

(No Model.)

A. B. IRELAND. REPEATING SPRING AIR GUN.

No. 458,834.

Patented Sept. 1, 1891.

Fig. 1.

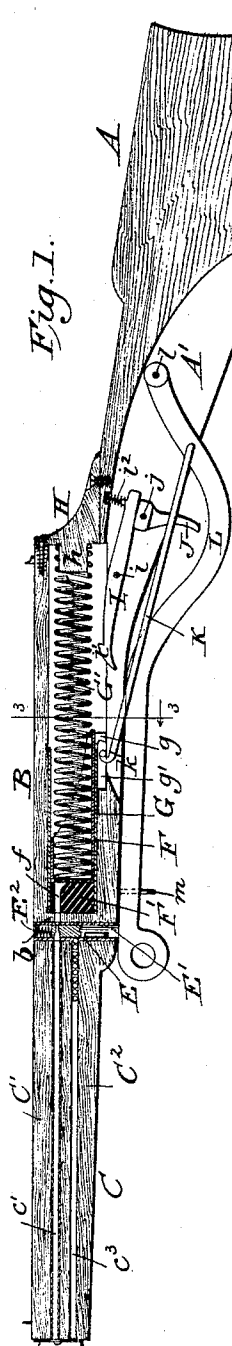


Fig. 2.

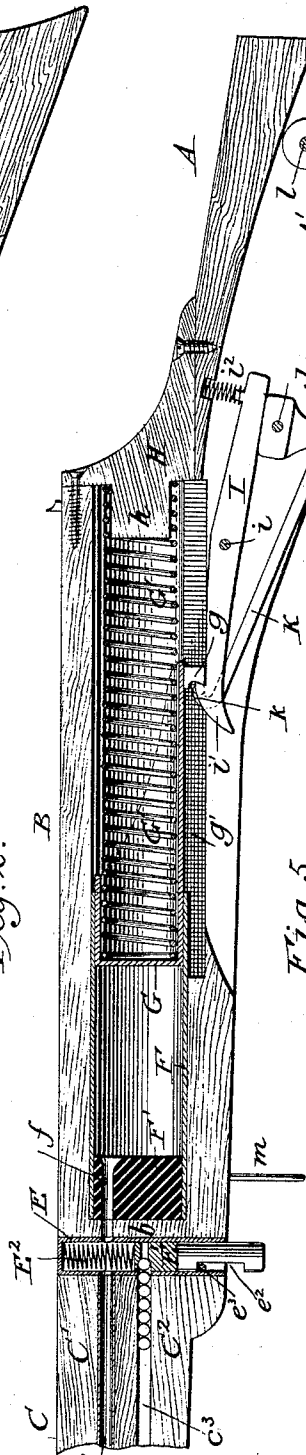


Fig. 5.

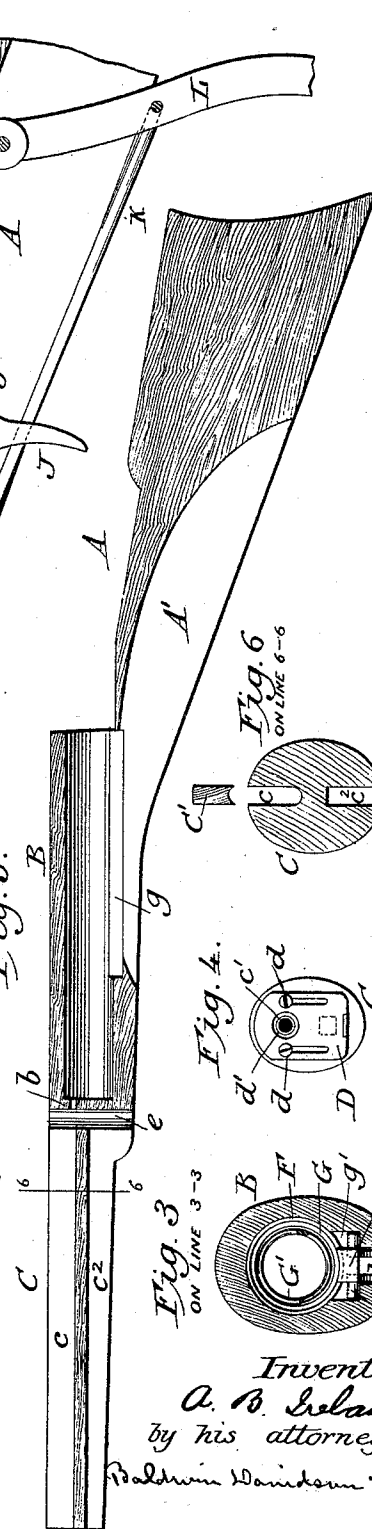


Fig. 4.

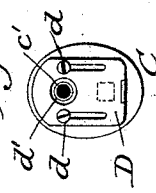


Fig. 6
ON LINE 6-6

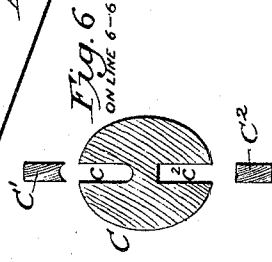
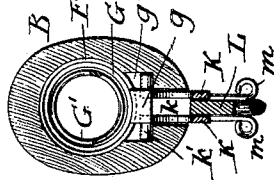


Fig. 3
ON LINE 3-3



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UNITED STATES PATENT OFFICE.

A. BERTSELL IRELAND, OF GREENE, NEW YORK, ASSIGNOR OF ONE-HALF
TO ERFORD L. PAGE, OF SAME PLACE.

REPEATING SPRING AIR-GUN.

SPECIFICATION forming part of Letters Patent No. 458,834, dated September 1, 1891.

Application filed March 9, 1891. Serial No. 384,296. (No model.)

To all whom it may concern:

Be it known that I, A. BERTSELL IRELAND, a citizen of the United States, and a resident of Greene, in the county of Chenango and State of New York, have invented certain new and useful Improvements in Repeating Air-Guns, of which the following is a specification.

My invention relates to air-guns of the class in which the balls are fed one at a time from a magazine parallel with the barrel into a transversely-reciprocating carrier, which conveys them into line with the barrel, through which they are driven by the force of air compressed by a spring-actuated piston.

The object of my invention is to produce a cheap, simple, and effective apparatus for attaining these ends; and my invention consists in certain novel combinations and organizations of instrumentalities hereinafter specified.

Unless otherwise indicated the parts are of ordinary construction.

In the accompanying drawings, Figure 1 represents a vertical central longitudinal section through my improved gun with the parts in the attitude assumed just after firing; Fig. 2, a similar view of a portion of the same on an enlarged scale, with the parts in the position they assume when retracted to reload the gun. Fig. 3 represents a vertical transverse section through the gun on the line 3 3, Fig. 1, looking forward. Fig. 4 is an end elevation showing the muzzle-slide. Fig. 5 is a vertical longitudinal central section through the gun-stock, and Fig. 6 a vertical transverse section therethrough on the line 6 6 of Fig. 5.

The drawings show the stock proper A, cylinder B, and barrel C, as formed from a single piece of wood. A longitudinal groove *c* is cut in the barrel, extending as far back as the front wall *b* of the cylinder B. An open-ended tube *c'* of metal—such as brass—constituting the gun-barrel proper, is inserted in this groove, which is then closed by a properly-shaped strip *C'*, glued or otherwise securely fastened therein. A second longitudinal groove *c²*, cut in the under side of the barrel, is correspondingly closed by a similar strip *C²*, leaving a longitudinal opening constituting a magazine *c³*.

The muzzle of the gun is covered by a plate

D, provided with vertical slots which transverse guideways *d* to enable the plate to slide transversely to the bore of the gun. In its lowest position this plate covers the end of the magazine. It is also provided with a hole *d'*, which in the position last-mentioned coincides with the bore of the gun. By sliding this plate the bore is closed, so as to prevent the ball from escaping, while at the same time the magazine is uncovered for the insertion of balls therein. The balls are shown as fed from the magazine by gravity; but the usual spring piston and slide may be employed for this purpose, if desired.

A slot *e* is bored transversely through the barrel, so as to intersect the rear ends both of the barrel and magazine. A metallic tube E, closed at its upper end, but open at its lower, is driven into this slot. This tube is perforated transversely in the line of the bore of the barrel, and a corresponding perforation is made in its front wall in line with the magazine. A bolt or carrier-slide E' has in it a transverse perforation traversing this tube, constituting a carrier for the balls. The front end of this carrier has a cavity sufficient to admit one ball at a time, the rear portion being of a smaller diameter, so as to prevent the balls from passing backward therethrough, but leaves a passage for the compressed air when in line with the barrel. A spring E² normally keeps the carrier depressed in line of the magazine, this depression being limited by a transverse pin *e³* in the tube, against which shoulders on the flattened lower portion *e²* of the carrier slide. Where the slide is cylindrical, as here shown, this pin also prevents its turning, and thus keeps its transverse opening in proper line with the magazine and barrel.

A longitudinal opening is bored from the rear in the central portion B of the stock to a point near the carrier-slot. A tube F, constituting the air-cylinder, is inserted in the front part of this opening, the front end of the tube being closed by a buffer-spring F', of rubber or other suitable material. An opening *f* in the line of the bore of the barrel extends through this buffer-spring and through the partition and front wall *b* of the central portion of the stock, so as to permit

the air to pass freely therethrough to the carrier and barrel. A tubular piston G slides endwise in the cylinder F, being normally thrown forward by a spiral spring G', inclosed in the piston, the rear end of the spring encircling a stud *h* on a block H, closing the end of the cylinder. The upper portion of the rear end of the piston is cut away, as shown in Fig. 2, so as to render it lighter. A catch-block *g*, secured on the under side of the piston, slides in a longitudinal guideway *g'* in the stock. A catch-lever I, rocking on a central pivot *i*, carries at its forward end a hook *i'*, which engages with the catch-block *g*, when in its retracted position. A spring *i²* prevents the disengagement of the latch until released by the trigger J, which rocks on a pivot *j* in a recess A' in the under side of the stock. The piston is retracted by means of a link K, which is provided at its forward end with a hook *k*, engaging with the catch-block *g*, and provided with a transverse guide-pin *k'*, sliding in the guideway *g'*, above mentioned. The rear end of this link is pivoted to a guard-lever L, the rear end of which turns on a pivot *l* in the stock. The forward end of this lever, when swung up against the stock, strikes the protruding end of the carrier-slide and forces the carrier with the ball therein into the line of the bore of the barrel. The link is normally held in this position by friction-pins *m* on the stock.

The operation of the gun will readily be understood from the foregoing description. The balls are fed from the magazine one at a time into the carrier, which, by the upward movement of the guard L, is forced into line with the bore of the barrel, carrying one ball with it. A slight spring of well-known construction may be used in the front of the carrier or the rear of the bore of the barrel to prevent the premature escape of the ball. The depression of the front end of the guard-lever then compresses the spring, and the catch-block on the piston engages with the catch-lever and is held in that position when the guard-lever is again closed against the barrel. The pulling of the trigger then releases the spring, which thrusts the piston forward, and the compressed air expels the ball from the barrel. The depression of the guard-lever releases the carrier-slide, which is thrown down by this spring to bring the carrier into line with the magazine to receive another ball, when the carrier is again brought into line with the barrel by closing the guard-lever up against the barrel, this operation being repeated as often as desired.

The sliding muzzle-plate D enables me completely to fill the magazine from the muzzle end without lateral openings therein, while the organization of the carrier-slide is such that none of its working parts protrude through the stock, except the lower end, and that only for the instant that the shot is being received and transferred from the magazine to the barrel. The arrangement of the

buffer-spring F' inside the cylinder is advantageous, as it enables me to make it the full size of the cylinder-bore and to render it readily removable or replaceable. The organization of the piston and spring, as will be perceived, is such as to enable these parts readily to be assembled or separated by removing the rear block H. The use of a rigid connection between the stock and barrel is also advantageous, as it is less liable to get out of order than one where the parts are connected by a hinge, and the loading of the gun and the retraction of the air-compressing spring are effected by "breaking down" the stock. The guard-lever and connecting parts, it will moreover be seen, when in the firing position are almost entirely inclosed within the stock, and consequently protected from injury.

Having thus fully described the construction, organization, and operation of my improved magazine repeating spring air-gun, what I claim therein as new and as of my own invention is—

1. The combination, substantially as hereinbefore set forth, of a barrel-tube, a magazine-tube, and a transversely-moving muzzle-plate normally covering the entrance to the magazine and provided with an opening corresponding with the barrel-tube when the magazine is closed.

2. The combination, substantially as hereinbefore set forth, of a barrel-tube, a magazine, a transverse tube intersecting them, closed at the top and having perforations coincident with the bores of the barrel-tube and magazine, a carrier reciprocating in said transverse tube, a spring in said tube which normally tends to expel the carrier therefrom, and a stop holding the carrier in line with the magazine.

3. An air-gun stock constructed substantially as hereinbefore set forth, with a central longitudinal perforation open at its rear end, an air-cylinder inserted therein, a buffer plug or spring filling the front end of said cylinder, an opening through said buffer-plug and the head of the cylinder in line with the bore of the barrel, and a breech block or plug closing the rear end of the perforation.

4. The combination, substantially as hereinbefore set forth, of a stock, a longitudinal central perforation therein, a cylinder fitting said opening, a buffer plug or spring fitted in its forward end and provided with an opening therein in line with the bore of the barrel, a tubular piston reciprocating in the cylinder, a spiral spring inclosed therein, a block closing the rear end of the perforation, and a central internal stud or stem thereon encircled by the spring.

5. The combination, substantially as hereinbefore set forth, of a barrel-tube, a magazine, a tube intersecting them having perforations therein coincident with their bores, a carrier reciprocating in said tube, a spring

therein which normally tends to force the carrier in line with the magazine, a stop limiting the movement of the carrier, a stock, an air-cylinder therein, a buffer plug or spring closing the front end of the cylinder, an air-passage therethrough in the line of the bore of the barrel, a tubular piston, and a spiral actuating-spring inclosed therein.

6. The combination, substantially as here-
inbefore set forth, of a gun stock or butt hav-
ing a longitudinal slot on its under side, a
forearm connected therewith, an air-cylinder
therein, a buffer plug or spring closing the
front end of the cylinder, an air-passage there-
through in the line of the bore of the barrel,
a tubular piston, a spiral actuating-spring in-
closed therein, a catch-block on the piston,
and a catch-lever rocking on a pivot in the
stock and engaging with the catch-block to
hold the piston in its retracted position.

7. The combination, substantially as here-
inbefore set forth, of an air-cylinder, its per-
forated buffer-plug, a tubular piston, its in-
closed actuating-spring, its catch-block, a re-
tracting-link engaging therewith, a guard-le-
ver pivoted at its rear end in the stock and
actuating the link, a rocking catch-lever en-
gaging with the catch-block when retracted,
and a trigger directly acting on the catch-le-
ver to release it to fire the gun.

8. The combination, substantially as here-
inbefore set forth, of a barrel-tube, a magazine,
a carrier sliding transversely thereto, a spring
which normally holds the carrier in line with
the magazine, an air-cylinder, a perforation
through the head thereof in line with the bore
of the barrel, a tubular actuating-spring, a
catch-block on the cylinder, a guard-lever piv-
oted at its rear end in the butt of the stock,
a retracting-link pivoted on this lever and
acting on the catch-block, and a latch which
holds the piston in its retracted position.

9. The combination, substantially as here-
inbefore set forth, of a barrel-tube, a magazine,
an intersecting perforated tube, a carrier re-
ciprocating therein, a spring which normally
tends to hold the carrier in line with the
magazine, and a guard-lever pivoted at its
rear end on the stock and adapted to swing
upward and forward against the carrier to
carry the ball from the magazine into the line
of the barrel.

10. The combination, substantially as here-
inbefore set forth, of an air-compressing cyl-
inder, its tubular piston, its inclosed actuat-
ing-spring, its catch-block, a groove in the
forearm or stock in which it slides, a retract-
ing-link engaging at intervals with said catch-
block, its guide-pins traversing the slot, a
guard-lever pivoted at its rear end in the
stock, and a pivotal connection between the
guard-lever and retracting-link, the organiza-
tion being such that the downward swing of
the guard-lever retracts the piston, while the
forward movement of the guard-link de-
taches it therefrom.

11. The combination, substantially as here-
inbefore set forth, of a barrel-tube, a magazine,
a transversely-moving spring-actuated car-
rier, an air-cylinder, a buffer-plug inserted
therein, a perforation through said plug and
the cylinder-head in line with the bore of the
barrel, a tubular piston, its inclosed actuat-
ing-spring, its catch-block, a retracting-link
engaging therewith, a guard-lever with which
it is connected, a rocking catch-lever engag-
ing with the catch-block when retracted, and
a trigger acting directly on the catch-lever.

In testimony whereof I have hereunto sub-
scribed my name.

A. BERTSELL IRELAND.

Witnesses:

L. ROBINSON,
CHAS. O. BROWN.