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TENSION REGULATOR FOR SEWING MACHINE PRESSER BAR

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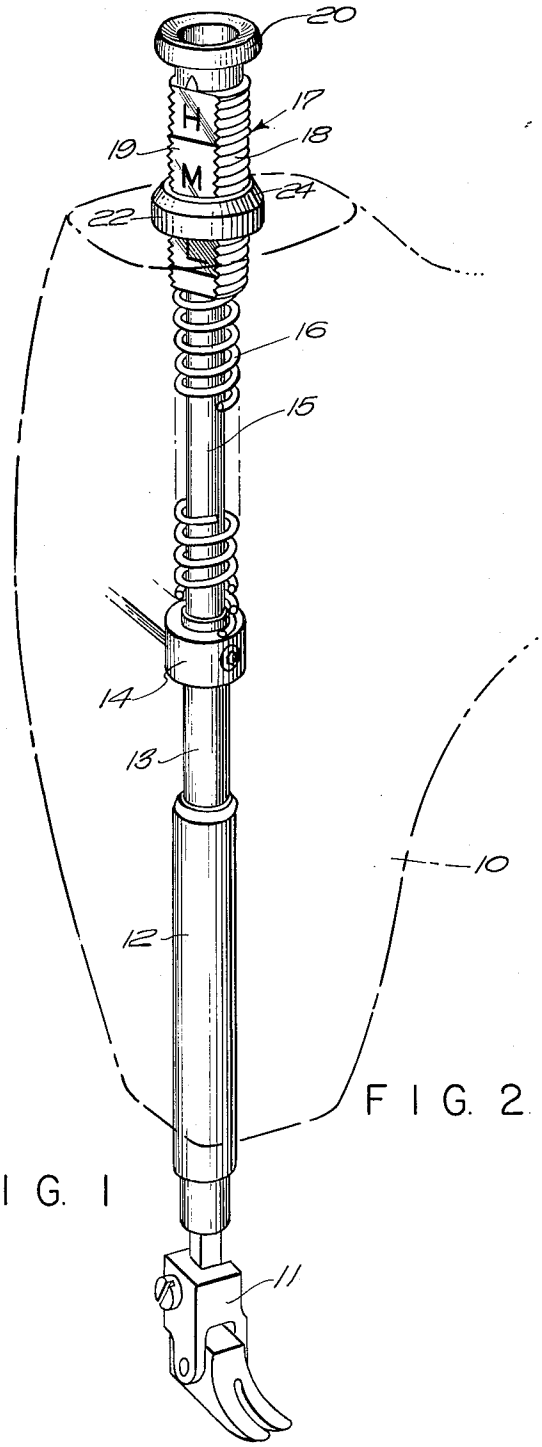


FIG. 1

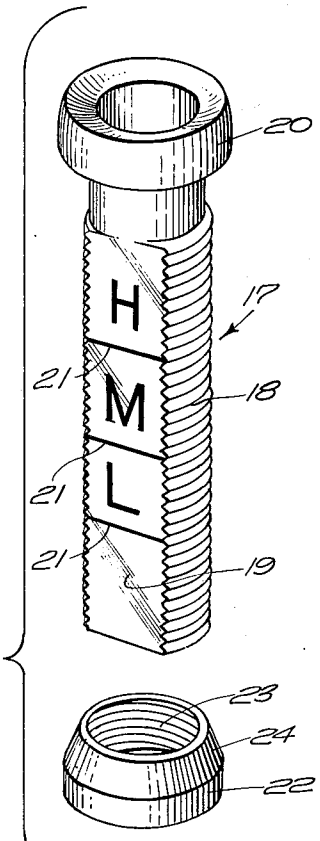


FIG. 2

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TENSION REGULATOR FOR SEWING MACHINE PRESSER BAR

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My present invention relates to sewing machines and more particularly to a device for regulating the tension on the presser foot.

The principal object of the present invention is to provide a calibrated device for presetting the tension on the presser foot of a sewing machine.

A further object of the present invention is to provide a tension regulator which permits a uniform tension to be applied to a plurality of machines doing the same work.

Another object of the present invention is to provide a tension regulating device which can be simply and easily adjusted by the operator of the sewing machine.

A further object of the present invention is to provide a presser foot tension regulator which is simple in construction and easy and economical to manufacture and assemble.

With the above and other objects and advantageous features in view my invention consists of a novel arrangement of parts more fully disclosed in the detailed description following in conjunction with the accompanying drawings and more particularly defined in the appended claim.

In the drawings,

FIG. 1 is a perspective view of a presser foot bar assembly with the tension regulator of the present invention.

FIG. 2 is an enlarged perspective view of the regulating device.

In commercial dressmaking operations the average factory is equipped with a large number of sewing machines sometimes running into hundreds. The quality of the stitching depends on the skill of the operator and the proper setting on the machine. Adjustments are made for the precise number of threads per inch. However, while the machine is equipped with means for loosening or tightening the pressure on the presser foot, most operators have little or no knowledge of how to use it. The pressure must be varied with the thickness and type of material passing through it. As a result the pressure settings are never uniform and one operator will sew a portion of a garment with one pressure setting while a second operator will sew another portion of the same garment with a different setting. This causes a variation in the stitching.

No sewing machine on the market has any means for accurately fixing the setting. The present invention is designed to provide the sewing machine with means for presetting the presser foot pressure. By notifying the operators of the several machines that the particular material being worked on requires a certain pressure, the device of the present invention permits the operator to simply and easily adjust the machine to the required pressure.

While the presser foot bar construction of various makes of sewing machines vary in minor details, they all use essentially the same basic principle. The presser foot is mounted at the bottom end of a vertical bar which is retained adjacent its top end in a guide bracket. The upper end of the presser foot bar is hollow. At the top of the sewing machine head a bolt is threaded into place which rides on a small shaft which extends downwardly into the hollow presser foot bar. A tension spring surrounds the shaft with its upper end against the bolt and its lower end against the top edge of the pressure foot bar or holding collar. When the presser foot is lifted the collar and bar are lifted against the action of the spring and the bar telescopes over the shaft. When the presser foot is dropped the spring tension pushes the bar downwardly and it is this tension which produces the pressure of the presser foot on the cloth over the feed dog. The present invention provides a calibrated adjustment for the tension of the spring.

For purposes of illustration I have shown the device mounted on the type of assembly used on a Singer sewing machine. In this construction the sewing machine head **10** shown in dotted lines in FIG. 1 houses the needle reciprocating and the presser foot mechanisms. The presser foot **11** may be of any conventional design and is mounted on the bottom end of the presser foot bar **12**. The upper end of the presser foot bar **12** comprises a hollow cylindrical portion **13** which extends through a guide bracket **14**. The bracket **14** is locked to the hollow portion **13** and moves vertically with it. A shaft **15** is mounted in axial alignment with the portion **13** and is adapted to telescopically slide into it. The tension spring **16** surrounds the shaft **15**. The bottom end of the spring **16** rests on the upper edge of the guide bracket **14**. The top of the spring **16** and the top of the shaft **15** bear against the bottom of the adjustment device **17** shown in FIGS. 1 and 2. In some constructions the shaft **15** is made integrally with the adjustment device **17**. The device **17** consists of an elongated threaded bolt **18** with very fine threads. One side of the bolt **18** is flattened at **19**. The top of the bolt **18** is provided with a finger gripping portion **20**. With this construction turning movement of the bolt **18** downwardly increases the tension of the spring **16** and turning movement of the bolt **18** upwardly decreases the tension of the spring. The spring tension is uniform throughout the different models of the machines because the same spring **16** in the same length is used on all these machines. The flat portion **19** is now subdivided with three lines **21** marked "light," "medium" and "heavy." The calibration or spacing of the lines **21** should be such that from the lowest line to the intermediate line, which is "light" will run from 3 pounds to 7 pounds pressure on the presser foot. The "medium" calibration runs from 7 to 12 pounds pressure and the "heavy" runs from 12 to 15 pounds pressure. The threaded portion of the bolt **18** is approximately 1½ inches in length and the various calibrations are approximately 5/8 of an inch apart. It will be found that this size will produce substantially the same pressure for every machine for the same setting.

In use a locking indicator collar **22** is provided with internal threads **23** which ride on the bolt **18**. The upper edge of the collar **22** is bevelled at **24** for easier reading. In setting the proper tension the bolt **18** is turned upwardly to its topmost position. The collar **22** is now rotated until its top bevelled edge **24** indicates the desired pressure. The operator now grasps the portion **20** and rotates the bolt clockwise and downwardly until the collar **22** reaches the top of the sewing machine head **10** at which point it locks the assembly in place. It will be found that the spring tension **16** will then be maintained at the indicated pressure. Now when a new material is being passed through the shop the operators can be notified to use a certain size needle, with so many threads to the inch and with a particular pressure. Since the pressure adjustment is simple and easy to make no mechanic is required. The result will be complete uniformity in the stitch for the particular material for the garment regardless of the machine used.

In existing machines the adjustment bolt is removed and replaced with the device of the present invention. This can be done externally without dismantling the sewing machine head. Thus the device is simple and easy

to manufacture and economical to install. Other advantages of the present invention will be readily apparent to a person skilled in the art.

I claim:

In a sewing machine head, a vertical presser bar having a hollow portion at its upper end and a presser foot mounted at its lower end, a shaft mounted axially with said presser bar and having its lower end telescoping into the hollow portion of said presser bar, a bracket locked to the upper end of said hollow portion and vertically movable therewith, a tension spring surrounding said shaft and bearing against the upper edge of said bracket, and means for applying a predetermined tension to said spring, said means including a bolt threaded vertically into the sewing machine head, the lower end of said bolt engaging the upper ends of said shaft and said spring, said bolt extending vertically from the sewing machine head, said bolt having a longitudinal flattened portion with calibrations to permit a reading of the setting of said bolt and spring tension, a collar threadedly mounted on said bolt for locking said bolt in predetermined tensioning position, said collar having an upper edge cooperating with said calibrated portion of said bolt whereby said collar designates the desired position of said bolt.

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