

No. 696,294.

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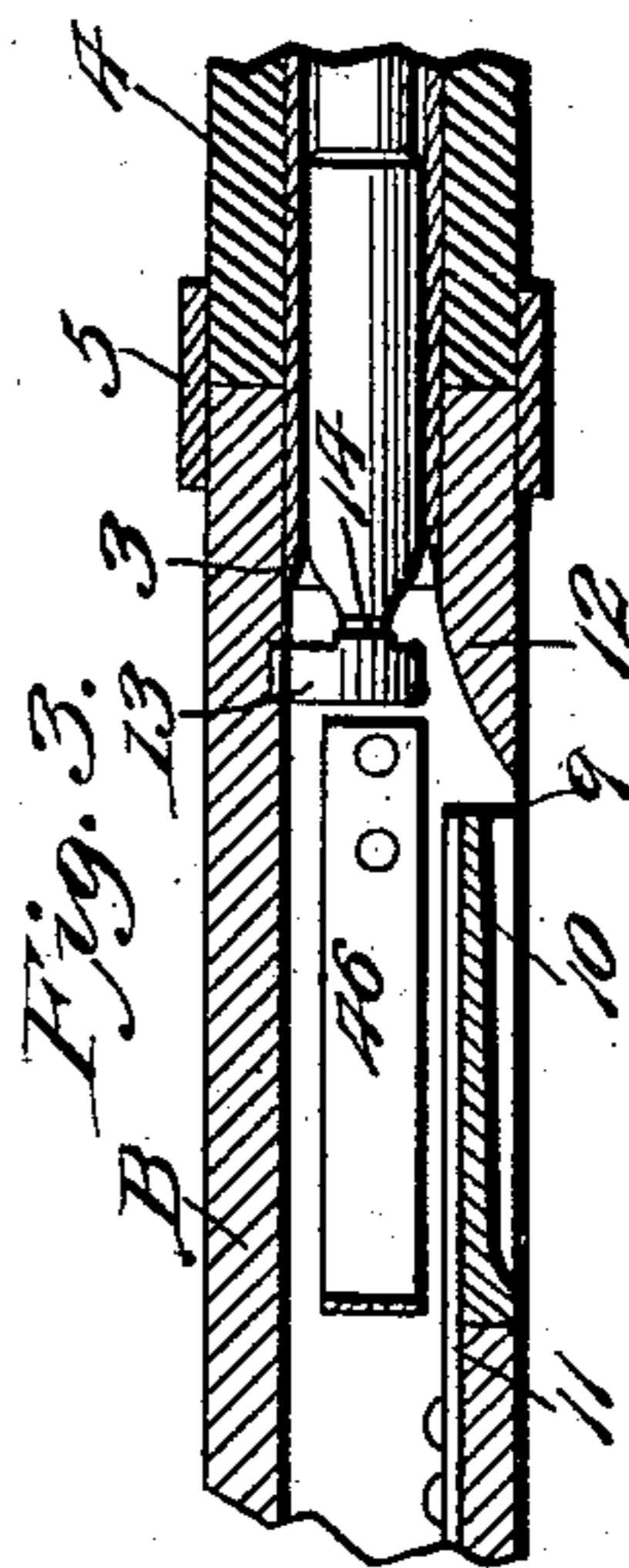
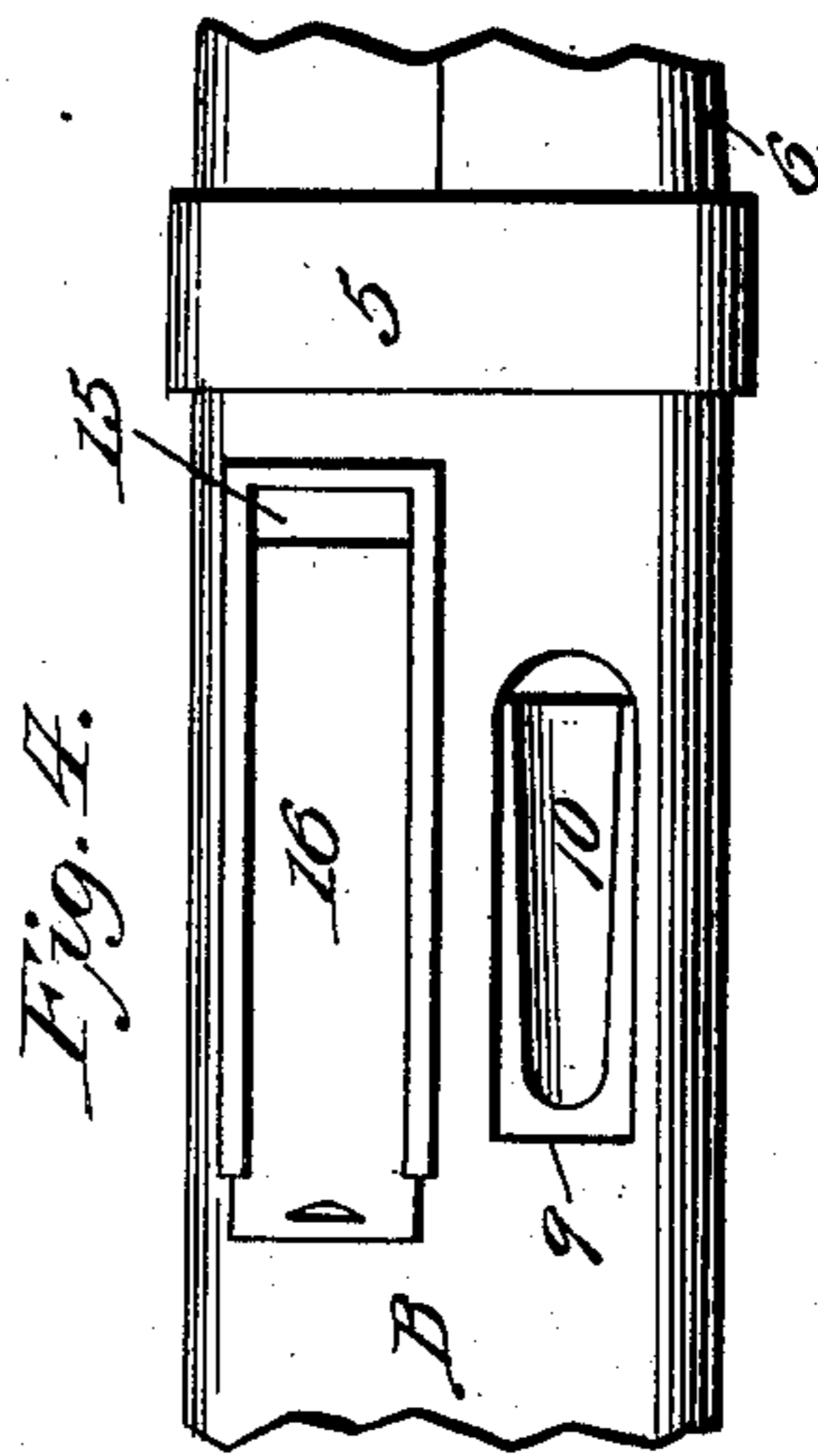
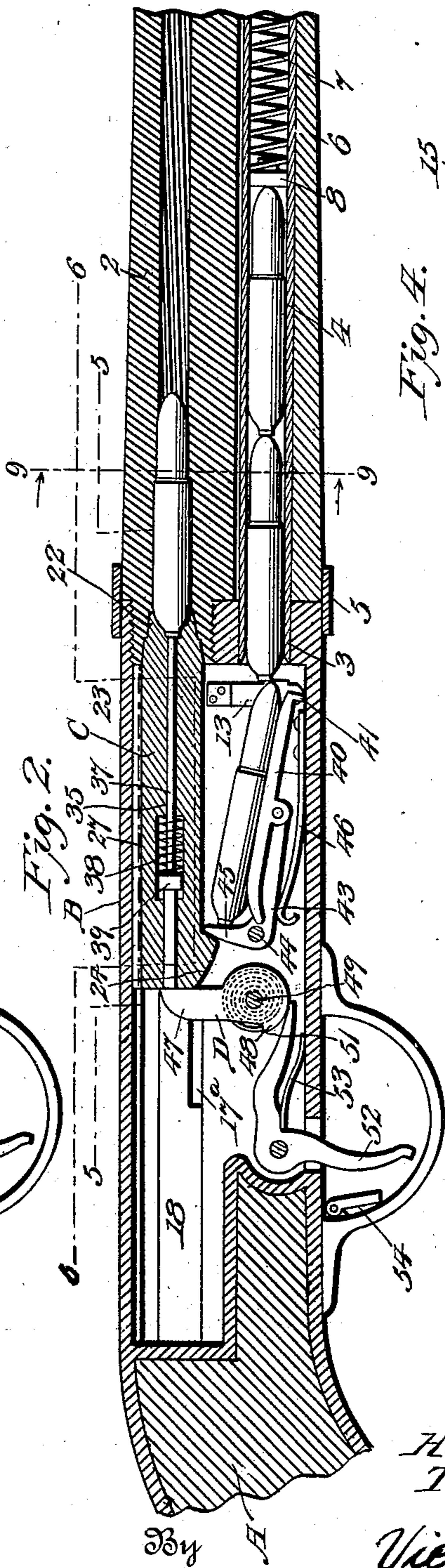
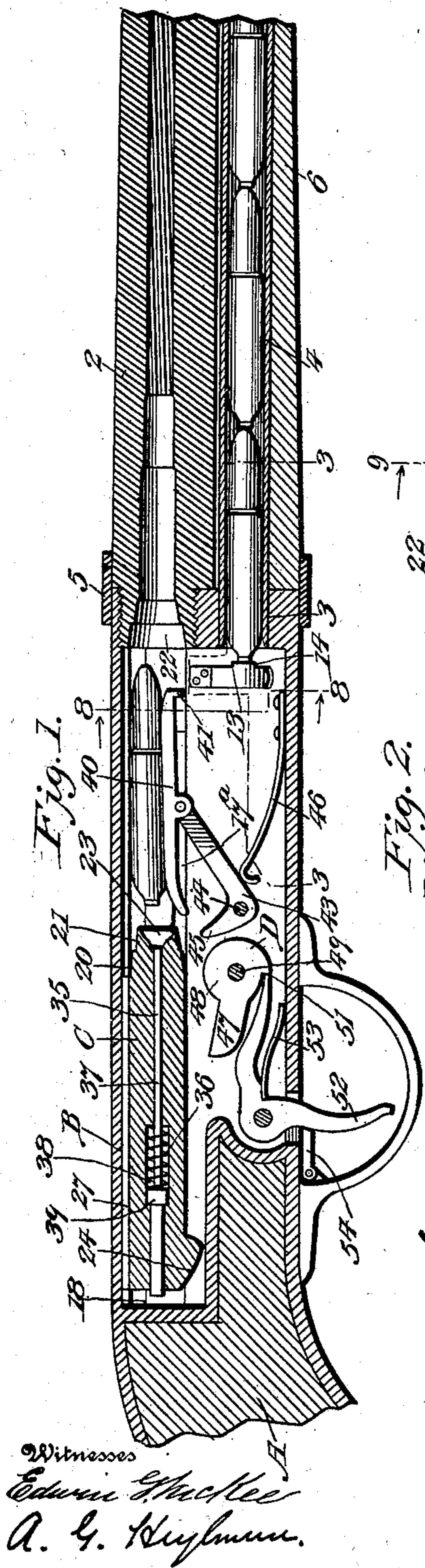
H. ANGELL & T. BERNTSON.

FIREARM.

(Application filed Oct. 26, 1901.)

(No Model.)

3 Sheets—Sheet 1.



Inventors  
Hans Angell and  
Thomas Berntson

Victor J. Evans.

Attorney.

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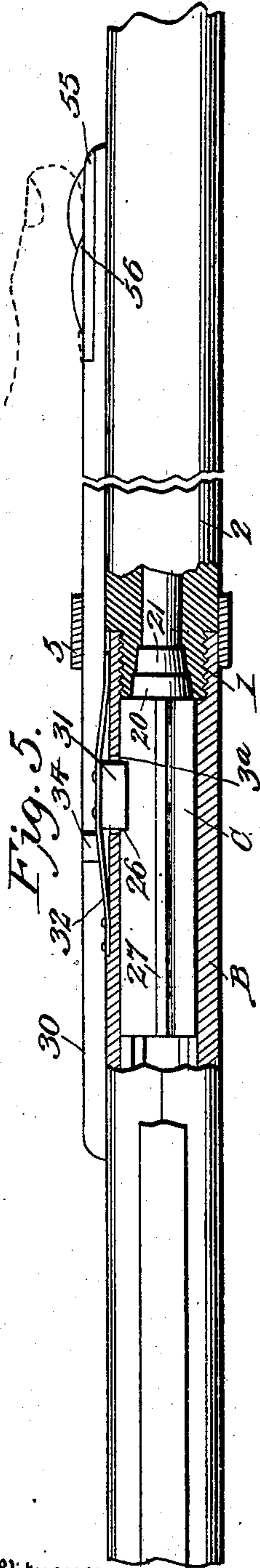
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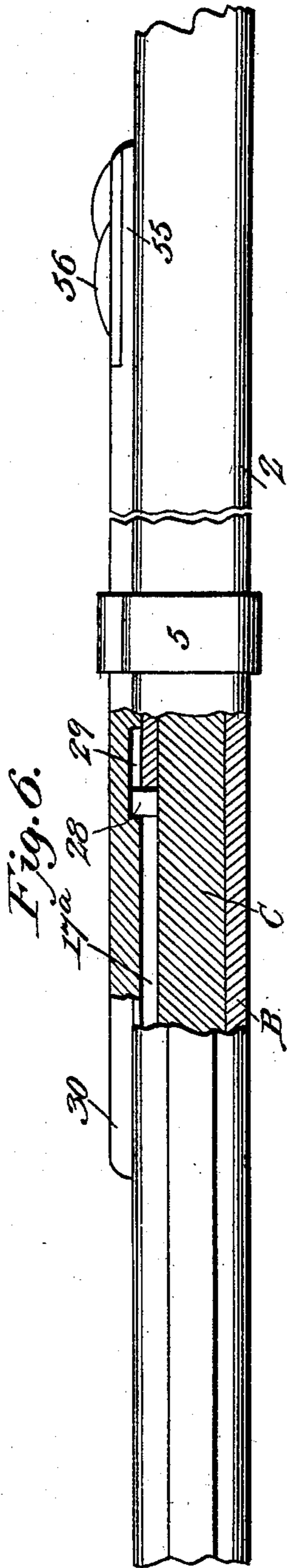
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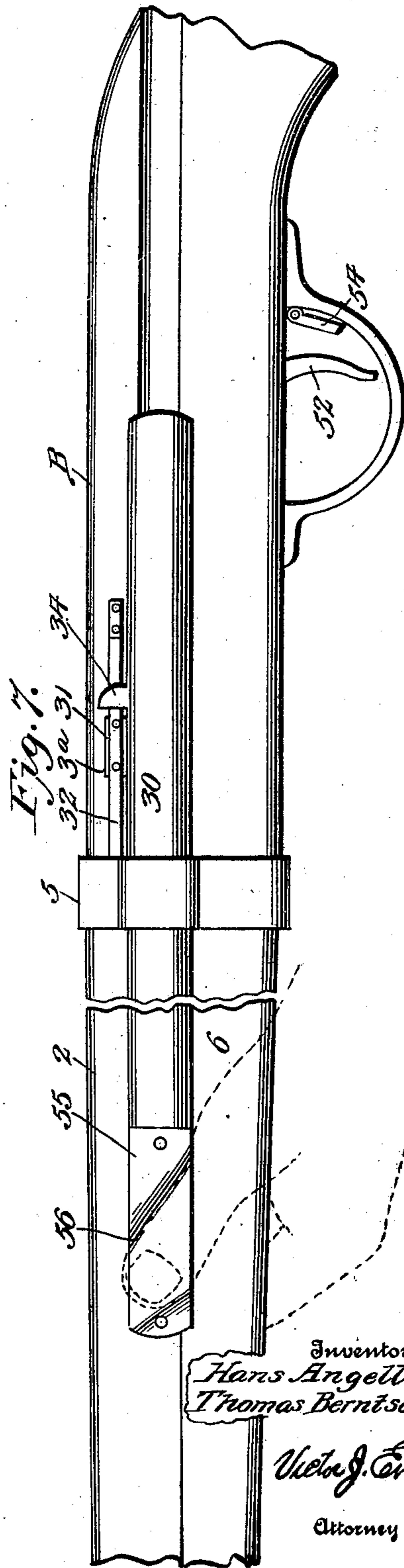
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Witnesses  
Edwin J. McKee  
A. G. Huffman



By



Inventors  
Hans Angell  
Thomas Bernison

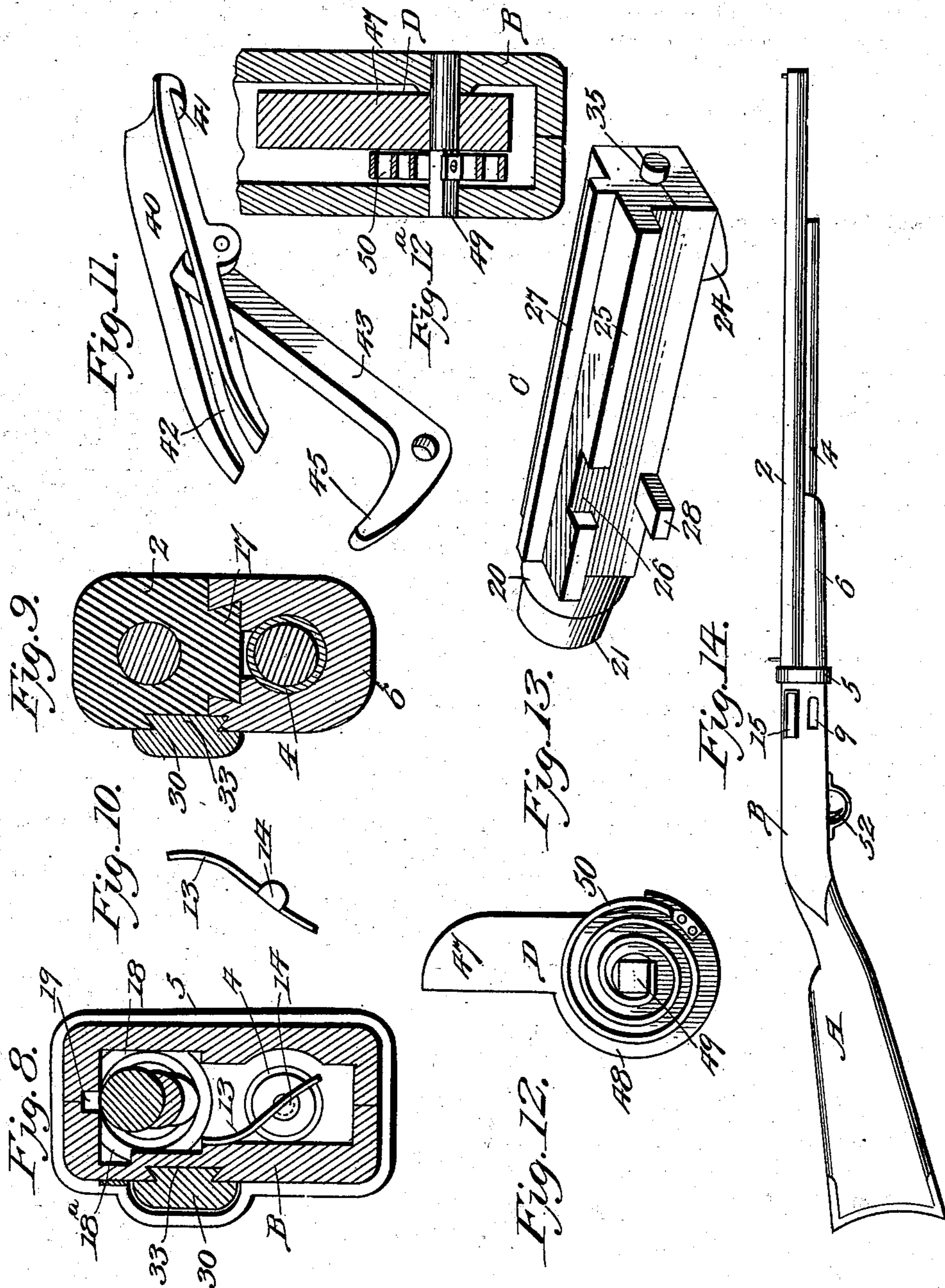
Victor J. Evans  
Attorney

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Witnesses  
Edwin H. McKee  
A. G. Neysman.

By

Inventors  
Hans Angell  
Thomas Berntson  
Victor J. Evans  
Attorney

# UNITED STATES PATENT OFFICE.

HANS ANGELL AND THOMAS BERNTSON, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNORS OF ONE-THIRD TO VICTOR J. EVANS, OF WASHINGTON, DISTRICT OF COLUMBIA.

## FIREARM.

SPECIFICATION forming part of Letters Patent No. 696,294, dated March 25, 1902.

Application filed October 26, 1901. Serial No. 80,092. (No model.)

*To all whom it may concern:*

Be it known that we, HANS ANGELL and THOMAS BERNTSON, citizens of the United States, residing at 218 Fourth street, Washington, in the District of Columbia, have invented new and useful Improvements in Firearms, of which the following is a specification.

Our invention has relation to improvements in firearms of that class or style denominated "magazine-firearms," particularly such as have a tubular magazine parallel with the barrel of the gun and adapted to successively feed the cartridges to the chamber of the frame and present them for insertion into the barrel. The improvements embody improved means for feeding the cartridges to a chamber in the frame, a simplified means for carrying and elevating the cartridges to the barrel, and improved mechanism for actuating the bolt and firing mechanism.

The invention consists in the novel construction of parts and their association in novel aggroupment and operative combinations.

The improvements are fully and clearly illustrated in the accompanying drawings, to be taken as a part of this specification, and wherein—

Figure 1 is a central longitudinal vertical section taken through the frame, the barrel, and magazine and showing the bolt or breech-block with firing-pin, the cartridge-holder and carrier in raised position, and the striker set for action. Fig. 2 is a central longitudinal vertical section through the frame and bolt or breech-block, showing the mechanism as in position at the time of firing the gun. Fig. 3 is a detail sectional plan view taken on the line 3 3 of Fig. 1, showing the transversely-moving spring engaging the end of a cartridge to prevent its movement from the magazine. Fig. 4 is a detail view, in side elevation, showing the lateral opening to the interior of the frame and its side closure and the elongated cartridge-feed aperture through which the cartridges are fed to the magazine. Fig. 5 is a detail plan view, partly in section, taken on the line 5 5 of Fig. 2, showing the breech-block in its locked position and held therein

by the engagement of the spring-actuated locking-lug. Fig. 6 is a detail plan view, partly in section, taken on the line 6 6 of Fig. 2, showing the slide with recess in engagement with the lug on the breech-block. Fig. 7 is a side elevation showing the actuating-slide with lug which rides on the spring-actuated locking-lug. Fig. 8 is a vertical section taken on the line 8 8 of Fig. 1, showing the band which surrounds the meeting joint of the barrel and frame, the cartridge, the cartridge-carrier, and the stop-spring, which normally sets in the path of the cartridges in the magazine. Fig. 9 is a vertical section taken on the line 9 9 of Fig. 2, showing the constructions of the connections between the magazine and actuating-slide and the barrel. Fig. 10 is a detail illustration of the stop-spring, which normally stands in the path of the cartridges in the magazine to prevent their premature discharge from the magazine-tube. Fig. 11 is a detail perspective of the cartridge lever and carrier. Fig. 12 is a detail side view of the striker, showing the actuating coil-spring for operating the striker. Fig. 12<sup>a</sup> is a detail vertical section through the frame and the striker, showing the manner of the striker's mount on the spindle or bolt. Fig. 13 is a detail perspective of the breech-block, showing the locking-recess and lug by which it is moved. Fig. 14 is an exterior end view of the complete arm.

Referring to the drawings, A designates the stock of the gun, the inner end of which is shaped to fit the socket or chamber in the end of the frame, as indicated in Figs. 1 and 2 of the drawings, and by its connection adapted to support the frame and barrel.

B designates the frame, consisting of a suitable hollow metal shell having an interior chamber of such size and capacity as to conveniently and properly receive and accommodate the mechanism essential to effect the loading and firing of the gun. The forward end of the frame is provided with a threaded opening 1, into which the rear end of the barrel 2 screws, and below the barrel connection is another opening 3, into which is tightly fitted or otherwise suitably secured the rear

end portion of the magazine-tube 4. To strengthen the juncture between the barrel and the frame, a band clip or collar 5 is shrunk or clamped about the parts at this point.

5 The magazine-tube 4 is fitted in the wooden fore piece 6 of the stock and opens at its rear into the front end of the chamber in the frame, as shown in Figs. 1 and 2. The magazine-tube is extended to such length beyond the  
10 fore piece 6 as may be desired and is closed at its outer end. Within the magazine-tube is arranged an expansive spiral spring 7, carrying on its free end a small block 8, loosely disposed in the tube and which bears by the  
15 force of the spring against the nose of the last cartridge in the magazine. The cartridges are fed to the magazine through an opening 9 in the side wall of the frame, the opening being closed by a plate 10, having a recessed  
20 outer face to fit the cartridge and secured to a flat spring 11, fastened at its rear end to the inner face or wall of the frame and extending over the back of the plate, as seen in Fig. 3 of the drawings. The inner wall of the  
25 frame adjacent to the forward end of the cartridge-opening 9 is inclined or rounded, as at 12, presenting a surface over which the cartridge is moved and by which it is directed into the mouth of the magazine.

30 It will be perceived from the foregoing that a cartridge can be placed in the cavity or recess in the plate 10, and then by pressure inwardly the plate will yield inwardly, opening wider at its free end, so as to present the  
35 nose of the cartridge to the inclined part 12, so that the cartridge can be pushed partially within the magazine and being followed by a second cartridge admitted by like manipulation will be moved clear into the tube. This  
40 manipulation of cartridges in succession eventuates in fully charging the magazine with its complement of cartridges. A laterally-movable spring 13, secured within the carrier-chamber and formed with a cup or lug  
45 14 on its free end, stands normally in the path of the cartridges and acts as a stop to prevent the cartridges from escaping prematurely from the magazine, as shown in the drawings.

In the wall of the frame is made an opening 15, through which visual observation may be made of the interior mechanism in the  
50 frame and the condition of the inclosed parts or elements ascertained and lubricant applied. A slide 16 is provided to close the opening 15.

55 The barrel of the gun and the fore-end stock are held together by a dovetail connection 17, as shown in Fig. 9 of the drawings.

60 In the upper portion of the chamber of the frame B is formed a rectangular breech-block seat 18, extending longitudinally the interior length of the chamber, and in the left-hand wall of the frame is formed a longitudinal groove 18<sup>a</sup>, in which slidably engages a lateral  
65 flange 25 on the breech-block, and in the roof or upper wall of the frame is a groove 19, in which a vertical guide-rib 27 on the top of

the breech-block slidably engages. A slot 17<sup>a</sup> is cut through the left-hand wall of the frame, wherein slidably engages the lug 28 of the  
70 breech-block. The frame is made up of two plates, meeting at the vertical center and held together by cross-bolts and the collar 5, as indicated in Fig. 8 of the drawings. In the seat and slideway thus provided is slidably placed the breech-block C. This consists of substantially duplicate pieces with  
75 their inner faces laid in contact and secured together by screws or rivet-bolts let through them and form in conjunction a metal body 80 rectangular in cross-section and of such length as to suit it to the purposes intended. The breech-block at its front end is formed with a round extension made up of two conical sections 20 21, which fit into a coincident  
85 socket 22, formed in the breech of the barrel. The shoulders of the conical sections set gas-tight against the shoulders of the socket in the barrel and prevent the escape of the gases generated by the explosion of the charge.  
90 The inner or firing end of the breech-block is conically countersunk, as at 23, to set or fit over the end of the cartridges, as shown in the drawings. On the under face of the breech-block at the rear end is formed a lug  
95 24, having a cam or rounded face and an abruptly-inclined inner end or shoulder, the purpose of the lug being that as the breech-block is moved into firing position the shoulder will contact with the lug or short arm of  
100 the cartridge-lifting lever and carry the cartridge-carrier down into position to take a cartridge from the magazine, and when the breech-block is moved back the under face of the lug 24 engages the end of the striker  
105 or hammer and moves that element into cocked position. Along the left-hand side face of the breech-block is formed a lateral flange 25 to engage and slide in the groove 18. In the flange 25 is a locking-notch 26,  
110 wherein the locking-lug 31 engages when the breech-block has been moved into firing position to hold the breech-block in locked position. On the top face of the breech-block is formed a longitudinally-disposed guide-rib  
115 27, which slides in the groove 19 in the roof of the chamber of the frame and guides the breech-block in its movement back and forth. Projecting laterally from the side of the breech-block at the lower edge thereof is a  
120 lug 28, which engages in a recess 29 in the actuating-slide 30. The locking-lug 31 is secured to an outwardly-moving spring 32, having its ends secured to the frame and the locking-lug secured to the middle, as shown  
125 in Figs. 5 and 7. The locking-lug projects into a slot 3<sup>a</sup>, made in the wall of the frame, which slot registers with the recess 26 in the breech-block when that element is in firing position. The actuating-slide 30 has a dovetail connection 33 with the side of the gun,  
130 as shown in the drawings, and is provided with a vertically-projecting lug 34, placed to ride on the spring 32 and depress the spring

and push the locking-lug into the locking-recess in the flange of the breech-block, and thus hold that element locked in its forward movement. The recess 29 is made longer than the width of the lug 28, so that the slide may have first a movement to carry the lug 34 off the spring to release the locking-lug and then by engagement with the end of the recess 29 carry the breech-block back to initial position.

The breech-block C is centrally and longitudinally cored or bored out, as at 35, an intermediate enlarged chamber 36 being formed to accommodate an expansive spring for restoring the firing-pin to initial position. In this bore of the breech-block is placed the firing-pin 37, made to fit the bore and to have a limited longitudinal movement therein. About the firing-pin, within the chamber 36, is arranged an expansive spring 38, which bears at one end against the end of the chamber and at the other end against a collar 39 on the firing-pin and serves to return the firing-pin to initial point with its rear end projecting, as shown in Fig. 1 of the drawings.

The cartridge-carrying mechanism consists of a plate 40, constituting a cartridge-carrier concave in cross-section and slightly directed downward at its outer end, which terminates in a depending flange 41, extending partly across the end to provide room for the movement of the spring 13 and which when the carrier is in its lower position rests on the bottom of the frame, as indicated in Fig. 2 of the drawings. The rear portion of the carrier 40 is bifurcated, the arms having an open-end slot 42 between them which straddles the carrier-lever, and the ends of the arms are curved down at the points or ends to present a curved surface to the approach of the breech-block. The carrier is pivotally connected approximately at its middle to the end of a bell-crank lever 43, pivotally fulcrumed on a cross-pin 44, fixed in the walls of the frame. The short arm 45 of the bell-crank lever stands in the path of the lug 24 when the carrier is in elevated position, as shown in Fig. 1, so that as the breech-block is moved forward to push the cartridge into the chamber of the barrel and immediately after its engagement with the cartridge and its movement to engage in the opening in the barrel the lug 24 will contact with the end of the lever-arm 45 and move the long arm down, carrying with it the cartridge-carrier into position to receive a cartridge from the magazine, as shown in Fig. 2. When the breech-block is moved back, the lug 24 is carried away from contact with the nose of the arm 45, which release causes the lifting-spring 46 to lift the carrier, with the cartridge thereon, into position to be acted on by the breech-block. In the descent of the carrier the stop-spring 13 is moved by the engagement of the carrier to one side from the mouth of the magazine to permit the spring of the magazine to force another cartridge out onto the

carrier, where it is held by the lodgment of the end against the arm 45, as indicated in Fig. 2 of the drawings. As the carrier rises the spring 13 moves across the mouth of the magazine and stops the escape of the cartridges as long as the carrier is elevated.

D designates the striker or hammer, consisting of an arm 47, forming the striking portion, and a hub 48, mounted loosely on an arbor or bolt 49, secured across the chamber of the frame. On the bolt 49 is mounted a coil-spring 50, having one end fixed to the bolt and the other fixed to the hammer, so that the hammer will be forcibly driven against the firing-pin and the cartridge discharged by the impact. The hub of the hammer is formed with a notch 51, in which the end or nose of the trigger engages to hold the hammer cocked, as shown in Fig. 1. The trigger 52 is pivotally mounted on a pin fixed across the chamber of the frame and has its forwardly-extending arm arranged to engage in the notch in the hub of the hammer. A spring 53, placed under the trigger, holds it in engagement with the hammer, as seen in Fig. 1. A trigger-locking piece 54 is hinged or otherwise connected to the guard, whereby the trigger may be held and locked in engagement with the hammer and prevent premature or accidental disconnection.

In Fig. 1 the mechanism is shown as in the positions preliminary to loading the cartridge into the cartridge-chamber of the barrel, and the procedure to accomplish this may be stated as follows: The gun is grasped by the hand with the thumb pressing on a thumb-plate 55, having a depression 56 therein in which the thumb rests. The actuating-slide is then moved forward until the end of the recess 29 engages the lug 28 on the breech-block, and the slide being then moved forward the breech-block is carried with it, and the end thereof contacting with the end of the cartridge that is pushed off the carrier into the chamber in the barrel, and the block carried to its outer limit, with the locking-lug and the recess in the block standing in registration. The lug 34 at about the limit of movement of the slide begins to ride on the spring 32 and presses the locking-lug 31 into the recess in the breech-block and locks the block firmly and securely in place. The trigger may then be released, and the hammer will then be thrown into contact with the end of the firing-pin and discharge the cartridge. In the progress of the breech-block in the act of pushing the cartridge into the barrel the lug 24 encounters the arm 45 of the cartridge-lifting lever and carries the carrier down into position to receive another cartridge, as shown in Fig. 2. The return movement is effected by moving the actuating-slide back until the lug 34 is moved back to permit the spring to move outward and disengage the locking-lug from the breech-block, when the continued backward movement of the slide carries the breech-block back to its initial position. In

the passage back the lug 24 rides over the end of the hammer and cocks it, and the spring 46 lifts the carrier, with the cartridge, into alinement with the breech-block and the chamber of the barrel, as shown in Fig. 1. These respective movements are accomplished without taking the gun from the shoulder, so that the loading and firing may be very rapid.

It will be perceived that no means are provided for extracting cartridge-shells after explosion. This is unnecessary, since the cartridge-shells used are made of a material which is consumed by the explosion and passes out of the gun with the generated gases with which their residue is incorporated.

Having described our invention, what we claim is—

1. In a magazine-firearm, the combination of a chambered frame formed with a longitudinal groove in its side wall and a locking-lug slot, a reciprocating breech-block in the chamber of the frame formed with a lateral flange to engage in the groove in the frame, and formed with a locking-recess to register with the locking-lug slot in the frame when the breech-block is in firing position, and a locking-lug slidingly engaging in the said slot and recess and actuated by means exterior to the frame.

2. In a magazine-firearm, the combination of a chambered frame formed with a longitudinal groove in its side wall, and a central guide-groove in its upper wall, a reciprocating breech-block having a lateral flange along its side face and a vertical flange to engage in the groove in the upper wall of the frame, the said lateral flange being formed with a locking-recess, a locking-lug to engage in the locking-recess, a spring to withdraw the locking-lug from the locking-recess, and a slide provided with a lug to ride upon the spring and move the locking-lug into engagement with the locking-recess of the breech-block.

3. In a magazine-firearm, the combination of a chambered frame formed with a longitudinal groove 18<sup>a</sup> and a slot 17<sup>a</sup> wherein the actuating-lug of the breech-block projects and slides, a reciprocating breech-block formed with a lateral flange to engage in the groove 18<sup>a</sup>, and formed with a locking-recess in said flange and an actuating-lug to slid-

ingly engage in the slot 17<sup>a</sup>, an actuating-slide movable longitudinally and formed with a recess to engage the lug on the breech-block to actuate the same, a spring-held locking-lug to engage in the locking-recess of the breech-block, and depressed and released by the actuating-slide.

4. In a magazine-firearm, the combination of a chambered frame, a reciprocating breech-block in the frame, and having its firing end countersunk to fit over the end of a cartridge, and a lug on the under face at the rear end, a spring-retracted firing-pin in the breech-block, a hammer in the path of the lug on the breech-block to be cocked thereby and to drive the firing-pin against the cartridge, a cartridge-carrier comprising a carrying-plate and a bell-crank lever having one arm in the path of the lug on the end of the breech-block, whereby the carrier is moved downward, and a lifting-spring to carry the carrier upward when the breech-block is moved to its initial position.

5. In a magazine-firearm, the combination of a chambered frame, a reciprocating breech-block in the chamber having a countersunk firing end, and a lug on its under side at its rear end, means substantially as described to reciprocate the breech-block, a firing-pin in the breech-block, a cartridge-carrier having an arm in the path of the lug on the breech-block, whereby the carrier is depressed, a spring to lift the carrier when the breech-block has been moved back, and a spring-actuated hammer in the path of the lug on the breech-block and cocked by contact therewith in the rearward movement of the block.

6. The combination with the cartridge-carrier and the magazine, of a laterally-movable spring secured within the carrier-chamber and formed with a cup on its free end standing normally across the mouth of the magazine and movable therefrom by the downward movement of the carrier.

In testimony whereof we affix our signatures in presence of two witnesses.

HANS ANGELL.  
THOMAS BERNTSON.

Witnesses:

A. G. HEYHMAN,  
HUGH M. STERLING.