No. 744,324. PATENTED NOV. 17, 1903.

W. A. FOWLER.

PROTECTIVE MECHANISM FOR LOOMS.

APPLICATION FILED AUG. 31, 1903.

NO MODEL.

Fig: 1.

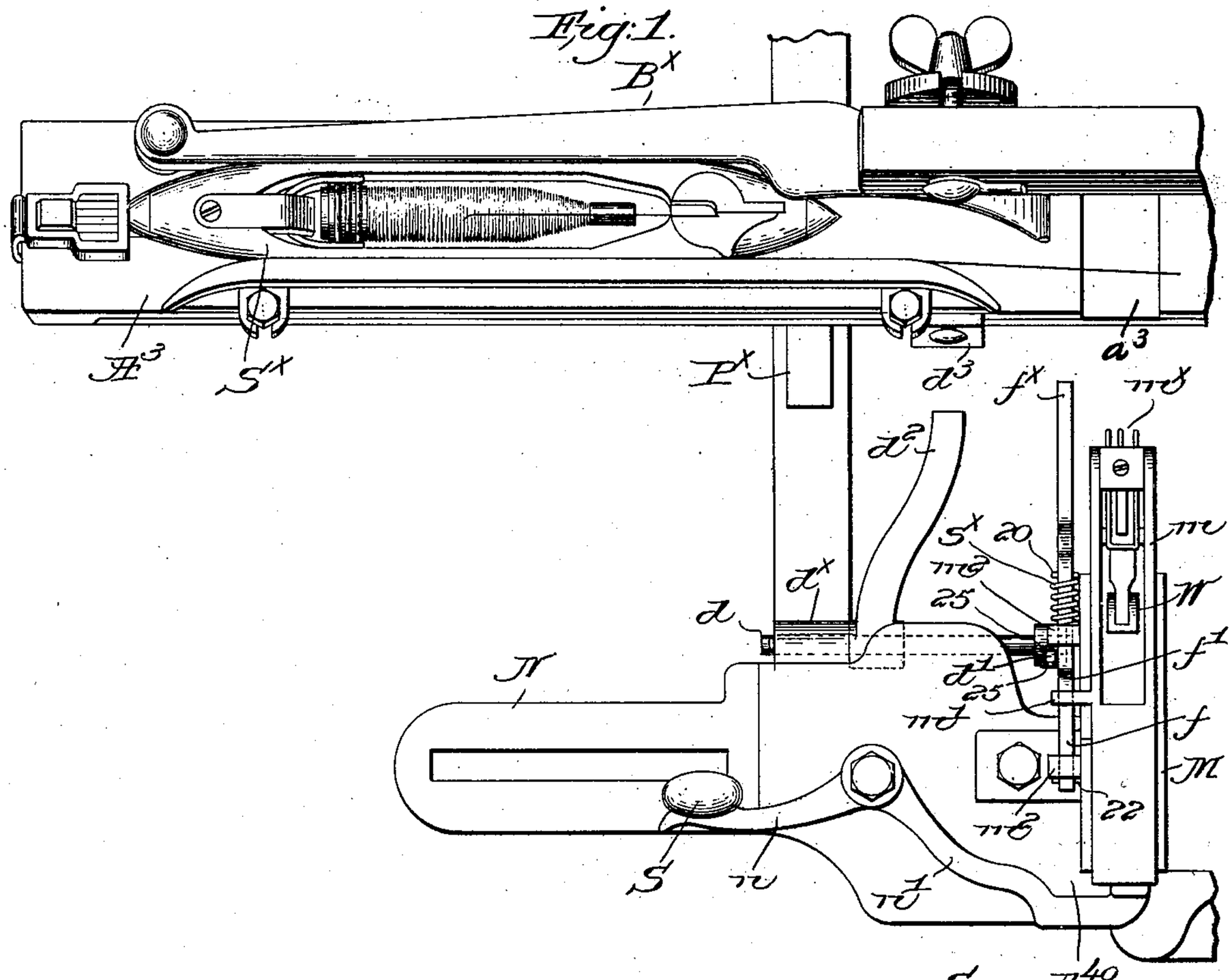
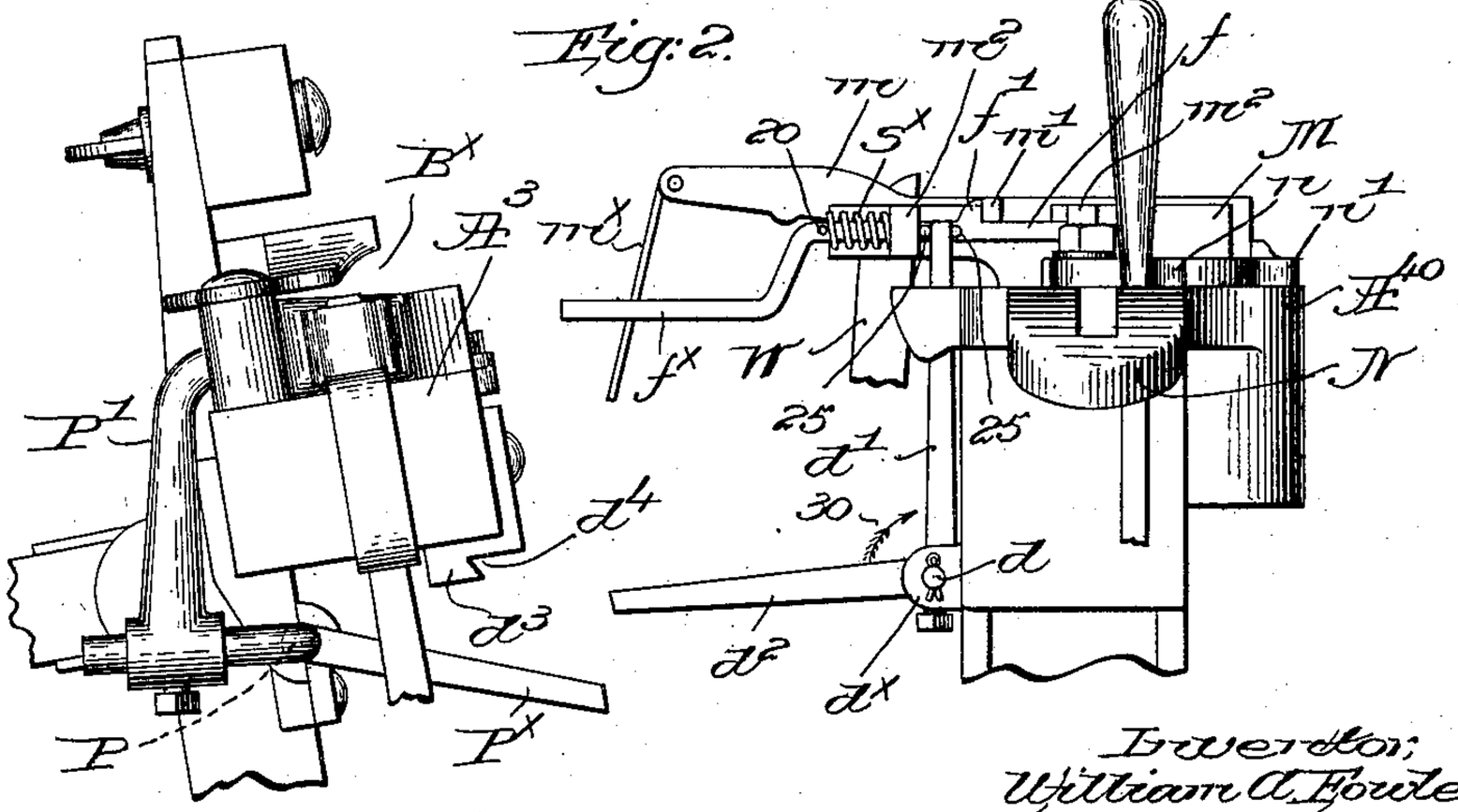


Fig: 2.



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No. 744,324. Patented November 17, 1903.

UNITED STATES PATENT OFFICE.

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PROTECTIVE MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 744,324, dated November 17, 1903.

Application filed August 31, 1903. Serial No. 171,319. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. FOWLER, a citizen of the United States, residing at Salisbury, in the county of Rowan and State of North Carolina, have invented an Improvement in Protective 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.

It is common practice in plain looms to mount the filling detector or fork on a slide at one side of the loom in such close juxtaposition to the shuttle-box at that end of the lay that when the latter beats up the tines of the fork sweep across the raceway very close to the mouth of the shuttle-box. Should the shuttle fail to properly box therein, the fork is liable to strike it on the beat up and be bent or otherwise injured, as the usual protector mechanism of the loom cannot act to shield or guard the filling-detector at such time.

My present invention has for its object the production of means to prevent injury to the filling-detector when the shuttle is improperly boxed at the same side of the loom, and I have also provided means for checking the movement of the lay in a positive and absolute manner at such time entirely independent of the usual protector mechanism.

The various novel features of my invention will be described hereinafter in the specification and particularly pointed out in the following claims.

Figure 1 is a top or plan view of a portion of the left-hand side of a loom with one embodiment of my invention applied thereto, and Fig. 2 is a left-hand side elevation of the apparatus illustrated in Fig. 1.

The lay A^3, shuttle-box $B^\times$ thereon, herein the one at the left-hand end of the lay, the protector rock-shaft P, Fig. 2, binder-finger P′, and dagger $P^\times$, mounted thereon, the dagger being adapted to coöperate with the usual frog, (not shown,) the shipper S, its knock-off lever $n\,n'$, the filling detector or fork $m^\times$, pivotally mounted on a slide m, longitudinally movable in a stand M, secured to the breast-beam A^{40}, and the weft-hammer W to move the slide outward upon detection of filling failure, may be and are all of usual or well-known construction.

In Fig. 1 the arm n' of the knock-off lever is shown as located in front of the slide m, so that outward movement of the latter releases the shipper from its holding-notch in the usual plate N.

The filling-fork tines sweep across the raceway of the lay in the transverse recess a^3 thereof, Fig, 1, on the beat up in usual manner and close to the mouth of the shuttle-box $B^\times$.

On the outer side of the stand M, I have shown two bearings m^2, in which is slidably mounted the straight shank f of a shuttle-feeler $f^\times$, adapted to extend across the mouth of the shuttle-box when the lay beats up, provided the shuttle is properly boxed or is at the other end of the lay. A spring $s^\times$ is coiled around the feeler-shank between the rearmost bearing m^2 and a pin 20 on said shank, the spring normally pushing the feeler toward the back of the loom, a pin 22 at the front end of the shank coöperating with the other bearing m^2 to limit such movement.

I have herein shown an upturned ear f' on the shank f behind a lateral lug m' on the fork-slide m, overhanging the shank and in the path of movement of said ear f'.

Should the shuttle $S^\times$, Fig. 1, fail to be properly boxed in the shuttle-box $B^\times$, its inner end will project more or less beyond the mouth of said box, and on the beat up it will engage the shuttle-feeler $f^\times$ and push it and its shank f forward or to the right, Fig. 2. During such movement, resisted by spring $s^\times$, the ear f' engages the lug m' and moves the slide m outward in unison with the feeler, so that the filling-fork $m^\times$ is retracted as the lay advances and is effectually prevented from coming into contact with the projecting end of the shuttle. Any injury of the filling-fork or tendency to injury thereof by the shuttle is thus absolutely prevented.

When the slide m is moved outward, as described, the knock-off lever $n\,n'$ is actuated thereby to release the shipper and effect stoppage of the loom.

In this construction I have provided a stop or check to effect stoppage of the lay as it beats up. A rock-shaft d, mounted in suit-

able bearings $d^{\times}$ on the loom-frame, (one of said bearings being shown,) is provided with an upturned arm d', the upper end thereof being extended between two lateral pins 25 on the shuttle-feeler shank, and a second arm or stop-dog d^2 is also rigidly secured to the rock-shaft, the normal position of the parts being clearly shown in Fig. 2. The lay has secured to it a bunter d^3, having a notch d^4 to receive the stop-dog d^2 when the latter is operatively positioned. When the shuttle-feeler $f^{\times}$ is moved outward, as has been described, it rocks the shaft d in the direction of arrow 30, Fig. 2, through the upturned arm d', and thereby elevates the top of the dog d^2 into the path of the bunter d^3, so that as the lay beats up said dog engages the notch d^4 of the bunter and brings the lay to a stop, it being remembered that the shipper has been released. Such stopping or checking of the lay is positive and effective and acts entirely independently of the usual protector mechanism, so that if the latter should fail to operate no harm would result.

My invention is not restricted to the precise construction and arrangement herein shown and described, as the same may be varied or rearranged in different particulars without departing from the spirit and scope of my invention.

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

1. In a loom, a lay having a shuttle-box, a filling-detector at the same side of the loom, a movable support for the detector, and means to move said support and retract the detector when the shuttle fails to box properly in said shuttle-box.

2. In a loom, a lay having a shuttle-box, a filling-detector movable across the mouth thereof when the lay beats up, a movable detector-support, and means to move it and retract the detector when the shuttle fails to box properly in said shuttle-box.

3. In a loom, a lay having a shuttle-box, a filling-fork at the same side of the loom, a fork-slide, and means to move the slide outward and thereby retract the fork when the shuttle fails to box properly in said shuttle-box.

4. In a loom, a lay, a filling-fork to detect filling failure, a fork-slide adapted to be moved outward upon detection of filling failure, and means operative by or through failure of the shuttle to properly box in the adjacent shuttle-box to move the slide and retract the filling-fork.

5. In a loom, a lay having a shuttle-box, a filling-fork at the same side of the loom, a slide on which it is mounted, and means to move said slide to retract the filling-fork, and also to stop the lay, when the shuttle fails to properly box in said shuttle-box.

6. In a loom, a shipper, a lay, a filling-fork, a slide on which it is mounted, means intermediate said slide and shipper to release the latter upon outward movement of the former, a normally inoperative dog, and means to move the slide outward, retracting the filling-fork, and to render the dog operative to stop the lay, when the shuttle fails to box properly in the adjacent shuttle-box.

7. In a loom, a shipper, a lay, a normally operative filling-detector, a normally inoperative checking-dog for the lay, a detector-slide, and means to move the latter and said dog to render the detector inoperative, and the dog operative to stop the lay, when the shuttle fails to properly box in the adjacent shuttle-box, such movement of the detector-slide effecting release of the shipper.

8. In a loom, a lay having a shuttle-box, a filling-fork at the same side of the loom, a movable slide on which it is mounted, said slide having a lateral lug, and a shuttle-feeler slidably mounted adjacent the fork-slide and adapted to coöperate with its lug, the shuttle when improperly boxed engaging and moving the shuttle-feeler, and thereby the fork-slide to retract the filling-fork and prevent damage thereto by the shuttle.

9. In a loom, a lay having a shuttle-box, a filling-fork at the same side of the loom, a movable slide on which it is mounted, a shuttle-feeler slidably mounted adjacent the fork-slide, a normally inoperative checking-dog for the lay, and connections between said shuttle-feeler and the fork-slide and checking-dog, engagement of the feeler by an improperly-boxed shuttle retracting the filling-fork and causing the dog to move into position to engage and check the forward movement of the lay.

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

WILLIAM A. FOWLER.

Witnesses:
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