Aug. 4, 1931. W. F. SCHMIDT 1,817,769

LIQUID GUN OR PISTOL

Filed June 28, 1928

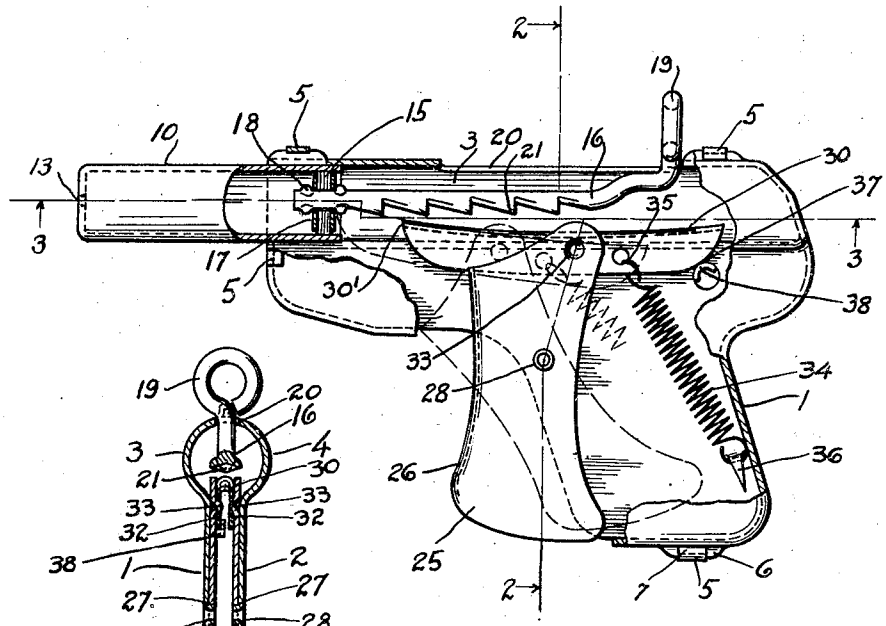


Fig. 1

Fig. 2

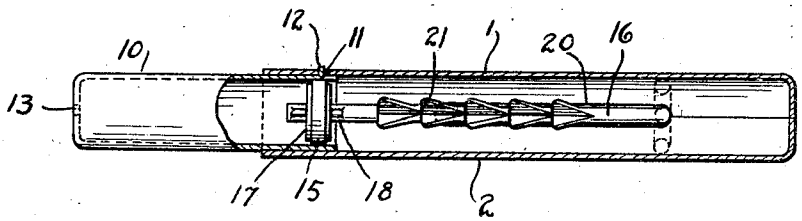


Fig. 3

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Patented Aug. 4, 1931 1,817,769

UNITED STATES PATENT OFFICE

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LIQUID GUN OR PISTOL

Application filed June 28, 1928. Serial No. 288,244.

This invention relates to a liquid gun or pistol, and it has to do especially with a pistol in the nature of a toy for children's use.

The invention contemplates such a pistol which involves certain novelties of construction as to its general structure, and also a novel mechanism for effecting a plurality of shots or discharges of liquid from a single load or charge of liquid. It is appreciated that such liquid pistols are not broadly new, and that it is not broadly new to provide a pistol wherein a plurality of shots can be had. However, such a pistol which is to be used as a toy must be a simple well designed structure so that it can be manufactured at a minimum cost, and at the same time the structure must be rugged to withstand rough usage which it receives in use.

The invention aims to provide a pistol which meets these requirements. The structure as a whole is simple and composed of a minimum number of parts and easily assembled so that the cost of production is not great, and at the same time it is rugged so that it will not get out of order during use. The mechanism for effecting a plurality of shots is also simple, rugged and composed of a minimum number of parts.

In the accompanying drawings:

Fig. 1 is a side view of a pistol constructed in accordance with the invention with some of the outer casing being cut away to expose the inner construction.

Fig. 2 is a section on line 2—2 of Fig. 1 illustrating some of the details of the construction.

Fig. 3 is a section on line 3—3 of Fig. 1.

A frame for the pistol is composed of a pair of complementary halves 1 and 2 each having a half barrel formation 3 and 4. These complementary halves of the frame are preferably stamped from sheet metal. One of the halves is provided with tongues 5, and the other with notched extensions 6. When the two halves are placed together the tongues 5 are bent into the notch in the extensions and then the ends of the tongues are bent so as to overlap the extensions as at 7. This holds the two pistol halves together to form the complete pistol shell. It will also be noted that the tongues 5 and the notched extension 6 on top of the barrel portion of the gun serve as sights.

A magazine barrel 10 is disposed between the two barrel shaped parts of the complementary halves. One of the outside shell parts is provided with an opening 11 and the barrel is provided with a struck-out lip or projection 12. When the two halves are fixed together in the manner above specified the barrel is clamped between them and it is retained from longitudinal movement by the projection 12 fitting in the opening 11. The forward end of the barrel is closed except for a small opening 13 which serves as a discharge opening and also for refilling the barrel.

Within the barrel is a piston 15 carried by a suitable piston rod 16. This piston may be formed of suitable material such as leather or the like which is disposed between the metal disks 17 held on the rod by punched out portions 18 of the rod. The opposite end of the rod is turned upwardly to provide a suitable loop formation 19 which extends outside of the pistol frame, the two halves of the pistol frame, each being cut away as at 20 to provide an elongated slot or opening to permit reciprocation of the piston rod. The piston rod is provided with a ratchet formation having a number of teeth 21.

For the purpose of operating the piston, a trigger 25 is provided. This trigger may be advantageously formed of a single piece of sheet metal bent upon itself with the bight portion indicated at 26 being exposed and serving for contact with the finger of the operator. The two parts of the trigger are each provided with an aperture 27, and the metal of each complementary half of the frame structure is punched in as at 28 to form a fulcrum for the trigger.

A pawl is provided for operatively associating the trigger and the ratcheted piston rod. The pawl is shown at 30 and consists of a single strip of sheet metal bent upon itself, as at 31. The two parts of the pawl are each apertured as at 32. The pawl fits between the two parallel sides of the trigger

which are formed by reason of the trigger being formed of a single sheet of metal bent in upon itself. The metal of the trigger is punched in, as at 33, so as to form projections which fit into the apertures 32 of the pawl. Thus the pawl is pivoted to the trigger.

The pawl and trigger are both under a restraining spring action and for this purpose a single spring is provided. This spring is shown at 34 and is connected to the pawl at one end, as at 35, by means of a suitable aperture in the pawl and connected to the frame of the pistol, as at 36. The part 36 is in the nature of a hook punched out of the metal of one of the complementary halves of the pistol frame. At least one end of the pawl is shaped as at 37 to function after the manner of a cam, acting upon a fixed part 38. This part 38 is provided by the stamping out of part of the metal of one of the complementary frame sections of the pistol.

In Fig. 1 the parts are shown with the barrel filled with liquid and ready for the discharge action. To discharge a portion of the contents the trigger 26 is pulled by the finger of the operator so that the trigger fulcrums at 28 and advances the pawl, generally speaking, from right to left. The pawl in the position shown in Fig. 1 is in contact with the projection 38 so that its opposite end is out of contact with the piston rod. However, when the pawl is moved, it moves away from the projection 38 and the spring rocks the pawl on its pivot until its end 30′ moves up into contact with the ratcheted rod. Continued movement of the trigger causes an advancement of the piston a distance of one ratchet tooth.

The trigger is now released and the spring retracts the trigger and pawl. At the end of the movement the part 37 of the pawl strikes the projection 38 and is rocked on it pivot 33 so that its end 30′ is moved away from the ratcheted piston rod. The position of the trigger and pawl, as shown in the dotted lines of Fig. 1, illustrates the position which they assume when a shot has been discharged. A repetition of this operation effects successive separate discharges of the liquid in the barrel until the same is exhausted.

When all liquid is discharged the piston will be at the forward end of the barrel and the loop 19 will be at the forward end of the elongated slot 20. In order to reload the gun, the end of the barrel is placed in a liquid and the piston retracted in the barrel back to the position shown in Fig. 1 by manually retracting the loop 19. In this connection it is pointed out that whenever the trigger mechanism is released and allowed to come to rest, the pawl automatically disengages from the ratcheted piston rod. This permits refilling of the barrel at any time without interference of the trigger and pawl mechanism.

The structure of the pistol which involves two complementary frame halves, the manner in which they are connected together, the barrel, and means for associating it with the pistol frame, can be utilized wi h a different arrangement of trigger mechanism. For example, a single shot mechanism can be provided. The number of discharges in a single load of liquid is variable without departing from the spirit of the invention by the expedient of changing only the number and position of the teeth of the ratchet formation of the piston rod, the relative movements of the trigger and pawl mechanism.

Claims:

1. A liquid gun, comprising a pair of complementary sheet metal members fitted together to form a gun frame, each sheet metal member having a half barrel formation which together form a complete barrel, a separate liquid-containing barrel fitted between the two half barrel portions of the sheet metal members, and interengaging means between the separate liquid barrel and a sheet metal member for securing the liquid barrel to the sheet metal member.

2. A liquid gun, comprising a pair of complementary sheet metal members fitted together to form a gun frame, each sheet metal member having a half barrel formation which together form a complete barrel, a separate liquid-containing barrel fitted between the two half barrel portions of the sheet metal members, and interengaging means between the separate liquid barrel and a sheet metal member for securing the liquid barrel to the sheet metal member, said interengaging means including an integral struck-out metal part on one of the interengaging members, and an apertured portion in the other for receiving this struck-out integral part.

3. A toy gun, comprising a gun structure provided with a hollow hand grip which is formed of spaced metal members, a trigger disposed in the hand grip and partly exposed for operation, said trigger having an aperture therein, and struck-in parts of the metal portions of the hand grip which are disposed in the aperture in the trigger to form a fulcrum for the trigger.

4. A toy gun, comprising a pair of complementary sheet metal members secured together to form a gun frame structure having a hand grip, a trigger disposed between the metal members and in the hand grip, said trigger being provided with an opening, the metal of each member in the hand grip being punched in to form inwardly extending projections which fit in the opening of the trigger and form a fulcrum for the trigger.

5. A liquid gun, comprising a frame struc-

ture, a liquid barrel, a piston in the barrel, a rod upon which the piston is mounted provided with a ratchet formation, a trigger, a pawl associated with the trigger arranged to advance the piston and rod step by step upon successive operations of the trigger, a single spring acting upon the trigger and pawl to cause them to assume normal position, and means acting upon the pawl when in normal position to disengage the same from the ratcheted piston rod.

6. A liquid gun, comprising a frame structure, a liquid barrel, a piston in the barrel, a rod upon which the piston is mounted provided with a ratchet formation, a trigger, a pawl associated with the trigger arranged to advance the piston and rod step by step upon successive operations of the trigger, a single spring acting upon the trigger and pawl to cause them to assume normal position, means acting upon the pawl when in normal position to disengage the same from the ratcheted piston rod, and means for retracting the piston and rod to fill the barrel with a charge of liquid, the retracting being permitted by reason of the pawl being disengaged from the rod.

7. A liquid gun, comprising a frame structure, a liquid barrel, a piston, a piston rod provided with ratchet teeth, a trigger, a pawl pivoted to the trigger for engagement with the ratchet teeth so that upon successive trigger operations the piston is advanced step by step, a spring connected to the pawl for causing both the pawl and trigger to assume normal position, a fixed projection on the gun frame structure, and a cam surface on the pawl to cooperate with the fixed projection when the spring returns the pawl to normal position to swing the pawl on its pivot and disengage the same from the piston rod, to permit retraction of the piston and piston rod to fill the liquid barrel.

8. A liquid gun comprising a frame structure, a liquid barrel, a piston in the barrel, a piston rod upon which the piston is mounted and which projects from the liquid barrel into the frame structure, said frame structure being provided with an opening elongated in the direction of the axis of the liquid barrel, said piston rod having a portion extending substantially at right angles to the barrel axis and projecting out through the opening for manual movement of the piston, a rack formation on the piston rod, a trigger, a pawl associated with the trigger for moving the rod step by step, and means for moving the pawl to disengage it from the rack formation to permit manual retraction of the piston to fill the barrel.

9. A liquid gun comprising, a frame structure, a liquid barrel, a piston, a piston rod provided with a rack, a trigger, a pawl associated with the trigger for engagement with the ratchet teeth so that upon successive trigger operations the ratchet is advanced step by step, a spring for urging the pawl normally into contact with the rack, said pawl being arranged to move with the trigger in its operations, an abutment carried by the frame structure and positioned so that the pawl strikes the same each time the trigger returns to normal position to move the pawl against the action of said spring to disengage the same from the rack formation on the piston rod whereby the piston may be manually retracted to fill the barrel.

In testimony whereof I affix my signature.

WILLIAM F. SCHMIDT, Deceased,
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