

J. F. DUSTIN.

SHUTTLE.

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994,066.

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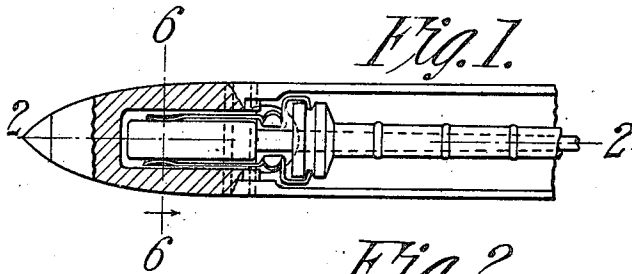


Fig. 2.

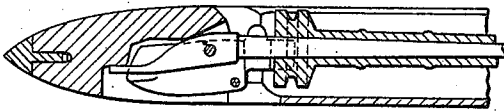


Fig. 3.

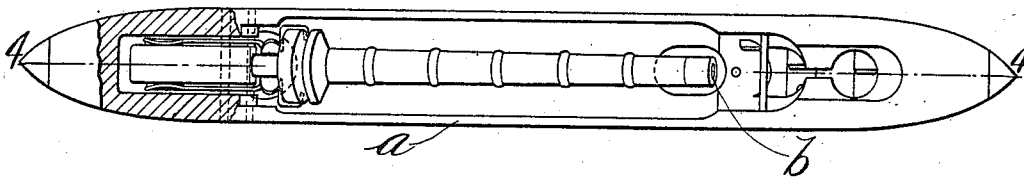
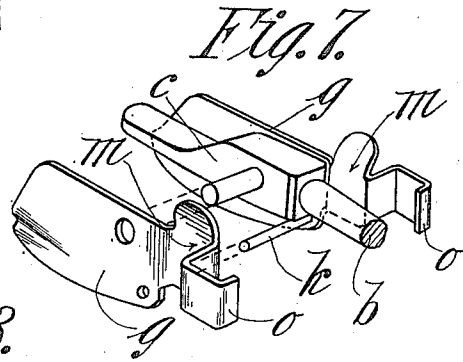


Fig. 4.

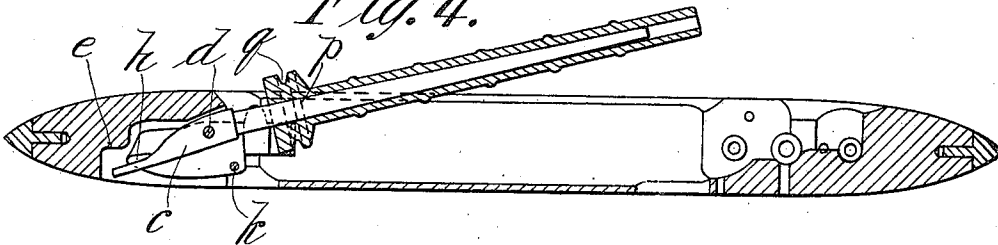


Fig. 5.

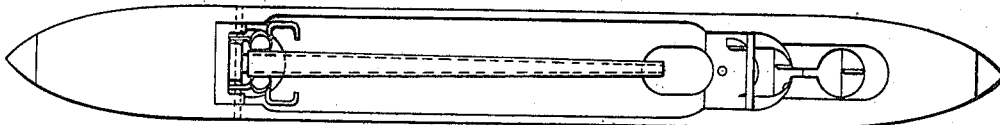
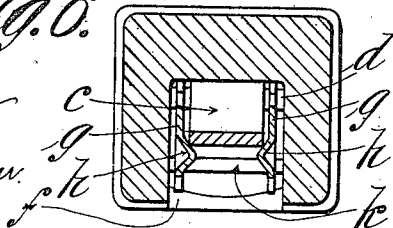


Fig. 6.

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SHUTTLE.

994,066.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN F. DUSTIN, a citizen of the United States of America, residing at Fulton, in the county of Oswego and State of New York, have invented new and useful Improvements in Shuttles, of which the following is a specification.

This invention relates to an improved shuttle construction broadly, and specifically to improved means for automatically locking either a bobbin or a cop-tube to the spindle of a shuttle to restrain the bobbin or cop against all endwise movement on the spindle when the latter is swung down into the shuttle in operative position.

The invention is illustrated in the accompanying drawings, in which,—

Figure 1 is a plan view, partly in section, of a part of the shuttle embodying this invention, and showing a bobbin on the spindle. Fig. 2 is a sectional elevation of the parts shown in Fig. 1, the spindle being in the same position. Fig. 3 is a view similar to Fig. 1 but showing the spindle swung up out of the shuttle in position to permit the removal of the bobbin. Fig. 4 is a sectional elevation of the shuttle in the same plane as Fig. 2 but showing the spindle swung up out of the shuttle. Fig. 5 is a plan view of the shuttle shown in the preceding four figures, but showing a cop-tube on the spindle, instead of a bobbin. Fig. 6 is a cross sectional view on an enlarged scale taken through one end of the shuttle, as on line 6—6, Fig. 1, and illustrates the manner in which the cop or bobbin clamping devices are actuated. Fig. 7 is a perspective view on an enlarged scale of the base of the spindle and the bobbin or cop-clamping devices, one of the parts of the latter being shown in separated relation to the spindle.

Referring to these drawings, *a* may indicate the shuttle as a whole, and *b* the spindle. The base of the spindle, indicated specifically by *c*, is rectangular in cross section, said base being located in a slot in the shuttle made to receive it. The spindle *b* is pivotally supported in said slot on a pin *d*, to the end that it may be swung down within the shuttle into position of axial alinement therewith, as shown in Fig. 2, and swung out of said position, as shown in Fig. 4, far enough to permit the cop or bobbin to be withdrawn from the spindle. The end of the base of the spindle beyond its pivotal

point *d* comes to a bearing against a shoulder *e* in the shuttle, when it is swung down into the latter, whereby the spindle is accurately alined with the axis of the shuttle. This shuttle and spindle construction is well known and, *per se*, forms no part of the invention. In shuttles as ordinarily constructed, however, a spring is so applied to the base of the spindle as to yieldingly hold the spindle in its position of axial alinement in the shuttle, whereby during the rather violent movement to which it is subjected in weaving, the spindle will be held in place. The nature of the present invention is such that a separate spring for this purpose is not required.

As heretofore stated, the base of the spindle is located in a rectangularly shaped slot in one end of the shuttle, this being shown clearly in Fig. 6 and indicated by *f*. The rectangularly shaped base of the spindle is, as stated, located in this slot and between the sides of the base of the spindle and the opposite walls of the slot are located two spring-jaws (each of which is indicated as a whole by *g*,) which are identical in shape and comprise two flattened portions which lie closely against the opposite sides of the base of the spindle, as shown in Fig. 6, there being formed at the rear end of these two flattened portions an inwardly projecting rib *h* which, when the spindle is in position of axial alinement with the shuttle will lie under the two sides of the base of the spindle, thus holding the latter up against the shoulder *e* in the shuttle; and when the free end of the spindle is swung out to the position shown in Fig. 4, the base of the spindle snaps by these two ribs *h* to a position below them, whereby the spindle may be retained in said elevated position while the bobbin or cop is being removed from, or replaced thereon.

The pivot-pin *d*, on which the spindle swings, extends through the two jaws *g* of the clamping devices, and to prevent these jaws from swinging on this pivot, a second pin *k* is passed through them below the base of the spindle, as shown in the various figures of the drawing.

It will be observed by referring to the drawings, that the slot *f* terminates at the forward end of the rectangular base of the spindle and that the clamping jaws for the bobbin or cop extend beyond this point and

are free to play laterally of the spindle within the recess in the shuttle. These two jaws are at the point indicated by *m*, bent inward toward the spindle and are so located relative to the sides of the latter that when a cop-tube is put onto the spindle, and the latter is then swung down into its proper position within the shuttle, the base of the cop will be wedged in between the two portions *m* of these jaws and tightly clamped to the spindle thereby, these jaws being sufficiently yielding to allow the cop, when on the spindle, to be forced in between them. Beyond the portions *m*, the jaws flare outwardly and the free ends thereof are then bent in to form a slight hook *o* on each of them, and the base of the bobbin *p* has a circumferential groove *q* therein with which the hooked ends *o* of the jaws engage, as shown in Fig. 1, when the spindle is swung down into the shuttle. These hooked ends *o* of the jaw need not necessarily pinch the base of the bobbin, it being quite sufficient that they engage the groove in such manner as to prevent endwise movement of the bobbin on the spindle.

By means of this construction, either a cop-tube or a bobbin may be used, as desired, on the shuttle spindle and so firmly retained in position thereon that no amount of jar or driving forward in the weaving process can cause them to move forward on the spindle, and thus effect the breaking of the yarn.

What I claim, is:—

1. In a shuttle, a spindle pivotally supported therein to swing into and out of a position of axial alinement with the shuttle, jaws in the shuttle between which the spindle swings, the free ends of the jaws extend-

ing axially of the shuttle on opposite sides of the base of the bobbin or cop-tube, and means at one point on the jaws to engage the base of a bobbin, and means at another point on said jaws to engage the base of a cop-tube to restrain said bobbin or cop-tube against endwise movement on the spindle when the latter is in axial alinement with the shuttle.

2. In a shuttle, a spindle pivotally supported therein to swing into and out of axial alinement with the shuttle, and spring-jaws between which the base of the spindle swings, means on the free ends of said jaws to engage the base of a bobbin, and other means on the jaws in proximity to said free ends thereof to engage the base of a cop-tube having a smaller diameter than the base of a bobbin, whereby said bobbin or tube may be restrained against endwise movement when the spindle is in axial alinement with the shuttle.

3. In a shuttle, a spindle pivotally supported therein to swing into and out of axial alinement with the shuttle, and spring-jaws between which the base of the spindle swings, said jaws having oppositely disposed bearing points certain of which are adapted to engage the base of a bobbin and certain others of which are adapted to engage the base of a cop-tube having a smaller diameter than the base of a bobbin to restrain said bobbin or cop-tube against endwise movement when the spindle is in axial alinement with the shuttle.

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