

No. 683,008.

Patented Sept. 17, 1901.

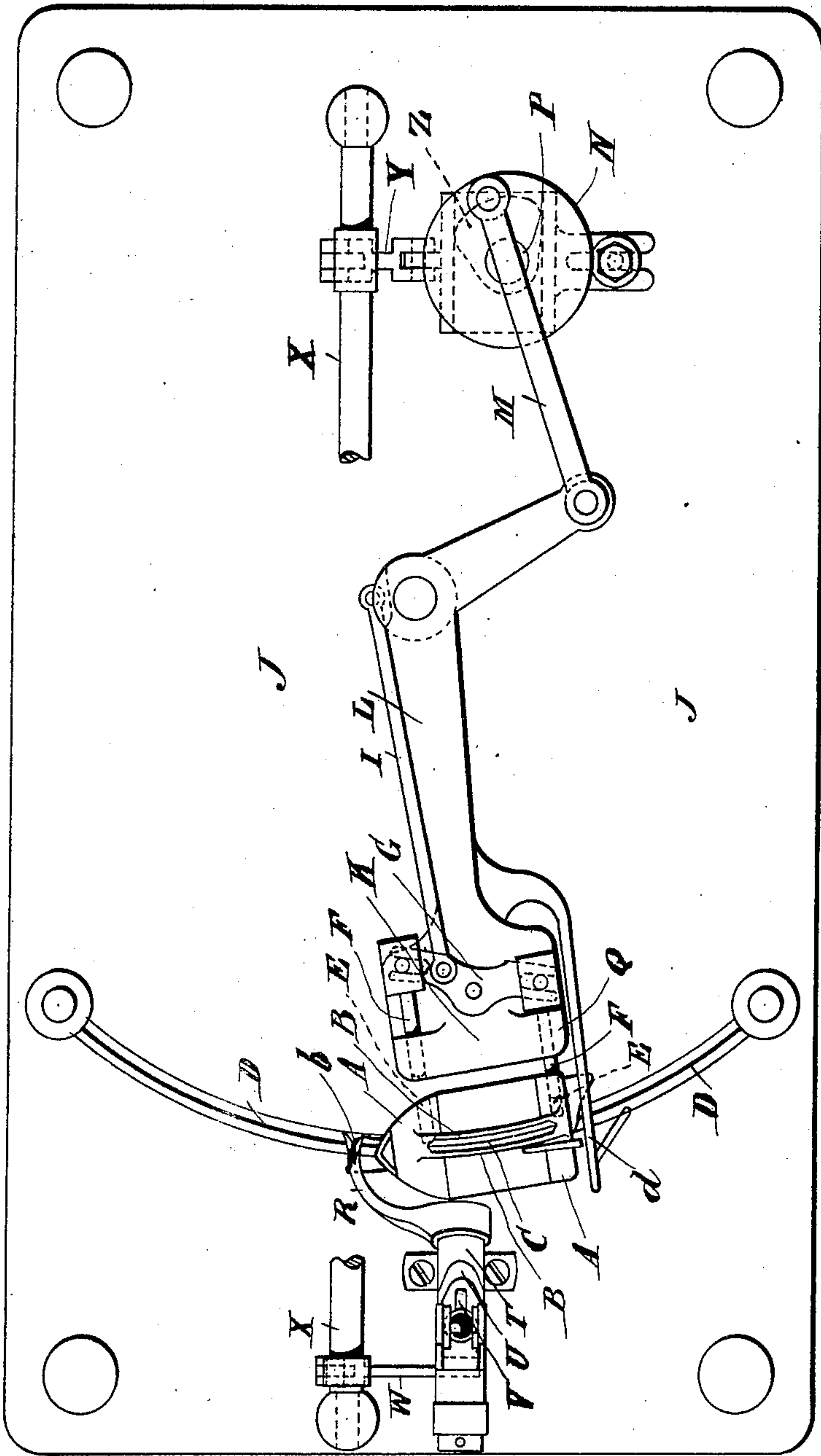
H. F. AINLEY.
TWO REEL SEWING MACHINE.

(Application filed Apr. 6, 1901.)

(No Model.)

5 Sheets—Sheet 1.

Fig. 1.



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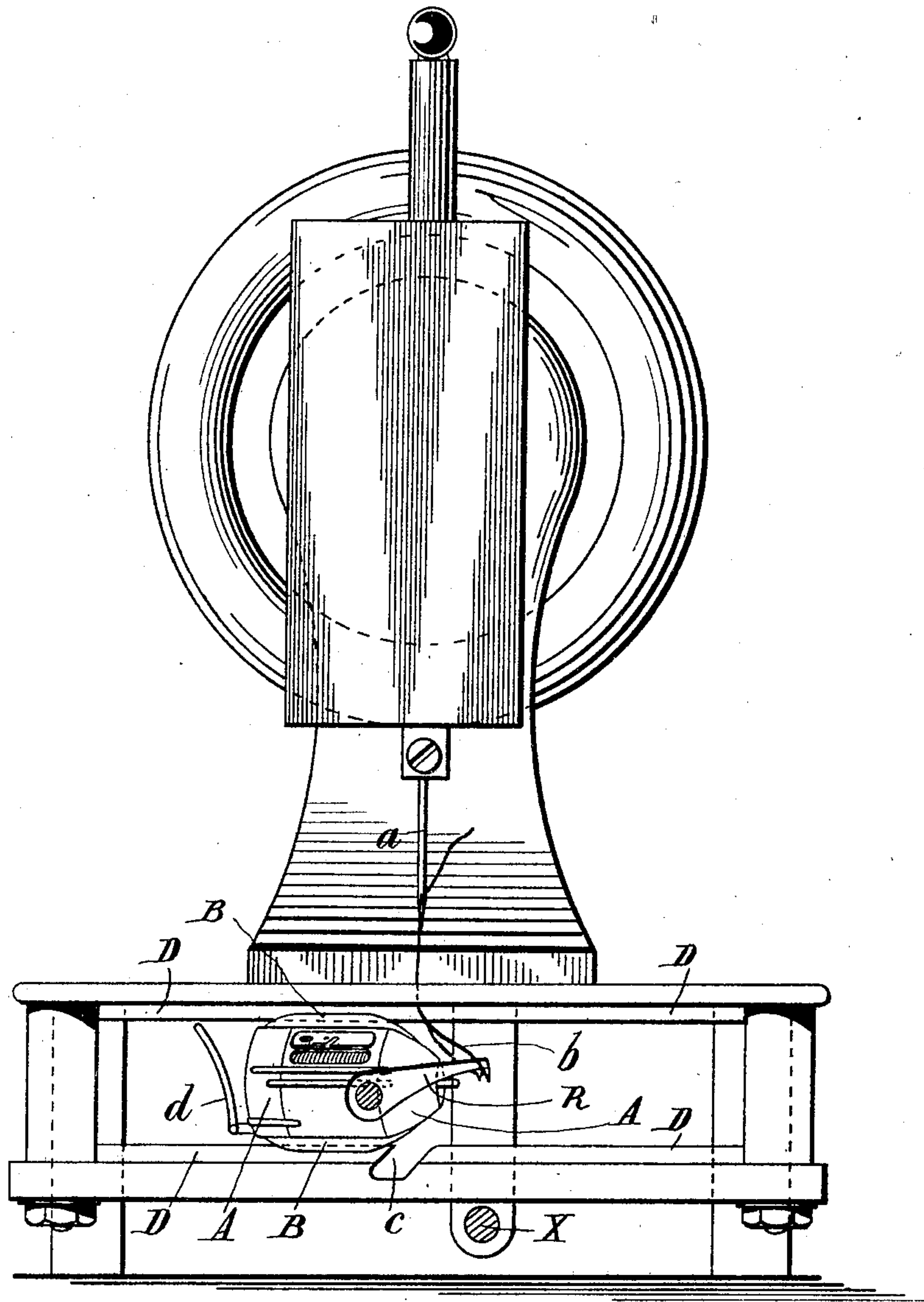
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Fig. 2.



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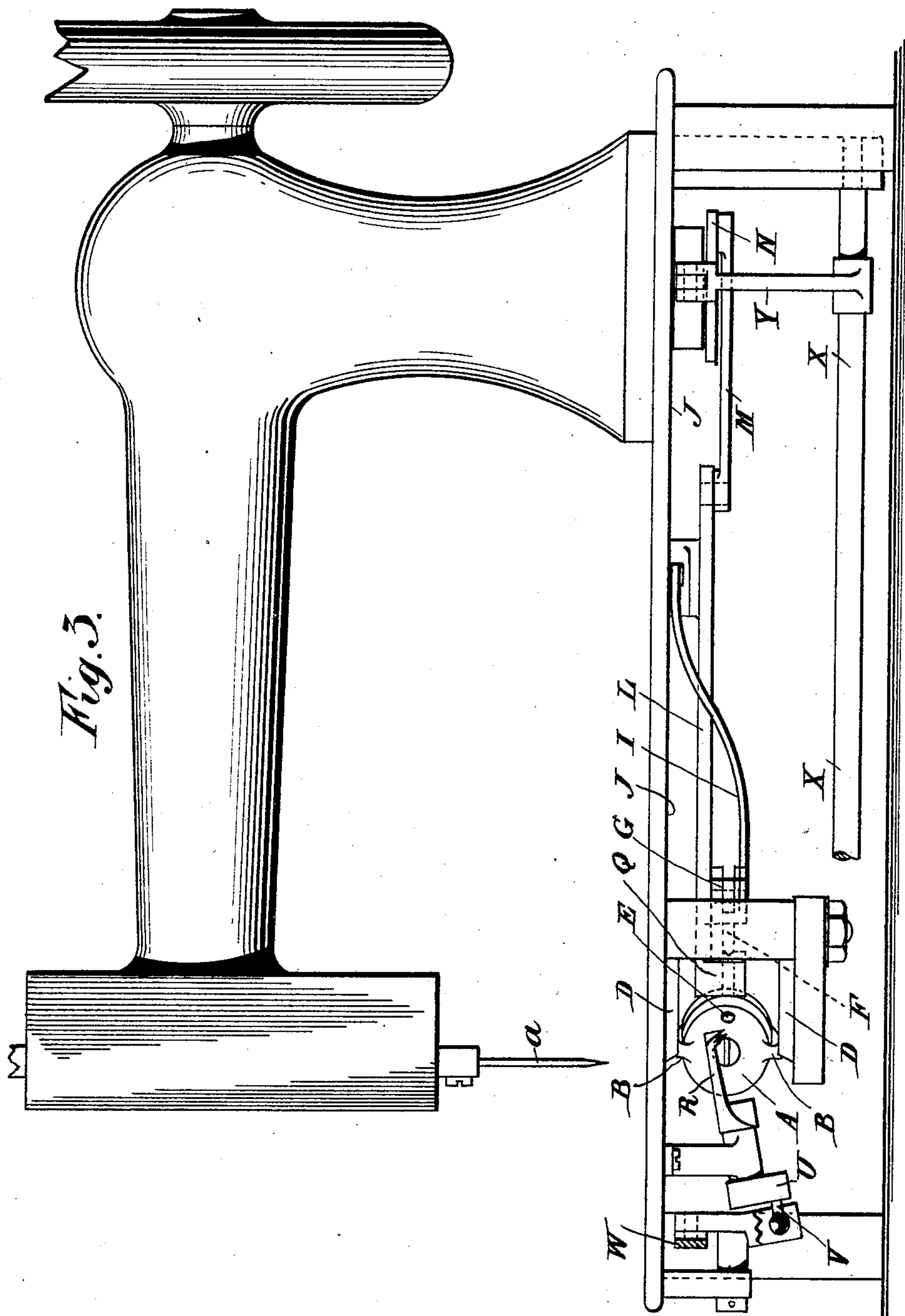
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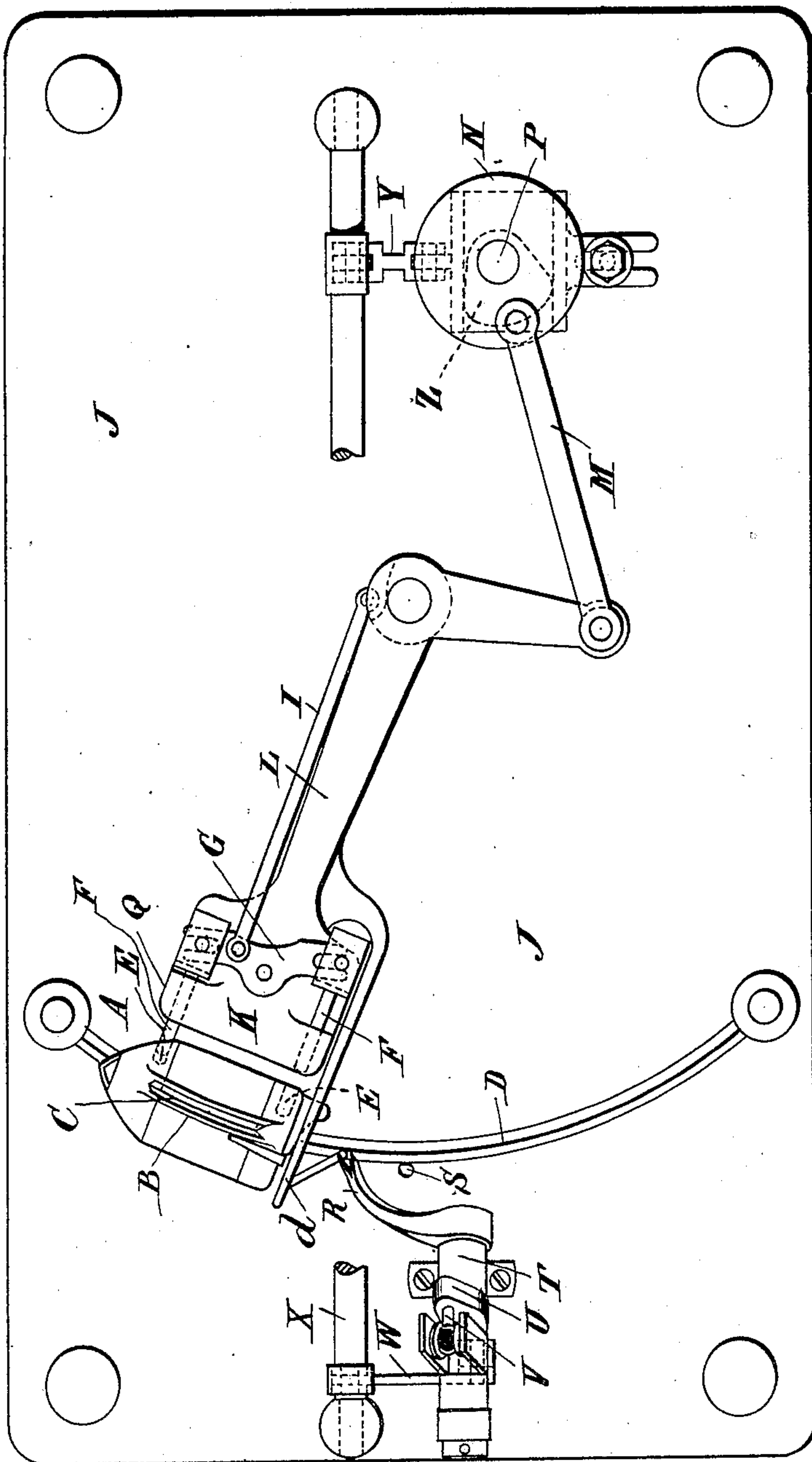
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(No Model.)

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Fig. 4.



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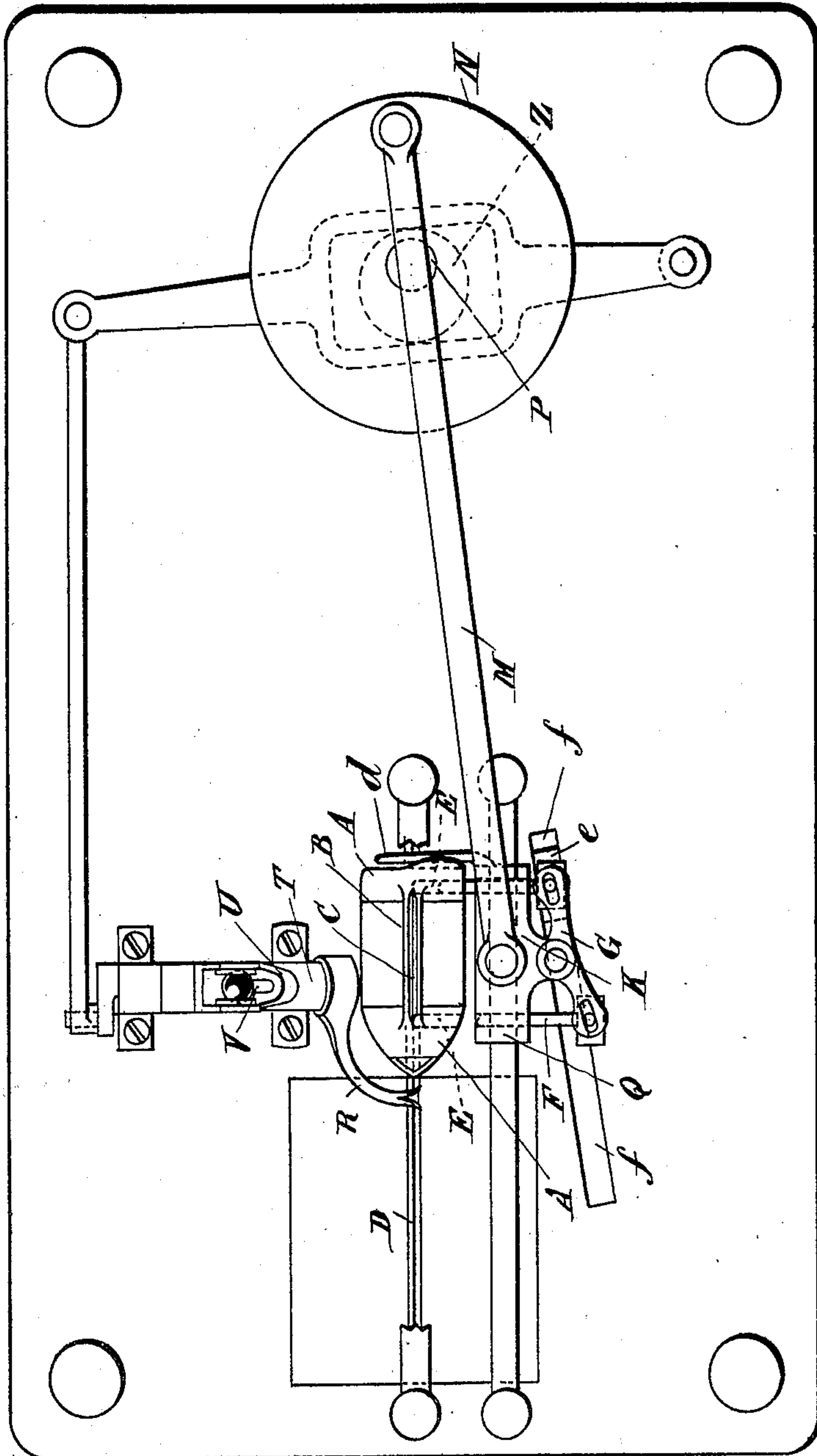
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(No Model.)

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Fig. 5.



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UNITED STATES PATENT OFFICE.

HARRY FRANCIS AINLEY, OF LONDON, ENGLAND.

TWO-REEL SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 683,008, dated September 17, 1901.

Application filed April 6, 1901. Serial No. 54,674. (No model.)

To all whom it may concern:

Be it known that I, HARRY FRANCIS AINLEY, a subject of the King of Great Britain, residing at 5 Muston road, Clapton, London, England, have invented certain new and useful Improvements in or Connected with Two-Reel Sewing-Machines, of which the following is a specification.

The object of this invention is improvements in or connected with two-reel sewing-machines, whereby a more perfect stitch is made without fear of the cotton being abraded or torn during the travel of the lower reel-carrier and the extent of opening of the loop or the amount of slack is lessened.

The invention will be clearly understood from the following description, aided by the accompanying drawings, in which—

Figure 1 is an under plan of a sewing-machine, showing the reel-carrier and looper and their appurtenances and showing the position of the reel-carrier when about to enter the loop, the lower guide being removed and the connecting-rod for the looper broken for clearness. Fig. 2 is a front end view of a sewing-machine with a portion removed to show the looper engaging the thread and starting to open it out ready for the reel-holder to pass through the loop made. Fig. 3 is a side elevation of a sewing-machine with a portion of the looper connecting-rod broken away. Fig. 4 is a similar view to Fig. 1, but with the reel-carrier at the end of its movement, the cotton having been released and the stitch made. Fig. 5 is an under plan of a sewing-machine with the bottom track broken away, the reel-carrier moving in a horizontal plane instead of in a curvilinear manner, as in the previous figure.

For the purpose of this invention the lower reel-carrier A is cylindrical and pointed at one end and is provided with means for facilitating the introduction and withdrawal of the reel, such as by forming it with a hinge portion or flap, on which the reel-pin is mounted, or by making the reel-carrier of skeleton form for the purpose. It is also provided at opposite sides with webs B B, having tracks or grooves C for engaging with guides D D, fitted, preferably, to the under part of the frame of a sewing-machine.

The reel-carrier A is provided with two or

more holes E E for receiving pins F F of a rocking lever G, either pin F F moving the reel-carrier A along the track D D, according to which pin F is in engagement with the reel-carrier A. The rocking lever G is pivoted to a bar I, secured to the base-plate J, and is also pivoted to a plate K, forming part of a reciprocating lever L, secured to the frame or bed-plate J of the machine, which lever L gets its reciprocating movement from a connecting-link M and disk N, the disk N being secured to an axle P, which is revolved from the main shaft in the usual manner. The plate K, carrying the rocking lever G, has also projecting guides or bearings Q, through which the pins F F project when engaging the reel-carrier A, but are of such a character that a perfectly-smooth surface without obstruction is provided for the cotton as it is passing around the reel-carrier A, the nose of each pin being within its bearing Q on the arrival of the cotton at that part.

Adjacent to the bed-plate J is the pivoted or reciprocating or oscillating looper R, with its point close to the needle-hole S, which looper R is pivoted in a bracket T, tilted at a desired angle to suit the movement of the looper. The looper-axle carries a crank U, its pin V being connected to a universal joint of a reciprocating lever W, this being connected by rod X, which is actuated through its link Y from a cam Z or the shaft P, so that such looper moves in time with the reel-carrier, so as to draw down the cotton and partly spread the loop for the reel-carrier to pass through at the proper moment. Now supposing the needle *a* has entered the work and passed below to a position with the eye of the needle just below the point of the looper R, on the commencement of the return movement of the needle *a* the looper R will commence its motion and the nose will enter between the cotton *b* and the needle *a* and by reason of the angle-headed shape of the looper R will open out the cotton *b* away from the needle *a*, the cotton passing under the angle-headed looper and between the lip *c* and the angled head of the looper R, and in consequence will be held in an opened state, the onward motion of the looper R carrying the cotton *b* from the slack of the "take-up" over the reel-carrier A and in the path of its

nose, so that the pointed nose of the reel-carrier A will enter the loop-cotton and by its onward motion will engage the cotton and pass through same, the angled nose of the reel-carrier A still further drawing the cotton from the slack of the take-up. At the commencement of the movement of the reel-carrier A the pin F nearest the end of same is in engagement therewith and during the first part of the travel is gradually leaving same; but as soon as the reel-carrier A has gone a distance sufficient for the cotton to have passed the hole E nearest the pointed nose the pin F at the nose end enters its hole E for carrying on the motion of the reel-carrier and the pin at the back portion is freed from the hole, so that during the remaining movement of the reel-carrier A the cotton is not met by any obstruction, gaps being made in the tracks, so that the webs B of the reel-carrier A are free from acting upon the cotton. The reel-carrier A has now passed completely through the loop of the cotton, the looper F commences its backward movement, and at the same time the cast-off *d*, formed by a projecting rod from the lever L, will remove the cotton from the looper, which cotton is drawn tight up to the work by the take-up, ready for the next stitch to be made, the looper A being placed in position for the next engagement with the cotton and to allow of the return movement of the reel-carrier. In connection with such mechanism it is preferred that a vertical or top feed be employed. By the mechanism herein described the reel-carrier is situate close under the work-plate, so that the movement of the cotton is not so great as in previously-constructed two-

reel sewing-machines, thus preventing undue strain upon the cotton and, further, allowing any size of cotton to be employed, and, further, by affixing a wax-pot, (heated,) the thread, if such be used, can be waxed during the stitching operation.

In the construction shown at Figs. 1 to 4 the rocking shaft G is actuated through the medium of the rod I, pivoted to a fixed point of the base; but in Fig. 5 the rocking shaft G is actuated by a block *e* of one of the pins F engaging a slot *f* of the base-plate. So instead of the rod L having a rocking motion, as in Figs. 1 to 4, the rod L has a reciprocating motion, and by reason of the slot *f* being at an angle to the travel of the reel-carrier A the block *e* will operate the rocking lever G in the same manner as in Figs. 1 to 4.

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

In two-reel sewing-machines, a reel-carrier, an oscillatory arm, pins carried by said arm for engaging the reel-carrier, a rocking lever on said oscillatory arm for engaging the pins in alternation, a link connected respectively with said rocking arm and the framework, a looper R, a driving-shaft operatively connected with said oscillatory arm, a cam Z on said shaft, and driving connections between said cam and looper involving a universal joint, connecting-rod X and link Y.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

HARRY FRANCIS AINLEY.

Witnesses:

RICHARD CORE GARDNER,

CHARLES ALFRED GROSSETETE.