

(No Model.)

3 Sheets—Sheet 1.

A. BURGESS.  
RECOIL OPERATED FIREARM.

No. 591,525.

Patented Oct. 12, 1897.

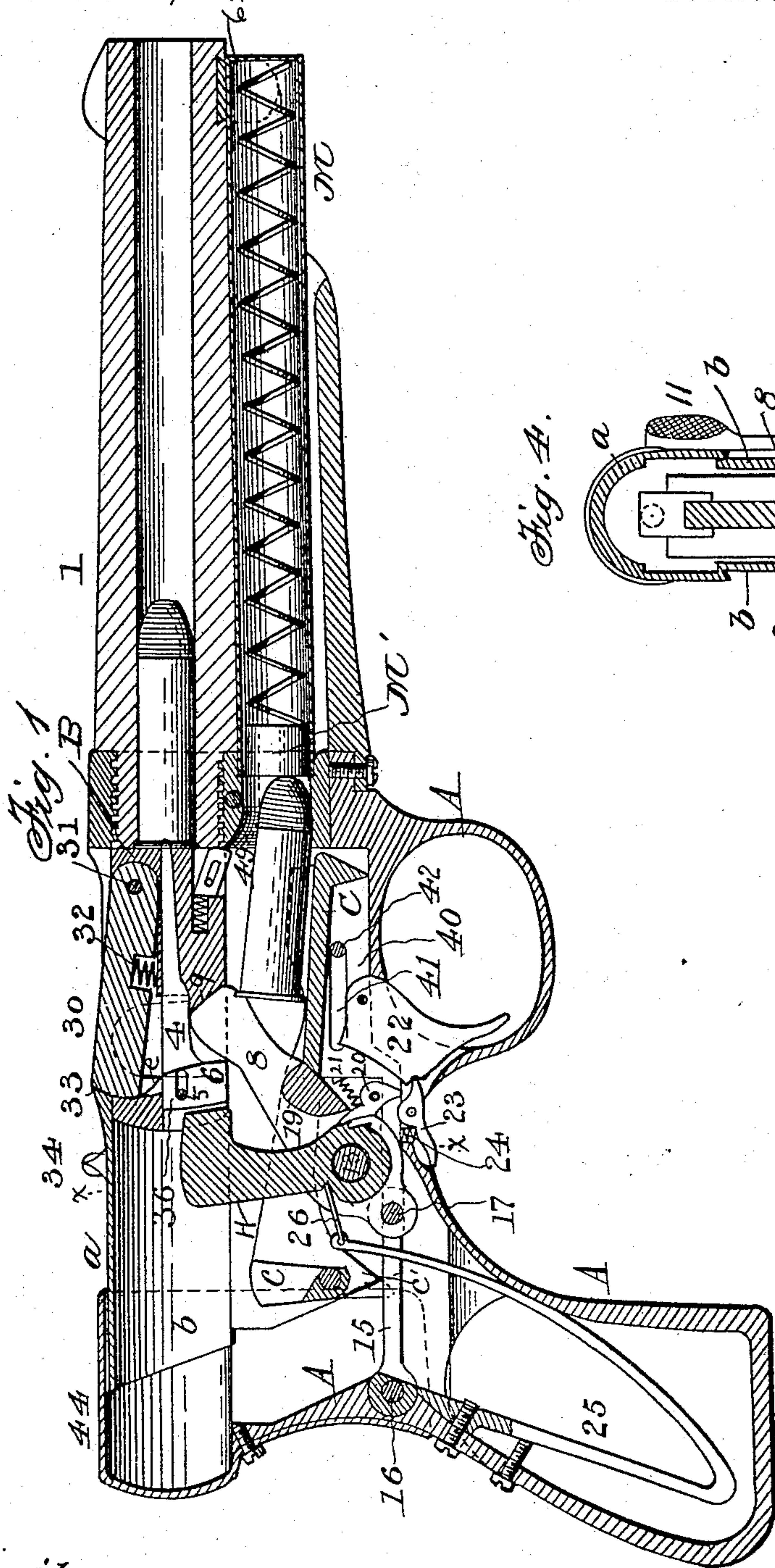


Fig. 4.

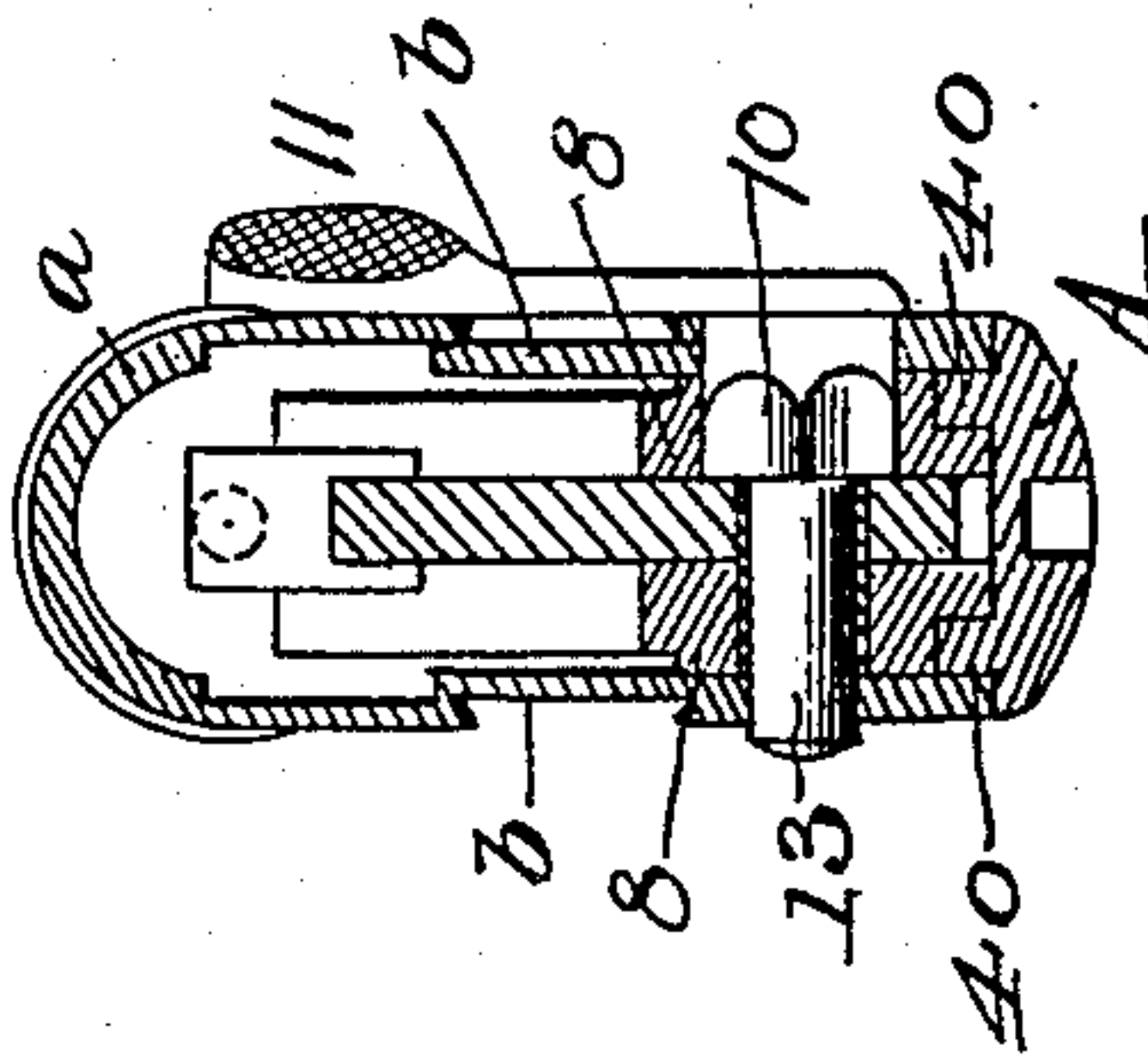
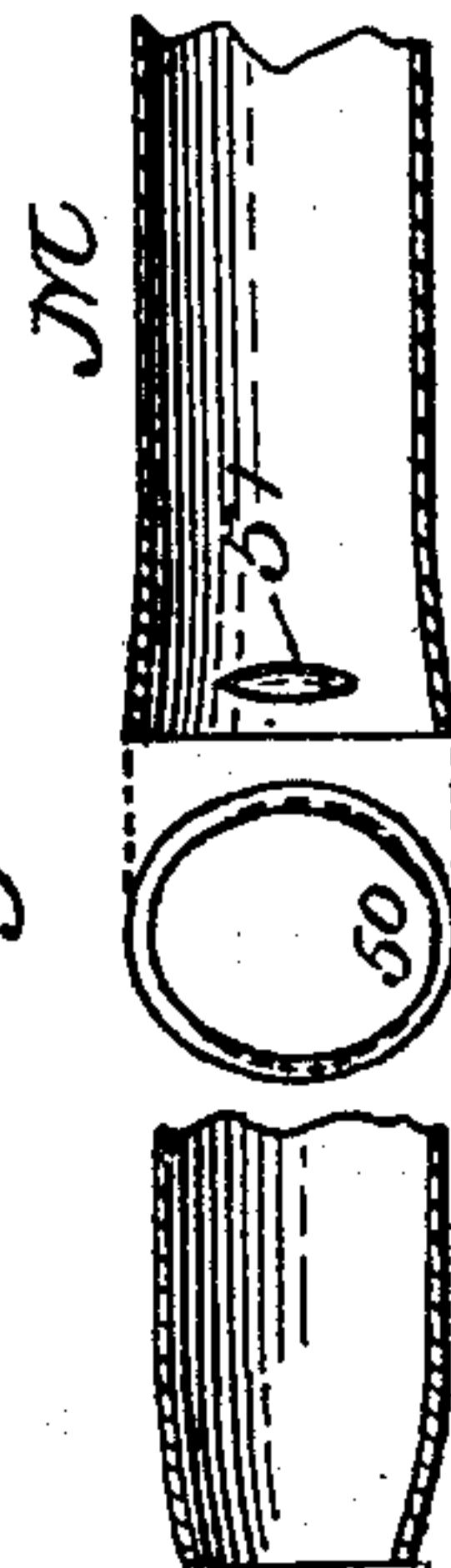


Fig. 6.



Witnesses:  
F. L. Ourand.  
C. K. Davies.

Inventor  
Andrew Burgess  
By W. A. Barrett  
Attorney.

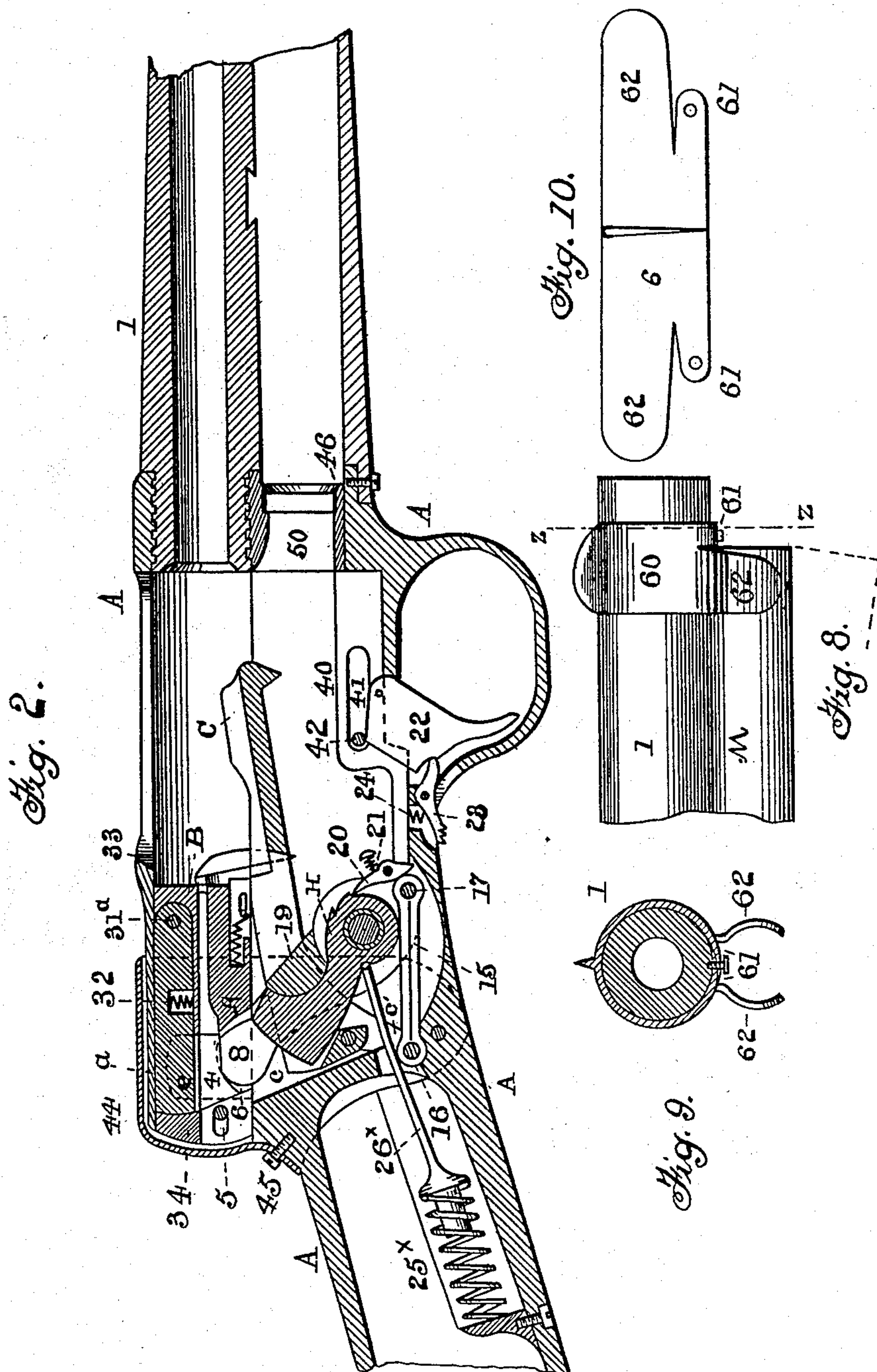
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WITNESSES  
Chas. K. Davies.  
J. Bartlett

INVENTOR  
A. Burgess  
By W. A. Bartlett  
Attorney



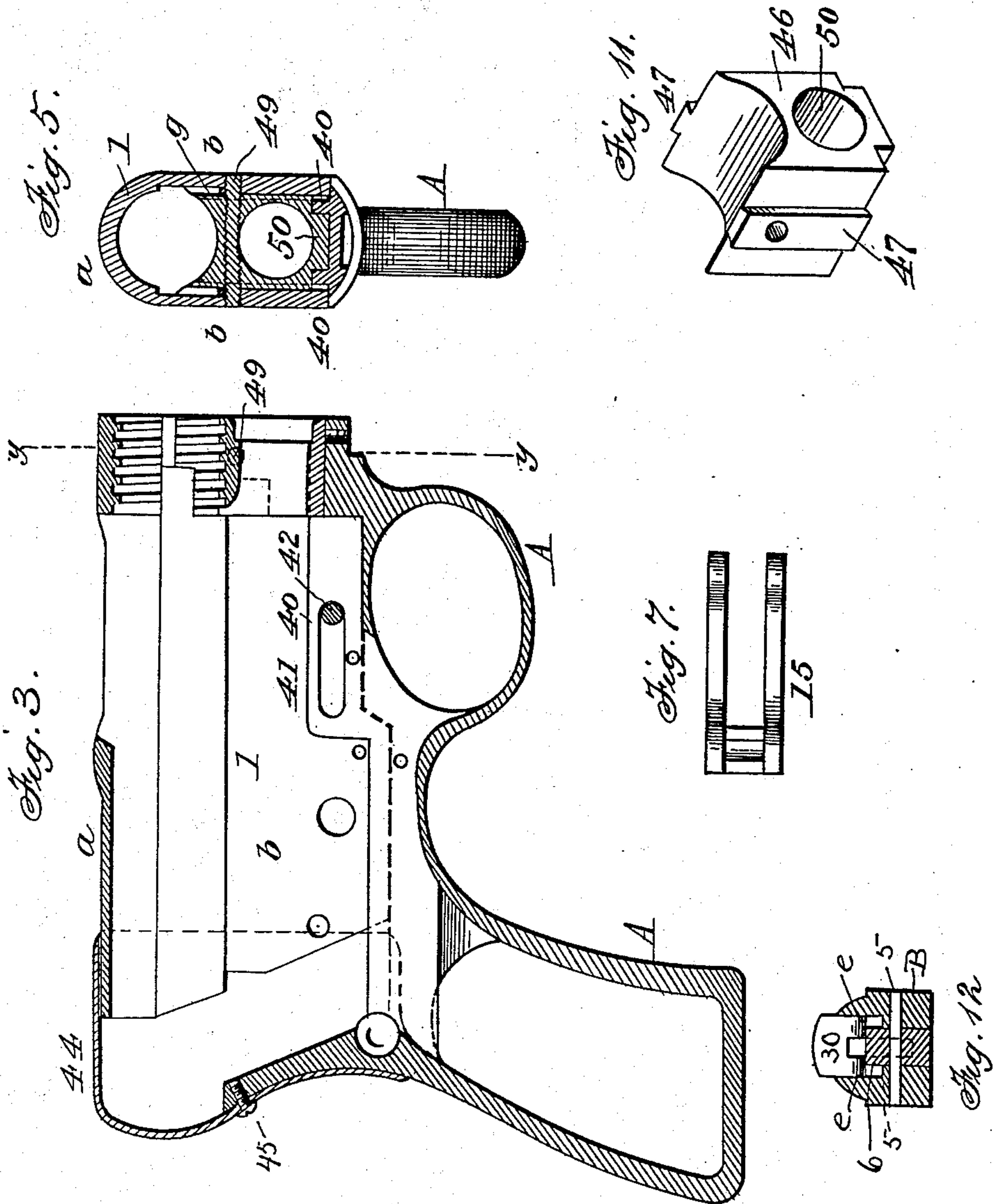
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Witnesses:  
F. L. Ourand.  
C. K. Davies.

Inventor:  
Andrew Burgess  
By W. A. Bartlett  
attorney.



# UNITED STATES PATENT OFFICE.

ANDREW BURGESS, OF BUFFALO, NEW YORK.

## RECOIL-OPERATED FIREARM.

SPECIFICATION forming part of Letters Patent No. 591,525, dated October 12, 1897.

Application filed February 20, 1896. Serial No. 580,015. (No model.)

*To all whom it may concern:*

Be it known that I, ANDREW BURGESS, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Automatic Guns, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to automatic or self-operating firearms.

The object of the invention is to make an automatic gun of cheap construction; also, to improve the means of locking and unlocking the breech mechanism; also, to improve the construction of the magazine and its connection to the barrel; also, to improve various parts and the combinations of parts, substantially as hereinafter pointed out in the claims.

Figure 1 is a central longitudinal section of the gun with pistol-stock, the breech of the gun closed. Some parts of the gun and cartridges in the gun are shown in elevation. Fig. 2 is a central longitudinal section of gun, the breech open and showing part of a shoulder-stock. Fig. 3 is a central longitudinal section of the frame and housing for breech mechanism, other parts being omitted. Fig. 4 is a cross-section on line *xx*, Fig. 1, looking forward. Fig. 5 is a cross-section on line *yy*, Fig. 3, looking toward the butt of the gun. Fig. 6 shows vertical and horizontal sections and end view of the end part of magazine-tube. Fig. 7 is a detail elevation of a link hereinafter referred to. Fig. 8 is a side elevation of the muzzle part, showing magazine-holding clip. Fig. 9 is a section of same on line *zz*, and Fig. 10 a plan of blank for the magazine-clamp. Fig. 11 is a perspective of connecting-piece hereinafter referred to. Fig. 12 is a cross-sectional detail of the firing-pin in its relation to the locking-brace.

The frame or mounting A may be of cast metal and of such construction as to attach any usual form of stock or support, both pistol-stock and shoulder-stock being shown or indicated. The frame has longitudinal guides on which the receiver moves back and by its backward movement opens the breech, a reverse movement serving to close the breech, as will be described.

The receiver is preferably of sheet metal struck up or bent to shape with a cover *a*,

preferably arched, and side plates *b*, preferably flat, the receiver proper being open at the bottom. This receiver carries the breech-bolt B and its locking mechanism, the operating-lever or brace 8, pivoted in said receiver, and the cartridge-carrier C, also pivoted to and lying between the flat sides of the receiver. The hammer H is carried on the same pin with the operating-lever or brace 8. The barrel 1 is attached to the receiver in usual manner and the barrel and receiver together have a backward and forward movement relatively to frame A.

The breech-bolt B slides lengthwise in the receiver in opening and closing, as is usual in bolt-guns. The operating-lever 8 locks the bolt in closed position, as in Fig. 1, by engaging an abutment or shoulder 9 on the bolt. The operating-lever is preferably forked and is made to turn with the turning of pin 13 by a squared shoulder or other suitable connection on the pin (indicated at 10) entering a squared hole in the lever. A thumb-lever 11 outside the frame is connected to pin 13, and by said thumb-lever the operating-lever may be worked to open the bolt by hand.

The firing-pin 4 extends lengthwise of the bolt in a suitable recess therein, and a retaining-pin 5 passes through the sides of the bolt and through a slot in said firing-pin. The firing-pin 4 has a shoulder 6 extending down behind the rear face or corner of the operating-lever. The lower part of the bolt is cut away in rear of shoulder or abutment 9, so that the upper end of the operating-lever may lie between the abutment 9 and the shoulder 6 of the firing-pin.

When the operating-lever 8 is swung forward, as in Fig. 1, it presses the bolt forward to close the breech and finally locks the bolt in closed position. When the operating-lever is swung backward, it first presses back the firing-pin by its engagement with shoulder 6, and when the firing-pin has reached the limit of its backward movement—in this instance determined by the length of the slot through which retaining-pin 5 passes—the firing-pin will then press back the bolt and the two will move together to the open position of the bolt.

The backward movement of the bolt is made automatic or operative under the recoil im-



pulse by means of the link 15 and its connections. This link is shown pivoted to a pin 16 in the fixed frame and also pivoted to a pin 17 on an extension of the operating-lever below the pivot of said operating-lever. The impulse of recoil or a backward pressure on the barrel or receiver of the gun sufficient to overcome the pressure of the mainspring causes the receiver to move backward relatively to frame A. The pin or fulcrum 13 moves with the receiver, and as the link 15 holds the lower end of the lever against backward movement the upper end of said lever moves back when the receiver so moves, carrying the bolt back more rapidly than the movement of the receiver to the open position, as in Fig. 2.

The hammer H, pivoted to pin 13 or to a sleeve thereon, is swung back by a cross-piece 19 on the operating-lever. The sear 20 is hung in the receiver in position to retain the hammer in cocked position, said sear being pressed toward the usual notches in the hammer by spring 21. When the receiver moves back, its pin 42 presses or holds down the trigger.

The trigger 22 is pivoted in the fixed frame and does not partake of the backward movement of the hammer and sear. When the sear is back, therefore, it is out of engagement with the trigger.

A safety-catch 23, hung in the frame and pressed against the trigger by spring 24, by its cam action forces the trigger to its engaging position, and in such position the trigger cannot rock the sear to release the hammer, even when the hammer is forward, until the safety-catch has first been pressed so that its front end rocks away from the notch in the trigger.

For automatic repetition of fire a continuous pressure or pull on both the trigger and safety-catch are necessary. For deliberate fire press the safety-catch and pull the trigger a little back to throw its notch out of engagement with the safety-catch, but not enough to release the sear. Then release the safety-catch. Then by pulling the trigger to fire the gun the receiver part recoils, the pin 42 presses down the trigger as it recoils, and the safety-catch catches the trigger to prevent its being again pulled until said catch is again pressed to again release the trigger.

The mainspring 25 (shown in Fig. 1) is a common leaf-spring, with a bearing-piece 26 pressing against the hammer. In Fig. 2 a spiral spring 25<sup>x</sup> is shown, and a bearing-piece 26<sup>x</sup>, extending to the hammer. In either case it will be understood that the spring has its bearing against the fixed frame and presses forward not only against the hammer, but against the receiver through the hammer-pivot. The mainspring is strong enough to carry the receiver and its connected parts forward, so that the breech is closed and the bolt locked by the operating-lever, and the mainspring still retains power enough to give

a blow from the hammer. This forward movement and closing of the breech takes place the instant the recoil ceases to act, and as the movement of opening and closing the breech supplies a new cartridge the firing may take place with great rapidity.

The cartridge-carrier C is hung in the receiver, and has a shoulder c above its pivot, against which shoulder the operating-lever 8 bears as the lever swings backward, thus lifting the carrier from the position of Fig. 1 to that of Fig. 2. The carrier is also shown as having a projection c' below its pivot or fulcrum, which projection comes against the fixed frame nearly at the completion of the rearward movement of the receiver. Either one of these means for lifting the carrier may be used independently of the other, or both may be used.

In guns which use large powder charges or charges of quick-powder it is desirable that the bolt be locked with great firmness. To secure such locking, I have shown a supplementary brace 30, pivoted in a recess in the top of the bolt by a pin 31 and pressed upward by a spring 32, so as to lock against an abutment 33 at the rear upper part of the receiver. The shoulder or abutment 33 is inclined relatively to the end of the brace 30, so that the end of the locking-brace does not come to a square bearing against said shoulder or abutment, but rests against said abutment in such manner that a strong backward pressure on the bolt tends to retire the locking-brace into the recess in the bolt, overcoming the pressure of spring 32. Such a locking-brace would hold but little if the spring 32 were the only means of holding it to place; but the locking-brace 30, as shown, has downwardly-projecting wings having inclined lower surfaces.

The rear part of the firing-pin has side shoulders 6, which extend under these wings on the brace as the firing-pin is driven forward by the blow of the hammer, and thus at the instant the firing-pin gives its blow to the cartridge it acts with a wedge-like action to hold the brace 30 in a solid locked position. The retiring of the firing-pin by the first backward movement of the operating-lever unlocks the locking-brace 30 by the backward movement of these shoulders from under the brace, and a continued backward pressure on the bolt then causes the brace 30 to fold into the bolt and move backward under the abutment 33, as has been explained. The locking of the bolt by a brace which is automatically unlocked by pressure and the holding of said brace firmly by a moving piece at the instant of firing I consider new and important.

The receiver is open at the top over the closed position of the bolt for the ejection of the shell, and the cartridge extractor and ejector are of any usual construction.

The frame A has guide-ribs 40, extending upward inside the lower edges of the flat



faces *b* of the receiver. These guide-ribs 40 have longitudinal slots 41 therein. A pin 42 passes through the lower part of the receiver, extending through these slots. This pin serves to guide the receiver on the frame. The top of the receiver is covered by a hood 44, which is firmly attached to the frame A, as by screw 45, and extends forward far enough to cover the rear portion of the receiver when the receiver is in forward position. This hood holds down the rear part of the receiver and the pin 42 holds the forward part, and is the only piece which need be inserted in assembling the receiver and frame.

The receiver being composed of light or sheet metal struck up or bent to shape is, when so struck up, open at the front. A connecting-piece 46 has side ribs 47, which enter grooves *g* in the front part of the receiver. A pin or screw 49, passed through the sides of the receiver and the connecting-piece, holds the parts firmly together. The connecting-piece has a hole 50, into which the magazine can be inserted from the front.

When the connecting-piece 46 is secured in the receiver, the screw-thread which retains the barrel may be cut partly in the receiver and partly in this piece, as indicated in Fig. 3. The front end of the opening 50 is made conical or flaring. (See Fig. 2.) The magazine-tube M, of thin metal, is cylindrical for most of its length, but the rear end is bent to a slightly oval form, as indicated at 50, Fig. 6, said Fig. 6 showing an end view, a vertical section, and a horizontal section, of said tube. In addition the flattened or longer sides of the oval or elliptical end may have slight depressions 51. The depression at the sides of the magazine-tube are for the purpose of retaining the cartridges in the tube.

When the oval or elliptical end of the magazine-tube is entered into the round hole 50, the thin metal of the tube will be forced to assume a nearly cylindrical form and the cartridges will then be released and be free to move back into the receiver under the impulse of follower M'. The head of the follower, being larger than a cartridge, will still be retained by the flattened sides of the magazine-tube. The carrier or any other usual or suitable stop will be used to prevent the cartridges from feeding back except at the proper time.

The cartridge-magazine tube, of thin metals, may be made so inexpensive that a new one may be applied each time the gun is loaded, if desirable. The rear end of the magazine will be passed back into the hole 50, releasing the cartridges, as explained. The front end of the magazine I prefer to attach to the barrel by means of a spring-clip 60. This clip, as shown in Fig. 10, may be struck out of sheet metal and may have the front sight thereon. The wings 61 are passed around the gun-barrel and secured by a screw or in other suitable manner. The wings 62 are bent to form

sides of a clasp, as shown in Figs. 8 and 9, which clasp extends a little more than half-way around the magazine-tube when said tube is attached to the gun, the wings 60 forming a rest for the front of the tube. The tube may be removed by swinging sidewise, as in dotted lines, Fig. 8.

It will be understood from the claims that I contemplate departures from the precise constructions shown, as by substitution of equivalents, reversal of positions of parts, and other changes within the skill of expert workmen, save in such instances as in my claims I have limited myself to precise construction shown and described.

What I claim is—

1. The receiver, of sheet metal, having flat sides, arched top, and open at the bottom, and the breech-bolt and operating mechanism carried by said receiver, combined with the frame having guide-ribs over which the lower edges of the receiver lap, and means for retaining said parts in contact so that the receiver and connections may slide on the frame, all combined substantially as described.

2. The frame having slotted guide-ribs, and the receiver having an arched top and side plates overlapping said ribs, a retaining-pin passing through said side plates and the slots in the ribs, and the breech-operating mechanism carried by said receiver, all combined substantially as described.

3. The frame having longitudinal guide-ribs provided with slots, and with a hood covering the rear portion of the receiver, combined with the movable receiver and connections, a pin passing through said receiver and guide-ribs, the rear end of said receiver entering said hood, all combined substantially as described.

4. The receiver and the frame having a longitudinal guideway on which said receiver moves, the breech-bolt carried by the receiver, the operating-lever pivoted to the receiver and engaging the breech-bolt to reciprocate the same, said lever connected to and resisted by the frame below the lever-pivot, whereby the longitudinal movement of the receiver causes the opening or closing of the breech-bolt, all combined substantially as described.

5. The receiver and the frame having a longitudinal guideway on which said receiver moves, the operating-lever pivoted in said receiver and engaging the breech-bolt to reciprocate the same, a link connected to said lever and to the frame, and the hammer carried by the receiver, and in position to be pressed back by the backward movement of the operating-lever.

6. The receiver, the frame having a longitudinal guideway for said receiver, the operating-lever, breech-bolt, and hammer carried by said receiver, a link connected to the operating-lever and to the frame, and the main-spring having its bearings against the frame and the hammer, and serving to advance the



receiver by pressure on the hammer, all combined substantially as described.

7. The frame having a guideway, the receiver reciprocating in said guideway, the hammer and sear carried by the receiver, the trigger hung in the frame forward of the sear and engaging the sear only when the sear is in forward position, and the safety-catch automatically engaging the trigger to hold the trigger away from the sear, all combined substantially as described.

8. The frame having a guideway, the receiver reciprocating on said guideway, the hammer and sear carried by said receiver, the trigger hung in the frame in position to engage the sear only when the receiver is in its forward position, and the safety-catch arranged as described for engaging said trigger, all combined substantially as described.

9. The frame having a longitudinal guideway, the receiver reciprocating in said guideway and carrying the hammer and breech-closing mechanism, the trigger hung in the frame and engaged by a part on the receiver to press the trigger out of firing position as the receiver recoils, and the safety-catch for locking said trigger, all combined substantially as described.

10. The combination with the trigger hung in the frame, the safety-catch also hung in the frame and engaging a notch in said trigger, said safety-catch operating to cam the trigger forward by its engagement with the eccentric rear surface of the trigger to thereby by automatically engage the notch in the trigger, and the hammer and sear carried by the reciprocating receiver, all combined substantially as described.

11. The combination of the frame, the reciprocating receiver guided thereon, and the cartridge-carrier pivoted in the receiver, and having a projection at one side of its fulcrum, in position to engage and be operated by an abutment of the frame as the receiver nearly completes its backward movement, substantially as described.

12. The receiver and operating-lever pivoted therein, the frame and guideway on which said receiver reciprocates, the carrier pivoted in the receiver in position to be engaged and lifted by the operating-lever, and the link connected to said lever and to the frame, all combined substantially as described.

13. The breech-bolt and locking-brace piv-

otally connected thereto, the abutment on the receiver against which said brace bears with an inclined bearing, whereby backward pressure on the bolt tends to unlock the brace, and the moving piece engaging and locking said brace firmly by positive engagement at the instant of firing, all combined substantially as described.

14. The breech-bolt and the pivoted brace carried thereby, the abutment on the receiver with which said brace engages with an inclined bearing tending to unlock automatically, and the firing-pin having wedge-pieces engaging said brace and locking the same when the firing-pin is in its forward position, all combined substantially as described.

15. The arched receiver having flat sides, the connecting-piece having tongue-and-groove connection with said sides and means for securing the same together, and the barrel having screw-threaded engagement with said receiver and connecting-piece, all combined substantially as described.

16. The receiver-front having a cylindrical hole therein, and the thin metal tube forming the magazine, having its end compressed sideways to retain cartridges, but of a character to assume the cylindrical form as the magazine is inserted, substantially as described.

17. The combination with the receiver-front having a cylindrical hole with a conical mouth, of the thin metal tube having its mouth distorted, but capable of conforming to the hole in the receiver-front when inserted therein, substantially as described.

18. The combination with the gun-barrel of the spring-clip, having wings surrounding the barrel, and wings forming an open-sided clasp for a magazine, all combined substantially as described.

19. The combination with the gun-barrel of the spring-clip having a front ring portion which surrounds the barrel and is secured thereto, said clip having leaves which form an open-sided spring-clasp, and the magazine-tube entered into said clasp and having its end resting against the ring around the barrel, all combined substantially as described.

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

ANDREW BURGESS.

Witnesses:

CHAS. T. SPARO,  
W. A. BARTLETT.