Aug. 31, 1954

E. M. VARONA ET AL

2,687,715

DUAL AIR RIFLE

Filed Aug. 15, 1950

3 Sheets-Sheet 1

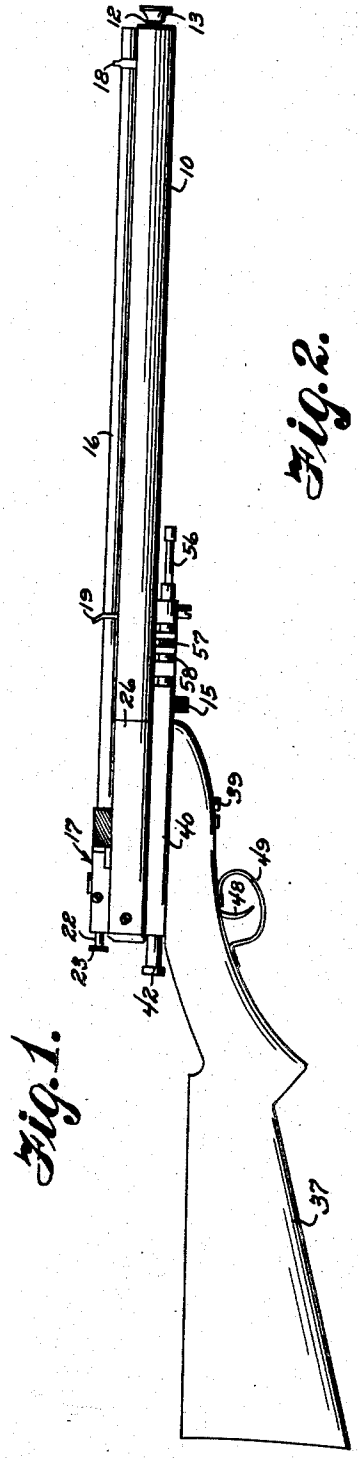


Fig. 1.

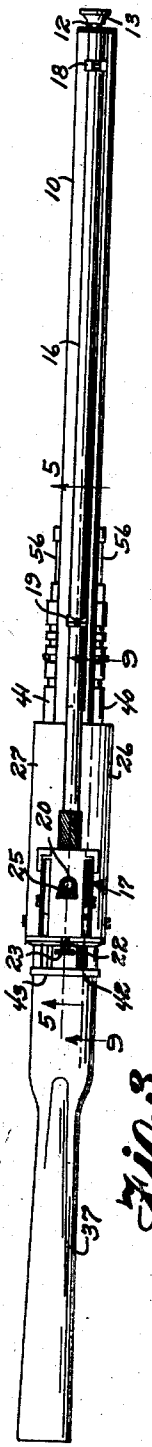


Fig. 2.

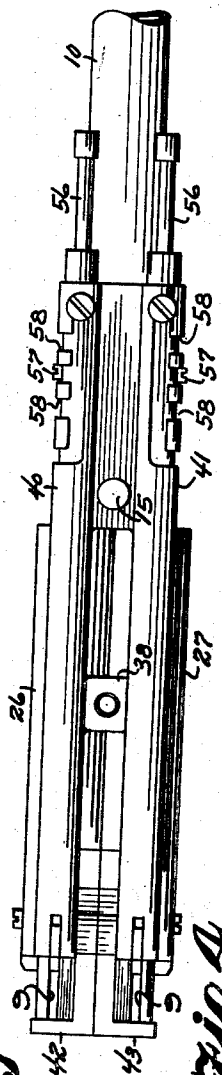


Fig. 3.

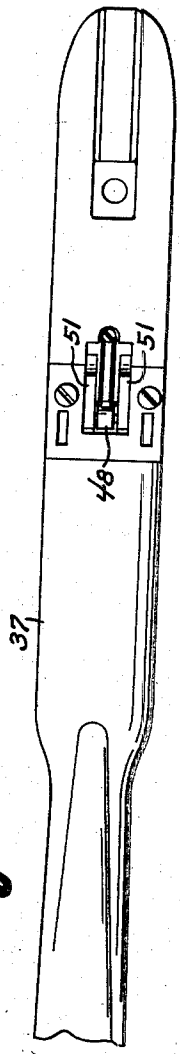


Fig. 4.

Eulalio M. Varona
Oscar B. Varona
Olivio B. Varona INVENTORS.

BY Victor J. Evans & Co.

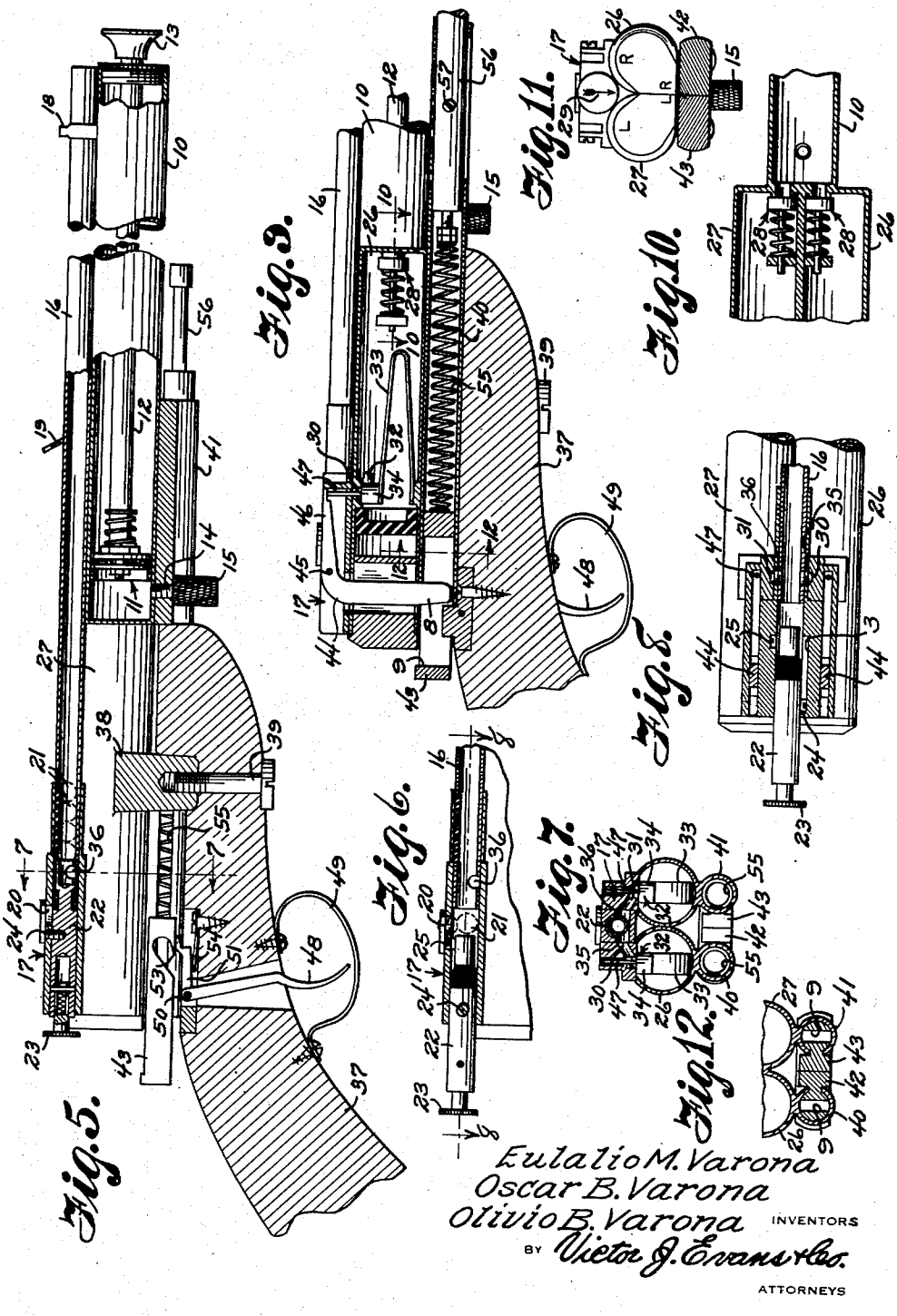
ATTORNEYS

Aug. 31, 1954 E. M. VARONA ET AL 2,687,715

DUAL AIR RIFLE

Filed Aug. 15, 1950

3 Sheets-Sheet 2



Eulalio M. Varona
Oscar B. Varona
Olivio B. Varona INVENTORS

BY Victor J. Evans & Co.

ATTORNEYS

Aug. 31, 1954 E. M. VARONA ET AL 2,687,715

DUAL AIR RIFLE

Filed Aug. 15, 1950

3 Sheets-Sheet 3

Fig. 13.

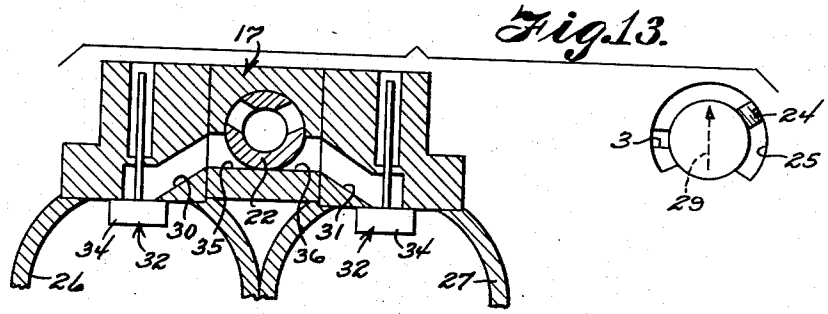


Fig. 14.

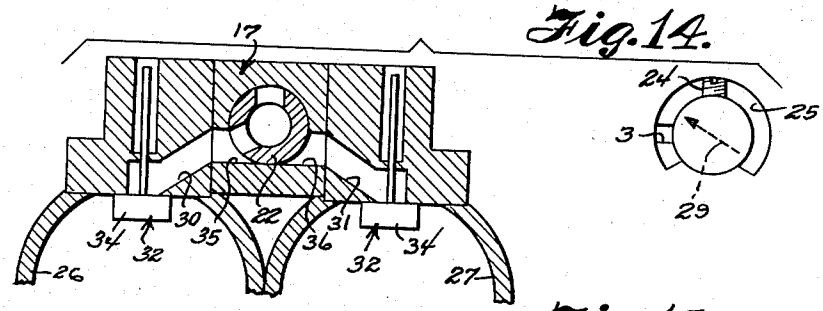


Fig. 15.

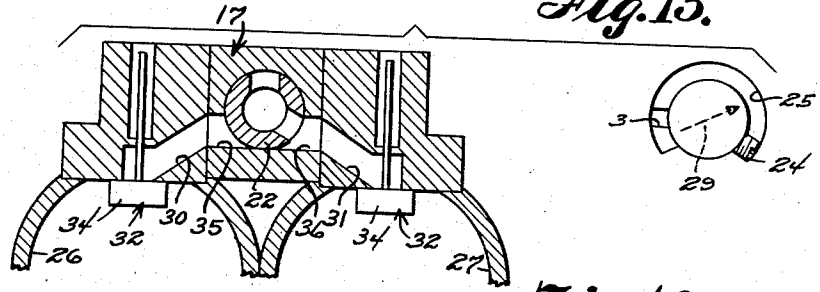
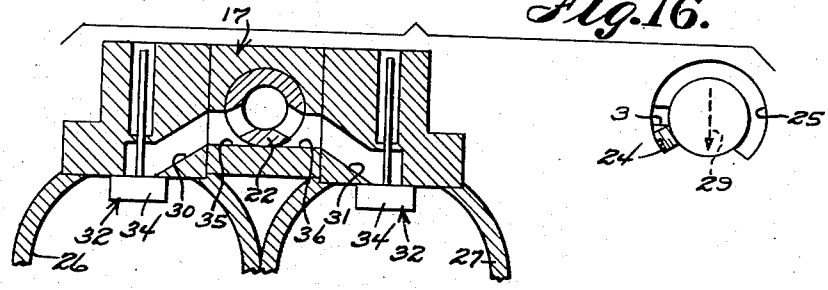


Fig. 16.



INVENTORS
Eulalio M. Varona
Oscar B. Varona
Olivio B. Varona
BY Victor J. Evans & Co.

ATTORNEYS

Patented Aug. 31, 1954

2,687,715

UNITED STATES PATENT OFFICE

2,687,715

DUAL AIR RIFLE

Eulalio M. Varona, Oscar B. Varona, and Olivio B. Varona, Manila, Republic of the Philippines

Application August 15, 1950, Serial No. 179,476

1 Claim. (Cl. 124—13)

1

This invention relates to guns, and more particularly to a gun or rifle from which the projectiles are propelled by air under pressure.

The object of the invention is to provide a rifle which is constructed so that air under pressure will be delivered behind projectiles to propel the latter as desired.

Another object of the invention is to provide an air rifle which will propel projectiles under great force.

A further object of the invention is to provide an air rifle which is extremely simple and inexpensive to manufacture.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings forming a part of this application, and in which like numerals are employed to designate like parts throughout the same:

Figure 1 is a side elevational view of the air rifle according to the present invention;

Figure 2 is a top plan view of the air rifle;

Figure 3 is an enlarged fragmentary bottom plan view of the rifle, with the stock removed;

Figure 4 is a top plan view of the stock;

Figure 5 is an enlarged sectional view taken on the line 5—5 of Figure 2;

Figure 6 is a vertical sectional view of the breech block with the loading member retracted;

Figure 7 is a sectional view taken on the line 7—7 of Figure 5;

Figure 8 is a sectional view taken on the line 8—8 of Figure 6;

Figure 9 is an enlarged sectional view taken on the line 9—9 of Figure 2;

Figure 10 is an enlarged sectional view taken on the line 10—10 of Figure 9;

Figure 11 is a rear end elevational view of the rifle with the stock removed;

Figure 12 is a sectional view taken on the line 12—12 of Figure 9.

Figure 13 is a transverse sectional view taken through the rifle showing the reservoirs, valves and loading member and with the loading member closing off both air reservoirs, the corresponding position of the indicating arrow, locking screw and slot being shown diagrammatically looking from the front towards the rear of the rifle.

Figure 14 is a view similar to Figure 13, but showing the position of the parts when one reservoir is in communication with the projectile barrel.

Figure 15 is a view similar to Figure 14, but showing the position of the parts when the other reservoir chamber is in communication with the projectile barrel.

2

Figure 16 is a view similar to Figure 13, but showing the position of the parts when both reservoir chambers are in communication with the projectile barrel.

Referring in detail to the drawings, the numeral 10 designates a compression cylinder in which is slidably arranged a pump-plunger 11, Figure 5. The plunger 11 includes an elongated stem 12 and a flared collar 13. A threaded stud bolt 14 provided with a knurled head 15 is arranged in engagement with the cylinder 10 and the bolt 14 can be unscrewed to permit air to bleed from the cylinder as desired. Further, the bolt 14 can be removed from the cylinder 10 to ensure that the rifle will not be used by a stranger.

A tubular projectile barrel 16 is supported on the top of the cylinder 10 and is secured thereto, there being a breech block 17 positioned to the rear of the barrel 16 and communicating with the latter. Suitable front and rear sights 18 and 19 are supported on the projectile barrel 16, and the breech block 17 is provided with an opening 20 through which are inserted the projectiles 21 that are to be discharged.

A loading member 22 is slidably and rotatably arranged in the breech block 17 and projects out of the rear thereof, there being a knob 23 for moving the loading member 22. A screw 24 projects from the loading member 22, and this screw is adapted to be projected through a slot in the breech block 17, and this slot includes an arcuate portion 25 and an elongated or straight portion 3. In Figures 13, 14, 15 and 16 it will be seen that the screw 24 is in four different positions of the arcuate portion 25 of the slot when the loading member is moved to control the flow of air from a pair of air reservoir chambers 26 and 27. The screw 24 moves rearwardly through the straight portion 3 of the slot to the position shown in Figure 6 when the gun is to be loaded with projectiles 21. Thus, to move the loading member rearwardly, the loading member 22 is first rotated to free the screw 24 from the arcuate portion 25 of the slot so that the screw 24 can move through the straight portion 3 of the slot.

The pair of tubular reservoir chambers 26 and 27 are arranged to the rear of the cylinder 10. A spring-pressed valve 28 is arranged in each of the chambers 26 and 27 and the valves 28 permit compressed air to pass from the cylinder 10 to the reservoir chambers, but prevent air from leaving the chambers and returning to the cylinder 10. The rear ends of the chambers 26 and 27 have the letters "L" and "R" marked thereon, and the knob 23 for moving the loading member 22 has an arrow 29 marked thereon and this arrow, Figure

11, serves to indicate the chamber that is supplying the air to the projectile barrel 16. The chamber 26 has communicating therewith an inclined passageway 30, and the chamber 27 also has communicating therewith an inclined passageway 31. A valve 32 is arranged in each of the chambers 26 and 27 and a spring 33 normally maintains the heads 34 of these valves in bridging or closing relation with respect to the passageways 30 and 31. Spaced apertures 35 and 36 register with the passageways 30 and 31 to permit flow of air from the chambers 26 and 27 through the breech block 17 and into the projectile barrel 16.

A stock 37 is detachably secured to a block 38 by a headed screw 39, the block 38 being welded or otherwise secured to the under surface of the chambers 26 and 27.

A pair of spaced open-ended casings 40 and 41 are positioned below the chambers 26 and 27 and are secured thereto, and a pair of hammers 42 and 43 are slidably arranged in the pair of casings 40 and 41. Each hammer, however, is provided with a slot 9 into which projects a portion 8 of an L-shaped arm 44, and each arm is pivotally connected by a pin 45 to the breech block 17. The other end portion 46 of each of the arms 44 is in engagement with the complemental stem 47 of the valve 32 and upon pivotal movement of the arms 44 in a clockwise direction, the valve head 34 will be moved downwardly to permit air to flow out from the chambers 26 and 27 to propel the projectiles.

For causing pivotal movement of these arms 44, a single trigger 48 surrounded by a trigger guard 49 is provided. Secured to the upper end of the trigger 48 by a rivet 50 is a pair of spaced fingers 51, and these fingers engage with slots 53 which are formed in the bottom of each of the hammers 42 and 43. Thus, until the trigger 48 is pulled backward, the fingers 51 are urged upwardly into engagement with the slots 53 by springs 54, and the hammers are not able to move backward.

A coil spring 55 is positioned in each of the casings 40 and 41 for normally urging the hammers backward, and the tension of these coil springs can be varied as desired. Thus, a shank 56 slidably projects out of the front end of each of the casings 40 and 41 and these shanks abut the coil springs. A stud 57 is secured to each of the shanks 56 and this stud is adapted to be positioned in one of a plurality of spaced slots 58 which are arranged in each casing whereby the tension of the coil springs 55 can be adjusted as desired. By varying the tension of the coil springs in the aforementioned manner, the interval between squeezing the trigger and discharging the projectiles can be set or varied as desired.

In use, the rifle may be pointed downwardly and the plunger 11 reciprocated to build up air pressure in the chambers 26 and 27. One or more projectiles 21 may be loaded through the opening 20 into the breech block 17 when the loading member 22 is in its rear or uncocked position. Then, the loading member 22 is set by means of the knob 23 so that the compressed air will come from either of the chambers 26 and 27 or from both. The hammers 42 and 43 are pushed inwardly into the casings 40 and 41 and the rifle is aimed. Then when the user squeezes the trigger 48, the fingers 51 will be moved out of engagement with the grooves 53 in the hammer

and the springs 55 will quickly force the hammers rearwardly. The fingers 51 have their upper front edges engaging the portions of the hammers 42 and 43 contiguous to the slots 53 so that manual pressure on the trigger 48 moves the front ends of the fingers 51 out of engagement with the knife edges on the hammers 42 and 43. This rearward movement of the hammers will cause the arms 44 to pivot to thereby depress and open the valves 32 whereby air will pass from the chambers 26 and 27 through the respective passageways into the breech block 17 to propel the projectiles out of the barrel 16.

As many embodiments may be made of this inventive concept, and as many modifications may be made in the embodiment hereinbefore shown and described, it is to be understood that all matter herein is to be interpreted merely as illustrative and not in a limiting sense.

I claim:

An air rifle comprising a compression cylinder, a pump-plunger slidably arranged in said cylinder, a pair of reservoir chambers arranged to the rear of said cylinder for receiving compressed air from the latter, a valve positioned in each of said chambers for permitting air to enter said chambers and for preventing air from passing from said chambers to said cylinder, a projectile barrel arranged above said cylinder and supported by the latter, a breech block arranged to the rear of said cylinder and communicating with the projectile barrel, there being an opening in said breech block for inserting projectiles, there being an inclined passageway arranged in each of said chambers for the egress therethrough of compressed air, a pair of oppositely disposed apertures in said projectile barrel communicating with the passageways in said chambers, a loading member slidably and rotatably positioned in said projectile barrel whereby said projectiles are adapted to be moved into said projectile barrel, a valve normally closing each of said passageways, a stock arranged below said cylinder and operatively connected to said chambers, a pair of open-ended casings positioned below said chambers and secured thereto above said stock, a hammer provided with a slot slidably arranged in each of said casings, a pair of fingers for preventing rearward movement of said hammers, a coil spring normally urging said hammers rearwardly in said casings, a pair of L-shaped arms pivotally connected to said breech block and each having an end portion projecting through the slot in the hammer therebelow, the other end portion of each of said arms adapted to open the valves that normally close the passageways in said chambers upon pivotal movement of said arms, and a trigger carried by said stock for freeing said fingers from said hammers to cause said hammers to be moved rearwardly whereby said valves will be opened and said projectiles will be propelled through said barrel.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
822,645	Benjamin	June 5, 1906
1,026,303	Dickey	May 14, 1912
2,006,030	Price	June 25, 1935
2,331,163	Benjamin	Oct. 5, 1943
2,495,829	Vincent	Jan. 31, 1950