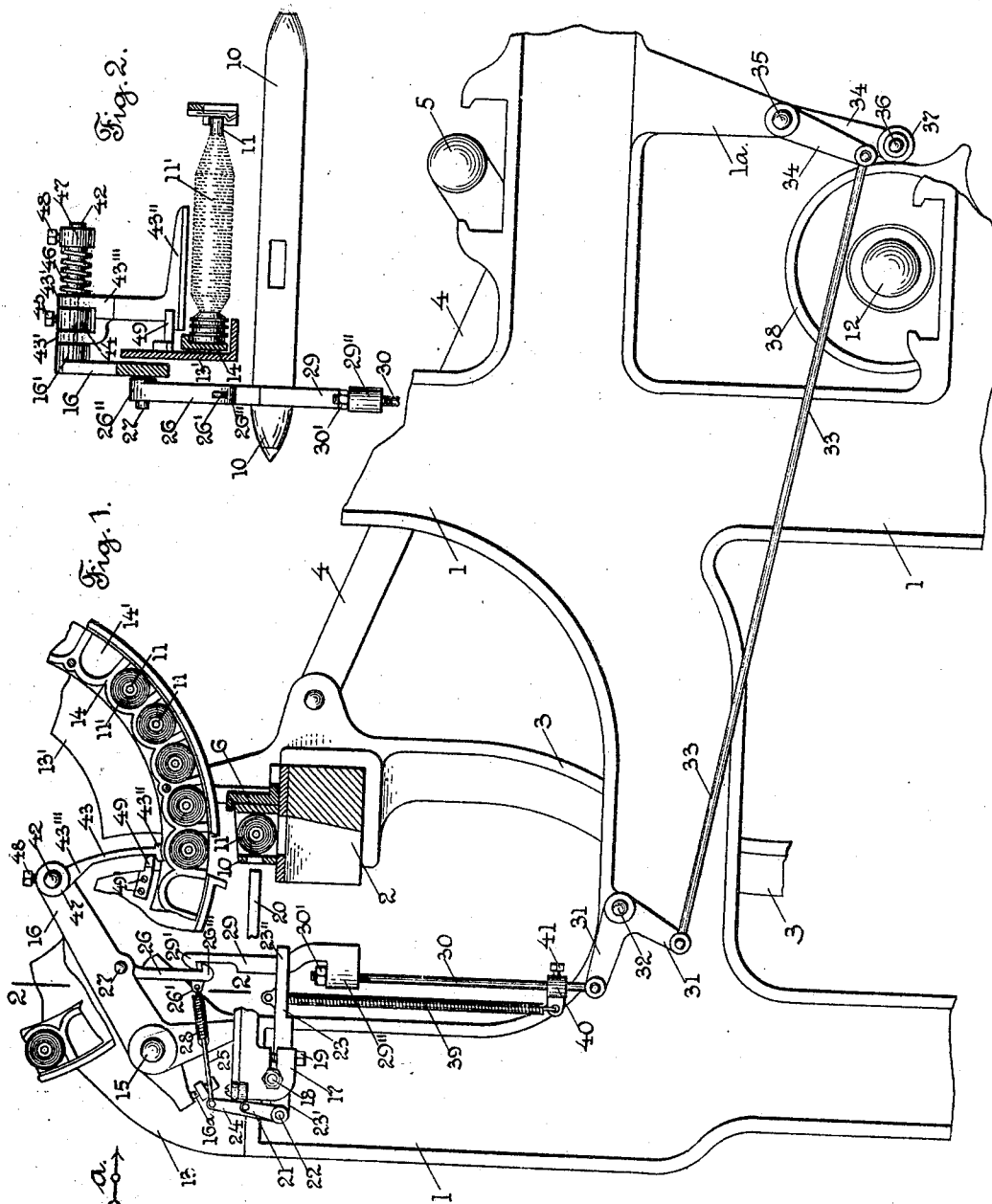


E. H. RYON.
TRANSFER MECHANISM FOR WEFT REPLENISHING LOOMS.
APPLICATION FILED OCT. 20, 1910.

1,032,709.

Patented July 16, 1912.

2 SHEETS-SHEET 1.



Witnesses
M. Bredt.
W. H. Hoad.

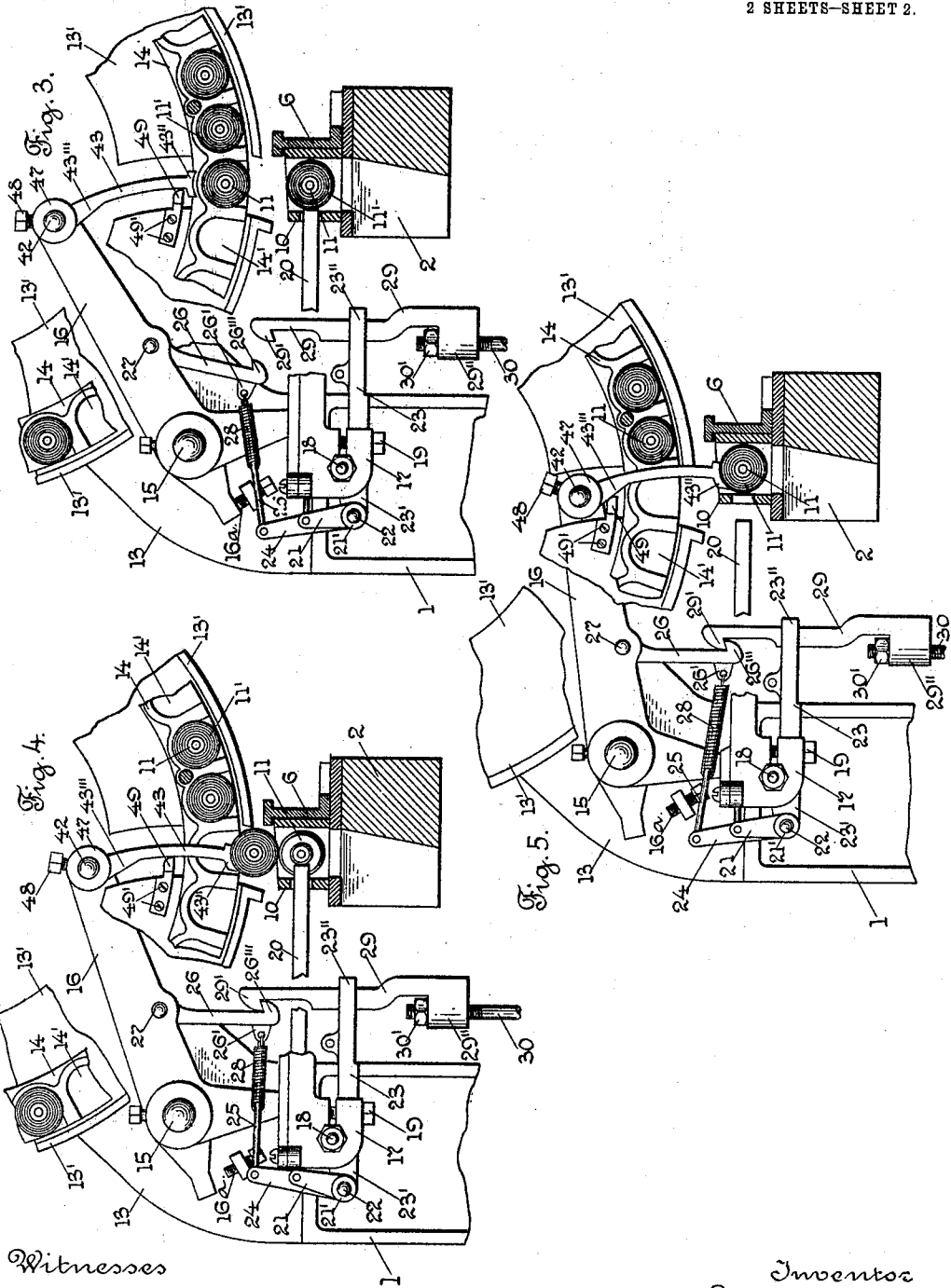
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UNITED STATES PATENT OFFICE.

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TRANSFER MECHANISM FOR WEFT-REPLENISHING LOOMS.

1,032,709.

Specification of Letters Patent.

Patented July 16, 1912.

Application filed October 20, 1910. Serial No. 568,018.

To all whom it may concern:

Be it known that I, EPPA H. RYON, a citizen of the United States, residing at Waltham, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Transfer Mechanism for Weft-Replenishing Looms, of which the following is a specification.

My invention relates to the filling transfer mechanism of weft replenishing looms, and the object of my invention is to improve upon the transfer mechanism, as ordinarily made, which transfers a fresh bobbin from the magazine into the running shuttle on the same pick on which the practical or substantial or total exhaustion of filling on the bobbin is indicated by the filling feeler or detector.

My invention consists in certain novel features of construction of my improvements as will be hereinafter fully described.

In my improvements in transfer mechanism for weft replenishing looms, the transferer is operated at the proper time, through intermediate connections, by a driven cam, preferably located on the bottom shaft of the loom. The transfer mechanism is put into operation, to transfer a bobbin from the magazine into the active shuttle on the substantial or practical exhaustion of the filling in said shuttle, on the same pick, through the operation of a filling feeler or filling detector, comprising preferably a longitudinally movable slide, which is adapted to enter an opening in the front wall of the shuttle to engage the filling therein. The filling feeler or filling detector is located on the magazine end of the loom.

I have shown in the drawings a detached portion of a weft replenishing loom, having a rotary magazine, and a filling detector, and my 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 which is shown in the drawings, is in this instance of the type shown and described in U. S. Letters Patent, No. 933,326, and the filling feeler or detector is of the type shown and described in the U. S. Letters Patent, No. 972,722, but my improvements in transfer mechanism may be combined with and attached to any

type of movable magazine, provided with 55 any type of filling detector.

Referring to the drawings:—Figure 1 is a side view of a magazine of a weft replenishing loom with my improvements combined therewith; the magazine is partially broken away, and the lay is shown in section. Fig. 2 is a section, on line 2, 2, Fig. 1, of the transferer lever, and some detached parts of the magazine, looking in the direction of arrow *a*, same figure. Fig. 3 shows, on an enlarged scale, some of the parts shown in Fig. 1, in a different position. Fig. 4 corresponds to Fig. 3, but shows the parts shown in Fig. 3, in a different position, and, Fig. 5 corresponds to Fig. 4, but shows the parts shown in Fig. 4 in a different position.

In the accompanying drawings, 1 is the loom side or end frame, 2 is the lay carried on the lay sword 3, which is pivotally mounted at its lower end, not shown, and is operated through the crank connector 4 to the crank shaft 5; 6 is a single stationary shuttle box at the magazine end of the loom, and 10 a shuttle therein, carrying a bobbin 11 having filling 11' thereon; 12 is the bottom shaft, 13 is a stand rigidly secured to the loom side 1, and having a cylindrical portion 13', which engages the inner ring 14 of the rotary magazine, having pockets 14' to carry the heads of the bobbins 11. The stud 15 on the stand 13 has loosely mounted thereon the hub of the transferer arm 16.

17 is the feeler bed, adjustably secured on the stud 18 by a screw bolt 19. The guide or bed 17 is preferably grooved on its upper side to loosely receive the feeler slide 20, which is adapted to engage the filling 11' on a bobbin 11 in the running shuttle 10. The slide 20 is adapted to operate, through intermediate connections, the upright lever 21, which has its hub 21' secured on a shaft 22, which is loosely mounted in bearings 23' on the stand 23. The opposite end of the shaft 22 has secured thereon the upright lever 24.

All of the above mentioned parts, except the transferer arm 16, may be of the usual and well known construction, and as shown and described in U. S. Letters Patents No. 933,326, and No. 972,722, above referred to.

I will now describe my improvements.

One end of a rod 25 is pivotally connected to the upper end of an upright lever 24; the other end of said rod 25 is adapted to bear against a lug 26' on a downwardly extending latch 26, which has its hub 26'' pivotally mounted on a stud 27, see Fig. 2, on the transferrer arm 16. A helically coiled contraction spring 28 has one end connected to the lug 26' and its other end connected to the rod 25, and acts to yieldingly hold the end of the rod 25 against the lug 26'. The latch 26, which has its lower end hooked at 26'', is adapted to be moved into the path of and be engaged by the hooked end 29' on an upwardly extending bar 29. The bar 29 is in this instance loosely supported at 23'' in the arm or stand 23 attached to the loom side, and has an up and down movement in a vertical plane. The lower end of the arm 29 has a boss 29'' thereon, which is adjustably connected by a nut 30' to the upper end of a rod 30; the lower end of the rod 30 is pivotally connected to one arm of an angle lever 31, see Fig. 1, which has its hub loosely mounted on a stud 32 on the loom side 1. The other arm of the angle lever 31 has pivotally connected thereto one end of a rod or connector 33; the other end of said rod or connector 33 is connected to one arm of a double lever 34, which has its hub loosely mounted on a stud 35 on a stand or hanger 1^a on the loom side 1. The second arm 34' of the double lever 34 carries a pin 36, on which is mounted in this instance a roll 37, which is adapted to engage the periphery of and be operated by a cam 38, in this instance fast on the bottom shaft 12. Through the rotation of the cam 38 and the intermediate connections to the bar 29, an up and down movement is communicated to said bar every second pick.

A helically coiled contraction spring 39 has its upper end connected to the stand 23, and its lower end connected to a collar 40, secured on the lower end of the rod 30 by a set screw 41. The spring 39 acts to yieldingly hold the roll 37 on the operating lever 34 in engagement with the cam 38.

The boss 16' on the end of the transferrer arm 16 has a stud 42 extending out therefrom, see Fig. 2, on which is hinged or pivotally mounted, the yoke shaped end 43' of the downwardly extending transferrer member 43, which is adapted to engage with its lower engaging end 43'' the bobbin 11 in the magazine, on the downward movement of the transferrer arm 16. A collar 44 secured on the stud 42 by a set screw 45, acts to hold the transferrer member 43 in position. A helically coiled torsion spring 46 encircles the stud 42, and is connected at one end to the hub 43' of the transferrer member 43, and at its other end to a collar 47, secured by a set screw 48 on the stud 42, and acts to yieldingly hold the transferrer mem-

ber 43 against a stop or rest 49, secured to the cylindrical portion of the magazine, in this instance by screws 49'. The stop 49 serves as a guide for the transferrer member 43, and on the downward movement of the transferrer arm 16 and the transferrer member 43, the stop or rest 49 engages the inclined or beveled portion 43''' on the transferrer member 43, and causes said member, as shown in Fig. 5, to be moved backwardly to follow the movement of the lay, thus insuring the positive insertion of a fresh bobbin from the magazine into the active shuttle.

The operation of my improvements will be readily understood by those skilled in the art, and briefly is as follows:—As long as the loom is running normally, and a bobbin has a sufficient amount of filling thereon, as shown in Figs. 1 and 3, the feeler slide 20, on the forward movement of the lay, will engage the filling and move backwardly the upright levers 21 and 24, and through the wire 25, and spring 28, the latch 26 will be moved out of the path of the hooked end 29' on the vertically moving bar 29, shown in Fig. 3, and leave the transferrer 16 at rest, and in its raised position, an extension 16'' on said arm engaging a check bolt 16^a, see Fig. 3. When the filling on the bobbin in the running shuttle is practically or substantially exhausted, as shown in Fig. 4, the filling feeler slide 20 will not move back the upright levers 21 and 24, but will leave them at rest, with the lower end of the latch 26 in the path of the vertically moving bar 29, so that on the downward movement of said bar 29, through intermediate connections to the cam 39, said latch 26 will be drawn downward, and also the transferrer arm 16 of the transferrer member 43, to force a bobbin from the magazine into the active shuttle to take the place of the substantially exhausted bobbin therein, and on the continued downward movement of the transferrer arm 16 and the transferrer member 43, the exhausted bobbin will be removed from the shuttle, and substituted by a fresh bobbin, and as the rest or stop 49 engages the inclined portion 43''' on the transferrer arm 43, said member will be forced backwardly to follow the continued backward movement of the lay, and insure the insertion of the fresh bobbin on the same pick.

The advantages of my improvements will be readily appreciated by those skilled in the art.

My improvements, to be combined with the filling detecting mechanism, and the transferring mechanism of a weft replenishing loom, are of a very simple construction, and can be readily applied to weft replenishing looms of the ordinary type, without materially altering the construction of said looms.

One of the essential features of my improvements is the constant reciprocating device 29, which may be so timed and adjusted as to immediately cooperate with the transferring mechanism on the indication of the feeler, to cause a transfer of new filling into the active shuttle.

I believe that I am the first one to use a filling feeler on the magazine end of a loom, and on a stationary part of a loom, to detect the condition of filling when the lay is at its extreme front center, and immediately transfer a fresh bobbin into the active shuttle, before the shuttle is picked from the magazine end of the loom.

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

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

1. In a weft replenishing loom, a magazine for bobbins, a filling feeler on a stationary part of the loom, a transferer, a movable member cooperating therewith, said movable member under the control of said filling feeler, and a constant driven device, independent of the lay, to cooperate with said movable member, to cause a transfer of a bobbin from the magazine into the active shuttle on the same pick that a change of filling is indicated by the filling feeler.

2. In a weft replenishing loom, a magazine for bobbins, a bobbin transferer, a movable member connected with said transferer, a constant driven device, independent of the lay, to cooperate with said member, a filling feeler on the magazine end of the loom, and on a 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.

3. In a weft replenishing loom, a magazine for bobbins or filling carriers, a bobbin transferer having a movable member connected therewith, a constant reciprocating device, independent of the lay, said device adapted to engage with said movable member, and means to operate said device, said means, including filling detector mechanism located on the magazine end of the loom, and on a stationary part of the loom, and comprising a feeler to feel through an opening in the shuttle, and engage the filling, to control said movable member.

4. In a weft replenishing loom, a magazine for bobbins, a bobbin transferer, comprising an arm, and a movable member pivotally connected to said arm to transfer a bobbin from the magazine into the shuttle, and a second movable member pivotally connected to said arm and operated by a filling feeler, and said filling feeler adapted to feel through an opening in the shuttle to engage the filling, and a constant reciprocating de-

vice, independent of the lay, to cooperate with said second mentioned movable member, for the purpose stated.

5. In a weft replenishing loom, a magazine for bobbins, a bobbin transferer, a movable member attached to said transferer, said member having an engaging portion normally in the path of and adapted to be engaged by a corresponding portion, on a constant driven device, and said device, and means for operating the same, a filling detecting mechanism connected with said movable member to draw the engaging portion of said member from the path of the engaging portion of said driven device, until the substantial exhaustion of filling in the active shuttle takes place.

6. In a weft replenishing loom, a lay, a magazine for weft carriers, filling detecting means on the magazine end of the loom, and on a stationary part of the loom, and comprising a feeler, to feel through an opening in the shuttle and engage the filling, to detect the condition of the filling in the running shuttle as the lay approaches the limit of its forward stroke, a transferring mechanism under the control of said filling detecting means, and connections, intermediate the filling detecting means and the transferring mechanism, and a constant reciprocating device, and means for operating the same, independent of the lay, to automatically operate a member of said transferring mechanism, to transfer a bobbin from the magazine into the active shuttle on the immediate backward stroke of the lay.

7. In a weft replenishing loom, the combination with filling detecting mechanism, located at the magazine end of the loom, and on a stationary part of the loom, and comprising a reciprocating feeler slide, to feel through an opening in the shuttle and engage the filling, and a magazine for bobbins or filling carriers, and a bobbin transferring mechanism, comprising a pivotally mounted transferer arm, and a transferring member attached thereto, of connections, intermediate said transferer arm and the reciprocating feeler slide, and a constant reciprocating device, and means for operating the same, independent of the lay, to automatically operate the transferring mechanism, to transfer a bobbin from the magazine into the active shuttle on the same pick that substantial exhaustion of filling is indicated by the filling feeler.

8. In a weft replenishing loom, the combination with a filling detecting mechanism, located at the magazine end of the loom, and comprising a reciprocating feeler slide on a stationary part of the loom, to feel through an opening in the shuttle and engage the filling, and a magazine for bobbins or filling carriers, a bobbin transferring mechanism, comprising a pivotally

mounted transferrer arm, and a transferring member attached thereto, of connections intermediate said transferrer arm and said reciprocating feeler slide, said connections, 5 comprising a member pivotally mounted on the transferrer arm, and yieldingly connected, through intermediate connections to the reciprocating feeler, and a constant reciprocating device, adapted to engage said 10 member, and means for constantly reciprocating said device, and causing, on the sub-

stantial exhaustion of filling in the active shuttle, the operation of the transferring mechanism to transfer a fresh bobbin into the active shuttle on the same pick that substantial exhaustion of filling is indicated by 15 the filling feeler.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."