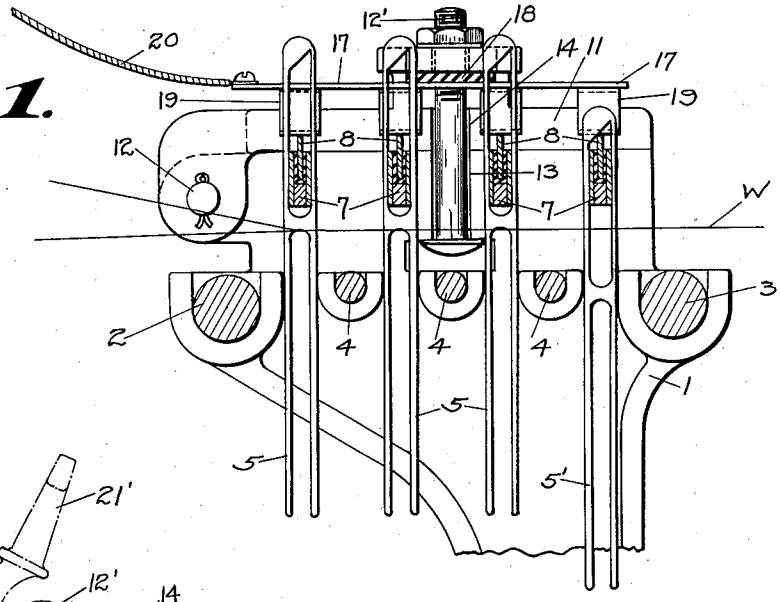
May 30, 1939. C. D. BROWN 2,160,776

ELECTRIC WARP STOP MOTION

Filed Nov. 9, 1938

Fig. 1.



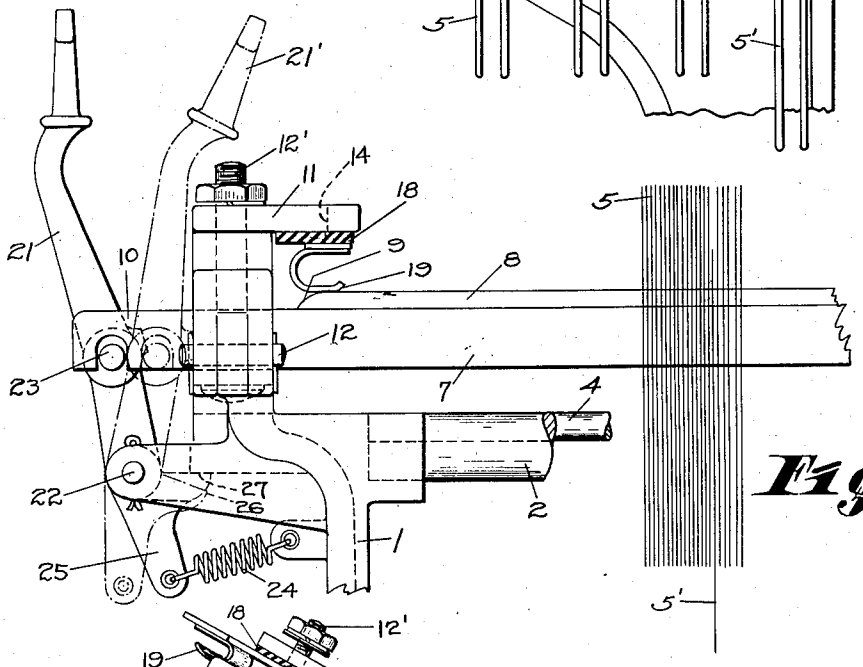


Fig. 2.

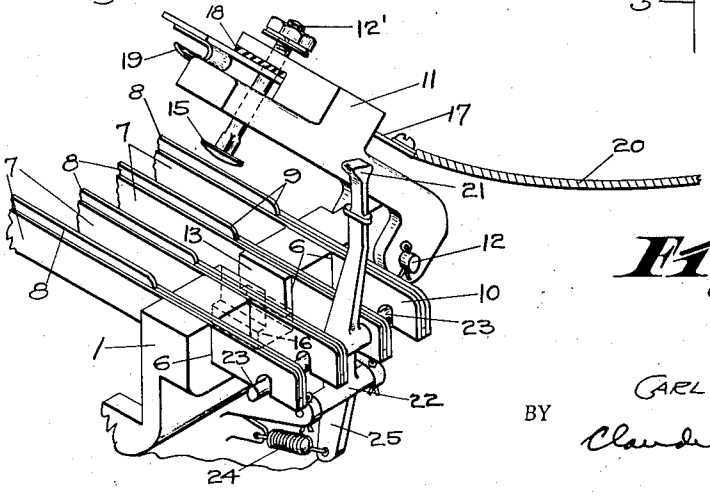


Fig. 3.

INVENTOR.
GAEL D. BROWN.
BY
Claude F. Snider
ATTORNEY.

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ELECTRIC WARP STOP MOTION

Carl D. Brown, Hopedale, Mass., assignor to Draper Corporation, Hopedale, Mass., a corporation of Maine

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6 Claims. (Cl. 139—358)

The present invention pertains to electric warp stop motions for looms and more particularly relates to the construction of the detector bars, and supporting means therefor, of such stop motions.

Electric warp stop motions commonly include detector bars, each consisting of a grounded electrode and an insulated live electrode, electric contact means for supplying electric energy to the live electrodes, and fixed supports for the electrodes and contact means. The construction must be such that the detector bars can be detached from the stop motion at the time when a new warp is to be installed in the loom. Prior constructions have been such that detaching the detector bars is inconvenient, usually involving the disassembling of bolts, springs, or other parts which may be lost or mislaid while the warp is being changed.

It has been proposed to construct such warp stop motions so that the detector bars may be manually reciprocated, to move a fallen drop wire and thus indicate the location of the wire which is down.

A principal object of the present invention is to provide an electric warp stop motion having detector bars as aforesaid, and supporting means for the bars and contact means, which stop motion shall be so constructed that said bars may be conveniently removed or installed without disassembling the stop motion or detaching the parts thereof.

A further object is to provide an electric warp stop motion having fixed supports, detector bars slidably mounted on the supports, and an improved and more convenient manually operable means for reciprocating the detector bars to locate a fallen drop wire.

The foregoing and other objects of the invention are accomplished in the construction illustrated on the accompanying drawing, of which:

Fig. 1 is a view in cross-section of an electric warp stop motion comprising the preferred embodiment of my invention;

Fig. 2 is a view in elevation of one end of said stop motion; and

Fig. 3 is a perspective view of the same.

The drawing shows only one end of my improved electric warp stop motion, such showing being sufficient for an understanding of the present invention. Thus, I have shown only one end bracket 1. This bracket is adapted to be fixed to the loom frame, not shown, at one side of the loom, it being understood that there will be another bracket of suitable construction at the other side of the loom. These brackets support and are connected by front and back supporting rods 2 and 3 which extend widthwise of the loom beneath the warp sheet W. Additional supporting rods 4, 4, for separating the individual banks of drop wires 5, may be provided if so desired.

The bracket 1 is provided with a plurality of upwardly opening slots 6, 6 which are preferably formed in the upper edge of the bracket. Each of the slots is positioned in a vertical plane which extends widthwise of the loom, which is in a direction parallel to the supports 2 and 3. Detector bars of the warp stop motion are supported by the bracket 1 in the slots 6.

The said detector bars are of usual construction in that each consists of a grounded electrode 7 and a live electrode 8 which is supported by and insulated from the grounded electrode. The particular bars shown are, however, of novel construction in that each live electrode 8 terminates and is rounded on its end at 9 while the grounded electrode 7 is longer than the live electrode and has an end portion 10 which extends appreciably beyond the end 9. The electrode 7 consists of a metallic channel, the extended portion 10 of which rests directly in a slot 6. The electrode 8 consists of a flat metal bar which is fixed in the channel of bar 7 and is insulated from the latter in the usual manner. The construction is such that the detector bars may slide longitudinally in the slots, and may be lifted bodily therefrom.

The supporting means for the detector bars includes a bar-retaining member 11 for holding the bars in the slots 6. This member comprises a cap which is movably mounted on the bracket 1, preferably by being pivoted thereto at 12. The pivot 12 is located in front of the detector bars and the cap 11 extends from such pivot rearwardly across or over the slots 6 and over the ends 10 of the grounded electrodes. The cap 11, when closed as in Figs. 1 and 2, will prevent the detector bars from moving vertically but will not interfere with longitudinal sliding movement of the bars. The cap may be fastened in bar-retaining position by a bolt 12' which extends through a slot 13 in bracket 1 and a slot 14 in the cap and which bolt has a head 15 engaging a recess 16 at the bottom of the slot 13. When the bolt 12' is loosened it may be moved, toward the right on Fig. 2, until head 15 comes out of recess 16, whereupon the cap 11 may be lifted or moved about pivot 12 to permit the detector bars to be lifted out of the slots 6.

The bracket 1 is in direct contact with and therefore grounded to the loom frame. The ex-

tended end portions 10 of the electrodes 7 rest directly in the slots and are thereby grounded. Electric energy is supplied to the insulated live electrodes through contact means which, according to my invention, are carried by the cap 11. As shown, a metal plate 17 is fixed to the cap 11 but is insulated therefrom as by a fiber block 18. The plate 17 extends transversely of the detector bars directly above the ends 9 of the live electrodes. Metal contact springs 19 are fixed to the plate 17 and yieldingly bear against the electrodes 8. A wire 20, from a suitable source of electric energy, is electrically connected to the plate 17 and such energy flows through the plate and springs 19 to the live electrodes. The sliding contact between springs 19 and the electrodes will be broken if the latter are moved longitudinally in a direction toward the right on Fig. 2.

During normal operation of the loom, the individual warp threads of the warp sheet W support the drop wires 5 and hold them out of contact with the live electrodes 8. Thus, the circuit which includes wire 20, plate 18, springs 19, the live electrodes 8 and the grounded electrodes 7 is normally open. However, when a warp thread breaks its drop wire 5' falls down into contact with the live electrode and closes the circuit between the electrodes, thereby closing said circuit. This closing of the circuit effects the stopping of the loom through the usual instrumentalities, not shown. It will be seen that the stop motion as thus far described operates in the usual manner, the advantages of my construction being that it is comparatively simple and unusually substantial, and that it is so arranged that the detector bars may be quickly and easily removed or installed without dismantling or disassembling any of the other parts of the stop motion.

The warp stop motion shown is further provided with novel manually operable means for reciprocating the detector bars endwise to move a fallen drop wire and thereby indicate the location of such wire. It will be noted that the detector bars are smooth and therefore have only frictional engagement with the fallen drop wire. I find that such frictional engagement is sufficient, if the detector bars are reciprocated far enough, and said manually operable means is accordingly constructed in a manner to conveniently accomplish this purpose.

To the end mentioned, the aforesaid manually operable means comprises a lever 21 which may be pivoted to the bracket 1 at 22. The pivot 22 is below the detector bars. The lever 21 extends from said pivot upwardly between the projecting ends 10 of the bars to a point well above the bars and above the top of the cap 11. Suitable connections between the lever 21 and the detector bars may consist of lateral arms 23 which are carried by the lever and which loosely engage in slots in the bottom of extensions 10. It will be seen that this lever is convenient to manipulate manually, and that it is so arranged that the detector bars may be reciprocated endwise a substantial distance.

The stop motion is preferably provided with suitable spring means, such as spring 24 for yieldingly urging the lever 21 in a direction to pull the detector bars toward the left in Fig. 2. This spring 24 is a coiled tension spring which has one end fastened to the bracket 1 and its other end fastened to the lower arm 25 of the lever 21. The spring acts to yieldingly hold the lever in such position that extension 26 thereon engages a stop surface 27 on the bracket 1. In this position of the lever, the contact springs 19 engage the live electrodes 8 as shown. The spring 24 will yield to permit the lever 21 to be moved to dotted line position 21', Fig. 2.

Having fully disclosed the preferred embodiment of my invention, I claim:

1. In an electric warp stop motion, the combination of a supporting bracket having upwardly opening slots therein, detector bars removably supported in said slots, each of said bars comprising a grounded electrode and a live electrode supported by and insulated from said grounded electrode, a bar-retaining member normally extending across said slots in position to hold said bars therein, and contact means for supplying electric energy to said live electrodes, said means being supported by and movable with said member, and said member being movably mounted on said bracket for movement away from bar-retaining position to thereby permit said bars to be lifted out of said slots.

2. In an electric warp stop motion, the combination of a fixed end bracket having slots in its upper edge, detector bars having their ends removably supported in said slots, each of said bars comprising a grounded electrode and a live electrode supported by and insulated from said grounded electrode, a bar-retaining cap pivoted to said bracket for movement to and from bar-retaining position, and a series of spring contacts supported by said cap and insulated from said grounded electrodes, each of said contacts engaging one of said live electrodes when said cap is in bar-retaining position.

3. In an electric warp stop motion, the combination of a fixed end bracket having slots in its upper edge, detector bars removably and slidably supported in said slots, each of said bars comprising a grounded electrode and a live electrode supported by and insulated from said grounded electrode, a bar-retaining cap pivoted to said bracket and normally extending across said slots in position to retain said bars therein, said cap being movable away from said position to thereby permit said bars to be lifted out of said slots, contact means carried by said cap for supplying electric energy to said live electrodes, and a manually operable lever for sliding said bars endwise in said slots, said lever being pivoted to said bracket.

4. In an electric warp stop motion, the combination of a fixed end bracket having slots in its upper edge, detector bars slidably supported in said slots, each of said bars comprising a grounded electrode and a live electrode supported by and insulated from said grounded electrode, a bar-retaining cap holding said bars in said slots while permitting the bars to slide longitudinally, electric contact means carried by said cap for supplying electric energy to said live electrodes, and a manually operable lever supported by said bracket and connected to said bars for sliding the latter endwise to thereby move a fallen drop wire.

5. In an electric warp stop motion, the combination of a fixed end bracket having slots therein, detector bars slidably supported in said slots, each of said bars comprising a grounded electrode and a live electrode supported by and insulated from said grounded electrode, spring contact means having sliding engagement with said live electrodes, a manually operable lever pivoted to said bracket and connected to said bars for reciprocating the latter longitudinally,

a stop on said bracket engaging said lever for limiting movement of the latter in one direction, and a spring connected to said lever and yieldingly urging the same against said stop.

6. In an electric warp stop motion, the combination of a fixed end bracket having slots therein, detector bars slidably supported in said slots, each of said bars comprising a grounded electrode sliding directly in its respective slot and a live electrode supported by and insulated from said grounded electrode, said grounded electrodes having end portions extending beyond the ends of said live electrodes, a bar-retaining cap supported by said bracket, spring contact members supported by and insulated from said cap, said contact members having sliding engagement with said live electrodes for supplying electric energy thereto, a manually operable lever pivoted to said end bracket, and connections between said lever and said bars for reciprocating the latter, said connections comprising arms carried by said lever and engaging said projecting end portions of said grounded electrodes.

CARL D. BROWN.