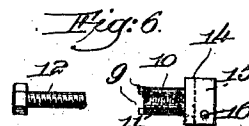
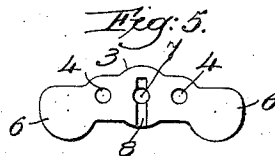
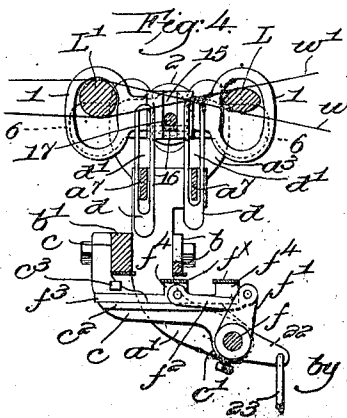
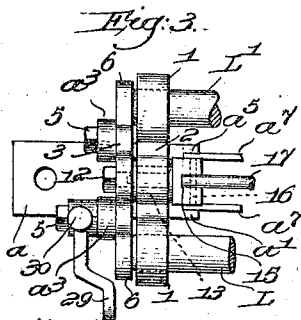
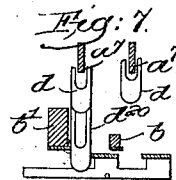
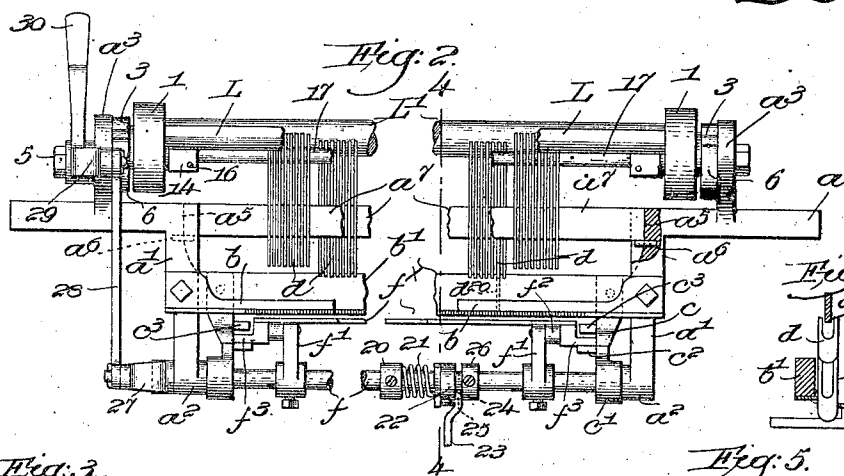
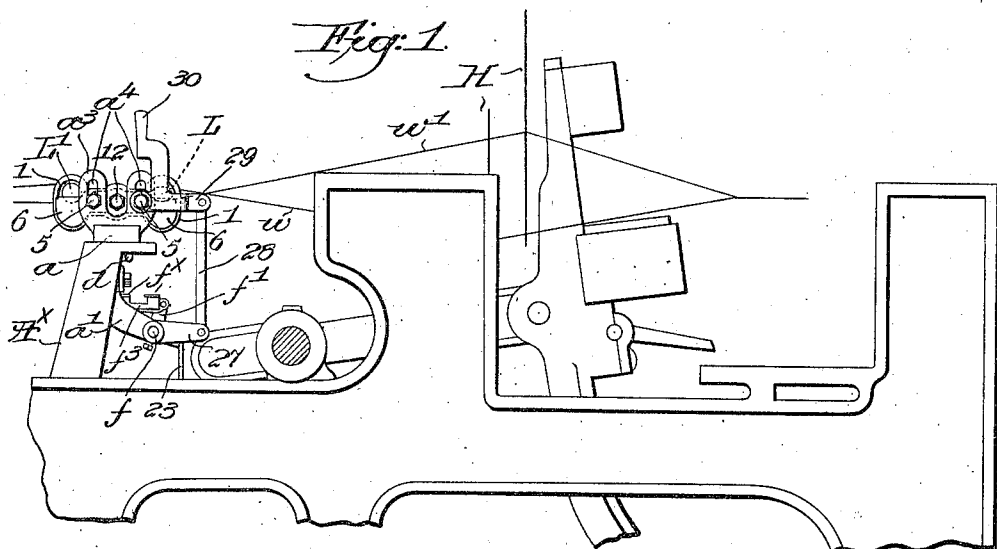


WARP STOP MOTION FOR LOOMS.
APPLICATION FILED MAR. 31, 1911.

1,013,966.

Patented Jan. 9, 1912.



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WARP STOP-MOTION FOR LOOMS.

1,013,966.

Specification of Letters Patent.

Patented Jan. 9, 1912.

Application filed March 31, 1911. Serial No. 618,217.

To all whom it may concern:

Be it known that we, WALLACE I. STIMPSON and ALONZO E. RHOADES, both citizens of the United States, and residents of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Warp Stop-Motions for Looms, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention has for its object the production of a warp stop-motion for looms so constructed and arranged that when the loom is stopped by a warp fault the weaver can readily note in which one of a plurality of banks of detectors is located the released or active detector, so that the faulty warp-thread can be found promptly.

In the ordinary form of double-bank stop-motion apparatus wherein the detectors are suspended from the warp-threads and are almost wholly below the warp the construction is such that it is very hard for the weaver to ascertain readily where the released detector is located, for if it is in the rear bank it is covered by parts of the mechanism in front, and if in the front bank the arrangement of the feeler device obstructs the view.

In our present invention we have so arranged the feeling instrumentality that a clear view of the front bank of detectors can be had at all times, and by certain changes and novel features of construction we have provided for a substantially unobstructed view of the lower ends of the detectors of the rear bank, so that a released detector in such rear bank can be seen with comparative ease.

We have also devised certain novel structural features whereby the warp stop-motion as a whole is improved.

The novel features of our invention will be fully described in the subjoined specification and particularly pointed out in the following claims.

Figure 1 is a left-hand side elevation and

part section of a portion of a loom, provided with a warp stop-motion embodying our present invention; Fig. 2 is an enlarged front view, broken out between its ends, of that part of the warp stop-motion illustrated in Fig. 1; Fig. 3 is a top plan view of the left hand end of the mechanism shown in Fig. 2; Fig. 4 is a transverse sectional detail on the line 4—4, Fig. 2, looking toward the right; Fig. 5 is a detached view of one of the end supports, to be referred to; Fig. 6 is a view of the two-part pivot on which the lease-rod guide is fulcrumed; Fig. 7 is a sectional detail similar to Fig. 4, but showing a released detector in the rear bank of detectors, to illustrate the visibility of such detector when the loom has been stopped thereby.

Stands A^x opposite each other on the loom side support the novel position of the warp stop-motion between the whip-roll and the harnesses H , Fig. 1, at a convenient distance back of the latter. The head a of a bracket having a depending and frontwardly curved foot a' is mounted on each stand A^x , each foot having a bearing a^2 for a transverse feeler rock-shaft f having attached upturned arms f' near its ends, Fig. 2. A bifurcated ear a^3 on each bracket head has upright parallel slots a^4 , and the upper end of each foot a' has two parallel and vertical saw-cuts a^5 made in its inner face, Fig. 2, a horizontal pin a^6 being driven into each cut, to support and position in parallelism the detector guides or bars a^7 , the ends of the latter being dropped into opposite saw-cuts and resting on the pins. Each bar a^7 serves as a guide for a series or bank of vertically movable drop detectors d , longitudinally slotted at d' for the reception of the bar, and also to serve as a warp-eye, as shown in Fig. 4. The two banks of detectors are suspended from and hang below the warp-threads w, w' ; between the lease-rods L, L' , and it will be apparent that a very small portion of a detector is visible above the warp at any time, so that the locating of a released detector must be undertaken below

the warp. Herein the ends of the lease-
 rods are extended through elongated eyes 1
 of guide members 2, which permit vertical
 movement of the rods with the warp while
 limiting fore and aft movement of said rods.
 Endwise movement of the lease-rods is
 limited by end plates 3, each plate having
 holes 4, Fig. 5, for the reception of bolts 5
 passed through the slots of the ears a^3 , said
 bolts clamping the plates 3 in vertically ad-
 justed position on the inner faces of the
 ears, the enlarged ends 6 of a plate 3 cross-
 ing the eyes 1 opposite the ends of the lease-
 rods. Each plate 3 has a central hole 7 and
 an intersecting upright groove 8 on its inner
 face, the groove receiving lugs 9, Fig. 6, on
 the outer end of a cylindrical member 10 of
 a pivot device, internally threaded at 11 for
 the reception of the attaching screw 12
 when passed through the hole 7, the screw
 thus locking the member 10 on the end plate
 while the lugs 9 prevent rotation of such
 member. The member 10 forms a fulcrum
 for the lease-rod guide 2, the latter having
 a hole 13, see dotted lines Fig. 3, for the
 reception of said member 10, the rectangular
 head 14 of the latter being provided with a
 vertical slot 15 crossed near its lower end
 by a transverse pin 16. A rod 17 constitut-
 ing a warp-rest is dropped into the opposite
 slotted heads 14 and is supported in the slots
 15 thereof by the pins 16, so that said warp-
 rest can be readily inserted or removed, and
 in a similar manner the detector guides a'
 can be easily inserted in or removed from
 their supports, previously described, in the
 upper ends of the bracket feet a' . The seats
 thus made for the warp-rest and for the de-
 tector guides are easily constructed and re-
 duce the cost of manufacture materially.

Transverse back-stop bars b , b' are bolted
 to the front and rear edges of the feet a'
 to serve as stops or supports for released
 detectors in the front and rear banks, res-
 pectively, when cooperating with the feeler,
 and it will be seen by inspection of Figs. 2,
 4 and 7 that the front bar b for the greater
 part of its length is quite shallow, its upper
 edge being so low down that the lower ends
 of the detectors in the rear bank are clearly
 visible from the loom side. That is, beneath
 the lower ends of the front bank of detectors
 and the top of the back-stop b there is a
 clear space through which the weaver can
 see not only the lower ends of the detectors
 of the rear bank, but he can also see plainly
 a released detector, as d^{20} , (see dotted lines
 Fig. 2) in such rear bank, and can thus as
 readily locate it as if it were in the front
 bank.

We have shown L-shaped brackets c bolted
 to the back-stop b' and extended frontward
 horizontally beneath the two backstops, Fig.
 4, bosses c' on the front ends of the said

brackets loosely embracing the shaft f ad-
 jacent the bearings a^2 , as in Fig. 2. Hori-
 zontal ribs c^2 on the lower portions of the
 brackets c support slides f^3 pivotally con-
 nected by short links f^2 with the rocker arms
 f' , the slides having upright ears f^4 which
 carry transversely extended flat plates f^*
 which serve as feelers. Lugs c^3 overhang
 the slides f^3 to serve as guides or stops for
 preventing any tipping movement of the
 said slides on the ribs c^2 . The feelers f^* are
 reciprocated back and forth beneath the de-
 tectors by the normal rocking motion of the
 shaft f , see Fig. 4, the warp-threads while
 intact maintaining the lower ends of the
 detectors above the substantially horizontal
 path of movement of the feelers. When a
 warp-thread fails its detector will drop into
 abnormal position, as at d^{20} , Fig. 7, and will
 engage the feeler f^* corresponding with the
 rear bank of detectors, to thereby arrest the
 feeler device as a whole on its rearward or
 feeling stroke, the back-stop b' serving to
 hold the released detector against backward
 pressure. In a similar manner the back-stop
 b will act when a released detector in the
 front bank engages its corresponding
 feeler f^* .

The means for effecting the normal rock-
 ing of the rock-shaft f and for bringing
 about the stoppage of the loom when arrest
 of the feeler device is caused by a released
 detector may be of any suitable or well
 known character, of which there are numer-
 ous examples in the art. One of these de-
 vices is shown and described in United
 States Patent No. 797,671 granted to Drap-
 per, August 22, 1905. The link 27 in that
 patent corresponds to the link 23 partly
 shown herein, said link 23 being connected
 with a rocker-arm 22 loose on the shaft f ,
 which latter has fast upon it an adjacent
 collar 20. A spring 21 connected with said
 collar and rocker-arm provides a connection
 between said arm and shaft which will yield
 when a released detector engages and arrests
 the normal vibrational movement of the
 feeler. As shown in Fig. 2 a lateral lug 24
 on the hub of arm 22 is adapted to engage
 a similar lug 25 on a collar 26 fast on the
 shaft, (said lugs being shown by dotted
 lines in Fig. 2) so that the retracting stroke
 of the feeler members f^* is effected posi-
 tively when the link 23 is drawn downward.

While the lower ends of both banks of de-
 tectors are easily seen at all times by the
 weaver, whether or not the feeler device is
 in motion, yet the location of the latter well
 below the detectors, and the movement of
 the feeler members f^* in a substantially
 horizontal path, tend to still further open
 up to view this part of the warp stop-mo-
 tion, as will be apparent.

When the loom stops it is convenient for

the weaver to ascertain instantly if such stoppage is due to a warp fault. To this end an arm 27 fast on one end of the feeler rock-shaft f is connected by a link 28, Figs. 1 and 2, with a bell-crank 29, 30 conveniently fulcrumed on one of the bolts 5 hereinbefore referred to, the arm 30 being shaped as a handle, and by swinging said handle to the left, Fig. 1, the feelers f^* will be moved in the direction of the feeling stroke if the warp-threads are intact, showing that loom stoppage was not due to a warp fault. If a released detector has brought about loom stoppage then the handle 30 cannot be swung to the left and the weaver knows that a warp-fault has brought about the stoppage of the loom.

Having fully described our invention, what we claim as new and desire to secure by Letters Patent is:

1. In a warp stop-motion for looms, vertically movable detectors arranged in two parallel banks and suspended from and maintained elevated by intact warp-threads, said detectors being almost wholly below and concealed by the warp-threads, fixed guides for said detectors, located below the warp, the lower ends of the detectors extending below said guides, a stationary back-stop for each bank, to support the rear edge of a released detector, the front stop having its upper edge at a distance below the lower ends of the detectors of the front bank, to leave an unobstructed sight opening through which the lower ends of the detectors of the rear bank, and a released detector in such bank, can be clearly seen by the weaver, connected feeler members, one for each bank of detectors, and means normally acting to vibrate said members in a horizontal path below the back-stops, a released detector engaging one of the feeler members and arresting movement thereof, such arrangement of the front stop and relative location of the feeler members permitting a released detector in either bank to be readily located.

2. In a warp stop-motion for looms, opposite, fixedly supported brackets each having a depending, frontwardly curved foot, a feeler rock-shaft supported by the lower ends of said feet, open seats in the upper portions of said feet, located opposite each other, transverse and parallel detector-guides removably mounted in the seats, a bank of longitudinally slotted detectors loosely strung upon each guide and suspended from the warp-threads between the lease-rods, said lease-rods, positioning means for the same, mounted on the brackets, a plurality of fixedly connected feeler members, one for each bank of detectors, supporting means on the inner faces of the bracket feet, on which the feeler members are slidably sustained, and operating con-

nections between the rock-shaft and said members to effect normal vibration thereof in a substantially horizontal path.

3. In a warp stop-motion for looms, opposite, fixedly supported brackets each having an upturned ear, an end-plate bolted to each ear on its inner face, a pivot member carried by and extended inwardly from each end-plate, a fore and aft guide member fulcrumed on the inner end of each of the pivot members and having eyes at its ends opposite the extremities of the adjacent end-plate, lease-rods loosely extended through the eyes and vertically supported by the warp threads, the end-plates limiting endwise movement of the lease-rods, a head on the inner end of each pivot member, having an upright slot and a pin crossing the lower end of such slot, and a warp-rest detachably held in the slotted heads and vertically supported by the transverse pins, combined with two banks of detectors suspended from and hanging below the warp-threads between the lease-rods, the warp rest being located between the two banks of detectors.

4. In a warp stop-motion for looms, vertically movable controlling-detectors arranged in two transverse, parallel banks, suspended from and maintained elevated by intact warp-threads, a pair of feeler members normally vibrating back and forth in a substantially horizontal path below the banks of detectors and adapted to be engaged and arrested by a released detector, and a fixed, transverse bar for each bank, to support the rear edge of a released detector when in engagement with its feeler member, the upper edge of the front bar being below the lower ends of the front bank of detectors and exposing to view the lower ends of the detectors in the rear bank, whether the latter detectors be in normal or abnormal position.

5. In a warp stop-motion for looms, opposite, fixedly supported brackets each having a depending, frontwardly extended foot, a feeler rock-shaft supported by the lower ends of said feet, transverse and parallel detector-guides sustained by the upper portions of the feet, a bank of longitudinally slotted detectors loosely strung upon each guide and suspended from and almost wholly below the warp-threads, fixedly connected feeler members, one for each bank, supports on the inner faces of the bracket feet, on which the feeler members are slidably sustained, operating connections between said feeler members and the rock-shaft, to effect normal vibration of the former in a substantially horizontal path, and a back-stop for each bank of detectors, said stops being fixedly mounted on the front and rear edges of the bracket feet above the feeler path,

each stop serving to support the rear edge
of a released detector in the corresponding
bank, the upper edge of the front stop being
below the lower ends of the detectors of
5 the front bank, to permit an unobstructed
view of the lower end of a released detector
in the rear bank.

In testimony whereof, we have signed our

names to this specification, in the presence
of two subscribing witnesses.

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Witnesses:

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E. D. OSGOOD.