

No. 677,607.

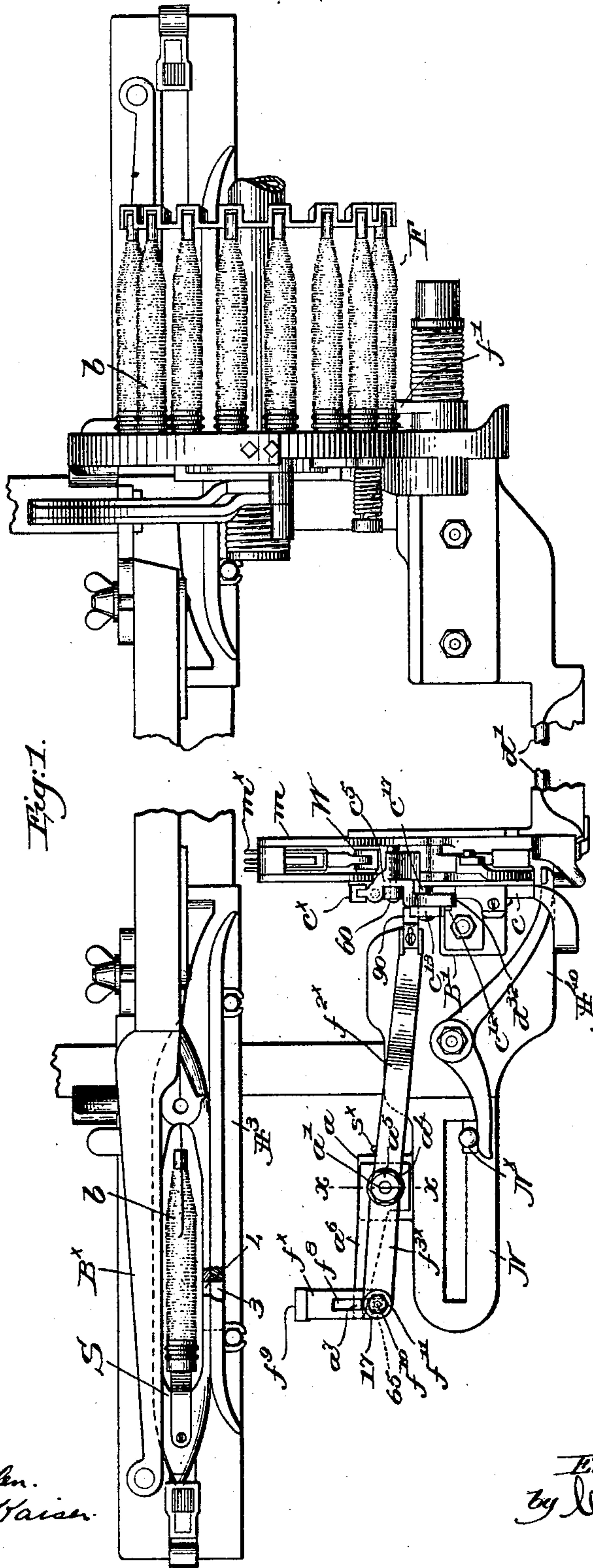
Patented July 2, 1901.

E. S. STIMPSON.
WEFT REPLENISHING LOOM.

(Application filed Apr. 5, 1901.)

(No Model.)

2 Sheets—Sheet 1.



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UNITED STATES PATENT OFFICE.

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WEFT-REPLENISHING LOOM.

SPECIFICATION forming part of Letters Patent No. 677,607, dated July 2, 1901.

Application filed April 5, 1901. Serial No. 54,437. (No model.)

To all whom it may concern:

Be it known that I, EDWARD S. STIMPSON, a citizen of the United States, and a resident of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Weft-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 provided with automatic filling-replenishing mechanism, the time of the operation whereof is controlled by means which become effective when the filling in the shuttle has become exhausted to a predetermined extent. This is effected by or through the agency of a feeler, which intermittently engages and is moved by the filling in the shuttle until the predetermined point of exhaustion thereof is reached, at which time the movement of the feeler is insufficient to maintain other elements of the controlling means inoperative and actuation of said means occurs to cause a change of filling.

My present invention has for one of its objects the production of means for effecting a rectilinear movement of the feeler to prevent a rubbing contact between it and the filling in the shuttle, such rubbing having a tendency to wear the filling in some cases and the feeler in others.

Another object of my invention is the production of means for very accurately setting or adjusting the controlling means, so that the same shall become operative when the desired exhaustion of the shuttle-filling takes place.

Figure 1 is a top or plan view, centrally broken out, of a loom provided with automatic filling-replenishing mechanism and having one embodiment of my present invention applied thereto. Fig. 2 is an enlarged top or plan view of the filling-fork, the parts cooperating therewith, and certain novel elements of the means for controlling the filling-replenishing mechanism. Fig. 3 is a side elevation thereof, showing the parts in normal position. Fig. 4 is an enlarged detail, in side elevation, of the latch-carrier and some of the devices mounted thereon. Fig. 5 is a side ele-

vation of the feeler, its swinging carrier, and means for effecting rectilinear movement of the feeler; and Fig. 6 is an enlarged sectional detail on the line $x-x$, Fig. 1, through the pivotal support of the feeler-carrier.

I have shown in Fig. 1 a loom substantially such as forms the subject-matter of United States Patent No. 662,320, dated November 20, 1900, wherein a feeler is adapted to feel the filling in the shuttle at every alternate forward beat of the lay, the feeler operating to effect actuation of the filling-supplying mechanism prior to complete exhaustion of the filling in the shuttle. The breast-beam A^{40} , lay A^3 , filling-feeder F , transferrer f' , controlling-shaft d' , the shipper N^x , the holding-plate N therefor, the shuttle-box B^x , apertured at 3, the shuttle S , having a slot 4 in its side wall for the entrance of the feeler, and the vibrating-actuator or weft-hammer W may be and are as in said patent. So, too, the filling-fork m^x , its slide m , movable in a guideway in the stand B' , the slide-bar c , the latch-carrier c^5 , pivoted thereon at 60 and having fulcrumed upon it a depending latch c^x to cooperate at times with a projection w^x on the weft-hammer W , and the spring s^2 , tending to lift the inner end of the latch-carrier, may be and are as in the patent referred to. A stand a , secured to the plate N , has a slot 70 therein, Figs. 5 and 6, for an upturned headed bolt a' , extended through a post a^2 , having an annular shoulder a^3 and resting on the stand, a washer a^4 and nut a^5 , screwed onto the upper end of the bolt, holding the post in adjusted position on the stand, the post having a lateral foot a^6 extended from at or near its base, the foot being shown as provided at or near its end with an upturned toe a^7 for a purpose to be described. An arm f^{2x} has its hub f^{50} rotatably mounted on the post between the shoulder a^3 and washer a^4 , a spring s^x normally acting to move the free end of the arm, having a wear-plate 90 thereon, toward the front of the loom. The hub f^{50} is provided with a second shorter arm f^{3x} extended toward the loom side, said arms constituting a feeler-carrier adapted to swing or rock about the substantially vertical pivotal support a^2 , and the feeler f^x is pivotally mounted on the outer end of the arm f^{3x} by

means of an upturned stud f^{10} , fast on the feeler and loosely extended through a hole in the arm f^{3x} , a washer 18 being interposed between the feeler and under side of said arm, and a second washer 17 between the top of the arm and a retaining-nut f^{11} . (See Fig. 5.)

The feeler is shown as a substantially straight bar, having a laterally-elongated feeling-face f^9 to contact with the filling in the shuttle on every alternate beat of the lay, the shuttle entering the shuttle-body through the apertures 3 4 in well-known manner. This intermittent engagement of the feeler with the filling in the shuttle operates to swing the feeler-carrier bodily upon its vertical fulcrum, as in the patent hereinbefore referred to; but herein in order to counteract the movement of the feeler-carrier in a curved path and to effect movement of the feeler in a substantially rectilinear path I have slotted the feeler longitudinally at f^8 , Fig. 1, to receive loosely the upturned toe a^7 . The toe is shown in plan view in Fig. 1 as rectangular, and as the feeler-carrier is swung on its fulcrum the toe will cause the feeler itself to move in a substantially straight line or path. Of course there must be some slight play at the pivotal connection between the arm f^{3x} and the feeler, and this may very conveniently be provided by passing the stud f^{10} through an elongated hole 65. (See dotted lines, Fig. 1, in the arm.) Inasmuch as the movement of the feeler toward the filling is by virtue of the structure just described substantially normal to the longitudinal axis of the filling-carrier b , there will be no rubbing or abrading action between the face f^9 of the feeler and the filling, so that all tendency to rub or cut the filling or to wear the face of the feeler by rubbing is obviated. Any other suitable means may be employed to effect the guidance of the feeler in a rectilinear path, as I have only shown herein one practical mode of obtaining the desired result.

In the patent referred to the latch c^x is normally operative—that is to say, in the path of some part of the actuator or weft-hammer; but the latch is periodically moved into inoperative position by or through the filling-induced movement of the feeler. The free end of the arm f^{2x} in said patent is moved from beneath a shoulder on the latch-carrier to permit a spring to lift the latch into inoperative position; but when the filling in the shuttle has been exhausted to a predetermined extent the amplitude of movement of the feeler will be insufficient to withdraw the end of the arm f^{2x} from the stop on the latch-carrier and the latch remains in position to be engaged by the actuator. This mode of operation pertains in my present invention; but I have provided means for effecting a fine adjustment of the parts, so that the quantity of filling which is to remain upon the filling-carrier when a change of filling is effected

can be adjusted with great delicacy and accuracy.

The latch-carrier is shown as provided on one side with a longitudinal shelf or ledge c^{12} , on which is mounted a seat-block c^{13} , provided with an overhanging shoulder c^{14} , Fig. 3, and the block is held in position on the carrier by means of a bolt c^{140} , which is passed through the block and through a slot c^{16} in the latch-carrier, a nut c^{17} on the end of the bolt serving when tightened to clamp the seat-block securely in place. The overhanging shoulder c^{14} rests upon the wear-plate 90, carried by the arm f^{2x} when said arm is not swung by filling-induced movement of the feeler, and fulfils the function of the foot c^6 in the patent referred to. The upright edge c^{18} of the wear-plate 90, adjacent the shoulder, acts as a stop to limit the spring-actuated movement of the feeler-carrier. The slot c^{16} extends longitudinally of the latch-carrier and has a transverse portion c^{19} and a narrower longitudinal portion c^{20} . The retaining-bolt c^{140} is provided with a threaded hole to receive an adjusting-screw d^{30} , provided with a collar d^{31} to enter the transverse enlargement c^{19} of the slot, and at its inner end the screw has a suitable head or thumb-nut d^{32} . The part d^{33} of the shank of the screw enters the part c^{20} of the slot, and the collar d^{31} prevents longitudinal movement of the screw, while permitting its rotation, such rotation in one direction or the other acting to move the bolt c^{140} toward or away from the fulcrum 60 of the latch-carrier, and correspondingly the seat-block c^{13} is also moved or adjusted relatively to the fulcrum.

The construction described permits of ready assembling of the parts, as the bolt c^{140} is passed through the block and then the adjusting-screw d^{30} is inserted in the hole in the bolt, after which the adjusting-screw can be located properly in the slotted portion of the carrier by a lateral movement, and when the nut c^{17} is applied to the bolt the parts will be maintained in proper position.

To adjust the seat, the latter being formed by the shoulder c^{14} and upright edge c^{18} , the clamping-nut c^{17} is slightly loosened and the adjustment is effected by rotation of the screw d^{30} , after which the nut is tightened and the block c^{13} will be clamped securely in desired position. The greater the movement of the block away from the fulcrum of the latch-carrier the less filling will remain on the filling-carrier when the filling-replenishing mechanism will be operated, and, conversely, if more filling is to be left on the filling-carrier the block will be moved toward the fulcrum. This adjustment is also used for setting the apparatus to operate with filling-carriers having different diameters.

A rough adjustment may be had by changing the fulcrum-post a^2 of the feeler on the stand a ; but even if such rough adjustment be employed the final adjustment must be

made by the device described located on the latch-carrier.

It will be understood that so long as the volume of the filling-shuttle suffices to swing the feeler-carrier far enough to withdraw the detent 90 from beneath the shoulder c^{14} the spring s^2 will operate to lift the latch; but when the movement of the detent is insufficient to withdraw it from beneath the shoulder the latch will remain in its normal or operative position to be engaged by the actuator.

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

1. In a loom provided with filling-replenishing mechanism, a controlling-feeler therefor to intermittently engage and be moved by the filling in the shuttle, and means to effect movement of the feeler in a substantially rectilinear path.

2. In a loom provided with filling-replenishing mechanism, a controlling-feeler therefor to intermittently engage and be moved by the filling in the shuttle, a swinging carrier on which the feeler is fulcrumed, and means to effect movement of the feeler in a substantially rectilinear path.

3. In a loom, a feeler-carrier mounted to rock on a vertical pivot, a feeler fulcrumed on the carrier and adapted to be bodily moved by intermitting engagement with the filling in the shuttle, and means to guide the feeler in a substantially rectilinear path when it is moved.

4. In a loom, a feeler-carrier mounted to rock on a vertical pivot, a feeler fulcrumed on the carrier and adapted to be bodily moved by intermitting engagement with the filling in the shuttle, and a fixed guide in sliding engagement with the feeler between its fulcrum and its filling-engaging face, to counteract the swinging movement of the carrier and effect movement of the feeler in a substantially rectilinear path.

5. In a loom, a feeler-carrier mounted on a vertical pivot and swung in one direction by engagement of the feeler with the filling in the shuttle, a spring to move it in the opposite direction, a feeler fulcrumed on the carrier, and means to effect the movement of the feeler in a substantially rectilinear path.

6. In a loom, a feeler intermittently moved by engagement with the filling in the shuttle until exhausted to a predetermined extent, means to effect such movement of the feeler in a substantially rectilinear path, automatic filling-replenishing mechanism, and means to control the time of its operation, including a governing member moved into inoperative position by filling-induced movement of the feeler, operative positioning of said member effecting actuation of the controlling means.

7. In a loom provided with filling-replenishing mechanism, means to control the time of its operation, and an actuator for said means, the latter including a latch, a latch-carrier, an adjustable seat thereon, a detent to coop-

erate therewith and maintain the latch operative, a feeler intermittently moved by engagement with the filling in the shuttle until exhausted to a predetermined extent, and devices between the detent and the feeler, to withdraw the latter from its seat and render the latch inoperative at each filling-induced movement of the feeler, adjustment of the seat determining the minimum effective movement of the feeler necessary to render the latch inoperative.

8. In a loom provided with filling-replenishing mechanism, means to control the time of its operation, and an actuator for said means, the latter including a latch, a latch-carrier, a movable seat thereon, a detent to cooperate therewith and maintain the latch operative, a feeler intermittently moved by engagement with the filling in the shuttle until exhausted to a predetermined extent, and devices between the detent and the feeler, to withdraw the latter from its seat and render the latch inoperative at each filling-induced movement of the feeler, and means to adjust the seat in the direction of movement of the detent, to thereby determine the minimum effective movement of the feeler necessary to withdraw the detent and thereby render the latch inoperative.

9. In a loom provided with filling-replenishing mechanism, means to control the time of its operation, and an actuator for said means, the latter including a latch, a latch-carrier, a sliding seat thereon, means to adjust it, a clamping device to retain it in adjusted position, a detent to cooperate therewith and maintain the latch inoperative, a feeler intermittently moved by engagement with the filling in the shuttle until exhausted to a predetermined extent, and devices between the detent and the feeler, to withdraw the latter from its seat and render the latch inoperative at each filling-induced movement of the feeler.

10. In a loom provided with filling-replenishing mechanism, means to control the time of its operation, and an actuator for said means, the latter including a latch normally in the path of the actuator, a latch-carrier, a sliding, shouldered seat thereon, means to adjust the seat on the latch-carrier, a detent to cooperate with the shouldered seat and at such time maintain the latch operative, a swinging arm on which the detent is mounted, and a feeler operatively connected with the arm and intermittently moved by engagement with the filling in the shuttle until exhausted to a predetermined extent, adjustment of the seat on the latch-carrier determining the minimum effective movement of the feeler necessary to withdraw the detent from the seat and thereby determining the corresponding extent of exhaustion of the shuttle in the filling.

11. In a loom provided with automatic filling-replenishing mechanism, controlling means, and a vibrating actuator for said

means, the latter including a latch normally
in the path of the actuator, a slotted latch-
carrier having a shelf, a seat movable there-
on and having an overhanging shoulder, a re-
5 taining-bolt on the seat extended through the
slot in the latch-carrier and provided with a
clamping-nut, an adjusting-screw in engage-
ment with the bolt and rotatably mounted on
the latch-carrier, to adjust the position of the
10 seat on the latch-carrier, a detent to coöper-
ate with the shoulder of the seat and main-
tain the latch operative, and means to peri-

odically withdraw the detent and permit the
latch to move into inoperative position until
the filling in the shuttle has been exhausted 15
to a predetermined extent.

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

EDWARD S. STIMPSON.

Witnesses:

GEORGE OTIS DRAPER,
ERNEST W. WOOD.