

(No Model.)

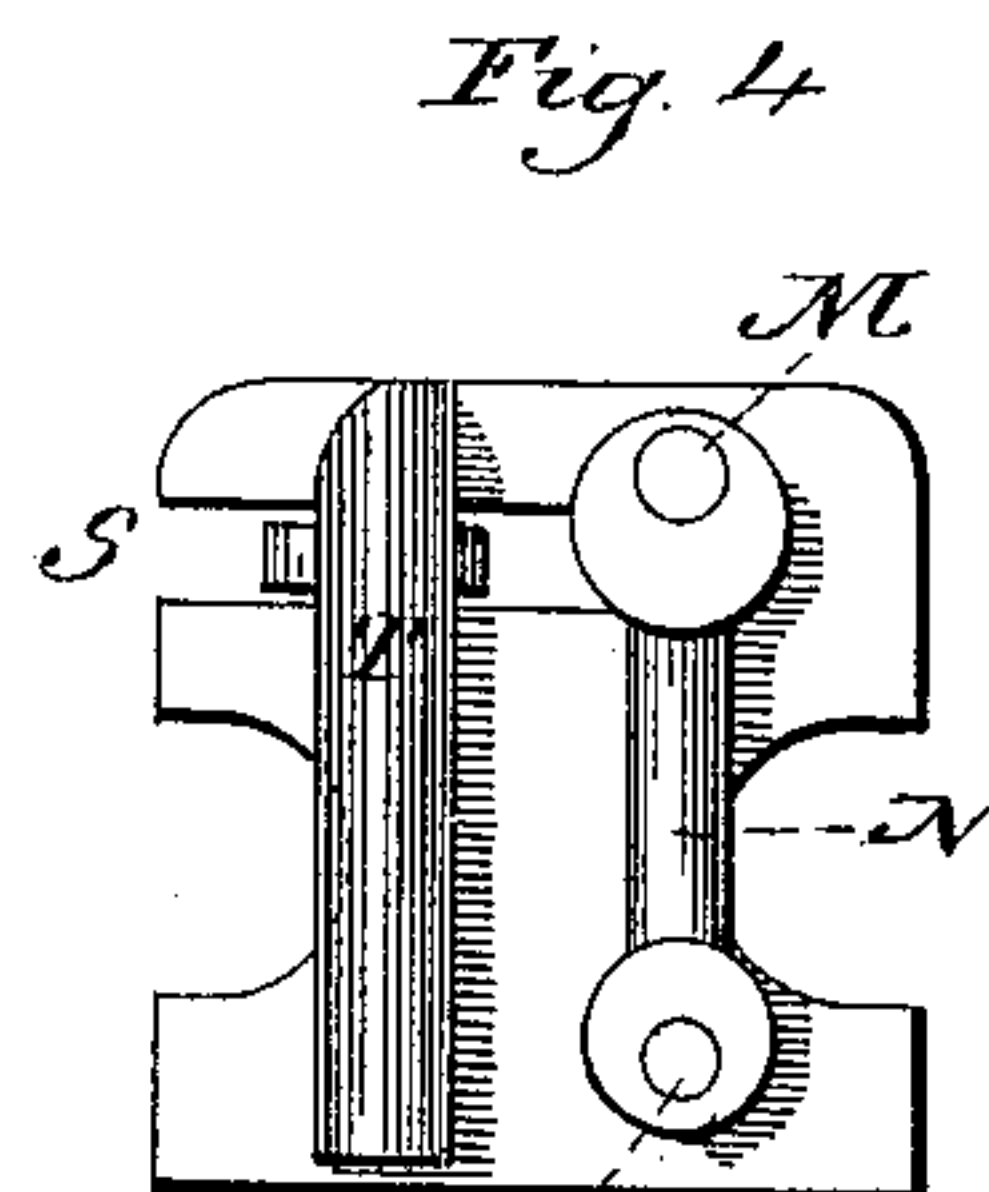
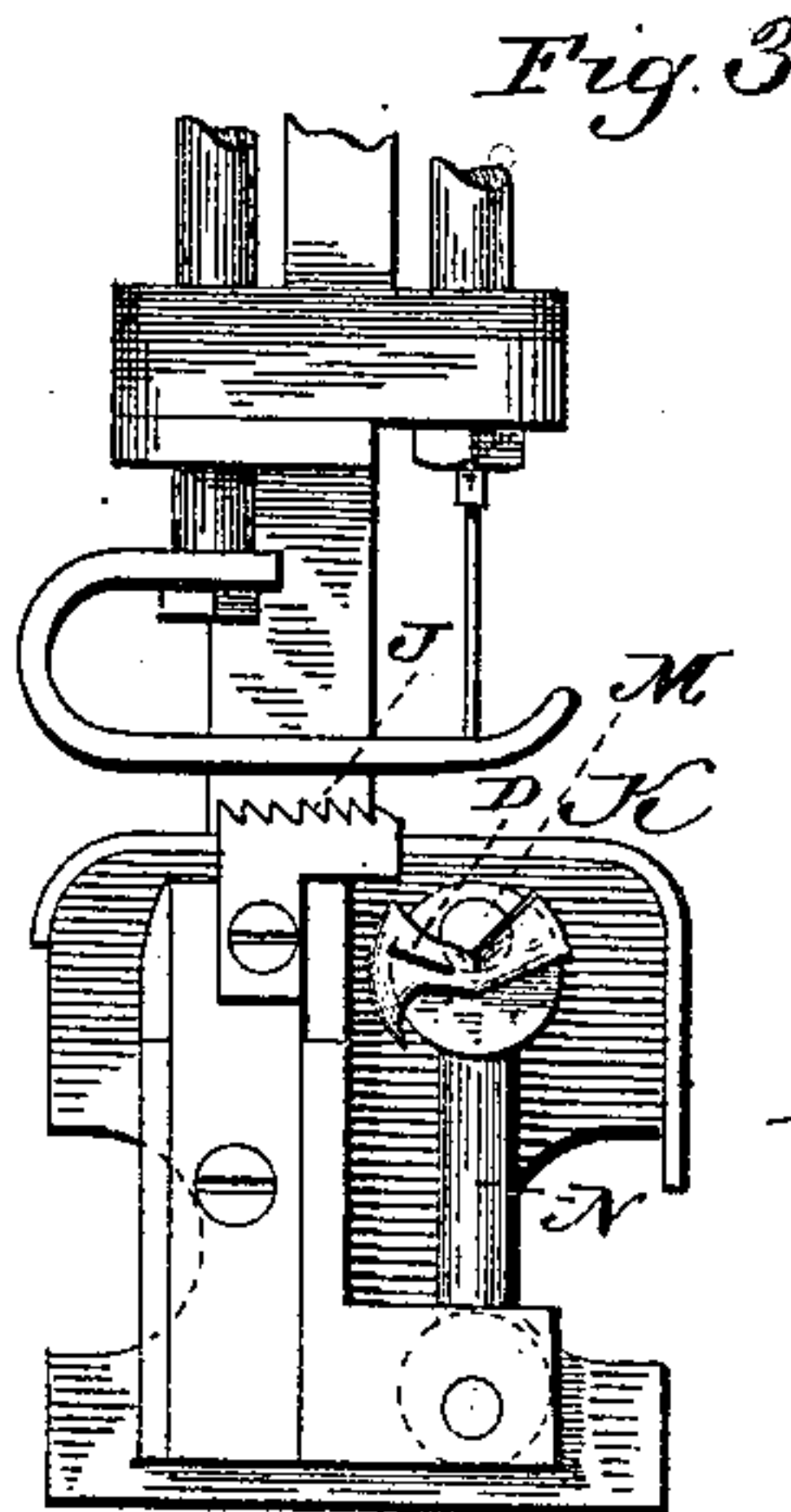
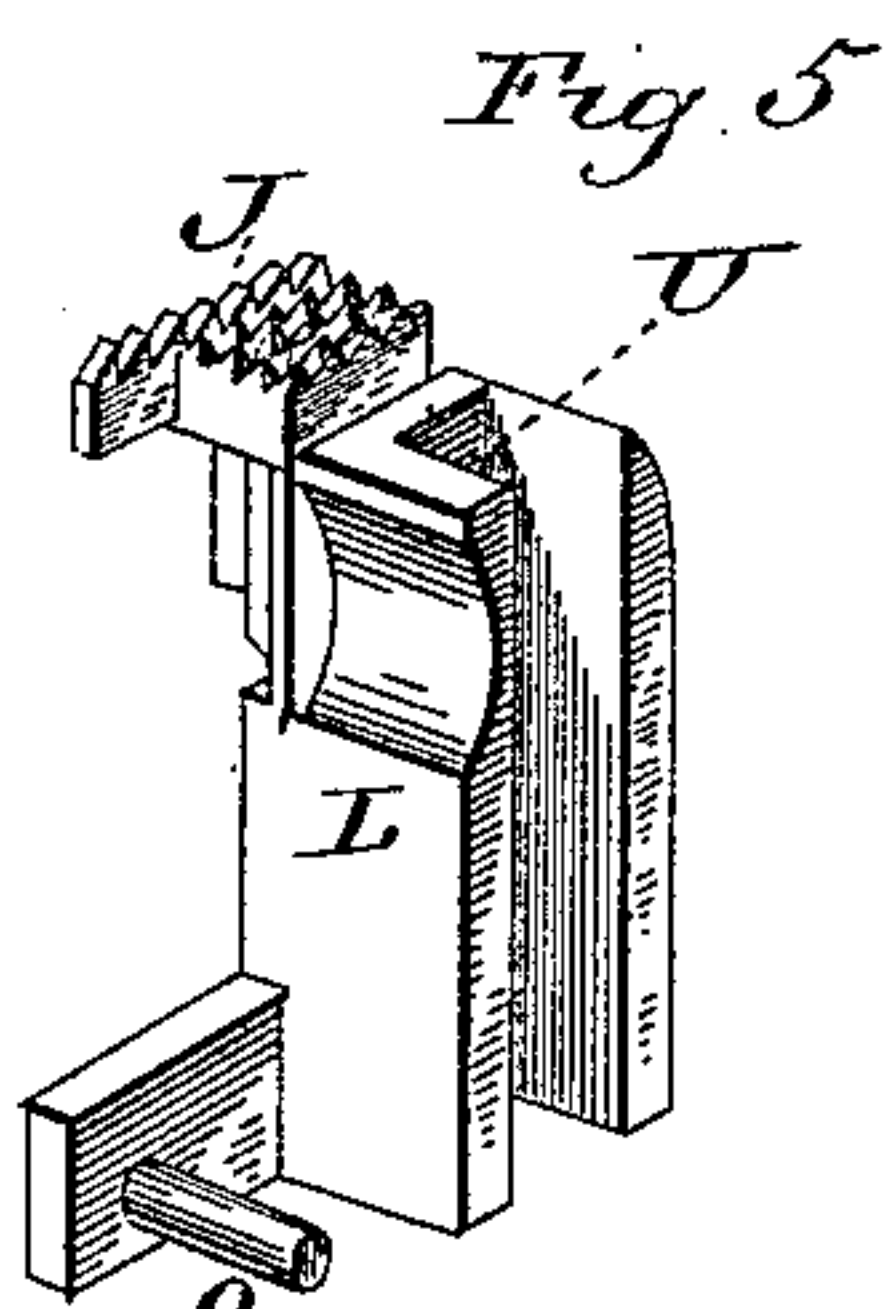
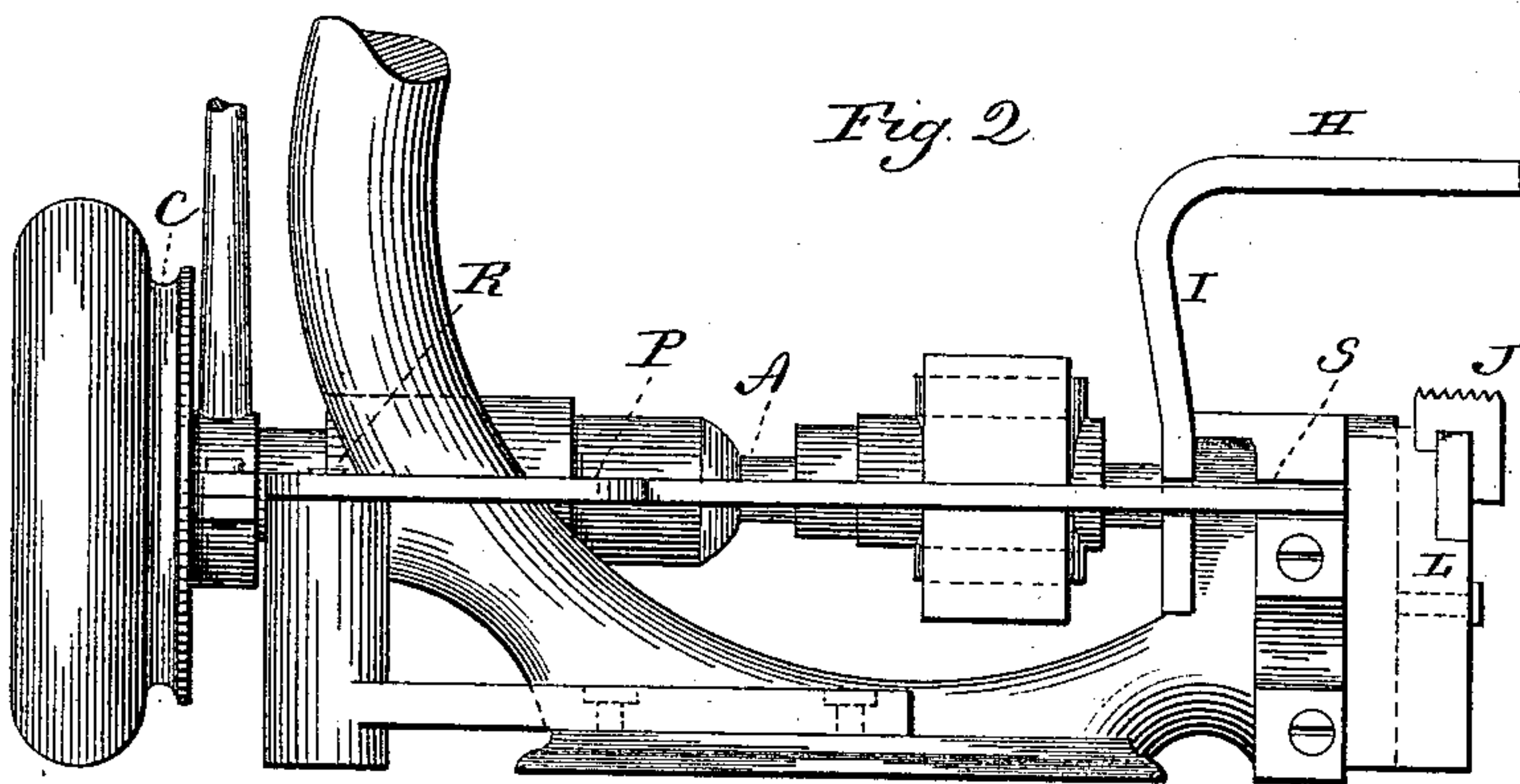
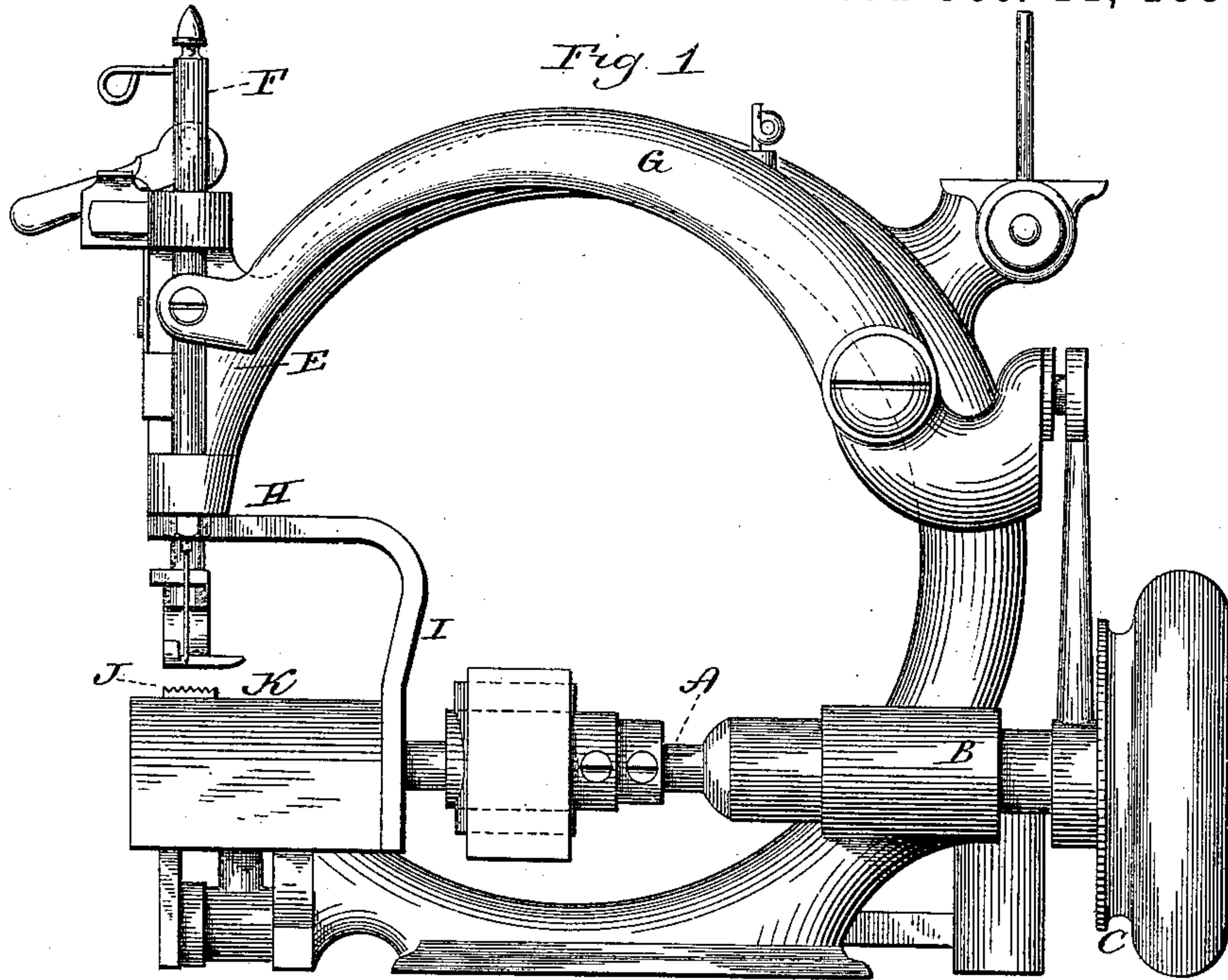
2 Sheets—Sheet 1.

C. F. BOSWORTH.

SEWING MACHINE FEEDING MECHANISM.

No. 371,414.

Patented Oct. 11, 1887.



Witnesses,
J. H. Shumway
Fred C. Earle

Chas. F. Bosworth,
Inventor,
By
Fred C. Earle.

(No Model.)

2 Sheets—Sheet 2.

C. F. BOSWORTH.

SEWING MACHINE FEEDING MECHANISM.

No. 371,414.

Patented Oct. 11, 1887.

Fig. 6

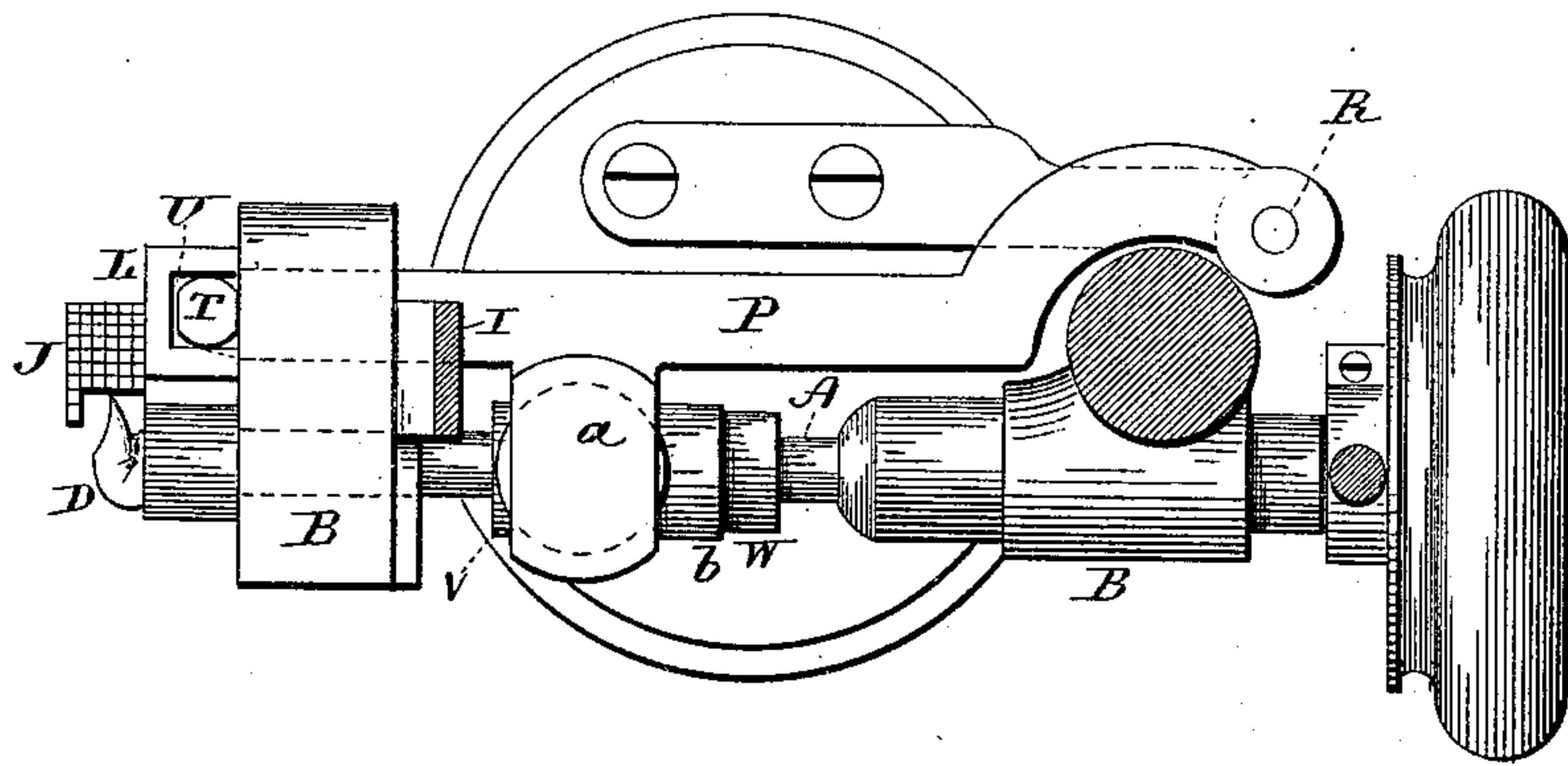


Fig. 7

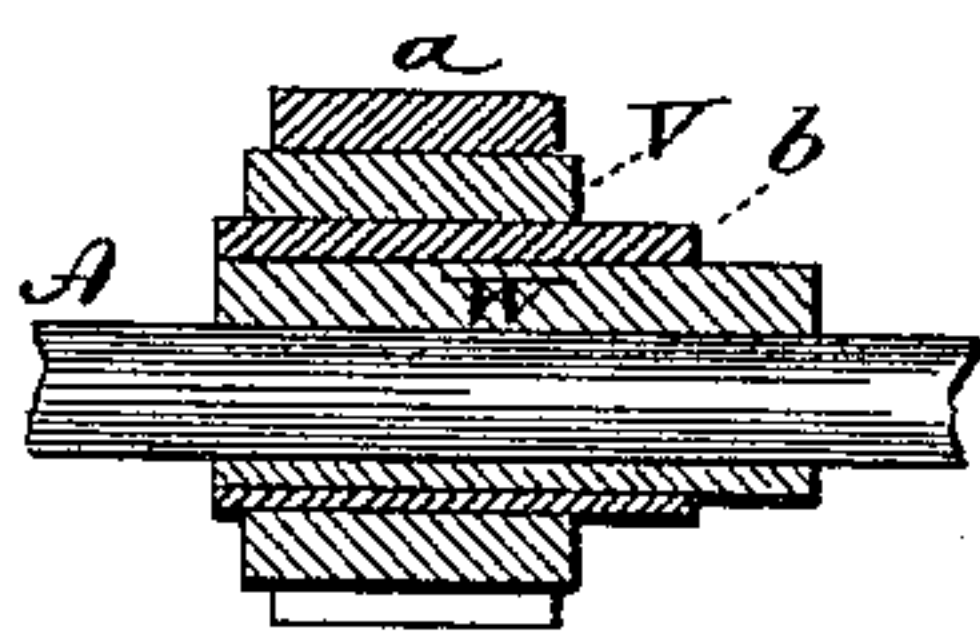


Fig. 8

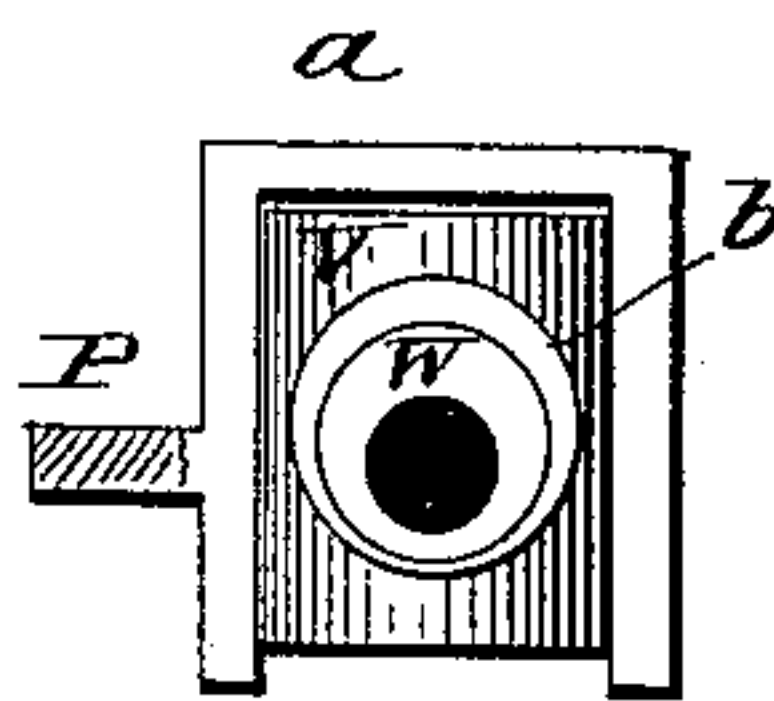
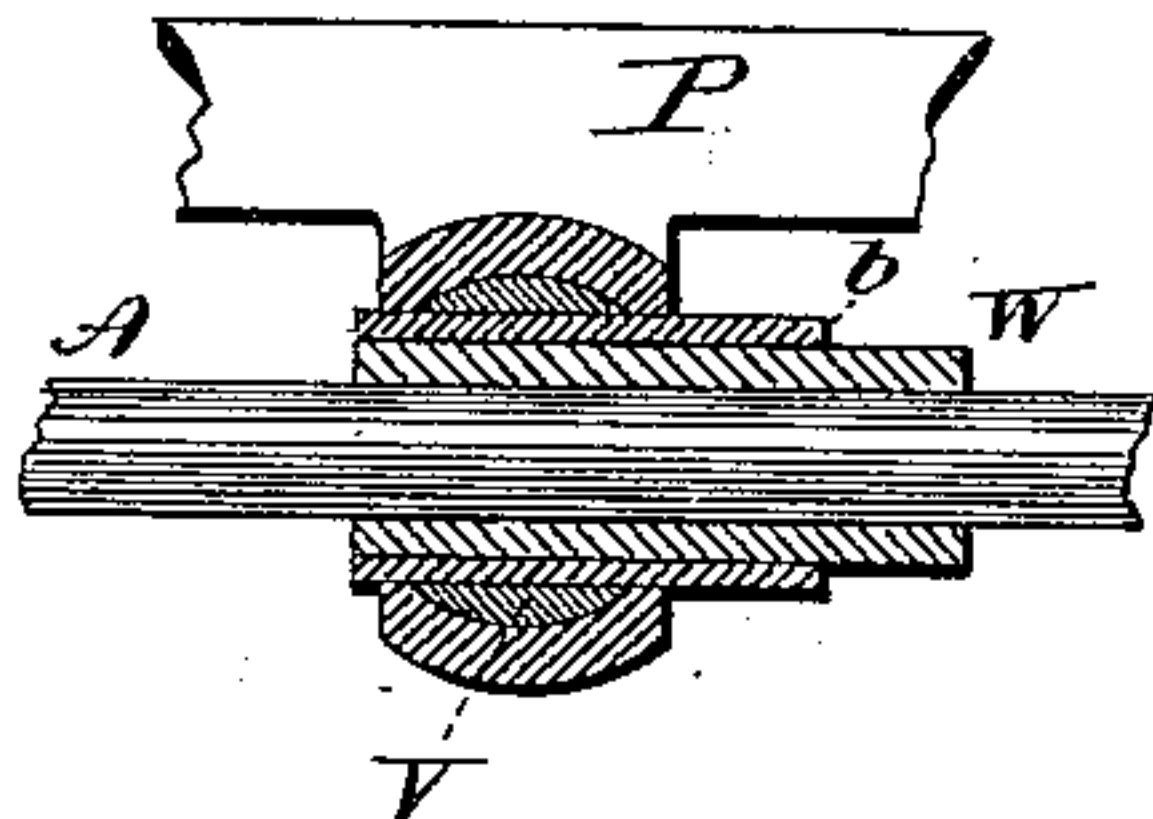


Fig. 9



Witnesses
J. H. Shumway,
Fred C. Earle

Chas F. Bosworth,
Inventor,
By atty
J. H. Shumway

UNITED STATES PATENT OFFICE.

CHARLES F. BOSWORTH, OF MILFORD, CONNECTICUT.

SEWING-MACHINE FEEDING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 371,414, dated October 11, 1887.

Application filed March 30, 1887. Serial No. 232,967. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. BOSWORTH, of Milford, in the county of New Haven and State of Connecticut, have invented new Improvements in Sewing-Machines; 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 front view of the machine complete; Fig. 2, a rear view of the lower portion of the machine, showing the invention; Fig. 3, a feed end view of the machine, showing the feed-block in place; Fig. 4, a feed end view, the feed-block and looper removed, showing the vertical bar T, and also the eccentric on the driving-shaft by which vertical movement is imparted to the feed-block; Fig. 5, a perspective view of the feed-block detached; Fig. 6, a top view, the work-plate removed, and the supporting-arm broken away to show the invention; Fig. 7, a longitudinal section through the feed-eccentric, showing the eccentric block and stirrup; Fig. 8, a transverse section through the driving-shaft, looking toward the feed-eccentric; Fig. 9, a horizontal section through the same.

This invention relates to an improvement in that class of sewing-machines commonly known as the "Willcox & Gibbs." The character of this machine adapts it to run at very great velocity; but in heavier work—that is, such as straw for hats, &c.—under great velocity of running there is so great vibration to the needle-arm as to interfere with the proper working of the parts. Again, under such rapid work the feed of the usual construction is not as positive as is required for this class of work.

The object of my invention is to adapt the machine to the highest velocity, and especially to the sewing of straw braid.

The general outline of the machine is the same as that known as the "Willcox & Gibbs," and in which the supporting-arm is of C shape, one end carrying the work-plate and the other end carrying the needle and presser-foot bars.

A represents the driving-shaft, which is supported in the usual bearings, B B, and carries the pulley C at one end and the looper D at the opposite end, as in the usual construction.

E is the arm, which extends upward over and downward toward the work-plate, carries the needle-bar F in the usual manner, and to which an up-and-down reciprocating movement is imparted through the needle-bar G, also in the usual manner.

In the usual construction the end of the arm E is disconnected from the bed of the machine, and under rapid work is liable to vibration. To avoid such vibration I introduce a bracket, H, of right-angular shape, one branch, H, secured to the end of the arm E and extending inward, the other branch, I, turned downward and secured to the base. This bracket H I leaves sufficient space upon the cloth-plate for the widest braid, and firmly connects the usual free end of the arm E directly to the base and so as to secure it against possible vibration.

J represents the feed, which is of usual shape, presenting series of teeth upon its surface, adapted to engage the work through the work-plate K. The work-plate K is of small extent compared to the usual work-plate of this machine, but sufficient for braid-sewing. The feed is secured to or made a part of a block, L, which stands beneath the work-plate, while the feed J extends up through an opening in the plate. The up-and-down movement required for the feed is imparted by an eccentric, M, on the driving-shaft, from which a connecting-rod, N, extends downward, and is hung to a stud, O, on the block L. Advance and retreating movement is imparted to the feed through a lever, P, (see Fig. 6,) which is hung to the frame or base near the pulley, upon a fulcrum, R, and so as to swing in a horizontal plane substantially parallel with the plane of the driving-shaft. This lever extends forward through a slot, S, in the frame of the machine, and at its forward end the lever P carries a vertical bar, T, (see Figs. 4 and 6,) on the advance side of the connecting-rod N. The feed-block L is constructed with a vertical groove, U, corresponding to the vertical bar T of the lever R, and so as to set over that bar, as seen in Fig. 6. This bar serves as a guide for the up and-down movement of the feed-block. To the lever R a vibratory movement is given by means of an eccentric, W, on the driving-shaft A. The eccentric W works in a cylindrical block, V, the axis of which block is vertical, or at right

angles to the axis of the driving-shaft, (see Fig. 9,) the cylindrical block V being free to move longitudinally on the eccentric.

Attached to the lever P, or made a part of it, is a saddle, *a*, (see Figs. 8 and 9,) which spans the cylindrical block V, the saddle being fitted to engage the block V, so as to support it on its vertical axis.

The eccentric W imparts a transverse reciprocating movement to the block V, and this block V within the saddle communicates such transverse reciprocating movement to the lever P, and gives to it the horizontal vibratory movement required. This horizontal vibratory movement, being communicated to the feed-block L through the bar T, gives to it the required transverse reciprocating movement.

The cylindrical shape of the eccentric-block permits the oscillation of the saddle of the lever P thereon, and it being free longitudinally on the eccentric, is adapted to slide thereon to adapt itself to the vibratory movement of the lever P.

In order to vary the feed the eccentric is made double. By applying an eccentric-sleeve, *b*, outside the eccentric W, both the eccentric-sleeve *b* and the eccentric W being adjustable rotarily on the shaft, the extent of eccentricity may be varied to any desirable extent within the range of the two eccentrics. This is a common eccentric adjustment, not necessary to be particularly described.

By making the positive connection which I have described between the feed and the driving-shaft, to communicate the transverse reciprocating movement to the feed, there is no possibility of loss or over-motion, and consequently the feed is necessarily of the most regular character. The up and down movement of the feed being imparted positively from the driving-shaft, there is an equal certainty as to the movement of the feed in this direction, and because of the positive character of both the advancing and retreating movement of the feed and of its up-and-down movement there is no limit to the speed at which the machine may be run.

Guides are employed to mechanically carry the braid to the machine, that it may also be presented in the proper relation to the needle and feed; but these constitute no part of my present invention, and may be common and well-known guides.

While my invention is designed to adapt the

machine especially for straw-braid sewing, the improvements are equally advantageous in any case where very rapid and good quality of work is desirable.

I claim—

1. In a sewing-machine substantially such as described, having an arm extending over the work-plate and carrying a vertical needle-bar, the combination therewith of a bracket, one branch secured to the free end of said arm and the other branch turned downward and secured to the base, substantially as and for the purpose described.

2. In a machine substantially such as described, the combination of the driving shaft, a lever hung to swing in a horizontal plane substantially parallel with the plane of the driving shaft and carrying at its free end a vertical bar, T, an eccentric on the driving-shaft, and connection therefrom to said lever, whereby the rotation of the driving-shaft imparts transverse vibratory movement to said lever, a feed-block, L, carrying the feed J and guided vertically on said arm T, of the lever P, with an eccentric on the driving-shaft, and connection therefrom to said block, substantially as described, whereby the advancing and retreating movement of the feed is imparted through said lever P and the up-and-down movement of the feed is imparted direct from the driving-shaft.

3. In a sewing-machine substantially such as described, the combination of a lever, P, hung to the base and so as to swing in a horizontal plane substantially parallel with the plane of the driving-shaft, an eccentric on said driving-shaft, a cylindrical block, V, around said eccentric, the axis of said cylindrical block being at right angles to the axis of the driving-shaft, a saddle, *a*, forming a part of the lever P and embracing said cylindrical eccentric-block, the said lever carrying a vertical bar, T, at its outer end, and feed-block L, carrying the feed J and guided vertically on said bar T, with an eccentric on the driving shaft, and, in connection with said feed-block, to impart up-and-down reciprocating movement to said feed-block, all substantially as and for the purpose described.

CHARLES F. BOSWORTH.

Witnesses:

THOS. F. FOGARTY,
WM. G. MITCHELL.