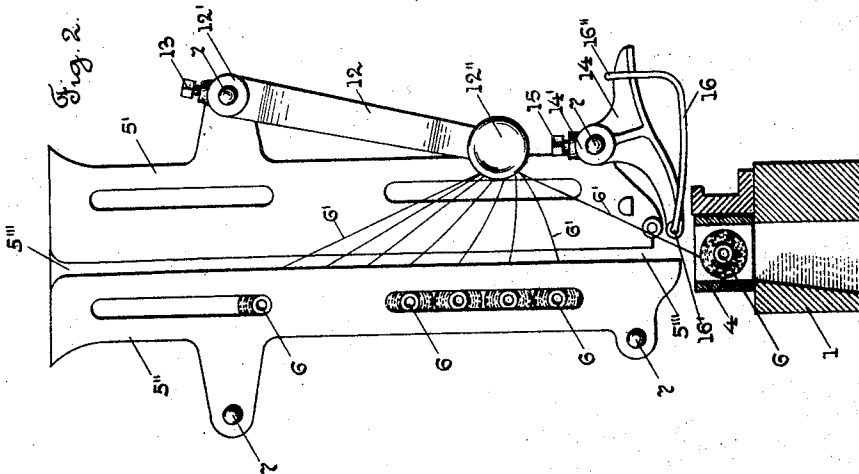


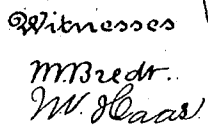
937,979.



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UNITED STATES PATENT OFFICE.

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

WEFT-REPLENISHING LOOM.

937,979.

Specification of Letters Patent.

Patented Oct. 26, 1909.

Application filed April 10, 1907. Serial No. 367,436.

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 which have a magazine carrying superposed bobbins of filling carriers, preferably arranged in series, in one or more vertically extending guide-ways or compartments, and dropping down by gravity to the lower discharging end of the magazine, as the lowest bobbin in any one of the compartments is removed by the transfer mechanism; and my invention particularly relates to means for holding the loose ends of the filling drawn off from the bobbins in the magazine, and to means for guiding the filling, on the bobbin transferred from the magazine into the shuttle, to cause it to be threaded into said shuttle, as the lay moves backward, and the shuttle is being thrown across the lay.

In weft replenishing mechanism of looms of the class referred to, the loose ends of the filling from a series of bobbins in the magazine, are led to a point, at such a distance from the lower bobbin in the series, as to permit of the filling on the bobbin transferred being threaded into the shuttle.

As the series of bobbins is replenished from time to time, by placing new bobbins in the magazine, and the bobbins drop down in the magazine by gravity, it is found that the ends of the filling from the bobbins in the upper part of the magazine, when they reach the position of the lowest bobbins, become so slack that the filling often fails to be threaded into the shuttle when the bobbin is transferred.

In my improvements, I preferably bring all the loose ends of the filling from the series of bobbins, to a fixed device, to which they are attached, and said device is at such a distance from the bobbins as to hold and retain the filling from the lowest bobbin in the magazine, in a taut, or a substantially taut condition, when it is being transferred from the magazine into the shuttle. The fixed device referred to, relative to the bobbins in the magazine, is such, that the filling

between the bobbins and the fixed device, when the bobbins are near the top of the magazine, will be substantially taut, and will become loose when midway in the magazine as the bobbins descend therein by gravity, and will again become taut, or substantially taut, when the bobbins are near the bottom of the magazine, and when the lowest bobbin is transferred from the magazine into the shuttle.

When a bobbin is transferred from the magazine into the shuttle, the end of the filling extends upwardly to its point of attachment, and the filling passes above the eye of the shuttle, and in order to thread the filling into the eye of the shuttle, which takes place when the shuttle is being thrown across the lay from the magazine end thereof, I provide a guide for the filling, near the magazine, and slightly above the shuttle, and extending rearwardly. The filling passes under the guide, as the lay moves backward, and is moved or diverted from a vertically inclined direction, to a horizontal direction, to be threaded into the eye of the shuttle, as the shuttle is being thrown across the lay.

By my improvements I am enabled to hold practically taut the loose end of filling from a filling carrier, as the filling carrier is being transferred from the magazine into the shuttle, and to guide the filling and cause it to be threaded into the shuttle, as the shuttle is being thrown across the lay from the magazine end.

I have shown in the drawing a detached portion of a stationary magazine for weft replenishing looms of the type shown and described in U. S. application for Letters Patent, Serial No. 298,939, with my improvements combined therewith, sufficient to enable those skilled in the art to understand the construction and operation thereof.

Referring to the drawings:—Figure 1 is a front view of a stationary magazine, of the type referred to, with one series of bobbins or filling carriers therein, and my improvements combined therewith, and also shows one end of the lay, and a shuttle thereon partially broken away, with a bobbin in said shuttle, and also shows the upper end of the picker stick. Fig. 2 is an end view of the magazine shown in Fig. 1, looking in the direction of arrow *a*, some figure; the lay

beam, shuttle box, and shuttle are shown in section in this figure. Fig. 3 corresponds to Fig. 1, but shows the picker stick and the shuttle moved inwardly, and the filling threaded into the shuttle by the guide. Fig. 4 is an end-view of the magazine shown in Fig. 3, looking in the direction of arrow *b*, same figure: the lay beam, shuttle box, and shuttle are shown in section in this figure.

In the accompanying drawings, 1 is the outer end of the lay, 2 is the upper end of the picker stick carrying the picker 3, 4 is a shuttle having a threading device 4' thereon, of any ordinary construction.

The stationary magazine for the filled bobbins is in this instance similar to the magazine shown and described in application, Serial No. 298,939, above referred to. The stationary magazine or hopper consists in this instance of a vertically extending plate 5, having in this instance two vertically extending guide-ways or compartments for the heads of the bobbins 6, which are superposed on each other and drop down in the guide-ways by gravity, and two separate plates 5', and 5'', each having a vertically extending guide-way or compartment for the tips of the bobbins. There is in this instance a vertically extending opening 5''' between the two plates 5' and 5'', through which preferably pass the filling ends 6' from the bobbins 6. The plates 5 and 5'' are secured together in this instance by the transverse rods 7. At the lower end of each guide-way or compartment for the bobbins 6 is in this instance located a rocking lever or cradle 8, to hold the bobbins 6 in their respective guide-way or compartment, and on the rocking of the lever or cradle 8, the lowest bobbin in the guide-way or compartment is allowed to drop down by gravity to the discharging end of the magazine, and to be transferred into a shuttle, to take the place of the spent bobbin.

The lever or cradle 8 has a motion communicated to it at the proper time, to rock said cradle, and allow the lowest bobbin to drop down to the discharging end of the magazine. Said rocking lever or cradle 8 has a crank pin 8', which is connected to the lower end of a vertically extending rod 9, mounted in lugs or ears 10 on the plate 5. A spring 11 encircles the rod 9 and acts to return said rod to its normal position, and with it the lever or cradle 8. The rod 9 is connected, through intermediate mechanism, not shown, with the drop shuttle boxes at the other end of the loom, not shown, all as fully described in said application for Letters Patent, Serial No. 298,939.

I will now describe my improvements, which in this instance are shown combined with the stationary magazine, for filling carriers or bobbins, of the class referred to,

but which may be combined with any other magazine.

An arm 12 has in this instance a hub 12' thereon, which in this instance is secured by a set screw 13 on one of the transverse rods 7 of the magazine, at one side of the magazine. The arm 12 extends in this instance outwardly and downwardly from the magazine, and has preferably on its free end a rounded headed extension 12'', around which the loose ends of filling 6' from the bobbins 6 are wound, as shown. The filling ends in this instance extend through the vertically extending opening 5''' between the two plates 5' and 5''.

The filling attaching end 12'' of the arm 12 is so located above the lower bobbins of the magazine, that the distance between the upper bobbins and the attaching end 12'' of their fillings, and the distance between the attaching end 12'' and the bobbin transferred into the shuttle, is such, that the filling from the bobbin transferred into the shuttle, when suitably guided, will be sufficiently taut to be threaded into the shuttle as the shuttle is thrown across the lay. The attaching end 12'' for the filling end is also preferably located at the rear of the vertical central portion of the magazine, as shown in Fig. 2.

The guiding device for the filling on the bobbin transferred into the shuttle, to thread the filling into the shuttle, is in this instance made separate from the magazine, and consists of a plate or support 14, having in this instance a hub 14', secured in this instance by a set screw 15 on one of the transverse rods 7. The plate 14 has in this instance attached to its forward end, the front end 16' of a wire 16, which extends rearwardly under the plate 14, and then upwardly with its other end 16'' preferably bent inwardly and extending over the upper edge of the plate 14, but not attached thereto, so as to allow the wire to move upwardly and form a yielding surface.

The wire 16 is located in the path of the filling from the bobbin which is transferred into the shuttle from the magazine, as the lay moves backward, and acts, as the filling engages said wire, to move downwardly the filling, intermediate its attached end, on the holding device 12'', and the threading device on the shuttle, to cause the filling to be guided and threaded into the shuttle, as the lay moves backward, and the shuttle is being thrown across the lay.

The attaching end 12'' of the arm 12 for the filling ends, preferably extends above and in vertical alinement with the guide-wire 16, and the distance from the end 12'' to the rear part of the guide-wire 16 is less than the distance from the end 12'' to the front end of the guide-wire, so that the tension on the filling on the bobbin, as the lay

moves backward, after the bobbin has been transferred into the shuttle, is reduced as the lay moves backward and the filling is threaded into the shuttle.

5 It will be understood that in using my improvements, the device to which the loose ends of the fillings are attached, is in a stationary position above the lower bobbin of the sets of bobbins, and the filling from the
10 bobbin, at the time the bobbin is transferred, extends in an upwardly inclined direction, directly from the tip of the bobbin to the stationary device, as shown in the drawings, and as the lay moves backward pre-
15 paratory to the picking of the shuttle across the lay, the filling passes under the guide 16, and as the shuttle is thrown across the lay, the position of the filling is changed from an inclined position by its engagement
20 with the guide 16, to a horizontal position, and is thus caused to be threaded into the shuttle.

It will be understood that the details of construction of my improvements may be
25 varied if desired, and they may be adapted to be applied to weft replenishing looms having magazines of different construction, as for instance the magazine shown and de-
30 scribed in U. S. Letters Patent, No. 626,201. Having thus described my invention, what I claim as new and desire to secure by Let-
ters Patent is:

1. In a weft replenishing loom, the combination with a magazine for bobbins or
35 filling carriers, of a stationary device to hold the ends of the filling from the bobbins, said device located in a position intermediate the upper bobbin of a series, and a bobbin transferred into the shuttle, and a yielding guide
40 extending rearwardly, to be engaged by the filling from the bobbin transferred into the shuttle, as the shuttle is being thrown across the lay, to cause the filling to be threaded into the shuttle.

45 2. In a weft replenishing loom, the combination with a magazine for a series of bobbins or filling carriers, of a stationary device in a position above the lower bobbins to hold the ends of the filling from the bobbins,
50 and a yielding guide located relatively to said device, to cause the filling from the bobbin, transferred into the shuttle, to engage said guide on the backward movement of the lay, and have its position changed from an
55 inclined position to a horizontal position and cause the filling to be threaded into the shuttle.

3. In a weft replenishing loom, the combination with a magazine for bobbins or
60 filling carriers, of a device to hold the ends of the filling from the bobbins in a fixed position, above the lower bobbins in the magazine, and at the rear of said bobbins, and a yielding guide extending rearwardly to
65 engage the filling from the bobbin, trans-

ferred into the shuttle, to cause its position to be changed from an inclined position to a horizontal position, and to be threaded into the shuttle as it is being thrown across the lay.

4. In a weft replenishing loom, the combination with a magazine for bobbins or
70 filling carriers, of a device for holding the ends of the filling from the bobbins in a stationary position, and a yielding guide extending rearwardly for the filling from the
75 bobbin, transferred from the magazine into the shuttle, to cause the filling to be moved from an inclined position to a horizontal position, and to be threaded into the shuttle
80 as the shuttle is being thrown across the lay.

5. In a weft replenishing loom, the combination with a magazine for bobbins or
85 filling carriers, of a stationary device to which the loose ends of the filling from the bobbins are attached, said device extending above the lowest bobbin, and a yielding guide extending rearwardly, under which
90 guide the filling from a transferred bobbin passes, and is caused to be threaded into the shuttle, as the shuttle is thrown across the lay.

6. In a weft replenishing loom having a magazine with a series of superposed filling
95 carriers or bobbins therein, the combination with a stationary device located intermediate the upper and lower bobbin of a set of bobbins in the magazine, to hold the ends of the fillings so that the filling from a bobbin
100 becomes substantially taut as it drops to the lowest position of the series, of a rearwardly extending guide under which the filling passes after the bobbin has been transferred, to cause the filling to be threaded into the
105 shuttle as it is being thrown across the lay.

7. In a weft replenishing loom, having a lay, and a shuttle box thereon, the combination with a magazine having a series of superposed bobbins, of a stationary device for
110 holding the ends of the filling from each bobbin, said device located above the lower bobbins of a series of bobbins, and a rearwardly extending guide under which the filling from the transferred bobbin passes and
115 is changed from an inclined position to a horizontal position, and is caused to be threaded into the shuttle as the shuttle is thrown across the lay.

8. In a weft replenishing loom having a lay, and a shuttle box thereon, the combination with the magazine having a series of superposed bobbins, and a stationary device
120 for holding the ends of the fillings from the bobbins, of a yielding guide under which, as the lay moves backward, a filling from a transferred bobbin will pass and be threaded into the shuttle as it is thrown across the lay.

9. In a weft replenishing loom having a lay, and a shuttle box thereon, the combination with the magazine having a series of su-
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perposed bobbins, of a stationary device for holding the ends of the filling from each bobbin, said device located above the lower bobbins of a series of bobbins, and a guide attached to the magazine and adapted to yield to the strain on the filling thread of a transferred bobbin, as the shuttle is thrown across the lay.

10. In a weft replenishing loom having a lay, and a shuttle box thereon, the combination with the magazine having a series of superposed bobbins, and a stationary device attached to the magazine for holding the ends of the fillings from the bobbins, of a yielding guide under which the thread of a transferred bobbin passes as the shuttle is thrown across the lay.

11. In a weft replenishing loom, a device for holding the ends of fillings, said device located above the lower bobbins and rearwardly of a vertical central line of the magazine, and in vertical alinement with the filling guide, the distance from said device to the rear part of said guide being less than

the distance from said device to the front part of said guide.

12. In a weft replenishing loom having a lay, and a shuttle box thereon, the combination with the magazine having a series of superposed bobbins, of a stationary device for holding the ends of the filling from each bobbin, said device located above the lower bobbin of a series of bobbins, a guide adjustably attached to the magazine under which the filling thread of a transferred bobbin passes, as the shuttle is thrown across the lay on its backward movement.

13. In a weft replenishing loom, a filling thread guide for a filling of a transferred bobbin, comprising a plate or support attached to the magazine, and provided with a yielding wire attached to the forward end of said plate, and extending rearwardly to guide the filling.

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Witnesses:

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