

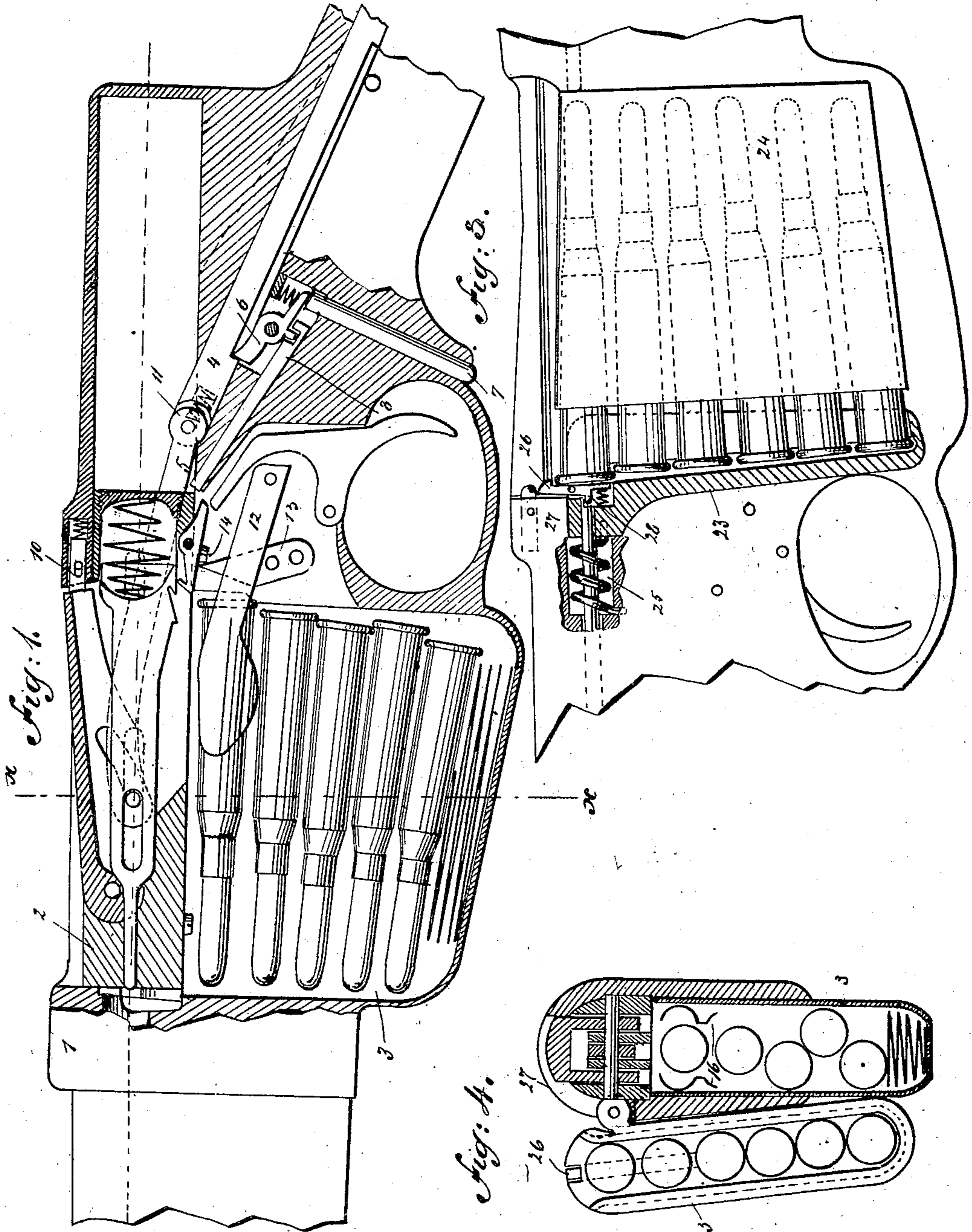
(No Model.)

4 Sheets—Sheet 1.

A. BURGESS.
RECOIL OPERATED MAGAZINE GUN.

No. 520,753.

Patented May 29, 1894.



WITNESSES:
Chas. Nida
E. M. Clark

INVENTOR:
Andrew Burgess

(No Model.)

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Fig. 2.

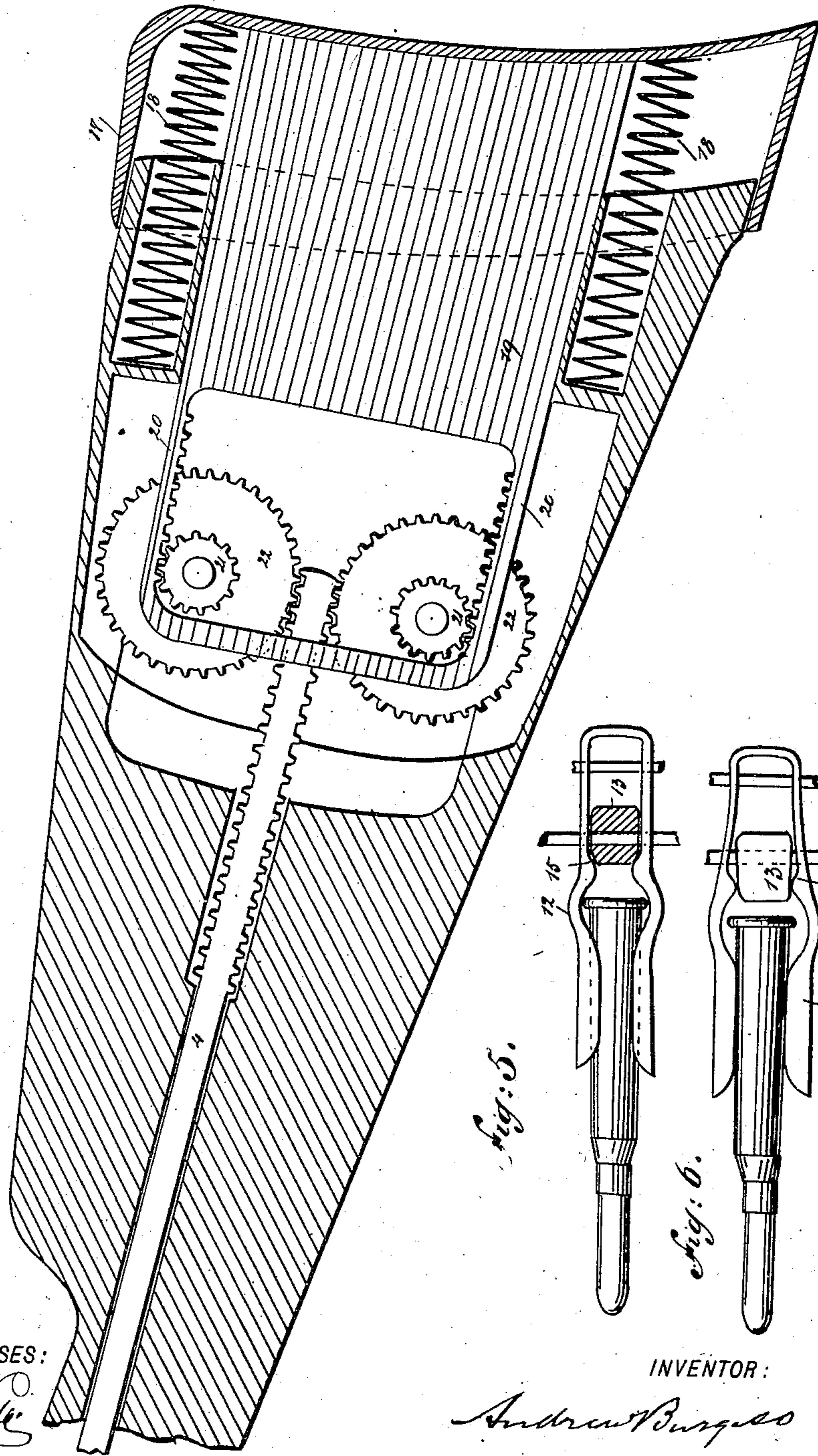


Fig. 5.

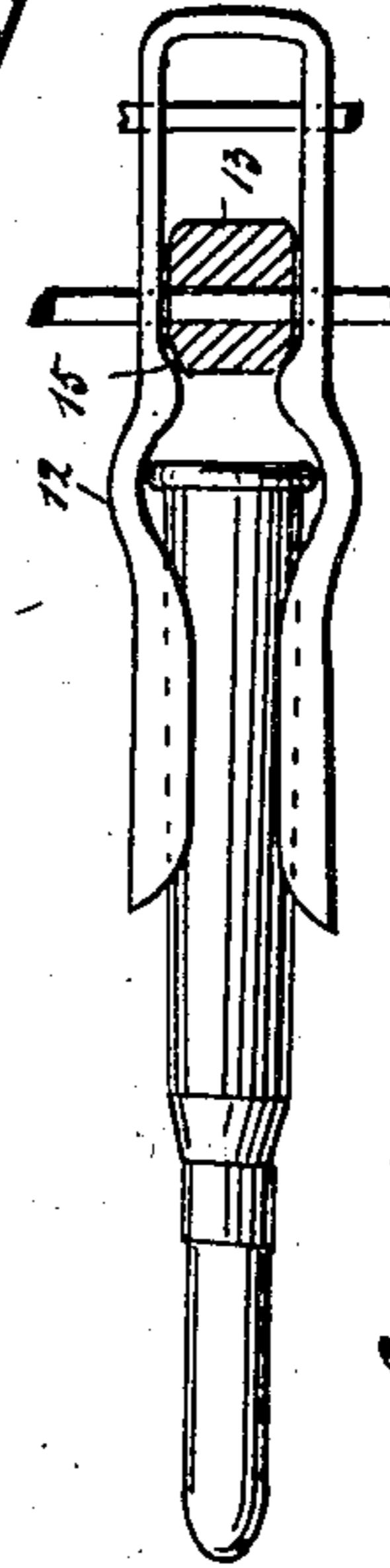


Fig. 6.



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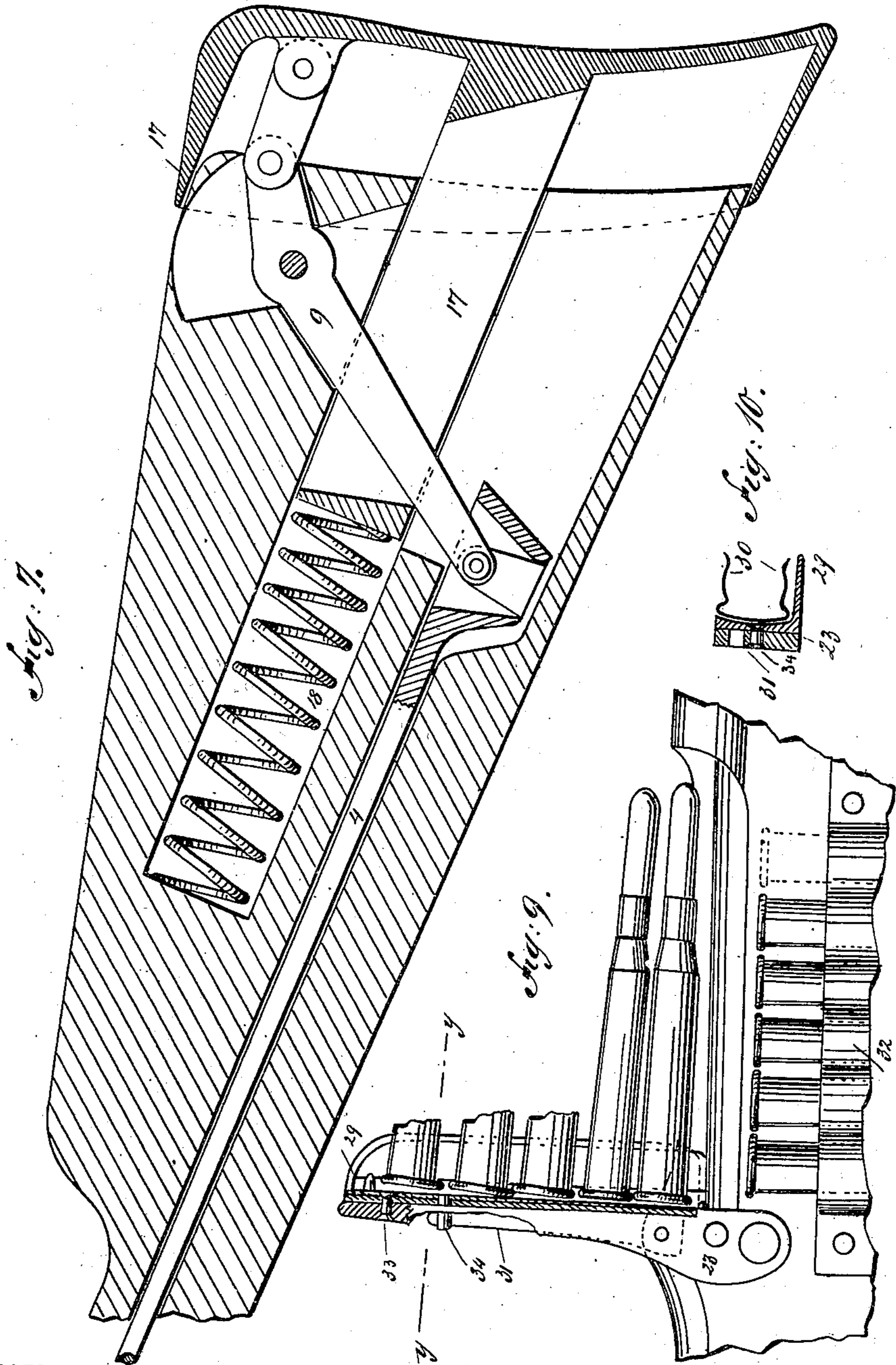
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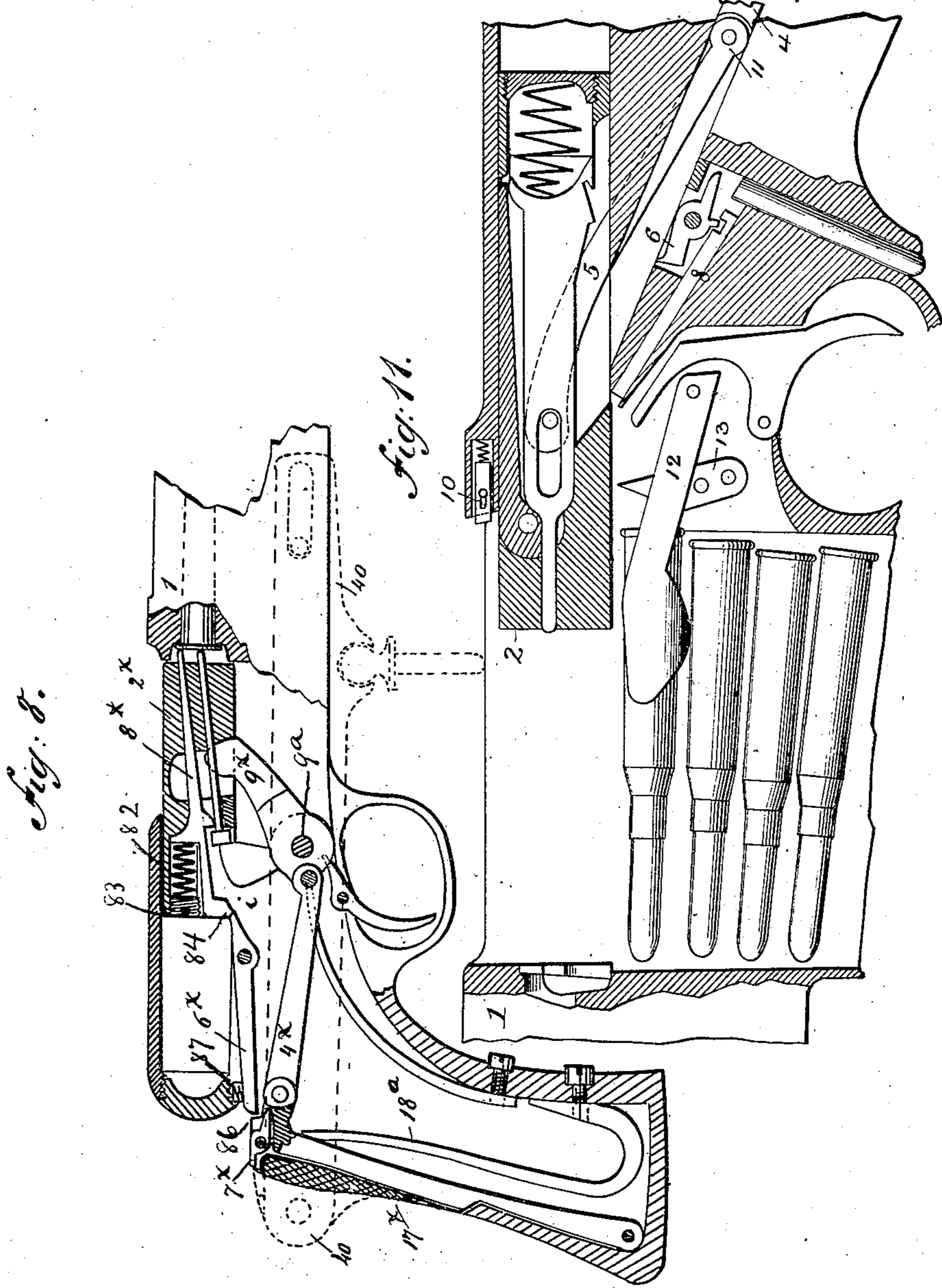
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WITNESSES:

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INVENTOR:

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UNITED STATES PATENT OFFICE.

ANDREW BURGESS, OF OWEGO, NEW YORK, ASSIGNOR TO THE BURGESS GUN COMPANY.

RECOIL-OPERATED MAGAZINE-GUN.

SPECIFICATION forming part of Letters Patent No. 520,753, dated May 29, 1894.

Application filed April 24, 1890. Serial No. 349,212. (No model.)

To all whom it may concern:

Be it known that I, ANDREW BURGESS, a citizen of the United States, residing at Owego, in the county of Tioga and State of New York, have invented certain new and useful Improvements in Automatic and Magazine Guns; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to automatic and magazine fire arms.

The object of the invention is to produce a fire-arm which shall operate easily and rapidly, and may load by recoil action; also to improve the loading and feeding devices of magazine fire arms; also to improve certain details of construction and arrangements of parts in a magazine fire arm.

Figure 1 is a longitudinal section of the breech mechanism and magazine, parts being shown in elevation. Fig. 2, is a longitudinal sectional view of the butt stock and its parts. Fig. 3, is an outside view of the frame with the magazine feeder in section, attached thereto. Fig. 4, shows cross section on line $x-x$, Fig. 1, looking rearward. Figs. 5 and 6, show the cartridge separator detached in closed and open positions. Fig. 7, is a modification of the butt stock, and parts. Fig. 8, is another modification showing another arrangement of the recoil portions, and non-recoil portions. Fig. 9, shows a modification of the magazine feeder of Fig. 4. Fig. 10, is a cross section on line $y y$ of Fig. 9. Fig. 11 is a section showing the breech operating and recoil locking mechanism of Fig. 1 in a different position.

The gun frame 1, receives the bolt 2, and magazine 3. The lock mechanism is contained in the bolt and is cocked and reciprocated by the rod 4, through the connecting piece 5. The rod 4 is normally locked forward by the pawl 6, which may be turned to unlock, by the hand pin 7, or automatically by the recoil piece 8, which is driven back by the rearward pressure at the time of the ex-

plosion; this movement is communicated to the pawl by the rear of the bolt, engaging the pin 8, which pin slides in a recess in the frame, and engages a projection at one side of the pivot of the said pawl as in Fig. 1; or as in Fig. 8 the pin or piece 8^x extends directly from the rear of the cartridge shell through an opening in the bolt, and engages an incline i on the locking pawl 6^x, so as to turn said pawl as the cartridge moves back on recoil.

The bolt in Fig. 1, is shown pressed forward of its locking position by the spring-pin 10, and the spring joint 11, but when the charge fires, the backward impulse of the bolt is immediately to its locked position, and in that movement it turns the pawl, by connections as shown, to unlock the rod 4, when the recoil of the body of the gun will occur, and being resisted by the non-recoil portions which are connected to the rod 4, the force of the recoil is then exerted through said rod, on the breech mechanism.

The unlocking of a breech operating device as above described is effected by the shock of discharge before the ordinary recoil takes place, and may be produced direct from the chamber of the gun, as through a special recoil piece in Fig. 8, or the bolt acting as such recoil piece in Fig. 1, or from the breech piece through its locking brace or other connections, and it is not essential that the shell or parts be forced forward or move back perceptibly, as the shock on the unlocking recoil parts may be communicated by the natural elasticity of the metal, to augment their movement.

To distinguish the parts, I designate those parts that resist or operate the rod 4 as non-recoil portions of the gun, and a non-recoil portion may be the butt-plate, which is held against recoil by the shoulder of the operator or by its own inertia; or the non-recoil portion may be on the stock of a pistol, which is grasped by the hand; or in cannon, the non-recoil portion becomes the mounting, stand, or carriage of the gun. The form or peculiar systems of such breech mechanism may also be varied and connected with a reciprocating rod or vibrating lever, by means equivalent to those here shown.

In Fig. 2, I show a butt plate 17 pressed rearward by springs 18. The butt plate has a forward central extension 19 provided with the ratchet bars 20 which engage the outer peripheries of small gear wheels 21. The small gears 21 are fixed to the large ones 22, and these gears 22 engage by their inner peripheries, cogs on the sides of the operating rod 4. The recoil of the body of the gun traveling backward upon, or telescoping the non-recoil portion 19—17, causes the bars 20 to turn the small gear wheels 21 and they turn the large ones to multiply and reverse the movement of the rod 4, which connecting with the breech, opens it; and after the breech is open the reverse movement, by reaction of springs 18, closes the breech. In Fig. 7 it will be seen that the rear of operating rod 4, is connected to the butt plate (non-recoil portion) by a lever, to reverse and multiply the movement of said rod, but the operating rod may be attached to the non-recoil portion, and engage a lever, or slide forward to vibrate or reciprocate the breech mechanism as in Fig. 8.

I arrange a magazine to feed upward through the center of the frame, and to raise the top cartridge above the others and hold it separate therefrom so that its flange may not be obstructed, I pivot a two pronged spring 12 rearward of the magazine, its forward prongs springing inward and being concaved inside to grasp the top cartridge, as shown in Fig. 5, when the breech is open; but a spreader 13, is engaged by a projection 14 of the breech piece, when the breech is closed, to open the prongs (as shown in Figs. 1, 4 and 6); and allow a cartridge to rise between them. The inclines 15, of the separator by their tendency to spring toward each other, operate on the spreader to rock it on its pivot, and thus turn the spreader back when released by the opening of the breech; and the separator is raised to present the top cartridge in front of the face of the bolt. The separator has horizontal wedge shaped extensions 16, at the bottom of its prongs (Fig. 4) to close in between the top cartridge and the one below, and hold them apart, when the breech is open.

When the magazine is empty and the breech open, cartridges may be thrust downward into it, their sides forcing apart the prongs of the separator, which then hold the cartridges down against the pressure of the magazine spring. To facilitate this operation I pivot a feeder 23, (Figs. 3, 4, 9 and 10) to the upper rear part of the frame which feeder turns down against the side of the frame when not in use, but may be turned to debouch into the magazine when the breech is open.

The cartridges are arranged in packs, as 24, with their flanged ends projecting therefrom, which slide into the grooves of the feeder as shown in Figs. 3 and 4, and are there held by the pawl 26, and the feeder is held in its down position by the spring 25.

When the breech is open the feeder may be turned to near an upright position, and in doing this the pawl 26 is retired, by its projection coming in contact with the top of the frame 27, and the mouth of the feeder thus opening direct into the top of the magazine, the cartridges may all be pressed down (first removing the case 24) into the magazine, forcing open the prongs of separator 12, as before described.

In the modification (Figs. 9, and 10), the feeder is provided with spring jaws 30, so the heads of the cartridges can be thrust backward into the feeder, or the feeder may be turned down forward to snap onto the heads of a gang of cartridges arranged in a loop, as 32, on the side of the frame. The spring jaws 30 are attached to an angle plate 29 which plate is pivoted at 33 to the feeder staff 23, so that the lower part of the plate with its jaws can swing laterally on the feeder, to a position directly over, or outside the top of the magazine; a pin 34 limits the movement, by traversing a slot in the feeder; and a spring 31 bears against the pin 34 to press the jaw portion of the feeder normally outside the opening in the top of the frame, but the feeder may be turned by hand over the magazine mouth to feed the cartridges as before.

In the modification shown in Fig. 8, the recoil piece 8^x is a slide piece extending about lengthwise through a recess in the bolt 2^x, and normally pressed forward beyond the face of the bolt by a spring 82, interposed between a projection on the recoil piece, and an abutment 83 of the bolt, said abutment being shown as a screw engaging a thread in the bolt. The recoil piece has an inclined surface 84, in convenient position to engage the bearing surface 2, (which is preferably inclined) of the pawl or lever 6^x, which pawl or lever is pivoted in the frame with its front end in position to be engaged by said incline on the recoil piece. The lever, or bearing plate 17^x is pivoted near the bottom of the stock, and presents a bearing to the hand embracing the stock. A rigid link 4^x pivoted to the upper end of this bearing plate 17^x, is connected to the locking brace 9^x by a pivot below the fulcrum or pivot 9^a of said brace, which fulcrum is firm in the frame. The front end of the brace 9^x has a bearing against a shoulder in the block 2^x, and the turning of said brace on its pivot or fulcrum unlocks and moves the bolt backward, as is common in breech loading firearms. The rear end of the pawl or lever 6^x extends in front of a shoulder 86 on the bearing piece 17^x, and is normally held in engagement with said shoulder, by gravity or by a spring 87, so that the plate 17^x cannot be pressed forward relatively to the rest of the stock. But when said pawl 6^x is tripped by the action of the recoil piece 8^x, the plate 17^x may be moved forward (or the main part of the gun may move backward relatively to said plate, under the recoil impulse), and this movement of the plate 17^x; opens the

breech, through the described connections. At the same time spring 18^a is compressed; and the expansion of said spring reverses the movement and closes the breech. A pivoted finger piece 7^x having one end in position to engage the pawl 6^x, may be used to unlock the plate 17^x when it is desired to do so other than by recoil action. Then a forward pressure on plate 17^x will open the breech. It will be seen that if there be no pressure against the plate 17^x, when the pistol is fired, piece 17^x will have the same tendency as the rest of the gun to retire under the recoil impulse, and if made light so as not to operate by inertia it will not actuate the breech mechanism. The pawl 6^x will then relock the piece 17^x as soon as the impulse of recoil piece 8^x is expended.

While I show in Fig. 8 mechanism adapted for use in a pistol, it is equally applicable to shoulder guns or cannon, by mere change in size, and manner of mounting, and I show in dotted lines (40) a method of attaching the non-recoil piece 17^x to a heavy mounting (as for cannon) so as to allow the recoil portion of the gun to move thereon and operate the breech automatically by the movement of the recoil portion, which is communicated to the lever 9^x and breech piece, by the rod 4^x resisted by pieces 17^x and 40 to open, and the spring 18^a to close the breech.

From the description it will appear that the unlocking of the recoil portion from the non recoil portion of the gun is effected by the first backward movement of the cartridge shell in the chamber of the gun on firing, and is not dependent on the recoil of the main part of the gun. The subsequent movement of the recoil portion of the gun relatively to the non recoil portion opens the breech, and compresses a spring which in turn serves to close the breech. It will also appear that by an arrangement of levers, or by a multiplying gear, the recoil of the main part of the arm may be but for a little distance, and yet the breech piece may be moved by the impulse thereby received, through a very considerable distance. In practice the power of the recoil of a gun loaded with modern ammunition is very great, and is more than sufficient to operate almost any known and operative form of breech mechanism.

I claim—

1. In a gun, a recoil piece having a bearing against the cartridge, a locking piece controlled by said recoil piece, and the breech operating mechanism engaged by said locking piece so as to be unlocked by the recoil of the cartridge on firing, the parts in combination substantially as described.

2. In a gun, a primary unlocking piece actuated by the firing of the cartridge, a non recoil portion normally locked to the recoil portion of the gun by said locking piece, and the recoil portion having a movement relatively to said non-recoil portion on firing when the parts are unlocked, said recoil and non-recoil

portions connected to and serving to actuate the breech mechanism, all combined substantially as described.

3. A gun having parts adapted to recoil under the impulse of firing, and having other parts relatively secured against recoil, means for locking the recoil and non-recoil parts together, and means actuated by the initial pressure of the explosion, operating to unlock said parts prior to the recoil of the body of the gun, all combined substantially as described.

4. A gun having parts adapted to recoil under the shock of firing and other parts relatively held against recoil, a breech piece initially movable relatively to the barrel, and a catch holding the recoil and non-recoil portions together, said breech piece unlocking the catch by its initial recoil, all combined substantially as described.

5. In a gun, the recoil and non-recoil portions, substantially as described, a catch locking said parts together, a piece acting by the initial pressure of the charge to unlock said catch prior to the recoil of the body of the gun, and means for opening the breech by the relative movement of the recoil and non-recoil portions, all combined substantially as described.

6. In a gun, the recoil and non recoil portions, substantially as described, the breech piece and a catch for locking the same, an operating rod connected thereto, and a recoil portion actuated by the firing of the gun to unlock said catch, and to open the breech of the gun, substantially as described.

7. In a gun, the recoil and non recoil portions substantially as described, the breech piece and an operating link connected thereto, means for locking the breech, and an actuating rod connected to the recoil portion of the gun and releasing the catch under the impulse of firing, all substantially as described.

8. The magazine arranged to deliver cartridges upward toward the breech closing piece, a two pronged spring pivoted in the frame so that normally one prong is at each side of the top cartridge in the magazine, and the spreader hung in the frame and actuated from the breech piece to operate said spring to grasp or release a cartridge, all combined substantially as described.

9. A magazine which feeds the cartridges sidewise upward to the frame of a gun, a bifurcated spring separator pivoted rearward of the magazine, and having prongs extending forward in position to grasp the top cartridge in the magazine, and connection from the reciprocating bolt by which the separator is opened by the closing bolt, all in combination, substantially as specified.

10. A magazine which feeds the cartridges sidewise upward to the frame of a gun, a bifurcated spring separator pivoted rearward of the magazine, and having prongs extending forward in position to grasp the top cartridge in the magazine, and connection from

the reciprocating bolt by which the separator is opened by the closing bolt, said separator being provided with extensions on its prongs to wedge the two top cartridges apart, all in combination, substantially as specified.

11. In a gun a magazine opening upward through the frame, a feeder pivoted to the gun near the magazine, and having grooves to receive the heads of the cartridges, and a spring to turn the mouth portion of the feeder away from the opening in the top of the frame, all in combination, substantially as specified.

12. In a gun a magazine opening upward through the frame, a cartridge feeder connected to the gun near the magazine opening by a pivotal connection so as to hold a plurality of cartridges longitudinal with the barrel, and in position to be thrust laterally into the magazine, in combination with a spring to turn the feeder out of said operative position, substantially as and for the purpose described.

13. In a gun a magazine opening upward

through the frame a feeder pivotally connected to the gun near said magazine opening and having spring jaws arranged to guide a plurality of cartridges into the magazine, in combination with a receptacle alongside the frame to hold cartridges vertically, in position to be grasped by the jaws of the feeder when vibrated, substantially as described.

14. In a gun a magazine opening upward through the top of the frame, a feeder pivoted to the frame to hold the cartridges when thrust sidewise therein, a spring catch to hold said cartridges from rising laterally from the feeder and a projection on the frame which said catch engages when the feeder is turned to position for filling the magazine; all in combination, substantially as and for the purpose set forth.

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

ANDREW BURGESS.

Witnesses:

CHAS. NIDA,
EDWD. M. CLARK.