U. P. UDESEN.

AIR GUN.

APPLICATION FILED FEB. 19, 1918.

1,292,665.

Patented Jan. 28, 1919.

2 SHEETS—SHEET 1.

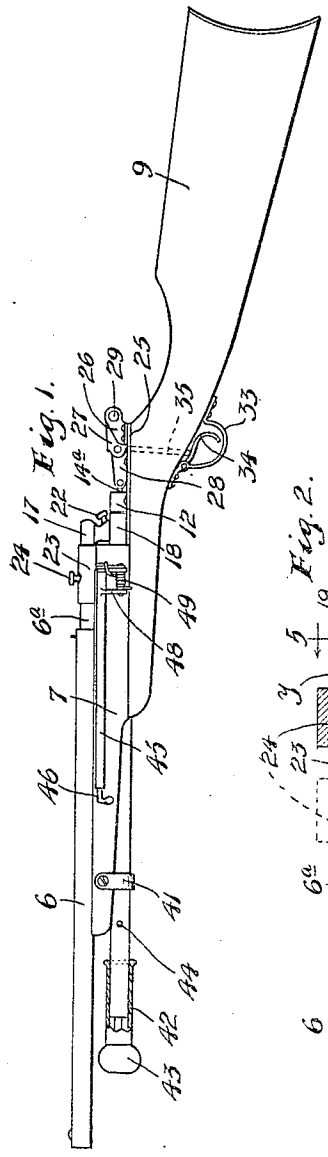


Fig. 1.

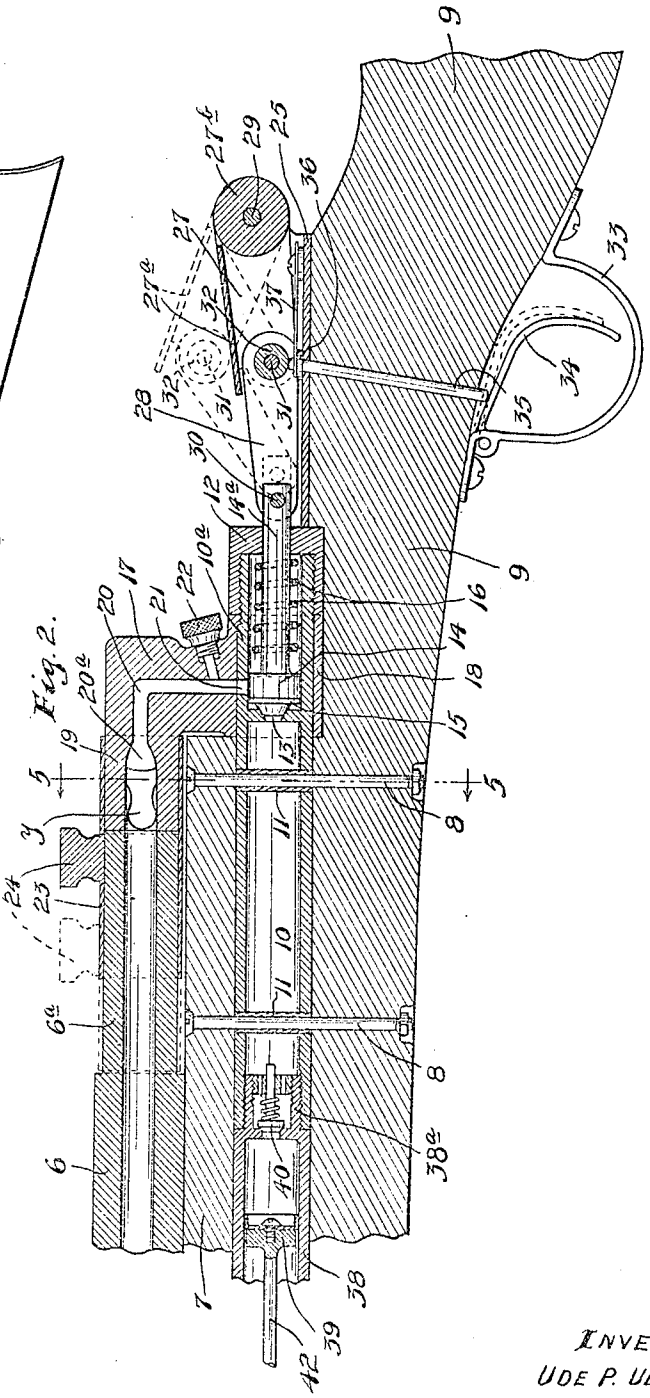


Fig. 2.

WITNESSES.

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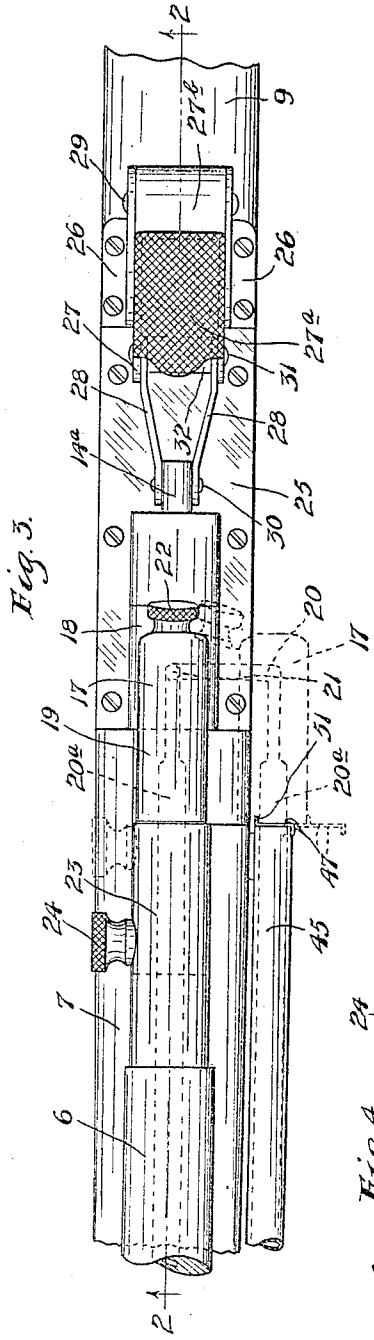


Fig. 3.

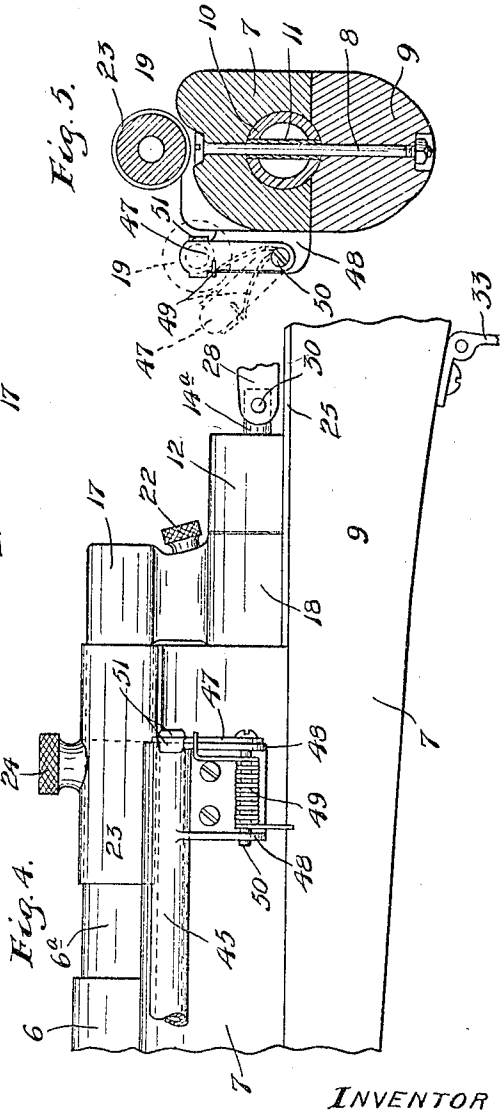


Fig. 4.

Fig. 5.

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UNITED STATES PATENT OFFICE.

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AIR-GUN.

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Application filed February 19, 1918. Serial No. 218,017.

To all whom it may concern:

Be it known that I, UDE P. UDESEN, a subject of the King of Denmark, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Air-Guns; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to breech-loading air guns, and has for its object to improve the construction thereof, in point of simplicity, efficiency and durability. Generally stated, the invention consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

In this improved air gun, as preferably constructed, the bullets or projectiles are contained in a magazine secured to one side of the barrel; the bullets are transferred from the magazine to the barrel, one at a time, by oscillatory movement of the vibratory breech block; the breech block is locked to and accurately alined with the breech end of the barrel by a breech lock in the form of a sleeve that slides on the rear end of the barrel and telescopes in the adjacent front end portion of the breech block. The breech block has an air channel that leads from a port in the compressed air magazine and delivers the air against the projectile to propel the same through the barrel; the air discharge port in the air compression chamber is closed by an air release valve that is seated against the air pressure therein contained; the air release valve is arranged to be tightly closed by the action of a valve seating toggle, which when seated, is slightly beyond a dead center; and the said seating toggle is arranged to be released from a trigger through a so-called tripping pin. The invention also involves certain other minor but important features of construction, all of which will hereinafter appear.

In the accompanying drawings, which illustrate the invention, like characters indicate like parts throughout the several views.

Referring to the drawings,

Figure 1 is a view in side elevation showing the improved gun;

Fig. 2 is an enlarged vertical section taken on the line 2—2 of Fig. 3;

Fig. 3 is a plan view of the gun, rear and front portions of the gun being broken away;

Fig. 4 is a side elevation showing the breech portions and adjacent parts of the gun; and

Fig. 5 is a transverse vertical section taken on the line 5—5 of Fig. 2.

The barrel 6 of the gun is preferably like that of an ordinary rifle having a smooth bore, but having a rear end portion 6^a of slightly reduced diameter. This barrel, by the use of means not shown, is rigidly anchored to a supplemental stock extension 7, preferably of wood. This stock extension 7, by means of small but long nut-equipped bolts 8, is rigidly secured to the front portion of the machine stock 9 proper.

The air compression chamber is preferably in the form of a metallic tube 10 which is tightly fit into a bore formed chiefly in the bottom of the stock extension 7, and as shown, partly within the underlying upper portion of the stock 9; and here it may be noted that the anchoring screws 8 are passed through vertical diametrically extended tubes 11, the ends of which are secured with air-tight joints in the top and bottom of the said tube 10. The screws 8, therefore, not only rigidly connect the stock members 7 and 9, but rigidly anchor the air chamber 10 in respect to both thereof.

The rear end of the air compression chamber or rather the tube in which it is formed, has a cylindrical rearward extension 10^a that projects clear of the stock, and at its extreme end is threaded and is engaged by an internally threaded screw-threaded cap.

At the joints of the extension 10^a with the compression chamber 10, there is a partition formed with an air discharge port 13 that is adapted to be closed by an air release valve 14. This air release valve 14, as preferably constructed, is provided on its face with a quite thick rubber gasket for facing 15 which not only affords an air-tight joint, but as an important function, will yield for a reason presently to be noted. The valve 14 is provided with a rearwardly extended stem 14^a that works through the cap 12. A coiled spring 16 surrounds the stem 14^a. This spring is of such length that it is inoperative when the valve 15 is seated but will cushion the rearward movement thereof.

The so-called breech block 17 has a lower sleeve 18 that is journaled on the tube extension 10^a immediately in front of the cap nut 12. At its outer end, said breech block

is formed with a forwardly extended cylindrical portion 19 that is of the same diameter as the reduced portion 6^a of the barrel and is adapted to accurately aline therewith. This breech block 17 further is provided with an air conduit or channel 20 that extends from the upper portion of its sleeve 18 radially outward and then axially of the extension 19 and terminates in a bullet or projectile seat 20 that is adapted to receive and hold the bullet or projectile *y* (see Fig. 2). When the breech block 17 is in the position shown in Fig. 2, the lower extremity of its air conduit 20 registers with a port 21 in the tube extension 10^a. The numeral 22 indicates a plug that normally closes an oil hole leading to the lower portion of the said conduit 20.

Mounted to slide on the reduced end 6^a of the barrel, and to accurately telescope over the cylindrical portion 19 of the breech block 17, is a so-called breech locking sleeve 23 which, as shown, has a knob 24 by means of which it may be readily moved. To facilitate movement of the sleeve, it will also be free to rotate or oscillate. When this lock sleeve is telescoped over the end 19 of said breech block, the latter will be accurately alined with the barrel and the projectile contained in the seat 20^a will be accurately alined with the bore of the barrel.

Rigidly secured by screws, or otherwise, on the flat upper surface of the stock 9, immediately at the rear of the tube extension 10^a, is an anchor plate 25 which, at its rear end, has laterally spaced lugs 26. The projecting rear end of the valve stem 14^a is connected to the anchor lugs 26 by a valve locking toggle which constitutes an important feature of the invention. This toggle, as preferably constructed, is made up of two toggle arms 27 and 28. The toggle arm 27 is shown as of channel shape and provided with a top plate 27^a and a cylindrical hub portion 27^b, which latter is pivoted to the lugs 26 by a pin 29. The toggle member 28 is shown as made up of a pair of laterally spaced links pivotally connected to the valve stem 14^a by a pin 30 and pivotally connected to the front end of the laterally spaced sides of the link 27 by a pin 31 that is surrounded by a spacing sleeve 32.

An ordinary trigger guard 33 is secured to the underside of the stock 9, and a trigger 34 is pivoted thereto. This trigger is adapted to space a tripping pin 35 that works through the stock 9 with its upper end in position to engage the spacing sleeve 32 of the toggle. Near its upper end, the tripping pin 35 has a flange 36 that limits its downward movement, which downward movement is produced by a leaf spring 37 secured on the plate 26.

The pump for charging the air compression chamber 10 comprises a cylinder 38 and a piston 39. This cylinder has a reduced threaded end 38^a that is screwed into the front end of the said compression chamber and is provided with a spring closed check valve 40 (see Fig. 2). The pump cylinder is preferably further secured in position by a small metal stirrup 41 applied to the front end of the stock extension 7. The pump piston 39 has a projecting stem 42 that terminates in a hand piece 43, by means of which it may be reciprocated. The pump barrel 18 is preferably formed with an air intake port 44 for admitting air into the barrel when the piston is moved outward beyond the same.

The projectiles or bullets *y* are adapted to be contained in a toggle magazine 45 that is rigidly secured to one side, to wit, as shown at the left hand side of the stock extension 7. In its front end, this magazine is shown as provided with a removable plug 46 shown only in Fig. 1, and which, when removed, permits the bullets to be inserted freely into the said magazine. The rear end of said magazine is normally closed by a small gate 47 that is pivoted to one of a pair of ears 48 that depend from the magazine. The tension spring 49 applied on a pin 50 held by the ears 48 yieldingly presses said gate into its closed position toward the barrel. This gate has a small rearwardly projected lug 51 that is adapted to be engaged by the front end of the breech extension 19 when the latter is moved toward the left or into the position indicated by dotted lines in Fig. 4. Here it should be stated that the rear end of the magazine 45 is so located that when the breech is oscillated into the dotted line position in Fig. 3, its bullet receiving cavity or seat 20^a will accurately aline with the said magazine and will receive one bullet therefrom, provided the gun be held with the front edge of its barrel slightly upward.

Operation.

The operation is substantially as follows: When the breech locking sleeve 23 is slid forward, the breech may be oscillated toward the left into the position to receive a bullet from the magazine, and under such movement, the magazine gate will be forced out of position so that the bullet may enter the cavity 20^a of the said breech block. The breech block is then oscillated back into position, and the locking sleeve 27 is telescoped over this cylindrical projection 19. The toggle should then, or before, be pressed down into its full line position Fig. 2, and when so pressed, it will be thrown slightly below its dead center and its rubber gasket 15 will then be compressed and the port 13 will be tightly closed. Then, by reciprocation of the pump piston, it will be compressed

and stored within the compression chamber 10. The gun is then ready to fire and this is caused by pulling on the trigger.

When the trigger is pulled, the tripping pin will block the toggle by pressing the immediate portion upward until it has passed its dead center, and thereupon, the air pressure from within the chamber 10 will instantly throw the valve 14 rearward, so as to establish communication between the air chamber 10 and the air conduit 20 of the breech block. When the air is thus released, it, of course, rushes violently against the projectile and projects the same through and from the barrel. The re-cocking of the gun or the setting of the toggle in position to lock the air releasing valve 14 in its closed position, is caused simply by pressing the intermediate portion of the toggle downward. The toggle is therefore not only a simple, but most efficient kind of a device for locking and releasing the air releasing valve. The rubber facing or gasket 15 on the face of the releasing valve 14, in addition to forming the air tight joint, affords the simplest kind of a yielding element for the valve and toggle connection. Some kind of a yielding connection is of the utmost importance because the toggle, in setting, must be forced slightly below its dead center and the valve should be spread under a slightly yielding pressure. It must not be released by the movement of the toggle slightly beyond its dead center.

The pump, including its discharge check valve, are removable from the air compression chamber, as an entirety, whenever any repair thereof is to be made and this is a feature of considerable importance.

What I claim is:

1. An air gun having an air release valve, and a toggle for seating and releasing said valve, the said valve and toggle connections including a yielding element that is compressed when said toggle is set and said valve is closed.

2. An air gun having an air release valve, a toggle pivotally anchored at one end and having its other end pivotally connected to said valve, the said toggle, when seated being slightly below a dead center, and a trigger actuated connection for tripping said toggle, the said valve having an elastic facing that is compressed when said toggle is set and said valve is closed.

3. In an air gun, the combination with the stock and barrel, of a breech block mounted for lateral pivotal movement and provided with a projecting tubular end adapted to register with the rear end of said barrel to aline a projectile with the bore thereof, and a breech lock slidably mounted on said barrel and movable onto and off from the tubular end of said breech block.

4. In an air gun, the combination with the stock and barrel, of a breech block mounted for lateral pivotal movement and provided with a projecting tubular end adapted to register with the rear end of said barrel to aline a projectile with the bore thereof, a breech lock slidably mounted on said barrel and movable onto and off from the tubular end of said breech block, a compressed air chamber secured to said stock, said breech block having an air conduit, and an air release valve controlling a communication between said air chamber and the conduit of said breech block.

5. In an air gun, the combination with the stock and barrel, of a compressed air chamber secured to said stock and having a cylindrical rear end, a breech block mounted to oscillate on the cylindrical rear end of said air chamber and having a tubular free end adapted to register with the breech end of said barrel to position a projectile for alinement with the bore thereof, said breech block having an air conduit, an air release valve controlling communication between said air chamber and the air conduit of said breech block, a toggle pivotally anchored to said breech block and pivotally connected to said valve for setting said valve in a closed position, and a trigger and coöperating connection for tripping said toggle.

6. In an air gun, the combination with the stock and barrel, of a compressed air chamber secured to said stock and having a cylindrical rear end, a breech block mounted to oscillate on the cylindrical rear end of said air chamber and having a tubular free end adapted to register with the breech end of said barrel to position a projectile for alinement with the bore thereof, said breech block having an air conduit, an air release valve controlling communication between said air chamber and the air conduit of said breech block, a toggle pivotally anchored to said breech block and pivotally connected to said valve for setting said valve in a closed position, a trigger and coöperating connection for tripping said toggle, and a lock sleeve slidably mounted on the rear end of said barrel and telscopically movable onto and off from the tubular end of said breech block.

7. In an air gun, the combination with a stock and barrel, of a magazine secured to one side of said barrel and a breech block mounted for transverse oscillatory movements and having a projectile seat that is movable from registration with said magazine into registration with the breech end of said barrel.

8. In an air gun, the combination with a stock and barrel, of a magazine secured to one side of said barrel and a breech block mounted for transverse oscillatory movements and having a projectile seat that is movable from registration with said maga-

zine into registration with the breech end of said barrel, and means for introducing air under compression, into said breech block back of the projectile.

9. In an air gun, the combination with a stock and barrel, of a magazine secured to one side of said barrel and a breech block mounted for transverse oscillatory movements and having a projectile seat that is movable from registration with said magazine into registration with the breech end of said barrel, and a lock sleeve slidably mounted on the rear end of said barrel and telescopically movable onto and off from the tubular end of said breech block.

10. In an air gun, the combination with a stock and barrel, of a magazine secured to one side of said barrel and a breech block mounted for transverse oscillatory movements and having a projectile seat that is movable from registration with said magazine into registration with the breech end of said barrel, the said magazine at its rear end having a yieldingly closed gate arranged to be displaced by said breech block when the projectile seat of the latter is alined with said magazine.

In testimony whereof I affix my signature in presence of two witnesses.

UDE P. UDESEN.

Witnesses:
CLARA DEMAREST,
BERNICE G. BAUMANN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."