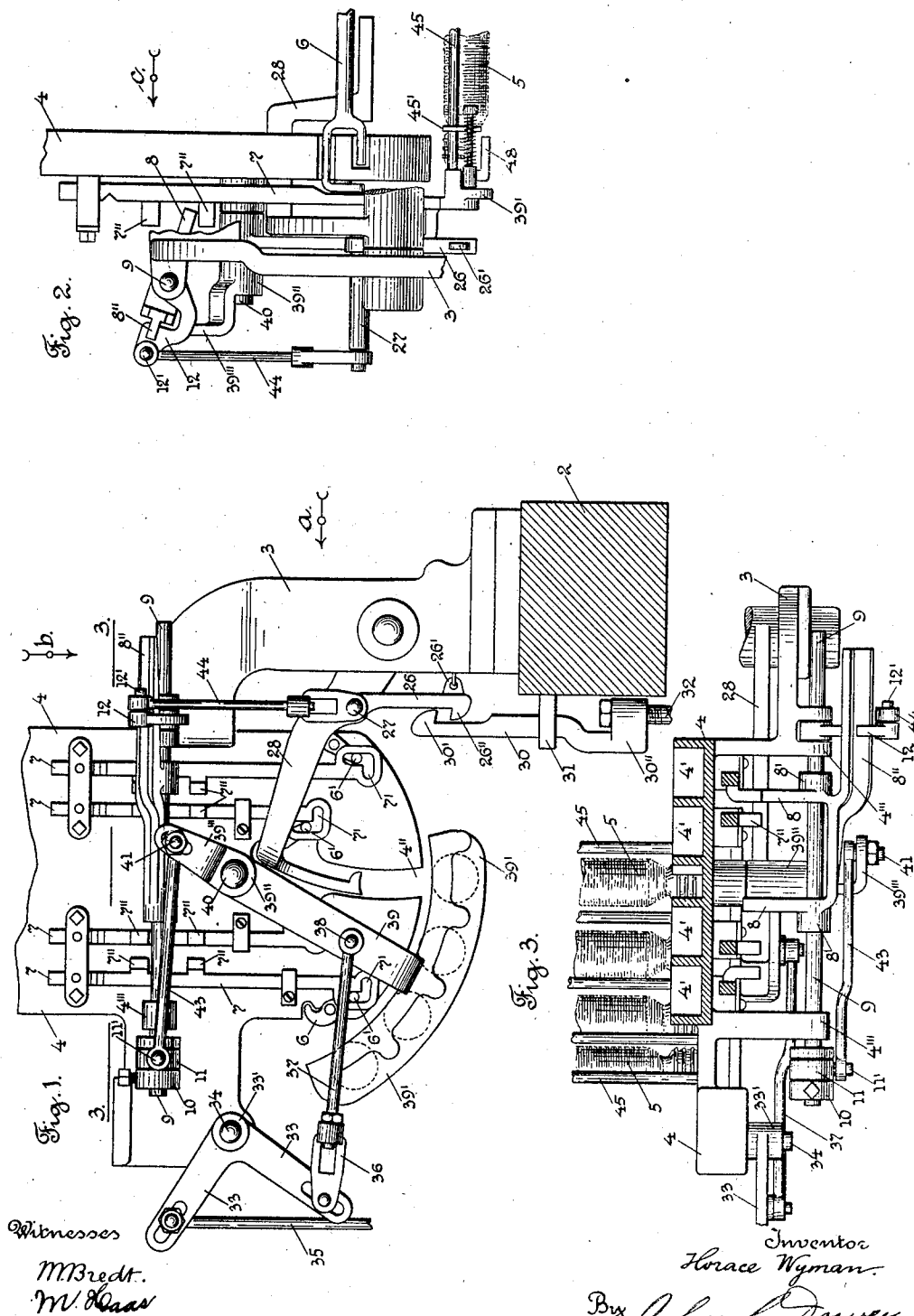


1,058,691.

H. WYMAN.
WEFT REPLENISHING LOOM.
APPLICATION FILED MAR. 21, 1912.

Patented Apr. 8, 1913.

2 SHEETS—SHEET 1.



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2 SHEETS-SHEET 2.

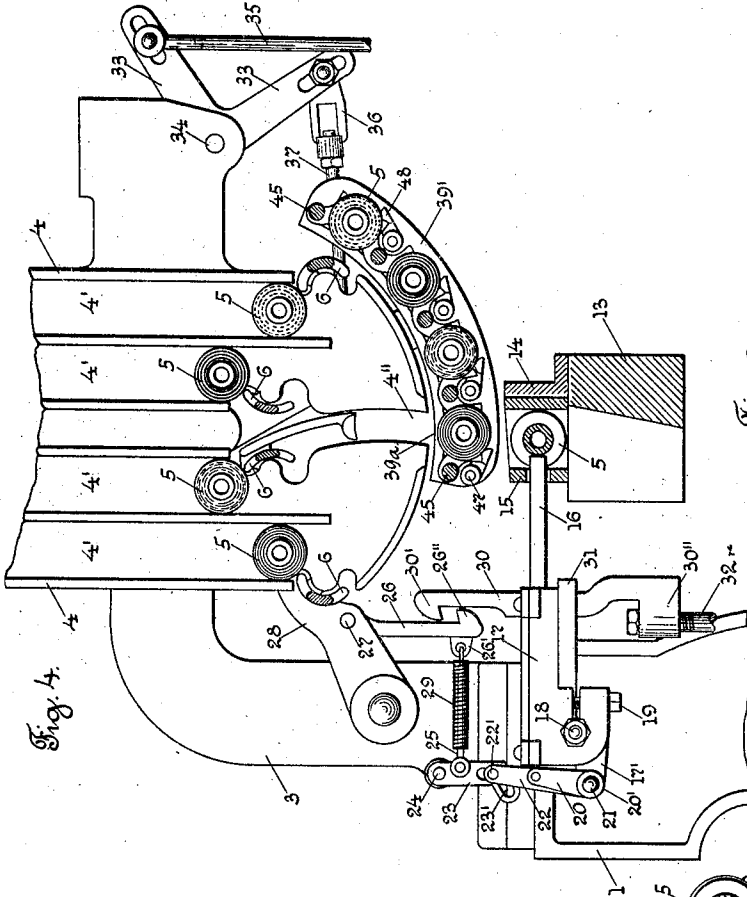


Fig. 4.

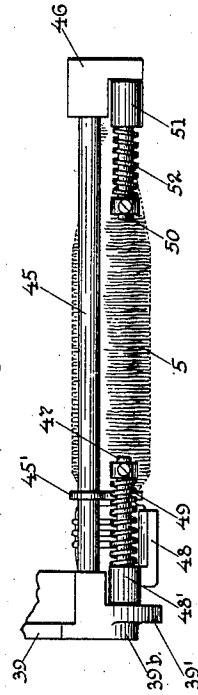


Fig. 5.

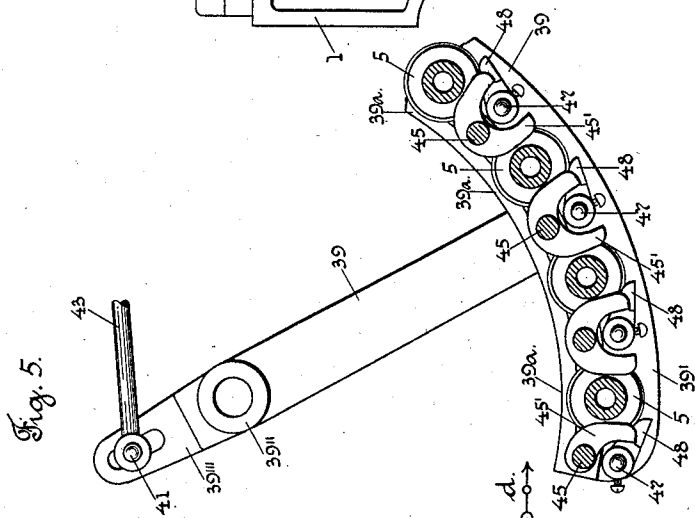


Fig. 6.

Witnesses
M. Brydt.
W. Deas.

Inventor
Horace Wyman.
By John C. Dewey
Attorneys.

UNITED STATES PATENT OFFICE.

HORACE WYMAN, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO CROMPTON & KNOWLES LOOM WORKS, A CORPORATION OF MASSACHUSETTS.

WEFT-REPLENISHING LOOM.

1,058,691.

Specification of Letters Patent.

Patented Apr. 8, 1913.

Application filed March 21, 1912. Serial No. 685,163.

To all whom it may concern:

Be it known that I, HORACE WYMAN, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Weft-Replenishing Looms, of which the following is a specification.

My invention relates to weft replenishing looms, particularly of the class shown and described in U. S. Letters Patent, No. 941,179, in which a stationary magazine is used, with a plurality of guide-ways or compartments for superposed bobbins or filling carriers, which, upon an indication of the filling detecting mechanism, are released from their respective compartments, and transferred into the active shuttle.

My invention relates particularly to a movable bobbin receiver, which is combined with the stationary magazine of the type shown and described in said Letters Patent, and which is preferably provided with a similar number of compartments, to hold single bobbins or filling carriers, corresponding in color or character to the bobbins or filling carriers in the stationary magazine.

The bobbin receiver preferably has a pivoted arm movable back and forth in the arc of a circle, in unison with the movement of the shifting shuttle boxes at the other end of the loom, in this instance four in number. The four compartments of the receiver are provided with bobbins or filling carriers, which correspond in color or character with the bobbins or filling carriers in the compartments of the stationary magazine, and the receiver holds a bobbin, which corresponds with the bobbin in the active shuttle, always in readiness to be transferred into the active shuttle, whenever the exhaustion or substantial exhaustion of a bobbin in the active shuttle calls for a change of bobbins.

As soon as a bobbin has been transferred from the receiver to the active shuttle, mechanisms are put into operation by the transfer arm itself, which causes a fresh bobbin to drop from the corresponding compartment in the stationary magazine through the discharge opening, into the receiver, to take the place of the bobbin transferred into the active shuttle.

The object of my invention is to improve upon the construction of the weft replenish-

ing mechanism in the type of loom shown in Patent, No. 941,179, above referred to.

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

I have shown in the drawings a detached portion of a stationary magazine of a weft replenishing loom of the class above referred to, and a transferrer mechanism of the type shown and described in the pending application for Letters Patent, No. 588,018, with my bobbin receiving mechanism combined therewith, sufficient to enable those skilled in the art to understand the construction and operation thereof.

Referring to the drawings:—Figure 1 is an inner end view of a stationary magazine with my improvements combined therewith. Fig. 2 is a front view of some of the parts shown in Fig. 1, looking in the direction of arrow *a*, same figure. Fig. 3 is a section, on line 3, 3, Fig. 1, looking in the direction of arrow *b*, same figure. Fig. 4 is an inner view of the stationary magazine, shown in Fig. 1, looking in the direction of arrow *c*, Fig. 2. Fig. 5 is, on an enlarged scale, the conveyer shown in Fig. 4, detached, and, Fig. 6 is an edge view of the lower portion of the conveyer shown in Fig. 5, looking in the direction of arrow *d*, same figure.

In the accompanying drawings, 1 is the loom side or end frame.

2 is the breast beam on which is mounted the stationary stand 3, to which is rigidly connected the inner end 4 of the stationary magazine. The magazine 4 has in this instance four vertically extending compartments or guide-ways 4', for the heads of the bobbins 5, all of which lead to one discharge opening 4'' under the transferrer.

Each of the four compartments or guide-ways 4' of the magazine is provided at its lower end with mechanism for supporting a set of bobbins in each compartment, preparatory to the discharge of the bobbin to the lower discharging end of the magazine.

The bobbin holding and releasing mechanism consists of a rocking cradle or support 6, pivotally mounted at the lower part of the magazine. A pin 6' extends within an offset slot 7' in the lower part of a vertically moving bar 7, which is loosely guided at its upper inner end on the magazine, see Fig. 1. Each bar 7 is provided with two projections

7'', which are adapted to extend in the path of and be operated by the fingers 8, which have their hubs 8' fast on the horizontal sliding rod 9, loosely mounted in bearings 4'' on the magazine, see Fig. 3.

One end of the sliding rod 9 has a collar 10 fast thereon, which has an annular groove therein to receive a ring or yoke 11, carrying a stud 11', from which a connector rod extends to the receiver arm, to be hereinafter described.

The raising and lowering of the shuttle boxes on the opposite end of the loom, not shown, will communicate, through intermediate connections, a sliding motion to the rod 9 and the fingers 8 thereon. A side extension 8'', see Fig. 3, on the hubs 8', extends loosely into a notch on a lever 12, which through its up and down movement will impart a rocking motion to the extension 8'' and the fingers 8, to cause the up and down movement of the vertically extending bars 7, and a rocking of the cradle or bobbin supports 6, in the usual way.

The lay beam 13 has a single stationary shuttle box 14 thereon, at the magazine end of the loom, see Fig. 4, with a shuttle 15 therein, carrying a bobbin or filling carrier 5, in the usual way. On the forward movement of the lay 13, the bobbin 5 in the active shuttle 15, is adapted to be engaged by the feeler slide 16, which is loosely guided in the feeler bed 17, adjustably fastened upon the bolt or stud 18 by a bolt 19, see Fig. 4. The feeler slide 16, or filling detector, is in this instance of the type shown and described in U. S. Letters Patent, No. 972,722, and is adapted to operate, through intermediate connections, not shown, the upright lever 20, which has its hub 20' secured on a shaft 21, which is loosely mounted in bearings 17' on the bed 17. The opposite end of the shaft 21 has secured thereon the upright lever 22, which has a pin 22' at its upper end, which extends loosely into an offset slot 23' in the lower end of a downwardly extending lever 23, which has its hub pivotally mounted on a stud 24 on the stand 3, see Fig. 4.

The lever 23 has pivotally connected thereto one end of a rod 25, see Fig. 4. The other end of said rod 25 is adapted to bear against a lug 26' on the lower end of the downwardly extending latch 26, which is pivotally mounted, at its upper end, on a stud 27 on the transfer arm 28.

A helically coiled contraction spring 29, attached at one end to the lever 23, and at its other end to the lug 26', acts to yieldingly hold the end of the rod 25 against the lug 26' on the latch 26. The latch 26, which extends downwardly from the transfer arm, has its lower end hooked at 26'', and is adapted to be moved with said transfer arm into the path of and be engaged

by the hooked end 30' on the upper end of the upwardly extending bar 30, which is in this instance loosely guided in a stand 31, to have an up and down motion in a vertical plane. The bar 30 has its lower end 30'' adjustably connected to the upper end of a rod 32, through which an up and down movement is communicated to the hooked bar 30, by mechanisms on the loom, not shown.

On the practical or substantial exhaustion of the filling on the bobbin 5 in the active shuttle 15, and on the engagement of the feeler slide 16 with the bobbin 5 in the active shuttle 15, as shown in Fig. 3, the feeler slide 16 will leave the upright levers 20 and 22 in their inoperative position, and the latch 26 remains with its hooked end 26'' in the path of the hooked end 30' of the vertically moving bar 30, so that on the downward movement of said bar 30, through the latch 26, the transfer arm 28 will be operated and move downwardly, to engage a bobbin in the receiver under the transferer, to transfer it into the active shuttle on the same pick.

All of the above mentioned parts may be of the usual and well known construction, and are particularly shown and described in the U. S. Letters Patents above referred to, Nos. 941,179 and 972,722, and the Letters Patent No. 1,032,709.

I will now describe my improvements.

An angle lever 33, see Fig. 1, has its hub 33' loosely mounted on a stud 34 on the magazine end 4, and has one arm adjustably connected to the upper end of a rod or connector 35, which rod is connected, through intermediate connections, not shown, in this instance with the drop shuttle boxes, not shown, on the opposite end of the loom. The raising and lowering of said shuttle boxes will communicate, through intermediate connections, a rocking movement to the angle lever 33, to cause said lever to have four different positions, corresponding to the position of the four shuttle boxes. The other arm of the angle lever 33 is adjustably connected to the rod head 36, on one end of an adjustable connector rod 37. The other end of said rod 37 is pivotally connected to a stud 38 on a swinging arm 39, which has rigidly connected to its lower end the frame 39' forming the bobbin receiver, and comprising in this instance four compartments, corresponding to the number of compartments in the stationary magazine for the bobbins or filling carriers 5.

The swinging arm 39 has its hub 39'' loosely mounted on a stud 40 on the magazine. Extending upwardly from the hub 39'' is an arm 39''', which has adjustably connected thereto a stud 41, see Fig. 1, to which is pivotally connected one end of a

connector or rod 43; the other end of the connector or rod 43 is pivotally connected to a stud 11' on the ring or yoke 11, which is loosely connected to the collar 10 on the horizontally sliding rod 9.

The raising and lowering of the shuttle boxes communicates, through intermediate connections, a swinging motion to the receiver 39', and also a reciprocating motion to the sliding rod 9 connected therewith, and causes the bobbin in the receiver 39', which corresponds to the bobbin in the active shuttle, to be placed in a position to be transferred at any time into the active shuttle. The sliding motion of the rod 9 will also cause the rocking fingers 8 thereon to be moved into the path of the vertically moving bars 7, to operate a cradle or support 6 of a compartment containing bobbins which correspond to the bobbin in the receiver 39', which is placed in position to be transferred.

The releasing of a bobbin and the dropping of the same into the receiver 39', after having the corresponding bobbin transferred, is accomplished by the transferrer arm 28, which in this instance has pivotally connected to the stud 27 the lower end of an adjustable connector 44, see Fig. 1. The upper end of the connector 44 is pivotally connected to a stud 12' on the lever 12.

The operation of the transferrer arm 28 imparts, through connector 44 and lever 12, a rocking motion to the side extension 8' and the operating fingers 8, secured on the sliding rod 9.

On the downward movement of the transferrer arm 28 to transfer a bobbin into the active shuttle, a rocking motion is communicated to the supporting cradle 6 in one direction, which causes a fresh bobbin to have its preliminary movement, to be dropped into the hollow part of the cradle 6. On the upward movement of the transferrer arm 28, to its inoperative position shown in the drawings, the cradle 6 is rocked in the other direction and causes the bobbin to be released from the cradle to be dropped to the lower part of the magazine and through the discharge opening therein into the vacant compartment of the receiver 39', which is moved to its position according to the position of the shuttle boxes. The frame 39' of the receiver, as shown in Figs. 5 and 6, has in this instance four compartments 39^a, which hold the heads of the bobbins 5. Transverse rods 45 are provided, which extend outwardly from the frame 39', see Fig. 6, and are adapted to carry on their outer ends the lugs 46 for the tips of the bobbins. The rods 45 have suitably secured thereon the downwardly extending projections, or guide portions 45' for the heads of the bobbins, to hold the bobbins in their compartments and prevent them from moving.

Bosses 39^b have pins 47, see Figs. 5 and 6, extending out therefrom, which loosely carry the hubs 48' of holding latches 48 for the heads of the bobbins. A helically coiled torsion spring 49, acts to yieldingly hold up the latch 48 against a stop, not shown, to carry the head of the bobbin. On the opposite end on the lug 46 in a pin 50 which loosely carries the boss 51 of a similar holding latch, which in this instance is yieldingly moved upwardly against the tip of the bobbin by a torsion spring 52 encircling the pin 50.

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 having shifting shuttles for different colors of filling, and having a magazine with a plurality of compartments for superposed filling carriers for filling of different colors, means to retain the lower filling carrier in each compartment, a transferrer located between two of the compartments, a single discharge opening for all of the compartments, located under the transferrer, guiding means for the filling carriers from each compartment to the discharge opening, a movable bobbin receiver under the stationary magazine, having compartments, each to receive a single filling carrier from the stationary magazine, means to move said receiver to maintain under the transferrer a filling carrier having the same color or character of filling as in the active shuttle.

2. In a weft replenishing loom, a stationary magazine with a plurality of compartments for filling carriers, a movable bobbin receiver under said magazine, which magazine has a single discharge opening for all of the compartments, a transferrer located above said discharge opening, and filling detecting means, whereby upon the detection of the substantial exhaustion of filling in the active shuttle, the transferrer will be operated, and a bobbin transferred from the receiver into the shuttle, during the same forward movement of the lay.

3. In a weft replenishing loom, a magazine with a plurality of compartments for filling carriers of different characters or colors, and having a single discharge opening for all of the compartments, a bobbin receiver under the magazine, having a receiving opening under the transferrer, and having compartments for single filling carriers of the same character or color as the filling carriers in the magazine, and movable back and forth to keep the same character of filling under the transferrer as in the active shuttle, and filling detector means, and a transferrer, located above said single dis-

charge opening, and made operative upon the substantial exhaustion of filling in the active shuttle, to replenish said shuttle with the same character of filling, during the same forward movement of the lay that detection takes place.

4. In a weft replenishing loom, a magazine with a plurality of compartments for filling carriers, said magazine having a single discharge opening for all of the compartments, located under the transferrer, and said transferrer, and a bobbin receiver below it, means, operating with the downward movement of the transferrer, to select a similar filling carrier from one of the compartments of the magazine, and means to convey it through the discharge opening into the vacant compartment of the bobbin receiver, when the transferrer returns to its normal position.

5. In a weft replenishing loom, a stationary magazine having a plurality of compartments for filling carriers, and a single discharge opening for all of the compartments, a bobbin receiver under the magazine, filling detecting means, and a transferrer, located above said single discharge opening, and operative upon the substantial exhaustion of filling in the active shuttle, to replenish said shuttle with filling from the bobbin receiver.

6. In a weft replenishing loom, a stationary magazine having a plurality of compartments for superposed filling carriers, and a single discharge opening for filling carriers to pass through, for all the compartments, a transferrer located above said opening, and a bobbin receiver movable below said opening, to hold filling carriers in reserve for immediate transfer, when indicated by the filling detector.

7. In a weft replenishing loom, a magazine having a single discharge opening for all of the compartments and a movable bobbin receiver below it, a transferrer located above said opening, and means to actuate said transferrer in one direction to transfer a filling detector from the bobbin receiver, and cooperating means to make a preliminary selection of the filling, means to return the transferrer to its normal position, and cooperative means to release the selected filling carrier to fall below the transferrer, to replace the transferred filling carrier in the bobbin receiver.

8. In a weft replenishing loom, a stationary magazine with a plurality of compartments for superposed filling carriers, and having a single discharge opening for all the compartments, a bobbin receiver movable under the magazine, and having compartments for single filling carriers, transferred from the stationary magazine through said discharge opening, to be transferred into the active shuttle.

9. In a weft replenishing loom, a stationary magazine having a plurality of compartments for filling carriers, and a single discharge opening for all of the compartments, a transferrer located above said discharge opening, and a movable bobbin receiver, having compartments for single filling carriers below said opening, and means, operated by the transferrer, to release a filling carrier from one of the compartments in the magazine, to pass through said discharge opening into a compartment in said receiver.

HORACE WYMAN.

Witnesses:

MINNA HAAS,
JOHN C. DEWEY.