(No Model.) 2 Sheets—Sheet 1.

G. W. WEAVER.

AIR GUN.

No. 421,793. Patented Feb. 18, 1890.

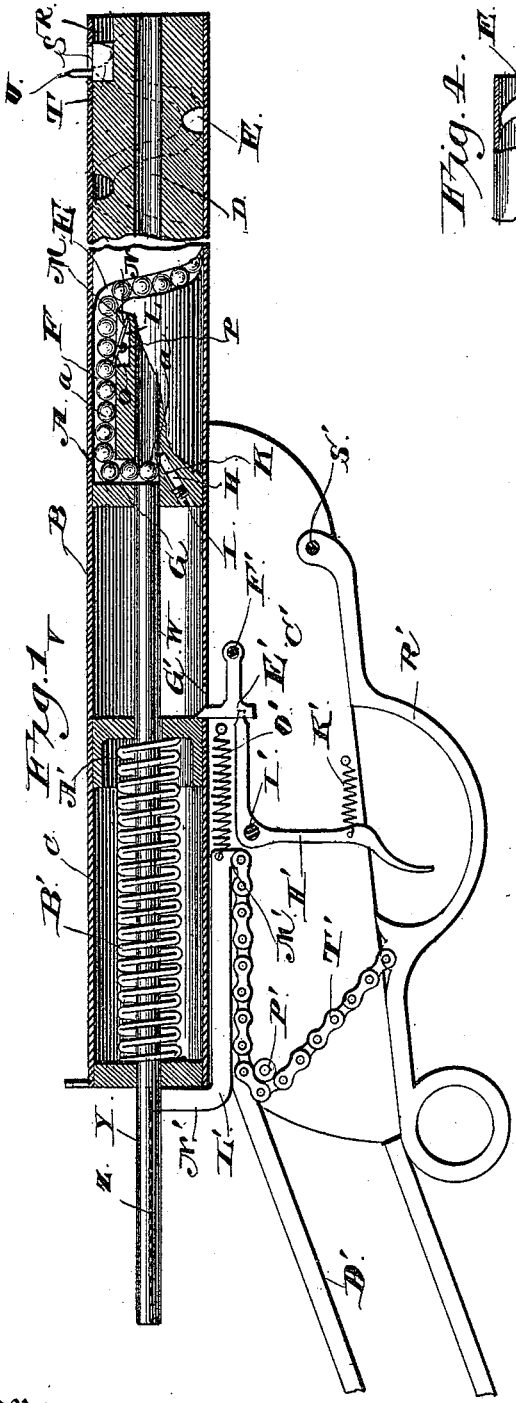

Fig. 1.

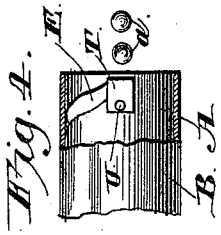

Fig. 4.

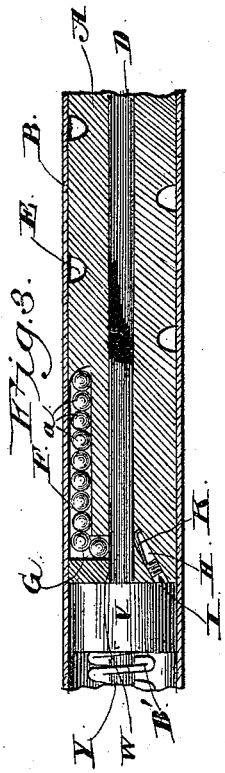

Fig. 3.

Witnesses
M. E. Fowler
E. G. Siggers

Inventor
George W. Weaver
By his Attorneys
C. A. Snow & Co.

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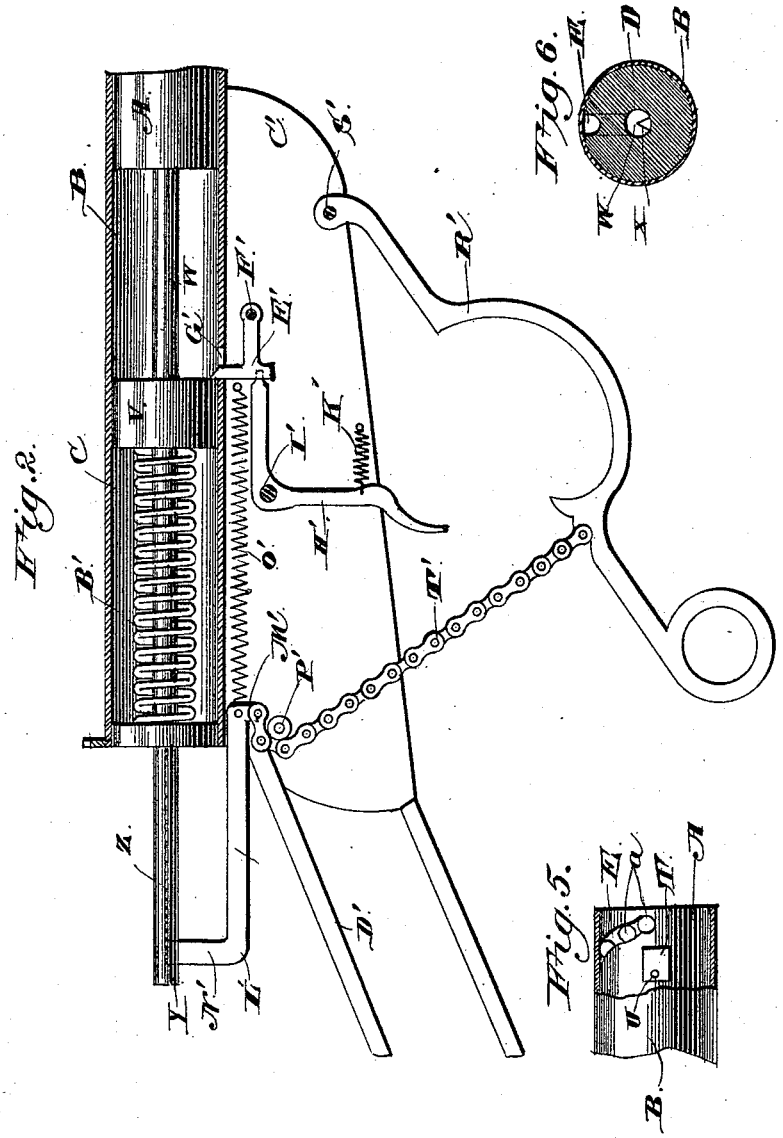

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UNITED STATES PATENT OFFICE.

GEORGE WALTER WEAVER, OF ILION, NEW YORK.

AIR-GUN.

SPECIFICATION forming part of Letters Patent No. 421,793, dated February 18, 1890.

Application filed September 18, 1888. Serial No. 285,713. (No model.)

To all whom it may concern:

Be it known that I, GEORGE WALTER WEAVER, a citizen of the United States, residing at Ilion, in the county of Herkimer and State of New York, have invented a new and useful Improvement in Air-Guns, of which the following is a specification.

My invention relates to an improvement in air-guns; and it consists in the peculiar construction and combination of devices that will be more fully set forth hereinafter, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical longitudinal sectional view of an air-gun embodying my improvement, showing the same in the firing position. Fig. 2 is a similar view showing the operating parts in position when drawing the plunger rearward in the air-compressing chamber. Figs. 3, 4, 5, and 6 are detail views.

A represents the barrel of the piece, and B represents a cylindrical shell or tube, which is slipped over the said barrel and extends beyond the breech or rear end thereof, so as to form an air-compressing chamber C. Extending longitudinally through the center of the barrel is the bore D, and arranged spirally around the barrel and extending from the muzzle thereof to the breech is a magazine-chamber E. By thus forming the magazine-chamber spirally around the barrel the capacity of the said magazine-chamber is very greatly increased, in fact to such an extent that when the magazine-chamber is thus spirally arranged it is adapted to contain from two hundred to three hundred or more of the balls or projectiles for the gun. The rear end of the spirally-arranged portion of the magazine-chamber communicates with a longitudinal portion F of the same, and at the rear end of the said longitudinal portion F is a vertical or right-angled portion or bore G, which communicates with the bore D of the barrel, near the breech thereof. An inclined opening H is made in the breech of the barrel, below the bore G, and extends upward and communicates with the bore at a point below the vertical part G of the magazine-chamber. A plug I is screwed or otherwise rigidly secured in the lower end of the opening H, and to the said plug is attached a forwardly and upwardly extending spring K, the upper end of which is curved, as shown, and is normally projected a slight distance within the bore D of the barrel, and is thereby adapted to prevent the projectile *a* in the breech of the said bore from rolling down the barrel when the muzzle of the gun is depressed.

Communicating with the lower side of the longitudinal portion F of the magazine-chamber, near the front end thereof, is a vertical longitudinal recess L, of suitable length, depth, and width, and in the said recess is located a gravity-detent M. The same is provided with a long forwardly-extended weighted arm N, a relatively short rearwardly-extended arm O, and is fulcrumed on a transverse pin P. By this means the short rear arm of the detent is normally elevated above the lower side of the longitudinal portion of the magazine-chamber, and is thereby adapted to prevent the projectiles which are in the said longitudinal portion of the chamber from rolling forward into the spiral portion of the same, and consequently a pumber of balls or projectiles are at all times stored in the said longitudinal portion of the magazine, ready to be fed through the vertical bore or portion G to the breech of the bore D.

After each discharge of the gun the person using the same almost invariably and voluntarily raises the muzzle, and this elevation of the muzzle causes the balls or projectiles in the spiral magazine thereof to run by their own gravity downward into the longitudinal portion F, and those balls or projectiles which pass into that portion of the longitudinal bore or chamber in rear of the detent M are prevented by the said detent from running forward when the muzzle is depressed, as before stated. The extreme front end of the spiral magazine-chamber is longitudinally arranged and communicates with a longitudinal opening R. The upper side of the shell B has a longitudinal slot S near its muzzle, which communicates with the said opening R, and in the latter is arranged a block T, which is adapted to slide backward and forward therein. A stud or pin U projects from the upper side of the said block and through the slot S and has its upper end pointed and constitutes the muzzle-sight. By grasping the projecting

portion of the sight the block T may be moved rearward in the opening R, so as to uncover the front end of the magazine-chamber, and thereby adapt the latter to be filled with balls or projectiles, after which the block is moved forward and caused to cover the entrance to the magazine, and thereby balls or projectiles are prevented from being dropped from the magazine when the muzzle of the gun is depressed.

V represents a plunger or piston, which is snugly fitted in the air-chamber C and is adapted to reciprocate therein. From the front side of the said plunger or piston projects a plunger-rod W, which enters the bore of the barrel and has an inverted-V-shaped groove X on its lower side extending the entire length of the plunger-rod. From the rear side of the plunger or piston projects a rod Y, which extends through a central opening in the rear end or breech of the chamber C, and said rod Y is also provided on its under side with a groove Z, which extends nearly to the extreme rear end of the said rod. The rear portion of the plunger or piston is provided with an annular or concentric recess A′, in which is fitted the front end of a coiled extensile spring B′. Said spring has its rear end bearing against the rear end of the chamber C, and the function of the spring is to force the plunger forward in the chamber C, as will be hereinafter described. A barrel-case C′ is secured to and depends from the chamber C, and to the lower rear corner of the said barrel-case is secured a skeleton stock D′.

E′ represents a piston-detent, which is substantially T-shaped, as shown, and has its longitudinal arm pivoted at its front end on a pin F′, that extends transversely through the barrel-case. The upper end of the T-head of the detent is beveled on its front side and adapted to project through an opening G′ in the lower side of the chamber C.

H′ represents a right-angled trigger, which is fulcrumed on a pin I′, that passes transversely through the barrel-case, and the forwardly-extending arm of the said trigger engages a recess in the rear side of the piston-detent E′, and thereby the latter is adapted to be depressed by pulling the trigger, as will be readily understood. A coiled or other suitable spring K′ is attached to the depending arm of the trigger and adapted to normally move the same forward so as to elevate the upper end of the piston-detent C.

L′ represents a draw-bar, which slides in a longitudinal groove in the rear portion of the barrel-case just below the chamber C. The front end of the said rod is turned downward to form a short depending arm M′, and the rear end of the said rod is turned upward at right angles to form an arm N′, the upper end of which engages a groove C in the lower side of piston-rod Y.

O′ represents a coiled retractile spring, which has its rear end attached to the front end of the draw-bar, the function of the said spring being to normally draw the bar L′ forward to the position shown in Fig. 1.

In the rear upper corner of the barrel-case is journaled a guiding sheave or pulley P′.

R′ represents a guard-lever, which is of the form here shown, and has its front end pivoted in the lower portion of the barrel-case on the transverse pin or bolt S′.

T′ represents a chain or flexible link which passes over the pulley P′, has its front upper end secured to the depending arm M′ of the draw-bar, and the lower end of the said chain or link is attached to the guard-lever at a suitable distance from the rear end thereof.

The operation of my invention is as follows: When the guard-lever R′ is depressed, the link or chain is caused to draw the rod L′ rearward against the tension of the spring O′, and the arm N′ of the said rod, by engaging the rear end of the groove C, causes the piston or plunger V to be drawn rearward in the air-compressing chamber and the plunger W to be drawn rearward in the bore of the barrel, so as to cause the front end of the said plunger to clear the portion G of the magazine, and thereby cause a ball or projectile to drop into the breech of the bore and to become engaged by the spring K. At the same instant the piston or plunger clears the upper end of the detent E′, and the latter engages the front side of the piston or plunger, and thereby locks the same in the position indicated in Figs. 1 and 2. It will be understood that the rear movement of the piston or plunger is accomplished against the resistance of the spring B′, and that consequently the latter becomes compressed and the energy expended in moving the piston or plunger rearward is stored in the said spring. Having thus moved the plunger or piston rearward, the operator raises the lower end of the guard-lever R′ and the spring O′ draws the rod L′ forward and tightens the chain or link, so as to maintain the guard-lever in the elevated position shown in Fig. 1. The gun is then ready to be discharged, and this is accomplished by pulling the trigger, which causes the detent E′ to disengage the piston or plunger, and the spring B′ immediately forces the plunger forward in the chamber C with great violence, so as to compress air in the said chamber and force the same through the groove X of the plunger-rod W into the breach of the bore and cause the said compressed air to discharge the ball or projectile from the barrel with great initial velocity and considerable penetrating force. It will be understood that the plunger-rod W moves forward with the plunger or piston and follows the ball or projectile, and serves to cut off the lower end of the portion G of the magazine, so as to prevent compressed air from being forced into the magazine.

Having thus described my invention, I claim—

1. In a magazine-gun, the combination, with the barrel having a bore, of a spiral magazine-chamber encircling the bore and communicating at one end with the same, substantially as specified.

2. In a gun, a barrel having a straight bore, in combination with a spiral magazine-chamber encircling the bore and arranged within the barrel, substantially as described.

3. In an air-gun, the combination, with the barrel having the bore D, of the spirally-arranged magazine-chamber communicating with the breech of the said bore and encircling the same, substantially as described.

4. In an air-gun, the combination, with a barrel having the bore, of the spirally-arranged magazine-chamber inclosing the bore, the rear portion of said magazine-chamber being longitudinally disposed and provided with the right-angled extension G, communicating with the bore, substantially as described.

5. In an air-gun, the combination, with the barrel having the straight longitudinal bore, of the magazine channel or chamber communicating with the bore and encircling the bore, and the detent M, having an arm disposed normally in one side of the magazine channel or chamber, for the purpose set forth, substantially as described.

6. In an air-gun, the barrel having a magazine chamber or channel communicating with the bore and encircling the same, in combination with the detent M, having the arm O, normally projected in said magazine channel or chamber in front of the point of communication, for the purpose set forth, substantially as described.

7. In an air-gun, the combination of the barrel having a longitudinal bore with the spirally-arranged magazine channel or chamber communicating with the bore and encircling the same, and the movable block T, adapted to cover and uncover the front end of said magazine channel or chamber, substantially as described.

8. The combination, with the barrel having the bore, of the spirally-arranged magazine-chamber encircling the bore, the opening R, formed in the barrel and communicating with the magazine at its front end, and the slot S, communicating with said opening, of the block T, movable longitudinally in the opening, and thereby adapted to cover and uncover the mouth of the magazine, and the stud or pin U, projecting from the block and working in the slot S, substantially as specified.

9. In an air-gun, the combination, with the barrel, of the air-chamber C at the breech thereof, the spring-pressed piston in said chamber having the plunger-rod W engaging the bore of the barrel, the plunger being further provided with the rearwardly-extended rod Y, having groove Z, the spring-actuated draw-rod L′, having the arm engaging said groove, the detent to engage the piston, the trigger connected to said detent, and means, substantially as described, to operate the draw-rod, substantially as described.

10. The combination, in an air-gun, of the plunger having the rod Y, provided with the groove Z, the spring-actuated longitudinally-movable draw-rod having the arm engaging said groove, the guard-lever, the chain or link connecting the same to the draw-rod, for the purpose set forth, and the sheave or guide for said chain or link, substantially as described.

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

GEORGE WALTER WEAVER.

Witnesses:

GEORGE O. RASBACH,

JAMES CONKLING.