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W. M. AMMERMAN.

TENSION AND THREAD CONTROLLING MECHANISM FOR SEWING MACHINES.

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NO MODEL.

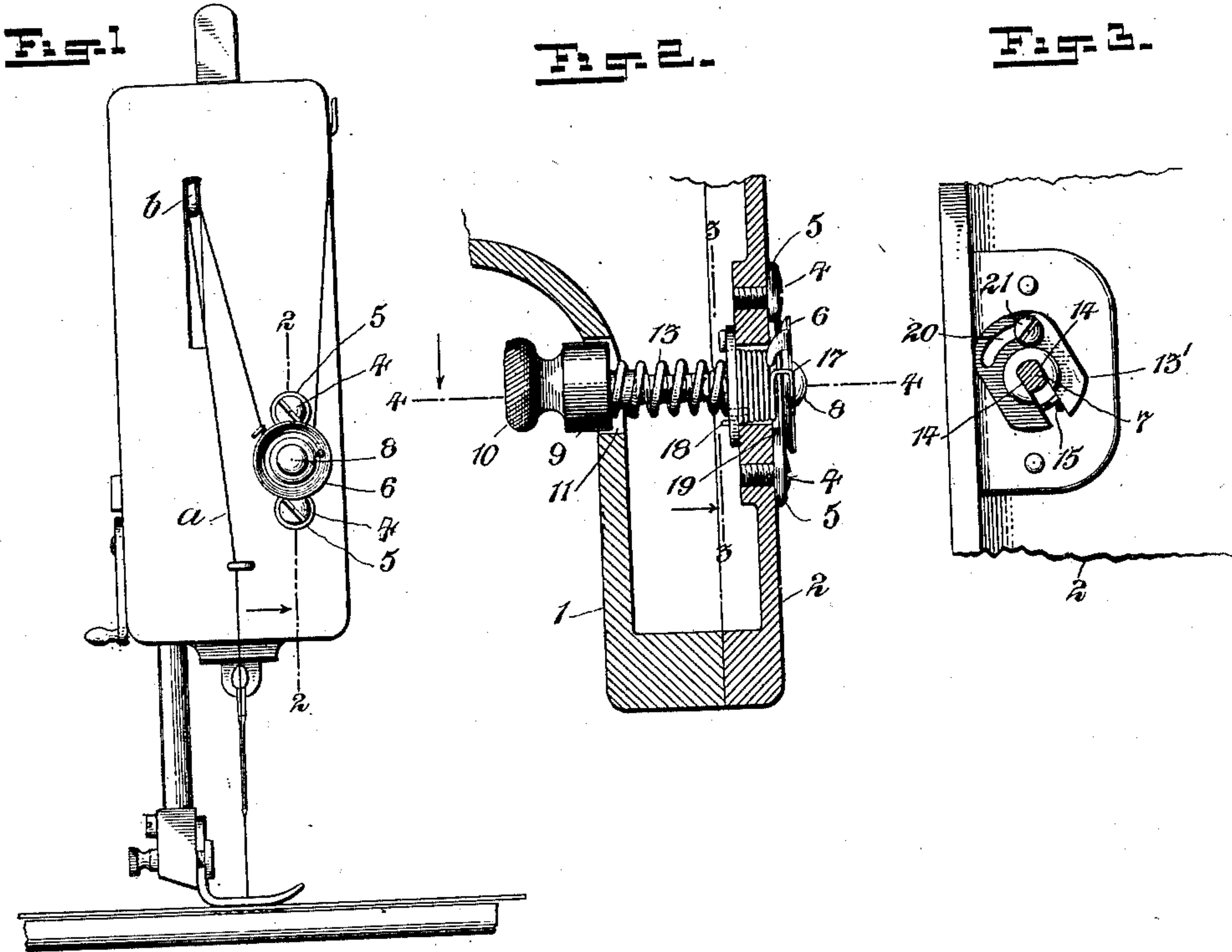
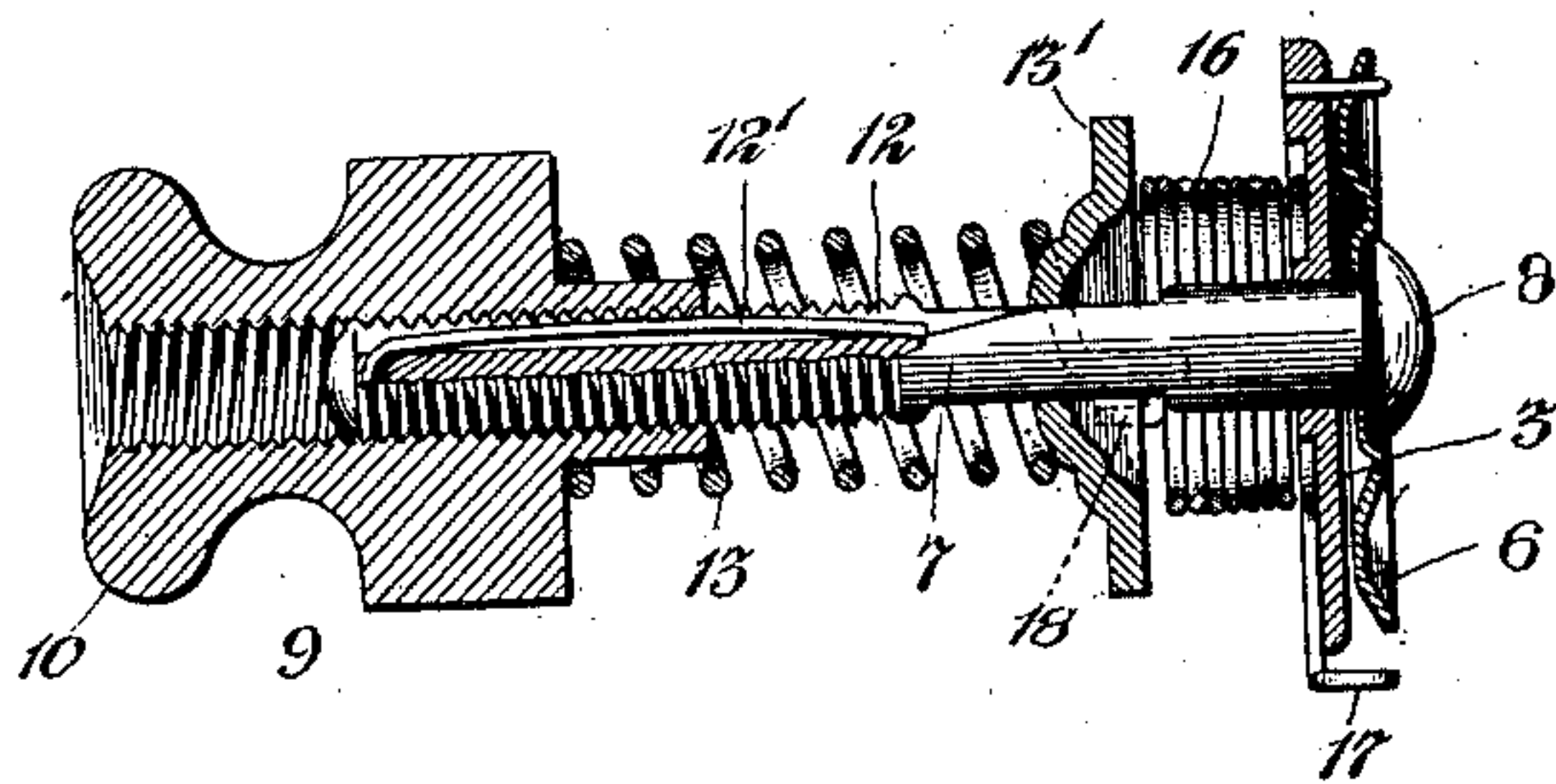


Fig. 4



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TENSION AND THREAD CONTROLLING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 756,314, dated April 5, 1904.

Application filed June 9, 1900. Serial No. 19,690. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM M. AMMERMAN, a citizen of the United States, and a resident of the city and county of New Haven, State of Connecticut, have invented certain new and useful Improvements in Tension and Thread Controlling Mechanism for Sewing-Machines, of which the following is a specification, reference being had to the accompanying drawings, forming part thereof.

This invention has for its principal object to provide a simple and effective device for producing the proper tension on the upper or needle thread and releasing the same when desired, the invention consisting in the certain novel features of construction and combinations of parts, as hereinafter set forth in detail and pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is a front end elevation of a part of a sewing-machine provided with my improved tension device. Fig. 2 is an enlarged section taken through line 2 2 of Fig. 1, showing the complete tension device in side elevation. Fig. 3 is an inner or rear side view of a portion of the face-plate and connected parts of the tension device, a bolt or spindle forming part of the latter being in section through line 3 3 of Fig. 2. Fig. 4 is an enlarged view of the tension device and the slack-thread spring-controller removed from connection with the machine, the several parts, excepting the bolt or spindle, which is partly broken away, being in section through line 4 4 of Fig. 2.

In said drawings, 1 indicates a portion of the arm or frame, and 2 the detachable face-plate, of an ordinary sewing-machine. Located upon the front side of the face-plate 2 and in position to produce the desired and customary tension upon the upper thread *a* in its passage from the spool or other thread-supply to the take-up *b* is my improved tension device. This device consists of two plates or disks between which the thread is adapted to be passed and impinged in the usual manner, one of which (indicated at 3) is secured in a fixed or stationary position upon the face-plate 2 by means of fastening-screws 4 4,

which engage with ears or extensions 5 5 of said plate, and the other (indicated at 6) is loosely mounted upon a bolt or spindle 7, which projects at its forward end through a central opening in the stationary plate 3. This said bolt or spindle 7 is provided with an enlarged head 8 at its front end for engaging with the face side of the movable plate or disk 6 mounted thereon and is made of sufficient length to extend across the space or opening in the lower front end of the sewing-machine arm to a point adjacent to the rear wall thereof, as shown in Fig. 2, at which point its screw-threaded end is provided with an adjusting-nut 9 thereon, the head 10 of which projects through an opening 11 in the said rear wall of the arm in a position where it may be conveniently reached by the operator to be acted upon and adjusted in a manner as will be described. A coiled spring 13 is located upon the bolt 7, with one end bearing against a plate 13', which is secured to the rear wall of the face-plate, and its other end bearing against the adjusting-nut 9. This spring acts upon the bolt or spindle in a direction to cause the plate or disk 6, which is engaged by its head 8, to be held in yielding engagement with the plate 5, and so produce a tension upon the thread guided between the engaging surfaces, which tension may be regulated as desired by turning the adjusting-nut 9 in the proper direction to vary the pressure or tension of the spring 13, as will be obvious. As a simple and desirable means for holding the nut 9 in its adjusted position upon the bolt 7 and preventing any undue turning of the same thereon that might be caused by the jarring of the machine when in operation I have provided the bolt with a longitudinal groove 12 in one side thereof, in which a spring 12' is seated with a part thereof normally projecting into a position so as to engage with the interior-threaded wall of the nut, as clearly shown in Fig. 4, and act with sufficient pressure thereon to serve as a friction-brake to hold the nut against undue turning on the bolt.

In order to release or remove the tension upon the thread at any desired time, the op-

erator simply presses inwardly against the end of the adjusting-nut 9, which action forces the head 8 of the bolt outwardly from the disk 6, and consequently relieves the latter of its pressure on the thread. The adjusting-nut 9 arranged as described thus serves not only as a means to adjust the tension for the thread, but also as a knob for operating the bolt 7 to remove the tension from the thread.

The bolt or spindle 7 in order to be held against turning or rotary movement when the adjusting-nut 9 is turned thereon is provided with flattened sides 14 14 for a portion of its length, which are engaged by the sides of a slot 15 in the plate 13', through which the bolt passes, as shown. These flattened sides 14 14 extend a sufficient distance at either side of the plate 13' so as not to interfere with the longitudinal sliding movement of the bolt.

At a point between the tension-disk 3 and the plate 13' the face-plate 2 is provided with an opening therein within which is seated a coiled spring 16, one end of which latter is bent laterally, as at 18, to project through the slot 15 in the plate 13 and engage with one of the side walls thereof to be held in a stationary position, and its opposite end being bent radially outward to form an arm 17 for engaging with the needle-thread to control the slack therein during the descent of the needle in the usual manner. This spring-arm 17 has a normal tendency to bear downward against a shoulder 19 on the rear side of the plate or disk 3, the same being drawn upward from such position more or less, according to the strain upon the needle-thread by the take-up when the latter is drawing and tightening the stitch. To adjust the tension of the spring-arm 17 so that it will act with a greater or less pressure upon the thread, the position of the "still" end 18 of the spring is adjusted so as to wind the coil more or less tightly upon the bolt 7, such adjustment being secured according to my present invention by adjusting the position of the plate 13', which engages with and holds the end 18 of the spring in a stationary position, as hereinbefore described. To permit of such adjustment, the said plate 13' is provided with an elongated slot 20, through which a fastening or set screw 21 extends and screws into the face-plate, with its head spanning the slot and engaging with the face side of the plate 13', as best shown in Fig. 3. The slot

20 is formed in the arc of a circle, so as to allow for the turning of the plate in a circular direction when adjusted.

The several parts constituting the tension and slack-thread controlling devices, as described, being connected with and supported by the face-plate independent of connection with any other part of the machine enables the face-plate to be connected with or disconnected from the frame or arm 1 to adjust the plate 13' or for any other desired purpose without interfering with any of said parts.

Having thus set forth my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a sewing-machine, the combination, with the arm or frame thereof, of a tension device comprising in part a movable plate or disk, a spindle extending through said frame with one end engaging said movable plate or disk of the tension device at one side of the frame, and its other end provided with an adjusting-nut located in position to be engaged from the opposite side of the frame, means for normally holding said tension plate or disk in operative position, and an adjusting-plate supported upon the inner wall of the frame opposite the said tension-disk and engaging with the spindle to prevent rotary movement of the same, for the purpose set forth.

2. In a sewing-machine, the combination, with the arm or frame thereof, of a tension device comprising in part a movable plate or disk, a spindle extending through said frame with one end engaging said movable plate or disk of the tension device at one side of the frame, and its other end provided with an adjusting-nut located in position to be engaged from the opposite side of the frame, means for normally holding said tension plate or disk in operative position, an adjusting-plate supported upon the inner wall of the frame opposite the said tension-disk and engaging with the spindle to prevent turning or rotary movement of the same, and a slack-thread-controlling spring seated within an opening in the wall of the frame with one end adapted for engaging with the thread and its opposite end having connection with said adjusting-plate, for the purpose set forth.

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Witnesses:

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