

(No Model.)

3 Sheets—Sheet 1.

A. BURGESS.
AUTOMATIC MAGAZINE FIREARM.

No. 589,118.

Patented Aug. 31, 1897.

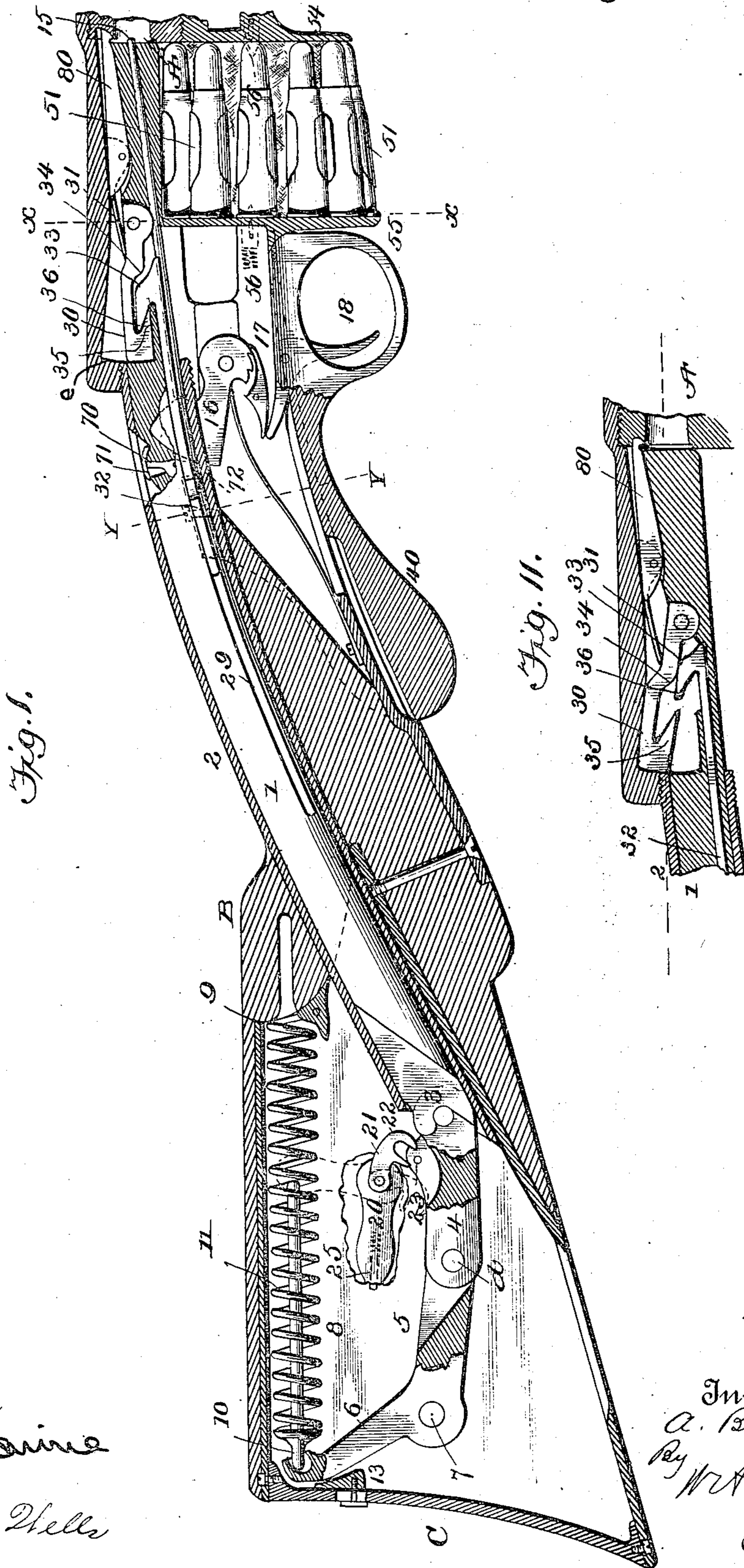


Fig. 1.

Fig. 11.

Witnesses
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(No Model.)

3 Sheets—Sheet 2.

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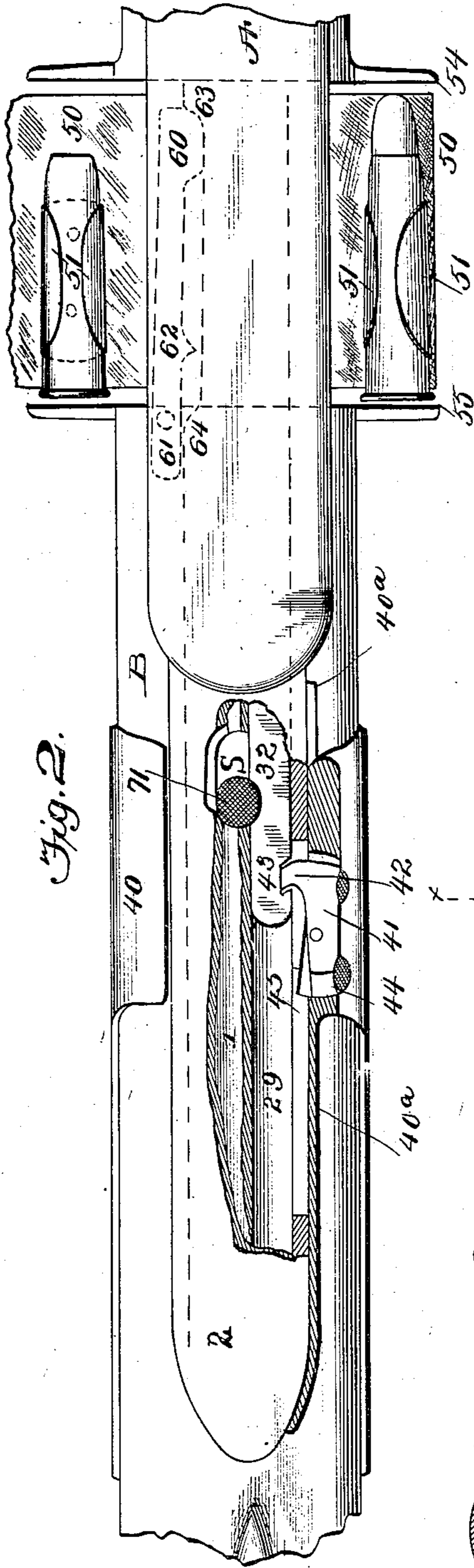


Fig. 2.

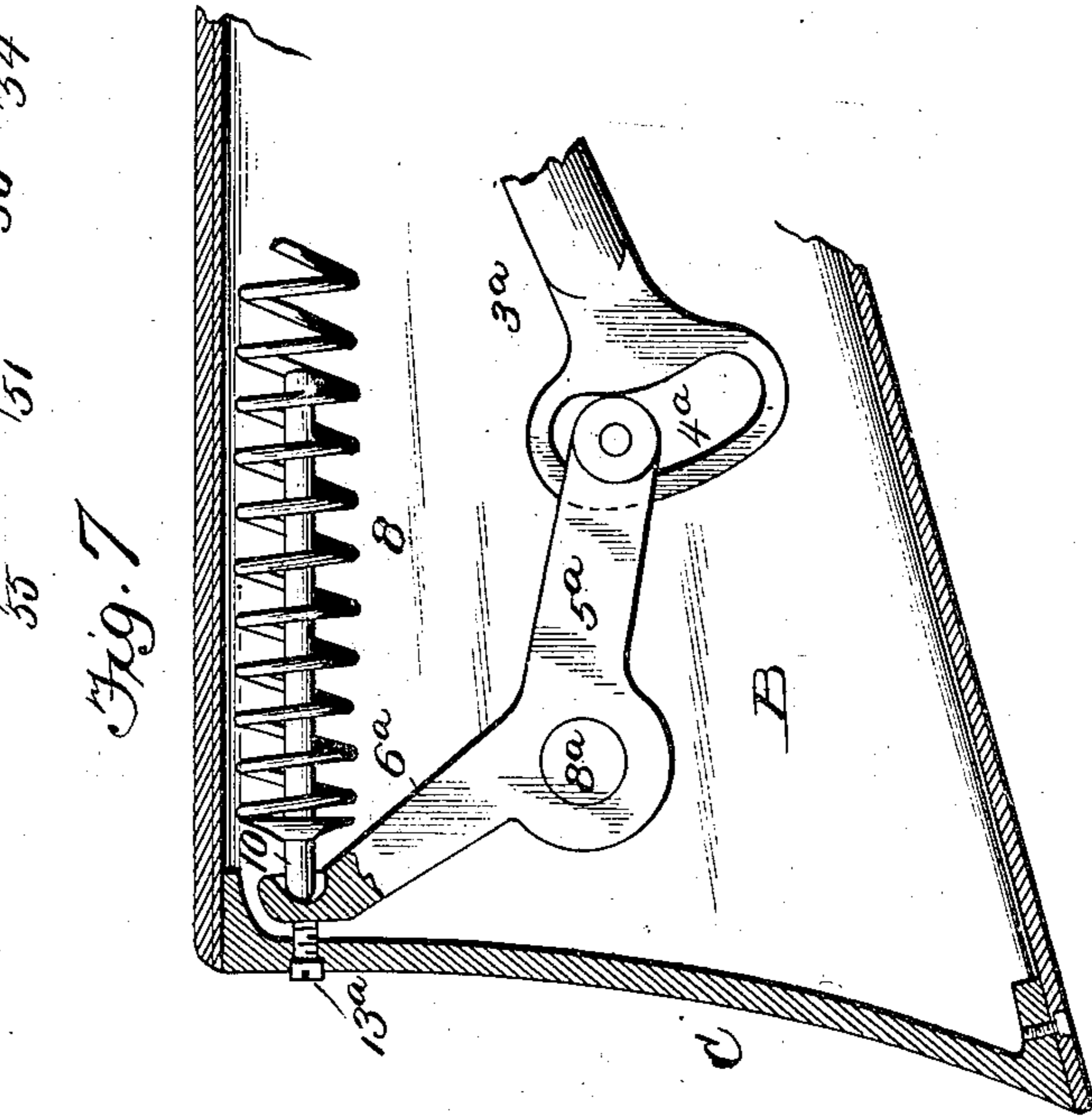


Fig. 7.

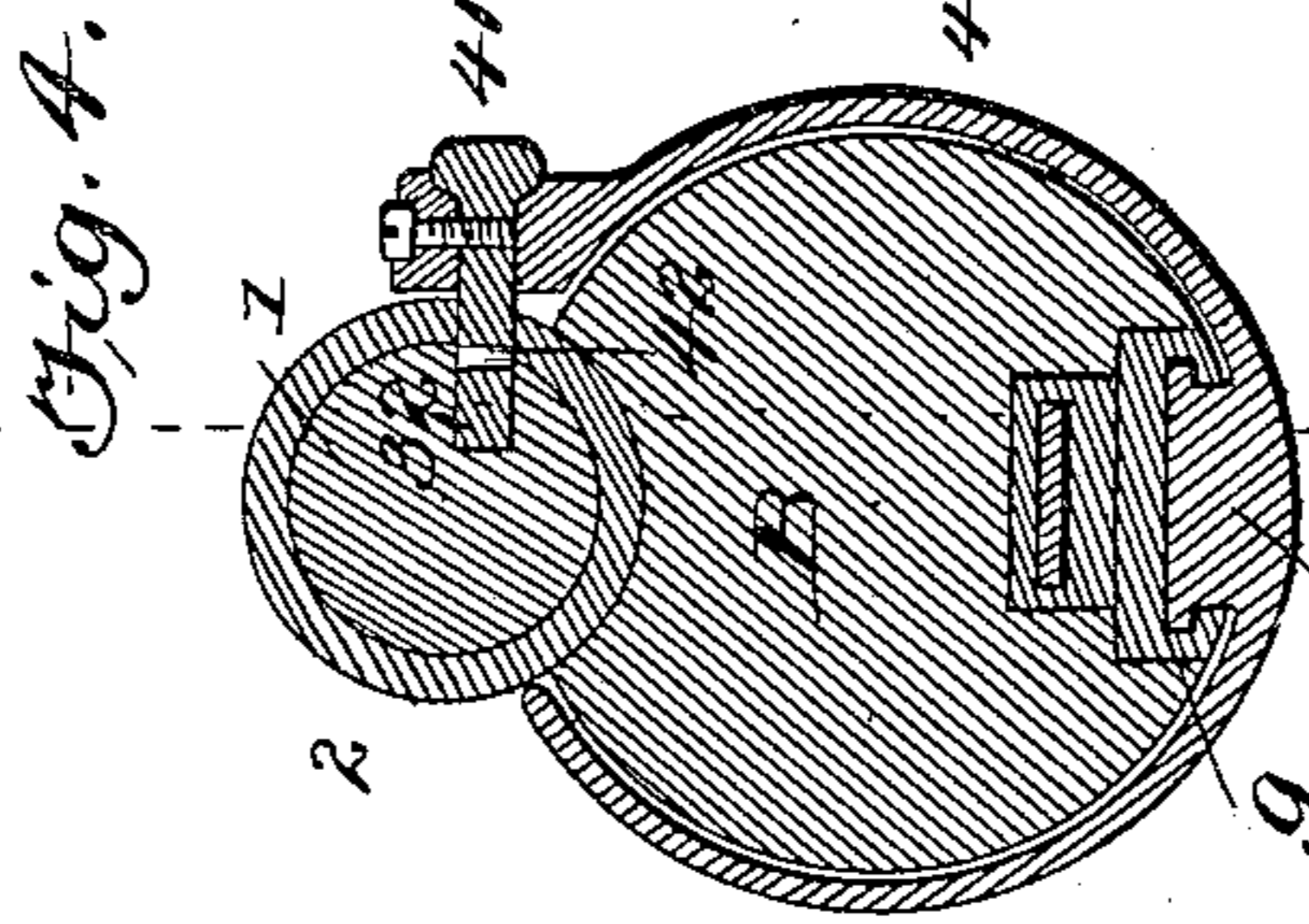


Fig. 4.

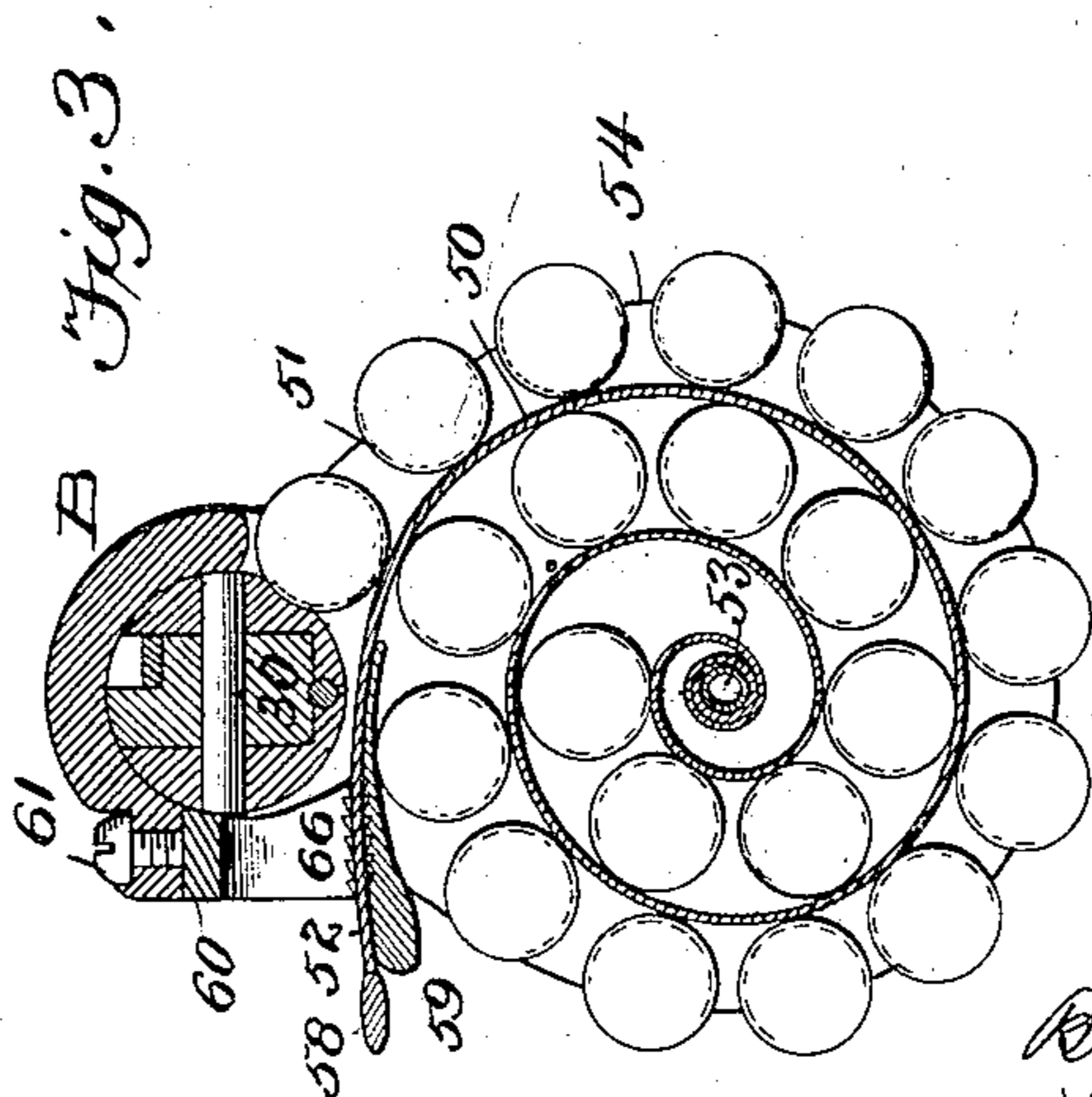


Fig. 3.

Fig. 5.

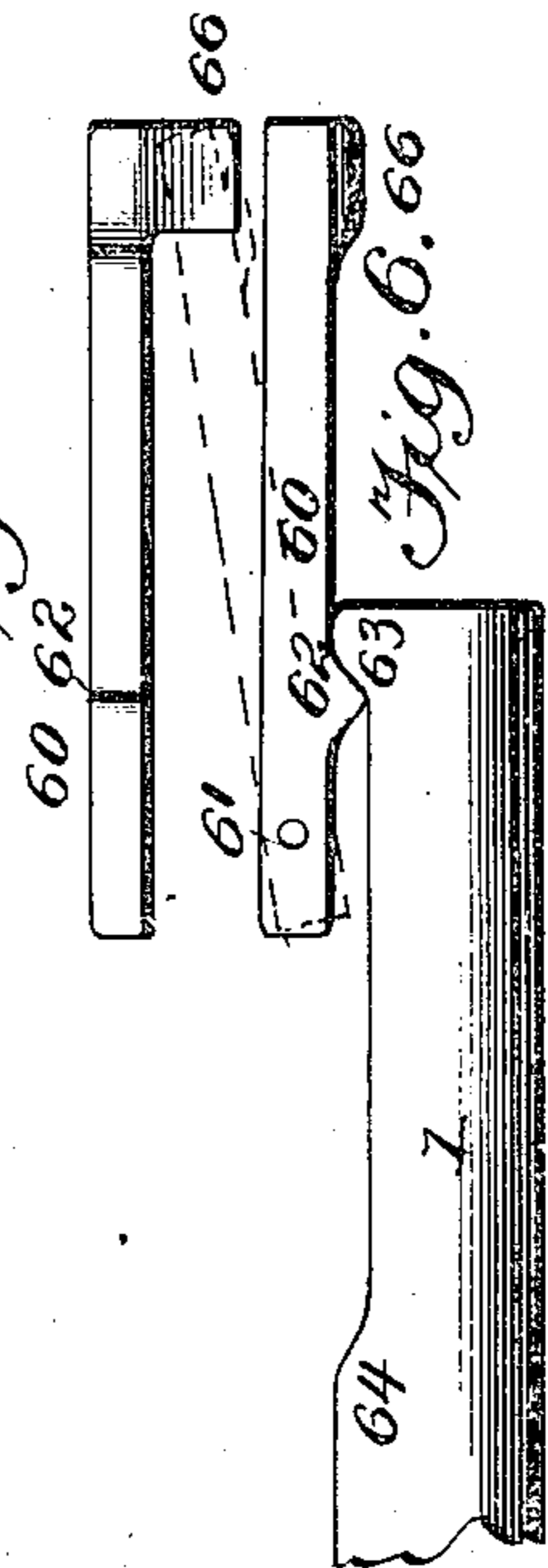


Fig. 6.

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Fig. 8

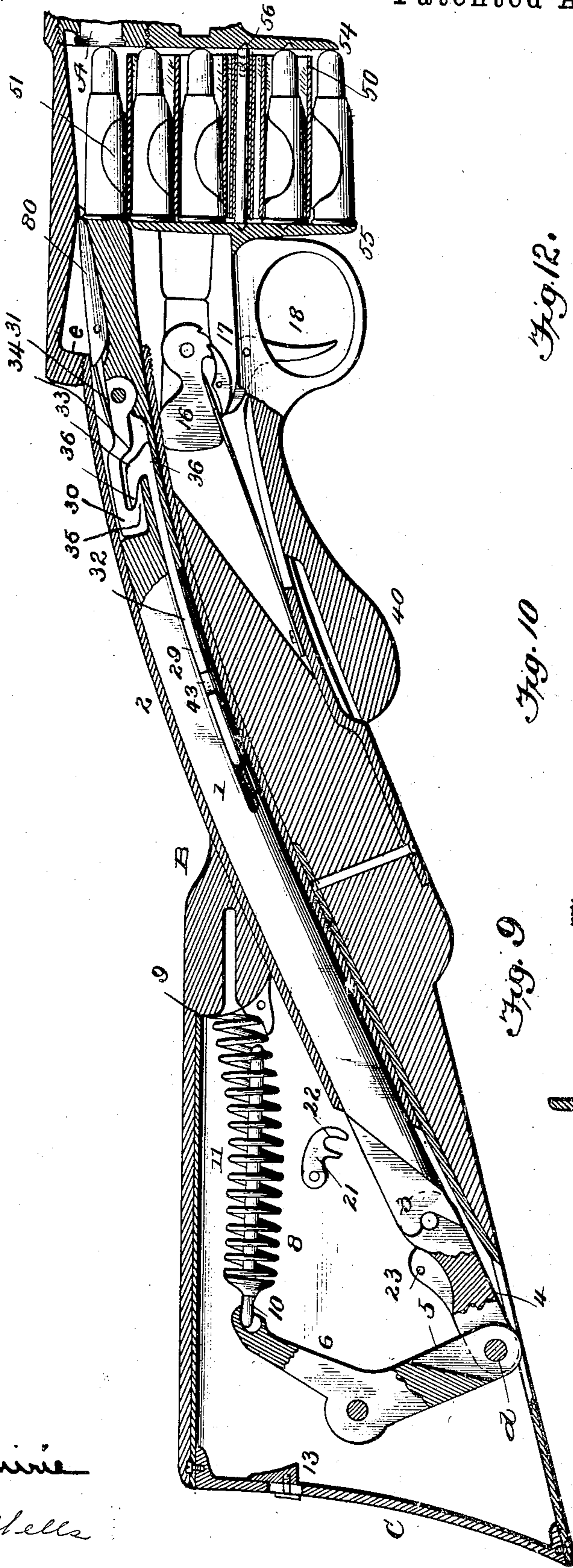


Fig. 12.

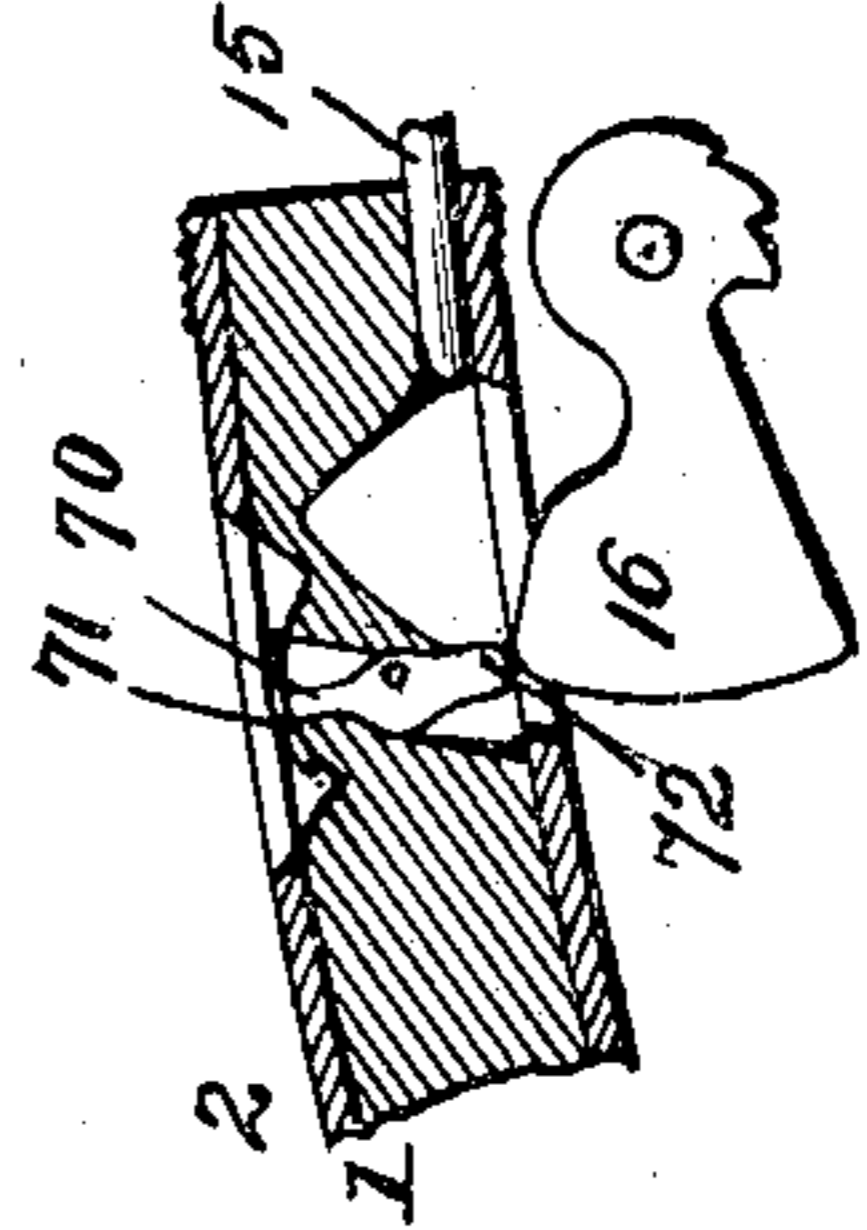


Fig. 10

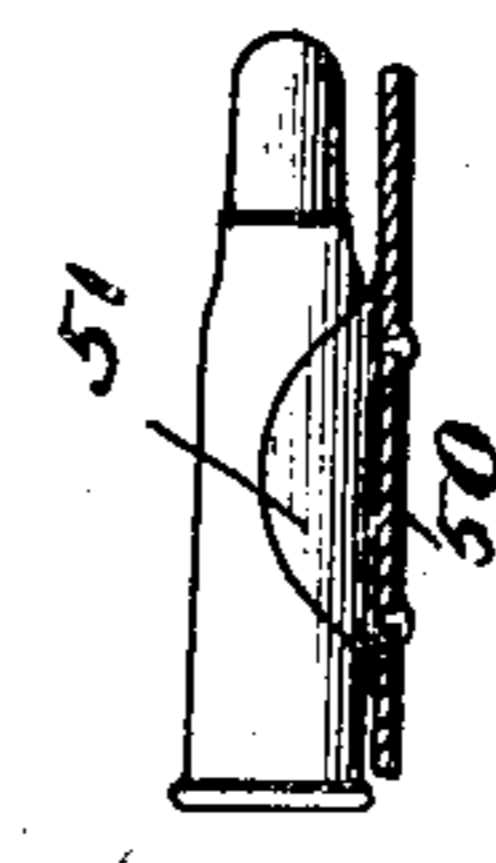
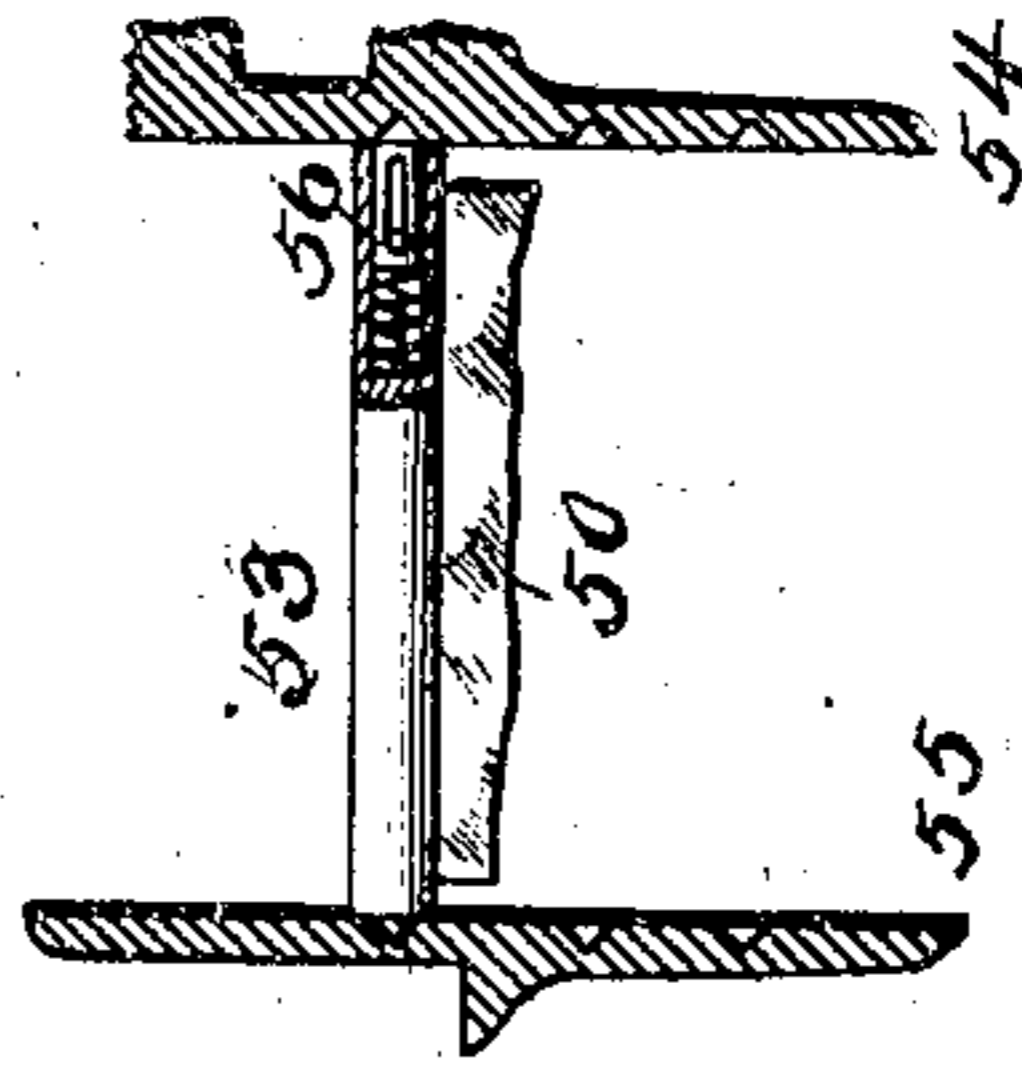


Fig. 9



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UNITED STATES PATENT OFFICE.

ANDREW BURGESS, OF BUFFALO, NEW YORK.

AUTOMATIC MAGAZINE-FIREARM.

SPECIFICATION forming part of Letters Patent No. 589,118, dated August 31, 1897.

Application filed May 20, 1892. Serial No. 433,692. (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 Magazine-Guns, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to magazine-guns.

The object of the invention is to improve the automatic operative mechanism by which the gun after firing is loaded by power stored up from the recoil; also to so construct the gun that it may be made automatic or not, as desirable; also to so construct the automatic gun mechanism that the gun may be fired when the breech is not positively locked, but is held by a resistance proportioned to the shock of recoil; also to so construct the automatically-operating breech that the resistance to its opening may be made variable; also to improve the working connections between the handle and breech mechanism; also to improve the magazine or cartridge-holder and means for feeding cartridges to the gun; also a safety-stop.

Figure 1 is a longitudinal section about centrally of the stock, breech and mechanism, and magazine of a gun, breech closed, about on line *x*, Fig. 4. Fig. 2 is a top plan, partly broken away, of that part of the gun near the bolt. Fig. 3 is a cross-section just in rear of the cartridges in the magazine, as at *xx*, Fig. 1. Fig. 4 is a cross-section about at *yy*, Fig. 1. Fig. 5 is a detail side elevation of the cartridge feed-lever. Fig. 6 is a plan diagram of the front of the bolt and cartridge-lever. Fig. 7 is a modified view of so much of the operating-spring and bolt-connecting mechanism as is necessary to the understanding of my invention. Fig. 8 is a view generally similar to Fig. 1, showing the breech open. Fig. 9 is a broken section of the magazine-shields and detail of belt and means for attaching. Fig. 10 is a cross-section of the magazine-belt with a cartridge thereon. Fig. 11 is a detail section of the bolt and immediate connections in locked position. Fig. 12 is a detail of hammer and safety-catch.

A indicates the barrel, B the stock, and C the butt-plate, bearing the usual relation to each other.

The breech is closed by a reciprocating bolt 1, which is curved in the direction of its length and moves lengthwise in a correspondingly curved way or housing, and is therefore inclosed in the stock or housing in both the open and the closed position of the breech-bolt.

When operating automatically, the breech-bolt is never positively locked, although it has a locking-brace, as will be explained.

The bolt 1 extends well back in the guide-way 2 and has, preferably, a knuckle 3 at its rear end, with which knuckle the end of a toggle-lever engages. Other forms of jointed connection may be used for the purpose of connecting the lever to the bolt.

The toggle-lever shown in Fig. 1 consists of two members—a link 4 and a bell-crank consisting of two arms 5 and 6, pivoted to the supporting-pin 7 in the stock.

The arm 6 of the bell-crank lever is forced back by a strong spring 8, which bears against an abutment 9 in the stock and also against a connecting-piece 10, which bears against the lever. The connecting-piece 10 has a forward extension 11, which enters inside the coiled spring 8.

It is not essential that the details of construction of the spring and its bearing on the lever 6 be precisely as shown. Any equivalent form of spring will effect the same result.

As seen in Fig. 1, the backward pressure of the spring 8 on the lever 6 will force the links 4 and 5, forming the toggle, into almost a straight line. In this position the recoil of the bolt rearwardly (as under the shock of firing) meets a great resistance from the spring and the toggle-joint; but if the backward pressure be sufficient to overcome the spring and flex the joint by which the link 4 and lever 5 are connected the lever-arm 5 soon acts to a greater advantage as respects the lever-arm 6, and the spring 8 is more easily compressed as the bolt moves back in its housing.

The angle of the toggle-joint may be adjusted, as by setting in the abutment-wedge 13 more or less. This wedge bears against the lever 6 in opposition to the spring 8. When light cartridges are used, the wedge 13 may be moved to press in the lever 6 to a greater extent, so as to flex the joint at *d* and permit

the bolt to act on the spring at greater advantage of leverage. Of course other mechanisms than a wedge may be used as an abutment. A screw, which I consider preferable, is shown in Fig. 7.

As soon as pressure is removed from the front of the bolt the spring 8 expands, rocks the bell-crank lever, straightens the toggle-joint at *d*, and forces the bolt to closed position. If there be a cartridge in the proper position, it is carried forward into its chamber in the barrel and is ready for firing when the breech is closed.

Any usual firing mechanism may be used. I have shown a firing-pin 15 in the bolt, a hammer 16, pivoted in the frame, and a sear 17 and trigger 18 in the frame or stock, and all operating in the usual manner. The hammer is cocked by the bolt in its backward movement, as in many other breech-loading guns.

The automatic mechanism for closing the breech may be entirely disconnected, so that no automatic action takes place. The thumb-piece 20, Fig. 1, projects outside the stock, (the stock being broken away in Fig. 1 to show the pin.) A lever 21, rigid with the thumb-piece or its shaft, has a hook 22. When the thumb-piece is turned upward and forward, the hook 22 is turned backward and engages a pin or shoulder 23 on the link 4. The thumb-piece 20 serves as a lever, and when turned forward the parts described carry the link 4 backward until it is disengaged from the open knuckle 3, when the front end of the link 4 is lifted up out of the way of the movement of the bolt.

The piece 20 may have a spring-catch 25 to engage an abutment on the stock and hold it in either of its positions. When the link 4 is disconnected from the bolt, the spring 8 will naturally be compressed to some extent.

When the automatic mechanism for closing the breech is disengaged, as last above described, the breech mechanism may be operated by hand by the following-described means.

The bolt 1 has a locking-brace 30, which is pivotally connected to and moves with the bolt. This brace is pressed down by a spring 31, so that it lies in a recess in the bolt and only locks the bolt when the bolt is closed, and the brace is forced outward into a tangential recess adjacent to the curved bolt-guideway against the pressure of the spring.

The downward curvature of the bolt toward the rear permits the locking-brace to find its bearing directly in rear of the center of the face of the bolt, so that the recoil has no tendency to move the brace up or down and the resistance is in the direct line of pressure.

A slide-piece 32 lies in a curved recess 29 in the bolt and has an inclined face 33 at its front end. The slide-piece 32 may be moved independently of the bolt, and by pressing the slide forward the incline 33 engages an incline 34 on the locking-brace and so turns the brace on its pivot, bringing the swinging end in

front of the abutment *c* in the frame and at the same time compressing the spring 31.

The locking-brace has a hook 35 with an inclined inner face. The slide-piece 32 has a corresponding hook 36. When the slide-piece 32 is drawn toward the butt of the gun, the incline 33 will permit the locking-brace to be thrown down by its spring to unlock the brace. Even if the spring fails to work the point of the hook 36 on the slide, entering above the point of hook 35 on the brace, will force the brace down into its recess in the bolt and thus unlock the bolt. A further backward pull on the slide-piece will draw back the bolt by means of the engagement of the hook on the slide with the hook on the locking-brace. When the brace is in the housing 2, it cannot swing outward from its recess. The slide 32 may be moved longitudinally by connection with the handle 40. The handle 40 is shown in Figs. 1, 2, and 4 as a sleeve nearly surrounding the small of the stock and guided for longitudinal reciprocation on the stock by a tongue *f*, entering a groove *g* in the stock, as usual in guns of this character. Preferably the curve of the small of the stock will correspond to that of the bolt-housing. The handle 40 has a catch 41, which is shown in Fig. 2 pivoted in the handle. This catch has a hook 42 at one end, which can enter a notch 43 in the slide 32. The catch 41 can be turned on its pivot so as to engage the slide or not. When in engagement with the slide, the reciprocation of the handle 40 will open and close the breech, as usual with guns of this character. The catch 41 engages the operating-rod 32 through a slot in the housing of the bolt. Said slot may be covered by the slide 40^a, which is carried by the handle 40.

It is presumable that the breech will only need to be opened by the handle when the automatic mechanism is disconnected, but the breech may be worked by hand when the automatic mechanism is engaged, in which case the hand must overcome the force of the spring 8.

When the catch 41 is turned out of engagement with the slide 32, its broad end 44 is carried into a recess 45 in the stock or housing. This locks the handle, so that it cannot move backward.

To insure the unlocking of the locking-brace when the handle is disengaged from the slide 32, the position in which catch 44 locks the handle should be a little in rear of the extreme forward position of the handle 40, so that the slide 32 will be drawn back to unlock the brace before the hook 42 is disengaged from said slide.

The catch 41 will be held by friction or a suitable fastening in either of its engaging positions.

I have described a particular form of hand operating mechanism to cooperate with the automatic mechanism, but it is apparent that other hand operating mechanism might be

the equivalent for the purpose of such cooperation.

In Fig. 7 a detail is shown in which the bell-crank lever 6^a is hung on the pivot 8^a and is pressed by the spring 8, as has been described. The front arm 5^a of said bell-crank lever 6^a connects directly with the rear end 3^a of the bolt by means of a roller or abutment 4^a, working in a cross-slot or camway in the end of the bolt. The slot may be of such form as to require a greater or less force pressing rearwardly on the bolt extension 3^a to rock the bell-crank lever.

The stock will of course be made in sections or hollow at the breech portion, and the frame and boat housing will be screwed together, as shown, or connected in any convenient and suitable manner.

The magazine is shown in longitudinal section in Fig. 1 and in rear elevation with reference to the cartridges in the section Fig. 3.

The magazine consists of a flexible belt, of metal, fabric, or other suitable material 50, having clasps 51 on one face. These clasps 51 are of suitable thin elastic metal secured to the belt 50 by pins, rivets, or in other suitable manner. The clasps 51 are made to extend slightly more than half-way round the cartridges and are in effect segments of hollow cylinders with the ends rounded or beveled, so that the closed side of the clasp next the belt is the longest.

The magazine-belt may be of any convenient length proportioned to the gun. One end of the belt is stiffened by a spindle 53, and the belt, with the clasps filled with cartridges, wound up on said spindle to form the rolled magazine of cartridges.

The gun has a fixed front shield 54, nearly in the form of a disk, and a fixed rear shield 55 of similar form. These plates or shields form the front and rear walls of the magazine, and the frame is open at the sides between these shields. The cartridges in the magazine are confined against endwise movement by these shields.

In the center of each shield or magazine-plate there is a spring-pressed pin 56, (see Fig. 9,) and when the magazine of cartridges is applied to the gun these spring-pins 56 enter recesses at the ends of the spindle 53. Mechanism might be supplied for withdrawing one of the pins, but this will generally be unnecessary, as the magazine may be pressed sidewise into position between the shields and the spring-pins will enter the rounded recesses in the spindle, and by a sufficient side pressure on the magazine the round-pointed pins will release the same.

The free end of the magazine-belt 50 has a binding-strip or finger-grasp 58, and a length of belt sufficient to extend from one side of the gun to the other is left at the free end, free from cartridge-clasps. The remainder of the belt is supplied with clips or catches at approximately equal distances apart, the

distance being that which the feeder will move the cartridge-belt.

When the rolled magazine is in place in the gun, as in Figs. 1 and 3, the free end of the belt extends across the frame just under the bolt and over a bridge 59, which is parallel with the bolt. This bridge has teeth on its upper face to hold the magazine-belt from moving backward.

A lever 60 (shown in dotted lines, Fig. 2, and in diagram, Fig. 6) is pivoted in the frame on a vertical pivot 61 alongside the bolt. This lever has a projection 62 on the side toward the bolt, which projection inclines in both directions. The bolt has a groove in one side or is flatted away, leaving the projections 63 and 64, one in front and the other in rear of the projection 62 on the feed-lever.

The feed-lever 60 has a foot 66, which is provided with teeth preferably beveled in one direction and having straight faces in the other direction. These teeth bite into the surface of the magazine-belt, and when the free end of the lever is swung out the teeth carry the belt along, but in returning the teeth ride over the belt, like the feeding-foot of a sewing-machine. The elasticity of the lever 60 permits a slight yield for the purpose.

When the bolt 1 is drawn quickly backward from the position in Fig. 2 to that shown in diagram in Fig. 6, the projection 63 on the bolt engaging the incline 62 on the feed-lever swings the lever quickly outward, moving the magazine-belt with it and unwinding the belt from the roll. The rear end of the lever swings in toward the bolt, and on closing the bolt its inclined projection 64 strikes the rear end of the lever and by its wedging action swings the lever back to a position parallel with the bolt, the magazine-belt being held from backward movement by the teeth on the bridge 59.

The side or unwinding movement of the magazine-belt when the breech is open brings a cartridge in front of the bolt. The forward movement of the bolt takes a cartridge from the clasp in front of it and forces the cartridge into the barrel, the clasp being opened by the passage of the flange and bolt as the bolt moves forward to insert the cartridge in the barrel. The elastic clasp is spread or flatted out more or less according to the size of the cartridge-flange or of the bolt. The flange or bolt pressing on the inclined end of the clasp causes the clasp to spread, so that as the bolt moves lengthwise of the clasp the bridge 59 supports the magazine-strip and the cartridge-flange or bolt spreads the clasp and lets the cartridge move forward into the barrel. The reverse movement or opening of the bolt brings the empty shell back into or in line with the clasp on the strip.

As the cartridges are taken from the belt the empty portion of the belt hangs down below the gun. When the magazine-belt is empty, the belt may be removed from the gun

and refilled or replaced by a new magazine coiled ready for use.

Any usual extractor, as 80, may be used. The empty clasps on the magazine-belt offer
5 little resistance to the extraction of the empty shell if made light or flexible. If made strong and elastic enough, the clasp may close round the empty shell as it is extracted, and thus retain the empty shells on the cartridge-belt,
10 in which case no other ejector is needed.

The hammer is cocked by the backward movement of the bolt, as in other guns of this class. When the hammer is full-cocked, it may be prevented from falling by a safety-
15 catch 70, which is pivoted in the bolt with a finger-piece 71, exposed through an opening in the frame, and a cam or other face 72 in position to swing over the hammer and keep it from falling. If the face 72 is a cam or
20 incline, it will press the hammer back a little beyond its full-cocked position. The top of the frame may have a mark, as at S, which will be exposed when the hammer is safely locked, and otherwise will be covered by the
25 finger-piece 71.

The clasping mechanism by which the magazine-belt is held at its inner end, so as to unwind, is capable of considerable modification. The catches by which it is held may
30 be in the ends of the spindle and a number of sockets may be made in the shields or frame, so as to receive the clasps of a large magazine-roll in a lower socket or a small one in an upper socket.

While I have described the new parts of a complete gun and have illustrated but few of the modifications therein which I have devised, it will be understood that I do not in
35 general limit myself to the precise construction illustrated, as I intend the claims to cover many other species in so far as the invention is generic.
40

It will be understood that parts of the gun necessary to make an operative device (not
45 herein described) may be of any usual construction.

The unlocked recoil-operated breech mechanism is specially intended for light powder charges.

50 I claim—

1. In a breech-loading gun, and in combination with the barrel and frame, a curved housing for the breech-bolt, and a curved bolt in said housing having an extension to the
55 rear of the small of the stock and inclosed in the housing and stock in all positions of the breech-bolt, when assembled in the gun.

2. In a magazine-gun of the character described, the frame, barrel, and reciprocating
60 bolt, said frame having a fixed bridge in proximity to the bolt, a flexible magazine-strip and flexible clasps thereon, and means for passing the magazine-strip across the bridge in position for the bolt to pass length-
65 wise of the clasp and move the cartridge

therefrom directly into the barrel, all combined substantially as described.

3. In a magazine-gun, the frame having a fixed bridge as described, the bolt reciprocating in proximity to said bridge, the flexible
70 magazine-strip and means for moving it across said bridge, said strip having flexible clasps with inclined rear ends against which the cartridge-flange or bolt-head acts to expand the clasps when pushed directly forward, all combined and relatively arranged
75 substantially as described.

4. In a recoil-operated breech-loading gun, the barrel and frame, the breech-bolt and a bell-crank lever connected thereto, and a
80 spring bearing on the bell-crank lever to close the breech-bolt, in combination substantially as described.

5. In a recoil-operated breech-loading gun, the frame and barrel, the reciprocating
85 breech-bolt, a bell-crank lever hung in rear of the bolt and connected thereto by a link, and the spring acting on one arm of the bell-crank lever in opposition to the rearward movement of the breech-bolt, all combined
90 substantially as described.

6. In a recoil-operated breech-loading gun, the frame, barrel, and breech-piece, a lever connected to the breech-piece and a spring offering resistance to the movement of the
95 lever to resist the opening of the breech-piece, and an adjustable abutment by which the initial position of the lever may be regulated, all combined substantially as described.

7. In a recoil-operated breech-loading gun, the frame and suitable operative connections, the reciprocating breech-bolt, the bell-crank lever and link connected to said bolt and a
100 spring bearing on said lever against the opening of the bolt, and the movable abutment
105 for regulating the initial position of the arms of the bell-crank lever, all combined substantially as described.

8. The frame and connections, the reciprocating breech-bolt, the lever connected to said
110 bolt to resist the rearward movement thereof, the spring bearing on the lever, and means for disengaging the lever and breech-bolt, in combination substantially as described.

9. The frame and connections, the reciprocating breech-bolt and bell-crank lever connected thereto, the spring bearing on said
115 lever, and a detaching-piece extending outside the frame and in position to force the lever connections out of operative engagement
120 with the bolt, all in combination.

10. The frame and operative connections, the reciprocating bolt, bell-crank lever and spring, the link connecting the bell-crank lever and spring by a knuckle-bearing, and
125 the handle suitably supported and having a hook in position to lift the link from engagement with the bolt as the handle is moved, all combined substantially as described.

11. The combination with the frame, 130

breech-bolt, and operative connections, of the recoil-operated devices for opening and closing the breech, and a hand-operated breech-controlling mechanism, capable of connection
5 to or disconnection from the breech-closing piece, all combined.

12. In a gun, the barrel, frame, and reciprocating breech-piece, the recoil-operated mechanism substantially as described by
10 which the breech may be opened and closed, the hand mechanism outside the stock for operating the breech-piece, and means extending outside the stock for disengaging the hand mechanism from the breech-piece, all
15 combined.

13. The frame and operative connections, the breech-piece reciprocating about lengthwise of the frame in opening and closing, the handle supported on the frame to reciprocate
20 about lengthwise thereof, and the catch connected to the handle, and movable into position to engage with the breech-moving mechanism while unlocking the handle or to release said mechanism when locking the handle, all in combination.

14. The frame, bolt, and operative connections, the locking-brace in the bolt provided with a hook having inclined face, the slide-piece having a hook in position to engage the
30 hook of the locking-brace, and the handle on the frame having a catch in position to engage with the slide or to be disengaged therefrom, all in combination.

15. The frame, bolt, and operative connections, the locking-brace engaging the bolt, and the spring acting normally to unlock said
35 brace, combined with an operating-handle and mechanism in position to engage the brace and overcome the spring when desirable, all combined substantially as described.

16. An open-sided gun-frame, suitable breech and operating mechanism carried by said frame, and a cartridge-magazine consisting of a flexible strip wound on a spindle,
45 and insertible into said frame in position for the exterior cartridge on the strip to be engaged by the breech-piece, and a spring-catch for holding said magazine-strip in place, all combined substantially as described.

17. In a magazine-gun, the combination with the frame and longitudinally-reciprocating breech-bolt, of the flexible belt and means for moving the same, said belt having
50 flexible clasps with the rear ends inclined to such extent that the cartridge-flanges can be

forced directly forward, thus flexing and expanding the clasps, all combined substantially as described.

18. The shoulder-gun having a magazine-receptacle in its frame, open at both sides,
60 and in rear and partly in line with the barrel, a coiled magazine of flexible material having clasps for the attachment of cartridges, and means for retaining said coiled magazine in said receptacle, and a vibrating piece
65 operated by the breech mechanism to uncoil the flexible magazine, by the operation of the breech-piece, all combined substantially as described.

19. The flexible magazine-belt having cartridge-clasps, the bridge having teeth over which said belt passes, the feed-lever having
70 teeth engaging the opposite face of the magazine-belt, and the bolt operating on said lever to swing it as the bolt opens, combined
75 with the frame and operative connections substantially as described.

20. The combination of the frame and operative connections, the flexible magazine-belt, the lever pivoted on a vertical pivot and having
80 teeth engaging said belt, said lever having a projection at the side toward the bolt, and the bolt having side projections at front and rear of the projection on the lever, to engage
85 said lever, substantially as described.

21. The frame and operative connections, the hammer hung in the frame, the bolt reciprocating over the hammer to cock the same
90 by its backward movement, and the safety-catch lever pivoted in the bolt, having an operating-piece in line with an opening in the housing when the bolt is closed, and a surface at its lower part which may be turned
95 over the hammer in its cocked position, all combined substantially as described.

22. The frame having a curved boltway and recess tangential thereto, the curved bolt, and the locking-brace extending tangentially
100 to the body of the bolt, and having its locking-face when in locked position directly in rear of the face of the bolt and at one side of the body thereof, all combined in a gun, substantially as described.

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

ANDREW BURGESS.

Witnesses:

W. A. BARTLETT,
D. M. BARTLETT.