

J. L. DOW.
SHUTTLE TENSION DEVICE.
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974,757.

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Fig. 4.

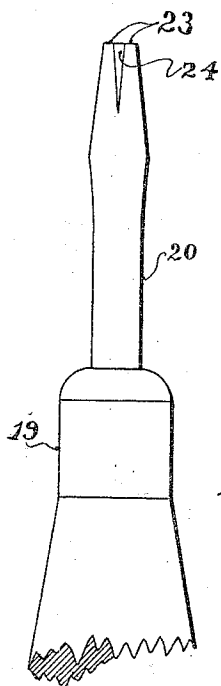


Fig. 1.

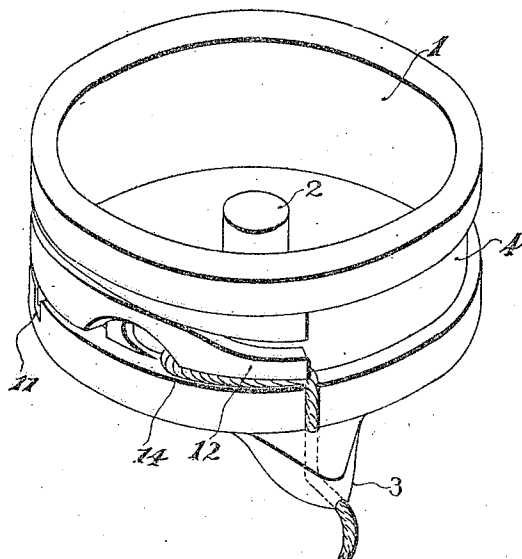


Fig 5.

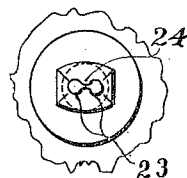


Fig. 2.

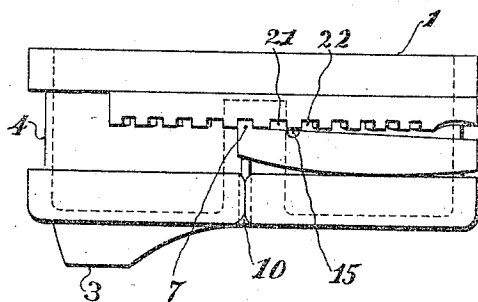
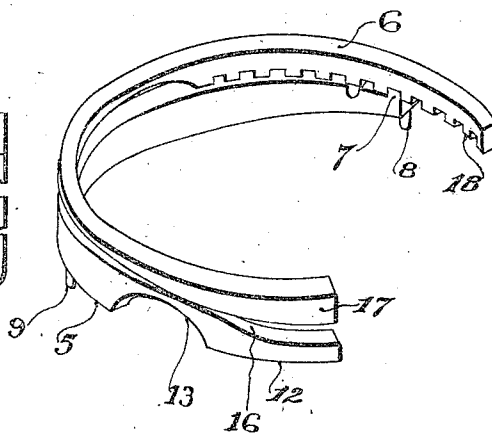


Fig. 3.



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SHUTTLE TENSION DEVICE.

974,757.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN L. Dow, a citizen of the United States, residing at Melrose Highlands, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Shuttle Tension Devices; 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.

The invention described herein relates to certain improvements in shuttle tension devices used in the shuttles of the rotary or oscillating type of sewing machines, and particularly in the shuttles of shoe-sewing machines of the above named type.

In a tension adjusting device heretofore employed, the thread engaging member and the tension adjusting member are placed in operative relation in a peripheral groove in the thread case, the tension being adjusted by moving the parts longitudinally of each other, and the parts being held in adjusted position by intermeshing teeth. This form of adjustment is objectionable however, in that the parts of the device have to be entirely removed from the peripheral groove in order that they may be adjusted.

The object of the present invention is to provide a tension adjusting device in which the thread engaging member and the tension adjusting member can be relatively adjusted while in position in the peripheral groove of the thread case.

A further object is to provide a device of this character which, when adjusted, is locked in adjusted position, no accidental derangement being possible.

The invention is hereinafter more fully described and claimed.

In the accompanying drawing forming part of this specification, Figure 1 is a perspective view showing the tension device in position in the thread casing; Fig. 2 is a plan view of the device; Fig. 3 is a perspective view of the tension device shown detached from the thread casing; Fig. 4 is an elevation view of the tension adjusting tool. Fig. 5 is an end view of the same.

The invention is applied to a shuttle of the rotary or oscillating type, only the thread case of the shuttle being shown.

The thread case comprises a circular body 1 provided with a bobbin spindle 2, a thread

delivery nose 3, and a peripheral groove 4 for the reception of the tension device.

The tension device comprises a thread engaging member 5 and a tension adjusting member 6, both consisting of flat strips of resilient or spring metal curved to the form of the thread case, and extending slightly more than half way around the case. The thread engaging member 5 and the tension adjusting member 6 are held in operative relation by means of the sides of the peripheral groove 4, the side of the groove which engages the member 6 preferably being slightly undercut.

The thread engaging member 5 is held in position in the groove 4 by means of two pins 8 and 9, which are integral with, and project from the thread engaging member 5 and engage in holes 10 and 11, located in the periphery of the thread case 1. The thread engaging member 5 has a tension end 12, which engages the thread and presses it against a thread supporting surface 14 on the thread case. This tension end is made resilient by cutting away a portion of the part 5. At the opposite side of the thread engaging member from the thread bearing surface 12 is a cam face 16 on which rides the cam surface 17 of the tension adjusting member 6. At the other end and on the same side as the cam face 16 is a projecting tooth 7 which is adapted to engage with any one of a series of teeth 18 on the tension adjusting device 6. At the same end and at any convenient distance from the tooth 7 is a semi-circular slot 15.

The tension adjusting tool 19 has a blade 20 having two cylindrical lips 23 connected by a thin plate 24, as shown in Figs. 4 and 5.

The operation of this tension device is as follows:—One of the cylindrical lips 23 of the tool 19 is inserted in the semi-circular groove 15, and the other lip 23 is inserted in the tooth 21 or 22 of the series 18, according as it is desired to decrease or increase the tension. Should it be desired to decrease the tension the other lip 23 is inserted in the tooth 21, and the handle of the tool is turned to the right (see Fig. 2). Turning the handle to the right forces the end of the thread engaging member downward, with respect to Fig. 2, and the tooth 7 is disengaged from the tooth of the series 18 with which it was in contact. Further movement of the handle to the right will

cause the tension adjusting member 6 to be moved to the right (the thread engaging member 5 being immovable with respect to the thread case) and causing the cam face 17 to slide downward on the cam face 16, thus decreasing the pressure on the thread engaging end 12. The movement of the tool being completed, the pressure is removed from the end of the thread engaging member carrying the projecting tooth 7, which springs into the next succeeding tooth of the series 18, and the device is thus locked in adjusted position.

It will thus be seen that this tension device may be adjusted without removing the parts from the thread case, and that the parts will remain locked in adjusted position, all danger of accidental derangement being avoided.

Having thus described my invention what I claim is:—

1. A shuttle tension device for sewing machines, having, in combination with a cylindrical thread case having a peripheral groove, a thread engaging member mounted in the groove, a tension adjusting member also mounted in the groove and arranged to bear on the thread engaging member, said tension adjusting member being movable longitudinally in the groove to vary the tension.

2. A shuttle tension device for sewing machines, having, in combination with a cylindrical thread case having a peripheral groove, a thread engaging member mounted in the groove, a tension adjusting member also mounted in the groove and arranged to bear on the thread engaging member, said tension adjusting member being movable longitudinally in the groove to vary the tension, and means for locking the tension adjusting member in adjusted position.

3. A shuttle tension device for sewing machines, having, in combination with a thread case having a peripheral groove, a thread engaging member, and a tension adjusting member mounted in said groove and extending circumferentially of the thread case, said members being relatively adjustable longitudinally while in the groove to vary the tension.

4. A shuttle tension device for sewing machines, having, in combination with a thread case having a peripheral groove, a thread engaging member, a tension adjusting member mounted in said groove and extending circumferentially of the thread case, said members being relatively adjustable longitudinally while in the groove to vary the tension, and means carried by the members for locking them in adjusted position.

5. A shuttle tension device for sewing machines, having, in combination with a cylindrical thread case having a peripheral groove, a thread engaging member mounted

in the groove, and a tension adjusting member mounted in the groove and provided with a cam surface arranged to bear on the thread engaging member, said tension adjusting member being movable while both members are in the groove.

6. A shuttle tension device for sewing machines, having, in combination with a cylindrical thread case having a peripheral groove, a thread engaging member mounted in the groove, a tension adjusting member mounted in the groove and provided with a cam surface to bear on the thread engaging member, and means for locking the tension adjusting member in adjusted position, said tension adjusting member being movable while both members are in the groove.

7. A shuttle tension device for sewing machines having, in combination with a thread case having a peripheral groove, a thread engaging member and a tension adjusting member mounted in said groove, the thread engaging member being fixed with respect to the thread case, the tension adjusting member being movable along the groove relatively to the thread engaging member, while both members are in the groove whereby the tension of the thread engaging member may be adjusted, and intermeshing teeth on the members whereby the members are held in adjusted position.

8. A shuttle tension device for sewing machines having, in combination with a cylindrical thread case having a peripheral groove and a thread supporting surface therein, a thread engaging member having a resilient end adapted to press the thread against the supporting surface, a tension adjusting member coacting with said thread engaging member and acting to press it into engagement with the thread, the members being relatively movable longitudinally while in position in the groove, and intermeshing teeth on the members to hold the members in adjusted position.

9. A shuttle tension device for sewing machines having, in combination with a cylindrical thread case having a peripheral groove, a thread engaging member and a tension adjusting member removably secured in said groove and held in operative relation by the side walls thereof, a series of adjusting teeth at one end of said tension adjusting member, a projecting tooth at one end of said thread engaging member and adapted for engagement with any one of the adjusting teeth of the tension adjusting member to hold the device in adjusted position, of a slot adjacent the projecting tooth and acting as a fulcrum to move the tension adjusting member longitudinally of said thread engaging member, the two members being adjustable while in position in the groove.

10. A shuttle tension device for sewing

machines having, in combination with a cylindrical thread casing having a peripheral groove, a resilient thread engaging member and a resilient tension adjusting member re-
 5 movably secured in said groove and held in operative relation by the side walls thereof, the tension adjusting member being movable circumferentially of said groove and longi-
 10 tudinally of said thread engaging member, and having a series of adjusting teeth, the thread engaging member having a thread en-
 15 gaging face at one end, and a projecting locking tooth and an adjusting slot at the other end, the slot acting as a fulcrum to
 20 move the tension adjusting member longitudinally of the thread engaging member while in position in the groove, the project-
 25 ing tooth meshing with one of the teeth on the tension adjusting member to lock the de-
 30 vice in adjusted position.

11. A shuttle tension device for sewing machines having, in combination with a cy-

lindrical thread case having a peripheral groove, a thread supporting face on the side wall of said groove, a thread engaging mem- 25
 ber having a thread engaging face, and a cam face at opposite sides of one end, a pro-
 30 jecting locking tooth and an adjusting groove at the other end on the same side of the member as the cam face, a tension ad-
 35 justing member having a series of teeth at one end co-acting with the locking tooth and adjusting groove to move the members lon-
 40 gitudinally of each other and hold them in adjusted position, a cam face at the other
 45 end of said tension adjusting member co-acting with the cam face on the thread en-
 50 gaging member to change the tension on the thread, the members being adjustable while in position in the groove.

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Witnesses:

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