

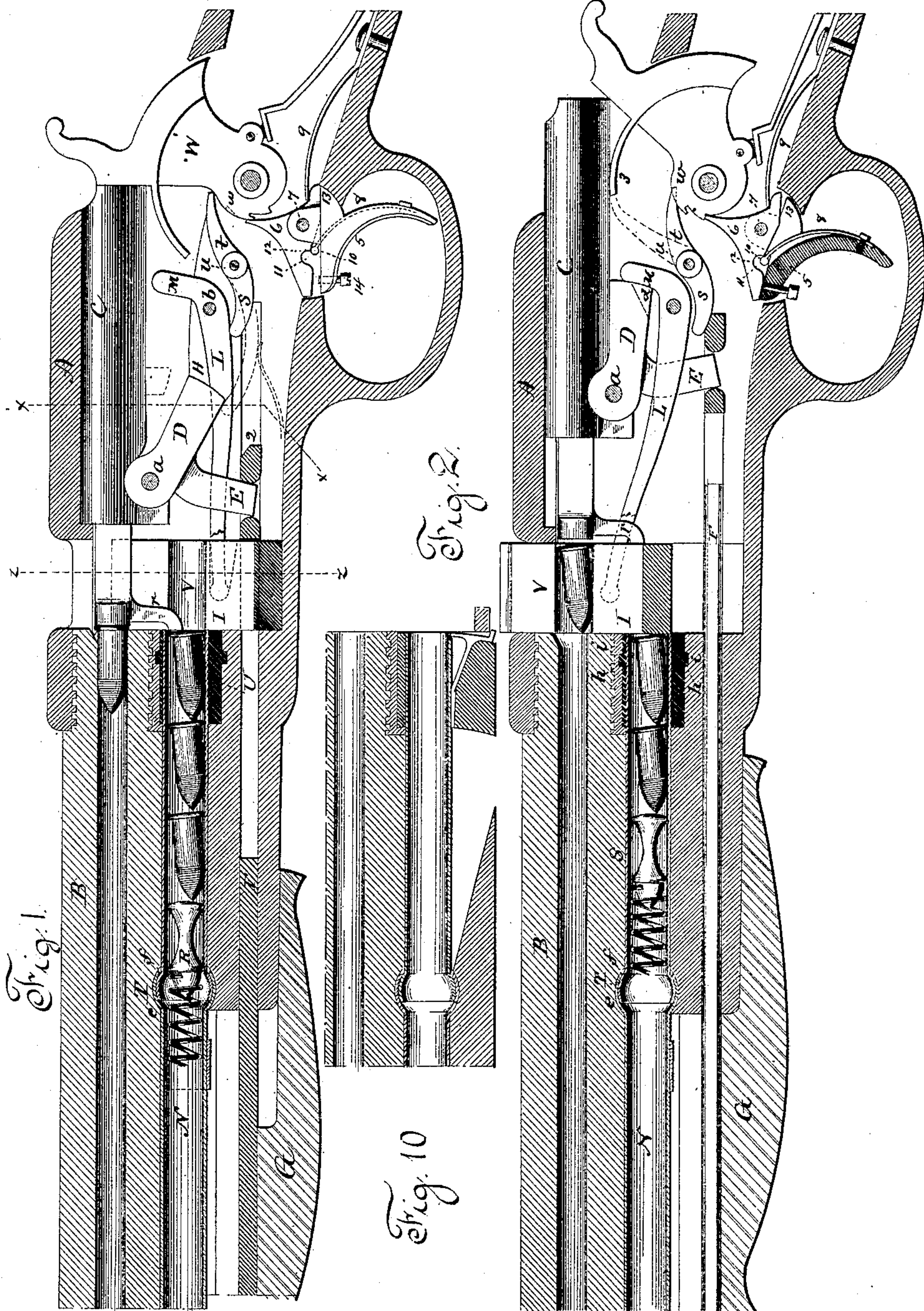
(No Model.)

3 Sheets—Sheet 1.

F. F. KNOUS.
MAGAZINE FIRE ARM.

No. 332,203.

Patented Dec. 8, 1885.



Witnesses.
J. H. Humway
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(No Model.)

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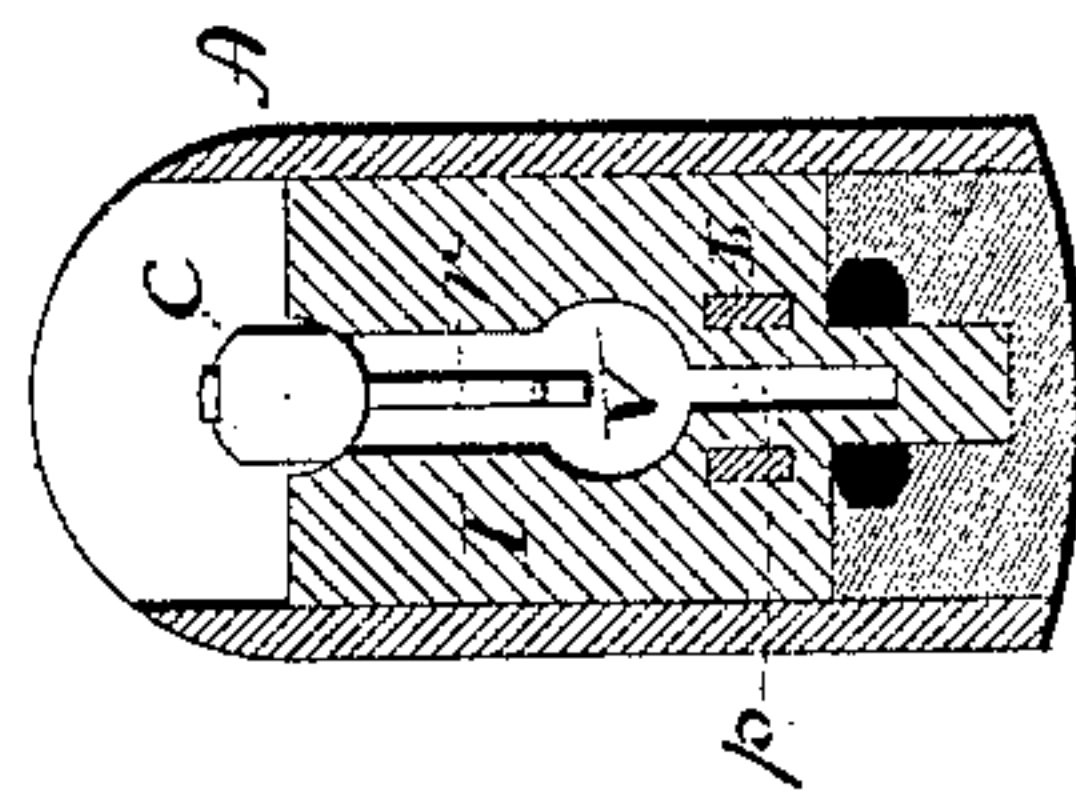
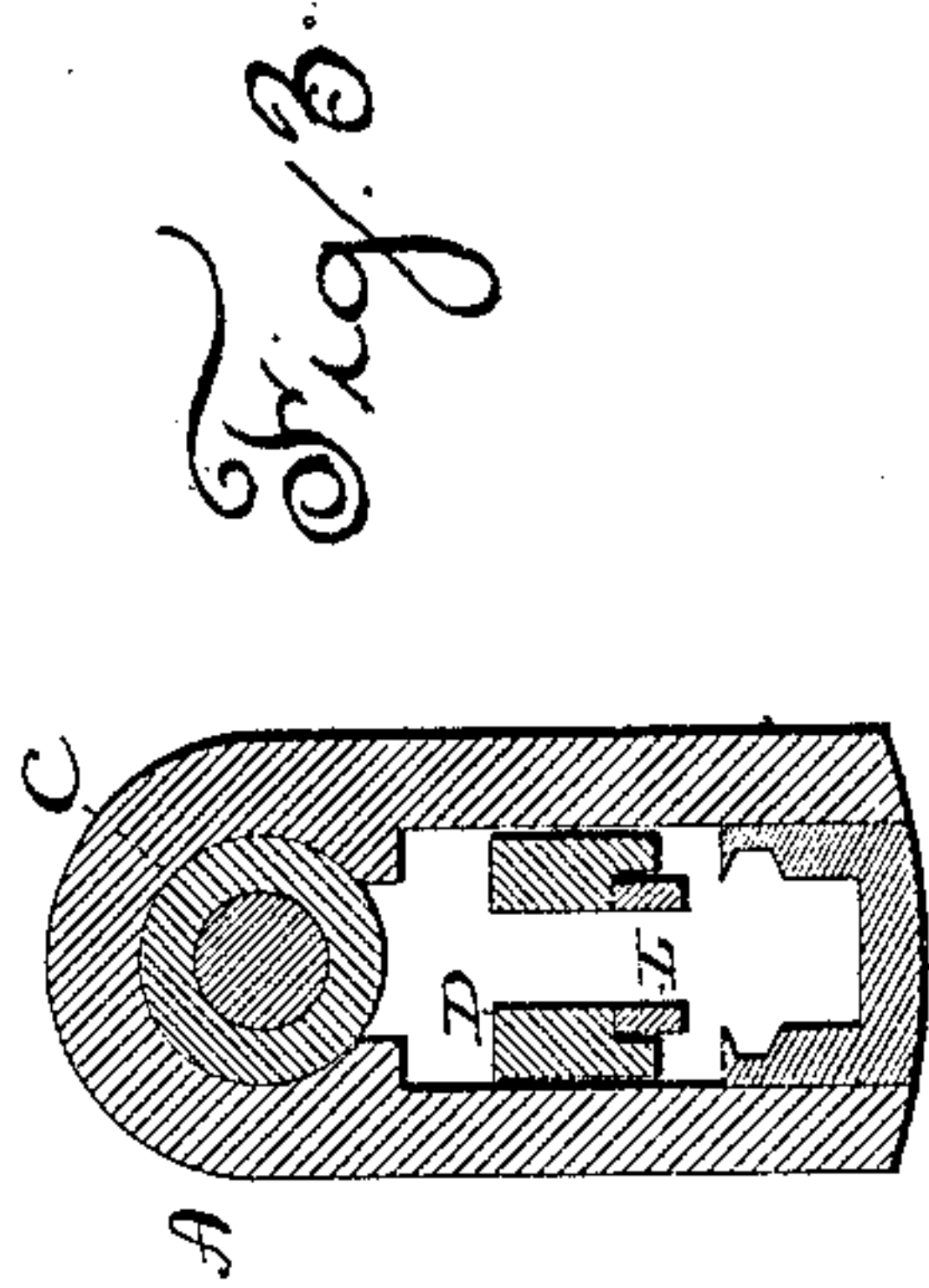
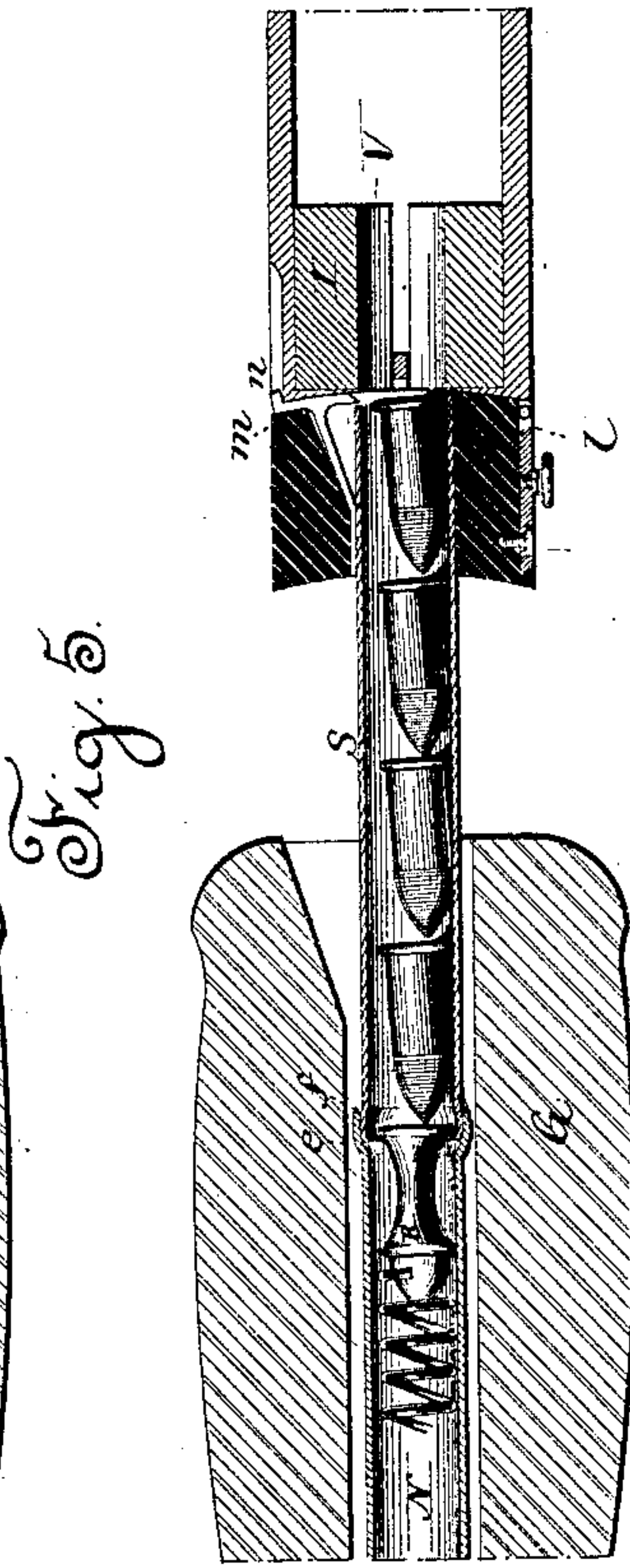
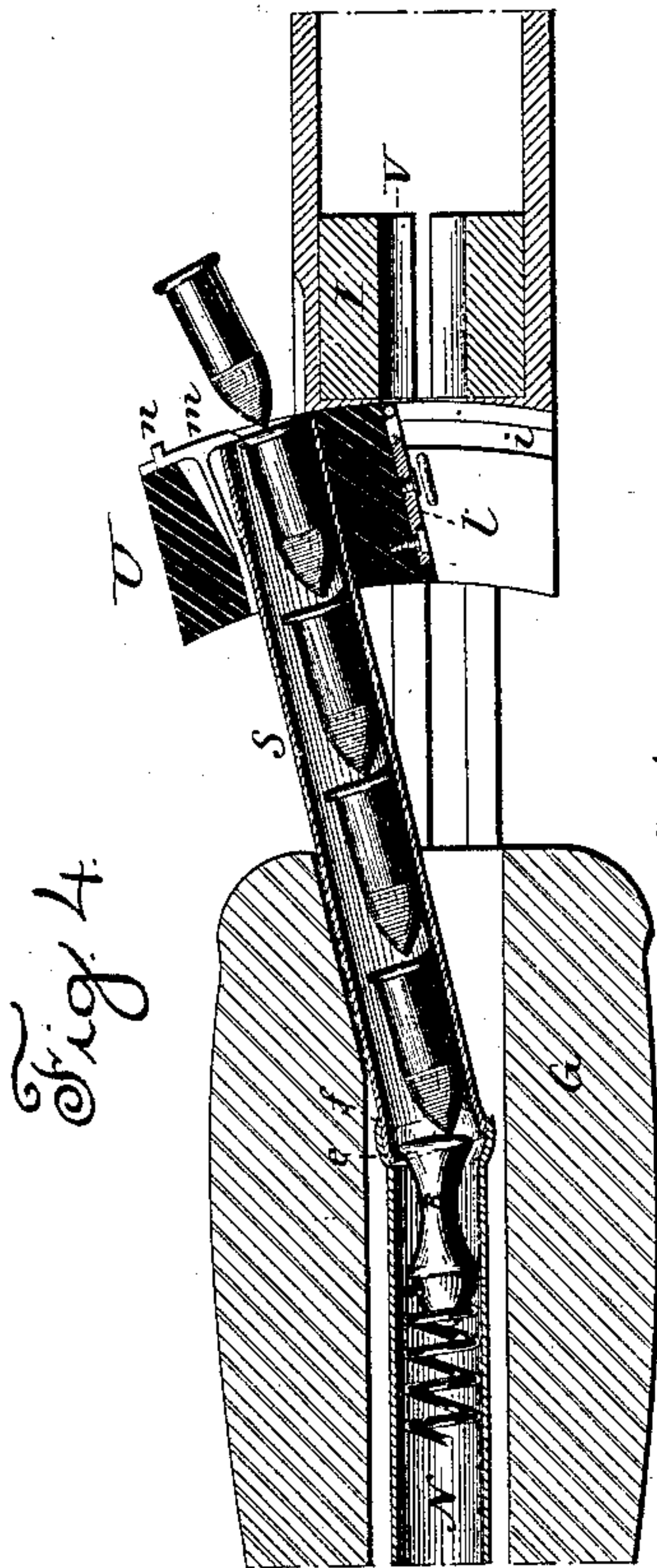
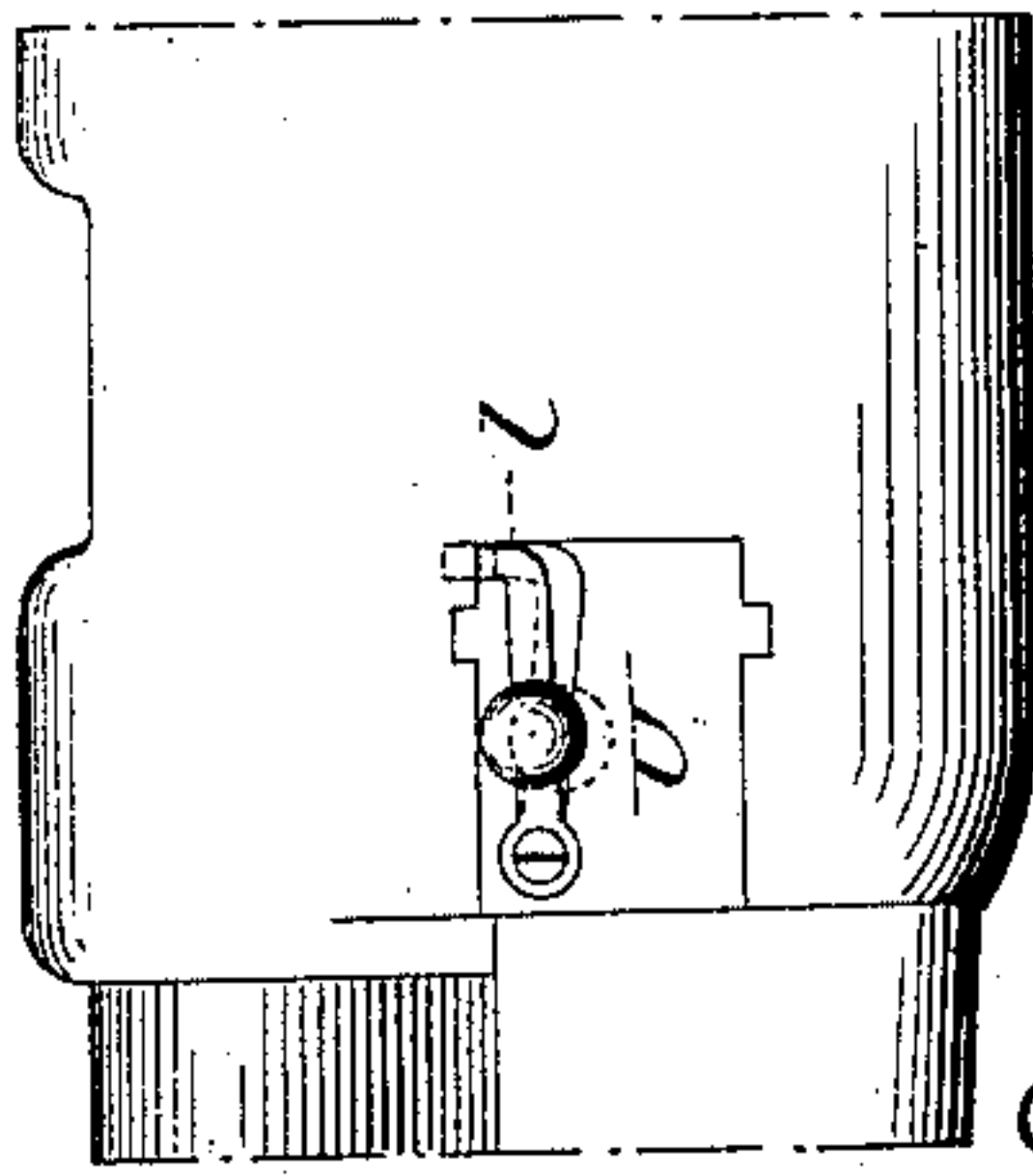


Fig. 6.



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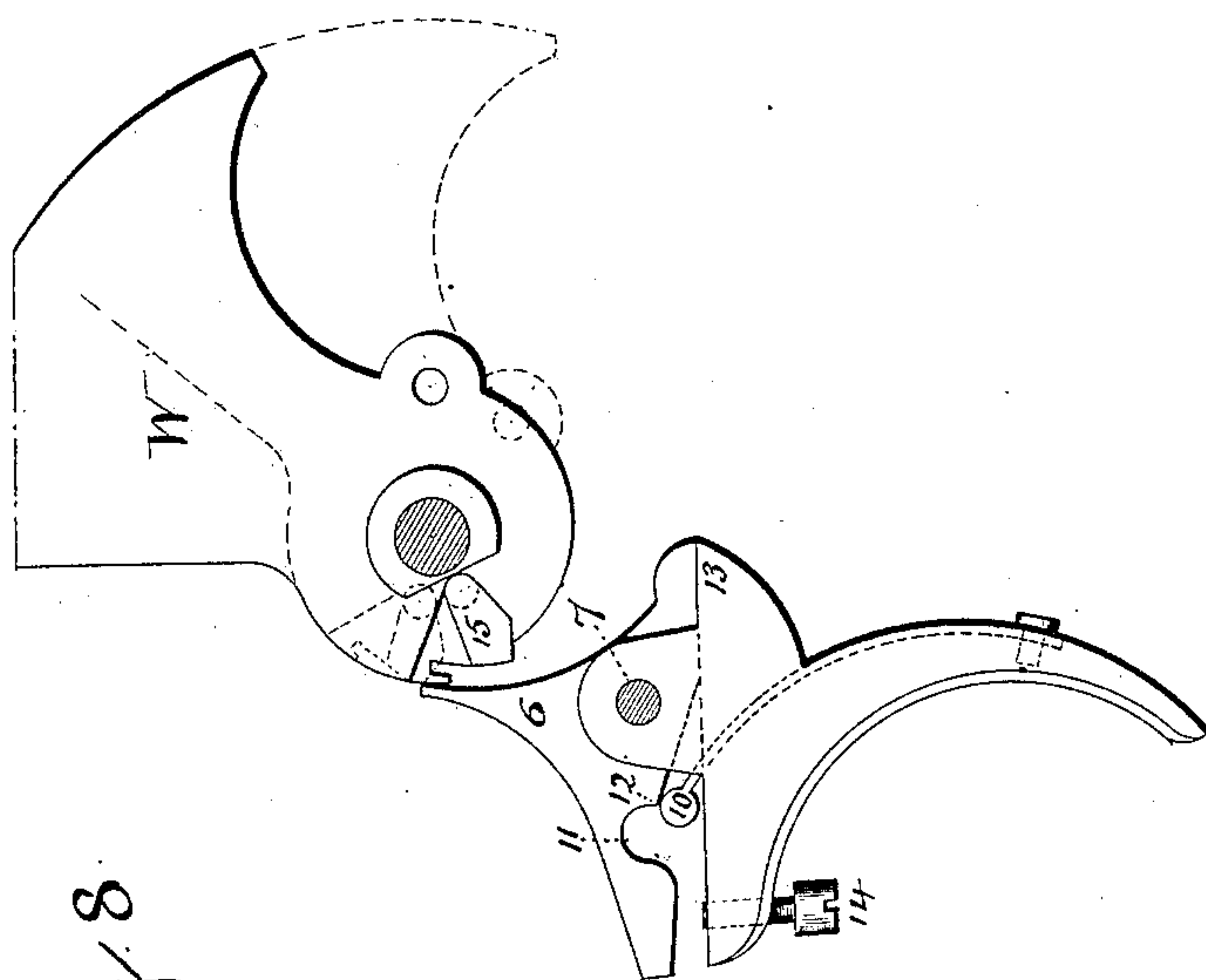
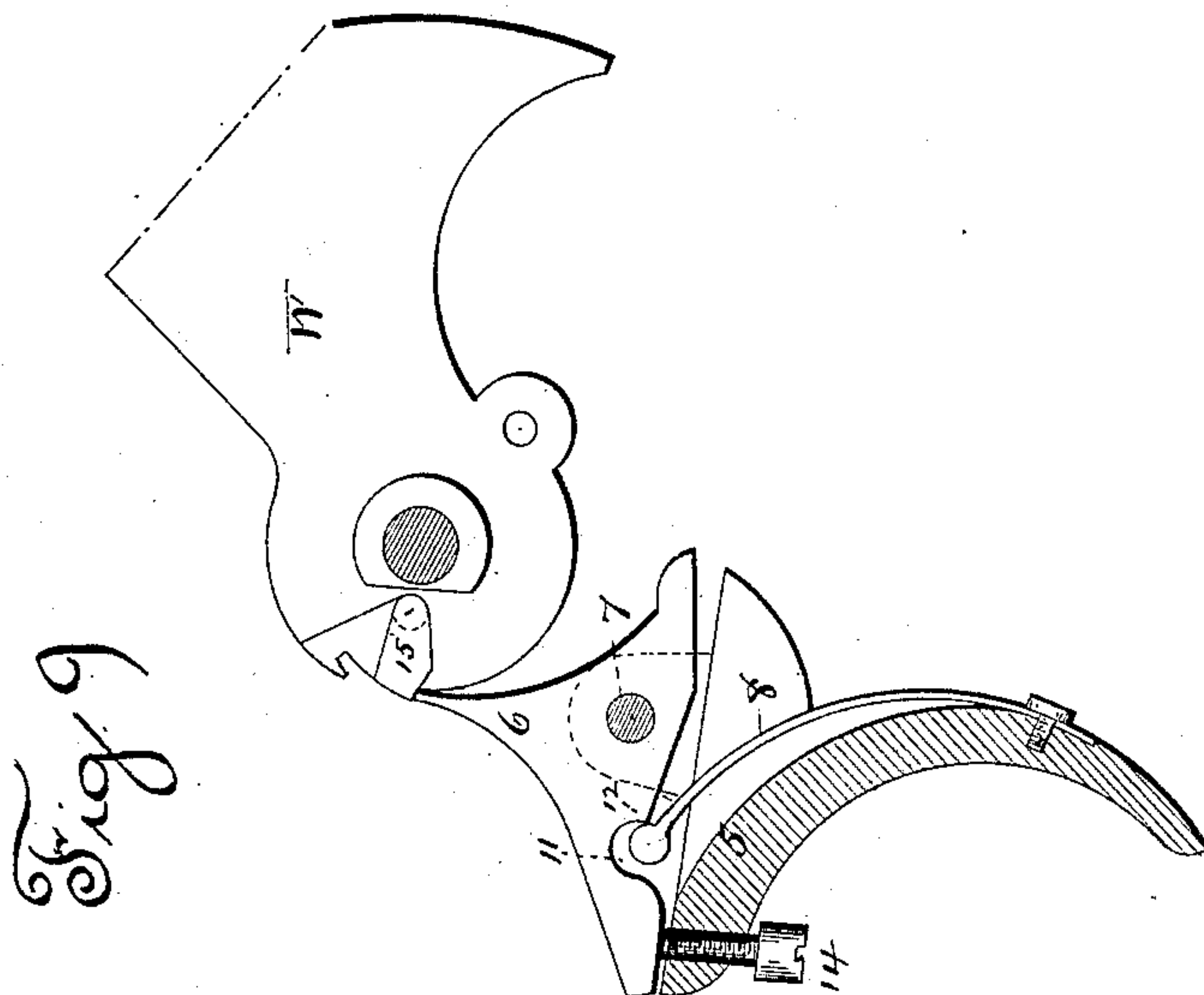
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UNITED STATES PATENT OFFICE.

FRANKLIN F. KNOUS, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE COLTS
PATENT FIRE ARMS MANUFACTURING COMPANY, OF SAME PLACE.

MAGAZINE FIRE-ARM.

SPECIFICATION forming part of Letters Patent No. 332,203, dated December 8, 1885.

Application filed September 14, 1885. Serial No. 177,019. (No model.)

To all whom it may concern:

Be it known that I, FRANKLIN F. KNOUS, of Hartford, in the county of Hartford and State of Connecticut, have invented a new Improvement in Magazine Fire-Arms; and I 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, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a longitudinal sectional side view showing the parts in their normal condition; Fig. 2, the same view showing the carrier raised, the breech-piece in its full-open position, also showing the trigger set; Fig. 3, a transverse section on line *x x* of Fig. 1; Fig. 4, a horizontal section through the magazine, illustrating the jointed part as swung outward for the purpose of charging; Fig. 5, the same showing the hinged part of the magazine-tube in its place in line with the carrier; Fig. 6, a side view of the forward portion of the receiver, showing the block; Fig. 7, a transverse section on line *z z* of Fig. 1; Fig. 8, a side view of a portion of the hammer and the trigger enlarged, as in the ordinary working; Fig. 9, the same view with the trigger set; Fig. 10, a modification.

This invention relates to an improvement in that class of magazine fire-arms in which the breech-piece is arranged to move longitudinally backward and forward in axial line with the barrel, and in which the magazine is arranged beneath the barrel, and also in which the carrier is of a block-like character, and arranged to work up and down in a vertical recess in the receiver, directly in rear of the barrel, and such as are adapted to use the smaller size of cartridges—such, for instance, as those known as “22s.” Parts of the invention, however, are applicable to other constructions of arms. In the usual construction of this class of arms, where the magazine is charged through the side of the receiver, the width of the frame or receiver cannot be practically reduced in proportion to the length of the cartridge. It is therefore impossible to insert such short cartridges in the usual way through the side of the receiver and push them home into the magazine; hence such short

cartridges are liable to clog in the passage. In the use of this class of arms as usually constructed, as soon as the cartridge-chamber of the carrier is brought into line with the magazine the entire column of cartridges contained in the magazine is suddenly thrown rearward, under the action of the magazine-spring, the extent of this sudden backward movement being the length of the cartridge-chamber in the carrier, and such sudden violent movement is repeated each time that a cartridge is thrown from the magazine into the carrier. With the best cartridges there will be more or less upsetting of the bullets, or further ramming them into the shells, thereby shortening the cartridges many times to a very considerable extent, so that the cartridge next in advance of one so shortened will partially enter the cartridge-chamber, and thereby clog and prevent the working of the carrier. Again, there is liability of premature explosion, due to the blow imparted in such movement of the column.

The object of my invention is to overcome these difficulties and specially adapt the arm to rapid charging and firing; and it 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 applied; C, the breech-piece, arranged in the receiver in axial line with the barrel. Near the forward end of the breech-piece a locking-brace, D, is hung upon a pivot, *a*, and from this brace an arm, E, extends downward into engagement with a slide, F, in the receiver, which slide extends forward through the receiver and terminates in a handle, G, the brace D being arranged to be turned down forward of an abutment, H, in the receiver, to lock the breech-piece in its closed position, and so that in the first part of the rear movement of the handle and slide the brace will be thrown up from its abutment, leaving the breech-piece free to be moved rearward by the continued rear movement of the handle, and so that on the forward movement of the handle the breech-piece will be drawn to its closed position, and then the brace turned down against the abutment H to lock the breech-piece in the closed position—a construction common and well known.

I is the carrier, arranged to slide vertically

in a recess in the receiver, directly in rear of the barrel, and after the manner of what is known as the "Winchester arm." The carrier is actuated by a lever, L, hung in the receiver, in rear of the brace, upon a pivot, *b*, the lever extending forward into a recess in the carrier, and so that as the lever is turned up and down upon its pivot it will correspondingly move the carrier. The lever in rear of the pivot is turned up to form a second arm, M, which stands in the path of the brace D in its rear movement, and so that as the brace approaches its rear position, as indicated in Fig. 2, it strikes the arm M of the lever L, forcing it backward, and correspondingly turning up the forward arm, and so as to raise the carrier to its up position, as seen in Fig. 2. The lever L is of a bifurcated character, as seen in Fig. 3, from the hub forward, and so that the arm E of the brace works between the two parts of the lever. The brace is in width so as to cover and to extend laterally beyond the two parts of the lever; but the central part of the lower side of its bearing end is cut away, as at *d*, so that a portion of the brace may pass over the outside beyond each of the two parts of the lever, and so that as the breech-piece is drawn to its closed position, and then as the brace is turned downward its central part, *d*, will strike the upper side of the lever L and turn the lever to its down position, as seen in Fig. 1, and take with it the carrier to its lowest position.

Beneath the barrel the magazine N is arranged. This magazine is of tubular shape, and is provided with the usual magazine-spring, P, which carries at its rear end a follower, R, adapted to work through the magazine, and so that as the cartridges are introduced the follower will be forced forward, compressing the spring. Then the reaction of the spring will force the cartridges to the rear.

The magazine is made in two parts, N being the forward part and fixed to the barrel, and S the rear portion, the division being a short distance forward of the forward end of the receiver, and at the point of junction between the two parts a joint, T, is made in the magazine-tube. This is best made in a ball-and-socket form, as seen in Figs. 1 and 2—that is to say, one tube is expanded to form a spherical-shaped shell, *e*, and the other to a corresponding spherical-shaped shell, *f*, inside the first. In the forward end of the receiver—that is, forward of the carrier and beneath the barrel—a block, U, is arranged to slide in a horizontal or transverse plane, and upon a circle of which the center of the joint T is the center. The block U is guided by a segmental rib, *h*, in corresponding grooves, *i*, in the receiver, preferably both above and below. The rear end of the movable rear portion, S, of the magazine-tube is fixed in this block U, and opens through it at the rear, as seen in Figs. 4 and 5, and so that as the block is turned outward—say to the right, as seen in Fig. 4—the rear portion, S, of the tube will be carried with

it, and so as to expose the rear end of the magazine outside the receiver, but so that when the block is in its closed position, as seen in Fig. 5, the magazine-tube stands in line with the cartridge-chamber V in the carrier I, that chamber V, when the carrier is in its down position, as seen in Fig. 1, forming, substantially, a continuation of the magazine-tube, in the usual manner for this class of carriers. The block U is provided with a latch, *l*—say upon the left side—adapted to engage the receiver when the block and its magazine are in their normal or closed position, as seen in Fig. 6. This latch is best hung on the end of the block, and so as to swing up and down, as indicated in Fig. 6, to lock and unlock.

In the block a spring-catch, *m*, is arranged at the rear end, and upon the side that swings outward, the face of the catch toward the magazine-tube, and so that as the block is turned outward, as seen in Fig. 4, the catch will swing inward, and so as to extend into the magazine-tube so far as to engage the head of each cartridge as it is inserted, as indicated in Fig. 5. The rear side of the catch is beveled, so that as the cartridge is pressed forward it will cause the catch to swing outward, so as to permit the entrance of the cartridge so forced into the magazine, and then return to engage the head of the said cartridge, as seen in Fig. 4, thus serving as a stop for the column of cartridges as they are introduced into the magazine. The catch is constructed with a projection, *n*, arranged to engage the receiver as the block is forced inward to its closed position, and before the block shall have reached that closed position, so that in completing the said closed position the catch will be drawn outward, as seen in Fig. 5, to leave the passage free from the magazine into the carrier. If the block should be turned outward while the magazine is charged, the catch will spring inward and engage the column of cartridges, so that when open there will be no liability of the escape of the cartridges therein.

Instead of arranging the block U to work in a horizontal plane transversely through the receiver, it can be arranged in a vertical plane, as seen in Fig. 10, the path of movement being from the center of the joint, as before, and so as to expose the rear of the block and the open end of the magazine-tube below the bottom of the receiver.

In order that the follower may work freely around the bend in the magazine when the magazine is being charged, I reduce it in diameter from its extreme ends toward the center, making it of spool shape, so that it can take a bearing in the magazine only at its extreme ends, which will permit it readily to pass the bend when moving in either direction.

To avoid the possible clogging of the cartridges between the magazine and carrier, and premature explosion hereinbefore mentioned, and to make the movement of the cartridge into the carrier simultaneous with and so as

to follow the breech-piece, I construct the breech-piece with a downwardly-projecting finger, *r*, which extends into the cartridge-chamber V when the carrier is in its down position, as seen in Fig. 1, the forward end of this finger being slightly forward of or substantially flush with the front face of the carrier when the breech-piece is in its extreme closed position. As the breech-piece moves rearward, the column of cartridges is free to follow, and the rearmost cartridge passes into the chamber in the carrier and is then raised to its up position. As the column thus simply follows the breech-piece, the sudden blow-like action of the column of cartridges moving under the action of the magazine-spring without any retarding device is avoided, and the difficulties arising therefrom are overcome.

The finger *r* holds the column of cartridges entirely within the magazine until the opening movement of the breech-piece. Then the rear cartridge is permitted to follow it onto the carrier, and because of such control of the column by the movement of the breech-piece clogging between the carrier and the magazine is avoided. As the breech-piece passes through the cartridge-chamber V while the carrier is up, a longitudinal slot, *p*, is made in the bottom of the chamber V for the passage of the finger *r*. (See Fig. 7.)

For rapid firing it is desirable that the hammer shall be locked in its cocked position, so that it cannot be discharged until all the parts are in proper position for firing. To do this, I arrange a two-armed lever, *s t*, upon a pivot, *u*, between the hammer W and the carrier, the forward arm extending beneath the carrier forward of its pivot, the rear arm extending toward and over the hub of the hammer. The hammer is constructed with a lock-notch, *w*, which stands in the plane of the rear end of the arm *t*. When the carrier is in its down position, as seen in Fig. 1, the carrier-lever L bears upon the forward arm, *s*, of the said hammer-lever, and turns its rear arm, *t*, upward and out of the path of the notch *w* in the hammer; but when the carrier is raised, as seen in Fig. 2, the lever is free. The rear end, 2, of the slide F is constructed to pass beneath the forward arm, *s*, of the said lever as it reaches its extreme rear position, as seen in Fig. 2. This rear end, 2, of the slide passes beneath the arm *s* and forces that arm *s* upward, and the arm *t* correspondingly downward into the lock-notch *w* in the hammer, as seen in Fig. 2, so that the hammer is positively engaged, and cannot be discharged so long as the said lever remains in this locked position. The hammer is thrown slightly beyond the full-cocked position by the extreme rear movement of the breech-piece, as indicated in Fig. 2, and so that as the locking-lever enters the notch in the hammer and the breech-piece commences its forward movement the force of the mainspring bears the hammer against the arm *t* of the lever, so as to hold the two in

firm engagement, and until all the parts are brought to their closed position, and the lever is thrown from such engagement with the hammer by the final descent of the carrier-lever, and as the carrier-lever is not moved downward until in the final locking movement of the locking-brace D the hammer is positively locked until the breech-piece is safely locked by the brace.

If the trigger be held from possible engagement with the hammer, the release of the lever *s t* will permit the hammer to fly forward to impart its blow; hence the firing may be done entirely by the back and forward movement of the lever independent of the trigger, and may thus be as rapid as it is possible to make such complete movement of the parts.

While I prefer to construct the locking-lever to engage the hammer near its hub, it may make its engagement with the guard-piece 3, which extends forward from the front face of the hammer to close the opening in the receiver through which the hammer works, as indicated in broken lines, Fig. 2. In either case the locking of the hammer is positive.

It will be observed that the lever *s t* is practically operated by the locking movement of the brace; but it may be done directly from the brace, as indicated in broken lines, Fig. 1—that is, by an extension of the arm *s*, so that the brace will strike it as it comes to its locked position, and turn up the other arm to disengage the hammer, as seen in Fig. 1—and such would naturally be the construction were the arm a single loader instead of a magazine-gun, and in case some other of the known mechanisms be employed to operate the brace instead of the slide, like engagement should be made by such mechanism to turn the forward arm of the lever upward to bring the rear end into the path of the bearing on the hammer. A spring, however, may be employed for this purpose, as indicated in broken lines, Fig. 1.

The carrier-lever, instead of being raised by the brace striking the upwardly-turned arm M, may be actuated by a downward projection from the breech-piece, as indicated in broken lines, Fig. 1, the arm M standing in the path of this downward projection. It is only essential to this part of my invention that the upwardly-turned arm shall stand in the path of one of the moving parts in the opening movement of the breech-piece.

It is not essential to this invention that the mechanism of the arm shall be worked through the handle and slide, as the brace may be actuated by any of the mechanisms adapted to such purpose, and too well known to require particular description in this application.

In this class of arms, particularly for sharpshooting, a sensitive trigger is desirable; and it is also desirable that the trigger should not always be so sensitive but that it may be set as a sensitive trigger at the pleasure of the operator. To make provision for such adjustment of the trigger, I construct the trigger in two parts, 5 6, the part 5 being the finger-

piece and the part 6 the portion which will engage the hammer. The two parts are hung upon the same pivot, 7, and so that they stand in the same plane; but the two parts are permitted a certain movement independent of each other. On the part 5 a spring, 8, is arranged, which extends upward, and so as to bear upon the underside of the part 6, as seen in Fig. 8, and forward of the pivot, the power of the spring serving to separate the forward parts of the trigger. The part 6 extends to the rear of the pivot, and on this extension the trigger-spring 9 bears, and so that the rear extension of the part 6 will bear upon the rear extension of the part 5, holding the two parts together, and the spring 8 bears upon the part 6 forward of the pivot, which tends to separate or turn the forward parts from each other. Immediately in front of the point where the end 10 of the spring 8 bears is a transverse notch, 11, forming a sharp angle, 12, on the bearing-face of the part 6, and so as to form a slight rounded shoulder on its upper side near the end. Normally, the end of the spring rests in rear of this angle 12. The end of the spring is rounded.

Standing as in Fig. 8, the trigger works as a common unset trigger, the pull of the trigger being directly communicated to the part 6 through the bearings in rear of the pivot. When thus used as a common unset trigger, the spring in the trigger holds and supports the two parts as if a common unset trigger.

To set the trigger after the hammer is cocked, the trigger is pressed forward to carry the end 10 of the spring forward of the angle 12 in the part 6, as seen in Fig. 9. This movement permits the rounded shoulder of the spring to escape or pass the angle 12 so far as to permit the shoulder to take a slight hold on the part 6 over the angle 12, as seen in Fig. 9, the hold being sufficient to retain the two parts in that position, but yet so that the spring may be easily drawn from engagement at the shoulder. This separates the two parts at the rear and leaves the finger-piece free to be pulled independent of the part 6. If in this condition the finger-piece be pulled so far as to permit the rounded shoulder of the spring to escape downward from the shoulder or angle 12 on the part 6, upon such escape of the spring it will fly rearward beneath the part 6, tending to turn the part 5 downward and rearward, and the reaction of the spring being quicker than the pull of the finger will impart a strong impulse to the finger-piece independent of the finger, and under such impulse the rear portion, 13, strikes the rear projecting portion of the part 6, and imparts a blow to the part 6 sufficient to throw it from its engagement with the hammer. The finger-piece and the part 6 are adjusted with relation to each other by a screw, 14, so that the extent of the bearing of the end of the spring 8 upon the part 6 forward of the angle may be varied with a great degree of nicety, and so that the slightest touch on the finger-piece will

cause the spring to escape from the angle and impart the blow to the part 6 and discharge the hammer. The trigger will be more or less sensitive, according as the spring is permitted to pass forward of the angle 12 to a greater or less extent.

The hammer is provided with the usual fly, 15, to prevent the possibility of the trigger catching the hammer on the half-cock notch, which otherwise it might do under the action of the trigger-spring. This fly, however, is a common and well-known device for this purpose.

I claim—

1. In a magazine fire-arm in which the breech-piece is arranged to move longitudinally in axial line with the barrel, the combination therewith of a vertically-sliding carrier, a brace hung to the breech-piece and arranged to drop forward of an abutment in the receiver when the breech-piece is in its closed position, and a lever hung in rear of said abutment, one arm extending forward into engagement with the carrier, the other arm turned upward into the path of one of the moving parts of the arm in opening the breech-piece, the said brace arranged to engage the forward arm of the said lever in its locking movement, substantially as described.

2. In a magazine fire-arm, the combination of the longitudinally-movable breech-piece, a brace hung to said breech-piece, and so as to swing in a vertical plane, an abutment in the receiver, against which said brace may turn when the breech-piece is in its extreme closed position, a slide in connection with said brace and extending forward, provided with a handle beneath the barrel, a carrier arranged to move vertically in the receiver, and a lever hung in the receiver in rear of the brace, one arm extending forward into engagement with the carrier and beneath said brace, the other arm turned upward into the path of one of the moving parts of the arm in opening the breech-piece, the said brace arranged to engage the forward arm of the said lever in its locking movement, substantially as described, whereby, in the opening movement of the breech-piece, the carrier is raised, and on the locking movement of the breech-piece the carrier descends.

3. In a fire-arm, the combination of a longitudinally-movable breech-piece, a brace hung to said breech-piece, an abutment in the receiver against which said brace is arranged to engage when the breech-piece is in its closed position, a hammer hung in rear below said breech-piece, a lever hung in the receiver between said brace and hammer, the forward arm extending toward the brace and the rear arm toward the hammer, the hammer constructed with a bearing corresponding to the rear end of said lever, and mechanism, substantially such as described, between said brace and lever, whereby, as the brace is turned to its locking position, the rear end of said lever is thereby turned out of the path

of the bearing on the hammer, and on the raising of the brace from its locking position the rear end of the said hammer is permitted to come into the path of said bearing on the hammer, substantially as described.

4. In a magazine fire-arm, the combination of a longitudinally-movable breech-piece, a brace hung to said breech-piece, an abutment in the receiver against which said brace may be turned when the breech-piece is in its extreme closed position, a carrier-lever hung in rear of said brace, and extending forward beneath said brace into connection with the carrier, the said brace constructed to bear upon said lever when the brace is in its locked position, a hammer hung in the receiver at the rear of the breech-piece, and a lever hung in the receiver between the brace and hammer, the rear arm of said lever adapted to engage a bearing on the hammer, the other arm extending forward beneath the carrier-lever, substantially as described, whereby, as the carrier-lever descends, the said brace will be turned out of the path of the said bearing on the hammer.

5. In a magazine fire-arm in which the magazine is arranged beneath the barrel, the magazine constructed in two parts, the forward part fixed to the barrel, the rear part hung to the forward part, so as to swing therefrom without movement of the forward part, and so as to expose the mouth of the rear part outside the receiver for the purpose of charging, substantially as described.

6. In a magazine fire-arm in which the magazine is arranged beneath the barrel, the said magazine constructed in two parts, the forward portion fixed and the rear portion jointed to the fixed portion, so as to swing in a horizontal plane, a transversely-sliding block in the receiver forward of the carrier, the said block fixed to the rear end of the said hinged part of the magazine, substantially as described, whereby said block may be turned from its place in the receiver to expose the open end of the magazine, and returned to close the magazine.

7. In a magazine fire-arm in which the magazine is arranged beneath the barrel, the magazine constructed in two parts, the forward part fixed to the barrel and the rear portion hinged to the forward part, so as to swing in a horizontal plane, a block arranged in the receiver in transverse guides, the said hinged part of the magazine terminating in said block, and so that by turning said block from the receiver the rear end of the hinged portion of the magazine will be exposed outside the receiver, and a spring-catch in the said block arranged to fall in rear of the magazine as the said block is turned from the receiver, and so as to serve as a catch for the column of cartridges, substantially as described.

8. In a magazine fire-arm in which the magazine is arranged beneath the barrel, the said magazine constructed in two parts, the forward portion fixed and the rear portion jointed to the fixed portion, so as to swing in a hori-

zontal plane, a transversely-sliding block in the receiver forward of the carrier, the said block fixed to the rear end of the said hinged part of the magazine, substantially as described, whereby said block may be turned from its place in the receiver to expose the open end of the magazine, and returned to close the magazine, and a latch on said block adapted to lock said block to the receiver when in its closed position, substantially as described.

9. In a magazine fire-arm in which the magazine is arranged beneath the barrel, the magazine constructed in two parts, the forward part fixed, the rear part hung to the forward part, so as to swing therefrom without movement of the forward part, and so as to expose the mouth of the rear part outside the receiver for the purpose of charging, and a follower in said magazine of substantially spool shape, substantially as and for the purpose described.

10. In a magazine fire-arm, the combination therewith of a longitudinally-movable breech-piece, and a carrier arranged to move vertically in said receiver to transfer a cartridge from the magazine to a position forward of the front face of the open breech-piece, the said carrier constructed with a cartridge-chamber in line with the magazine when the carrier is in its down position, and through which the breech-piece passes when the carrier is in its up position, the said breech-piece constructed with a downwardly-projecting finger extending down into and so as to work through said cartridge-chamber when the carrier is in its down position, the said carrier constructed with a recess below said cartridge-chamber, through which said projection will pass when the carrier is in its up position, substantially as described.

11. A set trigger for fire-arms composed of two parts, 5 6, hung upon the same pivot and in substantially the same plane, the part 5 forming the finger-piece and the part 6 adapted to engage the notch of the hammer, both parts extending forward of and also in rear of the pivot, the forward extension of the part 6 constructed with a transverse notch, 11, and the spring 8 on said part 5, its free end adapted to bear upon the under face of the part 6, adjacent to the said notch, and a trigger-spring, substantially as described.

12. A set trigger for fire-arms composed of two parts, 5 6, hung upon the same pivot and in substantially the same plane, the part 5 forming the finger-piece and the part 6 adapted to engage the notch of the hammer, both parts extending forward of and also in rear of the pivot, the forward extension of the part 6 constructed with a transverse notch, 11, and the spring 8 on said part 5, its free end adapted to bear upon the under face of the part 6 adjacent to the said notch, with an adjusting-screw, 14, between the two parts, and a trigger-spring, substantially as described.

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