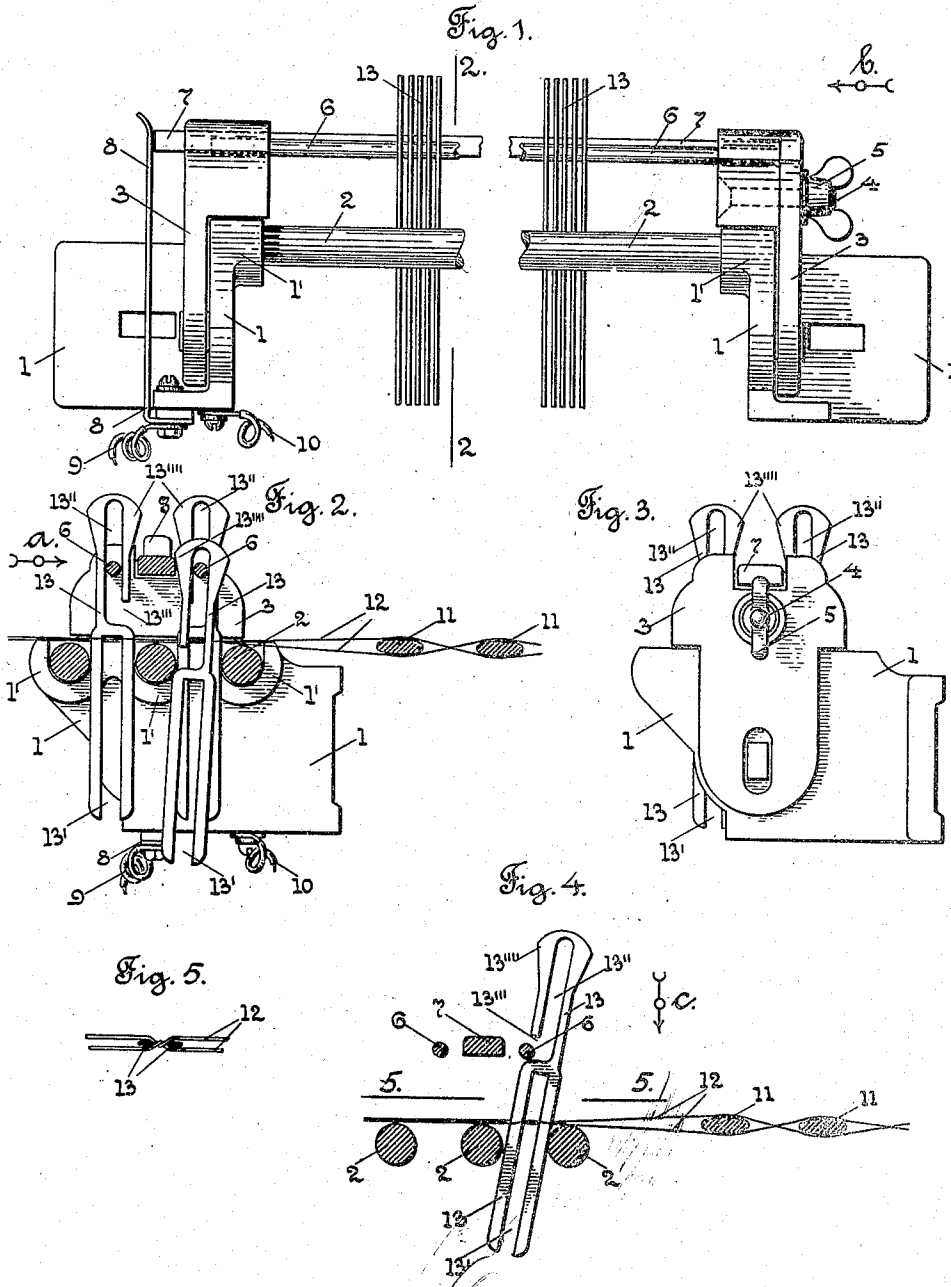


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 WARP STOP MOTION FOR LOOMS.
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WARP STOP-MOTION FOR LOOMS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HORACE WYMAN, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Warp Stop-Motions for Looms, of which the following is a specification.

My invention relates to warp stop motions for looms, and to that class of warp stop motions in which there are one or more sets or series of drop devices or detectors, and a drop device or detector for two warp threads, which is normally supported on or by two warp threads. The breaking of either warp thread allows the drop device or detector to move into operative position, to operate means for stopping the loom; and my invention particularly relates to the shape or construction of the drop devices or detectors, and the combination thereof with the guide rods, and other parts of the warp stop motion.

The object of my invention is to provide an improved warp stop motion of the class referred to.

My improvements are particularly adapted for, and are preferably used in, warp stop motions where electricity is employed, which warp stop motions are termed electric warp stop motions, but my improvements may be employed in connection with mechanical warp stop motions.

I have only shown in the drawing detached portions of a warp stop motion of the class termed electric warp stop motions in which electricity is used, with my improvements combined therewith, sufficient to enable those skilled in the art to understand the construction and operation thereof.

Referring to the drawing:—Figure 1 is a front view of detached portions of an electric warp stop motion, broken out through the center, looking in the direction of arrow *a*, Fig. 2. The warp threads are not shown in this figure. Fig. 2 is a section, on line 2, 2, Fig. 1, looking in the direction of arrow *b*, same figure; the warp threads and lease rods are shown in this figure. Fig. 3 is an end view of the parts shown at the right in Fig. 1, looking in the direction of arrow *b*, same figure. Fig. 4 shows the lease rods, warp supporting rods, guide rods, and terminal in section, as shown in Fig. 2, and also shows a drop device or detector in a position pre-

paratory to being put into operative position, shown in Fig. 2, or preparatory to being removed from engagement with the warp threads, and, Fig. 5 is a section, on line 5, 5, Fig. 4, looking in the direction of arrow *c*, same figure, showing the manner of supporting a drop device or detector on two of the warp threads, so that the breaking of either warp thread will allow the drop device or detector to drop down.

In the accompanying drawing, 1 are the end stands of the warp stop motion, adapted to be secured in a fixed position on the loom frame. The stands 1 have in this instance on their upper edge three recessed portions 1' for the warp supporting rods or bars 2, in this instance three in number.

3 are the end-frames of the warp stop motion, which may be vertically adjustable on the stands 1, and are attached thereto in this instance by a bolt 4 and thumb nut 5. The end-frames 3 have secured thereto the guide rods 6, in this instance two in number, and have a central recess therein for the bar 7 forming one terminal of an electric circuit; said bar or terminal 7 is properly insulated from the end-frames 3, and is connected by a bar or spring blade 8 with a wire 9, leading to a battery, or other source of electric supply, not shown.

The two guide rods 6 form the other terminal of the electric circuit, and are connected by a guide wire 10 with the battery, not shown.

11 are the lease rods, which in this instance are used, and which divide the warp threads 12, as they pass from the beam, not shown, into two groups or sets, which cross each other intermediate the lease rods 11, as shown, and both groups pass over and rest upon the warp supporting rods 2. There are in this instance two sets or series of drop devices 13, shown extending in two parallel rows, and each set or series extends between two of the warp supporting rods or bars 2, which retain the drop devices in position, in the direction of the length of the warp threads. Each drop device 13 is preferably made of thin metal, and has a longitudinally extending open end slot 13' in its lower portion, and a longitudinally extending slot or opening 13'' in its upper portion, with an opening 13''' leading out therefrom, preferably on one side of the device, at the lower end of the opening 13''. The upper end of

the drop device or detector 15 is preferably made wider and with the inclined edges 13''', as shown.

There is a drop device or detector 13 for two warp threads, or a pair of warp threads, and each drop device or detector 13 is preferably combined with two warp threads, or a pair of warp threads, by crossing said warp threads, and inserting between said warp threads the lower end of the drop device, and combining the lower slotted end of said drop device with the two warp threads in such a manner that one warp thread of a pair will be upon one side of the drop device, and the other warp thread of the pair will be on the other side of the drop device, as shown in Fig. 5, so that in case either one of a pair of warp threads breaks the drop device will move downwardly, and be guided by the guide rod 6, extending through the slotted opening 13'' in the upper portion of the drop device, so that the upper end of the drop device will be brought in contact with the terminal bar 7, and through its contact with the guide rod 6, the other terminal, as shown at the right in Fig. 2, will close the circuit, and put into operation means of any usual and ordinary construction, not shown, for stopping the loom.

By means of the opening 13''' leading out from the slotted opening 13'' in the upper portion of the drop device or detector 13, the drop device is readily and quickly applied to the warp threads and connected with a guide rod 6, by applying the drop device to a pair of warp threads in the manner above described, and then raising the drop device as shown in Fig. 4, until the opening 13''' from the opening 13'' in the upper portion of the drop device, is in line with the guide rod or terminal 6, as shown in Fig. 4, and then moving the drop device to cause the guide-rod 6 to enter through the opening 13''' into the slot or opening 13'', and then lowering the drop device until it rests on the warp threads, as shown at the left in Fig. 2.

In order to remove a drop device, it is only necessary to raise the same until the opening 13''' from the slot or opening 13'', is in line with a guide rod or terminal 6, and then move the drop device to cause the guide rod or terminal 6 to pass out through the opening 13''', as shown in Fig. 4, leaving the drop device or detector free to be removed.

The advantages of my improvements will be readily appreciated by those skilled in the art.

I provide a drop device or detector for

warp stop motions of the class referred to, which may be readily applied to, or removed from the warp threads, and combined with the other parts of the warp stop motion without removing any of the parts of the warp stop motion, or interfering with the arrangement of the warp threads.

I have shown my improvements combined with an electric warp stop motion, but they may be used in connection with mechanical warp stop motions, if preferred.

It will be understood that the details of construction of my improvements may be varied if desired.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a warp stop motion, the combination with a plurality of warp supporting rods or bars, over which all of the warp threads pass, and rest on said rods or bars, of drop devices extending between said rods or bars, and maintained in position by said rods or bars, each drop device engaging two warp threads, and having an open end slot in its lower part, and a separate slot or opening in its upper part, and an opening leading out from one side thereof.

2. In a warp stop motion, the combination with a plurality of warp supporting rods or bars, over which all of the warp threads pass, and rest on said rods or bars, of drop devices extending between said rods or bars, and maintained in position by said rods or bars, each drop device engaging two warp threads, and having an open end slot in its lower part, and a separate slot or opening in its upper part, and an opening leading out from one side thereof for the passage of a guide rod or bar, and said guide rod or bar.

3. In a warp stop motion, a drop device or detector, supported by a plurality of warp threads, and having an open end slot in its lower part, and a separate slot or opening in its upper part, and a side opening leading out therefrom for the passage of a guide rod or bar, and said rod or bar.

4. A drop device or detector for a warp stop motion, to be supported by a plurality of warp threads, and having an open end slot or opening in its lower part, and a separate slot or opening in its upper part, and a side opening leading out from the slot or opening in its upper part, for the passage of a guide rod or bar.

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