

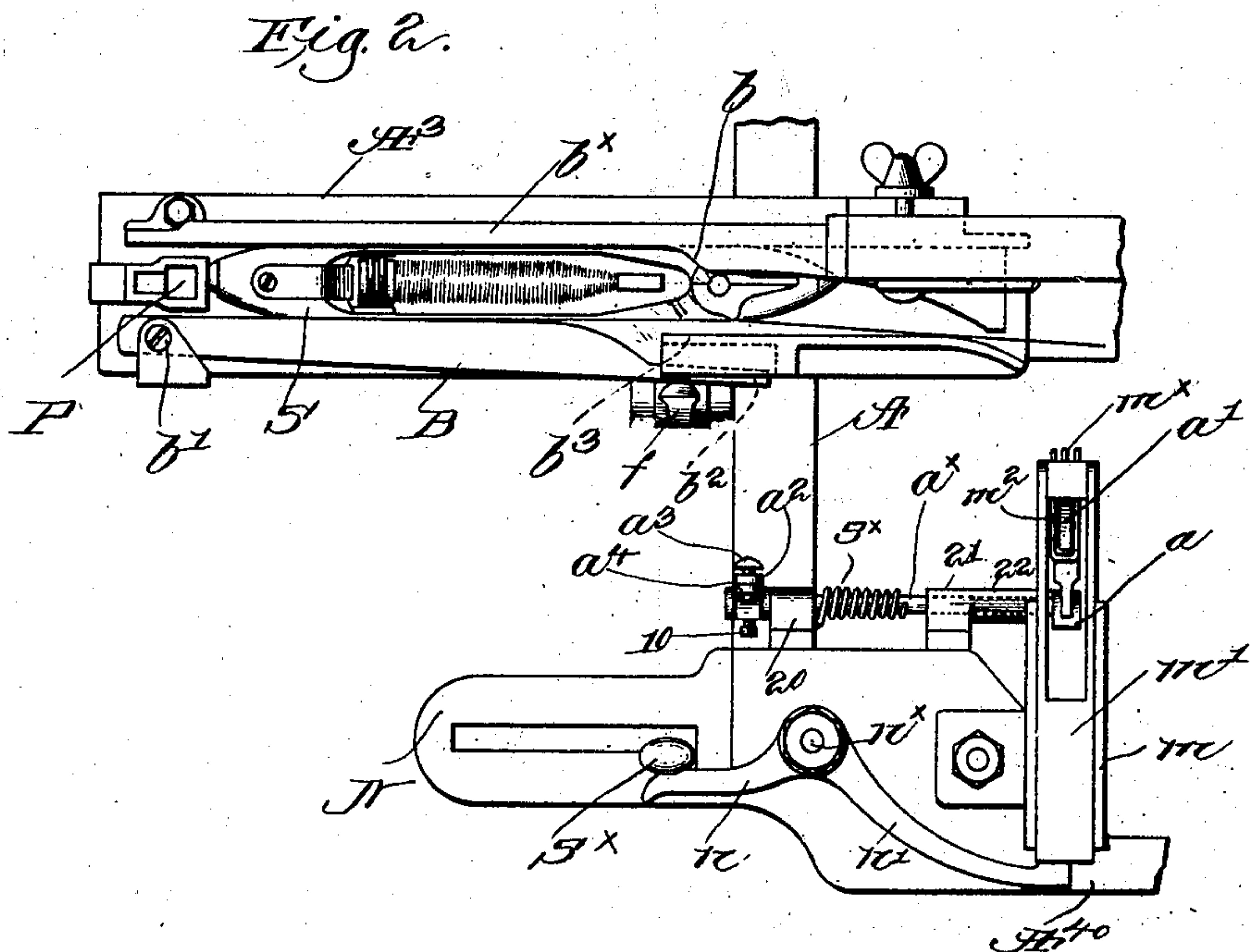
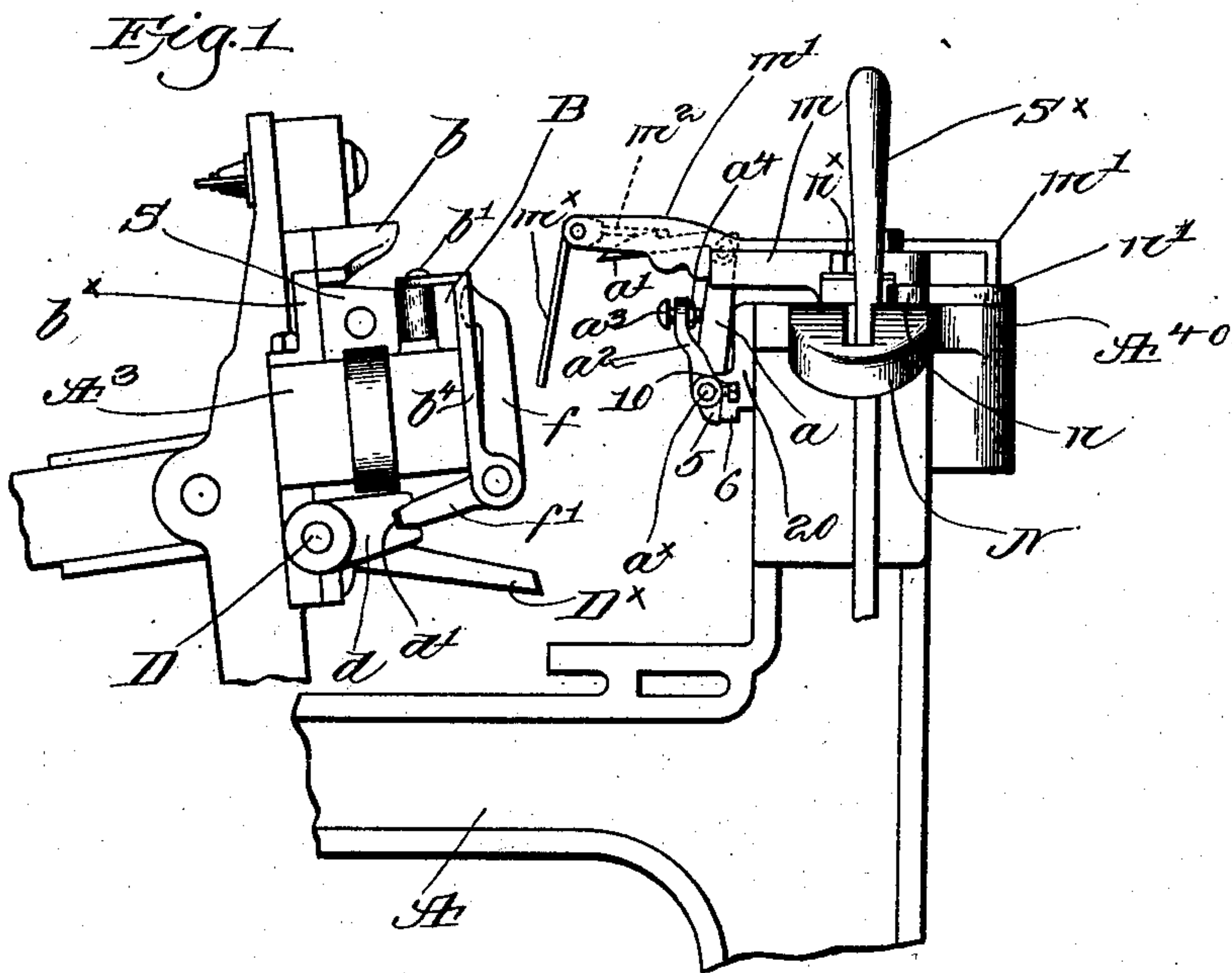
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W. A. FOWLER.  
FILLING STOP MOTION FOR LOOMS.

APPLICATION FILED AUG. 8, 1903.

NO MODEL.



Witnesses:  
H. C. Linsford,  
E. F. Allen.

Inventor:  
William A. Fowler,  
by Harry Gregory,  
att'y.



# UNITED STATES PATENT OFFICE.

WILLIAM A. FOWLER, OF SALISBURY, NORTH CAROLINA, ASSIGNOR TO  
DRAPER COMPANY, OF HOPEDALE, MASSACHUSETTS, A CORPORATION  
OF MAINE.

## FILLING STOP-MOTION FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 746,058, dated December 8, 1903.

Application filed August 8, 1903. Serial No. 168,710. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM A. FOWLER, a citizen of the United States, and a resident of Salisbury, county of Rowan, State of North Carolina, have invented an Improvement in Filling Stop-Motions for Looms, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention has for its object the production of novel means for effecting automatically the stoppage of a loom upon failure of the filling, due either to breakage or exhaustion thereof in the running-shuttle.

In the common form of filling stop-motion the filling when present tilts a fork on each alternate beat of the lay, and when the filling is absent on the detecting-pick the fork is not tilted and its tail engages a hook carried by a cam-follower and usually termed the "weft-hammer." The outward movement of the latter thereupon moves the fork-slide outward, and through suitable intervening devices the shipper is released.

In my present invention I dispense entirely with the weft-hammer and effect the desired movement of the fork-slide by or through the movement of the lay, and in the present embodiment of my invention the shuttle-binder is utilized for such purpose. When the shuttle is boxed on the detecting side of the loom, the binder imparts movement to an actuator, and if the filling is absent the latter cooperates with and moves the fork-slide outward. If the filling is present, the fork is tilted and the slide remains stationary. On alternate beats the shuttle is in the opposite shuttle-box, and at such time the binder which operates the actuator cannot impart sufficient movement thereto to operatively move the fork-slide.

The various novel features of my 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 of a sufficient portion of a loom to be understood with one embodiment of my invention applied

thereto, the picker and picker-staff being omitted; and Fig. 2 is a top or plan view of the apparatus shown in Fig. 1.

The loom-frame A, lay A<sup>3</sup>, longitudinally slotted for the picker-staff P, and the detecting shuttle-box, comprising a fixed back wall b<sup>x</sup>, cover-plate b, front binder B, fulcrumed at its outer end at b' on the lay and having its inner end b<sup>2</sup> pressed against the fixed guard or stop-plate b<sup>3</sup> at the mouth of the shuttle-box by the usual spring (not shown) on the protector rock-shaft D, may be and are all of substantially the construction shown in United States Patent No. 731,391. So, too, the short bifurcated arm d, secured to the said rock-shaft, the upturned binder-finger f, fulcrumed at b<sup>6</sup> on a bracket b<sup>4</sup> on the lay, and the arm f', rigidly connected with the binder-finger and extended beneath the lay to enter the notch d' of the arm d, are as in said patent and operate as therein provided to lift the dagger D<sup>x</sup> when the shuttle is properly boxed. The shipper S<sup>x</sup>, to operate a belt-shipper or similar device, (not shown,) the notched holding-plate N, the knock-off lever n n', fulcrumed at n<sup>x</sup>, Fig. 2, the guide m, rigidly mounted on the breast beam A<sup>40</sup>, the fork-slide m', movable in said guide transversely to the breast-beam, the filling-detector or fork m<sup>x</sup>, fulcrumed on the slide, and the loop or tail m<sup>2</sup> of the fork, may be and are all of well-known construction.

Brackets 20 21 on the back of the loom side provide bearings for a short horizontal rock-shaft a<sup>x</sup>, having secured to it near its inner end an upturned arm a, carrying at its upper end a pivotally-mounted hook a', movable beneath the tail of the fork m<sup>x</sup>, the arm a extending up into the slotted rear end of the fork-slide, as shown in Figs. 2.

The bracket 21 presents a sleeve-like bearing 22 for the rock-shaft a<sup>x</sup>, the arm a being located adjacent the inner end of the said bearing.

Outside of and adjacent the bearing provided by the bracket 20 a second shorter arm a<sup>2</sup> is secured to the rock-shaft by a set-screw 10 for adjustment, the upper end of said arm being shown as extended rearwardly (see



Fig. 1) in the path of movement of the inner end  $b^2$  of the binder B. A contact-stud  $a^3$ , screwed into the upper end of arm  $a^2$ , is held in adjusted position by a check-nut  $a^4$ , the head of the stud engaging the binder as the lay beats up.

Referring to Fig. 2, a spring  $s^x$  is coiled around the rock-shaft  $a^x$  and secured at one end thereto, the other end of the spring being fixed, the spring tending to turn the rock-shaft in a direction to move the arms  $a$  and  $a^2$  rearwardly. An ear 5 on the arm  $a^2$  co-operates with a stop-shoulder 6 on the bracket 20 (see Fig. 1) to limit such movement of the rock-shaft and arms, the arm  $a$  constituting the actuator for the fork-slide, as will appear hereinafter. When the shuttle S is in the detecting shuttle-box—viz., the one adjacent the filling-fork—the binder will be held out, as clearly shown in Fig. 2, and when the lay beats up the end  $b^2$  of the binder will engage the stud  $a^3$  and turn the rock-shaft  $a^x$  against the spring  $s^x$ , giving an outward stroke to arm  $a$ , the actuator. As the latter is longer than the arm  $a^2$ , it will have a greater movement, sufficient for purpose desired. When the filling is present, it will tilt the fork and lift its tail  $m^2$  above the hook  $a'$  before the outward stroke of the actuator is effected. If the filling is absent, however, the hook engages the tail and moves the fork-slide  $m'$  outward, the latter then acting on the arm  $n'$  of the knock-off lever to turn it on its fulcrum and release the shipper  $s^x$ . On the alternate or non-detecting beats of the lay the end  $b^2$  of the binder rests against the stop-plate  $b^3$ , and as the lay beats up the binder end  $b^2$  is so far back that movement of the rock-shaft  $a^x$  is insufficient to cause operative movement of the fork-slide by the actuator  $a$ , it being manifest that otherwise the slide would be moved because the fork is not tilted on such beats of the lay. The spring  $s^x$  returns the actuator to back position as the lay swings back.

By means of the set-screw 10 and the adjustable contact-stud  $a^3$  a very accurate and fine adjustment can be made, so that the proper actuating movement of the actuator will be effected by the lay as it beats up.

The construction is simple, direct-acting, and positive in its operation, the operative movement of the fork-slide being effected by or through the lay itself, obviating the usual weft-hammer and its actuating-cam.

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

1. In a loom, a lay, a filling-detector, a movable support therefor, and positively-operating means actuated by or through the lay on its forward beat to move said support when absence of filling is detected by said filling-detector, said means including two operatively-connected rocking members, one of which co-operates with the filling-detector to move its support.

2. In a loom, a lay, a filling-fork, a slide on which it is mounted, and means including a rock-shaft and two rigidly-attached arms actuated by or through the movement of the lay on alternate beats to move the slide outward when absence of filling is detected, one of said arms being engaged by a part on the lay and the other arm acting through the filling-fork to move the slide.

3. In a loom, a lay, a filling-fork, a slide on which it is mounted, outward movement of the slide being adapted to cause the operation of a stopping instrumentality, and means, including an actuator and an impact member rigidly connected therewith, adapted to rock on a common fulcrum, and actuated by the beat-up of the lay, to move the slide outward when absence of filling is detected.

4. In a loom, a lay having a shuttle-box thereon provided with a binder, a filling-detector, a movable support therefor, and means actuated by or through the binder when the shuttle is in said shuttle-box to cause operative movement of said support when absence of filling is detected.

5. In a loom, a lay having a shuttle-box thereon provided with a binder, a filling-detector, a slide upon which it is mounted, outward movement of the slide being adapted to effect the operation of a stopping instrumentality, and adjustable means actuated by or through engagement with said binder when the shuttle is boxed to cause outward movement of the slide upon detection of absence of filling.

6. In a loom, a lay, a filling-fork, its slide, a vibratable actuator to effect outward movement of the slide when the filling is absent, and means connected with and adapted to impart the operating stroke to the actuator by or through the lay.

7. In a loom, a lay, a filling-fork, its slide, a vibratable actuator to effect outward movement of the slide when the filling is absent, and means, including an adjustable impact member connected with said actuator, to impart the operating stroke to the actuator by or through the lay on the forward beat thereof.

8. In a loom, a lay, a shuttle-box thereon provided with a binder, a filling-fork, its slide, a pivotally-mounted, vibratable actuator to effect outward movement of the slide when the filling is absent, and means, including a member in the path of the binder as the lay beats up, to impart the operating stroke to said actuator when the shuttle is in said shuttle-box.

9. In a loom, a lay, a filling-fork, its slide, a vibratable actuator to effect outward movement of the slide when the filling is absent, a rock-shaft on which the actuator is mounted, an arm fast on said rock-shaft, an adjustable impact member carried by said arm, to be engaged by a part on the lay on its forward beat and through said arm turn the rock-shaft as the lay beats up on alternate picks, and a spring to turn said rock-shaft in the opposite direction.



10. In a loom, a lay, a shuttle-box thereon provided with a binder, a filling-fork, its slide, a pivotally-mounted, vibratable actuator to effect outward movement of the slide when  
5 the filling is absent, and an upturned arm rigidly connected with said actuator and adapted to be moved by the binder as the lay beats up, to impart the operating stroke to the actuator when the shuttle is in said shuttle-box.

10 11. In a loom, a lay, a shuttle-box thereon having a pivotally-mounted binder, a filling-fork and its slide, located at the side of the loom adjacent the shuttle-box, an actuator to

move the slide outward when the filling is absent, and means, including an adjustable  
15 member in the path of the free end of the binder, to impart the operating stroke to the actuator when the shuttle is in the said shuttle-box.

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

WILLIAM A. FOWLER.

Witnesses:

W. C. MAUPIN,

P. S. CARLTON.