

April 19, 1932.

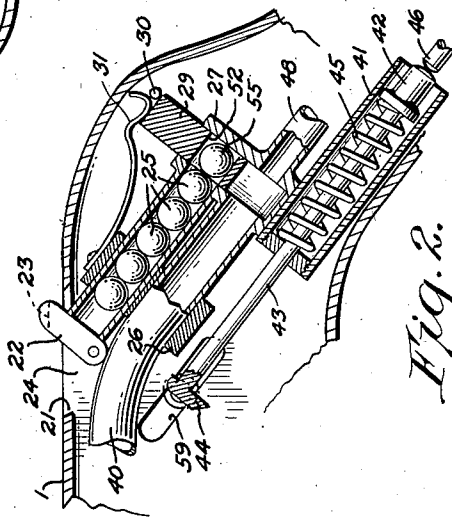
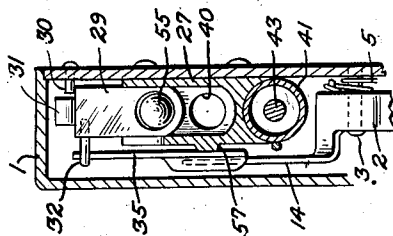
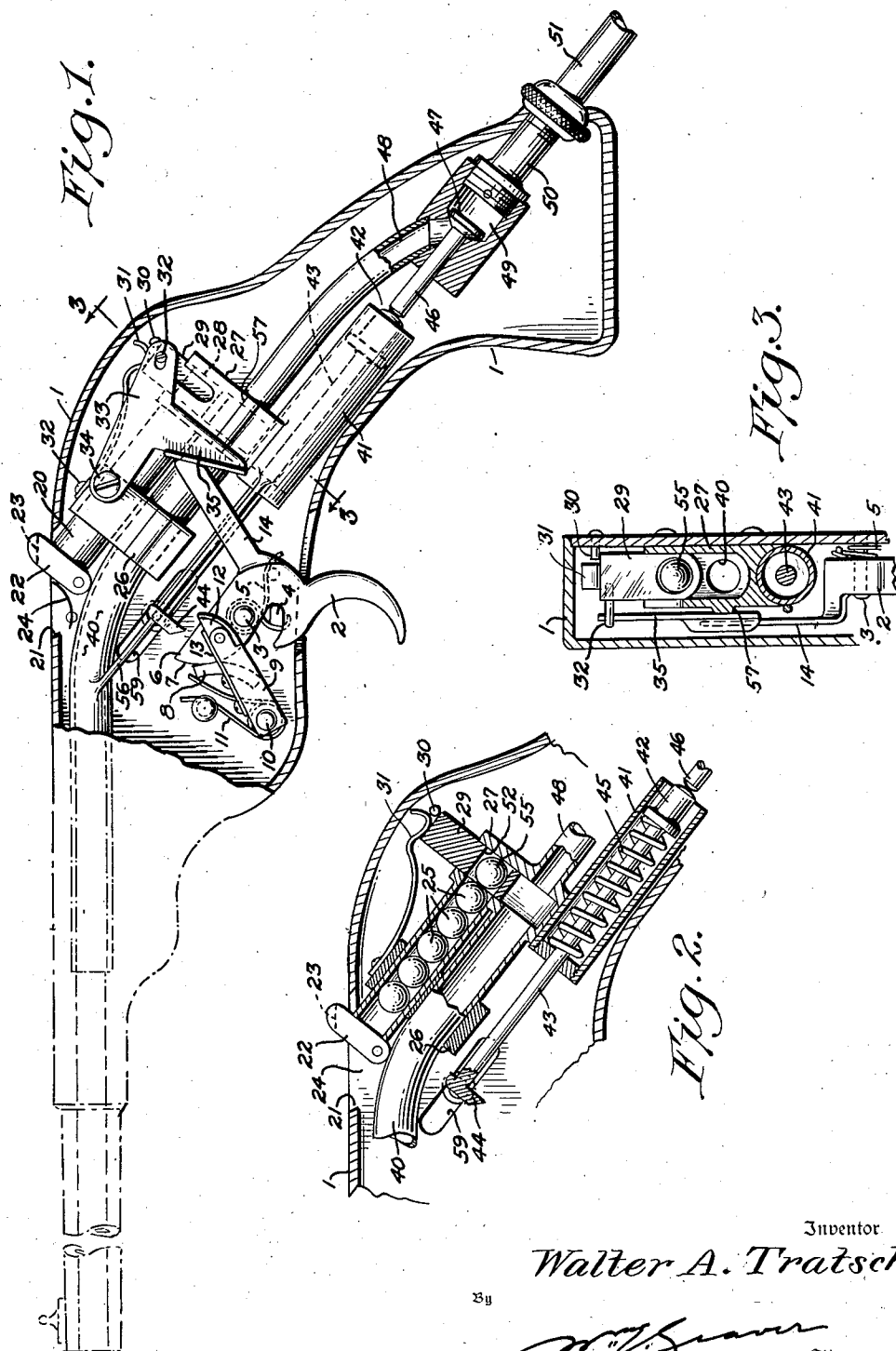
W. A. TRATSCH

1,854,605

AIR GUN

Filed June 16, 1930

2 Sheets-Sheet 1



Inventor:

Walter A. Tratsch

Attorney

April 19, 1932.

W. A. TRATSCH

1,854,605

AIR GUN

Filed June 16, 1930

2 Sheets-Sheet 2

Fig. 4.

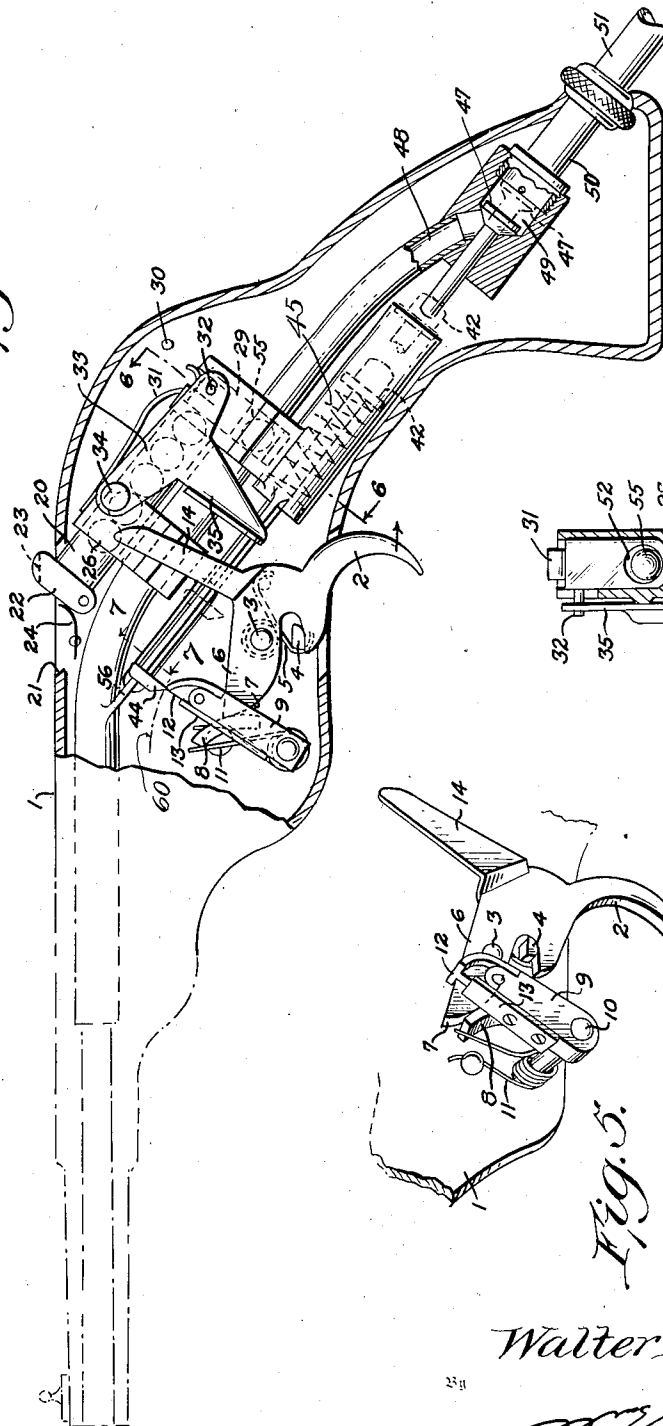


Fig. 6.

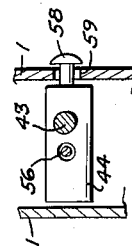
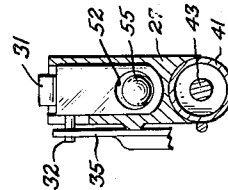
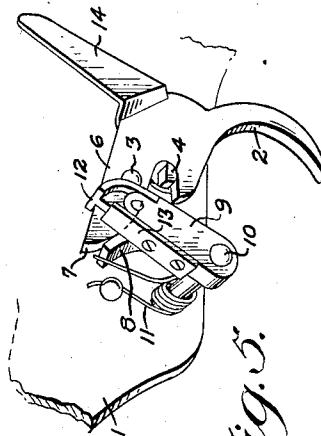


Fig. 7.

Fig. 5.



Inventor
Walter A. Tratsch

Attorney

UNITED STATES PATENT OFFICE

WALTER A. TRATSCH, OF CHICAGO, ILLINOIS

AIR GUN

Application filed June 16, 1930. Serial No. 461,442.

This invention relates to air guns and has for its object to provide a construction simple in parts and more efficient in operation than those heretofore proposed.

5 With these and other objects in view the invention resides in the novel details of construction and arrangements of parts as will be disclosed more fully hereinafter and particularly pointed out in the claims.

10 Referring to the accompanying drawings forming a part of this specification and in which like parts are designated by like numerals in all the views,—

15 Fig. 1 is a longitudinal part sectional view of a gun made in accordance with this invention;

20 Fig. 2 is a partial longitudinal sectional view of the parts illustrated in Fig. 1 to better disclose the construction of the ammunition magazine and the spring controlled hammer;

Fig. 3 is a transverse sectional view taken as on the line 3—3 of Fig. 1 and looking in the direction of the arrows;

25 Fig. 4 is a view similar to Fig. 1 but illustrating the parts in a different position;

Fig. 5 is a partial perspective view of the trigger and pawl mechanism;

30 Fig. 6 is a transverse sectional view of the loading chamber taken as on the line 6—6 of Fig. 4 and looking in the direction of the arrows; and

35 Fig. 7 is a transverse sectional view of the mounting of the trip associated with the hammer.

40 The gun may be a pistol or a rifle, the illustration being of a pistol, with the operating parts disposed in the grip or stock. The gun includes a frame supporting a trigger 2 pivoted as at 3 and limited in its forward position by a stop pin 4 against which the trigger is normally pressed as by the main spring 5. The trigger has a forwardly projecting portion 6 having a cam surface 7 adapted to operate over the convex surface of a lug 8 carried on one side of the pawl 9 which latter is pivoted as at 10 and placed under tension by a spring 11 so that said lug is pressed against the trigger cam. The pawl has pivoted at its free end a finger 12 normally

pressed by the flat spring 13 so that it occupies the position shown in Fig. 1. The trigger has a rearwardly extending arm 14 the outer end of which is adapted to control the feed of the ammunition to the barrel. 55

The ammunition magazine comprises a tube 20 one open end of which is located adjacent an opening 21 in the upper portion of the frame of the gun, said end having pivotally secured thereto a cover 22 whose outer end extends through said opening and is provided with a groove 23 serving as the rear sight of the gun, a flat spring 24 serving to normally keep the cover 22 in closed position over the mouth of the magazine. Balls 25 are manually loaded into the magazine by opening the cover 22. The magazine is mounted in two supporting blocks 26 and 27 rigidly secured to the gun frame, the rear-most block 27 constituting a breach block and having a rectangular opening 28 therein in which slides the loading member 29 which latter is stopped in its upward movement by the pin 30 on the frame. The top of this loading member is flat and receives there- 75 against the free end of a flat spring 31 secured as at 32 to the forward block 26. Extending laterally from one side of the loading member is a pin 32 engageable with a slot in one end of a lever 33 pivoted at its other end as at 34 to the forward supporting block. This lever has a downwardly extending portion 35 against one face of which operates the free end of the trigger arm 14. 80

The blocks 26 and 27 also support the rear end of the barrel 40, and the rear block 27 aids in supporting a housing 41 for the hammer or plunger which latter comprises a head 42 mounted on one end of a rod 43 extending out of the housing and having secured to its other end a trip 44 having a cam edge which is adapted to be engaged by the finger 12 of the pawl 9 when the trigger is moved rearwardly, as a result of which the trip is moved forwardly carrying with it the hammer 42. A coil spring 45 is interposed between the hammer head and the forward end of the housing 41, whereby as the hammer is moved, said spring is compressed. The cam edge of the trip 44 is so fashioned, however, that after 100

the pawl has swiped past the trip to release the same, the finger 12 during the return movement of the pawl will pivot and freely pass said trip to ultimately occupy a position to reengage the trip when the trigger is again pulled.

In alignment with the hammer is the stem 46 of a valve 47 adapted to seat against and close the rear end of a pipe 48 leading from the valve chamber 49 to the breach block 27, said pipe and the rearmost portion of the barrel 40 being coaxially aligned, or substantially so. A fitting 50 at one end of an air line 51 engages the valve chamber to supply air thereto.

The loading member 29 is substantially rectangular in shape and solid except for a cylindrical chamber 52 provided in its lower portion, the bore of which is of a dimension slightly greater than the diameter of the ammunition balls 25. The parts previously described are so proportioned that, when the gun is at rest, the main spring 5 will cause the arm 14 of the trigger to press against the extension 35 of the lever 33 which latter, through its pivotal connection, will raise the loading member 29 against the tension of the flat spring 31 to its uppermost position against the stop pin 30 with the chamber of the loading member in alignment with the ammunition magazine to receive therefrom one of the balls 25, see Figure 2. When the trigger is pulled the arm 14 will be moved in a direction away from the extension of the lever 33, thereby relieving the back pressure on the lever whereupon the pressure of the spring 31 will cause the loading member 29 to move downwardly in its guide block 27 to assume a position where the chamber of said member will be in alignment with the barrel 40. The barrel is curved downwardly at its rear end and the loading member is inclined as indicated so that there is practically no possibility of the ball such as 55 accidentally rolling from the loading member into the barrel. Further, the air pipe 48 being of a diameter less than that of the ball 55, there is no possibility of said ball rolling in the opposite direction from said loading member.

During the rearward pull on the trigger, the cam 7 thereof will operate against the lug 8 causing a pivotal movement of the pawl 9 in a forward direction during which the finger 12 of the pawl will engage and move the trip 44 forwardly along a guide rod 56 whose ends are rigidly secured to convenient parts of the mechanism. As the trip moves forward the hammer head 42 will likewise be moved, compressing the spring 45 associated therewith, and this movement continues until the pawl has carried its finger to a point just beyond that shown in Fig. 4, at which time the finger becomes disengaged with the trip, and the hammer spring 45 causes an immedi-

ate and accelerated rearward movement of the hammer which is sufficient in force not only to strike the stem 46 of the air valve, but to unseat said valve momentarily and permit air to flow from the line 51 through the air tube 48 and propel the ball 55 from the lowered loading member into and through the barrel 40.

When the trigger is permitted forward movement the spring 11 causes a return movement of the pawl, during which the finger 12 will pivot against the tension of its spring 13 and pass the trip 44 without operating the latter. Also during this release of said trigger its arm 14 will move rearwardly, engage the extension 35 of the loading lever 33 and pivot the same to cause the loading member 29 to rise from the position which it formerly occupied, at the bottom of the guide block 27, and assume a position at the top thereof with its chamber in alignment with the ammunition magazine to receive the next ball therefrom. The bore 52 is of a size to accommodate only one ball at a time and said member is of sufficient length that when it is in its lowered position one of its solid sides closes the end of the magazine, thus retaining the remaining balls in said magazine.

The air pressure in the line 51 is always maintained greater than the normal pressure of the coil spring 45 associated with the hammer when at rest as a result of which the valve 47 is maintained closed until the hammer is moved rearwardly under the increased and accelerated force of said spring, which force and acceleration is greater than the air line pressure, thus permitting an instantaneous opening of the valve 47 upon impact between the hammer 42 and the valve stem. When at rest, the hammer is in contact with the end of the valve stem.

In Fig. 1 all of the parts are shown at their normal or at rest positions but in Fig. 4 the parts are illustrated in their positions at the time that the finger 12 of the pawl 9 is about to release the trip 44, the dot and dash line arc 60 representing the path followed by the extremity of said finger. Also in Fig. 4 is denoted in dotted line position the trip 44, the hammer head 42 and the valve 47, subsequent to the release of the trip, to illustrate the opening of the valve and the passage for the air from the line 51 to and into the air tube 48.

In Figs. 2 and 3 the loading member 29 is clearly shown in its raised position to receive the ball 55 from the magazine, said member uncovering the rear end of the barrel 40. On the other hand, in Fig. 6 the member is shown in its lowered position with the ball 55 ready to be fired or projected into and through the barrel 40. A rib 57 is preferably formed on the side of the guide block 27 to permit freer movement thereon of the lever extension 35.

With particular reference to Fig. 7 it will be seen that the trip 44, rigidly mounted on the rod 43, carries a headed pin 58 to one side of said rod, said pin adapted to operate through a slot 59 in the side wall of the frame 1, and that said trip is apertured on the other side of said rod for sliding engagement with the rod 56. The purpose of this construction is to prevent a cocking of the trip when it is moved by the pawl.

It is obvious that those skilled in the art may vary the details of construction and arrangements of parts without departing from the spirit of this invention and therefore it is not desired to be limited to the foregoing disclosure except as may be required by the claims.

What is claimed is:—

1. In an air gun provided with a pivoted trigger, a barrel and means to deliver a ball to said barrel the combination of a valve controlling an air supply to fire the delivered ball; valve unseating means; and trigger actuated pivoted means for tensioning and then releasing said last named means.

2. In an air gun provided with a unitary pivoted trigger, a barrel and means to deliver a ball to said barrel the combination of a valve controlling an air supply to fire the delivered ball; valve unseating means under tension and normally engaging said valve; and trigger actuated pivoted means for moving said last named means out of engagement with said valve and then releasing said last named means.

3. In an air gun provided with a barrel, a magazine, and loading means to deliver a ball to said barrel the combination of a valve controlling an air supply to fire the delivered ball; valve unseating means; means for tensioning and then releasing the valve unseating means; and a trigger adapted when moved in one direction to operate said last named means; and adapted when moved in the other direction to shift said loading means into position to receive a ball from said magazine.

4. In an air gun provided with a barrel, a magazine, and loading means to deliver a ball to said barrel the combination of a valve controlling an air supply to fire the delivered ball; valve unseating means; means for tensioning and then releasing the valve unseating means; and a unitary trigger adapted when moved in one direction to operate said last named means, and adapted when moved in the other direction to shift said loading means into position to receive a ball from said magazine.

5. In an air gun provided with a barrel, a magazine, and loading means to deliver a ball to said barrel the combination of a valve controlling an air supply to fire the delivered ball; valve unseating means; means for tensioning and then releasing the valve unseating

means; and a unitary pivoted trigger adapted when moved in one direction to operate said last named means, and adapted when moved in the other direction to shift said loading means into position to receive a ball from said magazine.

6. In an air gun provided with a barrel, a magazine, and loading means to deliver a ball to said barrel the combination of a valve controlling an air supply to fire the delivered ball; valve unseating means; means for tensioning and then releasing the valve unseating means; and a trigger provided with an integral arm movable in one direction to operate said last named means, and provided with a second integral arm movable to shift said loading means into position to receive a ball from said magazine.

7. In an air gun provided with a barrel, a magazine, and loading means to deliver a ball to said barrel the combination of a valve controlling an air supply to fire the delivered ball; valve unseating means; means for tensioning and then releasing the valve unseating means; and a trigger provided with a forwardly projecting arm to operate said last named means, and provided with a rearwardly projecting arm to shift said loading means into position to receive a ball from said magazine.

8. In an air gun provided with a barrel, a magazine, and loading means to deliver a ball to said barrel the combination of a valve controlling an air supply to fire the delivered ball; valve unseating means; means for tensioning and then releasing the valve unseating means; and a trigger provided with divergent arms, one to operate said last named means, and the other to shift said loading means into position to receive a ball from said magazine.

9. In an air gun provided with a barrel, a magazine, and loading means to deliver a ball to said barrel the combination of a valve controlling an air supply to fire the delivered ball; valve unseating means; means for tensioning and then releasing the valve unseating means; and a unitary trigger of substantially Y formation, one of the upper arms movable forwardly to operate said last named means, the other upper arm movable rearwardly to shift said loading means into position to receive a ball from said magazine, and the lower arm constituting the finger piece for moving said upper arms.

In testimony whereof I affix my signature.
WALTER A. TRATSCH.