

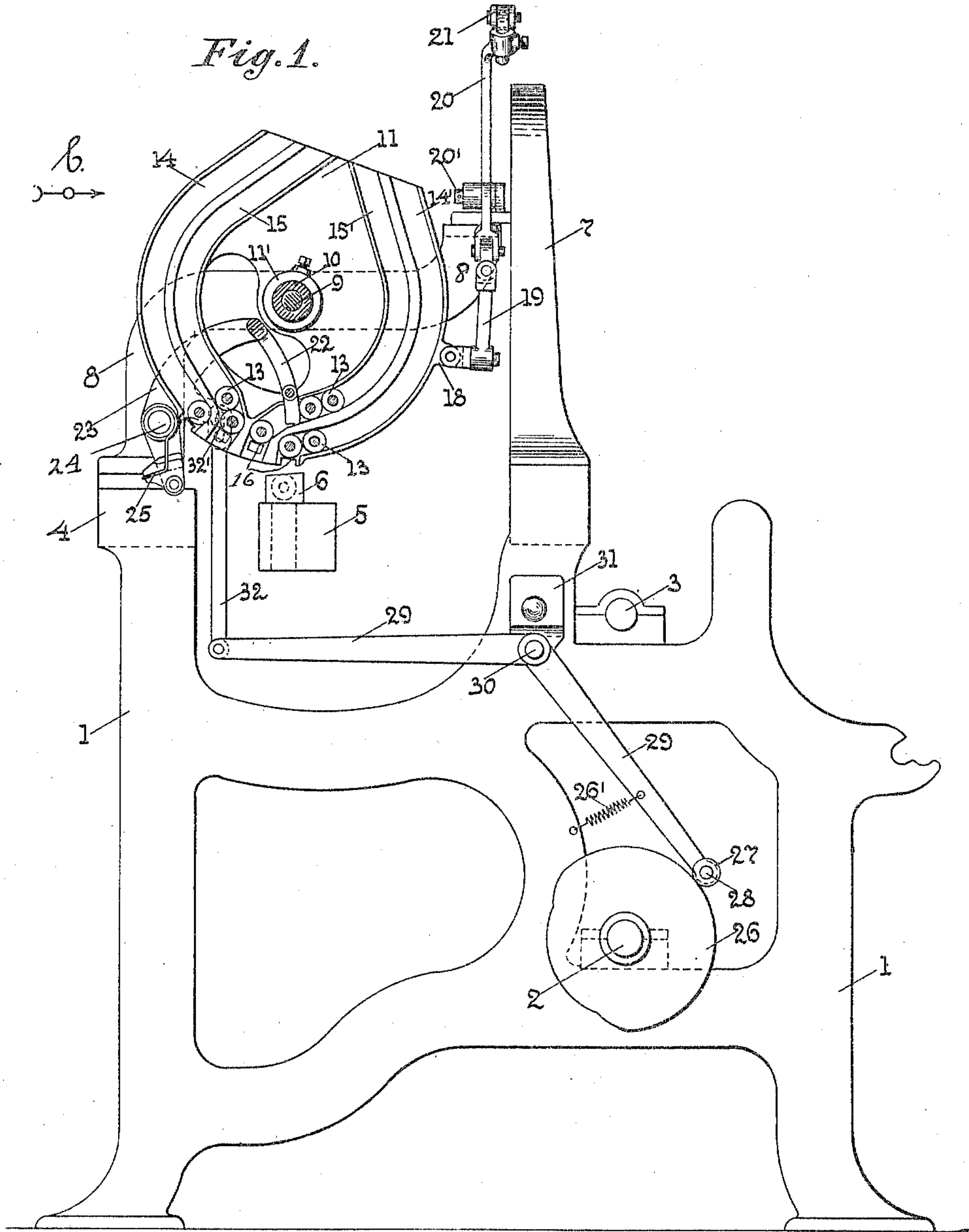
No. 811,889.

PATENTED FEB. 6, 1906.

H. WYMAN & J. T. CYR.
WEFT REPLENISHING LOOM.

APPLICATION FILED MAY 8, 1905.

2 SHEETS--SHEET 1.



Witnesses:

W. Bredt.
W. Heas.

Inventors:

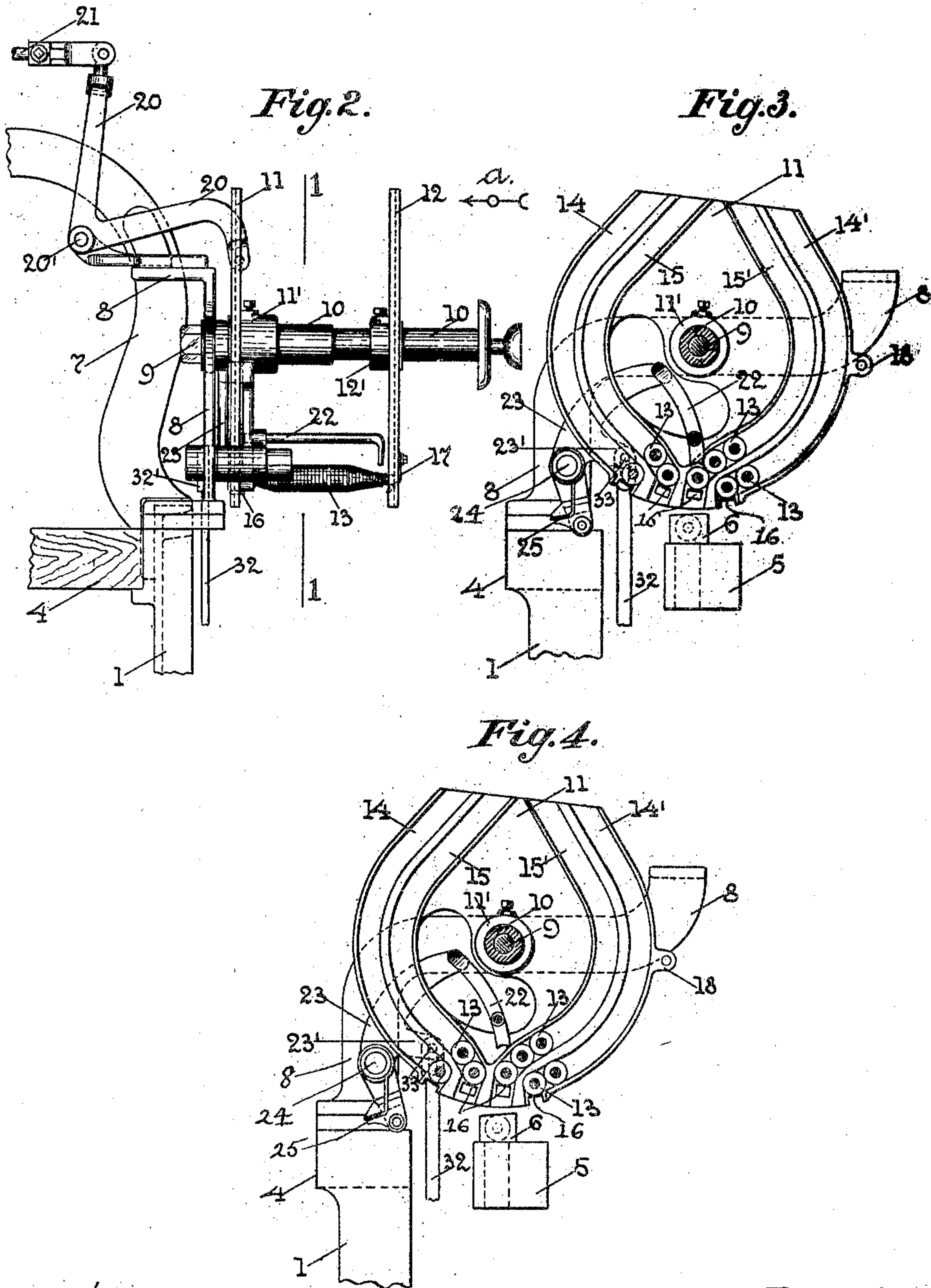
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UNITED STATES PATENT OFFICE.

HORACE WYMAN AND JOSEPH T. CYR, OF WORCESTER, MASSACHUSETTS,
ASSIGNORS TO CROMPTON & KNOWLES LOOM WORKS, A CORPORATION OF MASSACHUSETTS.

WEFT-REPLENISHING LOOM.

No. 811,889.

Specification of Letters Patent.

Patented Feb. 6, 1906.

Application filed May 8, 1905. Serial No. 259,360.

To all whom it may concern:

Be it known that we, HORACE WYMAN and JOSEPH T. CYR, citizens 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.

Our invention relates to automatic weft-replenishing looms of the class shown and described in United States Letters Patent No. 600,053 of March 1, 1898, and more particularly to the weft-replenishing loom shown and described in the United States Letters Patent No. 805,109 of November 21, 1905, and to the filling-supply mechanism shown and described in said application. In said Patent No. 805,109 is shown and described a magazine of the filling-supply mechanism having a set of compartments comprising two compartments, one on each side of the transferrer and each compartment adapted to carry a series of bobbins or filling-carriers which may be transferred from a terminal position in the lower end of either of the compartments directly into an active shuttle in the shuttle-box under the transferrer.

In our improvements as herein shown and described a magazine is provided having two sets of compartments comprising four compartments, two on each side of the transferrer, each compartment of one set on the inner side of a compartment of the other set, and the filling-carriers of the two inner compartments overlying those in the two outer compartments, with the terminals of the four compartments movable with the magazine under the transferrer in consecutive order, first the terminal of an outer compartment, then the terminal of an inner compartment, both on one side of the transferrer, then the terminal of the other inner compartment and the terminal of the other outer compartment, both on the opposite side of the transferrer.

Means are provided to retain any one of the terminals in position under the transferrer when a transfer of a bobbin or filling-carrier is to be made.

In our improvements, as shown in the drawings and hereinafter described, the transferrer is above a bobbin or filling-carrier when it is in a position to be transferred into a shut-

tle in the shuttle-box on the end of the lay when the lay is in its forward position under the magazine, as is common in the class of looms referred to.

The movement of the magazine when the filling in the active shuttle is substantially exhausted places the terminal of one of the four compartments under the transferrer, which has a filling-carrier of the same color as that in the active shuttle, preparatory to the transfer of the filling into the active shuttle.

When either of the inner compartments of the magazine is in a position for a transfer of a filling-carrier, such filling-carrier is directly under the transferrer; but as the filling-carriers of the inner compartments overlie the filling-carriers of the outer compartments in order to transfer a filling-carrier from one of the outer compartments when its terminal is in position under the transferrer it is necessary to move away the overlying filling-carriers in the inner compartment at the time the magazine moves to bring the terminal of one of the outer compartments into position. The transferrer is then in such a position that it will move the overlying filling-carriers out of the way and uncover the filling-carrier in the outer compartment at the terminal thereof and allow the transferrer to act directly to transfer said filling-carrier into the shuttle.

In order to obtain the result above referred to, the guideway to the terminal of each inner compartment is turned downward at an angle to the guideway of the filling-carriers above the terminal, thus making the filling-carrier at the terminal of the guideway at a greater distance from the center of movement of the magazine than the filling-carrier just above it, and as there is only sufficient room when the transferrer is in its normal position to allow the filling-carrier at the terminal of an inner compartment to move under the transferrer it follows that if the magazine moves to place the terminal of one of the outer compartments under the transferrer that the filling-carrier of an inner compartment next above the filling-carrier at the terminal which is nearer the center of movement of the magazine will as the magazine is moved come in contact with the transferrer and be pushed up or raised to uncover the filling-carrier at the terminal of an outer com-

partment, so that the transferrer can act directly to transfer said outer filling-carrier into the shuttle.

After the transferrer has returned to its normal position it will still act to retain the filling-carriers of an inner compartment in their raised position; but if the magazine is moved into a position to transfer the filling-carrier from the terminal of an inner compartment then the raised filling-carriers will resume their normal position adjacent to the filling-carrier at the terminal.

After the filling-carrier is transferred from the terminal of an inner compartment the transferrer is returned to its normal position, which position prevents the filling-carrier adjacent to the transferred filling-carrier from dropping into its terminal position. To enable said filling-carrier to drop into its normal position, an additional upward movement is given to the transferrer sufficient to allow said filling-carrier to pass under the transferrer and fall into its terminal position, and the remaining superposed filling-carriers follow after and present an unbroken series of filling-carriers. As soon as the lowest filling-carrier reaches its terminal position the transferrer moves down to its normal position for its next movement when required to transfer another filling-carrier.

We have only shown in the drawings a detached portion of the filling-supply mechanism embodying our improvements. It will be understood that the mechanism for moving the magazine according to the requirements of the supply of fresh filling may be of any suitable construction and operation.

Referring to the drawings, Figure 1 is a vertical sectional view through the magazine, taken at a point indicated by line 1 1, Fig. 2, looking in the direction of arrow *a*, same figure, and shows also the outside of a loom-frame and parts of the weft-replenishing operating mechanism combined therewith. Fig. 2 is a front edge view of the magazine looking in the direction of arrow *b*, Fig. 1. Only a single bobbin or filling-carrier is shown in this figure. Fig. 3 shows the magazine shown in Fig. 1 in a different position and with the transferrer in the same normal position. Fig. 4 corresponds to Fig. 3, but shows the transferrer in its raised position.

In the accompanying drawings, 1 is the loom side; 2, the bottom or cam shaft; 3, the crank-shaft; 4, the breast-beam; 5, the lay-beam, and 6 the stationary shuttle-box thereon.

7 is the loom-arch. 8 is a stand, secured in this instance to the loom-arch 7 and to the frame 1 at the end of the breast-beam 4.

The stand 8 has secured thereto a stud 9, on which is loosely mounted in this instance a sleeve 10. Fast on the inner end of the sleeve 10 is the hub 11' of a plate 11, forming in this instance the inner end or head of the

magazine. Also fast on the sleeve 10, near the outer end thereof, is the hub 12' of a plate 12, forming the outer end or head of the magazine. The inner head 11 of the magazine has in this instance two sets of compartments or guideways for the heads of the superposed bobbins or filling-carriers 13, and the outer head 12 has two corresponding sets of compartments or guideways for the tips of the bobbins or filling-carriers 13. The two sets of compartments or guideways in the inner head 11 and the outer head 12 of the magazine consist of the two outer compartments 14 and 14' and the two inner compartments 15 and 15' on the inner side of the outer compartments 14 and 14'.

The outer compartment 14 and the inner compartment 15 are located on one side of the pivotal support of the magazine and on one side of the transferrer, and the outer compartment 14' and the inner compartment 15' are located on the opposite side of the pivotal support of the magazine and on the opposite side of the transferrer.

The bobbins or filling-carriers 13, carrying, preferably, four different colors of filling corresponding to the colors on the filling-carriers in the four shuttles of the four drop-shuttle boxes at the opposite end of the loom, (not shown,) are placed in the compartments or guideways 14 14', 15 and 15', through their upper open ends, and drop down by gravity to their lower open ends, where the lowest bobbin or filling-carrier in each compartment is yieldingly held in its terminal position, in this instance by a spring-blade 16, attached to the inside head 11 of the magazine for the head of the bobbin, and the spring-blade 17, attached to the outside head 12 of the magazine for the tip of the bobbin. (See Fig. 2.)

The terminal point or discharging end of the four compartments or guideways 14 14', 15 and 15' are located in this instance side by side, as shown in the drawings. The terminal or discharging end of the two inner guideways 15 and 15' extends at an angle to the main portion of the guideways, as shown, for the reception of the lowest filling-carrier in each compartment, so that the distance of the two lowest filling-carriers in the two guideways 15 and 15' will be farther from the axis or pivot of the magazine than the distance of the filling-carriers above said lowest filling-carriers, as will be readily seen by referring to Fig. 3.

The magazine has a rocking motion communicated thereto, in this instance through an arm 18, link 19, angle-lever 20, pivoted on a stud 20', and connector 21 to mechanism which may be connected with or governed by the shifting or drop shuttle boxes at the opposite end of the loom to bring the terminal position of any one of the compartments 14 14', 15 and 15' over the stationary shuttle-box 6, with a filling-carrier in the lower

of said compartment directly under the transferrer.

The transferrer 22 (see Fig. 2) is secured to the transferrer-arm 23, pivotally mounted on a stud 24 and having connected therewith a spring 25 in the usual way. The transferrer 22 is operated in the usual and well-known way at the required time to move down and engage the head and tip of the filling-carrier 13, which extends directly under it to transfer the filling-carrier into the shuttle in the shuttle-box 6 under the magazine. The transferrer 22 extends between the two sets of compartments of the magazine with its engaging ends just above the lowest filling-carrier in the inner compartment 15 or 15', which has its terminal position in line with the stationary shuttle-box 6, (see Fig. 3,) so that as the magazine moves or rocks to carry the terminal of one or the other of the inner compartments 15 or 15' in line with the shuttle-box 6 the engaging end of the transferrer will just pass over the tops of the lowest filling-carriers in said two compartments. In case of an additional movement of the magazine, to place the terminal of either of the outer compartments 14 or 14' in line with the shuttle-box 6, with the lowest filling-carrier in said compartment under the transferrer, the transferrer will engage with the filling-carrier in one of the inner compartments next above the lowest filling-carrier in said compartment and nearer to the axis of the magazine to push up or raise the series of filling-carriers in said compartment, as shown in Fig. 1, so as to uncover the lowest filling-carrier in one of the outer compartments and allow the transferrer to engage therewith and transfer it into the stationary shuttle-box 6.

After the filling-carriers have been moved or raised up by the transferrer, as above described and shown in Fig. 1, in order to return to their normal position, as shown in Fig. 3, the magazine must be moved to bring the terminal of one of the inner compartments into its lowest position, as shown in Fig. 3.

We will now describe the mechanism shown in the drawings for giving to the transferrer the additional upward movement above its normal position to allow the filling-carrier in an inner compartment 15 or 15' to drop under the transferrer and move into its terminal position after the filling-carrier at the terminal has been transferred. On the bottom shaft 2 is fast a cam 26, (see Fig. 1,) on the periphery of which travels a roll 27 on a pin 28; in one arm of an angle-lever 29, pivoted on a stud 30 on a stand 31, secured to the loom-frame. The other arm of the angle-lever 29 has pivotally attached thereto the lower end of a connector 32, having a slotted opening 32' in its upper end to receive a pin 33, which can move freely up and down in said

slotted opening and is attached to the arm 23' on the transferrer-arm 23. A spring 26' acts to keep the roll 27 in contact with the cam 26. As the cam 26 rotates the roll 27 will travel on the lower part of the cam, allowing the roll 27 and the lower arm of the angle-lever 29 to move nearer the axis of the cam and at the same time allow the opposite arm of the angle-lever 29 and the connector 32 to be raised and also allow the spring 25 to raise the transferrer-arm 23 through the pin 33, moving in the opening 32' to carry the transferrer 22 above its normal position or into the position shown in Fig. 4, in which position the filling-carriers in an inner compartment 15 or 15' are free to pass by the lower engaging ends of the transferrer and to drop down into their normal positions, as shown in Fig. 4. The continued rotation of the cam 26 and the passing of the roll 27 on to the higher part of the cam, through the angle-lever 29 and the connector 32, engaging the pin 33, moves down the transferrer-arm 23 of the transferrer 22 into its normal position. (Shown in Figs. 1 and 3.) The cam 26 is preferably so shaped that the movement of the angle-lever 29 and the connector 32 occurs at every second movement of the lay to allow the transferrer to be raised above its normal position; but no effect is produced upon the filling-carriers in the magazine until the transferrer is actuated in the usual manner to transfer a filling-carrier, during which operation the pin 33 on the transferrer-arm 23 will be free to move downwardly in the slot 32' of the connector 32. It will thus be seen that while this additional upward movement and the return to its normal position of the transferrer takes place regularly at every second movement of the lay it in no way interferes with the usual movement of the transferrer to transfer a filling-carrier into a shuttle, according to the indications of the mechanism controlling the movement of the transferrer.

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 comprising two sets of compartments or guideways, an outer set, and an inner overlaying set, the terminals of the inner set interposed between the terminals of the outer set, and the terminals of the inner set being turned downward at an angle to the main portion of the compartment or guideway.

2. In a weft-replenishing loom, a pivoted magazine having two sets of guideways or compartments for filling-carriers, each set having two guideways or compartments, and the inner set overlaying the outer set, with its two terminals interposed between the two

terminals of the outer set, and all four terminals substantially the same distance from the axis of the magazine.

3. In a weft-replenishing loom, a magazine having a compartment or guideway carrying a series of filling-carriers overlaying a series of filling-carriers in another compartment or guideway, and said compartment or guideway, and each compartment or guideway having a terminal adapted to be placed under a transferrer, and means to move the filling-carriers of the overlaying series, which cover the terminal of the outer compartment or guideway, to admit free access of the transferrer to the terminal of said outer guideway.

4. In a weft-replenishing loom, a magazine comprising two sets of compartments or guideways for filling-carriers, one of the two sets comprising two outer compartments, one on each side of the transferrer, and the other of the two sets comprising two inner compartments, one on each side of the transferrer, the filling-carriers of the inner set overlaying the filling-carriers of the outer set,

and each compartment having a terminal 25 position for the lowest filling-carrier in each compartment.

5. In a weft-replenishing loom, a magazine comprising four compartments or guideways for four series of superposed filling-carriers, 30 each compartment having a terminal for its lowest filling-carrier, and the magazine adapted to be moved to place either one of the terminals under the transferrer.

6. In a weft-replenishing loom, a magazine 35 carrying bobbins or filling-carriers, a transferrer for the filling-carriers, normally positioned above a filling-carrier, and means to communicate an upward movement to the transferrer, to raise it above its normal position, and permit a retained filling-carrier to 40 pass under it.

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