April 19, 1932. H. W. THATCHER 1,854,963

FEELER FOR LOOMS

Filed May 28, 1931

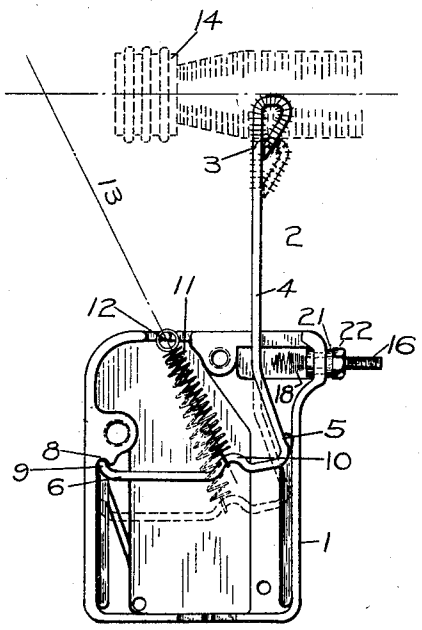

FIG. 1.

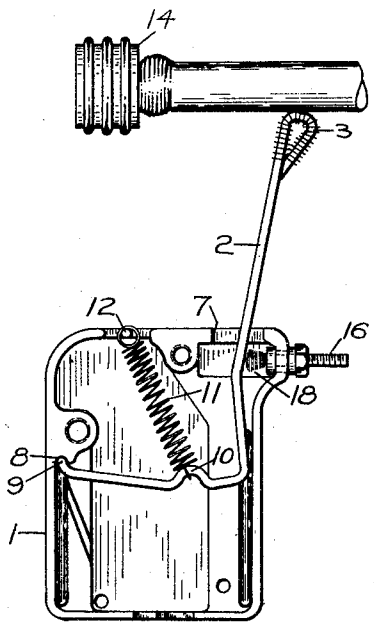

FIG. 2.

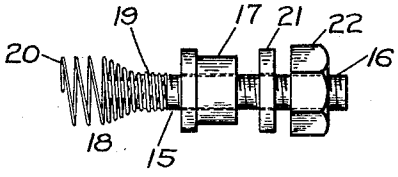

FIG. 3.

WITNESS
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FEELER FOR LOOMS

Application filed May 28, 1931. Serial No. 540,682.

This invention relates to feelers for looms for detecting and indicating exhaustion of filling that the filling may be automatically replenished, or the loom stopped for manual replenishment. Existing feelers for this purpose have not proven entirely satisfactory for silk and rayon. The delicate nature of these materials renders them extremely susceptible to being marked or cut by the somewhat harsh action of the feeler tip.

It is accordingly an object of my invention to provide a feeler which has a very light action so as to not damage delicate materials.

A side slipping feeler which has proven very satisfactory for use with cotton filling is disclosed in the Brown et al. Patent No. 1,593,426. The feeler disclosed in this patent consists essentially of a feeler member slidably and rotatably mounted in a feeler stand and retained in feeling position by a coil spring acting in a line parallel to the sliding movement.

I have found that by extending this spring obliquely to the line of sliding movement the spring may be made sufficiently light to preclude the possibility of damaging delicate materials, without rendering the mechanism inoperative. Also I have found that by providing an electric contact with a resilient portion to be engaged by the feeler member for completing an electric circuit the force required to cause the member to slip on a bare bobbin will be much less than where a mechanically actuated means is used.

It is, therefore, a further object of my invention to provide a side slipping feeler mechanism for looms, in which a feeler member is slidably and rotatably mounted on a feeler stand and retained in feeling position by a spring means acting in a line which is oblique to the sliding movement.

A further object of my invention is to provide a feeler for looms in which a feeler member is actuated in a predetermined manner upon substantially exhaustion of filling to engage a resilient contact member connected with an electric conductor, to complete a circuit and effect a change in the operation of the loom.

In the present embodiment of my invention I make use of some details which are similar to those of the feeler in the said Brown et al. patent.

Referring more particularly to the drawings:

Fig. 1 is a plan view of a feeler embodying my invention with the cover of the housing removed, showing in full and dotted lines two positions of the feeler member;

Fig. 2 is a similar view showing the position of the feeler member when the filling has become exhausted and

Fig. 3 is a detailed view of the electric conductor and bushing and resilient contact therefor.

A feeler stand or housing 1 is mounted on a suitable stationary part of the loom. A side slipping feeler member 2 is slidably and rotatably mounted in said housing, which is shown in Figs. 1 and 2 with the cover removed. The feeler member consists of a tip 3 and stem portion 4, having a laterally extending heel 5 and a laterally extending arm 6. The housing 1 is provided with a stop 7 normally engaged by the stem portion 4 and is also provided with a stop, or bearing, 8 engaged by end 9 of the arm 6 when the feeler member is in rearward feeling position. The arm 6 is provided intermediate its ends with a curved portion 10 for retaining one end of a coil spring 11. The other end of this coil spring is fastened, as at 12, to the housing.

It will be noted that the portion 10 engaged by the spring 11 is very close to the line forming the longitudinal axis of stem portion 4. The point 12 is spaced considerably farther from the axis of the stem portion. Thus the longitudinal axis 13 of the coil spring forms an acute angle with the axis of the stem portion. This angle is shown as being less than 45 degrees.

When the bobbin 14 contains a sufficient amount of filling, the filling will engage the tip 3 on the beat up of the lay and force the feeler member axially of its stem portion, which is radially of the bobbin. That is, until the filling is substantially exhausted it retains the feeler member against side slipping movement and allows it to slide only.

Obviously, if the angle formed by the spring and the line of this sliding movement were appreciably greater than 45 degrees the component of force acting in a line at right angles to the line of sliding movement would be greater than the component parallel to such sliding movement, and the stem portion 4 would be retained against the stop 7 regardless of whether the filling were exhausted or not. It will be seen from the dotted line showing of Fig. 1 that sliding of the feeler member serves to elongate the spring 11 and rotate it about point 12 as a pivot, thus decreasing the aforementioned angle. This angle could, therefore, probably be made equal to or slightly greater than 45 degrees with the result that the tip 3 would slip on a bare bobbin only after the feeler member had been caused to slide, in a right line, an appreciable distance. However, with this angle slightly less than 45 degrees the tip will slip readily upon the bare bobbin when the filling becomes substantially exhausted, and a very light spring will serve to return the feeler member to its normal position.

In thus slipping, the tip portion is rotated about the bearing point 8 and the feeler member contacts with an electric conductor 15. This conductor consists of a threaded portion 16 extending through an insulating bushing 17 in the housing 1, and a yielding contact portion 18. This contact portion, in the present instance, consists of a coiled wire spring having a closed helical portion 19 threaded on the conductor 16, and an open resilient helical portion 20 adapted to yield when contacted by the feeler member.

A fibre washer 21 is positioned on the conductor between a nut 22 and the housing 1 to complete the insulation of the conductor from the housing. Completion of the circuit from the conductor through the feeler member operates through any of the conventional means to effect a predetermined change in the operation of the loom, such as replenishment of the filling, or stopping of the loom so that replenishment of the filling may be accomplished manually.

Certain features of my invention may be useful without others. Particularly it is noted that the electric contact member may be used with other types of feelers, and that the spring arrangement may be used without an electric conductor, substituting therefor any of the usual mechanically operating means.

It is to be understood that the foregoing is merely descriptive of a preferred embodiment of my invention and may be departed from in many of the details.

I claim as my invention:

1. An electrical side slipping feeler for looms comprising: a housing; a feeler member slidably and rotatably mounted in said housing, said member including a feeler tip, a stem and a laterally extending arm; a spring acting on said arm obliquely to said sliding movement; an insulating bushing extending through the housing; an electrical conductor extending through said bushing; and a coiled wire spring on the end of said conductor adapted to be contacted by said feeler stem upon substantial exhaustion of the filling to complete the circuit from the conductor to the feeler stem.

2. An electrical feeler for looms comprising: a feeler stand; a side slipping feeler member thereon; an insulating bushing supported by said stand; a conductor extending through said bushing; and a coiled spring mounted on the end of said conductor, said spring being comprised of a closed helix and an open helix and the closed portion being secured on said conductor.

3. An electrical feeler for looms comprising: a feeler stand; a feeler member thereon adapted to be actuated in a predetermined manner upon detection of substantial exhaustion of filling; an insulating bushing carried by said stand; a threaded conductor passing through said bushing; a coiled spring on said conductor comprised of a closed helix, and an open resilient part in position to be compressed by said feeler member in completing an electric circuit, said closed part being threaded onto said conductor.

4. An electrical feeler for looms comprising: a feeler stand; a side slipping feeler member mounted thereon; an insulating bushing carried by said stand; an electrical conductor extending through said bushing; and a yielding tip on said conductor in position to be engaged and compressed by said feeler member upon slipping of the same, to complete an electric circuit and effect a predetermined change in the operation of the loom.

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