

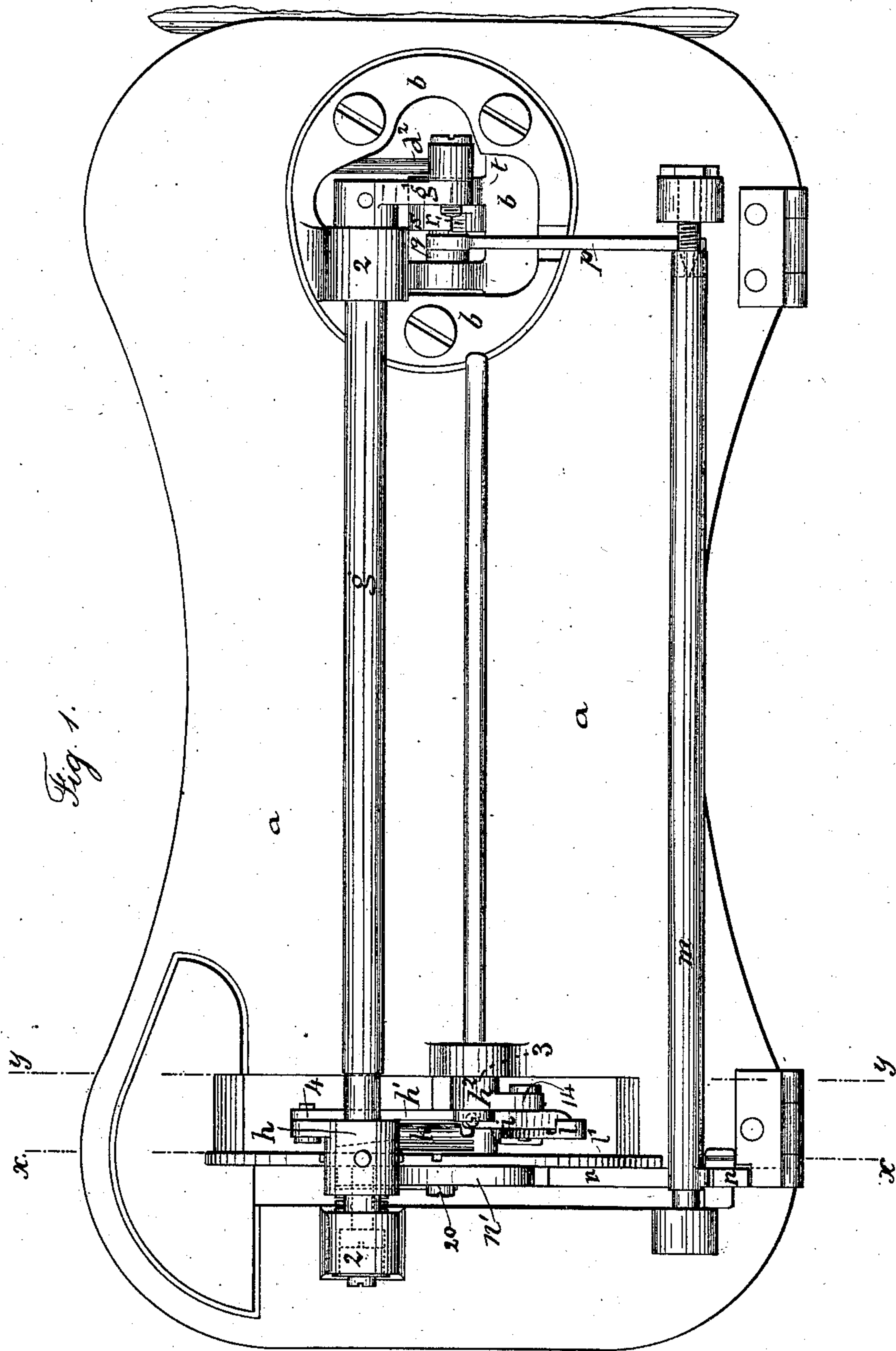
(No Model.)

3 Sheets—Sheet 1.

J. T. JONES.  
SEWING MACHINE.

No. 255,296.

Patented Mar. 21, 1882.



Witnesses

Chas H Smith  
J. Hall

Inventor

John T. Jones  
per Lemuel W. Perrell  
att'y

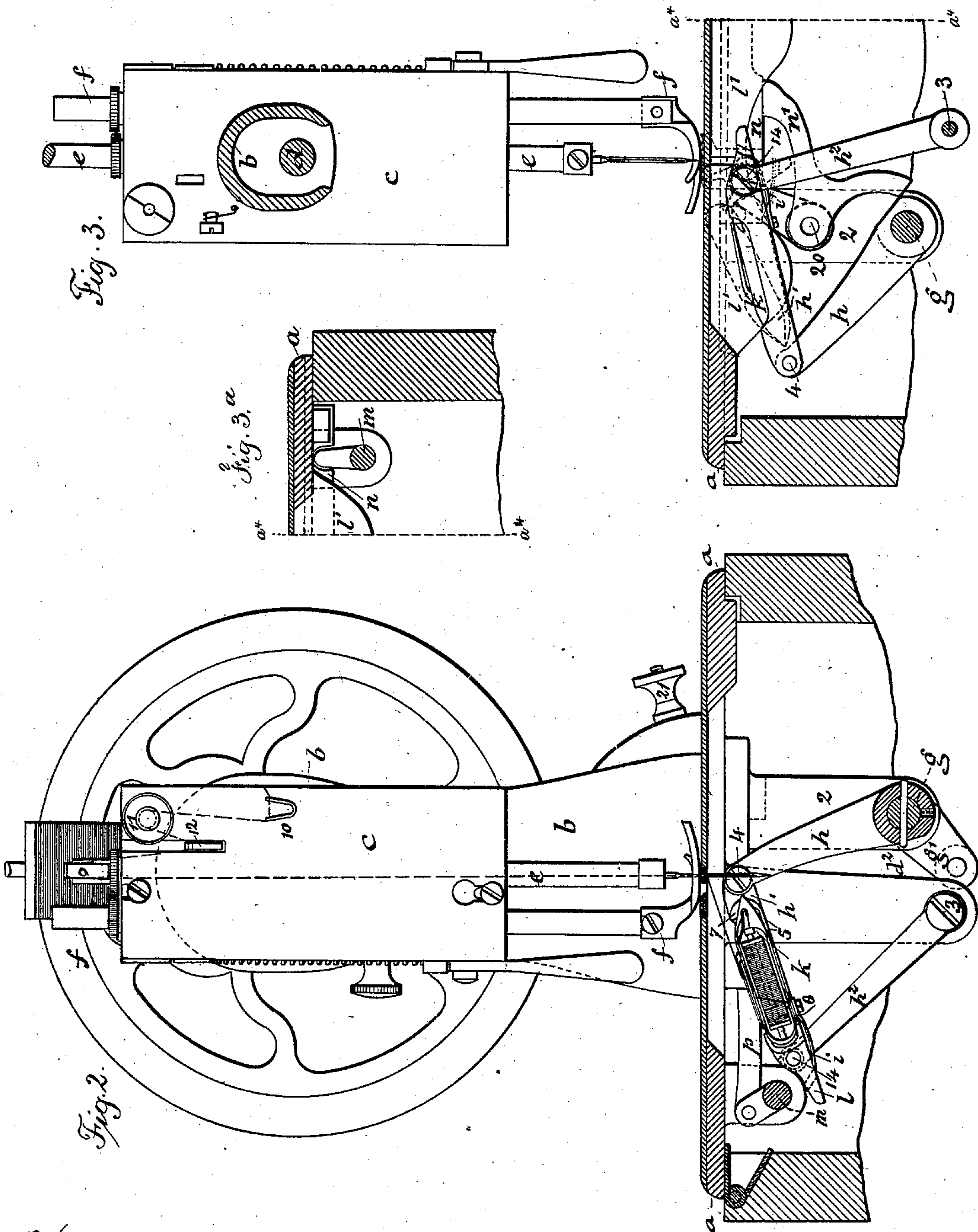
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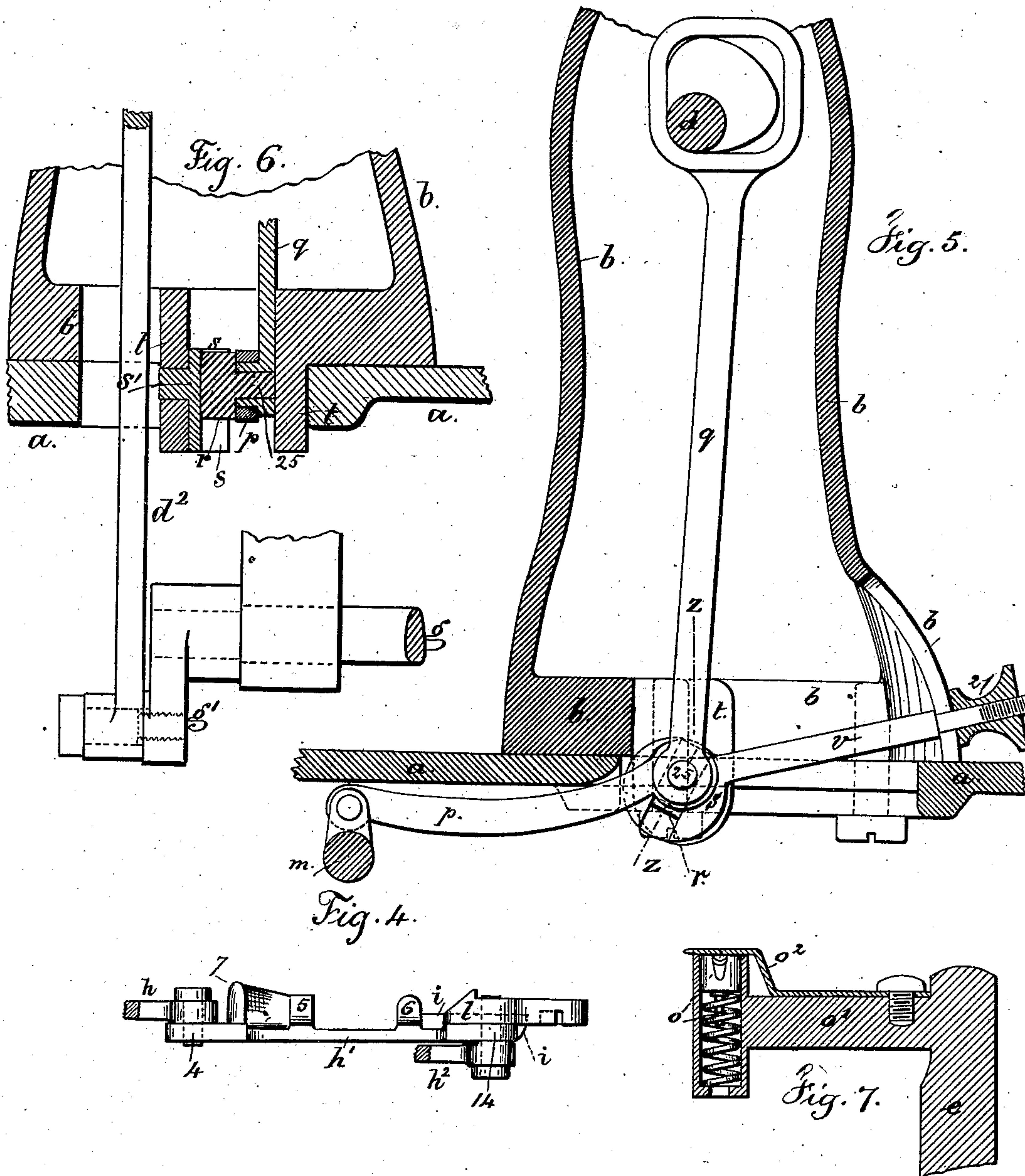
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# UNITED STATES PATENT OFFICE.

JOHN THOMAS JONES, OF UTICA, NEW YORK.

## SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 255,296, dated March 21, 1882.

Application filed March 22, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN THOMAS JONES, of Utica, in the county of Oneida and State of New York, have invented an Improvement in Sewing-Machines, of which the following is a specification.

Sewing-machine shuttles have been moved by a swinging arm, that gives to the shuttle an accelerated and retarded movement, and the feed-regulating device has been placed at the base of the stationary head or arm of the machine and swung up or down and clamped, as in my Patent No. 117,640, and the take-up has had a spring-eye moving up and down with the needle-bar.

My present invention relates to a peculiar feed-regulating device that is more easily constructed and less liable to wear loose than the devices heretofore employed; also, to a link shuttle-carrier pivoted to two swinging arms, so that the shuttle is carried reliably through the loop of needle-thread, and the heel of the shuttle is raised and the loop of needle-thread draws freely off it, and at the same time the shuttle-thread is drawn up in the line of the shuttle, and there is no tendency to displace the shuttle by drawing the heel up against the under side of the throat-plate, as heretofore. I also employ a peculiar pivoted shuttle-lever, that forms the rear end of the shuttle-carrier and prevents the shuttle from rising out of the carrier, and it is used to lift the end of the shuttle as it is liberated, so that it can be removed. Upon the needle-bar there is a spring-cushion, which relieves sudden strain upon the thread and controls the same, and also holds the thread away from the needle-point as the latter descends.

In the drawings, Figure 1 is an inverted plan of the machine. Fig. 2 is an elevation of the needle-bar and head of the machine and a section of the bed at the line  $xx$ , Fig. 1. Fig. 3 is an elevation of the shuttle and its arms, the bed being in section at  $yy$ . In said Fig. 3 the parts that are to the right of the dotted line  $a^4 a^4$  are shown in Fig. 3<sup>a</sup>. Fig. 4 is a plan of the shuttle-carrier, and Fig. 5 is a vertical section of part of the vertical arm, showing also the feed-regulating mechanism. Fig. 6 is a section at the line  $zz$ , Fig. 5; and Fig. 7 is a section of the spring-cushion on the needle-bar in larger size.

The bed  $a$  of the machine, the hollow arm  $b$ , that rises above the table and terminates as a head,  $c$ , the main rotating shaft  $d$  and fly-wheel, the needle-bar  $e$  and its actuating mechanism, and the presser-foot  $f$  are to be of any usual or desired character, so long as these parts are adapted to my improvements hereinafter set forth.

Upon the main shaft  $d$  there is a crank or eccentric, with connecting-rod  $d^2$  to the crank-arm  $g'$  of the rock-shaft  $g$ , which shaft  $g$  is in bearings 2 2, below the bed  $a$ . Near the end of the shaft  $g$ , next the needle, is an arm,  $h$ , and to its upper end is pivoted, at 4, one end of the shuttle carrying link  $h'$ , and the other end is hinged at 14 to the arm  $h^2$ , which is pivoted at 3 to a bracket at the under side of the bed.

The shuttle  $k$  is of ordinary construction, and it rests upon the fingers 5 and 6, that project from the face of the link  $h'$ ; and 7 is a finger coming above the shuttle near its nose or front end. The heel or back end of the shuttle is received into the recessed end of the lever  $l$ , which lever  $l$  has the screw 14 for its pivot, and there is a spring,  $i$ , below this lever, which acts against a heel, as in a knife-blade, to hold the lever when turned down to its normal place for use, or when turned up, as in dotted lines, to raise the heel of the shuttle and liberate the same and allow of the removal of such shuttle or its convenient replacement.

The lever  $l$  is provided with a tail-piece, that projects behind the aforesaid heel, for the convenience of moving such lever by the finger, and when the lever is turned into the position shown by dotted lines, Fig. 3, the spring  $i$  is in a slot or opening behind the heel, and the concave shuttle-holding end is raised to lift and liberate the shuttle.

The shuttle-face runs against the vertical face  $l'$  of the raceway, and by reference to Figs. 2 and 3 it will be seen that the link shuttle-carrier  $h'$  does not move in the arc of a circle, as it would do if it were moved by the arm  $h$  only. Neither does it remain parallel to the surface of the bed, as it would if the arms  $h$  and  $h^2$  were parallel, but the shuttle is carried upwardly as it enters the loop of needle-thread, and it is parallel, or nearly so, to the bed when the loop of thread is about midway of the shuttle, and after this the rear end of the shuttle is kept up near the surface of the bed, and the



point of the shuttle is carried downwardly. This causes the shuttle to stand in line, or nearly so, with its thread, that passes to the fabric. Hence the shuttle-thread receives tension in the proper direction as the stitch is drawn up. Besides this, the crank-motions that act upon the rock-shaft give to same and to the shuttle a rapid movement when the shuttle is passing through the loop of needle-thread and a retarded movement at the ends of the stroke. Hence the strain upon the thread and the concussion of the shuttle in the shuttle-driver will be but little, and the machine is rendered durable, and the risk of breaking the thread is lessened.

To still further lessen the risk of breaking the threads and insure the more perfect control thereof, I make use of a spring-cushion, *o*, at the upper end of the needle-bar. This spring-cushion is at the end of the arm *o'*, and it is in the form of a grooved cushion or saddle resting upon a helical spring within a hollow slotted case, as seen in larger size in Fig. 7. There is a spring, *o''*, resting upon the top of the slotted hollow case, that retains the thread in place after it has been sprung in beneath it.

It will be understood that the thread passes beneath the guide 10, over the tension device 11, through the eye of the ordinary take-up-lever 12, thence over the cushion *o*, and down directly to the needle-eye. By this arrangement of thread-regulating devices, the cushion *o* being located at the place where there is a bend in the thread before it passes straight, or nearly so, to the needle, said cushion yields and prevents undue strain or friction on the thread during the rapid movements to which it is subjected, and the cushion compensates any unequal action in the other parts and keeps upon the thread the tension necessary to prevent the needle-point catching and splitting the thread as it descends.

By employing a screw to adjust the tension of the spring of the cushion the action of said cushion in controlling the thread may be varied.

The feed-bar *n* is pressed downwardly by a spring, as usual, and it is pressed upwardly by the bent lever *n'*, pivoted at 20, Fig. 3, and acted upon by a cam upon the hub of the rock-shaft arm *h*, so as to strike the feed upwardly against the fabric at the proper time. The end motion is given to the feed-bar by the rock-shaft *m* with a finger that enters a notch in said feed-bar, as shown in Fig. 3<sup>a</sup>.

At the other end of the rock-shaft *m* there is a crank-arm and a link, *p*, to the vertical link *q*, that extends up to a crank or eccentric upon the main shaft *d*. (See Fig. 5.) The pin 25 forms the pivot or hinge that connects the links *p* and *q*, and this pin projects from a block, *r*, that slides in a groove in the hub *s*. This hub *s* is pivoted upon a pin, *s'*, that passes into the bracket *t* at the lower end of the hollow arm *b*, and from this hub there is a lever-arm, *v*, that passes through a segmental slot in the side of the hollow arm *b*, and there is a nut, 21, on the screw-threaded end of this arm *v*,

which clamps against the face of the arm *b* to hold the parts in any position in which they may be placed.

If the hub *s* is turned by the lever *v* and held so that its slot is vertical or nearly in line with the link *q*, then the block *r* will go up or down in the slot in the hub *s* and will give but little end motion to the link *p*; but when the feed-regulating lever *v* is moved the other way, so as to bring the slot of the hub diagonally to the endwise movement of the link *q*, then the link *p* receives nearly the same amount of end motion, and the feed movement is the greatest.

The feed-regulating lever *v* can be moved and clamped at the place that will produce the desired feed movement; and I remark that in consequence of the hub *s* being upon a bracket from the arm *b*, instead of being upon the bed *a*, as in my Patent No. 117,640, the parts can be properly made and put into place before the arm *b* is screwed to the bed *a*, thus not only facilitating the construction of the machine, but also insuring the proper operation of the feed-regulating mechanism.

I am aware that the shuttle-driver has been upon a link between a swinging arm and a revolving crank. With my improvement the thread is pulled up at an inclination to the bed, and the shuttle swings back and forth in the same path, instead of describing an ellipse.

I claim as my invention—

1. The combination, in a sewing-machine, of the stationary hollow arm *b*, having brackets *t*, that project down through the bed *a*, the links *p* and *q*, hinged together, the rock-shaft *m*, and feed-bar *n*, the block *r*, grooved hub *s*, arm *v*, and pivot *s'* in the bracket *t* for the hub *s*, substantially as set forth.

2. The combination, in a sewing-machine, of the shuttle-link *h'*, having supports for the shuttle, with the arm *h''*, pivoted at 3, the arm *h*, rock-shaft *g*, and mechanism for giving motion to the rock-shaft, substantially as set forth.

3. The combination, with the arm *h''*, rock-shaft *g*, and arm *h*, of a shuttle-link, *h'*, having fingers 5 and 7 to receive the nose of the shuttle, and the lever *l*, pivoted at 14, and recessed for receiving the heel of the shuttle, and a spring to retain the lever *l* in position, substantially as set forth.

4. The combination, with the needle-bar and needle in a sewing-machine, of a thread-tension, the take-up lever 12, having a positive movement, and the spring cushioning device *o*, the parts being arranged substantially as specified, so that the thread passes from the controller 12 over the cushioning device, and then directly to the needle, for the purposes set forth.

Signed by me this 7th day of March, A. D. 1881.

J. THOS. JONES.

Witnesses:

WM. TOWNSEND,  
GEO. W. BEST.