

931,829.

Inventor
Horace Wymann.
By John C. Oswey
Attorney.

UNITED STATES PATENT OFFICE.

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

WEFT-REPLENISHING LOOM.

931,829.

Specification of Letters Patent.

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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, and to that class of weft replenishing looms which have a stationary magazine, with two or more compartments or guide-ways for the bobbins or filling carriers, and my invention particularly relates to the magazine for the filling carriers, and to the operative mechanism connected therewith, for a loom preferably having a single shuttle box at each end of the lay, and using a single shuttle, for filling of one color or character. The object of my invention is to provide a magazine having a plurality of compartments for bobbins or filling carriers, preferably of the same color or character, and means to discharge a filling carrier from any one of the compartments to the transferring mechanism, and also to provide means to indicate from which of the compartments a filling carrier shall be discharged, said means actuated by the transferring mechanism operated by a filling detector mechanism.

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 loom, and of a magazine for bobbins or filling carriers, and a transferring mechanism, 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 outside end elevation of a detached portion of a loom frame, a magazine, and parts of a transferring mechanism, with my improvements combined therewith. The lay-beam and shuttle box thereon, and the transferer, are shown in section; and the outside end frame of the magazine is not shown. Fig. 2 shows a modified construction of the indicating surface or pattern chain shown in Fig. 1.

The magazine shown in the drawing, and the operative parts connected therewith, are of substantially the same construction and operation as the magazine shown in my

pending application, Serial No. 298,939, and particularly shown in Fig. 3 of the drawings of said application.

In the accompanying drawing, 1 is a detached portion of the loom frame or end, at the rear of the loom.

2 is a portion of the loom arch, carrying a stand 3, on which the pattern indicating mechanism, to be hereinafter described, is supported.

1' is a detached portion of the loom frame or end at the front of the loom, having a stand 4 fast thereon, which is also secured to the loom arch 2.

To the stand 4 is, in this instance, rigidly attached the inner end of the frame 5 of the magazine, having a plurality of vertically extending guide-ways or compartments 5', in this instance four in number, for four sets of bobbins or filling carriers 6, preferably of one color or character. Each of the compartments 5' leads at its lower end to the single discharging end 5'' of the magazine, which is directly under the transferrer 7' carried on the transferrer arm 7.

The transferrer arm 7 has a downwardly extending arm 7'', on which is pivotally mounted the dagger 8, adapted to be raised into the path of the bunter 9 on the lay-beam 10, as the lay beats up, on the operation of the filling detecting mechanism at the other end of the loom, through the raising of the vertically moving plate 11, against the action of the spring 12, and the movement of the pivoted arm 13 and the link 14, in the usual and well known way.

The mechanism for holding the bobbins 6 in their compartments in the magazine, and for releasing the lowest bobbin in each set of bobbins, corresponds to the mechanism shown and described in said application, Serial No. 298,939, and consists of a rocking cradle or support 15, only partially shown in the drawings, for each set of bobbins, and located at the lower discharging end of each compartment.

In connection with the holding and releasing mechanism for the bobbins in the several compartments, is used a selecting mechanism, to determine from which compartment a bobbin shall be discharged, to be transferred into the shuttle by the transferring mechanism; in this instance the same selecting mechanism for the bobbins is used, as is shown and described in said application,

Serial No. 298,939, which mechanism comprises a longitudinally moving and rocking rod 16, having a head 16' with an annular groove 16'' therein. The rod 16 is supported and moves in bearings on the inner side of frame 5 of the magazine, and is connected with and adapted to operate the rocking cradles or supports 15 for the bobbins 6.

All of the above mentioned parts may be of the same construction and operation as similar parts shown and described in said application, Serial No. 298,939, except that in said application, the longitudinal movement of the rod 16, forming a part of the selecting mechanism for the bobbins, is controlled by the vertical movement of the drop shuttle boxes at the other end of the loom, through connections to the shuttle box lifter rod.

I will now describe my improvements combined with the parts above mentioned, and which particularly relate to the selecting mechanism for the bobbins, and in this instance to the longitudinally moving rod 16, forming a part of said mechanism.

Attached to, or forming a part of the transferring arm 7, is an arm 7^a, to move with said transferer arm. To the end of the arm 7^a is pivotally connected one end of a pawl 17; the other end of the pawl 17 rests upon and engages a ratchet wheel 18, secured to the pattern cylinder or drum 19, loosely mounted on the stud 20 carried on the stand 3. The pattern cylinder 19 has thereon a pattern chain or indicating surface 21, in this instance made up of four different sets or rolls, one set for each compartment in the magazine, and each set of rolls in this instance of a different diameter.

Extending over the pattern chain 21 is a pattern lever 22, pivotally mounted at one end on the stand 3, and connected at its lower end, by a wire or link 23, with an extension 24' on a lever or arm 24, pivoted on a stud 25. The arm 24 carries a stud or roll, which is adapted to extend into the annular recess 16'' in the enlarged end 16' on the longitudinally moving rod 16. A helically coiled contraction spring 26 is attached at one end to the extension 24' on the arm 24, and at its other end to a stationary bracket 27 on the stand 4.

The operation of my improvements, from the above description in connection with the drawing, will be readily understood by those skilled in the art.

When the filling detecting mechanism indicates practical or substantial exhaustion of filling in the active shuttle, and puts into operation the transferring mechanism in the usual way, the downward movement of the transferer arm 7 will, through arm 7^a, move the pawl 17, and communicate a partial rotation to the ratchet wheel 18, and pattern cylinder or drum 19, to bring a roll under

the indicator lever 22, and through link 23 and arm 24, move the longitudinally moving rod 16 of the selecting mechanism. The amount of movement of the longitudinally moving rod 16 of the selecting mechanism depends upon the size of the pattern roll or indicating surface on the pattern chain 21. In this instance there are ten small rolls in succession on the pattern chain 21 for the first compartment from the left, the number of rolls corresponding to the number of bobbins in said compartment, and ten larger rolls in succession on said chain for the second compartment from the left, and ten still larger rolls in succession for the third compartment from the left, and ten still larger rolls for the fourth compartment from the left, so that in the revolution of the chain 21, in the direction of arrow *a*, Fig. 1, the ten bobbins in the first compartment from the left will be discharged in succession, and then a larger roll coming under the pattern indicator lever 22 will, through link 23 and arm 24, move the longitudinally moving rod 16 to the right, to cause the discharge of the bobbins from the second compartment from the left. The continued rotation of the pattern chain 21 will bring a larger roll of the third series of rolls under the pattern indicator lever 22, and through link 23 and arm 24, move the longitudinally moving rod 16 still farther to the right, to cause the discharge of the bobbins from the third compartment from the left, and the continued rotation of the pattern chain 21 will bring the series of largest rolls under the indicator lever 22, and through link 23 and arm 24, will move the rod 16 still farther to the right, to cause the bobbins from the fourth compartment from the left to be discharged, and this operation is repeated, the compartments being re-filled as they are exhausted, and each compartment having the bobbins or filling carriers therein all discharged in succession into the single shuttle used in the loom.

In case it is desired to discharge one bobbin only from each compartment in succession, then the pattern chain or indicating surface will be arranged as shown in Fig. 2, with two of the largest rolls in succession, and two of the smallest rolls in succession, and the other two rolls intermediate said rolls, as shown, so that the rotation of the pattern chain 21^a will cause the longitudinal movement of the rod 16 from one compartment to the next compartment at each discharge of a bobbin, so that the bobbins will be discharged, one after another from the several compartments, until they have all been discharged.

I have not shown in the drawing details of construction of the selecting mechanism of which the sliding rod 16 forms a part, as said selecting mechanism is fully shown and

described in the application, Serial No. 298,939, hereinbefore referred to.

In my improvements, as herein described, and shown in the drawings, when the filling detector mechanism indicates practical or substantial exhaustion of the filling in the active shuttle, and puts into operation the transferring mechanism in the usual way, to transfer a filling carrier into the active shuttle, the operation caused by the transferring mechanism selects, through the indicating means, the compartment from which the next filling carrier to be transferred shall be taken.

It will be understood that the details of construction of my improvements may be varied if desired, and any usual form of releasing and selecting mechanism for the bobbins or filling carriers may be used.

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

1. In a weft replenishing loom, the combination with a magazine having a plurality of compartments for bobbins or filling carriers, any one of the lowest ones of said bobbins or filling carriers being adapted to be discharged from its compartment and transferred into a shuttle by the transferring mechanism, of means, operated by a filling detector mechanism, to cause the operation of the transferring mechanism and the operation of the pattern surface to indicate for the selection of any one of the lowest bobbins from its compartment.

2. In a weft replenishing loom, the combination with a magazine having a plurality of compartments for bobbins or filling carriers, of means, operated by a filling indicator mechanism, on the practical or substantial exhaustion of filling in the active shuttle, to cause the operation of the transferring mechanism, and also cause the operation of a pattern surface for the selection of the compartment from which the bobbin is to be released.

3. In a weft replenishing loom, the combination with a magazine having a plurality of series of superimposed bobbins or filling carriers, of means to release the lowest bobbin of any one series, and means to transfer such bobbin into the active shuttle, and means, operated by a filling detector mechanism, to indicate for the release of the lowest one of a series of bobbins, to be transferred from its compartment into the active shuttle.

4. In a weft replenishing loom, the combination with a magazine having a plurality of compartments for bobbins or filling carriers, which are adapted to be released from their compartments, of means controlled by the transferring mechanism, to select a single bobbin or filling carrier from each compartment consecutively.

5. In a weft replenishing loom, having a magazine with a plurality of compartments for bobbins or filling carriers, a transferring mechanism, and indicating means for the release of a bobbin, said means operated by a filling detector mechanism on the practical exhaustion of the filling in the active shuttle.

6. In a weft replenishing loom having a filling detector mechanism, and a stationary magazine with a plurality of compartments for bobbins or filling carriers, and a discharging end common to all of the compartments, a transferring mechanism, and indicating means for the release of a bobbin, operated by the filling detector mechanism upon the practical exhaustion of filling in the active shuttle.

HORACE WYMAN.

Witnesses:

JOHN C. DEWEY,
M. HAAS.