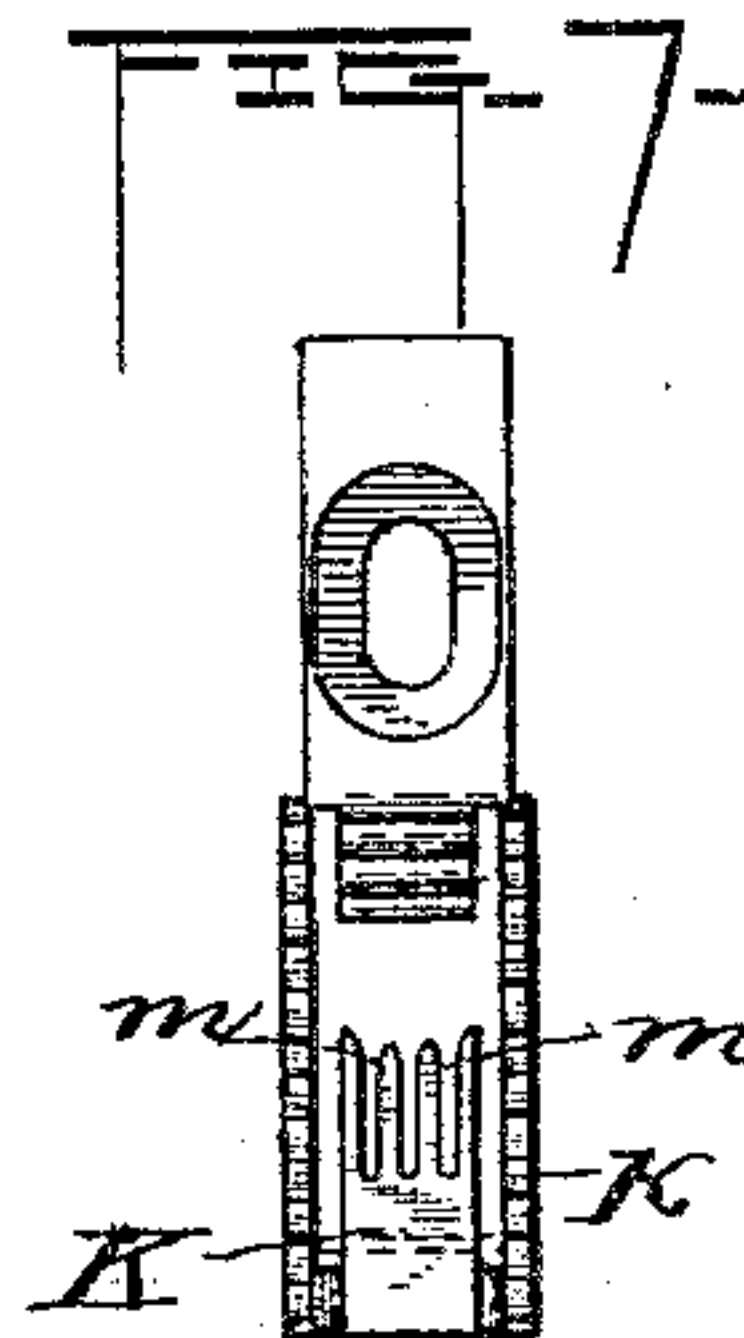
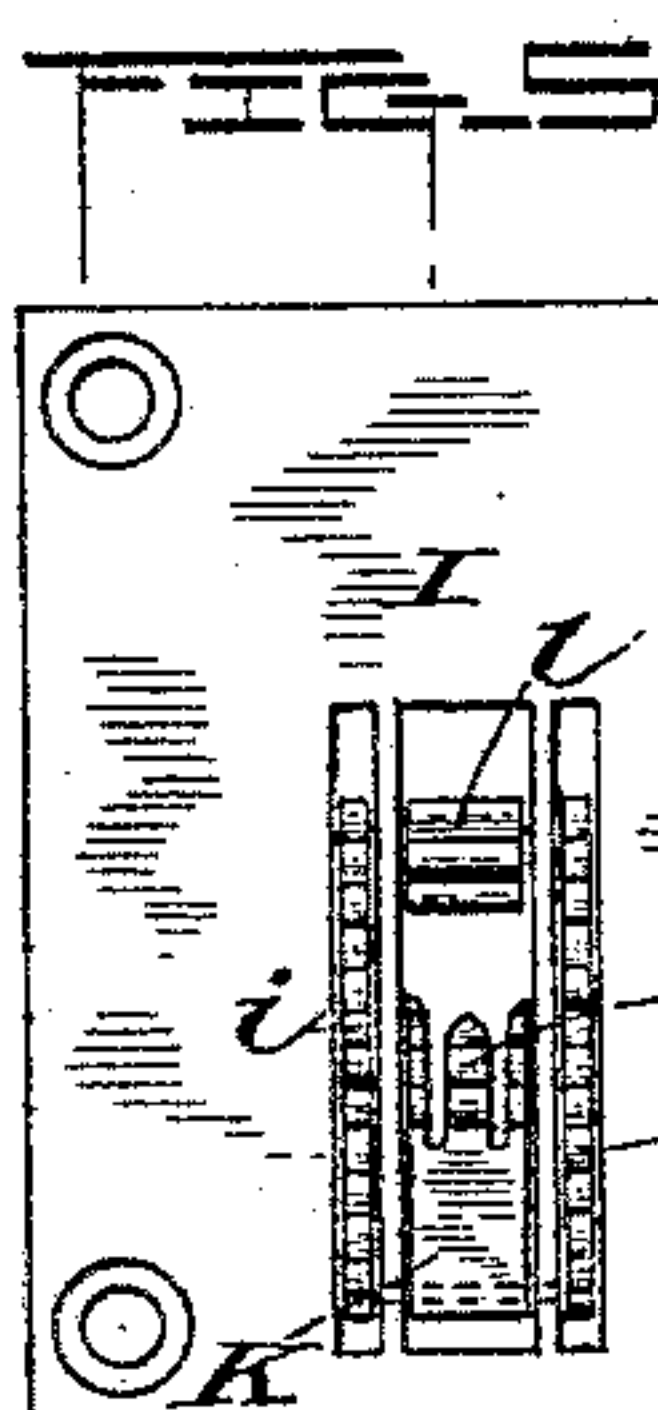
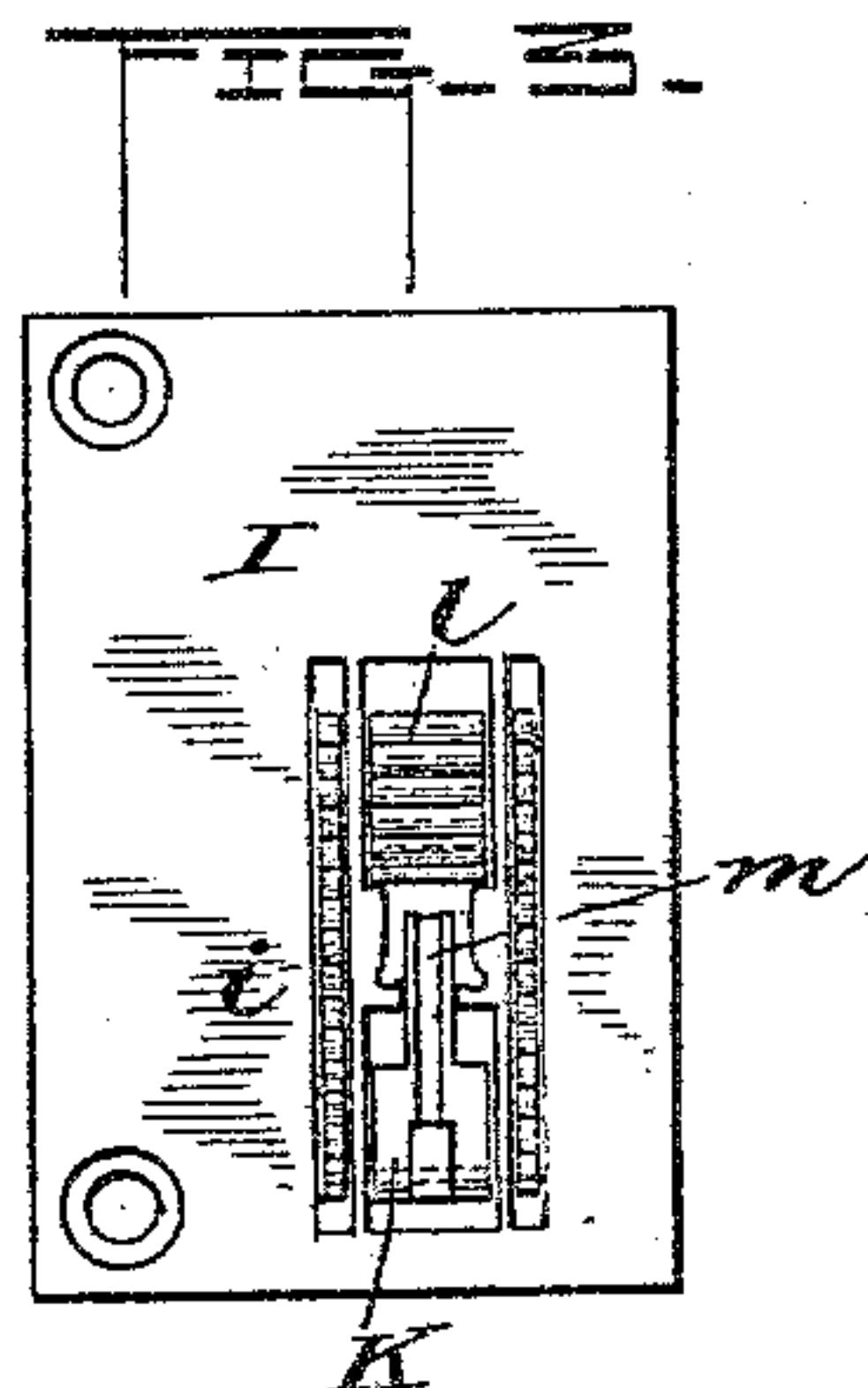
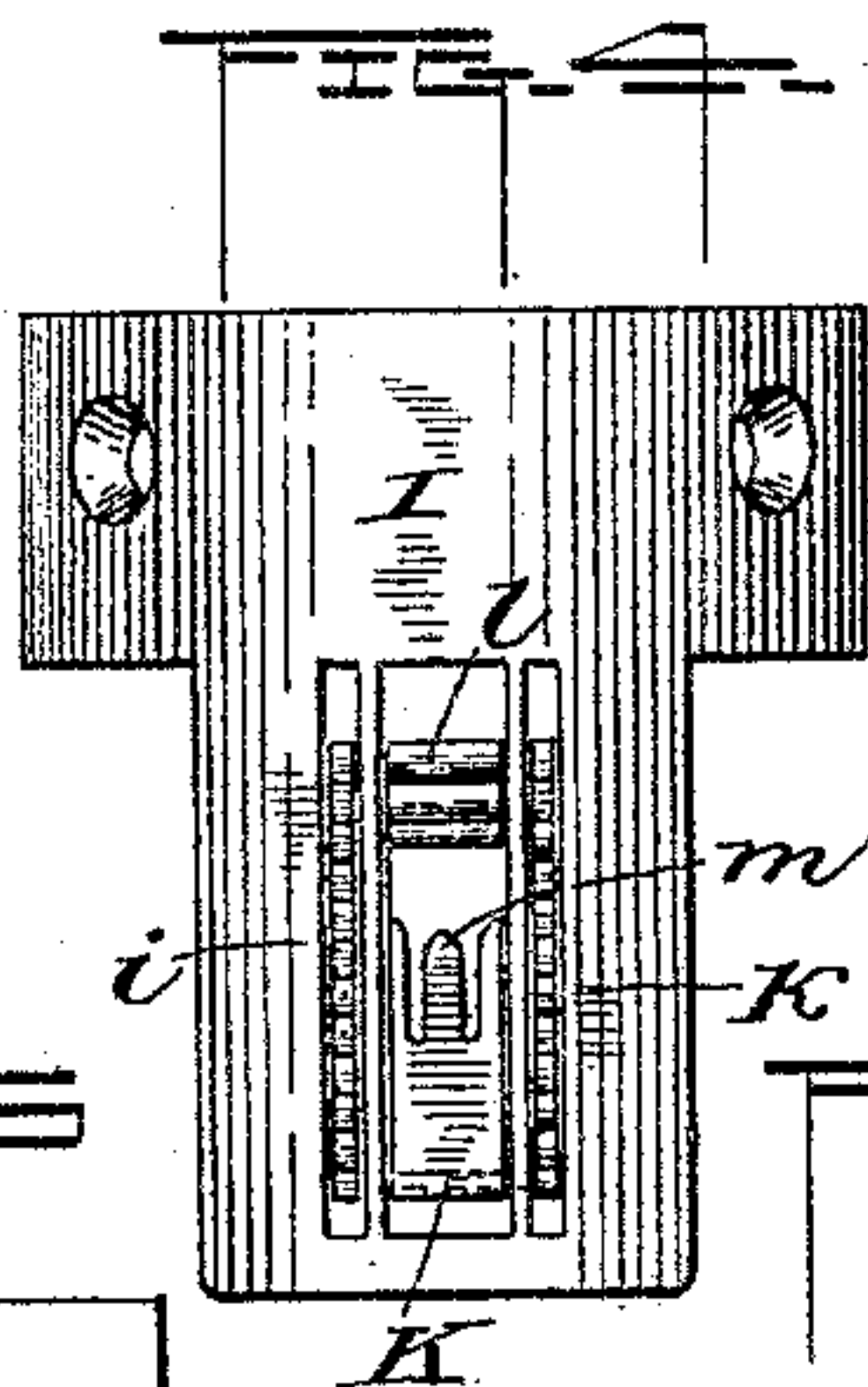
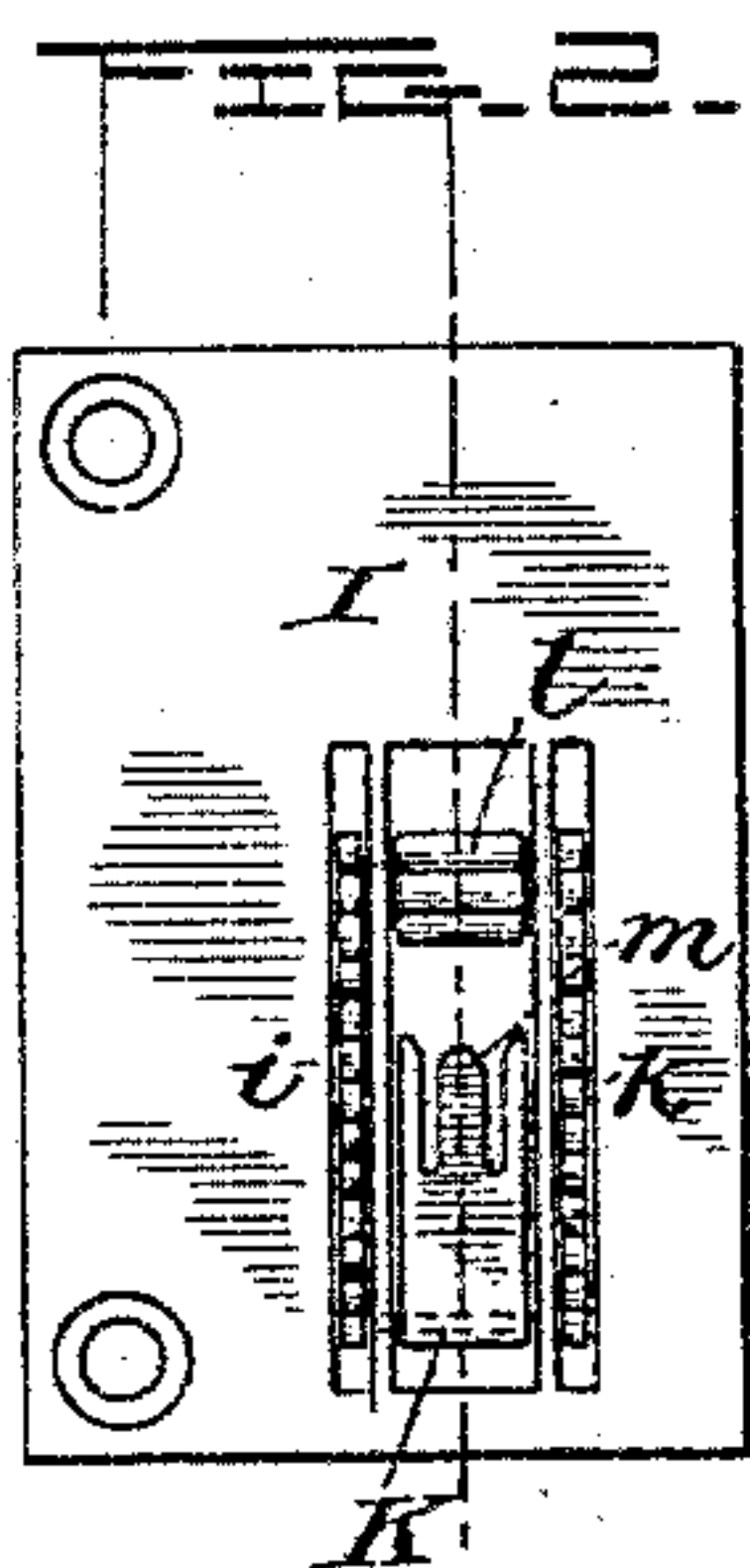
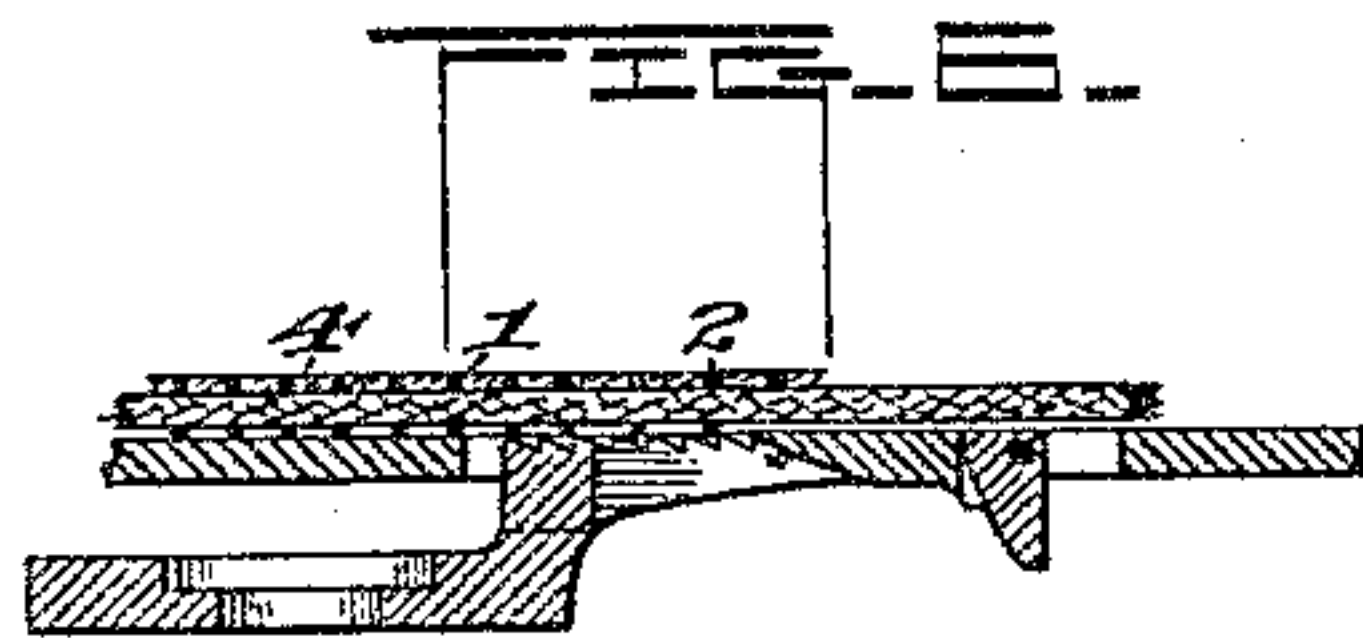
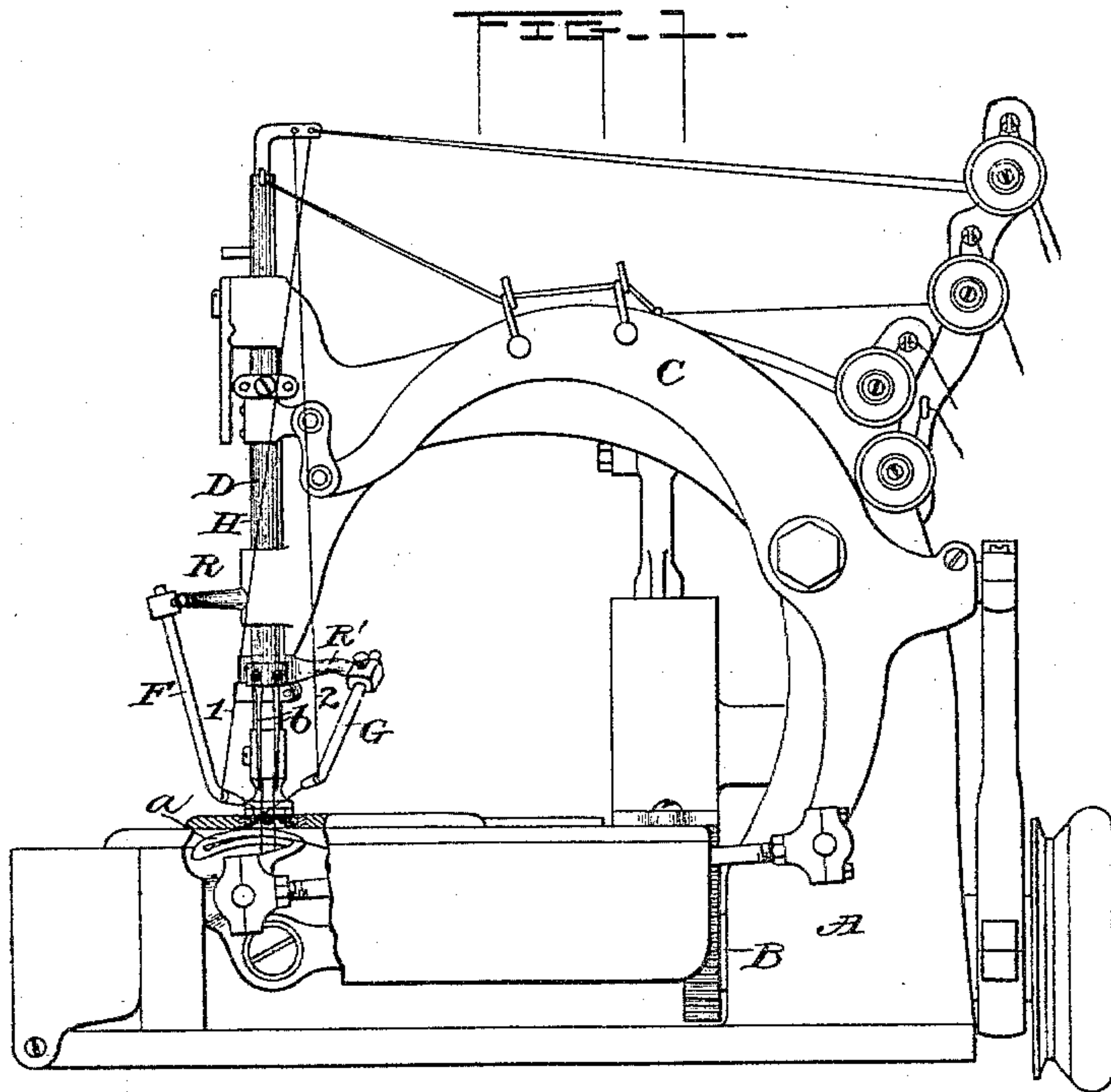


(No Model.)

R. G. WOODWARD & C. McNEIL.  
STITCH SLACKING DEVICE FOR SEWING MACHINES.

No. 597,663.

Patented Jan. 18, 1898.



Witnesses  
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# UNITED STATES PATENT OFFICE.

RUSSEL G. WOODWARD, OF WAUKEGAN, AND CHESTER MCNEIL, OF CHICAGO, ILLINOIS, ASSIGNORS TO THE UNION SPECIAL SEWING MACHINE COMPANY, OF CHICAGO, ILLINOIS.

## STITCH-SLACKING DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 597,663, dated January 18, 1898.

Application filed October 8, 1895. Serial No. 565,036. (No model.)

*To all whom it may concern:*

Be it known that we, RUSSEL G. WOODWARD, residing at Waukegan, in the county of Lake, and CHESTER MCNEIL, residing at Chicago, in the county of Cook, State of Illinois, citizens of the United States, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a description, reference being had to the accompanying drawings and to the letters of reference marked thereon.

Our invention relates to an improvement in sewing-machines, and is herein illustrated as applied to that class of machines in which a plurality of vertically-reciprocating needles is employed, in combination with supplemental thread-carriers reciprocating back and forth in front of the needle across the line of the seam and laying threads from one row of stitches to the other, the rows of stitches securely binding said cross-threads, and including also a cooperating under-thread-carrying looper which carries the cross-thread back and forth between the needle-loops of the under side of the fabric and enchains therewith, forming a seam well known in the trade and useful for ornamenting the flat face of a fabric, for uniting the edges of two pieces of fabric, or for forming ornamental edges on garments. Such machines as generally constructed comprise two vertically-reciprocating needles, a single under-thread-carrying looper, thread-carrying fingers for laying a cross-thread on the upper surface of the fabric, the single looper making the cross-stitch on the lower surface, and a throat-plate having a tongue or tongues over which the stitches are formed and from which the stitches are withdrawn as the fabric moves forward, thus making an elastic stitch. More than two needles have been used on such machines, as shown in Patents No. 506,524, granted October 10, 1893, to George D. Mun-  
sing, and No. 506,527, granted October 10, 1893, to Lorenz Muther, in which cases three needles are shown and the throat-plate has two tongues over which the stitches are formed.

While we have illustrated the device forming the feature of our present invention in

connection with a machine of the character above referred to, it will be understood that we do not wish to be limited to its application to a machine comprising supplemental thread-carrying fingers on the upper surface of the fabric. Furthermore, we do not desire to be limited in respect to the number of needles used, as it may apply to machines having a vibrating needle or cloth-plate as well as machines in which two or more needles are used reciprocating vertically and parallel one with another—as, for instance, as shown in the well-known “Union Special” twin-needle machine illustrated in Patent No. 344,493, in which the single looper of the under surface of the fabric makes a cross-stitch, the under thread being laid beneath the tongue on the throat-plate, which acts to support the material and prevent it from being puckered and also acts to make the stitch elastic.

The invention therefore consists in the matters hereinafter described and referred to in the appended claims.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of a sewing-machine constructed in accordance with our invention. Fig. 2 is a plan view showing one form of throat-plate and feed-dog adapted for a flat-bed machine. Fig. 3 is a plan view of a form of feed-dog. Fig. 4 represents a plan view of the throat-plate and feed-dog, the former being of shape to adapt it to a cylinder or horn machine in which the feed is up the arm. Fig. 5 is a view similar to Fig. 2, but showing the tongue on the feed-dog notched, whereby it acts as a portion of the feed itself; and Fig. 6 is a sectional view showing the arrangement of the threads with respect to the feed-dog tongue. Fig. 7 is a plan view showing a feed-dog adapted for use on the three-needle machine.

In the drawings, A represents the frame of the machine, which is of ordinary construction. B is the main shaft; C, the needle-arm lever; D, the needle-bar actuated thereby, and  $\alpha$  the looper cooperating with the needles to form stitches, making a cross-stitch on the under surface of the fabric. These parts are all of the construction shown in the well-



known "Union Special" machines, are actuated in the usual manner, and need not be herein specifically referred to. In the present machine we use two needles, (marked *b*,) which are secured to the needle-bar in the customary manner, making two parallel rows of stitches and secured on the under side by the looper-thread. Any number of needles may of course be used.

*F* *G* represent oscillating thread-carriers reciprocating back and forth across the line of the seam in front of the needles, so as to lay the threads which they carry between the outer rows of stitches, the cross-threads being bound by said outer rows. The thread-carrier *F* is supported upon the end of the horizontal arm *R*, which has a collar upon its inner end embracing the vertical shaft *H*. The carrier *G* is supported upon the end of a horizontal arm *R'*, which is driven by a segmental gear on the lower end of said shaft *H*. It will be understood that movement is imparted to the shaft *H* by suitable intermediate connections from the main shaft, and in the movement of said shaft *H* the thread-carriers *F* *G* weave the threads 1 2 across between the rows of stitches 3 4 and are securely fastened thereby.

*I* represents the throat-plate, which, as shown in Fig. 2, is adapted to be used on a flat-bed machine and, as shown in Fig. 4, on a cylinder or horn machine, this throat-plate being secured to the bed-plate in any suitable manner. It is provided with long narrow slots for the passage of the feed-surfaces *i* *k* and with a wide oblong slot through which at the rear end projects the feeding-surface *l*, while at the front there projects through it a portion *K* of the feed-dog. This portion *K*, as shown in Fig. 2, is smooth on its upper surface, is provided with openings for the passage of the needles, and between these openings or slots is a tongue *m*, hinged to have a limited vertical swinging movement and over which the stitches are formed and which aids in making them elastic, and this tongue is preferably chamfered off on its under surface to allow of the more ready slipping off of the stitches. By having this tongue over which the stitches are formed arranged on the feed-dog very material advantages are secured over a construction in which the tongue is on the throat-plate in that the tongue moves in the direction of the feed and backs out of the loops of thread which are around it, thereby preventing any breaking away or distortion of the fabric which is likely to occur in other instances where the feed positively carries the stitches with the goods off the tongue. Furthermore, by having the tongue on the feed-dog and having it partake of the rising-and-falling motion, as well as the forward-and-backward motion, it acts to a certain extent as a pull-off for the upper thread.

In Fig. 5 we have shown a view similar to Fig. 2, but in which the tongue of the feed-

dog over which the stitches are formed is notched, just as are the other parts of the feed-dog, which possesses certain advantages in that it provides a feeding-surface acting on the fabric between the points where the needles are operating, which prevents drawing or puckering of the work, especially on thin and sleazy goods. The especial object of having the tongue hinged is that the latter may be held in one position by the threads—that is, up against the presser-foot—during all the movements of the feed. As far as this feature of the hinged tongue is concerned we do not wish to be limited to its application to the feed-dog, as it may be applied to a throat-plate or presser-foot having means for reciprocating it in the direction of the feed. This arrangement may have certain other advantages which in its use have not yet become manifest, but which we intend to cover in this application. In Fig. 4 we have shown our improved feed-dog as used in connection with the throat-plate to be applied to a cylindrical or horn machine. In Fig. 7 is shown a form of feed-dog adapted for use on three-needle machines, in which two tongues are provided which are hinged.

We do not claim, broadly, a reciprocating finger or feed-dog tongue extending into the vertical plane in which the needles lie and in the path of the cross-stitch device and reciprocating in a plane between the fabric and said cross-stitch device.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The combination with stitch-forming mechanism of a swinging stitch-slacking tongue or finger extending lengthwise in a plane parallel with the line of feed, and means for reciprocating said tongue in the direction of its length; substantially as described.

2. A sewing-machine having stitch-forming mechanism including a device for making a cross-stitch and having a tongue pivoted to swing vertically intersecting the path of the cross-stitch device across which tongue stitches are formed; substantially as described.

3. A sewing-machine comprising a feed-dog having a tongue hinged thereto across which tongue the stitches are formed; substantially as described.

4. A sewing-machine comprising a feed-dog having a tongue hinged thereto across which tongue the stitches are formed, said tongue being provided on its upper side with teeth similar to the teeth on the body of the feed-dog; substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

RUSSEL G. WOODWARD.  
CHESTER McNEIL.

Witnesses:

JAMES R. TROWBRIDGE,  
E. L. BLAIE.