H. WYMAN & G. F. HUTCHINS.

WEFT REPLENISHING LOOM.

APPLICATION FILED JUNE 8, 1912.

1,051,657. Patented Jan. 28, 1913.

Fig. 1.

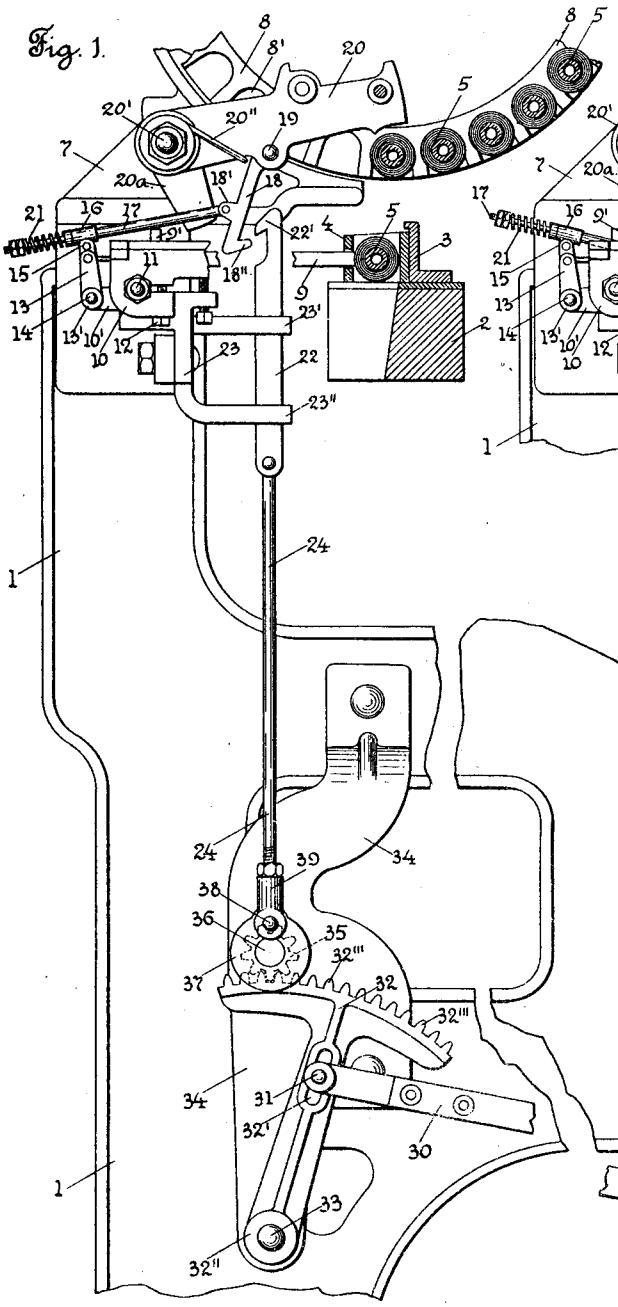
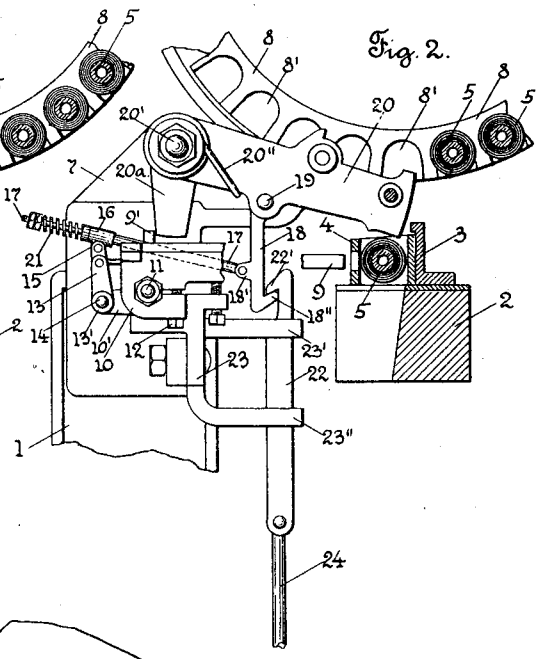


Fig. 2.



Witnesses
M. Bredt.
W. Haas.

Inventors
Horace Wyman
George F. Hutchins.
By John C. Dewey.
Attorney.

UNITED STATES PATENT OFFICE.

HORACE WYMAN AND GEORGE F. HUTCHINS, OF WORCESTER, MASSACHUSETTS, ASSIGNORS TO CROMPTON & KNOWLES LOOM WORKS, A CORPORATION OF MASSACHUSETTS.

WEFT-REPLENISHING LOOM.

1,051,657. Specification of Letters Patent. Patented Jan. 28, 1913.

Application filed June 8, 1912. Serial No. 702,429.

To all whom it may concern:

Be it known that we, HORACE WYMAN and GEORGE F. HUTCHINS, citizens of the United States, residing in Worcester, county of Worcester, and State of Massachusetts, have jointly invented certain new and useful Improvements in Weft-Replenishing Looms, of which the following is a specification.

Our invention relates to weft replenishing looms, and particularly to the filling transfer mechanism of weft replenishing looms, and to the operating mechanism for the transferrer arm.

The object of our invention is to improve upon the filling transfer mechanism, as ordinarily made, which transfers a fresh bobbin from the magazine into the active shuttle on the same pick on which the substantial exhaustion of filling on the bobbin is indicated by the filling feeler or detector.

In our improvements in transfer mechanism of weft replenishing looms, the transferrer is operated at the proper time, through intermediate connections, by a driven mutilated gear, preferably located on the bottom shaft of the loom, said gear operating a mutilated pinion every other pick, which pinion, on a half turn, operates an oscillating segmental gear, which is in mesh with another pinion, and imparts a full rotary movement to said pinion, and a crank pin thereon. The crank pin is adapted to operate a vertically moving bar, to move it down and up, and on an indication by the filling feeler or detector of the substantial exhaustion of filling in the active shuttle, said bar operates the transferrer arm, all as will be hereinafter described.

We have shown in the drawing a detached portion of a weft replenishing loom, having a rotary magazine, and a filling detector, and our improvements in transfer mechanism combined therewith, sufficient to enable those skilled in the art to understand the construction and operation thereof.

The magazine for the bobbins or filling carriers shown in the drawing, is in this instance of the Northrop type, so-termed, and the filling detector mechanism, and the filling transfer mechanism, is of the type shown and described in the U. S. Letters Patent No. 1,032,709, but our improvements may be combined with and attached to any type of magazine, either rotary or stationary, and used in connection with different types of filling detector mechanisms, and filling transfer mechanisms.

Referring to the drawing:—Figure 1 is a side view of a magazine of a weft replenishing loom with our improvements combined therewith; the magazine is partially broken away, and the lay is shown in section. Fig. 2 shows the filling transfer mechanism shown in the upper part of Fig. 1, in a different position, and about to transfer a bobbin.

In the accompanying drawing, 1 is the loom side or end frame, 2 is the lay, with a stationary shuttle box 3 thereon, and a shuttle 4 therein, carrying a bobbin or filling carrier 5.

6 is the bottom shaft of the loom, 7 is a stand, rigidly secured to the loom side 1; said stand carries the rotary magazine 8, only the lower portion of which is shown, and is adapted to carry in pockets 8′ the heads of the bobbins or filling carriers 5, in the usual way.

On the forward movement of the lay 2, the bobbin 5 in the active shuttle 4 is adapted to be engaged by the feeler slide 9, which is loosely guided on the feeler bed 10, and adjustably pivoted upon the bolt 11 by the screw 12 in the usual way. The feeler slide 9 is adapted to operate, through intermediate connections, the upright lever 13, which has its hub 13′ secured on a shaft 14, which is loosely mounted in bearings 10′ on the bed 10. The opposite end of the shaft 14 has secured thereon the upright lever 15, having a swivel head 16 through which extends the connector rod 17, which has its end pivotally connected to a lug 18′ on the lower end of a downwardly extending latch or member 18, which is pivotally connected at its upper end to a stud 19 on the transferrer arm 20, which is pivotally mounted on a stud 20′, and is raised by a torsion spring 20″, in the usual way. The transferrer arm 20 has a downward extension 20^a thereon, which, on the downward movement of the arm 20, will engage a projection 9′ on the feeler slide 9, to move outwardly said slide 9, out of the path of the filling carrier 5, transferred into the active shuttle, as shown in Fig. 2. A helically coiled expansion spring 21 on the connector 17, acts as a give-way for the upright lever 15.

The latch or member 18, which extends

downwardly from the transferrer arm 20, has its lower end hooked at 18″, and is adapted to be moved into the path of and to be engaged by the hooked end 22′, on the upper end of a vertically extending bar or actuating device 22, which in this instance is loosely guided in the bars 23′ and 23″ on a stand 23, and has a down and up movement in a vertical plane. The bar 22 has its lower end pivotally connected to the upper end of a rod 24, through which a down and up motion is communicated to the hook bar 22, by mechanism on the loom to be hereinafter described.

On the practical exhaustion of filling on the bobbin 5 in the active shuttle 4, and on the engagement of the feeler slide 9 with the bobbin 5 in the active shuttle, the feeler slide 9 will leave the upright levers 13 and 15 in their inoperative position, which causes the latch 18 to remain with its hooked end 18″ in the path of the hooked bar 22, see Fig. 2. On the downward movement of the bar 22, through the latch 18, the transferrer arm 20 will be operated and moved downwardly, to engage a bobbin 5 in the magazine 8 and transfer it into the active shuttle on the same pick, as shown in Fig. 2.

All of the above mentioned parts may be of the usual and well known construction and are fully shown and described in U. S. Letters Patent, No. 1,032,709, above referred to.

We will now describe our improvements in the operating mechanism for communicating a vertical reciprocating movement to the bar 22, and the rod 24 connected therewith.

On the bottom shaft 6 is in this instance secured a disk 25, to which is adjustably secured in any suitable manner a gear 26, for operating the dwell or mutilated pinion 27. The gear 26 has a smooth portion 26′ to be engaged by the two dwell portions 27′ on the pinion 27, and has a recessed portion 26″ in said smooth portion 26′, to allow of the entrance of the projecting point on the dwell portions 27′ on the pinion 27, as said pinion revolves. The master gear 26 has a tooth portion 26‴, to engage with the toothed portions 27″ on the dwell pinion 27, on each revolution of the gear 26, to impart a half turn to said pinion 27 every other pick. The dwell pinion 27 is loosely mounted on a stud 28 on the loom side 1, and has secured upon its front side a crank 29, carrying a pin 29′, to which is pivotally connected one end of a connector 30; the other end of the connector 30 is pivotally connected to a pin or stud 31, adjustably secured in a slot 32′ in the arm of a segmental gear 32, which has its hub 32″ loosely mounted on a stud 33 at the lower end of a stand 34 secured to the loom side 1. The toothed portion 32‴ of the segmental gear 32 meshes with and revolves a pinion 35, which is loosely mounted on a stud 36 on the stand 34. On the front side of the pinion 35 is secured a disk 37, which carries a pin 38, which is pivotally connected to the rod head 39. The rod head 39 has adjustably secured thereto the lower end of the upwardly extending connector 24, which carries at its upper end the hooked bar 22. Through the rotation of the gear 26 a half turn is imparted to the mutilated pinion 27, and the crank pin 29′ thereon, every second pick, and through the connector 30, and the segmental gear 32, one full revolution is communicated to the pinion 35, and the crank pin 38 thereon, to move the hooked bar or actuating device 22 down and up every other pick, to transfer a bobbin or filling carrier on the indication of the substantial exhaustion of filling thereon, in the manner above described. By means of the half turn of the mutilated pinion actuating the pinion gear a full turn, a quick up and down motion is given to the actuating device, to transfer a bobbin into the active shuttle when indicated.

It will be understood that the details of construction of our improvements may be varied if desired.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:—

1. In a weft replenishing loom, a magazine for bobbins, a bobbin transferrer, a movable member connected with said transferrer, a filling feeler on the magazine end of the loom, and on the stationary part of the loom, to detect the condition of the filling in the active shuttle, and connections intermediate said filling feeler and said movable member, an intermittently moving device, independent of the lay, to coöperate with said movable member, and means for operating said device, said means comprising a mutilated gear, a mutilated pinion driven by said gear one-half of a revolution at a time, a connection to a segmental gear, and said segmental gear, a pinion rocked by said segmental gear, first in one direction, and then in the opposite direction, and a connection intermediate said pinion and said device.

2. In a weft replenishing loom, a bobbin transferrer, a movable member connected with the transferrer, a filling detector mechanism to control the movable member, an intermittently moving device for actuating said movable member, a pinion for moving said device in opposite directions, and means to cause said pinion to make a complete revolution, and to dwell, said means comprising a mutilated driving gear, a mutilated pinion operated thereby, and connections intermediate said mutilated pinion and said first mentioned pinion.

3. In a weft replenishing loom, a filling detector mechanism, a bobbin transferrer mechanism, under the control of said filling detector mechanism, and an intermittently moving actuating device to operate said transferrer, and means to move said device, said means comprising a mutilated pinion, making a half revolution and then a dwell, a mutilated driving gear for the pinion, a second pinion oscillating first in one direction, and then in the other direction, a crank connection from said first mentioned pinion to a segment gear, and said segment gear actuating said second pinion, a crank connection from said second pinion to the actuating device, to move it intermittently in opposite directions with a quick movement.

HORACE WYMAN.
GEORGE F. HUTCHINS.

Witnesses:
JOHN C. DEWEY,
MINNA HAAS.