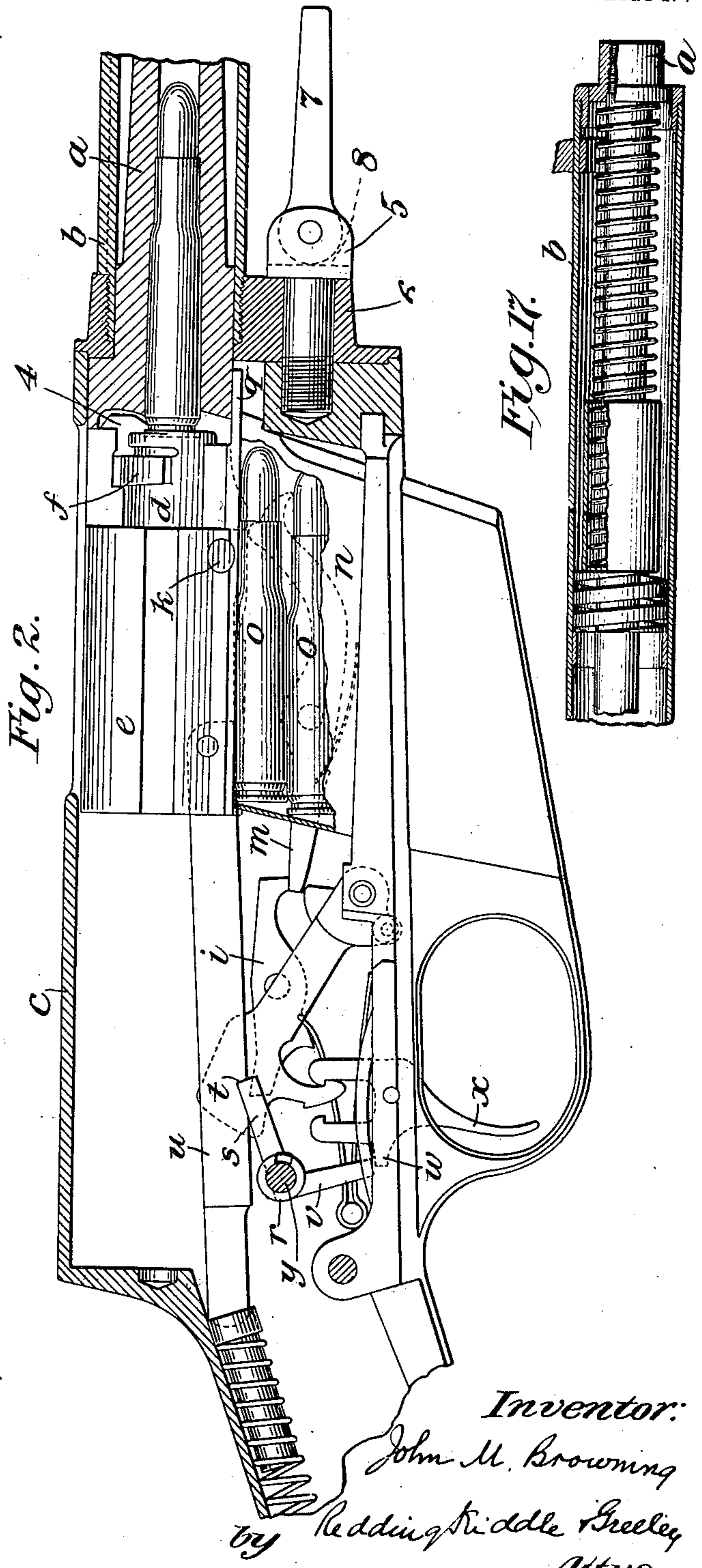
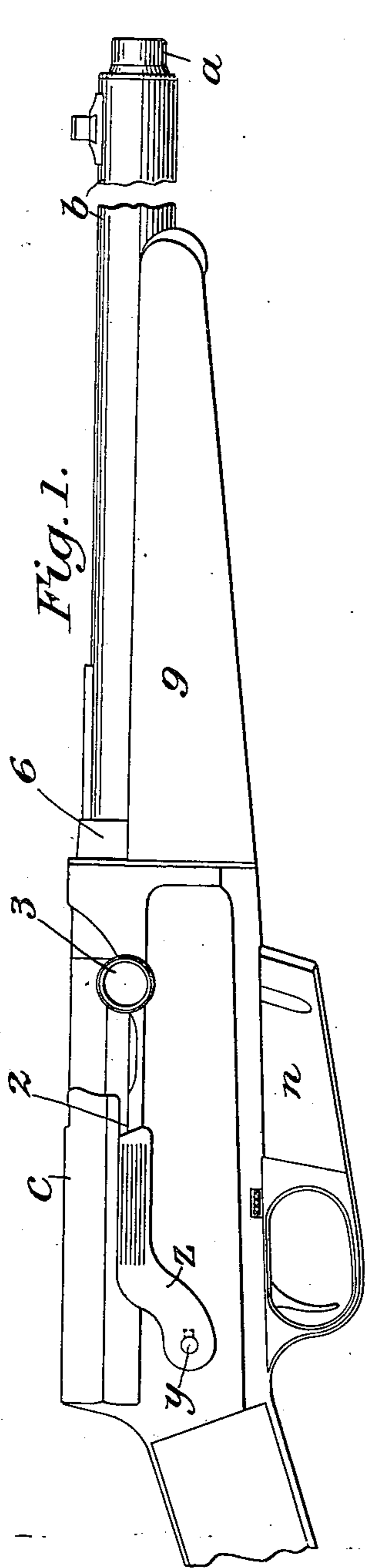


984,263.

J. M. BROWNING.
RECOIL OPERATED FIREARM.
APPLICATION FILED JULY 30, 1904.

Patented Feb. 14, 1911.

3 SHEETS—SHEET 1.



Witnesses:
A. H. Jester
L. E. Varney

Inventor:
John M. Browning
by *Redding Kiddle Greeley*
Attys.

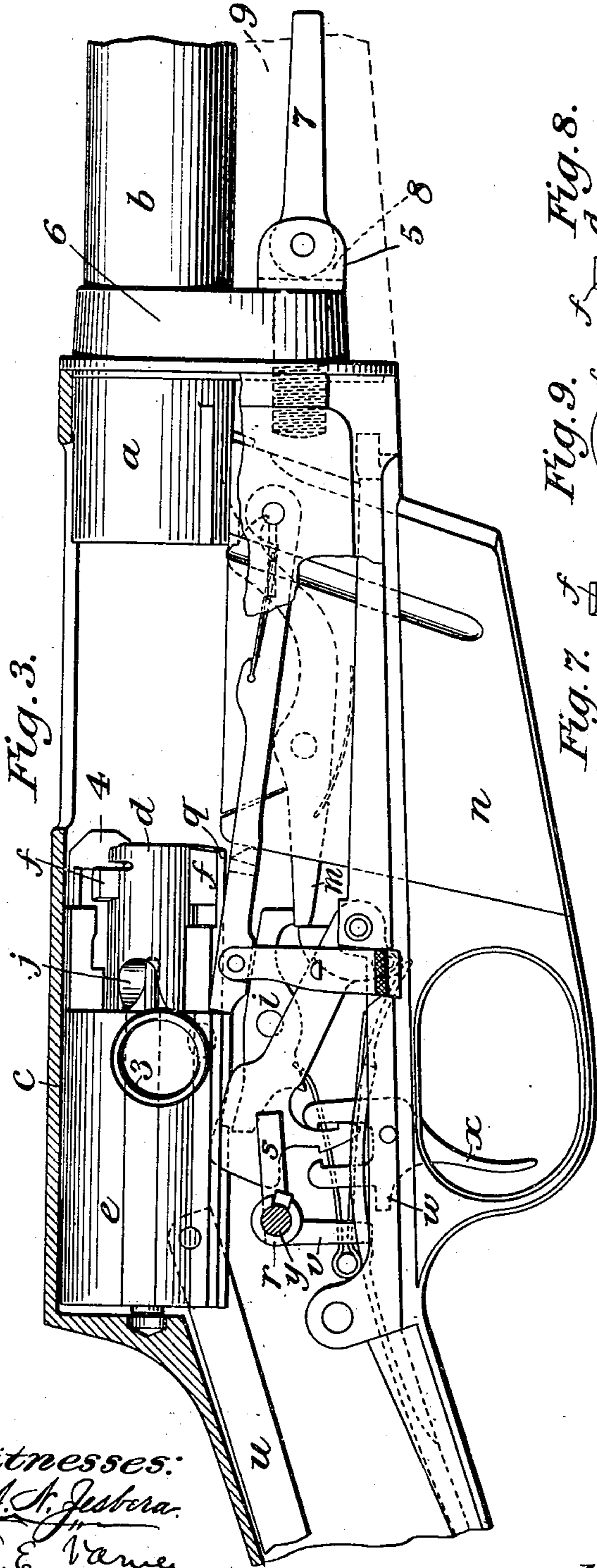


Fig. 3.

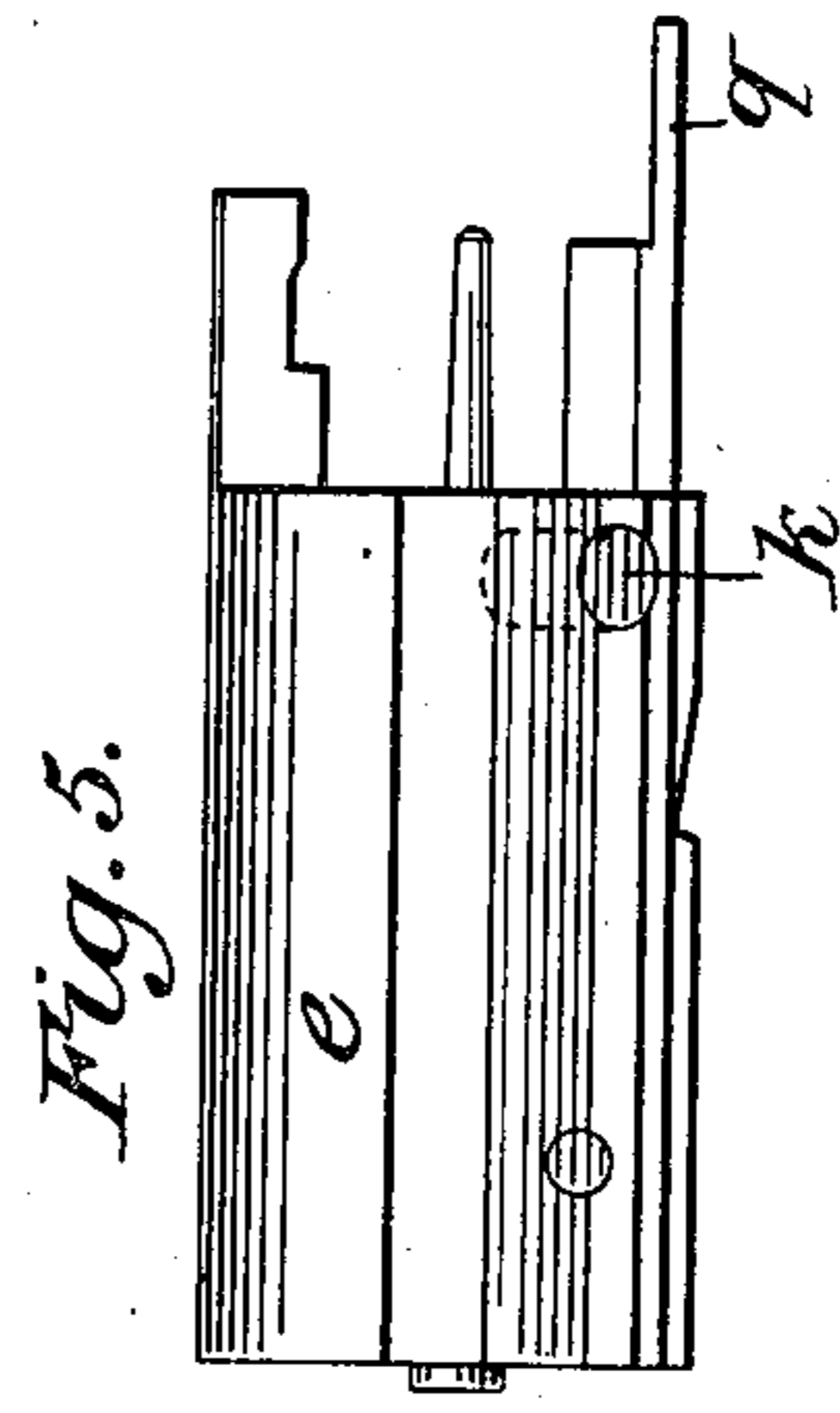
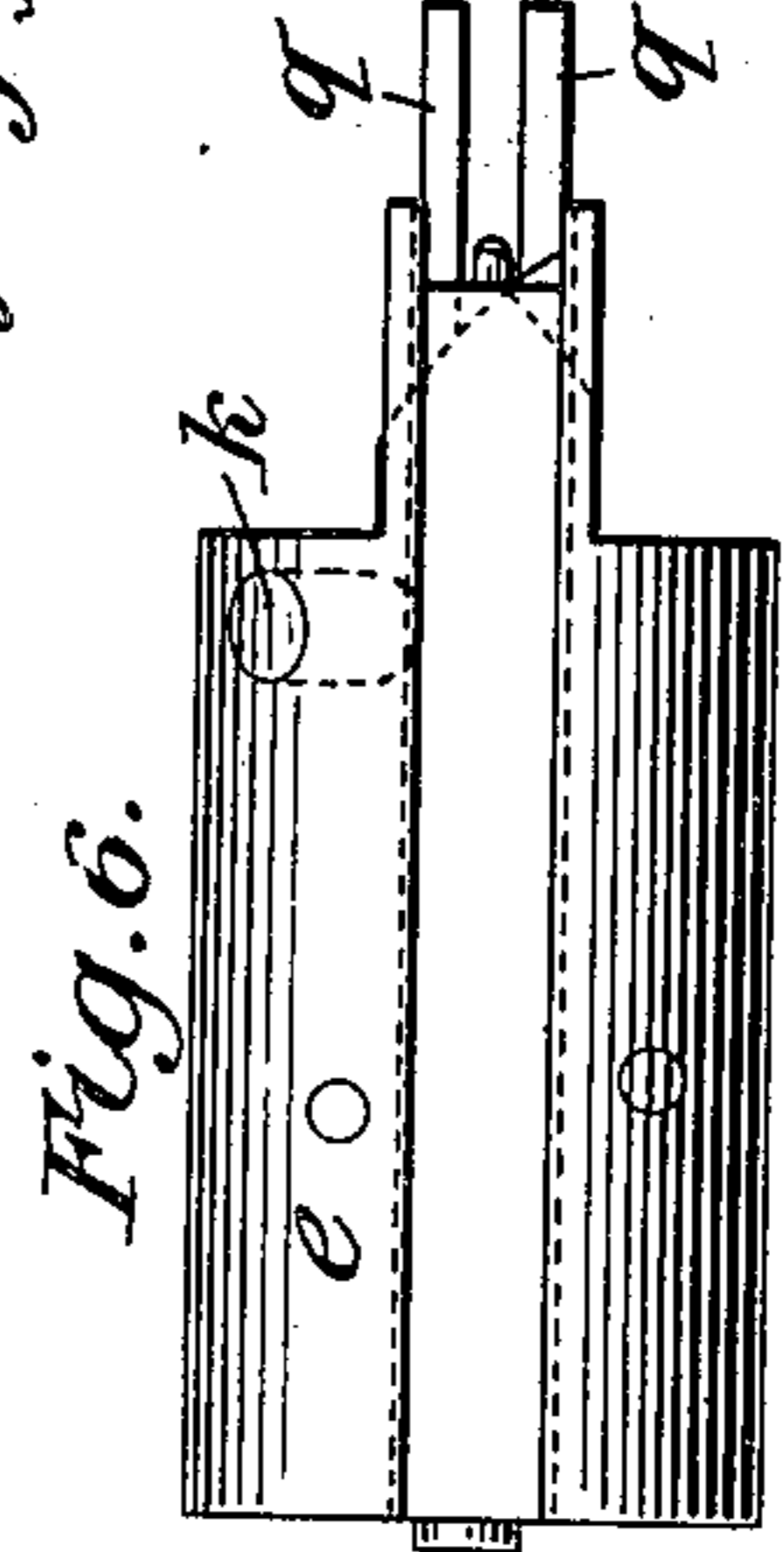
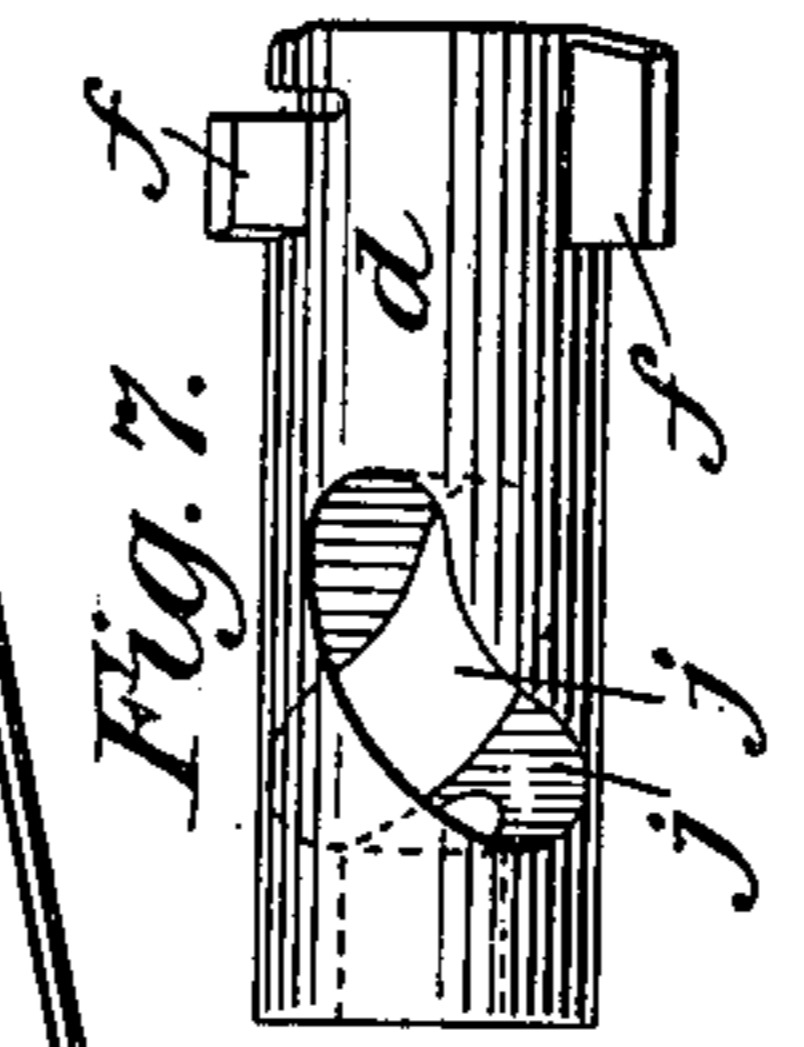
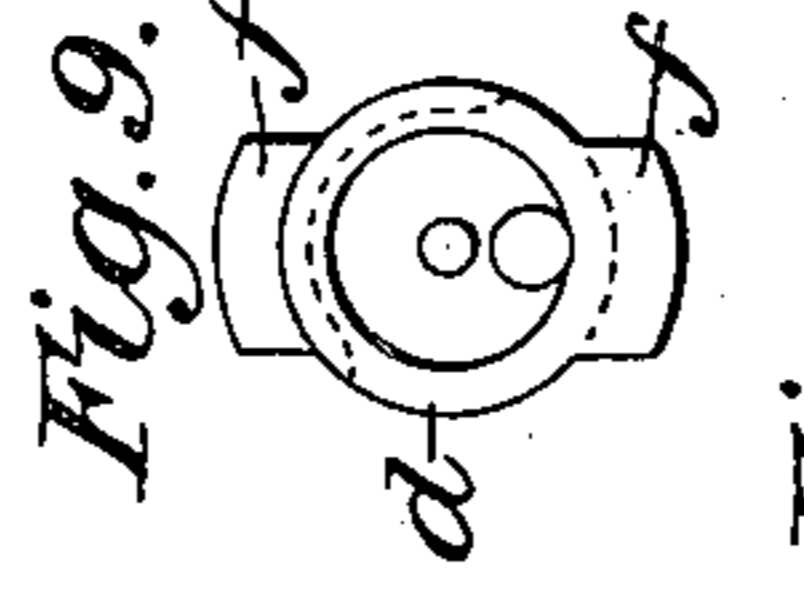
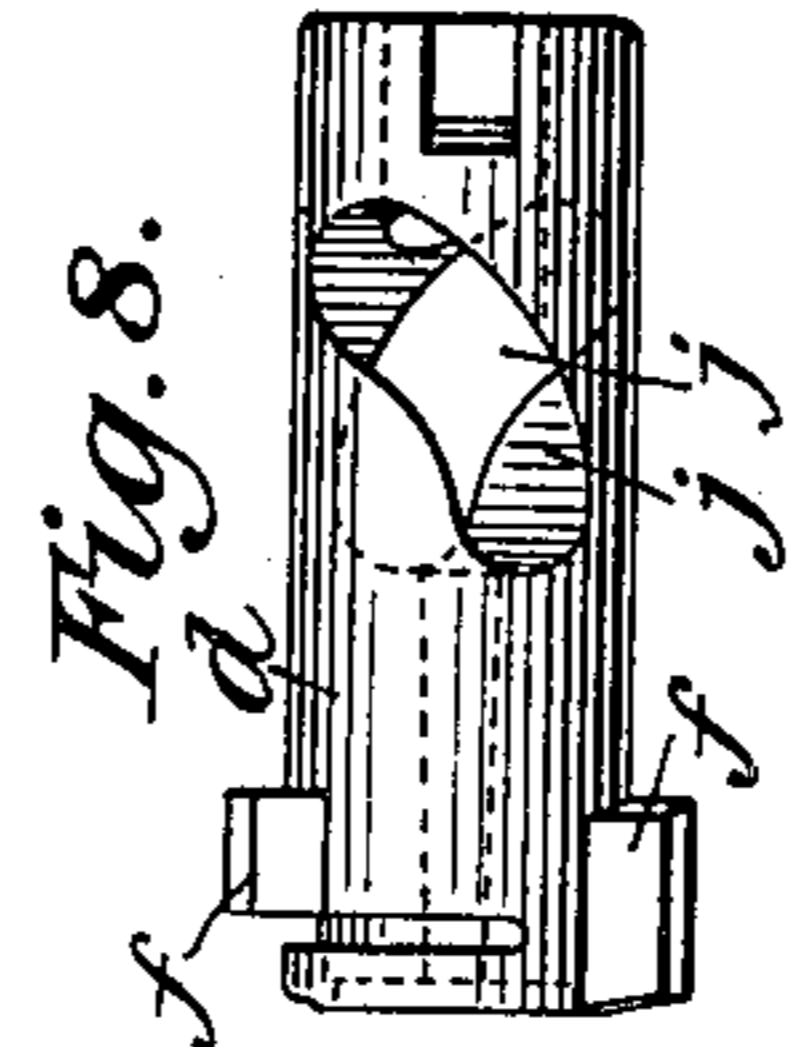


Fig. 8.

Fig. 9.

Fig. 7.

Fig. 6.

Fig. 5.

Witnesses:
 A. S. Jester
 L. E. Varney

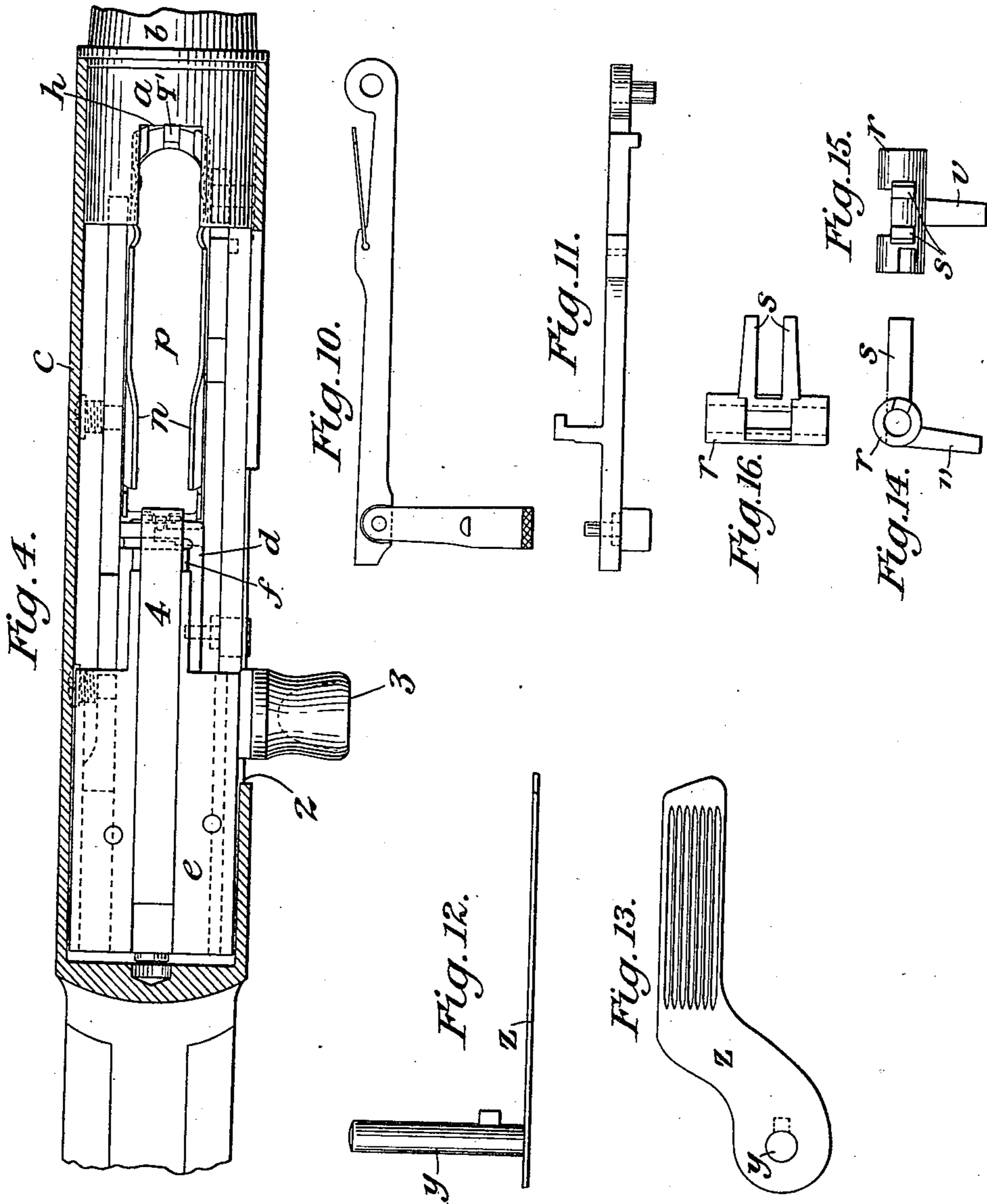
Inventor:
 John M. Browning
 by Redding Kiddle Greeley
 Attys.

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3 SHEETS—SHEET 3.



Witnesses:
A. N. Jesbera.
L. E. Varney

Inventor:
John M. Browning
by *Redding Kiddle Greeley*
Attys.

UNITED STATES PATENT OFFICE.

JOHN M. BROWNING, OF OGDEN, UTAH.

RECOIL-OPERATED FIREARM.

984,263.

Specification of Letters Patent. Patented Feb. 14, 1911.

Application filed July 30, 1904. Serial No. 218,815.

To all whom it may concern:

Be it known that I, JOHN M. BROWNING, a citizen of the United States, and a resident of the city of Ogden, county of Weber, and State of Utah, have invented certain new and useful Improvements in Recoil-Operated Firearms, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

This invention relates to recoil operated firearms and, while it is applicable generally to fire arms embraced within this class, the invention will be illustrated and described herein in connection with the gun mechanisms shown in my former Letters Patent, and in particular Letters Patent of the United States numbered 659,786, dated November 16, 1900, and numbered 701,288, dated June 3, 1902.

One of the improvements embraced within the present invention relates to the means for rotating the breech bolt within the bolt carrier, the object of the present improvements being to provide a simple means to effect the rotation of the bolt within the carrier which does not involve any considerable expense in its construction, and which will effect the desired operation with certainty, ease and freedom.

Another object of the invention is to enable the empty shells, which have to be discharged from the gun while in a hot and expanded condition, to be extracted from the barrel with greater ease than heretofore.

Another object of the invention is to provide a safety device to lock the trigger in its position of full cock and also to prevent at the same time the rearward movement of the bolt carrier, thereby avoiding an accidental or unintentional firing or an unintentional opening of the gun.

Another of the objects of the invention is to provide improved means for transferring the cartridges one by one into the chamber of the gun barrel from their magazine, which means will be set forth more particularly hereinafter.

Still another object of the invention is to provide means for turning the bolt which clamps the barrel to the gun frame in order that the gun may be quickly taken apart and packed.

In the drawings, in which for purposes of illustration and explanation the invention is embodied, Figure 1 is a view in side eleva-

tion of a fire arm containing the improvements, the butt-stock and a portion of the gun barrel being broken away for convenience of illustration. Fig. 2 is a view partly in central section and partly in elevation, showing some of the interior of the gun mechanism within the outer frame, the parts of such mechanism being in position ready for the gun to be fired and the hammer being at full cock, but with the safety device in position to prevent the firing of the gun and the rearward movement of the bolt carrier. Fig. 3 is a similar view showing the safety device in its inoperative position, the bolt carrier in a position just short of its extreme rearward position with the breech bolt extended, and with the cartridge magazine empty. Fig. 4 is a view partly in horizontal section through the center of the gun barrel and partly in plan of the parts as they appear in Fig. 3. Figs. 5 and 6 are respectively a side elevation and plan of the bolt carrier removed from the gun, and with the breech bolt removed from the carrier. Figs. 7, 8 and 9 are respectively opposite side views and a front end elevation of the breech bolt. Figs. 10 and 11 are respectively a side elevation and a plan of the checking device for the bolt carrier which is brought into operation by the spring-actuated follower in the magazine when all of the cartridges have been discharged therefrom. Figs. 12 and 13 are respectively a plan and a side elevation of the lever and shaft for operating the safety device. Figs. 14, 15 and 16 are detail views of parts of the safety device. Fig. 17 is a view, partly in section and partly in elevation, showing the buffer for the barrel.

In describing the invention it will be unnecessary to describe in detail a full operative gun mechanism, as reference may be had for such description to my former Letters Patent above referred to; and only so much, therefore, of a gun mechanism as may be necessary to enable the invention to be understood, will be alluded to.

The recoil barrel *a* as will be understood, is carried in a barrel jacket *b* which is secured to the gun frame *c*, the latter containing most of the gun mechanism. When the gun is fired the breech bolt *d* (rotatable in the reciprocating bolt carrier *e*, which is cored to receive the bolt and constitutes with the bolt the breech closure of the gun), recoils with the barrel which, in the position

in which the gun is fired (Fig. 2), is locked to the bolt and when the recoil takes place the barrel, carrier and bolt move back in the same relative positions as shown in Fig. 2.

5 The means for locking the bolt and barrel together may comprise, as shown in the various figures, projections or lugs *f* upon the bolt and corresponding grooves (not shown) in the rear end of the barrel which are
10 adapted to be engaged by said projections or lugs, the latter as the bolt and barrel come together entering longitudinal slots, one of which is shown at *h*, in the barrel and being rotated by suitable means which are provided
15 to turn the bolt to bring said projections or lugs into their grooves in the rear of the gun barrel, as clearly explained in my former Letters Patent.

After the recoil has taken place and the
20 barrel, bolt and bolt carrier have moved to their rearward positions, the carrier is checked by the latch *i*, as was explained in my former Letters Patent, while the barrel moves forward again under the action of
25 the barrel spring (not shown) drawing as it moves, the core out of the carrier and at the same time rotating it through a cam and pin connection to be presently described, where-
30 by the bolt and barrel are unlocked, the bolt remaining in its forward position with respect to the carrier while the barrel returns to its normal position.

In my former Letters Patent, the rotation of the bolt within the carrier was effected
35 by providing spiral wings upon the bolt to engage corresponding grooves in the carrier, a construction which involves considerable expense in the manufacture of the parts. In the present case there are provided cam
40 slots *j* in the bolt, preferably two in number, and diametrically opposite each other in the periphery of the bolt so that one may balance the other, these slots being shaped substantially as shown in Figs. 7 and 8 while
45 pins *k* are provided upon the carrier and extend into the central space therein in which the bolt reciprocates and into the cam slots *j* respectively. In this way a very simple means is provided to effect the rotation of
50 the bolt within the carrier and one which does not involve any considerable expense in its construction and which will effect the desired operation with the necessary certainty, ease and freedom.

55 After each firing of the gun takes place and the recoil drives back the carrier and barrel, the latter, as already described, moves forward again while the carrier is retained for a moment in its rearward position. As the
60 barrel moves forward, the extractor 4 on the bolt engages the head of the blank which is drawn out of the barrel and ejected. On account of the rapidity with which the gun operates, the blanks are not permitted to
65 cool even slightly before being extracted

from the barrel, and accordingly are not easily withdrawn from the barrel, being held tightly therein in a very hot and somewhat expanded condition. In order to assist in starting these hot blanks from
70 the barrel, the latter is adapted to begin its forward motion while the carrier is still moving backward, so that the momentum of the carrier while so moving backward may be added to the impulse of the
75 forward movement of the barrel in starting the blanks. The barrel in recoiling when near the limit of its rearward movement is stopped by the buffer spring contained in the barrel jacket as shown and described in
80 my Patent No. 701,288; in the present case, however, the barrel is stopped entirely by the buffer which is located in such a position that the barrel is stopped while the bolt carrier has yet about one-half an inch to travel
85 rearward. By this arrangement the bolt carrier is moving to the rear while the barrel is moving forward which causes a heavy blow to be struck upon the extractor to start the empty shell.
90

When the barrel is moved back to its first position, it depresses a lever *m* which controls the latch *i* causing it to release the carrier which, provided the magazine is not
95 exhausted of its cartridges, then moves forward with the breech bolt held non-rotatable in its forward position by means not shown but already described in my former Letters Patent.

As the carrier moves forward across the
100 magazine *n* containing cartridges *o*, one over the other and all being pressed upward by a spring actuated follower *p*, one or more projections or fingers *q*, preferably one
105 upon each side and upon the lower forward end of the carrier, engage the head of the top cartridge and push it from the magazine forward and upward into the chamber of the gun barrel. The two fingers are preferable to
110 a single piece inasmuch as they push upon the cartridge head at each side and therefore assure the centering of each cartridge as it is transferred from the magazine to the chamber of the gun barrel, notwithstanding
115 any unevenness in the head of the cartridge. Between the two fingers, as the carrier approaches the limit of its forward movement, a longitudinal rib or flange *q'* on the forward upper end of the magazine is received
120 and serves to keep the carrier properly centered, so that the cartridges may be delivered accurately into the breech. Moreover the two fingers bear the cartridges above the rib or flange so that there is no
125 possibility of the head of the cartridges becoming caught by coming in contact with said rib or flange or any other underlying part as has been the case heretofore, where a single finger has been employed.

In order to maintain the gun in its closed
130

position (shown in Fig. 2) and prevent accidental opening or accidental firing thereof, a safety device is provided and may comprise a rotatable sleeve portion *r* (Figs. 14, 15 and 16) upon which are provided projections or fingers *s* preferably two in number, to engage notches *t* in the link *u* which connects and operates with the bolt carrier and with a projection *v* adapted to be brought in front of an offset *w* upon the trigger *x*. The safety device may further comprise a shaft *y* within the sleeve portion *r* to which it is keyed and manually operative controlling lever *z*, through which as will be obvious the positions of the projections or fingers may be controlled, is secured to the shaft *y*. When the lever *z* is in the position shown in Fig. 1, the trigger and bolt carrier will be locked, and the gun can neither be fired nor opened, the positions of the projections or fingers being as indicated in Fig. 2; but when the lever is depressed the projections or fingers will be moved to the position shown in Fig. 3 and the gun may be operated as if no safety device were present. Furthermore, the longitudinal slot 2, in which the handle 3 upon the bolt carrier *e* moves back and forth as the gun operates, is normally closed by the lever *z* which fits closely against the side of the gun and is of an elongated shape to completely cover the slot 2 when the gun is locked.

For convenience in screwing and unscrewing the screw bolt 5, which passes through the "take down head" 6 into the forward end of the frame *c*, a lever 7 may be pivoted in a straight groove 8 in the head of the bolt. Normally the lever will rest in the forward stock 9, indicated in dotted lines, but when it is desired to screw or unscrew the bolt 5, the stock is removed and the lever turned so that it is perpendicular to the bolt, when the bolt may be easily rotated.

It will be obvious that many changes may be made in the embodiment of the invention without departing from the spirit thereof.

I claim as my invention:—

1. In a device of the character described, the combination of a recoilable barrel and means to limit its rearward movement, a bolt and carrier therefor mounted so as to permit a greater rearward movement than the barrel, connecting elements between the bolt and barrel to hold them together during the rearward movement of the latter and elements operated by a continued movement of the carrier after the barrel has been arrested by the limiting means to cause an unlocking of the bolt and barrel.

2. In a recoil operated fire arm the combination of a recoilable barrel, limiting means to limit its rearward movement, a breech bolt and carrier therefor and extractors secured to the bolt, elements to secure the bolt

and barrel together as the barrel moves rearwardly, elements operated by the continued rearward movement of the carrier after the barrel has engaged the limiting means to cause the bolt to become unsecured to the barrel and free to move rearwardly relative thereto, the rearward movement of the bolt being greater than the rearward movement of the barrel.

3. In a recoil operated fire arm the combination of a recoilable barrel, means for limiting its rearward movement, a breech bolt and carrier therefor, bayonet connecting means between the bolt and barrel for locking them together, pin and slot connections between the carrier and bolt of such shape and construction as to cause a partial rotation of the bolt when the carrier moves rearwardly relative thereto and after the barrel is arrested to rotate the bolt sufficiently to unlock the bolt and barrel and also to impart a rearward movement of the bolt from the carrier by further movement of the carrier, and a shell extractor carried by the bolt; the carrier and bolt both so mounted that they can continue to move rearwardly after the unlocking and thus cause movement of the carrier to impart through the extractor a blow upon the cartridge.

4. In a recoil operated fire arm, the combination of a reciprocating part constituting the breech closure of the gun, a hammer, a trigger controlling the hammer, and a safety device having a rotatable portion and fingers rigidly attached to said portion to engage the reciprocating part and the trigger respectively to lock the reciprocating part and trigger from movement when the reciprocating part is closed against the end of the gun barrel.

5. In a recoil operated fire arm, the combination of a reciprocating part constituting the breech closure of the gun, a hammer, a trigger controlling the hammer, and a safety device having a rotatable portion with fingers rigidly attached to said portion to engage the reciprocating part and the trigger respectively and manually operative means engaging the rotatable portion whereby the same may be rotated to lock the reciprocating part from movement.

6. In a recoil operated fire arm, the combination of a reciprocating part constituting the breech closure of the gun, a hammer, a trigger controlling the hammer, and a safety device having a rotatable portion with fingers rigidly attached to said portion to engage the reciprocating part and the trigger respectively, a shaft keyed to the rotatable portion, and a lever secured to the shaft whereby the rotatable portion may be rotated to lock the reciprocating part from movement.

7. In a recoil operated fire arm, the combination of a reciprocating part, a handle

- upon the reciprocating part, said fire arm having a slot in its side in which the handle works, and a locking device having a lever adapted to close said slot.
- 5 8. In a recoil operated fire arm, the combination with the gun barrel, of a magazine, a part constituting the breech closure of the gun adapted to reciprocate above the magazine, two projections upon the lower forward
- 10 end of the reciprocating part to push a cartridge from the magazine into the chamber of the gun barrel, and a fixed rib each side of which the projections work in the operation of the arm.
- 15 9. In a recoil operated fire arm, the combi-

nation with the gun barrel, of a magazine, a breech bolt, a bolt carrier adapted to reciprocate above the magazine, a projection upon the lower forward end of the bolt carrier to push a cartridge from the magazine into the chamber of the gun barrel, and a longitudinal rib upon the forward upper end of the magazine for the purpose specified.

This specification signed and witnessed this fifteenth day of July, 1904.

JOHN M. BROWNING.

In the presence of—

ANTHONY N. JESBERA,
LUCIUS E. VARNEY.