No. 686,010. Patented Nov. 5, 1901.

H. A. WEBSTER.

TENSION DEVICE FOR SEWING MACHINES.

(Application filed Oct. 21, 1897.)

(No Model.)

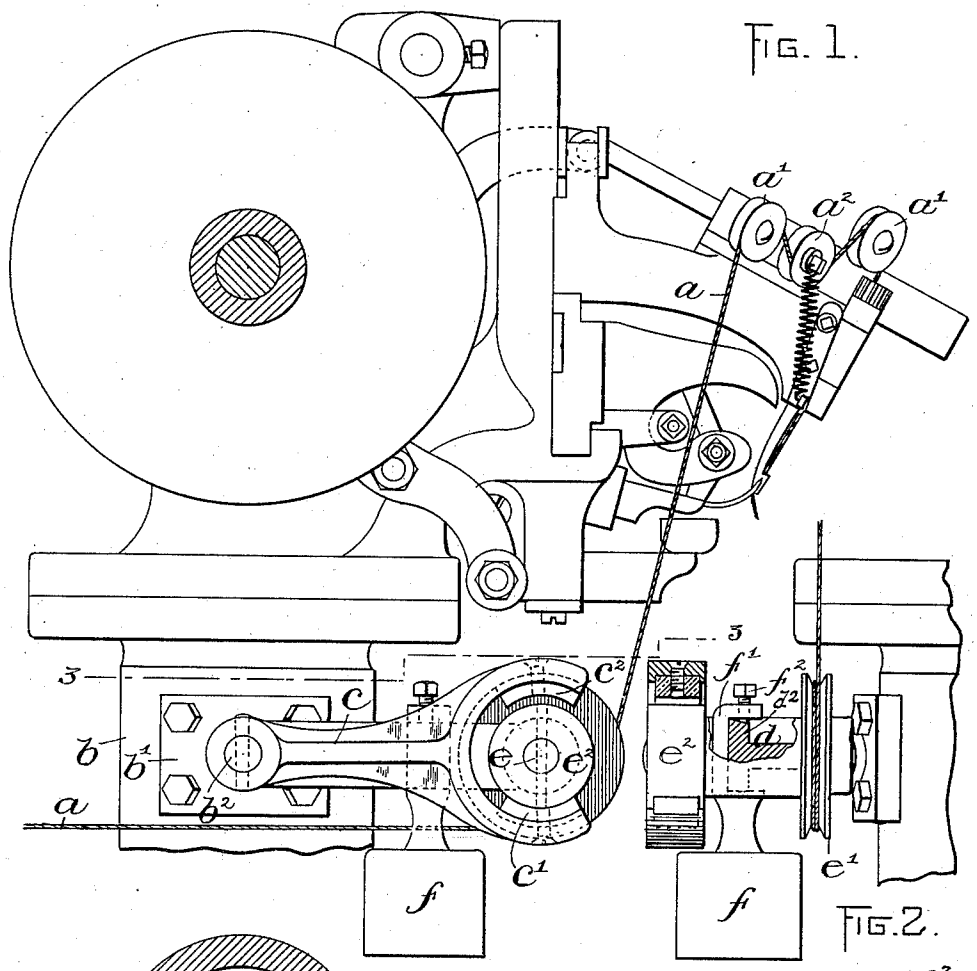


FIG. 1.

FIG. 2.

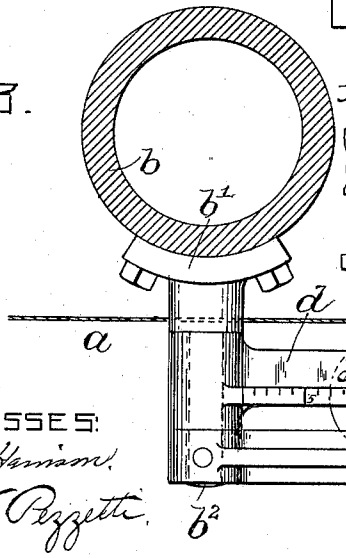


FIG. 3.

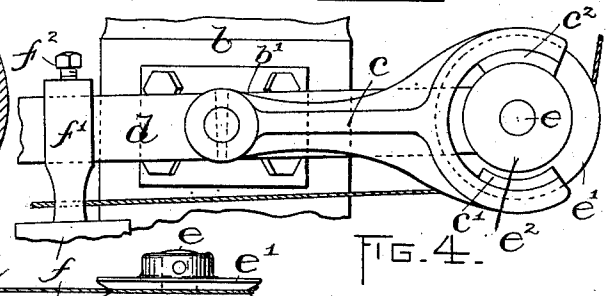


FIG. 4.

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UNITED STATES PATENT OFFICE.

HAROLD A. WEBSTER, OF HAVERHILL, MASSACHUSETTS, ASSIGNOR TO THE GOODYEAR SHOE MACHINERY COMPANY, OF PORTLAND, MAINE, A CORPORATION OF MAINE.

TENSION DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 686,010, dated November 5, 1901.

Application filed October 21, 1897. Serial No. 655,888. (No model.)

To all whom it may concern:

Be it known that I, HAROLD A. WEBSTER, of Haverhill, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Tension Devices for Sewing-Machines, of which the following is a specification.

This invention has relation to tension devices for sewing-machines or other machines in which it is desirable or necessary to exert tension upon the thread.

The object of this present invention is to provide a device of the character referred to which may be employed upon wax-thread machines and which will exert a constant tension upon the thread without operating to strip the wax therefrom or to adhere to the thread in such way as to render the operation of sewing difficult and uncertain.

To this end the invention consists of a tension device possessing certain features of construction and relative arrangement of parts, all as illustrated upon the drawings and now to be described in detail and then pointed out in the claims hereto annexed.

Reference is to be had to the accompanying drawings, and to the letters marked thereon, forming a part of this specification, the same letters designating the same parts or features, as the case may be, wherever they occur.

Of the drawings, Figure 1 represents in side elevation a machine for sewing boots and shoes equipped with my invention. Fig. 2 represents a front elevation of the tension device. Fig. 3 represents a plan view of the same, being a section on the line 3 3 of Fig. 1. Fig. 4 represents another embodiment of my invention.

Referring to the drawings, it will be seen that I have illustrated more or less conventionally a sewing-machine; but inasmuch as the present invention relates only to tension devices I shall not describe the various parts of the machine more than to say that the thread a passes over pulleys or idlers a' a' to the stitch-forming mechanism, there being a take-up roll a^2 interposed between the two rolls or idlers a'.

Projecting out from the standard b of the machine is a bracket b', formed with a stud b^2, to the outer end of which is pinned a forked or bifurcated arm c. A lever d is fulcrumed on the stud b^2 and is formed on its end with a tubular bearing d' to receive a shaft e, which is provided on one end with a grooved wheel e' and on the other end with a friction wheel or disk e^2, projecting between the prongs or ends of the arm c. The friction-disk e^2 rests upon a brake-shoe c', secured on the inner face of the forked arm, there being another brake-shoe c^2 arranged diametrically opposite to the first mentioned, which prevents the lever d from being raised beyond a limited extent. A weight f is hung upon the lever d, being provided with an upwardly-projecting hook f' to take over a rib d^2 on the lever and a set-screw f^2 to engage the said lever to prevent the hook from sliding off, the upper surface of the said rib being beveled, as shown in Fig. 2, and being provided with a graduated scale, as shown in Fig. 3. The thread a passes entirely around the grooved wheel e' once and from thence travels over the pulleys a'. The wheel e' is held from rotation, except when there is considerable stress upon the thread by reason of the friction-disk e^2 being pressed against the brake-shoe c' by the weight f; but when the pull upon the cord or thread is sufficient to overcome the weight the lever is lifted slightly and the antifriction-disk e^2 is allowed to revolve freely without materially varying the tension thereof. If, however, the pull on the thread is more than sufficient to overcome the weight f, the lever will be lifted until the brake-disk e^2 engages the brake-shoe c^2 and brakes the thread-truck e', and the greater the pull on the thread the greater will be the braking action. It will be noted, therefore, that the thread-truck will be free to revolve only when a pull of a predetermined amount is exerted on the thread, and any pull of greater or lesser amount will be opposed by a braking resistance which will vary directly as the amount of pull varies from the predetermined amount. This device is especially adapted for use on a sewing-machine where it is desirable to hold the thread clamped when the stitch is set and then to release the clamp to draw off more thread for the next stitch.

The tension may be varied by shifting the weight along the lever *d*, as will be readily understood, the scale thereon indicating the degree of tension. The brake-shoes c' c^2 may be formed of leather or metal or any other suitable material.

In Fig. 4 I have shown another embodiment of my invention in which the lever *d* is fulcrumed intermediate of its ends and the weight *f* is placed on the other side of the fulcrum from the wheel e' and the disk e^2. By this arrangement the friction-disk is pressed upwardly against the friction-block c^2, and the tension upon the thread *a* increases according to the stress upon the same. In this form of tension device the thread is held from being drawn off when the stitch is set, as it is in the other form of my tension device, but unlike the latter the thread-truck is never freely revoluble, the braking action increasing with the pull on the thread.

Having thus explained the nature of the invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all of the modes of its use, I declare that what I claim is—

1. A tension device for sewing-machines comprising a lever, a shaft journaled in said lever and having fast therewith a friction-disk, and a pulley for the thread, a weight movable along said lever, and an arm having oppositely-arranged brake-shoes with which said friction-disk may be alternately engaged.

2. A tension device for sewing-machines comprising a forked arm having oppositely-arranged brake-shoes, a lever provided with a journal-bearing and having a graduated scale, a shaft mounted in said bearing, a friction-disk arranged between the brake-shoes and fastened on the shaft, a grooved wheel on said shaft for the thread, and a weight movable along the graduated scale of the lever.

3. In a tension device for sewing-machines, the combination with a rotatable thread-truck movable in its plane of rotation, of a braking-surface connected therewith, stationary brake members so disposed with relation to the braking-surface that a pull on the thread will tend to move the braking-surface out of contact with one brake member and into contact with the other, and means acting normally to move the braking-surface out of contact with the latter brake member and into contact with the former, substantially as described.

4. In a tension device, for sewing-machines, the combination with a pivoted arm, of a thread-truck rotatably mounted thereon around which the thread passes, a braking-surface connected therewith, a stationary friction member so located with relation to the brake-surface that a pull upon the thread will move the brake-surface toward the friction member, and means normally tending to move the brake-surface away from the friction member, substantially as described.

5. In a tension device for sewing-machines, the combination with a rotatable thread-truck around which the thread passes, means for braking the thread-truck upon a pull of the thread, substantially as described.

6. In a tension device for sewing-machines, the combination with a thread-truck around which the thread passes, of brake devices operatively connected therewith operating to brake the thread-truck when a pull is exerted upon the thread and when the tension on the thread is relieved, substantially as described.

7. In a tension device for sewing-machines, the combination with a thread-truck, of brake devices operatively connected therewith acting to brake the thread-truck for all pulls on the thread both greater and less than the predetermined amount, substantially as described.

8. In a tension device for sewing-machines, the combination with a thread-truck, of means acting to brake the thread-truck upon each pull of the thread with a tension increasing as the pull is applied, substantially as described.

9. In a tension device for sewing-machines, the combination with a thread-truck, of means acting to brake the thread-truck upon each pull of the thread with a tension proportional to the pull of the thread, substantially as described.

10. In a tension device for sewing-machines, the combination with a thread-truck, of means acting to brake the thread-truck upon each pull of the thread with a tension increasing as the pull is applied and proportional to such pull, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 30th day of September, A. D. 1897.

HAROLD A. WEBSTER.

Witnesses:
C. F. BROWN,
A. D. HARRISON.