

(Model.)

P. DIEHL.

TENSION DEVICE FOR SEWING MACHINES.

No. 339,623.

Patented Apr. 13, 1886.

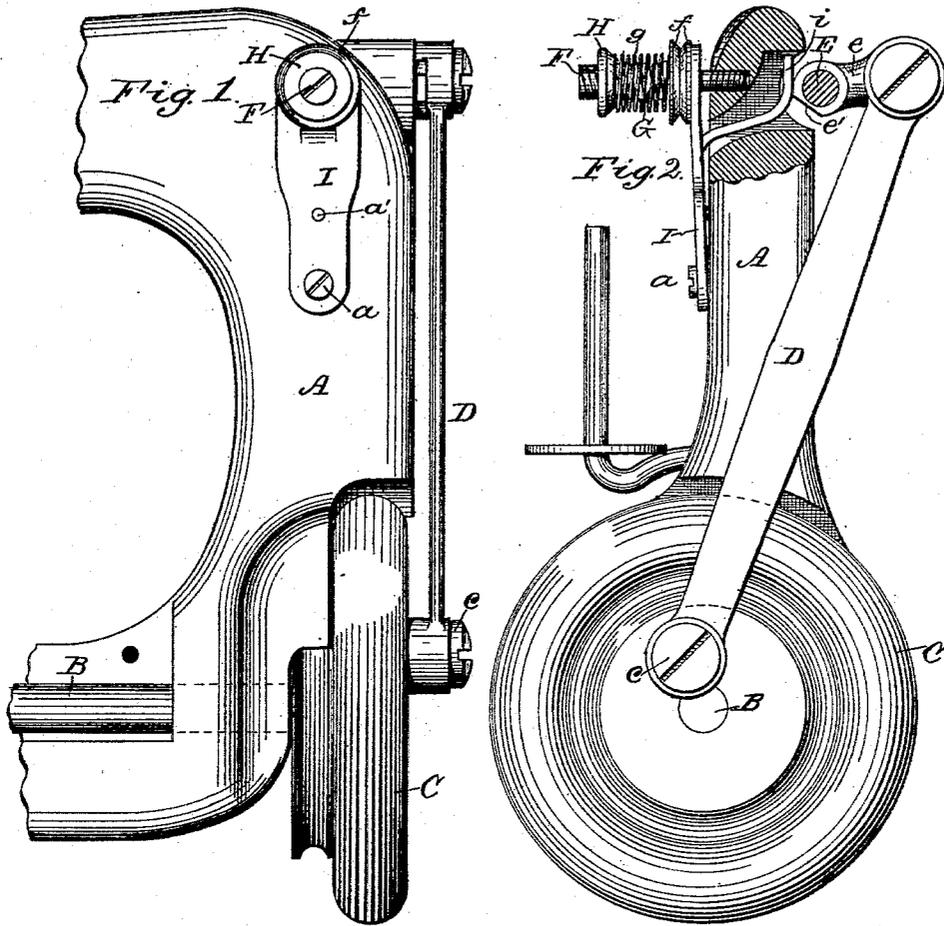
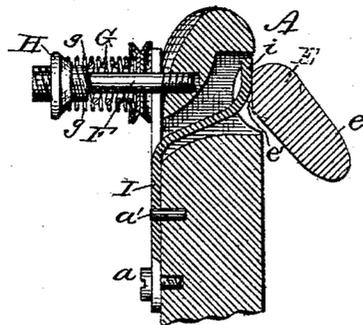


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

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TENSION DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 339,623, dated April 13, 1886.

Application filed October 10, 1885. Serial No. 179,540. (Model.)

To all whom it may concern:

Be it known that I, PHILIP DIEHL, a citizen of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Tension Devices for Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of my invention is to provide a sewing-machine tension device of simple construction, capable of being operated so that the thread will be released at intervals from most of the friction thereon, but when thus released will still be held by a light tension, the latter being capable of being varied to suit different kinds of work independently of the main tension. To this end I employ a pair of ordinary tension disks or plates mounted on a pin having a shoulder, between which and said disks is placed a stiff spiral spring having but little tendency to expand, said disks being compressed together and against said spring by a plate or lever having a tendency to spring away from the disks, but having an arm impinging against a flattened portion or cam on a shaft. This flattened portion or cam holds the spring-lever against said disks at intervals, but allows said lever to move far enough at times to clear the disks from the said stiff spiral spring. A light spiral spring of greater elasticity than the main tension-spring, and having coils of larger diameter than the latter, is placed on the disk-supporting pin outside of or over the main tension-spring, the said light tension-spring being between one of the tension-disks and a regulating-nut on the pin. This latter spring exerts a constant pressure on the tension-disks, so that when the latter are released from the main tension-spring the thread passing between the disks will still be subjected to a slight pressure or tension.

In the accompanying drawings, Figure 1 is an elevation of a portion of a sewing-machine with my invention applied thereto. Fig. 2 is a sectional rear view of the same, and Fig. 3 is a detail section showing the disks released from the main tension-spring.

A denotes the rear portion of the frame or bracket-arm of a sewing-machine, in the lower portion of which is journaled the driving-shaft

B, carrying a fly and pulley wheel, C, having a crank-pin, *c*, connected by a pitman, D, with the rear arm, *e*, of a rock-shaft, E, pivoted to or journaled in the upper portion of the arm A. A pin, F, is screwed into the arm A, and on said pin is a pair of ordinary tension-disks, *f*. The pin F is provided with a shoulder, between which and said disks is a stiff coil-spring, G, of slight elasticity or expansibility. Outside of the spring G, between the tension-disks and an adjusting-nut, H, is a light and very elastic coil-spring, *g*, the pressure of which against said disks may be regulated by said nut, which runs on a threaded portion of the pin F.

Attached to the arm A by a screw, *a*, is a spring-lever, I, which extends between the disks *f* and the said arm, said lever having a tendency to move away from the said disks, but being held in contact therewith by an arm, *i*, bearing against a flattened portion, *e'*, on the rock-shaft E. Instead of said flattened portion of the shaft, a properly-shaped cam may be employed. The lever I is steadied by a pin, *a'*, attached to the arm A, and the arm *i* on said lever is preferably merely a tongue struck out from the central upper portion of said lever to fork the latter so that it may embrace the pin F.

When the machine is in operation, the rocking movements of the shaft E, against the flattened portion *e'* of which the arm *i* of the lever I presses, will impart a slight vibrating movement to said lever. This operation of said lever will permit the tension-disks *f* to move away from the stiff coil-spring G, which has so little elasticity that it will not expand sufficiently to follow the movements of said lever. Thus the thread passing between the disks *f* will be relieved from so much tension as is due to the pressure of said disks against said spring G. The light spring *g* is, however, sufficiently elastic to follow the movements of the lever I, and will therefore hold the disks *f* against said lever at all times, and when the thread is released from the main portion of the tension due to the stiff spring G it will be subjected to a slight tension due to the light spring *g*.

When the parts are in the position indicated by Fig. 3, the thread is released from the ten-

sion due to the spring G, and is only subjected to the tension due to the spring *g*; but in Fig. 2 the parts are shown in the position they occupy when the full pressure is applied to the thread.

5 The stress of the light tension-spring *g* may be adjusted by means of the regulating-nut H without disturbing the spring G, which latter is in its action independent of the light spring *g*.

10 I claim as my invention and desire to secure by Letters Patent—

1. The combination, with the tension-disks, of a supporting-pin therefor having a shoulder, a stiff spring between said shoulder and disks, a nut on said pin, a light tension-spring between said nut and disks, a lever against which the latter are pressed by said springs, and a shaft having a flattened portion or cam for operating said lever.

20 2. The combination, with the tension-disks, light and stiff springs operating independently of each other, a pin for supporting said disks,

and an adjusting-nut, of a shaft having a flattened portion or cam, and a lever forked to embrace said pin, and having an arm imping- 25 ing against said flattened portion or cam on said shaft.

3. In an automatic or intermittent tension device, the combination, with the tension disks or plates and two independent springs 30 separate from said disks or plates and of different strength and elasticity, said springs both pressing in the same direction against said disks or plates, of a movable lever or surface, against which said disks or plates are 35 pressed by said springs, substantially as set forth.

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

PHILIP DIEHL.

Witnesses:

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