No. 733,077. PATENTED JULY 7, 1903.

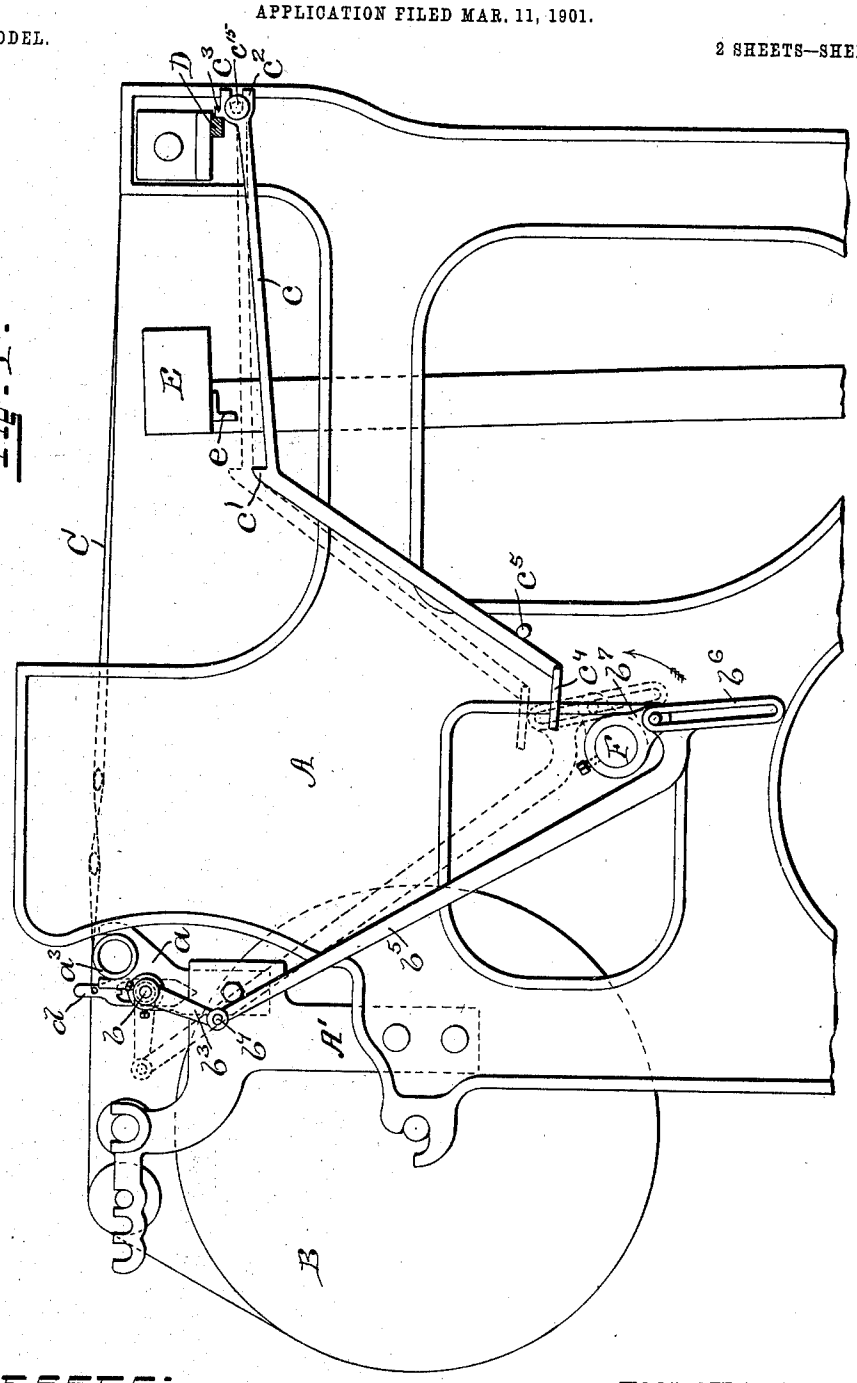
H. A. OWEN.

WARP STOP MOTION FOR LOOMS.

APPLICATION FILED MAR. 11, 1901.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 2

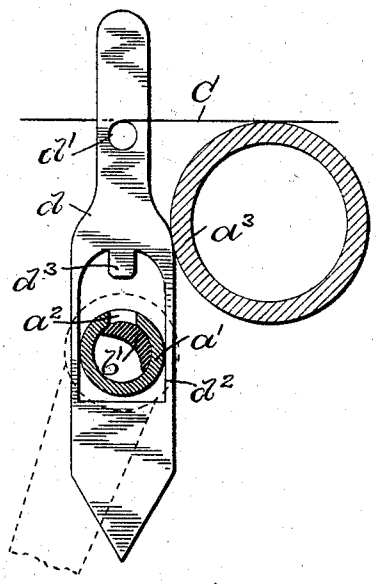


Fig. 3.

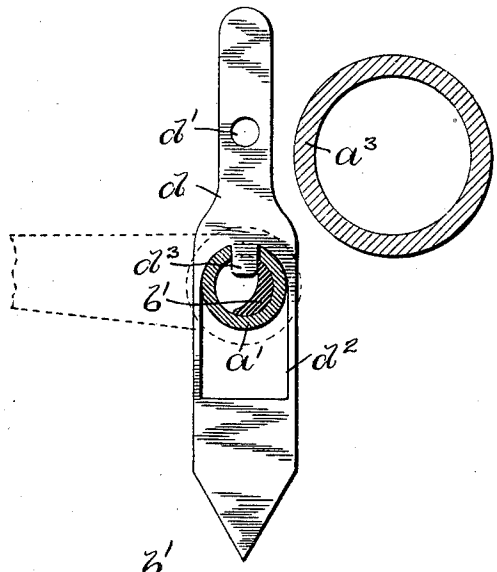
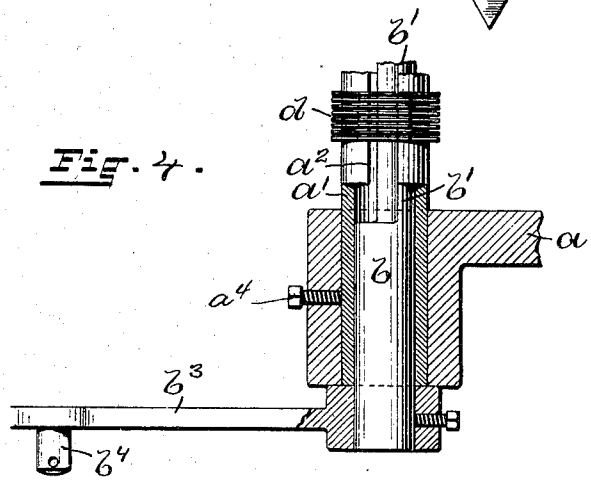


Fig. 4.



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UNITED STATES PATENT OFFICE.

HENRY A. OWEN, OF WHITINSVILLE, MASSACHUSETTS, ASSIGNOR TO THE WHITIN MACHINE WORKS, INCORPORATED, OF WHITINSVILLE, MASSACHUSETTS.

WARP STOP-MOTION FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 733,077, dated July 7, 1903.

Application filed March 11, 1901. Serial No. 50,667. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. OWEN, a citizen of the United States, residing at Whitinsville, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Warp Stop-Motions for Looms, of which the following is a specification.

This invention has reference to an improvement in mechanism for automatically stopping the loom when a warp-thread breaks.

Figure 1 is an end view of part of a loom, showing an improved warp stop-motion in connection with the same. Fig. 2 is a side view, partly in section, of the detector part of the warp stop-motion, showing one of the detector-plates suspended from a warp-thread in the normal position. Fig. 3 is a side view, partly in section, of the same parts as in Fig. 2 in the operative position when the warp-thread supporting the detector-plate has broken. Fig. 4 is a top view, partly in section, of one end of the feeler of the stop-motion, showing the bracket, the tube supported therein, the detector-plates, the rocking bar, and the lever secured to the rocking bar.

Similar marks of reference indicate corresponding parts in all the figures.

In the drawings, A indicates the end frame of the loom; B, the warp-beam; C, the warp; D, a member of the loom stop mechanism, preferably the arm, by which the shipper-lever is secured; E, the lay, and F the cam-shaft. The bracket a, as shown, is secured to the whip-roll stand A', which is attached to the end frames, there being one on each end frame; but the bracket a may form a part of the whip-roll stand A'. The tube a' extends from the bracket a on one end of the loom to the bracket a on the other end and is secured in the bracket by the set-screw a^4, so as to be firmly held against longitudinal and rotary movement. The tube a' has the slot a^2 in its upper side, the said slot extending practically the length of the loom across the width of the warp. The stop a^3, preferably consisting of a tube, is also supported at the opposite ends on the brackets a a. Within the tube a' is supported the rocking bar b, preferably formed of the crescent-shaped section b' with round ends, one of which projects beyond the end of the tube a'. To the projecting end of the rocking bar the lever b^3, having at its free end the pivot b^4, is secured. On the pivot b^4 the connector b^5, provided at its lower end with the slotted link b^6, is supported. The link b^6 engages with a pin on the crank b^7, secured to the cam-shaft F.

The bar c, provided with the shoulder c', has at the front end a fork c^2, supported on a stud c^{15}, projecting from the end frame, and is provided with the knock-off stud c^3, bearing on the knock-off lever D, which holds the shipper-lever in the operative position. A bracket e is secured to the lay, which when the bar c is raised may engage with the shoulder c'.

I do not wish to confine myself to the exact construction and arrangement of the part of the bar c, connecting with the knock-off mechanism, as the same may be modified to best suit the knock-off mechanism of the loom.

The rear end of the bar c extends obliquely downwardly and has at its lower end the plate c^4. The bar c, supported at the front end on the stud and bearing on the stop-lever D, is supported at the oblique rear part on the pin c^5.

A series of detector-plates d, having the opening d', are supported on the individual warp-threads. These detector-plates d, usually made of thin sheet-steel, have the opening d^2 of a width slightly greater than the diameter of the tube a' and of a vertical length greater than the diameter of the tube a'. The upper end of the opening d^2 is contracted toward the center on curved lines corresponding with the tube a' against the stop d^3, projecting into the opening and formed to enter the slot a^2 in the tube a'.

When the loom is in its normal operation, the series of detector-plates d are suspended from the series of warp-threads and are held in the vertical position by the tube a' and the stop a^3 against the strain in taking up the warp.

The rocking bar b rocks in the tube a', so that the crescent part of the bar passes under the slot a^2, as is shown in Fig. 2, and to one side of the slot, as is shown in Fig. 3.

The operation of the rocking bar b is produced by the rotation of the crank b^7, which carries the link b^6 and the lower end of the

connector b^5 around and past the plate c^4 in the direction indicated by the arrow in Fig. 1, thereby moving the lever b^3 from the position shown in solid lines to the position shown in broken lines in Fig. 1, and vice versa. When now a warp-thread breaks, the detector-plate connected with the thread drops, the stop d^3 enters the slot a^2 and rests on the crescent portion of the rocking bar b until the lever b^3 is in the position shown in broken lines in Fig. 1, when the stop d^3 drops in front of the crescent-shaped section of the rocking bar and locks the same, as is shown in Fig. 3, and with it the lever b^3. The connector b^5 swings now on the pivot b^4, and as the crank b^7 revolves the pin on the crank slides in the link b^6 and carries the upper end of the link under the plate c^4, moving the link b^6, the connector b^5, and the bar c into the position shown in broken lines in Fig. 1, where near the backward swing of the lay the bracket e encounters the shoulder c', draws back the bar c, and operates the stop mechanism to stop the loom.

In piecing up the broken warp-thread the detector-plate may be swung sufficiently on the tube a' to bring the opening d' to the rear of the adjacent plates to facilitate the insertion of the warp.

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

1. In a warp stop-motion for looms, the combination with a series of detector-plates provided with stops and supported individually by a warp-thread, of a slotted tube rigidly secured to the end frames, a rocking bar in the slotted tube, means, comprising a swinging connector, having a link connected with a crank, the crank, and connections with the loom stop mechanism operated by the link when a warp-thread is broken, and means connected with the lay whereby the loom is stopped, as described.

2. In a warp stop-motion for looms, the combination with the detector-plates supported on the warp-threads and provided with openings, the longitudinally-slotted tube extending through the openings in the detector-plates, the stop a^3 supported on the brackets a a, the rocking bar, a swinging connector pivotally connected to the rocking bar by a lever and having a link, the lever, means controlling the movement of the connector and link, means connected with the lay and means operated by the connector and link for stopping the loom, as described.

3. In a warp stop-motion, in combination with a longitudinally-slotted tube secured against rotation, a rocking bar in the slotted tube, detector-plates provided with a stop adapted to enter the slot of the tube, a lever on one end of the rocking bar, a connector pivoted on the lever at one end and provided with an open link on the other end, a crank on the cam-shaft, the pin of the crank controlling the movement of the link, and means operated by the link and connector for stopping the loom when a warp-thread breaks, as described.

4. In a warp stop-motion for looms, the combination with a series of detector-plates supported by the warp-threads, and having the openings d^2 and the stops d^3 therein, the slotted tube a', means for securing the tube against rotation, the rocking bar b', mechanism connected with the rocking bar to operate the same, the bar c, the loom stop devices, means for swinging the said bar c into engagement with the loom stop mechanism when a warp-thread breaks, as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY A. OWEN.

Witnesses:
J. A. MILLER, Jr.,
A. E. HAGERTY.