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J. M. & M. S. BROWNING.

MAGAZINE GUN.

No. 465,339. Patented Dec. 15, 1891.

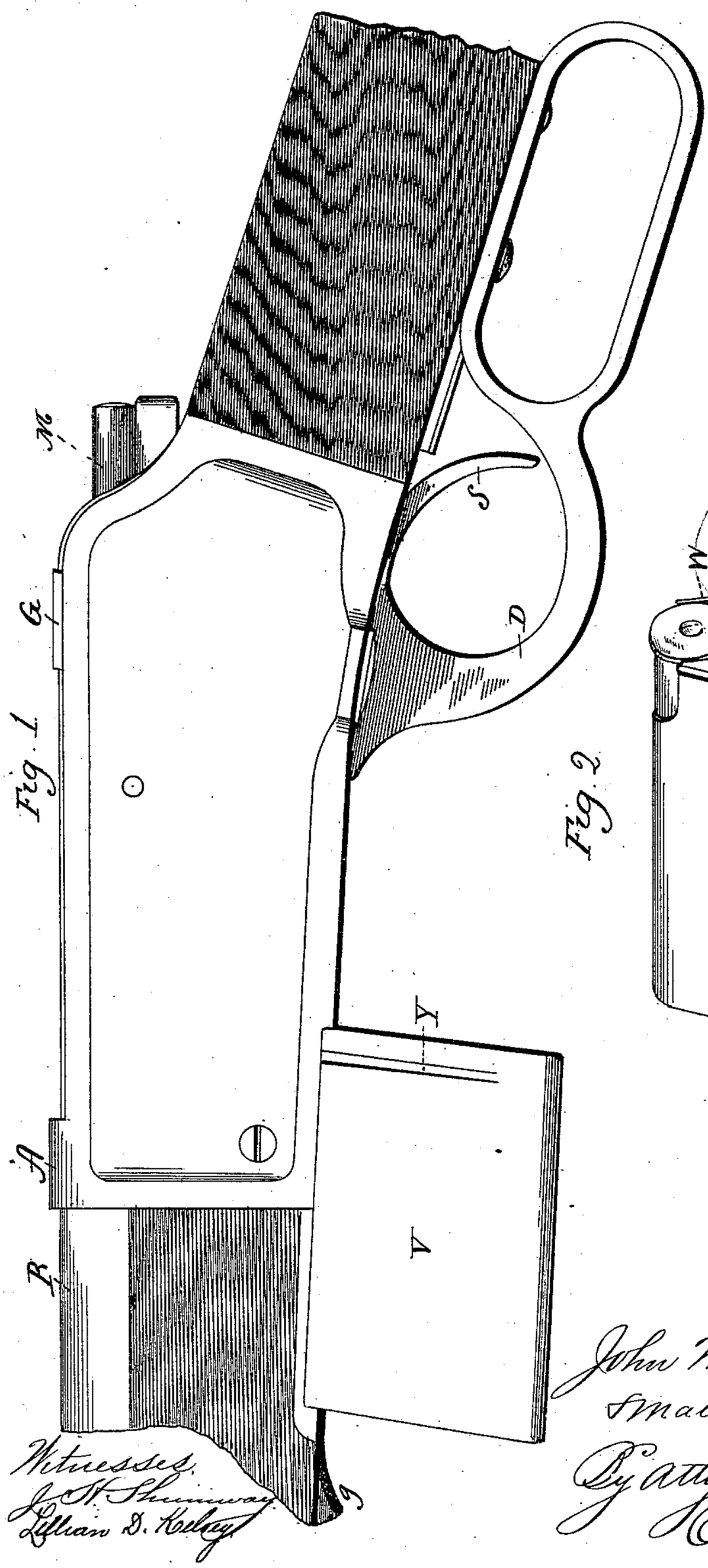

Fig. 1.

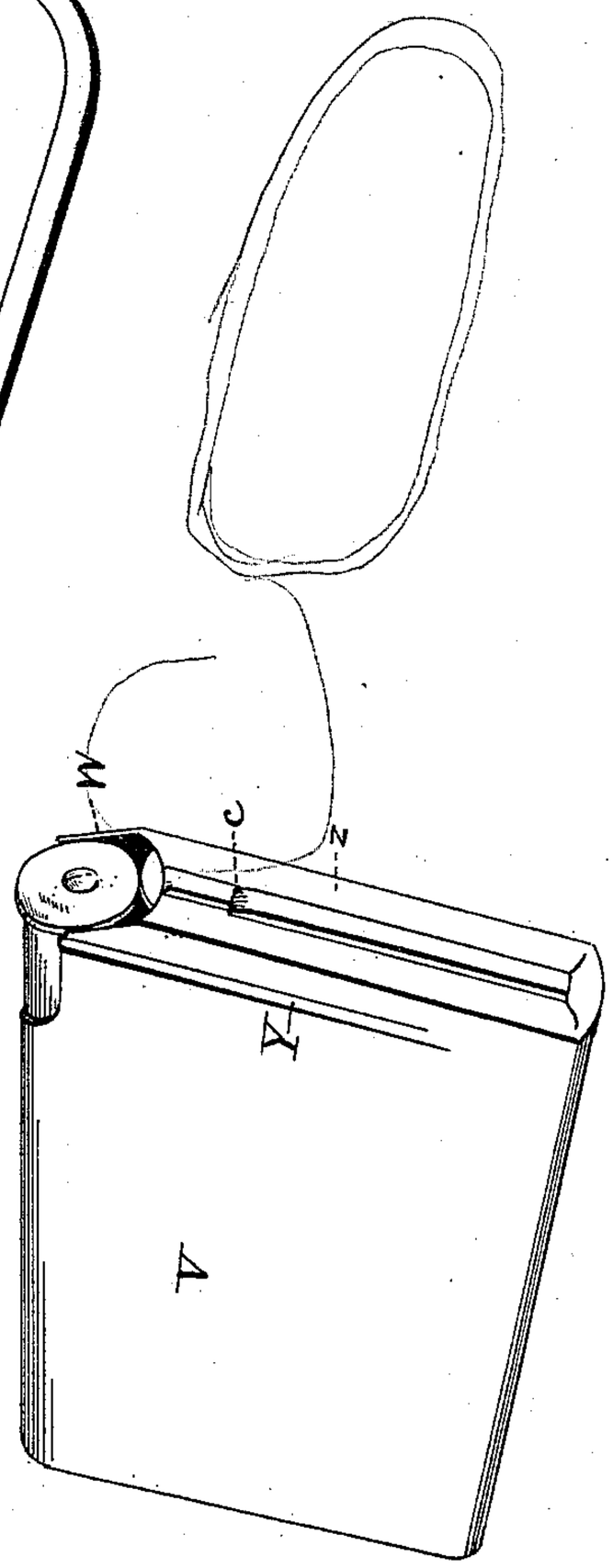

Fig. 2.

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Fig. 3

Fig. 4

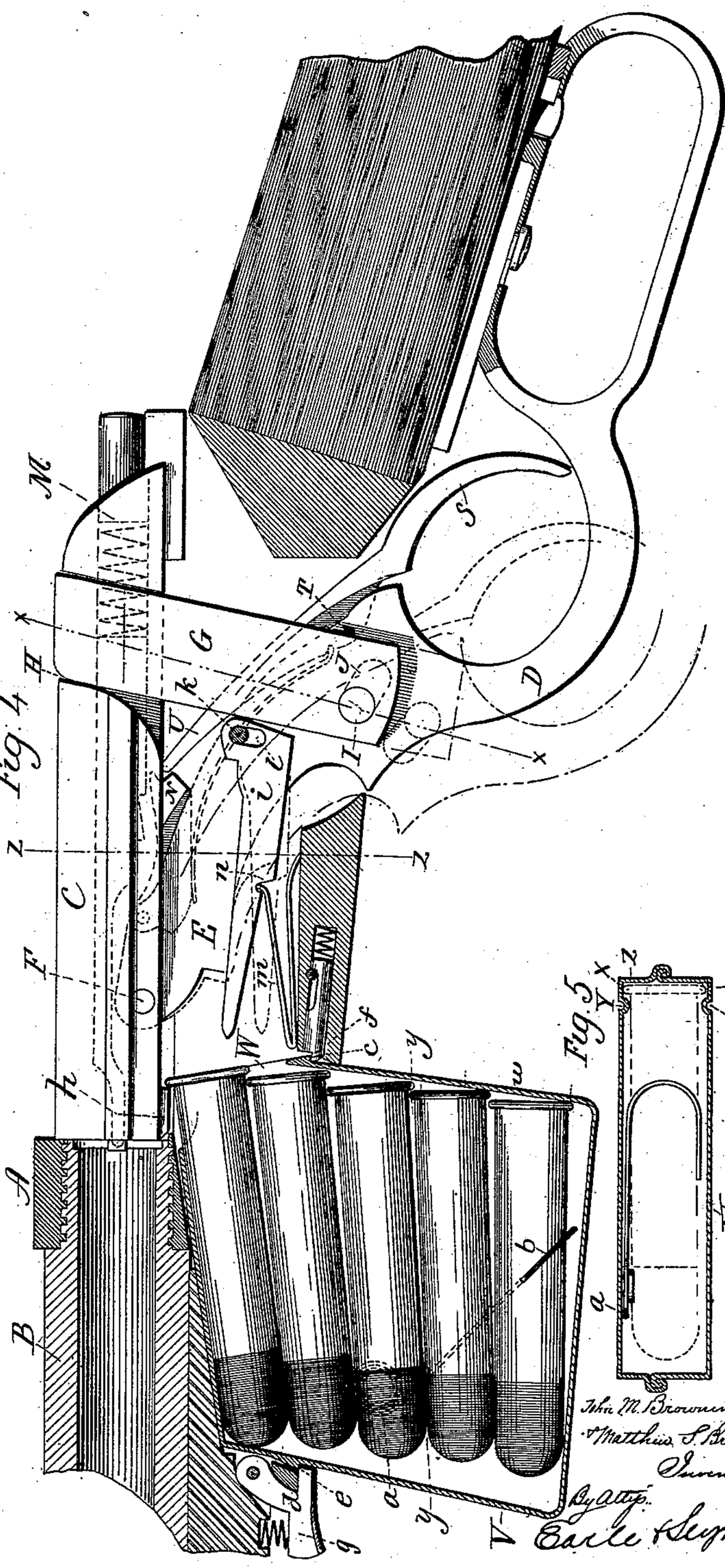
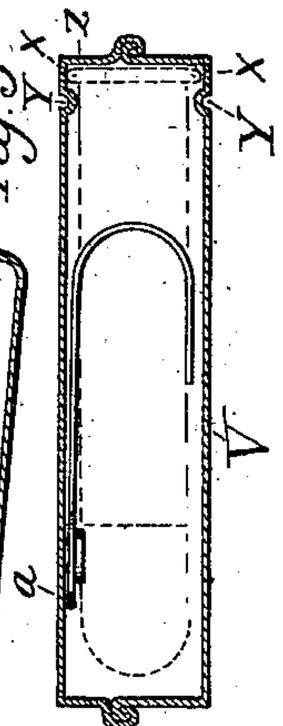


Fig. 5



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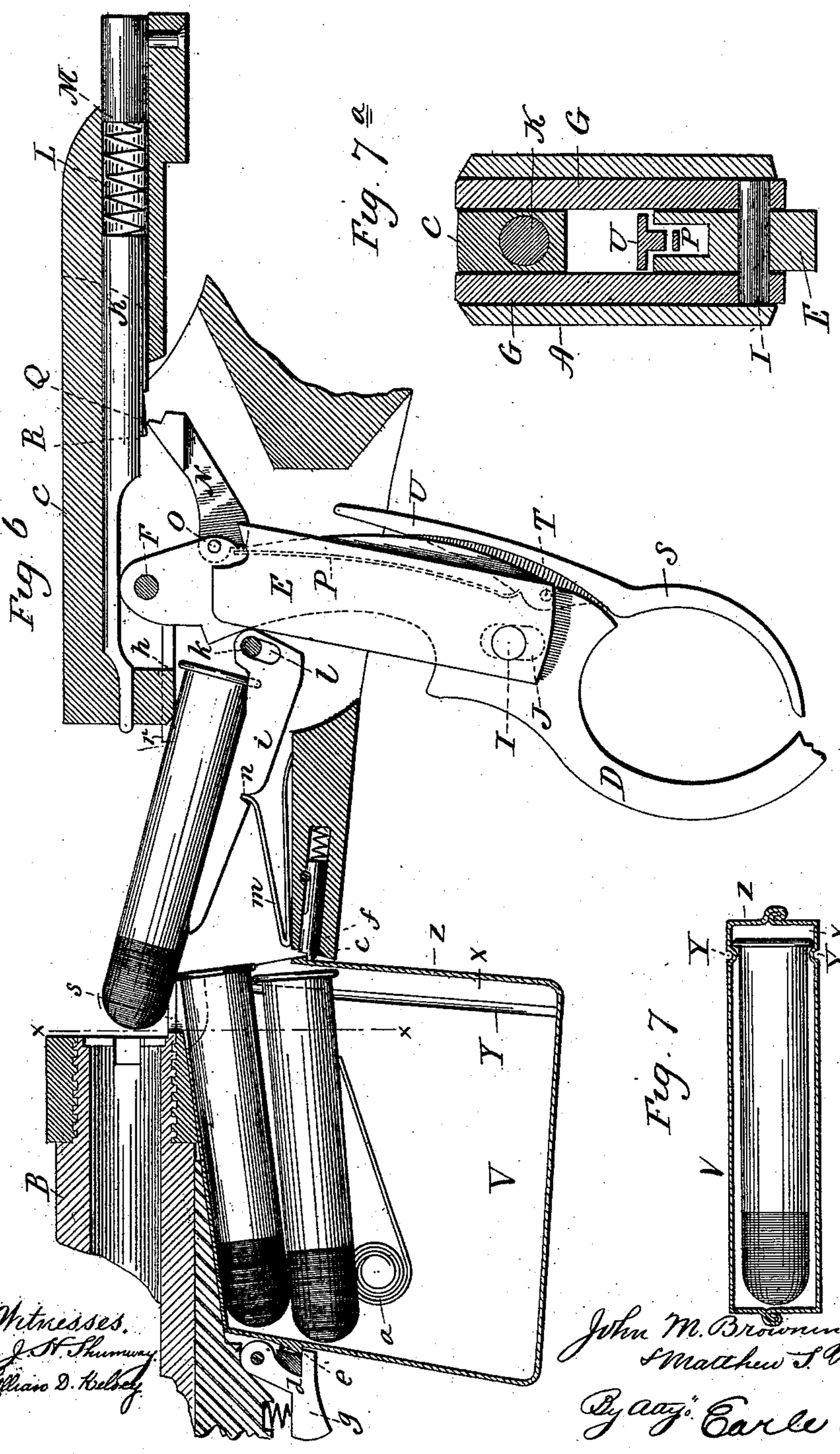

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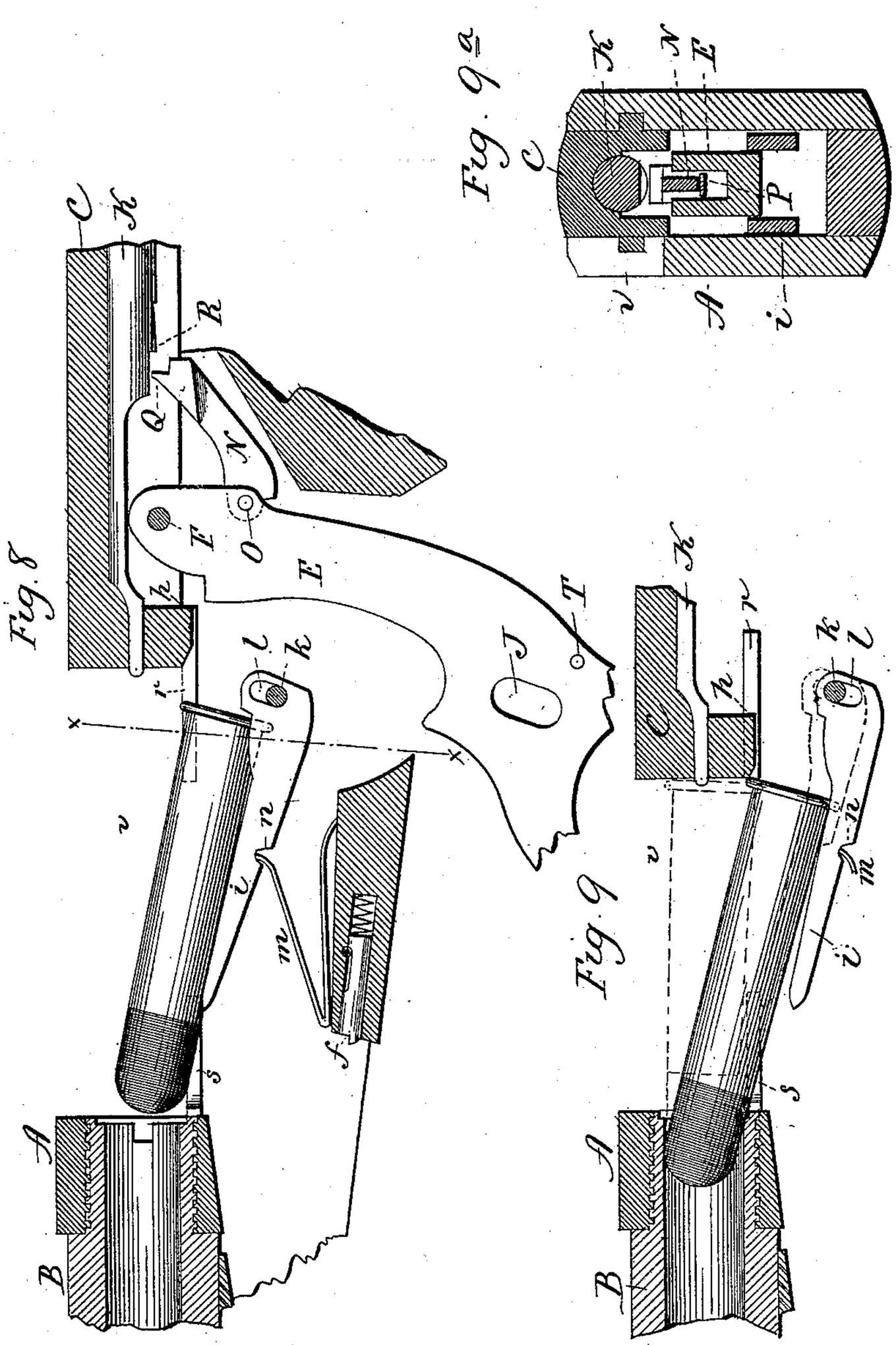

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Fig. 10

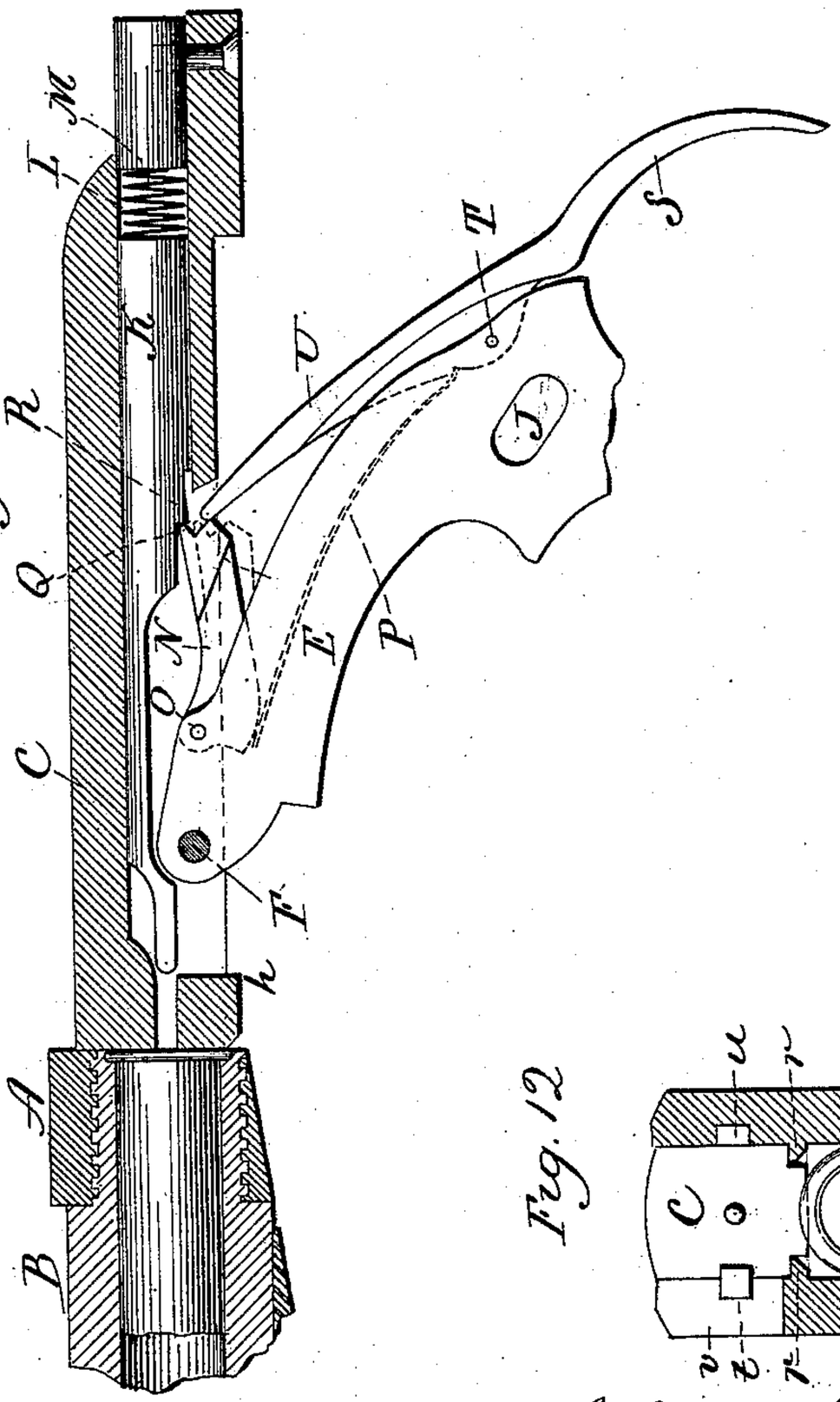


Fig. 13

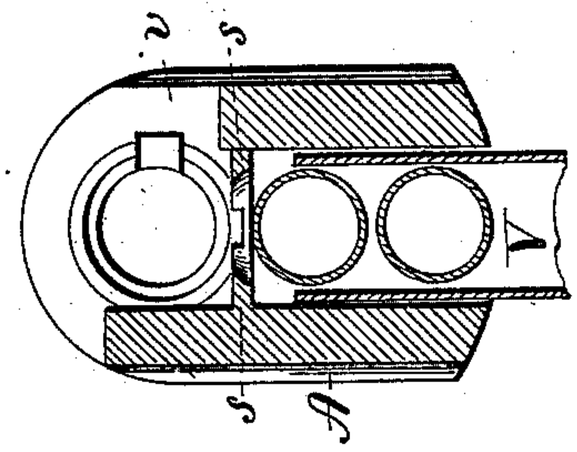


Fig. 11

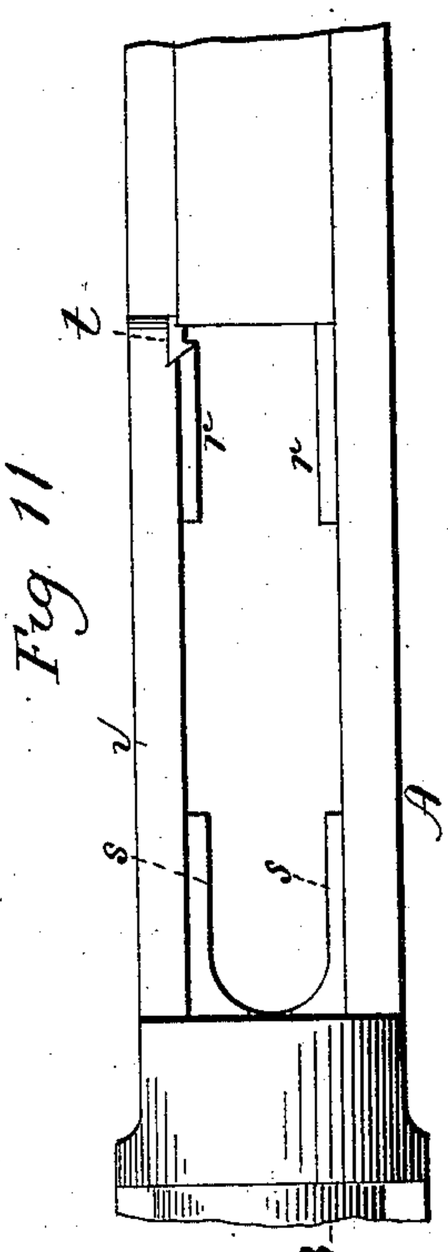
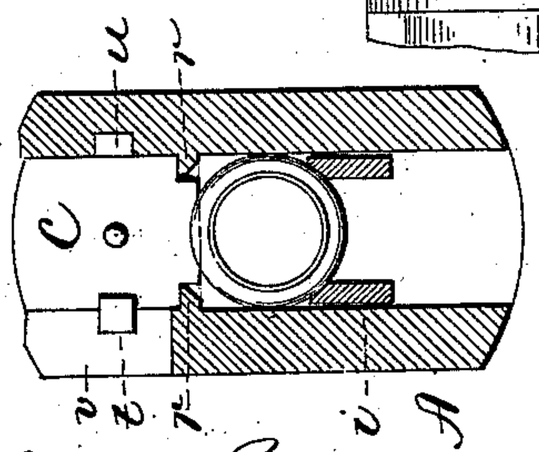


Fig. 12



Witnesses,
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UNITED STATES PATENT OFFICE.

JOHN M. BROWNING AND MATTHEW S. BROWNING, OF OGDEN, UTAH TERRITORY, ASSIGNORS TO THE WINCHESTER REPEATING ARMS COMPANY, OF NEW HAVEN, CONNECTICUT.

MAGAZINE-GUN.

SPECIFICATION forming part of Letters Patent No. 465,339, dated December 15, 1891.

Application filed August 3, 1891. Serial No. 401,573. (No model.)

To all whom it may concern:

Be it known that we, JOHN M. BROWNING and MATTHEW S. BROWNING, of Ogden, in the county of Weber and Territory of Utah, have invented a new Improvement in Magazine Fire-Arms; and we do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, which said drawings constitute part of this specification, and represent, in—

Figure 1, a side view of the arm, the forward and rear portions broken away; Fig. 2, a perspective view of the magazine detached, looking from the rear; Fig. 3, a top or plan view of that portion of the arm illustrated in Fig. 1; Fig. 4, a longitudinal sectional side view representing the parts in the closed or normal position; Fig. 5, a longitudinal section through the magazine, cutting on line *y y* of Fig. 4; Fig. 6, the same section as Fig. 4, showing the parts as the breech-piece approaches its open position; Fig. 7, a longitudinal section through the magazine, showing a cartridge therein; Fig. 7ª, a transverse section on line *x x* of Fig. 4; Fig. 8, the same section as Fig. 6, showing the parts as in the position of the breech-piece in its extreme rear position; Fig. 9, a section of the parts of Fig. 8, showing the breech-piece as it has commenced its advance and started the cartridge into the barrel, so that its head may escape from the ribs *r;* Fig. 9ª, a transverse section on line *z z* of Fig. 4, looking rearward; Fig. 10, a longitudinal section showing the breech-piece in the closed position and the firing-pin as engaged with the sear in the cocked position; Fig. 11, a top view of the receiver, showing the breech-piece in the rear position and also showing a top view of the ribs *r r* and the stops *s;* Fig. 12, a transverse section on line *x x* of Fig. 8, looking rearward; Fig. 13, a transverse section on line *x x* of Fig. 6.

This invention relates to an improvement in that class of magazine fire-arms in which the breech-piece is arranged to reciprocate longitudinally in the receiver at the rear of the barrel to produce its opening and closing movement, and in which the magazine is arranged to receive cartridges substantially parallel with each other, the cartridges being forced by a spring, so as to be successively presented for removal from the magazine, in contradistinction to a magazine arranged longitudinally under the barrel and in which the cartridges are arranged heads to points or in longitudinal line, the object being primarily to insure the positive movement of a cartridge from the magazine, as the breech-piece opens, into a position to be forced by the closing breech-piece into its place in the barrel, and at the same time to make the supply of cartridges to the arm simple, so as to facilitate rapid firing; and the invention consists in the construction as hereinafter described, and particularly recited in the claims.

A represents the receiver, to the forward end of which the barrel B is secured in the usual manner, the barrel opening into the receiver at the rear.

C represents a longitudinally-reciprocating breech-piece arranged in the receiver and suitably guided in line with the barrel, so as to move backward and forward in opening and closing, as usual in this class of breech-pieces. The breech-piece is arranged to be operated by means of a trigger-guard lever D. This lever extends upward into the receiver, having an arm E, which is hung by a pivot F to the breech-piece. In suitable and substantially vertical guides in the rear of the pivot a pair of locking-bolts G G are arranged, one at each side of the breech-piece, as seen in Figs. 3 and 4, the breech-piece being constructed with notches H, corresponding to the said bolts, and in which the bolts stand when the breech-piece is closed and the parts in their normal position. These bolts extend downward and are connected to the lever D by studs I on the inside of the bolt extending into corresponding slots J in the lever, as seen in Fig. 7ª, and so that as the lever is turned downward, as from the position seen in Fig. 1 to that in broken lines same figure, the bolts will be drawn down accordingly.

The bolts G G serve to lock the breech-piece in the closed position to resist recoil. The bolts, being partially in the receiver and partially in the breech-piece, interlock the

breech-piece with the receiver in the strongest possible manner.

The slot J permits the lever D to swing upon its pivot F without effect upon the breech-piece, so long as the studs may play in the slots J; but when the studs come to a bearing at the rear end of the slots J, as represented in broken lines, Fig. 4, the slots and bolts become so engaged that the lever must also turn on the studs I as a pivot between the bolts and the lever. The result of this is that a further downward movement of the lever D will draw the bolts downward entirely out of engagement with the breech-piece, but at the same time the upper or breech-piece end of the lever will correspondingly recede, as represented in Fig. 6, and finally to the wide-open position represented in Fig. 8, the slots J in the lever permitting a play of the studs of the bolts, so that the upper or breech-piece end of the lever will move freely in the same longitudinal line of the breech-piece, turning upon its pivot F in so doing. On the return of the lever the breech-piece is first forced forward to its closed position, it reaching such closed position before the lever reaches its up position, and so that in the completion of the closing movement of the lever D the bolts G will be brought home into firm engagement with the breech-piece.

Longitudinally in the breech-piece the firing-pin K is arranged. This is a spindle provided with a mainspring L, arranged between the rear end of the firing-pin and a shoulder M, stationary in the breech-piece, as seen in Figs. 6 and 10, the spring tending to force the firing-pin forward, that its point may strike the primer of the cartridge, as usual in this class of firing-pins. The firing-pin moves rearward with the breech-piece in its opening movement, as seen in Fig. 6.

To the arm E of the lever D and near its pivot F the sear N is hung upon the rear or upper side of the arm E and upon a pivot O, so that it may swing in a plane parallel with the plane of the path of movement of the lever D. The sear is provided with a spring P, the tendency of which is to force the nose of the sear rearward or upward from the arm E. The nose Q of the sear is constructed so that it may engage the cocking-shoulder R of the firing-pin; but in the rear movement of the breech-piece the firing-pin retreats in advance of the sear and so that in the open position of the breech-piece the shoulder R will stand at the rear of the nose Q of the sear, as seen in Fig. 8. As the lever D is turned to produce the closing movement of the breech-piece and as the breech-piece approaches its closed position, the shoulder R will engage the nose of the sear, and as this closing movement is completed the sear acts, in connection with the lever as a toggle, to hold or force the firing-pin to its cocked position, where it will be held by the sear, as represented in Fig. 10.

The trigger S is hung upon a pivot T in the lever and so that it partakes of the swinging movement of the lever. From the trigger a finger U extends upward and forward to the sear and so as to bear upon its nose end, as represented in Figs. 4 and 10, and so that a pull of the trigger will depress the sear, as indicated in broken lines, Fig. 10, so as to release the firing-pin and permit it to fly forward under the action of its mainspring L. The sear-spring P is fixed by one end to the trigger, so that it operates both as a sear and trigger spring, as represented in Fig. 10; but it will be understood that independent springs may be employed.

V represents the magazine. It is of box character of a length somewhat greater than the length of a cartridge and of a depth corresponding to the number of cartridges which it is required to contain. The magazine is made detachable from the arm and is adapted to be arranged forward of the rear end of the barrel, instead of in rear of that point, as usually arranged. The magazine is constructed from sheet metal and is closed upon all sides, the metal being folded and its edges joined. At the rear end and at the upper side an opening W is made sufficient to permit the introduction of cartridges into the magazine or to permit their removal therefrom. The width of the magazine corresponds substantially to the diameter of the heads of the cartridges to be introduced therein. At the rear end the magazine is constructed with grooves X upon opposite sides. (See Fig. 5.) These grooves are best produced by making corresponding depressions Y upon the outside of the case, forming a rib upon the inside and parallel with the rear end Z of the magazine, and so that the ribs upon the inside serve to arrest the entrance of cartridges so soon as the head shall have passed within the plane of the inside of the rear end Z of the magazine, the grooves X being in width somewhat greater than the thickness of the projecting heads or rims of the cartridges. As the first cartridge is inserted it drops into the magazine, the rim passing down into the grooves X. The next cartridge follows in like manner.

In the magazine a spring-follower is arranged upon which the cartridges introduced will rest, the follower yielding as successive cartridges are introduced until the magazine is properly filled, the spring tending to force the cartridges upward, so that one cartridge will always stand with its head at the rear opening W, as seen in Figs. 2 and 4. To construct the spring-follower so that it will occupy substantially no space in the magazine so far as depth is concerned, the follower is made from wire bent at one end to form a coiled spring *a*. (See Figs. 4 and 5.) This coil is in the plane of the sides of the magazine and is secured thereto at one side near the forward end, but yet so as to allow the free working of the spring. The follower *b* is attached to or preferably made as a part of

this spring, the wire continuing from the spring rearward and bent so as to cross the magazine that it may take a bearing upon the lowermost cartridge, as represented in Fig. 4. The follower lies close against the side of the cartridge from the spring to the bend and occupies so little space that it does not interfere with the cartridges, the cartridges passing freely between the spring and the opposite side of the magazine. The follower is compressed as successive cartridges are introduced until the magazine is filled, as seen in Fig. 4. Thus it will be seen that the space required for the follower when arranged below the cartridges is in this case occupied by cartridges. Consequently a magazine of the same size will receive a proportionately larger number of cartridges than when the follower is arranged entirely below the cartridges, as in the usual construction.

The spring-follower is of sufficient force to support the column of cartridges which may be arranged therein, so that as the uppermost cartridge is withdrawn the column will rise to present the second cartridge in place of the first, with its head at the opening W, and so on until the last cartridge is in like manner presented.

Below the barrel an opening is made corresponding in shape to the upper portion of the magazine and into which that portion of the magazine may be inserted, as seen in Fig. 4. The rear upper end of the magazine projects into the receiver to a slight extent beyond the rear end of the barrel; but the body of the cartridges is forward of that point. The opening W at the rear end of the magazine is presented into the receiver below the breech-piece. The magazine is held in its position by means of a suitable shoulder *c* at one end of the frame engaging a corresponding shoulder in the receiver and a spring-latch *d* at the opposite end adapted to engage a corresponding shoulder *e* on that end of the receiver. Preferably the latch is arranged forward, as shown in Fig. 4, and also preferably the rear shoulder *c* of the magazine is engaged with a spring-shoulder *f*, arranged in the receiver. The spring-latch is withdrawn by means of a finger-piece *g* projecting therefrom, as clearly shown, and so that one magazine may be readily removed from the gun and another introduced in its place, so that the person using the arm may have at hand several magazines to be interchanged as the cartridges from one magazine are exhausted.

To withdraw the first cartridge from the magazine the breech-piece is constructed with a shoulder *h* upon its under side, which as the breech-piece comes to its closed position will pass forward of the head of the first cartridge presented at the opening W in the magazine, and as seen in Fig. 4, the spring of the magazine yielding for the depression of the rear end of that cartridge, so that the shoulder may pass over it, and so that as the breech-piece is next drawn rearward in the opening movement it will, because of the engagement of the shoulder *h*, take the cartridge with it, drawing it from the magazine, as seen in Fig. 6. The carrier *i* is arranged in the receiver below the breech-piece. It is hung at its rear end upon a pivot *k*, stationary in the receiver, (see Figs. 4 and 6;) but the carrier is constructed with a vertical slot *l* at the pivot, so as to allow a vertical play of the carrier upon its pivot. The carrier extends forward from its pivot toward the magazine and is provided with a spring *m* between its two ends, the spring taking a bearing in a notch *n* in the carrier, and so that the carrier may swing on the end of the spring at the notch, as upon a pivot, such swinging movement being in a vertical plane. The arm E of the lever D works through a slot in the carrier, as seen in Fig. 9ª, and so that in the closed position the arm will bear upon the carrier near its forward end to depress it into the position seen in Fig. 4, and because of this bearing of the arm E of the lever D upon the forward end of the carrier when the lever is first depressed, as represented in broken lines, Fig. 4, it will correspondingly depress the forward end of the carrier and bring it to a point below the head of the cartridge then presented at the opening of the magazine, and so that in the rear movement of the breech-piece the cartridge will be drawn from the magazine onto the upper side of the carrier, and so soon as the cartridge has passed from the magazine then the spring *m* of the carrier reacts and forces the forward end of the carrier upward, so as to correspondingly raise the forward end of the cartridge to a position above the magazine, the next cartridge following in the magazine to take the place of the one so withdrawn.

On each side of the receiver and at the rear end of the breech-piece opening a longitudinal rib *r* is formed. (See Figs. 11, 12, and 13.) The position of these ribs is such that the head of the cartridge as it is drawn rearward by the breech-piece will pass below those ribs, and as seen in Fig. 6, and as the forward end of the cartridge rises it will turn upon the forward portion of the breech-piece as a fulcrum, forcing the rear or head end downward, together with the rear end of the carrier, and so that the breech-piece may escape from the head of the cartridge, as represented in Fig. 6, the slot in the carrier permitting this depression of its rear end. Then as the breech-piece completes its rear movement, as seen in Fig. 8, the spring *m*, reacting upon the carrier, will bring the forward end of the carrier up against stops *s* on the sides of the receiver near the barrel and as seen in Fig. 8. The rear end of the carrier also rises, as seen in Fig. 8, to bring the head of the cartridge against the stops *r* at the rear and into a position, so that the head of the cartridge will be struck by the breech-piece when it next advances. When the breech-piece is next moved forward, it will

strike the head of the cartridge, force it forward below the ribs *r*, as seen in Fig. 9, and so as to enter the forward end of the cartridge into the barrel, this movement continuing until the head passes forward of the ribs *r*. This first advance movement of the cartridge causes a depression of the carrier against its spring, as represented in Fig. 9; but so soon as the cartridge-head has passed beyond the control of the ribs *r*, then the spring *m* of the carrier reacts and forces the carrier upward, as seen in Fig. 9, which gives to the cartridge a sudden upward movement to bring it into a position forward of the front face of the breech-piece, as represented in broken lines, Fig. 9. The breech-piece then continuing its movement forces the cartridge into the barrel, the breech-piece engaging the next cartridge in the magazine, and the carrier being depressed to receive the second cartridge, as before described. The breech-piece is provided with the usual extractor-hook (here represented at *t*, Fig. 12) on one side of the breech-piece, with a corresponding shoulder *u* on the opposite side, and so that as the breech-piece is withdrawn the exploded shell or cartridge, if it be not exploded, will be drawn rearward, and the next rising cartridge will eject the exploded shell or cartridge, if it be not exploded, from the receiver in the usual manner. As here represented, one side of the receiver is open, as at *v*, Figs. 12 and 13; but the position of the opening is immaterial, it only being necessary that the extracting devices shall be arranged in relation thereto, as usual in fire-arms. By this arrangement of the box-magazine forward of the opening in the receiver the cartridges are taken therefrom by the retreating breech-piece and do not, therefore, depend upon a spring or gravity to bring them into a position for introduction to the barrel, and the gun is therefore capable of the most rapid firing.

The construction of the magazine, as before described, brings the magazine into the most compact possible form, it being substantially no larger than the space required for the number of cartridges it is adapted to contain, and no additional devices are necessary to retain the cartridges in the magazine until required for use. Consequently there is no opening to be made into the magazine for the escape of the cartridges. It has simply to be set into place and the cartridges are ready to be delivered therefrom.

The construction of the magazine, so far as the follower and its spring are concerned, is applicable to this class of magazines generally, irrespective of the mechanism of the arm, the advantages being, as before stated, an increased number of cartridges for the same size of magazine.

The magazine constructed with all sides closed and with the rear opening may be employed with arms of other construction than that which we have described, it only being essential that such arms shall be provided with some means for withdrawing the cartridges from the magazine. Such arrangement is too apparent to require illustration We therefore do not wish to be understood as limiting the construction of the magazine to the particular mechanism of the arm which we have described.

While it is preferred to make the magazine removable for obvious reasons, it will be understood that it may be made a permanent part of the arm and the cartridges introduced thereto—as, for illustration, from the rear end of the magazine—through an opening indicated by broken lines at *w*, Fig. 4.

The arrangement of the carrier upon its spring and so as to coact with the operating-lever to receive a cartridge from the magazine and present it forward of the front face of the breech-piece may be employed in that class of magazine-guns in which the magazine is arranged longitudinally beneath the barrel, so that cartridges stand in longitudinal line. The upper cartridge in Fig. 4 may be understood as representing the rearmost cartridge in such a magazine. We therefore do not wish to be understood as limiting the construction and arrangement of the carrier to the necessary employment of a magazine of the peculiar construction which we have described.

We do not claim, broadly, the vertical locking-bolts in connection with the swinging lever pivoted to the breech-piece, whereby the breech-piece is unlocked in the opening movement of the lever and before the opening movement of the breech-piece commences and locked in the closing movement of the lever after the breech-piece has reached its closed position, as such a combination of elements is found in Letters Patent No. 306,577, granted for our invention October 14, 1884.

We claim—

1. In a magazine fire-arm, the combination of a longitudinally-reciprocating breech-piece, a trigger-guard lever having an arm extending up into the receiver and pivoted to the breech-piece near its forward end, a carrier arranged below the breech-piece and extending rearward at the sides of said lever, hung by slotted connection at its rear end to a stationary pivot in the receiver, the said lever adapted to bear upon the upper side of the carrier forward of the pivot, a spring upon the under side of the receiver and arranged to bear upward thereon between the two ends of the carrier, the receiver constructed with ribs above the carrier and forward of the breech-piece when in its open position, and the receiver also constructed with stops near the barrel and above the forward end of the carrier, substantially as described.

2. The combination, in a fire-arm, of a longitudinally-reciprocating breech-piece, a trigger-guard lever having an arm extending upward and forward into the receiver and pivoted to the breech-piece near its forward

end, one or more vertically-movable bolts arranged in the receiver and adapted to engage the breech-piece in its closed position, said bolts in slotted connection with the said lever in rear of its pivot end, a longitudinally-movable firing-pin arranged in the breech-piece, a sear hung in the lever near its pivot end and extending rearward, provided with a spring adapted to force the nose of the sear into engagement with the cocking-shoulder of the firing-pin, and a trigger also hung in the said lever, with a finger extending upward and adapted to bear upon the said sear to turn it from its engagement with the firing-pin, substantially as described.

3. A magazine fire-arm having a longitudinally-reciprocating breech-piece, the combination therewith of a box-magazine adapted to contain several cartridges, one above another, the said magazine arranged in the receiver forward of the rear end of the barrel, the said magazine opening rearwardly into the receiver in rear of the rear end of the barrel, the said breech-piece being adapted to engage the head of a cartridge presented to the receiver through said opening and withdraw the said cartridge therefrom in the opening movement of the breech-piece, with mechanism, substantially such as described, to receive the said cartridge so drawn from the magazine and present the same forward of the front end of the breech-piece, substantially as described.

4. In a magazine fire-arm having a longitudinally-reciprocating breech-piece, the combination therewith of a removable box-magazine substantially closed upon all sides, but open at the rear end at the upper edge, the receiver constructed with a recess at its forward end and below the barrel corresponding to and adapted to receive that portion of the magazine in which the said opening is formed, the said recess opening rearward into the receiver and so as to present the head of a cartridge through the opening in the magazine rearwardly into the receiver, the said magazine being adapted to be removably interlocked with the receiver, and mechanism, substantially such as described, adapted to engage the head of the cartridge presented through the said opening in the magazine and withdraw the said cartridge in the opening movement of the breech-piece, substantially as described.

5. A box-magazine for fire-arms, having a spring-follower hung upon one side of the magazine and so as to swing in the plane of the magazine, the follower extending along the side of the magazine, to which it is hung and turned transversely across, so as to stand below the column of cartridges in the magazine, while the cartridges themselves may pass down between the said follower and the opposite side of the magazine, substantially as described.

6. A box-magazine for fire-arms, closed upon all sides, but constructed with an opening at the rear end and at the upper edge of the magazine, the two sides of the magazine constructed with an inwardly-projecting rib forming a vertical groove upon the inside of the magazine at the rear end and with which grooves the said opening communicates, combined with a spring-follower adapted to support the column of cartridges and successively force them toward said opening and so as to successively present the heads of the cartridges to the said opening, substantially as described.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

JOHN M. BROWNING.
MATTHEW S. BROWNING.

Witnesses:
W. G. WRIGHT,
T. F. BROWNING.