(No Model.) 3 Sheets—Sheet 1.

R. DINSMORE.

MAGAZINE FIRE ARM.

No. 455,034. Patented June 30, 1891.

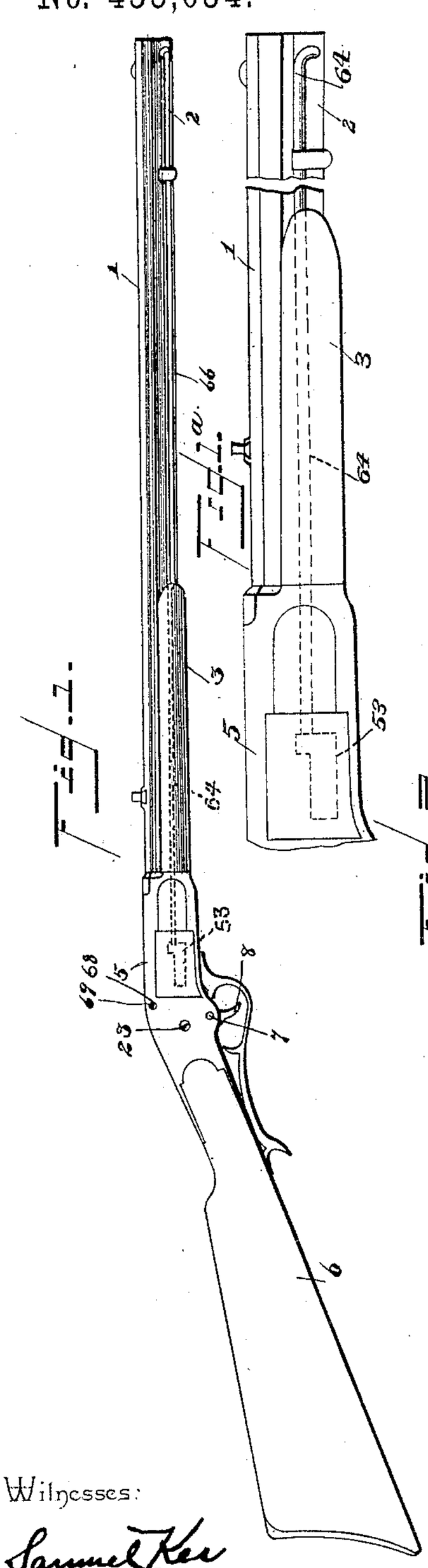


FIG. 1.

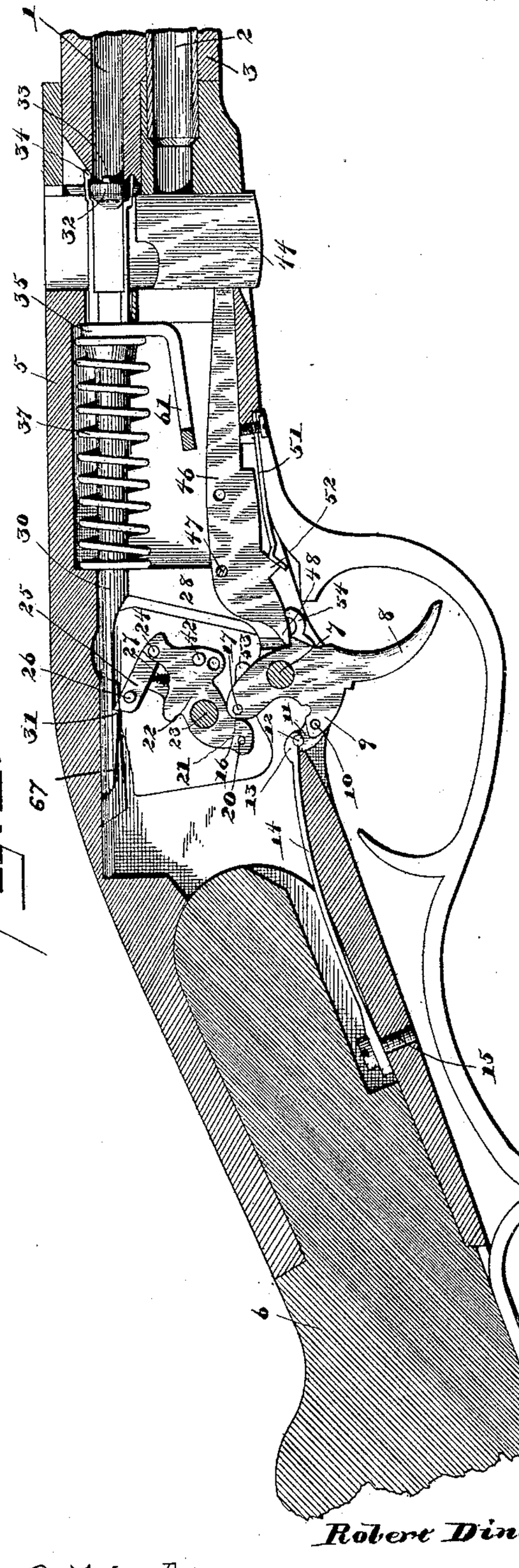


FIG. 2.

Witnesses:

Samuel Ker

W. S. Duvall.

Inventor

Robert Dinsmore

By his Attorneys.

Church & Co.

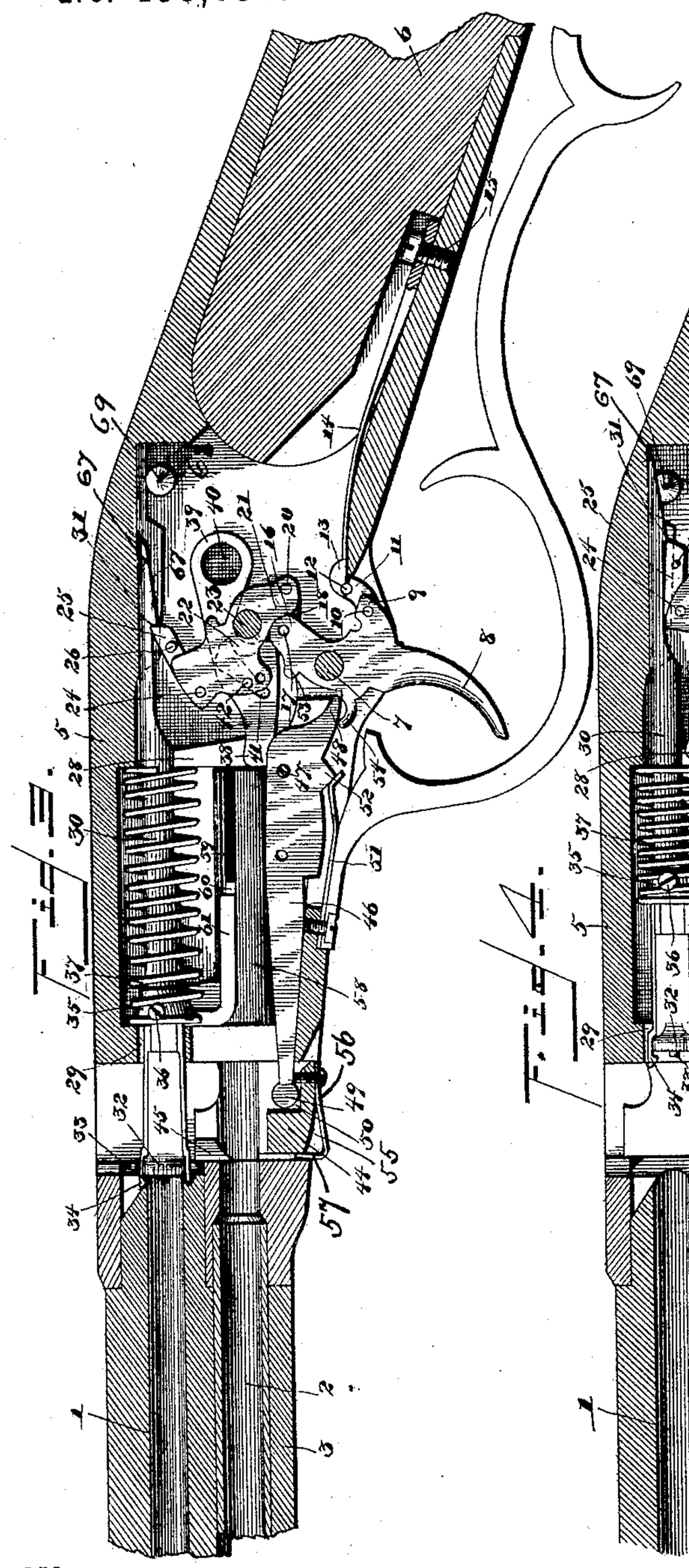
(No Model.)

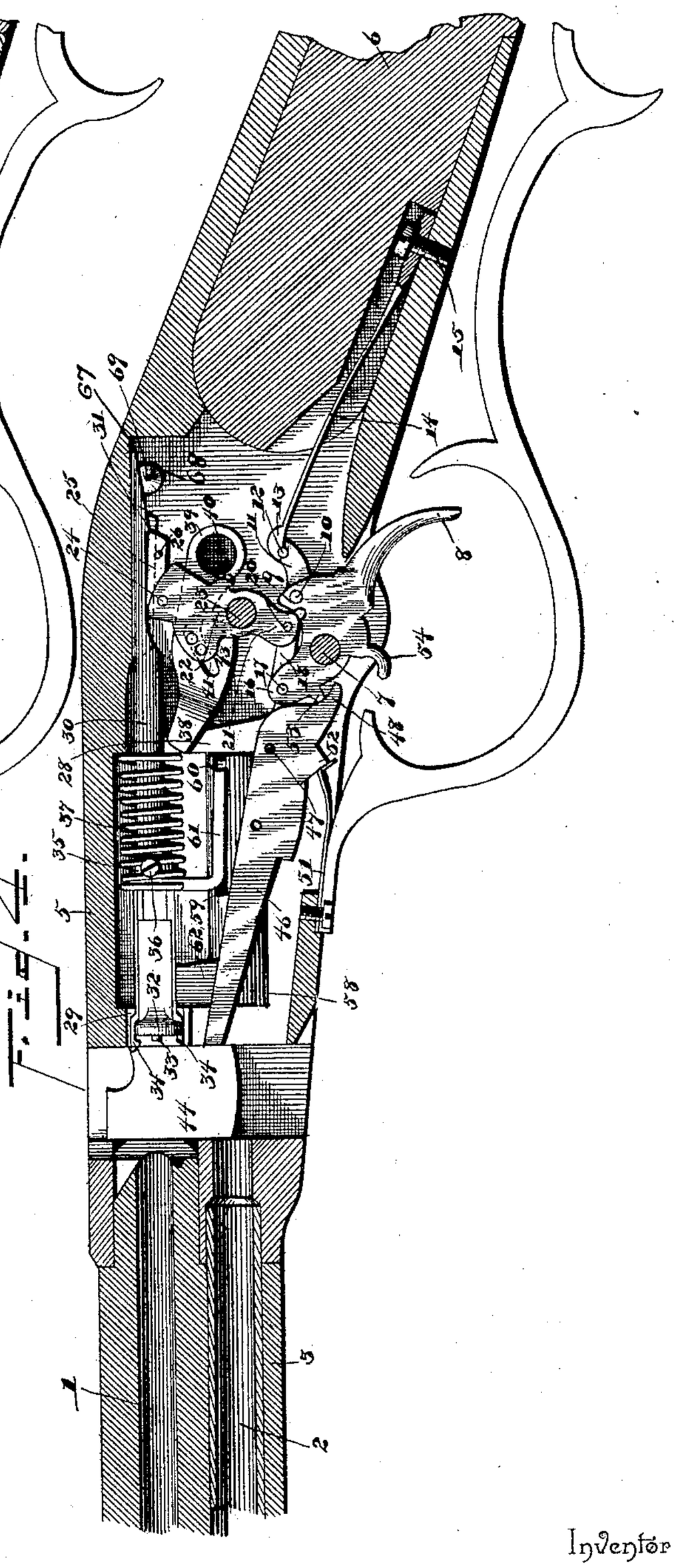
3 Sheets—Sheet 2.

R. DINSMORE.

MAGAZINE FIRE ARM.

No. 455,034. Patented June 30, 1891.





Witnesses:

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W. S. Duvall

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By his Attorneys,

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(No Model.) 3 Sheets—Sheet 3.

R. DINSMORE.

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Fig. 5.

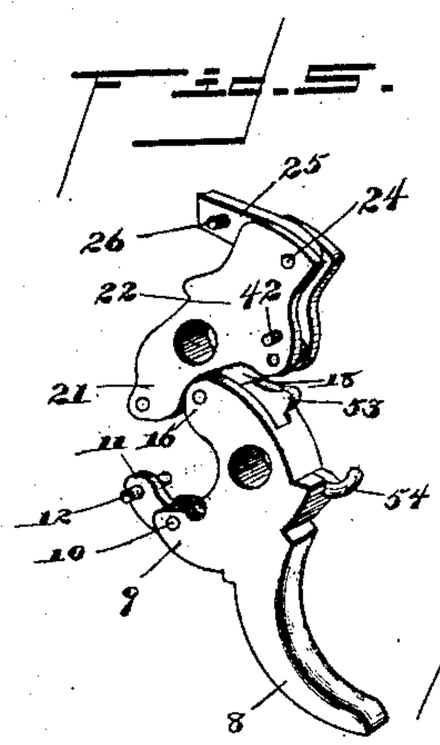


Fig. 6.

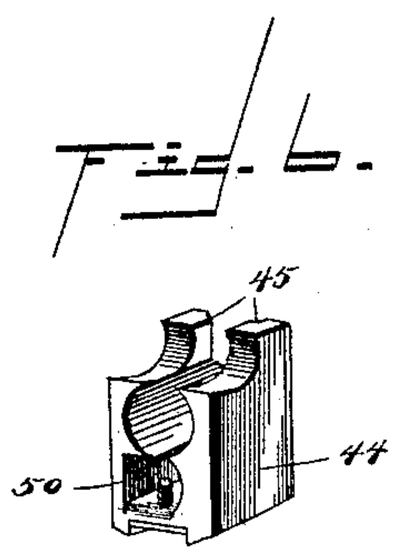


Fig. 12.

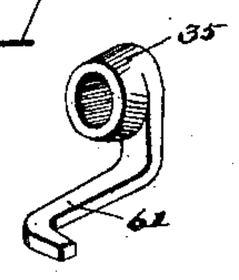


Fig. 7.

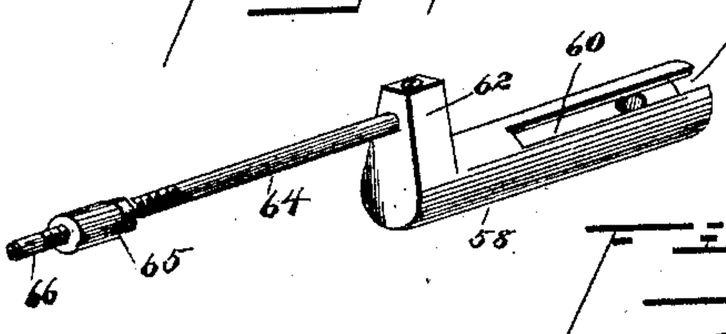


Fig. 8.

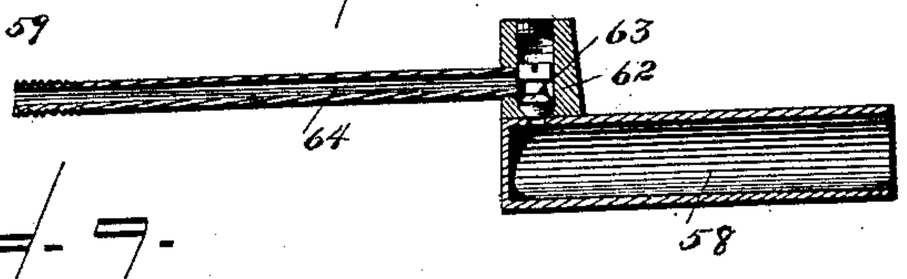


Fig. 9.

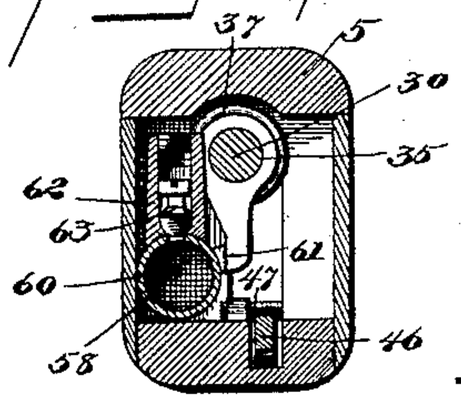


Fig. 10.

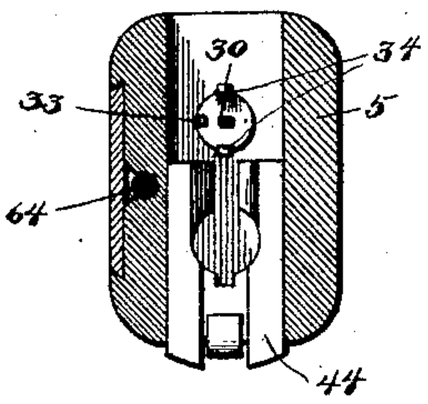
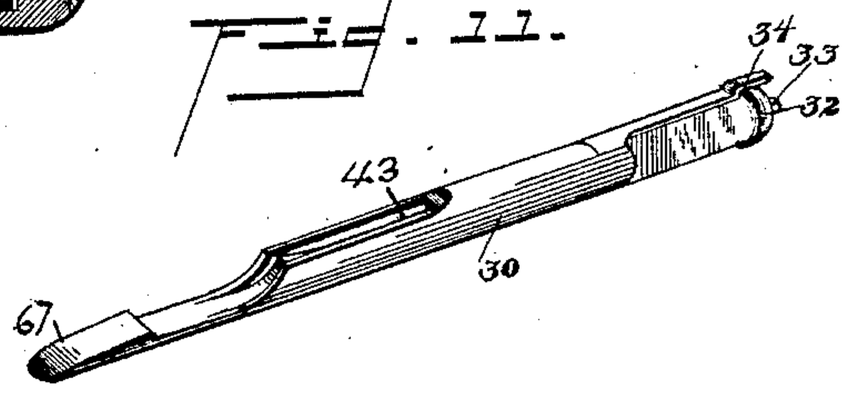


Fig. 11.



Witnesses:
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W. S. Duvall.

Inventor
Robert Dinsmore
By his Attorneys,
Cashow & Co.

UNITED STATES PATENT OFFICE.

ROBERT DINSMORE, OF WESTON, WEST VIRGINIA, ASSIGNOR OF ONE-HALF TO ADOLPH GREENSTEIN, OF SAME PLACE.

MAGAZINE FIRE-ARM.

SPECIFICATION forming part of Letters Patent No. 455,034, dated June 30, 1891.

Application filed May 17, 1890. Serial No. 352,119. (No model.)

To all whom it may concern:

Be it known that I, ROBERT DINSMORE, a citizen of the United States, residing at Weston, in the county of Lewis and State of West Virginia, have invented a new and useful Magazine Fire-Arm, of which the following is a specification.

This invention has relation to magazine fire-arms, and to that class thereof which are hammerless.

The objects of the invention are to provide an extremely simple and economically-constructed fire-arm of the magazine pattern, the magazine, carrier-block, and firing-pin of which are all adapted to be operated by a single movement of the trigger.

With the above general objects in view the invention consists in certain features of construction hereinafter specified, and particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a side elevation of the magazine-gun constructed in accordance with my invention. Fig. 1ª is a detail in side elevation and partial section of the pneumatic tube, the pump, and barrel. Fig. 2 is a longitudinal section, the interior mechanism being viewed in right-side elevation. Fig. 3 is a similar section, the view being taken from the left side. Fig. 4 is a similar view to Fig. 3, the piece being cocked and ready for firing. Fig. 5 is an enlarged perspective of the tumbler and trigger. Fig. 6 is a detail of the carrier-block. Fig. 7 is a detail of the pump. Fig. 8 is a sectional view of the pump. Fig. 9 is a transverse section through the piece and through the valve of the pump. Fig. 10 is a similar view in front of the carrier-block. Fig. 11 is a detail in perspective of the plunger. Fig. 12 is a detail in perspective of the connection between the plunger and the pneumatic feed device.

Like numerals of reference indicate like parts in all the figures of the drawings.

1 designates the barrel of the piece, to which is secured upon its under side in any usual manner the magazine 2, said magazine and barrel being connected to the forearm 3. The rear ends of the barrel and magazine fit in suitable sockets formed in the front end of the lock-frame 5, which latter is connected in the usual manner to the butt or stock 6. The lock-frame has passed therethrough a bearing-bolt 7, upon which is pivoted the trigger 8. The trigger 8 is provided with a rearward extension formed by a pair of bearing-ears 9, and pivoted within the ears, as at 10, is an arm 11, provided near its upper free end with a pair of transverse bearing lugs or trunnions 12, upon which bears the bifurcated end 13 of the back spring 14 of the piece, the rear end of said back spring being connected to the lock-frame by means of the usual screw 15. The tendency of the spring 14 is to press the trigger 8 forward, as is usual. Diametrically opposite the depending portion or finger of the trigger 8 the same is provided with a pair of bearing-ears 16, in which is pivoted, as at 17, a link 18, the opposite end of which is pivoted, as at 20, to the lower bifurcated portion 21 of a tumbler 22, which latter is mounted for oscillation upon a bearing-bolt 23, passing through the lock-frame at a point in rear and above the bearing-bolt 7. Diametrically opposite the pivot 20 there is pivoted, as at 24, to the tumbler 22, at its upper end, a pawl 25, provided at its side with a liberating-pin 26, and between the ears in the recess formed thereby there is interposed a light coiled spring 27, which serves to elevate the free or engaging end of the pawl.

28 designates a partition, which separates or divides the lock-frame into a front and rear chamber, and in the latter chamber is located the parts just described. In suitable guide-openings 29, formed in the partition just mentioned and the rear wall of the carrier-block opening, is the plunger 30, the under side of which is cut away to form a shoulder 31 near the rear end thereof, which shoulder is normally engaged by the spring-pawl 25. The plunger is provided at its front end with a head 32, from the rim of which projects the firing-pin 33 and a pair of spring-catches 34. A collar 35 is secured to the plunger by means of a set-screw 36 and interposed between the collar and the partition 28 and encircling the plunger is a coiled spring 37, the tendency of which is to project the bolt to the front.

38 represents a latch, provided at its rear end upon one side with a hub 39, loosely seated for oscillation in a countersunk recess 40,

formed in the side wall of the lock-frame. The latch is provided with a curved slot 41 between its pivot and free end and adapted to ride in the same is a pin 42, projecting from the adjacent side of the tumbler 22. In advance of its cut-away portion or shoulder 31 the bolt is provided with a groove or notch forming a forward shoulder 43. (See Fig. 11.)

In an opening in the lock-frame in rear of the breech of the barrel is located the vertical carrier-block 44, said block being adapted for vertical reciprocation in rear of the barrel and the magazine. The carrier-block is vertically recessed upon its upper side to form a cartridge-receiving portion, and said recess is flared at its front end, as at 45, to receive the head 32 of the plunger.

46 designates the carrier-block-elevating lever or arm, and the same is pivoted, as at 47, in advance of the bolt 7 of the trigger. The rear end of the arm is extended to form a tail 48, and the front end of said arm terminates in a head 49, which takes loosely within a recess 50, formed in the rear wall or side of the block. A flat spring 51 is secured in position under the arm 46, and has its free bent end abutting against a shoulder 52, formed upon the under edge of said arm and serving to normally raise the free end of the arm. Above and below the tail portion 48 of the arm 46 there project upper and lower cam-lugs 53 and 54, respectively, said lugs being designed to operate upon opposite sides of the tail portion 48 and are formed upon the trigger.

The under side of the carrier-block is provided with a channel 55 for the passage of the cartridges to the magazine, and in said channel there is mounted a flat spring 56, the free end of which is bent to form a gate 57, adapted to cover the rear end of the magazine when the carrier-block is in raised position, as in the act of firing or elevating a cartridge.

Referring more particularly to Figs. 3, 4, and 9, 58 designates a pump-cylinder, the inner side of which is longitudinally slotted, as at 59, and in the bore of the cylinder is mounted for reciprocation a piston-head 60, which is actuated by and connected to a pump-arm 61 of angular shape and rigidly connected with or forms a part of the collar 35. At the front end of the cylinder upon the upper side there is located a valve-chamber 62, in which is mounted for reciprocation a check-valve 63. An air-tube section 64 leads from the valve-chamber and by a coupling 65 is connected to a longer section of tubing 66, the front end of which terminates within the front end of the magazine 2.

To load the piece the same is inverted and the cartridges placed successively into the cartridge-channel of the carrier-block, the gate readily yielding from a slight pressure and permitting the cartridges to pass from the channel into the magazine, which in this way may be entirely filled. Pressure being removed from the block and gate, they resume their normal positions, as shown in Fig. 3. Taking the parts in the position shown in Fig. 3, and supposing a cartridge to be upon the carrier-block ready for elevation to the breech of the barrel, a pull to the rear upon the trigger 8 serves, first, to retract the plunger 30 by reason of the rearward oscillation of the tumbler 22, which is in engagement with the plunger through the medium of the spring-pawl 25. The oscillations of the tumbler, it will be readily observed, are obtained through the medium of the link 18 and against the tension of the spring 14. As the trigger 8 is drawn to the rear the cam-lug 53 thereof presses downwardly upon the tail 48 of the arm 46 and raises the carrier-block 44 to a point opposite the breech. In this position the carrier-block is maintained until the plunger has reached the end of its rearward movement and is released from connection with the spring-pawl 25. This releasing is secured by means of contact of the pins 26 with the upper portion of the lock-frame, which tends to depress the pawl from below the plane of the shoulder 31 of the plunger, and the spring 37 throws the plunger forward and projects the cartridge into the bore of the barrel 1. When thus projected, the spring-catches 34 take over the flange or rim of the shell of the cartridge and the firing-pin 33 serves to explode the same. When the spring-pawl 25 is liberated from connection with the bolt 30, the spring 14 serves to return the tumbler and trigger to their normal positions, and in so doing the cam-lug 54 takes under and elevates the rear end or tail portion 48 of the hoisting arm or lever 46, and consequently depresses the front end of said lever and with it lowers the hoisting-block 44. As the plunger 30 is drawn to the rear, as above described, so also is the plunger-arm and piston of the pump, the latter to such an extent as to permit air to enter the pump-cylinder through the front end of the slot in advance of the piston. When, therefore, the plunger is released and is projected by its spring 37 to the front, in the similar manner is moved the plunger or pump-arm and the piston, and by the latter the air within the cylinder in advance of the piston is forced through the valve-chamber, and by the check-valve into the air-tube, and from thence to the front end of the magazine 2, in rear of the line of cartridges contained therein, so that a pneumatic feed is provided and the series of cartridges are by compressed air forced toward the rear end of the magazine and the rearmost cartridge into the carrier-block. After the piece has been fired and the trigger again drawn to the rear the fresh cartridge in the carrier-block is elevated by the carrier-block but not before the plunger by the pawl 25 has been retracted out of the path of the carrier-block. When the bolt is retracted the spring-catches 34 serve to withdraw the empty shell, and the same is loosely suspended in the carrier-block passage and in the path of

said block, the movement of the latter serving to disengage the shell from the catches and throw the same upward out of the gun. When this operation has taken place the parts, it will be observed, are in condition for a second discharge, and it will be apparent that the piece may be successively and as rapidly discharged as the trigger is pulled. When the tumbler is oscillated in the act of retracting the bolt, and after said bolt has been released from connection with the pawl 25, the free end of the latch 38 will, by reason of the curvature of the slot 41, be elevated until it takes into the groove and abuts against the shoulder 43 thereof. This elevation of the latch against the shoulder occurs just previous to the explosion of the cartridge, and hence said latch serves to prevent the plunger from being thrown to the rear by the recoil of the shell. As soon, however, as the pressure of the finger upon the trigger 8 is removed the spring 14 serves to oscillate the trigger forward and the tumbler in a similar direction and lower the latch out of the groove and from behind the shoulder 43.

The rear end of the plunger is chamfered or beveled, as at 67. A threaded opening 68 is formed in the side of the lock-frame, and threaded in said opening is a conical set or adjusting-plug 69. By means of this plug 69 it will be observed that the rear end of the bolt may be adapted to travel a greater or less distance before the same shall release itself from the spring-pawl 25. In this manner a most accurate timing may be secured between the movements of the bolt and carrier-block.

Although herein shown and described in connection with a magazine-rifle, it will be apparent that the same principle and substantially the same construction may be employed in magazine shotguns.

It will be at once noticed from the above description that I have succeeded in providing a magazine-rifle the construction of which comprises an exceedingly small number of parts, all of which are strong and durable and have very little, if any, frictional contact calculated to induce wear or breakage. It will be also observed that I avoid the use of the usual spring for feeding the cartridges from the magazine and substitute therefor a very perfect pneumatic attachment, which, however, it will be observed, may be omitted, if desired.

Having described my invention, what I claim is—

1. In a magazine-gun, the combination, with a reciprocating plunger and means for operating the same, of a pneumatic cylinder, a tube connecting the same with the front end of the magazine, the piston mounted in the cylinder, and an arm actuated by the plunger and connected with the piston, substantially as specified.

2. In a magazine-gun, the combination, with a reciprocating plunger and means for operating the same, of a pneumatic cylinder, a tube connecting the same with the front end of the magazine, a valve located in the cylinder opposite its connection with the tube, a piston mounted in the cylinder in rear of the valve, and an arm connected with the plunger and with the piston, substantially as specified.

3. In a magazine-gun, the combination, with a reciprocating plunger and means for operating the same, of a pneumatic cylinder longitudinally slotted for a portion of its length and provided at its front end with a valve-chamber having a check-valve, a piston mounted for reciprocation in the cylinder and arm connecting the same with the plunger and passing through the slot of the cylinder and adapted to move the piston in rear of the end of the slot, and a pneumatic tube leading from the upper end of the valve-chamber to the front end of the magazine, substantially as specified.

4. In a gun, the combination, with a reciprocating plunger and a spring for throwing the same, said plunger being provided with a shoulder, of an oscillating tumbler provided at its upper end with a spring-pawl adapted to engage said shoulder, and a trigger pivotally mounted below the tumbler, and a loose connection between the tumbler and trigger, substantially as specified.

5. In a gun, the combination, with a reciprocating plunger and means for operating the same, said plunger being provided with a shoulder, of a pivoted locking-latch and devices for operating the same simultaneous with the movement of the plunger, and so as to take in rear of said shoulder, substantially as specified.

6. In a gun, the combination, with a reciprocating plunger and means for operating the same, of a pivoted locking-latch having a curved slot, an oscillating tumbler having a pin engaging the slot, and means for operating the tumbler, whereby the latch is thrown against the stop on the plunger, substantially as specified.

7. In a gun, the combination, with a reciprocating plunger and a coiled spring for throwing the same in one direction, said plunger being provided on its under side with front and rear notches, of an oscillating tumbler provided at its upper end with a spring-latch for engaging the rear notch of the plunger, a pivoted latch having a slot adapted at its front end to engage the forward shoulder, and a pin projecting from the tumbler and riding in the slot, and mechanism for liberating the pawl and oscillating the tumbler, and for elevating the free end of the latch in rear of the front notch subsequent to a liberation of the pawl, substantially as specified.

8. In a gun, the combination, with a reciprocating plunger and a spring for throwing the same, of means for retracting the plunger against the tension of its spring and releasing the same, and means for temporarily locking said plunger against retraction simultaneous

with the throw of the plunger, substantially as specified.

9. In a gun, the combination, with a reciprocating plunger and an oscillating tumbler having a spring-pressed pawl for engaging the shoulder on the plunger, of means for oscillating the tumbler and for adjusting the rear end of the plunger, substantially as specified.

10. The combination, with the reciprocating plunger, the rear end of which is beveled and provided with a notch or shoulder, said beveled end projecting through an opening in the lock-frame of the gun, of an oscillating tumbler and means for operating the same, a spring-pressed pawl connected to the tumbler and adapted to engage the notch or shoulder of the plunger, and provided with laterally-projecting liberating-pins adapted to strike against the inner surface of the lock-frame, and an adjustable plug threaded in the aforesaid opening below the beveled end of the plunger, substantially as specified.

11. In a magazine-gun, the combination, with the lock-frame having the carrier-block passage, the carrier-block mounted therein, the pivoted carrier-arm connected at its front end to the block and at its rear end extended beyond its pivot to form the tail, of the pivoted trigger having opposite cam-lugs adapted to actuate said arm by taking against the upper and lower sides of the tail portion, substantially as specified.

12. In a magazine-gun, the combination, with a plunger, a spring for throwing the same in one direction, said plunger being provided with front and rear notches, an air-cylinder having a valve, a tube leading from the valve-chamber to the magazine, a piston-head mounted in the cylinder, and a plunger-arm connecting said head to the plunger, a pivoted oscillating tumbler, a pivoted pawl mounted in the upper end of the tumbler and spring-pressed into connection with the rear notch of the plunger and means for liberating said pawl, a latch pivoted at one side of the tumbler and provided with a cam-slot to receive a pin projecting from the tumbler, whereby said latch is adapted to be thrown against the rear notch subsequent to the release of the plunger, a carrier-block mounted in advance of the plunger, a carrier-block arm pivoted in the lock-frame and terminating in rear of its pivot in a tail portion, a trigger pivoted below the tumbler, a link loosely connecting the upper end of the trigger with the lower end of the tumbler, said trigger being provided with a pair of cam-lugs for operating upon opposite sides of the tail portion of the said carrier-block arm or lever, an arm projecting from the rear side of the trigger, and a spring secured to the frame and having its free end resting upon the said arm, substantially as specified.

13. In a gun, the combination, with a plunger, a spring for throwing the same in one direction, said plunger being provided with front and rear notches, a pivoted oscillating tumbler, a pivoted pawl mounted in the upper end of the tumbler and spring-pressed into connection with the rear notch of the plunger, and means for liberating said pawl, a latch pivoted at one side of the tumbler and provided with a cam-slot to receive a pin projecting from the tumbler, whereby said latch is adapted to be thrown against the rear notch subsequent to the release of the plunger, a trigger pivoted below the tumbler, a link loosely connecting the upper end of the trigger with the tumbler, and a spring for supporting the trigger, substantially as specified.

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

ROBERT DINSMORE.

Witnesses:
JOHN H. SIGGERS,
R. J. MARSHALL,