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THREAD TIGHTENING DEVICE FOR SEWING MACHINES

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Fig. 1.

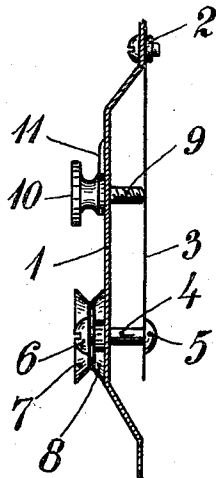
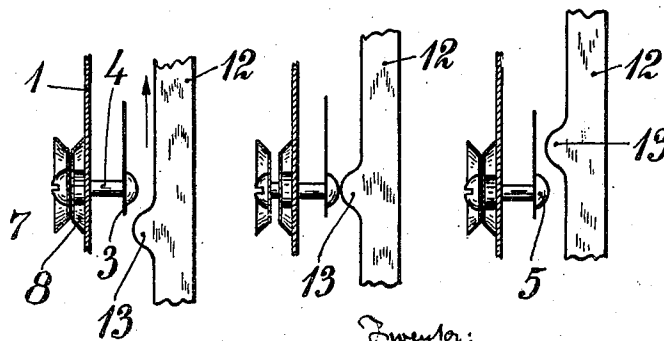


Fig. 2. Fig. 3. Fig. 4.



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UNITED STATES PATENT OFFICE

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THREAD TIGHTENING DEVICE FOR SEWING MACHINES

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2 Claims. (Cl. 112—254)

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This invention relates to a thread tightening device for sewing machines, of the type where the thread is guided between two discs which are pressed towards each other by spring means, the pressure of said discs against each other being relieved when the presser foot is lifted to its usual raised position.

When using the sewing machine for embroidering or darning operations the presser foot should be still further lifted to a third position.

It is an object of the invention to provide for an arrangement, whereby the discs are automatically pressed towards each other when the presser foot is raised from said second to said third position.

Another object is to provide for a very simple mounting of the discs and of the spring means therefor.

Still another feature is to provide for a simple adjustment of said spring means.

Other features of the invention will appear from the following description of a suitable embodiment thereof in connection with the drawing in which:

Figure 1 is a partial vertical section through the front plate of the machine arm, with the thread tightening device mounted thereon, the presser foot rod not being shown.

Figures 2, 3 and 4 illustrate the pressure discs, the end portion of the leaf spring and part of the presser foot rod in three different height positions.

The thread tightening device, which is mounted upon the front plate 1 of the machine arm, comprises two discs 7 and 8 of suitable shape, arranged at the outer side of the front plate. The thread is guided between said discs. The discs are loosely inserted upon a bolt 4 displaceably received in a hole in the front plate, the inner end of the bolt carrying a head 5. The discs are maintained on the bolt by means of a head 6 or the like provided at the outer end of the bolt.

At the inner side of the front plate 1 is arranged a leaf spring 3, one end of which is secured at 2, the other, free end thereof being provided with an opening, through which the bolt 4 displaceably passes. The head 5 of the bolt serves as abutment for the spring 3, the tension of which is directed off the front plate. Thus the discs 7, 8 are pressed resiliently together, thereby exerting a braking effect upon the thread.

As will be understood the braking action of the discs and thus also the tightening of the

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thread are dependent on the resiliency of the leaf spring 3, and thus may be adjusted by adjusting the leaf spring. This is effected by means of an adjusting screw 9 having a head 10 serving as a finger-grip. This screw is screwed through the front plate 1, so that the inner end of the screw abuts against the leaf spring 3 between ends thereof. If the adjusting screw is turned to move inwards, the resiliency of the leaf spring is increased, thereby also increasing the pressure of discs 7 and 8 against each other. If the adjusting screw is turned to move outwards said resiliency and pressure are decreased. The adjusting screw is provided with a pointer 11 indicating the degree of thread tightening upon a scale arranged on the front plate.

As shown in Figures 2-4 the presser foot rod 12 is provided with a projection or cam 13 having inclined or rounded sides. Figure 2 shows the position of the parts during the making of an ordinary seam. Then the presser foot rod is in its lowermost position and cam 13 is situated below head 5 on bolt 4, entirely out of engagement therewith, the thread being tightened to the desired degree. When sewing is stopped and the presser foot rod is lifted into its usual raised position, shown in Figure 3, for insertion of the fabric into the machine or removal of the same therefrom, cam 13 will engage head 5 and thus press the bolt 4 outwards, whereby the tightening of the thread is relieved. In order to make the sewing machine adapted for embroidering and/or darning operations, the presser foot rod is so arranged that it may be lifted into a third position, Figure 4, in which cam 13 is again out of engagement with bolt head 5. Thus the resiliency of the leaf spring and accordingly the thread tightening are operative also in this position of the presser foot rod.

The constructional details here described and shown may be varied or modified within the scope of the invention.

I claim:

1. In a sewing machine a thread tightening device comprising in combination a stationary thread tightening member mounted on the machine body; a movable thread tightening member arranged adjacent to said stationary tightening member movably relative thereto; an operating member secured to said movable thread tightening member so as to be adapted to be movable between thread tightening position with said movable thread tightening member pressing against said stationary thread tightening member and thread releasing position with said

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movable thread tightening member spaced from said stationary thread tightening member; spring means engaging said operating member and tending to permanently hold the same in thread tightening position; and an actuating member mounted on said machine body slidably along a straight path between two end positions in each of which it is not engaging said operating member and shaped so as to engage during its sliding movement in a middle position between said end positions said operating member and to move the same against action of said spring means from thread tightening into thread releasing position.

2. In a sewing machine a thread tightening device comprising in combination a stationary thread tightening member mounted on the machine body; a movable thread tightening member arranged adjacent to said stationary tightening member movably relative thereto; an operating member secured to said movable thread tightening member so to be adapted to be movable between thread tightening position with said movable thread tightening member pressing against said stationary thread tightening member and thread releasing position with said movable thread tightening member spaced

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from said stationary thread tightening member; spring means engaging said operating member and tending to permanently hold the same in thread tightening position; an actuating member mounted on said machine body slidably along a straight path between two end positions not engaging during such sliding said operating member; and a cam portion on said actuating member arranged and shaped so as to engage said operating member and to move the same against action of said spring means from thread tightening into thread releasing position only when said actuating member is located in a predetermined position between said end positions of the same.

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