

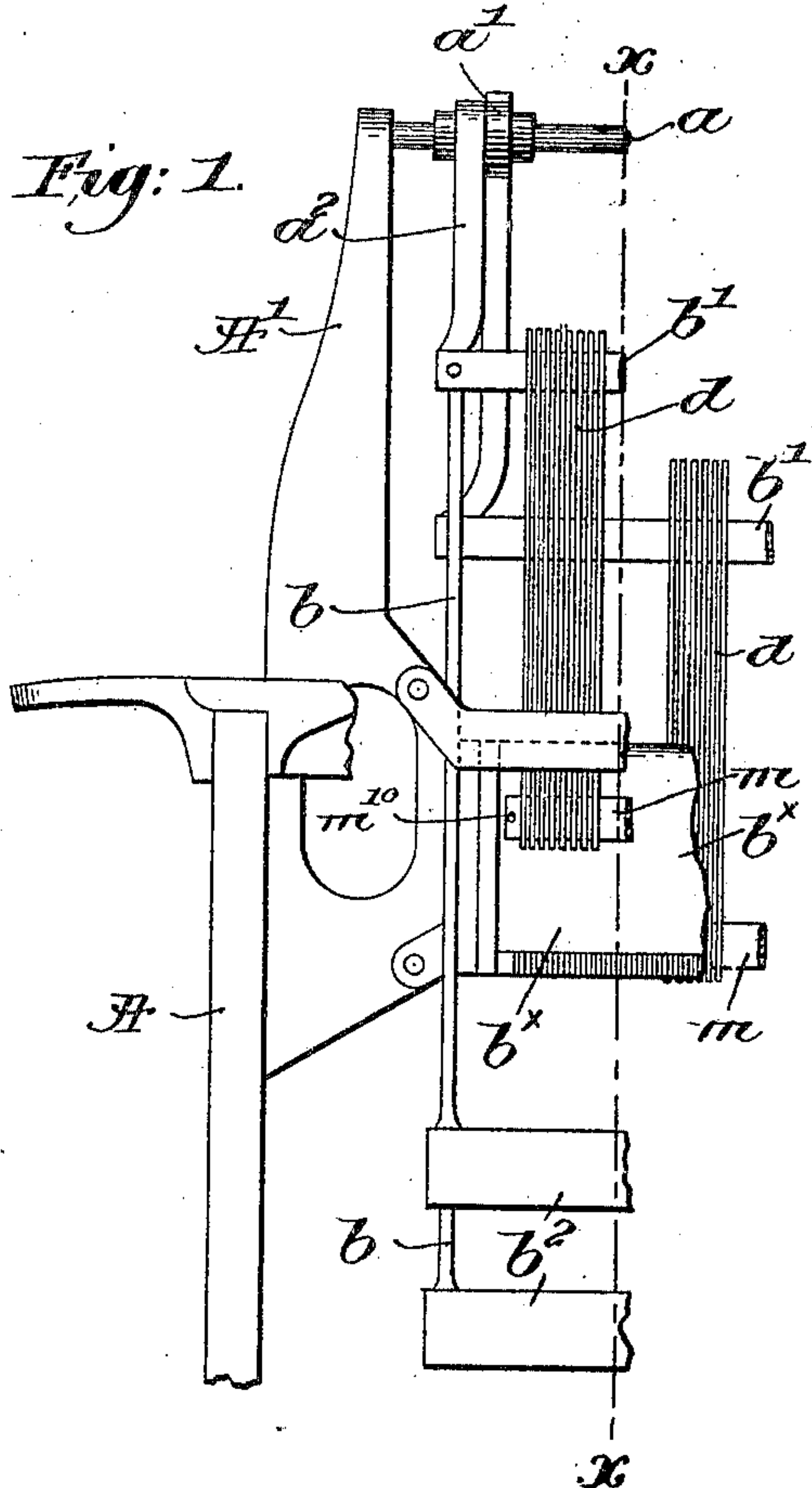
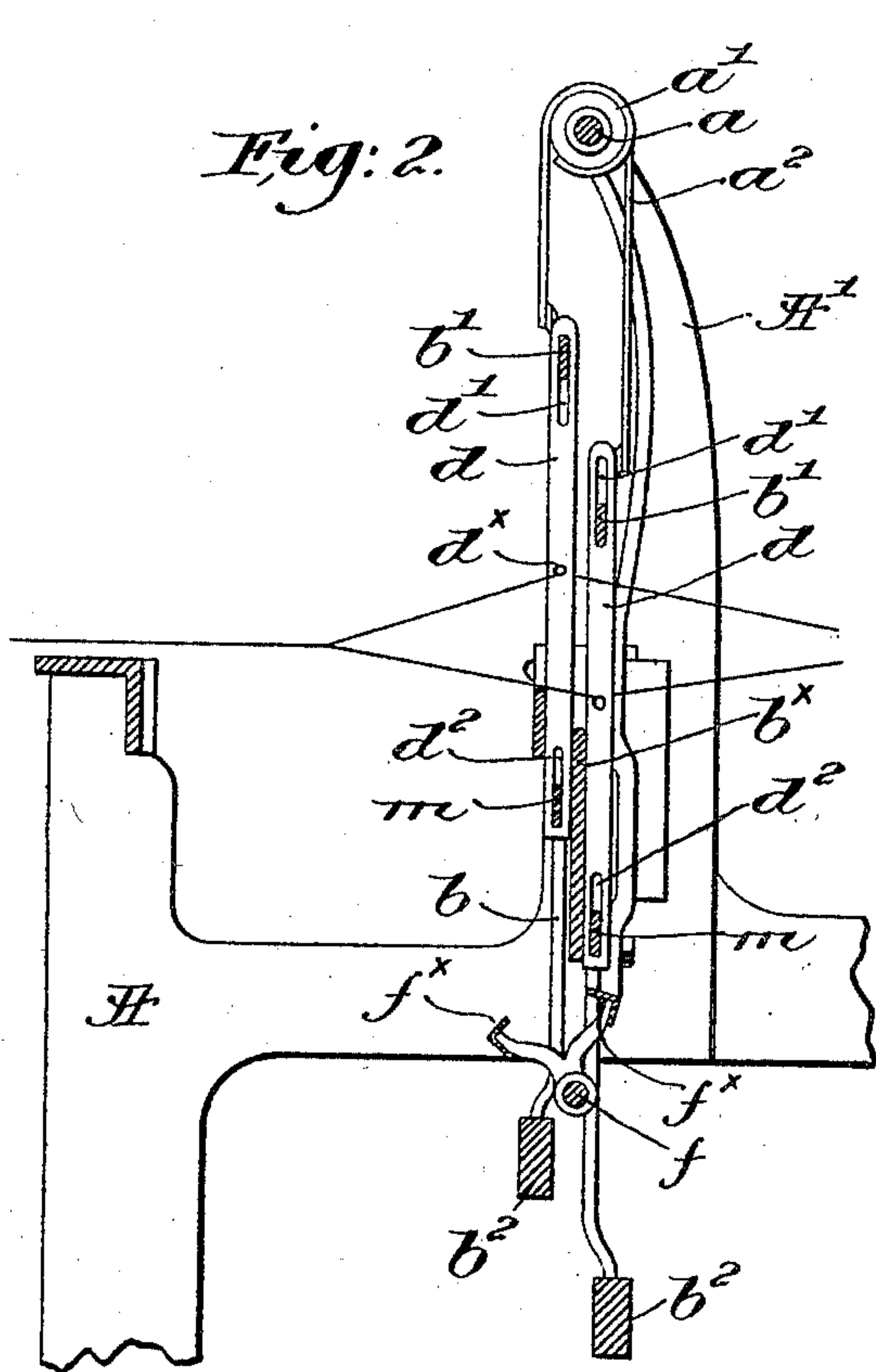
No. 622,630.

Patented Apr. 4, 1899.

J. H. NORTHROP.  
WARP STOP MECHANISM FOR LOOMS.

(Application filed Nov. 25, 1898.)

(No Model.)



Witnesses,  
Edward H. Allen.  
Charles F. Logan.

Inventor;  
James H. Northrop,  
by Granby Gregory.  
attys



# UNITED STATES PATENT OFFICE.

JAMES H. NORTHROP, OF HOPEDALE, MASSACHUSETTS, ASSIGNOR TO THE  
DRAPER COMPANY, OF SAME PLACE AND PORTLAND, MAINE.

## WARP STOP MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 622,630, dated April 4, 1899.

Application filed November 25, 1898. Serial No. 697,324. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES H. NORTHROP, of Hopedale, county of Worcester, State of Massachusetts, have invented an Improve-  
5 ment in Warp-Stop-Motion Mechanism for Looms, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 In the type of warp-stop-motion mechanism for looms forming the subject-matter of United States Patent No. 536,969, dated April 2, 1895, the harness or heddle frames are provided with series of thin flat steel detector-  
15 heddles normally controlled by the warp-threads and having a limited vertical movement relative to the frame.

The "detector-heddles," as they may be termed, inasmuch as they serve as heddles  
20 and also as actuating-detectors for the stop-motion mechanism, are usually made of hardened steel to combine lightness and strength with resistance to wear by the warp-threads, and in practice they frequently become mag-  
25 netized. When magnetized, they tend to stick together, and some will lag behind others of the series during the reciprocation of the frames to effect the change of sheds, and this irregular and improper operation of the hed-  
30 dles results in impaired quality of the cloth being woven.

My present invention has for its object the production of means for insuring the uniform and proper operation of heddles acting also  
35 as actuating-detectors in warp-stop-motion mechanism without interfering in the least with their detecting movement upon breakage or undue slackness of a warp thread or threads. I am also enabled by my invention  
40 to maintain the heddles in a more nearly vertical position, an important point when weaving goods with a heavy strain on the warp-threads.

Figure 1, in front elevation, represents a  
45 sufficient portion of a loom to be understood with my invention applied thereto; and Fig. 2 is a cross-sectional view thereof, taken on the line  $x x$ , looking toward the left.

The stands  $A'$  on the loom-frame  $A$  provide

bearings for an overhead shaft  $a$ , having 50  
sheaves  $a'$ , to which are attached flexible connections or straps  $a^2$  between the harness-frames, the latter comprising upright side bars  $b$  and top and bottom bars  $b' b^2$ , the latter connected to the usual actuating-treadles, 55  
(not shown,) all of well-known construction in the type of warp-stop-motion mechanism referred to, as are also the normally-vibrating feelers  $f^x f^x$ , mounted on the rock-shaft  
60  $f$ , stoppage of a feeler by engagement with an abnormally-positioned detector-heddle operating by or through suitable means (not shown) to stop the loom.

I have shown a series of metallic detector-heddles  $d$ , having warp-eyes  $d^x$  and provided 65  
near their upper ends with longitudinal slots  $d'$  to receive the supporting-bar, which in the present instance is the top cross-bar  $b'$  of the frame, the slots being longer than the depth  
70 of the bar in order to permit the detecting movement of the heddle, as in the patent referred to.

In order to effect the movement of the detector-heddles in unison, I have applied an evening device thereto below the warp-threads, 75  
herein shown as a rod or bar  $m$ , passed loosely through longitudinal slots  $d^2$ , located below the warp-threads and near the lower ends of the heddles, said evener being supported by  
80 the series of heddles and resting on the bottoms of the slots  $d^2$ . The weight of the evener is sufficient to overcome any tendency of some of the heddles to stick up higher than the  
85 others, for on the downward stroke of the frame the weight of the evener would come upon any one or more of the heddles which lagged behind the others and the lagging heddles would be positively depressed with the  
others.

From an inspection of the depressed heddles 90  
in the rear series, Fig. 2, it will be seen that the evener in no way prevents a heddle from dropping the length of its slot upon failure or undue slackness of its warp-thread, as at such time the other heddles will support  
95 the evener.

When weaving goods with a heavy strain on the warp-threads, there is a tendency to



pull the heddles from the proper vertical position owing to their light weight, and the eveners  $m$  by its weight counteracts this tendency and helps to maintain the heddles in vertical position.

5 The lower ends of the two series of detector-heddles are prevented from intermingling by a separator  $b^x$ , extended across the loom and forming a back-stop for an abnormally-  
10 positioned heddle when engaged by one of the feelers.

The eveners  $m$  is provided at each end beyond the series of detectors with a transverse pin or stop  $m^{10}$ , which serves to limit the  
15 side play or movement of the detectors.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a warp stop-motion for looms, a series of actuating-detectors movable into operative position by breakage or undue slackness of the warp-threads, a reciprocating support for said detectors and relatively to which they have a limited independent vertical  
20 movement, and an evening device supported by the detectors below the warp-threads, to insure normal movement of the detectors in unison.

2. In a warp stop-motion for looms, a series of detector-heddles each longitudinally slotted near its ends and provided with a warp-receiving eye, a reciprocating support for said heddles extended through the upper slots thereof, the heddles having limited vertical movement relative to said support, and  
35 an eveners  $m$  extended through the lower

slots of the heddles and suspended by the latter below the warp-threads.

3. In a warp stop-motion for looms, a series of longitudinally-slotted detector-heddles  
40 having each a warp-receiving eye, a reciprocating support for said heddles extended through the slots thereof and of less depth than the length of the slots, and an eveners  $m$  suspended by said heddles below the  
45 warp-threads, a heddle released by breakage or undue slackness of its warp-thread having a limited longitudinal movement independent of and relative to said eveners  $m$  while the latter is supported by the remaining heddles.  
50

4. In a warp stop-motion for looms, a series of longitudinally-slotted detector-heddles having each a warp-receiving eye, a reciprocating support for said heddles extended  
55 through the slots thereof and of less depth than the length of the slots, and an eveners  $m$  suspended by said heddles below the warp-threads, a heddle released by breakage or undue slackness of its warp-thread having a limited longitudinal movement independent  
60 of and relative to said eveners  $m$  while the latter is supported by the remaining heddles, said eveners  $m$  having a stop at each end thereof beyond the series of heddles, to limit the side play of the latter.  
65

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

JAMES H. NORTROP.

Witnesses:

GEO. OTIS DRAPER,  
ALBERT H. COUSINS.