(No Model.)

J. H. NORTHROP.

LOOM SHUTTLE.

No. 454,807. Patented June 23, 1891.

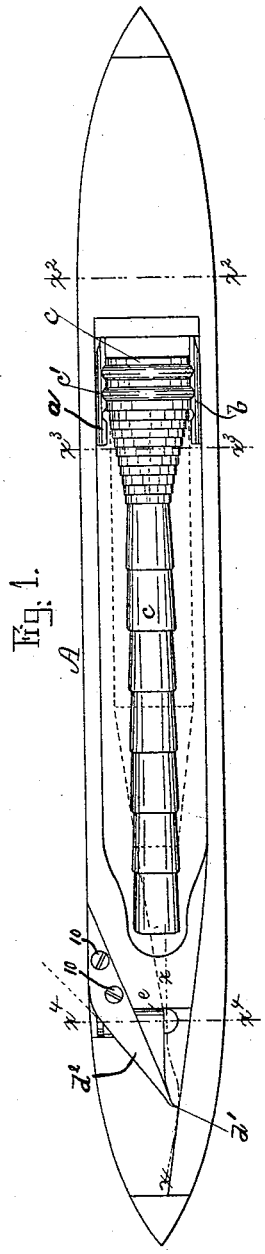

Fig. 1.

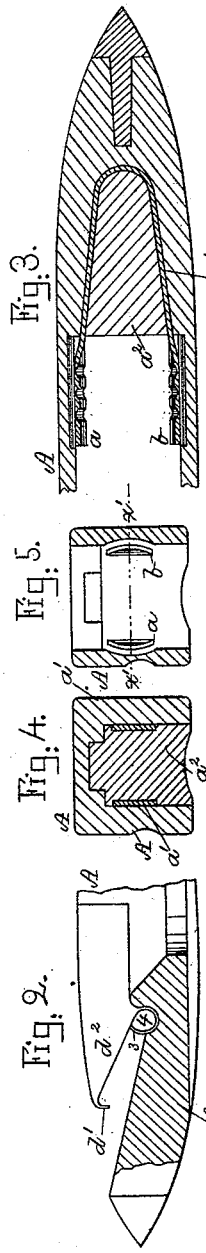

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

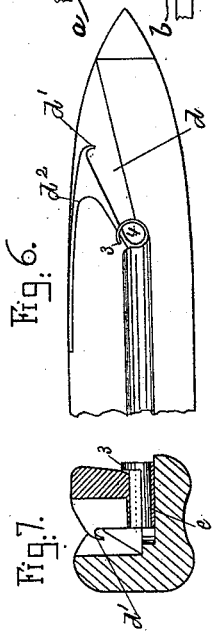

Fig. 6.

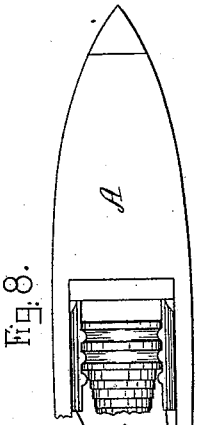

Fig. 8.

Fig. 7.

Witnesses.

Fred. A. Greenleaf

Frederick L. Emery

Inventor.

James H. Northrop,

by Crosby & Gregory Attys.

UNITED STATES PATENT OFFICE.

JAMES H. NORTHROP, OF HOPEDALE, MASSACHUSETTS, ASSIGNOR TO GEORGE DRAPER & SONS, OF SAME PLACE.

LOOM-SHUTTLE.

SPECIFICATION forming part of Letters Patent No. 454,807, dated June 23, 1891.

Application filed May 10, 1890. Serial No. 351,227. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. NORTHROP, a subject of the Queen of Great Britain, but at present residing at Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Loom-Shuttles, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to improve the construction of bobbins and shuttles employed in that class of loom wherein the weft is automatically supplied to the shuttle while the loom is in motion, my improved bobbin and shuttle being so constructed that a bobbin containing weft may be automatically introduced into the shuttle and be thereafter removed automatically on the occurrence of any fault in the delivery of the weft.

One part of my invention consists in a loom-shuttle and attached bobbin-holding jaws adapted to receive a bobbin between them from one side of the shuttle and to hold the same and thereafter permit the bobbin to be discharged from between the said jaws at the other side of the shuttle, as will be described.

Other parts of my invention will be hereinafter described, and defined in the claims at the end of this specification.

Figure 1 in top view represents a shuttle having one form of jaw embodying my invention, the bobbin being shown in full lines and the yarn load thereon being indicated by dotted lines; Fig. 2, a partial section in the irregular dotted line x, Fig. 1; Fig. 3, a partial longitudinal section of the shuttle, cutting through both jaws of the clamp in the line x', Fig. 5; Fig. 4, a section of the shuttle in the line x^2, Fig. 1; Fig. 5, a section of the shuttle in the line x^3, Fig. 1; Fig. 6, a detail, looking at the side of the shuttle which is uppermost in Fig. 1; Fig. 7, a section in the line x^4, Fig. 1. Fig. 8 is a modification showing jaws with projections to enter grooves in the bobbin.

The shuttle-body A, of wood or other usual material and of usual shape, is shown as provided with a pair of yielding bobbin-holding jaws a b, (represented as forming part of a metal loop or strap a',) suitably inserted or held in the shuttle-body by a block a^2 or in other usual or equivalent manner. The acting faces of the jaws or arms a b, shown as somewhat concaved in cross-section (see Fig. 5) and represented as provided with a series of grooves or notches at their inner sides, (see Fig. 3,) are located next to and substantially parallel to the inner side walls of the shuttle. These jaws are free to yield to a limited extent to a bobbin while being pushed into position between them from one—as, for instance, the top side of the shuttle—the bobbin being removable from the other or bottom side of the shuttle, this being essential for the success of this invention. The jaws, by reason of their concaved inner or acting faces, grasp and hold the bobbin and do not require a spindle in the bobbin.

The head of the bobbin c, of wood or other usual or suitable material, is represented as provided with two annular projections or rings c', adapted to enter the grooves or notches made in the inner or acting faces of the jaws, two, or it may be more, such projections enabling the bobbin, while being pushed into position between the jaws, to be maintained substantially in horizontal position, the said projections, after the bobbin has been pushed into place, aiding in keeping the bobbin in central horizontal position in the shuttle. The jaws have, it will be seen, a greater number of grooves or notches than the bobbin has projections, such provision compensating for variations in the longitudinal position of the shuttle in the shuttle-box when the bobbin is being pushed into place between the jaws, and enabling the bobbin to be properly received in and held by the jaws notwithstanding slight variations in the position of the shuttle longitudinally.

Believing myself to be the first to provide a shuttle with yielding bobbin-holding jaws or devices to yield or separate as a bobbin-head is pushed into operative position between them, I do not intend to limit this invention to any special form of yielding jaw, but consider as within the scope of my invention any other form of jaw having the properties referred to. It is obvious that my invention would be substantially the same if the construction was just the reverse, as in Fig. 8, where the jaws are shown as provided with

projections to enter notches in the head of the bobbin; but the projections on the head of the bobbin are preferable as affording greater strength, for the said projections c' may be of metal bent to form rings. The shuttle-body is cut away at d down to and into the usual delivery opening or eye 4 in the side wall of the shuttle, and the shuttle at one side the said slot has applied to it by screws 10 a horn d^2, provided with a point, as at d', under which the weft-thread is automatically drawn or passed by the movement of the shuttle in the shed after the bobbin has been pushed into the shuttle from a suitable hopper or guideway, as in my applications, Serial No. 351,228 and No. 380,494, the outer end of the weft-thread carried by the bobbin being connected with some fixed part of the hopper or loom, which causes the said thread to be held while the bobbin is being pushed into the shuttle and the latter is shot across the shed, during which operation the shuttle thread is automatically inserted in the shuttle delivery-eye. The delivery-eye 4 is shown as lined by a metal plate e bent to leave an open side, the plate having a lip 3, down behind and over the point of which the weft is passed as it enters the said eye 4, the lip 3 preventing the escape of the thread from the said eye. In this shuttle the weft-thread is drawn off the end of the bobbin through the transverse opening or passage in the plate e and out through the side of the shuttle.

It is not desired or intended to limit this invention to the exact form of the device or slot whereby the shuttle is made self-threading, thus avoiding drawing the end of the weft-thread out through the delivery-eye 4, as when the eye is not slotted; and instead of the particular plate or form of slot shown I may employ any other usual device or form of slot common to other self-threading shuttles.

In another application, Serial No. 352,960, filed May 23, 1890, I have shown a spindle having a head which may be passed into a holder from one side of the shuttle and out from the holder at the opposite side of the shuttle, the head of the spindle and the holder being so shaped as to prevent longitudinal movement of the spindle in the shuttle, the said application having been filed to protect my invention, broadly, as applied to spindles as contradistinguished from bobbins without spindles, as in the present invention.

It is not intended to limit this invention to the exact form of bobbin shown.

My applications, Serial Nos. 351,228 and 380,494, show means for automatically supplying a bobbin or a spindle to the shuttle and discharging it therefrom.

I am aware that bobbins have been provided with a ring of wire to prevent the head of the bobbin from being split.

I claim—

1. A loom-shuttle and attached bobbin-holding jaws, adapted to receive a bobbin between them from one side of the shuttle and to hold the same and thereafter permit the bobbin to be discharged from between the said jaws at the other side of the shuttle, substantially as described.

2. A loom-shuttle having a self-threading slot or eye and bobbin-holding jaws, and a bobbin adapted to be grasped and held between the said jaws, to operate substantially as described.

3. A loom-shuttle provided with bobbin-holding jaws having a series of notches or projections, in combination with a bobbin provided with projections or notches in less number than the notches or projections of the jaws, as and for the purpose set forth.

4. A bobbin for use in a loom-shuttle, the said bobbin having its head provided with two or more annular projections or grooves, for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES H. NORTHROP.

Witnesses:
F. J. DUTCHER,
H. W. BEATTY.