

No. 739,113.

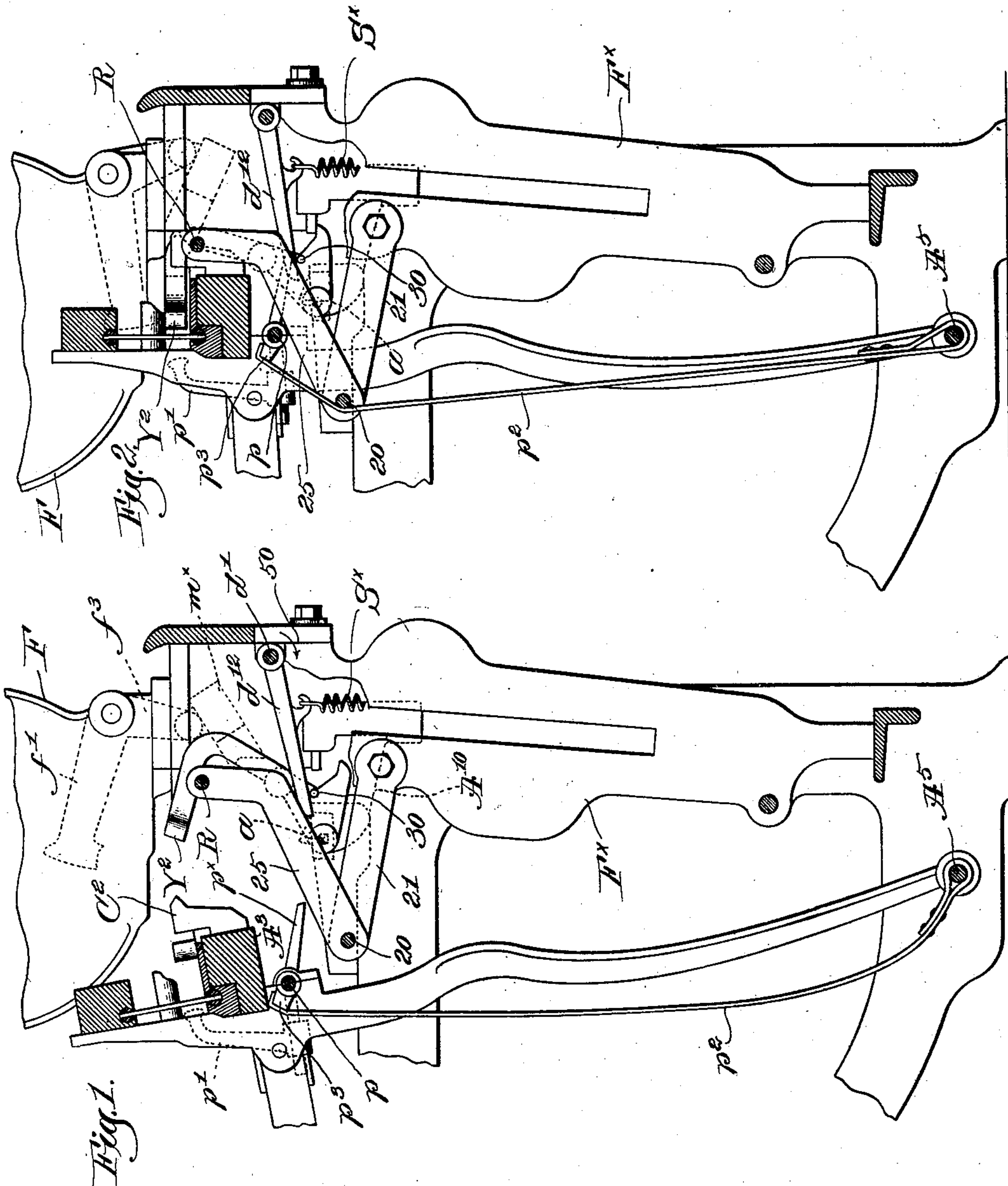
PATENTED SEPT. 15, 1903.

O. A. SAWYER.
FILLING REPLENISHING LOOM.

APPLICATION FILED JUNE 20, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



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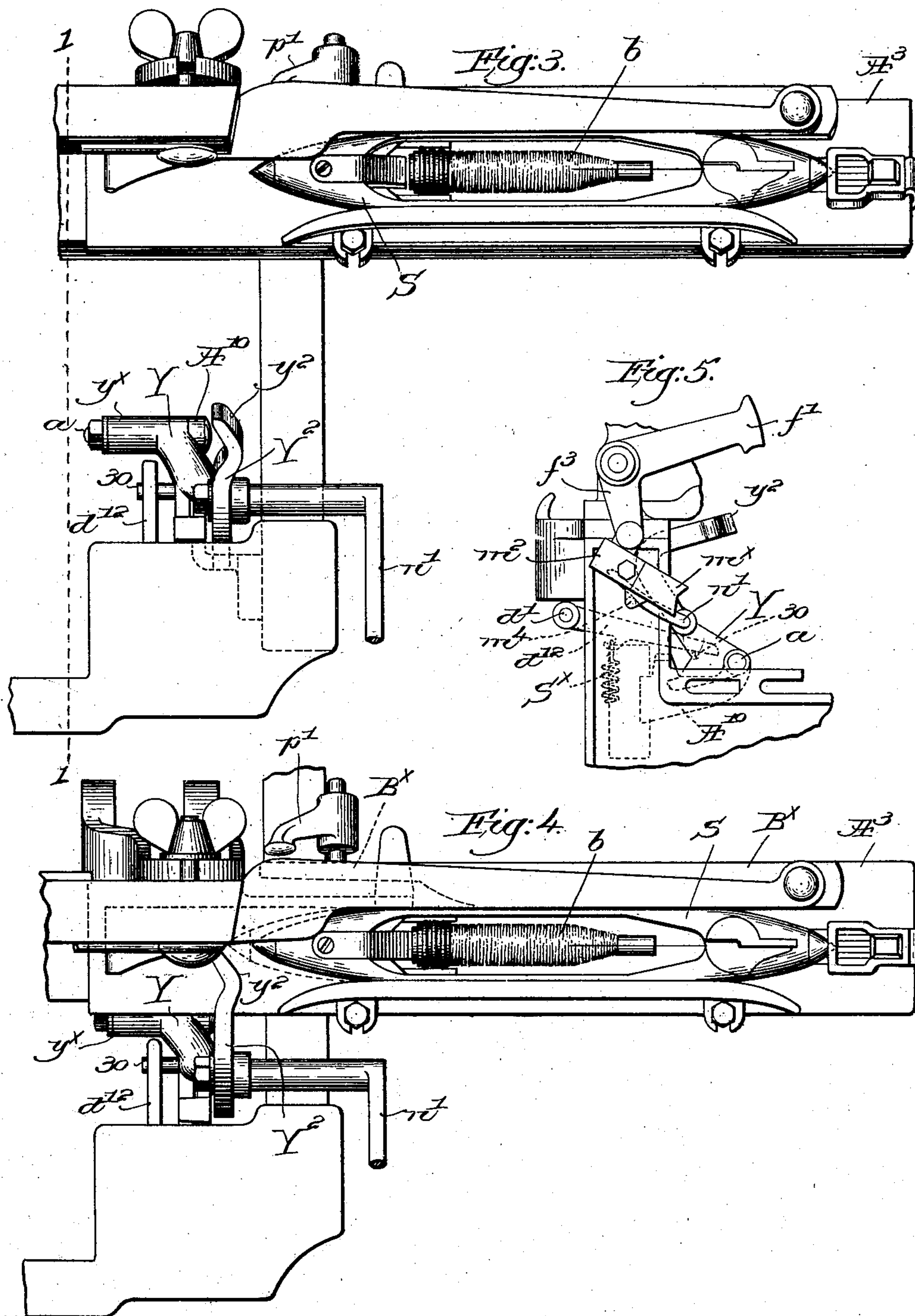
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NO MODEL.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

ORREN A. SAWYER, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO DRAPER COMPANY, OF HOPEDALE, MASSACHUSETTS, A CORPORATION OF MAINE.

FILLING-REPLENISHING LOOM.

SPECIFICATION forming part of Letters Patent No. 739,113, dated September 15, 1903.

Application filed June 20, 1903. Serial No. 162,300. (No model.)

To all whom it may concern:

Be it known that I, ORREN A. SAWYER, a citizen of the United States, and a resident of Lowell, county of Middlesex, State of Massachusetts, have invented an Improvement in Automatic Filling-Replenishing 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 relates more particularly to looms wherein the running filling is automatically replenished at the proper time—as, for instance, in the Northrop loom, one form of which is shown in United States Patent No. 529,940, the running shuttle being provided with a fresh supply of filling transferred from a feeder or hopper by suitable transferring means. If the shuttle is not properly boxed, filling-replenishment is prevented by or through a shuttle-feeler, which detects the improper position of the shuttle in the replenishing shuttle-box and through intermediate devices governs the operation of the transferring means. While the feeler thus detects the improper position of the shuttle, it does not ordinarily correct the fault, and the filling-replenishing is retarded until the shuttle is properly boxed. When the mechanism is nicely adjusted, this delay may be objectionable, particularly in so-called “feeler-loom,” wherein filling-replenishment is effected when the filling in the shuttle is substantially exhausted.

In the present invention the shuttle-feeler is so constructed and arranged that if the shuttle is only slightly out of proper position it will be pushed into the shuttle-box into position for filling-replenishment without delaying the latter for two or more picks. Means are also provided to relieve the binder-pressure, so that the “homing” of the shuttle can be easily effected by the shuttle-feeler. Should the shuttle be so far out of the box that it cannot be pushed in by the shuttle-feeler, the latter will then act to prevent filling-replenishment on that pick, as is now customary.

The various novel features of the invention will be fully described in the subjoined

specification and particularly pointed out in the following claims.

Figure 1 is a transverse sectional view of a portion of a loom provided with automatic filling-replenishing mechanism, with one embodiment of the present invention applied thereto, the parts being in normal position, the section being taken on the line 1-1, Fig. 3, looking toward the right. Fig. 2 is a similar view, but showing the lay forward and the replenishing mechanism as having just operated to provide the shuttle with a fresh supply of filling. Fig. 3 is an enlarged plan view of the replenishing shuttle-box and the shuttle-feeler in normal position, with the lay back. Fig. 4 is a similar view, but showing the lay nearly forward and the shuttle-feeler in position to detect improper position of the shuttle and correct the same if the shuttle is not too far out of the box; and Fig. 5 is a detail viewed from the right-hand side of the loom of the shuttle-feeler and some of the adjacent parts of the apparatus.

The lay A^3 , automatically self-threading shuttle S , the feeder F , Figs. 1 and 2, to hold the filling supplies or carriers b , Figs. 3 and 4, the transferrer f' , having the depending end f^3 , the notched dog m^x , carried by the latter and to be engaged by the bunter C^2 on the lay to effect change of filling, and the controlling rock-shaft d' , to be rocked in the direction of arrow 50, Fig. 1, when filling-replenishing is to be effected, may be and are all substantially as in United States Patent No. 641,792, the rock-shaft d' having fast upon it an arm d^{12} for a purpose to be described, one end of a strong spring S^x being attached to said arm and its other end fixed to a part of the loom-frame.

A bracket A^{10} on the loom side has a stud a , on which is fulcrumed an upturned arm Y , the upper end of which forms the shuttle-feeler, to be described, said arm having a finger n' (see Fig. 5) to engage a lug m^4 on the arm m^2 , carrying the notched dog m^x , the arm d^{12} on the rock-shaft d' being held by spring S^x against a pin 30 on the arm Y , substantially as in Patent No. 683,423, except that herein the hub y^x of arm Y is not laterally movable on the fulcrum-stud a .

Some of the parts just referred to are omitted in Figs. 1 and 2 for the sake of clearness, as they are fully illustrated in Figs. 3, 4, and 5.

Referring to Figs. 1 and 2, the protector rock-shaft p , dagger p^x thereon, the upturned binder-finger p' to coöperate with the binder B^x of the replenishing shuttle-box at the right-hand end of the lay, Figs. 3 and 4, may be of usual construction and operate in well-known manner. Herein a strap or band p^2 , Figs. 1 and 2, is shown as looped at one end about the lay rocker-shaft A^5 and extended upward to a short arm or finger p^3 on the protector-shaft p , the strap being long enough to be slack when the lay is back, as shown in Fig. 1. A rod 20 is rigidly secured to brackets 21, one of said brackets being bolted to each of the cloth-roll stands F^x , as shown in Figs. 1 and 2, the brackets supporting the pivoted upturned arms 25, which carry the supplementary roll R , substantially as in United States Patent No. 668,024, the strap passing behind the rod 20. Manifestly as the lay beats up the strap will engage said rod and be tightened, so that as the lay completes its forward movement the taut strap will pull upon the finger p^3 and turn the protector-shaft p to draw back the binder-finger p' , as shown in Fig. 2 and also in Fig. 4. The binder-pressure upon the shuttle is thus relieved, and when the shuttle is in the replenishing shuttle-box it can be easily pushed into proper position by the shuttle-feeler, as will be described. It is to be understood that the binder release does not take place until after the point of the dagger has passed the usual frog-lift, so that there is no interference with the usual operation of the protector mechanism. The upper end of the arm Y is bent rearwardly at Y^2 at such a height that it will extend over the lay just in front of the mouth of the replenishing shuttle-box when filling-replenishment is to be effected, provided the shuttle is properly boxed, and in Fig. 2 the part Y^2 , constituting the shuttle-feeler, is shown in such position. Referring to Figs. 3 and 4, said feeler is shaped at its extremity to present a cam-face y^2 , which is diagonal to the length of the lay and slightly convex, as herein shown. Now if the end of the shuttle projects beyond the mouth of the shuttle-box, as in dotted lines, Fig. 4, the cam-face y^2 will engage the shuttle just back of its point, and as the lay completes its forward movement the cam will act to push the shuttle into the box in proper full-line position, Fig. 4, for filling-replenishment, it being remembered that the binder-pressure is then relieved, as has been described. Of course the shuttle-feeler cannot act in such manner if the shuttle is too far out for the cam to act as described, but in such case the shuttle-feeler will be stopped in its movement into operative position and the filling-replenishing mechanism will be prevented from operating. As will be understood by those skilled in the art, the shuttle-

feeler is normally maintained in the position shown in Fig. 1, but when the rock-shaft d' is turned in the direction of the arrow 50 to cause filling-replenishment the lifting of arm d^{12} permits the dog m^x to move into the path of the bunter C^2 , and the shuttle-feeler is swung rearwardly to attain the position shown in Fig. 2 as the lay beats up.

The invention is not restricted to the precise construction and arrangement herein shown and described, as the same may be modified or rearranged in various particulars by those skilled in the art without departing from the spirit and scope of the invention.

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

1. In a loom, the lay provided with a shuttle-box, means to normally insure proper positioning of the shuttle in the shuttle-box, said means yielding when the location of the shuttle precludes positioning thereof, and mechanism to render said means operative by or through an abnormal condition of the filling.

2. In a loom, the lay provided with a shuttle-box, and swinging means mounted independently of the lay to normally insure proper positioning of the shuttle in the shuttle-box, said means yielding upon engagement with the shuttle if the location of the latter precludes positioning thereof.

3. In a loom, the lay provided with a shuttle-box, swinging means mounted independently of the lay and adapted when rendered operative to normally insure proper positioning of the shuttle in the shuttle-box, said means yielding upon engagement with the shuttle if the location of the latter precludes positioning thereof, and mechanism to render said means operative upon the occurrence of an abnormal condition of the filling.

4. In a loom, the lay provided with a shuttle-box, a coöperating binder, means to relieve the binder-pressure as the lay beats up, and means rendered operative by or through an abnormal condition of the filling to normally insure proper positioning of the shuttle in the shuttle-box, such means acting when binder-pressure is relieved, and yielding when the location of the shuttle precludes positioning thereof.

5. In a loom, the lay provided with a shuttle-box, a swinging feeler mounted independently of the lay and having a cam-face on its free end to engage and normally insure proper positioning of the shuttle in the shuttle-box; said feeler being retracted by engagement with the shuttle when the location of the latter precludes positioning thereof, and means to effect the movement of the feeler into operating position.

6. In a loom, the lay provided with a shuttle-box, a pivotally-mounted feeler having a cam-face to engage and normally insure proper positioning of the shuttle in the shuttle-box, said feeler yielding when the location of the

shuttle precludes positioning thereof, and means governed by or through the filling to render said feeler operative.

7. In a loom, the lay provided with a shuttle-box, a shuttle, a movable feeler having a cam-face to engage and normally insure proper positioning of the shuttle in the shuttle-box, the feeler yielding when the location of the shuttle precludes positioning thereof, means to release the shuttle from binding-pressure in the shuttle-box at the time the feeler acts, and means to render the feeler operative to coact with the shuttle.

8. In a loom provided with automatic filling-replenishing mechanism, a lay having a shuttle-box, means acting normally to insure proper positioning of the shuttle in the shuttle-box when filling-replenishment is to be effected, and connections between said means and the replenishing mechanism to prevent the operation of the latter when the location of the shuttle precludes positioning thereof.

9. In a loom provided with automatic filling-replenishing mechanism, a lay having a shuttle-box, a feeler moved automatically into position to normally insure proper boxing of the shuttle when filling-replenishment is to be effected, and connections between the feeler and the replenishing mechanism to prevent the operation of the latter when the location of the shuttle precludes boxing thereof by the feeler.

10. In a loom provided with automatic filling-replenishing mechanism, a lay having a shuttle-box, shuttle-binding means, a feeler automatically moved to normally insure proper boxing of the shuttle when filling-replenishment is to be effected, a device to render said binding means inoperative at such time, and connections between the feeler and the replenishing mechanism to prevent the operation of the latter when the location of the shuttle precludes boxing thereof by the feeler.

11. In a loom provided with automatic filling-replenishing mechanism, a lay having a shuttle-box, a pivotally-mounted feeler having a cam-face and movable automatically, when filling-replenishment is to be effected, into position to normally insure proper boxing of the shuttle, said feeler yielding upon engage-

ment with the shuttle when the location of the latter precludes proper boxing thereof by the feeler, and connections between said feeler and the replenishing mechanism to prevent the operation of the latter when the shuttle cannot be boxed.

12. In a loom provided with automatic filling-replenishing mechanism, a lay having a shuttle-box, protector mechanism, including a shuttle-binder and a rock-shaft controlling it, a feeler rendered operative when filling-replenishment is to be effected to normally insure proper boxing of the shuttle for replenishment, the feeler yielding when the location of the shuttle precludes its boxing by said feeler, connections between the latter and the replenishing mechanism to prevent operation of the mechanism when the shuttle cannot be boxed, and means to turn the rock-shaft and relieve the binder-pressure when the feeler is rendered operative.

13. In a loom, provided with automatic filling-replenishing mechanism, the lay having a shuttle-box, means independent of the lay normally acting to insure proper positioning of the shuttle in the shuttle-box when filling-replenishment is to be effected, and connections between said means and the replenishing mechanism to prevent the operation of the latter when the location of the shuttle precludes positioning thereof.

14. In a loom provided with automatic filling-replenishing mechanism, the lay having a shuttle-box, means independent of the lay normally acting to insure proper positioning of the shuttle in the shuttle-box when filling-replenishment is to be effected, shuttle-binding mechanism, means to automatically relieve the shuttle from binder-pressure when the feeler is in condition to cooperate with the shuttle, and connections between said means and the replenishing mechanism to prevent the operation of the latter when the location of the shuttle precludes positioning thereof.

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

ORREN A. SAWYER.

Witnesses:

WILLIAM C. TROMBLY,
EARL A. THISSELL.