

No. 698,579.

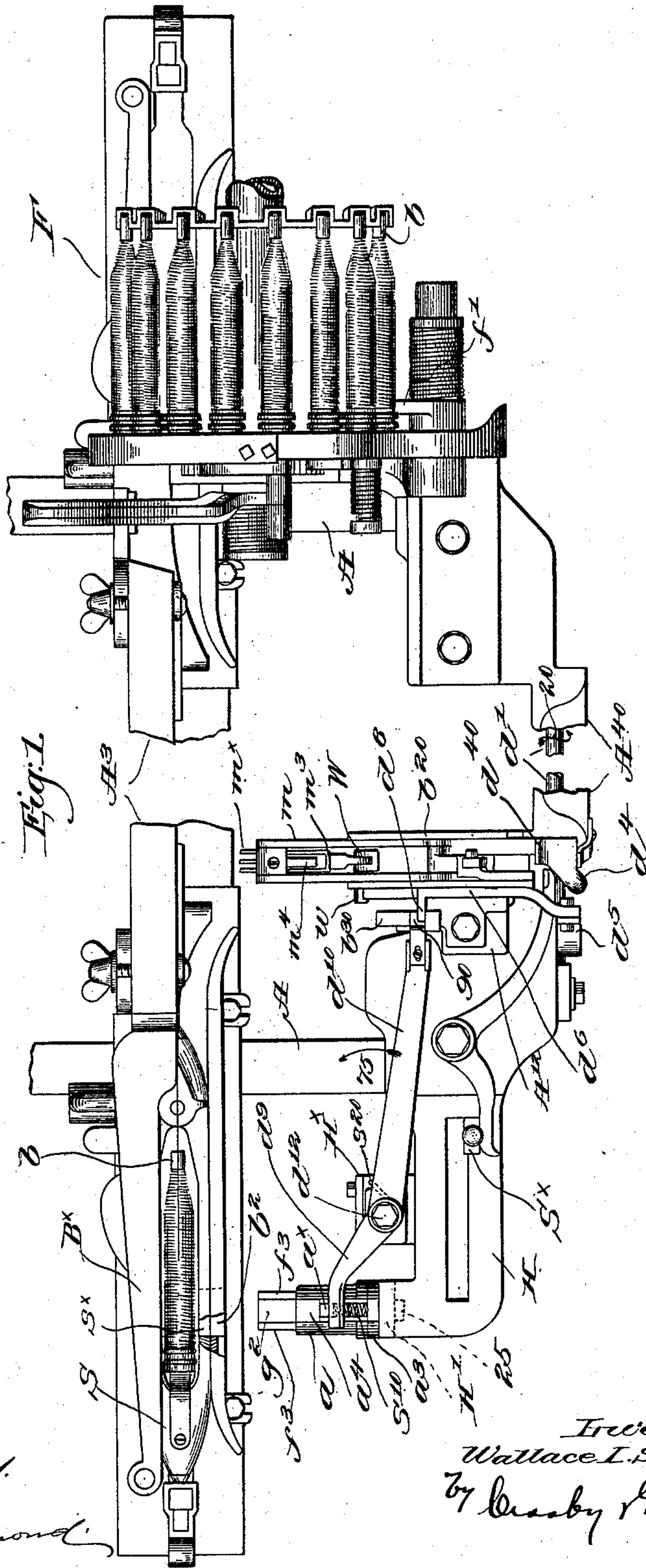
Patented Apr. 29, 1902.

W. I. STIMPSON.
FILLING REPLENISHING LOOM.

(Application filed Nov. 29, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses,
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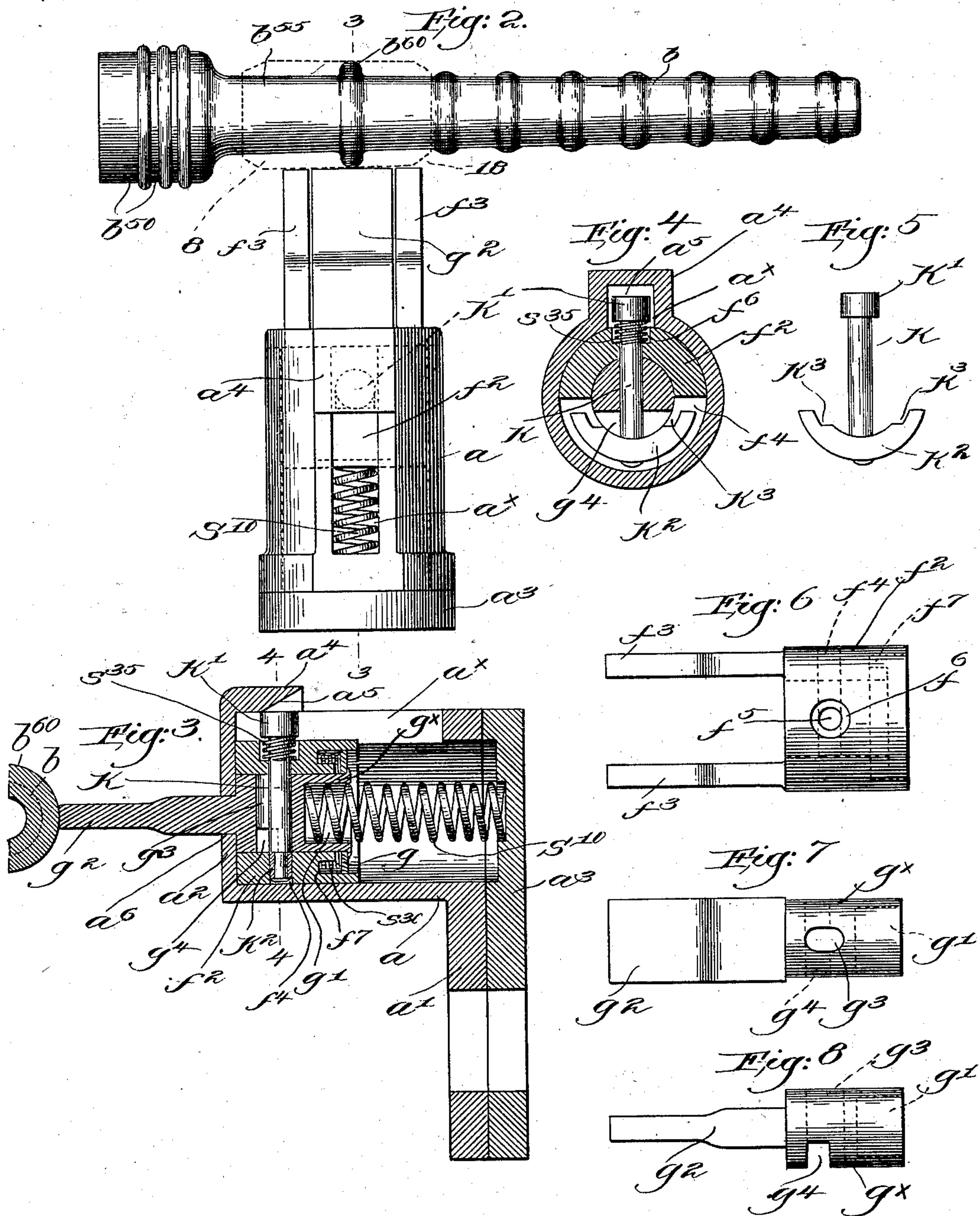
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UNITED STATES PATENT OFFICE.

WALLACE I. STIMPSON, OF MILFORD, MASSACHUSETTS, ASSIGNOR TO
DRAPER COMPANY, OF HOPEDALE, MASSACHUSETTS, A CORPORATION OF MAINE.

FILLING-REPLENISHING LOOM.

SPECIFICATION forming part of Letters Patent No. 698,579, dated April 29, 1902.

Application filed November 29, 1901. Serial No. 84,048. (No model.)

To all whom it may concern:

Be it known that I, WALLACE I. STIMPSON, a citizen of the United States, and a resident of Milford, county of Worcester, 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 letters on the drawings representing like parts.

This invention has for its object the production of novel means for effecting the actuation of the filling-replenishing mechanism of a so-called "feeler-loom" when the supply of filling in the shuttle has been exhausted to a predetermined extent.

In my present invention the filling in the shuttle intermittently engages and moves a feeler until the filling is exhausted to a predetermined extent, whereupon an actuating device, previously movable in unison with the feeler, is moved relatively thereto by or through the filling-carrier in the shuttle, and such relative movement is made operative through suitable intermediate means to effect a replenishment of filling.

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 an enlarged plan view of the feeler and the actuating device with a filling-carrier in position ready to cooperate therewith. Fig. 3 is a vertical sectional view of such parts on the line 3 3, Fig. 2. Fig. 4 is a transverse section on the line 4 4, Fig. 3, looking toward the right. Fig. 5 is a detached detail of the movable stud forming a part of the actuating device. Fig. 6 is a top or plan view of the feeler. Fig. 7 is a similar detached view of one member of the actuating device, which is carried by and longitudinally movable relatively to the feeler; and Fig. 8 is a side elevation of the member shown in Fig. 7.

Referring to Fig. 1, the loom-frame A, breast-beam A⁴⁰, lay A³, the shipper-lever S^x and its notched holding-plate H, attached to the breast-beam, the filling-feeder F to receive the filling-carriers b, the transferrer f', and the operating controlling rock-shaft d', adapted

to be rotated in the direction of the arrow 20 to effect a change of filling, are and may be all as shown in United States Patent No. 686,904, granted the 19th day of November, 1901, the parts operating substantially as set forth in said patent.

The filling-replenishing mechanism is located at one side of the loom to transfer a fresh supply of filling to the shuttle S when the latter is in the adjacent shuttle-box while the feeler is mounted at the opposite side of the loom.

The front wall of the shuttle-box B^x is provided with a longitudinal aperture or slot b², and the shuttle has a slot s^x in its side wall to register with the aperture or slot b² when the shuttle is in the box B^x, as shown in Fig. 1.

The rock-shaft d' is provided with an upturned arm d⁵, on the upper end of which is pivotally mounted a latch d⁶, rearwardly extended across the breast-beam and when in its operative position being adapted to be engaged by a shoulder w on the weft-hammer W. The latch is provided with a transverse projection d⁸, which normally rests upon a plate 90, secured to one end of a detent-lever d⁹, fulcrumed on a vertical pivot d¹², mounted on a bracket H^x, secured to the holding-plate H, a spring s²⁰ normally maintaining the inner end of the detent beneath the projection d⁸ to thereby maintain the latch d⁶ inoperative or out of the path of the shoulder w on the weft-hammer.

The usual filling-fork m^x is pivotally mounted on a slide m, mounted in a guide b²⁰, said filling-fork having a tail m³ to cooperate with the usual hook m⁴, carried by the weft-hammer, when upon failure of the filling the fork is not tilted, as is well understood by those skilled in the art, the outer end of the slide engaging the end d⁴⁰ of an upturned arm d⁴, fast on the rock-shaft d', all substantially as in the said United States Patent hereinbefore referred to. The guide b²⁰ forms part of a stand A¹², bolted to the breast-beam and having an upturned portion provided with a horizontal face b³⁰, on which the plate 90 of the lever-arm d¹⁰ slides.

The holding-plate H at its outer end substantially opposite the aperture b² in the shuttle-box

the-box is provided with a depending web H' , (shown in dotted lines, Fig. 1,) to which is suitably secured, as by a bolt 25, a feeler-support (shown separately in Figs. 2 and 3) and comprising a tubular body portion a , having at its outer end a depending foot a' , the tubular portion being closed at its rear end, as at a^2 , its opposite end being closed by a plate a^3 , (see Fig. 3,) detachably secured in any suitable manner to the depending foot a' . The top of the part a is provided with a longitudinal slot a^x at right angles to the breast-beam, as clearly shown in Figs. 1 and 2, for a purpose to be described, the feeler being mounted to slide longitudinally in the tubular body portion a of the bracket. The said body is provided at its rear end with a hood a^4 , which overhangs the slot a^x , said hood having a beveled portion a^5 (see Fig. 3) immediately above the slot.

The feeler (shown separately in Fig. 6) consists of a tubular body f^2 , mounted to slide easily in the tubular portion a of the bracket and having a bifurcated inner end to present two parallel branches f^3 , which project through a transverse opening a^6 in the end a^2 of the bracket-body. The lower part of the tubular body f^2 of the feeler is provided with a transverse slot f^4 , and a hole f^5 , counter-bored at f^6 , Figs. 3, 4, and 6, is made in the top of the body above the transverse slot f^4 . An annular recess f^7 is formed in the inner end of the feeler-body (see Fig. 3) to form a seat for a coiled spring s^{30} , the free end of the said spring bearing against a collar g , secured to the inner cylindrical end g^x of one member—viz., the actuator proper of the actuating device for effecting the operation of the filling-replenishing mechanism at the proper time—said collar being shown in Fig. 3 as held in place by the slightly-upset end of the part g^x . Said cylindrical end g^x is socketed at g' to form a seat for a suitable spring S^{10} , the opposite end of the spring bearing against the plate a^3 . The spring s^{10} normally tends to maintain the actuator butted against the inner end a^2 of the supporting-bracket, while the springs s^{30} at such time maintains the feeler-body in like position. At such time the blade-like or flattened end g^2 of the actuator assumes the position best shown in Fig. 2, between the bifurcated portions f^3 of the feeler, so that the extremities of such portions and of the blade g^2 are in alinement. An upright stud k is mounted in the hole f^5 in the feeler-body and extends through a transverse elongated slot g^3 in the cylindrical part g^x of the arm g^2 , the stud having a head k' , which freely enters the slot a^x of the feeler-support, the lower end of the said stud having attached to it a segmental latch k^2 , which is at times movable in the transverse slot f^4 of the feeler-body, the stud constituting another member of the actuating device. At the lower end of the slot g^3 the cylindrical portion g^x is transversely notched or cut away, as at g^4 , and the latch, by reference to Figs. 4 and 5, is shown

as notched or cut out at or near its extremities at k^3 . A lifting-spring s^{35} is seated in the counterbore f^6 and acts against the under side of the stud-head k' , normally tending to lift said stud, and when the parts are in the position shown in Figs. 2, 3, and 4 the latch k^2 will bear against the circumference of the part g^x of the actuator to prevent the stud from rising.

The lever-arm d^9 , as shown in Fig. 1, extends across the top of the feeler-support a transversely to the slot a^x therein, and so long as the stud k of the actuating device is maintained retracted below the top of the feeler-support the detent d^9 d^{10} will not be moved thereby. Whenever the shuttle enters the box B^x , the bifurcated end of the feeler and the blade-like part g^2 of the actuator will enter the aperture b^2 of the shuttle-box wall as the lay beats up, and such parts will also pass through the slot s^x in the side wall of the shuttle to engage the filling, and as the lay completes its forward movement the filling will act simultaneously and uniformly upon the parts f^3 g^2 to move them toward the breast-beam in unison, so that their relative position will not be changed from that shown in Fig. 3 and the stud k will still remain in retracted position. As the lay swings back the spring S^{10} expands and returns the actuator to its normal position, the spring s^{30} at such time acting to move the feeler in the same direction until the parts have again assumed the position shown in Figs. 1, 2, and 3. If, however, the actuator proper is moved longitudinally relatively to the feeler, it will be manifest that such movement will bring the notch g^4 immediately above the latch k^2 , so that the latter is released, and the stud k will instantly rise, by the expansion of the spring s^{35} , projecting the stud-head above the top of the feeler-support a , and if such movement of the actuating device as a whole toward the breast-beam is continued, the stud-head moving longitudinally in the slot a^x , the arm d^9 of the detent will be engaged and said detent will be rocked on its fulcrum d^{12} in the direction of the arrow 75, Fig. 1, to thereby withdraw the plate 90 from beneath the projection d^8 , releasing the latch d^6 to be engaged by the shoulder w of the weft-hammer, and through the rock-shaft d' a change of filling will be effected in well-known manner.

In order that the just-described relative movement of the actuating device and feeler may be effected by or through the filling-carrier when the filling in the shuttle has been exhausted to a predetermined extent, the filling-carrier is provided with an annular enlargement on its barrel, such annular enlargement being so located that when the shuttle is properly boxed in the shuttle-box B^x the enlargement will be opposite the finger g^2 of the actuator as the lay beats up.

Referring to Fig. 2, the filling-carrier comprises a barrel b , having a base or head b^{50}

and an elongated substantially cylindrical portion b^{55} adjacent the head to receive the primary or initial winding of the filling. The annular enlargement b^{60} , which is located between the ends of the part b^{55} , may be made as a part of the filling-carrier or the filling may be wound upon the filling-carrier in such a way as to form an annular enlargement or ring at this point before any material traverse of the filling is instituted. In dotted lines in Fig. 2 the filling is shown at 8 and 18 on each side of the annular enlargement, it being supposed that the filling has been woven off to this point. The filling is still of sufficient volume to prevent the enlargement b^{60} from projecting or standing out, as it were, beyond the surface of the filling as the lay beats up; but after the filling has been still further reduced the annular enlargement will so project, and it will engage the blade g^2 of the actuator before the filling will engage the bifurcated portion f^3 of the feeler, and consequently the actuator g^x g^2 will be moved toward the breast-beam on the beat up of the lay before the like movement of the feeler is instituted, and, as has been described, this forward movement will operate to release the stud k to operate the detent. Owing to the inclined or cam face a^5 of the hood on the feeler-support the stud cannot fully rise until it has been moved forward out of the hood, and, conversely, when the feeler and actuating device move toward the back of the loom by or through the action of the spring S^{10} after operation of the detent the cam-face a^5 will act on the stud-head to gradually depress the stud against its lifting-spring s^{35} and into the position shown in Fig. 3, so that the latch k^2 will again be caught by the part g^x adjacent the notch g^4 , the notches k^3 in the latch permitting the desired upward movement of the stud when released without increasing the depth of the notch g^4 . When the actuating device is engaged by the enlargement on the filling-carrier to move said actuating device relatively to the feeler, the spring s^{30} at such time operates to maintain the feeler in the position shown in Fig. 3 until the actuator has been moved far enough to bring the releasing-notch g^4 over the latch k^2 , and thereafter the continued movement of the said actuator g^2 g^x will act to carry with it the feeler.

My invention is not restricted to the precise construction and arrangement herein shown, and it may be changed or modified in various particulars without departing from the spirit and scope of my invention.

The mechanism herein shown is strong, durable, and at the same delicate in its operation.

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 a filling-carrier, filling-replenishing mechanism, controlling means therefor, a feeler to intermittently engage the filling in the shuttle,

and an actuating device, governed by or through the feeler, to actuate said controlling means, presence of filling in the shuttle acting through the feeler to prevent, and predetermined exhaustion of the filling permitting, movement of the actuating device by the filling-carrier to actuate the controlling means.

2. In a loom, a shuttle adapted to contain a filling-carrier, filling-replenishing mechanism, controlling means therefor, a feeler to intermittently engage the filling in the shuttle, and an actuating device for said controlling means, carried by and normally movable with the feeler, presence of filling in the shuttle acting to move the feeler and actuating device in unison, and predetermined exhaustion of the filling effecting movement of the actuating device by the filling-carrier relatively to the feeler, to thereby actuate the controlling means.

3. In a loom, a shuttle adapted to contain a filling-carrier, filling-replenishing mechanism, controlling means therefor, a feeler to intermittently engage the filling in the shuttle, and an actuating device for said means, carried by and limitedly movable relatively to the feeler, presence of filling in the shuttle preventing, and predetermined exhaustion of the filling effecting, initial movement of the actuating device by the filling-carrier to thereby actuate the controlling means.

4. In a loom, a shuttle adapted to contain a filling-carrier, filling-replenishing mechanism, controlling means therefor, a yieldingly-sustained feeler to engage and be intermittently engaged by the filling in the shuttle, and an actuating device for said controlling means, carried by and limitedly movable relatively to the feeler, presence of filling in the shuttle effecting simultaneous movement, and predetermined exhaustion of filling effecting relative movement of said feeler and actuating device by the filling-carrier, to thereby actuate the controlling means.

5. In a loom, a shuttle adapted to contain a filling-carrier, filling-replenishing mechanism, controlling means therefor, a yieldingly-sustained feeler having a bifurcated end to intermittently engage the filling in the shuttle, and an actuating device for said controlling means, carried by and relatively movable on the feeler, and having a filling-engaging member between the parts of the bifurcated end of the feeler, presence of filling in the shuttle preventing, and predetermined exhaustion of the filling permitting, movement of the actuating device by or through the filling-carrier relatively to the feeler, to thereby effect the operation of the controlling means.

6. In a loom, a shuttle adapted to contain a filling-carrier, filling-replenishing mechanism, controlling means therefor including a detent, a feeler to intermittently engage the filling in the shuttle, and an actuating device governed by or through the feeler, to operate the detent, presence of filling in the shuttle

acting through the feeler to prevent, and predetermined exhaustion of the filling permitting, initial movement of the actuating device by the filling-carrier, to thereby operate the

5 detent.

7. In a loom, a shuttle adapted to contain a filling-carrier, filling-replenishing mechanism, controlling means therefor, including a detent, a yieldingly-sustained feeler, to inter-

10 mittingly engage the filling in the shuttle, and an actuating device for the detent, mounted on and limitedly movable relatively to the feeler, presence of filling in the shuttle acting through the feeler to prevent, and prede-

15 termined exhaustion of the filling permitting movement of the actuating device by or through the filling-carrier relatively to the feeler, to thereby operate the detent.

8. In a loom, a shuttle adapted to contain

20 a filling-carrier, filling-replenishing mechanism, controlling means therefor, an actuating device for said means, mounted on and movable relatively to the feeler, and a feeler to cooperate with the filling in the shuttle and

25 maintain the actuating device inoperative until predetermined exhaustion of the filling, the actuating device at such time being moved by or through the filling-carrier relatively to the feeler into position to effect the actuation

30 of the controlling means.

9. In a loom, a shuttle adapted to contain a filling-carrier, filling-replenishing mechanism, controlling means therefor, a feeler yieldingly sustained in position to intermittently

35 engage and be moved by the filling in the shuttle until exhaustion thereof to a predetermined extent, and a normally inoperative actuating device for said means, slidably mounted on the feeler and movable by or

40 through the filling-carrier into position to effect the actuation of the controlling means, upon predetermined filling exhaustion.

10. In a loom, a shuttle adapted to contain a filling-carrier, filling-replenishing mechanism, controlling means therefor, a feeler to

45 intermittently cooperate with the filling in the shuttle until predetermined exhaustion of the filling, and an actuating device movably mounted on the feeler to engage and

50 transmit the movement of the filling-carrier primarily to said controlling means, by or through movement of the actuating device relatively to the feeler, to effect actuation of the controlling means upon predetermined

55 filling exhaustion.

11. In a loom, a shuttle adapted to contain a filling-carrier, filling-replenishing mechanism, controlling means therefor including a detent, a yieldingly-sustained feeler to inter-

60 mittingly engage the filling in the shuttle, an actuating device mounted on and longitudinally movable relatively to the feeler, said device including a spring-operated stud, and means to normally maintain it inoperative,

65 presence of filling in the shuttle preventing release of the stud, and predetermined exhaustion of the filling acting by or through

the filling-carrier to effect the release of the stud and engagement of the detent thereby to operate the latter and effect the actuation

70 of the controlling means.

12. In a loom, a shuttle adapted to contain a filling-carrier, filling-replenishing mechanism, controlling means therefor, a longitudinally-movable, yieldingly-sustained feeler

75 movable on alternate picks by and until predetermined exhaustion of the filling in the shuttle, and an actuating device for said means, movable with and also relatively to the feeler, the feeler and said device moving

80 in unison until predetermined exhaustion of the filling permits movement of the actuating device relatively to the feeler, by or through the filling-carrier, to effect actuation of the controlling means.

85

13. In a loom, a shuttle adapted to contain a filling-carrier, filling-replenishing mechanism, controlling means therefor, including a detent and a latch normally maintained inoperative thereby, a yieldingly-sustained

90 feeler to engage and be moved by the filling in the shuttle on alternate picks, until predetermined filling exhaustion, and an actuating device slidably mounted on the feeler and having a spring-controlled stud normally

95 out of the path of the detent, movement of the actuating device by the filling-carrier relatively to the feeler upon predetermined exhaustion of the filling releasing the stud to enter the path of the detent and to thereafter

100 move the detent to release the latch.

14. In a loom provided with filling-replenishing mechanism, controlling means therefor, a shuttle adapted to contain a filling-carrier and having a slot in its side wall, a yield-

105 ingly-sustained feeler, and an actuating device mounted on and movable relatively to the feeler, the feeler and the inner end of said device intermittently entering the slot to engage the filling in the shuttle, to be moved

110 in unison thereby until predetermined filling exhaustion, predetermined exhaustion of the filling permitting movement of the actuating device relatively to the feeler, by or through the filling-carrier, to thereby render said de-

115 vice operative to effect the actuation of the controlling means.

15. In a loom provided with filling-replenishing mechanism, controlling means therefor, a shuttle having a slotted side wall and

120 adapted to contain a filling-carrier having an annular enlargement on its barrel, a yieldingly-sustained, longitudinally-movable feeler adapted to enter the slot and engage the filling at one side of said annular enlarge-

125 ment, and an actuating device mounted on and movable longitudinally upon the feeler, said device comprising an actuator extended rearwardly adjacent the inner end of the feeler, to enter the slot in the shuttle, a spring-

130 controlled stud on the feeler and extended through an elongated slot in the outer end of the said actuator, and a latch on said stud, normally engaged by the actuator to main-

tain the stud inoperative, exhaustion of the filling to expose the annular enlargement and permit movement thereby of the actuator relatively to the feeler releasing the latch of the stud, the latter moving into operative position to thereafter effect the actuation of the controlling means.

16. In a loom provided with filling-replenishing mechanism, controlling means therefor, a shuttle having a slotted side wall and adapted to contain a filling-carrier having an annular enlargement on its barrel, a bifurcated feeler having a tubular body, an actuator extended between the bifurcated portions of the feeler and slidably supported in the tubular body thereof, a spring-controlled stud transversely movable in said body and extended through an elongated slot in the said actuator, a latch on the stud, to normally engage a part of and be maintained inoperative by said actuator, the latter having a releasing-notch adjacent the latch, a fixed support for and in which the feeler is longitudinally movable, said support having a slot therein for the stud, a controlling-spring for the feeler, and a device on said support to return the stud to inoperative position, presence of filling in the shuttle preventing, and predetermined exhaustion of the filling permitting, relative movement of the feeler and actuator, to thereby release the stud and operatively position the same and to thereafter effect the operation of the controlling means by longitudinal movement of the operatively-positioned stud in the slotted support.

17. In a feeler-loom, a tubular support having a longitudinal slot, a feeler longitudinally movable in said support, a feeler-spring, an actuator mounted on and slidable in the feeler

and having a transverse, elongated, upright slot and a notch at the lower end thereof, a stud mounted in the feeler and extended through the slot in the actuator, a spring to lift the stud and bring its upper end above the top of the longitudinally-slotted support, a latch on the lower end of the stud, and a spring between the actuator and feeler, tending to move them oppositely, the latch normally engaging a portion of the actuator adjacent the notch therein, movement of the actuator relatively to the feeler acting to release the stud, combined with filling-replenishing mechanism, and controlling means therefor, actuated by movement of the released stud in the longitudinal slot of the support.

18. In a loom, a shuttle adapted to contain a filling-carrier having an annular enlargement on its barrel, filling-replenishing mechanism, controlling means therefor, including a detent, an actuating device to operate the latter, and a feeler, the feeler and actuating device being arranged to cooperate with the filling in the shuttle and be simultaneously moved thereby until exhaustion of the filling to an extent sufficient to permit engagement and movement of the actuating device by said annular enlargement prior to filling-induced movement of the feeler, to thereby actuate the controlling means.

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

WALLACE I. STIMPSON.

Witnesses:

GEORGE OTIS DRAPER,
ERNEST W. WOOD.