US 20250354776A1

(19) United States
(12) Patent Application Publication
Huebner
(10) Pub. No.: US 2025/0354776 A1
(43) Pub. Date: Nov. 20, 2025

(54) **TOY PROJECTILE LAUNCHERS**

(71) Applicant: **Kenneth John Huebner**, Milwaukee, WI (US)

(72) Inventor: **Kenneth John Huebner**, Milwaukee, WI (US)

(21) Appl. No.: **18/669,090**

(22) Filed: **May 20, 2024**

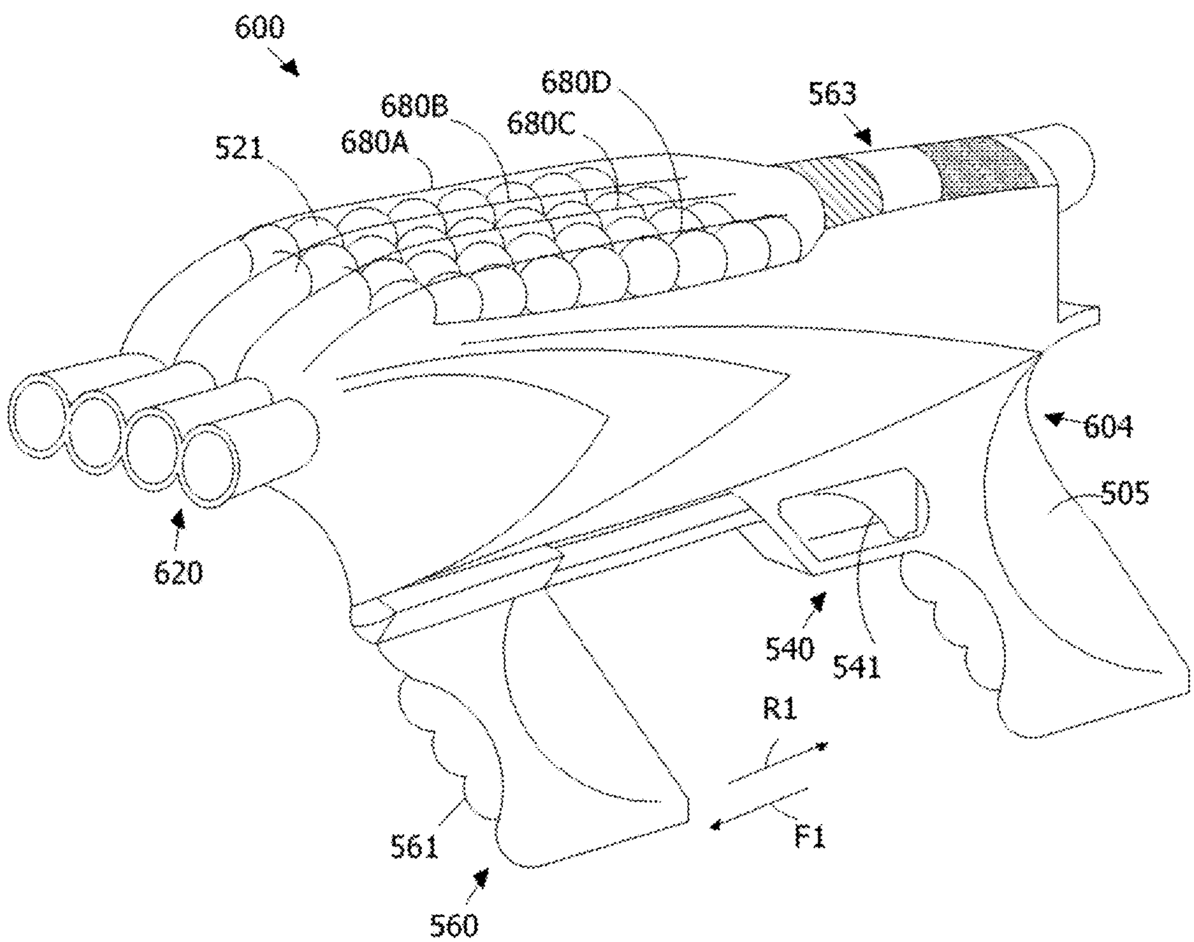
Publication Classification

(51) **Int. Cl.**
F41B 7/08 (2006.01)

(52) **U.S. Cl.**
CPC ***F41B 7/08*** (2013.01)

(57) **ABSTRACT**

A toy projectile launcher able to rapidly and sequentially launch a plurality of projectiles (such as four foam darts, each dart launched every 0.1 second) after being loaded and primed once, creating a machine gun effect. The launcher may be non-electronic, manually operated, and including a fluid compressor comprising a walled chamber holding a launch spring and a piston coupled to a priming actuator having a catch assembly with catch stops. A valve system may be coupled to the fluid compressor and an active barrel group comprising one or more launch barrels able to receive a plurality of projectiles. A trigger assembly may comprise a variable latch engaging the catch assembly, configured to single launch or sequentially launch the plurality of projectiles after the fluid compressor has been primed once by the priming actuator. Such structures also support electronic launchers and various projectiles (e.g., darts, balls, gel beads, etc.).



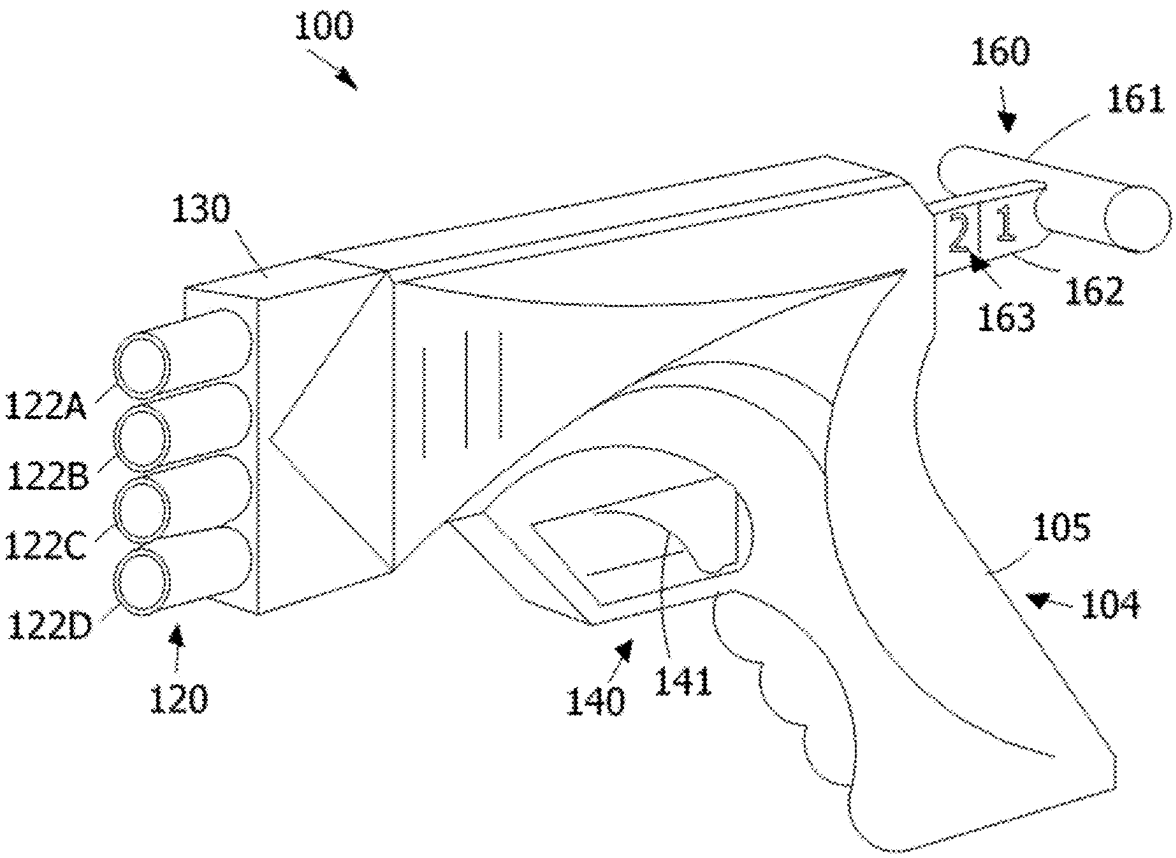

100
160
161
130
2
1
163
162
122A
122B
122C
122D
120
105
104
140
141

FIG. 1

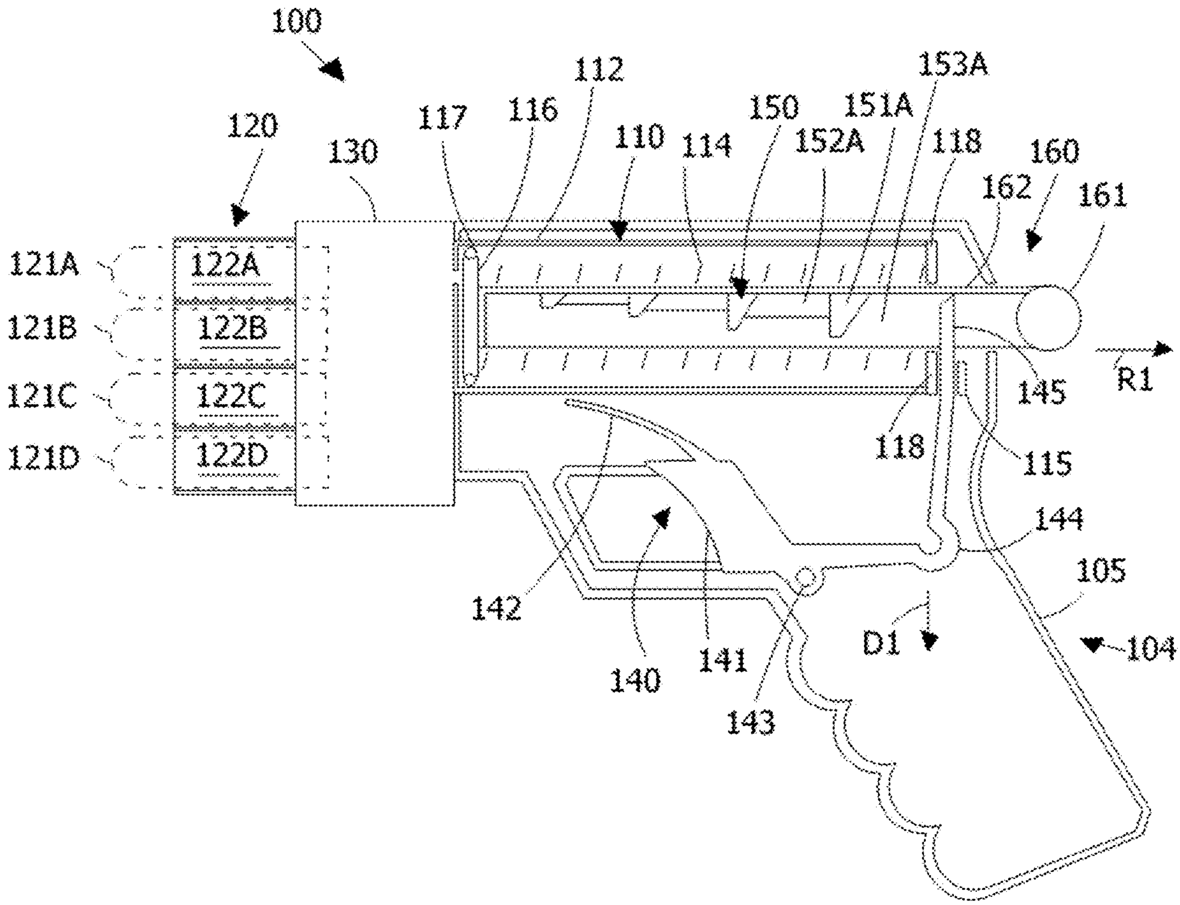
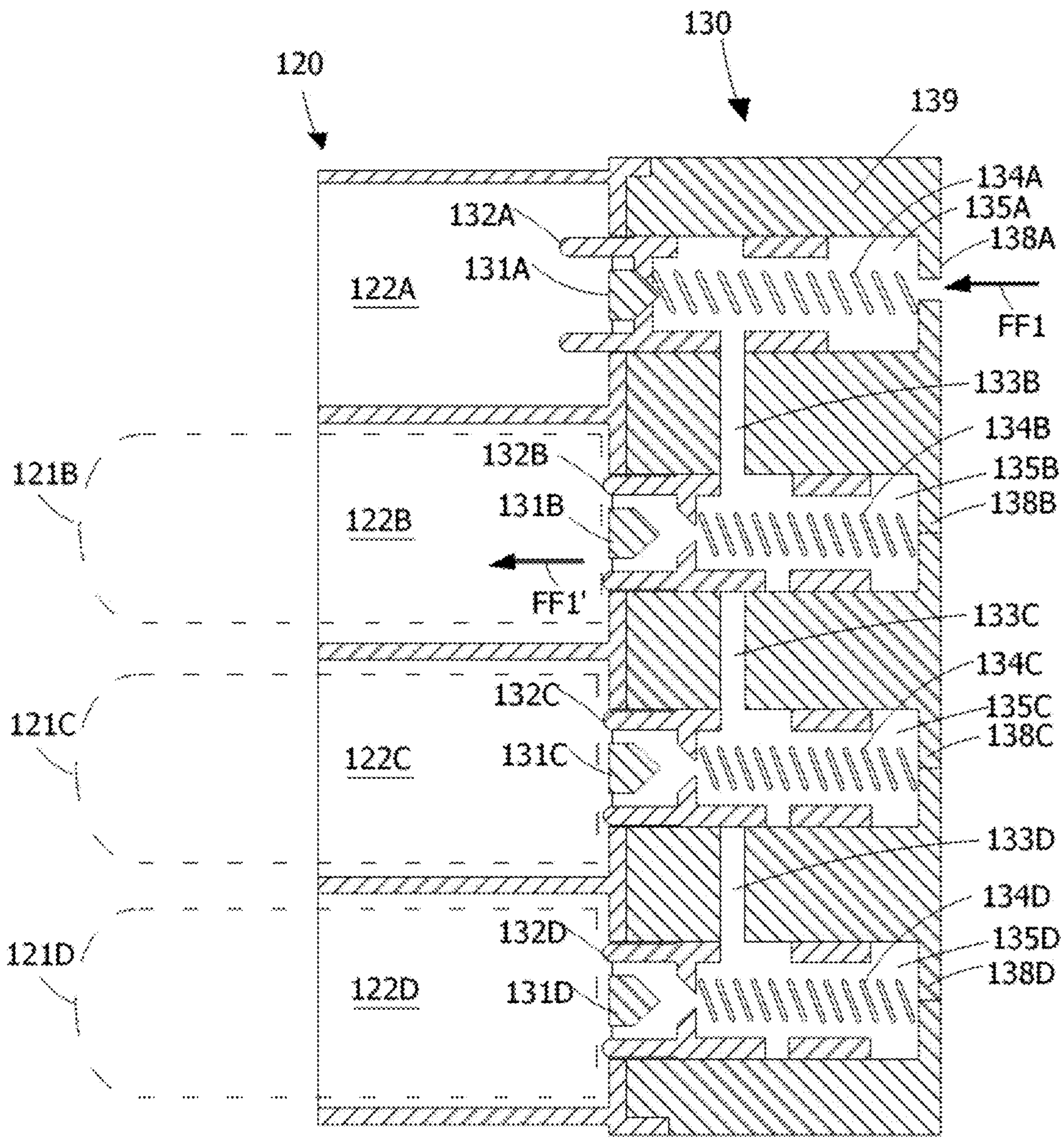

100
120
130
117
116
112
110
114
150
152A
151A
153A
118
162
160
161
121A
122A
121B
122B
121C
122C
121D
122D
145
R1
118
115
144
105
142
D1
104
140
141
143

FIG. 2



130
120
139
134A
135A
138A
132A
131A
122A
FF1
133B
134B
121B
132B
135B
131B
138B
122B
FF1'
133C
134C
121C
132C
135C
138C
122C
131C
133D
134D
121D
132D
135D
138D
122D
131D

FIG. 3A

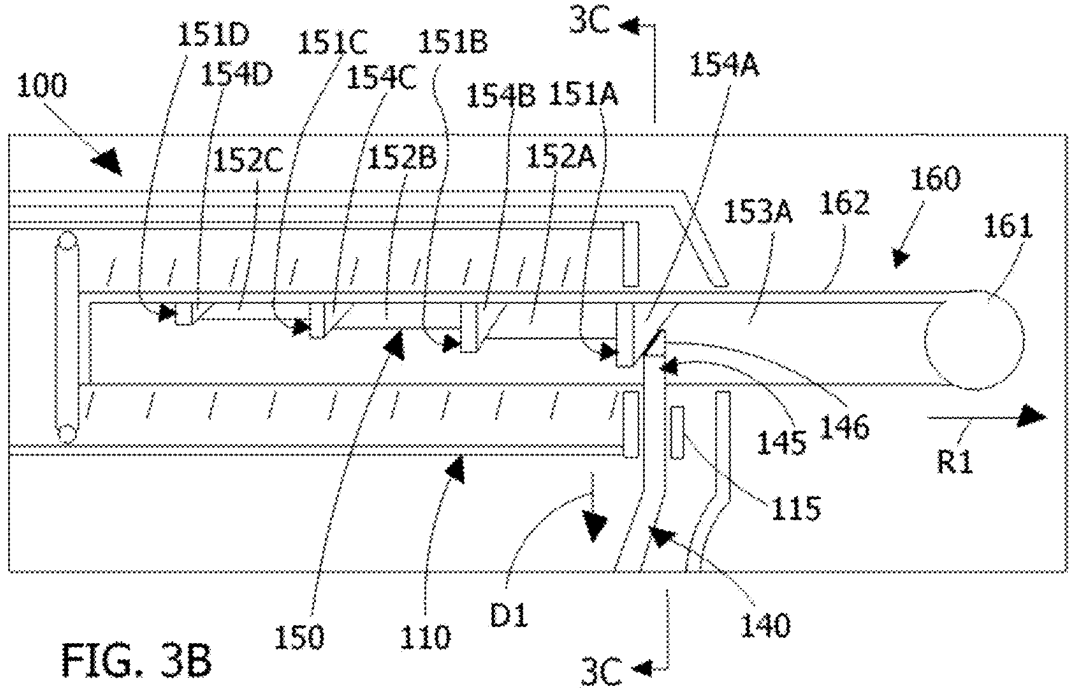

3C
151D
154D
151C
154C
151B
154B
151A
154A
100
152C
152B
152A
153A
162
160
161
145
146
115
R1
150
110
D1
140
3C

FIG. 3B

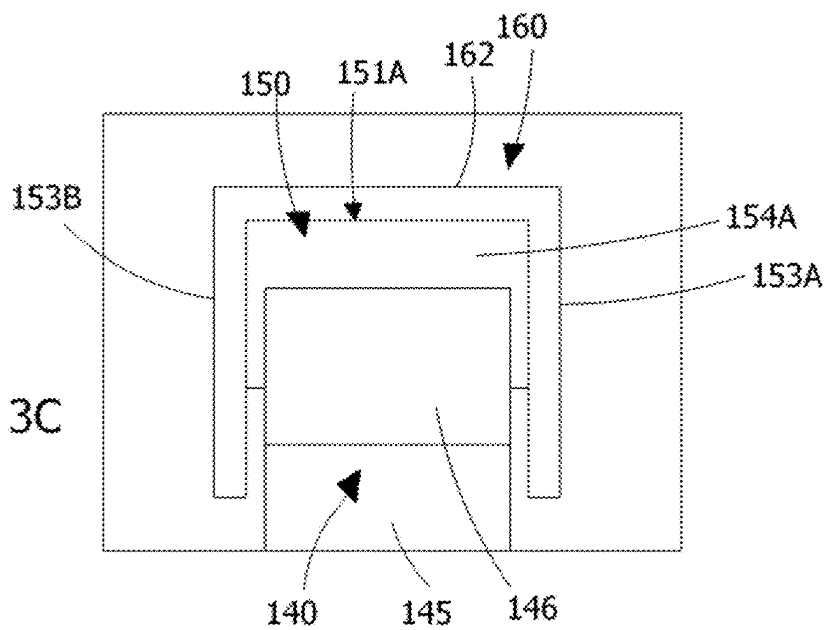

160
162
150
151A
153B
154A
153A
140
145
146

FIG. 3C

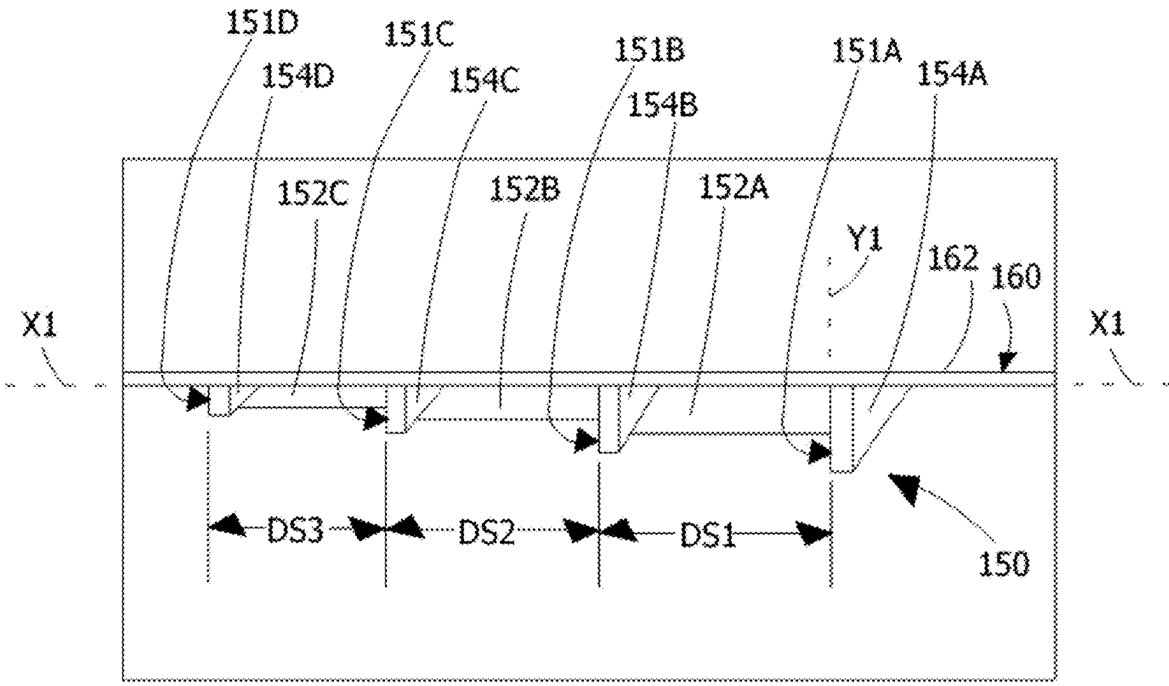

151D
154D
151C
154C
151B
154B
151A
154A
152C
152B
152A
Y1
162
160
X1
X1
DS3
DS2
DS1
150

FIG. 4A

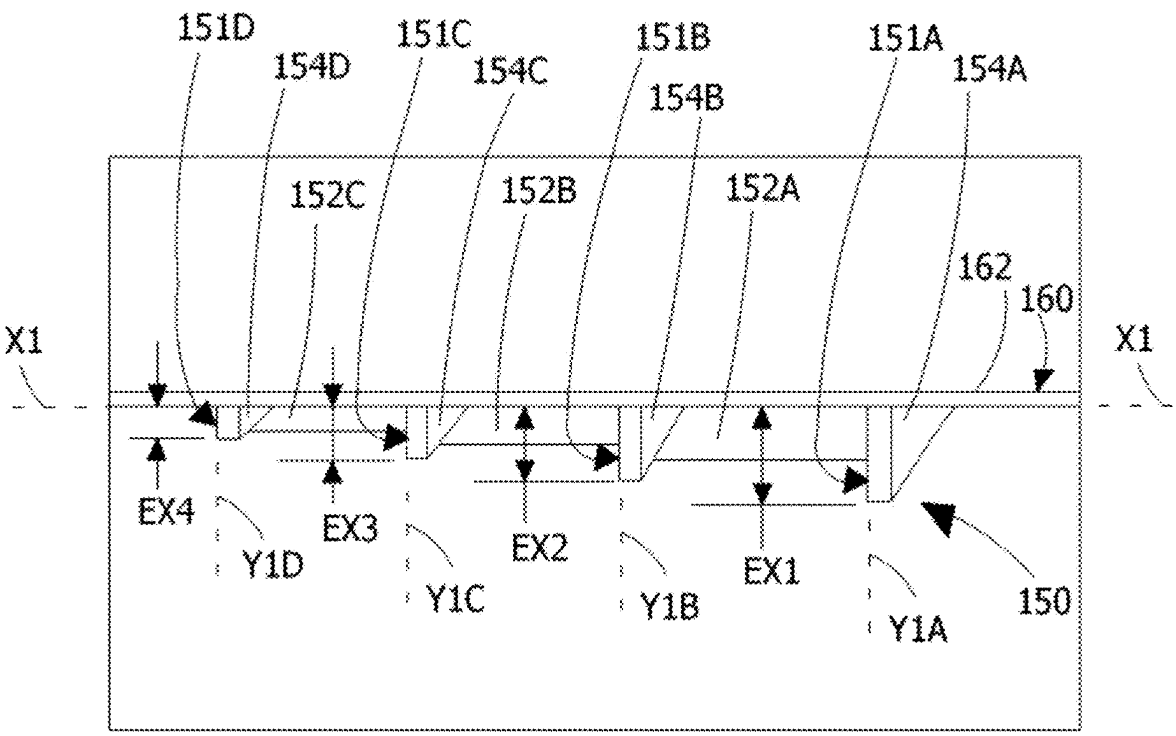

151D
154D
151C
154C
151B
154B
151A
154A
152C
152B
152A
162
160
X1
X1
EX4
EX3
EX2
EX1
Y1D
Y1C
Y1B
Y1A
150

FIG. 4B

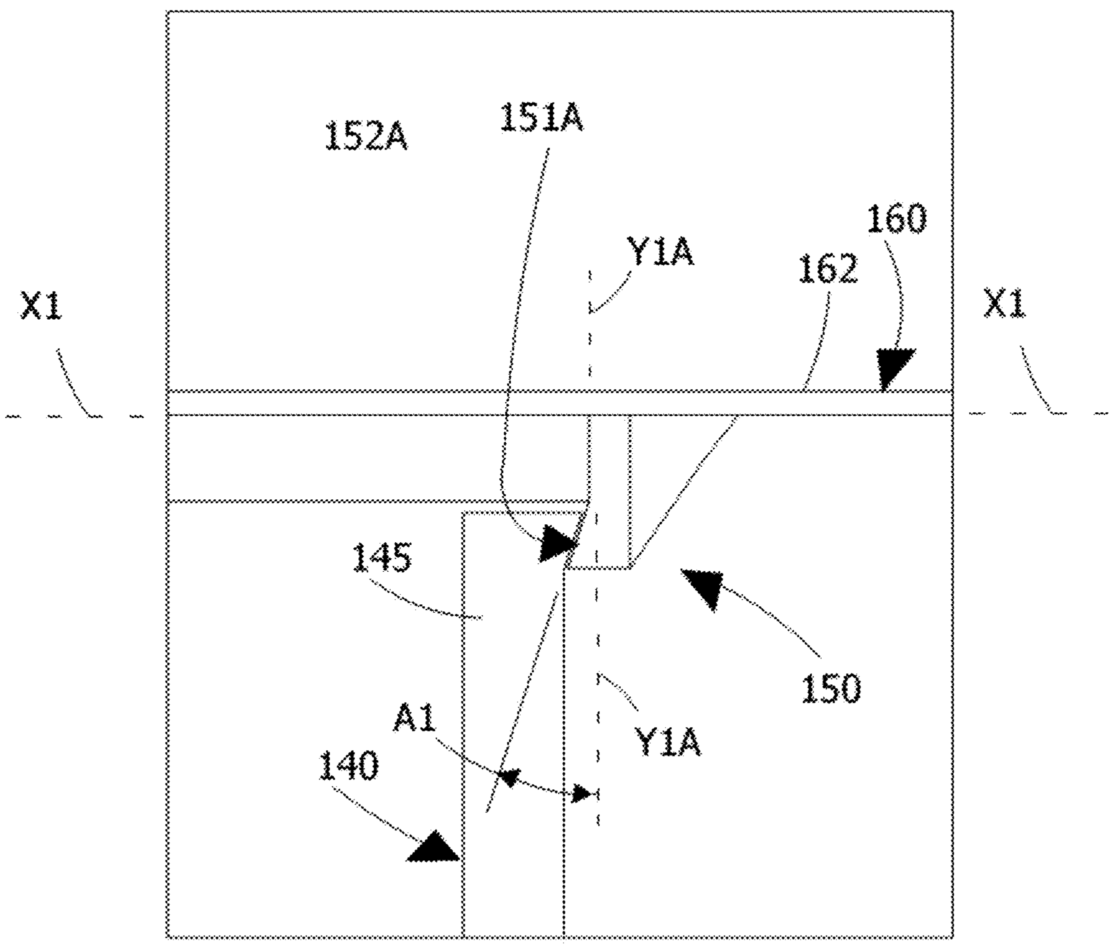


FIG. 4C

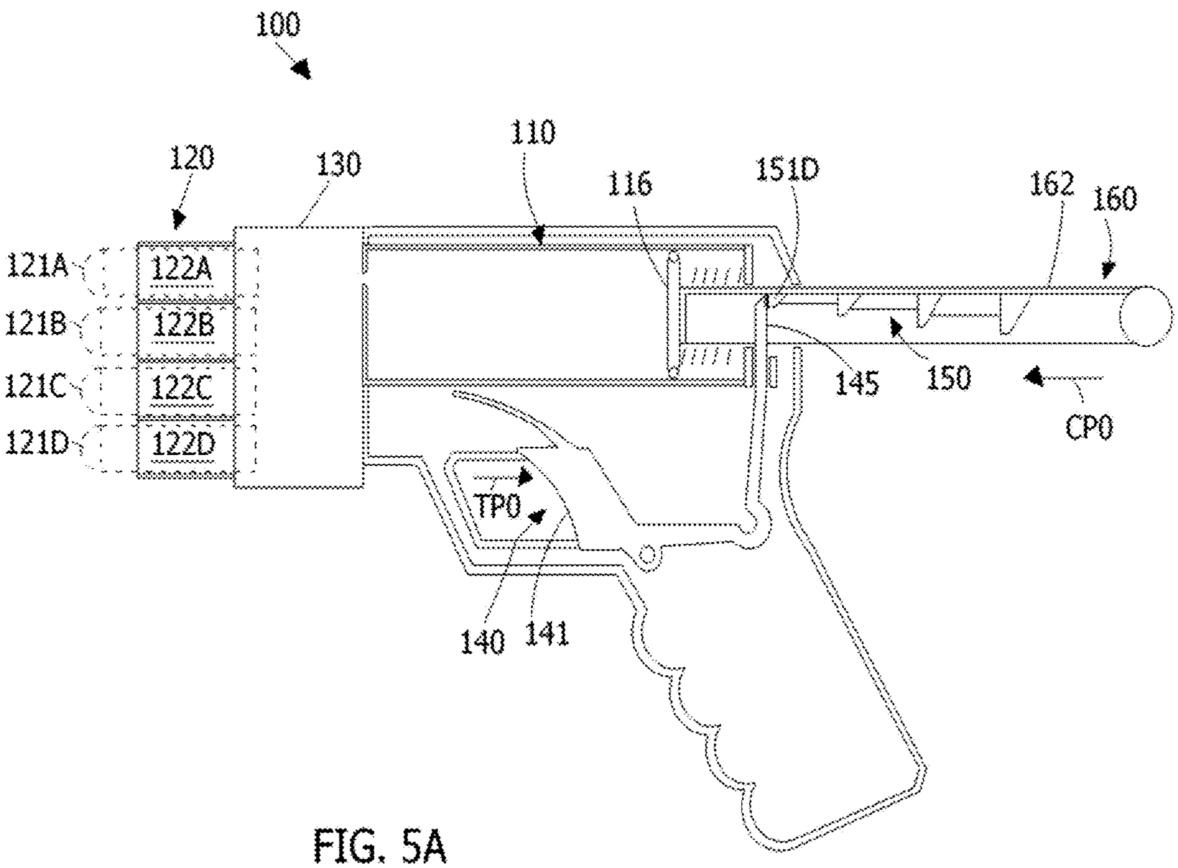

100
120
130
110
116
151D
162
160
121A
122A
121B
122B
121C
122C
121D
122D
145
150
CP0
TP0
140
141

FIG. 5A

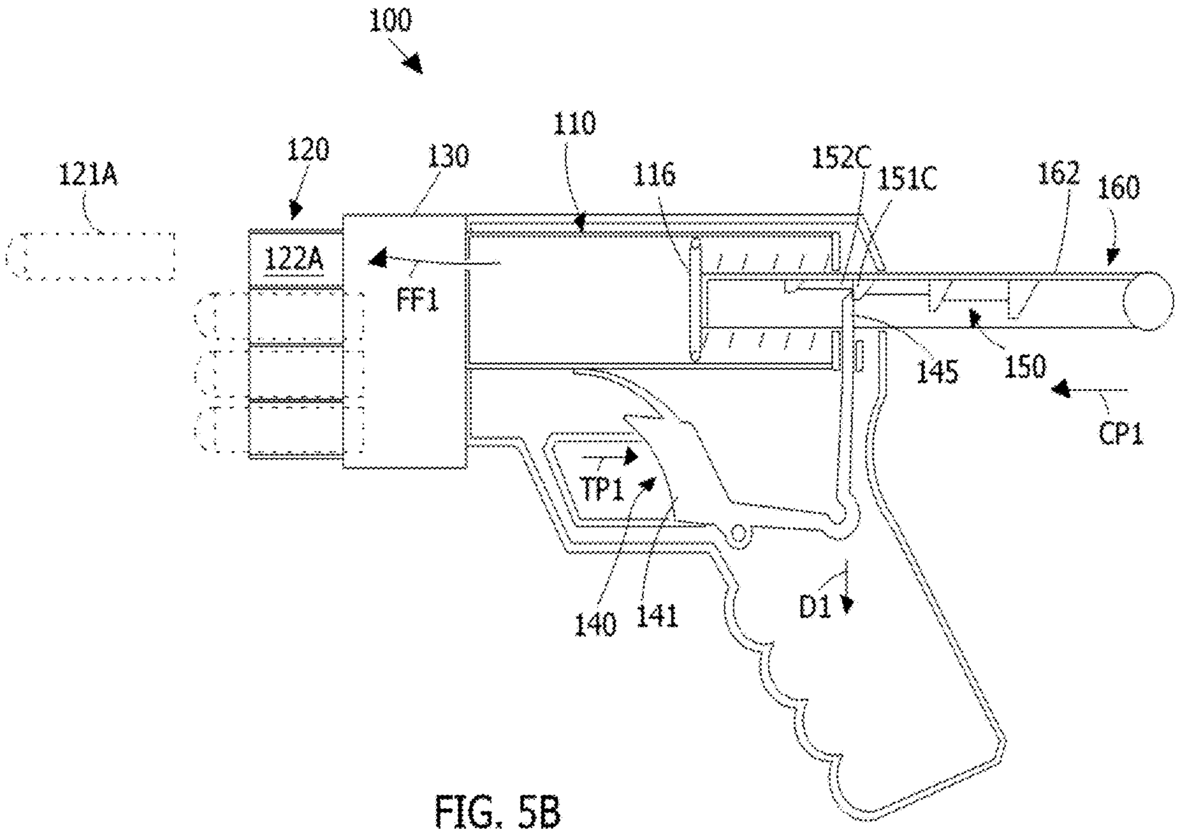

100
110
120
130
121A
122A
FF1
116
152C
151C
162
160
145
150
CP1
TP1
140
141
D1

FIG. 5B

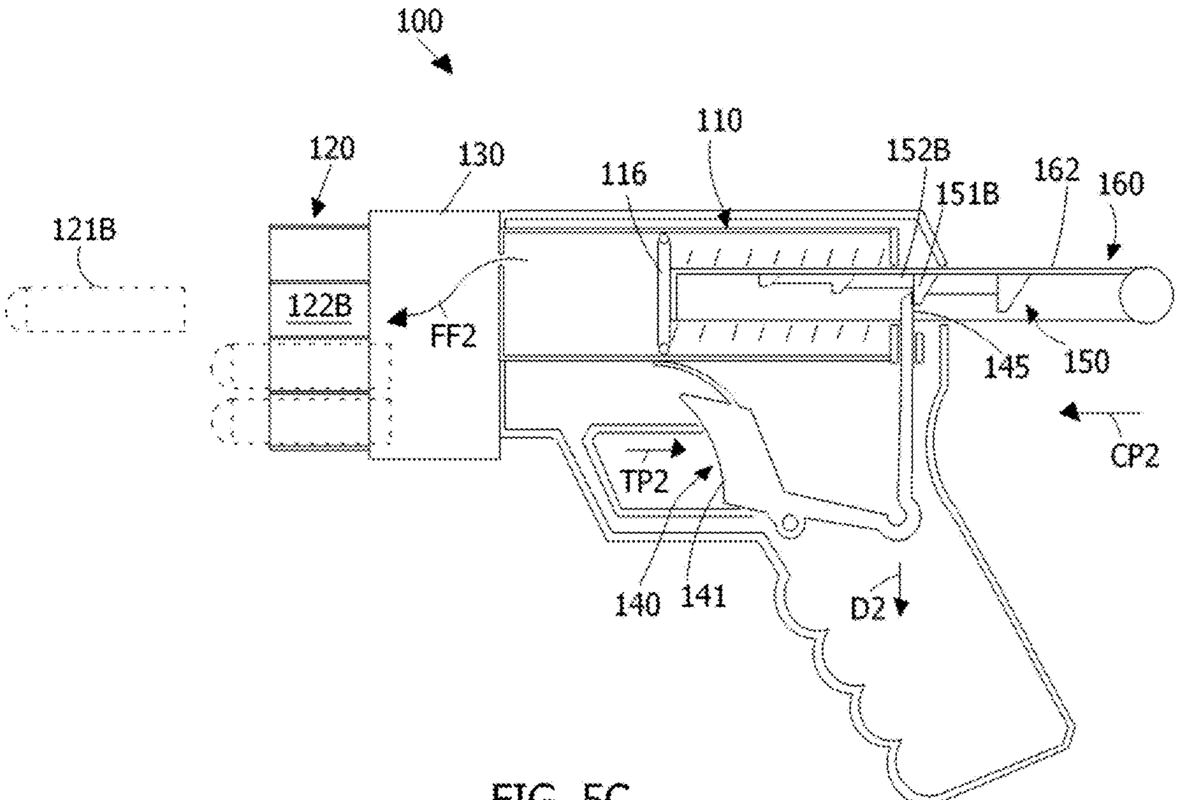

100
110
120
130
116
152B
151B
162
160
121B
122B
FF2
145
150
CP2
TP2
140
141
D2

FIG. 5C

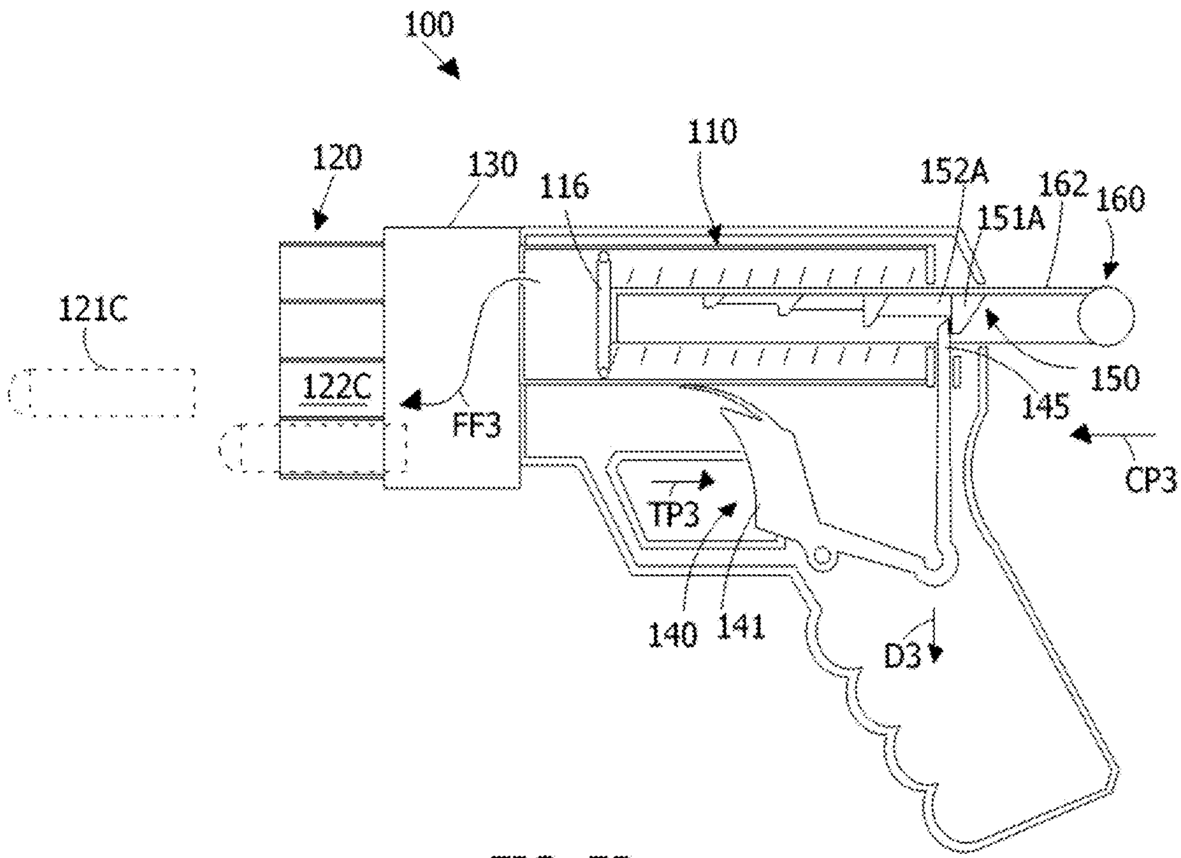

100
120
130
110
116
152A
162
151A
160
121C
122C
FF3
150
145
CP3
TP3
140
141
D3

FIG. 5D

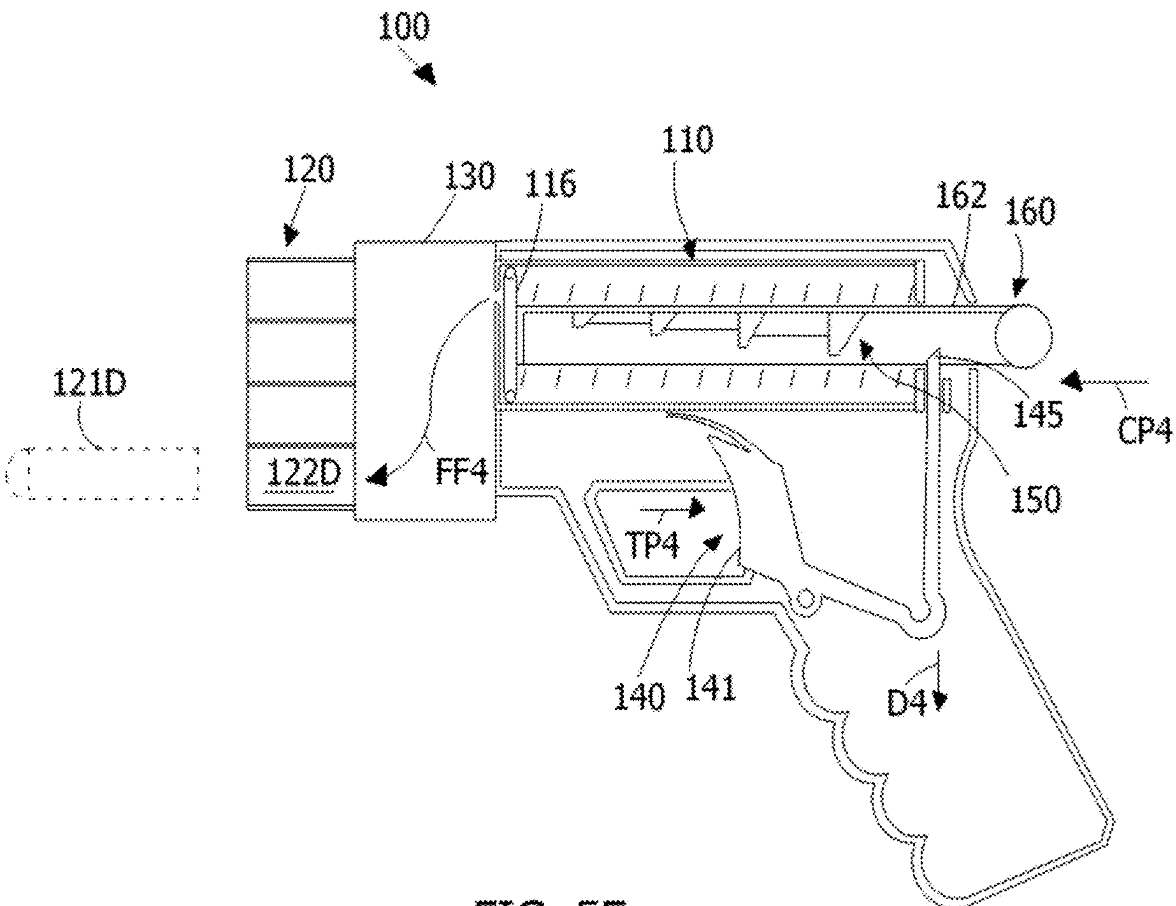

100
120
130
116
110
162
160
121D
122D
FF4
145
CP4
150
TP4
140
141
D4

FIG. 5E

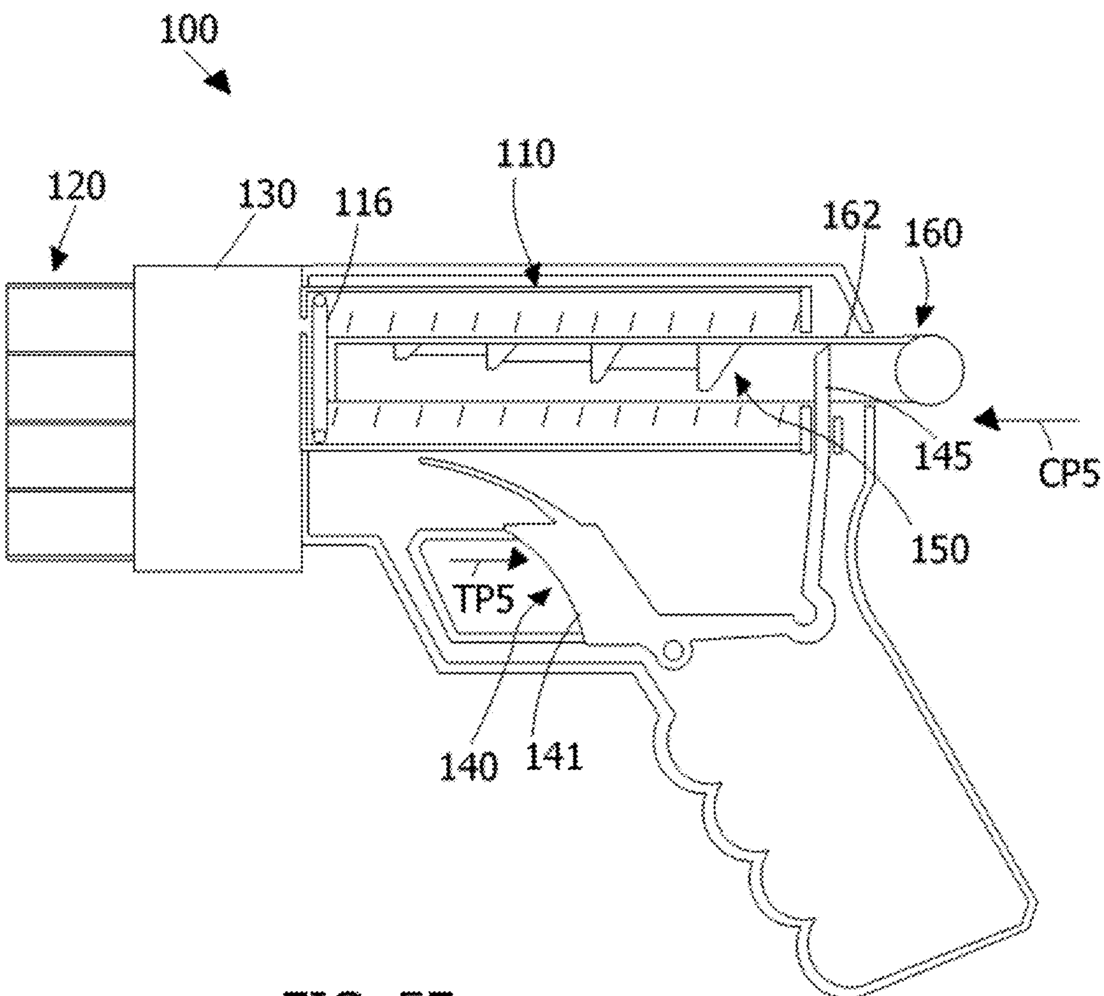


FIG. 5F

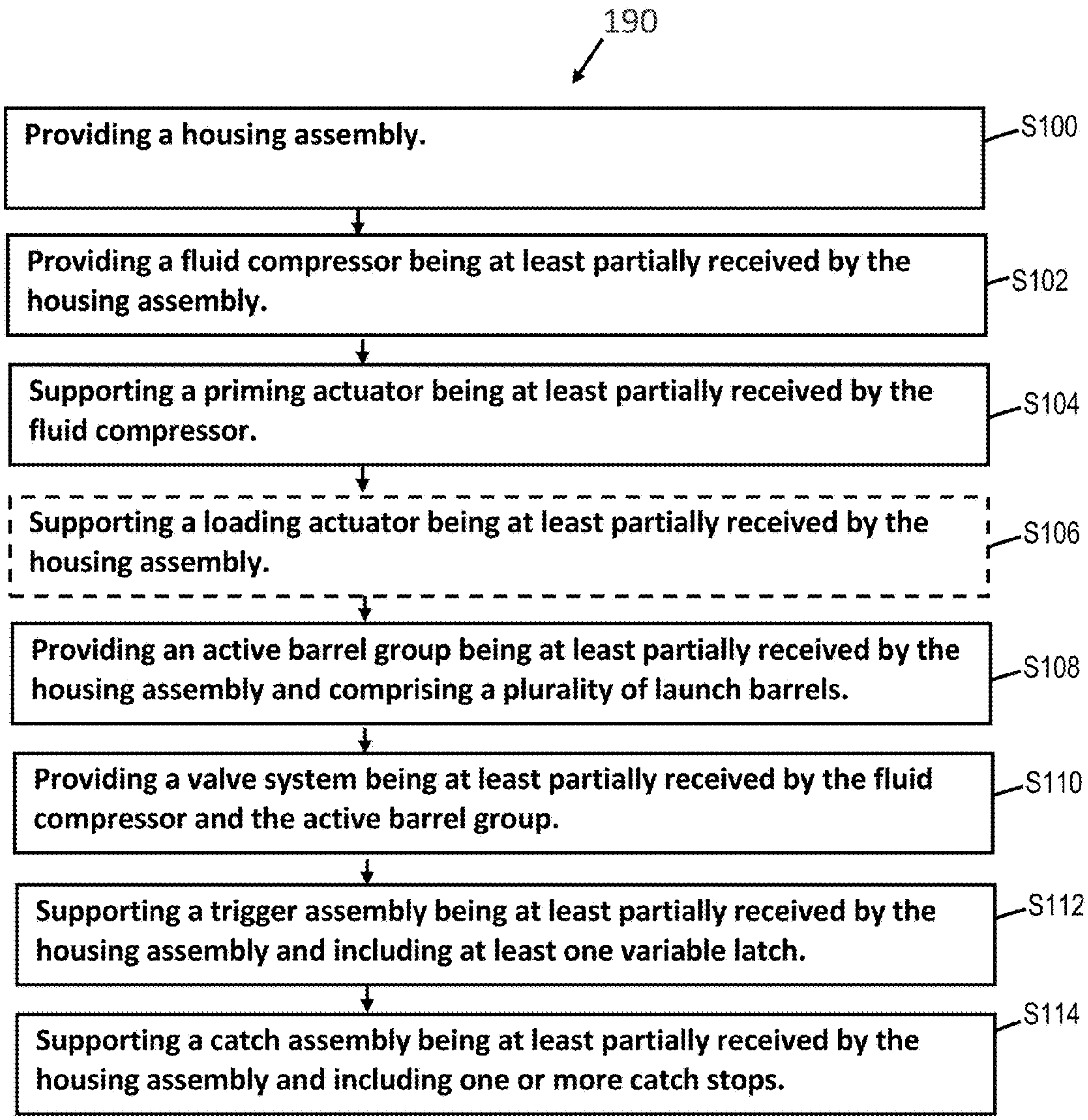

190
Providing a housing assembly.
S100
Providing a fluid compressor being at least partially received by the housing assembly.
S102
Supporting a priming actuator being at least partially received by the fluid compressor.
S104
Supporting a loading actuator being at least partially received by the housing assembly.
S106
Providing an active barrel group being at least partially received by the housing assembly and comprising a plurality of launch barrels.
S108
Providing a valve system being at least partially received by the fluid compressor and the active barrel group.
S110
Supporting a trigger assembly being at least partially received by the housing assembly and including at least one variable latch.
S112
Supporting a catch assembly being at least partially received by the housing assembly and including one or more catch stops.
S114

FIG. 6A

Providing a fluid compressor being at least partially received by the housing assembly, wherein the fluid compressor comprises a launch spring that is preloaded. S103

FIG. 6B

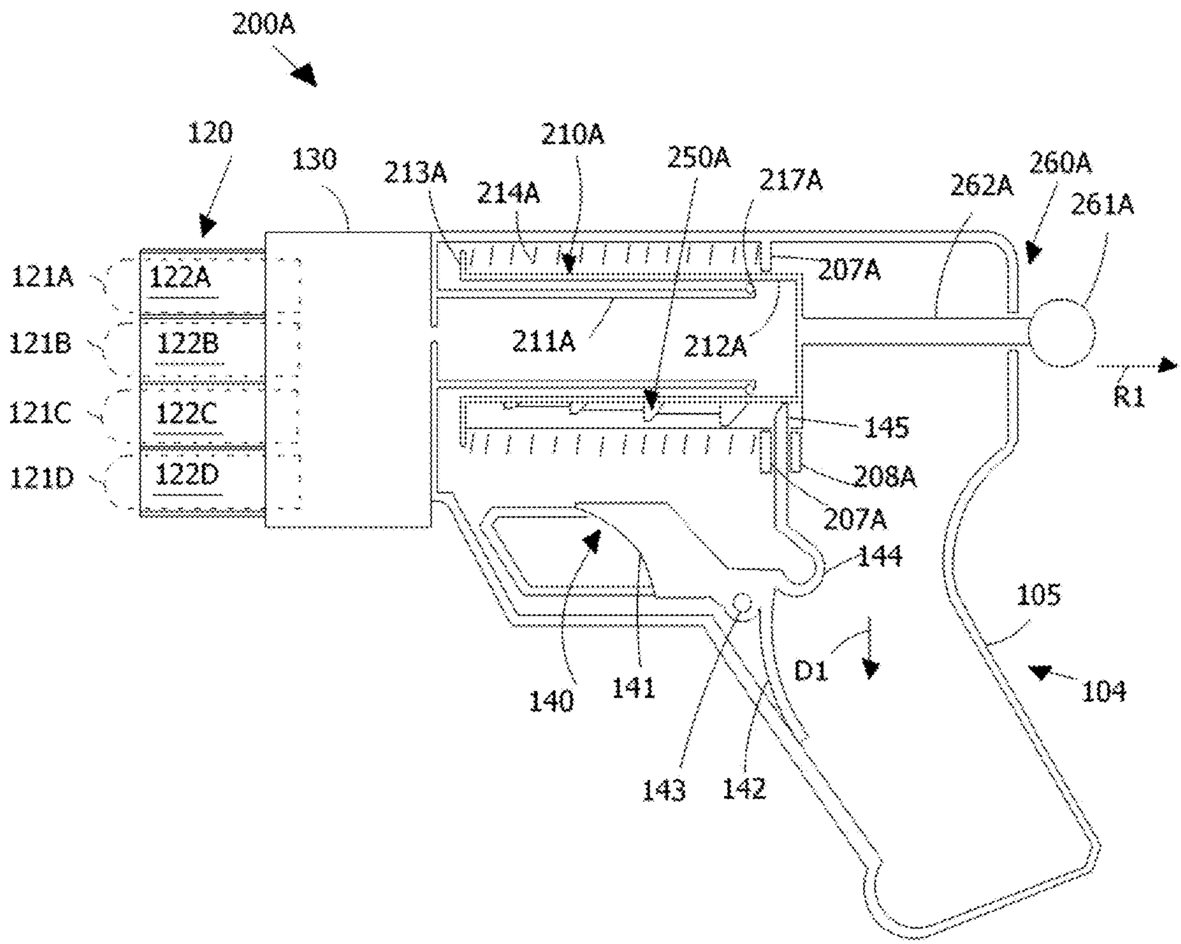

200A
120
130
210A
250A
213A
214A
217A
262A
260A
261A
121A
122A
207A
121B
122B
211A
212A
R1
121C
122C
145
121D
122D
208A
207A
144
105
D1
104
140
141
143
142

FIG. 7A

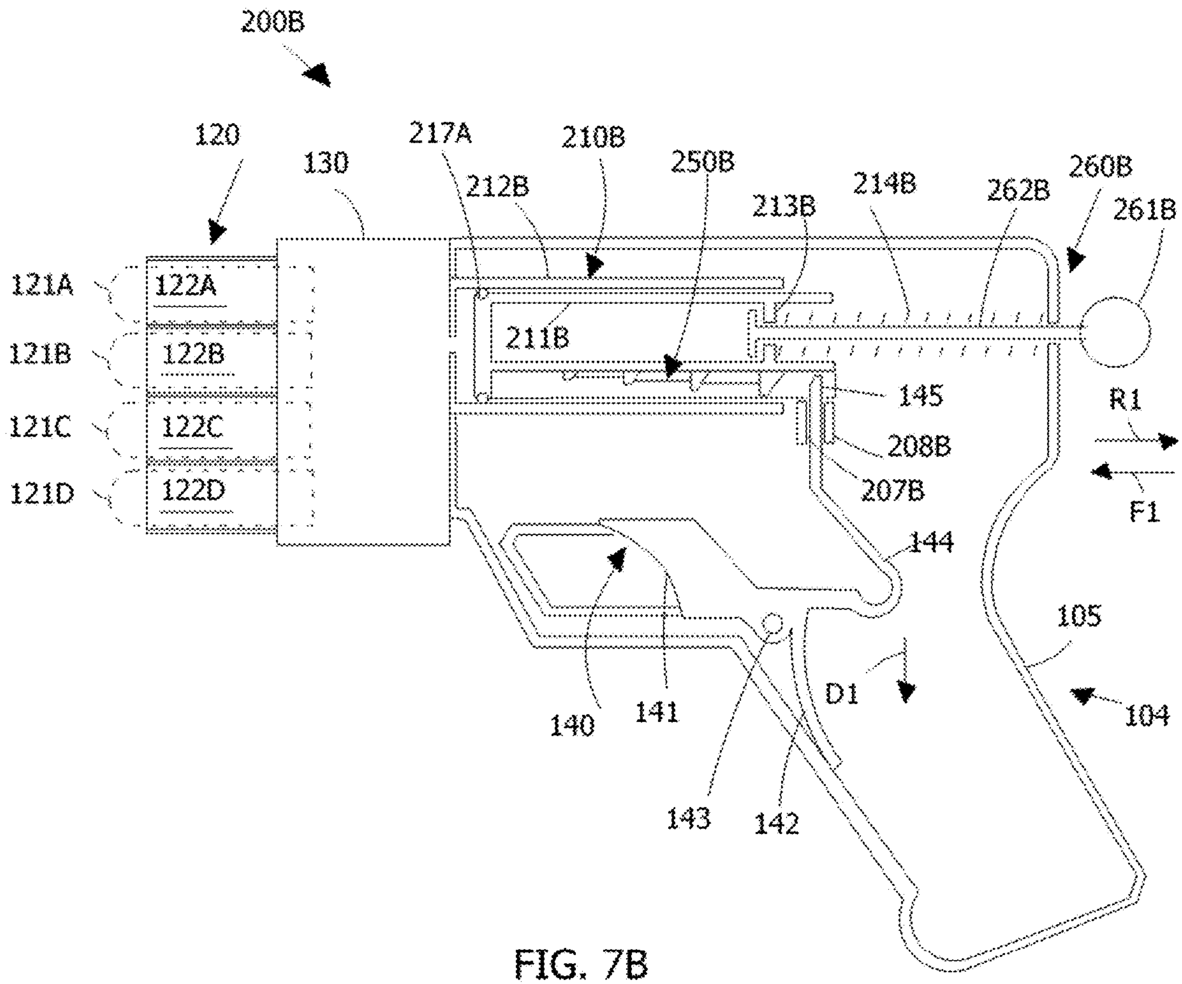

200B
120
130
217A
210B
212B
250B
213B
214B
262B
260B
261B
121A
122A
121B
122B
211B
121C
122C
121D
122D
145
R1
208B
207B
F1
144
105
140
141
D1
104
143
142

FIG. 7B

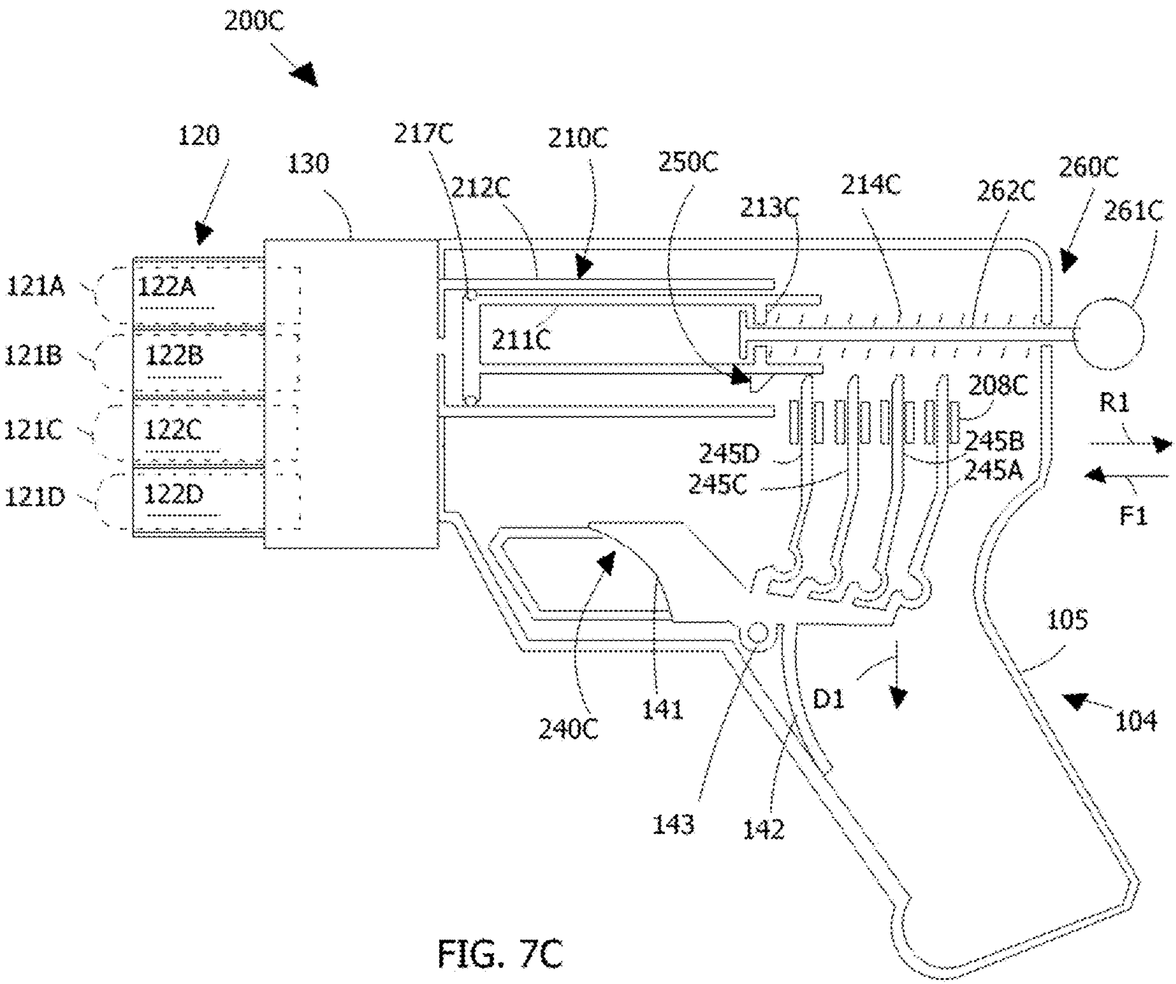

200C
120
130
217C
210C
212C
250C
213C
214C
262C
260C
261C
121A
122A
121B
122B
211C
121C
122C
121D
122D
208C
R1
245D
245B
245C
245A
F1
105
240C
141
D1
104
143
142

FIG. 7C

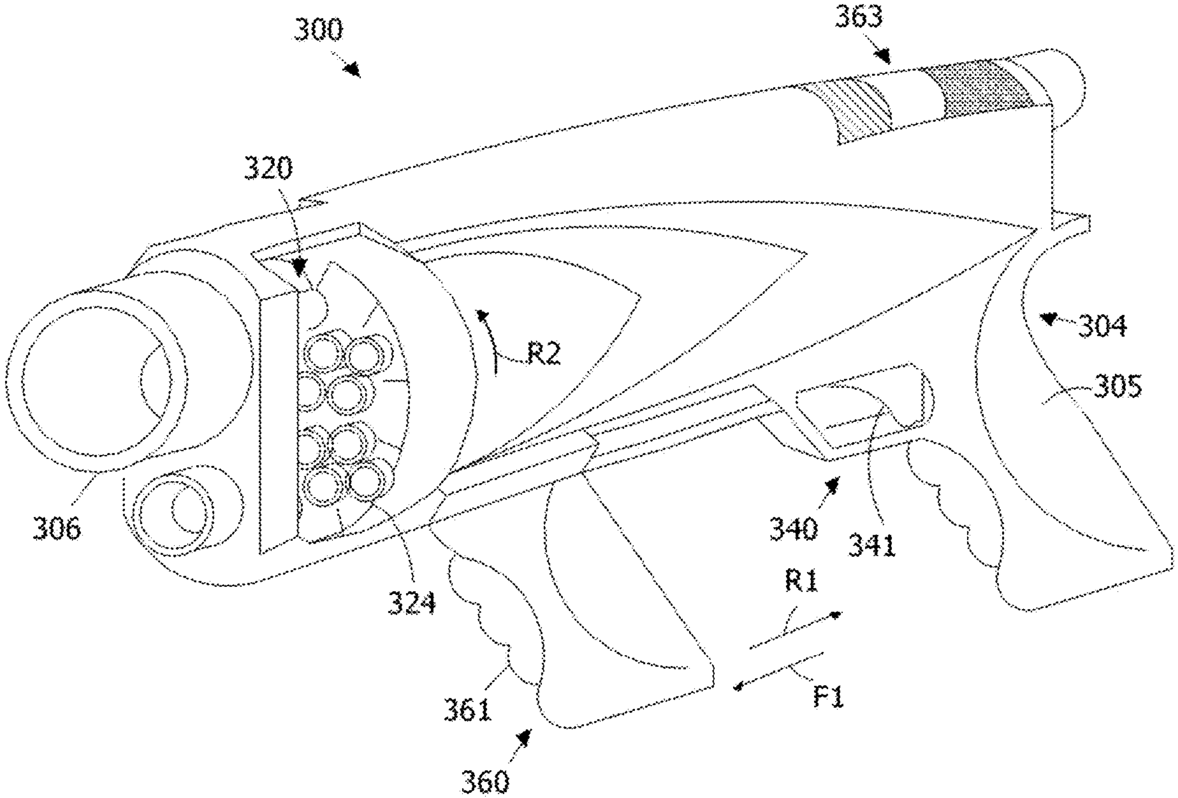


FIG. 8

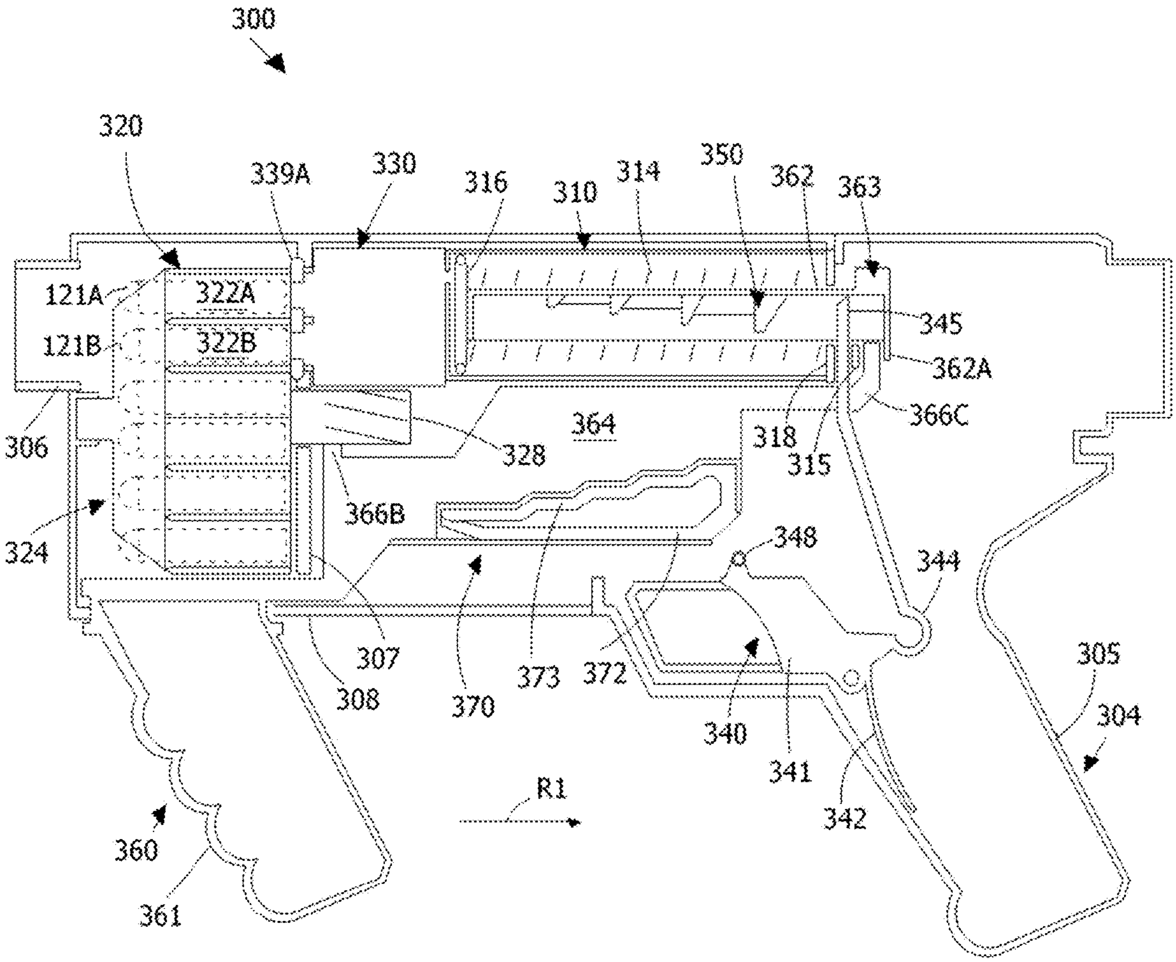

300
320
339A
330
316
310
314
350
362
363
121A
322A
121B
322B
345
362A
306
328
364
318
315
366C
324
366B
348
344
307
370
373
372
308
305
340
341
304
342
R1
360
361

FIG. 9A

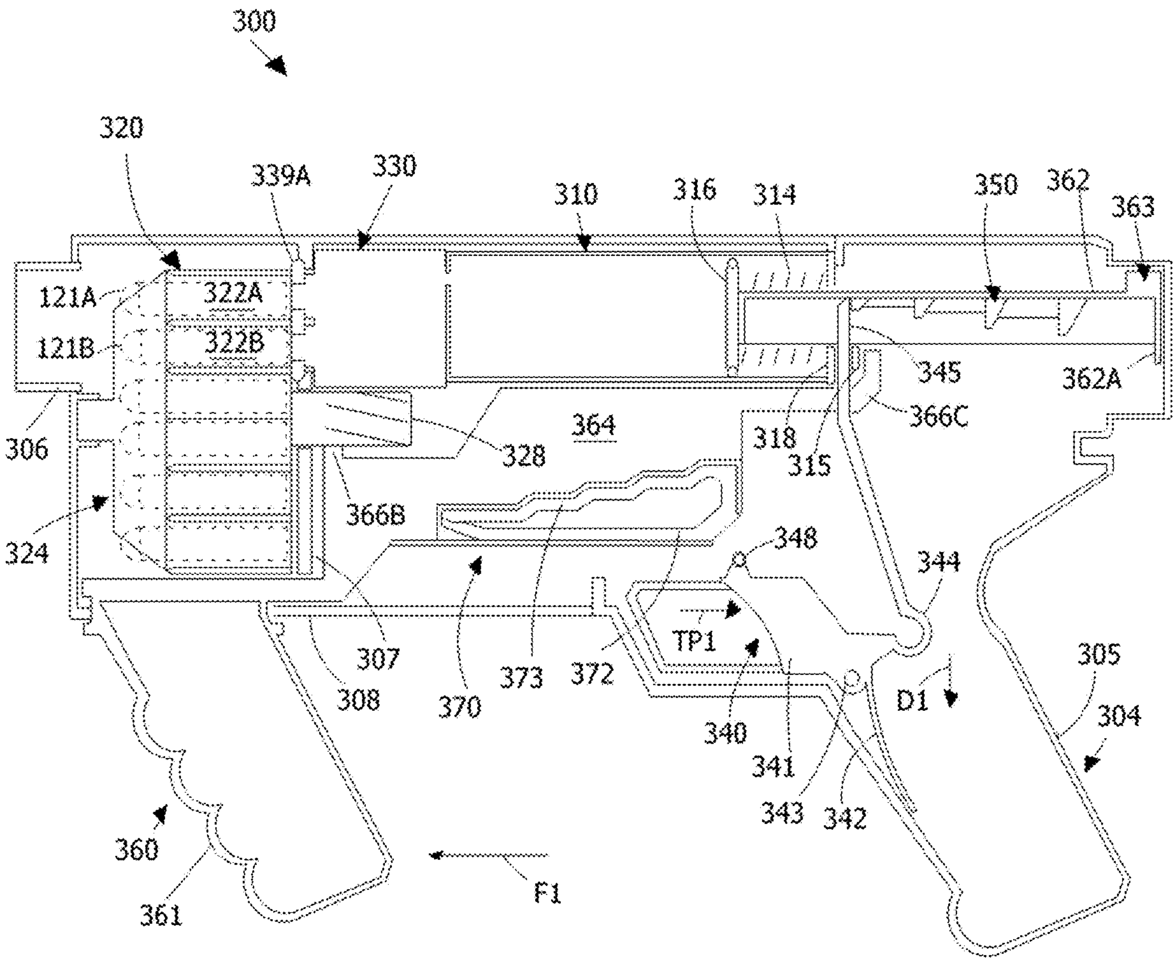

300
320
339A
330
310
316
314
350
362
363
121A
322A
121B
322B
345
362A
306
364
328
318
366C
315
366B
324
348
344
307
TP1
305
308
370
373
372
340
D1
304
341
343
342
360
361
F1

FIG. 9B

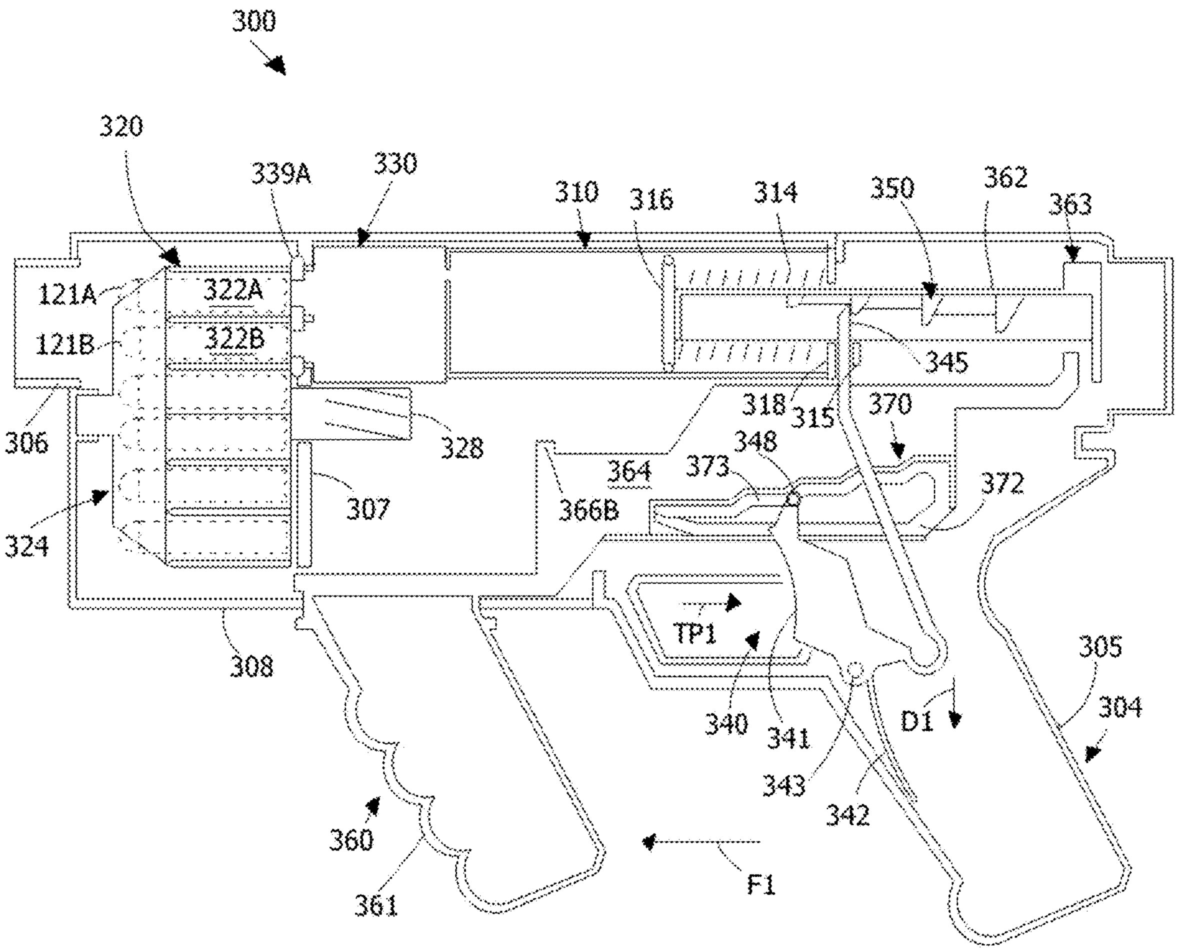

300
320
339A
330
310
316
314
350
362
363
121A
322A
121B
322B
345
306
318
315
370
328
348
364
373
372
324
307
366B
TP1
305
308
340
341
D1
304
343
342
360
F1
361

FIG. 9C

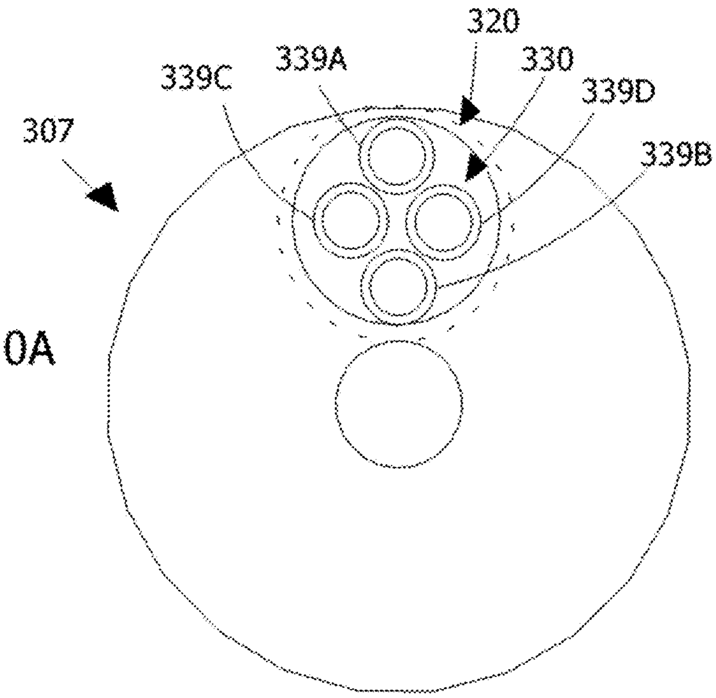


FIG. 10A

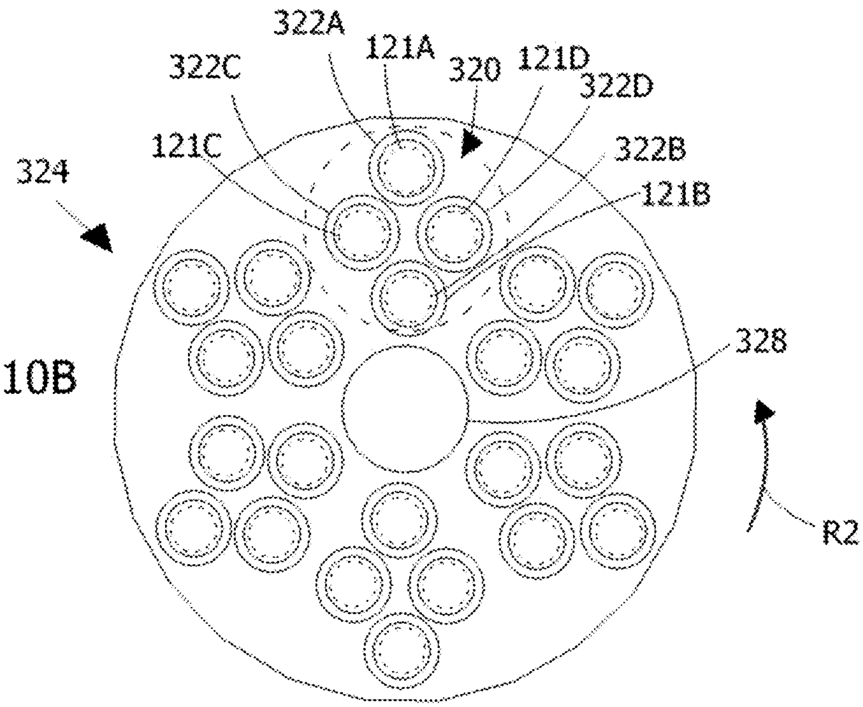


FIG. 10B

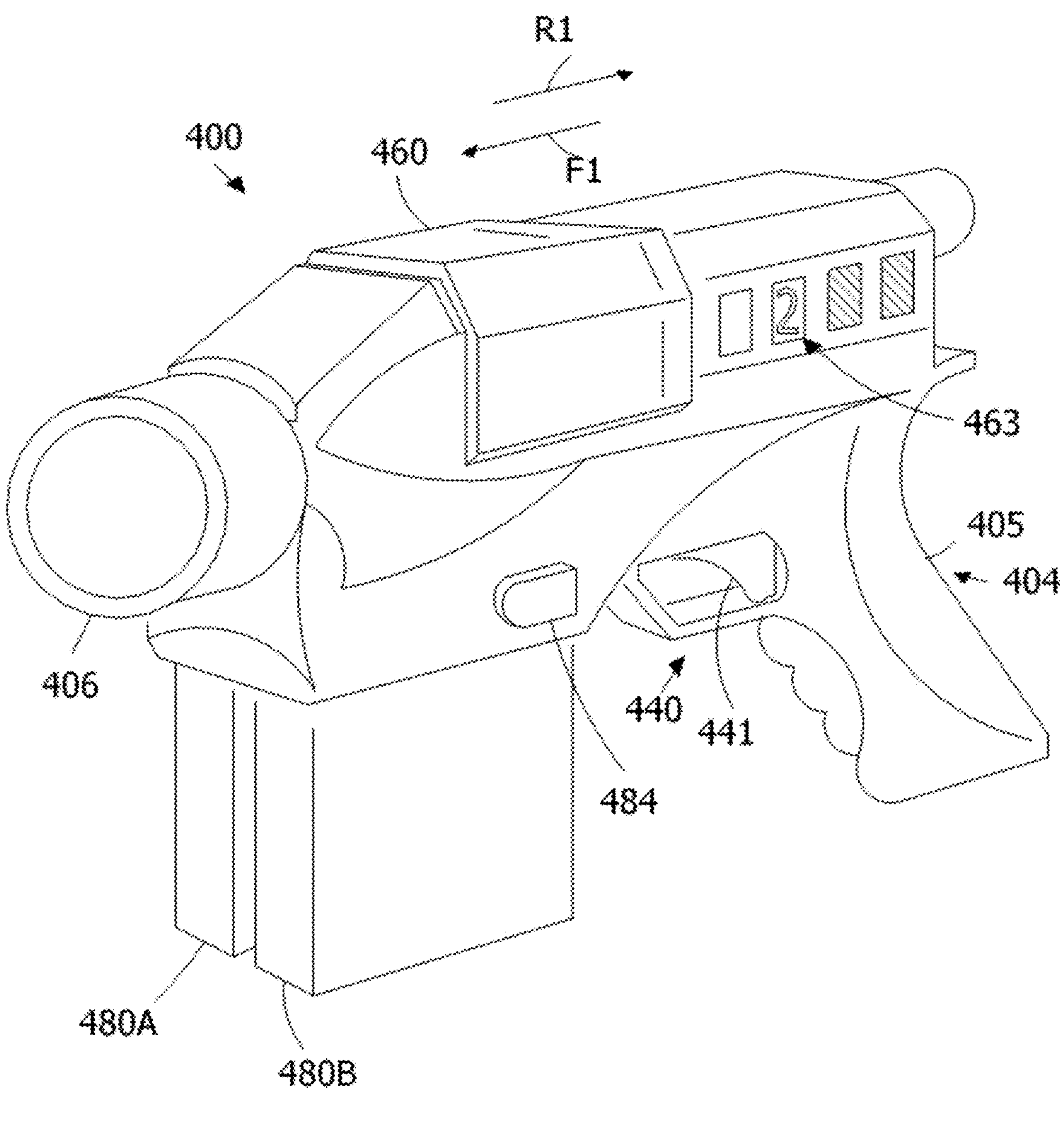


FIG. 11

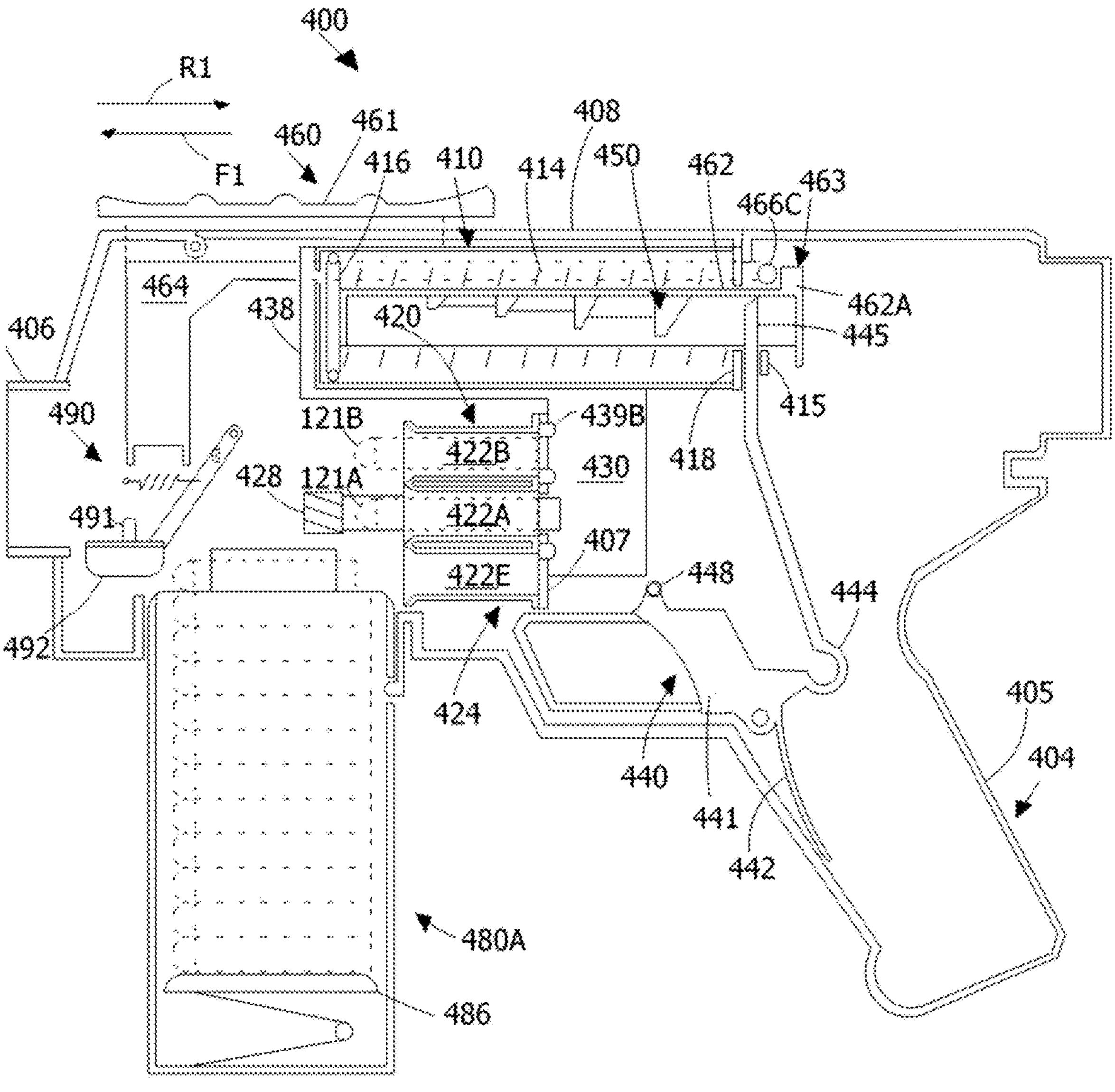

400
R1
F1
460
461
416
410
414
450
408
462
466C
463
462A
445
415
418
464
438
420
406
490
121B
439B
422B
430
428
121A
422A
491
407
422E
448
444
492
424
440
441
442
405
404
480A
486

FIG. 12

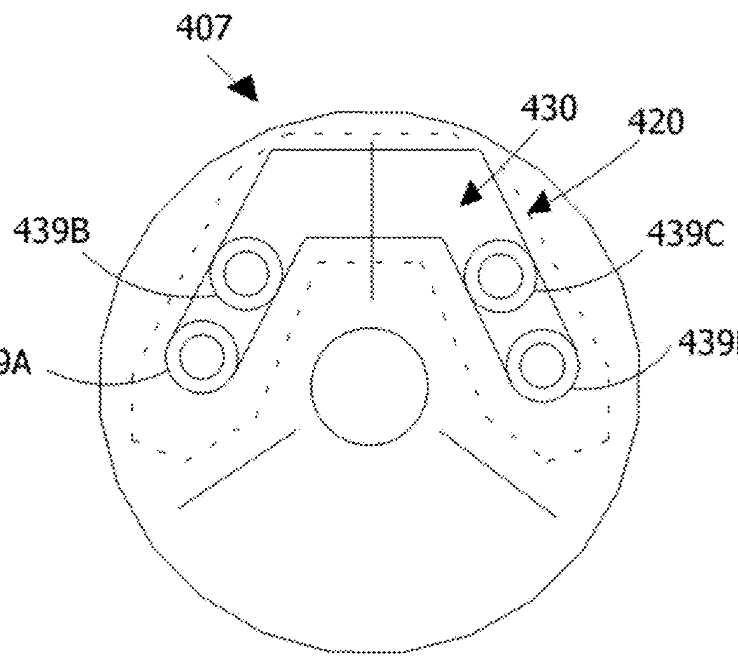


FIG. 13A

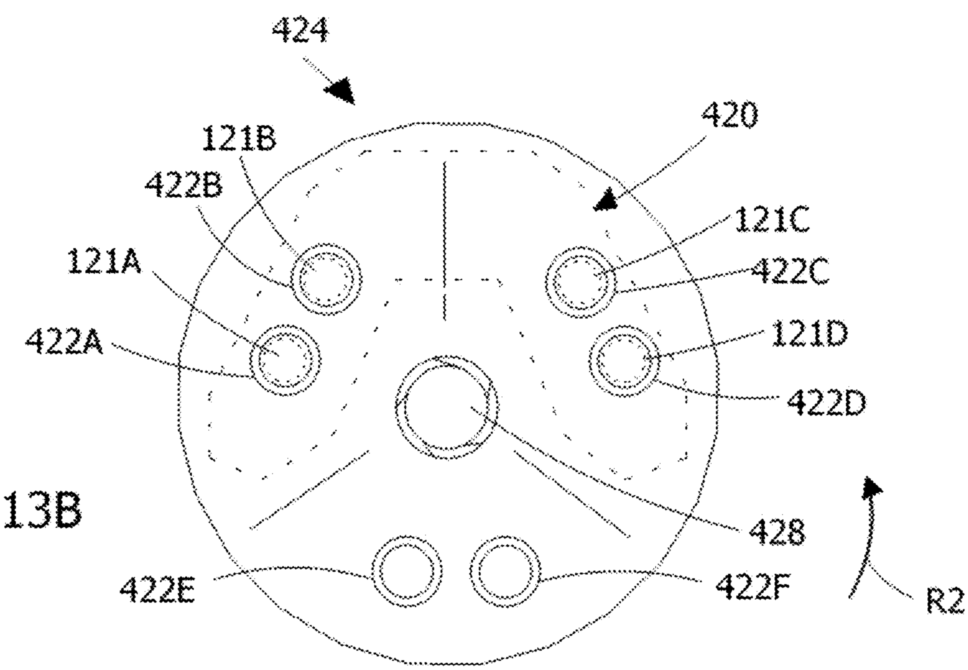


FIG. 13B

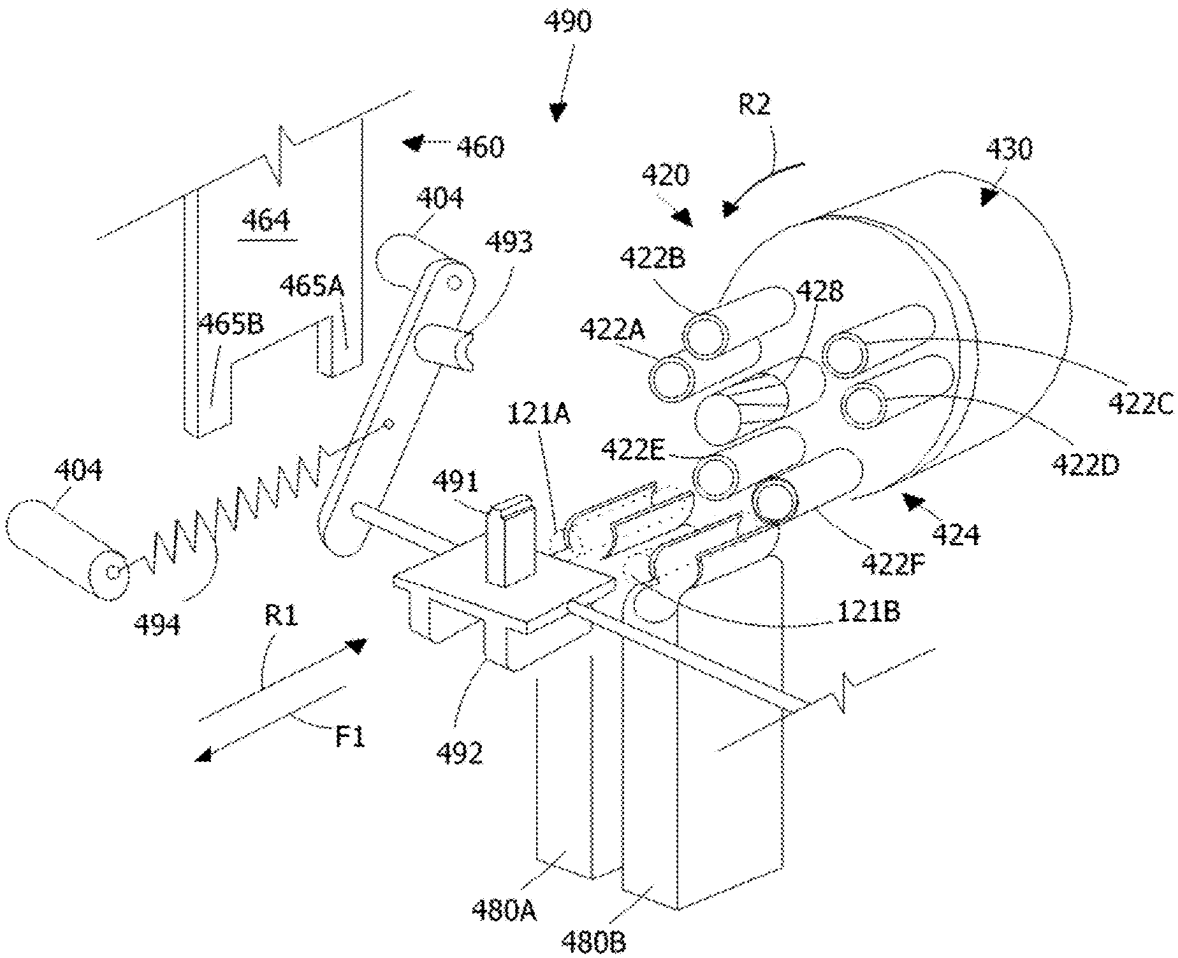

490
460
464
465A
465B
404
493
R2
420
430
422B
428
422A
422C
422D
121A
422E
491
404
424
422F
121B
494
R1
F1
492
480A
480B

FIG. 14

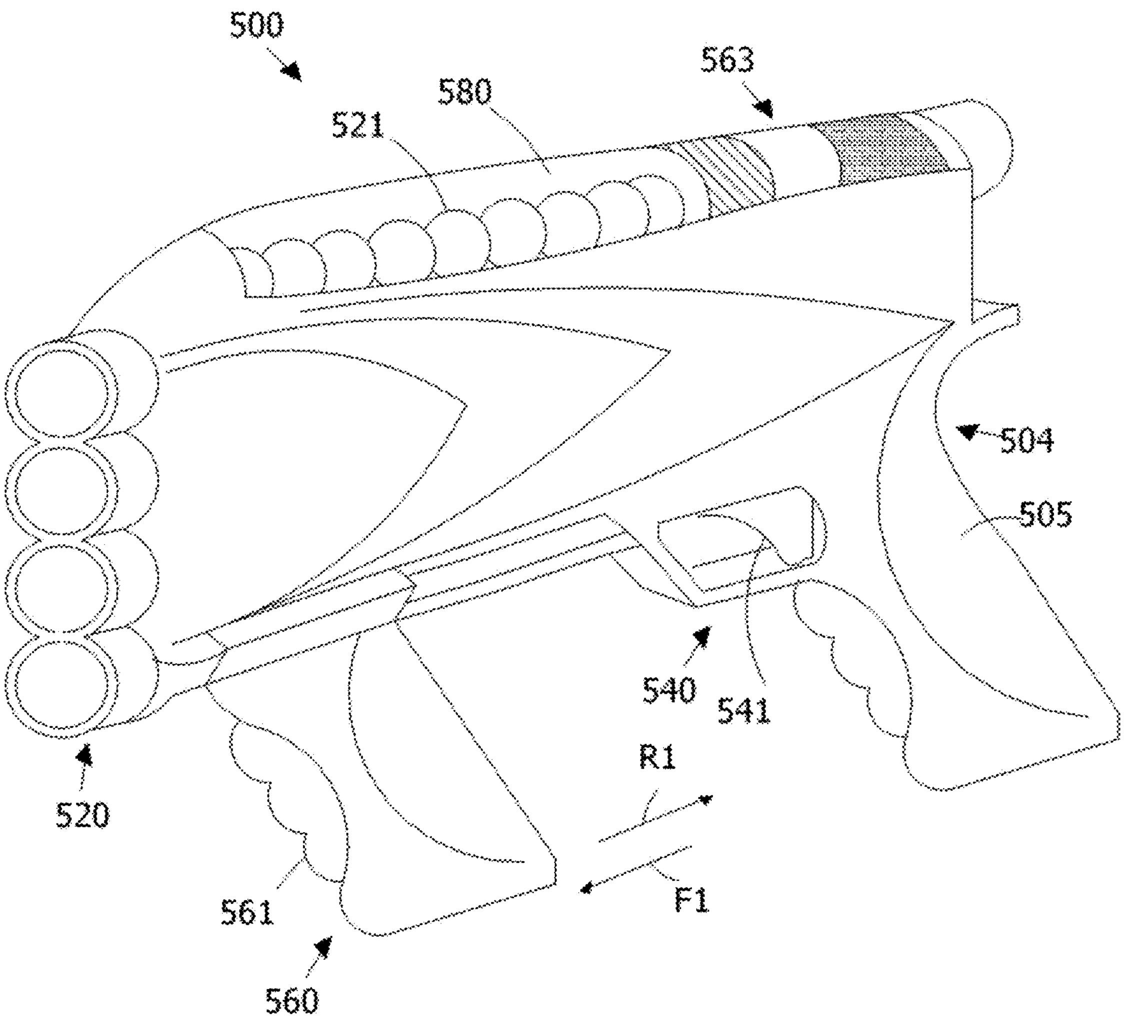


FIG. 15

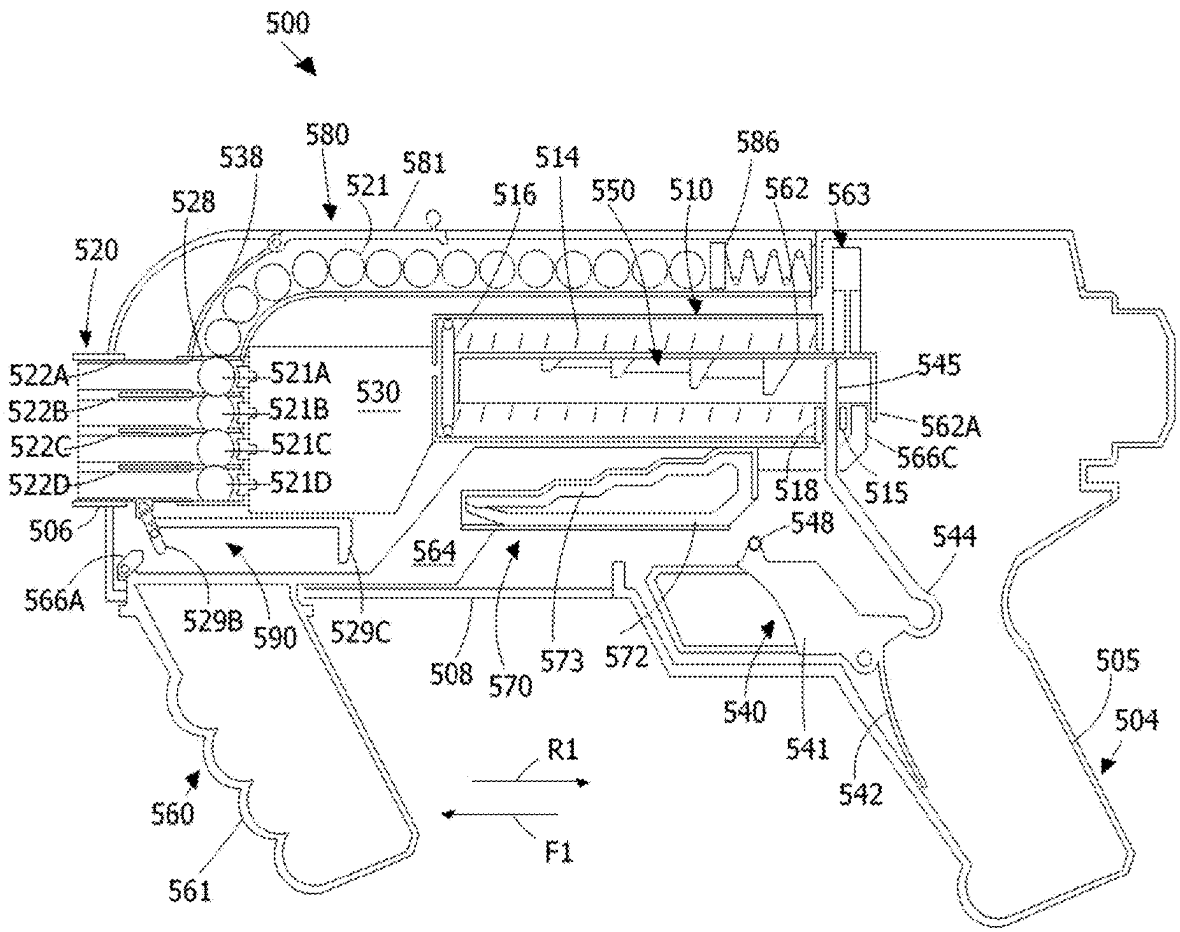

500
580
538
521
581
514
586
528
516
550
510
562
563
520
522A
521A
530
545
522B
521B
562A
522C
521C
566C
522D
521D
518
515
506
548
544
564
566A
529B
590
529C
508
570
573
572
540
541
505
504
R1
F1
542
560
561

FIG. 16

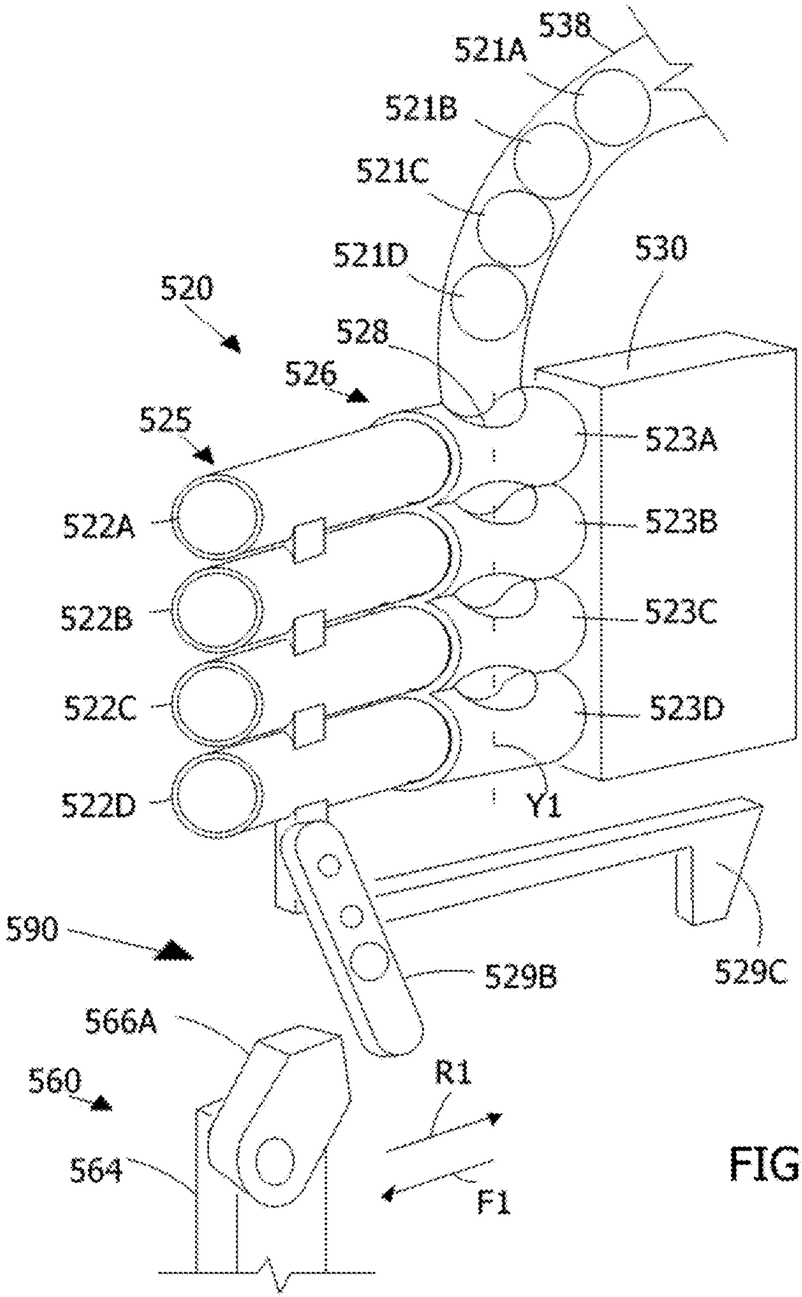

538
521A
521B
521C
521D
530
520
528
526
525
523A
522A
523B
522B
523C
522C
523D
522D
Y1
590
529B
529C
566A
560
R1
564
F1

FIG. 17A

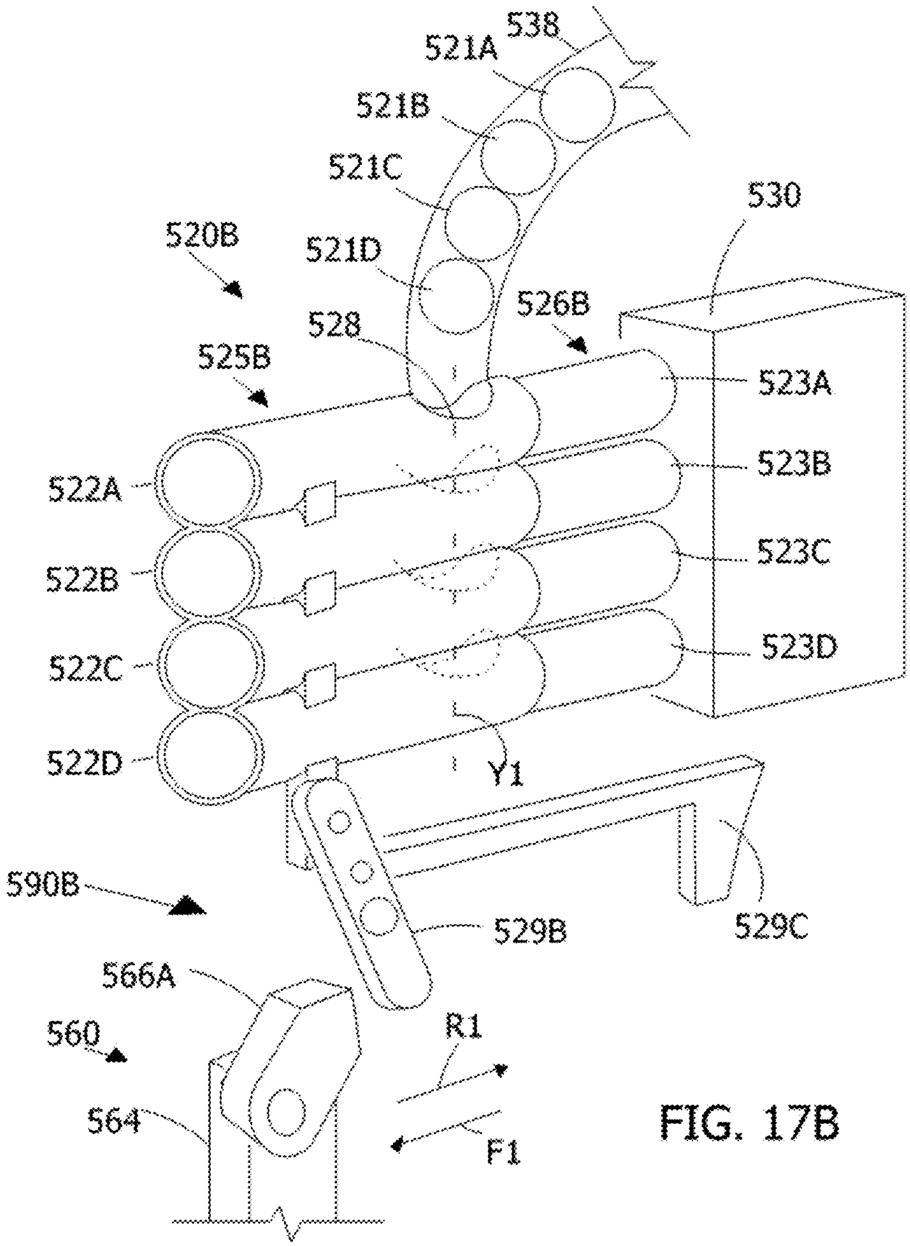

538
521A
521B
521C
530
520B
521D
526B
528
525B
523A
523B
522A
523C
522B
523D
522C
522D
Y1
590B
529B
529C
566A
R1
560
564
F1

FIG. 17B

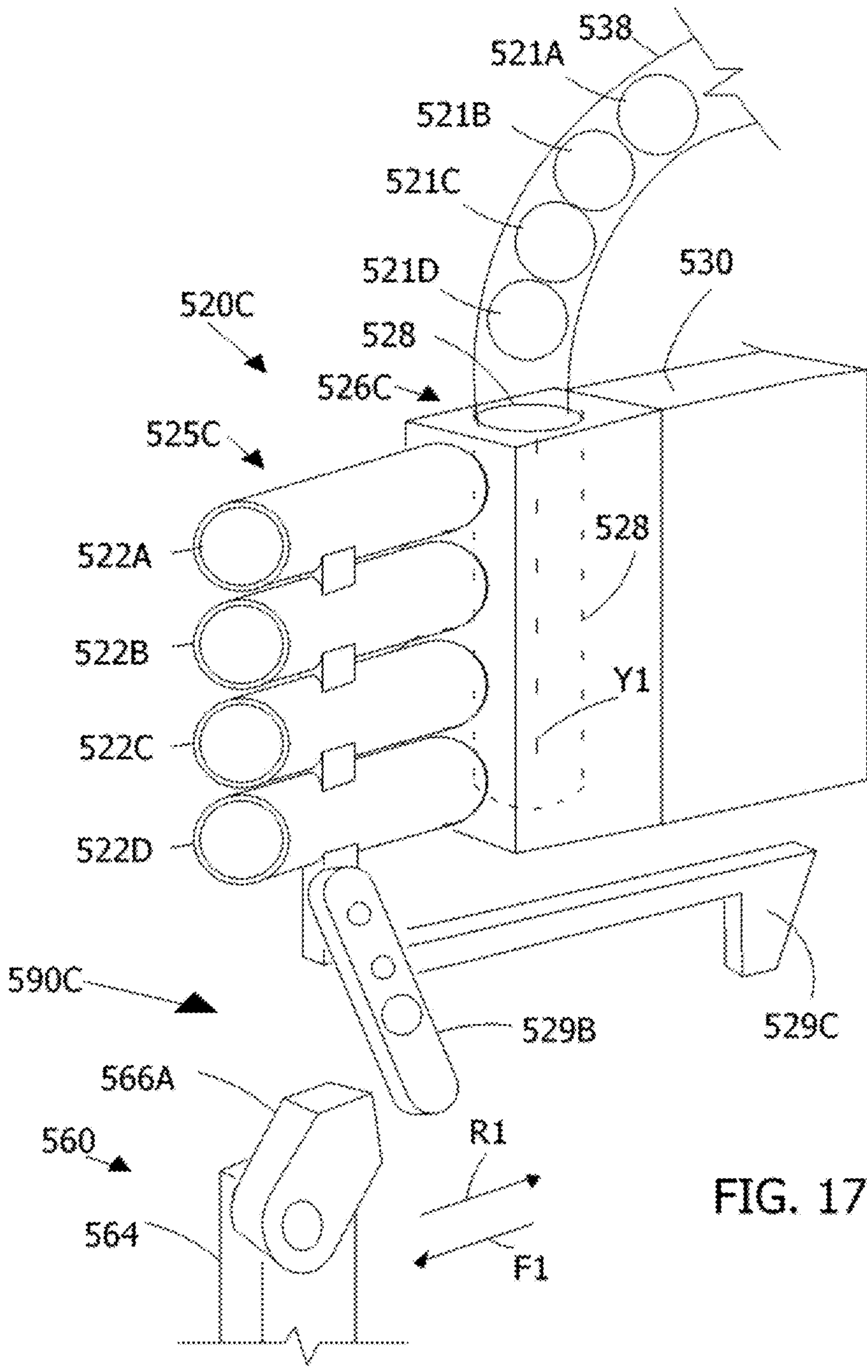

538
521A
521B
521C
521D
530
520C
528
526C
525C
528
522A
522B
Y1
522C
522D
590C
529B
529C
566A
560
R1
564
F1

FIG. 17C

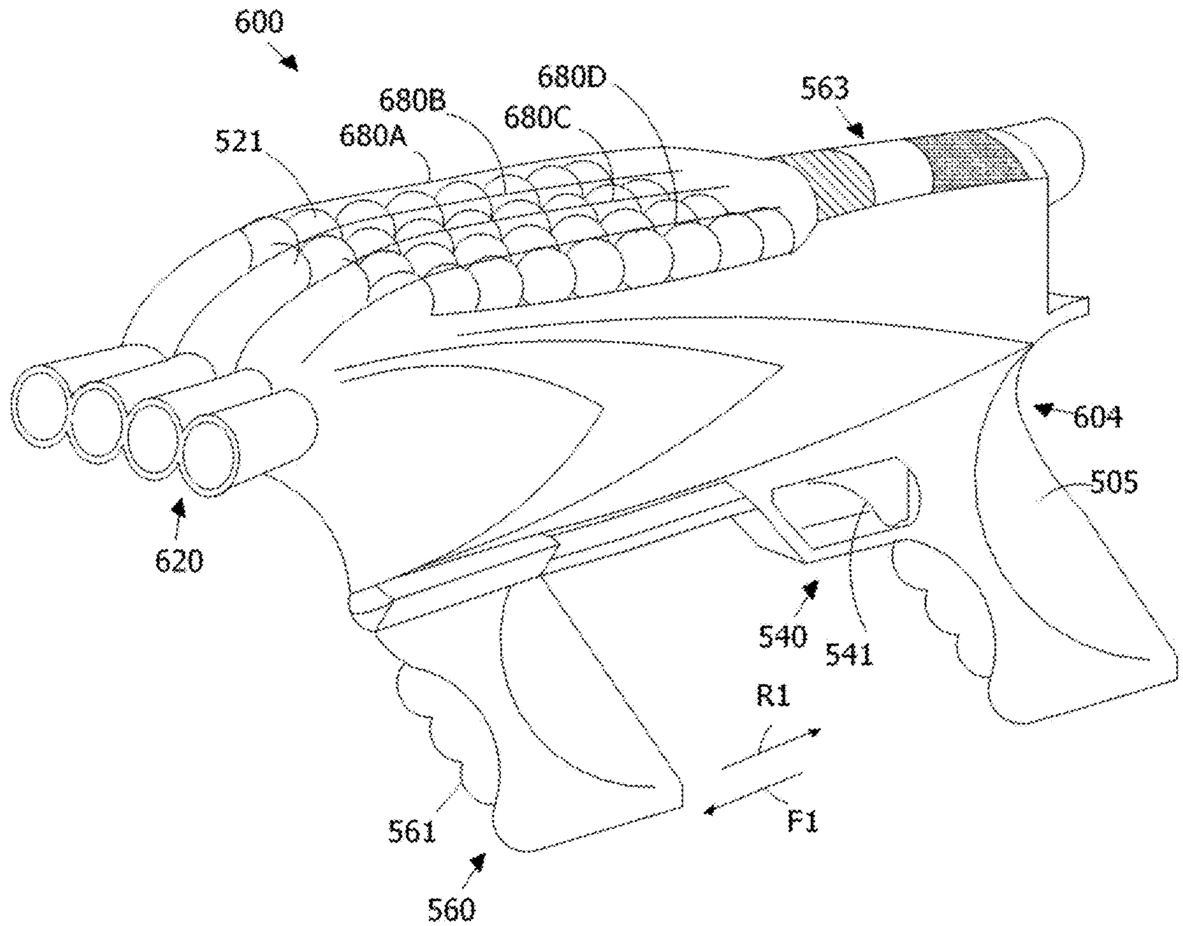

600
680D
563
680B
680C
521
680A
604
505
620
540
541
R1
F1
561
560

FIG. 18

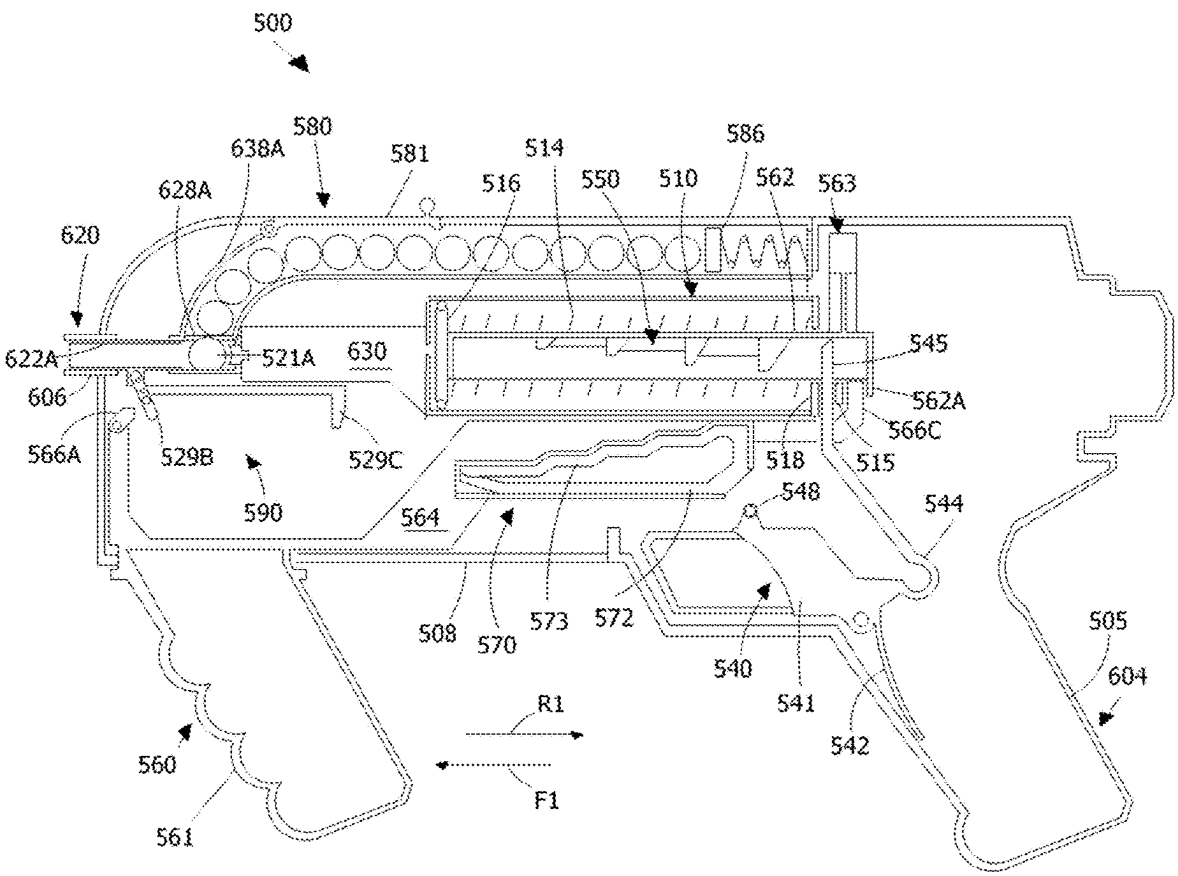

500
580
638A
581
514
586
550
510
562
563
516
628A
620
622A
521A
630
545
606
562A
566C
566A
529B
529C
518
515
590
548
544
564
508
570
573
572
540
541
505
604
542
R1
F1
560
561

FIG. 19

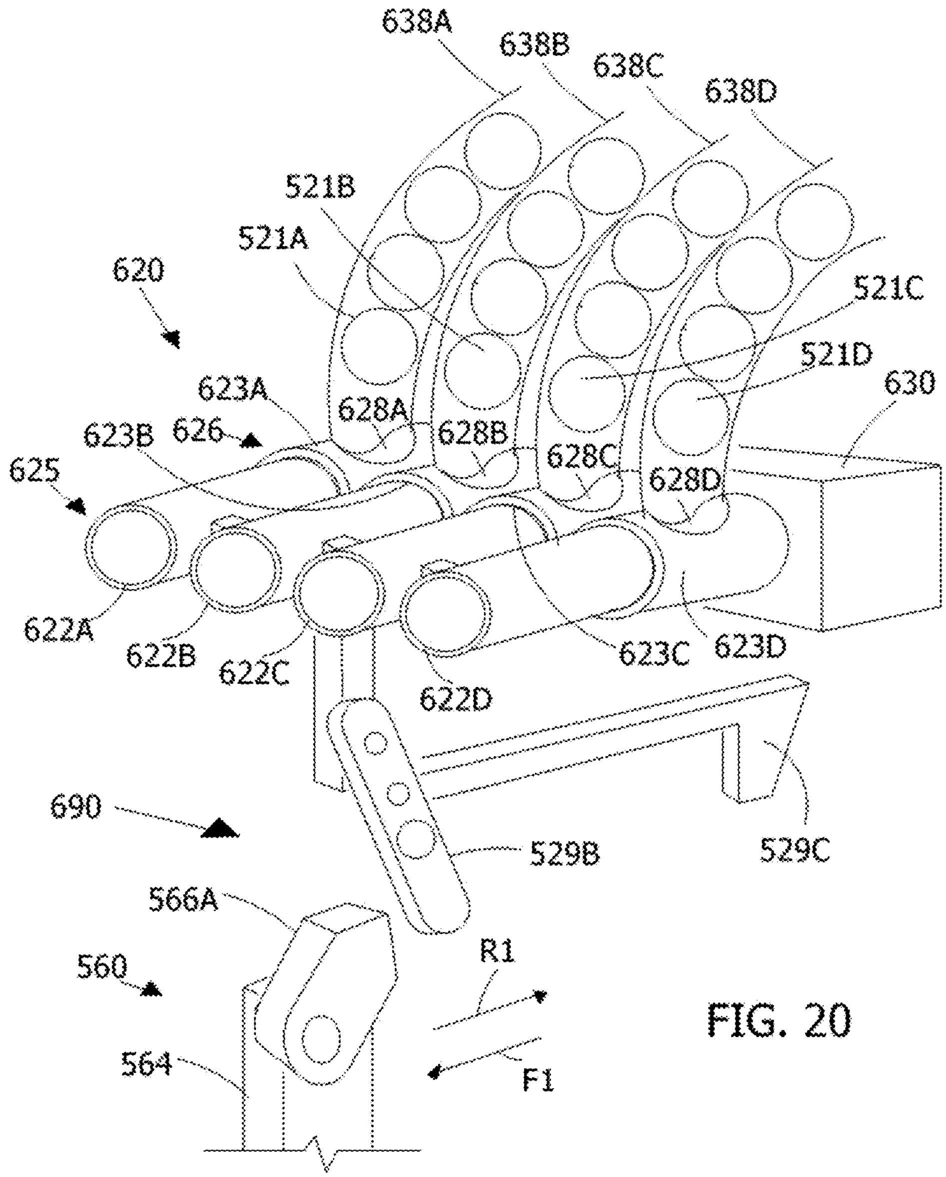

638A
638B
638C
638D
521B
521A
620
521C
521D
630
623A
628A
623B
626
628B
628C
625
628D
622A
622B
622C
622D
623C
623D
690
529B
529C
566A
R1
560
564
F1

FIG. 20

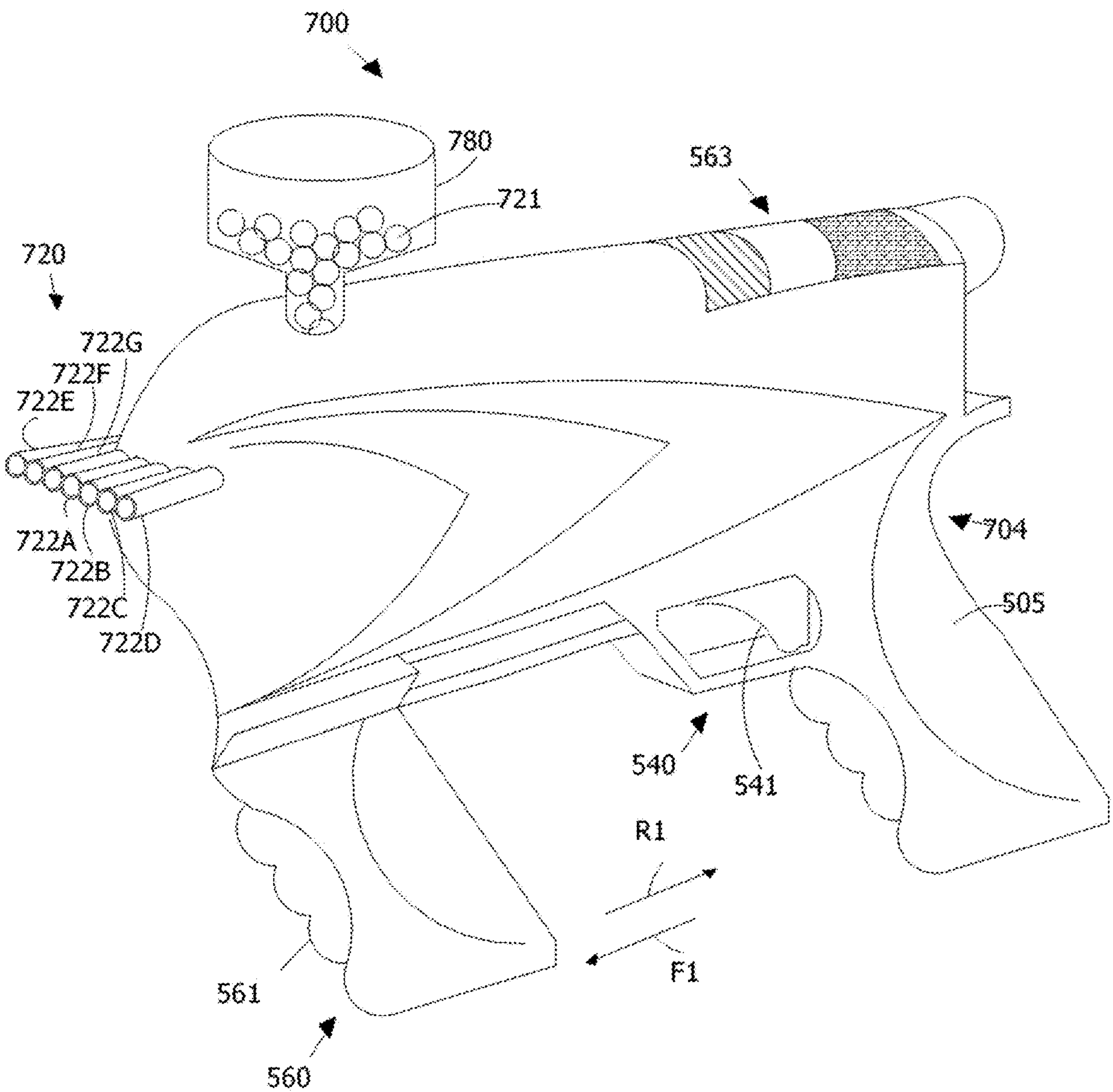

700
780
721
563
720
722G
722F
722E
722A
722B
722C
722D
704
505
540
541
R1
F1
561
560

FIG. 21

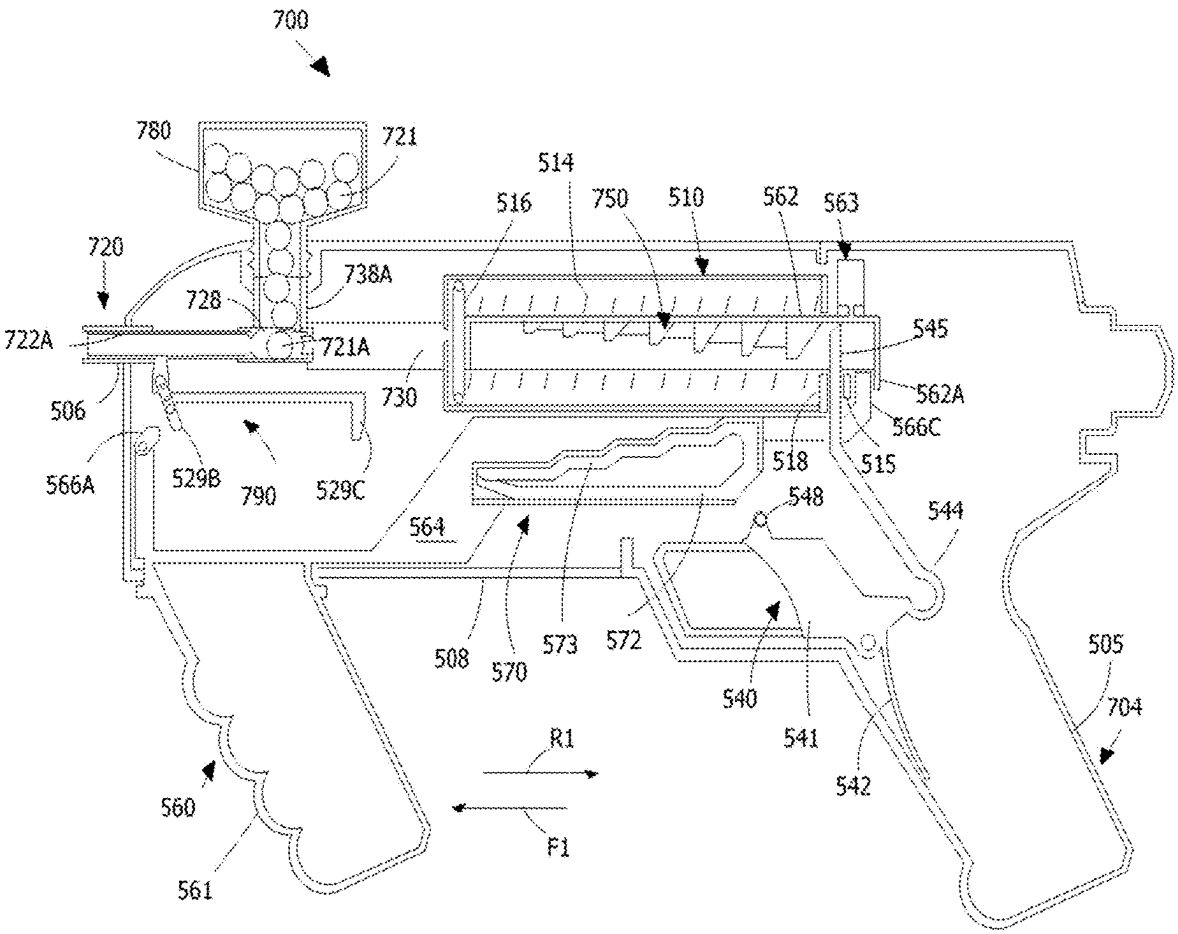

700
780
721
514
750
510
562
563
516
720
738A
728
722A
721A
545
730
562A
506
566C
518
515
566A
529B
790
529C
548
564
544
508
570
573
572
540
541
505
704
542
R1
F1
560
561

FIG. 22

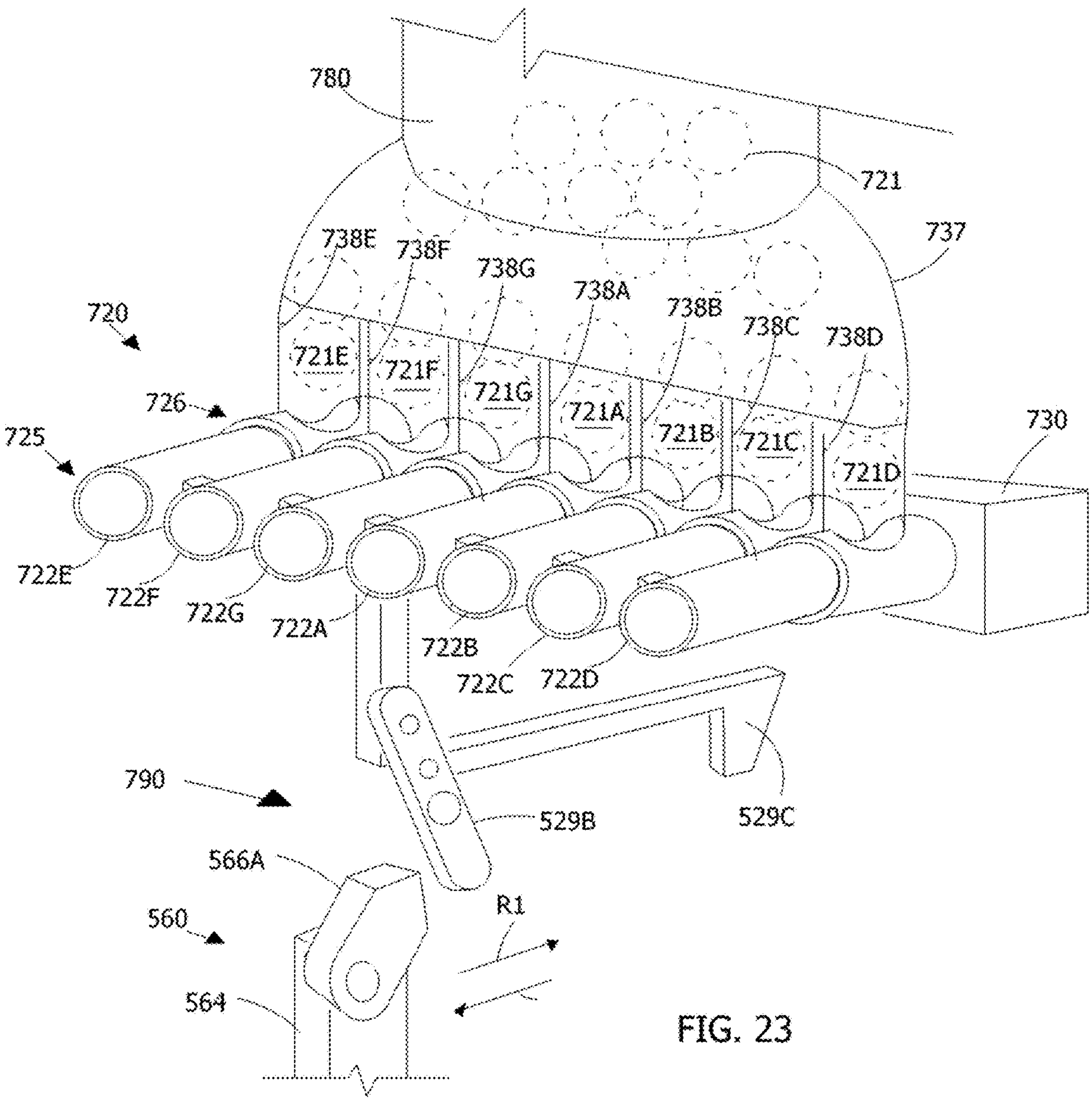

780
721
737
738E
738F
738G
738A
738B
738C
738D
720
721E
721F
721G
721A
721B
721C
721D
726
725
730
722E
722F
722G
722A
722B
722C
722D
790
529B
529C
566A
560
R1
564

FIG. 23

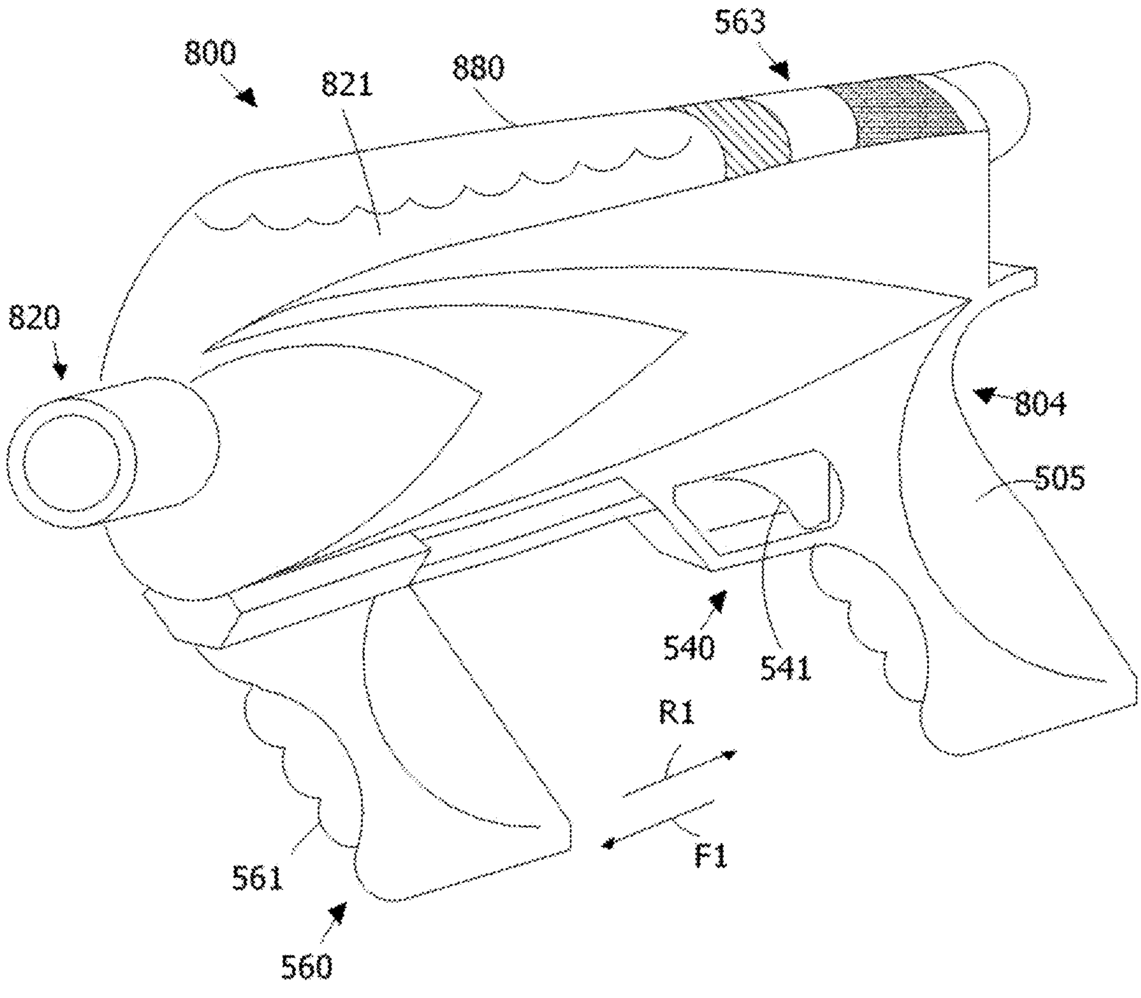


FIG. 24

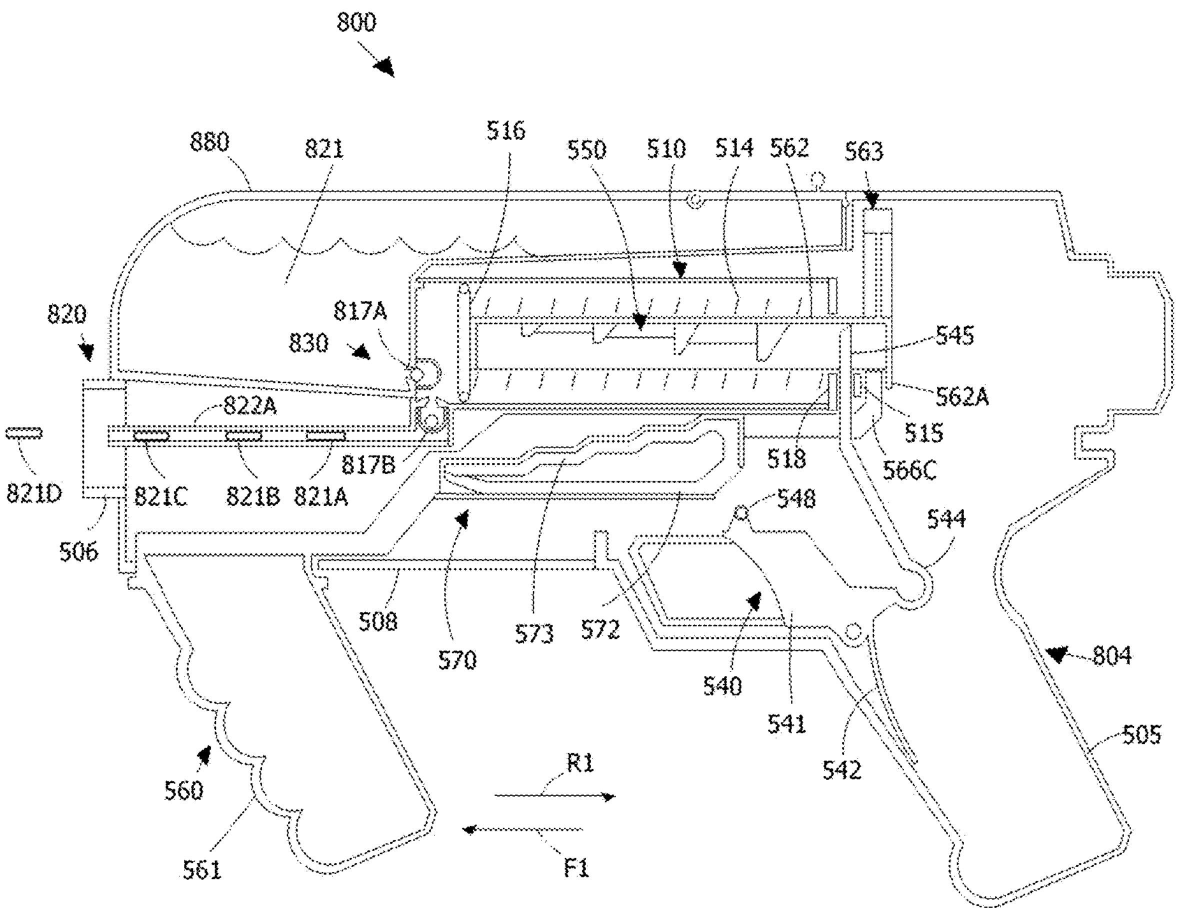

800
880
821
516
550
510
514
562
563
820
817A
830
545
822A
562A
821D
515
817B
518
566C
821C
821B
821A
506
548
544
508
573
572
570
804
540
541
505
542
R1
560
F1
561

FIG. 25

TOY PROJECTILE LAUNCHERS

BACKGROUND

[0001] Traditional toy projectile launchers amuse kids and adults alike, which include toy blasters, pistols, rifles, crossbows, and slingshots, as examples—all of which are able to launch a projectile at a target. Such launchers vary in size, shape, and load capacity, while projectiles are often made of child-safe, soft materials—such as foam darts, rubber balls, gel beads, flexible disks, water spray, and colorful streamers. Inevitably, handheld launchers are desired for games, battles, and competitions. As manually operated non-electronic launchers are 60% to 90% less costly, with wide adoption for play at parks, schoolyards, indoors, and backyards, in respect to automated electronic launchers. For such launchers bring simple fun when launching a projectile at a target, like a bullseye, tree, or another player.

[0002] But unfortunately it's the "motion problems" of traditional launchers that cause a loss of game play and a lull in battle games. For when a player is moving with a handheld launcher, such as running towards a target—or when a target is moving, such as an opposing player running across an outdoor playground—the flaws of manually operated launchers become apparent. For such launchers are slow in usage, cumbersome in operation, and not easily aimed at a moving target.

[0003] Consider for example a typical play experience, where a player has a manually operated, toy foam dart blaster as a launcher:

- **[0004]** 1. Prior to launching a projectile, the toy blaster is refilled (or manually loaded) with a projectile by the player, which can take about 0.5 second to many seconds to accomplish.
- **[0005]** 2. Then prior to launching a projectile, the toy blaster must be primed by the player. Priming the blaster takes about 0.5 second to multiple seconds to complete. Specifically, the player must prime or cock the handheld blaster by applying a force (typically 8 to 12 pounds of force) to the blaster (e.g., by pulling back its handle) with a first hand while the toy blaster is being held tight in a second hand. During which time, the toy blaster often swings downward or is shaken from its forward position such that precisely aiming the blaster is often useless-even for adult players—but especially true for weaker players or young children.
- **[0006]** 3. Next, prior to launching a projectile, the player must quickly reposition the toy blaster to aim at a desired moving target, which takes another 0.1 second to multiple seconds.
- **[0007]** 4. Finally to launch a projectile, the player pulls a trigger of the blaster, which causes a single, foam dart to launch at the target, such as a player's opponent moving away.

[0008] Thereby about one second to multiple seconds has elapsed between each launched projectile. Now for the most steadfast player, the above play actions **1** through **4** may be rapidly repeated with great physical effort, while the moving target continues to move out of view. In addition, priming (or cocking) the blaster corrupts the aiming of the blaster—prior to each projectile launched. So by way of time delay and cumbersome action of traditional launchers, a moving target has moved out of view—making such launchers ineffective and feeble when players or targets are moving in space.

[0009] Such "motion problems" are commonplace for low-cost, traditional projectile launchers such as foam dart blasters, rubber ball pistols, flexible crossbows, and other types of launchers. Whereby there is a need to improve toy projectile launchers to have greater ease of use with less time delay between launched projectiles, especially when players or targets are in motion.

SUMMARY

[0010] Accordingly, the reader will appreciate this disclosure presents new apparatuses and methods for exemplary embodiments of toy projectile launchers that are far less cumbersome and easier to use with greatly reduced time delay between launched projectiles—including remarkably low build cost with few parts—while presenting surprising special effects—such as rapidly launching projectiles in temporal sequence (e.g., like four projectiles in sequence, where each projectile is launched every 0.1 second) after being loaded and primed once, creating a machine gun effect to the delight of users in motion. Players moving about can now engage each other. Whereby the "motion problems" of traditional launchers, as described in the background section, are largely eliminated.

[0011] Even more remarkable are the new apparatuses and methods disclosed can be implemented as low cost, non-electronic, manually operated launchers and automated electronic launchers as well. Whereby, substantially all types of toy projectile launchers (e.g., blasters, pistols, rifles, crossbows, slingshots, etc.) can benefit from this disclosure to rapidly and sequentially launch a plurality of projectiles (e.g., foam darts, rubber balls, gel beads, elastic rings, etc.) after being loaded and primed once, creating a machine gun effect.

[0012] For example, in some embodiments, a toy projectile launcher may be non-electronic and manually operated, comprising a housing assembly that receives a fluid compressor that includes a walled chamber holding a launch spring and a piston coupled to a priming actuator, with an included catch assembly having one or more catch stops. A valve system may be coupled to the fluid compressor and an active barrel group, which includes one or more launch barrels able to receive a plurality of projectiles. Thereby, a trigger assembly may comprise a variable latch engaging the catch assembly, configured to a single projectile launch or rapid sequential launch of the plurality of projectiles in temporal sequence from the launcher (e.g., such as four projectiles, where each projectile is launched every 0.1 second) after the fluid compressor has been primed once by the priming actuator of the launcher.

[0013] Surprising functional aspects are evident. For in many embodiments, there is a reduced count for the priming or cocking action of a projectile launcher and its fluid compressor prior to launching a projectile (e.g., where the priming action occurs once for every four or more foam darts launched), making such embodiments easier and faster to use for players, while being more responsive to moving targets and players in motion. Further in various embodiments, there is a reduced time delay (e.g., as little as 0.1 second) between each launched projectile, making such embodiments capable of launching a rapid sequence of projectiles at a target-including a moving target, such as another player running away. Also in many embodiments, there is a reduced count for the projectile loading action of a launcher (e.g., where the projectile loading action occurs once for every four or more darts launched), making such embodiments faster and easier to load for players, while again being more responsive to moving targets and moving players.

[0014] Thus in most embodiments, a player may continuously and steadily aim a projectile launcher while launching a sequence of a plurality of projectiles (e.g., such as four darts) without the need to reload and re-prime the launcher at every projectile launch, such that aiming at and hitting a moving target or opposing player in motion is far more likely.

[0015] Other surprising functional effects exist. For in various embodiments of a projectile launcher, there is the possibility to launch one projectile, two projectiles, three projectiles, four projectiles, and more in a controlled "one shot event" or in rapid sequence (e.g., every 0.1 second) depending on a player's desire—which makes for wonderful strategic play when targeting one or more objects that may be fixed or moving in spatial position. More surprising functional effects exist in some embodiments, such as a manually operated, priming actuator that enables a projectile launcher to be primed or cocked with minimal force (e.g., 10 lbs. or less of force on a primer handle) such that a young child can operate, yet such a launcher is still capable of rapidly launching in temporal sequence a plurality of projectiles (e.g., such as four darts) after loading and priming once. Other surprising functional effects for various embodiments include a projectile launcher enabled to sequentially launch each projectile, of a plurality of projectiles, with substantially similar muzzle velocity without reload and re-prime of the launcher.

[0016] Remarkable apparatus and structural attributes also exist. For in many embodiments of a projectile launcher, there are few or no additional parts for apparatus construction, with little to nominal extra manufacturing cost, relative to prior art-whereby there is increased performance value for players while holding financial cost to customers. For example, in many embodiments, a projectile launcher may be comprised of components that are integrated, often as single, molded parts, reducing overall part count and complexity of assembly.

[0017] Surprising special effects also exist. For in many embodiments of a projectile launcher, there is the facility for rapidly launching a sequence of projectiles that simulate a fully-automated machinegun or Gatling gun (e.g., where each projectile is launched every 0.1 second in a sequence of four or more projectiles). To the delight of a user, such embodiments can create a startling visual effect and flight path for each launched projectile—along with a mechanized "rat-a-tat-tat machine gun" sound effect—and a mechanical vibratory effect sensed by the user.

[0018] Even more surprising special effects exist. For in various embodiments, a projectile launcher may be coupled to one or more storage clips holding a plurality of projectiles (e.g., 24, 36, or 48 toy darts, etc.), giving the launcher a larger source of projectiles. The launcher may include a priming actuator operatively coupled to a loading actuator, such that the launcher is able to load one or more launch barrels with a plurality of projectiles, from the one or more storage clips, each time the launcher is primed or cocked. Then in continuous launch mode, a player may continuously slide the priming actuator back and forth, enabling the launcher to create a continuous stream of sequentially launched projectiles (e.g., launching each dart about every 0.1 second) over a large time duration (e.g., of 2 seconds and more) with a large quantity of projectiles (such as 24 foam darts)—for a super-charged, machine gun effect.

[0019] In summary, various new apparatuses, structures, and methods of the exemplary embodiments are quite versatile, accommodating both traditional and novel types of toy projectile launchers, including toy blasters, pistols, rifles, crossbows, bows, slingshots, paint-ball guns, and wrist mounted launchers as examples. Such exemplary embodiments are also accommodating of traditional and novel types of projectiles, such as foam darts, rubber balls, gel beads, elastic rings, paper airplanes, soft disks, paint balls, liquid globs, toy cars, and colorful streamers as examples, including other types of toy projectile launchers and projectiles that may be considered.

Apparatuses and Methods of Projectile Launchers

[0020] Some exemplary embodiments of apparatuses and methods for toy projectile launchers are briefly discussed below, while other sections in this disclosure will provide greater detail in text and drawings for the reader.

Apparatuses of Projectile Launchers

[0021] In many embodiments, a toy projectile launcher may be comprising: a housing assembly; a fluid compressor being at least partially received by the housing assembly, wherein the fluid compressor is structured to compress a fluid; a priming actuator being at least partially received by the fluid compressor, wherein the priming actuator is configured to prime the fluid compressor to potentially generate one or more fluid flows in temporal sequence; an active barrel group being at least partially received by the housing assembly, wherein the active barrel group is configured to receive a plurality of projectiles; a valve system being at least partially received by the fluid compressor and the active barrel group, wherein the valve system is configured to be in fluid communication with the fluid compressor and the active barrel group; a trigger assembly being at least partially received by the housing assembly, wherein the trigger assembly is configured to increase each fluid flow, of the one or more fluid flows, from the fluid compressor; and a catch assembly being at least partially received by the housing assembly, wherein the catch assembly is configured to decrease each fluid flow, of the one or more fluid flows, from the fluid compressor, wherein the toy projectile launcher is able to launch each projectile, of the plurality of projectiles from the active barrel group, in temporal sequence after the fluid compressor has been primed once by the priming actuator.

[0022] In various embodiments, the toy projectile launcher, wherein: the priming actuator is further configured to be manually operated. In some embodiments, the toy projectile launcher, wherein: the catch assembly comprises at least one catch stop, wherein at least a portion of the priming actuator is further coupled to the at least one catch stop of the catch assembly. In a few embodiments, the toy projectile launcher, wherein: the catch assembly comprises at least one catch stop, wherein at least a portion of the fluid compressor is further coupled to the at least one catch stop of the catch assembly.

[0023] In some embodiments, the toy projectile launcher, further comprising: one or more storage clips coupled to at least a portion of the housing assembly, wherein the one or more storage clips are configured to hold at least the plurality of projectiles. In a few embodiments, the toy projectile launcher, further comprising: one or more storage clips that are operatively coupled to the priming actuator, wherein the one or more storage clips are configured to hold at least the plurality of projectiles, and the priming actuator is further able to move the plurality of projectiles into at least a portion of the active barrel group.

[0024] In a few embodiments, the toy projectile launcher, wherein: the fluid compressor is further configured to be primed once by at most two continuous movements of at least a portion of the priming actuator. In some embodiments, the toy projectile launcher, wherein: the fluid compressor is further comprising a launch spring configured to be preloaded. In various embodiments, the toy projectile launcher, wherein: the trigger assembly and the catch assembly are further configured to perform a plurality of launch cycles, where each launch cycle comprises the trigger assembly increasing each fluid flow, of the one or more fluid flows, from the fluid compressor and, subsequently, the catch assembly decreasing each fluid flow, of the one or more fluid flows, from the fluid compressor.

[0025] In at least one embodiment, the toy projectile launcher, wherein: the catch assembly comprising at least a first catch stop, a second catch stop, and a third catch stop such that a first distance, between the first catch stop and the second catch stop, is at least 1% greater than a second distance between the second catch stop and the third catch stop. In a few embodiments, the toy projectile launcher, wherein: the catch assembly comprising at least a first catch stop and a second catch stop such that a first dimension, of the first catch stop, is at least 1% greater than a second dimension of the second catch stop, wherein the first and second dimensions are measurable along a first and second spatial axis, respectively, where the first and second spatial axis are substantially parallel.

[0026] In some embodiments, the toy projectile launcher, wherein: the catch assembly comprising at least a first catch stop and a second catch stop that are configured such that a first spatial position, of the first catch stop, is substantially different on at least two spatial axis of a second spatial position of the second catch stop. In a few embodiments, the toy projectile launcher, wherein: the catch assembly is further comprising one or more catch supports, wherein a first catch support, of the one or more catch supports, is configured to hold the trigger assembly in a position of a partially triggered state.

[0027] In various embodiments, the toy projectile launcher, wherein: the catch assembly further comprising at least one catch stop that comprises an at least one catch wedge. In some embodiments, the toy projectile launcher, wherein: the trigger assembly is further comprising an at least one variable latch that comprises an at least one trigger wedge.

[0028] In many embodiments, a toy projectile launcher may be comprising: a housing assembly of the toy projectile launcher; a fluid compressor being at least partially received by the housing assembly, wherein the fluid compressor is configured to potentially compress a fluid; a priming actuator being at least partially received by the fluid compressor, wherein the priming actuator is configured to prime the fluid compressor to potentially generate a fluid flow; an active barrel group being at least partially received by the housing assembly and comprising one or more launch barrels, wherein the active barrel group is configured to receive a plurality of projectiles; a valve system being at least partially received by the fluid compressor and the active barrel group, wherein the valve system is configured to be in fluid communication with the fluid compressor and the active barrel group; a loading actuator being at least partially received by the housing assembly, wherein the loading actuator is configured to be operatively coupled to one or more storage clips configured to hold at least the plurality of projectiles, wherein the loading actuator is able to move the plurality of projectiles, from the one or more storage clips, into at least a portion of the active barrel group; a trigger assembly being at least partially received by the housing assembly and including an at least one variable latch, wherein the trigger assembly is configured to increase the fluid flow from the fluid compressor based on one or more start movements of the at least one variable latch of the trigger assembly; and a catch assembly being at least partially received by the housing assembly and including one or more catch stops, wherein the catch assembly is configured to decrease the fluid flow from the fluid compressor based on one or more stop movements of the one or more catch stops of the catch assembly, wherein the toy projectile launcher is able to launch each projectile, from the plurality of projectiles from the active barrel group, in temporal sequence after the fluid compressor has been primed once by the priming actuator.

[0029] In a few embodiments, the toy projectile launcher, wherein: the priming actuator is further configured to be manually operated. In some embodiments, the toy projectile launcher, wherein: at least a portion of the priming actuator is further coupled to the one or more catch stops of the catch assembly. In various embodiments, the toy projectile launcher, wherein: at least a portion of the fluid compressor is further coupled to the one or more catch stops of the catch assembly. In some embodiments, the toy projectile launcher, wherein: the fluid compressor is further comprising a launch spring configured to be preloaded.

[0030] In a few embodiments, the toy projectile launcher, wherein: the trigger assembly and the catch assembly are further able to perform a plurality of launch cycles, where each launch cycle comprises the trigger assembly increasing the fluid flow from the fluid compressor and, subsequently, the catch assembly decreasing the fluid flow from the fluid compressor. In various embodiments, the toy projectile launcher, wherein: the catch assembly comprising at least a first catch stop, a second catch stop, and a third catch stop such that a first distance, between the first catch stop and the second catch stop, is at least 1% greater than a second distance between the second catch stop and the third catch stop. In a few embodiments, the toy projectile launcher, wherein: the catch assembly is further comprising one or more catch supports, wherein a first catch support, of the one or more catch supports, is configured to hold the trigger assembly in a position of a partially triggered state. In some embodiments, the toy projectile launcher, wherein: at least a first catch stop, of the one or more catch stops, comprises at least one catch wedge.

Method of Projectile Launchers

[0031] In many embodiments, a method for assembling a toy projectile launcher may be comprising the steps of: providing a launcher with a housing assembly; providing a fluid compressor being at least partially received by the housing assembly; supporting a priming actuator being at least partially received by the fluid compressor; providing an active barrel group being at least partially received by the housing assembly and comprising one or more launch barrels; providing a valve system being at least partially received by the fluid compressor and the active barrel group; supporting a trigger assembly being at least partially received by the housing assembly and including an at least one variable latch; and supporting a catch assembly being at least partially received by the housing assembly and including one or more catch stops. In a few embodiments, the method may be further comprising the step of: providing a loading actuator being at least partially received by the housing assembly. In some embodiments of the method, the fluid compressor may be further comprising a launch spring; and including the step of: installing the launch spring such that the launch spring is preloaded.

BRIEF DESCRIPTION OF THE DRAWINGS

[0032] Various exemplary embodiments of the disclosure will now be described by way of example with reference to the accompanying drawings:

[0033] FIG. **1** is a perspective view of a toy projectile launcher, shaped like a handheld pistol that launches projectiles (e.g., foam darts).

[0034] FIG. **2** is a section view of the launcher of FIG. **1**, which shows the launcher before priming a fluid compressor by a priming actuator of the launcher.

[0035] FIG. **3**A is a section view of a valve system of the launcher of FIG. **1**.

[0036] FIG. **3**B is a section view of one or more catch stops of a catch assembly of the launcher of FIG. **1**.

[0037] FIG. **3**C is a section view of a variable latch of a trigger assembly and a catch assembly of the launcher of FIG. **1**.

[0038] FIG. **4**A is a section view of a catch assembly of the launcher of FIG. **1**, which describes distances.

[0039] FIG. **4**B is a section view of a catch assembly of the launcher of FIG. **1**, which describes dimensions.

[0040] FIG. **4**C is a section view of a catch assembly of the launcher of FIG. **1**, which describes angles.

[0041] FIG. **5**A is a section view of the launcher of FIG. **1**, which shows the launcher after priming the fluid compressor by the priming actuator of the launcher.

[0042] FIG. **5**B is a section view of the launcher of FIG. **1**, which shows the launcher after launching a first projectile from the launcher.

[0043] FIG. **5**C is a section view of the launcher of FIG. **1**, which shows the launcher after launching a second projectile from the launcher.

[0044] FIG. **5**D is a section view of the launcher of FIG. **1**, which shows the launcher after launching a third projectile from the launcher.

[0045] FIG. **5**E is a section view of the launcher of FIG. **1**, which shows the launcher after launching a fourth projectile from the launcher.

[0046] FIG. **5**F is a section view of the launcher of FIG. **1**, which shows the launcher after launching all of the projectiles from the launcher.

[0047] FIG. **6**A is a flow chart of a method for assembling the launcher of FIG. **1**.

[0048] FIG. **6**B is a flow chart of a method step for assembling the launcher of FIG. **1**.

[0049] FIG. **7**A is a section view of an alternative launcher similar to the launcher of FIG. **1**, wherein the catch assembly is coupled to an outer walled chamber of a fluid compressor.

[0050] FIG. **7**B is a section view of an alternative launcher similar to the launcher of FIG. **1**, wherein the catch assembly is coupled to an inner walled chamber of a fluid compressor.

[0051] FIG. **7**C is a section view of an alternative launcher similar to the launcher of FIG. **1**, wherein a trigger assembly comprises a plurality of variable latches operatively coupled to a catch assembly.

[0052] FIG. **8** is a perspective view of a toy projectile launcher, which includes an active storage clip that holds a plurality of projectiles (e.g., foam darts).

[0053] FIG. **9**A is a section view of the launcher of FIG. **8**, which shows the launcher before priming a fluid compressor by a priming actuator of the launcher.

[0054] FIG. **9**B is a section view of the launcher of FIG. **8**, which shows the launcher after priming the fluid compressor by the priming actuator of the launcher.

[0055] FIG. **9**C is a section view of the launcher of FIG. **8**, which shows the launcher in continuous launch mode.

[0056] FIG. **10**A is a section view of a clip support wall and a valve system of the launcher of FIG. **8**, in relationship to an active barrel group.

[0057] FIG. **10**B is a section view of the active storage clip of the launcher of FIG. **8**, in relationship to the active barrel group.

[0058] FIG. **11** is a perspective view of a toy projectile launcher, which includes a plurality of reserve storage clips.

[0059] FIG. **12** is a section view of the launcher of FIG. **11**, which shows the launcher before priming a fluid compressor by a priming actuator of the launcher.

[0060] FIG. **13**A is a section view of a clip support wall and a valve system of the launcher of FIG. **11**, in relationship to an active barrel group.

[0061] FIG. **13**B is a section view of an active storage clip of the launcher of FIG. **11**, in relationship to the active barrel group.

[0062] FIG. **14** is a perspective view of a loading actuator of the launcher of FIG. **11**.

[0063] FIG. **15** is a perspective view of a toy projectile launcher, which includes a reserve storage clip that holds projectiles (e.g., foam balls).

[0064] FIG. **16** is a section view of the launcher of FIG. **15**, which shows the launcher before priming a fluid compressor by a priming actuator of the launcher.

[0065] FIG. **17**A is a section view of a loading actuator of the launcher of FIG. **15**, wherein an active barrel group includes stub launch barrels with loading openings.

[0066] FIG. **17**B is a section view of an alternative embodiment of a loading actuator of the launcher of FIG. **15**, wherein an active barrel group includes launch barrels with loading openings.

[0067] FIG. **17**C is a section view of another alternative embodiment of a loading actuator of the launcher of FIG. **15**, wherein an active barrel group includes a stub barrel unit with a loading opening.

[0068] FIG. **18** is a perspective view of a toy projectile launcher, which includes a plurality of reserve storage clips that hold projectiles (e.g., foam balls).

[0069] FIG. **19** is a section view of the launcher of FIG. **18**, which shows the launcher before priming a fluid compressor by a priming actuator of the launcher.

[0070] FIG. **20** is a section view of a loading actuator of the launcher of FIG. **18**, wherein an active barrel group includes stub launch barrels with loading openings.

[0071] FIG. **21** is a perspective view of a toy projectile launcher, which includes a reserve storage clip that hold projectiles (e.g., gel beads).

[0072] FIG. **22** is a section view of the launcher of FIG. **21**, which shows the launcher before priming a fluid compressor by a priming actuator of the launcher.

[0073] FIG. **23** is a section view of a loading actuator of the launcher of FIG. **21**, wherein an active barrel group includes a plurality of stub launch barrels with loading openings.

[0074] FIG. **24** is a perspective view of a toy projectile launcher, which includes a reserve storage clip that holds projectiles (e.g., liquid globs).

[0075] FIG. **25** is a section view of the launcher of FIG. **24**, which shows the launcher before priming a fluid compressor by a priming actuator of the launcher.

DETAILED DESCRIPTION

[0076] A plurality of exemplary embodiments will be discussed in detail below. In an effort to provide a concise description of these embodiments, not all features of an actual implementation may be described in the description. Moreover, it should be appreciated that such a design effort could be quite labor intensive, but would nevertheless be a routine undertaking of design and construction for those of ordinary skill in the art having the benefit in this disclosure. Whereby, some helpful definitions of terms used throughout this disclosure are given:

[0077] The terms “a”, “an”, and “the” refers to one or more items. Where only one item is intended, the terms “one”, “single”, or similar language is used. The term “and/or” refers to any and all combinations of one or more of the associated listed items.

[0078] The terms “an embodiment,” “one embodiment,” “embodiment of a projectile launcher,” and like terms do not necessarily refer to the same embodiment. Particular features, structures, or characteristics may be combined in any suitable manner consistent with this disclosure.

[0079] The term “at least in part controlling” means in part controlling or wholly controlling. The usage of the singular term “controlling” without a conditional adverb means “at least in part controlling.” For example, “is controlling a piston” means: “is at least in part controlling a piston.”

[0080] The term “at least partially contained” means partially contained or wholly contained.

[0081] The term “at least partially occluded from view” means partially occluded from view or wholly occluded from view. The term “occluded from view” as used herein means to be blocked or hidden from the view of unaided human eyes and unaided human eyesight in visible light, unless otherwise indicated.

[0082] The term “based on” without a conditional adverb means “based at least in part on.” For example, “is based on movement” means: “is based at least in part on movement.” Thus, a feature that is described as based on a stimulus is based on the stimulus or a combination of some stimuli including the stimulus.

[0083] The term “close proximity” refers to the condition when two or more objects are located substantially nearby each other in space (e.g., 3D ambient space).

[0084] The terms “comprise,” “comprised,” “comprising,” “include,” “included,” “including,” and like terms are open-ended. Such terms do not foreclose additional structure or steps. Consider a claim that recites: “An apparatus comprising one or more barrels . . . . ” Such a claim does not foreclose the apparatus from including additional components (e.g., breech, latch, etc.).

[0085] The terms “configured to”, “structured to”, “operable to”, and like terms mean a broad recitation of structure generally meaning having a unit/assembly/component that is able to perform a task or tasks during operation. Various units, assembly, or other components may be described as “configured to” perform a task or tasks. As such, the unit/assembly/component can be configured to perform the task even when the unit/assembly/component is not operational (currently not active). In general, the apparatus that forms the structure corresponding to “configured to” may include wedges, gears, levers, etc. able to implement the operation. Similarly, various units/assemblies/components may be described as performing a task or tasks, for convenience in the description. Such descriptions should be interpreted as including the phrase “configured to.” Reciting a unit/assembly/component that is configured to perform one or more tasks is expressly intended not to invoke 35 U.S.C. 112, paragraph six, interpretation for that unit/assembly/component.

[0086] The terms “coupling,” “coupled,” “couple,” “connecting,” “connected,” “connect,” “attaching,” “attached,” “attach,” and like terms as used herein, refer to a coupling between items, wherein, for example, the items may be directly coupled or indirectly coupled via an intervening item or items, or the items may be directly attached or indirectly attached via an intervening item or items, or the items may be partially or wholly contained, or the items may be partially or wholly contained via an intervening item or items, or the items may be partially or wholly integrated, or the items may be partially or wholly integrated via an intervening item or items.

[0087] The term “example” refers to an exemplary embodiment.

[0088] The terms “first,” “second,” “third,” etc. as used herein are meant as distinguishing labels for nouns, elements, actions, or steps that they precede, and do not imply any type of ordering (e.g., spatial, temporal, logical, etc.). For example, a control unit may be described herein as performing write operations for “first” and “second” values. The terms “first” and “second” do not necessarily imply that the first value must be written before the second value.

[0089] The terms “in conjunction”, and like terms do not imply any type of ordering (e.g., spatial, temporal, logical, etc.) of their related items. For example, an apparatus described herein as performing in conjunction a priming operation and a loading operation. The term “in conjunction” does not necessarily imply a specific temporal ordering of the operations, unless specifically noted.

[0090] The terms “local” and “remote” as used herein are meant as distinguishing labels for nouns, elements, actions, or steps that they precede, and do not necessarily imply spatial proximity or other spatial characteristics, unless otherwise indicated.

[0091] The term “operatively coupled” refers to a means (e.g., mechanical, physical, electronic, etc.) of communication between items, unless otherwise indicated. Moreover, the term “operatively coupled” may further, but not necessarily, refer to a direct coupling between items and/or an indirect coupling between items via an intervening item or items (e.g., an item includes, but not limited to, a component, an element, an assembly, a circuit, a module, and/or a device).

[0092] The terms "may" and "can" are used in a permissive sense (i.e., meaning having the potential to), rather than the mandatory sense (i.e., meaning must).

[0093] The present disclosure further illustrates examples of operations for processes or methods used by the various embodiments described. Those of ordinary skill in the art will readily recognize that certain steps, blocks, elements, or operations described herein may be eliminated, taken in an alternate order, and/or performed concurrently. A process or method ends when its operations are completed, but could have additional steps not included in a figure or text.

[0094] Also, the following detailed description refers to the accompanying drawings.

[0095] The same reference numerals in different drawings identify the same or similar elements.

Dart Launcher with Primer Handle

[0096] So turning first to FIGS. **1** and **2**, there shown are perspective and section views of an exemplary embodiment of a toy projectile launcher **100**, which may include a plurality of launch barrels **122**A-**122**D for launching a plurality of projectiles **121**A-**121**D (e.g., such as foam darts), as shown with dashed lines. In various embodiments, the launcher **100** may be able to launch the plurality of projectiles **121**A-**121**D, each projectile being missile shaped of compact size (e.g., 12 mm dia.×75 mm long) and comprised of soft material (e.g., plastic foam, composite, etc.), although other shapes, sizes, and/or materials for projectiles may also be considered. The launcher **100** may be non-electronic and manually operated by a user.

[0097] As depicted, the launcher **100** may comprise a housing assembly **104**, a fluid compressor **110** (in FIG. **2**), a priming actuator **160**, an active barrel group **120**, a valve system **130**, a trigger assembly **140**, and a catch assembly **150** (in FIG. **2**).

Housing Assembly

[0098] FIGS. **1** and **2** present the housing assembly **104** of the projectile launcher **100**, which may be of compact size (e.g., 26 cm long×13 cm high×4 cm wide, etc.) for mobility and shaped as a handheld blaster or pistol, as examples. The housing assembly **104** may be comprised of a housing handle **105**, wherein a user (not shown) can grasp the handle **105** of the housing assembly **104** such that the projectile launcher **100** may be handheld by the user. The housing assembly **104** may be constructed of a single part having one or more interior cutouts or multiple parts fastened together (e.g., by friction, screws, and/or adhesive, etc.) with material comprised of molded plastic.

[0099] In alternative embodiments, the housing assembly **104** may be constructed of any shape (e.g., such as shaped as a rifle, shotgun, canon, blaster, bow, crossbow, sling shot, etc.), size (e.g., 50 cm long×20 cm high×5 cm wide, etc.), and/or material (e.g., composite, metal, wood, etc.).

Fluid Compressor

[0100] FIG. **2** further shows the fluid compressor **110** may be at least partially received by the housing assembly **104** of the launcher **100**, wherein the fluid compressor **110** may be configured to potentially compress a fluid, such as ambient air from a play environment. Whereby, the fluid compressor **110** being at least partially received by the housing assembly **104**, wherein the fluid compressor **110** may be structured to potentially compress a fluid and generate a fluid flow or one or more fluid flows in temporal sequence.

[0101] The reader may keep in mind that in various embodiments throughout this disclosure, a fluid compressor may be able to compress a fluid (e.g., air, water, etc.) by applying a force to the fluid, such that a change in fluid pressure occurs. If any pathway is available, the fluid can then move due to pressure difference. Whereby, a fluid compressor may be capable to generate a "fluid flow," a term that means a moving fluid that may pass, for example, through an element, valve, or apparatus of a launcher. Moreover, the fluid flow can be increased, which means the quantity of moving fluid is increased. And the fluid flow can be decreased, which means the quantity of moving fluid is decreased. So in various embodiments throughout this disclosure, a launcher comprising a fluid compressor can be configured to compress a fluid and generate and modulate one or more fluid flows will become apparent.

[0102] In the current embodiment, the fluid compressor **110** may be comprised of a walled chamber **112**, a rear chamber wall **118**, a launch spring **114**, a latch guide **115**, and a piston **116**. The walled chamber **112** may be cylindrical in shape, at least partially hollow, and constructed of molded plastic or hot-sealed plastic. The chamber **112** may be sized (e.g., 40 mm dia.×130 mm long), for example, to provide one or more fluid flows for launching a plurality of projectiles in temporal sequence. Further, the chamber **112** may hold and retain the piston **116** and launch spring **114**. Whereby, the piston **116** may be shaped and sized (e.g., 36 mm dia.×4 mm thick) to fit within the walled chamber **112**. The piston **116** may comprise an O-ring **117** that provides a fluid seal against the interior walls of the chamber **112**, reducing leakage of the fluid around the piston **116** of the compressor **110**. Further, the piston **116** may be configured to be moveable within the chamber **112**, able to compress the fluid and create a fluid flow from the compressor **110**. The piston **116** may be constructed of a single part or coupled parts of molded rigid or flexible plastic. The rear chamber wall **118** and latch guide **115** may be coupled to the walled chamber **112**, so their positions may be fixed relative to the compressor **110**. As depicted, the launch spring **114** may be a compression spring fitted between the piston **116** and the rear chamber wall **118**, wherein the spring **114** may be comprised of a coiled metal wire spring. In some embodiments, the fluid compressor **110** may be comprised of one or more launch springs **114** that substantially provide energy storage for the launcher **100**, such that the launcher **100** may be able to launch a plurality of projectiles **121**A-**121**D in temporal sequence after the launcher **100** has been primed once by the priming actuator **160**.

[0103] The reader may keep in mind that in many embodiments throughout this disclosure, a "spring" is an elastic element or device that can deform by a force (e.g., compression, tension, shear, twist, etc.) and substantially return to its original shape. In many embodiments in this disclosure, a spring may be any type (e.g., compression, tension, and/or torsion, etc.), any material (e.g., metal, plastic, wood, foam, fiber, and/or composite, etc.), and/or any shape (e.g., coil, tab, wave, tip, thread, and/or leaf, etc.). For example, in some embodiments, a spring may be comprised of one or more coiled metal wires. In other embodiments, a spring may be comprised of one or more flexible plastic elements.

[0104] Further, in alternative embodiments, the fluid compressor **110** and walled chamber **112** may be constructed of any shape (e.g., rectangular block shaped, spherical, ovoid, elliptical cylinder, etc.), size (e.g., 160 mm long×50 mm dia.), and/or material (e.g., vinyl sheet, polyethylene, metal, etc.) that does not substantially leak a fluid, such as air. In alternative embodiments, the piston **116** may be constructed of any shape (e.g., rectangular, spherical, ovoid, oval disk, etc.), size, material (e.g., single part, composite part, molded plastic, metal, etc.), and/or components, including the piston **116** having no O-ring **117**. In alternative embodiments, the launch spring **114** may be comprised of any spring type (e.g., tension spring, leaf spring, etc.), any shape (e.g., s-shaped, etc.), any size, and/or any material (e.g., composite, flexible plastic, wood, metal, etc.). In alternative embodiments, the latch guide **115** and/or the rear chamber wall **118** may be coupled to the housing assembly **104**.

Fluid Compressor—with Preloaded Spring

[0105] Also presented in FIG. **2**, the projectile launcher **100** and fluid compressor **110** may be configured such that the launch spring **114** is preloaded when received by the fluid compressor **110** during assembly and/or operation of the launcher **100**.

[0106] The reader may keep in mind that a spring that is preloaded does not change the spring constant (also called the spring rate) of Hooke's spring law—but changes the initial starting force of the spring. So the term "free length" of a spring is the length of the spring that has no force (or zero force) applied to it. And the term "preloaded length" of a spring is the length of the spring that has an initial starting force (or non-zero force) applied to it. A technique to preload a compression spring may be to use the launch spring **114** with a free length that is longer than the length of its enclosure or fitting, such as the fluid compressor **110**. Thereby, the launch spring **114** may be preloaded when received by the fluid compressor **110**. In the current embodiment, the launch spring **114** may be configured to be preloaded with a free length that is at least 1%, 5%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100%, 120%, 140%, 160%, 180%, or 200% longer than the preloaded length of the launch spring **114**. Whereby a launch spring may be selected, during the design process, based on the desired preload, spring rate, thickness, diameter, length, and maximum force (e.g., 10 lbs. of force) experienced by a user, etc. An advantage of the launch spring **114** that is preloaded is improved uniformity of the force of the launch spring **114** over its displacement and, subsequently, improved uniformity of the fluid flow generated by fluid compressor **110** during the launching of a plurality of projectiles from the launcher **100**.

[0107] In alternative embodiments, the launch spring **114** may not be preloaded during assembly and/or operation of the launcher **100** such that a preloaded spring is not required for operation. In alternative embodiments, any type of spring (e.g., tension spring, variable rate spring, torsion spring, etc.) may be used. For example, the launch spring **114** may be a tension spring and configured to be preloaded with a free length that is at least 1%, 5%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100%, 120%, 140%, 160%, 180%, or 200% shorter than the preloaded length of the launch spring **114**.

Priming Actuator

[0108] Turning now to FIGS. **1** and **2**, the priming actuator **160** may be at least partially received by the housing assembly **104**, wherein the priming actuator **160** may be configured to prime the fluid compressor **110** to potentially generate a fluid flow or one or more fluid flows in temporal sequence. Further, the priming actuator **160** may be structured such that the fluid compressor **110** may be configured to potentially generate a fluid flow or one or more fluid flows after the fluid compressor **110** has been primed once (or one time) by the priming actuator **160**. The priming actuator **160** may be manually operated by a user and may be non-electronically operated.

[0109] FIGS. **1** and **2** further show that the priming actuator **160** may be comprised of a primer handle **161** and a primer rod **162**, wherein the primer handle **161** is coupled to the primer rod **162**, which is coupled to piston **116** of the fluid compressor **110**. Thus the priming actuator **160** is operatively coupled to the fluid compressor **160**. The primer handle **161** may be sized (e.g., 12 mm dia.×40 mm wide) to be grasped and pulled (e.g., by a left or right hand) by a user. The primer rod **162** may be sized (e.g., 12 mm wide×14 mm high×150 mm long) for moving the piston **116** a maximum displacement. The priming actuator **160**, primer handle **161**, and primer rod **162** may be constructed of molded rigid plastic.

[0110] The priming actuator **160** or primer rod **162** may further comprise one or more primer indicators **163**, which are configured to provide information during priming and/or launching operations, such as indicating the number of trigger launches available, or the number of projectiles available, etc. The one or more primer indicators **163** may be comprised of one or more numbers (e.g., "1", "2", "3", "4", etc.), one or more symbols (e.g., check marks, hatch marks, alphabet letters, etc.), one or more patterns (e.g., diamond, dots, etc.), one or more textures, and/or one or more colors (e.g., red, yellow, blue, green, etc.) that act as a visual indicating element to a user. In the current embodiment, the primer handle **161** and primer rod **162** is a single, molded plastic part forming the priming actuator **160**. Further, the one or more primer indicators **163** may be molded into the primer rod **162** or the priming actuator **160**.

[0111] In alternative embodiments, the priming actuator **160**, primer handle **161**, and primer rod **162** may be constructed of any shape (e.g., bar, wedge, etc.), size, and/or material (e.g., metal, wood, fiber, composite materials, etc.). Further, in alternative embodiments, the actuator **160** may be able to move in alternate direction(s) (e.g., slide, swing, push, etc.). In alternative embodiments, the one or more primer indicators **163** may be coupled (e.g., plastic, paper, or metal element(s), etc.) or applied (e.g., paint, adhesive, paper, plastic, or metal film, etc.) to the primer rod **162** or the priming actuator **160**.

Active Barrel Group

[0112] FIGS. **1** and **2** further show that the active barrel group **120** may be at least partially received by the housing assembly **104** and comprising a plurality of launch barrels **122**A, **122**B, **122**C, **122**D, wherein the active barrel group **120** may be configured to receive a plurality of projectiles **121**A, **121**B, **121**C, and **121**D, as shown with dashed lines. The launch barrels **122**A, **122**B, **122**C, and **122**D may be sized so the plurality of projectiles **121**A, **121**B, **121**C, and

121D can be received and retained such that each projectile **121**A, **121**B, **121**C, and **121**D may form a fluid seal within each launch barrel **122**A, **122**B, **122**C, and **122**D, respectively. Further the active barrel group **120** and the plurality of launch barrels **121**A-**121**D are at least partially coupled to the valve system **130**, wherein the active barrel group **120** and the valve system **130** are in fluid communication such that each projectile, of the plurality of projectiles **121**A-**121**D, may be launched independently from the active barrel group **120**. The barrel group **120** may be constructed of molded plastic.

[0113] In alternative embodiments, the barrel group **120** and the launch barrels **122**A, **122**B, **122**C, **122**D may be constructed of any shape (e.g., long tube, rectangular, cylinder, elliptical cylinder, etc.), size, and/or material (e.g., metal, composite, etc.). In alternative embodiments, a projectile may be constructed of any shape (e.g., dart, sphere, disk, ring, etc.), size, and/or material (e.g., foam, rubber, gel bead, cardboard, paper, composite, etc.). In alternative embodiments, an active barrel group may comprise one or more launch barrels, two or more launch barrels, four or more launch barrels, or eight or more launch barrels. In alternative embodiments, the active barrel group **120** may be removable from the launcher **100**, such as to ease refilling (or manual loading) of a plurality of projectiles into the active barrel group **120**.

Valve System

[0114] Turning now to FIGS. **1** and **2** along with FIG. **3**A showing a close-up section view, the valve system **130** may be at least partially received by the fluid compressor **110** and the active barrel group **120**, wherein the valve system **130** may be configured to be in fluid communication with the fluid compressor **110** and the active barrel group **120** such that the valve system **130** is able to at least partially control a fluid flow from the fluid compressor **110** to (e.g., the plurality of launch barrels **122**A, **122**B, **122**C, **122**D of) the active barrel group **120**.

[0115] Turning specifically to the section view of FIG. **3**A, the valve system **130** may be comprised of a plurality of valve stems **132**A, **132**B, **132**C, and **132**D seated against a plurality of valve springs **134**A, **134**B, **134**C, and **134**D pressed against a plurality of valve rear walls **138**A, **138**B, **138**C, and **138**D, respectively, of a valve block assembly **139**. The valve springs **134**A-**134**D may be compression springs constructed of metal wire. Whereby, each valve stem, of the plurality of valve stems **132**A, **132**B, **132**C, and **132**D, is able to independently and linearly move or slide within a plurality of valve chambers **135**A, **135**B, **135**C, and **135**D, respectively, of the valve block assembly **139**. Then due to the expanding biased force of the valve springs **134**A-**134**D, each valve stem **132**A, of the plurality of stems **132**A-**132**D, may be able to protrude into the interior of a launch barrel **122**A when there is no projectile received by its associated launch barrel **122**A, and thereby closing a valve seat **131**A such that there can be no substantial fluid flow across the valve seat **131**A of the valve system **130**. However in contrast, when there is a projectile **121**B received by a launch barrel **122**B, the valve stem **132**B may be able to be pressed deeper into the valve block assembly **139**, and thereby opening a valve seat **131**B such that there can be substantial fluid flow across the valve seat **131**B and into the launch barrel **122**B of the active barrel group **120**. In addition, there may be one or more valve pathways **133**B, **133**C, and **133**D between the valve stems **132**A, **132**B, **132**C, and **132**D such that the valve system **130** can at least partially control a fluid flow from the fluid compressor **110** to the launch barrels **122**A, **122**B, **122**C, and **122**D, respectively, of the active barrel group **120**.

[0116] Thus FIGS. **1**, **2**, and **3**A show the valve system **130** may be configured to allow a fluid flow to the first available projectile received in a launch barrel and disallow or block the fluid flow to all other launch barrels of the active barrel group. Thereby the launcher **100** may be able to launch each projectile in temporal sequence from the active barrel group **120**. For example, as described in FIG. **3**A, the valve system **130** may be able to allow a fluid flow FF**1**, received from the fluid compressor **110** (in FIG. **2**), to flow into a first valve chamber **135**A, whereupon the fluid flow FF1 flows down a valve pathway **133**B and enters a second valve chamber **135**B, wherein the fluid flow FF**1** flows around a valve seat **131**B that is open, causing the fluid flow FF**1'** to be rapidly discharged into the launch barrel **122**B. Thus a projectile **121**B may be launched from the launch barrel **122**B of the active barrel group **120** of the launcher. In the current embodiment, the valve stems **132**A-**132**D, valve rear walls **138**A-**138**D, valve seats **131**A-**131**D, and valve block assembly **139** may be constructed of molded plastic.

[0117] In alternative embodiments, the valve system **130** may be constructed of any shape (e.g., rectangular, cylindrical, reserve, etc.), size, and/or material (e.g., metal, vinyl tubing, composite, etc.). In alternative embodiments, the valve springs **134**A-**134**D may be constructed of a different type of spring (e.g., tension spring, membrane flap spring, etc.), size, and/or material (e.g., plastic, composite, etc.). In alternative embodiments, the valve system **130** may comprise one or more valve stems **132**A-**132**D. Further, in some embodiments, a valve system may be mechanically controlled to modulate a fluid flow to the active barrel group **120**. For example, the valve system **110** may be operatively coupled (e.g., mechanically linked) to the fluid compressor **110** or the priming actuator **160** such that the valve system **110** is able to modulate (e.g., by increasing and/or decreasing) a fluid flow to the active barrel group **120** based on the movement of at least a portion of the fluid compressor **110** or the priming actuator **160** during the launching operation.

Trigger Assembly

[0118] Turning now to FIG. **2** along with FIGS. **3**B and **3**C showing close-up section views, the trigger assembly **140** may be comprised of a trigger **141**, a trigger pin **143**, a variable latch **145**, a trigger flexible hinge **144**, and a trigger return spring **142**. The variable latch **145** may be further comprised of a trigger wedge **146**. In some embodiments, the trigger assembly **140** may comprise at least one variable latch **145** that comprises at least one trigger wedge **146**.

[0119] The trigger assembly **140** may be at least partially received by the housing assembly **104** and including the variable latch **145**, wherein the trigger assembly **140** may be configured to increase a fluid flow (or each fluid flow of one or more fluid flows) from the fluid compressor **110** based on one or more start movements of the variable latch **145** of the trigger assembly **140** and/or one or more start movements of the one or more catch stops **151**A, **151**B, **151**C, and **151**D of the catch assembly **150**. The variable latch **145** may be constructed of a size (e.g., 12 mm deep×60 mm high×4 mm wide, etc.) able to substantially start and stop a moving catch assembly **150**, while avoiding substantial wear during usage.

[0120] The trigger **141** may be configured so a user can pull the trigger **141** (e.g., by a human finger) with a movement in the rearward direction R**1**, causing the trigger **141** to rotate or pivot about the trigger pin **143**, causing the variable latch **145** to make a movement in the downward direction D**1**. The flexible hinge **144** may be structured so the trigger **141** can pivot and move the variable latch **145** downward D**1** without breaking the trigger assembly **140**. The trigger return spring **142** may be configured to create a biased force such that the trigger **141** can return to a position of a substantially un-triggered state as shown in FIG. **2**. The trigger wedge **146** may be configured to operate as a wedge or cam to move the variable latch **145** of the trigger assembly **140** (e.g., out of the way) when the launcher **100** is being cocked or primed by a user. In the current embodiment, the trigger assembly **140** may be constructed of molded, flexible plastic, such that the trigger **141**, return spring **142**, flexible hinge **144**, variable latch **145**, and trigger wedge **146** are integrated into a single part.

[0121] In alternative embodiments, the trigger assembly **140** may be constructed of any shape, size, and material (e.g., metal, rigid plastic, composite, etc.). In alternative embodiments, the trigger assembly **140** may be comprised of one or more components (e.g., trigger **141**, flexible hinge **144**, trigger pin **143**, trigger return spring **142**, variable latch **145**, and/or trigger wedge **146**) that are coupled together. In alternative embodiments, the trigger assembly **140** may comprise at least one variable latch **145** or a plurality of variable latches **145**. In alternative embodiments, the trigger pin **143** may be removed such that the trigger **141** may slide or move within the housing assembly **104**. In alternative embodiments, the trigger return spring **142** may be a metal spring (e.g., compression spring, tension spring, etc.) coupled to the trigger assembly **140** and housing assembly **104**.

Catch Assembly

[0122] Continuing with FIG. **2** along with FIGS. **3**B and **3**C showing close-up section views, the catch assembly **150** may be comprised of one or more catch stops **151**A, **151**B, **151**C, and **151**D, one or more catch supports **152**A, **152**B, and **152**C, and one or more catch rails **153**A and **153**B. Whereby, the catch assembly **150** may be comprised of a plurality of catch stops **151**A, **151**B, **151**C, and **151**D that comprise a plurality of catch wedges **154**A, **154**B, **154**C, and **154**D, respectively. In some embodiments, the catch assembly **150** may be comprised of at least one catch stop **151**A that comprises an at least one catch wedge **154**A.

[0123] The catch assembly **150** may be at least partially received by the housing assembly **104** and including one or more catch stops **151**A, **151**B, **151**C, and **151**D, wherein the catch assembly **150** is configured to decrease a fluid flow (or each fluid flow of the one or more fluid flows) from the fluid compressor **110** based on one or more stop movements of the one or more catch stops **151**A, **151**B, **151**C, and **151**D of the catch assembly **150**. The one or more catch stops **151**A-**151**D may be constructed of a size (e.g., 12 mm deep×5 mm high×5 mm wide, etc.) able to substantially halt a moving catch assembly **150**, while avoiding substantial wear during usage.

[0124] The one or more catch supports **151**A-**151**D may be configured to provide positional support for the trigger assembly **140** and the variable latch **145** during a launch operation, and thereby configured to hold the trigger assembly **140** in a position of a partially triggered state, which will be discussed in more detail below. The one or more catch wedges **154**A-**154**D may be configured to operate as a wedge or cam to move the variable latch **145** of the trigger assembly **140** (e.g., out of the way) when the launcher **100** is being cocked or primed by a user. The one or more catch rails **153**A-**153**B may be configured to spatially guide the variable latch **145** along the geometry of the catch assembly **150** (as shown in FIGS. **3**B and **3**C).

[0125] In the current embodiment, the catch assembly **150** may be constructed of molded plastic and the one or more catch stops **151**A-**151**D, one or more catch supports **152**A-**152**C, one or more catch wedges **154**A-**154**D, and one or more catch rails **153**A-**153**B are integrated into a single part. Further, at least a portion of the priming actuator **160**, primer handle **161**, and/or primer rod **162** may be coupled to the one or more catch stops **151**A-**151**D of the catch assembly **150** forming, for example, a single part or multi-part component.

[0126] In alternative embodiments, the catch assembly **150** may be constructed of any shape, size, and/or material (e.g., metal, wood fiber, composite, etc.). Further, in alternative embodiments, the catch assembly **150** may be comprised of one or more components (e.g., catch stops, catch supports, catch wedges, and/or catch rails, etc.) that are coupled together. In alternative embodiments, the catch assembly **150** may be comprised of one or more catch stops, two or more catch stops, four or more catch stops, or eight or more catch stops. In alternative embodiments, at least a portion of the primer handle **161**, primer rod **162**, assembly, or element of the priming actuator **160** may be coupled to the one or more catch stops **151**A-**151**D of the catch assembly **150** forming, for example, a single part or multi-part component.

Catch Assembly—Geometry Distances

[0127] Now turning briefly to FIGS. **4**A, **4**B, and **4**C, there presented are close-up section views of the catch assembly **150** describing the geometry and configuration of the catch assembly **150**. As presented in FIG. **4**A, the catch stops **151**A, **151**B, **151**C, and **151**D may be separated by spatial distances DS**1**, DS**2**, and DS**3** measurable along or parallel to a spatial axis X**1** of the catch assembly **150**, which may be parallel to the lengthwise axis of the primer rod **162** of the priming actuator **160** (in FIGS. **2** and **4**A).

[0128] As shown by FIG. **4**A, in some embodiments, a launcher may include the catch assembly **150** comprising at least a first catch stop **151**A, a second catch stop **151**B, and a third catch stop **151**C such that a first distance DS**1**, between the first catch stop **151**A and the second catch stop **151**B, is at least 1%, 2%, 3%, 5%, or 10% greater than a second distance DS**2** between the second catch stop **151**B and the third catch stop **151**C, wherein the first and second distances DS**1** and DS**2** are measurable along a spatial axis X**1** of the catch assembly **150**, which may be parallel to the lengthwise axis of the primer rod **162** of the priming actuator **160** (in FIGS. **2** and **4**A). Further, in various embodiments, a launcher may include the catch assembly **150** comprising at least a first catch stop **151**A, a second catch stop **151**B, a third catch stop **151**C, and a fourth catch stop **151**D such that a first distance DS**1**, between the first catch stop **151**A and the second catch stop **151**B, is at least 1%, 2%, 3%, 4%, 5%, or 10% greater than a second distance DS**2**, between the second catch stop **151**B and the third catch stop **151**C, and also the second distance DS**2**, between the second catch stop

151B and the third catch stop **151**C, is at least 1%, 2%, 3%, 4%, 5%, or 10% greater than a third distance DS**3** between the third catch stop **151**C and the fourth catch stop **151**D, wherein the first, second, and third distances DS**1**, DS**2**, and DS**3** are measurable along a spatial axis X**1** of the catch assembly **150**, which may be parallel to the lengthwise axis of the primer rod **162** of the priming actuator **160** (in FIGS. **2** and **4**A).

[0129] Thus in many embodiments, the geometry of the catch assembly **150** can be adjusted during the design process to increase or decrease the quantity of the fluid flow from the fluid compressor **110** for each triggered launch of a projectile, from the plurality of projectiles **121**A, **121**B, **121**C, and **121**D (as in FIGS. **2** and **4**A) based on the geometry of the catch assembly **150**. Thereby in many embodiments, the launcher **100** may be able to launch each projectile, of the plurality of projectiles **121**A-**121**D, in temporal sequence after the fluid compressor **110** has been primed once by the priming actuator **160** of the launcher **100**, wherein each projectile has a muzzle velocity that does not vary by more than 10%, 20%, or 30% of the mean average muzzle velocity of the plurality of the projectiles **121**A-**121**D.

[0130] In alternate embodiments, a launcher can produce a substantially different muzzle velocity of one or more projectiles being launched. In alternative embodiments, the plurality of catch stops **151**A, **151**B, **151**C, and **151**D may be separated by a plurality of spatial distances DS**1**, DS**2**, and DS**3** that are substantially equal.

Catch Assembly—Geometry Operatively Coupled

[0131] Further in FIG. **4**A for some embodiments, a launcher may include the catch assembly **150** comprising an at least first catch stop **151**A and second catch stop **151**B such that an at least first catch support **152**A exists between the first catch stop **151**A and the second catch stop **151**B, wherein the at least first catch support **152**A may be further operatively coupled to an at least one variable latch **145** of the trigger assembly **140**. In some embodiments, one or more catch supports **152**A, **152**B, and **152**C may exist between two or more catch stops **151**A, **151**B, **151**C, and **151**D, wherein the one or more catch supports **152**A, **152**B, and **152**C may be operatively coupled to an at least one variable latch **145** of the trigger assembly **140**. In some embodiments, one or more catch supports **152**A, **152**B, and **152**C may be operatively coupled to an at least one variable latch **145** such that a first position, of the at least one variable latch **145** of the trigger assembly **140**, may be based upon a second position of the one or more catch supports **152**A, **152**B, and **152**C of the catch assembly **150**. In various embodiments, one or more catch supports may be operatively coupled to a trigger **141** such that a first position, of the trigger **141** of the trigger assembly **140**, may be based upon a second position of the one or more catch supports **152**A, **152**B, and **152**C of the catch assembly **150**. In a few embodiments, a first catch support **152**A and a second catch support **152**B may be operatively coupled to a trigger **141** such that a first position, of the trigger **141** of the trigger assembly **140**, may be based upon a second position of the first catch support **152**A, and a third position, of the trigger **141** of the trigger assembly **140**, may be based upon a fourth position of the second catch support **152**B of the catch assembly **150**.

Catch Assembly—Geometry Inclines

[0132] Also shown by FIG. **4**A, in some embodiments, a launcher may include the catch assembly **150** comprising one or more catch stops **151**A-**151**D, wherein an at least one catch stop **151**A, of the one or more catch stops **151**A-**151**D, comprises one or more catch wedges **154**A. In some embodiments, a catch wedge **154**A may act as an incline plane converting translational or rotational movement along a first spatial axis to a second spatial axis. For example, a catch wedge **154**A may enable the catch assembly **150** to move substantially unencumbered by a variable latch **145** of the trigger assembly **140** when the launcher **100** and the fluid compressor **110** is primed or cocked (as shown in FIGS. **2** and **3**B).

Catch Assembly—Geometry Dimensions

[0133] The reader may keep in mind that for various embodiments throughout this disclosure the term "dimension" is a measurable dimension or spatial extent of an assembly, component, or element.

[0134] So turning to FIG. **4**B, in some embodiments, a plurality of catch stops **151**A, **151**B, **151**C, and **151**D may be configured to have a plurality of dimensions EX**1**, EX**2**, EX**3**, and EX**4**, respectively, such that the plurality of dimensions EX**1**, EX**2**, EX**3**, and EX**4** are substantially dissimilar and are measurable along a plurality of spatial axis Y**1**A, Y**1**B, Y**1**C, and Y**1**D, respectively, which may be substantially perpendicular to the lengthwise axis X**1** of the primer rod **162** of the priming actuator **160** (in FIGS. **2** and **4**B).

[0135] Further, in various embodiments, a launcher may include the catch assembly **150** comprising at least a first catch stop **151**A and a second catch stop **151**B, wherein the first catch stop **151**A is configured to have a first dimension EX**1** that is at least 1%, 2%, 3%, 4%, or 5% greater than a second dimension EX**2** of the second catch stop **151**B, wherein the first and second dimensions EX**1** and EX**2** are measurable along a first and a second spatial axis Y**1**A and Y**1**B, respectively, which may be substantially perpendicular to the lengthwise axis X**1** of the primer rod **162** of the priming actuator **160** (in FIGS. **2** and **4**B). In various embodiments, a launcher may be including the catch assembly **150** comprising an at least first catch stop **151**A, second catch stop **151**B, and third catch stop **151**C, wherein the first catch stop **151**A is configured to have a first dimension EX**1** that is at least 1%, 2%, 3%, 4%, or 5% greater than a second dimension EX**2** of the second catch stop **151**B, and the second catch stop **151**B is configured to have the second dimension EX**2** that is at least 1%, 2%, 3%, 4%, or 5% greater than a third dimension EX**3** of the third catch stop **151**C, wherein the first, second, and third dimensions EX**1**, EX**2**, and EX**3** are measurable along a first, second, and third spatial axis Y**1**A, Y**1**B, and Y**1**C, respectively, which may be substantially perpendicular to the lengthwise axis X**1** of the primer rod **162** of the priming actuator **160** (in FIGS. **2** and **4**B).

Catch Assembly—Geometry Angles

[0136] Now turning to FIG. **4**C, in a few embodiments, at least one catch stop **151**A may be configured to have an at least one tilt angle A**1** that is greater than 0.1, 1, 2, 3, 4, 5, or 10 degrees. In a few embodiments, at least one catch stop **151**A and at least one variable latch **145** may be configured to have an at least one tilt angle **A1** that is greater than 0.1, 1, 2, 3, 4, 5, or 10 degrees. In various embodiments, the at least one tilt angle **A1** may be measurable relative to a spatial dimension **Y1A** that is substantially perpendicular to the lengthwise axis **X1** of the primer rod **162** of the priming actuator **160** (in FIGS. **2** and **4**C).

[0137] In a few embodiments, an advantage of an at least one catch stop **151**A and an at least one variable latch **145** configured to have at least one tilt angle **A1** is improved halting or catching of the variable latch **145** when the catch assembly **150** is moving within the launcher.

[0138] In alternative embodiments of the catch assembly **150** and trigger assembly **140**, there is no tilt angle **A1** or the tilt angle **A1** is equal to zero.

Refilling Operation (Manual)

[0139] Now turning back to FIGS. **1** and **2**, the toy projectile launcher **100** may be refilled (or manually loaded by a user) with a plurality of projectiles, referred to as the refilling operation. As depicted in FIG. **2**, the active barrel group **120** comprising a plurality of launch barrels **122**A, **122**B, **122**C, **122**D can receive and retain the plurality of projectiles **121**A, **121**B, **121**C, and **121**D that may be manually inserted into the launch barrels **122**A-**122**D by the user. Whereby, each projectile, of the plurality of projectiles **121**A-**121**D, may form a fluid seal within each launch barrel of the plurality of launch barrels **122**A-**122**D, respectively.

[0140] The reader may keep in mind that in various embodiments throughout this disclosure, the terms "refill", "refilling", "refilling operation", "manually loaded", "manual loading", and like terms mean a launcher, storage clip, or component of the launcher is manually loaded or refilled with one or more projectiles by a user (e.g., such as a user grasping a projectile and inserting the projectile into a launch barrel, etc.).

Priming Operation

[0141] Now turning to FIGS. **1** and **2**, the toy projectile launcher **100** may be primed once (or cocked once) such that the launcher **100** is capable of launching a plurality of projectiles, referred to as the priming operation.

[0142] The reader may keep in mind that in many embodiments throughout this disclosure, the terms "primed once," "primed one time," and like terms mean that a launcher comprising a fluid compressor has been primed one time (or cocked one time) by a priming actuator creating a store of energy (e.g., via a launch spring) such that, for example, the launcher may be able to launch a plurality of projectiles in temporal sequence. Understandably, the priming operation may be repeated indefinitely, as after the plurality of projectiles have been launched by the launcher, for example, the launcher is ready to be loaded again with a second plurality of projectiles, and again, the fluid compressor may be primed once by the priming actuator such that the launcher may be able to launch the second plurality of projectiles in temporal sequence. In many embodiments, a fluid compressor is a single component, unit, device, or element capable of compressing a fluid, such as air, water, or other fluids.

[0143] Further, the reader may keep in mind that throughout this disclosure the term "continuous movement" is a movement that is substantially nonstop and does not substantially reverse direction. For example, a movement made from a first position to a second position should be regarded as a single, continuous movement. But an alternative movement made from a first position to a second position and substantially back to the first position should be regarded as two continuous movements.

[0144] So in various embodiments and the current embodiment, a fluid compressor may be primed once by a single, continuous movement (e.g., linear, rotational, etc.) of at least a portion (e.g., of a primer handle) of a priming actuator of a launcher. Whereby, a fluid compressor may be primed once by a single, continuous movement (e.g., linear, rotational, etc.), between a first position and a second position, of at least a portion (e.g., of a primer handle) of a priming actuator of a launcher. In a few embodiments, a fluid compressor may be primed once by a single, continuous movement (e.g., linear, rotational, etc.) in substantially one direction of at least a portion (e.g., of a primer handle) of a priming actuator of a launcher. In some embodiments, a fluid compressor may be primed once by at most two continuous movements (e.g., between a first position and a second position) of at least a portion (e.g., of a primer handle) of a priming actuator of a launcher. In alternate embodiments, a fluid compressor may be primed once by a plurality of continuous movements of at least a portion (e.g., of a primer handle) of a priming actuator of a launcher.

[0145] So turning to FIG. **1**, a user (not shown) may grasp the housing handle **105** to hold and operate the launcher **100**. The priming operation may comprise the following operational steps:

[0146] In FIGS. **1**, **2**, **3**B, and **3**C, in a first operational step: the projectile launcher **100** including the fluid compressor **110** may be cocked or primed once by a single, continuous movement of the primer handle **161** and the priming actuator **160**. In other words in greater detail, the priming actuator **160** and, specifically, the primer handle **161** (e.g., which is grasped and moved by a user) makes a first movement in a rearward direction **R1**, causing the primer rod **162** to make the first movement in the rearward direction **R1** away from the launcher **100**, causing the piston **116** to make the first movement in the rearward direction **R1** within the fluid compressor **110**, and thereby, compressing the launch spring **114** between the piston **116** and the rear chamber wall **118** of the fluid compressor **110**. Further shown in FIGS. **3**B and **3**C, as the primer rod **162** makes the first movement in the rearward direction **R1**, the catch wedges **154**A-**154**D push the variable latch **145** and trigger wedge **146** with a second movement in a downward direction **D1** and out of the way of the catch stops **151**A-**151**D. Whereby, as the primer rod **162** makes the first movement in the rearward direction **R1**, the catch stops **151**A-**151**D of the catch assembly **150** travel unimpeded past the variable latch **145**, enabling the launcher **100** and the fluid compressor **110** to be primed once by the priming actuator **160** by a single, continuous movement of at least a portion of the priming actuator **160**.

[0147] Thus the priming operation ends.

[0148] As shown in FIG. **5**A, the projectile launcher **100** comprising the fluid compressor **110** has been cocked or primed once such that the fluid compressor **110** has a store of energy. As can be seen, the variable latch **145** is holding the catch stop **151**D of the catch assembly **150** at an initial catch position **CP0**, such that the primer rod **162** is held stationary by the launcher **100**. Further, the projectile launcher **100** and the fluid compressor **110** may be able to generate a fluid flow or one or more fluid flows after the fluid compressor **110** has been primed once by the priming actuator **160**. Subsequently, the toy projectile launcher **100** is now able to launch each projectile, of a plurality of projectiles **121**A, **121**B, **121**C, and **121**D, in temporal sequence (e.g., such as launching four projectiles in temporal sequence, where each projectile is launched every 0.1 second) after the fluid compressor **110** has been primed once by the priming actuator **160**.

Launching Operation

[0149] Turning now to FIGS. **5**A, **5**B, **5**C, **5**D, and **5**E, there shown are section views of the launcher **100** during an exemplary operation to launch a plurality of projectiles **121**A, **121**B, **121**C, and **121**D in temporal sequence from the launcher **100**, referred to as the launching operation.

[0150] In FIG. **5**A, the projectile launcher **100** is shown ready and prepared to launch a plurality of projectiles **121**A, **121**B, **121**C, and **121**D after the fluid compressor **110** has been primed once by the priming actuator **160**, as discussed by the "Priming Operation" above. As depicted, the trigger assembly **140** and the trigger **141** are located at an initial trigger position TP**0**, and the catch assembly **150** and the one or more catch stops **151**D are located at an initial catch position CP**0**. Further, the trigger assembly **140** and trigger **141** are at the position TP**0** of a substantially un-triggered state. A user (not shown) may grip the housing handle **105** to hold and operate the launcher **100**.

[0151] Whereby, the launching operation may comprise the following operational steps:

[0152] Turning to FIG. **5**B, in a first operational step: a first launch cycle is presented of a first trigger action of the trigger **141** pulled by the user. In response, the trigger **141** and trigger assembly **140** make a first start movement to a first trigger position TP**1** of a first partially triggered state, causing the trigger assembly **140** and trigger **141** to pivot, shifting the variable latch **145** by the first start movement in the downward direction D**1**. Whereupon, the variable latch **145** releases a first catch stop **151**D of the catch assembly **150** (in FIG. **5**A), causing the catch assembly **150** with the one or more catch stops **151**D coupled to the priming actuator **160** and piston **116** to make a first start movement. As such the fluid compressor **110**, in conjunction with the piston **116** making the first start movement, compresses a fluid of ambient air causing an increase of a first fluid flow FF**1** from the fluid compressor **110**. A moment later (e.g., 0.01 second), the catch assembly **150** makes a first stop movement at a first catch position CP**1** when a second catch stop **151**C, of the catch assembly **150**, is engaged by the variable latch **145** of the trigger assembly **140**, causing the trigger and trigger assembly **140** to make a first stop movement. Further, a first catch support **152**C may be configured to hold the trigger assembly **140** in a position of a partially triggered state. As such the fluid compressor **110**, in conjunction with the piston **116** making the first stop movement, no longer compresses the fluid of ambient air causing a decrease of the first fluid flow FF**1** from the fluid compressor **110**. Thereby, the fluid compressor **110** creates a pulse of the first fluid flow FF**1** in fluid communication with the valve system **130**, which at least partially controls and discharges the first fluid flow FF**1** into a first launch barrel **122**A of the active barrel group **120**. Whereupon, a first projectile **121**A is expelled by the first fluid flow FF**1** and launched from the first launch barrel **122**A of the launcher **100**.

[0153] Then turning to FIG. **5**C, in a second operational step: a second launch cycle is presented of a second trigger action of the trigger **141** pulled by the user. In response, the trigger **141** and trigger assembly **140** make a second start movement to a second trigger position TP**2** of a second partially triggered state, causing the trigger assembly **140** and trigger **141** to pivot, shifting the variable latch **145** by the second start movement in the downward direction D**1**. Whereupon, the variable latch **145** releases a second catch stop **151**C of the catch assembly **150** (in FIG. **5**B), causing the catch assembly **150** with the one or more catch stops **151**C coupled to the priming actuator **160** and piston **116** to make a second start movement. As such the fluid compressor **110**, in conjunction with the piston **116** making the second start movement, compresses a fluid of ambient air causing an increase of a second fluid flow FF**2** from the fluid compressor **110**. A moment later (e.g., 0.01 second), the catch assembly **150** makes a second stop movement at a second catch position CP**2** when a third catch stop **151**B, of the catch assembly **150**, is engaged by the variable latch **145** of the trigger assembly **140**, causing the trigger and trigger assembly **140** to make a second stop movement. Further, a second catch support **152**B may be configured to hold the trigger assembly **140** in a position of a partially triggered state. As such the fluid compressor **110**, in conjunction with the piston **116** making the second stop movement, no longer compresses the fluid of ambient air causing a decrease of the second fluid flow FF**2** from the fluid compressor **110**. Thereby, the fluid compressor **110** creates a pulse of the second fluid flow FF**2** in fluid communication with the valve system **130**, which at least partially controls and discharges the second fluid flow FF**2** into a second launch barrel **122**B of the active barrel group **120**. Whereupon, a second projectile **121**B is expelled by the second fluid flow FF**2** and launched from the second launch barrel **122**B of the launcher **100**.

[0154] Then turning to FIG. **5**D, in a third operational step: a third launch cycle is presented of a third trigger action of the trigger **141** pulled by the user. In response, the trigger **141** and trigger assembly **140** make a third start movement to a third trigger position TP**3** of a third partially triggered state, causing the trigger assembly **140** and trigger **141** to pivot, shifting the variable latch **145** by the third start movement in the downward direction D**1**. Whereupon, the variable latch **145** releases a third catch stop **151**B of the catch assembly **150** (in FIG. **5**C), causing the catch assembly **150** with the one or more catch stops **151**B coupled to the priming actuator **160** and piston **116** to make a third start movement. As such the fluid compressor **110**, in conjunction with the piston **116** making the third start movement, compresses a fluid of ambient air causing an increase of a third fluid flow FF**3** from the fluid compressor **110**. A moment later (e.g., 0.01 second), the catch assembly **150** makes a third stop movement at a third catch position CP**3** when a fourth catch stop **151**A, of the catch assembly **150**, is engaged by the variable latch **145** of the trigger assembly **140**, causing the trigger and trigger assembly **140** to make a third stop movement. Further, a third catch support **152**A may be configured to hold trigger assembly **140** in a position of a partially triggered state. As such the fluid compressor **110**, in conjunction with the piston **116** making the third stop movement, no longer compresses the fluid of ambient air causing a decrease of the third fluid flow FF**3** from the fluid compressor **110**. Thereby, the fluid compressor **110** creates a pulse of the third fluid flow FF**3** in fluid communication with the valve system **130**, which at least partially controls and discharges the third fluid flow FF**3** into a third launch barrel **122**C of the active barrel group **120**. Whereupon, a third projectile **121**C is expelled by the third fluid flow FF**3** and launched from the third launch barrel **122**C of the launcher **100**.

[0155] Then turning to FIG. **5**E, in a fourth operational step: a fourth launch cycle is presented of a fourth trigger action of the trigger **141** pulled by the user. In response, the trigger **141** and trigger assembly **140** make a fourth start movement to a fourth trigger position TP**4** of a fourth partially triggered state, causing the trigger assembly **140** and trigger **141** to pivot, shifting the variable latch **145** by the fourth start movement in the downward direction D**1**. Whereupon, the variable latch **145** releases a fourth catch stop **151**A of the catch assembly **150** (in FIG. **5**D), causing the catch assembly **150** with the one or more catch stops **151**A coupled to the priming actuator **160** and piston **116** to make a fourth start movement. As such the fluid compressor **110**, in conjunction with the piston **116** making the fourth start movement, compresses a fluid of ambient air causing an increase of a fourth fluid flow FF**4** from the fluid compressor **110**. A moment later (e.g., 0.01 second), the catch assembly **150** makes a fourth stop movement at a fourth catch position CP**4** when the piston **116** stops at the end of the fluid compressor **110**, causing the trigger and trigger assembly **140** to make a fourth stop movement. As such the fluid compressor **110**, in conjunction with the piston **116** making the fourth stop movement, no longer compresses the fluid of ambient air causing a decrease of the fourth fluid flow FF**4** from the fluid compressor **110**. Thereby, the fluid compressor **110** creates a pulse of the fourth fluid flow FF**4** in fluid communication with the valve system **130**, which at least partially controls and discharges the fourth fluid flow FF**4** into a fourth launch barrel **122**D of the active barrel group **120**. Whereupon, a fourth projectile **121**D is expelled by the fourth fluid flow FF**4** and launched from the fourth launch barrel **122**D of the launcher **100**.

[0156] Whereby, the launching operation ends.

[0157] In FIG. **5**F, the projectile launcher **100** is shown fully discharged of the plurality of projectiles **121**A, **121**B, **121**C, and **121**D and the fluid compressor **110** is no longer in a primed or cocked state for the launcher **100**. As depicted, the trigger assembly **140** and the trigger **141** are located at a final trigger position TP**5**, and the catch assembly **150** and the one or more catch stops are located at a final catch position CP**5**. Further, the trigger assembly **140** and trigger **141** are at the position TP**5** of a substantially untriggered state. Understandably, to launch more projectiles by the launcher **100**, the user may repeat the "Refilling Operation", "Priming Operation," and "Launching Operation" described above.

[0158] The launcher **100** can further launch projectiles in unique ways. For example, in other launching operations of the launcher **100**, a user may pull the trigger **141** once or to the first trigger position TP**1** to launch one projectile **121**A followed by a ten second time delay. Or a user may pull the trigger **141** twice or to the second trigger position TP**2** to launch two projectiles **121**A and **121**B in rapid temporal sequence (e.g., where each projectile is launched every 0.1 second). Or a user may pull the trigger **141** three times or to the third trigger position TP**3** to launch three projectiles **121**A, **121**B, and **121**C in slow temporal sequence (e.g., launching each projectile every 0.5 second).

[0159] In summary, the launcher **100** and the fluid compressor **110** (e.g., supported by the trigger assembly **140** and catch assembly **150**) may be configured to generate (e.g., a plurality of pulses of) a plurality of fluid flows FF**1**, FF**2**, FF**3**, and FF**4** after the fluid compressor **110** has been primed once by the priming actuator **160** of the launcher **100**. Thereby, the launcher **100** (e.g., supported by the trigger assembly **140** and catch assembly **150**) may be able to launch each projectile, from the plurality of projectiles **121**A, **121**B, **121**C, and **121**D received by the active barrel group **120**, in temporal sequence (e.g., a plurality of four projectiles, where each projectile is launched every 0.1 second) after the fluid compressor **110** has been primed once by the priming actuator **160** of the launcher **100**. Further, the launcher **100** (e.g., supported by the trigger assembly **140** and catch assembly **150**) may be able to create a variable time delay between a first projectile and a second projectile, of the plurality of projectiles **121**A-**121**D, launched in temporal sequence from the launcher **100** after the fluid compressor **110** has been primed once by the priming actuator **160** of the launcher **100**, wherein the variable time delay has a range of about 0.1 second to an arbitrary number of seconds, or from zero seconds to an arbitrary number seconds.

Method of Assembly

[0160] Now turning to FIG. **6**A, there shown is an exemplary embodiment of a method **190** for assembling the toy projectile launcher **100** comprising the following steps:

[0161] In step S**100**: providing a launcher with a housing assembly.

[0162] In step S**102**: providing a fluid compressor being at least partially received by the housing assembly.

[0163] In step S**104**: supporting a priming actuator being at least partially received by the fluid compressor S**104**.

[0164] In some optional embodiments (denoted by dashed lines), in step S**106**: supporting a loading actuator being at least partially received by the housing assembly. In the current embodiment of the launcher **100**, step S**106** is unneeded and not required.

[0165] In step S**108**: providing an active barrel group being at least partially received by the housing assembly and comprising a plurality of launch barrels.

[0166] In step S**110**: providing a valve system being at least partially received by the fluid compressor and the active barrel group.

[0167] In step S**112**: supporting a trigger assembly being at least partially received by the housing assembly and including an at least one variable latch.

[0168] Finally, in step S**114**: supporting a catch assembly being at least partially received by the housing assembly and including one or more catch stops.

Method of Assembly—Alternative Steps

[0169] Continuing with FIG. **6**A of the method **190** of assembly of a toy projectile launcher may further comprise the following alternative steps:

[0170] In various embodiments, step S**102** of FIG. **6**A may be replaced with step S**103** of FIG. **6**B, which reads: providing a fluid compressor being at least partially received by the housing assembly, wherein the fluid compressor comprises a launch spring that is preloaded.

Alternate Launcher with Catch Assembly on Outer Walled Chamber

[0171] It's recognized that alternative embodiments of launchers with a variety of apparatus may be considered. For example, in the previous embodiment, the launcher **100** comprises the fluid compressor **110** that includes the piston **116** that moves within the stationary, walled cylinder **112**, and thereby, generating a fluid flow. However, it's recognized that alternate embodiments of a launcher can comprise a fluid compressor that includes a stationary piston and a moving cylinder that generates a fluid flow. Other alternate embodiments of a launcher may comprise a plurality of at least partially hollow cylinders (having no piston) that move relative to each other to generate a fluid flow. Or an alternative embodiment comprised of a squeezable plastic membrane to generate a fluid flow. Whereby, some exemplary embodiments with different apparatus are presented, but other alternate embodiments may be considered to be in the scope of this disclosure as well.

[0172] So turning now to FIG. **7**A, there shown is a section view of an alternative exemplary embodiment of a toy projectile launcher **200**A. As depicted, the launcher **200**A may be constructed with similar apparatus as the previous launcher **100** (in FIGS. **1-6**B).

[0173] However, the reader may notice that the current embodiment of a fluid compressor **210**A is constructed differently from the previous embodiment of the fluid compressor **110** of the launcher **100** (in FIGS. **1-6**B). Also, a catch assembly **250**A is constructed differently from the previous embodiment of the catch assembly **150** of the launcher **100** (in FIGS. **1-6**B). Whereby, the subsequent discussion will focus on differences.

[0174] As depicted, the current embodiment of the toy projectile launcher **200**A may comprise a housing assembly **104**, a fluid compressor **210**A, a priming actuator **260**A, an active barrel group **120**, a valve system **130**, a trigger assembly **140**, and a catch assembly **250**A.

Housing Assembly

[0175] FIG. **7**A presents the housing assembly **104** and a housing handle **105** that are constructed similar to the housing assembly of the previous embodiment (in FIGS. **1-6**B), which the reader may refer to for reference.

Fluid Compressor

[0176] FIG. **7**A further shows the fluid compressor **210**A may be at least partially received by the housing assembly **104** of the launcher **200**A, wherein the fluid compressor **210**A is able to compress a fluid, such as ambient air from a play environment. In the current embodiment, the fluid compressor **210**A may be comprised of an inner walled chamber **211**A, an outer walled chamber **212**A, a launch spring **214**A, a rear chamber wall **207**A, and a latch guide **208**A.

[0177] The outer walled chamber **212**A may be cylindrical in shape, at least partially hollow, and constructed of molded plastic or hot-sealed plastic. The outer walled chamber **212**A may be sized (e.g., 40 mm dia.×120 mm long) to provide a fluid flow for launching a plurality of projectiles. Further, the outer walled chamber **212**A may be comprised of a flange **213**A, which supports the launch spring **214**A. The outer walled chamber **212**A may be constructed of a single part or coupled parts of molded plastic.

[0178] The inner walled chamber **211**A may be cylindrical in shape, at least partially hollow, and constructed of molded plastic or hot-sealed plastic. The inner walled chamber **211**A may be sized (e.g., 36 mm dia.×120 mm long) to provide a fluid flow for launching a plurality of projectiles. Further, the inner walled chamber **211**A may be coupled to the valve system **130**, such that the inner walled chamber **211**A may be in fluid communication with the valve system **130**. Further, the outer walled chamber **212**A may retain the launch spring **114** that is external of the outer walled chamber **212**A. The inner walled chamber **211**A may be constructed of a single part or coupled parts of molded plastic.

[0179] Whereby, the inner walled chamber **211**A may be shaped and sized to fit within at least a portion of the outer walled chamber **212**A. The inner walled chamber **211**A may comprise an O-ring **217**A that provides a fluid seal against the interior walls of the outer walled chamber **212**A, reducing leakage of the fluid around the inner walled chamber **211**A of the compressor **210**A. Further, the outer walled chamber **212**A may be configured to be moveable relative to the inner walled chamber **211**A, able to compress the fluid and create a fluid flow from the compressor **210**A. As depicted, the launch spring **214**A may be a compression spring fitted between the flange **213**A of the outer walled chamber **212**A and the rear chamber wall **207**A, wherein the spring **214**A may be constructed of spring steel metal wire. Finally, the rear chamber wall **207**A and the latch guide **208**A may be coupled to the housing assembly **104** so their positions may be fixed relative to the housing assembly **104**.

[0180] In alternative embodiments, the fluid compressor **210**A and outer walled chamber **112**A may be constructed of any shape (e.g., rectangular block shaped, spherical, ovoid, elliptical cylinder, etc.), size (e.g., 160 mm long×50 mm dia.), and/or material (e.g., vinyl sheet, polyethylene, metal, etc.) that does not substantially leak a fluid, such as air. In alternative embodiments, the inner walled chamber **211**A may be constructed of any shape (e.g., rectangular block shaped, spherical, ovoid, elliptical cylinder, etc.), size, material (e.g., single part, composite part, molded plastic, metal, etc.), and/or any components, such as having no O-ring **217**A. In alternative embodiments, the spring **214**A may be constructed of any type (e.g., tension spring), shape (e.g., s-shaped), size, and/or material (e.g., composite or flexible plastic).

Fluid Compressor—with Preloaded Spring

[0181] Also presented in FIG. **7**A, the projectile launcher **200**A and fluid compressor **210**A may be configured such that the launch spring **214**A is preloaded, which is similar to the previous embodiment (in FIGS. **1-6**B), which the reader may refer to for reference.

Priming Actuator

[0182] FIG. **7**A further shows that the priming actuator **260**A may be comprised of a primer handle **261**A and a primer rod **262**A of the launcher **200**A, wherein the primer handle **261**A is coupled to the primer rod **262**A, which is coupled to the outer walled chamber **212**A of the fluid compressor **210**A. The priming actuator **260**A may be at least partially received by the housing assembly **104**, wherein the priming actuator **260**A may be structured such that the fluid compressor **210**A may be capable to generate a fluid flow after the fluid compressor **210**A has been primed once or one time by the priming actuator **260**A. Whereby, in the current embodiment, the toy projectile launcher **200**A may be further configured to launch each projectile, of a plurality of projectiles **121**A, **121**B, **121**C, and **121**D, in temporal sequence (e.g., such as launching four projectiles in temporal sequence, where each projectile is launched every 0.1 second) after the toy projectile launcher **200**A comprising the fluid compressor **210**A has been primed once by the priming actuator **260**A.

[0183] In alternative embodiments, the priming actuator **260**A may be comprised of the primer handle **261**A located at the top, side, rear, or bottom of the launcher **200**A (having no primer rod **262**A), wherein the priming actuator **260**A and primer handle **261**A are coupled to the outer walled chamber **212**A of the fluid compressor **210**A.

Active Barrel Group

[0184] FIG. **7**A further shows that the active barrel group **120** may be at least partially received by the housing assembly **104** and comprising a plurality of launch barrels **122**A, **122**B, **122**C, **122**D, wherein the active barrel group **120** may be configured to receive a plurality of projectiles **121**A, **121**B, **121**C, and **121**D, as shown with dashed lines. The active barrel group **120** may be constructed similar to the active barrel group of the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference.

Valve System

[0185] FIG. **7**A presents the valve system **130**, which is constructed similar to the valve system of the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference.

Trigger Assembly

[0186] FIG. **7**A also shows the trigger assembly **140** may be comprised of a trigger **141**, a trigger pin **143**, a variable latch **145**, a trigger flexible hinge **144**, and a trigger return spring **142**. The trigger assembly **140** may be constructed similar to the trigger assembly of the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference.

Catch Assembly

[0187] Continuing with FIG. **7**A, the catch assembly **250**A may be constructed similar to the catch assembly of the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference. However there is at least one difference to the apparatus depicted, which is at least a portion of the outer walled chamber **212**A may be coupled to the one or more catch stops of the catch assembly **250**A forming, for example, a single part or multi-part component.

[0188] In alternative embodiments, at least a portion of a walled chamber, an assembly, or an element of the fluid compressor **210**A may be coupled to the one or more catch stops of the catch assembly **250**A forming, for example, a single part or multi-part component.

Refilling Operation (Manual)

[0189] Now in FIG. **7**A, the projectile launcher **200**A and the active barrel group **120** may be refilled (or manually loaded by a user) with a plurality of projectiles in a similar manner as the "Refilling Operation" of the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference.

Priming Operation

[0190] Now in FIG. **7**A, the projectile launcher **200**A and fluid compressor **210**A may be primed in a similar manner as the "Priming Operation" of the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference.

Launching Operation

[0191] Now in FIG. **7**A, the launcher **200**A may be able to launch each projectile, from the plurality of projectiles **121**A, **121**B, **121**C, and **121**D received by the active barrel group **120**, in temporal sequence (e.g., a plurality of four projectiles, where each projectile is launched every 0.1 second) after the fluid compressor **210**A has been primed once by the priming actuator **260**A of the launcher **200**A. Whereby, the launcher **200**A may have a launching operation that is similar to the "Launching Operation" of the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference.

Method of Assembly

[0192] Continuing with FIG. **7**A, a method for assembling the toy projectile launcher **200**A may be similar to the "Method of Assembly" of the previous embodiment (in FIGS. **6**A-**6**B), which the reader may refer to for reference.

Alternate Launcher with Catch Assembly on Inner Walled Chamber

[0193] So turning now to FIG. **7**B, there shown is a section view of an alternative exemplary embodiment of a toy projectile launcher **200**B. As depicted, the launcher **200**B may be constructed with similar apparatus and functionality as the previous launcher **100** (in FIGS. **1**-**6**B).

[0194] However, the reader may notice that the current embodiment of a fluid compressor **210**B is constructed differently from the previous embodiment of the fluid compressor **110** of the launcher **100** (in FIGS. **1**-**6**B). Also, a catch assembly **250**B is constructed differently from the previous embodiment of the catch assembly **150** of the launcher **100** (in FIGS. **1**-**6**B). Whereby, the subsequent discussion will focus on differences.

[0195] As depicted, the current embodiment of the toy projectile launcher **200**B may comprise a housing assembly **104**, a fluid compressor **210**B, a priming actuator **260**B, an active barrel group **120**, a valve system **130**, a trigger assembly **140**, and a catch assembly **250**B.

Housing Assembly

[0196] FIG. **7**B presents the housing assembly **104** and a housing handle **105**, which are constructed similar to the housing assembly of the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference.

Fluid Compressor

[0197] FIG. **7**B further shows the fluid compressor **210**B may be at least partially received by the housing assembly **104** of the launcher **200**B, wherein the fluid compressor **210**B is able to compress a fluid, such as ambient air from a play environment. In the current embodiment, the fluid compressor **210**B may be comprised of an inner walled chamber **211**B, an outer walled chamber **212**B, a launch spring **214**B, a rear chamber wall **207**B, and an latch guide **208**B.

[0198] The outer walled chamber **212**B may be cylindrical in shape, at least partially hollow, and constructed of molded plastic or hot-sealed plastic. The outer walled chamber **212**B may be sized (e.g., 40 mm dia.×120 mm long) to provide a fluid flow for launching a plurality of projectiles. Further, the outer walled chamber **212**B may be coupled to the valve system **130**, such that the outer walled chamber **212**B may be in fluid communication with the valve system **130**. The outer walled chamber **212**B may be constructed of a single part or coupled parts of molded plastic.

[0199] The inner walled chamber **211**B may be cylindrical in shape, at least partially hollow, and constructed of molded plastic or hot-sealed plastic. The inner walled chamber **211**B may be sized (e.g., 36 mm dia.×120 mm long) to provide a fluid flow for launching a plurality of projectiles. Further, the inner walled chamber **211**B may be comprised of a flange **213**B, which supports the launch spring **214**B. The inner walled chamber **211**B may be constructed of a single part or coupled parts of molded plastic.

[0200] Whereby, the inner walled chamber **211**B may be shaped and sized to fit within at least a portion of the outer walled chamber **212**B. The inner walled chamber **211**B may comprise an O-ring **217**B that provides a fluid seal against the interior walls of the outer walled chamber **212**B, reducing leakage of the fluid around the inner walled chamber **211**B of the compressor **210**B. Further, the inner walled chamber **211**B may be configured to be moveable relative to the outer walled chamber **212**B, able to compress the fluid and create a fluid flow from the compressor **210**B. As depicted, the launch spring **214**B may be a compression spring fitted between the flange **213**B of the inner walled chamber **211**B and the housing assembly **204**, wherein the spring **214**B may be constructed of spring steel metal wire. Finally, the rear chamber wall **207**B and the latch guide **208**B may be coupled to the housing assembly **104** so their positions may be fixed relative to the housing assembly **104**.

[0201] In alternative embodiments, the fluid compressor **210**B and outer walled chamber **112**B may be constructed of any shape (e.g., rectangular block shaped, spherical, ovoid, elliptical cylinder, etc.), size (e.g., 160 mm long×50 mm dia.), and/or material (e.g., vinyl sheet, polyethylene, metal, etc.) that does not substantially leak a fluid, such as air. In alternative embodiments, the inner walled chamber **211**B may be constructed of any shape (e.g., rectangular block shaped, spherical, ovoid, elliptical cylinder, etc.), size, material (e.g., single part, composite part, molded plastic, metal, etc.), and/or any components, such as having no O-ring **217**B. In alternative embodiments, the spring **214**B may be constructed of any type (e.g., tension spring), shape (e.g., s-shaped), size, and/or material (e.g., composite or flexible plastic).

Fluid Compressor—with Preloaded Spring

[0202] Also presented in FIG. **7**B, the projectile launcher **200**B and fluid compressor **210**B may be configured such that the launch spring **214**B is preloaded, which is similar to the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference.

Priming Actuator

[0203] FIG. **7**B further shows that the priming actuator **260**B may be comprised of a primer handle **261**B and a primer rod **262**B of the launcher **200**B, wherein the primer handle **261**B is coupled to the primer rod **262**B, which is operatively coupled to the inner walled chamber **212**B of the fluid compressor **210**B. The priming actuator **260**B may be at least partially received by the housing assembly **104**, wherein the priming actuator **260**B may be structured such that the fluid compressor **210**B may be capable to generate a fluid flow after the fluid compressor **210**B has been primed once or one time by the priming actuator **260**B. Whereby, in the current embodiment, the toy projectile launcher **200**B may be further configured to launch each projectile, of a plurality of projectiles **121**B, **121**B, **121**C, and **121**D, in temporal sequence (e.g., such as launching four projectiles in temporal sequence, where each projectile is launched every 0.1 second) after the toy projectile launcher **200**B comprising the fluid compressor **210**B has been primed once by the priming actuator **260**B.

[0204] However, operation of the priming actuator **260**B is different than the previous embodiment of the priming actuator **160** (in FIGS. **1**-**6**B). In the current embodiment, during a priming operation of the launcher **200**B by a user, the priming actuator **260**B and primer handle **261**B can make a first movement in the rearward direction R**1** (e.g., when pulled by the user), causing the inner walled chamber **211**B to make the first movement in the rearward direction R**1** until the variable latch **145** engages a final catch stop of the catch assembly **250**B. Whereupon, the priming actuator **260**B and handle **261**B can further make a second movement in the forward direction F**1** (e.g., when pushed by the user), such that the handle **261**B returns to its original location, before starting a launching operation.

[0205] In alternative embodiments, the priming actuator **260**B may be comprised of the primer handle **261**B located at the top, side, front, rear, or bottom of the launcher **200**B (having no primer rod **262**B), wherein the priming actuator **260**B and primer handle **261**B are coupled or operatively coupled to the inner walled chamber **211**B of the fluid compressor **210**B.

Active Barrel Group

[0206] FIG. **7**B further shows that the active barrel group **120** may be at least partially received by the housing assembly **104** and comprising a plurality of launch barrels **122**A, **122**B, **122**C, **122**D, wherein the active barrel group **120** may be configured to receive a plurality of projectiles **121**A, **121**B, **121**C, and **121**D, as shown with dashed lines. The active barrel group **120** may be constructed similar to the active barrel group of the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference.

Valve System

[0207] FIG. **7**B presents the valve system **130**, which is constructed similar to the valve system of the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference.

Trigger Assembly

[0208] FIG. **7**B also shows the trigger assembly **140** may be comprised of a trigger **141**, a trigger pin **143**, a variable latch **145**, a trigger flexible hinge **144**, and a trigger return spring **142**. The trigger assembly **140** may be constructed similar to the trigger assembly of the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference.

Catch Assembly

[0209] Continuing with FIG. **7**B, the catch assembly **250**B may be constructed similar to the catch assembly of the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference. However there is at least one difference to the apparatus depicted, which is at least a portion of the inner walled chamber **211**B may be coupled to the one or more catch stops of the catch assembly **250**B forming, for example, a single part or multi-part component.

[0210] In alternative embodiments, at least a portion of a walled chamber, an assembly, or an element of the fluid compressor **210**B may be coupled to the one or more catch stops of the catch assembly **250**B forming, for example, a single part or multi-part component.

Refilling Operation (Manual)

[0211] Now in FIG. **7**B, the projectile launcher **200**B and the active barrel group **120** may be refilled (or manually loaded by a user) with a plurality of projectiles in a similar manner as the "Refilling Operation" of the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference.

Priming Operation

[0212] Now in FIG. **7**B, the projectile launcher **200**B and fluid compressor **210**B may be primed in a similar manner as the "Priming Operation" of the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference.

Launching Operation

[0213] Now in FIG. **7**B, the launcher **200**B may be able to launch each projectile, from the plurality of projectiles **121**A, **121**B, **121**C, and **121**D received by the active barrel group **120**, in temporal sequence (e.g., a plurality of four projectiles, where each projectile is launched every 0.1 second) after the fluid compressor **210**B has been primed once by the priming actuator **260**B of the launcher **200**B. Whereby, the launcher **200**B may have a launching operation that is similar to the "Launching Operation" of the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference.

Method of Assembly

[0214] Continuing with FIG. **7**B, a method for assembling the toy projectile launcher **200**B may be similar to the "Method of Assembly" of the previous embodiment (in FIGS. **6**A-**6**B), which the reader may refer to for reference.

Alternate Launcher with Multiple Variable Latches

[0215] So turning now to FIG. **7**C, there shown is a section view of an alternative exemplary embodiment of a toy projectile launcher **200**C. As depicted, the launcher **200**C may be constructed with similar apparatus and functionality as the previous launcher **100** (in FIGS. **1**-**6**B).

[0216] However, the reader may notice that the current embodiment of a fluid compressor **210**C is constructed differently from the previous embodiment of the fluid compressor **110** of the launcher **100** (in FIGS. **1**-**6**B). Also, a catch assembly **250**C is constructed differently from the previous embodiment of the catch assembly **150** of the launcher **100** (in FIGS. **1**-**6**B).). Whereby, the subsequent discussion will focus on differences.

[0217] As depicted, the current embodiment of the toy projectile launcher **200**C may comprise a housing assembly **104**, a fluid compressor **210**C, a priming actuator **260**C, an active barrel group **120**, a valve system **130**, a trigger assembly **240**C, and a catch assembly **250**C.

Housing Assembly

[0218] FIG. **7**C presents the housing assembly **104** and a housing handle **105**, which are constructed similar to the housing assembly of the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference.

Fluid Compressor

[0219] FIG. **7**C further shows the fluid compressor **210**C may be at least partially received by the housing assembly **104** of the launcher **200**C, wherein the fluid compressor **210**C is able to compress a fluid, such as ambient air from a play environment. In the current embodiment, the fluid compressor **210**C may be comprised of an inner walled chamber **211**C, an outer walled chamber **212**C, a launch spring **214**C, a rear chamber wall **207**C, and a plurality of latch guides **208**C.

[0220] The outer walled chamber **212**C may be cylindrical in shape, at least partially hollow, and constructed of molded plastic or hot-sealed plastic. The outer walled chamber **212**C may be sized (e.g., 40 mm dia.×120 mm long) to provide a fluid flow for launching a plurality of projectiles. Further, the outer walled chamber **212**C may be coupled to the valve system **130**, such that the outer walled chamber **212**C may be in fluid communication with the valve system **130**. The outer walled chamber **212**C may be constructed of a single part or coupled parts of molded plastic.

[0221] The inner walled chamber **211**C may be cylindrical in shape, at least partially hollow, and constructed of molded plastic or hot-sealed plastic. The inner walled chamber **211**C may be sized (e.g., 36 mm dia.×120 mm long) to provide a fluid flow for launching a plurality of projectiles. Further, the inner walled chamber **211**C may be comprised of a flange **213**C, which supports the launch spring **214**C. The inner walled chamber **211**C may be constructed of a single part or coupled parts of molded plastic.

[0222] Whereby, the inner walled chamber **211**C may be shaped and sized to fit within at least a portion of the outer walled chamber **212**C. The inner walled chamber **211**C may comprise an O-ring **217**C that provides a fluid seal against the interior walls of the outer walled chamber **212**C, reducing leakage of the fluid around the inner walled chamber **211**C of the compressor **210**C. Further, the inner walled chamber **211**C may be configured to be moveable relative to the outer walled chamber **212**C, able to compress the fluid and create a fluid flow from the compressor **210**C. As depicted, the launch spring **214**C may be a compression spring fitted between the flange **213**C of the inner walled chamber **211**C and the housing assembly **204**, wherein the spring **214**C may be constructed of spring steel metal wire. Finally, the plurality of latch guides **208**C may be coupled to the housing assembly **104**.

[0223] In alternative embodiments, the fluid compressor **210**C and outer walled chamber **112**C may be constructed of any shape (e.g., rectangular block shaped, spherical, ovoid, elliptical cylinder, etc.), size (e.g., 160 mm long×50 mm dia.), and/or material (e.g., vinyl sheet, polyethylene, metal, etc.) that does not substantially leak a fluid, such as air. In alternative embodiments, the inner walled chamber **211**C may be constructed of any shape (e.g., rectangular block shaped, spherical, ovoid, elliptical cylinder, etc.), size, material (e.g., single part, composite part, molded plastic, metal, etc.), and/or any components, such as having no O-ring **217**C. In alternative embodiments, the spring **214**C may be constructed of any type (e.g., tension spring), shape (e.g., s-shaped), size, and/or material (e.g., composite or flexible plastic).

Fluid Compressor—with Preloaded Spring

[0224] Also presented in FIG. **7**C, the projectile launcher **2000** and fluid compressor **210**C may be configured such that the launch spring **214**C is preloaded, which is similar to the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference.

Priming Actuator

[0225] FIG. **7**C further shows that the priming actuator **260**C may be comprised of a primer handle **261**C and a primer rod **262**C of the launcher **2000**, wherein the primer handle **261**C is coupled to the primer rod **262**C, which is operatively coupled to the inner walled chamber **212**C of the fluid compressor **210**C. The priming actuator **260**C may be at least partially received by the housing assembly **104**, wherein the priming actuator **260**C may be structured such that the fluid compressor **210**C may be capable to generate a fluid flow after the fluid compressor **210**C has been primed once or one time by the priming actuator **260**C. Whereby, in the current embodiment, the toy projectile launcher **2000** may be further configured to launch each projectile, of a plurality of projectiles **121**A, **121**B, **121**C, and **121**D, in temporal sequence (e.g., such as launching four projectiles in temporal sequence, where each projectile is launched every 0.1 second) after the toy projectile launcher **2000** comprising the fluid compressor **210**C has been primed once by the priming actuator **260**C.

[0226] However, operation of the priming actuator **260**C is different than the previous embodiment of the priming actuator **160** (in FIGS. **1**-**6**B). In the current embodiment, during a priming operation of the launcher **2000** by a user, the priming actuator **260**C and primer handle **261**C can make a first movement in the rearward direction R**1** (e.g., when pulled by the user), causing the inner walled chamber **211**C to make the first movement in the rearward direction R**1** until the first variable latch **245**A engages the catch stop of the catch assembly **250**C. Whereupon, the priming actuator **260**C and handle **261**C can further make a second movement in the forward direction F**1** (e.g., when pushed by the user), such that the handle **261**C returns to its original location, before starting a launching operation.

[0227] In alternative embodiments, the priming actuator **260**C may be comprised of the primer handle **261**C located at the top, side, bottom, front, or rear of the launcher **2000** (having no primer rod **262**C), wherein the priming actuator **260**C and primer handle **261**C are coupled or operatively coupled to the inner walled chamber **211**C of the fluid compressor **210**C.

Active Barrel Group

[0228] FIG. **7**C further shows the active barrel group **120** may be at least partially received by the housing assembly **104** and comprising a plurality of launch barrels **122**A, **122**B, **122**C, **122**D, wherein the active barrel group **120** may be configured to receive a plurality of projectiles **121**A, **121**B, **121**C, and **121**D, as shown with dashed lines. The active barrel group **120** may be constructed similar to the active barrel group of the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference.

Valve System

[0229] FIG. **7**C presents the valve system **130**, which is constructed similar to the valve system of the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference.

Trigger Assembly

[0230] FIG. **7**C also shows the trigger assembly **240**C may be comprised of a trigger **141**, a trigger pin **143**, a plurality of variable latches **245**A, **245**B, **245**C, and **245**D, a trigger flexible hinge **144**, and a trigger return spring **142**. The trigger assembly **240**C may be constructed similar to the trigger assembly of the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference. However, there is at least one difference to the apparatus depicted, which is the trigger assembly **240**C may be comprised of the plurality of variable latches **245**A-**245**D. Whereby, each latch is operatively coupled to a latch guide

[0231] Further, the launching operation of the trigger assembly **240**C is different than the previous embodiment of the trigger assembly **140** (in FIGS. **1**-**6**B). In the current embodiment, a user (not shown) may pull the trigger **141**, causing the trigger **141** to rotate on trigger pin **143**, which causes each variable latch, of the plurality of variable latches **245**A-**245**D, to make a movement in the downward direction D**1** at different speeds (e.g., due to different radial distances). Thereby each latch, of the plurality of latches **245**A-**245**D, may be configured to engage and release the catch stop of the catch assembly **250**C at different moments in time. Hence, such functionality enables the launcher **2000** to launch each projectile, of the plurality of projectiles **121**A-**121**D, in temporal sequence after the fluid compressor **210**C has been primed once by the priming actuator **260**C of the launcher **2000**.

Catch Assembly

[0232] Continuing with FIG. **7**C, the catch assembly **250**C may be constructed similar to the catch assembly of the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference. However there are some differences to the apparatus depicted, which is at least a portion of the inner walled chamber **211**C may be coupled to one or more catch stops of the catch assembly **250**C forming, for example, a single part or multi-part component. Also, the catch assembly **250**C may be comprised of a single catch block (rather than a plurality of catch blocks) that is configured to be operatively coupled with the plurality of variable latches **245**A-**245**D of the trigger assembly **240**C.

[0233] In alternative embodiments, at least a portion of a walled chamber, an assembly, or an element of the fluid compressor **210**C may be coupled to the one or more catch stops of the catch assembly **250**C forming, for example, a single part or multi-part component.

Refilling Operation (Manual)

[0234] Now in FIG. **7**C, the projectile launcher **2000** and the active barrel group **120** may be refilled (or manually loaded by a user) with a plurality of projectiles in a similar manner as the "Refilling Operation" of the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference.

Priming Operation

[0235] Also in FIG. **7**C, the projectile launcher **2000** and fluid compressor **210**C may be primed in a similar manner as the "Priming Operation" of the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference.

Launching Operation

[0236] Further in FIG. **7**C, the launcher **2000** may be able to launch each projectile, from the plurality of projectiles **121**A, **121**B, **121**C, and **121**D received by the active barrel group **120**, in temporal sequence (e.g., a plurality of four projectiles, where each projectile is launched every 0.1 second) after the fluid compressor **210**C has been primed once by the priming actuator **260**C of the launcher **2000**. Whereby, the launcher **2000** may have a launching operation that is similar to the "Launching Operation" of the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference.

Method of Assembly

[0237] Continuing with FIG. **7**C, a method for assembling the toy projectile launcher **2000** may be similar to the "Method of Assembly" of the previous embodiment (in FIGS. **6**A-**6**B), which the reader may refer to for reference.

Dart Launcher with Active Storage Clip

[0238] So turning now to FIGS. **8**, **9**A, **9**B, **9**C, **10**A, and **10**B there shown are a perspective view and section views of another exemplary embodiment of a toy projectile launcher **300**, which includes an active storage clip **324** that can receive a plurality of projectiles **121**A-**121**D (e.g., foam darts in FIG. **10**B) for larger load capacity. The launcher **300** may be non-electronic and manually operated by a user. As depicted, the launcher **300** may be constructed with similar apparatus and functionality as the launcher **100** (in FIGS. **1**-**6**B) discussed earlier. However, the launcher **300** also substantially differs from earlier embodiments.

[0239] As depicted, the current embodiment of the toy projectile launcher **300** may comprise a housing assembly **304**, a fluid compressor **310**, a priming actuator **360**, an active barrel group **320**, a valve system **330**, a trigger assembly **340**, a catch assembly **350**, and an active storage clip **324**.

Housing Assembly

[0240] FIGS. **8**, **9**A, and **9**B show the housing assembly **304** may be shaped like a toy rifle or elongated blaster and comprising a housing handle **305**, configured to be handheld (e.g., by a user's right hand). The housing assembly **304** further comprises a housing barrel **306**, which may be sized (e.g., 70 mm dia.×20 mm long) so a plurality of projectiles may be launched from the launcher **300**. The housing assembly **304** may be constructed similar to the housing assembly **104** of the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference.

Fluid Compressor

[0241] FIGS. **9**A and **9**B further show the fluid compressor **310** may be at least partially received by the housing assembly **304** of the launcher **300**, wherein the fluid compressor **310** is able to compress a fluid, such as ambient air from a play environment. The fluid compressor **310** may be comprised of a walled chamber **312**, a piston **316**, a launch spring **314**, a rear chamber wall **318**, and a latch guide **315**. The fluid compressor **310** may be constructed similar to the fluid compressor **110** of the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference.

Fluid Compressor—with Preloaded Spring

[0242] Also presented in FIGS. **9**A and **9**B, the projectile launcher **300** and fluid compressor **310** may be configured such that the launch spring **314** is preloaded, which is similar to the launch spring **114** of the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference.

Priming Actuator

[0243] FIGS. **9**A and **9**B show the priming actuator **360** may be at least partially received by the housing assembly **304**, wherein the priming actuator **360** may be structured such that the fluid compressor **310** may be capable to generate a fluid flow after the fluid compressor **310** has been primed once (or one time) by the priming actuator **360**. Whereby, in the current embodiment, the toy projectile launcher **300** may be further configured to launch each projectile, of a plurality of projectiles **121**A, **121**B, **121**C and **121**D (in FIG. **10**B), in temporal sequence (e.g., such as launching four projectiles in temporal sequence, where each projectile is launched every 0.1 second) after the toy projectile launcher **300** comprising the fluid compressor **310** has been primed once by the priming actuator **360**.

[0244] Then turning to FIGS. **8**, **9**A, and **9**B, the priming actuator **360** may be comprised of a primer handle **361**, a primer rod **362**, and a primer linkage **364**. The primer handle **361** may be cylindrical shaped to be handheld (e.g., by a user's left hand) and able to make movements in a rearward direction D**1** and a forward direction F**1** along a housing rail **308** of the housing assembly **304**. The primer handle **361** may be coupled to the primer linkage **364**, which may be operatively coupled to the primer rod **362**, which is further coupled to the piston **316** of the fluid compressor **310**. The primer linkage **364** may be comprised of a primer rotate tab **366**B and a primer rod tab **366**C, which actuate various elements of the launcher **300** during the cocking or priming of the fluid compressor **310**. Also, the primer linkage **364** may be further comprised of a primer raceway **370**, which is used to guide movements of the trigger assembly **340** in continuous launch mode of the launcher **300**. The priming actuator **360** may be constructed of a single part having one or more interior cutouts or multiple parts fastened together (e.g., by friction fit, screws, and/or adhesive, etc.) with material comprised of molded plastic.

[0245] In alternative embodiments, the priming actuator **360** may be constructed of any shape, size, and/or material (e.g., composite, metal, wood, etc.). In alternative embodiments, the priming actuator **360** may be comprised of the primer handle **361** located at the top, side, bottom, front, or rear of the launcher **300**.

Active Barrel Group in an Active Storage Clip

[0246] Now turning to FIGS. **8**, **9**A, **9**B and the section views of FIGS. **10**A and **10**B, the active barrel group **320**

may be at least partially received by the housing assembly **304** and comprising a plurality of launch barrels **322**A, **322**B, **322**C, **322**D, wherein the active barrel group **320** may be configured to receive a plurality of projectiles **121**A, **121**B, **121**C, and **121**D (in FIG. **10**B) as shown with dashed lines. The active barrel group **320** may be constructed similar to the active barrel group of the previous embodiment (in FIGS. **1-6**B), which the reader may refer to for reference. However, numerous differences are discussed below.

[0247] The reader may keep in mind the terms "storage clip," "clip," "magazine," and like terms used throughout this disclosure mean an element, component, or device configured for storing or holding a plurality of projectiles that may be launched by a launcher. In many embodiments, a storage clip may be coupled (e.g., at least partially attached, connected, or integrated) to the launcher, wherein the plurality of projectiles in the storage clip are available for launching. In various embodiments, a storage clip may be non-removable from the launcher, allowing continuous access to the plurality of projectiles. In other embodiments, a storage clip may be removable from the launcher, making the clip easy to transport and refill (or manually load) with projectiles by a user.

[0248] So turning to FIGS. **8**, **9**A, **9**B and specifically FIGS. **10**A and **10**B, there shown is the active storage clip **324** that may be at least partially received by the housing assembly **304**, the valve system **330**, and the active barrel group **320**. The active storage clip **324** may provide a temporary staging area and storage for a plurality of projectiles prior to launching. The active storage clip **324** may be cylindrical shaped and sized (e.g., 150 mm dia.×70 mm long) to hold 24 projectiles, wherein the active storage clip **324** may be constructed of molded plastic. As depicted, the active storage clip **324** may be comprised of a plurality of launch barrels and the active barrel group **320** comprising the launch barrels **322**A, **322**B, **322**C, and **322**D, providing a total of 24 launch barrels. Wherein, to refill the active storage clip **324** with a total of 24 projectiles, each launch barrel may be configured to receive a projectile (e.g., when manually refilled by a user) prior to launch.

[0249] As shown in FIGS. **9**A, **9**B, **10**A, and **10**B, the active storage clip **324** may be supported by a clip support wall **307** and the housing assembly **304**, wherein the clip support wall **307** may be coupled to the housing assembly **304**. The clip support wall **307** may be sized (e.g., 150 mm dia.×2 mm thick) to support the active storage clip **324** and constructed of rigid, molded plastic. The clip support wall **307** may further be at least partially received by the valve system **330** and comprising a plurality of barrel fluid seals **339**A, **339**B, **339**C, and **339**D constructed of rubber, urethane, or any other material capable of creating a fluid seal or air-tight seal. Thus the plurality of barrel seals **339**A-**339**D are configured to create a fluid seal (or air-tight seal) between the plurality of launch barrels **322**A-**322**D, of the active barrel group **320** of the active storage clip **324**, and the valve system **330**. Whereby, FIGS. **9**A, **9**B, **10**A, and **10**B show the active storage clip **324** comprises the active barrel group **320** in fluid communication with the valve system **330** and the launch barrels **322**A, **322**B, **322**C, and **322**D, which are configured to receive the plurality of projectiles **121**A, **121**B, **121**C, and **121**D, respectively.

[0250] In FIGS. **9**A, **9**B, and **10**B, the active storage clip **324** may be further comprised of a rotation shift cog **328** configured to rotational move the active storage clip **324** based on a priming operation, which will be discussed below in the section titled "Priming Operation." As depicted in FIGS. **8**, **9**A, and **10**B during a priming operation, the priming actuator **360** may be configured to be operatively coupled to one or more storage clips **324** configured to hold at least a plurality of projectiles **121**A-**121**D, and the priming actuator **360** is further able to move (e.g., by a rotational movement in the rotation direction R**2**) the plurality of projectiles **121**A-**121**D into at least a portion of the active barrel group **320**, such that the plurality of projectiles **121**A-**121**D may be launched by the launcher **300**.

[0251] In alternative embodiments, the storage clip **324** may be constructed of any shape (e.g., rectangular, elliptical cylinder, reserve, etc.), size (e.g., 250 mm dia.×100 mm long), and/or material (e.g., metal, wood, composite, flexible plastic, etc.). In alternative embodiments, the storage clip **324** may comprise a plurality of launch barrels of arbitrary total count (e.g., of at least 2, 4, 8, 10, 16, 24, 32, 48, or 64 launch barrels, etc.) that are configured to receive a plurality of projectiles of arbitrary total count. In alternative embodiments, the storage clip **324** may be configured with a hinge for pivoting outwards or removable from the launcher **300**, such as to ease the refilling the clip **324** with projectiles by a user. In alternative embodiments, there may be a plurality of storage clips coupled to the launcher **300**.

Valve System

[0252] FIGS. **9**A, **9**B, **10**A, and **10**B present the valve system **330**, which is constructed similar to the valve system **130** of the previous embodiment (in FIGS. **1-6**B), which the reader may refer to for reference. However, as discussed earlier, the valve system **330** (in FIG. **10**A) may be in fluid communication with the fluid compressor **310** and the plurality of launch barrels **322**A-**322**D of the active barrel group **320** (in FIG. **101**B).

Trigger Assembly

[0253] FIGS. **8**, **9**A, and **9**B also show the trigger assembly **340** may be comprised of a trigger **341**, a trigger pin **343**, a variable latch **345**, a trigger follower **348**, a trigger flexible hinge **344**, and a trigger return spring **342**. The trigger assembly **340** may be constructed similar to the trigger assembly **140** of the previous embodiment (in FIGS. **1-6**B), which the reader may refer to for reference.

Catch Assembly

[0254] Continuing with FIGS. **9**A and **9**B, the catch assembly **350** may be constructed similar to the catch assembly **150** of the previous embodiment (in FIGS. **1-6**B), which the reader may refer to for reference.

Refilling Operation (Manual)

[0255] In FIGS. **8**, **9**A, **9**B, and **10**B, the projectile launcher **300**, active storage clip **324**, and active barrel group **320** may be refilled (or manually loaded by a user) with a plurality of projectiles in a similar manner as the "Refilling Operation" of the previous embodiment (in FIGS. **1-6**B), which the reader may refer to for reference. However, in the current embodiment, there are a total of 24 launch barrels in the active storage clip **324** that may be refilled (or manually loaded by a user) with a total of 24 projectiles.

Priming Operation

[0256] In FIGS. **8** and **9**A, the projectile launcher **300** and fluid compressor **310** may be primed in a similar manner as the "Priming Operation" of the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference. However, the current embodiment has differences. For example, a priming operation of the launcher **300** may be comprised of the following operational steps:

[0257] In FIG. **9**A, in a first operational step: the priming actuator **360** and, specifically, the primer handle **361** (e.g., grasped and moved by a user) makes a first movement in a rearward direction R**1** along a housing rail **308**, causing the primer linkage **364**, primer rod tab **366**C, and primer rod **362** to make the first movement in the rearward direction R**1**, such that the priming operation of the fluid compressor **310** is underway.

[0258] Further, the primer linkage **364** and the primer rotate tab **366**B also make the first movement in the rearward direction R**1**, causing the rotate tab **366**B to engage (e.g., or mesh with gear teeth) the rotation shift cog **328**, causing the rotation shift cog **328** to rotate the active storage clip **324**, causing the active storage clip **324** to make a first rotational movement in the rotation direction R**2** (in FIGS. **8** and **10**B), wherein the first rotational movement is about 60 degrees. Such capability enables the priming actuator **360** to be operatively coupled to the one or more storage clips **324** that are configured to hold at least a plurality of projectiles **121**A-**121**D, and the priming actuator **360** is further able to move the plurality of projectiles **121**A-**121**D into at least a portion of the active barrel group **320** (as shown in FIG. **10**B).

[0259] Whereby, as depicted in FIG. **9**B, the launcher **300** comprising the fluid compressor **310** has been primed once by the priming actuator **360**, wherein the fluid compressor **310** has a store of energy.

[0260] Thus the priming operation ends.

[0261] In alternative embodiments, the priming actuator **360** may make a rotationally movement of a plurality of projectiles into at least a portion of the active barrel group **320**, wherein the rotational movement is at least 5, 10, 15, 20, 25, 30, 60, 90, 120, or 180 degrees. In alternative embodiments, the priming actuator **360** may make any type of movement (e.g., linear, continuous, discontinuous, etc.) to move a plurality of projectiles into at least a portion of the active barrel group **320**.

Restoring Operation

[0262] Turning to FIG. **9**B, there shown is a restoring operation of the launcher **300**, which can restore at least a portion of the priming actuator **360** to its original position, following a priming operation. The restoring operation may be comprised of the following operational steps:

[0263] In a first operational step: the primer handle **361** (e.g., grasped and moved by a user) may be further configured to make a first movement in the forward direction F**1** along the housing rail **308**, causing the primer linkage **364** and primer rod tab **366**C to make the first movement in the forward direction F**1** as well. Whereby, the primer handle **361**, primer linkage **364**, and rod tab **366**C are restored to their original position. Yet the fluid compressor **310** has been primed once and remains primed. Thus the restoring operation ends.

[0264] In alternative embodiments, a restoring operation may not be required. For example, the launcher **100** in FIGS. **1**-**6**B does not require a restoring operation.

Launching Operation

[0265] In FIGS. **8**, **9**B, and **10**B, the launcher **300** may be able to launch each projectile, from the plurality of projectiles **121**A, **121**B, **121**C, and **121**D received by the active barrel group **320**, in temporal sequence (e.g., a plurality of four projectiles, where each projectile is launched every 0.1 second) after the fluid compressor **310** has been primed once by the priming actuator **360** of the launcher **300**, as shown in FIG. **9**B. Whereby, the launcher **300** may have a launching operation that is similar to the "Launching Operation" of the previous embodiment (in FIGS. **1**-**6**B), which the reader may refer to for reference.

[0266] In addition, FIG. **9**C shows the launcher **300** may be capable of continuous launch mode, which supports continuous launching of a plurality of projectiles retrieved from one or more storage clips **324**. The continuous launch mode may be comprised of the following operational steps:

[0267] In a first operational step in FIG. **9**A, to begin the continuous launch mode, a user (not shown) may pull the trigger **341** such that the trigger follower **348** enters a start channel **372** of the primer raceway **370**.

[0268] Then in a second operational step shown in FIG. **9**A, the user may pull the priming actuator **360** and primer handle **361** with a first movement in the rearward direction R**1**, causing the primer linkage **364** and the primer rod **362** to undergo the first movement as well, causing the fluid compressor **310** to be primed once by the priming actuator **360**, as shown in FIG. **9**B.

[0269] Then in a third operational step shown in FIG. **9**C, the user may push the priming actuator **360** and primer handle **361** with a second movement in the forward direction F**1**, causing the primer linkage **364** and a return channel **373** of the primer raceway **370** to undergo the second movement in the forward direction F**1** as well, causing the trigger follower **348** and trigger assembly **340** to rotate about the trigger pin **343**, causing the variable latch **345** to have one or more movements in the downward direction D**1**, releasing the catch assembly **350** one or more times, causing the fluid compressor **310** to generate a fluid flow one or more times, and subsequently launching one or more projectiles in temporal sequence from the launcher **300**.

[0270] As an option, the first, second, and third operational steps of continuous launch mode (as described above) may be repeated one or more times by the user, or until all the projectiles in the storage clip **324** are launched. Whereby the launcher **300** may be capable of continuous launch mode to continuously launch a plurality of projectiles (e.g., **24** darts), retrieved from one or more storage clips **324** of the launcher **300**, in temporal sequence (e.g., where each dart launches about every 0.1 second) over a substantial time duration (e.g., of **1**, **2**, **3**, or more seconds).

Method of Assembly

[0271] Finally in FIGS. **8**-**10**B, a method for assembling the toy projectile launcher **300** may be similar to the "Method of Assembly" of the previous embodiment (in FIGS. **6**A-**6**B), which the reader may refer to for reference.

Dart Launcher with Active and Reserve Storage Clips

[0272] So turning to FIGS. **11**, **12**, **13**A, **13**B, and **14**, there shown are perspective views and section views of another exemplary embodiment of a toy projectile launcher **400**, which includes an active storage clip **424** and a plurality of reserve storage clips **480**A and **480**B that can receive a plurality of projectiles **121**A-**121**D (e.g., foam darts in FIG. **13**B) for greater load capacity. The launcher **400** may be non-electronic and manually operated by a user. As depicted, the launcher **400** may be constructed with similar apparatus and functionality as the launcher **300** (in FIGS. **8**-**10**B) discussed earlier. However, the launcher **400** also substantially differs from earlier embodiments.

[0273] As depicted, the current embodiment of the toy projectile launcher **400** may comprise a housing assembly **404**, a fluid compressor **410**, a priming actuator **460**, a loading actuator **490**, an active barrel group **420**, a valve system **430**, a trigger assembly **440**, a catch assembly **450**, an active storage clip **424**, and a plurality of reserve storage clips **480**A and **480**B.

Housing Assembly

[0274] FIGS. **11** and **12** show the housing assembly **404** may be shaped like a toy machine gun and comprising a housing handle **405**, configured to be handheld (e.g., by a user's right hand). The housing assembly **404** further comprises a housing barrel **406**, which may be sized (e.g., 80 mm dia.×20 mm long) so a plurality of projectiles may be launched from the launcher **400**. The housing assembly **404** may be constructed similar to the housing assembly **304** of the previous embodiment (in FIGS. **8**-**10**B), which the reader may refer to for reference.

Fluid Compressor

[0275] FIG. **12** further shows the fluid compressor **410** may be at least partially received by the housing assembly **404** of the launcher **400**, wherein the fluid compressor **410** is able to compress a fluid, such as ambient air from a play environment. The fluid compressor **410** may be comprised of a walled chamber **412**, a piston **416**, a launch spring **414**, a rear chamber wall **418**, and a latch guide **415**. The fluid compressor **410** may be constructed similar to the fluid compressor **310** of the previous embodiment (in FIGS. **8**-**10**B), which the reader may refer to for reference.

Fluid Compressor—with Preloaded Spring

[0276] Also presented in FIG. **12**, the projectile launcher **400** and fluid compressor **410** may be configured such that the launch spring **414** is preloaded, which is similar to the launch spring **314** of the previous embodiment (in FIGS. **8**-**10**B), which the reader may refer to for reference.

Priming Actuator

[0277] FIGS. **11** and **12** show the priming actuator **460** may be at least partially received by the housing assembly **404**, wherein the priming actuator **460** may be structured such that the fluid compressor **410** may be capable to generate a fluid flow after the fluid compressor **410** has been primed once (or one time) by the priming actuator **460**. Whereby, the toy projectile launcher **400** may be further configured to launch each projectile, of a plurality of projectiles **121**A, **121**B, **121**C and **121**D (in FIG. **13**B), in temporal sequence (e.g., such as launching four projectiles in temporal sequence, where each projectile is launched every 0.1 second) after the toy projectile launcher **400** comprising the fluid compressor **410** has been primed once by the priming actuator **460**.

[0278] As depicted in FIGS. **11** and **12**, the priming actuator **460** may be comprised of a primer handle **461**, a primer rod **462**, and a primer linkage **464**. The primer handle **461** may be rectangular shaped to be hand gripped (e.g., by a user's left hand) and able to make movements in a rearward direction D**1** and a forward direction F**1** along a housing rail **408** of the housing assembly **404**. The primer handle **461** may be coupled to the primer linkage **464**, which may be operatively coupled to the primer rod **462**, which is coupled to the piston **416** of the fluid compressor **410**. The primer linkage **464** may further be comprised of a primer rod tab **466**C and a first and a second primer load tabs **465**A and **465**B (in FIG. **14**), which actuate various elements of the launcher **400** during the priming of the fluid compressor **410**. Further, the primer linkage **464** may be further comprised of a primer raceway (not shown, but similar to the raceway **370** of the previous launcher in FIGS. **9**A-**9**C), which is used to guide movements of the trigger assembly **440** during continuous launch mode of the launcher **400**. The priming actuator **460** may be constructed of a single part having one or more interior cutouts or multiple parts fastened together (e.g., by friction fit, screws, and/or adhesive, etc.) with material comprised of molded plastic.

[0279] In alternative embodiments, the priming actuator **460** may be constructed of any shape, size, and/or material (e.g., composite, metal, wood, etc.). In alternative embodiments, the priming actuator **460** may be comprised of the primer handle **461** located at the top, side, rear, or bottom of the launcher **400**.

Reserve Storage Clips

[0280] Turning to FIGS. **11**, **12**, and **14**, there shown is a plurality of reserve storage clips **480**A and **480**B that may be at least partially received by the housing assembly **404** and configured to receive a plurality of projectiles (as shown with dashed lines), where each clip **480**A (or **480**B) can hold up to 12 projectiles (e.g., foam darts) enabling a total load capacity of 24 projectiles for the launcher **400**. Each reserve storage clip **480**A (or **480**B) may be rectangular shaped, substantially hollow, and constructed of molded plastic. Further, each reserve storage clip **480**A (or **480**B) may comprise a transport assembly **486** (in FIG. **12**) configured with a biased force (e.g., by a metal extending spring) to move projectiles from the clip **480**A (or **480**B) towards the loading actuator **490**. The reserve storage clips **480**A and **480**B may be configured to be removable from the launcher **400**. Whereby a user may slide a clip release button **484** (in FIG. **11**), such that clips **480**A and **480**B can be removed from the launcher **400** and refilled (e.g., by a user) with projectiles.

[0281] In alternative embodiments, the plurality of reserve storage clips **480**A and **480**B may be comprised of any shape (e.g., spherical, cylindrical, etc.), size, and/or material (e.g., composite, metal, wood, etc.). In alternative embodiments, the plurality of reserve storage clips **480**A and **480**B may be non-removable from the launcher **400**, wherein the storage clips **480**A and **480**B may still be refillable with projectiles. In alternative embodiments, a storage clip may hold at least 4, 8, 12, 16, 18, or 24 projectiles, or an arbitrary number of projectiles.

Active Barrel Group in an Active Storage Clip

[0282] Now turning to FIGS. **12**, **13**A, **13**B, and **14**, an active barrel group **420** may be at least partially received by the housing assembly **404** and comprising a plurality of launch barrels **422**A, **422**B, **422**C, **422**D, wherein the active barrel group **420** may be configured to receive a plurality of projectiles **121**A, **121**B, **121**C, and **121**D (in FIG. **13**B) as shown with dashed lines. The active barrel group **420** may be constructed similar to the active barrel group **320** of the previous embodiment (in FIGS. **8-10**B), which the reader may refer to for reference. However, numerous differences are discussed below.

[0283] For example, FIGS. **12**, **13**A, **13**B, and **14** show the active storage clip **424** that may be at least partially received by the housing assembly **404**, the valve system **430**, and the active barrel group **420**. The active storage clip **424** may provide a temporary staging area and storage for a plurality of projectiles prior to launching. The active storage clip **424** may be cylindrical shaped and compactly sized (e.g., 70 mm dia.×50 mm long), wherein the active storage clip **424** may be constructed of molded plastic. As depicted, the active storage clip **424** may be comprised of a plurality of launch barrels **422**A, **422**B, **422**C, **422**D, **422**E, and **422**F, which includes the active barrel group **420**, providing a total of six barrels.

[0284] As shown in FIGS. **12**, **13**A, and **13**B, the active storage clip **424** may be supported by a clip support wall **407**, wherein the clip support wall **407** may be coupled to the housing assembly **404**. The clip support wall **407** may be sized (e.g., 70 mm dia.×2 mm thick) to support the active storage clip **424** and constructed of rigid, molded plastic. The clip support wall **407** may further be at least partially received by the valve system **430** and comprising a plurality of barrel fluid seals **439**A, **439**B, **439**C, and **439**D constructed of rubber, urethane, or any other material capable of creating a fluid seal (or air-tight seal). Thus the plurality of barrel seals **439**A-**439**D may be configured to create a fluid seal between the plurality of launch barrels **422**A-**422**D, of the active barrel group **420** of the active storage clip **424**, and the valve system **430**. Whereby, FIGS. **12**, **13**A, and **13**B show the active storage clip **424** comprises the active barrel group **420** in fluid communication with the valve system **430** and the launch barrels **422**A, **422**B, **422**C, and **422**D, which are configured to receive the plurality of projectiles **121**A, **121**B, **121**C, and **121**D, respectively.

[0285] In FIGS. **12**, **13**B, and **14**, the active storage clip **424** may be further comprised of a rotation shift cog **428**, wherein the rotation shift cog **428** and the active storage clip **424** may be able to make one or more rotational movements in the rotational direction R**2** relative to the clip support wall **407** during a loading operation by the loading actuator **490**, which is described below in the section titled "Loading Operation." As depicted, one or more storage clips **480**A and **480**B may be operatively coupled to the loading actuator **490**, wherein the one or more storage clips **480**A and **480**B are configured to hold at least a plurality of projectiles **121**A-**121**D, and the loading actuator **490** is further able to move (e.g., by a rotational movement in the rotation direction R**2**) the plurality of projectiles **121**A-**121**D into at least a portion of the active barrel group **420**, such that the plurality of projectiles **121**A-**121**D may be launched by the launcher **400**.

[0286] In alternative embodiments, the active storage clip **424** may be constructed of any shape (e.g., rectangular, elliptical cylinder, reserve, etc.), size (e.g., 100 mm dia.×40 mm long), and/or material (e.g., metal, wood, composite, flexible plastic, etc.). In alternative embodiments, the active storage clip **424** may be configured to make one or more movements in any direction (e.g., left, right, up, down, forward, backward, etc.) based on a loading operation. In alternative embodiments, the active storage clip **424** may comprise one or more launch barrels (e.g., at least 1, 2, 4, 8, 10, 12, or 16 barrels, etc.) that can receive one or more projectiles (e.g., at least 1, 2, 4, 8, 10, 12, or 16 projectiles, etc.).

Loading Actuator

[0287] Turning now to FIGS. **12** and **14**, the loading actuator **490** may be at least partially received by the housing assembly **404**, wherein the loading actuator **490** may be configured to be operatively coupled to one or more storage clips **480**A and **480**B configured to hold at least a plurality of projectiles, wherein the loading actuator **490** is able to move the plurality of projectiles, from the one or more storage clips **480**A and **480**B, into at least a portion (e.g., of one or more launch barrels **422**A-**422**F) of the active barrel group **420**. Further, the priming actuator **460** may be operatively coupled to the loading actuator **490**, wherein the loading actuator **490** may execute a loading operation in conjunction with a priming operation of the priming actuator **460**.

[0288] As depicted in FIG. **14**, the loading actuator **490** may be comprised of a load pivot arm **493**, a load return spring **494**, a load shuttle **492**, and a load rotation spline **491**. The load pivot arm **493** may be constructed of rigid material (e.g., metal, plastic, etc.) and pinned to the housing assembly **404**, wherein the arm **493** may be able to pivot in a rearward direction R**1** and forward direction F**1**. The load return spring **494** may comprised of a tension spring coupled to the pivot arm **493** and the housing assembly **404**, wherein the pivot arm **493** may have a biased force in the forward direction F**1**. The load shuttle **492** may be constructed of rigid or flexible material (e.g., metal, plastic, composite, etc.) and may be operatively coupled to the pivot arm **493**, wherein the shuttle **492** may be able to move one or more projectiles **121**A and **121**B from the plurality of storage clips **480**A and **480**B. In addition, the load rotation spline **491** may be constructed of rigid material (e.g., plastic, metal, etc.) and coupled to the load shuttle **492**, wherein the spline **491** may be able to operatively connect (e.g., by meshing with gear teeth) with the rotate shift cog **428** of the active storage clip **424**.

[0289] The reader may keep in mind that FIG. **14** does not show the entirety of the loading actuator **490**, as there can be a second load pivot arm, a second load return spring, and a third and fourth primer tab (all not shown), which are supported on the opposite side of the launcher **400**.

[0290] In alternative embodiments, the loading actuator **490** may be constructed of any shape, size, material (e.g., composite, metal, rigid plastic, flexible plastic, wood, etc.), and/or components. In alternative embodiments, the return spring **494** may be comprised of any spring type (e.g., compression, etc.), size, and/or material (e.g., plastic, etc.).

Valve System

[0291] FIGS. **12**, **13**A, and **14** present the valve system **430**, which is constructed similar to the valve system **330** of the previous embodiment (in FIGS. **8-10**B), which the reader may refer to for reference. However, as discussed earlier, the valve system **430** (in FIG. **13**A) may be in fluid communication with the fluid compressor **410** and the plurality of launch barrels **422**A-**422**D of the active barrel group **420** (in FIG. **13**B) in the active storage clip **424**.

Trigger Assembly

[0292] FIGS. **11** and **12** also show the trigger assembly **440** may be comprised of a trigger **441**, a trigger pin **443**, a variable latch **445**, a trigger follower **448**, a trigger flexible hinge **444**, and a trigger return spring **442**. The trigger assembly **440** may be constructed similar to the trigger assembly **340** of the previous embodiment (in FIGS. **8-101**B), which the reader may refer to for reference.

Catch Assembly

[0293] Continuing with FIG. **12**, the catch assembly **450** may be constructed similar to the catch assembly **350** of the previous embodiment (in FIGS. **8-101**B), which the reader may refer to for reference.

Refilling Operation (Manual)

[0294] In FIGS. **11** and **12**, the reserve storage clips **480**A and **480**B may be refilled (or manually loaded by a user) with a plurality of projectiles in a similar manner as the “Refilling Operation” of the previous embodiment (in FIGS. **8-101**B), which the reader may refer to for reference. However, in the current embodiment, the reserve storage clips **480**A and **480**B may be removed by a user sliding the clip release button **484**, such that the clips **480**A and **480**B may be refilled (or manually loaded by a user) with a plurality of projectiles.

Priming Operation

[0295] In FIGS. **11** and **12**, the projectile launcher **400** and fluid compressor **410** may be primed once (or one time) in a similar manner as the “Priming Operation” of the earlier embodiment (in FIGS. **8-101**B), which the reader may refer to for reference. However, the current embodiment has differences. A priming operation may be comprised of the following operational steps:

[0296] In FIG. **12**, in a first operational step: the primer handle **461** (e.g., which is grasped and moved by a user) may be configured to make a first movement in the rearward direction R**1** along the housing rail **408**, causing the primer linkage **464**, primer rod tab **466**C, and primer rod **462** to make the first movement in the rearward direction R**1** as well.

[0297] Whereupon, the launcher **400** comprising the fluid compressor **410** has been primed once by the priming actuator **460** (which is not shown, but is similar to state of the fluid compressor **310** in FIG. **9**B of the earlier embodiment.) The priming operation now ends.

Loading Operation (Mechanical)

[0298] Turning now to FIGS. **12**, **13**A, **13**B and mostly FIG. **14**, there shown is a loading operation of the launcher **400**, wherein the loading actuator **490** may be configured to move one or more projectiles **121**A and **121**B, from one or more storage clips **480**A and **480**B, into at least a portion (e.g., of one or more launch barrels **422**A-**422**D) of the active barrel group **420** of the active storage clip **424** (in FIG. **13**B).

[0299] As depicted in FIGS. **12** and **14**, the priming actuator **460** may be operatively coupled to the loading actuator **490**, such that the loading operation of the loading actuator **490** may occur in conjunction with the priming operation of the launcher **400**, as described above in the section titled “Priming Operation.”

[0300] Thus the loading operation may comprise the following operational steps:

[0301] In FIG. **12**, in a first operational step: a priming operation begins, wherein the primer handle **461** (e.g., which is grasped and moved by a user) may be configured to make a first priming movement in a rearward direction R**1** along the housing rail **408**, causing the primer linkage **464** to make the first priming movement in the rearward direction R**1** as well.

[0302] Whereby in FIG. **14**, the loading operation begins, when the primer linkage **464** and the first primer load tab **465**A make the first movement in a rearward direction R**1**, the first primer load tab **465**A pushes against the pivot arm **493**, causing the pivot arm **493** to make a first pivot movement in the rearward direction R**1**, causing the shuttle **492** and the rotation spline **491** to make a first linear movement in the rearward direction R**1**.

[0303] Wherein the shuttle **492** makes a first skimming movement in the rearward direction R**1** across the top of the plurality of storage clips **480**A and **480**B, causing one or more projectiles **121**A and **121**B to move in the rearward direction R**1** and into at least a portion (e.g., of one or more launch barrels **422**E and **422**F) of the active storage clip **424**.

[0304] Then subsequently, in FIGS. **13**A, **13**B, and **14**, the rotation spline **491** engages (e.g., meshes with gear teeth) the rotation shift cog **428**, causing the rotation shift cog **428** and the active storage clip **424** to make a first rotational movement (e.g., of about 120 degrees) in a rotational direction R**2** relative to the clip support wall **407**, causing the one or more projectiles **121**A and **121**B to move into at least a portion (e.g., of one or more launch barrels **422**C and **422**D) of the active barrel group **120** of the active storage clip **424**.

[0305] Whereupon, the pivot arm **493** escapes (or is released) from the first primer tab **465**, causing the return spring **494** to pull the pivot arm **493** in a first return pivot movement in the forward direction F**1**, causing the shuttle **492** and the rotation spline **491** to make the first return movement in the forward direction F**1** as well.

[0306] Whereby, the first operational step ends.

[0307] Then in FIG. **12**, in a second operational step: the priming operation continues (as described above), wherein the primer handle **461** continues to make the first priming movement in the rearward direction R**1** along the housing rail **408**, causing the primer linkage **464** to continue to make the first priming movement in the rearward direction R**1** as well.

[0308] Whereupon, in FIG. **14**, the primer linkage **464** and the second primer tab **465**B push against the pivot arm **493**, causing the pivot arm **493** to make a second pivot movement in the rearward direction R**1**, causing the shuttle **492** and the rotation spline **491** to make a second linear movement in the rearward direction R**1**.

[0309] Wherein the shuttle **492** makes a second skimming movement in the rearward direction R**1** across the top of the plurality of storage clips **480**A and **480**B, causing one or more projectiles **121**A and **121**B to move in the rearward direction R**1** and into at least a portion (e.g., of one or more launch barrels **422**E and **422**F) of the active storage clip **424**.

[0310] Then subsequently, in FIGS. **13**A, **13**B, and **14**, the rotation spline **491** engages (e.g., meshes with gear teeth) the rotation shift cog **428**, causing the rotation shift cog **428** and the active storage clip **424** to make a second rotational movement (e.g., of about 120 degrees) in a rotational direction R**2** relative to the clip support wall **407**, causing the one or more projectiles **121**A and **121**B to move into at least a portion (e.g., of one or more launch barrels **422**C and **422**D) of the active barrel group **120** of the active storage clip **424**.

[0311] Whereupon, the pivot arm **493** escapes (or is released) from the second primer tab **465**B, causing the return spring **494** to pull the pivot arm **493** in a forward movement in the forward direction F**1**, causing the shuttle **492** and the rotation spline **491** to make a second return movement in the forward direction F**1** as well.

[0312] Thus the second operational step ends, and the loading operation ends.

[0313] Then as shown in FIGS. **12**, **13**A, **13**B, and **14**, the loading actuator **490** being at least partially received by the housing assembly **404**, wherein the loading actuator **490** may be configured to be operatively coupled to one or more storage clips **480**A and **480**B configured to hold at least a plurality of projectiles **121**A-**121**D, and the loading actuator **490** may be able to move the plurality of projectiles **121**A-**121**D, from the one or more storage clips **480**A and **480**B, into at least a portion of the active barrel group **420**.

Restoring Operation

[0314] Turning to FIG. **12**, there shown is a restoring operation of the launcher **400**, which can restore at least a portion of the priming actuator **460** to its original position, following a priming operation. The restoring operation may be comprised of the following operational steps:

[0315] In a first operational step: the primer handle **461** (e.g., grasped and moved by a user) may be configured to make a first movement in the forward direction F**1** along the housing rail **408**, causing the primer linkage **464** and primer rod tab **466**C to make the first movement in the forward direction F**1** as well. Whereby, the primer handle **461**, primer linkage **464**, and rod tab **466**C are restored to their original position. Yet the fluid compressor **410** has been primed once and remains primed (not shown, but substantially similar the restoring operation of an earlier embodiment in FIG. **9**B, where the fluid compressor **310** has been primed once and remains primed). The restoring operation now ends.

[0316] In alternative embodiments, a restoring operation may not be required. For example, the launcher **100** in FIGS. **1**-**6**B does not require a restoring operation.

Launching Operation

[0317] In FIGS. **11**-**14**, the launcher **400** may be able to launch each projectile, from the plurality of projectiles **121**A, **121**B, **121**C, and **121**D received by the active barrel group **420**, in temporal sequence (e.g., a plurality of four projectiles, where each projectile is launched every 0.1 second) after the fluid compressor **410** has been primed once by the priming actuator **460** of the launcher **400**. Whereby, the launcher **400** may have a launching operation and a continuous launch mode that is similar to the launching operation and the continuous launch mode of the previous embodiment (in FIGS. **8**-**10**B), which the reader may refer to for reference.

Method of Assembly

[0318] Finally, a method for assembling the toy projectile launcher **400** may be similar to the "Method of Assembly" of an earlier embodiment (in FIGS. **6**A-**6**B), which the reader may refer to for reference. However, the method may include step S**106** of FIG. **6**A, as the launcher **400** supports the loading actuator **490**.

Ball Launcher with Single Feeder Channel

[0319] So turning to FIGS. **15**, **16**, **17**A-**17**C, there shown are perspective views and a section view of another exemplary embodiment of a toy projectile launcher **500**, which includes one or more reserve storage clips **580** that can receive a plurality of projectiles **521** (e.g., foam balls) and a loader actuator **590** with a single feeder channel to a plurality of launch barrels (in FIG. **17**A). The launcher **500** may be non-electronic and manually operated by a user. In various embodiments, the launcher **500** may be able to launch the plurality of projectiles **521**, each projectile being ball shaped of compact size (e.g., 24 mm dia.) and comprised of soft material (e.g., plastic foam, etc.), although other shapes, sizes, and/or materials for projectiles may also be considered. As depicted, the launcher **500** may be constructed with similar apparatus and functionality as the launcher **300** (in FIGS. **8**-**10**B) discussed earlier. However, the launcher **500** also substantially differs from earlier embodiments.

[0320] As depicted, the current embodiment of the toy projectile launcher **500** may comprise a housing assembly **504**, a fluid compressor **510**, a priming actuator **560**, a loading actuator **590**, an active barrel group **520**, a valve system **530**, a trigger assembly **540**, a catch assembly **550**, and one or more reserve storage clips **580**.

Housing Assembly

[0321] FIGS. **15** and **16** show the housing assembly **504** may be shaped like a toy multi-barrel blaster and comprising a housing handle **505**, configured to be handheld (e.g., by a user's right hand). The housing assembly **504** may be constructed similar to the housing assembly **304** of the previous embodiment (in FIGS. **8**-**10**B), which the reader may refer to for reference.

Fluid Compressor

[0322] FIG. **16** further shows the fluid compressor **510** may be at least partially received by the housing assembly **504** of the launcher **500**, wherein the fluid compressor **510** is able to compress a fluid, such as ambient air from a play environment. The fluid compressor **510** may be comprised of a walled chamber **512**, a piston **516**, a launch spring **514**, a rear chamber wall **518**, and a latch guide **515**. The fluid compressor **510** may be constructed similar to the fluid compressor **310** of the previous embodiment (in FIGS. **8**-**10**B), which the reader may refer to for reference.

Fluid Compressor—with Preloaded Spring

[0323] Also presented in FIG. **16**, the projectile launcher **500** and fluid compressor **510** may be configured such that the launch spring **514** is preloaded, which is similar to the launch spring **314** of the previous embodiment (in FIGS. **8-10**B), which the reader may refer to for reference.

Priming Actuator

[0324] FIGS. **15** and **16** show the priming actuator **560** may be at least partially received by the housing assembly **504**, wherein the priming actuator **560** may be structured such that the fluid compressor **510** may be capable to generate a fluid flow after the fluid compressor **510** has been primed once (or one time) by the priming actuator **560**. Whereby, the toy projectile launcher **500** may be further configured to launch each projectile, of a plurality of projectiles **521**A, **521**B, **521**C and **521**D (in FIG. **16**), in temporal sequence (e.g., such as launching four projectiles in temporal sequence, where each projectile is launched every 0.1 second) after the toy projectile launcher **500** comprising the fluid compressor **510** has been primed once by the priming actuator **560**.

[0325] As depicted in FIG. **16**, the priming actuator **560** may be comprised of a primer handle **561**, a primer rod **562**, and a primer linkage **564**. The primer handle **561** may be cylindrical shaped to be gripped (e.g., by a user's left hand) and able to make movements in a rearward direction D**1** and a forward direction F**1** along a housing rail **508** of the housing assembly **504**. The primer handle **561** may be coupled to the primer linkage **564**, which may be operatively coupled to the primer rod **562**, which is coupled to the piston **516** of the fluid compressor **510**. The primer linkage **564** may further be comprised of a primer rod tab **566**C and a primer load tab **566**A, which actuate various elements of the launcher **500** during the priming of the fluid compressor **510**. The primer linkage **564** may be further comprised of a primer raceway **570**, which is used to guide movements of the trigger assembly **540** during continuous launch mode of the launcher **500**. The priming actuator **560** may be constructed of a single part having one or more interior cutouts or multiple parts fastened together (e.g., friction fit, screws, and/or adhesive, etc.) with material comprised of molded plastic.

[0326] In alternative embodiments, the priming actuator **560** may be constructed of any shape, size, and/or material (e.g., composite, metal, wood, etc.). In alternative embodiments, the priming actuator **560** may be comprised of the primer handle **561** located at the top, side, rear, or bottom of the launcher **500**.

Reserve Storage Clip

[0327] Turning to FIGS. **15-16**, there shown are one or more reserve storage clips **580** that may be at least partially received by the housing assembly **504** and configured to receive one or more projectiles **521** (e.g., foam balls), where each clip **580** can hold up to 24 projectiles enabling a total load capacity of 24 projectiles for the launcher **500**. Each reserve storage clip **580** may comprise a transport assembly **586** configured with a biased force (e.g., by a metal spring) to move the one or more projectiles **521** from the clip **580** towards the loading actuator **590**. Further, the one or more reserve storage clips **580** may be configured to be removable from the launcher **500**. Whereby a user may slide a clip release button (not shown), such that clips **580** can be removed from the launcher **500** and manually refilled with projectiles by the user. In some embodiments, the housing assembly **504** may further comprise a feeder door **581**, enabling refilling of the reserve storage clip **580** with one or more projectiles **521**.

[0328] In alternative embodiments, the one or more storage clips **580** may be non-removable from the launcher **500**, wherein the clips **580** may still be manually refilled with projectiles. In alternative embodiments, a storage clip may hold at least 5, 8, 12, 16, 24, or 36 projectiles, or an arbitrary number of projectiles.

Active Barrel Group

[0329] Also shown in FIGS. **15-17**A, the active barrel group **520** may be at least partially received by the housing assembly **504** and comprising a plurality of launch barrels **522**A, **522**B, **522**C, **522**D, wherein the active barrel group **520** may be configured to receive a plurality of projectiles **521**A, **521**B, **521**C, and **521**D (in FIG. **16**). The active barrel group **520** may be constructed similar to the active barrel group **320** of the previous embodiment (in FIGS. **8-10**B), which the reader may refer to for reference. However, substantial differences exist.

[0330] As seen in FIG. **17**A, the loading actuator **590** may be operatively coupled to the active barrel group **520**, such that the loading actuator **590** may be able to move and load one or more projectiles into at least a portion of the active barrel group **520**. The active barrel group **520** may further comprise a launch barrel unit **525** that includes the plurality of launch barrels **522**A-**522**D, which may be integrated as a single part. The active barrel group **520** may also comprise a stub barrel unit **526** that includes a plurality of stub launch barrels **523**A, **523**B, **523**C, and **523**D, which may be integrated as a single part. The plurality of launch barrels **522**A, **522**B, **522**C, and **522**D may be operatively coupled to the plurality of stub launch barrels **523**A, **523**B, **523**C, and **523**D, respectively. Whereby, the plurality of launch barrels **522**A-**522**D may be able to move in a rearward direction R**1** and a forward direction F**1** in substantial contact with the plurality of stub launch barrels **523**A-**523**D, respectively, forming a fluid seal between the plurality of launch barrels **522**A-**522**D and the plurality of stub launch barrels **523**A-**523**D. Whereby, the plurality of launch barrels **522**A-**522**D and/or the plurality of stub launch barrels **523**A-**523**D may be further comprised O-rings (not shown) to support a fluid seal, wherein the O-rings may be constructed of a fluid-sealant material (e.g., rubber, urethane, etc.). Thus the launch barrel unit **525**, stub barrel unit **526**, and the valve system **530** may be in fluid communication such that each projectile, of the plurality of projectiles **521**A-**521**D, may be launched independently from the active barrel group **520**.

[0331] The active barrel group **520** may be also comprised of one or more loading openings **528**, which are one or more holes or openings (e.g., round shape, rectangular shape, etc.) implemented in a side wall, panel, component, and/or element that allow one or more projectiles to be moved and loaded into at least a portion of the active barrel group **520**. For example, each stub launch barrel **523**A, **523**B, **522**C, or **523**D, of the plurality of stub launch barrels **523**A-**523**D, may include at least one loading opening **528** that is substantially aligned on a same axis Y**1** (as shown with dashed line) in three-dimensional space such that the plurality of projectiles **521**A-**521**D can be moved and loaded into at least a portion (e.g., of the plurality of stub launch barrels **523**A-**523**D and/or the plurality of launch barrels **522**A-**522**D) of the active barrel group **520**. Further, a plurality of stub launch barrels **523**A and **523**B may be configured with one or more loading openings **528** that are coupled in three-dimensional space, such that the plurality of projectiles **521**A-**521**D can be moved and loaded into at least a portion (e.g., of the plurality of stub launch barrels **523**A-**523**D and/or the plurality of launch barrels **522**A-**522**D) of the active barrel group **520**.

[0332] In an alternative embodiment of a loading actuator **590**B, in FIG. **17**B there shown is an active barrel group **520**B having similar parts with the same reference numerals as the active barrel group **520** of FIG. **17**A, which the reader may refer to for reference. However, the loading opening(s) in the active barrel group **520**B are different. A stub barrel unit **526**B may comprise a plurality of stub launch barrels **523**A-**523**D, while a launch barrel unit **525**B may comprise a plurality of launch barrels **522**A-**522**D. But each launch barrel **522**A, **522**B, **522**C, or **522**D, of the plurality of launch barrels **522**A-**522**D, may comprise at least one loading opening **528** (as shown with solid and dashed lines) that is substantially aligned on a same axis **Y1** (as shown with dashed line) in three-dimensional space such that the plurality of projectiles **521**A-**521**D can be moved into at least a portion (e.g., of the plurality of stub launch barrels **523**A-**523**D and/or the plurality of launch barrels **522**A-**522**D) of the active barrel group **520**B. Further, a plurality of launch barrels **522**A and **522**B may be configured with one or more loading openings **528** that are coupled in three-dimensional space, such that the plurality of projectiles **521**A-**521**D can be moved into at least a portion (e.g., of the plurality of stub launch barrels **523**A-**523**D and/or the plurality of launch barrels **522**A-**522**D) of the active barrel group **520**B.

[0333] In another alternative embodiment of a loading actuator **590**C, in FIG. **17**C there shown is an active barrel group **520**C having similar parts with the same reference numerals as the active barrel group **520** of FIG. **17**A, which the reader may refer to for reference. However, the loading opening(s) in the active barrel group **520**C are different. A launch barrel unit **525**C may comprise a plurality of launch barrels **522**A-**522**D, integrated as a single part. But a stub barrel unit **526**C may comprise at least one loading opening **528** (as shown with solid and dashed lines) that is substantially aligned on a same axis **Y1** (as shown with dashed line) in three-dimensional space such that the plurality of projectiles **521**A-**521**D can be moved into at least a portion (e.g., of the plurality of launch barrels **522**A-**522**D) of the active barrel group **520**C. Thus the loading opening **528** partially enters the stub barrel unit **526**C and does not pass through to the opposite side.

Loading Actuator—with Single Feeder Channel

[0334] Now turning to FIGS. **16** and **17**A, the loading actuator **590** may be at least partially received by the housing assembly **504**, wherein the loading actuator **590** may be configured to be operatively coupled to one or more storage clips **580** configured to hold at least a plurality of projectiles **521**A-**521**D, wherein the loading actuator **590** may be able to move and load one or more projectiles **521**A-**521**D, from the one or more storage clips **580**, into at least a portion (e.g., of the one or more launch barrels **522**A-**522**D) of the active barrel group **520**. Further, the priming actuator **560** may be operatively coupled to the loading actuator **590**, wherein the loading actuator **590** may execute a loading operation in conjunction with a priming operation of the priming actuator **560**.

[0335] As depicted, the loading actuator **590** may be comprised of a load shifting arm **529**C, a load pivot arm **529**B, and a feeder channel **538**, which may be constructed of a rigid material (e.g., plastic, metal, fiber, and/or composite, etc.). The pivot arm **529**B may be loosely attached (e.g., by a pivot pin, or hinge, etc.) to the housing assembly **504** (in FIG. **16**) such that the pivot arm **529**B can make a pivot movement in the rearward direction **R1** and forward direction **F1**. The pivot arm **529**B may be operatively coupled to the launch barrel unit **525**, of the active barrel group **520**, and the shifting arm **529**C. Whereby, the pivot arm **529**B may be able to make a pivot movement such that the launch barrel unit **525** and the shifting arm **529**C make a movement in a rearward direction **R1** or a forward direction **F1** based on the movement of the primer load tab **566**A of the priming actuator **560**. The feeder channel **538** may be operatively coupled to the active barrel group **520** and the storage clip **580**, wherein the feeder channel **538** may provide a single channel (or pathway) and may be able to guide the movement of one or more projectiles, such as the plurality of projectiles **521**A-**521**D, from the one or more storage clips **580** into at least a portion (e.g., of the plurality of launch barrels **522**A-**522**D) of the active barrel group **520**.

[0336] In alternative embodiments, the loading actuator **590** may be constructed of any shape, size, material (e.g., composite, metal, rigid plastic, flexible plastic, wood, etc.), and/or components.

Valve System

[0337] FIGS. **16** and **17**A present the valve system **530**, which is constructed similar to the valve system **330** of the previous embodiment (in FIGS. **8**-**10**B), which the reader may refer to for reference. However, as discussed earlier, the valve system **530** (in FIG. **13**A) may be in fluid communication with the fluid compressor **510** and the plurality of launch barrels **522**A-**522**D of the active barrel group **520**.

Trigger Assembly

[0338] FIGS. **16** and **17**A also show the trigger assembly **540** may be comprised of a trigger **541**, a trigger pin **543**, a variable latch **545**, a trigger follower **548**, a trigger flexible hinge **544**, and a trigger return spring **542**. The trigger assembly **540** may be constructed similar to the trigger assembly **340** of the previous embodiment (in FIGS. **8**-**101**B), which the reader may refer to for reference.

Catch Assembly

[0339] Continuing with FIG. **16**, the catch assembly **550** may be constructed similar to the catch assembly **350** of the previous embodiment (in FIGS. **8**-**101**B), which the reader may refer to for reference.

Refilling Operation (Manual)

[0340] In FIGS. **15**-**17**C, the one or more reserve storage clips **580** may be refilled (or manually loaded by a user) with a plurality of projectiles in a similar manner as the "Refilling Operation" of the previous embodiment (in FIGS. **8**-**101**B), which the reader may refer to for reference.

Priming Operation

[0341] In FIGS. **15**-**17**C, the projectile launcher **500** and fluid compressor **510** may be primed in a similar manner as the "Priming Operation" of the earlier embodiment (in FIGS. **8-10**B), which the reader may refer to for reference.

Loading Operation (Mechanical)

[0342] Turning now to FIGS. **16** and **17**, there shown is a loading operation of the launcher **500**, wherein the loading actuator **590** may be configured to move and load one or more projectiles **521**A-**521**D, from one or more storage clips **580**, into at least a portion (e.g., of one or more launch barrels **522**A-**522**D) of the active barrel group **520**. As depicted, the priming actuator **560** may be operatively coupled to the loading actuator **590**, such that the loading operation of the loading actuator **590** may occur in conjunction with the priming operation of the launcher **500**, as described above in the section titled "Priming Operation."

[0343] Thus the loading operation may comprise the following operational steps:

[0344] In FIGS. **16** and **17**A, in a first operational step: a priming operation may begin, wherein the primer actuator **560** and the primer handle **561** (e.g., which is grasped and moved by a user) may be configured to make a first priming movement in a rearward direction R**1** along the housing rail **508**, causing the primer linkage **564** and primer load tab **566**A to make the first priming movement in the rearward direction R**1** as well.

[0345] Whereby, as the primer linkage **564** continues the first priming movement in the rearward direction R**1**, the primer load tab **566**A makes a first contact with the load pivot arm **529**B, causing the pivot arm **529**B to make a pivot movement in the rearward direction R**1** as well, causing the launch barrel unit **525** comprising the launch barrels **522**A-**522**D to make an opening movement in a forward direction F**1** away from the stub barrel unit **526**, revealing the loading opening **528** (as in "opening the breach") of the stub barrel unit **526** comprising the stub launch barrels **523**A-**523**D of the active barrel group **520**.

[0346] Subsequently, as depicted in FIG. **16**, the transport assembly **586** of the one or more storage clips **580** provides a biased force on one or more projectiles, including the plurality of projectiles **521**A-**521**D, such that the loading actuator **590** comprising the feeder channel **538** may be able to guide the movement of one or more projectiles, such as the plurality of projectiles **521**A-**521**D, from the one or more storage clips **580** towards the active barrel group **520**.

[0347] Thus in FIGS. **16** and **17**A, the launch barrels **522**A-**522**D and the stub launch barrels **523**A-**523**D of the active barrel group **520** may receive the plurality of projectiles **521**A-**521**D, respectively. As best seen in FIG. **16**, each launch barrel, of the plurality of launch barrels **522**A-**522**D, may receive about one projectile. In some alternate embodiments, each launch barrel, of the plurality of launch barrels **522**A-**522**D, may receive a mean average of about 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10 total projectiles, or an arbitrary number of total projectiles, during the loading operation.

[0348] So continuing with FIGS. **16** and **17**A, in a second operational step: as the primer linkage **564** continues the first priming movement in the rearward direction R**1**, the primer load tab **566**A makes a second contact with the load shifting arm **529**C, causing the shifting arm **529**C to make a shifting movement in the rearward direction D**1** as well, causing the launch barrel unit **525** comprising the launch barrels **522**A-**522**D to make a closing movement in the rearward direction R towards the stub barrel unit **526**, closing the loading opening **528** (e.g., as in "closing the breach") of the stub barrel unit **526** comprising the stub launch barrels **523**A-**523**D of the active barrel group **520**. Thus the loading operation has ended.

Restoring Operation

[0349] In FIGS. **15-17**C, following a priming operation, the launcher **500** can restore at least a portion of the priming actuator **560** to its original position in a similar manner as the "Restoring Operation" of the earlier embodiment (in FIGS. **8-101**B), which the reader may refer to for reference.

Launching Operation

[0350] In FIGS. **15-17**C, the launcher **500** may be able to launch each projectile, from the plurality of projectiles **521**A, **521**B, **521**C, and **521**D received by the active barrel group **520**, in temporal sequence (e.g., a plurality of four projectiles, where each projectile is launched every 0.1 second) after the fluid compressor **510** has been primed once by the priming actuator **560** of the launcher **500**. Whereby, the launcher **500** may have a launching operation and a continuous launch mode that is similar to the "Launching Operation" of an earlier embodiment (in FIGS. **8-10**B), which the reader may refer to for reference.

Method of Assembly

[0351] Finally, a method for assembling the toy projectile launcher **500** may be similar to the "Method of Assembly" of an earlier embodiment (in FIGS. **6**A-**6**B), which the reader may refer to for reference. However, the method may include step S**106** of FIG. **6**A, as the launcher **500** supports the loading actuator **590**.

Ball Launcher with Multiple Feeder Channels

[0352] So turning to FIGS. **18**, **19**, and **20**, there shown are perspective views and a section view of another exemplary embodiment of a toy projectile launcher **600**, which includes a plurality of reserve storage clips **680**A, **680**B, **680**C, and **680**D that can receive a plurality of projectiles **521** (e.g., foam balls in FIG. **18**) and a loader actuator **690** with a plurality of feeder channels to a plurality of launch barrels (in FIG. **20**). The launcher **600** may be non-electronic and manually operated by a user. As depicted, the launcher **600** may be constructed with similar apparatus and functionality as the launcher **500** (in FIGS. **15-17**C) discussed earlier, which the reader may refer to for reference since similar parts have the same reference numerals. However, the launcher **600** substantially differs from earlier embodiments, wherein the discussion will focus on the differences.

[0353] As depicted, the current embodiment of the toy projectile launcher **600** may comprise a housing assembly **604**, a fluid compressor **510**, a priming actuator **560**, a loading actuator **690**, an active barrel group **620**, a valve system **630**, a trigger assembly **540**, a catch assembly **550**, and a plurality of reserve storage clips **680**A-**680**D.

Housing Assembly

[0354] FIGS. **18-19** show the housing assembly **604** may be shaped like a toy multi-barrel blaster and comprising a housing handle **505**, configured to be handheld (e.g., by a user's right hand). The housing assembly **604** may be constructed similar to the housing assembly **504** of the previous embodiment (in FIGS. **15-17**C), which the reader may refer to for reference.

Reserve Storage Clip

[0355] Continuing with FIGS. **18-19**, there shown is the plurality of reserve storage clips **680**A, **680**B, **680**C, and **680**D (totaling four clips) having similar parts as the reserve storage clip **580** of the previous embodiment (in FIGS. **15-17**C), which the reader may refer to for reference. However, in the current embodiment, the plurality of reserve storage clips **680**A-**680**F may be at least partially received by the housing assembly **604** and configured to receive one or more projectiles **521** (e.g., foam balls), where each clip **680**A-**680**D can hold up to 24 projectiles enabling a total load capacity of 96 projectiles received by the launcher **600**.

Active Barrel Group

[0356] Turning to FIGS. **19-20**, the active barrel group **620** may be at least partially received by the housing assembly **604** and comprising a plurality of launch barrels **622**A, **622**B, **622**C, **622**D, wherein the active barrel group **620** may be configured to receive a plurality of projectiles **521**A, **521**B, **521**C, and **521**D (shown in FIG. **20** with dashed lines). The active barrel group **620** may be constructed similar to the active barrel group **520** of the previous embodiment (in FIGS. **15-17**C), which the reader may refer to for reference. However, substantial differences exist.

[0357] As seen in FIG. **20**, the active barrel group **620** may further comprise a launch barrel unit **625** that includes the plurality of launch barrels **622**A-**622**D, which may be integrated as a single part. The active barrel group **620** may also comprise a stub barrel unit **626** that includes a plurality of stub launch barrels **623**A, **623**B, **623**C, and **623**D, which may be integrated as a single part. The plurality of launch barrels **622**A, **622**B, **622**C, and **622**D may be operatively coupled to the plurality of stub launch barrels **623**A, **623**B, **623**C, and **623**D, respectively. Whereby, the plurality of launch barrels **622**A-**622**D may be able to move in a rearward direction R**1** and a forward direction F**1** in substantial contact with the plurality of stub launch barrels **623**A-**623**D, respectively, forming a fluid seal between the plurality of launch barrels **622**A-**622**D and the plurality of stub launch barrels **623**A-**623**D. Whereby, the plurality of launch barrels **622**A-**622**D and/or the plurality of stub launch barrels **623**A-**623**D may be further comprised O-rings (not shown) to support a fluid seal, wherein the O-rings may be constructed of a fluid-sealant material (e.g., rubber, urethane, etc.). Thus the launch barrel unit **625**, stub barrel unit **626**, and the valve system **630** are in fluid communication such that each projectile, of the plurality of projectiles **521**A-**521**D, may be launched independently from the active barrel group **620**.

[0358] The active barrel group **620** may be also comprised a plurality of loading openings **628**A, **628**B, **628**C, and **628**D, which are holes or openings (e.g., round shape, rectangular shape, etc.) implemented in a side wall, panel, component, and/or element that allow one or more projectiles to be moved and loaded into at least a portion of the active barrel group **620**. For example, each stub launch barrel **623**A, **623**B, **622**C, or **623**D, of the plurality of stub launch barrels **623**A-**623**D, may include at least one loading opening **628**A, **628**B, **628**C, or **628**D, respectively, on a plurality of distinct axis in three-dimensional space such that the plurality of projectiles **521**A-**521**D can be moved and loaded into at least a portion (e.g., of the plurality of stub launch barrels **623**A-**623**D and/or the plurality of launch barrels **622**A-**622**D) of the active barrel group **620**.

[0359] In an alternative embodiment, various elements of the active barrel group **620** may be replaced with various elements of the active barrel group **520**B in FIG. **17**B, which the reader may refer to for reference. In another alternative embodiment, various elements of the active barrel group **620** may be replaced with various elements of the active barrel group **520**C in FIG. **17**C, which the reader may refer to for reference.

Loading Actuator—with Multiple Feeder Channels

[0360] Now turning to FIGS. **19** and **20**, the loading actuator **690** may be at least partially received by the housing assembly **604**, wherein the loading actuator **690** may be configured to be operatively coupled to the plurality of storage clips **680**A-**680**D configured to hold at least a plurality of projectiles **521**A-**521**D, wherein the loading actuator **690** may be able to move and load one or more projectiles **521**A-**521**D, from the plurality of storage clips **680**A-**680**D, into at least a portion (e.g., of the one or more launch barrels **622**A-**622**D) of the active barrel group **620**. The loading actuator **690** may be constructed similar to the loading actuator **590** in the previous embodiment (in FIGS. **15-17**C), which the reader may refer to for reference. However, there are differences.

[0361] The loading actuator **690** may be comprised of a load shifting arm **529**C, a load pivot arm **529**B, and a plurality of feeder channels **638**A, **638**B, **638**C and **638**D, which may be constructed of a rigid material (e.g., plastic, metal, fiber, and/or composite, etc.). The pivot arm **529**B may be loosely attached (e.g., by a pivot pin, or hinge, etc.) to the housing assembly **604** (in FIG. **19**) such that the pivot arm **529**B can make a pivot movement in the rearward direction R**1** and forward direction F**1**. The pivot arm **529**B may be operatively coupled to the launch barrel unit **625**, of the active barrel group **620**, and the shifting arm **529**C. Whereby, the pivot arm **529**B may be able to make a pivot movement such that the launch barrel unit **625** and the shifting arm **529**C make a movement in a rearward direction R**1** or a forward direction F**1** based on the movement of the primer load tab **566**A of the priming actuator **560**. The plurality of feeder channels **638**A, **638**B, **638**C, and **638**D may be operatively coupled to the active barrel group **620** and the plurality of storage clips **680**A, **680**B, **680**C, and **680**D, respectively, wherein the plurality of feeder channels **638**A, **638**B, **638**C, and **638**D may provide multiple channels (or pathways) and may be able to guide the movement of one or more projectiles, such as the plurality of projectiles **521**A-**521**D from the plurality of storage clips **680**A-**680**D, into at least a portion of the active barrel group **520**.

Valve System

[0362] FIGS. **19** and **20** present the valve system **630**, which is constructed similar to the valve system **530** of the previous embodiment (in FIGS. **15-17**C), which the reader may refer to for reference. However, the valve system **630** may be in fluid communication with the fluid compressor **510** and the plurality of launch barrels **622**A-**622**D of the active barrel group **620**. Further, the valve system **630** may substantially have a horizontal orientation relative to the valve system **530** of the previous embodiment (in FIGS. **15-17**C).

Trigger Assembly

[0363] FIG. **19** also shows the trigger assembly **540** may be comprised of a trigger **541**, a trigger pin **543**, a variable latch **545**, a trigger follower **548**, a trigger flexible hinge **544**, and a trigger return spring **542**. The trigger assembly **540** may be constructed similar to the trigger assembly **540** of the previous embodiment (in FIGS. **15-17**C), which the reader may refer to for reference.

Catch Assembly

[0364] Continuing with FIG. **19**, the catch assembly **550** may be constructed similar to the catch assembly **550** of the previous embodiment (in FIGS. **15-17**C), which the reader may refer to for reference.

Refilling Operation (Manual)

[0365] In FIGS. **18-20**, the plurality of reserve storage clips **680**A-**680**D may be refilled (or manually loaded by a user) with a plurality of projectiles in a similar manner as the "Refilling Operation" of the previous embodiment (in FIGS. **15-17**C), which the reader may refer to for reference.

Priming Operation

[0366] In FIGS. **18-20**, the projectile launcher **600** and fluid compressor **510** may be primed in a similar manner as the "Priming Operation" of the earlier embodiment (in FIGS. **15-17**C), which the reader may refer to for reference.

Loading Operation (Mechanical)

[0367] In FIGS. **18-20**, the projectile launcher **600** may be loaded by the loading actuator **690** in a similar manner as the "Loading Operation" of the earlier embodiment (in FIGS. **15-17**C), which the reader may refer to for reference. However, the launcher **600** and loading actuator **690** are able to load the plurality of launch barrels **622**A-**622**D with a plurality of projectiles **521**A-**521**D.

Restoring Operation

[0368] In FIGS. **18-20**, following a priming operation, the launcher **600** can restore at least a portion of the priming actuator **560** to its original position in a similar manner as the "Restoring Operation" of the earlier embodiment (in FIGS. **15-17**C), which the reader may refer to for reference.

Launching Operation

[0369] In FIGS. **18-20**, the launcher **600** may be able to launch each projectile, from the plurality of projectiles **521**A-**521**D received by the active barrel group **520**, in temporal sequence (e.g., a plurality of four projectiles, where each projectile is launched every 0.1 second) after the fluid compressor **510** has been primed once by the priming actuator **560** of the launcher **600**. Whereby, the launcher **600** may have a launching operation and a continuous launch mode that is similar to the "Launching Operation" of an earlier embodiment (in FIGS. **15-17**C), which the reader may refer to for reference.

Method of Assembly

[0370] Finally, a method for assembling the toy projectile launcher **600** may be similar to the "Method of Assembly" of an earlier embodiment (in FIGS. **6**A-**6**B), which the reader may refer to for reference. However, the method may include step S**106** of FIG. **6**A, as the launcher **600** supports the loading actuator **690**.

Gel Bead Launcher with Multiple Feeder Channels

[0371] So turning to FIGS. **21**, **22**, and **23**, there shown are perspective views and a section view of another exemplary embodiment of a toy projectile launcher **700**, which includes one or more reserve storage clips **780** that can receive a plurality of projectiles **721** (e.g., gel beads) and a loader actuator **790** with a plurality of feeder channels to a plurality of launch barrels **722**A-**722**G (in FIG. **21**) totaling seven launch barrels, enabling the launcher **700** to launch seven projectiles in temporal sequence (e.g., where each gel bead is launched every 0.1 second). The launcher **700** may be non-electronic and manually operated by a user. In various embodiments, the launcher **700** may be able to launch the plurality of projectiles **721**, each projectile being ball shaped of compact size (e.g., 5 mm dia.) and comprised of soft gel material (e.g., hydrated gel, etc.), although other shapes, sizes, and/or materials for projectiles may also be considered.

[0372] The reader may keep in mind that throughout this disclosure, the term "gel bead" shall include similar names for such toys, including "gel ball", "hydrated gel", "gel pellet", or any other term that describes small, hydrated projectiles adapted for use with toy guns, pistols, crossbows, slingshots, and other types of launchers. Such gel-based projectiles are often constructed from soft absorbent polymer material that is soaked in water and expands to a ball, bead, or pellet shape for usage with a projectile launcher capable of launching gel beads.

[0373] As depicted, the launcher **700** may be constructed with similar apparatus and functionality as the launcher **500** (in FIGS. **15-17**C) discussed earlier, which the reader may refer to for reference since similar parts have the same reference numerals. However, the launcher **700** substantially differs from earlier embodiments, wherein the discussion will focus on differences.

[0374] As depicted, the current embodiment of the toy projectile launcher **700** may comprise a housing assembly **704**, a fluid compressor **510**, a priming actuator **560**, a loading actuator **790**, an active barrel group **720**, a valve system **730**, a trigger assembly **540**, a catch assembly **750**, and one or more reserve storage clips **780**.

Housing Assembly

[0375] FIGS. **21-22** show the housing assembly **704** may be shaped like a toy multi-barrel blaster and comprising a housing handle **505**, configured to be handheld (e.g., by a user's right hand). The housing assembly **704** may be constructed similar to the housing assembly **504** of the previous embodiment (in FIGS. **15-17**C), which the reader may refer to for reference.

Reserve Storage Clip

[0376] Continuing with FIGS. **21-23**, there shown is the one or more reserve storage clips **780** having similar parts as the reserve storage clip **580** of the previous embodiment (in FIGS. **15-17**C), which the reader may refer to for reference. However, in the current embodiment, the one or more reserve storage clips **780** may be at least partially received by the housing assembly **704** and configured to receive one or more projectiles **721** (e.g., gel beads), where each clip **780**

can hold an arbitrary number of projectiles (e.g. more than 100 projectiles). Further, the one or more reserve storage clips **780** may use the biased force of earth gravity, whereby the plurality of projectiles **721** are gravity fed to move towards the active barrel group **720** of the launcher **700**.

Active Barrel Group

[0377] Turning to FIGS. **21-23**, the active barrel group **720** may be constructed similar to the active barrel group **620** of the earlier embodiment (in FIGS. **18-20**), which the reader may refer to for reference. However, there are differences as well.

[0378] The active barrel group **720** may be at least partially received by the housing assembly **704** and comprising a plurality of launch barrels **722**A, **722**B, **722**C, **722**D, **722**E, **722**F, and **722**G, totaling seven launch barrels, wherein the active barrel group **720** may be configured to receive a plurality of projectiles **721**A, **721**B, **721**C, **721**D, **721**E, **721**F, and **721**G (in FIG. **23**) totaling seven projectiles. Thus the active barrel group **720** and the valve system **730** may be in fluid communication such that each projectile, of the plurality of projectiles **721**A-**721**G, may be launched independently from the active barrel group **720**.

[0379] As seen in FIG. **23**, the active barrel group **720** may further comprise a launch barrel unit **725** that includes the plurality of launch barrels **722**A-**722**G, which may be integrated as a single part. The active barrel group **720** may also comprise a stub barrel unit **726** that includes a plurality of stub launch barrels, which may be integrated as a single part, which may be constructed similar to the active barrel group **620** of the earlier embodiment (in FIGS. **18-20**), which the reader may refer to for reference.

[0380] In an alternative embodiment, the active barrel group **720** may be comprised of one or more launch barrels or an arbitrary number of launch barrels. In an alternative embodiment, one or more first elements of the active barrel group **720** may be replaced with or include one or more second elements of the active barrel group **520** in FIG. **17**A, the active barrel group **520**B in FIG. **17**B, the active barrel group **520**C in FIG. **17**C, and/or the active barrel group **620** in FIG. **20**, which the reader may refer to for reference.

Loading Actuator

[0381] In FIGS. **22** and **23**, the loading actuator **790** may be constructed similar to the loading actuator **690** of the earlier embodiment (in FIG. **20**), which the reader may refer to for reference. However, there are differences.

[0382] The loading actuator **790** may be at least partially received by the housing assembly **704**, wherein the loading actuator **790** may be configured to be operatively coupled to the one or more reserve storage clips **780** configured to hold a plurality of projectiles **721**, wherein the loading actuator **790** may be able to move and load the plurality of projectiles **721**A-**721**G (e.g., about seven projectiles), from the one or more reserve storage clips **780**, into at least a portion (e.g., of the plurality of launch barrels **722**A-**722**G) of the active barrel group **720**.

[0383] As depicted in FIG. **23**, the loading actuator **790** may be comprised of a load shifting arm **529**C, a load pivot arm **529**B, a manifold channel **737**, and a plurality of feeder channels **738**A, **738**B, **738**C, **738**D, **738**E, **738**F, and **738**G, which may be constructed of a rigid material (e.g., plastic, metal, fiber, and/or composite, etc.), which are constructed and function similar to the loading actuator **690** of the earlier embodiment (in FIG. **20**). However, the manifold channel **737** may be coupled between the one or more storage clips **780** and the plurality of feeder channels **738**A-**738**G, wherein the manifold channel **737** provides a branched pathway for the plurality of projectiles **721**. The plurality of feeder channels **738**A-**738**G may provide multiple channels (or pathways) and be able to guide the movement of the plurality of projectiles **721**. Whereby, the loading actuator **790** may be able to move (e.g., by gravity) the plurality of projectiles **721**, such as the plurality of projectiles **721**A-**721**G, from the one or more reserve storage clips **780**, across the manifold channel **737**, down the plurality of feeder channels **738**A-**738**G, and into at least a portion (e.g., of the plurality of launch barrels **722**A-**722**G) of the active barrel group **720**.

[0384] In an alternative embodiment, the loading actuator **790** may be able to load one or more launch barrels, or an arbitrary number of launch barrels, with one or more projectiles. In an alternative embodiment, one or more first elements of the loading actuator **790** may be replaced with or include one or more second elements of the loading actuator **590** in FIG. **17**A, the loading actuator **590**B in FIG. **17**B, the loading actuator **590**C in FIG. **17**C, and/or the loading actuator **690** in FIG. **20**, which the reader may refer to for reference.

Valve System

[0385] In FIGS. **22** and **23**, the valve system **730** may be constructed similar to the valve system **530** of the previous embodiment (in FIGS. **15-17**C), which the reader may refer to for reference. However, the valve system **730** may have a substantially linear shape, and the valve system **730** may be in fluid communication with the fluid compressor **510** and the plurality of launch barrels **722**A-**722**G of the active barrel group **720**.

Trigger Assembly

[0386] In FIGS. **21-22**, the trigger assembly **540** may be comprised of a trigger **541**, a trigger pin **543**, a variable latch **545**, a trigger follower **548**, a trigger flexible hinge **544**, and a trigger return spring **542**. The trigger assembly **540** may be constructed similar to the trigger assembly **540** of the previous embodiment (in FIGS. **15-17**C), which the reader may refer to for reference.

Catch Assembly

[0387] In FIG. **22**, the catch assembly **750** may be constructed similar to the catch assembly **550** of the previous embodiment (in FIGS. **15-17**C), which the reader may refer to for reference. However, the catch assembly **750** may be comprised of a plurality of catch stops, totaling seven catch stops.

Refilling Operation (Manual)

[0388] In FIGS. **21-22**, the one or more reserve storage clips **780** may be refilled (or manually loaded by a user) with a plurality of projectiles in a similar manner as the “Refilling Operation” of the previous embodiment (in FIGS. **15-17**C), which the reader may refer to for reference. However, the one or more reserve storage clips **780** may be removed from and reattached to the launcher **700**, for easier refilling with projectiles.

Priming Operation

[0389] In FIGS. **21-22**, the projectile launcher **700** and fluid compressor **510** may be primed in a similar manner as the "Priming Operation" of the earlier embodiment (in FIGS. **15-17**C), which the reader may refer to for reference.

Loading Operation (Mechanical)

[0390] In FIGS. **21-22**, the projectile launcher **700** may be loaded by the loading actuator **790** in a similar manner as the "Loading Operation" of the earlier embodiment (in FIGS. **15-17**C), which the reader may refer to for reference. However, the launcher **700** and loading actuator **790** are able to load the plurality of launch barrels **722**A-**722**G, totaling seven launch barrels, with a plurality of projectiles, totaling at least seven projectiles.

Restoring Operation

[0391] In FIGS. **21-22**, following a priming operation, the launcher **700** can restore at least a portion of the priming actuator **560** to its original position in a similar manner as the "Restoring Operation" of the earlier embodiment (in FIGS. **15-17**C), which the reader may refer to for reference.

Launching Operation

[0392] In FIGS. **21-22**, the launcher **700** may be able to launch each projectile, from the plurality of projectiles **721**A-**721**G (in FIG. **23**) received by the active barrel group **720**, in temporal sequence (e.g., a plurality of seven projectiles, where each projectile is launched every 0.1 second) after the fluid compressor **510** has been primed once by the priming actuator **560** of the launcher **700**. Whereby, the launcher **700** may have a launching operation and a continuous launch mode that is similar to the "Launching Operation" of an earlier embodiment (in FIGS. **15-17**C), which the reader may refer to for reference.

Method of Assembly

[0393] Finally, a method for assembling the toy projectile launcher **700** may be similar to the "Method of Assembly" of an earlier embodiment (in FIGS. **6**A-**6**B), which the reader may refer to for reference. However, the method may include step S**106** of FIG. **6**A, as the launcher **700** supports the loading actuator **790**.

Liquid Glob Launcher with Single Launch Barrel

[0394] So turning to FIGS. **24** and **25**, there shown is a perspective view and a section view of another exemplary embodiment of a toy projectile launcher **800**, which includes one or more reserve storage clips **880** that can receive a plurality of projectiles **821** (e.g., water globs, paint balls, volume of water, etc.), wherein the launcher **800** can rapidly launch a plurality of projectiles **821**A, **821**B, **821**C, and **821**D in temporal sequence (e.g., such as four water globs, where each water glob is launched every 0.1 second) after being primed once, where the projectile **821**D is shown launched. In various embodiments, the launcher **800** may be able to launch the plurality of projectiles **821**A-**821**D, each projectile being ball shaped of compact size (e.g., 3 mm dia.) and comprised of a liquid (e.g., water, paint, etc.), although other shapes, sizes, and/or materials for projectiles may also be considered. The launcher **800** may be non-electronic and manually operated by a user.

[0395] The reader may keep in mind that the launcher **800** may be able to launch the projectile **821**D configured to a liquid glob, which may be a small volume of liquid, such as water for example, in the shape of a bead or sphere when launched. The launcher **800** may launch substantially each projectile **821**D, of the plurality of projectiles **821**A-**821**D, comprised of liquid (e.g., such as water, colored water, or paint) having an average liquid volume in the range of 0.01 to 1.00 milliliters, 1 to 5 milliliters, 5 to 100 milliliters, or 100 to 1000 milliliters, inclusive. In various embodiments, a launcher may be able to launch a projectile comprised of a liquid, a plurality of particles in a liquid, a capsule containing a liquid, foam, syrup, bubbles, water, and/or paint, as examples.

[0396] As presented, the launcher **800** may be constructed with similar apparatus and functionality as the launcher **500** (in FIGS. **15-17**C) discussed earlier, which the reader may refer to for reference since similar parts have the same reference numerals. However, the launcher **800** also substantially differs from earlier embodiments.

[0397] The toy projectile launcher **800** may comprise a housing assembly **804**, a fluid compressor **510**, a priming actuator **560**, an active barrel group **820**, a valve system **830**, a trigger assembly **540**, a catch assembly **550**, and one or more reserve storage clips **880**.

Housing Assembly

[0398] FIGS. **24-25** show the housing assembly **804** may be shaped like a toy blaster or pistol and comprising a housing handle **505**, configured to be handheld (e.g., by a user's right hand). The housing assembly **804** may be constructed similar to the housing assembly **504** of the previous embodiment (in FIGS. **15-17**C), which the reader may refer to for reference.

Reserve Storage Clip

[0399] In FIGS. **24-25**, there shown are the one or more reserve storage clips **880** having similar parts as the reserve storage clip **580** of the previous embodiment (in FIGS. **15-17**C), which the reader may refer to for reference. However, in the current embodiment, the one or more reserve storage clips **880** may be at least partially received by the housing assembly **804** and configured to receive one or more projectiles **821** (e.g., water globs or volume of water). In some embodiments, the storage clip **880** may be substantially fluid tight to avoid leaks. Further, the one or more reserve storage clips **880** may be non-removable and comprised of a clip lid (e.g., hinged cover, screw cap, etc.) for refilling. In alternative embodiments, the storage clip **580** may be removable from the launcher **800**.

Active Barrel Group

[0400] In FIGS. **24-25**, the active barrel group **820** may be constructed similar to the active barrel group **520** of the earlier embodiment (in FIGS. **15-17**C), which the reader may refer to for reference. However, substantial differences exist.

[0401] The active barrel group **820** may be at least partially received by the housing assembly **804** and comprising one or more launch barrels **822**A, wherein the active barrel group **820** may be configured to receive the plurality of projectiles **821**A-**821**D. Thus the active barrel group **820** and the valve system **830** are in fluid communication such that each projectile, of the plurality of projectiles **821**A-**821**D, may be launched independently from the active barrel group **820**. In the current embodiment, the active barrel group **820** may comprise a single launch barrel **822**A. In an alternative embodiment, the active barrel group **820** may comprise an arbitrary number of launch barrels.

Valve System

[0402] In FIG. **25**, the valve system **830** may be at least partially received by the fluid compressor **510** and the active barrel group **820**. Wherein the valve system **830** may be in fluid communication with the fluid compressor **510** and the one or more launch barrels **822**A of the active barrel group **820** such that the valve system **830** may be able to at least partially control a fluid flow from the fluid compressor **510** to the one or more launch barrels **822**A of the active barrel group **120**. The valve system **830** may be comprised of an inlet check valve **817**A and an outlet check valve **817**B that may be structured (e.g., with a ball with valve seat, or a membrane flap with valve seat, etc.) and configured to substantially maintain a one way direction of a fluid flow or one or more fluid flows. For example, the inlet check valve **817**A substantially maintains a one way direction of a first fluid flow from the one or more reserve clips **880** to the fluid compressor **510**. The check valve **817**B substantially maintains a one way direction of a second fluid flow from the fluid compressor **510** to the one or more launch barrels **822**A of the active barrel group **820**.

Trigger Assembly

[0403] In FIGS. **24**-**25**, the trigger assembly **540** may be comprised of a trigger **541**, a trigger pin **543**, a variable latch **545**, a trigger follower **548**, a trigger flexible hinge **544**, and a trigger return spring **542**. The trigger assembly **540** may be constructed similar to the trigger assembly **540** of the previous embodiment (in FIGS. **15**-**17**C), which the reader may refer to for reference.

Catch Assembly

[0404] In FIG. **25**, the catch assembly **550** may be constructed similar to the catch assembly **550** of the previous embodiment (in FIGS. **15**-**17**C), which the reader may refer to for reference.

Refilling Operation (Manual)

[0405] In FIGS. **24**-**25**, the one or more reserve storage clips **880** may be refilled (or manually loaded by a user) with a plurality of projectiles in a similar manner as the "Refilling Operation" of the previous embodiment (in FIGS. **15**-**17**C), which the reader may refer to for reference. However, the storage clip **880** may be refilled with the plurality of projectiles **821**, e.g. such as water globs, or a volume of water.

Priming Operation

[0406] In FIGS. **24**-**25**, the projectile launcher **800** and fluid compressor **510** may be primed in a similar manner as the "Priming Operation" of the earlier embodiment (in FIGS. **15**-**17**C), which the reader may refer to for reference.

Restoring Operation

[0407] In FIGS. **24**-**25**, following a priming operation, the launcher **800** can restore at least a portion of the priming actuator **560** to its original position in a similar manner as the "Restoring Operation" of the earlier embodiment (in FIGS. **15**-**17**C), which the reader may refer to for reference.

Launching Operation

[0408] In FIGS. **24**-**25**, the launcher **800** may be able to launch each projectile **821**D (e.g., water glob, liquid drop, etc.), from the plurality of projectiles **821**A-**821**D received by the active barrel group **820**, in temporal sequence (e.g., four water globs, where each water glob is launched every 0.1 second) after the fluid compressor **510** has been primed once by the priming actuator **560** of the launcher **800**. Whereby, the launcher **800** may have a launching operation and a continuous launch mode that is similar to the "Launching Operation" of an earlier embodiment (in FIGS. **15**-**17**C), which the reader may refer to for reference.

Method of Assembly

[0409] Finally, a method for assembling the toy projectile launcher **800** may be similar to the "Method of Assembly" of an earlier embodiment (in FIGS. **6**A-**6**B), which the reader may refer to for reference.

Additional Alternative Launchers

[0410] Some more alternative, exemplary embodiments may be considered to be within the scope of this disclosure as well. For example, in many embodiments, an electrically powered launcher or battery powered launcher may comprise various apparatus, methods, and/or functionality disclosed herein. In some embodiments, a launcher having automated features (e.g., such as automated priming and/or loading apparatus) may comprise various apparatus, methods, and/or functionality described herein. Also, in a few embodiments, a launcher may be comprised of a plurality of fluid compressors including apparatus, methods, and/or functionality disclosed herein. For example, in some embodiments, a launcher may be comprised of a plurality of fluid compressors and a plurality of catch assemblies, wherein each catch assembly (e.g., similar to catch assembly **150** of FIG. **2**), of the plurality of catch assemblies, is comprised of one or more catch stops.

[0411] Finally, this document discloses embodiments that are not necessarily mutually exclusive, for some alternative embodiments may be constructed that combine, in whole or part, aspects of the disclosed embodiments. Various alternatives and embodiments are contemplated as being within the scope of the following claims particularly pointing out and distinctly claiming the subject matter regarded as the invention.

I claim:

1. A toy projectile launcher comprising:

a housing assembly;

a fluid compressor being at least partially received by the housing assembly, wherein the fluid compressor is structured to compress a fluid;

a priming actuator being at least partially received by the fluid compressor, wherein the priming actuator is configured to prime the fluid compressor to potentially generate one or more fluid flows in temporal sequence;

an active barrel group being at least partially received by the housing assembly, wherein the active barrel group is configured to receive a plurality of projectiles;

a valve system being at least partially received by the fluid compressor and the active barrel group, wherein the valve system is configured to be in fluid communication with the fluid compressor and the active barrel group;

a trigger assembly being at least partially received by the housing assembly, wherein the trigger assembly is configured to increase each fluid flow, of the one or more fluid flows, from the fluid compressor; and

a catch assembly being at least partially received by the housing assembly, wherein the catch assembly is configured to decrease each fluid flow, of the one or more fluid flows, from the fluid compressor, wherein the toy projectile launcher is able to launch each projectile, of the plurality of projectiles from the active barrel group, in temporal sequence after the fluid compressor has been primed once by the priming actuator.

2. The toy projectile launcher of claim **1**, wherein:

the priming actuator is further configured to be manually operated.

3. The toy projectile launcher of claim **1**, wherein:

the catch assembly comprises at least one catch stop, wherein at least a portion of the priming actuator is further coupled to the at least one catch stop of the catch assembly.

4. The toy projectile launcher of claim **1**, wherein:

the catch assembly comprises at least one catch stop, wherein at least a portion of the fluid compressor is further coupled to the at least one catch stop of the catch assembly.

5. The toy projectile launcher of claim **1**, further comprising:

one or more storage clips coupled to at least a portion of the housing assembly, wherein the one or more storage clips are configured to hold at least the plurality of projectiles.

6. The toy projectile launcher of claim **1**, further comprising:

one or more storage clips that are operatively coupled to the priming actuator, wherein the one or more storage clips are configured to hold at least the plurality of projectiles, and the priming actuator is further able to move the plurality of projectiles into at least a portion of the active barrel group.

7. The toy projectile launcher of claim **1**, wherein:

the fluid compressor is further configured to be primed once by at most two continuous movements of at least a portion of the priming actuator.

8. The toy projectile launcher of claim **1**, wherein:

the fluid compressor is further comprising a launch spring configured to be preloaded.

9. The toy projectile launcher of claim **1**, wherein:

the trigger assembly and the catch assembly are further configured to perform a plurality of launch cycles, where each launch cycle comprises the trigger assembly increasing each fluid flow, of the one or more fluid flows, from the fluid compressor and, subsequently, the catch assembly decreasing each fluid flow, of the one or more fluid flows, from the fluid compressor.

10. The toy projectile launcher of claim **1**, wherein:

the catch assembly comprising at least a first catch stop, a second catch stop, and a third catch stop such that a first distance, between the first catch stop and the second catch stop, is at least 1% greater than a second distance between the second catch stop and the third catch stop.

11. The toy projectile launcher of claim **1**, wherein:

the catch assembly comprising at least a first catch stop and a second catch stop such that a first dimension, of the first catch stop, is at least 1% greater than a second dimension of the second catch stop, wherein the first and second dimensions are measurable along a first and second spatial axis, respectively, where the first and second spatial axis are substantially parallel.

12. The toy projectile launcher of claim **1**, wherein:

the catch assembly comprising at least a first catch stop and a second catch stop that are configured such that a first spatial position, of the first catch stop, is substantially different on at least two spatial axis of a second spatial position of the second catch stop.

13. The toy projectile launcher of claim **1**, wherein:

the catch assembly is further comprising one or more catch supports, wherein a first catch support, of the one or more catch supports, is configured to hold the trigger assembly in a position of a partially triggered state.

14. The toy projectile launcher of claim **1**, wherein:

the catch assembly further comprising an at least one catch stop that comprises an at least one catch wedge.

15. The toy projectile launcher of claim **1**, wherein:

the trigger assembly further comprising an at least one variable latch that comprises an at least one trigger wedge.

16. A toy projectile launcher comprising:

a housing assembly of the toy projectile launcher;

a fluid compressor being at least partially received by the housing assembly, wherein the fluid compressor is configured to potentially compress a fluid;

a priming actuator being at least partially received by the fluid compressor, wherein the priming actuator is configured to prime the fluid compressor to potentially generate a fluid flow;

an active barrel group being at least partially received by the housing assembly and comprising one or more launch barrels, wherein the active barrel group is configured to receive a plurality of projectiles;

a valve system being at least partially received by the fluid compressor and the active barrel group, wherein the valve system is configured to be in fluid communication with the fluid compressor and the active barrel group;

a loading actuator being at least partially received by the housing assembly, wherein the loading actuator is configured to be operatively coupled to one or more storage clips configured to hold at least the plurality of projectiles, wherein the loading actuator is able to move the plurality of projectiles, from the one or more storage clips, into at least a portion of the active barrel group;

a trigger assembly being at least partially received by the housing assembly and including an at least one variable latch, wherein the trigger assembly is configured to increase the fluid flow from the fluid compressor based on one or more start movements of the at least one variable latch of the trigger assembly; and

a catch assembly being at least partially received by the housing assembly and including one or more catch stops, wherein the catch assembly is configured to decrease the fluid flow from the fluid compressor based on one or more stop movements of the one or more catch stops of the catch assembly, wherein the toy projectile launcher is able to launch each projectile, from the plurality of projectiles from the active barrel group, in temporal sequence after the fluid compressor has been primed once by the priming actuator.

17. The toy projectile launcher of claim **16**, wherein:

the priming actuator is further configured to be manually operated.

18. The toy projectile launcher of claim **16**, wherein:

at least a portion of the priming actuator is further coupled to the one or more catch stops of the catch assembly.

19. The toy projectile launcher of claim **16**, wherein:

at least a portion of the fluid compressor is further coupled to the one or more catch stops of the catch assembly.

20. The toy projectile launcher of claim **16**, wherein:

the fluid compressor is further comprising a launch spring configured to be preloaded.

21. The toy projectile launcher of claim **16**, wherein:

the trigger assembly and the catch assembly are further able to perform a plurality of launch cycles, where each launch cycle comprises the trigger assembly increasing the fluid flow from the fluid compressor and, subsequently, the catch assembly decreasing the fluid flow from the fluid compressor.

22. The toy projectile launcher of claim **16**, wherein:

the catch assembly comprising at least a first catch stop, a second catch stop, and a third catch stop such that a first distance, between the first catch stop and the second catch stop, is at least 1% greater than a second distance between the second catch stop and the third catch stop.

23. The toy projectile launcher of claim **16**, wherein:

the catch assembly is further comprising one or more catch supports, wherein a first catch support, of the one or more catch supports, is configured to hold the trigger assembly in a position of a partially triggered state.

24. The toy projectile launcher of claim **16**, wherein:

at least a first catch stop, of the one or more catch stops, comprises at least one catch wedge.

25. A method for assembling a toy projectile launcher comprising the steps of:

providing a launcher with a housing assembly;

providing a fluid compressor being at least partially received by the housing assembly;

supporting a priming actuator being at least partially received by the fluid compressor;

providing an active barrel group being at least partially received by the housing assembly and comprising one or more launch barrels;

providing a valve system being at least partially received by the fluid compressor and the active barrel group;

supporting a trigger assembly being at least partially received by the housing assembly and including an at least one variable latch; and

supporting a catch assembly being at least partially received by the housing assembly and including one or more catch stops.

26. The method of claim **25**, further comprising the step of:

providing a loading actuator being at least partially received by the housing assembly.

27. The method of claim **25**, wherein:

the fluid compressor is further comprising a launch spring; and including the step of: installing the launch spring such that the launch spring is preloaded.

* * * * *