No. 649,403. Patented May 8, 1900.

A. W. CLEMENT.

FILLING CHANGING MECHANISM FOR LOOMS.

(Application filed Dec. 30, 1899.)

(No Model.)

Fig. 1.

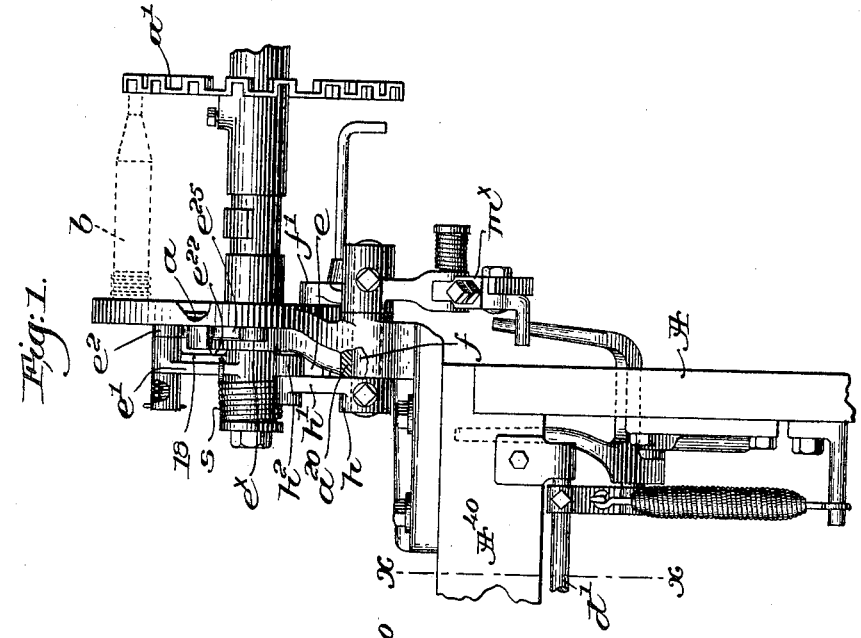
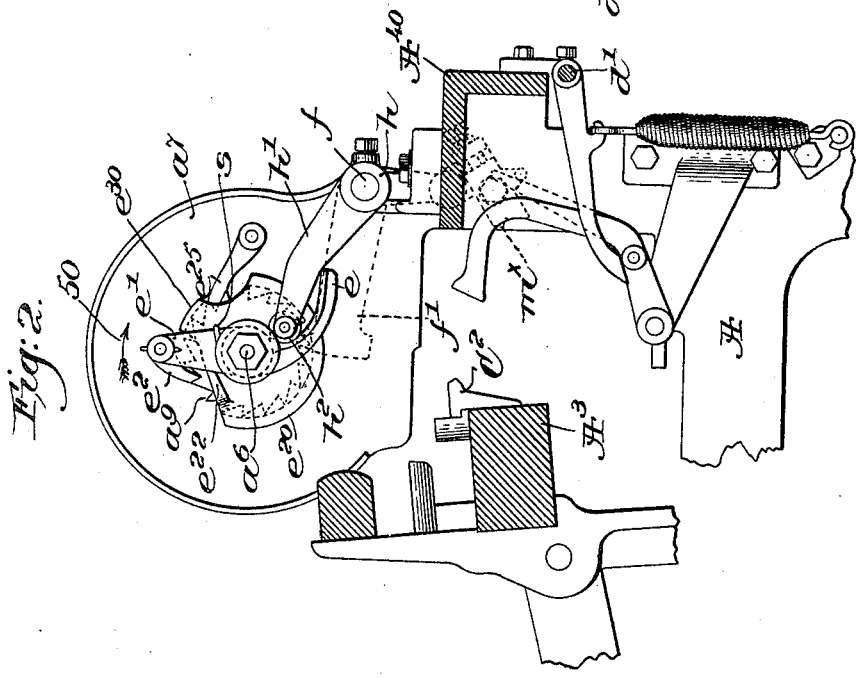


Fig. 2.



Witnesses,
E. G. Allen.
Gustave F. Magnitzky

Inventor,
Alvah W. Clement,
by Crosby & Gregory.
attys.

UNITED STATES PATENT OFFICE.

ALVAH W. CLEMENT, OF HOPEDALE, MASSACHUSETTS, ASSIGNOR TO THE DRAPER COMPANY, OF SAME PLACE AND PORTLAND, MAINE.

FILLING-CHANGING MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 649,403, dated May 8, 1900.

Application filed December 30, 1899. Serial No. 742,049. (No model.)

To all whom it may concern:

Be it known that I, ALVAH W. CLEMENT, a citizen of the United States, and a resident of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Filling-Changing Mechanism for Looms, of which the following description, in connection with the accompanying drawings, is a specification, like letters and numerals on the drawings representing like parts.

This invention relates to looms provided with means for automatically changing the filling; and it has for its object the production of improved and novel filling-changing mechanism whereby the actuation of the feeder in which the filling-carriers are supported is controlled by or through the operation of the transferrer.

A loom of the general type referred to is shown in United States Patent No. 627,803, dated June 27, 1899, the feeder being intermittingly moved by or through a strong spring to bring the filling-carriers one by one into operative position to be transferred. The spring is wound or set by pawl-and-ratchet mechanism, the pawl-carrier having an arm to be engaged by a projection on the lay, the upper end of one of the lay-swords being shown in said patent as carrying the projection, so that after filling change the pawl-carrier will be actuated by or through the lay to set the spring.

In the present invention the projection on the lay is dispensed with and the spring is set by or through the operation of the transferrer, whereby a stronger, more durable, and more direct acting mechanism is attained.

With the patented construction referred to when the filling-feeder for any reason becomes empty and the loom continues running the arm of the pawl-carrier is continually pounding on the lay-sword, while with the construction hereinafter described the device for setting the actuating-spring is not operated unless a transfer of filling is required.

Figure 1 is a front elevation of a portion of a loom provided with filling-changing mechanism with one form of the present invention embodied therein; and Fig. 2 is a transverse sectional view of the apparatus shown in Fig. 1, taken on the line $x\ x$ and looking toward the right.

The loom-frame A, lay A^3, breast-beam A^{40}, bunter C^2, the filling-changing mechanism, comprising, essentially, connected disks $a\ a'$ to support the filling-carriers b, the stud a^6, fixed on the stand a^7 and on which the disks rotate, and the ratchet wheel or teeth a^9, attached to the hub of the disk a, the transferrer f', mounted on the short shaft f, may be and are substantially as shown in the patent referred to.

The controlling mechanism for the transferrer, including the dog $m^\times$, governed as to its position by the rock-shaft d' and intervening connections, may be and is substantially as shown in United States Patent No. 628,228, dated July 4, 1899.

As best shown in Fig. 1, the shaft f is mounted to rock in a bearing a^{20}, forming a part of the stand a^7, the hub of the transferrer-arm f' being secured to the outer projecting end of the shaft, while to its projecting inner end is secured the hub h of an arm h', having preferably a roll h^2 mounted on its free end. The hub $e^\times$ of a pawl-carrier e' is shown as fulcrumed on the stud a^6, a pawl e^2, mounted on the carrier, coöperating with the ratchet a^9, and a cam e is shown as depending from the pawl-carrier and forming a rigid part therewith, said cam extending into the path of the roll h^2. A strong feeder-actuating spring s is attached at one end to the pawl-carrier and is fixed at its other end, the winding of the spring being such that retraction of the pawl-carrier will set or wind it up.

If the parts are in normal position, as shown, the operation of the transferrer to effect a change of filling depresses the arm h', and the latter, acting through the roll h^2 on the cam e, retracts the pawl-carrier, moving it in the direction of arrow 50, Fig. 2, and setting the spring. A detent-pawl e^{25} at such time prevents retrograde movement of the feeder, and the pawl e^2 moves on the ratchet a^9 to take a fresh hold, determined by a fixed shield e^{30}, mounted on the stand and projecting over a portion of the ratchet a^9, and the shield may for convenience form part of the casing e^{20}, which protects the greater part of the ratchet.

The swing imparted to the pawl-carrier stores up energy in the spring, and the latter will when free to act rotate the feeder by or through the pawl-carrier, pawl e^2, and ratchet a^9, the arm h' having been raised by the return stroke of the transferrer.

The casing e^{20} is provided with a stop e^{22}, which engages the pawl-carrier and positively limits the spring-impelled motion of the pawl-carrier, relieving the arm h' from shock, and preferably the pawl-carrier is stiffened and strengthened by a web 18, Fig. 1, extended along one edge to take up and distribute the blow when the stop e^{22} is engaged.

The actuating means for the feeder is controlled by or through the operation of the transferrer in the construction shown, and the upper portion of the lay is relieved from the duty of setting the feeder-actuating spring.

The durability, strength, and direct action of the apparatus are enhanced by the construction set forth, one practical embodiment of the invention being shown and described without attempting to show various modifications thereof which might be made without departing from the spirit and scope of the invention.

It will be manifest that while the stop e^{22} limits the movement of the pawl-carrier in one direction, thus preventing shock to the arm h', which would tend to loosen it on the shaft f, the limit of the feeding movement is determined by the strength of the spring s and the momentum of the parts moved—viz., the filling-feeder, its load, &c.

The mechanism is so arranged that if there is a gap—*i. e.*, several filling-carriers missing from the feeder—the spring s will give sufficient impetus to the parts actuated thereby to carry the feeder around to the proper point with a filling-carrier in position to be transferred.

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

1. A filling-feeder to hold a series of filling-carriers, means to intermittingly actuate the feeder to bring the filling-carriers singly into operative position, a transferrer, and connections between the actuating means and the transferrer, to set the former by the operation of the latter.

2. A rotatable filling-feeder to hold a series of filling-carriers, an attached ratchet, a co-operating pawl, a pawl-carrier, a feeder-actuating spring, set by retraction of the pawl-carrier, a transferrer, and means controlled by operation of the transferrer to retract the pawl-carrier and thereby set the spring, the latter acting through the pawl and ratchet to rotate the feeder intermittingly and bring the filling-carriers singly into the path of the transferrer.

3. A rotatable filling-feeder to hold a series of filling-carriers, an attached ratchet, a co-operating pawl, a pawl-carrier, a feeder-actuating spring, set by retraction of the pawl-carrier, a transferrer, means controlled by the operation of the transferrer to retract the pawl-carrier and thereby set the spring, and a shield to determine the point of engagement of the pawl and ratchet upon spring-actuated movement of the pawl-carrier.

4. A rotatable filling-feeder to hold a series of filling-carriers, an attached ratchet, a co-operating pawl, a pawl-carrier fulcrumed coaxially with the feeder and having an attached cam, a feeder-actuating spring attached at one end to said pawl-carrier and set by retraction thereof, a rocking transferrer, and an arm movable therewith to engage the cam and retract the pawl-carrier when the transferrer is operated, the feeder-actuating spring when set acting through the pawl and ratchet to rotate the feeder to bring the filling-carriers singly into the path of the transferrer.

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

ALVAH W. CLEMENT.

Witnesses:

GEORGE OTIS DRAPER,

ERNEST W. WOOD.