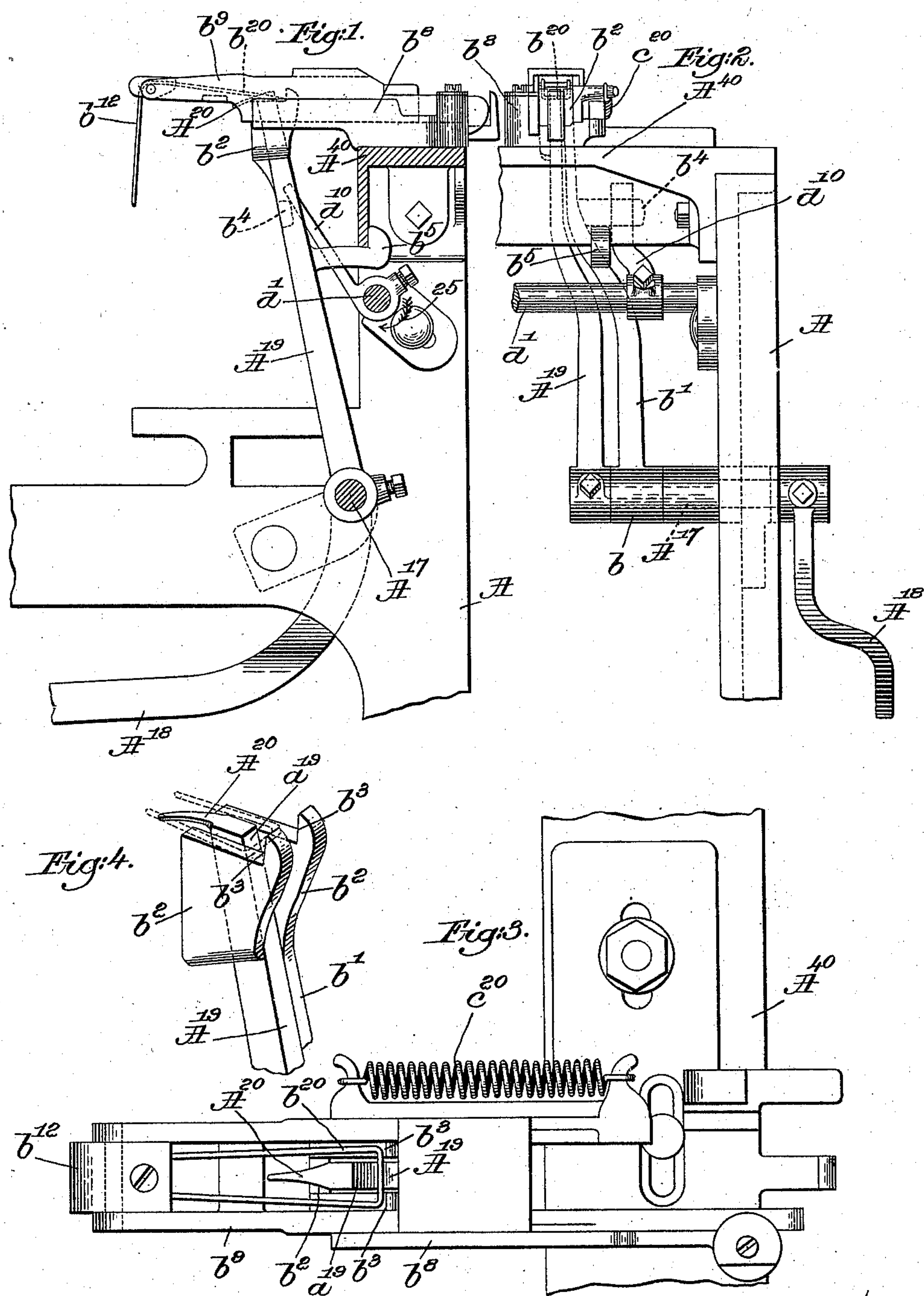


(No Model.)

J. H. NORTROP.  
STOP MOTION FOR LOOMS.

No. 575,307.

Patented Jan. 12, 1897.



witnesses.  
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Thomas Drummond.

Inventor.  
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# UNITED STATES PATENT OFFICE.

JAMES H. NORTHROP, OF HOPEDALE, MASSACHUSETTS, ASSIGNOR TO  
GEORGE DRAPER & SONS, OF SAME PLACE.

## STOP-MOTION FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 575,307, dated January 12, 1897.

Application filed September 19, 1896. Serial No. 606,312. (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 Improvement in Looms, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

United States Patent No. 529,943, dated November 27, 1894, for a loom describes a rock-shaft located below the breast-beam, to be rocked by or through the pressure of the outer end of the filling-fork slide or a lever connected by a link with an arm of said shaft, such turning of the shaft acting to bring the shuttle position-detector into action and advance the device, which is to act to guide an ejected filling-carrier into a suitable receptacle, and lift a notched dog connected with a pusher to be struck by a bunter carried by the lay, and it must also overcome the tendency of a spring which tends to keep the shaft and the parts controlled thereby in normal position.

In practice it has been found that in running a loom of the class referred to at high speed the strain on the weft-fork, which necessarily is or should be delicate in its operation, is so great as to often injure the same.

United States Patent No. 557,998 describes one form of construction by which the weft-fork is relieved of such strains; and this invention has for its object the production of another form of construction having the same object in view.

I have in this invention provided a normally-inoperative arm to act upon a finger fixed upon the rock-shaft to thereby turn it when the arm is operated. The "weft-hammer" is vibrated in the usual manner and means controlled by the weft-fork connect the hammer and actuating-arm when the weft-fork is not tilted, and as the weft-hammer moves forward it moves the actuating-arm with it, at the same time moving the slide out in its usual guiding-stand, the actuating-arm turning the starting-shaft upon failure of the filling. All strain upon the weft-fork is obviated except that due to the comparatively light spring required to return the weft-fork slide to normal position. The said

rock-shaft will be hereinafter designated as the "starting-shaft," and the normally-inoperative arm as the "actuating-arm." The strain exerted upon the tail of the weft-fork, when held between the weft-hammer and actuating-arm, as hereinafter described, is entirely at its extremity and has no effect upon the weft-fork bearing nor the main part of the fork itself.

Figure 1 of the drawings shows a sectional detail of a sufficient portion of a loom represented in said Patent No. 529,943, to be understood with my present invention embodied therein. Fig. 2 is a front elevation of the mechanism shown in Fig. 1. Fig. 3 is a top or plan view thereof on a larger scale, and Fig. 4 is a perspective detail of the upper ends of the weft-hammer and actuating-arm.

The loom-frame A, breast-beam A<sup>40</sup>, the starting-shaft d', the weft-fork b<sup>12</sup>, its carrying-slide b<sup>9</sup>, sliding in the guide b<sup>8</sup>, the lever A<sup>18</sup>, actuated by a cam (not shown) on the usual lower shaft of the loom, and the spring c<sup>20</sup> are and may be all as in said Patent No. 529,943, wherein like letters are used to designate like parts.

In the drawings, Figs. 1 and 2, I have shown a rock-shaft A<sup>17</sup>, to which the lever A<sup>18</sup> is attached, and a weft-hammer A<sup>19</sup> is rigidly secured to said shaft to be vibrated thereby, the upper end of said hammer having a convexed rearwardly-extended upper end A<sup>20</sup> to readily pass under the tail b<sup>20</sup> of the weft-fork when the latter is not acted upon by the filling.

The hub b of an actuating-arm b', Figs. 2 and 3, is herein shown as loosely mounted on the shaft A<sup>17</sup>, said arm having a bifurcated head b<sup>2</sup>, recessed to receive the weft-hammer A<sup>19</sup> as it swings inward, (see Fig. 4,) the top of the head being cut away laterally to form a seat and leave shoulders b<sup>3</sup> at its front side, between which and the straight front face a<sup>19</sup> of the weft-hammer the loop-like tail b<sup>20</sup> of the weft-fork enters when the filling fails. The arm b' has a lug or projection b<sup>4</sup> thereon to engage a finger d<sup>10</sup>, fast on the starting-shaft d', when the actuating-arm is operated, to turn said shaft in the direction of arrow 25, Fig. 1, a detent b<sup>5</sup> on the actuating-arm engaging some fixed part of the loom to limit its movement rearwardly.



The weft-fork slide is normally held by spring  $c^{20}$  in the position best shown in Figs. 1 and 3, and so long as the tail  $b^{20}$  of the weft-fork is not caught between the shoulders  $b^3$  5 of the actuating-arm and the weft-hammer the latter will swing back and forth without moving the actuating-arm, and the starting-shaft  $d'$  will not be turned. If the weft fails in front of the fork, however, and the latter 10 is not tipped, its tail will be caught between the weft-hammer and the shoulders  $b^3$ , and the actuating-arm  $b'$  will be moved toward the breast-beam with the weft-hammer, thereby causing the lug  $b^4$  to act upon the finger 15  $d^{10}$ , turning the starting-shaft  $d'$  without the intervention of the weft-fork proper or its slide.

The shoulders  $b^3$  are separated by a space only sufficient to admit the entrance of the 20 weft-hammer and present broad abutments against which the tail of the weft-fork is held by the hammer, so that the strain upon the tail is more evenly distributed.

My invention is not limited to the precise 25 construction herein shown, for the same may be modified in various particulars without departing from the spirit and scope of my invention.

Having described my invention, what I 30 claim as new, and desire to secure by Letters Patent, is—

1. In a loom, a starting-shaft to operate a change of filling, and having an attached finger, and a normally-inoperative actuating- 35 arm to coöperate with said finger, combined with a weft-hammer, and means controlled by failure of the filling to connect the weft-hammer and actuating-arm to move in unison, substantially as described.

40 2. In a loom, a starting-shaft to operate a change of filling, a finger thereon, a normally-inoperative actuating-arm provided with a lug to engage said finger and turn the shaft, and a bifurcated shouldered head on said 45 arm, the weft-fork, and its slide, combined with a weft-hammer normally movable in the said head, the weft-fork tail being adapted to

enter between the shouldered head and the weft-hammer upon failure of the filling, to move the actuating-arm, substantially as described. 50

3. In a loom, a starting-shaft to operate a change of filling, a normally-inoperative actuating-arm and connecting means to turn said shaft, a shouldered head on said arm, 55 recessed to receive the weft-hammer, the weft-fork having a tail, and the weft-fork slide, combined with a weft-hammer having a convexed upper end, to lift and pass beyond the weft-fork tail upon its backward stroke, 60 and a shoulder to engage the tail of said fork upon failure of the filling, whereby the actuating-arm is moved with the weft-hammer, the tail of the weft-fork being held between the hammer and the shouldered head of the 65 actuating-arm, substantially as described.

4. In a loom, a starting-shaft to operate a change of filling, a normally-inoperative actuator and connecting means to turn said shaft, a stop to limit the movement of said actuator 70 in one direction, combined with a positively-vibrated weft-hammer movable adjacent the actuator, and means controlled by the failure of the filling to operatively connect the weft-hammer and actuator, to move the lat- 75 ter and turn the starting-shaft, substantially as described.

5. In a loom, a starting-shaft to operate a change of filling, a normally-inoperative actuator and connecting means to turn said shaft, 80 a weft-fork, and its slide, combined with a positively-vibrated weft-hammer, failure of the filling causing the weft-fork tail to operatively connect the hammer and actuator, to move the latter and turn the starting-shaft, 85 substantially as described.

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

JAMES H. NORTHROP.

Witnesses:

WM. W. KNIGHTS,  
GEORGE OTIS DRAPER.