

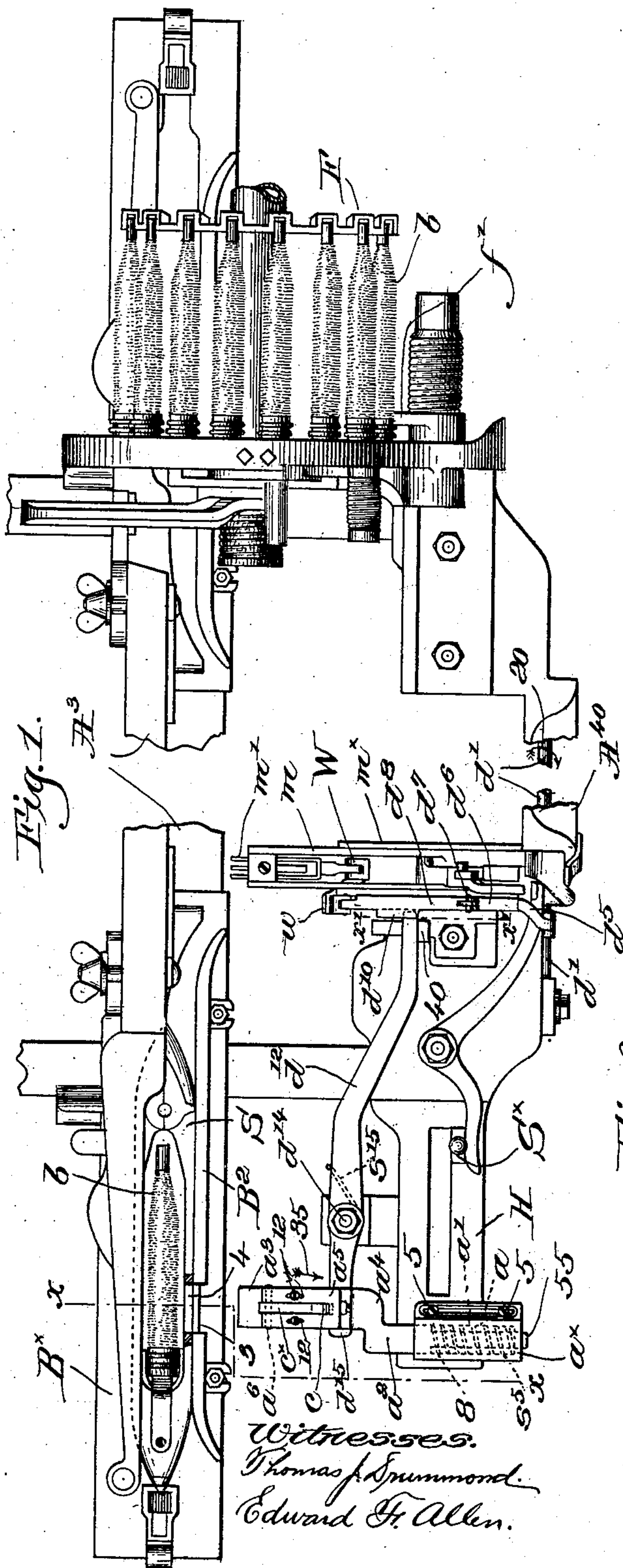
No. 685,236.

Patented Oct. 22, 1901.

W. HAYNES.
FILLING REPLENISHING LOOM.

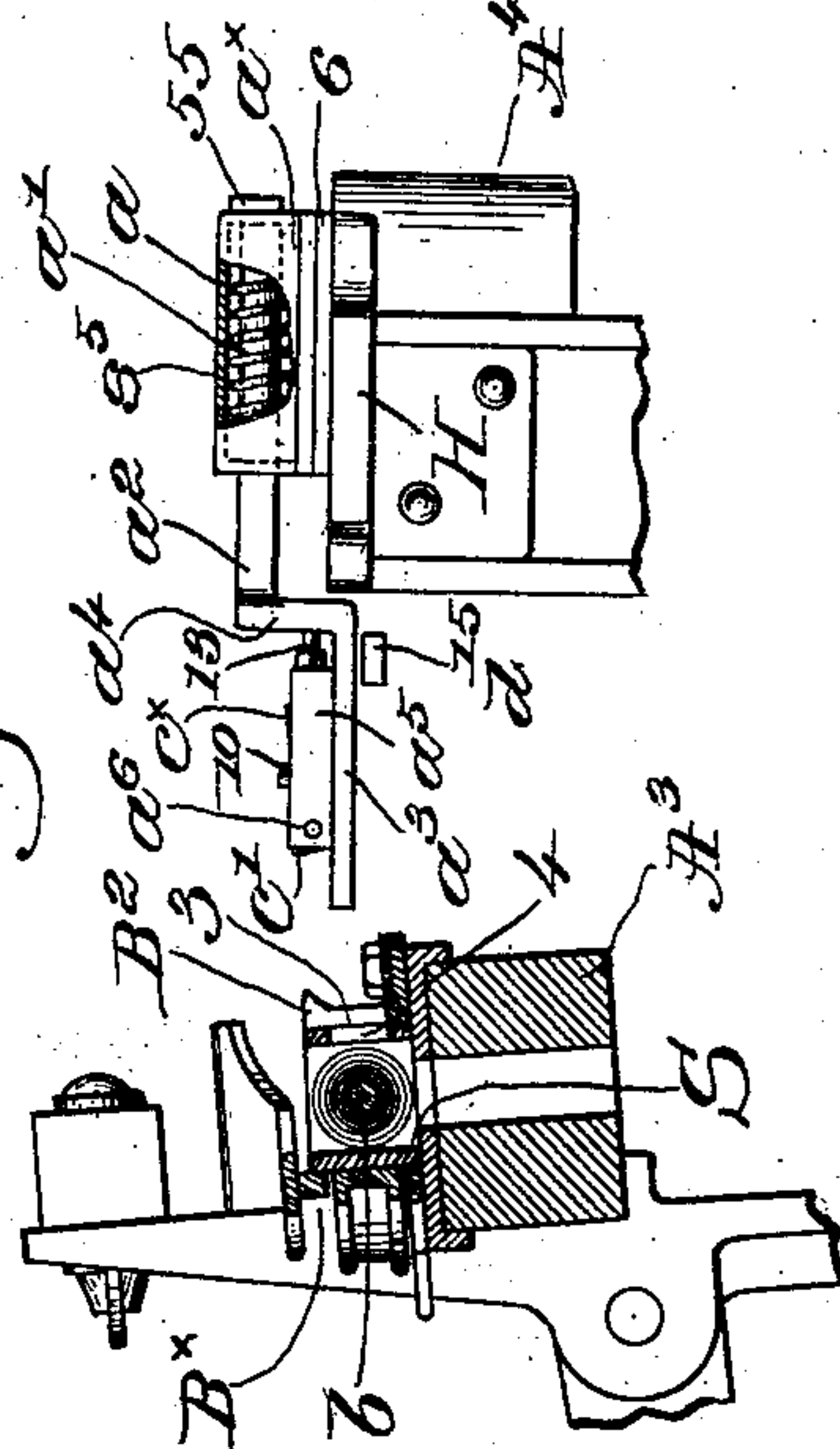
(Application filed Aug. 3, 1901.)

(No Model.)

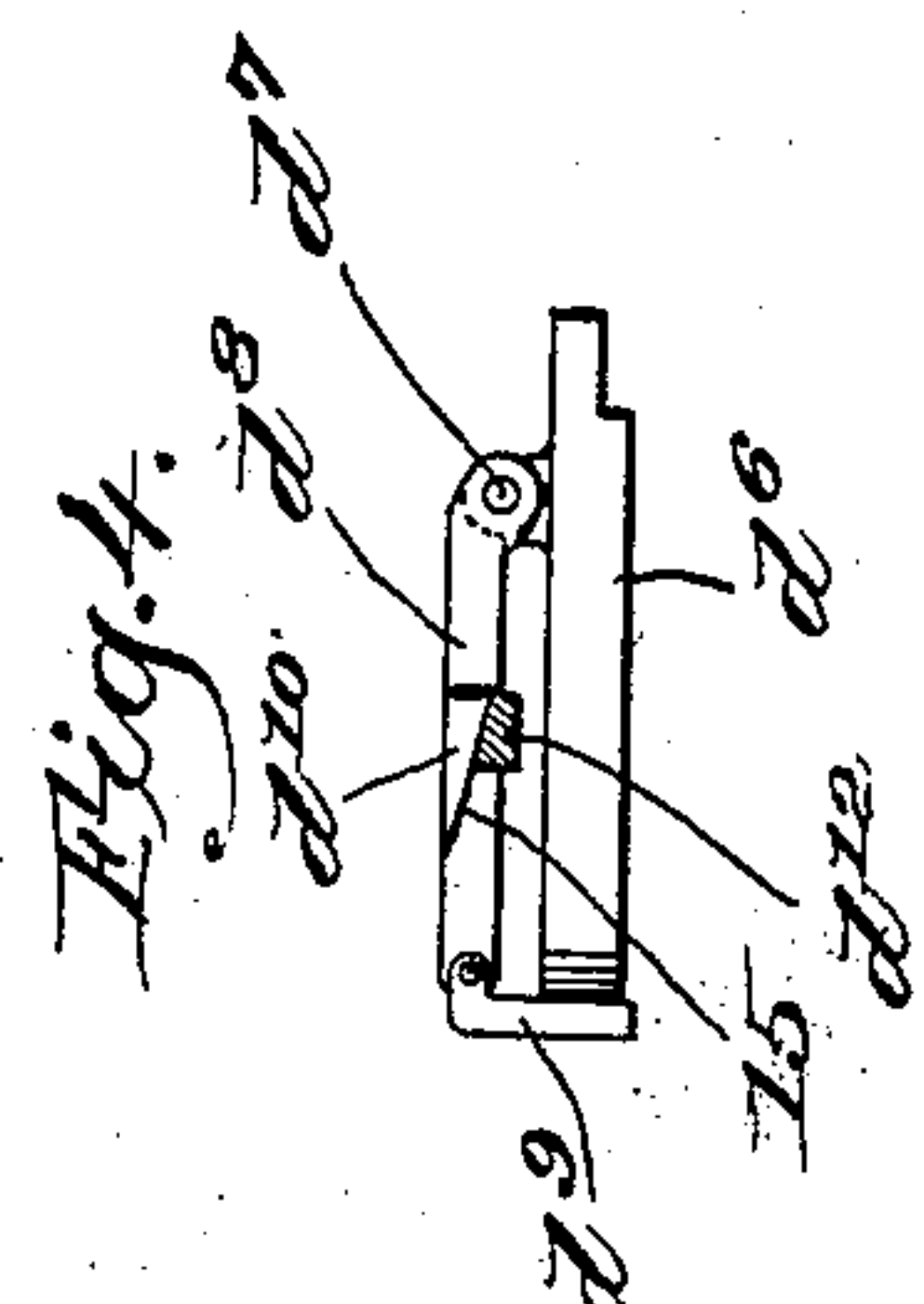
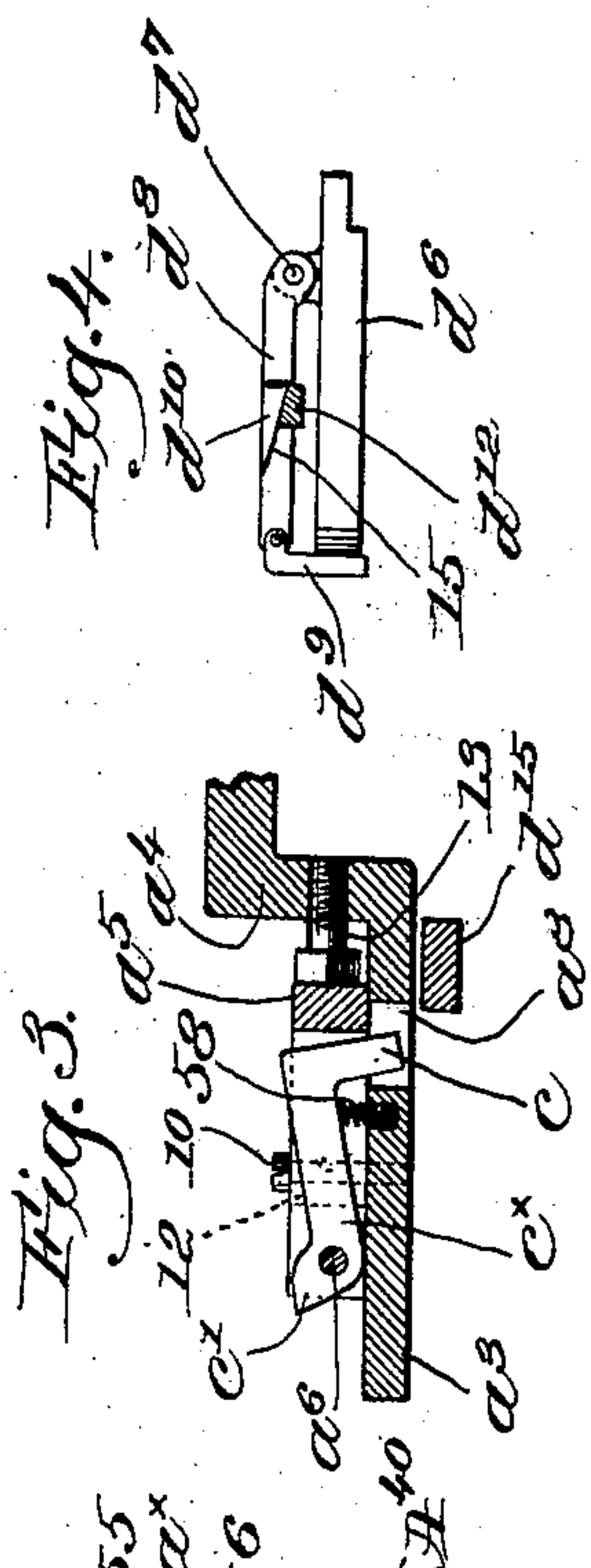


Witnesses:
Thomas J. Drummond.
Edward F. Allen.

Fig. 2.



Inventor
William Haynes,
by Crosby Gregory,
Att'y.



UNITED STATES PATENT OFFICE.

WILLIAM HAYNES, OF ATLANTA, GEORGIA, ASSIGNOR TO DRAPER COMPANY, OF HOPEDALE, MASSACHUSETTS, A CORPORATION OF MAINE.

FILLING-REPLENISHING LOOM.

SPECIFICATION forming part of Letters Patent No. 685,236, dated October 22, 1901.

Application filed August 3, 1901. Serial No. 70,762. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HAYNES, a citizen of the United States, and a resident of Atlanta, county of Fulton, State of Georgia, 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 so-called "feeler looms," provided with mechanism to automatically replenish the filling when the supply of the latter in the shuttle has been exhausted to a predetermined extent.

In my present invention I have provided a feeler to intermittingly coöperate with the filling in the shuttle and to be moved thereby until the desired exhaustion of the filling has been effected, and at such time the practical cessation of filling-induced movement of the feeler permits the operative positioning of a device to transmit the movement of the shuttle-body to effect the actuation of means which control the time of operation of the filling-replenishing mechanism.

Figure 1 is a top or plan view, centrally broken out, of a loom provided with automatic filling-replenishing mechanism and with one embodiment of my invention applied thereto. Fig. 2 is a transverse sectional detail on the line $x x$, Fig. 1, looking toward the right. Fig. 3 is an enlarged sectional detail taken longitudinally of the feeler to show more clearly the structure thereof and of certain devices mounted thereon, and Fig. 4 is a detail in side elevation of a portion of the controlling means for the filling-replenishing mechanism on the line $x' x'$, Fig. 1.

In Fig. 1 the lay A^3 , breast-beam A^{40} , shipper S^x and its notched holding-plate H , the filling-feeder F to receive filling-carriers b , the transferrer f' , and the operating or controlling rock-shaft d' to effect a change of filling when the rock-shaft is rotated in the direction of the arrow 20, Fig. 1, may be and are all of usual construction and substantially as shown in United States Patent No. 646,866, dated April 3, 1900, and in the structure shown the self-threading shuttle S is pro-

vided with a fresh supply of filling when in the shuttle-box adjacent the feeder F upon actuation of the filling-replenishing mechanism.

The front wall B^2 of the shuttle-box B^x (see Figs. 1 and 2) is provided with a slot 3, herein shown as cut down from the top of the wall, to register with an aperture or slot 4 in the side wall of the shuttle when the latter is in the box B^x , the slot 4 being located opposite a portion of the barrel of the filling-carrier near the base or head thereof.

On the outer end of the holding-plate H , I have herein shown a box-like support or stand a^x , somewhat similar to a loom-temple stand and having a longitudinal chamber a to receive a spiral spring s^5 , which is herein shown as coiled around the reduced end a' of the shank a^2 of the feeler. The shank and its reduced end are mounted to slide in the stand a^x , substantially at right angles to the breast-beam, the stand being adjustably secured, as by set-screws 5, Fig. 1, to a supporting-plate 6, fastened to the holding-plate H in any suitable manner. The outer end of the spring s^5 bears against the outer end wall of the stand a^x , and its inner end bears against the shoulder 8 of the feeler-shank.

The feeler is herein shown as a thin flat plate a^3 , connected by a bend a^4 with the shank a^2 , the bend serving to offset the feeler and position it opposite slot 3 in the front wall of the shuttle-box, hereinbefore referred to.

The feeler is yieldingly sustained by the means described in position to enter the slot 3 at each forward beat of the lay, and at each alternate beat when the shuttle is in the shuttle-box B^x the feeler will also pass through the slot 4 in the shuttle-wall to engage the filling on the filling-carrier, such engagement operating to move the feeler outward as the lay completes its beat up until the filling has been exhausted to a predetermined extent, and at such time the filling-induced movement of the feeler will cease, as there will be an insufficient amount of filling on the barrel of the filling-carrier to effect it.

The feeler moves in a rectilinear path, as will be manifest, transverse to the breast-beam and substantially at right angles to the lay.

The feeler is shown in Fig. 1 as made quite broad, so as to contact with a considerable portion of the filling, to thus distribute over the latter any strain due to impact and to thus lessen the chance of rubbing or breaking the filling. I have herein shown a \perp -shaped block a^5 , mounted on the feeler and adjustably secured thereto by set-screws 10, the shanks of which pass through longitudinal slots 12 (see Fig. 1) in the sides of the block and clamp the latter in position on the feeler, a stop-screw 13, screwed into the bend a^4 , serving as a back-stop for the block. The inner separated ends of the block a^5 support a transverse pin a^6 , serving as a fulcrum for an actuator c^x , said actuator extending longitudinally of the block and between its separated sides, as clearly shown in Figs. 1 and 3, and having its outer end bent to form a depending toe c , which passes through an aperture or hole a^8 in the feeler a^2 , the rear end of the actuator being bent up and extended rearwardly beyond the adjacent ends of the block a^5 to form a pin c' , the actuator being herein shown as normally maintained in inoperative position by a suitable spring s^8 . The actuator is thus movable with and also relatively to the feeler, and, as will appear hereinafter, the actuator serves to transmit to the controlling means for the filling-replenishing mechanism the movement of the shuttle-body when a change of filling is to be effected. The rock-shaft d' has an upturned arm d^5 , Fig. 1, the upper end of which is in the path of movement of a slide-bar d^6 , located adjacent the stand m^x , in which is mounted and longitudinally movable the usual slide m , on which the weft-fork m' is pivoted, the slide-bar having pivoted upon it at d^7 (see Fig. 4) a latch-carrier d^8 , rearwardly extended and at its end being pivotally connected with a depending latch d^9 , said latch overhanging the inner end of the slide-bar d^6 . When the latch is in the position shown in Fig. 4, a shoulder w on the usual weft-hammer W , Fig. 1, passes below the end of the latch; but if the latch is permitted to drop into the path of the shoulder w the forward movement of the weft-hammer will move the slide-bar outwardly and the upturned arm d^5 will be swung out, rocking the shaft d' in the direction of the arrow 20, Fig. 1, and in well-known manner effecting the actuation of the filling-replenishing mechanism. A laterally-extended shoulder d^{10} on the side of the latch-carrier (see Fig. 4 and also Fig. 1) is beveled on its under face, as at 15, to rest upon the correspondingly-beveled face of the inner end of a detent d^{12} , fulcrumed on a vertical pivot at d^{14} and normally held by a suitable spring s^{15} (see Fig. 1) in the position shown in said figure, the end of the detent beneath the shoulder d^{10} being held by the spring against a fixed upturned stop 40. At the opposite side of its fulcrum the detent is extended, as at d^{15} , beneath the feeler a^3 , and normally the toe c of the actuator on the feeler

is held above the path of the detent by the spring s^8 . So long as the detent remains in normal position herein shown the latch d^9 will be maintained by it in inoperative position. 70

As has been before stated, the feeler a^3 will be moved by engagement with the filling in the shuttle on every other pick from its normal or neutral position toward the front of the loom against the action of the spring s^5 , and such filling-induced movement of the feeler will be effected before the finger c' of the actuator can come in contact with the side wall of the shuttle-body. As the filling weaves off, however, the distance between the finger and the side wall of the shuttle gradually decreases until the filling has been exhausted to a predetermined extent, and at such time the diminution of the diameter of the mass of filling on the filling-carrier will be sufficient to permit the finger c' to engage the side wall of the shuttle, and as the shuttle is moved forward by the lay it will first act to tip the actuator c^x on its fulcrum to depress the toe c into the path of the detent, and at such time the side wall of the shuttle will bear against the ends of the block a^5 and will impart longitudinal movement to the feeler in the direction of the arrow 35, Fig. 1, bringing the toe c against the extended part d^{15} of the detent and swinging the latter on its fulcrum to withdraw its inner end from beneath the shoulder d^{10} . The latch-carrier d^8 thereupon drops to permit the latch d^9 to move into the path of the shoulder w on the weft-hammer, and the latter will on its next forward movement engage the latch and through the devices described will effect the actuation of the filling-replenishing mechanism. After the filling has been changed the various parts will return automatically to normal position, the spring s^{15} moving the detent to normal position, the inner end acting upon the beveled face 15 of the shoulder d^{10} to lift the latch-carrier and restore the latch to normal inoperative position. 100

The movement of the feeler from neutral position when effected by or through the actuator c , as has been described, is practically independent of the filling remaining on the filling-carrier, because the movement of the shuttle-body is transmitted to the feeler, not through the filling-carrier, as heretofore, but through the actuator to the supporting-block a^5 , rigidly mounted on the feeler. 115

The outer end of the part a' of the feeler-shank is bent up, as at 55, outside of the end of the box-like stand a^x to limit the movement of the feeler rearwardly. 120

The mechanism herein shown is exceedingly simple, effective, and rapid in its operation. 125

The adjustment of the actuator on the feeler is effected by means of the set-screws 12, and the feeler as a whole is adjusted on the holding-plate II by or through the clamp-screws 5. 130

The latch mechanism is not herein claimed, as the same is not, broadly, of my invention.

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

1. In a loom, a shuttle adapted to contain
5 a supply of filling, filling-replenishing mechanism, controlling means therefor, including a detent, an actuator to operate the detent, and a feeler to cooperate with the filling in the shuttle and permit the actuator to engage
10 and be moved by the shuttle-body, to operate the detent, upon exhaustion of the filling to a predetermined extent.

2. In a loom, a shuttle adapted to contain
15 a supply of filling, filling-replenishing mechanism, controlling means therefor, including a detent to normally prevent operation of said means, an actuator for the detent, pivotally mounted on the feeler, and a feeler to cooperate with the filling in the shuttle and permit
20 the actuator to be engaged and operatively positioned by the shuttle-body, and thereafter moved by the latter to operate the detent, upon exhaustion of the filling to a predetermined extent.

25 3. In a loom, a shuttle adapted to contain a supply of filling, filling-replenishing mechanism, controlling means therefor, an actuator for said means, mounted on and movable relatively to the feeler, and a feeler to cooperate with the filling in the shuttle and maintain
30 the actuator inoperative until predetermined exhaustion of the filling, the actuator at such time being automatically moved relatively to the feeler into position to effect the actuation
35 of the controlling means.

4. In a loom, a shuttle adapted to contain a supply of filling, filling-replenishing mechanism, controlling means therefor, a feeler
40 yieldingly sustained in position to intermittently engage and be moved by the filling in the shuttle until exhaustion of the filling to a predetermined extent, and a normally inoperative actuator for said means, pivotally
45 mounted on the feeler and movable by engagement with the shuttle-body into position to effect the actuation of the controlling means upon predetermined filling exhaustion.

5. In a loom, a shuttle adapted to contain a supply of filling, filling-replenishing mechanism, controlling means therefor, a feeler to
50 intermittently cooperate with the filling in the shuttle until predetermined exhaustion of the filling, and a device movably mounted on the feeler to transmit the movement of the
55 shuttle-body primarily to said controlling means, and thereafter through the feeler and effect actuation of such means upon predetermined filling exhaustion.

6. In a loom, a shuttle adapted to contain
60 a supply of filling, filling-replenishing mechanism, controlling means therefor, including a detent, a feeler yieldingly sustained in position to intermittently engage and be moved in a rectilinear path by the shuttle-filling until the latter is exhausted to a predetermined
65 extent, and an actuator pivotally mounted on the feeler, operatively positioned by engage-

ment with the shuttle-body upon predetermined filling exhaustion, and thereafter moved by the shuttle-body to effect release
70 of the detent and consequent operation of the controlling means.

7. In a loom, a shuttle adapted to contain a supply of filling, filling-replenishing mechanism, controlling means therefor, a longitudinally-movable, yieldingly-sustained feeler
75 to engage and be moved on alternate picks by the shuttle-filling until predetermined exhaustion of the filling, and an actuator for said means, movable with and also relatively
80 to the feeler and normally inoperative, predetermined filling exhaustion permitting the shuttle-body to operatively position the actuator by movement relative to the feeler, and thereafter moving the actuator and feeler in
85 unison to effect actuation of the controlling means.

8. In a loom, a shuttle adapted to contain a supply of filling, filling-replenishing mechanism, controlling means therefor, including
90 a detent, and a latch normally maintained inoperative thereby, a yieldingly-sustained feeler adapted to engage and be moved by the filling in the shuttle on alternate picks, until predetermined filling exhaustion, and
95 an actuator pivotally mounted on the feeler and having a toe normally out of the path of the detent, the feeler permitting the actuator to be engaged by the shuttle-body to move its toe into the detent-path and to thereafter
100 move the detent to release the latch upon predetermined filling exhaustion.

9. In a loom provided with filling-replenishing mechanism, controlling means therefor, including a latch, and a detent to normally
105 maintain it inoperative, a shuttle to contain a supply of filling and having a slot in its side wall, a yieldingly-sustained feeler adapted to intermittently enter the slot and engage the filling in the shuttle, to be moved by the
110 filling until predetermined exhaustion thereof, an actuator pivotally mounted on the feeler and having a depending toe, and means to normally maintain the actuator inoperative, predetermined exhaustion of the filling
115 permitting engagement of the actuator with the shuttle-body, to depress the actuator-toe into the path of, and to thereafter move, the detent to release the latch, thereby effecting actuation of the replenishing mechanism.
120

10. In a loom provided with filling-replenishing mechanism, controlling means therefor, including a latch, and a detent to normally maintain it inoperative, a shuttle to contain a supply of filling and having a slot
125 in its side wall, a yieldingly-sustained feeler adapted to intermittently enter the slot and engage the filling in the shuttle, to be moved by the filling until predetermined exhaustion thereof, an actuator pivotally mounted on the
130 feeler and having a depending toe, and a spring to normally maintain the toe elevated, the shuttle-body engaging the actuator and depressing the toe into the path of the de-

tent, and thereafter moving the latter to release the latch, upon predetermined exhaustion of the filling.

11. In a loom, a shuttle adapted to contain a supply of filling, normally inoperative filling-replenishing mechanism, controlling means therefor, including a detent, an actuator for the latter, adapted to be engaged and moved by shuttle-body upon predetermined exhaustion of the filling, to operatively move the detent to effect filling-replenishing, and a feeler to intermittingly engage and be moved by the filling in the shuttle until predetermined exhaustion of such filling, such filling-induced movement of the feeler preventing coöperation of the shuttle-body and the actuator.

12. In a loom a shuttle adapted to contain a supply of filling, filling-replenishing mechanism, controlling means therefor, a longitudinally-movable feeler adapted to intermittingly engage and be moved by the filling in the shuttle until predetermined exhaustion of the filling, a fixed guide for the feeler, a spring to return it to normal position after filling-induced movement thereof, and an actuator for the controlling means, operated by engagement with the shuttle-body, upon predetermined filling exhaustion, and prevented from such engagement by filling-induced movement of the feeler.

13. In a loom provided with filling-replenishing mechanism, controlling means therefor, including a latch, and a detent to normally maintain it inoperative, a shuttle to contain a supply of filling and having a slot in its side wall, a yieldingly-sustained feeler adapted to intermittingly enter the slot and

engage the filling in the shuttle, to be moved by the filling until predetermined exhaustion thereof, the feeler having an aperture, an actuator pivotally mounted on the feeler, having a depending toe to pass through the aperture and an upturned bunter at its inner end, and a spring to normally lift the toe, predetermined exhaustion of the filling permitting the shuttle-body to engage the finger and rock the actuator to depress the toe into the path of, and to thereafter move, the detent to release the latch and thereby effect replenishment of filling.

14. In a loom, the lay, a shuttle adapted to contain a supply of filling, filling-replenishing mechanism, controlling means therefor, a feeler yieldingly sustained in position to intermittingly engage and be moved by the filling in the shuttle until predetermined exhaustion of such filling, and a device movable with and also relatively to the feeler and adapted to coöperate with the shuttle-body when the filling therein has been exhausted to the predetermined extent, said device being operatively positioned, and through it to thereafter effect movement of the feeler independent of the action of the filling upon the latter, to effect the actuation of the filling-replenishing mechanism.

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

WILLIAM HAYNES.

Witnesses:

F. E. FORSTER,
J. D. CLOUDMAN.