Feb. 5, 1935. A. MORCHE 1,990,302

AIR PISTOL

Filed June 7, 1933

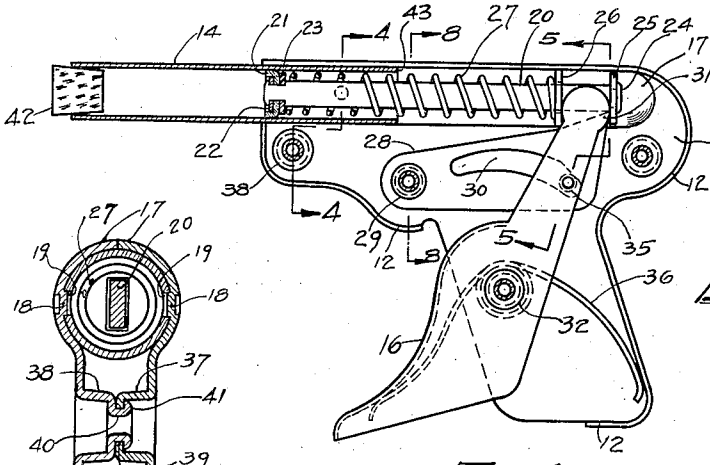


FIG. 1.

FIG. 4.

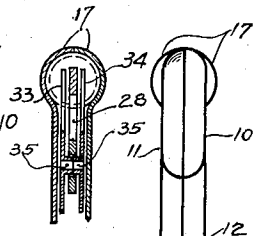


FIG. 5.

FIG. 6.

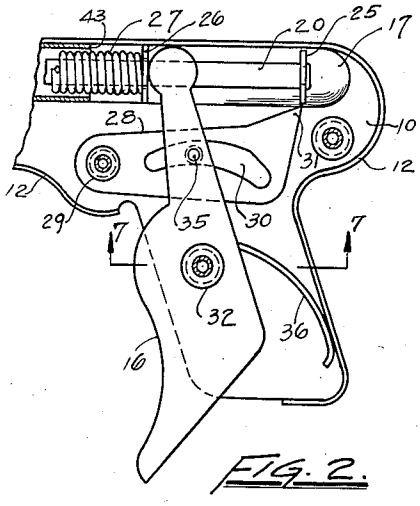


FIG. 2.

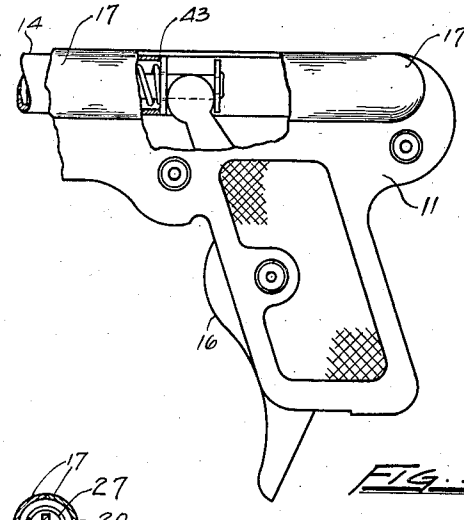


FIG. 3.

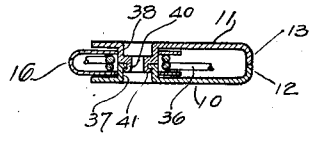


FIG. 7.

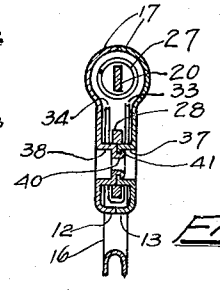


FIG. 8.

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AIR PISTOL

Alfred Morche, Wyandotte, Mich.

Application June 7, 1933, Serial No. 674,628

6 Claims. (Cl. 124—8)

This invention relates to improvements in air pistols, and has for its principal object the provision of a device of the character referred to, which is simple in construction, economical to manufacture, and easy to assemble.

Another object of the invention is the provision of an air pistol which will project pellets with sufficient force and accuracy so that it can readily be used for indoor target practice.

Another object of the invention is the provision of an air pistol in which the contraction of the operator's hand is utilized to further compress the air in the barrel after the impeller spring has been fully contracted and the plunger released.

Another object of the invention is the provision of an air pistol which will emit a higher pitched staccato sound when the pellet is discharged.

Another object of the invention is the provision of an air pistol which can be formed almost entirely of stampings secured together by means formed integral therewith.

Another object of the invention is the provision of an air pistol formed almost entirely of stampings having means formed integral therewith, upon which certain of the moving parts are pivoted.

The foregoing and other objects of the invention will be more readily understood after a careful examination of the following description in which reference is made to the accompanying drawing in which:

Fig. 1 is a vertical sectional view of a pistol embodying my invention.

Fig. 2 is a fragmentary sectional view showing the operating mechanism at the moment of releasing the locking detent.

Fig. 3 is a fragmentary side elevational view with parts broken away, illustrating the position of the trigger and plunger unit at the instant of discharge.

Fig. 4 is an enlarged vertical section taken on line 4—4 of Fig. 1.

Fig. 5 is a fragmentary sectional view taken on line 5—5 of Fig. 1.

Fig. 6 is a rear elevational view.

Fig. 7 is a sectional view taken on line 7—7 of Fig. 2.

Fig. 8 is a sectional view taken on line 8—8 of Fig. 1.

Now referring in detail to the drawing, it will be seen that the operating mechanism of my improved air pistol is enclosed within a housing made up of two stampings 10 and 11 having the general contour of a pistol breech and handle. The stampings 10 and 11 are formed with inturned flanges 12 and 13 along their entire peripheries except where the barrel 14 and trigger 16 are positioned. Along the upper portion of each stamping 10 and 11 is formed a semicircular channel 17 adapted to engage one end of the barrel 14. Inturned bosses 18 are formed near the forward end of the channels 17 and are adapted to engage apertures 19 formed in the barrel 14 to secure the barrel against displacement, as shown in Fig. 4. Slidably mounted within the rear end of the barrel 14, and extending into the channel 17, is the plunger 20, having a substantially rectangular cross section, on the front end of which is secured a leather or rubber cup 21 adapted to tightly conform to the inner periphery of the barrel 14 to effect an air-tight seal. The cup 21 is held in position by washers 22 and 23. At the opposite end of the plunger 20 is riveted, as at 24, a washer 25. Another washer 26 is slidably mounted on the plunger 20. Between the washers 23 and 25 is interposed the spring 27.

In the upper part of the pistol housing and in the same vertical plane with the plunger 20, is positioned a detent lever 28 which has its fulcrum at 29. The detent 28 is formed with a cam slot 30 and a sharp head 31 which is adapted to contact the inner surface of the washer 25 and normally lock the plunger 20 against forward displacement.

The trigger 16, having its fulcrum at 32, is preferably made of a single stamping bent through its center to form a deep channel. The upper portion of the trigger 16 terminates in the prongs 33 and 34, which extend past the opposite sides of the detent lever 28 and to the sides of the plunger 20. Inturned bosses 35 are formed on the prongs 33 and 34 and are adapted to contact the cam slot 30 to actuate the detent 28 when the trigger is pressed. When the trigger is released and is returning to its normal position the bosses 35 contact the upper edge of the cam slot 30 causing the rear end of the detent 28 to be elevated into its locking position. A spring 36 is positioned in the channel of the trigger 16 and the lower portion of the pistol housing comprising the handle, and is adapted to maintain the trigger in normally extended position, as shown in Fig. 1.

A very novel method of final assembly is illustrated in Figs. 4, 7 and 8. Cylindrical cups 37 and 38 are drawn inwardly of the stampings comprising the pistol housing. The cup 37 has a hole 39 pierced in its center large enough to receive a second drawn member 40 in the form of a hollow rivet extending from the cup 38, which is finally staked into permanent position as at 41. In Figs. 7 and 8 the same construction is embodied, using the outside diameter of the cups 32 and 29 as fulcrum points for the trigger 16 and detent 28, respectively. This highly efficient construction serves two purposes, first, as a substitute for fastening rivets, and second, as fulcrum points as indicated.

A complete cycle of discharging the air pistol is hereinafter specifically described. When the pistol is in the position as indicated in Fig. 1, a pellet 42 is inserted into the barrel 14. When the trigger 16 is pulled, the prongs 33 and 34 actuate the washer 26 and tend to compress the spring 27. Meanwhile, the plunger 20 and the washer 25 are prevented from traveling forward as the spring is being compressed because of the engagement of the end 31 of the detent lever 28 with the washer 25. As the trigger is further depressed, the inturned bosses 35 ride up in the cam slot 30 gradually tending to lower the detent lever 28 to the position as indicated in Fig. 2. At the instant shown in Fig. 2, the spring 27 has been compressed to the maximum and the detent 28 is about to release the washer 25, which is secured to the end of the plunger 20. It will be noted in Fig. 2 that at the instant the plunger 20 is to be released the trigger 16 has not traveled the entire distance which it is adapted to travel, as shown in Fig. 3. It is the pressure exerted by the operator's hand on the trigger during its travel from the point shown in Fig. 2 to the point shown in Fig. 3 which greatly adds to the efficiency of my improved pistol. It is apparent that this secondary movement of the trigger from the position shown in Fig. 2 to the position shown in Fig. 3 will carry forward the plunger unit with all its elements a considerable distance towards the compression chamber, thereby supercharging the air in the compression chamber before the previously compressed spring 27 has an opportunity to exert its full impulse. This is particularly true if a quick movement is imparted to the trigger.

After the plunger 20 is released by the head 31 of the detent 28, the plunger assembly is carried forward until the washer 26 contacts the end 43 of the barrel 14 which acts as a stop to the further movement of the plunger unit. Thus having produced a high compression in the barrel 14, the pellet 42 is swiftly ejected, accompanied by a sharp high-pitched report. After the pistol is discharged, as indicated in Fig. 3, the spring 36 will automatically return the moving parts to their original position, as shown in Fig. 1.

Having described my invention, what I claim and desire to secure by Letters Patent is:

1. In an air pistol having a barrel, breech and grip, a plunger unit slidably mounted in said barrel and breech, said plunger unit comprising a rod having an air-tight cup secured to its forward end, a compression spring slidably mounted on said rod, an annular slidable abutment and guide member on said rod back of said spring and a fixed annular abutment and guide member secured to the rear end of said rod, a detent pivoted in said grip and arranged to contact said fixed abutment and guide member, a trigger pivoted in said grip, said trigger having an elongated upwardly extending bi-furcated portion terminating in two arcuate heads adapted to ride between said annular abutment and guide members and means on said trigger for moving said detent into and out of contact with said fixed abutment member.

2. In an air pistol having a barrel, breech mechanism and housing for said breech mechanism, a plunger unit slidably mounted in said barrel, a detent pivoted at its forward end on inturned bosses formed integral with said housing, a cam slot in said detent, a trigger pivoted on inturned bosses formed integral with said housing, said trigger having an upwardly extending bi-furcated portion with means formed integral therewith adapted to engage said cam slot to actuate said detent.

3. In an air pistol having a barrel, breech mechanism and a housing for said breech mechanism, a plunger unit slidably mounted in said barrel, a detent mounted on inturned elements formed integral with said housing, a cam slot in said detent, a trigger pivoted on inturned elements formed integral with said housing, said trigger having an upwardly extending bi-furcated portion, with inturned elements formed integral therewith, said inturned elements being adapted to engage the lower edge of said cam slot to release said detent from locking position as the trigger is pressed and to engage the upper edge of said cam slot to force said detent into locking position when said trigger is released.

4. In an air pistol having a barrel, breech and grip, a plunger slidably mounted in said barrel, a compression spring for actuating said plunger, a detent pivoted at its forward end in said grip, said detent having an angular head adapted to contact said plunger and lock it against forward displacement, a cam slot in said detent, a trigger pivoted in said grip, said trigger having elements thereon arranged to engage said cam slot and unlock said detent from said plunger when said trigger is pressed, said trigger having an elongated portion above the pivot arranged to contact an abutment member on said plunger and impart a forward impetus to said plunger after said detent is unlocked.

5. In an air pistol having a barrel, breech and grip, a plunger unit slidably mounted in said barrel and breech, said plunger unit comprising a rod having an air tight cup secured to its forward end, a compression spring slidably mounted on said rod, an annular abutment member secured to the rear of said rod, a detent pivoted at its forward end in said grip, said detent having an annular head arranged to contact said abutment member and lock said plunger against forward displacement, a cam slot in said detent, an element on said trigger arranged to engage said cam slot and alternately unlock and lock said detent and said plunger upon the backward and forward movement of said trigger.

6. In an air pistol having a barrel, breech and grip, a plunger slidably mounted in said barrel, a compression spring slidably mounted on said plunger, a slidable annular abutment and guide member on said plunger adapted to contact the rear end of said barrel to limit the forward displacement of said plunger, a fixed annular abutment and guide member secured to the rear of said plunger, a detent pivoted at its forward end in said grip, said detent having an angular head adapted to contact said fixed abutment member on said plunger to secure said plunger against forward displacement, a cam slot in said detent, a trigger pivoted in said grip, said trigger having means thereon to engage said cam slot in order to lower and elevate said detent upon the movement of said trigger, said trigger having an upwardly extending elongated bi-furcated portion terminating in two arcuate heads adapted to ride between the aforesaid slidable and fixed abutment members.

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