

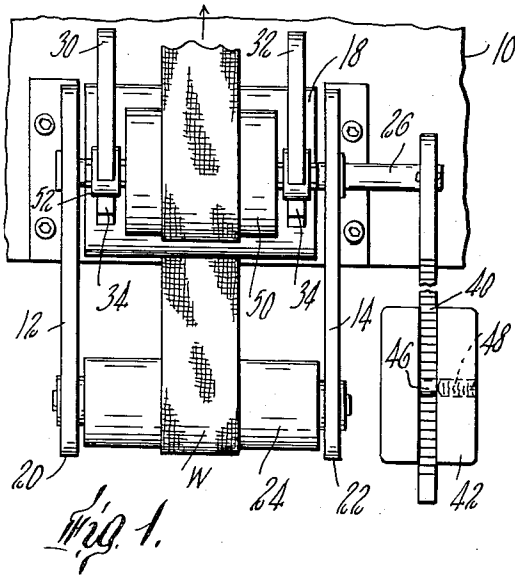
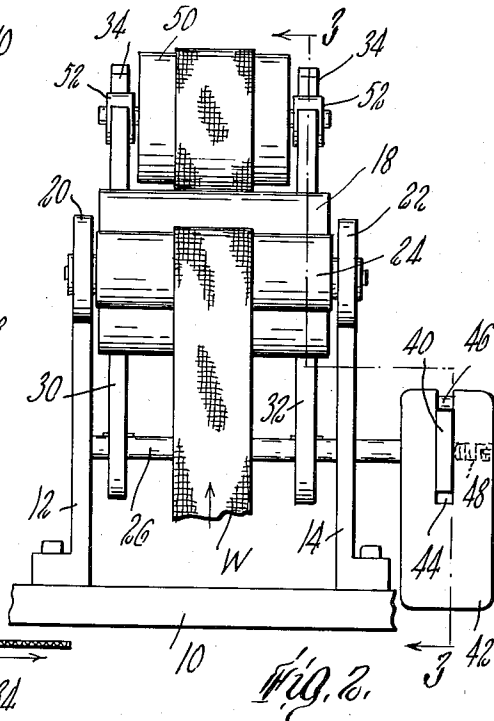
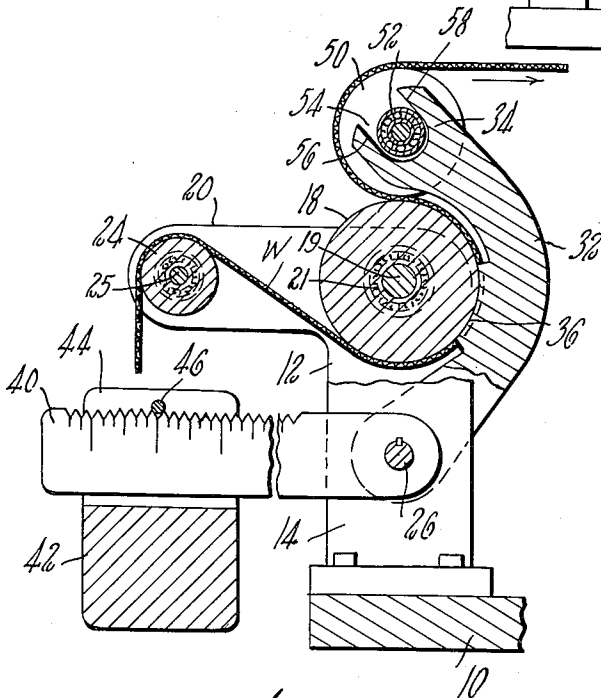
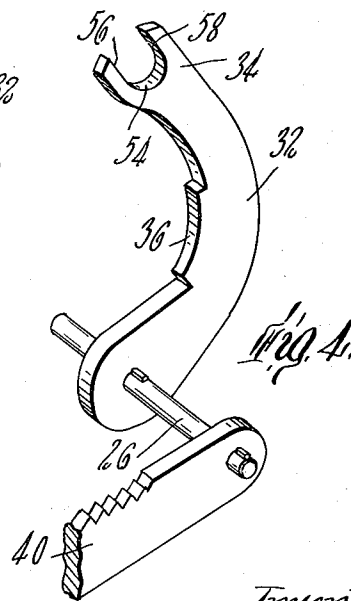
Feb. 7, 1961

C. F. LIBBY

2,970,787

TENSION DEVICE FOR FEEDING ELASTIC WEBS OR STRANDS

Filed Feb. 2, 1959



Inventor
Carl F. Libby
by Morse & Altman
Atty.

1

2,970,787

TENSION DEVICE FOR FEEDING ELASTIC WEBS OR STRANDS

Carl F. Libby, 1212 West St., Stoughton, Mass., assignor to John D. Riordan, Hopkinton, Mass., and Gertrude C. Libby, Stoughton, Mass., trustees of the Libby family trusts

Filed Feb. 2, 1959, Ser. No. 790,469

3 Claims. (Cl. 242—75.2)

This invention relates to a tension device more specifically designed for narrow elastic webs which are being fed to sewing machines or the like. It is an object of the invention to provide a tension device which is simple in structure and which is designed to receive a narrow tape or webbing from a source thereof with little or no tension thereon and to impose a tension of desired adjustable magnitude on the webbing leaving the device. The device is also designed to compensate for any variations there may be in the tension, if any, on the webbing which is being supplied thereto.

According to the invention, the webbing is passed around a knurled roll with which it is in frictional contact. Slippage on this roll is prevented by a second roll which rides on top of the knurled roll. Tension on the webbing is imposed by a braking drag on the first roll. For a more complete understanding of the invention reference may be had to the following description thereof, and to the drawing, of which:

Figure 1 is a plan view of a tension device embodying the invention;

Figure 2 is an elevation of the same;

Figure 3 is a section on the line 3—3 of Figure 2; and

Figure 4 is a fragmentary perspective view of the braking mechanism.

The device illustrated on the drawing is designed to receive a tape or the like ordinarily under little or no tension and to impose thereon a substantially constant tension of easily adjusted magnitude. As shown, the device includes a supporting frame having a base 10 and two upright members 12 and 14. Between these side frame members a knurled tension roll 18 is supported on a shaft 19 turning in bearings 21 for free rotation about a horizontal axis. These side members have forward projections 20 and 22 between which is rotatably mounted a guide roll 24 on a horizontal shaft 25, this guide roll being in front of the tension roll 18.

Below the axis of the roll 18 a rock shaft 26 extends horizontally through the side members 12 and 14 on the frame. Keyed to the rock shaft 26 are a pair of arms 30 and 32 which extend upward around to the rear of the roll 18 and terminate in the forked ends 34 above the roll 18. Each of the arms 30 and 32 is provided with a brake shoe 36 which bears against the roll 18 near an end thereof. To press the brake shoes 36 against the end portions of the roll 18, a bar 40 is keyed to the rock shaft 26 and extends horizontally forward therefrom as indicated in Figure 3. Adjustably supported by the bar 40 is a weight 42 which may consist of a block of metal or other heavy substance having a slot 44 to receive the bar 40 slidably. A pin 46 spans the slot 44 and is adapted to rest on the upper edge of the bar 40 in order to support the weight 42. By adjustably shifting the weight 42 along the bar 40, the pressure of the brake shoes 36 against the roll 18 can be regulated. A set screw 48 may be employed to secure the weight 42 in any position of adjustment on the bar 40.

A press roll 50 rests on the top of the tension roll

2

18 to prevent slippage of the webbing on the tension roll. This press roll is freely rotatable in bearings 52 which are slidably received in the forked ends 34 of the arms 30 and 32. The recess 54 in each fork 34 in which the bearings 52 are movable has inclined cam edges 56 and 58 which are parallel and which slope rearward and downward. The web W which is fed through the tension device passes with little or no tension thereon over the guide roll 24, then under and back of the tension roll 18, passing between the tension roll 18 and the press roll 50 and around the latter to extend toward the rear to the sewing machine or other place of use. The press roll 50 bears on the webbing by its own weight. The pressure is augmented by the camming action of the inclined edge surfaces 58 on the bearings 52 of the roll. When the pull on the webbing leaving the roll 50 urges the roll horizontally toward the right as it appears in Figure 3, that is, at an angle to the line of centers of the rolls 18 and 50, the cam edges 58 give a downward component to such a pull on the roll 50. This permits the use of a smaller roll than would be required if its weight alone were relied on to press the webbing on the roll 18 sufficiently to prevent slippage.

When the device is in operation, if something should impose added tension on the webbing approaching the tension device, such added tension would be felt at the press roll 50 which would be pulled slightly toward the right with the result that the braking drag would be reduced to compensate for the increased tension of the webbing approaching the device. Thus a substantially constant tension, the magnitude of which is determined by the position of the weight 42 on the bar 40, is maintained on the webbing leaving the roll 50.

I claim:

1. A tension device for narrow elastic webbing, comprising a frame, a tension roll supported by said frame for free rotation about a horizontal axis, a freely rotatable press roll resting upon said tension roll, frictional braking means engaging said tension roll, and means supporting both said braking means and said press roll and movable by movement of said press roll at an angle to the line of centers between said rolls to change the pressure of said braking means against the tension roll.

2. A tension device for narrow elastic webbing, comprising a frame having parallel side members, aligned bearings in said side members, a shaft freely rotatable in said bearings, a tension roll on said shaft between said side members, a rock shaft journaled in said side members, a pair of arms keyed to said rock shaft, each said arm having a brake shoe normally pressing against said tension roll, a normally horizontal bar keyed to said rock shaft and extending in a direction to press said brake shoes against said tension roll, a weight adjustably hung on said bar, said arms each having a portion above said roll with a recess therein, a press roll bearing on top of said tension roll, said press roll having a shaft with bearings slidably disposed in said recesses, said recesses having inclined cam edges engaged by said shaft bearings, the inclination of the edges being such as to cam the press roll against the tension roll when said press roll is urged at an angle to the line of centers between the two said rolls.

3. A tension device for narrow elastic webbing, comprising a frame including two side members, a tension roll mounted on said members for free rotation about a horizontal axis, a rotatable guide roll supported by said frame in front of said tension roll, a rock shaft journaled in said side members below said tension roll, a pair of arms keyed to said shaft near the ends of said tension roll, each said arm extending upward back of the tension roll and terminating in a forked upper end above the tension roll, a brake shoe on the mid portion of each said

arm arranged to bear against said tension roll, a horizontal bar keyed to said shaft and extending forward therefrom, a weight adjustable supported by said bar, and a press roll upon said tension roll, said press roll having bearings engaging in the forked ends of said arms and 5 movable therein rearwardly and downwardly.

References Cited in the file of this patent

UNITED STATES PATENTS

196,296	Haworth	Oct. 23, 1877
225,557	Brown	Mar. 16, 1880
573,229	Metz	Dec. 15, 1896