

T. L. MELONE.
SEWING MACHINE.

Patented June 28, 1870.

Fig. 7.

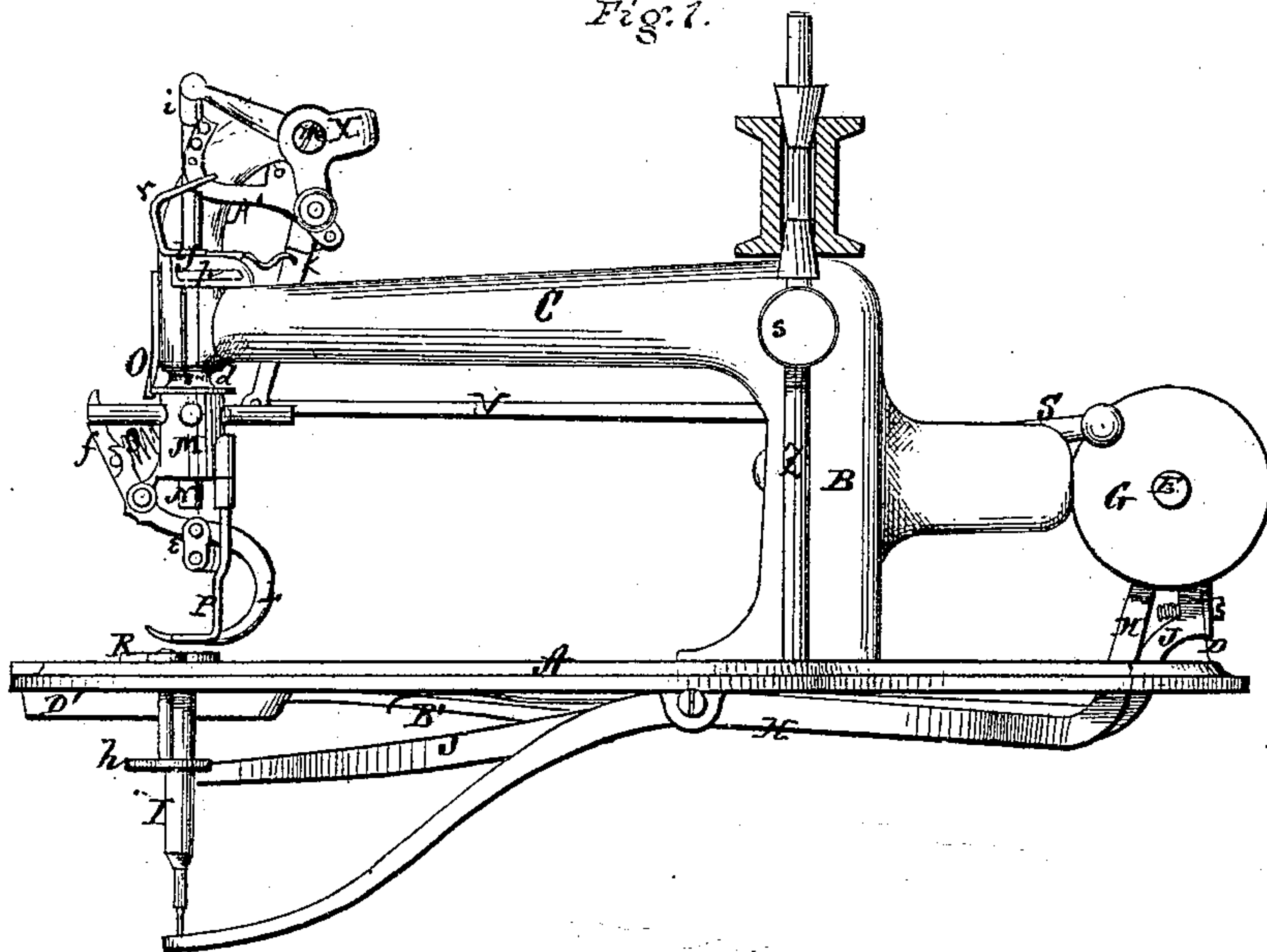
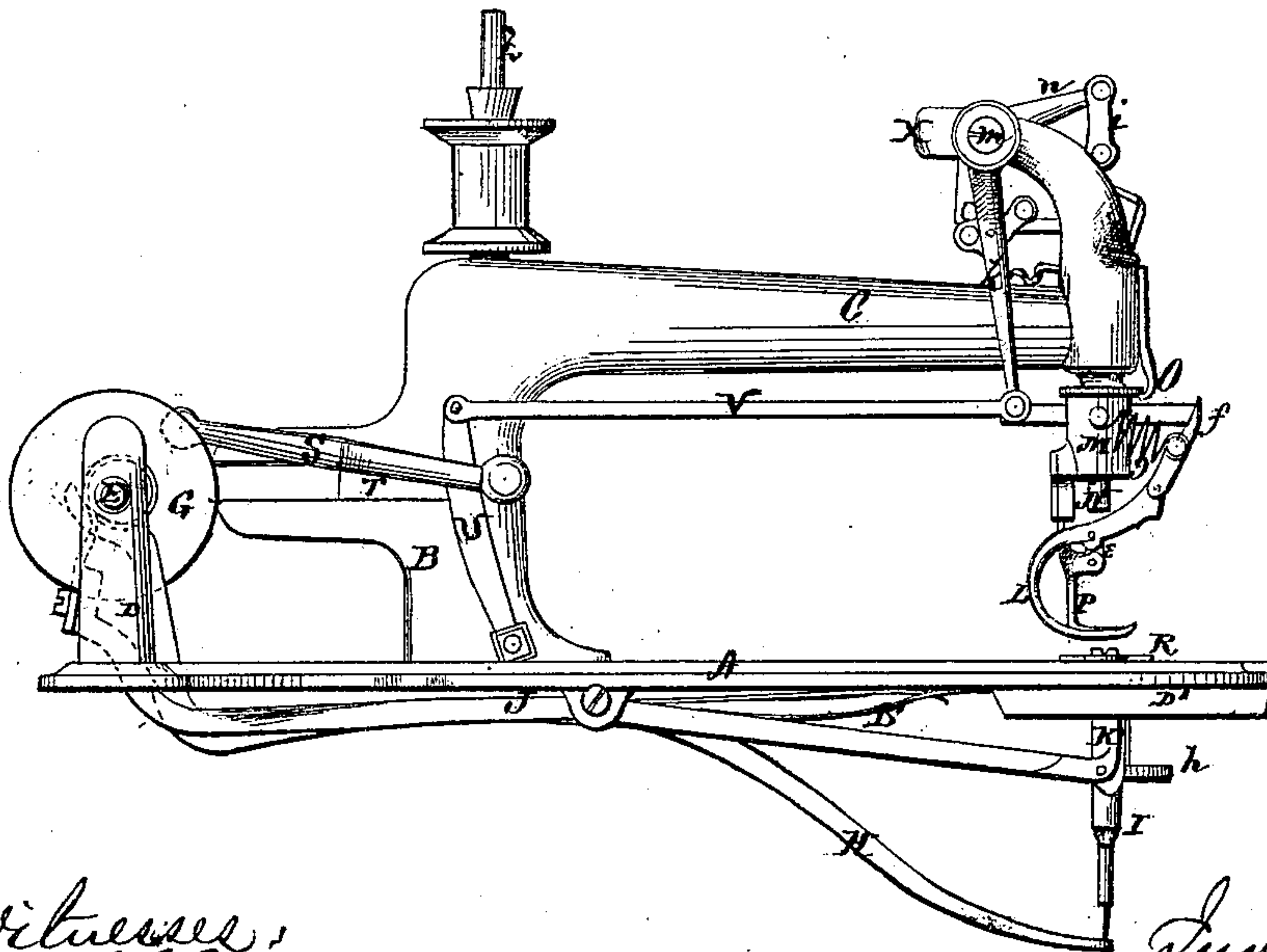


Fig. 2.



witnesses,
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Y. L. Melone
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att'y.

T. L. MELONE.
SEWING MACHINE.

No. 104,871.

Patented June 28, 1870.

Fig. 3.

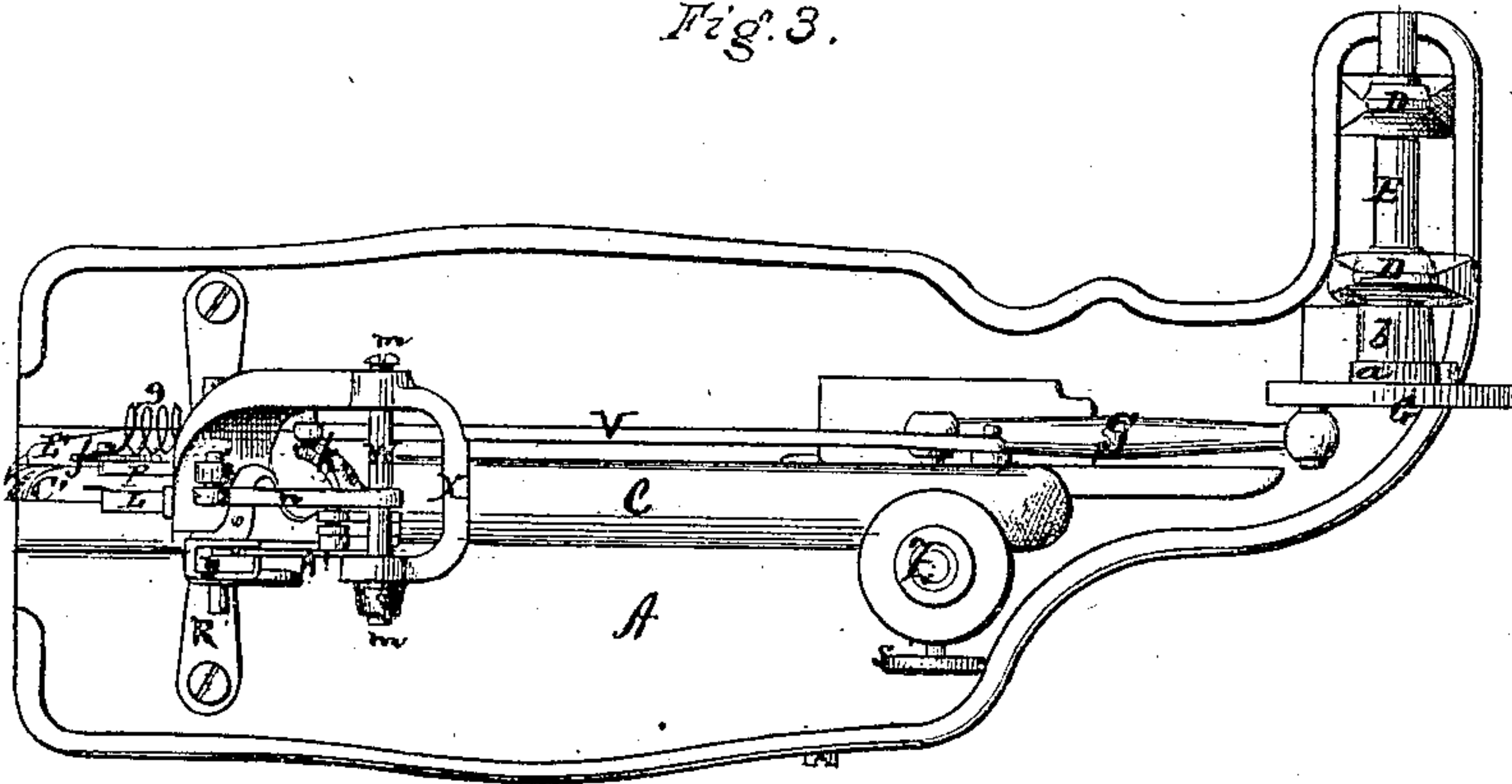


Fig. 4.

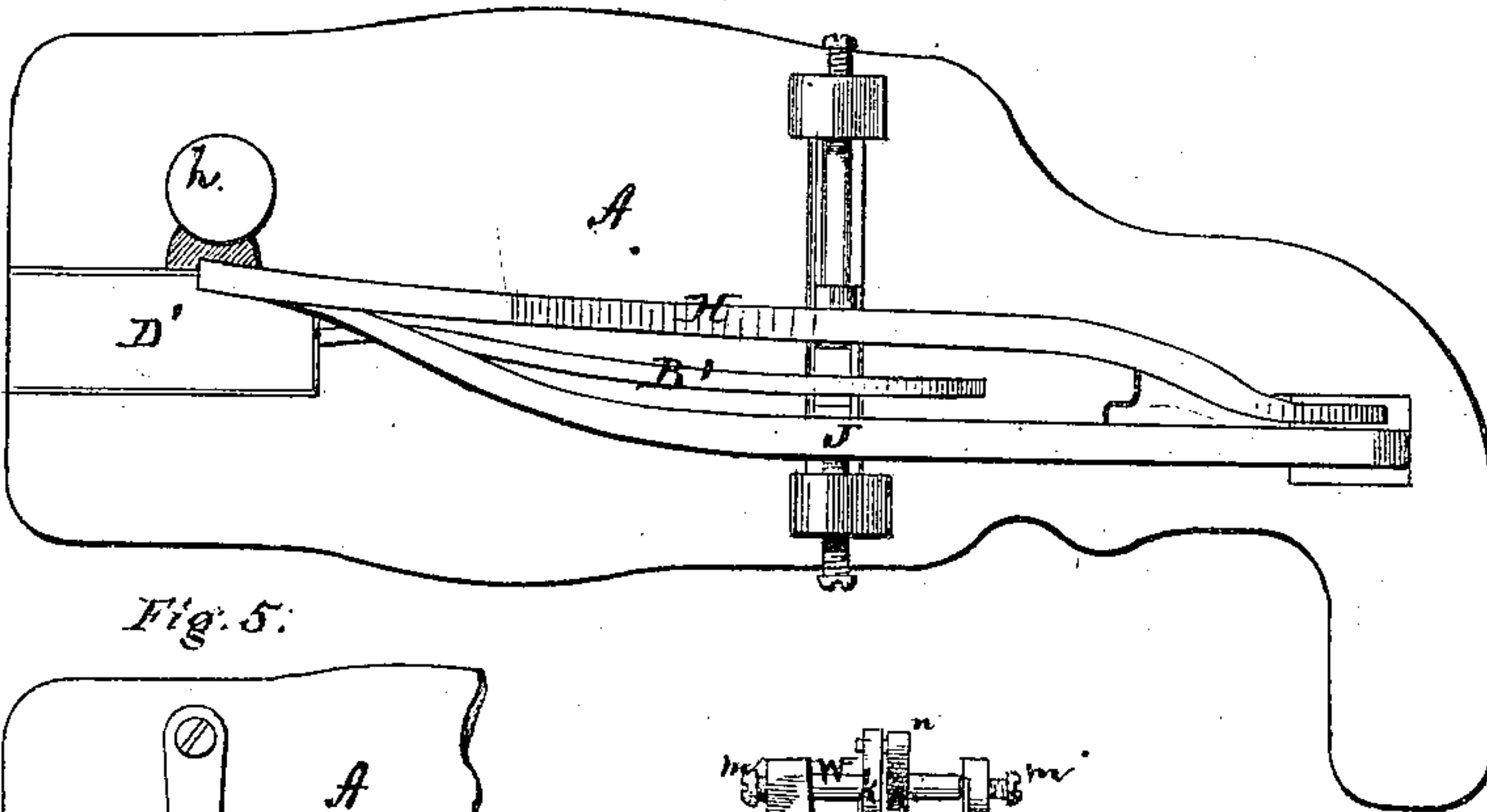


Fig. 5.

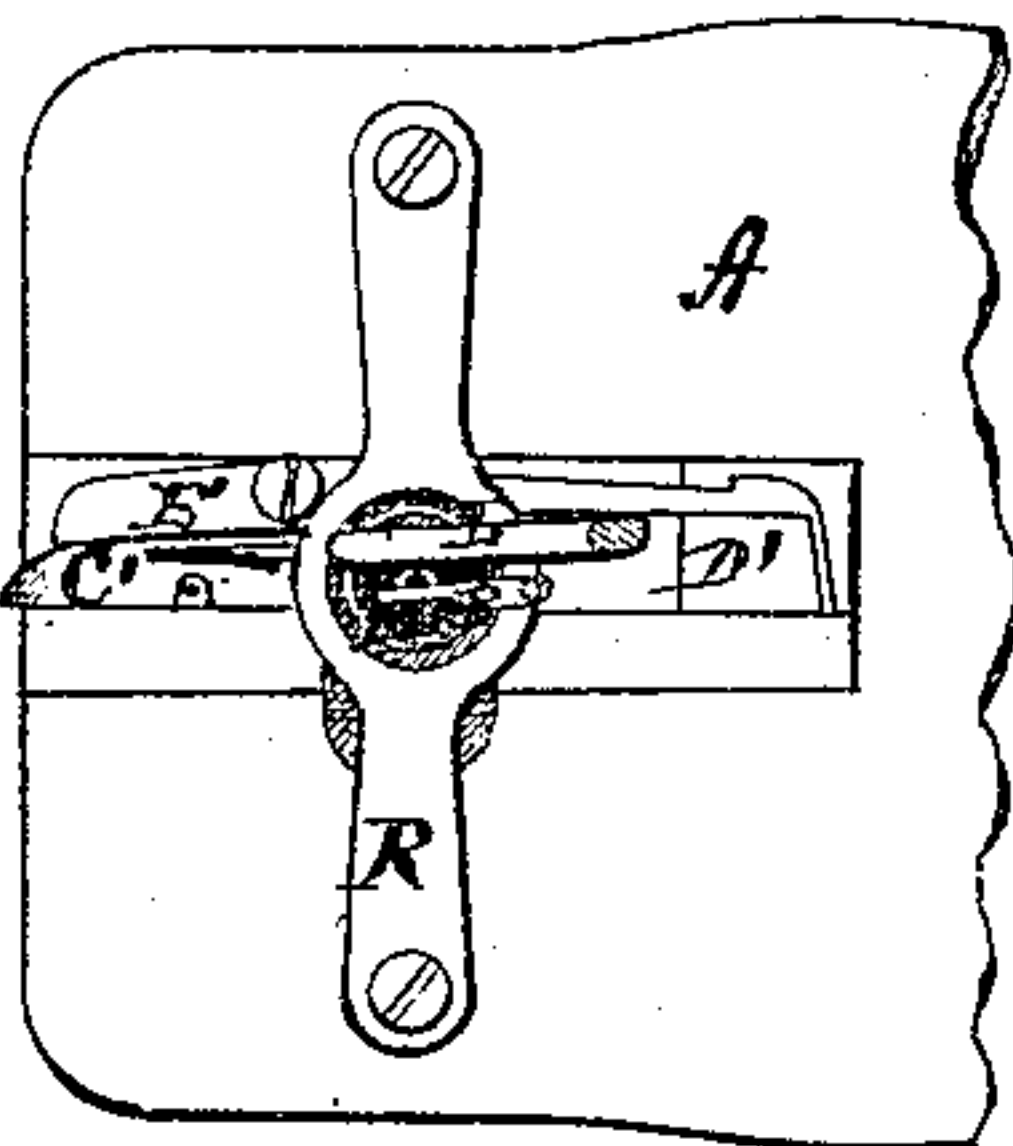
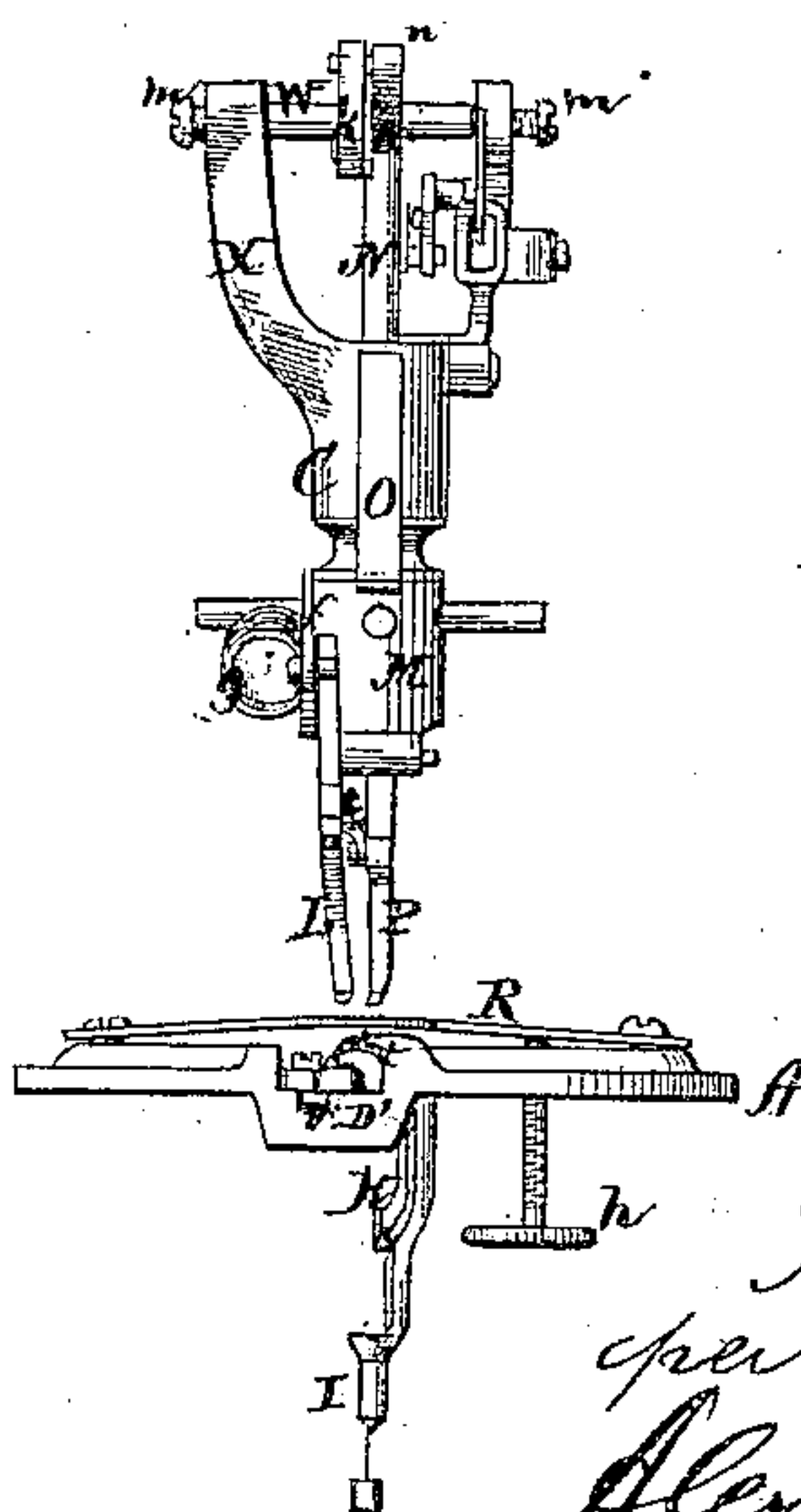


Fig. 6.



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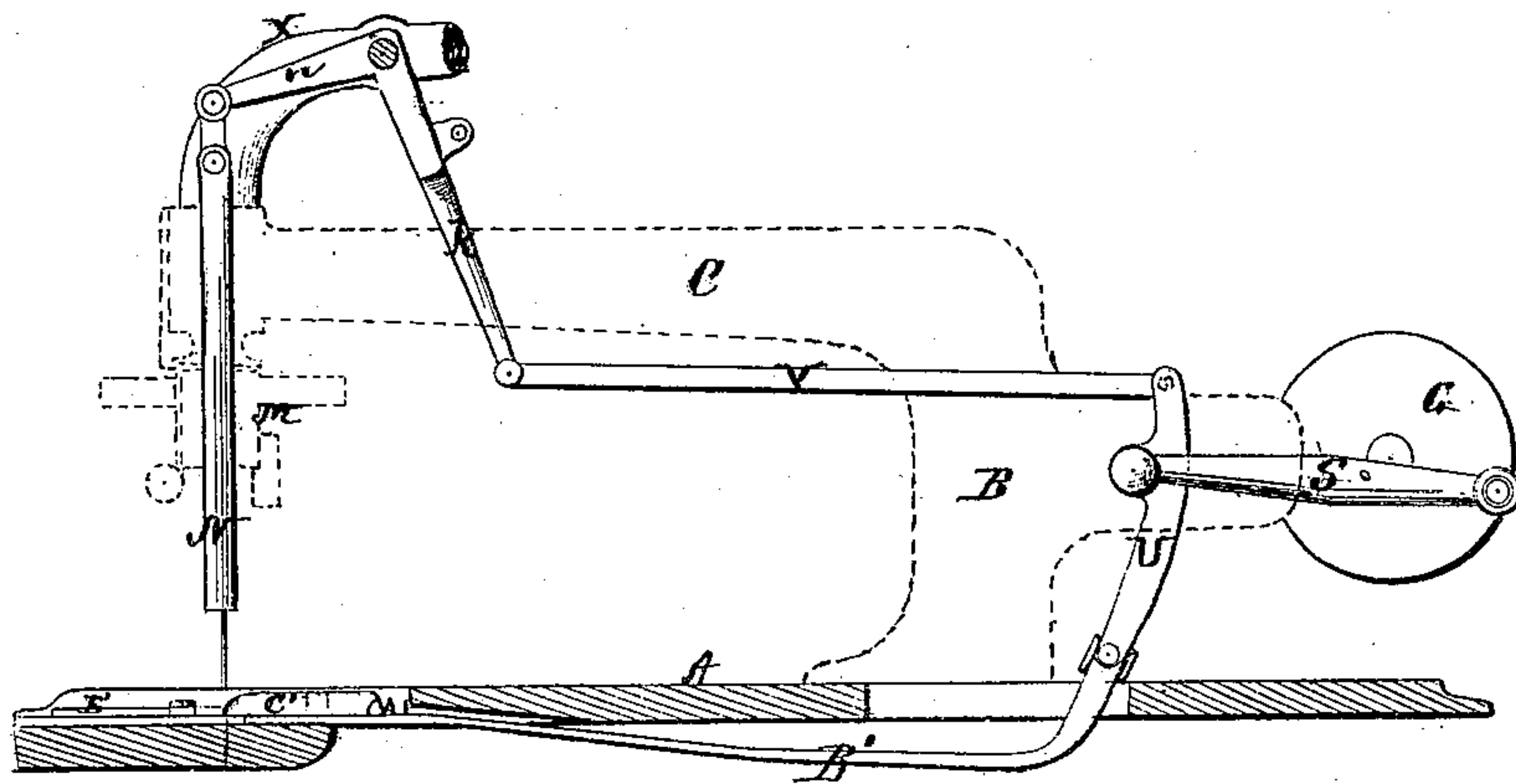


Fig. 8.

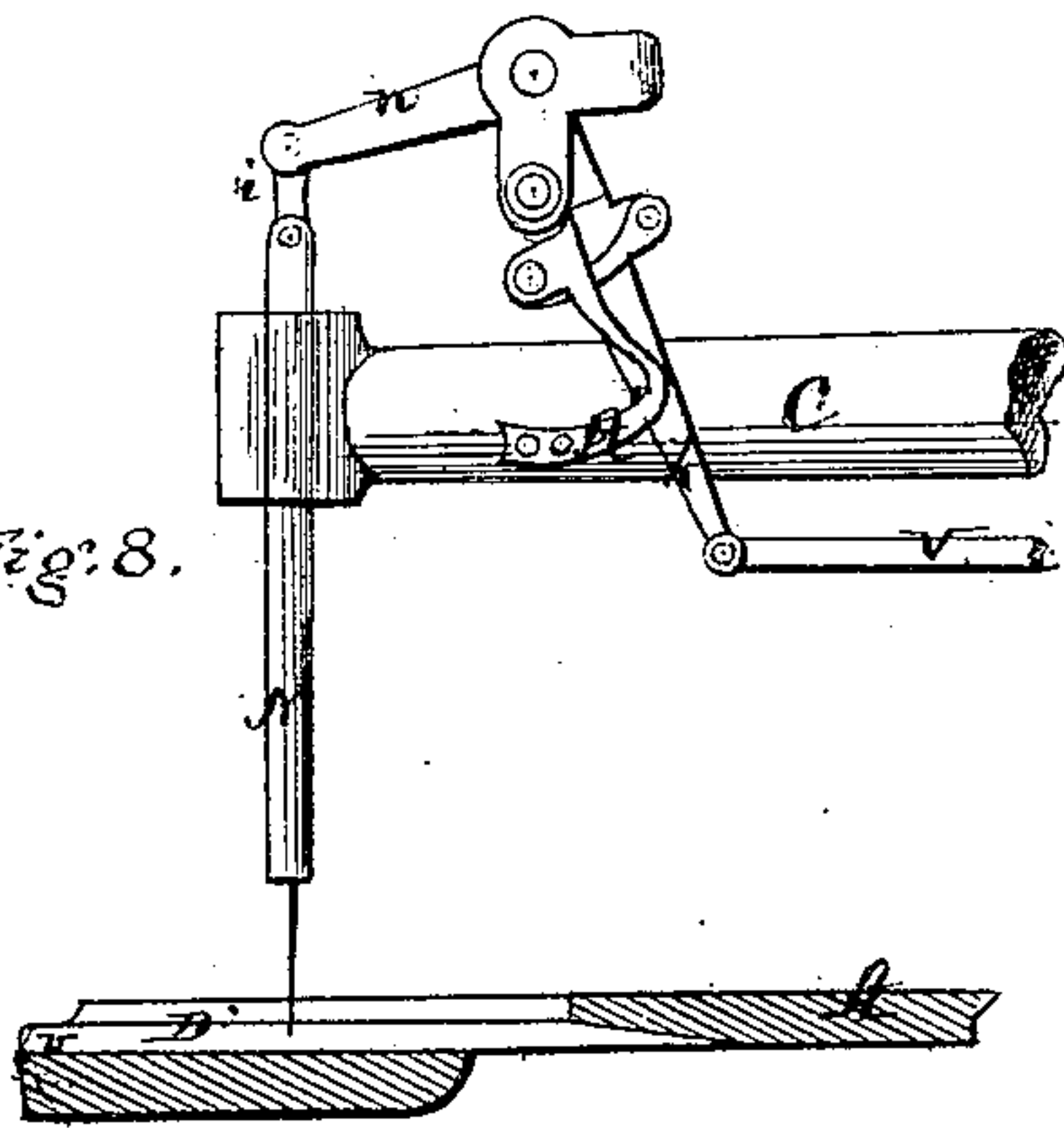


Fig. 9.

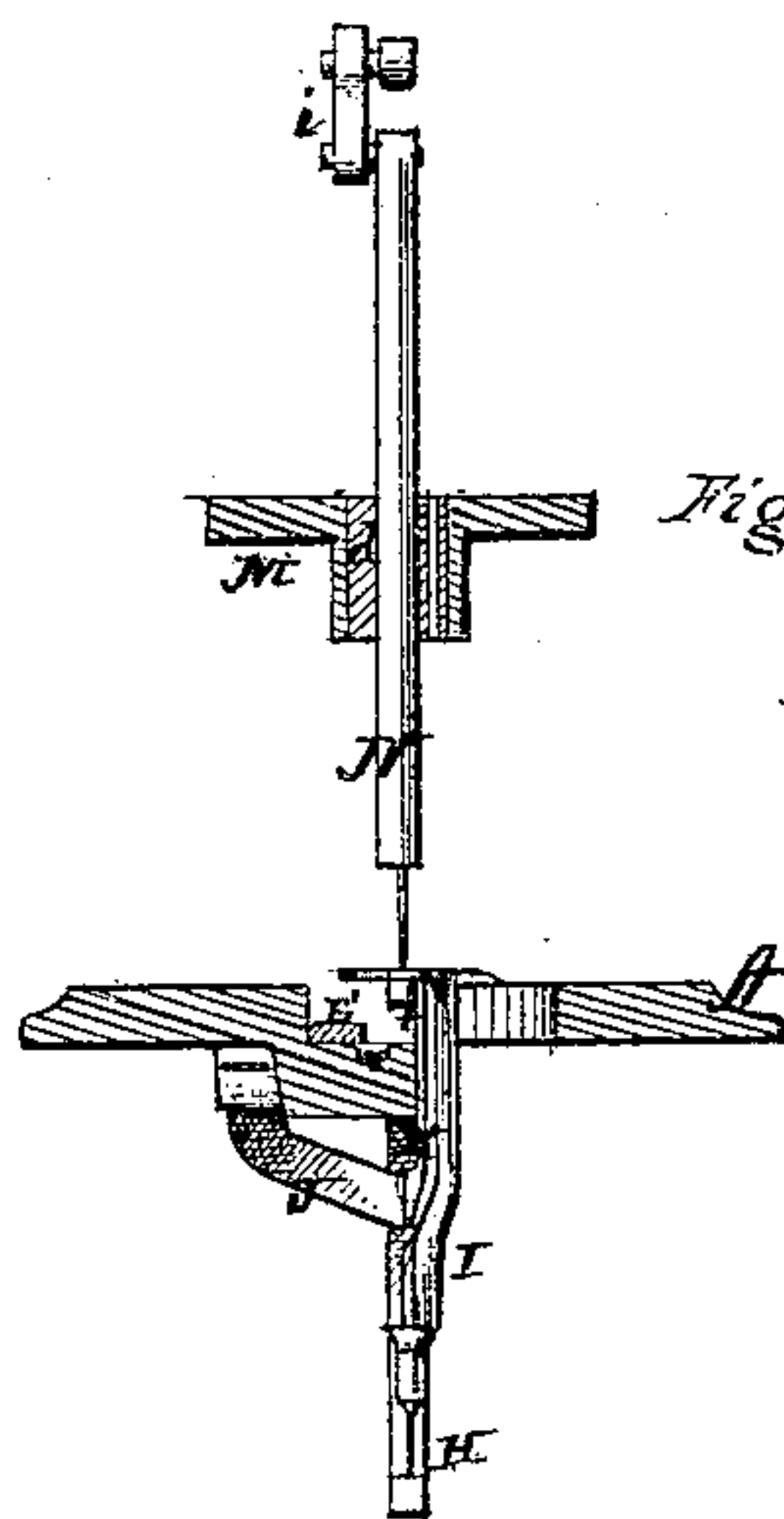
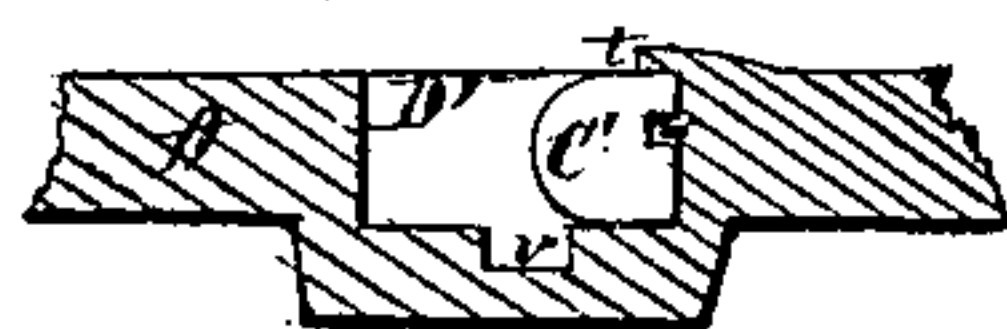


Fig. 10.



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United States Patent Office.

THOMAS L. MELONE, OF MOUNT GILEAD, OHIO.

Letters Patent No. 104,871, dated June 28, 1870.

IMPROVEMENT IN SEWING-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, THOMAS L. MELONE, of Mount Gilead, in the county of Morrow and in the State of Ohio, have invented certain new and useful Improvements in Sewing-Machines; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon making a part of this specification.

The nature of my invention consists in the construction and arrangement of a "sewing-machine," as will be hereinafter fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a front view of my machine.

Figure 2 is a rear elevation.

Figure 3 is a plan view, and

Figure 4 is a bottom view of the same.

Figure 5 is a plan view of that end of the machine in which the shuttle-race is formed.

Figure 6 is an end view of the machine.

Figure 7 is a side view, showing the mechanism for operating the needle and shuttle.

Figure 8 is a side view of one end of the machine, showing the mechanism for taking up the loop left by the shuttle.

Figure 9 is a transverse vertical section through the shuttle-race.

Figure 10 is a transverse vertical section of the shuttle-race, and

Figures 11 and 12 are enlarged views of the shuttle.

A represents the bed-plate of my machine, from which rises a standard, B, with an arm, C, extending to near the end of the bed-plate.

At the other end of the bed-plate are two smaller standards, D, in which the driving-shaft E has its bearings; said shaft being at its inner or front end provided with a crank-wheel, G, which drives all the parts of the machine, namely, the needle-arm and bar, the take-up bar or hook, and shuttle.

On the side of the crank-wheel G are two cams, *a* and *b*, the cam *a* operating a rock-bar, H, below the bed-plate A.

This rock-bar has, mounted upon its front end, a spring-post, I, which extends up through an opening in the bed-plate, and its upper end ring-shaped, and is arranged in such a manner that the ring may have a lateral movement in any direction, so that, in combination with the feed-foot above, it may grip and move the goods forward the length of a stitch; the post supporting the ring may be provided with a universal joint instead of a spring.

The other cam *b* operates a second rock-bar, J, which is provided at its front end with a perforated post, K, which projects through the ring of the spring-post I.

The needle plays in the perforated post K, so that when said post is raised by the cam *b*, it will, in combination with the presser-foot above, hold the goods while the feed-foot and ring are resuming their places preparatory to moving the goods for another stitch.

The rock-bars H and J are mounted or pivoted at the proper points by centers in lugs on the bottom of the bed-plate A.

L represents the feed-foot, which has its fulcrum on one side of the center of motion of the spring-post and ring I, so that, when lifted, it will have a lateral motion, and, in combination with the ring, will gripe and carry the goods forward the length of a stitch, the feed-foot being really automatic in its action, and thereby doing away with all machinery in its movements except the upward motion of the ring. The feed-foot L, is curved, as shown in the drawing, and pivoted to a collar or hub, M, placed around a collar, *d*, on the needle-bar N, the hub M being held by the bent bar O, as shown in fig. 2, so that it can be turned around, if desired.

The presser-foot P moves in a guide on the hub M, and is connected by a link, *e*, to the feed-foot L. This presser-foot operates in combination with the feed-foot and perforated post, K, or their equivalents, in such a manner that the goods will be griped and held between it above and the perforated post below, and receive the downward pressure of the feed-foot L until the upward pressure of the ring I is removed and the stitch is completed, and then lets the goods straight down, when the feed-foot and ring resume their former positions preparatory to moving the goods for another stitch.

It will be observed that in this feeding arrangement the goods are griped and lifted forward, and then held stationary while the stitch is being made, and not allowed at any time to be slipped or drawn through or over any of the feeding parts while in contact with them.

In the feeding arrangement, all the parts which come in contact with the goods have a uniform surface; either being all smooth or all rough.

At or near the upper end of the feed-foot L is pivoted a reversible handle, *f*, connected, by a spring, *g*, to the hub M. The handle *f* is so arranged as to hold the feed-foot and presser-foot when the machine is in operation, and, by reversing the handle, that is, throwing it down underneath, to lift and hold them up while the goods are being put in or removed from the machine.

Through the collar *d* of the needle-bar is a vertical hole, through which the needle-thread is carried down, so that the feed may be turned around in any direction without coming in contact with the thread.

On the bed-plate A, immediately under the feed and presser-foot, is laid a cross or face-plate, R, which has an opening of suitable size directly over the posts I

and K, and is raised or lowered by means of a thumb-screw, *h*, thereby giving more or less action to the feed-ring and perforated post, so as to lengthen or shorten the stitch.

The crank-wheel G is, by a pitman, S, connected with a slide, T, placed in a horizontal groove on the side of the guard or standard B.

To the slide T is secured a bar, U, the upper end of which is, by a pitman, V, connected with an arm, *k*, descending from the needle-arm shaft W.

This shaft is arranged on center points, *m m*, in a frame, X, above the arm C, whereby the wear can be taken up at any time, and all noise therefrom obviated.

Another arm, *n*, extends from the rocking-shaft *w*, and is, by a double joint, *i*, connected with the upper end of the needle-bar N.

On the side of the arm C, opposite the needle-bar N, is secured a slotted piece, *y*, having a hole on each side of the slot, and a spring, *p*, on the outer side, which form a part of the take-up arrangement.

The rod Z, upon which the upper or needle-thread spool is placed, passes through a socket, and the tension of this thread is regulated by a thumb-screw, *s*, passing through said socket. Between the inner end of this thumb-screw and the rod Z is placed a small spiral spring.

For the purpose of taking up the loop left down by the passage of the shuttle, and controlling the upper or needle-thread, I provide a pendulous-arm or hook, A', deriving its motion from the needle-arm, it being coupled with it by a connecting-rod. The movement of this arm A' is so timed in its relation with the shuttle that it is not brought in contact with the thread until the shuttle has passed through the loop. It will, therefore, be seen that the shuttle, needle, and pendulous arm or take-up, move regular and continuously until the stitch is completed, and then the movement is reversed, preparatory to a renewed impulse, the upper thread being controlled entirely independent of the needle-bar, and without striking or pounding against any thing to make noise.

The loop-hole *r*, above the point where the pendulous arm catches the thread, and through which it lifts it, is simply to prevent entanglement of the thread.

To the lower end of the bar U, which, as above described, is secured to the slide T, is pivoted the bar B' that moves the shuttle-carrier or driver, of usual construction.

The shuttle C' is run in a groove, *t*, in the shuttle-race D', in such a manner that, in combination with the presser-bar E' on the back of the shuttle, the machine may run more steadily and without throwing the shuttle out even though there may be no plate above it.

The presser-bar E at the back of the shuttle is so arranged as to confine the shuttle in its groove, *t*, in the shuttle-race, and also to confine the shuttle-carrier or driver in its groove, *v*, in the bed-plate, thereby gaining steadiness of motion and obviating noise, it being capable of adjustment from time to time, to take up the wear of the shuttle and shuttle-race.

From the face of the groove *t* in the shuttle-race is a point or tongue, *w*, projecting, for the purpose of holding the loop-thread while the shuttle is passing through, the face of the shuttle being grooved to match over it, it thereby acting as an additional guide to the shuttle. The above point or tongue, *w*, may be attached in any convenient way, or may take the form of a ridge and extend the entire length of the shuttle-race, it being cut away where the needle enters, so as to allow the outer side of the loop to pass around the shuttle in the usual way.

Now, in order to convey a clear idea of the object of this arrangement, it must be remembered that, in machines as usually constructed, and employing a shuttle, the needle-eye is kept down at the bottom of the shuttle, while the shuttle is passing through the

loop formed for it, and the thread or loop is held in check by the needle. But, in the case of a regular crank-movement, while the shuttle is moving forward the needle is also lifting up, and the thread is passed through the eye to the other side, and is then carried to a point by the shuttle (further forward than in the former case) to the proper angle for the thread to slip around the shuttle; hence, it is plain that more of the upper thread is drawn below the goods than is really needed. The point or tongue, *w*, acting in this case in lieu of the needle-eye in the former case, catches the loop or thread and holds it in check, thus obviating the difficulty.

Besides the groove in the face of the shuttle, there is a screw, *z*, in the face near the point, which, when withdrawn, will allow the face to swing open, the face being hinged at the rear end.

The bobbin *y* is held, at the rear end, by a perforation for that purpose, and is confined by the face or swing-plate closing against it. There is not any tension on the bobbin, it lying perfectly loose, the thread being passed under a wire guide, *z*, at the bottom edge of the plate, and upward between the plate and spring bearing, *a'*, said bearing being provided with a screw to regulate the amount of pressure; the thread is then passed down through the delivery-eye into the cavity and out at the slot *b'* in the back part of the shuttle.

In the working of this machine, by reversing the motion of the crank the feed is reversed, and it will sew equally as well backward as forward.

Having thus fully described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. The spring-post and ring I, mounted upon the front end of the rock-bar H, which is operated by means of the cam *a* on the driving or crank-wheel G, substantially as and for the purposes herein set forth.

2. The perforated post K, mounted upon the front end of the rock-bar J, which is operated by means of the cam *b*, on the driving or crank-wheel G, substantially as and for the purposes herein set forth.

3. The feed-foot L, constructed as described, having its fulcrum placed to one side of the center of motion of the spring-post and ring I, and operating in combination with said spring-post and ring, substantially as and for the purposes herein set forth.

4. The presser-foot P, constructed as described, and operating in combination with the feed-foot L and perforated post K, substantially in the manner and for the purposes herein set forth.

5. The reversible handle *f*, and spring, *g*, arranged as described, in combination with the feed-foot L and presser-foot P, to operate substantially as and for the purposes herein set forth.

6. The arrangement upon the needle-bar N, of the collar *d*, with hole for the thread, and hub, M, carrying the presser-foot, feed-foot, and reversible handle, substantially as herein set forth.

7. The shuttle C', constructed as described, its face-plate being grooved and hinged at the rear end, and provided with screw, *z*, bobbin, *y*, wire guide, *z*, spring bearing, *a'*, and slot, *b'*, all substantially as and for the purposes herein set forth.

8. In combination with the shuttle C', constructed as described, the shuttle-carrier B', and presser-bar, E', operating within the shuttle-race D', which is provided with grooves, *t v*, and tongue, *w*, substantially as and for the purposes herein set forth.

9. In combination with the feet L P and posts I K, the adjustable cross or face-plate R, constructed and arranged to operate substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing, I have hereunto set my hand this 6th day of April, 1870.

THOMAS L. MELONE.

Witnesses:

ROBT. F. BARTLETT,
EBENEZER R. JAMES.