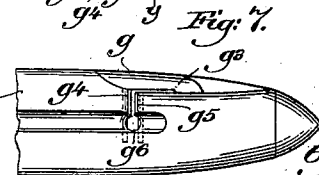
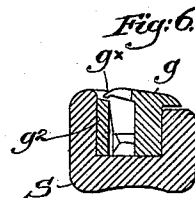
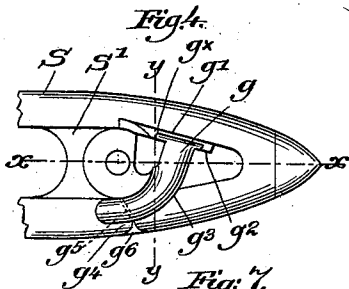
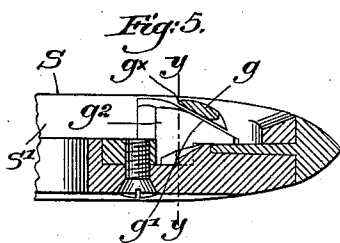
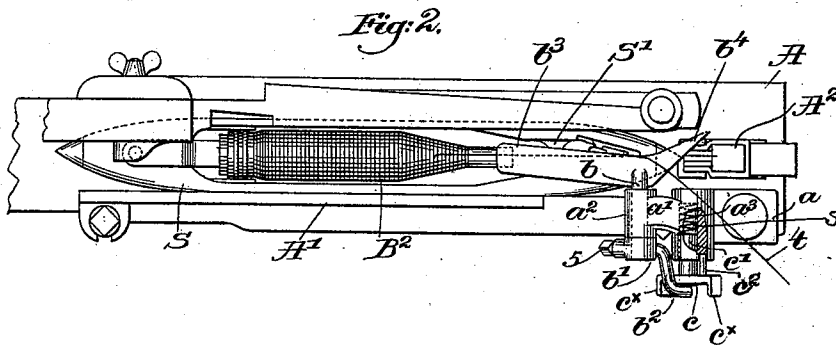
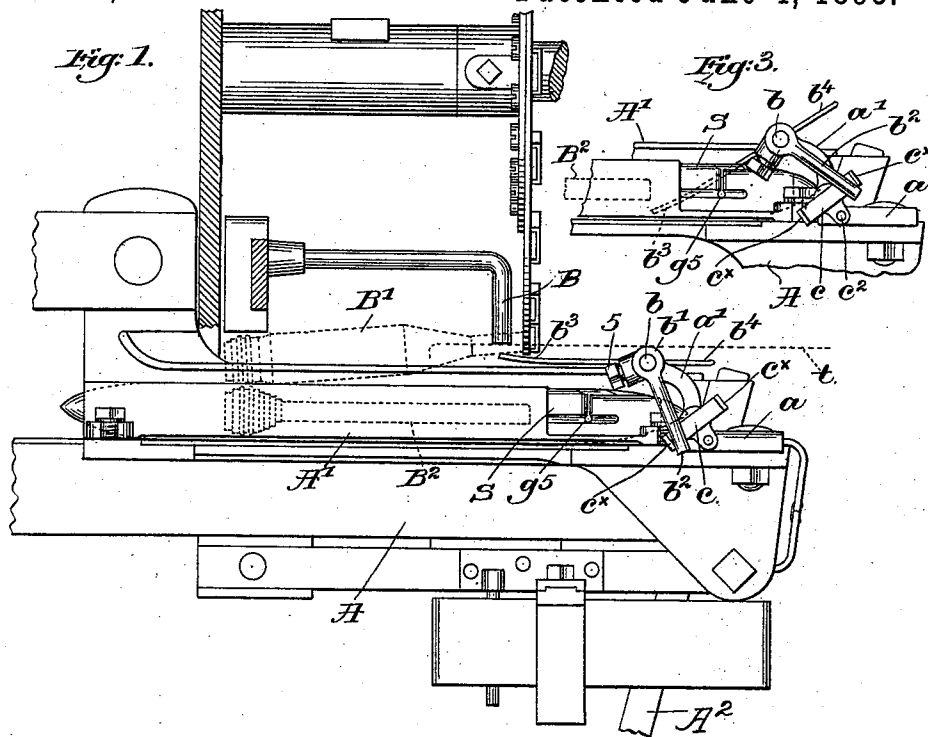


(No Model.)

J. H. NORTHROP.
LOOM.

No. 540,454.

Patented June 4, 1895.



Witnesses.

A. C. Harmon
Thomas J. Drummond

Inventor,

James H. Northrop
by David Gregory, atty.

UNITED STATES PATENT OFFICE.

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

LOOM.

SPECIFICATION forming part of Letters Patent No. 540,454, dated June 4, 1895.

Application filed February 4, 1895. Serial No. 537,160. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. NORTHROP, of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Looms, of which the following description, in connection with the accompanying drawings, is a specification, like letters and numerals on the drawings representing like parts.

In the filling supplying mechanism recently patented by me and shown in United States Patent No. 529,942, dated November 27, 1894, wherein a fresh or full bobbin is automatically taken from a bobbin feeder made to be rotated intermittently and inserted in the loom shuttle to take the place of an empty bobbin, or to take the place of a bobbin when its filling breaks, I have shown a bobbin-supporting device attached to the outer end of the pusher or transferrer stud, holding the small end of the bobbin up against but yielding to the action of the transferrer while it is being deposited in the shuttle and to aid in directing the small end into the space in the shuttle. The mechanism not moving with the lay and shuttle-box, it sometimes happens that the tip of the outgoing bobbin sticks up out of the shuttle alongside of the bobbin just put into the shuttle and acts as an obstruction to the shuttle in its flight.

This invention has for one of its objects the provision of means for overcoming this objection.

In the invention hereinafter described the device for supporting the incoming bobbin is also made to serve as a stop to cover the tip of the outgoing bobbin and prevent it from rising in the shuttle at one side of the newly inserted bobbin.

I have also herein provided a device to catch around the thread or filling end of the incoming bobbin and guide it off the bobbin in line with its longitudinal axis.

My invention therefore broadly consists in the combination with a lay, of a bobbin-support and stop carried by and moving with the lay, substantially as will be described.

Figure 1 in elevation represents a sufficient portion of a bobbin-transferring mechanism co-operating with the lay of the loom to enable my invention to be understood, the uppermost bobbin shown by dotted lines being sup-

posed to be held at both ends in the bobbin-feeder and as being acted upon by the pusher or transferrer to be put into the shuttle. Fig. 2 is a top view of the mechanism shown in Fig. 1 and partly broken out, the transferrer being omitted. Fig. 3 in elevation represents the support for the bobbin end in its lowest position and the parts ready to be returned to normal position as the shuttle is thrown by the picker-stick. Fig. 4 is a top view, on a larger scale, of the end of the shuttle provided with the eye and threading mechanism. Fig. 5 is a vertical section thereof on the line $x x$. Fig. 6 is a transverse section on the line $y y$, Fig. 5, looking to the right; and Fig. 7 is a side elevation of the shuttle end shown in Fig. 4.

The lay A, the shuttle-box A', the picker-stick A², and the transferrer stud B, are and may be as in the Patent No. 529,942, referred to, and to which reference may be had.

I have herein shown a stand a secured to the lay A adjacent the outer end of the shuttle-box, said stand having an upturned arm a' provided with a sleeve-like bearing a^2 for a rock-shaft b , extended loosely therethrough and having secured to its outer end by a set-screw 5 the hub b' of a rocker arm b^2 , the free end of said arm resting on the frictional holder, shown as a convex head c , projecting from a stud c' loosely inserted in a hole a^3 in the stand a , as shown best in Fig. 2, the stud being pressed outwardly to maintain the head c and the rocker arm b^2 in frictional contact by a spring s interposed between the end of the stud and the bottom of the hole a^3 . The ends of the head c are upturned at c^x to limit the movement of the rocker arm in either direction, and the latter will normally remain at one or the other side of the center of the convex head.

I have herein shown the stud c' as prevented from rotating by a lug or pin c^2 on the under side of the head entering loosely a recess in the stand, although it is obvious that any other suitable locking or retaining device might be used.

The yielding stud and its convex head constitute a friction detent for retaining the rocker arm in one or the other position shown in Figs. 1 and 3.

At the inner end of the rock-shaft *b* I have secured the combined bobbin-support and stop, said support being shown as a thin plate *b*³, preferably of metal, which normally stands above the horizontal plane in which the shuttle moves, and in the vertical plane of movement of the transferrer, said plate, normally kept elevated, as shown in Fig. 1, yielding under the action of a bobbin being taken from the usual feeder and by the transferrer being put into the shuttle.

When the incoming bobbin *B'* is being inserted in the shuttle *S*, as shown by dotted lines Fig. 1, its base rests on the base of the outgoing bobbin *B*², and its smaller end is held in the concave end of the transferrer stud *B* by the support *b*³, which latter projects over the small end of the bobbin *B*². As the bobbin *B'* is forced into the shuttle *S* by the transferring mechanism, the support *b*³ will be depressed until it enters the recessed portion *S'* of the shuttle, cut away for that purpose, until it assumes its abnormal position shown in Fig. 3. It will thus be evident that the small end of the outgoing bobbin *B*² cannot rise or stick up alongside of the bobbin *B'* because the support *b*³ forms a stop to prevent it from rising, and when the picker-stick *A*² throws the shuttle, the latter by striking the support will raise it from the recess *S'*, and it will be returned into its normal position by the combined action of the spring *s* and the convex head *c*, the rocker arm *b*² being moved thereby against the lower upturned portion or stop *c*^x on the head. The picker-stick is then free to move back and forth beneath the support *b*³ until a new bobbin is to be transferred to the shuttle, when the foregoing operation is repeated.

When a bobbin is placed in the shuttle it sometimes happens that the strain suddenly put upon the weft thread as it is drawn to one side is sufficient to break it, and to obviate this I have continued the rear end of the support *b*³ to form a hook *b*⁴, offset across the path of the thread *t* as it comes from the end of the bobbin, to guide the thread therefrom in line with the longitudinal axis of the bobbin. As the thread unwinds it is engaged by the rearwardly extended tip *g*^x of the horn or guide *g*, and drawn beneath said horn and over the inclined upper edge *g'* of the guide *g*² in the shuttle, see Figs. 4, 5 and 6, as the shuttle is moved away from the shuttle-box, the hook *b*⁴ maintaining the thread in the axial line of the bobbin and beneath the front portion of the horn *g*. On the return throw of the shuttle the thread passes underneath the horn and around its curved edge *g*³, over the top of the shuttle side, to the shoulder *g*⁴, Figs. 4 and 7, and the thread is drawn into the slit *g*⁵ leading to the eye *g*⁶, the thread be-

ing thereafter led through said eye until the bobbin is replaced by a fresh one.

My invention is not restricted to the precise construction and arrangement of parts as herein shown and described, nor to the exact construction of the friction detent for the support, as the same may be altered or modified without departing from the spirit and scope of my invention.

The bobbin-feeder, not fully shown, and the pusher or transferrer and picker-stick are or may be actuated in the time and order and by means all fully set forth and described in said patent.

I claim—

1. The combination with the lay and a bobbin-support and stop carried thereby and having its end extended forward in the lay above the path of movement of the shuttle, of a pusher or transferrer to push a bobbin on the support and depress it in the shuttle to form a stop and prevent the rising of the small end of the bobbin about to be discharged from the shuttle alongside the incoming bobbin, substantially as described.

2. The combination with the lay and a movable bobbin support and stop carried thereby, of a friction device connected with said bobbin-support and stop to keep said support and stop in depressed or elevated position, substantially as described.

3. The combination with the lay and a movable support and stop carried thereby, of a friction device having projections to act as stops to determine the extreme movements of the said support and stop into and above the shuttle, substantially as described.

4. In a loom, a lay, and a hook carried thereby and offset across the path of the thread to engage the thread of an incoming bobbin as it is placed in the shuttle, in front of and adjacent said hook, to guide the thread off from the bobbin in line with the longitudinal axis thereof, substantially as described.

5. In a loom, the lay, a recessed shuttle, and a support carried by the lay, to sustain and be depressed by the small end of the bobbin as it is placed in the shuttle, combined with a pusher or transferrer to place the bobbin in the shuttle, a thread guide carried by said support, to hook around the thread and draw the same from the bobbin in line with its longitudinal axis, and means to automatically place the thread in the eye of the shuttle, substantially as described.

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

JAMES H. NORTHROP.

Witnesses:

GEO. OTIS DRAPER,
WALTER HASTINGS.