



(No Model.)

2 Sheets—Sheet 2.

G. H. DIMOND & W. F. DIAL.

TENSION MECHANISM FOR SEWING MACHINES.

No. 298,185.

Patented May 6, 1884.

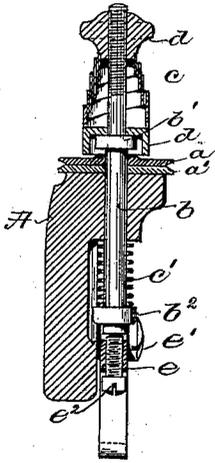


Fig. 5.

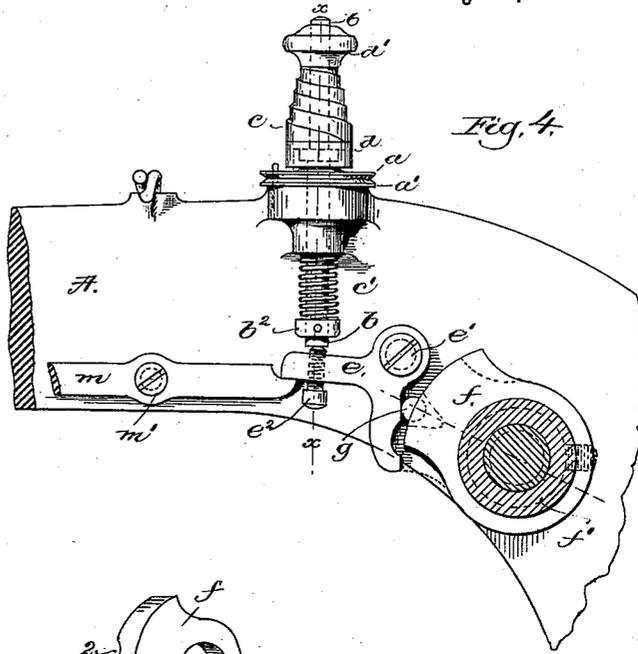


Fig. 4.

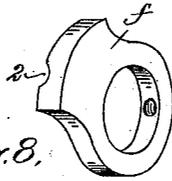


Fig. 8.

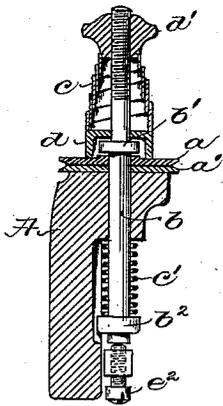


Fig. 6.

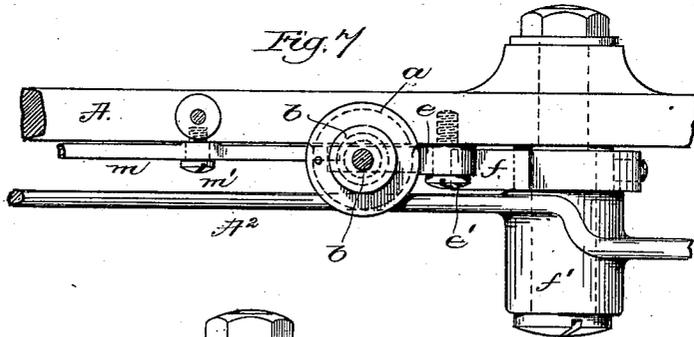


Fig. 7.

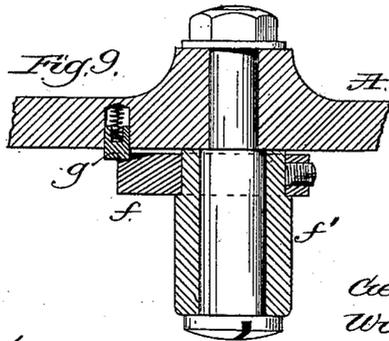


Fig. 9.

Witnesses.

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# UNITED STATES PATENT OFFICE.

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ASSIGNORS TO THE WHEELER & WILSON MANUFACTURING COMPANY,  
OF SAME PLACE.

## TENSION MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 298,185, dated May 6, 1884.

Application filed December 14, 1883. (No model.)

*To all whom it may concern:*

Be it known that we, GEORGE H. DIMOND and WILBUR F. DIAL, of Bridgeport, county of Fairfield, State of Connecticut, have invented an Improvement in Tension Mechanism for Sewing-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to that class of tension mechanism wherein the needle-thread at the proper times is gripped or held from rendering from the tension device and spool, and is at other times left free to be drawn therefrom.

Our improved mechanism is shown as applied to a Wheeler & Wilson No. 8 sewing-machine, to which it has been especially adapted.

The mechanism in the machine herein described is made to operate in substantially the time with relation to the formation of the stitch as set forth in another application made by us and filed concurrently with this, wherein we have shown and described an automatic tension as applied to sewing-machines of the Wheeler & Wilson form, and known as the "No. 10."

Figure 1 in side elevation represents a sewing-machine of well-known construction with our improvements added; Fig. 2, a partial view of the opposite side of the head of the machine; Fig. 3, a partial front elevation, chiefly to show the front end of the lever which is lifted by the presser-bar-lifting lever to actuate the tension device and remove all tension from the needle-thread. Fig. 4 is an enlarged detail, partially in section, of the tension device and the parts which are to operate it, as will be described; Fig. 5, a section of Fig. 4 on dotted line *xx*. Fig. 6 is a similar section with the spindle in another position. Fig. 7 is a top view of Fig. 4. Fig. 8 shows the operative cam of the tension device by itself; and Fig. 9 is a sectional detail, showing the said operative cam and its locking device and part of the overhanging arm or neck of the machine.

The tension device is shown as composed,

essentially, of two disks or plates, *a a'*, a spindle, *b*, provided with a fixed collar, *b'*, two springs, *c c'*, and a recessed or chambered washer, *d*, and a nut, *d'*. The spindle *b* is extended through the disks or plates *a a'*, or it may be through one plate, through the flanged part of the overhanging arm A, and then through the spring *c'*, where the spindle has a foot or step, *b<sup>2</sup>*, attached to it by a suitable set-screw. The end of the spindle *b* rests against one end of a lever or spindle-mover, *e*, shown as an elbow-lever pivoted at *e'*; and, as shown in the drawings, this lever has an adjusting-screw, *e<sup>2</sup>*, directly opposite the end of the spindle *b*, to facilitate adjustment of the parts and to compensate for wear. This lever or spindle-mover *e* is acted upon, during the regular operation of the machine in sewing, by means of a cam, *f*, fast upon the hub *f'* of the needle-bar-actuating lever A<sup>2</sup>, the catch or locking device *g* (shown in Figs. 1, 4, and 9 as a spring-pressed pin located in a chamber in the arm A) being at that time held back away from the said lever *e*. The operation of the lever *e* by the cam *f* causes the needle-thread passed between the disks or plates *a a'* to be clamped and held taut, while the take-up lever *h*, of usual construction and operated by the cam-hub *h<sup>4</sup>* on the shaft *h<sup>5</sup>*, common to the said Wheeler & Wilson machine, acts to pull up the loop of needle-thread to finish the stitch, and just as the take-up lever is to complete its backward movement away from the disks or plates *a a'* the cam *f* moves the lever *e* and spindle *b* to release the hold of the disks or plates *a a'* from the pressure due to the spring *c'*, but not that due to the spring *c*, for the spindle *b* during the regular movement of the machine in sewing will not be pushed upward far enough to cause the collar *b'*, attached to it, to lift the chambered washer *d* from contact with the disk or plate *a*; and hence the spring *c*, the pull of which is regulated by the nut *d'*, will keep the plate *a* against the needle-thread with a pressure just sufficient to prevent the needle-thread from becoming unnecessarily slack as the loop is being drawn by the usual rotating hook, B. The lever *e* has co-operating with it a lever,

*m*, pivoted at *m'*, the latter lever, near its front end, having a suitable projection, *m*<sup>2</sup>, to be acted upon by the presser-foot-bar-lifting lever *m*<sup>3</sup>, pivoted at *m*<sup>4</sup>. When the presser-bar is fully lifted for the removal of the work from under it, or for other reasons, the long end of the lever *m* will be depressed, causing the short end of the said lever to act upon and turn the lever *e* far enough to lift the spindle *b* and cause the collar *b'* to move away from the disk or plate *a* and act upon and move the chambered washer from the said disk or plate. The movement of the lever *e* at this time by the lever *m* is greater than by the cam *f*, so that the locking device or catch is permitted to fly out behind the lever *e* and hold the same and the spindle and disks or plates *a a'* in such position as to permit the needle-thread to be drawn freely between the said disks or plates. The presser-foot bar having been lowered to commence sewing, and the machine having been started, the part 2 of the cam *f* will act to press the catch back into its recess and release the lever *e*, so that it is moved backward by the spring *e'* against and so as to be operated by the said cam.

We claim—

1. The spindle, one or more tension disks or plates, the spring *e'*, and the spindle mover or lever, combined with the lever *m*, having its

long arm extended to the head of the machine, and the cam *f*, both the said lever and the said cam being arranged to move the said elbow-lever and spindle, substantially as described.

2. The spindle, one or more tension disks or plates, the spring *e'*, the spindle mover or lever *e*, the lever *m*, and presser-bar-lifting lever to move it, combined with a spring-actuated catch or locking device adapted to operate upon the lever *e*, and serving to lock the same, as described, against backward movement when lifted by the lever *m*, substantially as set forth.

3. The spindle, one or more tension disks or plates, the spring *e'*, the spindle-moving lever *e*, and the cam *f*, provided with the side notch or incline, and adapted to move the lever *e*, combined with the spring-pressed catch or locking device, the cam *f* being adapted to disengage the said locking device from the elbow-lever, as and for the purpose set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

GEORGE H. DIMOND.  
 WILBUR F. DIAL.

Witnesses:

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