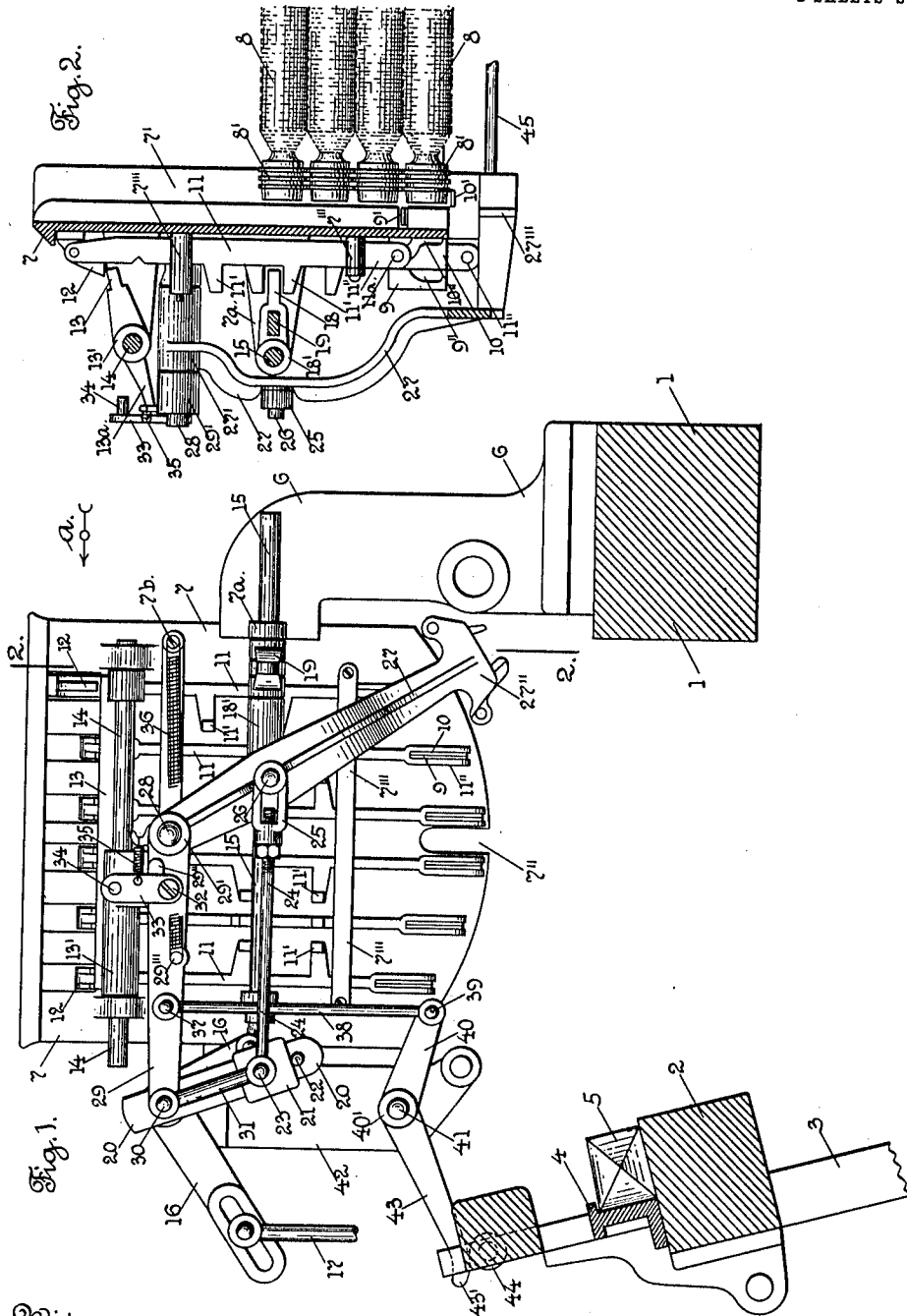


E. H. RYON.
WEFT REPLENISHING LOOM.
APPLICATION FILED DEC. 5, 1910.

1,022,109.

Patented Apr. 2, 1912.

2 SHEETS-SHEET 1.



Witnesses
M. Bredt.
W. Haas.

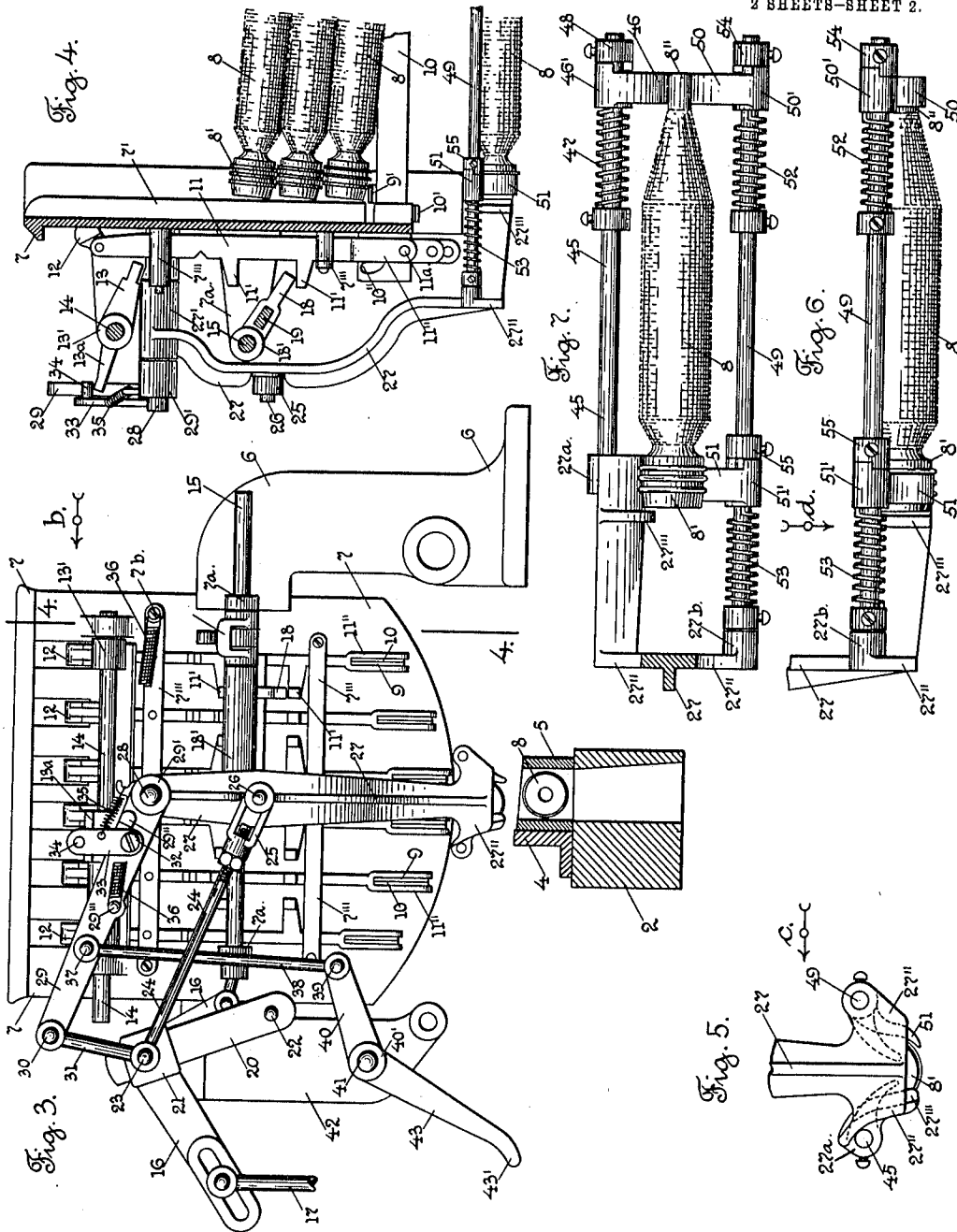
Inventor
Eppa H. Ryon.
By John C. Dewey.
Attorney.

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Inventor
Eppa H. Ryon.
By John C. Dewey
Attorney.

UNITED STATES PATENT OFFICE.

EPPA H. RYON, OF WALTHAM, MASSACHUSETTS, ASSIGNOR TO CROMPTON & KNOWLES LOOM WORKS, A CORPORATION OF MASSACHUSETTS.

WEFT-REPLENISHING LOOM.

1,022,109.

Specification of Letters Patent.

Patented Apr. 2, 1912.

Application filed December 5, 1910. Serial No. 595,599.

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 Weft-Replenishing Looms, of which the following is a specification.

My invention relates to weft replenishing looms, and particularly to the type of looms shown and described in U.S. Letters Patent, No. 933,492, in which a stationary magazine is used with a plurality of guide-ways or compartments for superposed bobbins, which, upon an indication, are released from their respective compartments, to be transferred into the active shuttle.

My invention more particularly relates to a conveying mechanism, which is combined with the stationary magazine of the type above referred to, and which consists in this instance of a single carrier or conveyer, which receives a bobbin from the compartment from which a bobbin is released, and carries it into the path of a transferer above the stationary shuttle box on the lay, preparatory to being transferred into the active shuttle.

My bobbin conveyer 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, in this instance six in number. Said arm carries a stud, movable up and down thereon, from which a connecting rod extends to the filling carrier or bobbin conveyer; when said stud occupies a position at the outer end of the arm, the conveyer will be moved to the lower end of that compartment which corresponds to the shifting shuttle box at the level of the race-way of the lay.

When a change of filling is indicated by the substantial or practical exhaustion of filling in the active shuttle, a bobbin which has the same color or character of filling as the bobbin in the shuttle, will be dropped from a compartment in the stationary magazine into the conveyer, and at the same time, on the further movement of the releasing mechanism for the bobbins, the stud above mentioned will be moved to the inward end of the arm, thus coinciding with the axis or

fulcrum of the arm, and move the conveyer, with the dropped bobbin, to the transfer position under the transferer. On the backward movement of the lay the stud is returned to its first position at the outer end of the arm, and the conveyer registers with the respective compartment of the magazine, according to the position of the shifting shuttle boxes.

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 the type above referred to, with my conveying 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 the stationary magazine, with my conveying mechanism combined therewith. Fig. 2 is a section, on line 2, 2, Fig. 1, looking in the direction of arrow *a*, same figure. Fig. 3 corresponds to Fig. 1, but shows some of the parts shown in Fig. 1, in a different position. Fig. 4 is a section, on line 4, 4, Fig. 3, looking in the direction of arrow *b*, same figure. Fig. 5 shows, on an enlarged scale, the lower part of the conveyer shown in Fig. 3. Fig. 6 is a side view of the conveyer shown in Fig. 5, looking in the direction of arrow *c*, same figure, and, Fig. 7 is a plan view of the conveyer, looking in the direction of arrow *d*, Fig. 6.

In the accompanying drawings, 1 is the breast beam of the loom, 2 is the lay, carried on the lay sword 3, which is pivotally mounted at its lower end, not shown.

4 is a single stationary shuttle box at the magazine end of the loom, and 5 is a shuttle in said box.

6 is a stand secured to the breast beam 1, which has rigidly connected thereto the inner end 7 of the stationary magazine, which in this instance has six vertically extending compartments or guide-ways 7', for the heads 8' of the bobbins 8. The bobbins 8 are arranged in six sets or series, one set in each compartment. Each compartment or guide-way is provided at its lower end with mechanism for supporting the sets of bobbins

therein, also for releasing the lowest bobbin in each set, preparatory to being conveyed to the discharging end 7'' of the magazine, to be transferred into the active shuttle, in the usual way. The said holding and releasing mechanism for each compartment consists in this instance of two sliding bars or blades 9 and 10, which are guided at each end, and have projections 9' and 10', see Fig. 2, for the heads and also for the tips of the bobbins, not shown, and which, through the sliding movement of the blades 9 and 10, move from underneath the bobbins to release and drop the same, all as fully shown and described in my pending application, Serial No. 588,017.

Arranged on the innerside of the plate 7 of the magazine, are six vertically moving bars 11, which are loosely supported in guides 7'', and have an up and down movement therein. The bars 11 are provided at their upper ends with weighted hooks 12, which are adapted, on their downward movement, to engage and rock a lever 13, which has its hub 13' secured on a rock shaft 14. Through intermediate connections, not shown, from said shaft 14 to a dagger on a transferrer arm, not shown, said dagger is raised into the path of the bunter on the lay, not shown, to transfer the bobbins into the active shuttle, all in the usual and well known way, and as fully described in Patent No. 933,492, above referred to.

A bearing 7^a on the magazine has loosely mounted therein a longitudinally moving rod 15; sliding motion is communicated to the rod 15, through angle lever 16, which, through the connector 17 from the shifting shuttle boxes on the opposite side, of the loom, not shown, receives a reciprocating movement, to cause the rod 15 to move longitudinally into six different positions, according to the position of the shifting shuttle boxes.

The longitudinally moving rod 15 has secured thereon, to move therewith, the hub 18' of the operating fingers 18 to which is communicated a rocking motion, through lever 19 and intermediate connections to the replenishing mechanism below, not shown. A rocking movement of the finger 18 will, through its engagement with the extensions 11' on the vertically moving bar 11, move up or down a selected bar, as shown at the right in Figs. 1 and 3. The bars 11 have at their lower ends yoke-shaped heads 11'', which, through the pin 11^a, which travels in curved or cam-shaped slots 9'' and 10'' in the sliding blades 9 and 10, communicate a sliding motion to said blades in opposite directions, to release and drop a bobbin 8 from its compartment.

All of the above mentioned parts may be of the usual and well known construction, and as particularly shown and described in

said Letters Patent, No. 933,492, and in pending application Serial No. 588,017, above referred to.

I will now describe my improvements in bobbin conveyer.

The operating lever 16, see Figs. 1 and 3, has an arm 20 rigidly connected therewith, which is adapted to loosely receive a sliding block 21, which in its normal position rests upon the pin 22 at the end of the arm 20. The block 21 carries a stud 23, which has pivotally connected thereto one end of a horizontally extending rod or connector 24; the other end of said rod or connector 24 has adjustably secured thereon the rod head 25, which is pivotally connected to a stud 25 fast on a downwardly extending arm 27. The arm 27 has its hub 27', Figs. 2 and 4, loosely mounted on a stud 28, which is secured to the inner frame 7 of the stationary magazine. The outer end of the stud 28 has loosely mounted thereon the hub 29' of an arm 29, which extends toward the rear of the magazine, and has its end coincide with the axis or fulcrum of the arm 20. A stud 30 on the end of the arm 29 has pivotally connected thereto the upper end of a link or connector 31; the lower end of the connector 31 is pivotally connected to the stud 23 on the sliding block 21. A bolt or screw 32 on the arm 29 has loosely pivoted thereon the lower end of an upwardly extending latch 33. The upper end of the latch 33 has thereon a pin 34 extending outwardly, and adapted to be engaged by the arm 13^a on the lever 13, see Figs. 2 and 4, when said arm 13^a moves upwardly through the rocking of the lever 13.

A contraction spring 35 acts to yieldingly hold the latch 33 in its normal position against the lug 29'' on the lever 29, see Fig. 1. The arm 29 is held in its normal position, as shown in Fig. 1, by a helically coiled contraction spring 36, which has one end connected to a pin 29''' on the arm 29, and its other end to a stud 7^b on the magazine.

A stud 37 on the arm 29 has pivotally connected thereto the upper end of a vertically extending connector 38; the lower end of said connector 38 is pivotally connected to a stud 39 on a lever 40, which has its hub 40' loosely pivoted on a stud 41 on a stand 42. An arm 43 extends rearwardly from the hub 40' and has an end 43' adapted to be engaged by a roll 44 carried on the lay, see Fig. 1.

The arm 27 of the conveyer is provided at its lower end with means to hold the released bobbin in position, preparatory to being transferred into the active shuttle. The lower end of the arm 27 has an enlarged portion 27'', see Figs. 5 to 7, provided with a projection on one side thereof, which extends below the magazine and into the path of the head of the bobbin, to hold the head

when a bobbin is released from the magazine. A rib 27''', see Fig. 7, prevents the head from moving. A boss 27^a has a wire 45 extending out therefrom, which loosely carries on its end the hub 46' of a holding latch 46 for the tip 8'' of the bobbin 8. A helically coiled torsion spring 47 acts to yieldingly hold up the latch 46 against a suitable stop on a collar 48. The opposite side of the conveyer 27'' has a wire 49 extending outwardly from the boss 27^b. Said wire has loosely pivoted thereon the hub 50' of a latch 50 for the tip of the bobbin, and the hub 51' on the latch 51 for the head of the bobbin 8. The helically coiled torsion springs 52 and 53 on the wire 49 act to yieldingly hold upwardly the latches 50 and 51 against the stops on the collars 54 and 55.

From the above description in connection with the drawings the operation of my improvements will be readily understood by those skilled in the art, and briefly is as follows:—When the loom is running normally the parts occupy the position shown in Fig. 1, and as the lever 16, and arm 20 connected therewith, are operated by the shifting shuttle boxes, the swinging arm of the conveyer 27 will be moved to a position under a compartment having bobbins corresponding to the bobbin in the shuttle box which is on a level with the race-way of the lay. Upon the practical or substantial exhaustion of filling in the active shuttle, the replenishing mechanism causes the selected bar 11 to move upwardly, as shown at the right in Fig. 1, which upward movement acts to operate the blades 9 and 10 to release the lowest bobbin from its compartment, as shown in Fig. 2. When the bar 11 moves downwardly again, the blades 9 and 10 are again moved longitudinally in opposite directions, and the lowest bobbin, which has had its preliminary movement, will drop into the conveyer 27. The continued movement of the sliding bar 11 will, through the engagement of the weighted hook 12 on the lever 13, rock said lever 13 and move upwardly the arm 13^a, which by its engagement with the pin 34 on the latch 33, will move upwardly said latch, and also the arm 29, see Fig. 3, and through intermediate connections to the sliding block 21, move upwardly said block on the lever 20, and cause, through connector 24 and conveyer arm 27, said conveyer arm 27, which contains a bobbin, to swing or move to the discharging end of the magazine, preparatory to the bobbin being transferred into the active shuttle, in the usual way. On the backward movement of the lay, the roll 44 will engage the arm 43, and cause the lever 40 to move downwardly, and through intermediate connections to the arm 29, move downwardly said arm 29 and said block 21 to their normal position shown in Fig. 1.

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 magazine of the class described, having compartments for a plurality of stacks of bobbins, supporting means for the lowest bobbin in each compartment, means to automatically release the lowest bobbin when called, a conveyer to catch a bobbin when released, and move the same to a position to be transferred into the shuttle, movable slides connected with each of said supporting means, and means to operate said slides, and connections from said slides to said conveyer to operate the same.

2. In a magazine of the class described, having compartments for a plurality of stacks of bobbins, supporting means for the lowest bobbin in each compartment, means to automatically release the lowest bobbin when called, a movable conveyer to catch a bobbin when released, and move the same to a position to be transferred into the shuttle, a movable slide connected with each of said supporting means, and means to operate said slides, and connections from said slides, to said conveyer, to move the same, from its position under any one of the bobbin compartments, to a position under the transferer, a lay, and means on said lay to return said carrier to an operative position under one of the bobbin compartments after each transfer of a bobbin into a shuttle.

3. In a magazine of the class described, a plurality of compartments for stacks of bobbins, a movable bobbin conveyer, and connections from said conveyer to move the same in unison with the drop shuttle boxes of the loom, a lay, and mechanism to move said conveyer to a central position under the transferer after a bobbin has been dropped therein, and means on said lay to return said carrier to an operative position under one of the bobbin compartments.

4. In a magazine of the class described, having a plurality of compartments for bobbins, supporting means for the lowest bobbin in each compartment, means to automatically release the lowest bobbin, when called, a single movable conveyer, and mechanism to move the same to register with any one of the compartments, to receive the bobbin released from a compartment, means to move said conveyer to carry the bobbin into a position to be transferred into the active shuttle, and means to move the conveyer to a position registering with the compartment having filling corresponding to the filling in the active shuttle, after the transfer takes place.

5. In a magazine of the class described, having compartments for a plurality of

stacks of bobbins, supporting means for the lowest bobbin in each compartment, means to automatically release the lowest bobbin when called; a conveyer to catch a bobbin 5 when released, means connected to said conveyer to control the same, and cause it to register with any one of the said compartments having filling corresponding to that in the active shuttle, means to withdraw said 10 conveyer from its controlling means after a bobbin has been dropped into said conveyer, and to move said conveyer with the bobbin therein to a position to have the bobbin transferred into the active shuttle.

15 6. In a magazine of the class described, having compartments for a plurality of stacks of bobbins, supporting means for the lowest bobbin in each compartment, means

to automatically release the lowest bobbin when called, a conveyer to catch a bobbin 20 when released, means connected to said conveyer to control the same, and cause it to register with any one of the said compartments having filling corresponding to that in the active shuttle, means to withdraw said 25 conveyer from its controlling means after a bobbin has been dropped into said conveyer, and to move said conveyer with a bobbin therein to a position to have the bobbin transferred into the active shuttle, and 30 means to restore said conveyer to its controlling means.

EPPA H. RYON.

Witnesses:

JOHN C. DEWEY,
MINNA HAAS.