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The image contains several technical drawings of a mechanical device, likely a pump or engine component, showing various views and details.

- Fig. 1:** A side view of the device, showing a long, narrow body with a series of stacked, rectangular components (3) in the center. A large, curved, bowl-shaped component (2) is attached to the right side. A small, circular component (10) is visible at the top left. Various other parts are labeled with numbers 1, 3, 4, 5, 6, 7, 8, 9, 11.
- Fig. 2:** A side view of the device, similar to Fig. 1, but with different internal components and a different arrangement of the stacked rectangular components (3). It also shows the bowl-shaped component (2) and various other parts labeled with numbers 1, 3, 4, 5, 6, 7, 8, 9, 11.
- Fig. 3:** A top view of the device, showing a circular cross-section with a central circular component (3) and a surrounding ring (4). Other parts are labeled with numbers 1, 2, 5, 6, 7, 8, 9, 10, 11.
- Fig. 4:** A top view of the device, similar to Fig. 3, but with different internal components and a different arrangement of the central circular component (3) and surrounding ring (4). It also shows various other parts labeled with numbers 1, 2, 5, 6, 7, 8, 9, 10, 11.
- Fig. 5:** A side view of the device, showing a long, narrow body with a series of stacked, rectangular components (3) in the center. A large, curved, bowl-shaped component (2) is attached to the right side. A small, circular component (10) is visible at the top left. Various other parts are labeled with numbers 1, 3, 4, 5, 6, 7, 8, 9, 11.
- Fig. 6:** A side view of the device, similar to Fig. 5, but with different internal components and a different arrangement of the stacked rectangular components (3). It also shows the bowl-shaped component (2) and various other parts labeled with numbers 1, 3, 4, 5, 6, 7, 8, 9, 11.

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

UNITED STATES PATENT OFFICE.

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

SHUTTLE FOR WEFT-REPLENISHING LOOMS.

951,488.

Specification of Letters Patent.

Patented Mar. 8, 1910.

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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 Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Shuttles for Weft-Replenishing Looms, of which the following is a specification.

My invention relates to a shuttle for weft replenishing looms, and to that type of shuttle termed "self-threading"; used in a weft replenishing loom in which a fresh bobbin is inserted in the active shuttle, when the filling on the bobbin in the shuttle is substantially exhausted, and my invention more particularly relates to mechanism combined with a shuttle of the type referred to, by means of which the substantial exhaustion of filling in the active shuttle is indicated, and the weft replenishing mechanism on the loom, through such indication, by the movement of the shuttle, is put into operation to supply fresh filling.

In my improvements as herein shown and described, I provide a shuttle having a self-threading mechanism of any usual construction, with a shaft or rod extending in the direction of the length of the shuttle, and loosely mounted in suitable bearings in the rear wall or body portion of the shuttle to have a rocking movement. Said rod has attached thereto, near one end, at the bobbin head end of the shuttle, a plate or pad adapted to engage the filling on the bobbin or filling carrier in the shuttle, and be held by the filling in its normal inoperative position. The other end of said rod, at the self-threading end of the shuttle, has attached thereto a hammer or block extending within an opening or recess in the rear wall of the shuttle, and adapted to be moved by the rocking motion of the rod above referred to, into alinement with a lever or device, independent of the shuttle, to move said lever or device, through the movement of the shuttle on the lay, and through connections to the weft replenishing mechanism of the loom, put into operation said mechanism, to supply a fresh filling in the active shuttle in the place of the substantially exhausted filling in said shuttle.

I have shown in the drawing a loom shuttle with a self-threading mechanism of ordinary construction at one end, with my improvements combined therewith.

Referring to the drawing:—Figure 1 is a sectional top view of a self-threading shuttle with my improvements combined therewith, shown in their operative position, and looking in the direction of arrow *a*, Fig. 2, and also showing a lever or device to be operated by the shuttle, and connected with the weft replenishing mechanism, not shown. Fig. 2 is a section, on line 2, 2, Fig. 1, looking in the direction of arrow *b*, same figure. Fig. 3 is a section, on line 3, 3, Fig. 2, looking in the direction of arrow *c*, same figure. Fig. 4 is a section on line 4, 4, Fig. 2, looking in the direction of arrow *c*, same figure. Fig. 5 corresponds to Fig. 3, but shows the feeler pad or plate in its inoperative position, held by its engagement with the filling on the bobbin. Fig. 6 corresponds to Fig. 4, but shows the actuator hammer in its inoperative position.

In the accompanying drawing, 1 is a self-threading loom shuttle, having at one end a self-threading device 2, which may be of any usual and well known construction used in self-threading shuttles, 3 is a bobbin or filling carrier, having the annular rings 3' adapted to engage grooves in the holding jaws 4 in the shuttle 1, in the usual way.

All of the above mentioned parts may be of any usual and well known construction in self-threading shuttles used in weft replenishing looms.

I will now describe my improvements combined with the shuttle shown in the drawing.

In this instance, at the rear of the bobbin 3, and along the back wall of the shuttle, extends a shaft or rod 5, in the direction of the length of the shuttle. One end of the rod 5 extends loosely, in this instance in a tube 7 secured in the rear wall or body portion of the shuttle at the bobbin head end of the shuttle, and forming a bearing for one end of said rod 5. The other end of said rod 5 extends loosely in a tube 6 secured in the rear wall or body portion of the shuttle at the bobbin tip end of the shuttle. The opening in the tube 7 for the rod 5 is preferably made eccentric to the axis of the tube, as shown in Fig. 3, so that the position of the rod 5 relative to the bobbin 3 may be adjusted, if desired, by rotating said tube 7.

On the rod 5, near the bobbin head of the spindle, is secured a feeler pad or plate 8, to engage the filling 3' on the bobbin 3,

and preferably made separate from said rod 5 and fast thereon, to rock with said rod. Near the other end of said rod 5 at the bobbin tip end of the shuttle, in this instance is 5 adjustably secured, by two screws 9', a block 9, which may be termed an "actuator", and extends within an opening or recess 1' made in the rear portion or wall of the shuttle 1. The actuator 9 has in this instance a longitudinal opening therein through which the 10 rod 5 extends, and the attaching screws 9' extend through threaded openings in the actuator 9, and engage at their inner ends with the rod 5, to in this instance adjustably secure the hammer 9 to said rod to rock therewith. The opening or recess 1' in the 15 rear wall of the shuttle 1 extends to the end portion of the shuttle, see Fig. 1.

In connection with the shuttle shown in 20 the drawing and above described, provided with my improvements, I may use a lever or device 10, having its hub 10' fast on an upright shaft 11, which shaft may be connected, through intermediate connections, 25 with the weft replenishing mechanism of a loom. The free end of the lever or finger 10 is adapted to enter freely the recess 1' in the rear wall of the shuttle 1, just before the shuttle reaches the end of its travel into 30 the shuttle box, preferably on the magazine end of the loom, in the normal operation of the loom.

The operation of my improvements in self-threading loom shuttles for weft replenishing 35 looms, from the above description in connection with the drawing, will be readily understood by those skilled in the art. When a bobbin 3 with a supply of filling 3'' thereon is placed in the shuttle 1, through 40 the upper side thereof, in the ordinary way, the engagement of the filling with the feeler pad or plate 8, will move down said pad within the shuttle and rock the rod 5, and the rocking of the rod 5 will raise the actuator 9. The actuator 9 extends at such an 45 angle from the rod 5, relative to the direction of the feeler pad 8, that when the pad 8 is in its lowered position, the actuator 9 will be in its raised position, see Figs. 5 50 and 6.

In the operation of the loom, as long as there is a sufficient amount of filling 3'' on the bobbin 3 in the active shuttle, the actuator 9 will be in its raised position, see 55 Fig. 6, and the end of the lever or device 10 will be free to enter the recess 1' in the rear wall of the shuttle, without any movement

being communicated to said lever or device 10. When the filling 3'' is drawn off from the bobbin 3 to a predetermined amount, the 60 feeler pad 8 is free to pass by the filling on the bobbin, as shown in Fig. 3, and the rod 5 will be rocked through the movement of the lay, and the actuator 9 will be moved into its lowest position, as shown in Fig. 4, 65 and extend in the path of the end of the lever or device 10, as the shuttle approaches said device, and the engagement of said actuator with the lever or device 10, will move said device in the direction indicated by 70 arrow *c*, Fig. 1, and rotate the shaft 11, and through intermediate connections, not shown, to a magazine or weft replenishing mechanism, not shown, put into operation the weft replenishing mechanism, to supply a 75 fresh bobbin or filling carrier in place of the substantially exhausted one in the shuttle.

It will be understood that the details of construction of my improvements may be varied if desired, and my mechanism, or its 80 equivalent may be combined with any construction of a fly shuttle, either for a weft replenishing loom for changing bobbins, or for a loom for changing shuttles. In connection with the rod 5 a helically coiled torsion 85 spring 5', or its equivalent, shown by broken lines in Fig. 2, may be used as an actuating spring to rock said rod. The spring 5' may be attached at one end to the rod 5 and at its other end to the shuttle body. 90

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

1. In a shuttle for looms, a filling carrier, means to support the same, a pivoted pad 95 arranged to bear against the filling on said carrier, and adapted to move past the longitudinal center of said carrier when the filling has been substantially exhausted, and connections from said pad to an actuator, 100 and said actuator, all attached to and forming a part of said shuttle.

2. In a shuttle for looms, a filling carrier, means to support the same, a pivoted pad 105 arranged to bear against the filling on said carrier, and adapted to move past the filling on said carrier, when the filling has been substantially exhausted, and connections from said pad to an actuator, and said actuator.

EPPA H. RYON.

Witnesses:

JOHN C. DEWEY,
MINNA HAAS.