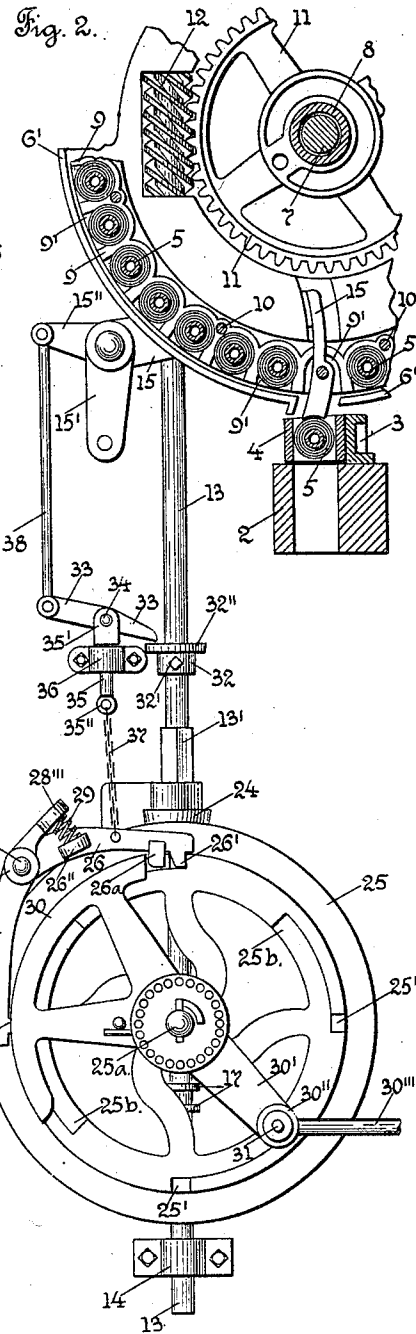
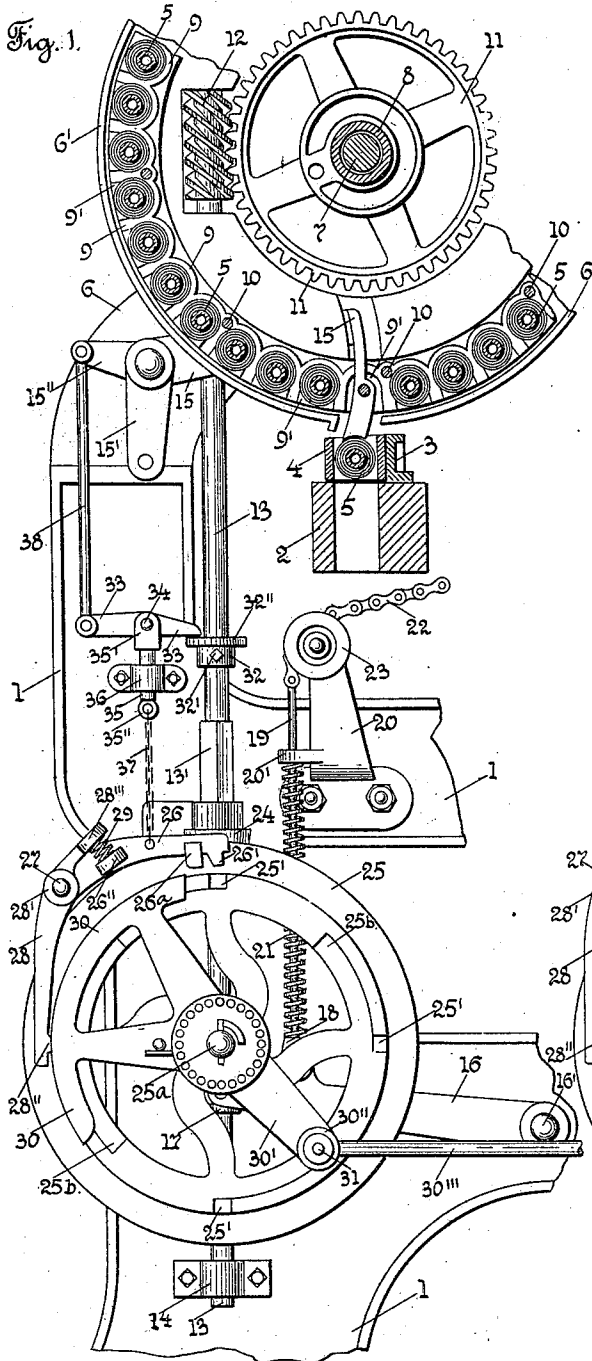


E. H. RYON.
WEFT REPLENISHING LOOM.
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1,045,443.

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UNITED STATES PATENT OFFICE.

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WEFT-REPLENISHING LOOM.

1,045,443.

Specification of Letters Patent.

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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 of the type shown and described in U. S. Letters Patent, No. 939,326, and No. 951,659, and more particularly to improvements in the weft replenishing, or transferring mechanism, combined with looms of the type referred to.

In the weft replenishing looms above referred to, a magazine of a rotary type is used, in which the bobbins or filling carriers are arranged in groups. The different groups contain filling carriers of different colors or characters, which correspond to the colors or characters of the filling on the bobbins in the shuttles used in the loom.

In this instance my improvements are shown in connection with a loom having four shuttles, and the magazine is moved positively, and in unison with the shifting shuttle boxes at the opposite end of the loom, at each change of position of the shuttle boxes, preparatory to supplying the active shuttle with a fresh bobbin or filling carrier, on the substantial exhaustion of filling thereon. After a bobbin or filling carrier has been removed from one group in the magazine, the magazine is moved to carry a new group of bobbins or filling carriers into operative position.

The object of my invention is to improve upon the operating mechanism of the rotary magazine, by means of which the magazine is moved from one group of bobbins or filling carriers to the next group, which movement, through my improved mechanism, takes place only after a predetermined bobbin of each group has been removed from the magazine by the transferrer, and does not take place on the transfer of any other bobbin of a group.

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

I have only shown in the drawing a detached portion of a weft replenishing loom of the type above referred to, with my improvements combined therewith, sufficient

to enable those skilled in the art to understand the construction and operation thereof.

Referring to the drawing:—Figure 1 is an end view of a detached portion of a weft replenishing loom of the type referred to, with the rotary magazine shown in section, and my improvements combined therewith, and, Fig. 2 corresponds to Fig. 1, but shows some of the parts shown in Fig. 1, in a different position; some of the parts shown in Fig. 1 are left off in this figure.

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

6, Fig. 1, is a stand rigidly secured to the loom side 1. The stand 6 has the cylindrical portion 6', with a centrally located and horizontally extending bolt 7, to loosely receive the sleeve hub 8 of an outer ring, not shown, for the tips of the bobbins 5. The heads of the bobbins or filling carriers 5 are mounted in pockets 9' on the inner ring 9, which ring is rigidly connected with the outer ring by the transverse rods 10, in the usual way.

A worm gear 11 is mounted in this instance on the sleeve 8, and meshes with and is driven by a worm 12, secured on the upper end of a vertically extending shaft 13. The lower end of the shaft 13 extends loosely through a bracket or bearing 14, attached to the loom side 1, see Fig. 1.

The transferrer 15 has the downwardly extending arm 15', which is adapted to be operated by a dagger or bunter on the lay, not shown, or otherwise. A horizontally extending arm 16, see Fig. 1, pivotally mounted on a stud 16', is adapted to engage with its forked end two collars 17, see Fig. 2, on the vertically extending shaft 13, to move said shaft up and down, according to the position of the shifting shuttle boxes, not shown, on the opposite end of the loom.

A rod head 18, Fig. 1, is pivotally connected to the lever 16, and a rod 19 extends upwardly from said rod head 18, and through a lug 20' on a stand 20, secured to the loom side, see Fig. 1. A helically coiled expansion spring 21 encircles the rod 19, and acts to move downwardly the lever 16. The upper end of the rod 19 has connected thereto one end of a chain 22, which passes over a guide sheave 23, mounted on the stand 20,

and to a pattern mechanism, not shown, on the opposite end of the loom.

The vertically moving shaft 13 has a square shaped portion 13' thereon, which moves longitudinally in an elongated hub of the bevel pinion 24, which pinion meshes with and is driven by the toothed portion, not shown, of the bevel gear 25, which has its hub loosely mounted on a stud 25^a. The bevel gear 25 has four notches 25' therein, in which is adapted to extend a projection 26' on a pawl 26, see Fig. 2. The hub of the pawl 26 is loosely mounted on a stud 27, on a stand, not shown. The stud 27 has also mounted thereon the hub 28' of a downwardly extending latch or pawl 28, which has a projection 28' thereon, which is adapted to extend into a notch 25' in the bevel gear 25, to hold said gear in its proper position, when said gear is disengaged from the pawl 26, as shown in Fig. 1.

A helically coiled expansion spring 29 bears at one end against an upwardly extending projection 28''' on the latch 28, and at its other end against a lug 23'' on the pawl 26, and acts to yieldingly hold either one of the pawls 26 and 28 in their locking position, as shown in Fig. 2.

The pawl 26 has a side extension 26^a thereon, which engages with the end of a shield 30, to hold said shield in its inoperative position. The hub of said shield 30 is loosely mounted on the elongated hub of the bevel gear 25. Extending downwardly from the hub of the shield 30 is an arm 30', which carries at its end 30'', a spring actuated plunger 31, which extends out from its cylindrical holder 30'' to engage the ratchet portion 25^b on the bevel gear 25, to move said gear, through the movement of the rod 30''' connected with the arm 30', one-fourth of its revolution, when the pawl 26 is raised, to revolve the upright shaft 18, and to turn the magazine from one group of bobbins to another group.

All of the above mentioned parts may be of the usual and well known construction, and as shown and described in U. S. Letters Patent, No. 939,326, and No. 951,659, above referred to.

I will now describe my improvements, which consist of means to raise the hold fast pawl 26, at the time when the vertically moving shaft 13 is in its upper position, which may be when the upper box of the shifting shuttle boxes is on a level with the race-way of the lay.

The vertically moving rod 13 has adjustably secured thereon a collar 32, by a set screw 32'. The collar 32 is provided with a circular disk 32'', which is adapted, on the upward movement of the rod or shaft 13, to engage the end of a lever 33. The lever 33 is pivotally mounted on a stud 34, at the upper forked end 35' of a vertically extend-

ing bolt 35, which extends loosely through a bracket or bearing 36, secured to the loom side 1, see Fig. 1.

The lower end of the bolt 35 has an eye 35'', which has connected thereto the upper end of a chain 37. The lower end of the chain 37 is connected to the pawl 26. A second arm on the lever 33 has pivotally connected thereto the lower end of an upwardly extending connector 38. The upper end of the connector 38 is pivotally connected to an arm 15'' on the transferrer 15.

From the above description in connection with the drawing, the operation of my improvements will be readily understood by those skilled in the art, and briefly is as follows:—On the indication of the substantial exhaustion of filling on a bobbin in the active shuttle, the transferrer arm 15 is operated in the usual way, to transfer a bobbin 5 from the magazine into the active shuttle 4, and as the vertically moving rod 13, according to the position of the shifting shuttle boxes, has been moved to its highest position, as shown in Fig. 1, the lever 33 will engage with its end the circular disk 32'' on the collar 32, and through the operation of the transferrer arm 15, and intermediate connections to the lever 33, the pivot point 34 of said lever 33 is raised, and also the pawl 26 is raised, as shown in Fig. 1. The pawl 26 is disengaged from the shield 30, to allow said shield 30 to be operated through the rod 30''' connected to a cam lever, not shown, and through the spring actuated plunger 31 engaging a ratchet portion 25^b on the bevel gear 25, the bevel gear 25 is moved, and through its rotation, turns the pinion 24, and also the upright shaft 13, and as the worm 12 on said shaft 13 is in mesh with the worm gear 11 of the magazine, the magazine will be rotated one-eighth of its circumference, to carry a new group of bobbins or filling carriers 5 under the transferrer arm 15, after the transfer of a bobbin.

On the transfer of another bobbin in the same group, as shown in Fig. 2, the circular disk 32'' on the upright shaft 13, has not been moved high enough to engage and move the end of the lever 33, and the transferrer arm 15 will, through its connection to said lever 33, rock said lever, without raising its pivot point 34, see Fig. 2, thus leaving the pawl 26 at rest, to hold the shield 30 in its inoperative position, and not move the magazine to another group of bobbins.

It will be understood that the details of construction of my improvements may be varied if desired, and that the magazine may be moved to another group of bobbins, at the lowest position of the vertically moving rod 13, instead of at the highest position.

Having thus described my invention, what I

I claim as new and desire to secure by Letters Patent is:—

1. In a weft replenishing loom, a movable magazine, having bobbins or filling carriers of different color or character arranged in groups, a transferrer, and means to move the magazine to bring a fresh group of bobbins under the transferrer only on the transfer of a predetermined bobbin of a group into the active shuttle.

2. In a weft replenishing loom, a movable magazine, having bobbins or filling carriers of different color or character arranged in groups, a transferrer, and means to move the magazine to bring a fresh group of bobbins under the transferrer only on the transfer of a predetermined bobbin of a group into the active shuttle, and connections intermediate said transferrer and said means.

3. In a weft replenishing loom, a movable magazine, having bobbins or filling carriers of different color or character arranged in groups, mechanism to move said magazine to bring a fresh group of filling carriers in position under the transferrer and said transferrer, to cause any one of the filling carriers of a group to be transferred into the active shuttle at the proper time, means to cause the operation of said mechanism, said means operating on the transfer of one or more of the predetermined bobbins of a group, and not operative on the transfer of the other bobbins of a group.

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