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W. R. BENJAMIN.

AIR GUN.

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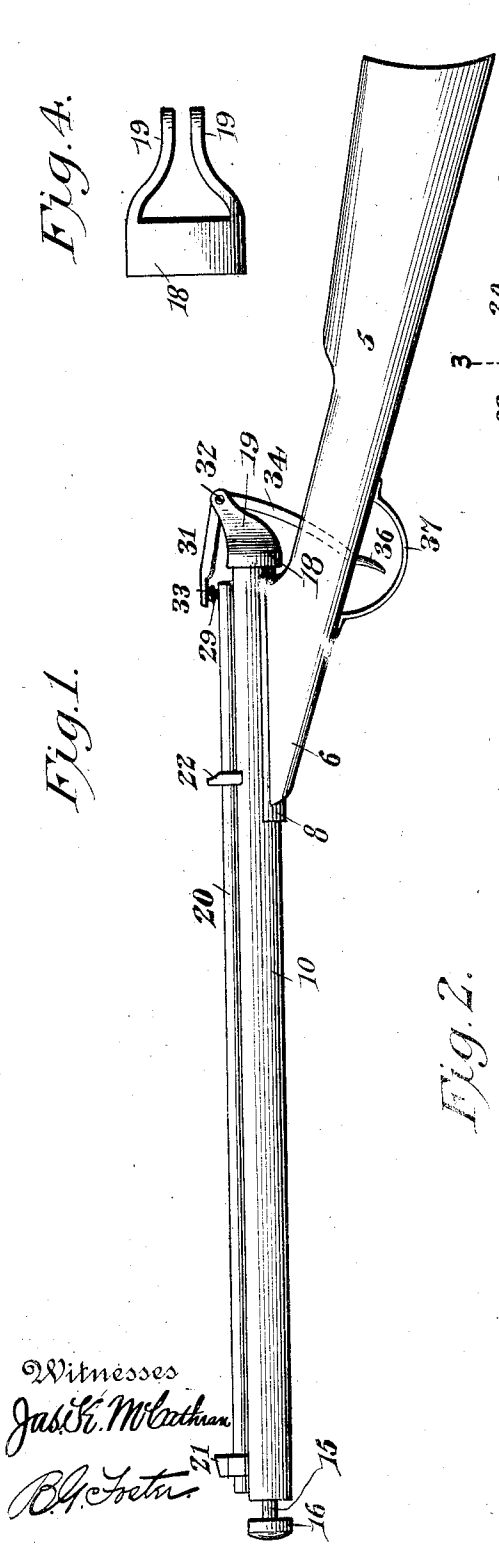


Fig. 1.

Fig. 4.

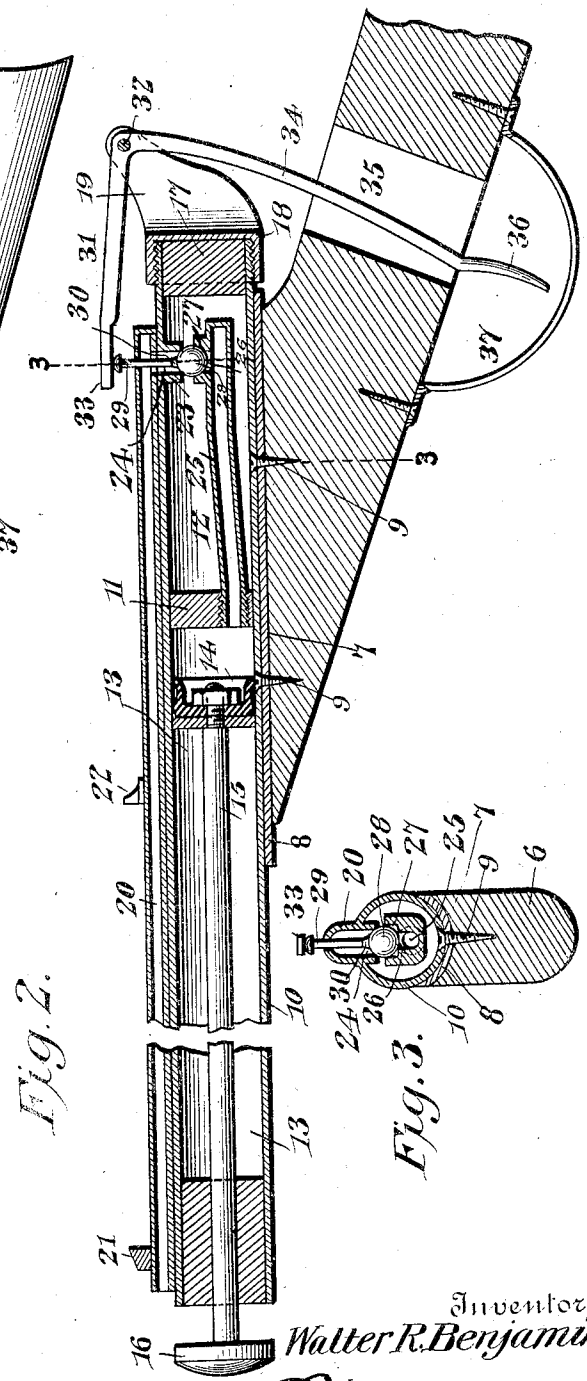


Fig. 2.

Fig. 3.

Witnesses

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AIR-GUN.

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To all whom it may concern:

Be it known that I, WALTER R. BENJAMIN, a citizen of the United States, residing at Granite City, in the county of Madison and State of Illinois, have invented a new and useful Air-Gun, of which the following is a specification.

This invention relates more particularly to that class of guns from which the projectiles are propelled by air or other suitable fluid under pressure.

The principal object is to provide a novel and extremely simple structure which will maintain air under pressure, will effectively deliver the same behind the projectiles, and is composed of parts that are elementary in their nature, so that there is little liability of breakage or derangement, though said parts are entirely accessible for the purposes of repair or renewal should it become necessary.

The embodiment of the invention that is considered preferable is illustrated in the accompanying drawings and is described in the following specification. An inspection of the claims hereto appended will clearly indicate, however, that the said invention is not limited to the exact structure herein illustrated, but that the same is open to numerous changes and modifications.

In the drawings, Figure 1 is a side elevation of the said preferred embodiment. Fig. 2 is a longitudinal sectional view, on an enlarged scale, through a portion of the same. Fig. 3 is a cross-sectional view taken on the line 3 3 of Fig. 2. Fig. 4 is a top plan view of the retaining-cap.

Similar reference-numerals designate corresponding parts in all the figures of the drawings.

In the embodiment illustrated a stock 5 is employed, having the usual grip extension 6, which extension is provided in its upper side with a longitudinally-disposed curved seat 7. This seat receives a holding-plate 8, secured in place by screws 9 and having secured thereto by solder or by any other suitable means a cylinder 10, preferably formed of sheet metal and having a partition 11 between its ends, which subdivides said cylinder into a reservoir 12 for holding air or fluid under pressure and a pump-barrel 13. A suitable reciprocatory pump-plunger 14 is located in the barrel and is connected to a stem 15, projecting from the outer end of said barrel and having a handle-knob 16. The inner end of the cylinder, and consequently the inner end of the reservoir, is closed by a compressible plug 17, of rubber or other suitable material, which plug is held in place by a cap 18, threaded upon the cylinder and having spaced rearwardly-projecting ears 19.

Located upon the upper side of the cylinder 10 is a projectile-barrel 20, having the usual front and rear sights 21 and 22 and having communication at its rear end with the interior of the reservoir through a nipple 23, depending within said reservoir, and having an outlet-opening 24 therethrough that communicates with said barrel.

Communication between the pump-barrel 11 and the reservoir 12 is secured through a yielding conduit-stem 25, the outer end of which is suitably fastened in the partition 11 and communicates with the inner end of said pump-barrel. The inner end portion of this conduit-stem has a lateral inlet-opening 26, located in opposition to the outlet-opening 24 in the nipple 23, said opening 26 being surrounded by a suitable valve-seat 27. A valve device, preferably in the form of a ball 28, of rubber or other compressible material, is interposed between the inlet and outlet openings, being located in the seat 27 and normally closing the inlet-opening. It is maintained in operative or closed position with respect to said openings by means of the yielding conduit-stem. A valve-stem 29 slidably passes across the inner end of the projectile-barrel and downwardly into the nipple, terminating at its inner end in a head 30, that bears upon the valve, the outer end of the stem projecting above the barrel. A trigger 31, pivoted to and between the ears 19 by means of a detachable pin 32, has an offset finger 33, the front portion of which is located over and bears upon the outer end of the valve-stem 29. The remaining portion of the trigger comprises a stem 34, passing downwardly through an opening 35 in the stock, projecting below said stock, and having a finger-piece 36 located within a guard 37.

The operation of the gun may be briefly outlined, as follows: When the pump-plunger 14 is reciprocated in the usual manner, air is forced through the conduit-stem 25 and acting against the valve 28 will move the stem sufficiently to escape into the reservoir. When sufficient pressure is secured in said reservoir, a projectile is dropped into the end of the projectile-barrel. Therefore when the trigger is pulled the front end of the finger 33

will be swung downwardly, thus pressing upon the valve-stem 29 and opening the outlet, so that air under pressure will be delivered to the projectile-barrel behind the projectile, which will thereby be expelled with great force from the barrel. It will be seen that this is an exceedingly-simple structure, a single ball constituting a valve device which controls both the inlet to and the outlet from the reservoir. The trigger mechanism is in like manner exceedingly elementary in its character and while not liable to derangement is entirely accessible should repairs become necessary. Furthermore, should the valve leak or require replacement it is only necessary to first detach the trigger, and then by unscrewing the cap 16 and removing the plug 15 the valve can be readily detached, as will be apparent.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described invention will be apparent to those skilled in the art without further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an air-gun, the combination with a projectile-holder, of a reservoir for fluid under pressure, said reservoir having an inlet and an outlet that communicates with the projectile-holder, a valve for controlling the inlet and outlet, and means for actuating the valve.

2. In an air-gun, the combination with a projectile-barrel, of a reservoir for fluid under pressure, said reservoir having an inlet and a separate outlet, the latter communicating with the barrel, a single valve device controlling both the inlet and outlet, and means for operating the valve device.

3. In an air-gun, the combination with a projectile-barrel, of a reservoir for fluid under pressure, said reservoir having an inlet and a separate outlet, the latter communicating with the barrel, a single valve device controlling both the inlet and outlet, and means for operating the valve device to open the outlet and at the same time hold said valve closed upon the inlet.

4. In an air-gun, the combination with a projectile-barrel, of a reservoir for fluid under pressure, a pump communicating with the reservoir, said reservoir also having communication with the barrel, a valve device for closing both of said communications, and means for operating the valve device.

5. In an air-gun, the combination with a projectile-holder, of a reservoir for fluid under pressure, said reservoir having an inlet and an outlet that communicates with the projectile-holder, a ball-valve for controlling both the inlet and the outlet, and means for actuating the ball-valve.

6. In an air-gun, the combination with a projectile-barrel, of a reservoir for fluid under pressure, said reservoir having an inlet and a separate outlet, the latter communicating with the barrel, a ball-valve having its opposite portions closing the inlet and outlet, and means for operating the valve.

7. In an air-gun, the combination with a reservoir for fluid under pressure, said reservoir having an open rear end, of a detachable closure for the open end, a projectile-barrel having communication with the reservoir, a yielding support located in the reservoir contiguous to the open end thereof, a valve detachably mounted on the support and controlling the communication with the barrel, said valve being accessible and removable through the open end when the closure is detached, and means for actuating the valve.

8. In an air-gun, the combination with a reservoir for fluid under pressure, said reservoir having an open rear end, of a detachable closure for said open end, a projectile-barrel having communication with the reservoir, a valve detachably mounted within the reservoir and controlling the communication with the barrel, said valve being accessible and removable through the open end when the closure is detached, and means for actuating the valve.

9. In an air-gun, the combination with a stock, of a reservoir mounted on the stock and having an open rear end located above the same, a detachable closure for said rear end, a projectile-barrel having communication with the reservoir, a valve detachably located in the reservoir and controlling said communication, said valve being accessible and removable through the open end of the reservoir when the closure is removed, and means for operating the valve.

10. In an air-gun, the combination with a projectile-barrel, of a reservoir for fluid under pressure having communication with the barrel, a yielding stem supported at one end and having a valve-seat at its other end that is located contiguous to the communication, a ball-valve loosely and detachably located in the seat and normally closing said communication, a valve-stem engaging the valve on the side opposite the portion located in the seat, and means for moving the stem longitudinally to actuate the valve.

11. In an air-gun, the combination with a reservoir for fluid under pressure and a projectile-barrel cooperating therewith, of means for permitting the introduction of fluid into the reservoir, said means comprising a yielding conduit having communication with the reservoir, and a valve controlling such conduit.

12. In an air-gun, the combination with a reservoir for fluid under pressure and a projectile-barrel coöperating therewith, of means for permitting the introduction of fluid into the reservoir, said means comprising a yielding conduit having an opening communicating with the reservoir, and a valve carried by the yielding conduit and normally closing said opening.

13. In an air-gun, the combination with a reservoir for fluid under pressure and a projectile-barrel coöperating therewith, of means for permitting the introduction of fluid into the reservoir, said means comprising a yielding conduit having an opening communicating with the reservoir, a valve-seat surrounding the opening, and a valve located in the seat and movable therefrom to allow the passage of fluid through the conduit into the reservoir.

14. In an air-gun, the combination with a reservoir for fluid under pressure and a projectile-barrel coöperating therewith, of a tubular stem located in the reservoir, said stem being supported at one end and having at its other end an opening surrounded by a valve-seat, and a valve located in the seat.

15. In an air-gun, the combination with a projectile-barrel, of a cylinder extending longitudinally along the same, a partition located in the cylinder and subdividing the same into an air-reservoir and a pump-barrel, a yielding conduit having one end secured in the partition and communicating with the pump-barrel, the other end being yielding and having an opening communicating with the reservoir, a valve closing said opening, and a plunger operating in the pump-barrel.

16. In an air-gun, the combination with a barrel, of a reservoir coacting therewith, a yielding conduit located in the reservoir and having communication with said reservoir, a valve carried by the conduit, and means for actuating the valve.

17. In an air-gun, the combination with a barrel, of a reservoir coacting therewith, a yielding conduit located in the reservoir and having communication with said reservoir, a valve carried by the conduit, and a pump connected to the conduit.

18. In an air-gun, the combination with a reservoir having opposed inlet and outlet openings, of a projectile-barrel having communication with the reservoir through the outlet-opening, a valve device interposed between the inlet and outlet and closing both, and means for actuating the valve device.

19. In an air-gun, the combination with a reservoir having opposed inlet and outlet openings, of a yielding conduit located in the reservoir and having one of said openings, a valve device interposed between the inlet and outlet openings and closing both, and means for actuating the valve device.

20. In an air-gun, the combination with a reservoir, of a projectile-barrel, said reservoir having an outlet opening into the barrel, a yielding inlet-conduit stem located in the reservoir and having an opening opposed to said outlet, a valve interposed between the opening and outlet and closing both, and means for actuating the valve.

21. In an air-gun, the combination with a projectile-barrel, of a cylinder located beneath the same, a partition dividing said cylinder into a pump-barrel and a reservoir, an outlet-nipple located in the reservoir and communicating with the projectile-barrel, a conduit-stem yieldingly supported in the reservoir, said stem communicating with the pump-barrel and having an opening opposed to the nipple, a valve-seat surrounding said opening, a ball-valve located in the seat and closing the opening and the nipple, a plunger operatively mounted in the pump-barrel, a valve-stem coacting with the valve, and means for actuating the valve-stem.

22. In an air-gun, the combination with a projectile-barrel, of an air-reservoir located beneath the same and having communication therewith, a valve for closing the communication, an upstanding valve-stem projecting above the barrel, and a trigger extending in rear of the barrel and having a forwardly-offset portion located over the barrel and stem and engaging said stem to depress the same when the trigger is operated.

23. In an air-gun, the combination with a reservoir having opposed inlet and outlet openings, of a projectile-barrel having communication with the reservoir through the outlet-opening, a valve device interposed between the inlet and outlet openings and closing both means for actuating said valve device, and a detachable end closure for said reservoir permitting access to the valve.

24. In an air-gun, the combination with a projectile-barrel, of a cylinder located alongside the same, a partition dividing said cylinder into a pump-barrel and a reservoir, said reservoir having an inlet communicating with the pump-barrel and an outlet communicating with the projectile-barrel and opposed to the inlet, a valve located between and controlling both the outlet and inlet, a pump-plunger movably located in the pump-barrel, a yielding plug located in the end of the cylinder and constituting a closure for the reservoir, and a cap covering the said plug.

25. In an air-gun, the combination with a projectile-barrel, of a reservoir communicating therewith and having an opening, a closure for said opening detachably mounted in the reservoir, and means for controlling the passage of motive fluid from the reservoir to the barrel, said means including a trigger mounted on the said closure.

26. In an air-gun, the combination with a projectile-barrel, of a reservoir, a cylinder having communication therewith and having

an open end, a cap threaded upon and closing said end, and means for controlling the passage of motive fluid from the reservoir to the barrel, said means including a trigger pivoted on said closure.

27. In an air-gun, the combination with a barrel, of a cylinder located alongside the same and having an open rear end, a partition in the cylinder dividing the same into a rear reservoir and a front pump-chamber, a plunger operating in the chamber, a valve controlling the introduction of a motive fluid to the reservoir and from the reservoir to the barrel, a cap threaded upon the rear end of the cylinder and having rearwardly-extending ears, a trigger pivoted to and between the ears, and a stem interposed between the valve and the trigger.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WALTER R. BENJAMIN.

Witnesses:
G. E. WHITTEN,
LOVE E. ERWIN.