Nov. 8, 1932. C. C. LOOMIS 1,886,704

FIREARM

Filed July 6, 1929

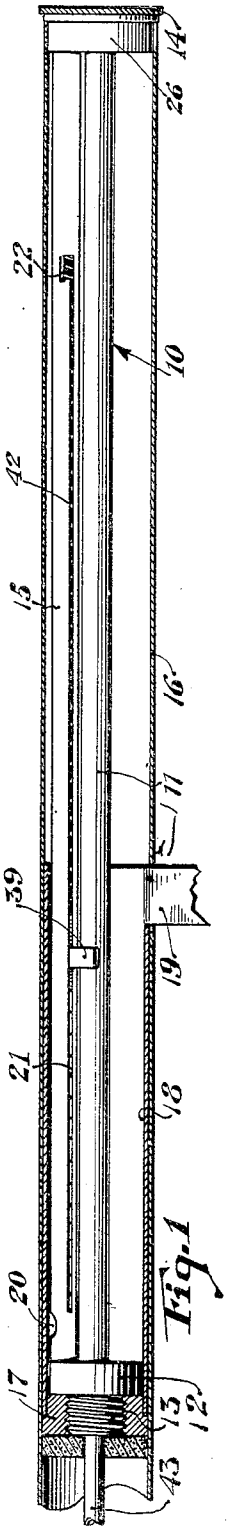


Fig. 1

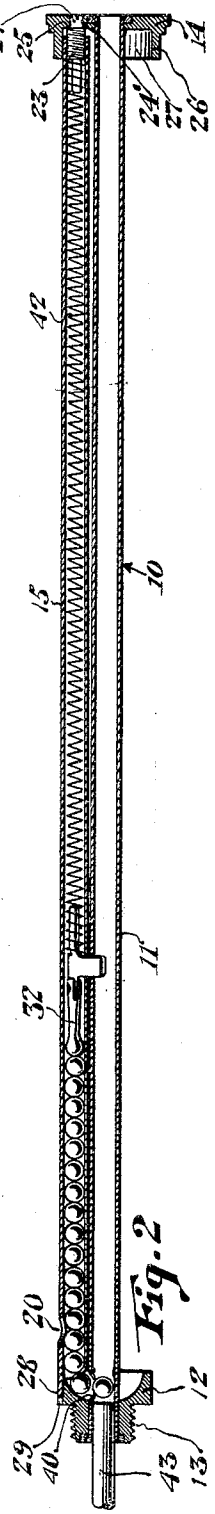


Fig. 2

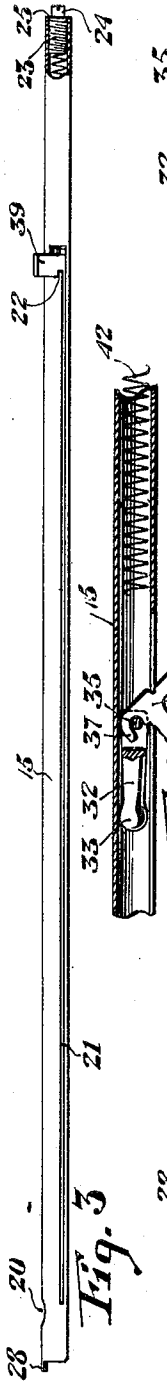


Fig. 3

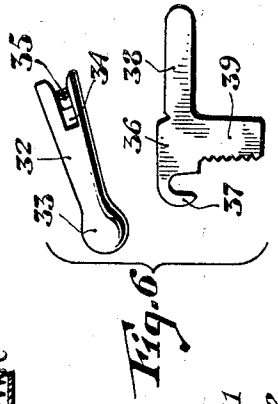


Fig. 6

Fig. 5

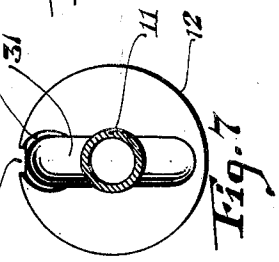


Fig. 7

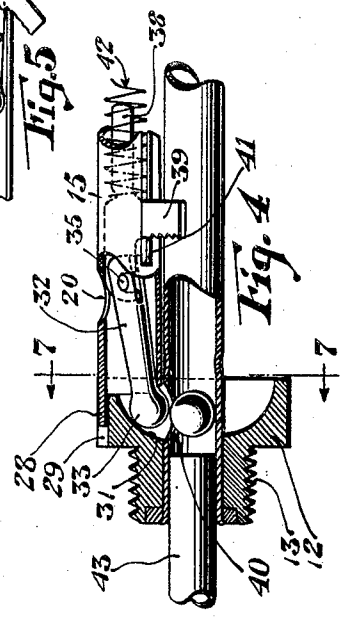


Fig. 4

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UNITED STATES PATENT OFFICE

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FIREARM

Application filed July 6, 1929. Serial No. 376,321.

The present invention relates to air guns of the magazine type and more particularly pertains to improvements in the magazines of such guns. In certain popular types of magazine air guns it is common to provide the magazine tube with a coil spring to urge a follower against a column of pellets for feeding them one at a time into the barrel, a loading port being provided in the side of the magazine tube for the introduction of pellets into the magazine. A difficulty sometimes encountered arises from a tendency of the coil spring to buckle and bulge through the loading port when the follower is moved to compress the spring. It is an object of the present invention to provide a magazine of simplified construction in which this difficulty is entirely eliminated.

Another difficulty common in former constructions lies in damage to the magazine tube resulting from rough handling. If the magazine follower be manually moved in an empty magazine against the pressure of the spring and then released, as is sometimes done by careless users, damage is very likely to result to the tube, which is usually of light sheet metal construction, when the movement is abruptly arrested by engagement of its finger piece with a portion of the tube. The present invention aims to provide a construction not susceptible to damage from such handling.

A further object of the invention lies in the provision of an improved follower which may be easily inserted in and removed from the magazine.

A further object of the present invention resides in the provision of a magazine and barrel unit with improved means for detachably securing the magazine to the unit.

These and further objects will be apparent from the following description, reference being had to the drawing which forms a part of this specification.

In the drawing:

Figure 1 is a fragmentary view in side elevation, partly in section, of the forward portion of the false barrel structure of an air gun showing the manner of mounting the improved barrel and magazine unit of the present invention.

Figure 2 is a longitudinal section in elevation of the improved barrel and magazine unit showing in detail the parts of the magazine in normal positions.

Figure 3 is a view in side elevation, partly in section, of the magazine ready for assembly into the magazine and barrel unit.

Figure 4 is a fragmentary side view, partly in section, of the rear end of the barrel and magazine unit with the last pellet in position for discharge from the barrel.

Figure 5 is a view in longitudinal section of a portion of the magazine tube showing the manner of detaching and removing the improved follower of the present invention.

In Figure 6 are shown enlarged detail views of the follower links.

Figure 7 is a transverse section taken at 7—7 of Figure 4 looking to the rear and showing the rear end piece of the barrel and magazine unit, the magazine being removed.

In my co-pending application, Serial No. 310,306, filed October 4, 1928, I have disclosed a combined barrel and magazine unit, which unit may be readily inserted in and removed from the false barrel structure of an air gun and in which unit the magazine is in the form of a tube secured to the unit but detachable therefrom for purposes of cleaning and repair.

According to the present invention, I provide a somewhat similar magazine and barrel unit likewise insertable in and removable from the false barrel of an air gun, but in which the magazine is detachably secured to the unit by means of novel and improved devices.

Referring to the drawing, the magazine and barrel unit designated generally by the numeral 10 comprises a true or shooting barrel 11 secured at its rear end to an end piece or plug 12 which is formed with a screw threaded portion 13. The barrel 11 may be secured to the end plug 12 by any suitable means, but preferably is secured by such means as is disclosed in my co-pending application, Serial No. 310,306, before mentioned. At its forward end the barrel 11 is

secured to an end cap 14 by similar means. Thus, the barrel 11, rear end plug 12 and forward end cap 14 constitute a rigid unit. To this rigid unit the magazine 15 is detachably mounted, thus forming the barrel and magazine unit 10, which unit may be inserted in a false barrel or housing 16 of the gun (Figure 1).

Within the false barrel 16 is provided an apertured abutment 17 into which the threaded portion 13 of the plug 12 may be screwed for securing the unit 10 in place in the gun. The abutment 17 may be secured to the false barrel 16, but preferably is secured to a reinforcing tube 18 which is positioned within the false barrel without being attached thereto, (see Figure 1). A depending lug 19 formed integral with the reinforcing tube 18 and projecting downwardly through the false barrel serves as an attaching means to connect with a forearm housing or other auxiliary structure positioned beneath the barrel. Such a construction relieves the barrel and magazine of stresses when the gun is discharged, the force of impact of the piston against abutment 17 being absorbed by the tube 18, lug 19 and auxiliary structure to which the lug is attached. For a more complete disclosure of an air gun embodying this construction reference may be had to my co-pending applications, Serial No. 224,888, filed October 8, 1927, and Serial No. 310,306, filed October 4, 1928. Although the shown embodiment of my invention is applied to an air gun of this type, it is obvious that many of the novel devices are applicable generally to magazine air guns.

The present invention contemplates an improved means for detachably securing the magazine to the barrel and magazine unit. In Figure 3 the magazine is shown detached and ready for mounting in the unit. Figures 1 and 2 show the magazine in place in the unit. The magazine 15 embodies a loading port 20 near its rear end and is provided with a long narrow slot 21 for accommodating and guiding the finger piece 39 of a magazine follower, which will hereinafter be described. The slot 21 terminates at its forward end in a bayonet slot 22 for retaining finger piece 39 and the follower in this position in the magazine to permit loading of the magazine with pellets.

At its forward end the magazine tube 15 carries a screw plug 23 threadedly mounted on the end of the tube and provided with a cylindrical head or pilot 24 of reduced diameter thereby forming the shoulder 25, the function of which will presently be explained. The end cap 14 is provided with a rearwardly projecting flange 26 forming a space 27 into which the forward end of the magazine tube is received at the upper side of the barrel 11. An aperture 24′ in the end cap 14 receives the head 24 of the screw plug 23. The rear end of the magazine tube is formed with an integral tongue 28 adapted to lie in a cut 29 in the plug 12 to hold the magazine tube properly in place with the loading port 20 uppermost. The plug 12 is further cut away at 30 (see Figure 7) to form a seat for the end of the magazine tube.

To assemble the magazine tube in the barrel unit 10 the forward end of the tube is first inserted in the space 27 of the end cap 14 with the head 24 of the plug 23 accommodated within the aperture 24′ of the cap. The rear end of the tube is then seated in the cut away portion 30 and the tongue 28 positioned in the cut 29 of the end plug, thereby setting the magazine tube loosely in place. With the aid of a screw driver or other tool the head 24 of the screw plug 23 may be reached from the front of cap 14 and rotated to back the plug 23 partially out of the tube and bring the shoulder 25 to bear tightly against the end cap. By this operation the rear end of the tube will be firmly pressed into its seat 30 in the rear end plug and thus the magazine will be rigidly but detachably secured in its place in the unit. Detachment of the magazine may be effected by simply reversing this procedure.

The invention further contemplates an improved follower construction for resiliently urging pellets from the magazine into the barrel, along with an arrangement for obviating the possibility of buckling of the magazine spring through the loading port and also of an arrangement for preventing accidental removal of the pellets through the loading port.

These objects are accomplished by the arrangement best illustrated in Figure 2. This figure shows a section of the magazine tube with a column of shot therein in normal position, the leading one of said shot being located in the recess 40 in the rear end plug 12 immediately above the shot in firing position in the barrel. It will be seen that the diameter of the loading port 20 is slightly greater than the diameter of a shot, to permit easy loading, and that, as clearly shown in this figure, when the shot column is pressed rearwardly by the magazine spring the center of the loading port 20 is substantially opposite the point of contact of two adjacent shot, so that if either shot is displaced outwardly it will be engaged by the tube wall adjacent to the loading port, instead of passing outwardly therethrough. By thus locating and proportioning the loading port with respect to the shot column, accidental egress of shot therethrough is effectively prevented. Moreover, when the magazine tube is in place, as illustrated in Figure 1, the loading port 20 is covered by the sleeve member 18, thus positively preventing outward displacement of the shot.

The magazine spring and spring follower

are constructed as follows: Referring to Figure 2, the magazine is seen to contain a coil spring 42 which at its forward end bears against the plug 23 and at its rear end engages the magazine follower. This follower is constructed of two links separably connected to each other. The forward link 32 is seen to be of rugged construction, approximating a tapered cylinder in shape, and formed at its forward end with a substantially spherical head 33. At its forward end this link is recessed at 34 and provided with a transverse pin 35 for receiving a hook portion 37 of the rear follower link 36. The rear link 36 is seen to have also a rearwardly extending spring engaging portion 38 and a laterally projecting finger piece 39. The link 36 being flat and thin, preferably a sheet metal stamping, is adapted to be inserted bodily through the slot 21. The finger piece 39 is adapted to extend laterally through the slot 21 in the magazine and is guided thereby in its fore and aft movement. The spherical head 33 of link 32 bears against the foremost pellet in the magazine and urges the column rearwardly, as indicated in Figure 2. At its rear end the barrel 11 is provided with an opening 40 to permit passage of pellets from the magazine to the barrel, and the rear end plug 12 is cut away at 31 to form a curved channel for guiding the passage of pellets through this opening.

Referring to Figure 4, it will be seen that the hook and pin connection of the follower links affords an articulated follower construction, whereby when the last pellet has left the magazine the spherical head 33 of the follower link 32 is permitted to enter partially into the channel 31 and retain contact with the last pellet to positively urge the same into the barrel and hold it in position for discharge by air pressure from a piston tube 43. It will be seen in Figure 4 that the engagement of head 33 of link 32 with the rear wall of channel 31 limits the rearward movement of the follower before finger piece 39 can reach the rear end 41 of slot 21 of the magazine tube. Thus, if the follower be allowed to snap to the rear in an empty magazine, the link 32 by its engagement with the wall of channel 31 in plug 12 will take up the shock of impact and relieve the magazine tube of injurious stresses from such impact.

As before stated, the invention contemplates making the follower readily detachable from the magazine tube. This is effected by the novel construction of the follower links 32 and 36, above described. It will be seen that the finger piece 39 by its engagement with the ends of slot 21 prevents removal of the follower from either end of the magazine tube. However, removal may be effected, as shown in Figure 5, by disengaging the rear end of spring 42 from the portion 38 of link 36 with the aid of any thin tool such as a knife blade inserted through slot 21, or by unscrewing plug 23 and drawing out spring 42 through the forward end of the tube. The link 36 may then be swung outwardly through the slot 21, the hook portion 37 pivoting about the pin 35 of the forward link and freeing itself therefrom. The forward link 32 is now free to be removed through an end opening of the magazine tube. Assembly may be effected by a simple reversal of the above procedure.

Having fully described my invention, what I claim is:

1. In an air gun, a barrel, a magazine tube adapted to contain a column of shot pellets, a spring and spring follower in said tube urging said shot pellets rearwardly, an opening in said tube for the transfer of pellets to said barrel, and a loading port located in the wall of said tube opposite the column of shot pellets but out of alignment with any one of such pellets.

2. In an air gun, a magazine tube having its wall apertured to provide a loading port for the reception of pellets, a follower in said tube adapted to resiliently urge a column of pellets past said loading port, said port being slightly greater in diameter than a pellet and being so located in said tube wall that its center normally lies opposite the contact point of two adjacent pellets.

3. In an air gun, a barrel assembly unit comprising a shooting barrel and end pieces secured thereto, a magazine tube adapted to lie parallel to said barrel and abut one of said end pieces, a plug threadedly engaging the forward end of said tube and movable to abut the other end piece, thereby compressing said tube between said end pieces.

4. In an air gun, a barrel assembly unit comprising a shooting barrel and end pieces secured thereto, a magazine tube adapted to lie parallel to said barrel with one end seated in the rear end piece, and a plug threadedly engaging the forward end of said tube and movable therein to abut the forward end piece.

5. In an air gun, a barrel assembly unit comprising a shooting barrel and end pieces secured thereto, a magazine tube adapted to lie parallel to said barrel and abut the rear end piece, a plug threadedly engaging the forward end of said tube and movable therein to abut the forward end piece, means carried by said plug and extending through an aperture in said forward end piece for manipulating said plug.

6. In an air gun, a barrel assembly unit comprising a shooting barrel and end pieces secured thereto, a magazine tube adapted to lie parallel to said barrel and abut the rear end piece, a plug threadedly mounted in the forward end of said tube and having a shoulder portion adapted to abut the forward end piece, a pilot carried by said plug, the

forward end piece being apertured to receive said pilot.

7. In an air gun, a barrel assembly unit comprising a shooting barrel and end pieces secured thereto, a magazine tube adapted to lie parallel to said barrel and abut the rear end piece, a plug threadedly mounted in the forward end of said tube and having a shoulder portion formed by a forwardly extending cylindrical portion of reduced diameter, the forward end piece being apertured to accommodate said cylindrical portion and permit the shoulder portion to abut the end piece.

8. In an air gun, a magazine tube, a spring follower therein comprising a link having a hook portion, and another link detachably engaged by said hook portion.

9. In an air gun, a magazine tube, a coil spring therein, a follower comprising a pellet-contacting link provided at one end with a transverse pin and a spring-engaging link having a hook portion engaging said pin.

10. In an air gun, a magazine tube formed with a narrow longitudinal slot, a spring follower comprising a thin flat link bodily insertable through said slot.

11. In an air gun, a magazine tube formed with a narrow longitudinal slot, a spring follower comprising a plurality of detachably connected links, one of said links being bodily removable through said slot.

12. In an air gun, a magazine tube formed with a narrow longitudinal slot, a spring follower comprising a pellet-contacting link and a spring-engaging link having a hook portion engaging said pellet-contacting link, said spring-engaging link being bodily removable through said slot.

13. In an air gun, a magazine tube formed with a narrow longitudinal slot, a spring follower comprising a spring-engaging link having a hook portion and a laterally extending finger piece, said link being bodily removable through said slot, and a pellet-contacting link recessed at one end and provided with a transverse pin receiving said hook portion.

14. In an air gun, a magazine tube formed with a narrow longitudinal slot, a spring follower comprising a pellet-contacting link formed with a recess and having a transverse pin at one end thereof, a thin flat spring-engaging link having a laterally extending finger piece and a hook portion engageable with said pin and adapted to be swung bodily through said slot about said pin for disengagement therefrom.

15. In an air gun, a magazine tube formed with a narrow longitudinal slot, an end piece abutting one end of said tube, a spring follower in said tube provided with a finger piece laterally extending through said slot, said follower being so shaped as to be stopped by said end piece before said finger piece reaches the end of said slot.

16. In an air gun, a magazine tube formed with a narrow longitudinal slot, an end piece abutting one end of said tube, a spring follower in said tube provided with a finger piece laterally extending through said slot, said follower being articulated to retain contact with the last pellet of the magazine to positively urge the same into the barrel, and being so shaped as to be stopped by contact with said end piece before said finger piece reaches the end of its slot.

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