

(No Model.)

C. R. EDWARDS.

TENSION DEVICE FOR SEWING MACHINES.

No. 299,629.

Patented June 3, 1884.

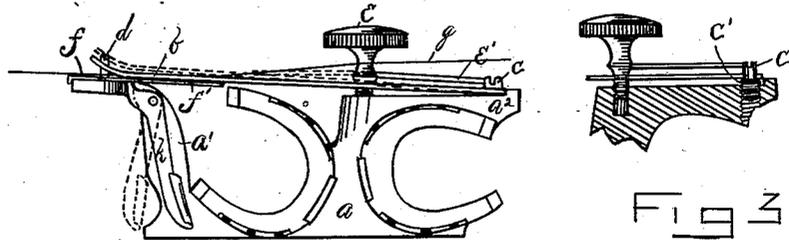


Fig 1

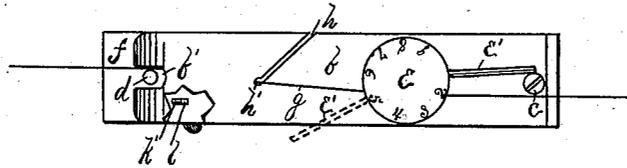


Fig 2

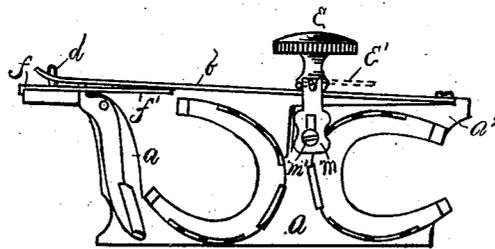


Fig 4

Witnesses:

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TENSION DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 299,629, dated June 3, 1884.

Application filed September 6, 1883. (No model.)

To all whom it may concern:

Be it known that I, CHARLES R. EDWARDS, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Tension Devices for Sewing-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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates more particularly to an arrangement of tension devices in which a tension screw or nut is turned to regulate the tension of the sewing-thread.

The objects of my invention are, first, to provide a convenient means for locking the action of the tension-screw within a range between a desirable maximum and minimum tension, and to change degrees of tension within that range; second, to arrange tension-plates so that the thread will enter between them at a lighter and more elastic tension than at its point of escape; third, to provide improved devices for allowing the liberation of the thread from the action of the tension-plates without objectionable displacement of the plates or other parts affecting a steady tension.

In the drawings, Figure 1 is a side elevation of my improvements. Fig. 2 is a top plan view of the same. Fig. 3 is a fragmentary section of Fig. 1. Fig. 4 is a modification.

Referring to the drawings, *a* is the frame upon which the tension devices are secured, and may be attached to or cast upon the arm of the sewing-machine. Upon this frame *a* are the two standards *a'* and *a''*.

b is the upper plate, which may be made more or less elastic, and one end may be held in place by the top of screw-post *c*, which enters a hole in the plate *b*, such plate resting on the shoulder *c'* of the post *c*, as more clearly shown in Fig. 3, in which the post and plate are shown in raised position. The opposite end of plate *b* is preferably shown as held from any considerable lateral displacement by

means of the slot *b'* in its turned-up end, which slot contains the thread-guide *d*, rigidly secured to the standard *a'*.

e is the tension-screw, which passes through a hole in the plate *b* and enters the standard *a''*. This tension-screw has a shoulder, which bears against the upper face of plate *b*, by which means the plate can be depressed, as desired. *f* is the under plate, which is riveted or otherwise secured at its end to the standard *a'*, from which point of fastening the remaining portion of this plate extends toward the tension-screw, and is free to yield under pressure of the upper plate, *b*, on turning the tension-screw. The free end *f'* of the plate *f* is more elastic than the upper plate, in order that the thread may enter between the plates at a lighter tension than at its point of escape, any unevenness of the thread thereby presenting less obstruction, and the twist of the thread less disturbed. The thread *g*, in its course from the spool toward the needle, enters between the plates in the slot *h* of the plate *b* and escapes from the plates on the rear side of the thread-guide *d*. To keep the thread constantly in the same path while between the plates, the slot *h* should have its inner end, *h'*, so located that the thread in passing from the spool and in front of the tension-screw should bear slightly against the inner end, *h'*, of slot *h* and against the rear side of thread-guide *d* as it passes to the needle.

k is a lever pivoted upon the side of standard *a'*, just below the under plate, *f*. An opening, *l*, in the under plate, *f*, permits the lever *k* to be pushed against the upper plate, *b*, to release the thread from its tension while drawing the fabric from under the needle. The tension-screw *e* is provided with a stop projection or finger, *e'*, which strikes a projection or stop, to prevent the tension-screw from making more than one revolution, and thus to limit the tension within a desirable range. In Figs. 1 and 2 the adjustable screw *e*, before described, forms the stop for the finger *e'*.

A modified form of stop is shown in Fig. 4, in which *m* is an adjustable slotted plate adapted to be secured in a raised or lowered position with relation to stop-finger *e'* by the set-screw *m'*, which passes through the slot in the plate and into the standard *a''*. The stop *e* or *m* is to

be lowered until the tension-screw *e* has been turned down to depress the upper plate, *f*, in order to obtain the lightest tension desired. Then the stop *c* or *m* is to be raised till the stop-finger *e'* will strike it in being turned either way. In order that the stop-finger *e'* may start just at the stop *c* at the desired light tension, the shoulder *e'*, if necessary, may be raised by turning screw-stop *e*, to obtain at the start the desired tension.

For convenience in adjusting the proper tension within the fixed range, I have placed upon the top of the tension-screw *e* figures indicating different degrees of tension. These figures may start with figure 9 facing the stop indicating a tension light enough for No. 90 thread, and, as the tension is tightened by turning screw *e*, figure 8 will next face the stop indicating No. 80 thread, and so on with the remaining figures. Any of these figures may be used to restore any favorite tension for particular work without regard to the particular thread indicated.

To produce the most desirable degrees of exactness, the indicating characters are useful; but a very desirable object is accomplished by noting the position of the stop-finger or projection *e* on a tension screw or nut, as limited in its range within a single revolution for the position of the finger, or its distance from the starting-point on one side of the stop is itself an important guide; and this feature of the tension-screw having the finger or projection to be met by the adjustable stop, it is evident, is applicable to any tension device whether tension-plates or tension-wheels are used, as in several well-known forms of tension devices where the tension is regulated by turning a thumb screw or nut.

After the range of tension has been set, as described, the most inexperienced operator need not and cannot go astray from the best stitch.

I claim—

1. In a tension device for sewing-machines, the combination, with a tension-member, of the

tension-screw *e*, provided with the stop finger or projection *e'*, and of a stop by means of which the stop-finger is restricted in its movement to one revolution of the tension-screw, as and for the purpose stated.

2. In a tension device for sewing-machines, the combination, with a tension-member, of the tension-screw *e*, provided with indicating-figures and the stop finger or projection *e'*, and of a stop by means of which the stop-finger is restricted in its movement within a single revolution of the tension-screw, as and for the purpose stated.

3. In a tension device for sewing-machines, the combination of the plate *f*, having its end at *d* immovably fastened to the supporting-frame *a'*, and the plate *b*, having its forward end touching and bearing on that portion of plate *f* between its fastened end *d* and its inner end, substantially as and for the purpose stated.

4. In a tension device for sewing-machines, the plate *f*, having its end immovably secured to the supporting-frame *a'*, and the plate *b*, having its forward end touching and bearing on the elastic portion of the plate *f*, between its fastening at *d* and its inner end, in combination with the tension-liberating lever *k*, pivoted to frame *a'*, and acting upon plate *b* from beneath, and between the elastic end of plate *f* and its rigid fastening at *d*, substantially as and for the purpose stated.

5. In a tension device for sewing-machines, the tension-plate *b*, in combination with the screw *e*, provided with shoulder *e'*, and the tension-screw *e*, provided with stop-finger *e'*, substantially as and for purposes set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES R. EDWARDS.

Witnesses:

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OTTO HODDICK.