

A. KEAN.
WARP STOP MOTION.
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1,013,021.

Patented Dec. 26, 1911.

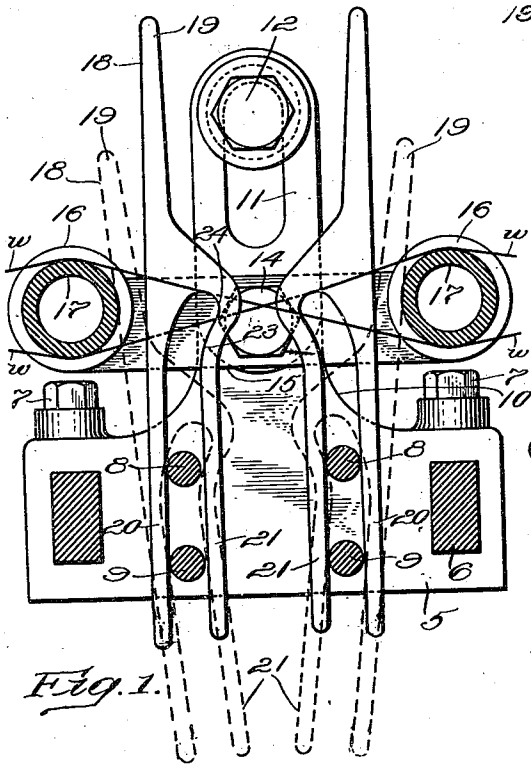


Fig. 1.

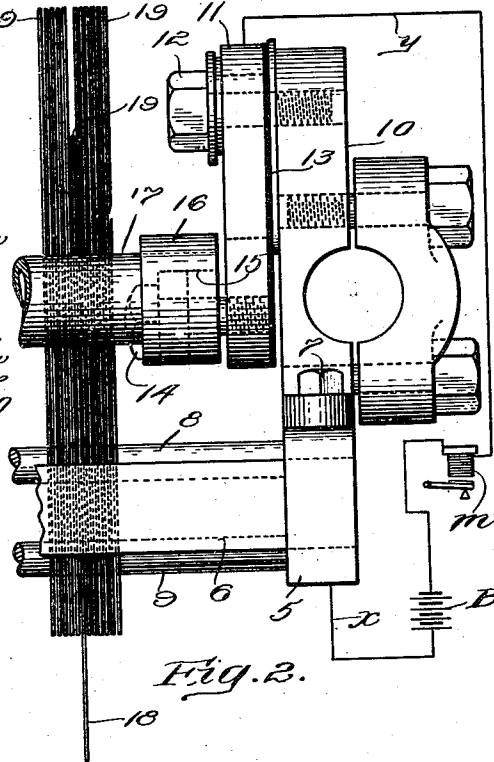


Fig. 2.

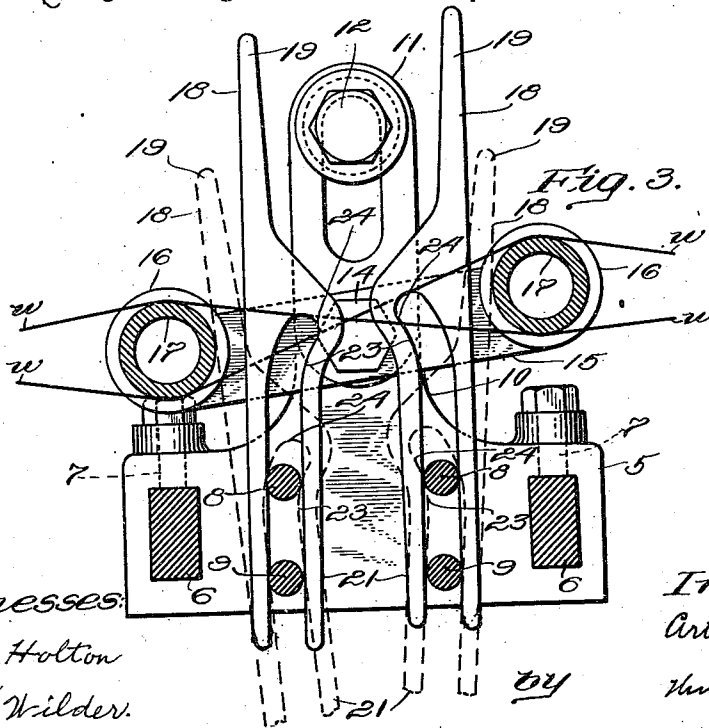


Fig. 3.

Witnesses:

S. L. Holton

E. H. Wilder.

Inventor:

Arthur Kean

Henry J. Miller
Att'y.

UNITED STATES PATENT OFFICE.

ARTHUR KEAN, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO AMERICAN TEXTILE APPLIANCES COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MAINE.

WARP STOP-MOTION.

1,013,021.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ARTHUR KEAN, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Warp Stop-Motions, of which the following is a specification, reference being had to the accompanying drawings, forming part thereof.

This invention has reference to improvements in warp stop motions for looms and relates more particularly to improvements in electrical warp stop motions without being limited thereto.

One object of this invention is to improve the construction of warp stop motions relative to the manner of sustaining the drop bars or devices.

Another object of the invention is to so construct a warp stop motion for looms having lease rods movable with the rise and fall of the warp that the drop bars or devices may follow the movement of such lease rods and, where such lease rods form terminals of an electrical circuit, be always in position to move into contact with such lease rods upon the failure of a warp thread to sustain its drop bar.

Other objects of this invention will appear from the following description.

The invention consists in the novel warp stop motion as hereinafter fully described and pointed out in the claims.

Figure 1, represents a cross sectional view of portions of a loom illustrating the new invention. Fig. 2, represents an elevation of parts of the same. Fig. 3, represents a sectional view similar to Fig. 1 illustrating relative positions of the drop bars and the terminals of an electric circuit under movement of the lease rods.

Similar numbers of reference designate corresponding parts throughout.

As shown in the drawings, in its preferred form, 5 indicates a bracket, one of a pair on which the terminals of an electric circuit are or may be mounted. These brackets 5 may form part of the loom frame or may be attached thereto and have sockets in which the ends of the stay bars 6—6 are secured by the set screws 7—7. In said brackets are supported the terminal rods 8, 8 and 9, 9 arranged in pairs the office of which will hereafter be pointed out. The upper portions of said brackets are connected to form the members 10 to which the

slotted plates 11 are adjustably secured by bolts 12 passing through the slots in said plates 11 and through the electric insulation 13 and secured in the members 10, said plates 11 being thus secured to but electrically insulated from the brackets 5. The plates 11 and the brackets 5 are connected with the electric circuit $x-y$ which includes the battery B, or other source of electrical energy, and magnet M of any suitable and well known loom stopping mechanism such as that shown and described in Letters Patent to A. P. S. Macquisten, No. 724,307, March 31, 1903.

On pivots 14—14 secured in the lower ends of plates 11 mounted cross bars 15, 15 having at their ends socket members 16, 16 in which the ends of the lease rods 17, 17 are mounted. These lease rods are preferably made of or are covered by brass or other material adapted to conduct electrical energy or to form part of an electrical circuit and hence each of said lease rods 17, 17 forms one terminal of the electric circuit $x-y$ while a pair of the rods 8, 9 form the other terminal thereof.

The drop bars preferably used in this warp stop motion, but which in their specific construction do not necessarily form part of the present invention or limitation thereof, are similar to the drop devices described in the Patent to E. Barnes, No. 851,337, April 23, 1907 and are formed of thin sheet metal having preferably the straight edge 18 extending from the upper end of the visual signal arm or detector 19 approximately to the lower end of arm 20 the main portion of which extends in line with said arm 19. Arm 21 extends, for the greater portion of its length, parallel with arm 20 but, at its upper portion curves away from said arm 20 to form the curved shoulder 23 while the space between said arms, following the curve of said shoulder forms the clearance opening 24. In the drawings the edge of arm 20 is curved in a line with shoulder 23 of arm 21 and while this structure is preferred it is not necessarily essential to the operation of the drop bar in its movement out of line with the pair of terminals 8, 9 as will hereafter be described.

In setting up a warp on a loom provided with this warp stop motion the warp threads w, w are crossed as shown in Figs. 1 and 3 of the drawing, with their crossing approxi-

mately coincident with the axis on which the cross bars 15 swing but preferably at points slightly above said axis, as shown. The upper reach of each of the warp threads *w, w* between the lease rods 17, 17 and said crossing point is now supplied with a drop bar or circuit closing device by passing said drop bar downward over the warp thread, which enters the space between arms 20 and 21 and then allowing the drop bar to drop into place on said warp thread as appears in Figs. 1 and 3 of the drawing. When the drop bar thus drops into place on a warp thread said drop is engaged by the warp thread at the upper edge of the clearance extension 24 and at a point out of the vertical median line of the drop bar so that the tendency is for the drop bar to swing, on said warp thread, in the direction toward which the drop bar is overbalanced or overweighted, that is, toward the associated lease rod 17, this tendency of movement being emphasized by the signal arm 19 acting as a counterweight located at the other side of said vertical median line of the drop from said point of support. Such tendency of the drop bar to swing on its warp thread in the circuit closing direction is of course resisted by the edges of its arms bearing against the terminals 8, 9 with which it is in association and which may represent approximately the vertical median line of the drop bar. With all of the warp threads thus supplied with drop bars the loom is set in motion and, under the rise and fall of the warp, the lease rod terminals 17, 17 swing with the cross bars 15, and the drop bars, sustained on said upper reaches of the warp threads, move upward and downward in parallel paths, as indicated in full lines in Fig. 3 of the drawings while the lease rod terminals 17, 17 in this movement, describe arcs relative to the contact edge of said drop bars, and cooperate with said drop bars, when a warp thread breaks or becomes unduly loose, to complete the electric circuit *x-y*. When a warp thread breaks or becomes unduly loose the drop bar, normally sustained by such thread, moves downward by gravity and tends to fall toward its related lease rod terminal 17, 17. In such downward movement of the drop bar the shoulder 23 ultimately rides against the terminal 8 and the lateral clearance 24 is brought to position to receive such terminal whereupon the drop bar swings on the fulcrum formed by the terminal 9 and the upper part or signal 19 of the drop swings toward, and finally into contact with its lease rod terminal to complete the electric circuit between one or both of the rods 8 or 9 and the lease rod terminal 17, while the signal arm 19 being out of line with the normally supported bars forms a visual signal to indicate the particular thread which requires attention, this iden-

tification of the broken or loose thread being emphasized by the movement of the normally supported drop bars relative to the fallen drop bar under the rise and fall of the warp. With any of the drop bars in the circuit closing position shown in broken lines in Figs. 1 and 3 the lease rod terminals 17 in their movement with the warp, effect wiping contacts with the edges 18 of said drop bars and such action tends to effect a similar action of the arms 20 or 21 on one or both of the terminals 8, 9.

It is evident that the terminals mounted to move with the cross bars 15 need not necessarily form lease rods and various other modifications of the mechanism may be made without departing from the spirit of the invention.

Having thus described my invention I claim as new and desire to secure by Letters Patent.

1. A warp stop motion for looms comprising a lease rod movably mounted and forming the terminal of an electric circuit, a fixed terminal connected in said circuit and a series of circuit closing bars mounted on threads supported by said lease rod and having a sliding engagement with said fixed terminal.

2. A warp stop motion for looms comprising a pair of lease rods, for crossing the warp, movably mounted and forming terminals of an electric circuit which includes an electrically actuated member of a loom stopping mechanism, a pair of terminals fixed below and between said lease rods and connected with said electric circuit, and two series of circuit closing drop bars sustained on the upper reaches of the warp and sliding in engagement with said fixed terminals.

3. A warp stop motion for looms comprising a pair of lease rods dividing the warp into sheets and forming terminals of an electric circuit which includes an electrically actuated member of a loom stopping mechanism, a pair of fixed terminals connected with said circuit, and circuit closing drop bars engaged with said warp threads between said terminals at points out of the median lines of said drop bars and in engagement with said fixed terminals.

4. A warp stop motion for looms comprising pivoted supports, lease rods mounted on said supports and adapted to effect crossing of the warp threads at a point approximately coincident with the axis on which said supports swing, an electric circuit, of which said lease rods form terminals, which includes the electrically actuated member of a loom stopping mechanism, fixed terminals located below and between said lease rods and connected with said circuit, and circuit closing drop bars supported by the warp between said lease

rods and the crossing point of the warps said drop bars extending above and below said warps and being slidably engaged with said fixed terminals.

5 5. A warp stop motion for looms comprising pivoted lease rod supports, lease rods mounted thereon and adapted to effect the crossing of the warps, said lease rods forming terminals of an electric circuit which in-
10 cludes the electrically actuated member of a loom stopping mechanism, fixed terminals for said electric circuit located between said lease rods and the axis on which their supports swing, and below the same, and circuit closing drops slidably engaged with
15 the warp at points between the vertical lines of said fixed terminals and the axis on which said lease rod supports swing.

6. A warp stop motion for looms comprising pivoted supports, lease rods mounted
20 on said supports and forming the terminals of an electric circuit which includes the electrically actuated member of a loom stopping mechanism, said lease rods dividing
25 the warp into sheets, circuit closers supported on the warp threads and adapted, upon the failure of the warp to contact with said lease rods, and fixed means, in electrical connection with said circuit, with which
30 said circuit closers are engaged to resist the circuit closing movement of said circuit closers under normal conditions of the warp.

7. A warp stop motion for looms comprising a lease rod movably mounted, a guide
35 fixed with reference to said lease rod, an electric circuit connected with said lease rod and guide and including the electrically actuated member of a loom stopping mechanism, and a circuit closer mounted to slide
40 and swing on said guide and adapted to be sustained by an unbroken warp thread in sliding relation with said guide.

8. A warp stop motion for looms comprising a circuit closer and means to guide the
45 same vertically, said circuit closer extend-

ing above the path of the warp and having means engaging the warp, a lease rod mounted to swing with reference to the vertical path of said circuit closer, and an electric
50 circuit connected with said guide and said lease rod and including the electrically actuated member of a loom stopping mechanism.

9. A warp stop motion for looms comprising pivoted supports, lease rods mounted
55 thereon and adapted to divide the warp in sheets with the crossing thereof approximately coincident with the axis on which said supports swing, drop bars engaged with the warp between the lease rods and
60 the crossing of said warp and extending above and below the path of the warp, and means for guiding said drop bars vertically in parallel paths during the rise and
65 fall of the warp.

10. A warp stop motion for looms comprising a terminal formed by two rods fixed
one above the other, a movable lease rod terminal, an electric circuit connected with
70 such terminals and including the electrically actuated member of a loom stopping mechanism, and a circuit closer having a longitudinal slot, engaged with said first
mentioned terminal, and a clearance extension, of said slot, adapted to receive one of
75 said terminal rods, when said circuit closer moves sufficiently to permit the swinging of the upper portion of said circuit closer toward said lease rod.

11. A warp stop motion for looms comprising a pivoted support, a pair of lease
80 rods mounted thereon and adapted to divide the warp in sheets crossed between said rods, drop bars mounted on said warp and having a loom stopping motion toward said
85 lease rods, and means for resisting such loom stopping movement of said drop bars under normal conditions.

ARTHUR KEAN.

Witnesses:

H. J. MILLER,
E. H. WILDER.