

Oct. 7, 1930.

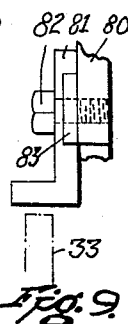
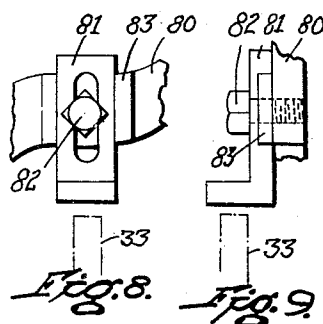
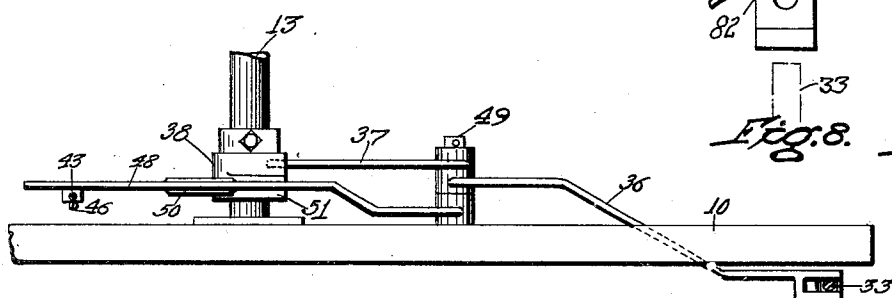
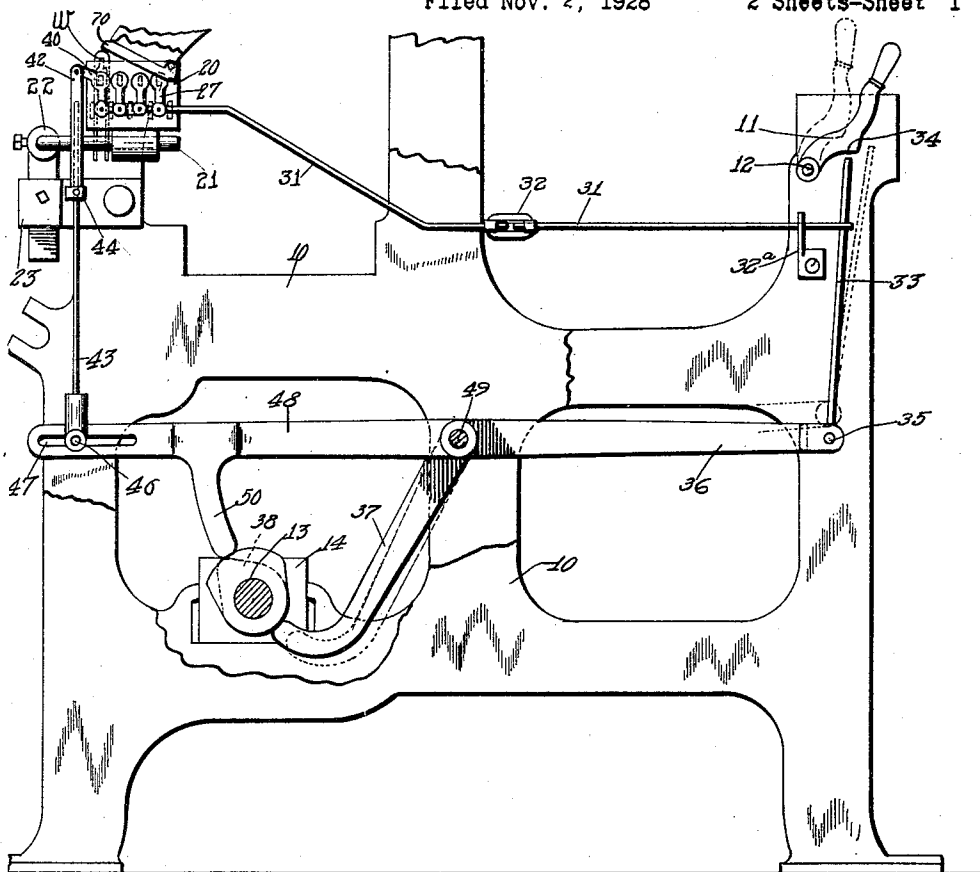
**J. REGAN**

**1,777,381**

WARP STOP MOTION

Filed Nov. 2, 1928

2 Sheets-Sheet 1



INVENTOR  
JOHN HEGAN

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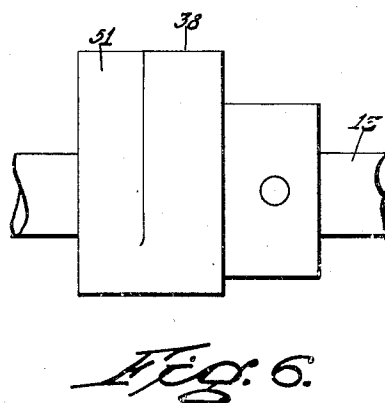
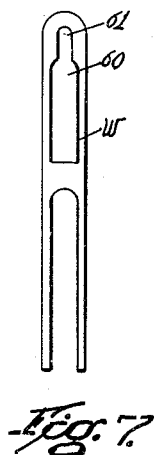
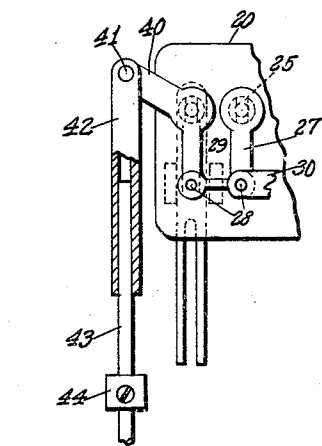
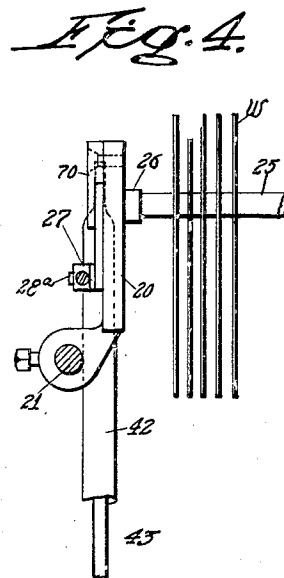
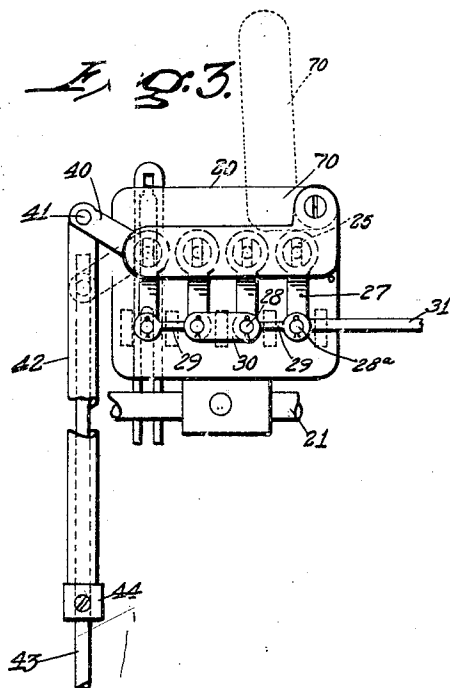
J. REGAN

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WARP STOP MOTION

Filed Nov. 2, 1928

2 Sheets-Sheet 2



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## UNITED STATES PATENT OFFICE

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## WARP STOP MOTION

Application filed November 2, 1928. Serial No. 316,832.

This invention relates to a stop motion for use in stopping a loom upon breakage or slackness of one or more warp threads. This general type of stop motion is shown in my prior patent, Reissue No. 14,829, dated March 30, 1920.

It is the object of my present invention to improve and simplify the construction of the stop motion shown in my prior patent, making the same less expensive to manufacture and more reliable and effective in operation.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claims.

A preferred form of the invention is shown in the drawings in which

Fig. 1 is a side elevation of parts of a loom having my improvements applied thereto;

Fig. 2 is a plan view of the same parts;

Fig. 3 is an end view of the stop motion;

Fig. 4 is a front elevation thereof;

Fig. 5 is a detail view similar to Fig. 3, but showing the parts in a different position;

Fig. 6 is a side elevation of an actuating cam;

Fig. 7 shows one of the drop wires used with my improved stop motion; and

Figs. 8 and 9 are detail side and front elevations showing a slight modification.

Referring to the drawings, I have shown parts of a loom including a loom frame 10, a shipper handle 11 pivoted at 12, and a bottom or cam shaft 13 rotatable in bearings 14 in the loom frame.

My improved stop motion comprises end members 20 (Figs. 3 and 4) secured on forwardly projecting rods 21, which in turn are mounted in supports 22 which are vertically adjustable in brackets 23 fixed to the loom frame.

A plurality of vibrator rods 25 (Fig. 4) of noncircular cross section are mounted in bushings 26 rotatable in the end members 20. Each bushing 26 has an arm 27 connected thereto, which is provided with a pivot stud 28 at its lower end. These pivot studs 28 are connected by links 29 and 30, and the for-

ward stud 28<sup>a</sup> is connected to a two-piece rod 31, which may be adjusted in length by a turn-buckle 32 (Fig. 1). At its forward end, the rod 31 is supported in a bearing 32<sup>a</sup> and is provided with an eye through which extends a substantially vertical rod 33.

The shipper handle 11 has a shoulder 34 overlying the upper end of the rod 33 when the latter is in its rearward or normal position. The rod 33 is pivoted at 35 to the front end of a lever 36, having a depending arm 37 engaging a cam 38 mounted for angular adjustment on the bottom shaft 13.

As the cam rotates, the lever 36 is periodically raised to the dotted line position indicated in Fig. 1. If this upward movement occurs when the vertical rod 33 is in its rearward position, the rod 33 engages the shoulder 34 and moves the shipper handle 11 to stop the loom.

The rearmost bushing 26 (Fig. 3) is provided with an upwardly and rearwardly extending arm 40 on which a depending tube or hollow sleeve 42 is pivoted at 41. A rod 43 is slidable in the sleeve 42 and has a collar 44 limiting upward movement thereof relative to said sleeve.

The lower end of the rod 43 is pivoted on a stud 46, horizontally adjustable in a slot 47 in the rear end of a cam lever 48. The levers 36 and 48 are preferably mounted on a common pivot stud 49 (Fig. 2). The lever 48 has a depending projection 50 engaging a second cam 51 on the cam shaft 13. The cams 38 and 51 may be formed as a single unit, as indicated in Fig. 6.

I have provided a pivoted guard plate 70 to prevent axial displacement of the bushings 26 and arms 27. The arrangement of parts in my improved stop motion permits this single guard plate to be used, in place of the two or more guards found necessary in my previous construction.

Having described the details of construction of my improved stop motion, the operation thereof will be easily understood. Drop wires W are strung on the vibrator rods 25, each drop wire having an opening with an enlarged lower portion 60 and a narrow upper portion 61. When supported on warp

threads, the wires are raised so that the vibrator rods 25 move freely in the enlarged lower portions 60 of the drop wire openings. The actuator rod 43 is raised at every revolution of the cam shaft 13, which corresponds to every second pick of the loom.

The collar 44 engages the lower end of a sleeve 42 and the arm 40 is rocked from the dotted line to the full line position indicated in Fig. 3, thus bringing the vibrator bars to a vertical position. When the arm 40 is thus raised, the rod 31 is drawn rearward and the vertical rod 33 is positioned under the shoulder 34, as indicated in full lines in Fig. 1.

As the cam shaft 13 continues to rotate, the actuator rod 43 descends and if there are no fallen drop wires, the sleeve 42 follows the actuator rod and the arm 40 moves to the dotted line position in Fig. 3, causing the vertical rod 33 to move to the dotted line position shown in Fig. 1, out of alignment with the shoulder 34.

If a warp thread has broken, however, the corresponding drop wire grips one of the vibrator rods 25 and retains it in vertical position, preventing angular movement of the arms 27. The telescoping connection between the rod 43 and sleeve 42 permits the rod 43 to move downward while the sleeve 42 remains in position, as indicated in Fig. 5.

The rod 31 is thus held rearward, retaining the rod 33 under the shoulder 34. The lever 36 is thereupon rocked by the cam 38 and the shipper lever is moved to stop the loom. The extent of rocking movement of the vibrator bars may be adjusted by variably positioning the stud 46 in the slot 47.

The combined cams 38 and 51 may be angularly adjusted on the shaft 13 to vary the timing of the stop motion relative to the harness movements.

In Figs. 8 and 9, I have shown a shipper handle 80 having an abutment member or clip 81 secured thereto by a bolt 82 and adjustable vertically between guideways 83. This adjustable abutment is a convenience in accurate setting of the stopping mechanism.

It will thus be seen that I have provided an exceedingly simple mechanism for stopping the loom upon breakage of warp threads and that the stop motion operates entirely without the use of springs and with a minimum number of moving parts.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:—

1. In a loom, a shipper lever, a knock-off member for said lever, a warp stop motion comprising vibrator rods and swinging arms connected thereto, a control rod directly connecting one of said swinging arms to said

knock-off member, actuating means for said stop motion effective to move said control rod in one direction to operatively position said knock-off member, said actuating means being freely movable in the opposite direction when return movement of said control rod is prevented by a fallen drop wire, and additional means to move said knock-off member periodically in a different direction, such latter movement causing loom stoppage if said knock-off member is operatively positioned.

2. In a loom, a warp stop motion comprising a vibrator rod, an actuating arm connected to rock said rod, an actuating member for said arm, and a telescoping connection between said member and arm permitting movement of said member in one direction independent of said arm, said telescoping connection comprises a depending sleeve pivoted to said arm, a rod freely slidable therein, and means to limit such sliding movement.

3. In a loom, a warp stop motion comprising a vibrator rod, an actuating arm connected to rock said rod, an actuating member for said arm, and a telescoping connection between said member and arm permitting movement of said member in one direction independent of said arm, said telescoping connection comprises a depending sleeve pivoted to said arm, a rod freely slidable therein, and a collar adjustably secured to said rod and engaging the lower end of said sleeve to limit such sliding movement.

4. In a loom, a shipper handle having a shoulder thereon, a rod mounted adjacent said shipper handle, a warp stop motion including a vibrator bar, an actuator through which said vibrator bar is regularly oscillated and through which said rod is regularly moved into and out of alignment with said shoulder, connections between said vibrator bar and said rod through which said rod is retained in operative position by a fallen drop wire, said actuator being freely movable in the opposite direction when said rod is thus retained in operative position, and means to move said rod periodically endwise, which endwise movement is effective to stop the loom if said rod is operatively positioned.

In testimony whereof I have hereunto affixed my signature.

JOHN REGAN.