(No Model.) 3 Sheets—Sheet 1.

J. W. PACKARD.

MILLING MACHINE.

No. 396,952. Patented Jan. 29, 1889.

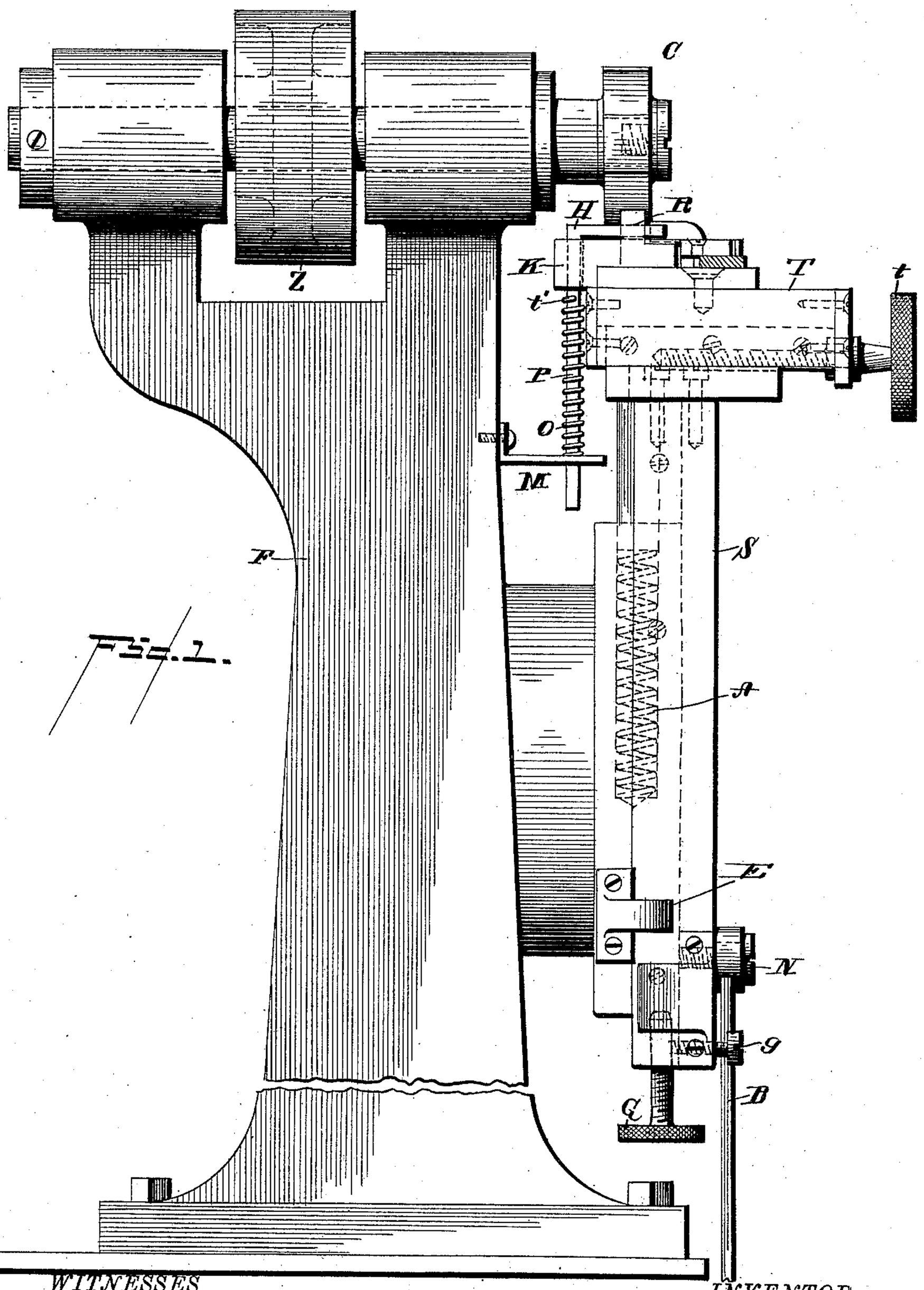

FIG. 1.

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(No Model.)

3 Sheets—Sheet 2.

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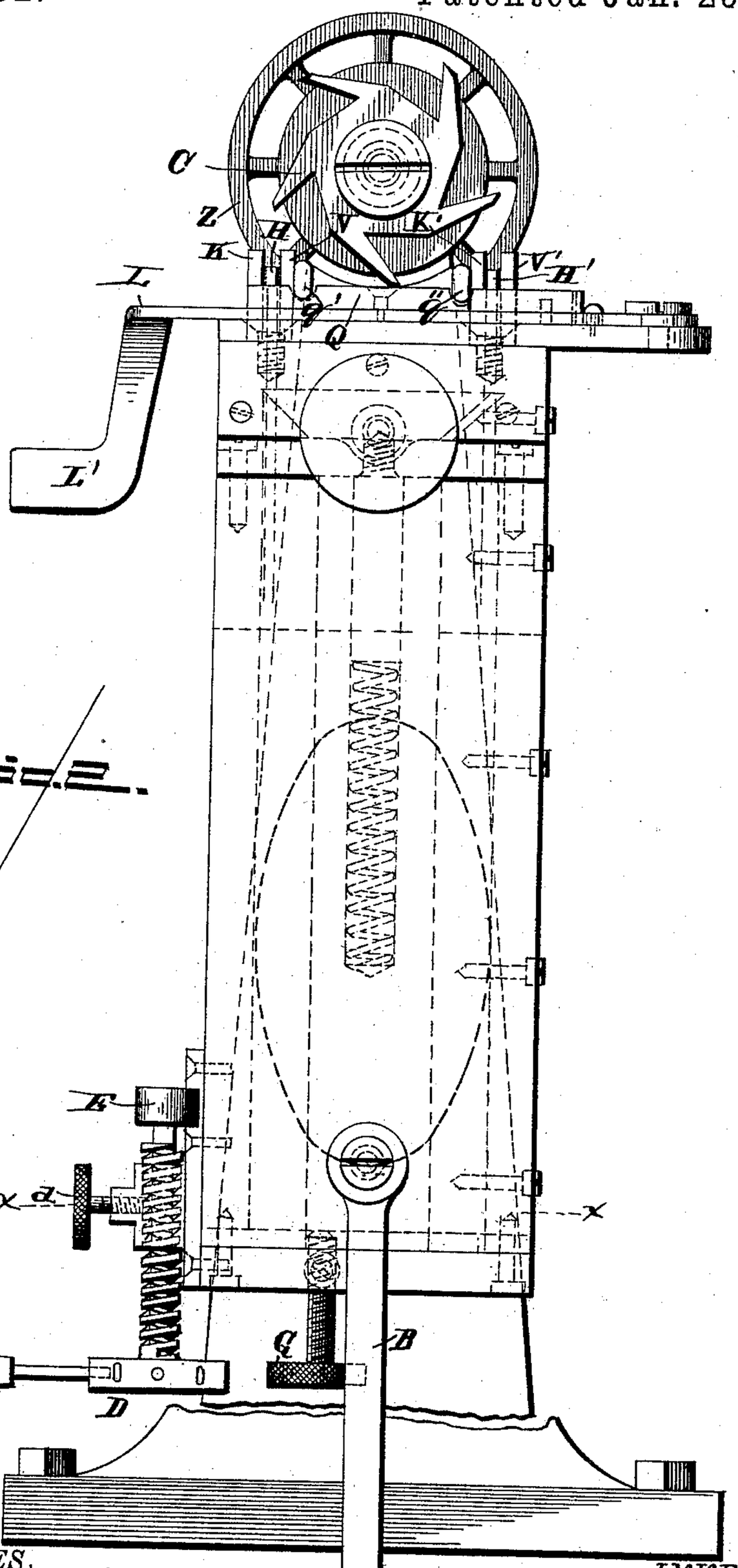

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(No Model.) 3 Sheets—Sheet 3.

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Fig. 3.

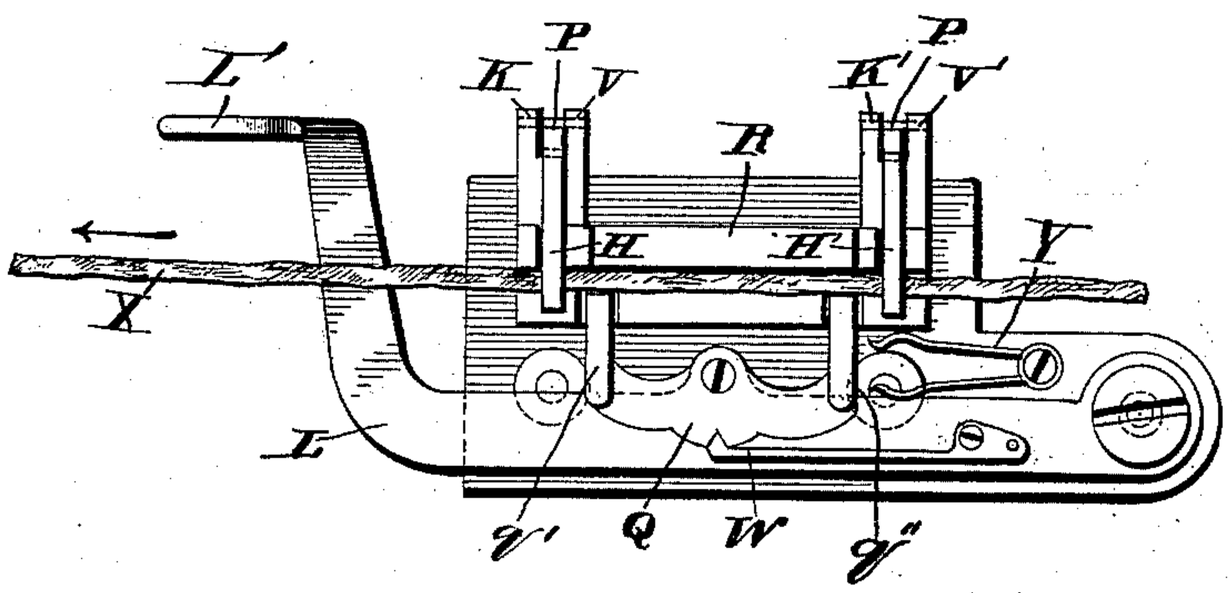


Fig. 4.

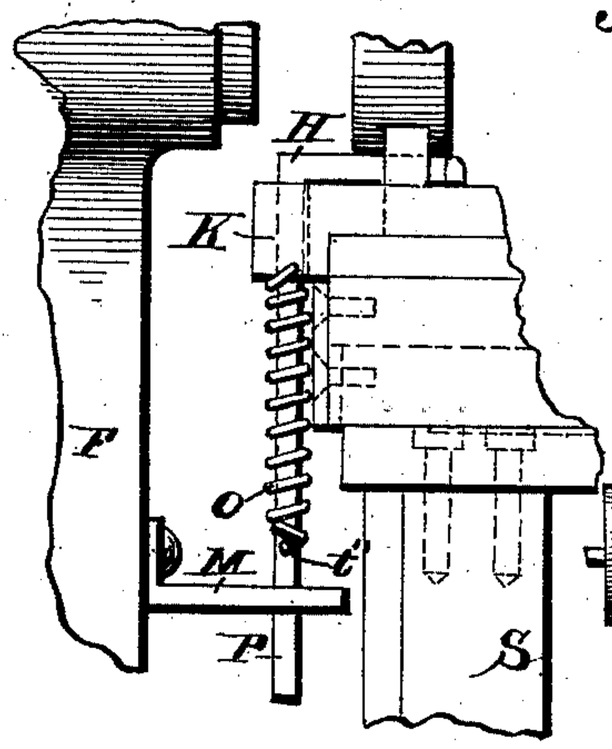
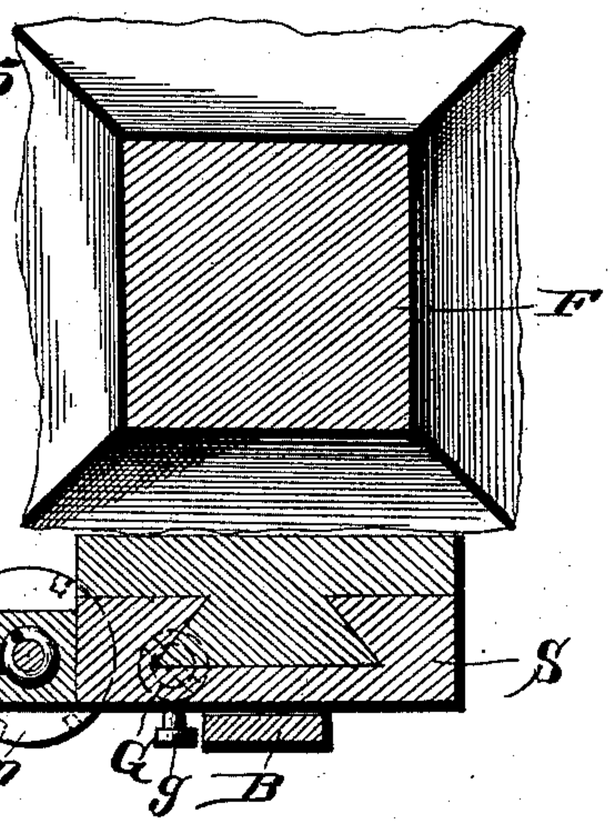


Fig. 5



WITNESSES,

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UNITED STATES PATENT OFFICE.

JAMES WARD PACKARD, OF NEW YORK, N. Y.

MILLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 396,952, dated January 29, 1889.

Application filed September 11, 1888. Serial No. 285,124. (No model.)

To all whom it may concern:

Be it known that I, JAMES WARD PACKARD, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Milling-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of my invention is to produce a small milling-machine or fiber-cutter which may be used in cutting down the strips of bamboo or other fiber to be used in the manufacture of electric incandescent lamps. These strips of fiber come in rough form as they are split out with a knife, and have to be planed down to nearly the standard size before they are put through the other stages of their preparation.

The machine herein described is to be used in this preliminary operation.

In the drawings, Figure 1 is a side view of the machine as it stands upon the work-bench, the screw D being removed. Fig. 2 is an end view of the same. Fig. 3 is a plan view showing some of the details of the clamp mechanism. Fig. 4 shows a modification. Fig. 5 shows a horizontal section taken on line *x x* of Fig. 2, drawn on a reduced scale.

F is the standard or main frame. Upon an arbor mounted in this frame are the cutters C and the pulley Z.

The table T has a horizontal adjustment controlled by the screw *t*, in the usual manner. The entire table has a vertical motion by means of the slide S. (Best shown in Fig. 1.) A spring, A, tends to keep the slide and table in their highest position of adjustment, while a link, B, connects the slide with a treadle, (not shown,) by which it may be pulled downward at the will of the operator. The vertical slide has a double adjustment. The variable adjustment is by means of the coarse-threaded screw D, which is turned back and forth by the handle U. (shown in Fig. 2.) The end of the screw D brings up against the lug E upon the main frame. As the screw D is turned backward the spring A will force the slide and table up farther and the cutter will take a deeper cut. The final adjustment is by means of the screw G, which has a fine thread. The screw G is held in any position of adjustment by the small set-screw *g*, and, if desirable, the screw D may also be held permanently in one position by the small set-screw *d*.

The main feature of my invention lies in the clamping devices, which I will now describe.

The L-shaped clamps P have a restricted movement in the guides formed by the projections K V and K′ V′ on the table T. The overhanging portion H of these clamps reaches beyond the raised ledge R on the said table. The vertical portion of each clamp is surrounded by a spring, O, one end of which is fastened to the clamp at the point *t′*, while the other end is fastened to the lug M upon the main frame F. The apparatus thus described furnishes the vertical clamping action.

That portion of the device which furnishes the horizontal clamping action is shown in detail in Fig. 3. The lever L is pivoted to the table T, as shown, and is swung inwardly toward the raised ledge R by pressure of the operator upon the thumb-piece L′. The spring Y tends continually to force the lever L away from the raised ledge R upon the table. Mounted on the lever L and pivoted to it is the two-pronged clamp Q, having the projections or prongs *q′ q″*. A pointed spring, W, also mounted on the lever L, fits into a notch in the pivoted clamp Q, and tends to hold it in such position that the two prongs *q′ q″* will rest evenly upon any strip or fiber, X, of about the usual thickness, which may be under the clamps H H′. If a strip of greater or less thickness than is usual, or of uneven thickness, should be under the clamps, one of the two prongs *q′ q″* would bring up against the strip of fiber before the other; but the spring W would then partly withdraw from the notch and allow the clamp Q to turn so that both prongs would bear with nearly even and equal pressure at both points upon the strip of fiber, thus securely holding it in place.

The operation of my apparatus is the following: The operator places his foot upon the

treadle and draws down the slide S. At first the clamp P moves with the slide until the spring O has reached its normal state of tension. During a short period of the travel of the slide S after this the clamp P remains stationary and the table moves away from it until the movement of the clamp within the guides K and V has brought the end t' of the spring where it is fastened to the clamp against the under side of said guides. During the remainder of the downward travel of the slide the clamp moves with it and the spring O is compressed. All pressure being removed from the lever L, the spring Y throws it out to one side, and leaves the way open for the insertion of a new strip of fiber, X. This is placed under the clamps H H′, Fig. 3, the lever L is pressed to the left, and the foot removed from the treadle, so that the spring A forces the slide S upward. The clamps H H′ are thus brought down upon the strip of fiber, and the latter is securely held between the table and the clamps H, the raised ledge R, and the prongs q' q'' of the clamp Q. The cutter C is kept continuously revolving, and as the piece of fiber, X, is drawn through the clamps by hand in the direction of the arrow in Fig. 3 a cut is taken from one side of it. The table is then drawn down, the strip of fiber turned over or on its side, the screw D given a partial turn backward to allow a deeper cut, and the slide is raised and the operation repeated. This is continued until the screw G brings up against a portion of the main frame and stops the table and slide in their position of final adjustment, thus insuring the cutting of all the strips of fiber to exactly the same size.

In Fig. 4 a modification of the vertical clamping device is shown. In this case the spiral spring O, surrounding the clamp, is fastened at its upper end to one of the projections K or V. Its lower end is fastened by the pin t'' to the shank of the clamp. Consequently, when the table is at or near its upper point of adjustment, the clamps are held down upon the table by the force of the spring O. When the table is drawn down, the clamps remain upon and travel with the table until the pin t'' strikes the lug M. After this the clamps remain stationary, and a continued movement of the table downward carries it away from the clamps and compresses the spring O.

Having therefore described my invention both in essence and detail, what I claim as new, and desire to protect by Letters Patent, is—

1. In a work-clamping device, the combination of the main frame, the reciprocating table, and the L-shaped clamps, which operate in conjunction with the table and are attached to the main frame by a spring-connection, substantially as described.

2. In a work-clamping device, the combination of the main frame, the vertically-reciprocating table, the vertically-acting clamp, which operates in conjunction with the table and has a restricted movement within guides upon said table, and the spring, one end of which is attached to the clamp, while the other is attached to the main frame, substantially as described.

3. In a work-clamping device, the combination of the table with a raised ledge, the lever pivoted to the table, the two-pronged clamp, which is pivoted on the lever and acts in conjunction with the raised ledge, and the spring which is mounted upon the lever and holds the pivoted two-pronged clamp flexibly in its position, substantially as described.

4. In a work-clamping device, the combination of the table with a raised ledge, the lever pivoted to the table, a spring which throws the lever away from the raised ledge, the two-pronged clamp, which is pivoted on the lever and acts in conjunction with the raised ledge, and a second spring, which is mounted upon the lever and holds the pivoted two-pronged clamp flexibly in its position, substantially as described.

5. In a work-clamping device, the combination of the main frame, the reciprocating table, and the clamps which slide in guides upon the table and are spring-pressed against the table when it is at or near one extreme of its adjustment, while they are automatically raised from the table when it is at other positions of its adjustment, substantially as described.

6. The combination, with a reciprocating slide and a main frame, of a fine-threaded adjusting-screw, which is attached to the slide and which abuts against a suitable portion of the main frame, together with a coarse-threaded adjusting-screw, which is attached to the slide only and also abuts against a suitable portion of the main frame, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES WARD PACKARD.

Witnesses:
A. P. SMITH,
CHAS. H. SONN.