

(No Model.)

2 Sheets--Sheet 1.

W. H. ELLIOT.
Magazine Fire Arm.

No. 232,178.

Patented Sept. 14, 1880.

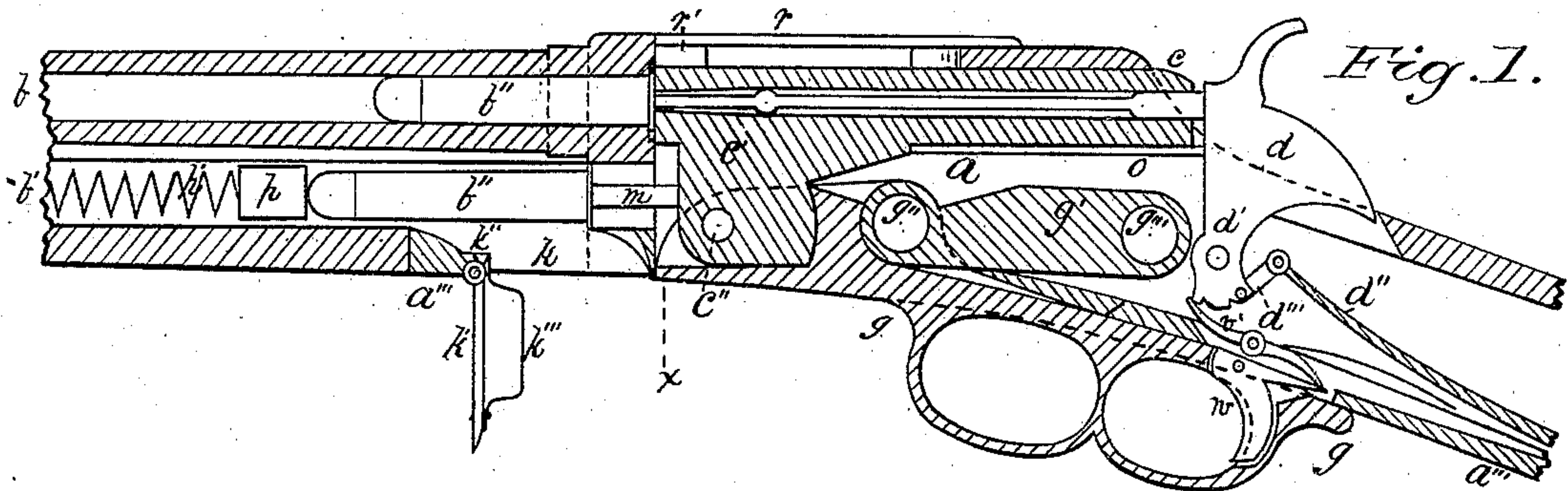


Fig. 2.

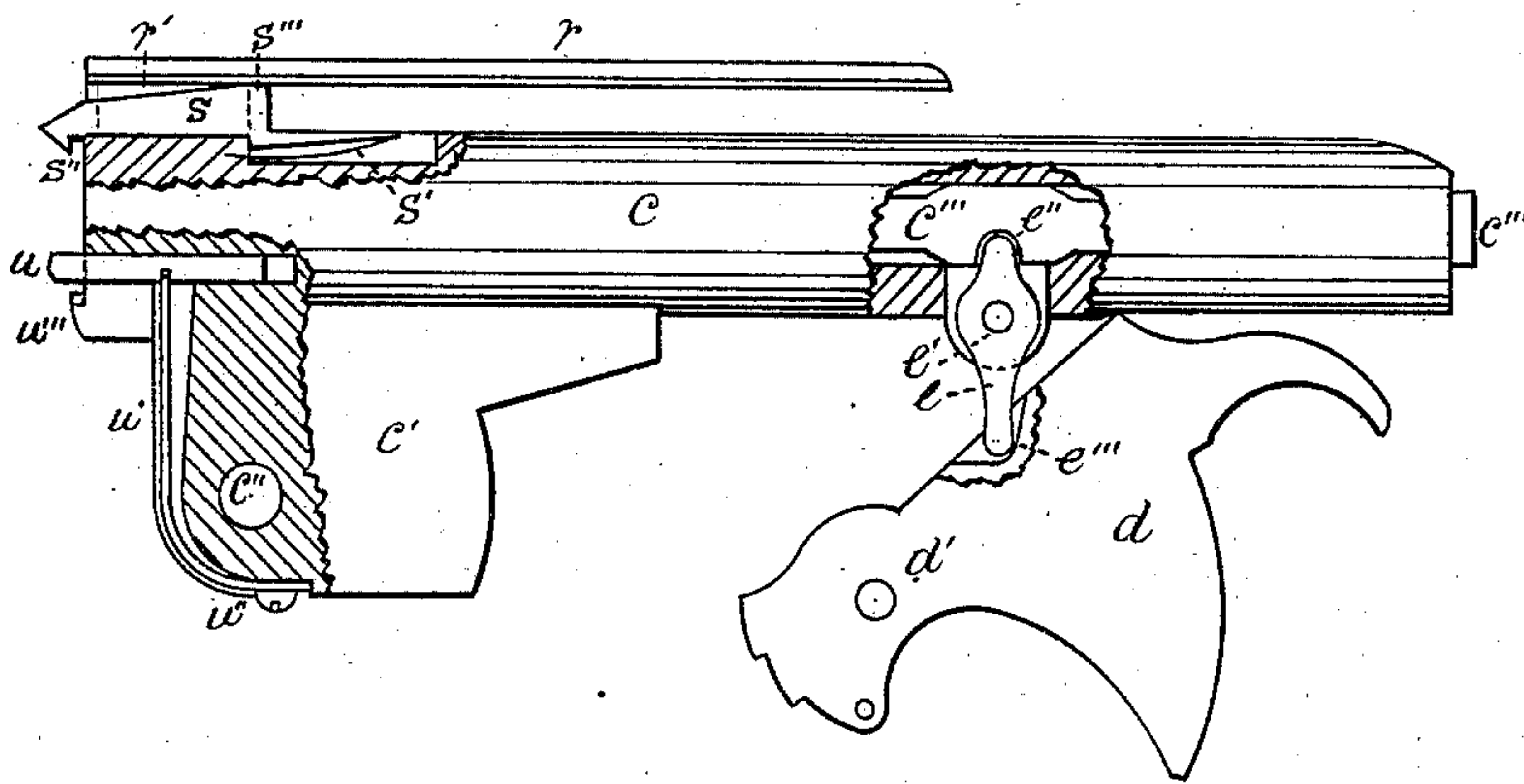


Fig. 3.

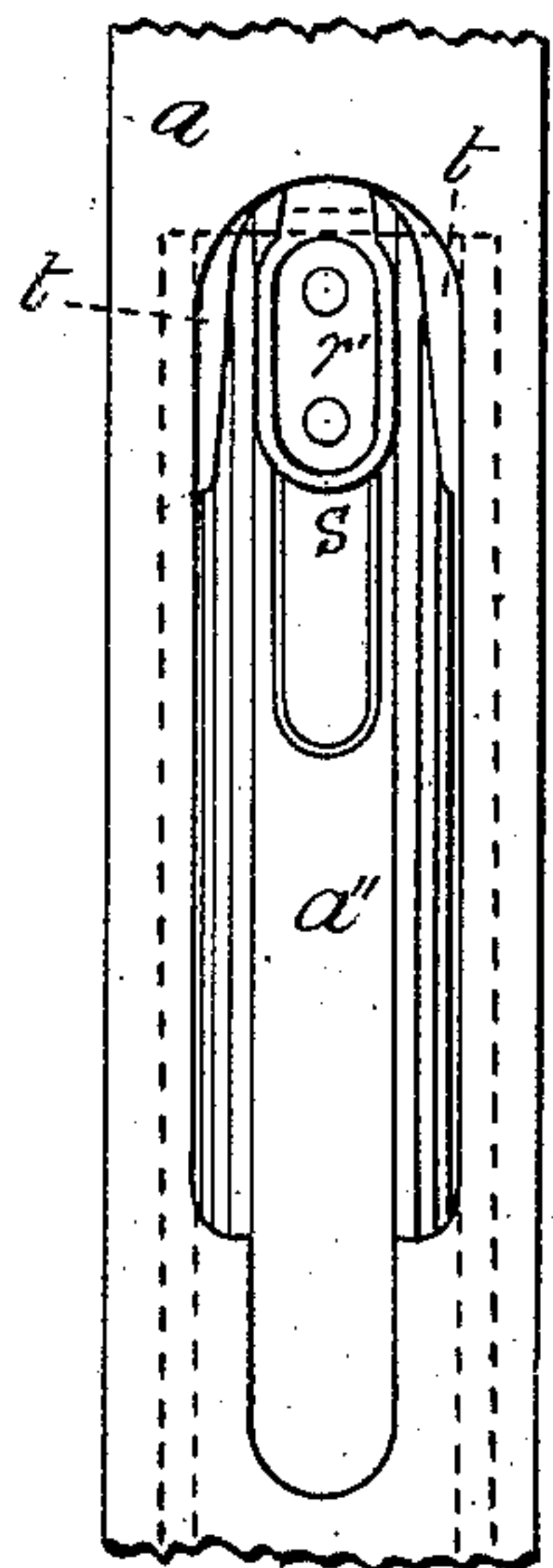


Fig. 4.

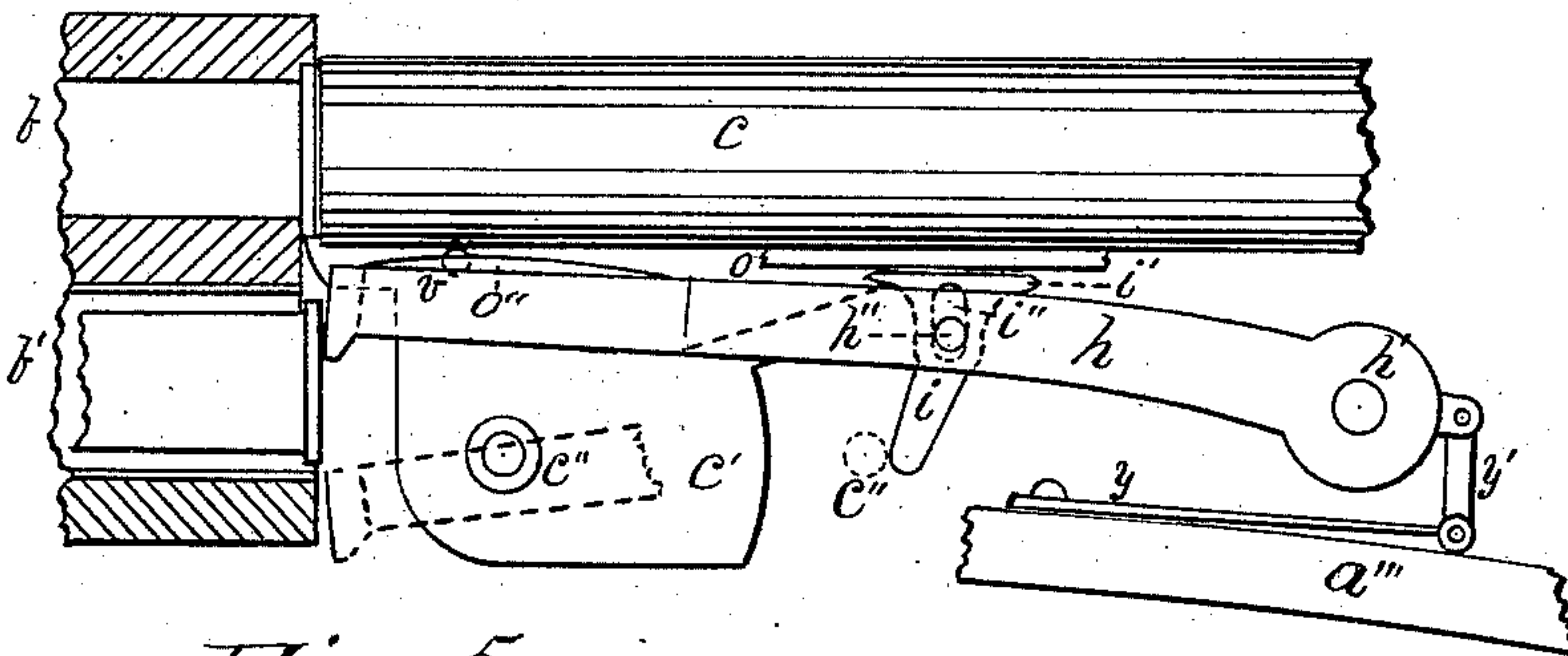


Fig. 5.

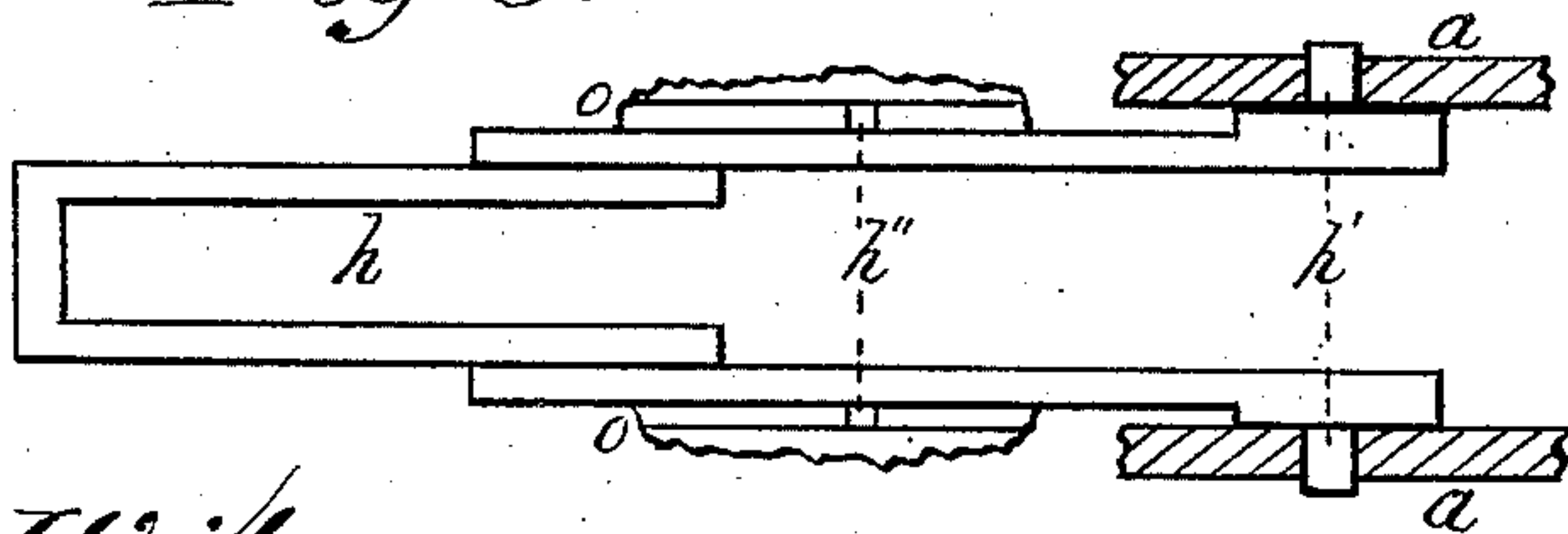
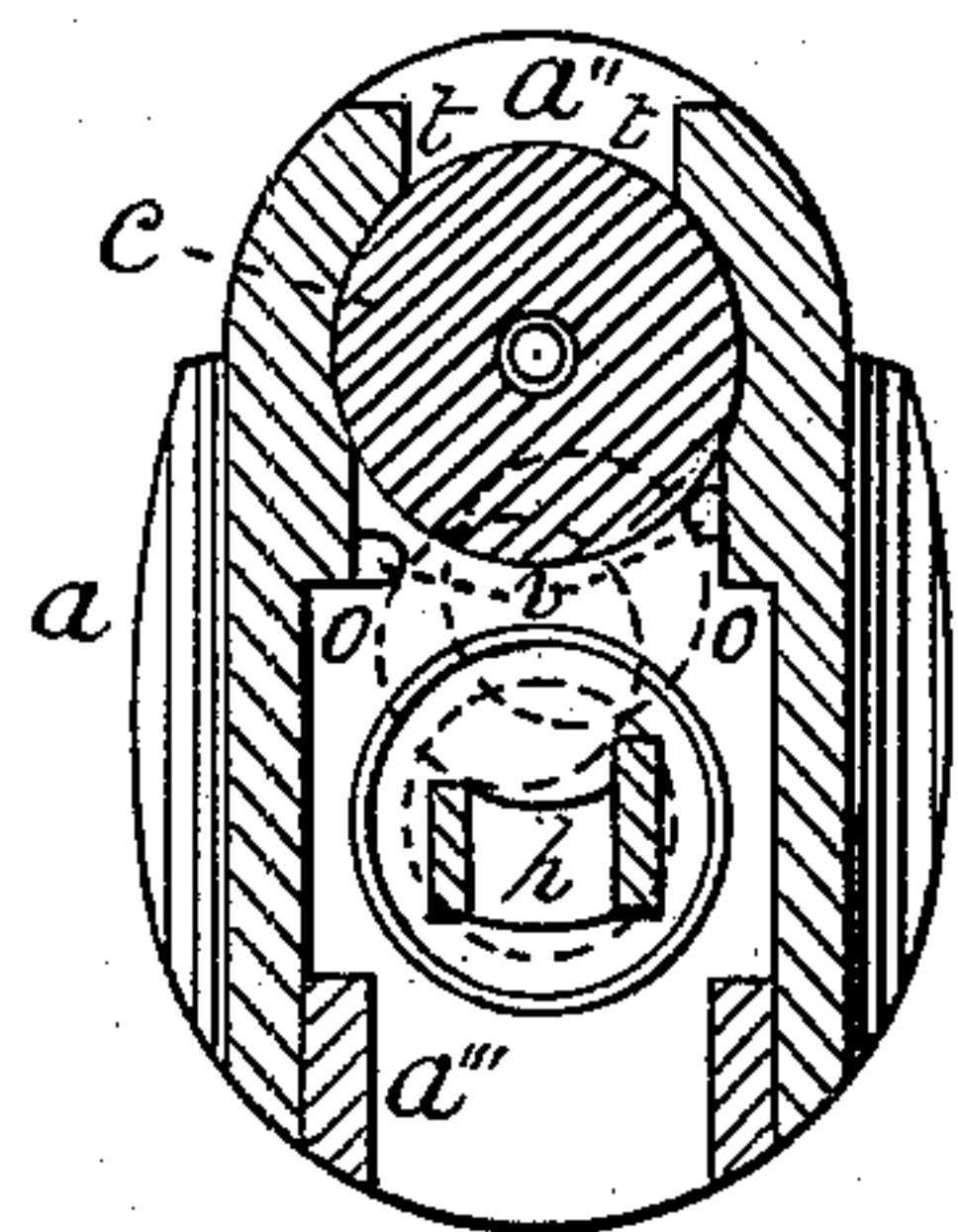


Fig. 6.



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(No Model.)

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Fig. 7.

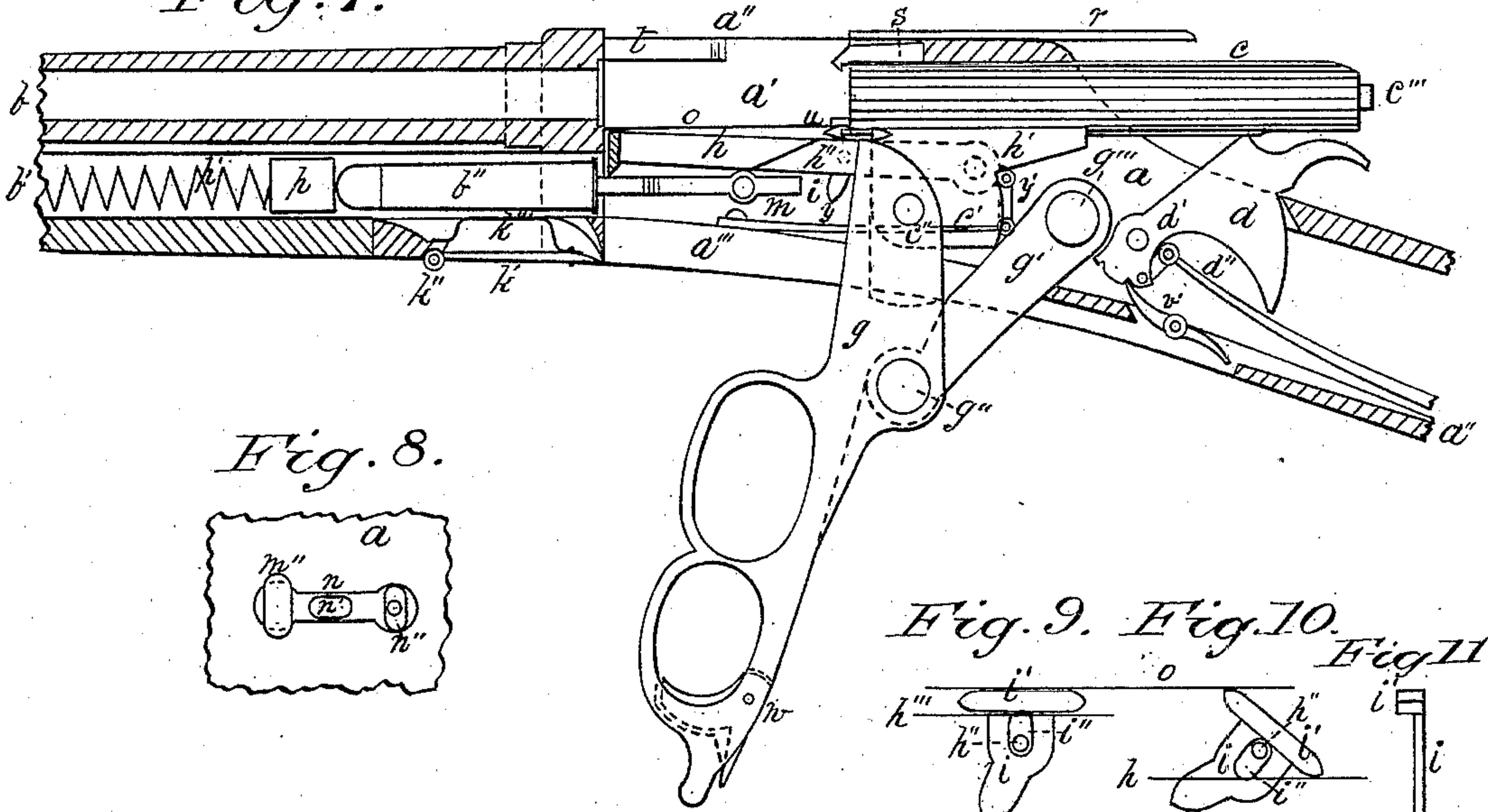


Fig. 8.

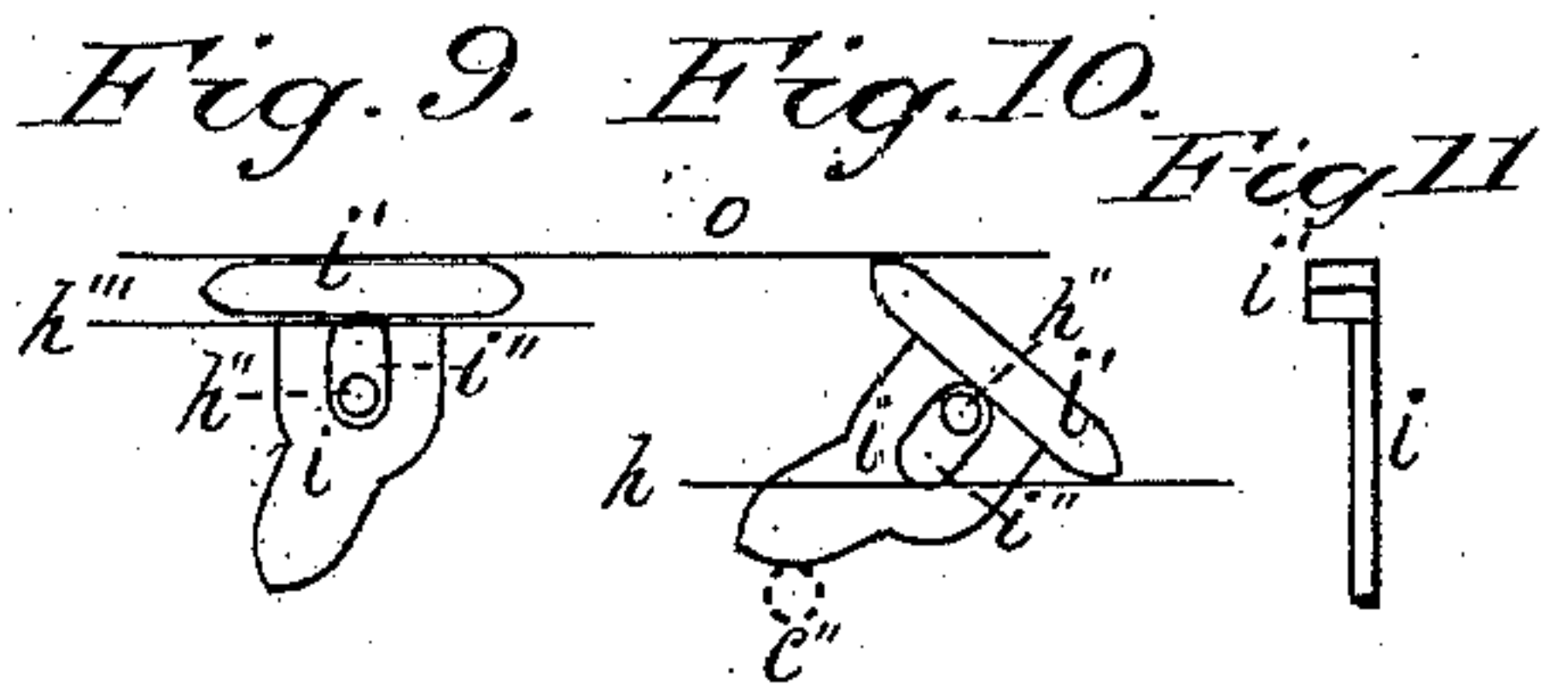
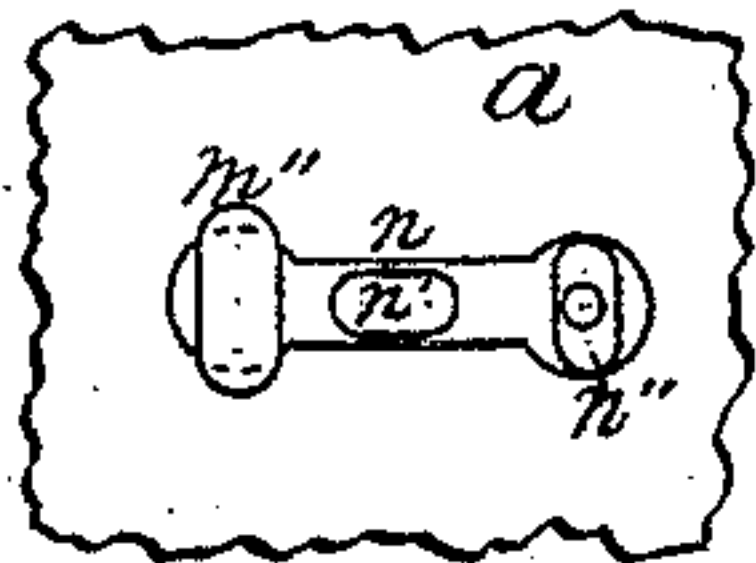


Fig. 12.

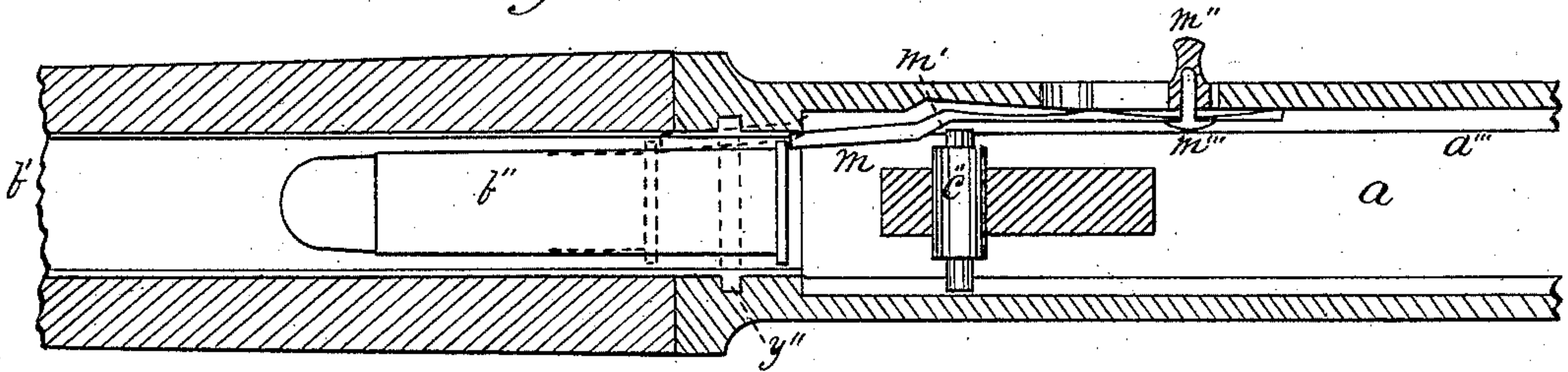


Fig. 13.

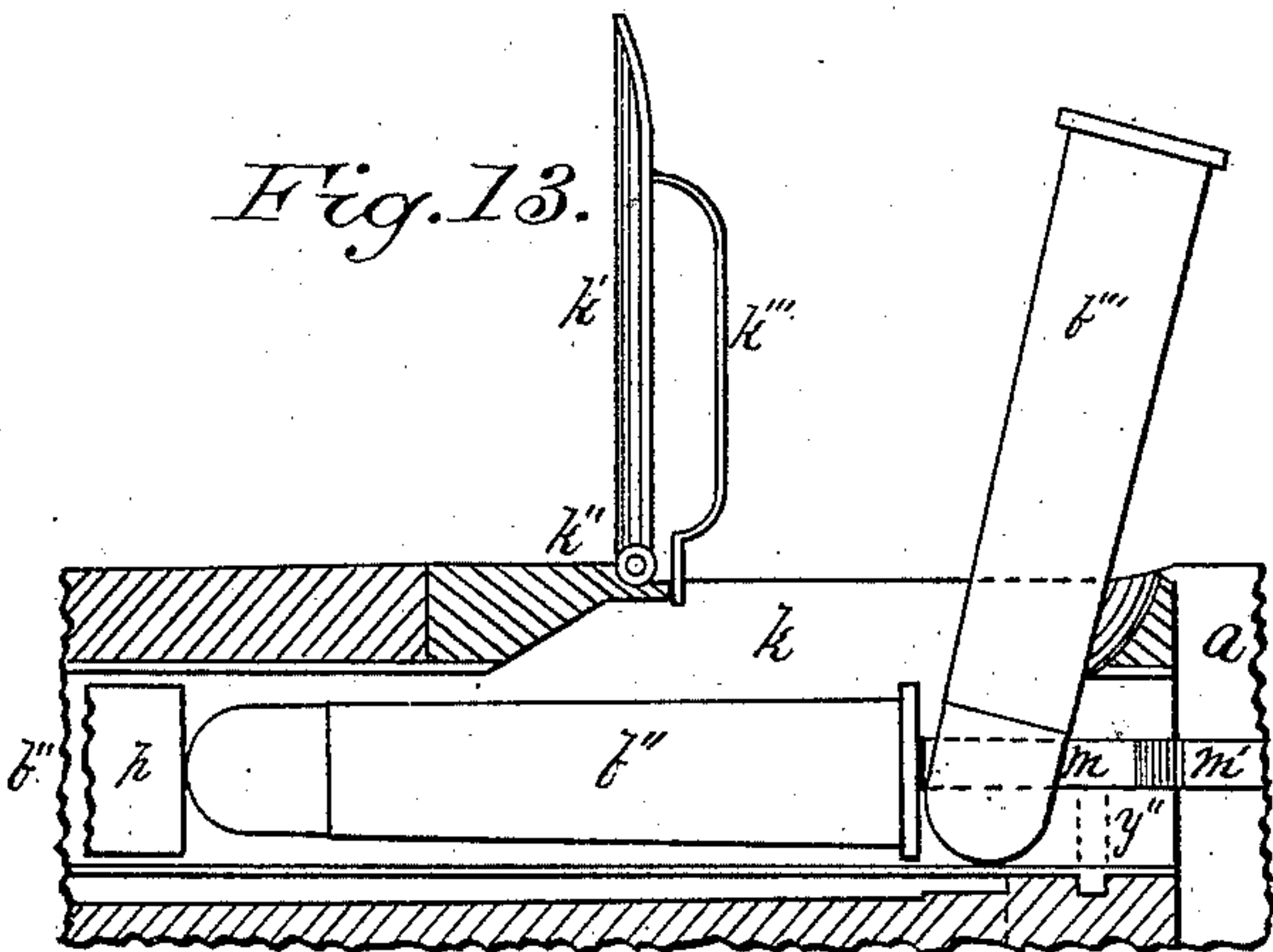
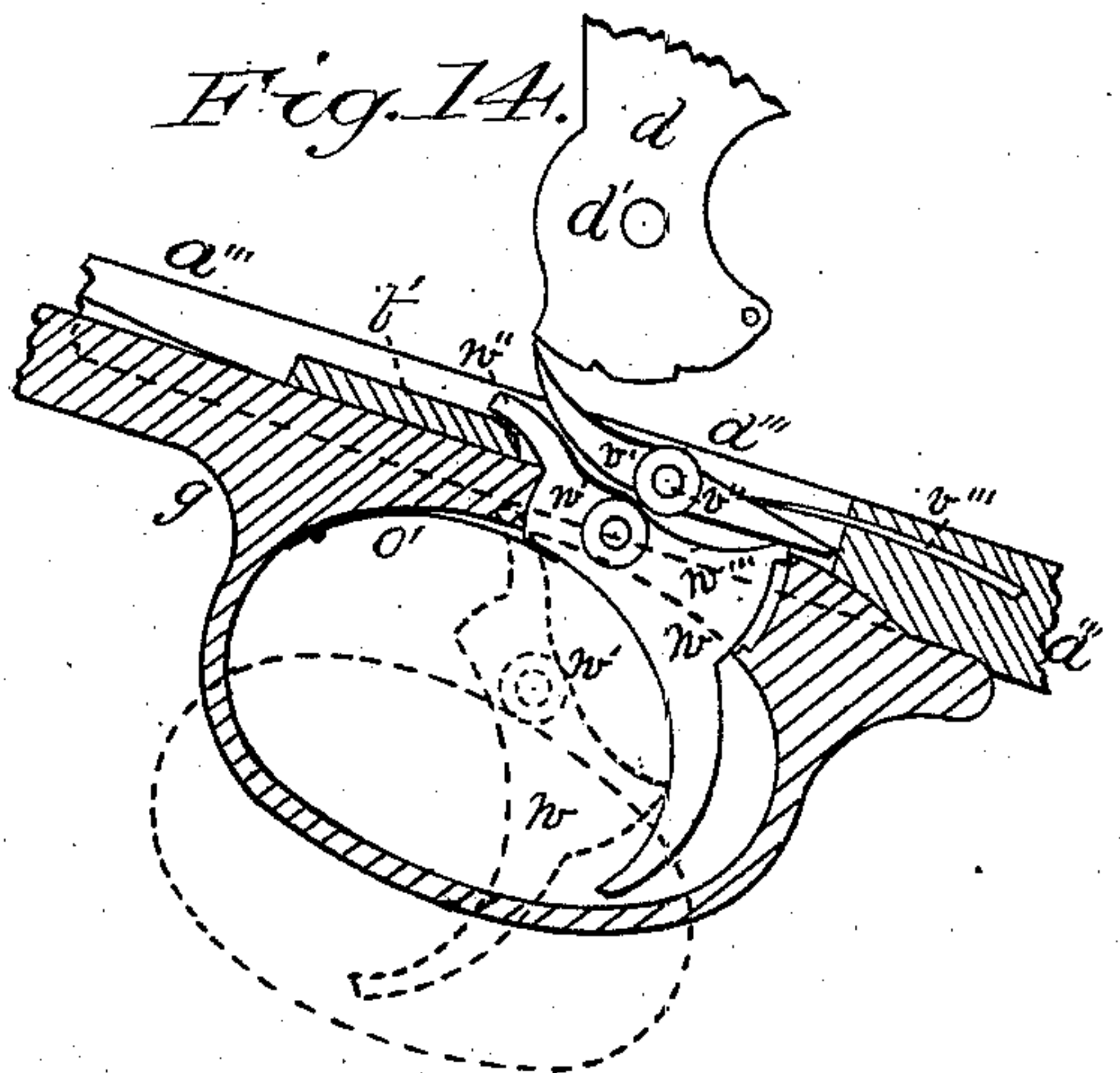


Fig. 14.



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UNITED STATES PATENT OFFICE.

WILLIAM H. ELLIOT, OF NEW YORK, N. Y.

MAGAZINE FIRE-ARM.

SPECIFICATION forming part of Letters Patent No. 232,178, dated September 14, 1880.

Application filed July 1, 1880. (No model.)

To all whom it may concern:

Be it known that I, WM. H. ELLIOT, of the city and State of New York, have invented a new and Improved Magazine Fire-Arm, of which the following is a specification.

The object of my invention is to provide a more convenient, simpler, and more practical magazine fire-arm than any now in use; and the nature of my invention consists in the use of certain appliances and methods, which are fully set forth in the following specification and claims.

Figure 1, in Sheet 1, is a vertical longitudinal section of the arm. Fig. 2 is an elevation of the bolt with the small parts supported upon it. Fig. 3 is a top view of a portion of the receiver with the cover removed. Fig. 4 is an elevation of the bolt, carrier, carrier-lever, and a section of a portion of the receiver. Fig. 5 is a plan of the carrier. Fig. 6 is a cross-section of the arm at *x*, Fig. 1. Fig. 7, in Sheet 2, is a vertical longitudinal section of the receiver, barrel, and magazine, showing the limb-work in elevation and the breech open. Fig. 8 is an elevation of a portion of the receiver, showing the sliding button which controls the feed-pawl. Fig. 9 is a front elevation of the carrier-lever, showing its position when not acting upon the carrier. Fig. 10 is the same, showing its position when depressing the carrier. Fig. 11 is a side elevation of the same. Fig. 12 is a horizontal section of a portion of the arm in the axial line of the magazine-tube, showing the feeding devices. Fig. 13 is a vertical section of a portion of the lower side of the arm, showing the opening through which the magazine is charged and the devices belonging thereto. Fig. 14 is a vertical longitudinal section of a portion of the guard-lever and tang-strap, showing the lock in elevation.

a is the receiver; *a'*, the receiving-chamber; *a''*, the entrance to the same; *a'''*, tang-strap; *b*, barrels; *b'*, magazine; *b''*, cartridges; *b'''*, first position of a cartridge on passing it into the magazine; *c*, bolt or breech-block; *c'*, projection from the lower side of the same; *c''*, joint and pivot in said projection; *c'''*, firing-pin; *d*, hammer; *d'*, pivot of the same; *d''*, mainspring; *d'''*, stirrup; *e*, firing-pin retractor; *e'*, pivot of the same, joining it to the breech-block; *e''*, recess in the firing-pin for the reception of the upper end of the retractor;

e''', notch or recess in the hammer which acts upon the retractor; *g*, guard-lever; *g'*, link, which is joined to the guard-lever by pivot *g''* 55 and to the receiver by pivot *g'''*; *h*, carrier; *h'*, pivot of the same, joining it to the receiver; *h''*, pivot upon which the carrier-lever *i* works; *i'*, foot of the carrier-lever; *i''*, slot in the carrier-lever for pivot *h''*; *k*, opening through 60 which the magazine is charged; *k'*, cover of the same; *k''*, pivot of the cover; *k'''*, spring of the same; *m*, feed-pawl; *m'*, bevel on the same, which is acted upon by the end of pivot *c''*; *m''*, button, which is fastened to the feed-pawl 65 by screw *m'''*; *n*, slot in the side of the receiver, in which the button works; *n'*, section of the button, showing its position in the narrow part of the slot; *n''*, the same, showing its position when in the widened end of the 70 slot; *o*, ledges on either side of the receiver, which extend its entire length; *o'*, trigger-spring; *o''*, raised side of the carrier; *p*, follower; *p'*, magazine-spring; *r*, cover of the receiving-chamber, attached to and supported 75 upon the bolt by the connection *r'*, which passes through the extractor *s*; *s'*, spring of the extractor; *s''*, hook of the same; *s'''*, fulcrum of the same; *t*, projecting portions of the receiver, partly over the receiving-chamber on 80 either side; *t'*, portions of the tang-strap over which the trigger projects; *u*, ejector; *u'*, spring of the same; *u''*, screw for attaching the same to the projection *c'*; *u'''*, a projection from the bolt to receive and stop the cartridge; *v*, projec- 85 tions from the inside of the receiver, near the forward end of the receiving-chamber; *v'*, sear; *v''*, pivot of the same; *v'''*, spring of the same; *w*, trigger; *w'*, pivot of the same; *w''*, nose on the same for locking it; *w'''*, point on 90 the same which touches the sear; *x*, line of section; *y* and *y'*, carrier-spring and stirrup; *y''*, rib and recess for holding the magazine-tube.

The invention herein described refers to that 95 kind of magazine-arm in which the breech-block has a reciprocal movement in a line with the barrel for opening and closing the chamber, and in which said movement is given to the breech-block by means of a peculiar toggle-joint actuated by a lever, and is an improvement upon the arm patented to me May 13, 1862.

For a magazine I employ a single tube pro-

vided with the usual cartridge-propelling devices located under the barrel.

The methods and devices herein described for firing the arm, for feeding the cartridges from the magazine into the receiving-chamber, and for charging the magazine will work equally well in connection with a magazine of one or more tubes located in the butt-stock.

To charge the magazine, open the cover k' and move the feed-pawl forward by means of the button m'' , which projects through the side of the receiver, as seen in Figs. 8 and 12, then give the button a quarter-turn, which locks the pawl in its forward position, as shown by broken lines. By this means the follower or cartridges, if there be any in the magazine, are moved far enough forward to admit the insertion of the ball end of a cartridge through the opening k and behind the head of the rear cartridge in the magazine, as seen at b''' , Fig. 13. The cartridge which is being inserted is then used as a lever to force the contents of the magazine forward until it comes sufficiently into line with the tube to finish the operation of insertion by pushing it forward and dropping it down in front of the feed-pawl, and so the operation of charging the magazine may be continued until it is full, when the cover k may be closed, the spring k''' performing the threefold function of holding the cover closed, holding it open, and by its curved form furnishing a support to the rear cartridge in the magazine to prevent it from falling into the opening k .

If the magazine be not required for immediate use, the feed-pawl has to be left locked in its forward position. If it be required for immediate use, the feed-pawl has to be released from its forward position, which is done by turning the button, as indicated at n' , Fig. 8, when, by the power of the magazine-spring, it will be forced back to the rear, where it may be locked, as it was in the front position, by giving the button a quarter-turn.

The reciprocating movement of the breech-block for opening and closing the arm is produced by a combination of toggle-joint and lever, the short arm of the lever g , or that portion of it between the pivots e'' and g'' , forming the forward link of the joint, which is pivoted to a projection, e' , from the under side of the bolt at e'' , while the rear link, g' , is pivoted at its forward end to the lever at g'' , and at its rear end to a fixed point upon the receiver by means of the pivot g''' ; or, in other words, the bolt receives its reciprocal movement for opening and closing the arm and locking it in the closed position by a toggle-joint, which has its forward link extended rearward to form a lever.

The arm in its closed position is represented in Fig. 1 and in its open position in Fig. 7, by reference to which it may be seen that when the arm is closed the receiving-chamber and all the space within the receiver under the receiving-chamber is occupied by the bolt, toggle-joint, lever, and carrier; but when the arm

is open all these devices except the carrier retire to the rear end of the receiver, leaving all of said space entirely unoccupied except by the carrier. Into this unoccupied space the cartridge is thrust by the magazine-spring, where it is received by the carrier, raised into the receiving-chamber, and directed into the chamber of the barrel without in any way being interfered with by any of the devices, which, when the arm is closed, occupy the entire space required for the movement of the cartridge.

By reference to Figs. 1, 4, and 7 it may be seen that the breech-block is arranged in the upper part of the receiver, and is so constructed as to slide back and forth for opening and closing the chamber in a line parallel with the axis of the barrel and to project at the rear end of the receiver to cock the hammer when the breech is opened; that the combined toggle-joint and lever, as shown in Fig. 1, is arranged in the lower part of the receiver directly under the breech-block, having its links and pivot-bearings also in a line parallel with the axial line of the barrel; that the carrier is pivoted at its rear end to the rear portion of the receiver, and is arranged between the breech-block and the toggle joint and lever, and in a line parallel with the bore of the barrel; that the breech-block above the carrier is connected at its forward end with the forward pivot-bearing, e'' , of the toggle joint and lever below the carrier by a projection, e' from the breech-block, which passes through the carrier; that the forward link of the toggle joint and lever is arranged, when the arm is closed, nearly or quite as far forward as the rear end of the barrel and directly in rear of and in close proximity to the magazine-tube, and occupies fully the space under the receiving-chamber which is required for handling the cartridge when the arm is open. This combination, construction, and arrangement of these devices reduces the length of the receiver by the length of the space required to elevate the cartridge to the receiving-chamber, as that space is occupied alternately by two sets of devices. It also brings the lever forward, so that it is almost entirely under the receiver, instead of extending rearward under the wrist of the arm. This shortens the breech mechanism of the arm to a little more than one-half of what it would otherwise be, and it not only compact's the arm, thereby increasing its strength, but it effects a very large economy in the weight of the finished arm and cost of manufacture.

It will be observed that the rear end of a lever combined as above described does not move forward as much by several inches in manipulating the arm as it would if it were swinging upon a fixed fulcrum, as its change of position is due as well to the rearward movement of its forward end as to the forward movement of its rear end, the force for moving the lever being applied nearly in a vertical direction. For this reason the toggle joint and lever com-

bined, as shown, with a magazine arranged under the barrel has great advantages, as in rapid loading and firing without removing the butt of the arm from the shoulder the lever may be worked by a movement of the wrist alone with very slight disturbance of the arm, which insures steadiness of aim.

The carrier is divided or slotted to make room for the dependent portion or projection c' to move back and forth in during the manipulation of the arm, as shown in Fig. 5. The two sides of the carrier may, however, be connected at both ends, if desired.

The carrier is depressed to the position of broken lines, Fig. 4, for the reception of a cartridge from the magazine by the carrier-lever i . The form and position of this device may be more readily seen in Figs. 9, 10, and 11.

The carrier-spring and stirrup y and y' elevate the carrier, as shown in Figs. 4 and 7; and as the elongated foot i' of the carrier-lever projects in between the ledge o and the upper side of the carrier when the carrier is elevated, it holds the lever in the position indicated in Fig. 9; but when the bolt is moved back and forth by the toggle-joint the projecting end of the pivot c'' comes in contact with the lower end of lever i , both in its forward and backward movements, as shown by broken lines, Figs. 4 and 10, and in each movement depresses the carrier. The pin h'' , projecting from the side of the carrier through the slot i'' in the lever, prevents the latter device from being displaced, while it acts freely between the ledge o and the carrier. Any point projecting from and moving back and forth with the breech-block or toggle-joint will serve to work the carrier-lever as well as the pivot c'' .

The firing-pin retractor e is pivoted to the breech-block at e' , as shown in Fig. 2, and at its upper end works in a notch, e'' , in the firing-pin c''' . As the breech-block is moving backward, cocking the hammer and carrying the retractor with it, the lower end of the retractor comes in contact with the stop e''' , which causes it to retract the firing-pin after the hammer has been brought to full-cock.

The cover of the receiving-chamber r is supported upon the top of the breech-block by the projection r' , which passes through the extractor s and is fastened by screws, as shown in Figs. 2 and 3. The extractor is held in place by this projection, and has its fulcrum at s''' against the under side of the cover. The rear end or tail of the extractor is sunken below the surface of the breech-block, and has a spring, s' , under it to cause its hook s'' to fasten upon the head of a cartridge.

The ejector u is forced forward by the spring u' . When the breech-block is moved forward to close the chamber the ejector is forced back by the head of the cartridge against the spring u' , depressing the same. When on opening the arm the shell is free from the chamber the ejector is immediately thrust forward by its spring, ejecting the shell in the usual way.

As the resistance of the toggle-joint is at c'' —

a point considerably below the axial line of the breech-block—the tendency of the strain of the charge is to throw the forward end of the breech-block upward. To support the breech-block against this tendency I construct the entrance to the receiving-chamber at the forward end considerably narrower than the bolt, as seen at t , Figs. 3 and 6, which, while it affords proper support to the breech-block, in no way interferes with the movement of the cartridges, as the entrance to the receiving-chamber extends forward between the supports to the rear end of the chamber in the barrel.

To avoid accidents in the manipulation of the arm, I construct the guard-lever, trigger, and sear in such a manner that the arm cannot be fired till the guard-lever is brought to its place; that said lever cannot be brought to its place while there is any pressure upon the trigger, and that a pull upon the trigger to fire the arm will lock the lever in place, as shown in Fig. 14. On moving the guard downward to open the arm the trigger assumes the position of the broken lines, being held in said position by its spring o' . On bringing the guard back to its place against the under side of the arm any pressure exerted upon the trigger will cause its nose w'' to strike upon the under side of the portion t' of the tang-strap, and so prevent the guard-lever from being brought to its place. If it be closed without pressure upon the trigger, the nose w'' will strike the lower side of the sear v' and glide forward over the portion t , as shown in full lines. If the guard-lever happen to be not quite closed down, a pull upon the trigger will cause it to act as a lever upon the guard to bring it into place before the point w''' can act upon the sear.

It is designed that the spring o' shall throw the trigger so far into the guard that it will be difficult to introduce the finger before that device while the guard-lever is away from the wrist of the arm.

To hold the guard-lever in place when the arm is not in use the usual button may be employed; or a spring-catch may be used, as shown in my patent before mentioned.

The operation of my improved arm is as follows: Starting with a full magazine and the feed-pawl in the rear position, moving the breech-block forward to close the arm brings the end of the pivot c'' against the bevel m' on the feed-pawl, as seen in Fig. 12. This forces the feed-pawl outward, thereby releasing the rear cartridge, which is immediately moved back against the carrier, as shown in Fig. 4. As the breech-block is moved backward the opposite end of the pivot c'' strikes the carrier-lever and causes it to depress the carrier to the position of the broken lines, when the rear cartridge is forced back upon the carrier by the magazine-spring until its head strikes the stop u''' on the breech-block, and as soon as the forward end of the cartridge leaves the magazine the spring y elevates the carrier, bringing the cartridge into the receiving-cham-

ber before the chamber of the barrel, the carrier being depressed by the lever *i* to receive a cartridge, and released to rise again midway of the backward movement of the breech-block. As the breech-block is moved forward to force the cartridge into the barrel and close the arm the pivot *c''* again strikes the carrier-lever, which, owing to its form, depresses the carrier but slightly during the forward movement. Just before the forward movement of the breech-block is completed the pivot *c''* again strikes the bevel *m'* on the feed-pawl, which releases the next cartridge in the magazine, as it did the preceding one. When the arm is closed it is fired in the usual way.

To reserve the magazine and fire the arm as a single breech-loader, push the feed-pawl forward and lock it, as before instructed. This moves all the cartridges in the magazine forward, so that the rear one is not so much exposed to the flash of the burning gases. The arm is then charged by dropping the cartridge into the receiving-chamber through the opening *a''*.

By reference to Figs. 4 and 6 there may be seen two points or projections, *v*. These are located near the forward end of and just below the receiving-chamber. It may also be seen that one side of the carrier is higher at that point than the other. The object of these devices is to prevent the carrier from throwing the cartridge up too high when raising it from the magazine.

The circles in broken lines seen in Fig. 6 show the different positions of the forward end of the cartridge while being raised. The lower circle shows the position of the cartridge on leaving the magazine. The middle circle shows the cartridge in the act of striking the lower projection. The upper circle shows the cartridge in the act of striking the upper projection.

When the upward movement of the cartridge is slow it will touch only the lower projection and then stop quietly in the bottom of the receiving-chamber; but if its upward movement be so rapid that it would be thrown out of the receiver if not checked it will strike the lower projection with so much force as to cause it to bound against the upper projection and from that to the opposite side of the receiving-chamber, which effectually checks its upward movement.

The rib and recess *y''* lock the magazine-tube to the receiver, so as to prevent them from being separated by the recoil of the charge.

Having described my invention, what I desire to have secured to me by Letters Patent of the United States is—

1. In a magazine fire-arm, the construction and arrangement of devices as follows: a breech-block adapted to slide back and forth in a line with the barrel to open and close the arm; a combined toggle joint and lever, as described, arranged in the lower part of the receiver directly under the breech-block, and having its links and pivot-bearings, when the

arm is closed, also in a line with the barrel; a carrier pivoted at its rear end to the receiver and arranged between the breech-block and the combined toggle joint and lever, and in a line parallel with the barrel; and a carrier-lever, *i*, which is arranged midway between the extreme ends of the carrier, and is provided with an elongated foot, *i'*, that works between the ledge or projection *o* on the receiver and the upper side of the carrier to depress the same, and is actuated by a cam on the breech-block, said breech-block being provided at its forward end with the depending portion *c'*, which passes through the carrier, and is coupled with the joint and lever by means of the forward pivot-bearing, *c''*, substantially as and for the purpose specified.

2. In a magazine fire-arm, the construction and arrangement of devices as follows: a breech-block adapted to move back and forth in a line with the barrel to open and close the arm, and provided with a dependent portion, *c'*; a toggle joint and lever combined, as described, and arranged in the lower part of the receiver directly in rear of and in close proximity to a magazine located under the barrel; a carrier pivoted to the receiver between the breech-block and the joint and lever, and adapted to be depressed below the mouth of the magazine to receive a cartridge therefrom, said breech-block being coupled with the joint and lever by means of the dependent portion *c'*, whereby the space into which the cartridge is thrust by the magazine is occupied alternately by the toggle joint and lever when the arm is closed, and by the carrier and cartridge when the arm is opened, substantially as specified.

3. In a breech-loading fire-arm having a breech-block for closing the chamber which moves in a line with the barrel, and in combination therewith a cover for the receiving-chamber, which is supported upon the forward end of the breech-block by a projecting portion of said cover, which passes through the extractor and is fastened by screws, said extractor being held in place by said projection, and having its fulcrum against the under side of said cover and provided with spring *s'*, substantially as shown and described.

4. In a magazine fire-arm having a breech-block for closing the chamber which moves in a line with the barrel, and in combination therewith a tubular magazine arranged under the barrel and a sliding feed-pawl which is locked in its forward position for reserving the magazine, and in its rear position is actuated to feed cartridges from the magazine by the action of a cam or pin, *c''*, upon the bevel *m'* on the feed-pawl, said cam being supported upon and moved with said breech-block, substantially as shown and described.

5. In a magazine fire-arm, a tubular magazine arranged under the barrel, and in combination therewith an opening into the magazine forward of its rear end for the purpose of charging the same, and a sliding feed-pawl

having a movement in a line with the magazine and provided with button m''' for locking it both in its forward and rearward position, whereby the follower or cartridges in the magazine may be locked so far forward that the latter may be charged through said opening, in the manner substantially as specified.

6. In a magazine fire-arm having a breech-block for closing the chamber which moves in a line with the barrel, a tubular magazine arranged under the barrel, and in combination therewith a carrier which is pivoted to the receiver at its rear end and is elevated at its forward end by spring y and depressed by carrier-lever i , which is arranged between the receiver and carrier at a point midway between the extreme ends of the carrier, and is provided with an elongated foot, i' , that works between the ledge or projection o on the receiver and the carrier to depress the same, said lever being actuated by a pin or cam which is supported upon and moves with the breech-block, whereby the carrier is depressed to receive a cartridge and is released to rise again midway of the backward movement of the breech-block, substantially as specified.

7. In a breech-loading fire-arm having a breech-block for closing the chamber, which moves in a line with the barrel, and a toggle-joint and guard-lever for operating the same, and in combination therewith a sear pivoted to the receiver and a trigger pivoted to the guard-lever, said trigger being provided with a nose or hook which shall pass through an opening in the tang-strap when the arm is closed and will hold onto the same when the arm is fired, whereby security against accident is obtained, substantially as shown and described.

8. In a magazine fire-arm having a magazine located below the line of the barrel and provided with a carrier for raising cartridges from the magazine to the receiving-chamber, and in combination therewith the raised side o'' on the carrier and the projections v on the inside of the receiver, whereby a zigzag movement is given to the cartridges to check the rapidity of their upward movement, substantially as specified.

9. In a magazine fire-arm having a tubular magazine arranged below the line of the barrel and provided with an opening through the side of the tube for charging the same with cartridges, which is independent of the mouth or opening for discharging it, and in combination therewith a cover, k' , and a spring, k''' , which shall serve the triple purpose of holding the cover closed, holding it open, and of furnishing a wall to the magazine-tube opposite the charge-opening, said spring being attached to the under side of the cover and curved inward, substantially as and for the purpose specified.

10. In a breech-loading fire-arm having a breech-block for closing the chamber, which has a movement in a line with the barrel, and a firing-pin through its entire length for communicating the blow of the hammer to the primer, and in combination therewith the retractor, which is pivoted to and moves with the breech-block, the free end of which is stopped by the hammer to retract the firing-pin after the hammer has been brought to full-cock by the rear end of the breech-block, substantially as shown and described.

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