

No. 715,971.

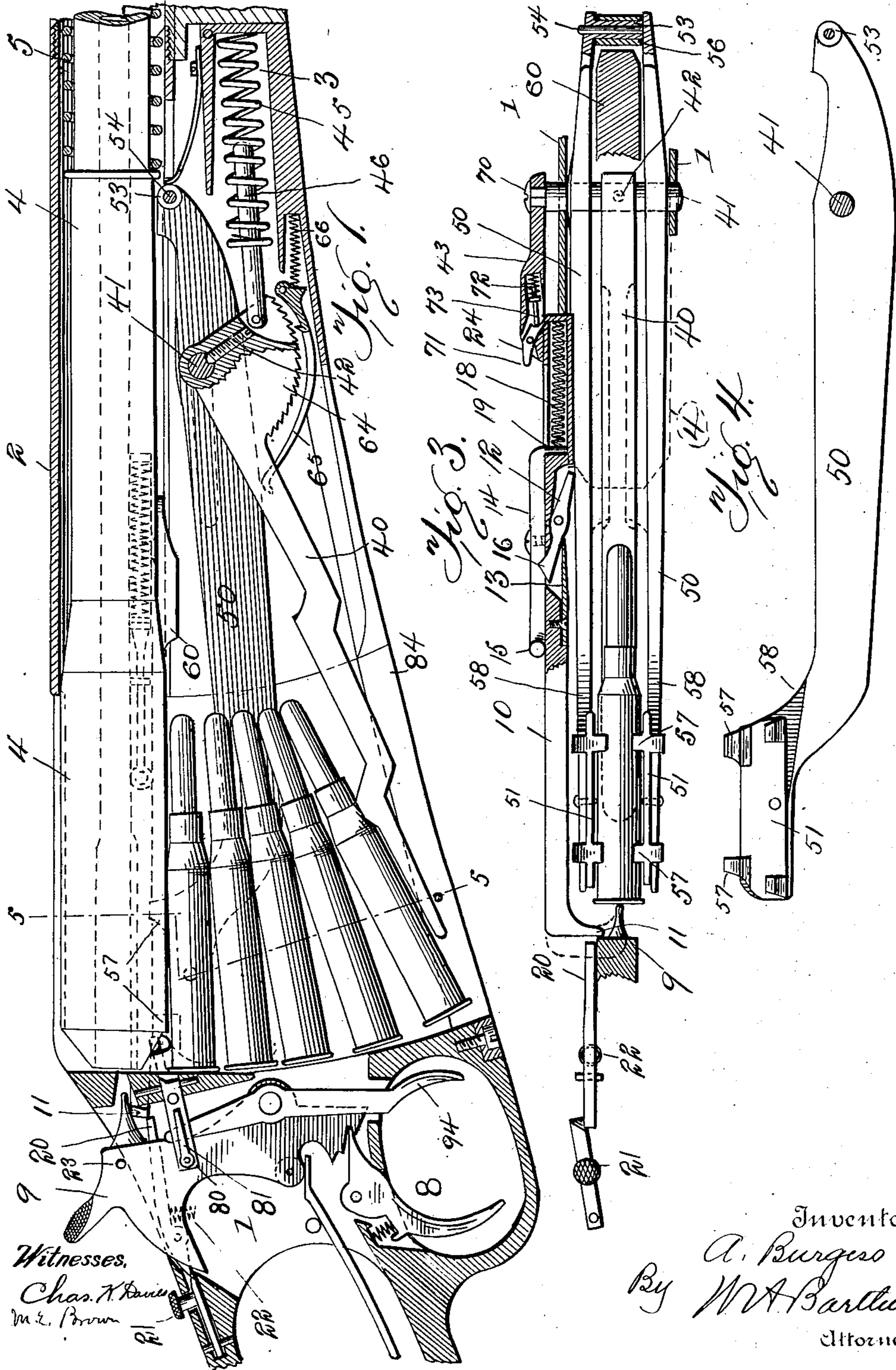
Patented Dec. 16, 1902.

A. BURGESS.
AUTOMATIC GUN.

(Application filed Nov. 6, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses,
Chas. A. Davis
W. L. Brown

Inventor
A. Burgess
By W. A. Bartlett
Attorney

No. 715,971.

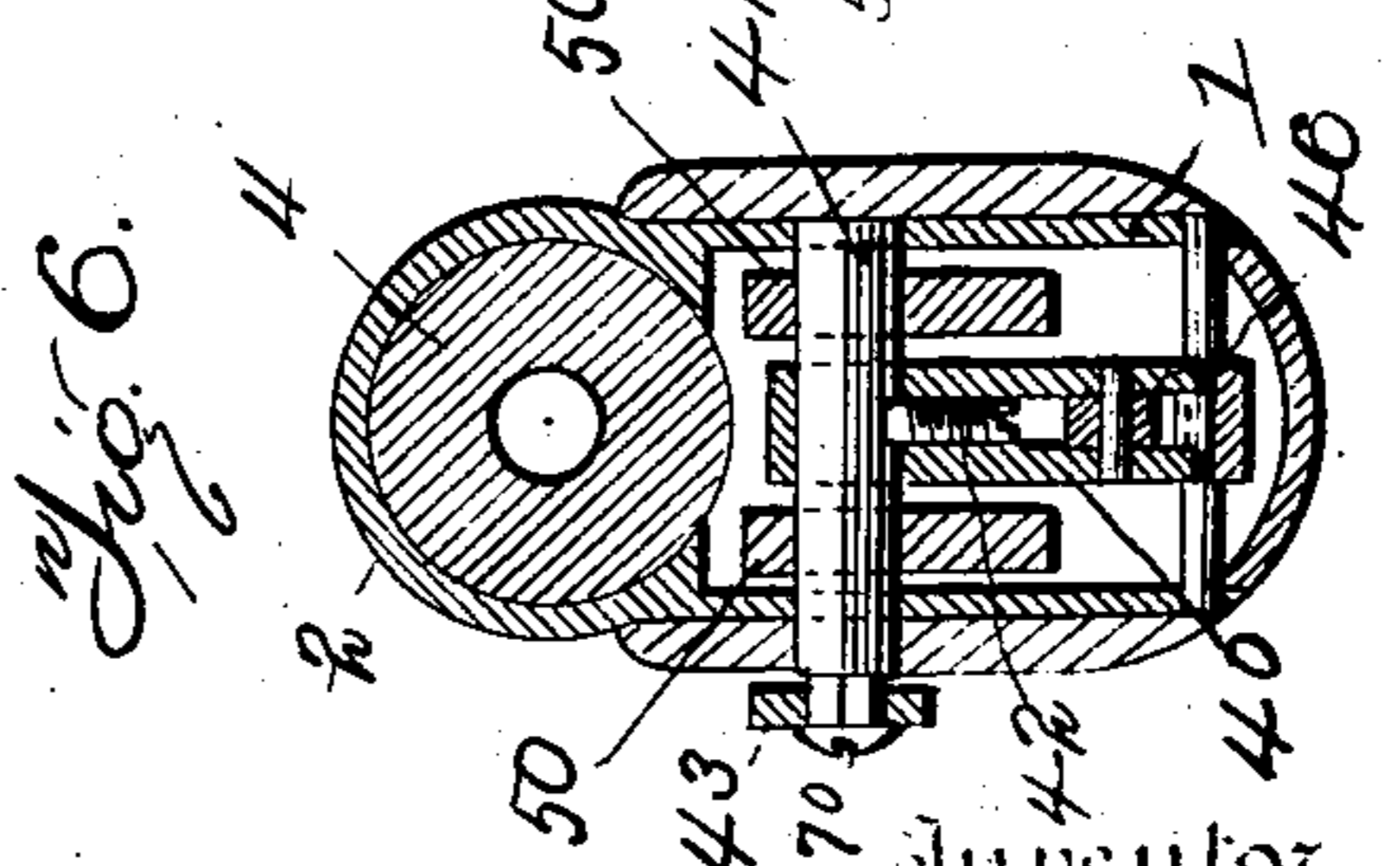
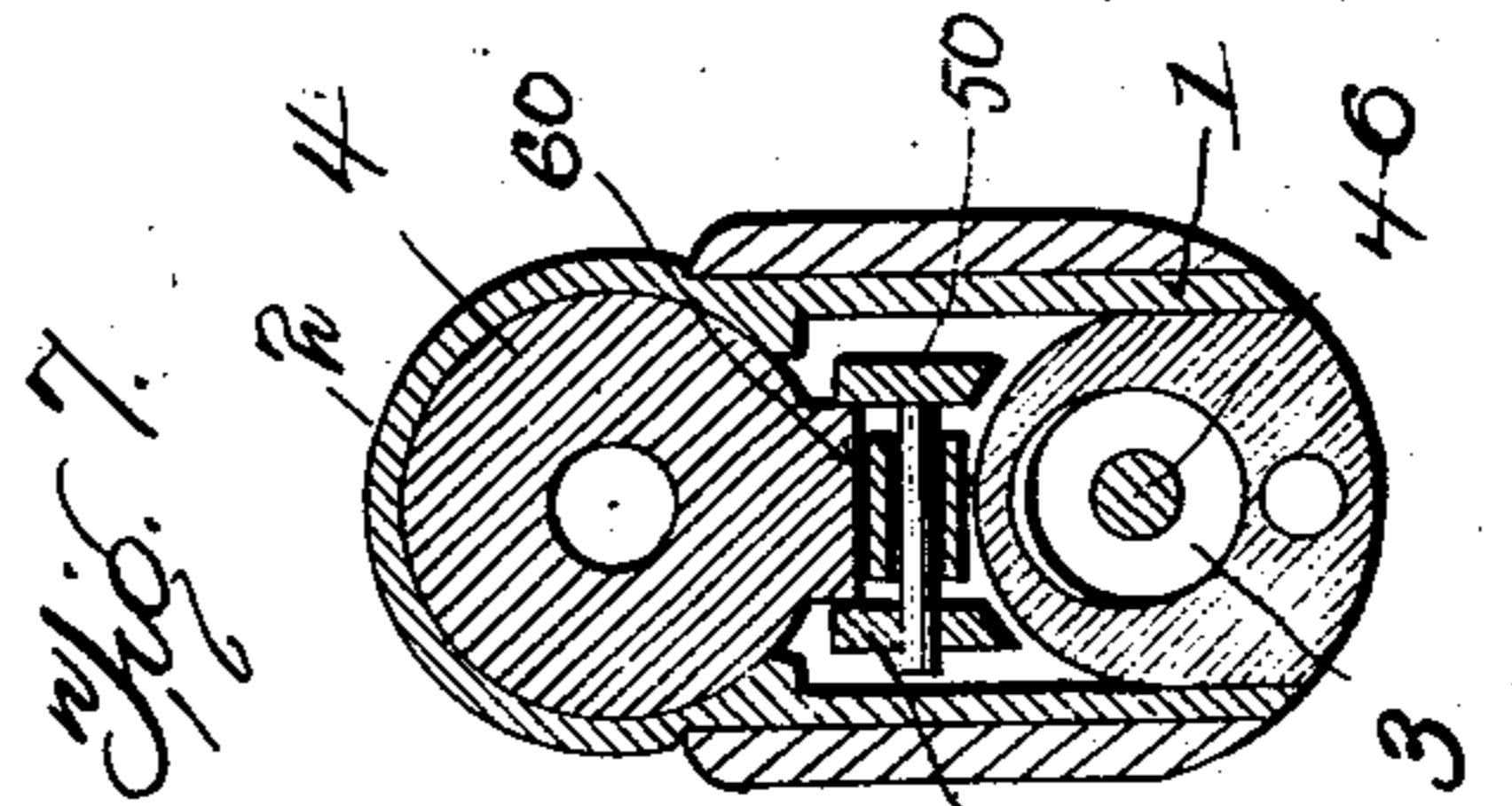
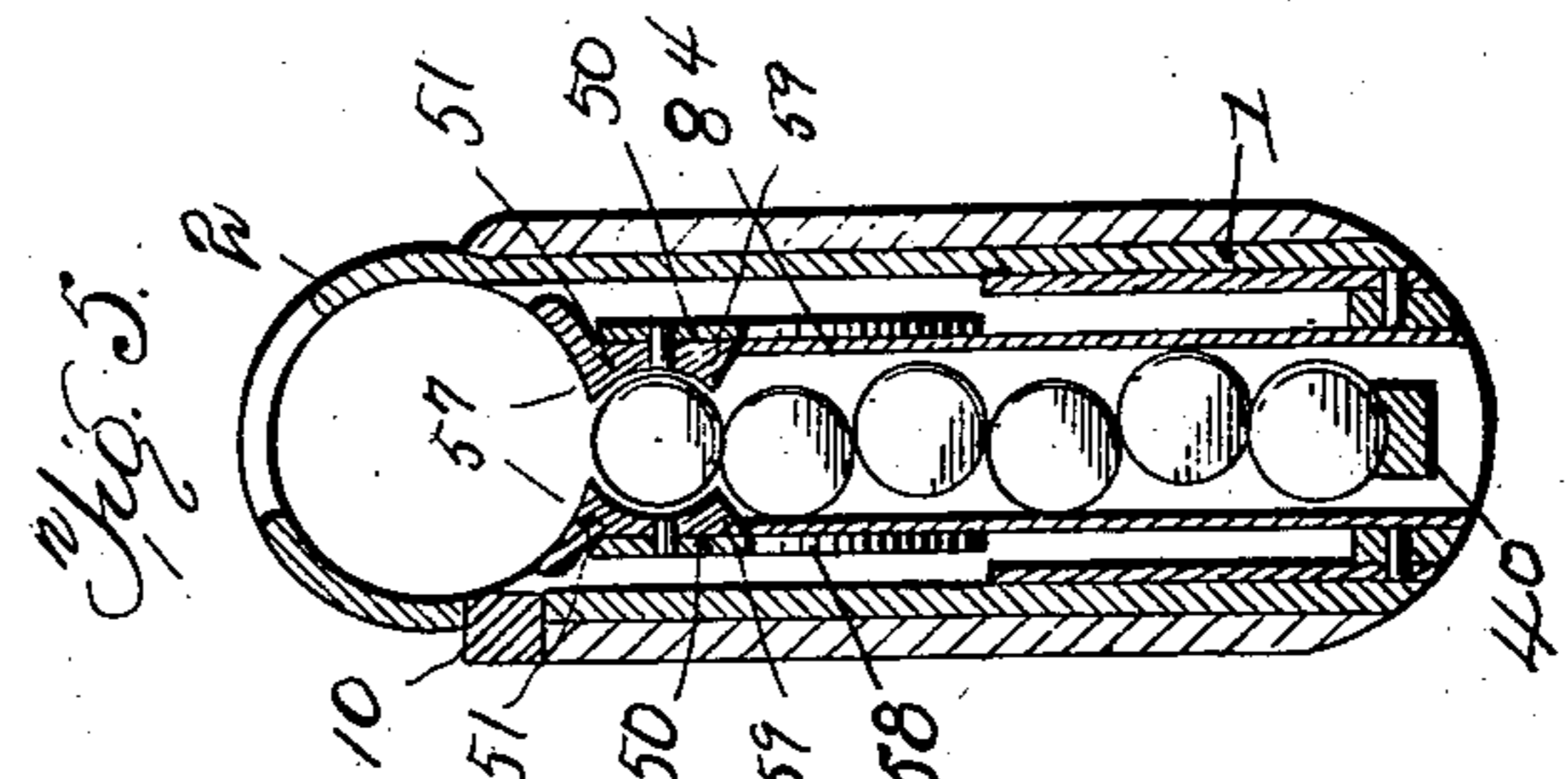
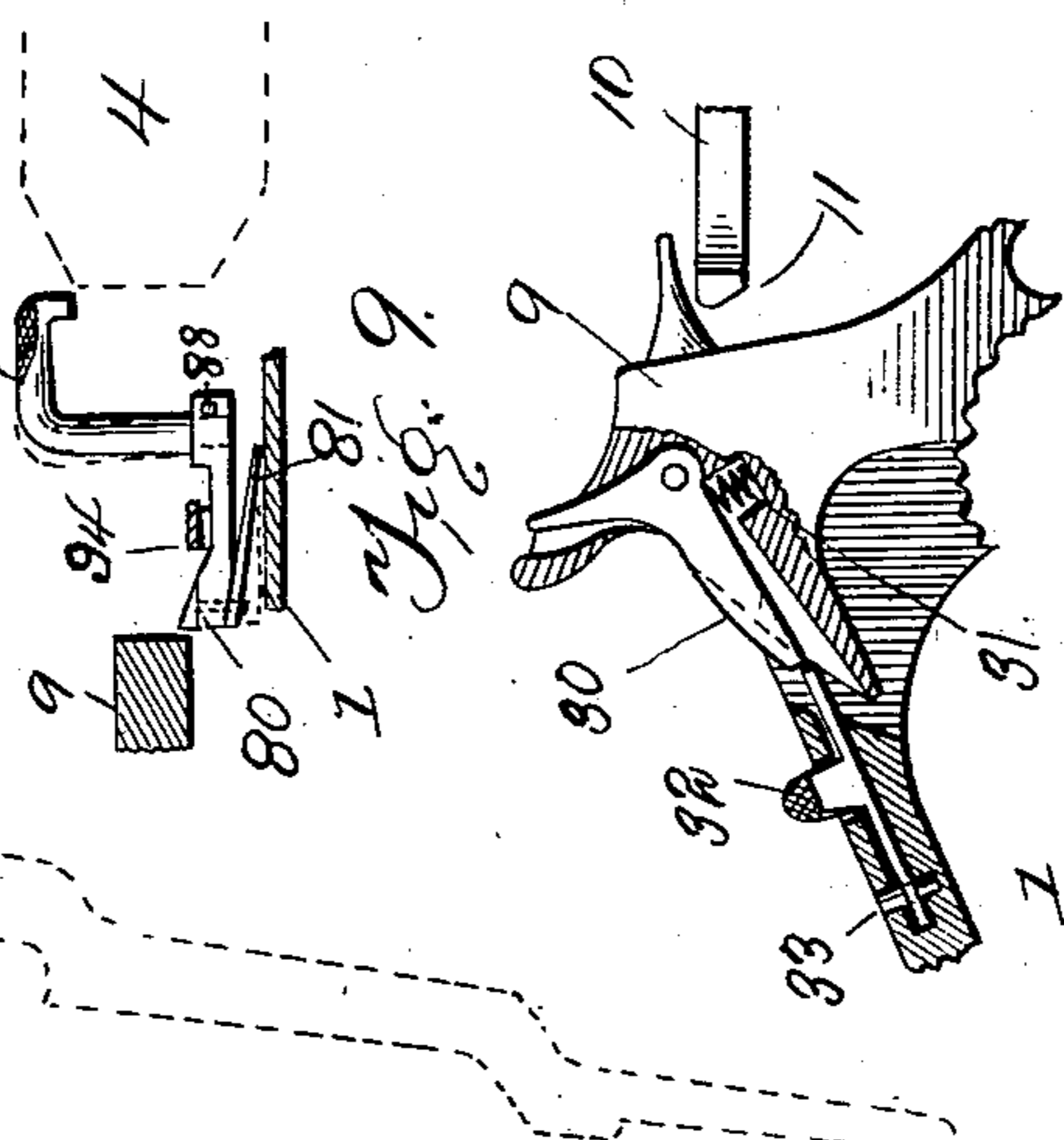
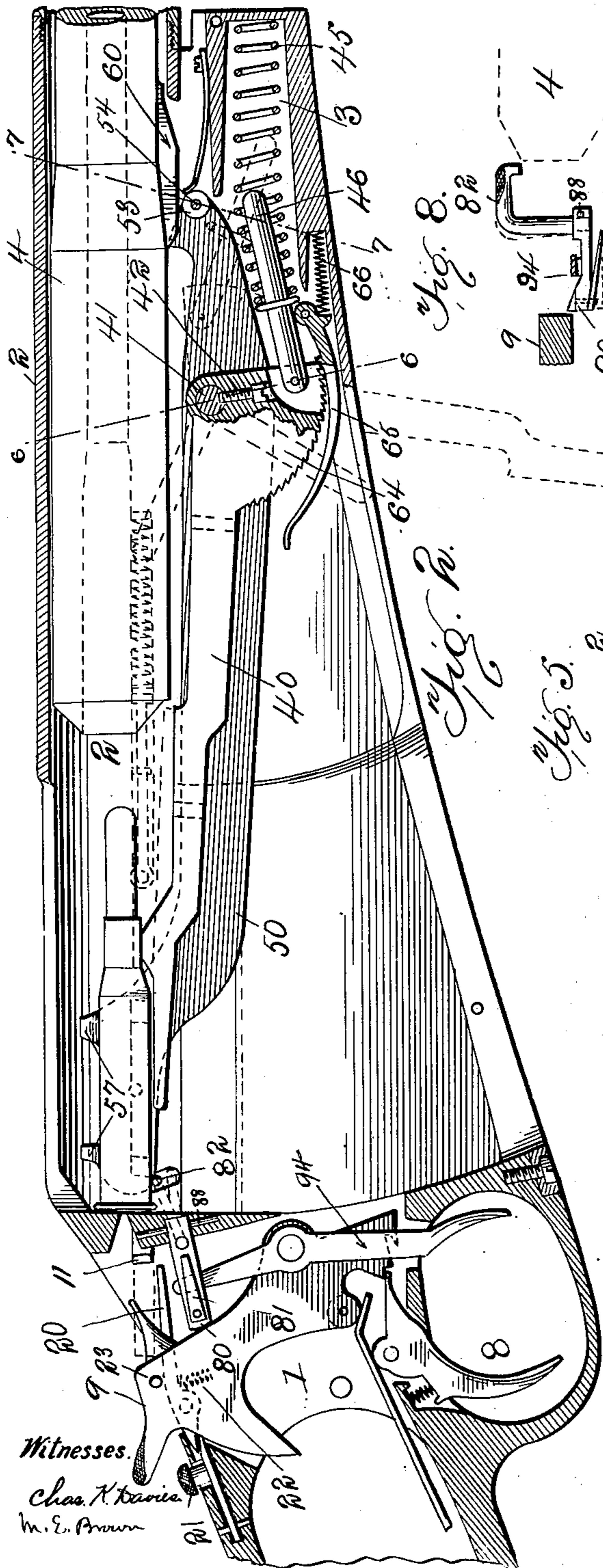
Patented Dec. 16, 1902.

A. BURGESS.
AUTOMATIC GUN.

(Application filed Nov. 6, 1901.)

2 Sheets—Sheet 2.

(No Model.)



Witnesses.
Chas. K. Davis
M. E. Brown

Inventor
A. Burgess
By W. A. Bartlett
Attorney

UNITED STATES PATENT OFFICE.

ANDREW BURGESS, OF OWEGO, NEW YORK.

AUTOMATIC GUN.

SPECIFICATION forming part of Letters Patent No. 715,971, dated December 16, 1902.

Application filed November 6, 1901. Serial No. 81,325. (No model.)

To all whom it may concern:

Be it known that I, ANDREW BURGESS, residing at Owego, in the county of Tioga 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 guns.

The object of the invention is to produce an automatic gun in which a cartridge-feeder operates with a certainty to hold a cartridge in line with the reciprocating barrel; also, to cause a magazine follower and feeder to cooperate and to cause the follower to be held back under certain conditions; also, to improve the mechanism of feeder and follower; also, to produce mechanism by which the cocking of the hammer shall be effected by the closing movement of the barrel and to place the firing mechanism under predetermined control, so that the firing may be rapid or deliberate or rapid for a period and then deliberate, as desirable; also, to improve various details and combinations of mechanisms, as will be explained.

Figure 1 is a central longitudinal vertical section of the working mechanism of the gun, showing some parts in elevation, the magazine being filled, breech closed, and hammer in safety position. Fig. 2 is a similar section showing barrel forward, a single cartridge in the feeder, and the hammer in cocked position. Fig. 3 is a broken horizontal section in a plane just below the barrel. Fig. 4 is a side elevation of one of the feeder bars or jaws. Fig. 5 is a cross-section on the irregular line 5 5, Fig. 1. Fig. 6 is a section on line 6 6, Fig. 2. Fig. 7 is a section on line 7 7, Fig. 2. Fig. 8 is a detail showing the elements of a hammer-detaining device. Fig. 9 is a broken detail of a modified form of hammer-stop.

The gun is of the character in which the cartridges are contained in what is called a "box-magazine." The cartridges are lifted by a spring-pressed magazine-follower. The top cartridge is held by what I have termed a "cartridge-feeder." The barrel moves forward under the impulse of firing a cartridge in the cartridge-chamber, and when forward the feeder lifts the top cartridge of the maga-

zine into line with the bore of the barrel and by the same movement throws out the spent shell, which shell is held against the fixed recoil-abutment 99 by any usual form of extractor.

The numeral 1 indicates the frame of the gun, which has a housing 2 for the barrel and a receptacle 3 for the follower spring and plug. The operative mechanism of the gun is held in the frame in customary manner and need be explained only as supposed novel features make explanation needful. The barrel 4 reciprocates in the housing, as is common. The barrel moves forward in its housing under the impulse of the firing, being mechanically held back (when operated by high-power cartridges) only by the return-spring 5, which operates in usual manner to return the barrel to closed position.

I have found by actual practice that when a gun of this kind fires a cartridge loaded with a large charge of very quick powder the barrel requires no locking mechanism. Apparently the operation is so quick that the inertia of the barrel causes the breech to remain closed until the projectile has moved well forward, and there is no harmful escape of gas at the breech when the barrel does move forward, as it does before the firing operation is fully complete. With light charges or slow powder the effect is different, and the barrel should be locked or detained. Thus there is a seeming paradox that a gun may be safely fired with a large or quick charge in a barrel free to move in the direction of the bullet, while the same may not be safely done with a light or slow charge.

In guns of this class the hammer is usually cocked by the forward movement of the barrel. In the present device the hammer is cocked by the first part of the return movement of the barrel, (under impulse of return-spring 5,) and the cocking of the hammer serves to somewhat retard this return movement, thus giving the cartridge-feeder time to assume its proper position for feeding. A cocking-slide 10 is located in a recess in the frame and moves in line with the barrel under the conditions to be stated. The nose 11 of this slide extends in front of some part of the hammer 9, and so forces the hammer back to or beyond cocked position when the slide

is moved back. A pawl 12 is pivoted in the slide 10, Fig. 3, and a spring 13 presses the front of this pawl into the line of movement of the barrel in closing. Dotted lines in Fig. 3 indicate the outline of the barrel. When the barrel after firing or after being drawn forward by hand returns backward under the impulse of spring 5, the rear end of the barrel engages pawl 12 and moves the pawl and slide 10 backward, thus cocking the hammer. An abutment-piece 14, for convenience made separate and attached to the frame by a screw, has a shoulder 15 in the path of movement of the outer inclined end 16 of the pawl 12 and trips said pawl 12 when the slide has moved far enough to complete the cocking movement. The barrel is thus released and continues its closing movement, the hammer being caught by trigger 8, as usual. The slide 10 is moved forward after it has cocked the hammer by a spring 18, resting in a recess in the slide and bearing against the front end of said recess and against a turned-in end 19 of the abutment-piece 14.

The backward movement of the slide 10 may be prevented in various ways to prevent the closing movement of the barrel for different purposes. Thus a lever 20, (shown in Figs. 1, 2, and 3,) supported on a pivot in the frame and controlled by a set-piece or turn-button 21, can be turned up by its spring 22, as in Fig. 1, to engage and prevent the slide 10 from moving back, and the barrel will thus be held open by its engagement with the pawl on the slide. By shifting the button 21 to the position of Fig. 2 the lever 20 will be locked down and the slide will not be thereby engaged when lever 20 is so placed. The button or catch 21 engages the rear end of lever 20 by an inclined face, and thus overcomes spring 22, which spring tends to throw lever 20 to its position to lock the slide 10. When the hammer is cocked by hand, a pin 23 in the side of the hammer engages the lever 20 to throw it down, and thus release slide 10 and the barrel; but if lever 20 be in its raised position the barrel cannot press back the slide to cock the hammer. Slide 10 can also be held, so as to prevent the barrel from closing, by a fly 24, connected to the cartridge-feeding mechanism, as will be hereinafter explained. The slide 10 may also be locked against backward movement by locking the hammer direct, and thus the barrel may be prevented from moving back to closed position. A dog 30 is pivoted in the thumb-piece of the hammer, and is pressed by spring 31 into engagement with swing-piece 32, when said swing-piece is in position to act as an abutment and stop the hammer from being cocked by a direct backward pressure from slide 10. Swing-piece 32 can be pressed aside, turning on its pivot 33, and the device becomes temporarily inoperative; otherwise the hammer is locked, and of course slide 10 is also locked. When the hammer is cocked by hand, the pressure on the front arm of dog 30, which is in the

thumb-piece, releases dog 30 from the abutment of the swing-piece 32, thus releasing the hammer, slide, and barrel.

The magazine-well is open at top and bottom, as in some other magazines and automatic guns, and can be loaded from a suitable clip or by entering single cartridges from the top by moving the barrel forward and from the bottom by turning the follower down and then (more conveniently) inverting the gun. A removable inner case, as 84, Fig. 5, may be inserted in the magazine to extend partly around in front of the cartridges to prevent them from moving forward. In this case the follower is made thin to traverse the narrowed opening, as shown in dotted lines in Fig. 3. The follower 40 extends to the front of the magazine-well, lying in a slot in the frame, as is common. The follower is in form of a lever and is firmly connected to its pivot 41, as by a set-screw 42. The pivot 41 extends through one side of the frame and has a thumb-lever 43 attached to the projecting end. The follower is pressed upwardly by a spring 45, bearing on a piston 46, which piston is pivoted to the follower-lever below the pivot 41 of said lever. The recess 3, in which spring 45 is contained, permits the side movement of the spring and piston. By pressing downward on the free end of lever 43 the follower can be turned down into the position shown in dotted lines, Fig. 2, when the pivoted end of the piston 46 will be in line with pivot 41 or a little above the same, and the follower will stay open for the insertion of cartridges.

What I have termed the "cartridge-feeder" is pivoted on the same pivot 41 as the carrier; but the feeder-bars are somewhat loose on said pivot, so as to rock thereon. The feeder is composed of two bars 50 50, which are complementary to each other on opposite sides of the magazine, and each bar is provided with a pivoted clamping-piece 51, which clamping-pieces are complementary. The feeder-bars 50 project forward (toward the muzzle) from the pivot 41. One of the bars has a stud 53, and a pin 54 from the other bar projects through such stud, so as to form a parallel connection, but permitting the bars to spread apart or come together slightly at this end. The stud 53 may be surrounded by an antifriction-sleeve 56, if desirable. The lower part of the barrel 4 has a lug 60, which on the forward movement of the barrel enters between the two bars 50 and spreads the front ends of these bars apart, thus causing the rear ends and the clamping-pieces 51 to close firmly on the top cartridge of the magazine. The slightly-loose connection of the bars 50 with pin 41 and their fulcrum contact with the inner walls of the frame permit this pin to act as the pivot for both the vertical and the lateral rocking of bars 50. The same lug 60, having an incline on its lower front surface, engages with sleeve 56, and thus depresses the front ends of the feeder-bars to

lift the cartridge and hold it very firmly while said lug 60 is thus in contact with the front ends of the feeder-bars. The clamps 51 are provided with ears which project above and below the center of the cartridge-shell. The clamps are pivoted to bars 50, and when lifted the top ears 57 come in contact with the arched inner surface of the wall of the receiver, and so swing the clamps on their pivots to present the cartridge inclosed between them in true alinement with the bore of the barrel. The feeder-bars 50 have inclines 58 on their upper faces. When the barrel closes backward over the cartridge, these inclines are struck by the inclined rear end of the barrel, and the feeder is thus forced down and at the same time spread apart at the rear end, the backward movement of the lug 60 permitting the front end of the bars 50 to close toward each other. The lower faces of clamps 51 are beveled or inclined on their inner surfaces, as shown in Fig. 5, and by their engagement with corresponding inclines on the wall of the magazine-case 84 the clamps are held apart while the cartridge from below (held or lifted by the follower) is entered between them. The upper ears 57 of the clamps projecting slightly closer together than the lower lugs 59 will hold the cartridge from being pressed through the clamps when the barrel is part way forward. When the barrel is back, it forms a detent to prevent the rising of the column of cartridges under pressure of the follower. The follower 40 has a toothed segment 64, with pivot 41 as a center. A curved pawl 65, pivoted in the frame below the segment, has a tooth to engage with any one of the teeth on this segment 64 when permitted. The pawl 65 is pressed toward the segment by a spring 66. When the feeder is thrown down, one of its bars engages the offset front arm or pawl 65 (which pawl is somewhat elastic) and forces the pawl away from the segment of the follower, as in Fig. 1, thus leaving the follower free to rise under the influence of its piston; but when the feeder lifts pawl 65 engages a tooth in segment 64, and thus prevents the movement of the follower or any undue pressure therefrom. (See Fig. 2.) The pawl engages the segment in a similar manner, whether there be one or more cartridges on the follower, but of course in a different position on the segment, according as the magazine be more or less full of cartridges. This capacity of the feeder to hold the follower against undue movement or pressure I consider quite new and important. When the cartridges have been exhausted, the follower rises directly in rear of the barrel and locks the barrel against rear movement, (the obstruction of the last cartridge having been removed,) thus leaving the magazine open and ready for the entrance of a clip or cartridges from the top. (See Fig. 2, dotted lines.)

I have heretofore referred to thumb-lever 43, by which the follower may be turned down. This thumb-lever is connected to the projecting end of pivot 41 by a screw 70 or other convenient mechanism, so that the lever may be fixed in any radial direction from the pivot.

In the rear end of lever 43 I pivot a fly 24. This fly is pressed inward by a spring 72, acting on a piston 73. If the lever 43 be set at such radial position relatively to pin 41 that its fly will rise into the line of movement of slide 10, then the fly will engage said slide (in Fig. 3 and dotted lines, Fig. 2) and will lock the slide, and so act as a barrel-stop to prevent the barrel from closing rearward. Thus it may be desirable to fire two or three shots with great rapidity, and then pause to permit smoke to disperse or to see the effect of the shots, and then resume fire more deliberately. The arm or lever 43 can be set to have its fly 24 engage and stop the slide after the required number of shots. This stops the barrel in open position. To resume fire, the fly 24 may be tripped by hand by pressing on point 71. The fly might, of course, engage the barrel instead of the slide.

When the hammer is cocked by the backward movement of slide 10 under influence of the barrel, the hammer is carried slightly beyond the full-cocked position, as determined by engagement of trigger 8 with the full-cock notch. To insure the detention of the hammer until the barrel shall have closed, I place at one side of the hammer a pivoted detent 80, which is pressed in by a spring 81, bearing against the frame. When the hammer 9 has been thrown back, this detent engages the front of the hammer somewhat as does the usual sear or trigger and is kept in front of the hammer until the backwardly-moving barrel, engaging the crank-arm 82 of detent 80, rocks said arm and detent on pivot 88, and thus swings the rear end of said detent away from the front of the hammer; when the trigger catches the hammer if not held out of engagement. A detent-releaser 94 is pivoted to the hammer-pivot and projects down in front of the trigger. By pressing forward on the lower end of this releaser the detent 80 can be turned back out of the way of the hammer. The crank-arm 82 of detent 80 projects through a slot in the frame and is connected to the detent by a swivel connection and may be turned down out of the way of the backwardly-moving barrel, as indicated by dotted lines in the upper portion of Fig. 2. When so turned down, the crank-arm 82 will not be engaged by the backward movement of the barrel, and hence this arm will not press back the detent 80, and thus under the influence of spring 81 the detent will operate to hold the hammer after each discharge and must be released by a forward pressure on releaser 94 before the gun can be fired. This permits firing with deliberation,

as the releaser 94 must be pressed forward before a pull on the trigger can be effective to fire the gun. As the finger lies between the trigger and the releaser, the finger movement necessary to fire the gun is but slight.

It is obvious that the cocking-slide fitted with a striker-point, as shown in Fig. 3, will become the equivalent of the vibrating hammer, reciprocating hammers being well known in the art, and its return-spring being the mainspring in such construction.

I have described the construction of parts in such manner as to be intelligible, as I believe, to a person skilled in this art. It will be understood that the usual constructions and devices are applicable to parts of the gun to which no special reference has been made herein. For example, the mechanism for stopping the follower by the feeder is as applicable to a gun which opens by the breech movement as by the barrel movement, and the same is true of the mechanism for stopping the firing after a predetermined number of shots, the slight mechanical changes necessary to adapt the new features to ordinary constructions being within the knowledge of the skilled mechanic.

What I claim is—

1. In an automatic gun, the combination of a longitudinally-reciprocating barrel, the return-spring acting on the barrel, the hammer, a longitudinally-moving slide interposed between the barrel and hammer, and a pawl in said slide engaging the barrel on its return movement, to cock the hammer.

2. In an automatic gun, a fixed recoil-abutment, a hammer arranged to strike a cartridge in front of said abutment, a barrel moving forward to open the breech for the admission of a cartridge, a spring to close the barrel rearwardly, the hammer, and intermediate mechanism acting on the hammer and barrel to throw the resistance of cocking on the initial closing movement, the barrel having a considerable final closing movement without resistance from the cocking mechanism.

3. In an automatic gun, the barrel and its return-spring, the hammer, a slide interposed between the barrel and hammer, a pawl in the slide engaged by the barrel on its return movement, means for releasing said pawl from its engagement with the barrel, and a spring engaging said slide to move it forward, all combined.

4. The combination of the longitudinally-reciprocating barrel, the hammer, a slide interposed between the barrel and hammer, a pawl in said slide engaged by the barrel in its return movement, and an abutment in the frame by which the pawl is released after cocking the hammer under impulse of the barrel movement.

5. The combination, in an automatic gun, of the fixed breech, the longitudinally-reciprocating barrel, the hammer, a slide inter-

posed between the barrel and hammer, a pawl pivoted in the slide, an abutment on a removable piece 14 by which the pawl is released from engagement with the barrel, a spring acting on the slide to move the same forward when released from the barrel, said removable piece 14 supporting one end of said spring by which the slide is moved.

6. The combination, in an automatic gun, of the frame, the barrel reciprocating longitudinally therein, a slide in the frame, a pawl in the slide which is engaged by the barrel in its backward movement, and an abutment on the frame by which said pawl is thrown out of engagement at the completion of the cocking movement, and a spring to move said slide forward.

7. In an automatic gun, the combination of the barrel, hammer, and a cocking-slide interposed between the barrel and hammer, by which the hammer is cocked by the return or closing movement of the barrel, and means for locking said slide and thereby stopping the return of the barrel, substantially as described.

8. In an automatic gun, the frame, barrel, hammer, and an interposed slide operating on the hammer under impulse of the closing movement of the barrel, a lever in position to lock the slide against backward movement, and a set piece by which said lever may be held in operative or inoperative position, all combined.

9. In an automatic gun, the combination of the barrel, hammer, and interposed slide by which the return barrel movement cocks the hammer, a lever by which the slide may be locked, and a projection on the hammer by which said lever is rocked when the hammer is cocked by hand.

10. In an automatic gun, the barrel, hammer, and interposed slide as described, and a hammer-lock engaging an abutment carried by the frame, whereby the hammer is locked, and the closing movement of the barrel prevented, all combined.

11. In an automatic gun, the reciprocating barrel, the hammer, and interposed slide operating as described to cock the hammer by the return movement of the barrel, and a hammer-lock pivoted to the thumb-piece of the hammer and engaging the frame, thus operating as a barrel-lock, which is released by pressure on the thumb-piece in cocking by hand.

12. In an automatic gun, the combination of a reciprocating barrel, a vertical magazine-well, a pivoted follower extending into the well, and a cartridge-feeder composed of two side bars, pivoted on the pivot of the follower, and actuated by an extension of the barrel to both raise and positively clamp the top cartridge, substantially as described.

13. The cartridge-feeder, composed of side bars pivoted in the frame so as to rock both laterally and vertically, the clamping-pieces

pivoted to said feeder-bars, and the reciprocating barrel having a lug engaging the front ends of the feeder-bars to rock them, and entering between said bars to cause the clamping of the cartridge, all combined.

14. The combination with a magazine-follower and pivoted feeder which grasps the top cartridge, of the barrel provided with an engaging lug which actuates the feeder to positively grasp the top cartridge and hold it firmly.

15. The combination with the pivoted feeder composed of side bars having inclines on their upper faces, of the clamps pivoted to said feeder-bars, and engaging the frame as described, and the reciprocating barrel having inclined rear end to lower said feeder, and a lug to raise and clamp it, substantially as described.

16. The combination of a spring-actuated magazine-follower and a cartridge-feeder controlled by the barrel, and means whereby the feeder controls the lifting movement of said follower, substantially as described.

17. The reciprocating barrel, pivoted magazine-follower, and pivoted feeder for the top cartridge, a toothed segment on the follower, and a locking-pawl controlled by the feeder, and in position to engage said segment to hold the follower.

18. In an automatic gun, the combination of a reciprocating barrel, a cartridge-feeder actuated thereby, a spring-pressed magazine-follower, and automatic means controlled by the barrel whereby the pressure of the follower is prevented when the feeder is lifted.

19. In a magazine-gun, the combination with a reciprocating barrel and a spring-pressed magazine-follower, of means controlled by the barrel and acting on the follower to restrain movement and pressure thereof after the lifting of a single cartridge.

20. In an automatic gun, the magazine and its cartridge-feeding mechanism, a reciprocating barrel, and means controlled by the cartridge-feed mechanism whereby the barrel movement is automatically checked after a predetermined number of cartridges have been fired and before the magazine is exhausted.

21. In an automatic gun, the combination with the magazine and the reciprocating barrel, of an adjustable barrel-stop automatically controlled by the magazine-follower, to stop the firing after a predetermined number

of cartridges have been fired, and before the complete emptying of the magazine.

22. The combination of the magazine, follower, and a swinging arm connected to said follower, and a fly in said arm acting as a firing-check, when a determined number of cartridges has been exhausted, substantially as described.

23. The combination with the hammer and reciprocating barrel, of a pivoted, spring-pressed hammer-detent having a crank-arm with which the barrel engages at the completion of its rear movement, whereby when the hammer is carried beyond full-cocked position and held by said detent, the detent is released by the closing of the barrel.

24. The combination with the hammer and automatic means for moving the same back beyond full-cocked position, of a spring-pressed hammer-detent, a connection to said detent movable into the line of movement of the barrel, so as to be engaged thereby and thus release the detent, and means for throwing said detent out of engaging position.

25. The combination with the hammer, the barrel, and connecting means whereby the closing movement of the barrel carries back the hammer beyond full-cocked position, a spring-pressed hammer-detent, and a lever extending into the reach of the trigger-flinger, whereby said detent may be released, substantially as described.

26. The combination of a reciprocating barrel, and the spring-pressed follower arranged to lift directly behind the barrel and lock the barrel against closing when the last cartridge has been exhausted.

27. In a magazine-gun, the spring-pressed magazine-follower, the feeder, and means controlled by the feeder whereby the follower movement is limited to the feeding of a single cartridge.

28. In an automatic gun, the combination with the breech opening and closing mechanism, of the magazine-follower, and means operated by said follower to stop the firing after a predetermined number of shots, and before the magazine is exhausted.

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

ANDREW BURGESS.

Witnesses:

W. A. BARTLETT,
M. E. BROWN.