

No. 753,198.

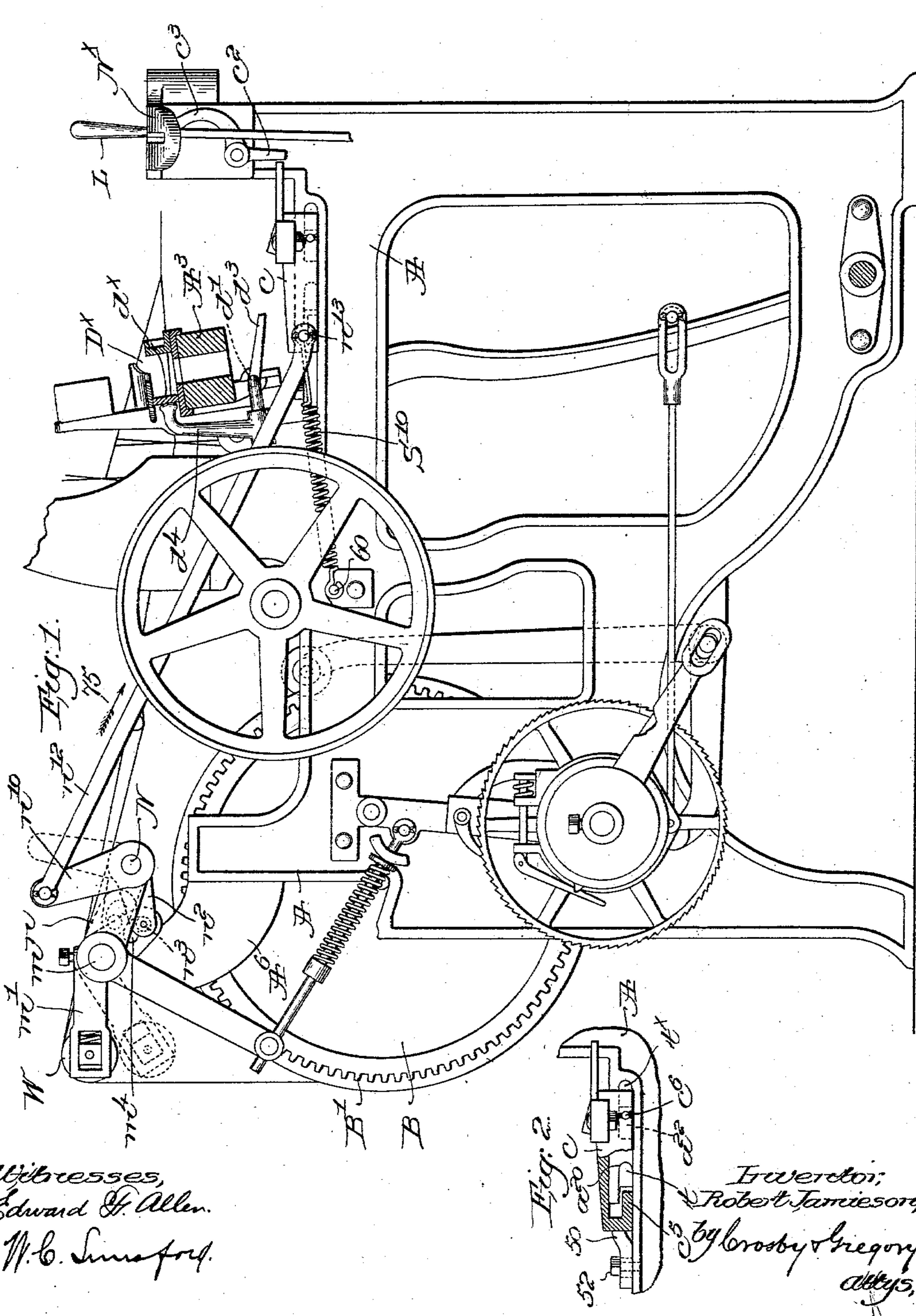
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R. JAMIESON.

MEANS FOR PREVENTING WARP BREAKAGE IN LOOMS.

APPLICATION FILED AUG. 31, 1903.

NO MODEL.



UNITED STATES PATENT OFFICE.

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MEANS FOR PREVENTING WARP BREAKAGE IN LOOMS.

SPECIFICATION forming part of Letters Patent No. 753,198, dated February 23, 1904.

Application filed August 31, 1903. Serial No. 171,323. (No model.)

To all whom it may concern:

Be it known that I, ROBERT JAMIESON, a citizen of the United States, residing at Hopedale, in the county of Worcester and State of Massachusetts, have invented an Improvement in Means for Preventing Warp Breakage in Looms, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

In United States Patent No. 731,622 a loom is shown provided with means to positively slacken the warps to an abnormal extent when the loom "bangs off" to obviate warp breakage. The proper working tension of the warps is restored in said patent by or through a backward stroke of the lay when the loom is again started, the lay being free to move forward to front center or past it, as the frog is freely slidable on the loom side. As a matter of practice it is frequently necessary to restore the tension of the warps by the expenditure of very considerable manual exertion when it is desired to start the loom, and this adds to the labor of the weaver.

My present invention has for its object the production of simple and effective means for restoring the tension of the warps automatically whenever by reason of the loom banging off the warps have been slackened as provided for in said patent, the momentum of the moving parts of the loom also being rapidly absorbed and its effect nullified, together with means to stop the lay before it reaches front center.

I have herein shown my invention in connection with a loom provided with a warp-tension-controlling instrumentality such as forms the subject-matter of the patent referred to.

Figure 1 is a left-hand side elevation of a loom embodying one form of my invention, the nearer end of the lay and the shuttle-box being shown in section with the means for controlling the warps in operative position in full lines; and Fig. 2 is an enlarged detail, partly in section, of the frog and checking device therefor.

The lay A^3 , notched holding-plate N^x for the shipper L, knock-off lever $c^2 c^3$, the protector mechanism, comprising, essentially, a slidably-mounted frog c , the dagger d^3 , and upturned binder-finger d^4 , fast on the rock-shaft d' and coöperating with the binder d^x of the shuttle-box D^x to lift the dagger when the shuttle is boxed properly, are of well-known construction. The warp-beam B, having an attached gear B' and the actuating mechanism therefor, whereby let-off is controlled, are substantially as in said Patent No. 731,622.

The stands A^6 on the loom sides supporting the rock-shaft m , having fast upon it arms n , which support a controlling rock-shaft N, extended across the loom, the whip-roll W, mounted in rearwardly-extended arms m' , loosely fulcrumed on the shaft m , the locking members m^4 , each secured to or forming part of one of the arms m' , (one at each side of the loom,) the coöperating locking members n^2 , fast on the rock-shaft N and each provided with a roll n^3 to enter the cam-slot m^5 in the opposite member m^4 , and the upturned arm n^{10} , fast on said rock-shaft N and having pivotally connected therewith one end of a link n^{12} , may be and are all substantially as shown and described in said patent and operate as therein set forth.

The forward end of the link is pivotally connected at n^{13} with the frog c , so that forward movement of the latter by operation of the protector mechanism will move the link n^{12} in the direction of arrow 75, Fig. 1, and by turning the rock-shaft N the whip-roll is unlocked and moved positively into dotted-line position, slackening the warps to such an extent that as the lay beats up the shuttle cannot tear or strain the warps.

In the patent referred to the frog is free to slide forward, and the lay can move by its momentum up to or even past front center, so that the loom may turn over one or more times when it bangs off.

In my present invention forward movement of the frog is stopped before the lay reaches front center and just as soon as the warps

have been slackened sufficiently to prevent damage, and thereupon the frog is immediately retracted or returned to normal position and the whip-roll is restored to operative condition and control of the warps.

Referring to Fig. 2, the rear end of the frog c is shaped to present a hook c^5 , and in a pocket a^{20} on the loom side A is inserted a cushion t , as a block of rubber, in the path of the hook c^5 . Beneath the front end of the frog a slot a^{22} is made in the loom side, through which a pin c^6 passes, the ends of the pin being held in the depending sides of the frog, preventing lifting of the latter, and in front of the pin a cushion or block of rubber t^x is inserted in the front end of the slot a^{22} .

Referring to Fig. 1, a powerful spring S^{10} is secured at one end to a pin 60 on the loom side, and the opposite end of said spring is attached to the frog, as by hooking it over the pin n^{13} . Sufficient clearance is provided between the frog-hook c^5 and pin c^6 and the cooperating checking-blocks t and t^x to permit forward movement of the frog far enough to release the shipper L and to unlock the whip-roll when by or through improper boxing of the shuttle the dagger engages the frog as the lay beats up. As the frog is thus moved forward the spring S^{10} is flexed or stretched, while the warps are slackened; but before the lay reaches front center the checking device stops the frog, and through it the lay is stopped, the momentum thereof being largely absorbed by the flexure of the spring. Immediately upon stoppage of the frog the spring contracts and draws the frog back to normal position, moving the link n^{12} oppositely to arrow 75, Fig. 1, and restoring the whip-roll to normal operative position and causing the locking device to lock it in such position. As the frog is pulled back it acts through the dagger to push back the lay, so that the loom is in readiness to be started without any manual labor to adjust the whip-roll or cooperating devices. The backward or retracting movement of the frog is limited by a stop 50, adjustably held on the loom side by a clamp-bolt 52, Fig. 2.

By making the checking bolts or cushions t and t^x slightly yielding too sudden stoppage of the frog and lay is prevented, the spring S^{10} manifestly assisting materially to effect the stoppage.

My invention is not restricted to the precise construction and arrangement shown nor to the warp-tension-controlling instrumentality herein illustrated, and various modifications may be made by those skilled in the art without departing from the spirit and scope of my invention.

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

1. In a loom, a movable whip-roll, a lay, means operated thereby on its forward beat,

upon improper boxing of the shuttle, to move positively the whip-roll to slacken the warps, a check to stop the lay at such time before it reaches front center, and means to thereafter restore the whip-roll to operative condition and control of the warps and simultaneously retract the lay.

2. In a loom, a movable whip-roll, a lay, means operated thereby on its forward beat, upon improper boxing of the shuttle, to move positively the whip-roll to slacken the warps, a check to stop the lay at such time before it reaches front center, and means independent of the lay to thereafter restore the whip-roll to operative condition and control of the warps.

3. In a loom, a movable whip-roll, protector mechanism including a frog, a connection between it and the whip-roll to positively move the latter to slacken the warps upon operation of the protector mechanism, a lay, a device to stop forward movement of the frog before the lay reaches front center, and a spring connected with the frog to thereafter immediately retract it and restore the whip-roll to normal operative position.

4. In a loom, a movable whip-roll, a lay, protector mechanism, including a dagger movable with the lay, and a frog to be engaged by said dagger upon improper boxing of the shuttle, a connection between the whip-roll and frog to positively move the former to slacken the warps upon operation of the protector mechanism, a device to stop the frog and check forward movement of the lay before it reaches front center, and a spring flexed by forward movement of the frog, to thereafter retract it and the lay and restore the whip-roll to operative position.

5. In a loom, a lay, a shipper, protector mechanism, including a dagger, and a frog to be engaged and moved thereby on the forward beat of the lay to release the shipper upon improper boxing of the shuttle, a device to stop forward movement of the frog before the lay reaches front center, a whip-roll, means actuated by operative forward movement of the frog to move the whip-roll positively to slacken the warps, and a spring directly connected with the frog to retract the same and act through said means to restore the whip-roll to operative position.

6. In a loom, a movable whip-roll, a lay, means operated thereby on its forward beat, upon improper boxing of the shuttle, to move positively the whip-roll to slacken the warps, and means to take up the momentum of and stop the lay before it reaches front center and to thereafter restore automatically the whip-roll to operative condition and control of the warps.

7. In a loom, a movable whip-roll, protector mechanism, including a frog, a connection between it and the whip-roll to positively move the latter to slacken the warps upon op-

eration of the protector mechanism, a lay,
means directly connected with the frog to
take up the momentum of the lay and stop it
and the frog before the lay reaches front cen-
5 ter, and to thereafter retract the frog and re-
store automatically the whip-roll to normal
operative position, and a stop to limit retract-
ive movement of the frog.

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

ROBERT JAMIESON.

Witnesses:

CLARE H. DRAPER,
GEORGE OTIS DRAPER.