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(54) Title: DRY FIRE PRACTICE TRAINING DEVICE FOR SINGLE STACK PISTOLS

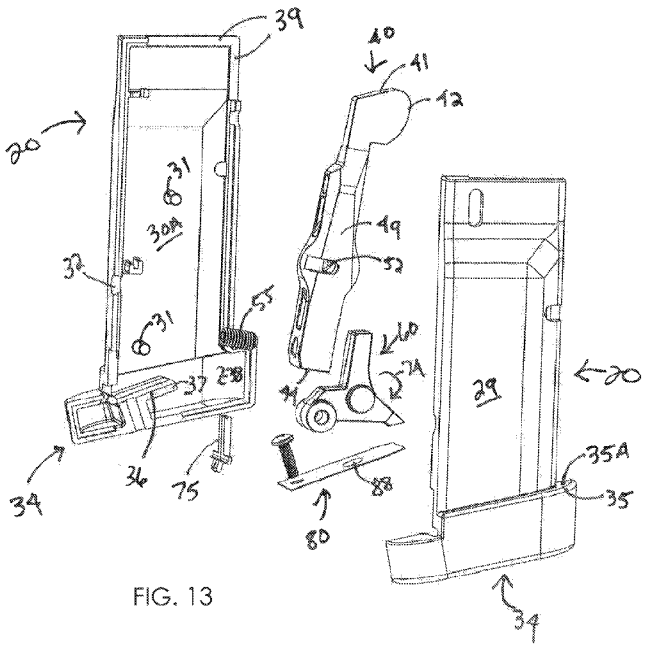

FIG. 13

(57) Abstract: Live firing a semi-automatic pistol, resets the firing pin, and the semi-automatic pistol is ready to be fired again. With dry fire practice, the shooter removes a hand from the pistol and ratchets the slide resetting the firing pin to simulate each shot. This invention provides a simulated ammunition magazine that provides realistic muscle training by duplicating the trigger action of normal live fire, the feel and the sound of the release of the firing pin, and the resetting of the trigger for additional trigger activations. There is no firing pin interaction, and no alterations required to the pistol. This dry fire training device is narrow enough to work in single stack pistols.

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DRY FIRE PRACTICE TRAINING DEVICE FOR SINGLE STACK PISTOLS

RELATED APPLICATIONS AND CLAIM OF PRIORITY

This PCT (Patent Cooperation Treaty) patent application claims priority to earlier filed US Provisional Patent Application No. 63/319,177 filed on March 11, 2022 with the United States Patent and Trademark Office (USPTO), and titled Dry Fire Practice Training Device for Single Stack Pistols. The identified earlier filed US Provisional Patent Application No. 63/319,177 filed on March 11, 2022 with the USPTO is expressly, fully and completely incorporated herein by this reference.

FIELD OF INVENTION

This invention relates to firearms. More particularly this invention relates to training ammunition magazines for semi-automatic pistols that permit dry fire training with the semi-automatic pistol. Even more particularly, this invention relates to training ammunition magazines that are of the single stack variety.

BACKGROUND OF THE INVENTION AND DESCRIPTION OF RELATED ART

Live firing is the best way to practice drawing and firing a pistol. Practice process builds muscle memory, and helps the shooter develop proper techniques of delivery and complete weapon control. There are a variety of drawbacks to live fire training practice. Using ammunition is an ongoing expense, and measures have to be taken to practice with safety. This may include, without limitation, traveling to/from a firing range; providing/purchasing/maintaining safety equipment for the shooter and possibly others; and allotting special time in the schedule for the practice session.

Dry fire practice is a possible substitute for live fire practice, but is more widely recognized and accepted as an addition to, and supplement to, live fire practice. Dry firing is a practice technique that also builds muscle memory and a technique whereby a pistol, is drawn, aimed, and fired but without using live ammunition. This enables the practice of firing a pistol to proceed smoothly and accurately without all of the negatives of live fire practice. Because no live ammunition is used, there is no ongoing expense, there is no need to use safety equipment, a special shooting environment is not necessary, and practicing can be accomplished in much less time and in locations (such as a home environment) where it is more likely a firearm may be used in an unexpected emergency situation, such as a home invasion, burglary, robbery and the like.

Dry firing also allows the shooter to practice in the actual

environment where the pistol may need to be used for protection such as in the home. With complete safety, actual shooting scenarios can be practiced in and around the home.

Practicing at the range can also be improved. When live fire is practiced at the range, the novice shooter usually has to spend a significant amount of time and expend a lot of ammunition getting accustomed to the report and recoil of the pistol. Before live practice begins, some dry fire practicing can be done. The novice shooter can become accustomed to the trigger feel before having to deal with the recoil and the report of live firing.

A major negative factor occurs with most methods of dry firing because when a semi-automatic pistol is live fired, the "firing" resets the pistol's firing pin and the pistol is ready to be fired again (repeatedly) until the magazine is empty. The shooter's hands remain in the firing position, and just the trigger finger and the trigger are employed. With known dry fire practice, after the first activation of the trigger releasing the firing pin, the shooter must remove a hand from the pistol and ratchet the slide back in order to reset the firing pin. The pistol is then ready for another trigger activation. This must be done each time, and every time, a shot is simulated. Doing this, teaches improper muscle memory because it is not even remotely close to what happens during actual live fire. When people are in real shooting situations, they need to be able to depend on simply acting upon how they have practiced. Anything else could be deadly.

Another negative of known dry fire practice is wear and tear on the

pistol resulting from the constant releasing of a pistol's firing pin without the firing pin having the cushioning effect of striking an ammunition cartridge within the pistol's ammunition chamber.

Some known dry fire training systems incorporate computer graphics into the training scenario. Other known systems attempt to replicate the pistol's recoil. Still other use laser marking of "shots", and still others project images onto a screen, etc.

A few examples of known firearm training patents include the following:

US. 5,993,215; issued November 30, 1999; to Jansen; Kotsiopoulos.

US. 4,657,511; issued April 14, 1987; to Allard; Briard; Saunier.

US. 4,725, 235; issued February 16, 1988; to Schroeder; Osborne.

US. 4,737,106; issued April 12, 1988; to Laciny.

US. 4,804,325; issued February 14, 1989; to Willits; Kleeman; Willits.

US. 5,451,162; issued September 19, 1995; to Parsons.

US. 9,182,189; issued November, 10, 2015; to Seigler.

These are some devices and/or systems that aid in dry fire practice, but only one of the patented devices 9,182,189 address both the "hands-free" trigger reset problem and the firing pin damage problem.

Negative aspects of these known devices/systems include, but are not limited to, they are training intensive; they are expensive; they do not allow a user to practice with their own pistol; they have extensive "learning curves"; they all allow the firing pin of the pistol to be damaged by the repetitive un-cushioned release responsive to pulling the trigger,

may require practice in a specific location (such as in front of a computer monitor) and none of the devices reset the firing pin after each successive trigger pull to allow simulation of the next shot.

Semi-automatic pistols are either double stack or single stack in design. Double stack pistols are wide enough (side-to-side dimensions of the pistol hand grip) for the ammunition to position itself in an alternating staggered array inside the ammunition magazine. This staggered positioning allows for more bullets to be in the magazine, but, also, necessitates that the pistol hand grip be wide enough to accommodate this wider magazine. This results in a thicker, more bulky and heavier pistol.

As is more fully disclosed herein, the present invention is a dry fire training device for use with a semi-automatic pistol having a magazine compartment defined in the semi-automatic pistol's hand grip. The magazine compartment is sized and configured to carry a single stack ammunition magazine which has a smaller side-to-side dimension because ammunition cartridges are arranged, and positionally retained in vertical stacked alignment, with one ammunition cartridge stacked substantially exactly on top of the ammunition cartridge immediately adjacent below, without any lateral offset. Although single stack magazines may be criticized for an inability to accommodate (contain) a greater quantity of ammunition cartridges, single stack magazines have the benefit of being smaller and more compact, which allows the semi-automatic pistol, which is configured to utilize single stack magazines, to be smaller, more compact, lighter in weight, easier to

handle/manipulate, and more easily concealed. Further such smaller semi-automatic pistols may be favored by users who are smaller in stature, or those who need to limit the amount of weight they carry, such as members of the armed forces and undercover law enforcement officers.

Semi-automatic pistols have a trigger mechanism. When the trigger mechanism is actuated by pulling the pistol's trigger, the pistol's firing pin is released from a "cocked position" spacedly rearwardly of an ammunition cartridge, and the firing pin responsively moves rapidly forwardly to forcefully impact the ammunition cartridge, causing the ammunition cartridge to "fire".

The release of the firing pin generates both an audible sound and a tactile "sensation" that are substantially simultaneous and which are difficult to accurately replicate.

Only one known dry fire training device addresses each and every one of the identified negative aspects, but that known device is not operable with a single stack ammunition magazine due to the size and structural components required to fulfill the needs and to generate the necessary audible and tactile feedback. Because a single stack magazine is much narrower (side-to-side dimension) known components of known solutions are not usable in single stack magazines.

There is, therefore, a continuing need for a dry fire training device that allows for precise muscle memory training, is simple to operate, prevents the firing pin of the pistol from being damaged during dry fire practice, provides for safe on-site home training, inserts easily into the pistol's magazine

compartment, has capabilities to interact with electronic dryfire training systems and devices, and is usable with a single stack ammunition magazine for a single stack pistol application.

As disclosed herein, the solution is to place the detente reed in an enlargement below the pistol's magazine well and make the enlargement wide enough and long enough to accommodate the detente reed. The enlargement is oriented horizontally to look like a normal magazine extension which is used for a rest for the pinky finger.

The present invention resolves this unmet and continuing need. The components and placement thereof and alignment thereof is unique and inventive and provides the necessary and sought after results.

SUMMARY

A principle aspect of the present invention is a dry fire training device to be used with a single stack semi-automatic pistol having a magazine compartment, and a trigger mechanism, and wherein the dry fire training device comprises a plurality of components, including, a simulated ammunition magazine that is inserted into the single stack semi-automatic pistol's magazine compartment and the simulated ammunition magazine encloses an elongate trigger lever that provides for interaction between the pistol's trigger mechanism when the dry fire training device is inserted into the magazine compartment, and a transfer lever that

interacts between the elongate trigger lever and a detente reed; a detente reed providing the sound (audible) and feel (tactile) of a pistol's firing pin release and reset and the détente reed biases the trigger lever and the transfer hub to a release and a reset position; whereby the dry fire practice training device is used with single stack pistols and provides audible and tactile simulation for realistic, repetitive dry fire training with single stack pistols, and allows said dry fire training device to interact with electronic training devices such, but not limited to a laser cartridge and other electronic training devices/tools/accessories.

A further aspect of the present invention is dry fire training device wherein the single stack pistol's magazine compartment is utilized to provide means for resetting a trigger mechanism after a pistol is dry fired.

A further aspect of the present invention is dry fire training device wherein a simulated magazine that has various holes, projections, and angled surfaces that provide for levers to rotate upon, a detente reed, and electronic components to be mounted.

A further aspect of the present invention is dry fire training device wherein an elongate trigger lever interacts with the single stack pistol's trigger mechanism and transfers that motion to another lever/hub.

A further aspect of the present invention is dry fire training device wherein a transfer hub that interacts with the trigger lever and transfers motion to a detente reed.

A further aspect of the present invention is dry fire training device wherein a detente reed that receives motion from the transfer hub and reacts to that motion providing the simulated feel of the release and reset of the trigger's firing pin.

A further aspect of the present invention is dry fire training device wherein various electronic components that respond when the lever and/or hub are activated which can in turn activate electronic components and devices.

A further aspect of the present invention is dry fire training device for use with a semi-automatic pistol having a magazine compartment defined in the semi-automatic pistol's hand grip that is sized and configured for a single stack ammunition magazine, and a trigger mechanism for releasing the semi-automatic pistol's firing pin, the dry fire training device comprising: a magazine case 20 that is sized and configured to replicate a single stack ammunition magazine, and has a upper end portion 23, a bottom end portion 24 and defines an interior chamber 30 that has an inner surface 30A which carries a plurality of spacedly arrayed and generally transversely extending pivot axle protrusions 31; an enlargement 34 at the bottom end portion 24 of the magazine case 20, and the enlargement 34 defines an interior cavity 38 that communicates with the interior chamber 30 of the magazine case 20, and a detente base plate 36, which has a détente reed 80 mounting protrusion 37 thereon, is structurally carried within the interior cavity 38; and an elongate trigger lever 40 is carried within the magazine case 20 interior chamber 30, and the elongate trigger lever 40 has a first end portion 41, a second end portion

44 and defines a pivot axle orifice 52 at a medial portion 50 that receives a generally transversely extending pivot axle protrusion 31 carried on the inner surface 30A of the interior chamber 30 so that the elongate trigger lever 40 is pivotally movable thereon within the interior chamber 30, and wherein the first end portion 41 of the elongate trigger lever 40 frictionally interacts with the trigger mechanism of the semi-automatic pistol; and a transfer hub 60 is carried within the interior chamber 30 defined by the magazine case 20 proximate the enlargement 34, and the transfer hub 60 has a medial portion 61, a trigger lever arm 62, a pivot axle arm 65 and a detente reed arm 69, and the trigger lever arm 62 has a terminal end 64 that frictionally engages with the second end portion 44 of the elongate trigger lever 40, and the pivot axle arm 65 has a terminal end 67 that engages with a transversely extending pivot axle protrusion 31 carried on the inner surface 30A of the interior chamber 30 of the magazine case 20, so that the transfer hub 60 is rotatably movable thereon responsive to forward and rearward pivotal movement of the second end portion 44 of the elongate trigger lever 40, and the detente reed arm 69 has a terminal end 71 that defines a corner 73, and the corner 73 of the terminal end 71 frictionally engages with a detente reed 80; and the detente reed 80 has a first end portion 81, and a second end portion 82, and is positionally secured to the detente reed base plate 36 within the interior cavity 38 of the enlargement 34, so that the second end portion 82 of the detente reed 80 is unsupported and is movable upwardly and downwardly between a release position, and a reset position, responsive to frictional engagement with the

corner 73 of the detente reed arm 69 as the transfer hub 60 rotatably moves; and wherein movement of the detente reed 80 between the release position and the reset position generates tactile and audible feedback to a user that replicates a release, and reset of the semi-automatic pistol's firing pin.

A further aspect of the present invention is dry fire training device wherein the magazine case 20 further has a muzzle facing portion 25, a rearward facing portion 26, a left side portion 27, a right side portion 28, an exterior surface 29, and the exterior surface 29 defines a through hole 32 for access to a regulating screw 55, and defines a detente reed access hole 33.

A further aspect of the present invention is dry fire training device and further comprising: a cover plate 75 that releasably engages with the magazine case proximate the protrusion to cover the détente access hole 33.

A further aspect of the present invention is dry fire training device wherein the enlargement 34 extends forwardly from the muzzle facing portion 25 of the magazine case 20 so as to form a finger shelf 35 on an upper surface 35A of the enlargement 34, and also rearwardly from the rearward facing portion 26 of the magazine case 20.

A further aspect of the present invention is dry fire training device wherein the enlargement 34 is positioned outside/external of the semi-automatic pistol's magazine compartment and immediately adjacent a bottom end portion of the semi-automatic pistol's hand grip.

A further aspect of the present invention is dry fire training device wherein the enlargement 34 has exterior dimensions that exceed interior dimensions of the semi-automatic pistol's magazine compartment.

A further aspect of the present invention is dry fire training device wherein the elongate trigger lever 40 further has a medial portion 50 that has a rearward facing enlargement 51, a muzzle side portion 46, a rearward side portion 47, a right side portion 48, a left side portion 49, and the first end portion 41 defines a curvilinear protrusion 42, and the curvilinear protrusion 42 has a predetermined side-to-side thickness dimension 43 that facilitates frictional operative communication with the semi-automatic pistol's trigger mechanism.

A further aspect of the present invention is dry fire training device further comprising: a set screw hole 53 defined in the elongate trigger lever 40 proximate the second end portion 44 to threadably carry a regulating screw 55 therein.

A further aspect of the present invention is dry fire training device further comprising: a plurality of spacedly arrayed cavities 54 defined in the elongate trigger lever 40 to carry and accommodate electronic components of the dry fire training device.

A further aspect of the present invention is dry fire training device wherein each arm 62, 65 and 69 of the transfer hub extends generally radially outwardly from the medial portion 61 of the transfer hub 60, and each arm 62, 65 and 69 is angularly offset from the adjacent arms 62, 65, 69.

A further aspect of the present invention is dry fire training device wherein the regulating screw 55 that is adjustable carried in the set screw through hole 53 defined in the second end portion 44 of the elongate trigger lever 40, the set screw hole 53 communicating between the rearward side portion 47 and the muzzle side portion 46 of the elongate trigger lever 40 proximate the second end portion 44; and the regulating screw 55 carried in the set screw through hole 53 frictionally and adjustably communicates with the trigger lever arm 62 of the transfer hub 60.

A further aspect of the present invention is dry fire training device wherein the détente reed 80 is formed of a metal.

A further aspect of the present invention is dry fire training device wherein the détente reed 80 defines a dimple.

A further aspect of the present invention is dry fire training device wherein the detente reed 80 is generally rectilinear and elongate and has a first side portion 83, a second side portion 84, an upper surface 85 and a bottom surface 86, and defines a mounting hole 87 proximate the first end portion 81 for engagement with the mounting protrusion 37 of the detente reed a base plate 36; and the detente reed 80 is positionally secured, along a portion of first end portion 81 so that the second end portion 82 of the detente reed 80 is movable upwardly and downwardly within the interior cavity 38 responsive to frictional engagement with the détente reed arm 69 and the corner 73 thereof which rotatably moves responsive to forward and rearward movement of the

elongate trigger lever 40 which pivots responsive to actuation of the trigger mechanism of the semi-automatic pistol.

A further aspect of the present invention is dry fire training device wherein the detente reed 80 biases the transfer hub 60 and the elongate trigger lever 40 to the reset position.

An even still further aspect of the present invention is dry fire training device for use with a semi-automatic pistol having a magazine compartment defined in the semi-automatic pistol's hand grip that is sized and configured for a single stack ammunition magazine, and a trigger mechanism for releasing the semi-automatic pistol's firing pin, the dry fire training device comprising: a magazine case 20 that has a upper end portion 23, a bottom end portion 24, a muzzle facing portion 25, a rearward facing portion 26, a left side portion 27, a right side portion 28, an exterior surface 29, and the magazine case 20 defines an interior chamber 30 that has an inner surface 30A which carries a plurality of spacedly arrayed and generally transversely extending pivot axle protrusions 31, and the exterior surface 29 defines a through hole 32 for access to a regulating screw 55, and defines a detente reed access hole 33 that may be covered with a releasable cover plate 75; an enlargement 34 is defined at the bottom end portion 24 of the magazine case 20 and the enlargement 34 extends generally forwardly from the muzzle facing portion 25 so as to form a finger shelf 35 on an upper surface 35A of the enlargement 34, and also rearwardly from the rearward facing portion 26, and the enlargement 34 defines an interior cavity 38 that communicates with the interior chamber 30 of

the magazine case 20, and a detente base plate 36, which has a mounting protrusion 37 thereon, is structurally carried within the interior cavity 38; and

an elongate trigger lever 40 is carried within the interior chamber 30 defined by the magazine case 20, and the elongate trigger lever 40 has a first end portion 41, a second end portion 44, a medial portion 50 having a rearward facing enlargement 51, a muzzle side portion 46, a rearward side portion 47, a right side portion 48, a left side portion 49, and defines a pivot axle orifice 52 proximate the medial portion 50 that receives a generally transversely extending pivot axle protrusion 31 carried on the inner surface 30A of the interior chamber 30 so that the elongate trigger lever 40 is pivotally movable thereon within the interior chamber 30, and wherein the first end portion 41 of the elongate trigger lever defines a curvilinear protrusion 42 that frictionally interacts with the trigger mechanism of the semi-automatic pistol, and the curvilinear protrusion 42 has a predetermined side-to-side thickness dimension 43; and a set screw hole 53 is defined in the elongate trigger lever 40 proximate the second end portion 44 to threadably carry an adjustable regulating screw 55 therein that may extend outwardly from the muzzle side portion 46, and the elongate trigger lever 40 further defines a plurality of spacedly arrayed cavities 54 that may carry and accommodate electronic components; and a transfer hub 60 is carried within the interior chamber 30 defined by the magazine case 20 proximate the enlargement 34, and the transfer hub 60 has a medial portion 61, a trigger lever arm 62, a pivot axle arm 65 and a detente reed arm 69, and each arm 62, 65, 69 extends somewhat

radially, outwardly from the medial portion 61 of the transfer hub 60, and the trigger lever arm 62 has a base portion 63 adjacent the medial portion 61, and a spaced apart terminal end 64 that frictionally engages with the muzzle side portion 46 of the second end portion 44 of the elongate trigger lever 40 and the regulating screw 55 carried thereby, and the pivot axle arm 65 has a base portion 66 adjacent the medial portion 61, and a spaced apart terminal end 67 that defines a transverse pivot axle hole 68 that engages with a transversely extending pivot axle protrusion 31 carried on the inner surface 30A of the interior chamber 30 of the magazine case 20, so that the transfer hub 60 is rotatably movable thereon responsive to forward and rearward pivotal movement of the second end portion 44 of the elongate trigger lever 40, and the detente reed arm 69 has a base portion 70 adjacent the medial portion 61 and a terminal end 71 opposite the base portion 70, and the terminal end 71 has an angled surface 72 and defines a corner 73, and the terminal end 71 and corner 73 of the detente reed arm 69 frictionally engages with a detente reed 80; and the detente reed 80 is generally rectilinear and elongate and formed of metal, and has a first end portion 81, a second end portion 82, a first side portion 83, a second side portion 84, an upper surface 85 and a bottom surface 86, and defines a dimple 88 and defines a mounting hole 87 proximate the first end portion 81 for engagement with a fastener for securing the détente reed 80 to the detente reed a base plate 36, and wherein the detente reed 80 is positionally secured, along a portion of first end portion 81 to the detente reed base plate 36 within the interior cavity 38 of the enlargement 34, so that the

detente reed 80 extends forwardly therefrom so that the second end portion 82 of the detente reed 80 is unsupported and is movable upwardly and downwardly within the interior cavity 38 between a release position and a reset position responsive to frictional engagement with the angled surface 72, and corner 73, of the detente reed arm 69 as the transfer hub 60 rotatably moves responsive to movement of the elongate trigger lever 40 which pivots responsive to actuation of the trigger mechanism of the semi-automatic pistol that is frictionally engaged with the curvilinear protrusion 42 of the elongate trigger lever 40; and wherein movement of the detente reed 80 between the release position and the reset position generates tactile and audible feedback to a user that replicates a release, and reset of the semi-automatic pistol's firing pin; and wherein the detente reed 80 biases the transfer hub 60 and the elongate trigger lever 40 to the reset position.

These and other aspects of the invention are more fully described and claimed herein.

BRIEF DESCRIPTIONS OF THE DRAWINGS

Specific forms, configurations, embodiments and/or diagrams relating to and helping to describe preferred embodiments of my invention are explained and characterized herein, often with reference to the accompanying Figures.

The Figures and all features shown therein/thereon also serve as part of the disclosure of my invention, whether described in the text or merely by graphical disclosure alone. The Figures are briefly described below.

Figure 1 is a perspective view of the left side and rearward facing portion of the elongate trigger lever.

Figure 2 is a perspective view of the right side and muzzle facing portion of the elongate trigger lever.

Figure 3 is a plan view of the détente reed showing the mounting hole and dimple defined therein.

Figure 4 is a perspective view of the cover plate.

Figure 5 is a perspective view of a fastener for securing the détente reed to the détente reed base plate.

Figure 6 is a perspective right side view of the transfer hub.

Figure 7 is a perspective left side view of the transfer hub.

Figure 8 is a side orthographic view of the regulating screw.

Figure 9 is an orthographic right side view of the exterior surface of the magazine case.

Figure 10 is an orthographic view of the inner surface of the right side half of the magazine case of Figure 9.

Figure 11 is an orthographic view of the inner surface of the left side half of the magazine case of Figure 12.

Figure 12 is an orthographic left side view of the exterior surface of the magazine case.

Figure 13 is an exploded perspective view of the interior chamber of the left half of the magazine case showing the position of the elongate trigger lever and the transfer hub and the détente reed.

Figure 14 is a cross-section view of a representative semi-automatic pistol showing the present invention (also in cross-section) within the pistol's magazine compartment.

Figure 15 is a top, downwardly looking view of the representative pistol shown in Figure 14 showing the interaction of the elongate trigger lever with the pistol's trigger mechanism.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

A Dry Fire Practice Training Device for Single Stack Pistols generally provides a magazine case 20; an elongate trigger lever 40 that is pivotally carried within an interior chamber 30 defined by the magazine case 20; a transfer hub 60 that operatively engages with the elongate trigger lever 40 and is movably carried within the interior chamber 30; and a détente reed 80 that moves between an activated position and a reset position responsive to operative engagement with a détente reed arm 69 of the transfer hub 60.

As shown in the Figures, the magazine case 20 is formed from a first half 21 and a second half 22 that interconnect to one another so as to define an interior chamber 30 therebetween. The magazine case 20 has a upper end portion 23, a bottom end portion 24, a muzzle facing portion 25, a rearward

facing portion 26, a left side portion 27, a right side portion 28, an exterior surface 29, and the interior chamber 30 has an inner surface 30A.

The inner surface 30A of the interior chamber carries a plurality of transversely extending, and spacedly arrayed pivot axle protrusions 31 to carry the elongate trigger lever 40 and the transfer hub 60 thereon.

The exterior surface 29 of the magazine case 20 defines a through hole 32 for access to a regulating screw 55, and the exterior surface 29 defines a detente reed access hole 33 that may be covered with a releasable cover plate 75. The exterior surface 29 of the magazine case 20 further defines a trigger arm orifice 39 in the upper end portion 23 and in the muzzle facing portion 25 adjacent the upper end portion 23.

An enlargement 34 is defined at the bottom end portion 24 of the magazine case 20. The enlargement 34 extends generally forwardly and downwardly from the muzzle facing portion 25 of the magazine case 20 and forms a finger shelf 35 on an upper surface 35A of the enlargement 34. The enlargement 34 also extends rearwardly and downwardly from the rearward facing portion 26 of the magazine case 20 as well as laterally outwardly (left and right) from the exterior surface 29 of the magazine case 20. An interior cavity 38 is defined by the enlargement 34 and the interior cavity 38 communicates with the interior chamber 30 of the magazine case 20. Interior dimensions of the interior cavity 38 of the enlargement 34 are larger than interior dimensions of the interior chamber 30 of the magazine case 20.

A detente base plate 36, which has a mounting protrusion 37 thereon and defines a hole for a threaded fastener, is structurally carried within the interior cavity 38 of the enlargement 34. The enlargement 34 generally represents a magazine extension that is known for single stack magazines.

Best shown in Figure 12, the elongate trigger lever 40 is carried within the interior chamber 30 defined by the magazine case 20. The elongate trigger lever 40 has a first end portion 41, a second end portion 44, a medial portion 50 that has a rearward facing enlargement 51, a muzzle side portion 46, a rearward side portion 47, a right side portion 48 and a left side portion 49. A pivot axle orifice 52 is defined proximate the medial portion 50 so as to receive one of the generally transversely extending pivot axle protrusion 31 carried on the inner surface 30A of the interior chamber 30. Engagement of the pivot axle protrusion 31 in the pivot axle orifice 52 allows the elongate trigger lever 40 to pivot thereon, and thereabout within the interior chamber 30.

The first end portion 41 of the elongate trigger lever 40 which is positioned proximate the upper end portion 23 of the magazine case 20 defines a curvilinear protrusion 42 that extends at least partially though the trigger arm orifice 39 so as to frictionally interact with the trigger mechanism of the semi-automatic pistol, and the curvilinear protrusion 42 has a predetermined side-to-side thickness dimension 43.

A set screw hole 53, which is a through hole, is defined in the elongate trigger lever 40 proximate the second end portion 44. A regulating screw 55 is threadably carried in the set screw hole 53 and the regulating screw 55 may

extend/pass at least partially outwardly from the muzzle side portion 46 of the elongate trigger lever 40.

A plurality of spacedly arrayed cavities 54 are defined in the elongate trigger lever 40. The plurality of spacedly arrayed cavities 54 are sized, oriented and configured to carry and accommodate various electronic components that may allow the current dry fire training device to function with and operatively communicate with other training devices, such as, but not limited to laser training devices, computer targeting systems, computer training systems. The plurality of spacedly arrayed cavities 54 may carry components, such as, but not limited to, light emitting diodes, a power source such as a battery or a capacitor, a circuit board or other electronic circuitry, a micro-switch, a transmitter, a receiver, a transceiver.

As shown in the Figures, the transfer hub 60 is carried within the interior chamber 30 defined by the magazine case 20 proximate the enlargement 34 and at least partially below the elongate trigger lever 40. The transfer hub 60 has a medial portion 61, a trigger lever arm 62, a pivot axle arm 65 and a detente reed arm 69. Each of the arms 62, 65, 69 extend somewhat radially, outwardly from the medial portion 61 of the transfer hub 60.

The trigger lever arm 62 has a base portion 63 adjacent the medial portion 61, and a spaced apart terminal end 64 that frictionally engages with the muzzle side portion 46 of the second end portion 44 of the elongate trigger lever 40. The terminal end 64 of the trigger lever arm 62 may also engage with an outwardly extending end portion of the regulating screw 55 carried by, and

possibly extending outwardly from, the muzzle side portion 46 of the elongate trigger lever 40. The regulating screw 55 allows a user to finely/precisely adjust the positioning and interaction of the second end portion 44 of the elongate trigger lever 40 and the trigger lever arm 62 of the transfer hub 60. This precise positioning adjusts the "timing" and synchronization of the trigger pull and the audible and tactile sensation.

The pivot axle arm 65 has a base portion 66 adjacent the medial portion 61 of the transfer hub 60, and a spaced apart terminal end 67 that defines a pivot axle hole 68. The pivot axle hole 68 extends transversely at least partially through the terminal end 67 and engages with one of the transversely extending pivot axle protrusion 31 carried on the inner surface 30A of the interior chamber 30 of the magazine case 20, so that the transfer hub 60 is at least partially rotatably movable thereon responsive to forward and rearward pivotal movement of the second end portion 44 of the elongate trigger lever 40.

The detente reed arm 69 has a base portion 70 adjacent the medial portion 61 of the transfer hub 60 and a terminal end 71 opposite the base portion 70. The terminal end 71 of the détente reed arm 69 has an angled surface 72 and defines a corner 73. As shown in Figure 12, the terminal end 71 and the corner 73 frictionally communicate with the detente reed 80.

The detente reed 80 is generally rectilinear and elongate and is preferably formed of metal, such as but not limited to spring steel, stainless steel, a composite, an alloy. It is also contemplated the détente reed 80 might be

formed of a plastic. Most preferably the material forming the détente reed 80 has retentive memory so that the détente' reed "snaps back" into an original position when deflected from the original position by a force exerted upon the détente reed 80.

The détente reed 80 has a first end portion 81, a tapered second end portion 82, a first side portion 83, a second side portion 84, an upper surface 85 and a bottom surface 86, and defines a mounting hole 87 proximate the first end portion 81 for engagement with a fastener to secure the détente reed 80 to the detente reed a base plate 36 within the enlargement 34 of the magazine case 20. As shown in Figures 3, 13 and 14, the détente reed 80 defines a dimple the may be "punched" into the détente reed 80. The dimple 88 modifies and enhances the audible and tactile sensation the détente reed 80 generates when the détente reed 80 moves between a release position and a reset position. The modified and enhanced audible and tactile sensation is representative of the release and reset of the pistol's firing pin.

As shown in Figure 12, the detente reed 80 is positionally secured, along a portion of first end portion 81 to the detente reed base plate 36 within the interior cavity 38 of the enlargement 34. The détente reed 80 may be secured thereto with a screw or other known fastener. The detente reed 80 extends from the détente reed base plate 36 so that the second end portion 82 of the detente reed 80 is unsupported and is movable upwardly and downwardly within the interior cavity 38 of the enlargement 34. The unsupported position of the détente reed 80 moves upwardly and downwardly between a release

position and a reset position responsive to frictional engagement with the angled surface 72, and the corner 73, of the detente reed arm 69 as the transfer hub 60 moves/partially rotates responsive to movement of the elongate trigger lever 40.

The elongate trigger lever 40 pivots responsive to actuation of the trigger mechanism of the semi-automatic pistol that is frictionally engaged with the curvilinear protrusion 42 of the elongate trigger lever 40.

Movement of the detente reed 80 between the release position, and the reset position, generates tactile and audible feedback to a user that replicates a release, and reset of the semi-automatic pistol's firing pin.

The detente reed 80 biases the transfer hub 60 and the elongate trigger lever 40 to the reset position.

OPERATION

The operation of the described embodiment of the present invention is believed to be readily apparent, and is briefly summarized at this point.

In its broadest object, the present invention is a dry fire training device for use with a semi-automatic pistol having a magazine compartment defined in the semi-automatic pistol's hand grip that is sized and configured for a single stack ammunition magazine, and a trigger mechanism for releasing the semi-automatic pistol's firing pin, the dry fire training device comprising: a magazine case 20 that is sized and configured to replicate a single stack

ammunition magazine, and has a upper end portion 23, a bottom end portion 24 and defines an interior chamber 30 that has an inner surface 30A which carries a plurality of spacedly arrayed and generally transversely extending pivot axle protrusions 31; an enlargement 34 at the bottom end portion 24 of the magazine case 20, and the enlargement 34 defines an interior cavity 38 that communicates with the interior chamber 30 of the magazine case 20, and a detente base plate 36, which has a détente reed 80 mounting protrusion 37 thereon, is structurally carried within the interior cavity 38; and an elongate trigger lever 40 is carried within the magazine case 20 interior chamber 30, and the elongate trigger lever 40 has a first end portion 41, a second end portion 44 and defines a pivot axle orifice 52 at a medial portion 50 that receives a generally transversely extending pivot axle protrusion 31 carried on the inner surface 30A of the interior chamber 30 so that the elongate trigger lever 40 is pivotally movable thereon within the interior chamber 30, and wherein the first end portion 41 of the elongate trigger lever 40 frictionally interacts with the trigger mechanism of the semi-automatic pistol; and a transfer hub 60 is carried within the interior chamber 30 defined by the magazine case 20 proximate the enlargement 34, and the transfer hub 60 has a medial portion 61, a trigger lever arm 62, a pivot axle arm 65 and a detente reed arm 69, and the trigger lever arm 62 has a terminal end 64 that frictionally engages with the second end portion 44 of the elongate trigger lever 40, and the pivot axle arm 65 has a terminal end 67 that engages with a transversely extending pivot axle protrusion 31 carried on the inner surface 30A of the interior chamber 30 of

the magazine case 20, so that the transfer hub 60 is at least partially rotatably movable thereon responsive to forward and rearward pivotal movement of the second end portion 44 of the elongate trigger lever 40, and the detente reed arm 69 has a terminal end 71 that defines a corner 73, and the corner 73 of the terminal end 71 frictionally engages with a detente reed 80; and the detente reed 80 has a first end portion 81, and a second end portion 82, and is positionally secured to the detente reed base plate 36 within the interior cavity 38 of the enlargement 34, so that the second end portion 82 of the detente reed 80 is unsupported and is movable upwardly and downwardly between a release position, and a reset position, responsive to frictional engagement with the corner 73 of the detente reed arm 69 as the transfer hub 60 rotatably moves; and wherein movement of the detente reed 80 between the release position and the reset position generates tactile and audible feedback to a user that replicates a release, and reset of the semi-automatic pistol's firing pin.

A further object of the present invention is a dry fire training device wherein the magazine case 20 further has a muzzle facing portion 25, a rearward facing portion 26, a left side portion 27, a right side portion 28, an exterior surface 29, and the exterior surface 29 defines a through hole 32 for access to a regulating screw 55, and defines a detente reed access hole 33.

A further object of the present invention is a dry fire training device further comprising: a cover plate 75 that releasably engages with the magazine case proximate the protrusion to cover the détente access hole 33.

A further object of the present invention is a dry fire training device wherein the enlargement 34 extends forwardly from the muzzle facing portion 25 of the magazine case 20 so as to form a finger shelf 35 on an upper surface 35A of the enlargement 34, and also rearwardly from the rearward facing portion 26 of the magazine case 20.

A further object of the present invention is a dry fire training device wherein the enlargement 34 is positioned outside/external of the semi-automatic pistol's magazine compartment and immediately adjacent a bottom end portion of the semi-automatic pistol's hand grip.

A further object of the present invention is a dry fire training device wherein the enlargement 34 has exterior dimensions that exceed interior dimensions of the semi-automatic pistol's magazine compartment.

A further object of the present invention is a dry fire training device wherein the elongate trigger lever 40 further has a medial portion 50 that has a rearward facing enlargement 51, a muzzle side portion 46, a rearward side portion 47, a right side portion 48, a left side portion 49, and the first end portion 41 defines a curvilinear protrusion 42, and the curvilinear protrusion 42 has a predetermined side-to-side thickness dimension 43 that facilitates frictional operative communication with the semi-automatic pistol's trigger mechanism.

A further object of the present invention is a dry fire training device further comprising: a set screw hole 53 defined in the elongate trigger lever 40

proximate the second end portion 44 to threadably carry a regulating screw 55 therein.

A further object of the present invention is a dry fire training device further comprising: a plurality of spacedly arrayed cavities 54 defined in the elongate trigger lever 40 to carry and accommodate electronic components of the dry fire training device.

A further object of the present invention is a dry fire training device wherein each arm 62, 65 and 69 of the transfer hub extends generally radially outwardly from the medial portion 61 of the transfer hub 60, and each arm 62, 65 and 69 is angularly offset from the adjacent arms 62, 65, 69.

A further object of the present invention is a dry fire training device wherein the regulating screw 55 that is adjustable carried in the set screw through hole 53 defined in the second end portion 44 of the elongate trigger lever 40, the set screw hole 53 communicating between the rearward side portion 47 and the muzzle side portion 46 of the elongate trigger lever 40 proximate the second end portion 44; and the regulating screw 55 carried in the set screw through hole 53 frictionally and adjustably communicates with the trigger lever arm 62 of the transfer hub 60.

A further object of the present invention is a dry fire training device wherein the détente reed 80 is formed of a material that has retentive memory such as for example only, and not limited to, from a metal, a composite, an alloy.

A further object of the present invention is a dry fire training device wherein the detente reed 80 is generally rectilinear and elongate and has a first side portion 83, a second side portion 84, an upper surface 85 and a bottom surface 86, and defines a mounting hole 87 proximate the first end portion 81 for engagement with the mounting protrusion 37 of the detente reed a base plate 36; and the detente reed 80 is positionally secured, along a portion of first end portion 81 so that the second end portion 82 of the detente reed 80 is movable upwardly and downwardly within the interior cavity 38 responsive to frictional engagement with the détente reed arm 69 and the corner 73 thereof which rotatably moves responsive to forward and rearward movement of the elongate trigger lever 40 which pivots responsive to actuation of the trigger mechanism of the semi-automatic pistol.

A still further object of the present invention is a dry fire training device wherein the detente reed 80 biases the transfer hub 60 and the elongate trigger lever 40 to the reset position.

An even still further object of the present invention is a dry fire training device wherein for use with a semi-automatic pistol having a magazine compartment defined in the semi-automatic pistol's hand grip that is sized and configured for a single stack ammunition magazine, and a trigger mechanism for releasing the semi-automatic pistol's firing pin, the dry fire training device comprising: a magazine case 20 that has a upper end portion 23, a bottom end portion 24, a muzzle facing portion 25, a rearward facing portion 26, a left side portion 27, a right side portion 28, an exterior surface 29, and the magazine

case 20 defines an interior chamber 30 that has an inner surface 30A which carries a plurality of spacedly arrayed and generally transversely extending pivot axle protrusions 31, and the exterior surface 29 defines a through hole 32 for access to a regulating screw 55, and defines a detente reed access hole 33 that may be covered with a releasable cover plate 75, and defines a trigger arm orifice 39; an enlargement 34 is defined at the bottom end portion 24 of the magazine case 20 and the enlargement 34 extends generally forwardly from the muzzle facing portion 25 so as to form a finger shelf 35 on an upper surface 35A of the enlargement 34, and also rearwardly from the rearward facing portion 26, and the enlargement 34 defines an interior cavity 38 that communicates with the interior chamber 30 of the magazine case 20, and a detente base plate 36, which has a mounting protrusion 37 thereon, is structurally carried within the interior cavity 38; and an elongate trigger lever 40 is carried within the interior chamber 30 defined by the magazine case 20, and the elongate trigger lever 40 has a first end portion 41, a second end portion 44, a medial portion 50 having a rearward facing enlargement 51, a muzzle side portion 46, a rearward side portion 47, a right side portion 48, a left side portion 49, and defines a pivot axle orifice 52 proximate the medial portion 50 that receives a generally transversely extending pivot axle protrusion 31 carried on the inner surface 30A of the interior chamber 30 so that the elongate trigger lever 40 is pivotally movable thereon within the interior chamber 30, and wherein the first end portion 41 of the elongate trigger lever defines a curvilinear protrusion 42 the extends at least partially

through the trigger arm orifice 39 and that frictionally interacts with the trigger mechanism of the semi-automatic pistol, and the curvilinear protrusion 42 has a predetermined side-to-side thickness dimension 43; and a set screw hole 53 is defined in the elongate trigger lever 40 proximate the second end portion 44 to threadably carry an adjustable regulating screw 55 therein that may extend outwardly from the muzzle side portion 46, and the elongate trigger lever 40 further defines a plurality of spacedly arrayed cavities 54 that may carry and accommodate electronic components; and a transfer hub 60 is carried within the interior chamber 30 defined by the magazine case 20 proximate the enlargement 34, and the transfer hub 60 has a medial portion 61, a trigger lever arm 62, a pivot axle arm 65 and a detente reed arm 69, and each arm 62, 65, 69 extends somewhat radially, outwardly from the medial portion 61 of the transfer hub 60, and the trigger lever arm 62 has a base portion 63 adjacent the medial portion 61, and a spaced apart terminal end 64 that frictionally engages with the muzzle side portion 46 of the second end portion 44 of the elongate trigger lever 40 and the regulating screw 55 carried thereby, and the pivot axle arm 65 has a base portion 66 adjacent the medial portion 61, and a spaced apart terminal end 67 that defines a transverse pivot axle hole 68 that engages with a transversely extending pivot axle protrusion 31 carried on the inner surface 30A of the interior chamber 30 of the magazine case 20, so that the transfer hub 60 is rotatably movable thereon responsive to forward and rearward pivotal movement of the second end portion 44 of the elongate trigger lever 40, and the detente reed arm 69 has a base portion 70 adjacent

the medial portion 61 and a terminal end 71 opposite the base portion 70, and the terminal end 71 has an angled surface 72 and defines a corner 73, and the terminal end 71 and corner 73 of the detente reed arm 69 frictionally engages with a detente reed 80; and the detente reed 80 is generally rectilinear and elongate and formed of metal, and has a first end portion 81, a tapered second end portion 82, a first side portion 83, a second side portion 84, an upper surface 85 and a bottom surface 86, and defines dimple 88, and defines a mounting hole 87 proximate the first end portion 81 for engagement with a fastener to secure the détente reed 80 to the detente reed a base plate 36, and wherein the detente reed 80 is positionally secured, along a portion of first end portion 81 to the detente reed base plate 36 within the interior cavity 38 of the enlargement 34, so that the detente reed 80 extends forwardly therefrom so that the second end portion 82 of the detente reed 80 is unsupported and is movable upwardly and downwardly within the interior cavity 38 between a release position and a reset position responsive to frictional engagement with the angled surface 72, and corner 73, of the detente reed arm 69 as the transfer hub 60 rotatably moves responsive to movement of the elongate trigger lever 40 which pivots responsive to actuation of the trigger mechanism of the semi-automatic pistol that is frictionally engaged with the curvilinear protrusion 42 of the elongate trigger lever 40; and wherein movement of the detente reed 80 between the release position and the reset position generates tactile and audible feedback to a user that replicates a release, and reset of the

semi-automatic pistol's firing pin; and wherein the detente reed 80 biases the transfer hub 60 and the elongate trigger lever 40 to the reset position.

In compliance with the statute, the invention has been described in language more or less specific as to structural, and methodical features. It is to be understood, however, that the invention is not limited to the specific features shown and described since the means herein disclose comprised preferred forms of putting the invention into effect. The invention is, therefore, claimed in any of its forms or modifications within the proper scope of the appended claims appropriately interpreted in accordance with the Doctrine of Equivalence.

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CLAIMS

I CLAIM:

1. A dry fire training device for use with a semi-automatic pistol having a magazine compartment defined in the semi-automatic pistol's hand grip that is sized and configured for a single stack ammunition magazine, and a trigger mechanism for releasing the semi-automatic pistol's firing pin, the dry fire training device comprising:

a magazine case 20 that is sized and configured to replicate a single stack ammunition magazine, and has a upper end portion 23, a bottom end portion 24 and defines an interior chamber 30 that has an inner surface 30A which carries a plurality of spacedly arrayed and generally transversely extending pivot axle protrusions 31;

an enlargement 34 at the bottom end portion 24 of the magazine case 20, and the enlargement 34 defines an interior cavity 38 that communicates with the interior chamber 30 of the magazine case 20, and a detente base plate

36, which has a détente reed 80mounting protrusion 37 thereon, is structurally carried within the interior cavity 38; and

an elongate trigger lever 40 is carried within the magazine case 20 interior chamber 30, and the elongate trigger lever 40 has a first end portion 41, a second end portion 44 and defines a pivot axle orifice 52 at a medial portion 50 that receives a generally transversely extending pivot axle protrusion 31 carried on the inner surface 30A of the interior chamber 30 so that the elongate trigger lever 40 is pivotally movable thereon within the interior chamber 30, and wherein the first end portion 41 of the elongate trigger lever 40 frictionally interacts with the trigger mechanism of the semi-automatic pistol; and

a transfer hub 60 is carried within the interior chamber 30 defined by the magazine case 20 proximate the enlargement 34, and the transfer hub 60 has a medial portion 61, a trigger lever arm 62, a pivot axle arm 65 and a detente reed arm 69, and

the trigger lever arm 62 has a terminal end 64 that frictionally engages with the second end portion 44 of the elongate trigger lever 40, and

the pivot axle arm 65 has a terminal end 67 that engages with a transversely extending pivot axle protrusion 31 carried on the inner surface 30A of the interior chamber 30 of the magazine case 20, so that the transfer hub 60 is rotatably movable thereon responsive to forward and rearward pivotal movement of the second end portion 44 of the elongate trigger lever 40, and

the detente reed arm 69 has a terminal end 71 that defines a corner 73, and the corner 73 of the terminal end 71 frictionally engages with a detente reed 80; and

the detente reed 80 has a first end portion 81, and a second end portion 82, and is positionally secured to the detente reed base plate 36 within the interior cavity 38 of the enlargement 34, so that the second end portion 82 of the detente reed 80 is unsupported and is movable upwardly and downwardly between a release position, and a reset position, responsive to frictional engagement with the corner 73 of the detente reed arm 69 as the transfer hub 60 rotatably moves; and wherein

movement of the detente reed 80 between the release position and the reset position generates tactile and audible feedback to a user that replicates a release, and reset of the semi-automatic pistol's firing pin.

2. The dry fire training device as claimed in Claim 1 and wherein the magazine case 20 further has a muzzle facing portion 25, a rearward facing portion 26, a left side portion 27, a right side portion 28, an exterior surface 29, and the exterior surface 29 defines a through hole 32 for access to a regulating screw 55, and defines a detente reed access hole 33.

3. The dry fire training device as claimed in Claim 2 and further comprising:

a cover plate 75 that releasably engages with the magazine case proximate the protrusion to cover the détente access hole 33.

4. The dry fire training device as claimed in Claim 2 and wherein the enlargement 34 extends forwardly from the muzzle facing portion 25 of the magazine case 20 so as to form a finger shelf 35 on an upper surface 35A of

the enlargement 34, and also rearwardly from the rearward facing portion 26 of the magazine case 20.

5. The dry fire training device as claimed in Claim 1 and wherein the enlargement 34 is positioned outside/external of the semi-automatic pistol's magazine compartment and immediately adjacent a bottom end portion of the semi-automatic pistol's hand grip.

6. The dry fire training device as claimed in Claim 1 and wherein the enlargement 34 has exterior dimensions that exceed interior dimensions of the semi-automatic pistol's magazine compartment.

7. The dry fire training device as claimed in Claim 1 and wherein the elongate trigger lever 40 further has a medial portion 50 that has a rearward facing enlargement 51, a muzzle side portion 46, a rearward side portion 47, a right side portion 48, a left side portion 49, and the first end portion 41 defines a curvilinear protrusion 42, and the curvilinear protrusion 42 has a

predetermined side-to-side thickness dimension 43 that facilitates frictional operative communication with the semi-automatic pistol's trigger mechanism.

8. The dry fire training device as claimed in Claim 7 and further comprising:

a set screw hole 53 defined in the elongate trigger lever 40 proximate the second end portion 44 to threadably carry a regulating screw 55 therein.

9. The dry fire training device as claimed in Claim 1 and further comprising:

a plurality of spacedly arrayed cavities 54 defined in the elongate trigger lever 40 to carry and accommodate electronic components of the dry fire training device.

10. The dry fire training device as claimed in Claim 1 and wherein each arm 62, 65 and 69 of the transfer hub extends generally radially outwardly from the medial portion 61 of the transfer hub 60, and each arm 62, 65 and 69 is angularly offset from the adjacent arms 62, 65, 69.

11. The dry fire training device as claimed in Claim 8 and wherein the regulating screw 55 that is adjustable carried in the set screw through hole 53 defined in the second end portion 44 of the elongate trigger lever 40, the set screw hole 53 communicating between the rearward side portion 47 and the muzzle side portion 46 of the elongate trigger lever 40 proximate the second end portion 44; and

the regulating screw 55 carried in the set screw through hole 53 frictionally and adjustably communicates with the trigger lever arm 62 of the transfer hub 60.

12. The dry fire training device as claimed in Claim 1 and wherein the détente reed 80 is formed of a metal.

13. The dry fire training device as claimed in Claim 1 and wherein the détente reed 80 defines a dimple at a generally medial position.

14. The dry fire training device as claimed in Claim 1 and wherein the detente reed 80 is generally rectilinear and elongate and has a first side portion 83, a

second side portion 84, an upper surface 85 and a bottom surface 86, and defines a mounting hole 87 proximate the first end portion 81 for engagement with the mounting protrusion 37 of the detente reed a base plate 36; and

the detente reed 80 is positionally secured, along a portion of first end portion 81 so that the second end portion 82 of the detente reed 80 is movable upwardly and downwardly within the interior cavity 38 responsive to frictional engagement with the détente reed arm 69 and the corner 73 thereof which rotatably moves responsive to forward and rearward movement of the elongate trigger lever 40 which pivots responsive to actuation of the trigger mechanism of the semi-automatic pistol.

15. The dry fire training device as claimed in Claim 1 and wherein the detente reed 80 biases the transfer hub 60 and the elongate trigger lever 40 to the reset position.

16. A dry fire training device for use with a semi-automatic pistol having a magazine compartment defined in the semi-automatic pistol's hand grip that is sized and configured for a single stack ammunition magazine, and a trigger

mechanism for releasing the semi-automatic pistol's firing pin, the dry fire training device comprising:

a magazine case 20 that has a upper end portion 23, a bottom end portion 24, a muzzle facing portion 25, a rearward facing portion 26, a left side portion 27, a right side portion 28, an exterior surface 29, and the magazine case 20 defines an interior chamber 30 that has an inner surface 30A which carries a plurality of spacedly arrayed and generally transversely extending pivot axle protrusions 31, and the exterior surface 29 defines a through hole 32 for access to a regulating screw 55, and defines a detente reed access hole 33 that may be covered with a releasable cover plate 75, and defines a trigger arm orifice 39 in the muzzle facing portion 28 at the upper end portion 23;

an enlargement 34 is defined at the bottom end portion 24 of the magazine case 20 and the enlargement 34 extends generally forwardly from the muzzle facing portion 25 so as to form a finger shelf 35 on an upper surface 35A of the enlargement 34, and also rearwardly from the rearward facing portion 26, and the enlargement 34 defines an interior cavity 38 that communicates with the interior chamber 30 of the magazine case 20, and a

detente base plate 36, which has a mounting protrusion 37 thereon, is structurally carried within the interior cavity 38; and

an elongate trigger lever 40 is carried within the interior chamber 30 defined by the magazine case 20, and the elongate trigger lever 40 has a first end portion 41, a second end portion 44, a medial portion 50 having a rearward facing enlargement 51, a muzzle side portion 46, a rearward side portion 47, a right side portion 48, a left side portion 49, and defines a pivot axle orifice 52 proximate the medial portion 50 that receives a generally transversely extending pivot axle protrusion 31 carried on the inner surface 30A of the interior chamber 30 so that the elongate trigger lever 40 is pivotally movable thereon within the interior chamber 30, and wherein the first end portion 41 of the elongate trigger lever defines a curvilinear protrusion 42 that extends at least partially though the trigger arm orifice 39 so as to frictionally interact with the trigger mechanism of the semi-automatic pistol, and the curvilinear protrusion 42 has a predetermined side-to-side thickness dimension 43; and

a set screw hole 53 is defined in the elongate trigger lever 40 proximate the second end portion 44 to threadably carry an adjustable regulating screw 55 therein that may extend outwardly from the muzzle side portion 46, and the

elongate trigger lever 40 further defines a plurality of spacedly arrayed cavities 54 that may carry and accommodate electronic components; and

a transfer hub 60 is carried within the interior chamber 30 defined by the magazine case 20 proximate the enlargement 34, and the transfer hub 60 has a medial portion 61, a trigger lever arm 62, a pivot axle arm 65 and a detente reed arm 69, and each arm 62, 65, 69 extends somewhat radially, outwardly from the medial portion 61 of the transfer hub 60, and

the trigger lever arm 62 has a base portion 63 adjacent the medial portion 61, and a spaced apart terminal end 64 that frictionally engages with the muzzle side portion 46 of the second end portion 44 of the elongate trigger lever 40 and the regulating screw 55 carried thereby, and

the pivot axle arm 65 has a base portion 66 adjacent the medial portion 61, and a spaced apart terminal end 67 that defines a transverse pivot axle hole 68 that engages with a transversely extending pivot axle protrusion 31 carried on the inner surface 30A of the interior chamber 30 of the magazine case 20, so that the transfer hub 60 is rotatably movable

thereon responsive to forward and rearward pivotal movement of the second end portion 44 of the elongate trigger lever 40, and

the detente reed arm 69 has a base portion 70 adjacent the medial portion 61 and a terminal end 71 opposite the base portion 70, and the terminal end 71 has an angled surface 72 and defines a corner 73, and the terminal end 71 and corner 73 of the detente reed arm 69 frictionally engages with a detente reed 80; and

the detente reed 80 is generally rectilinear and elongate and formed of metal, and has a first end portion 81, a second end portion 82, a first side portion 83, a second side portion 84, an upper surface 85 and a bottom surface 86, and defines a dimple 88 and defines a mounting hole 87 proximate the first end portion 81 for engagement with a fastener to secure the détente reed 80 on the detente reed a base plate 36, and wherein the detente reed 80 is positionally secured, along a portion of first end portion 81 to the detente reed base plate 36 within the interior cavity 38 of the enlargement 34, so that the detente reed 80 extends forwardly therefrom so that the second end portion 82 of the detente reed 80 is unsupported and is movable upwardly and downwardly within the interior cavity 38 between a release position and a reset

position responsive to frictional engagement with the angled surface 72, and corner 73, of the detente reed arm 69 as the transfer hub 60 rotatably moves responsive to movement of the elongate trigger lever 40 which pivots responsive to actuation of the trigger mechanism of the semi-automatic pistol that is frictionally engaged with the curvilinear protrusion 42 of the elongate trigger lever 40; and wherein

movement of the detente reed 80 between the release position and the reset position generates tactile and audible feedback to a user that replicates a release, and reset of the semi-automatic pistol's firing pin; and wherein

the detente reed 80 biases the transfer hub 60 and the elongate trigger lever 40 to the reset position.

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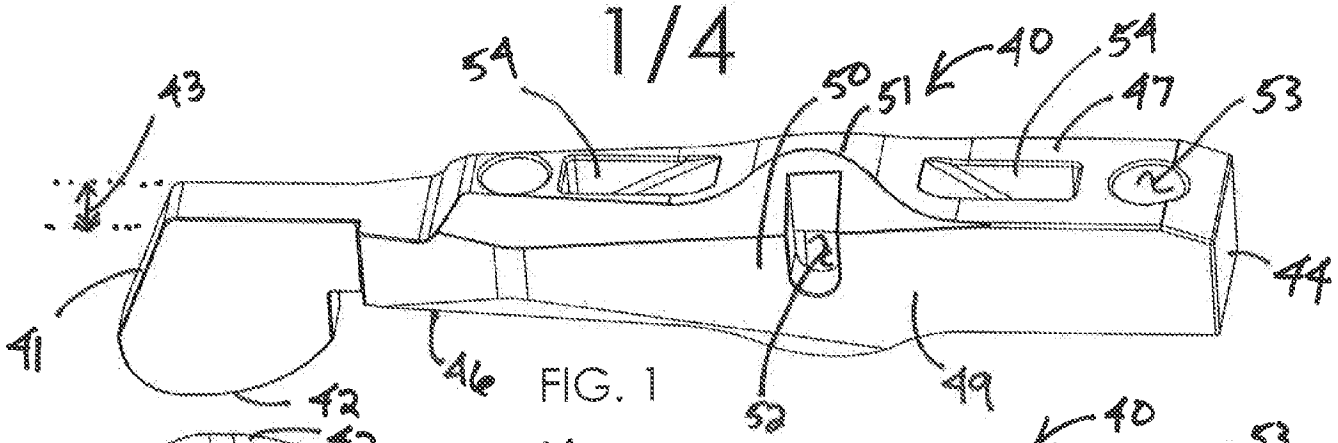

FIG. 1

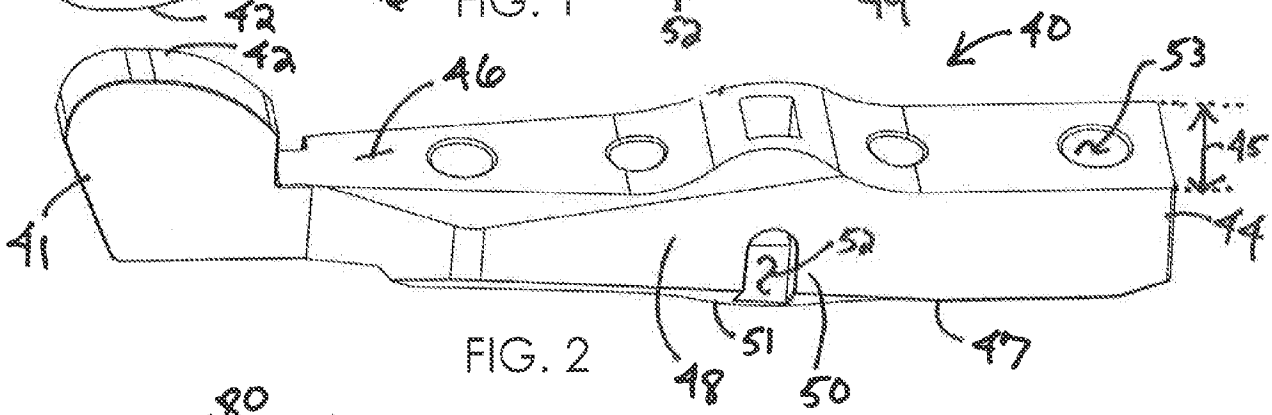

FIG. 2

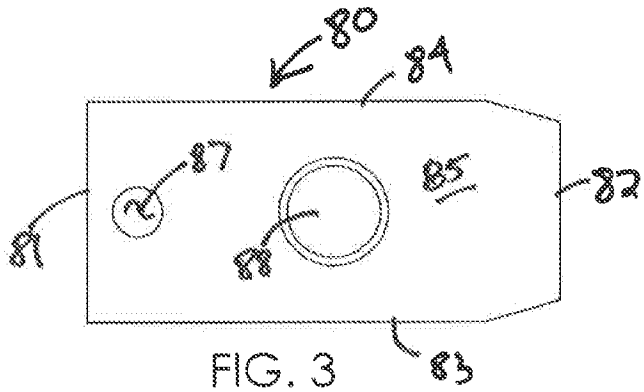

FIG. 3

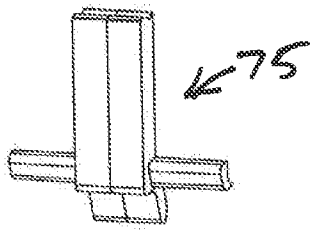

FIG. 4

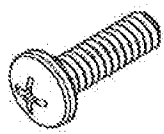

FIG. 5

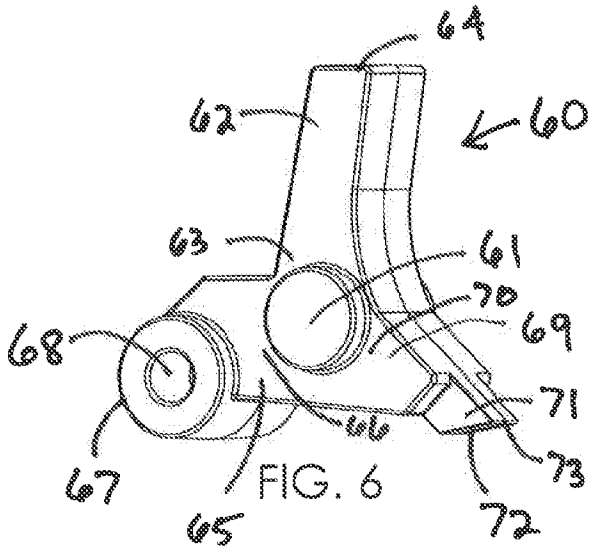

FIG. 6

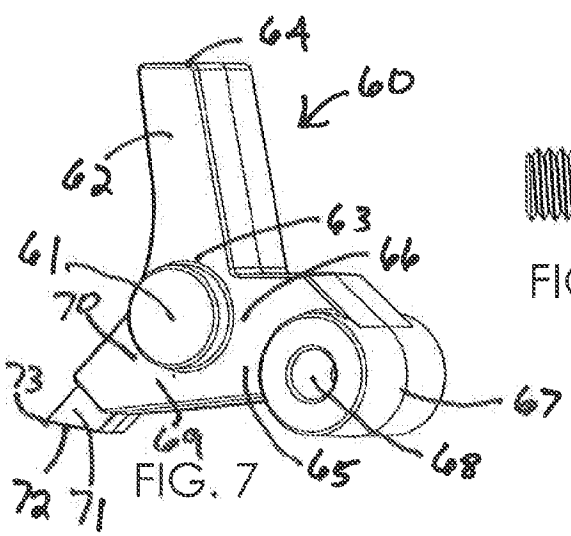

FIG. 7

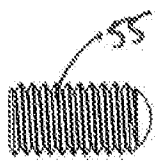

FIG. 8

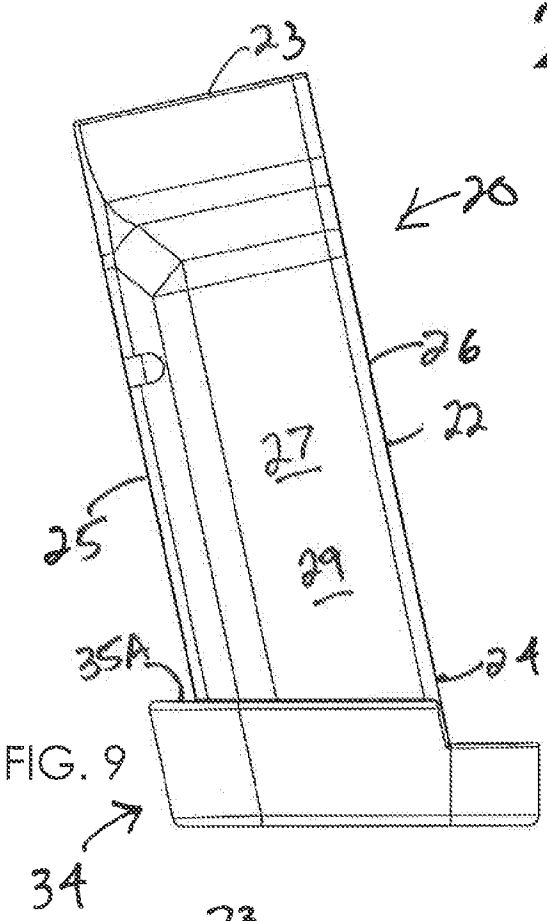

FIG. 9

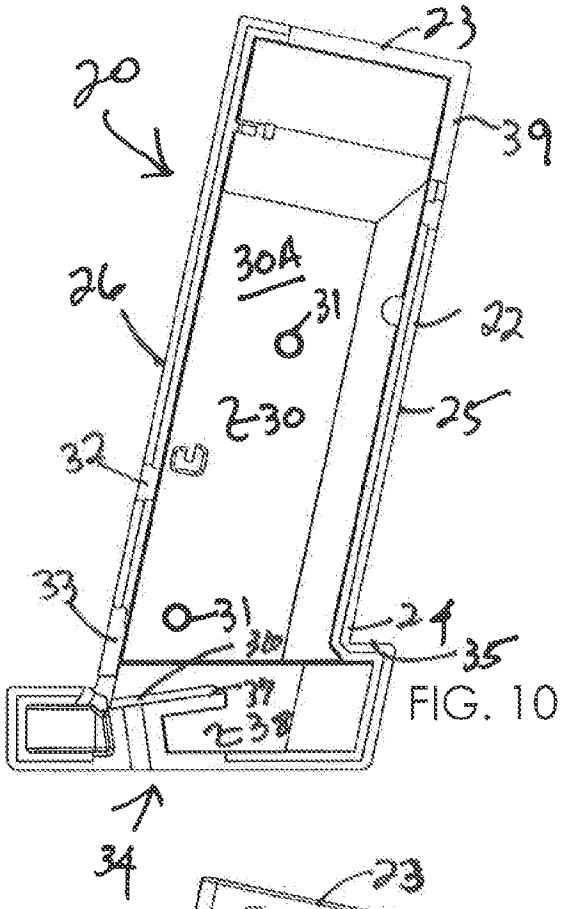

FIG. 10

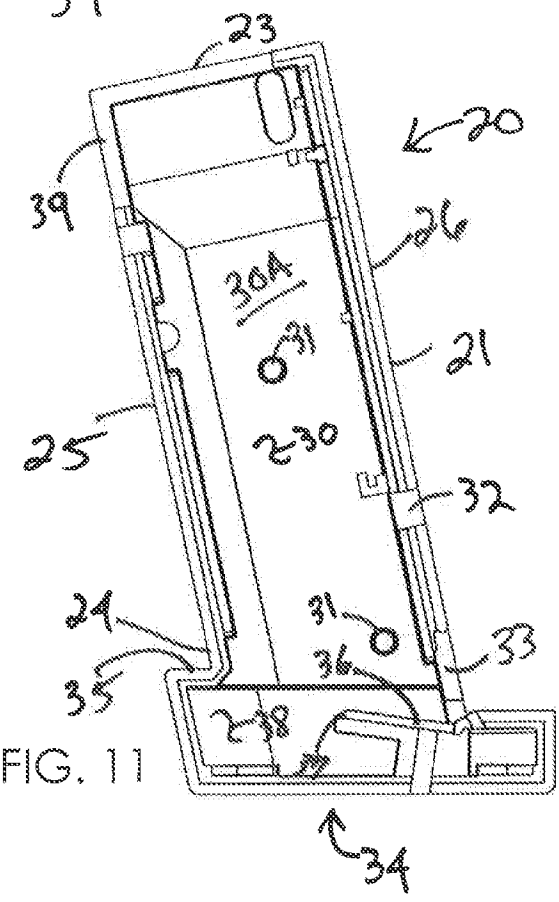

FIG. 11

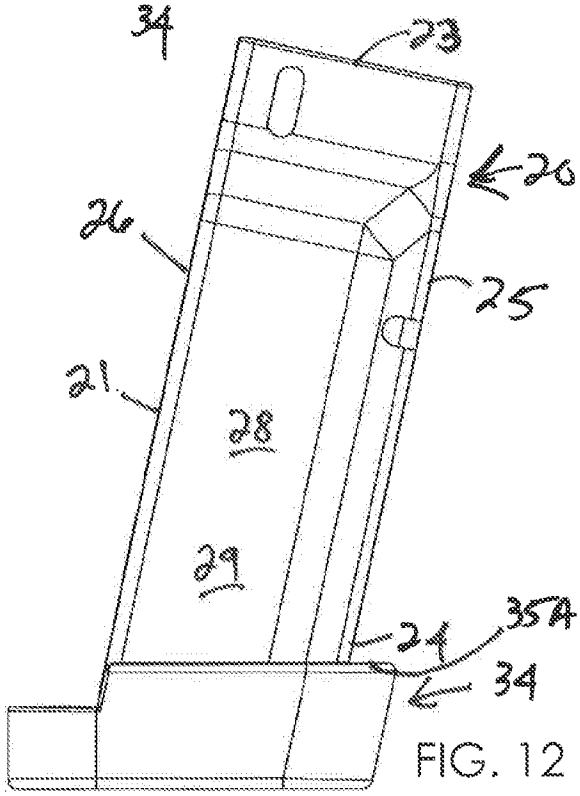

FIG. 12

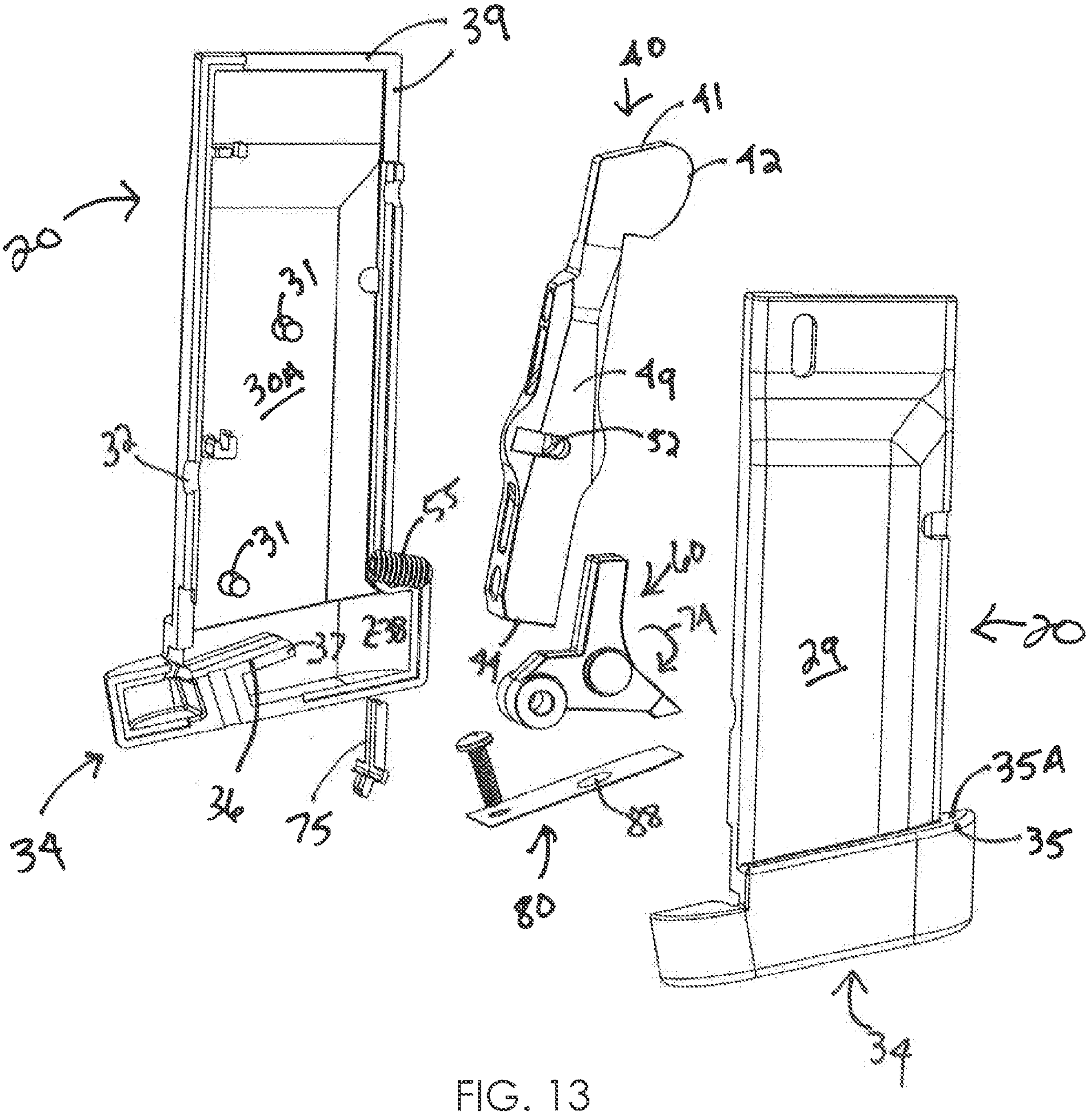
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FIG. 13

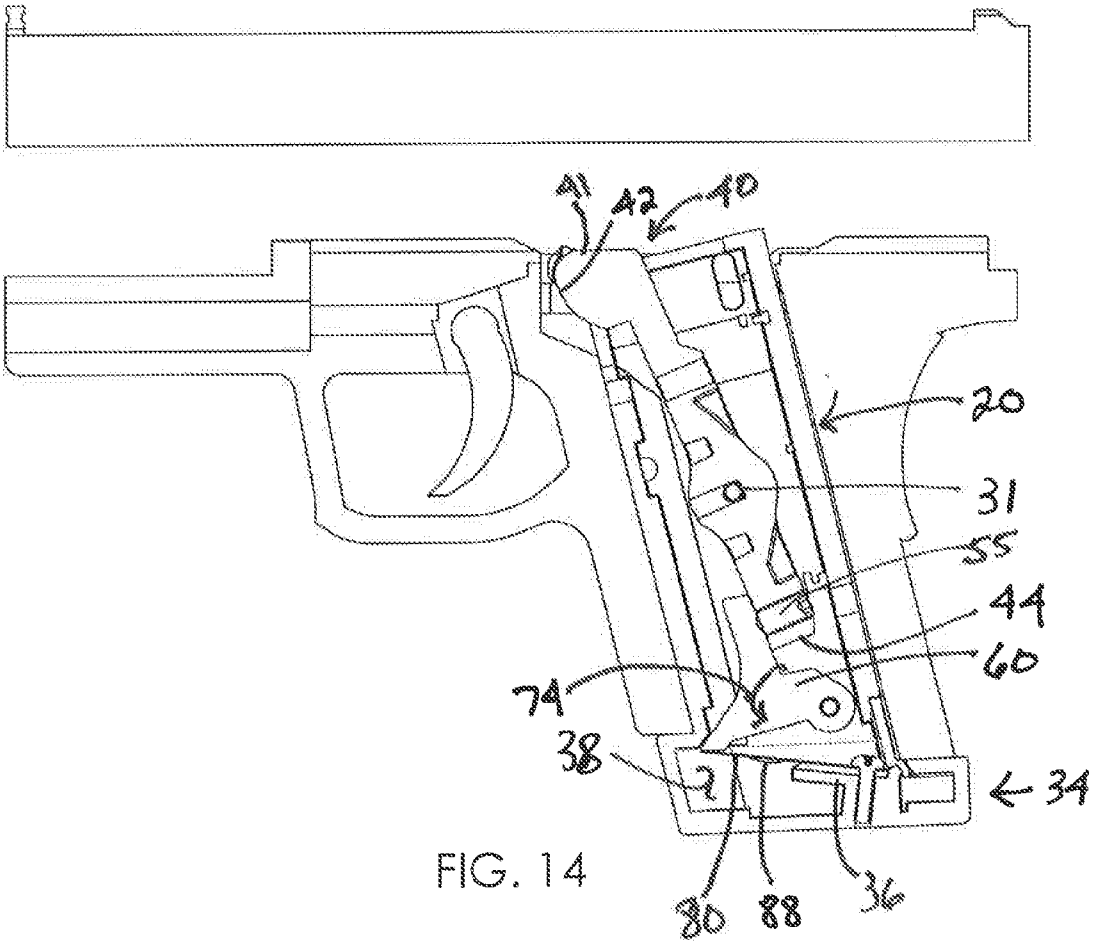

FIG. 14

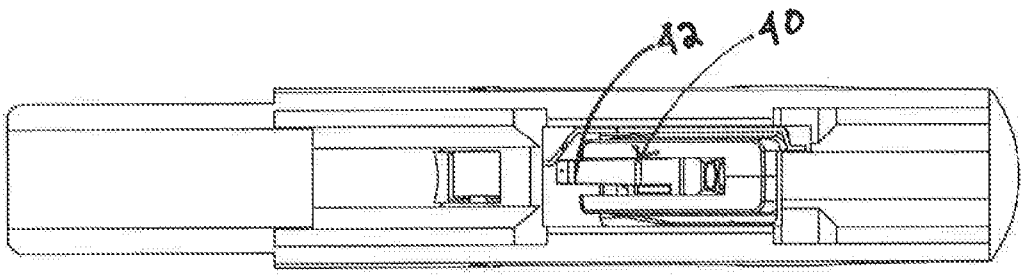

FIG. 15