

I. SNOW & G. STUBBINGS.
SHUTTLE FOR LOOMS.
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969,912.

Patented Sept. 13, 1910.

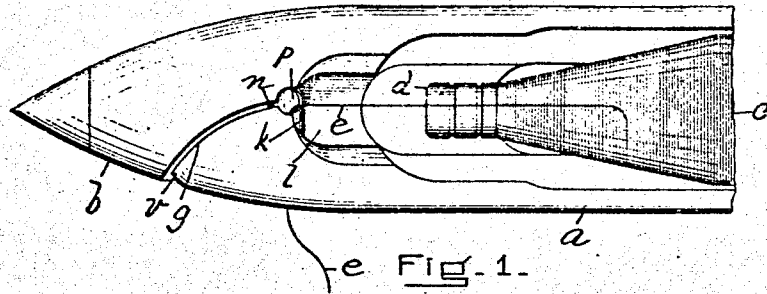


Fig. 1.

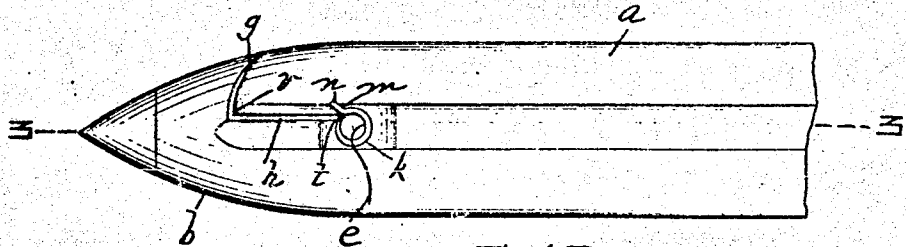


Fig. 2.

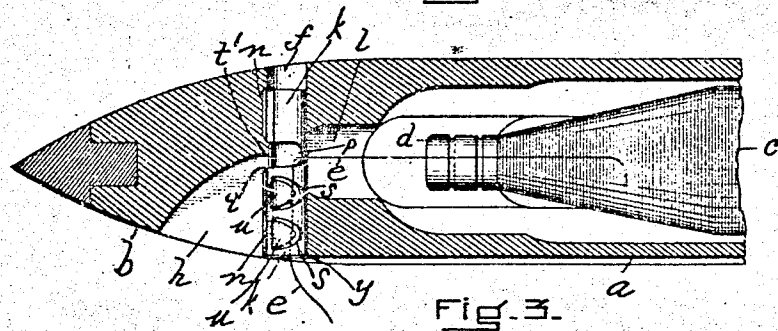


Fig. 3.

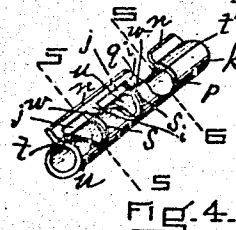


Fig. 4.

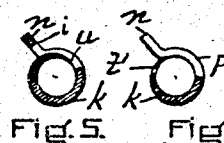


Fig. 5.

Fig. 6.

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ISAAC SNOW AND GEORGE STUBBINGS, OF LAWRENCE, MASSACHUSETTS.

SHUTTLE FOR LOOMS.

969,912.

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To all whom it may concern:

Be it known that we, ISAAC SNOW, a citizen of the United States, residing at Lawrence, in the county of Essex and State of Massachusetts, and GEORGE STUBBINGS, a subject of the King of Great Britain, residing at said Lawrence, have invented new and useful Improvements in Shuttles for Looms, of which the following is a specification.

This invention relates to shuttles of the class in which threading devices are provided which connect with the thread-hole or eye, and the invention relates specifically to an improved thread-guide whereby the thread is kept on its way through a passage leading to the eye without looping, "floating", or breaking.

The nature of the invention is fully described in detail below, and illustrated in the accompanying drawings, in which:—

Figure 1 is a plan view of the end of a shuttle in which the eye and our improved thread-guide are located. Fig. 2 is a front view of the same. Fig. 3 is a horizontal section taken on line 3—3, Fig. 2. Fig. 4 is a perspective view of the threading device or guide removed. Figs. 5 and 6 are sections taken on lines 5—5, and 6—6, Fig. 4, respectively.

Similar letters of reference indicate corresponding parts.

a represents the front wall and *b* the head of a shuttle provided with our invention.

c is the bobbin sustained by a suitable spindle *d*, and *e* is the thread extending from said bobbin through the thread-guide, as illustrated particularly in Fig. 3.

f is a horizontal passage extending through the head of the shuttle, substantially round in cross section, *g* is a curved vertical cut constituting a narrow passage leading down to the horizontal passage *f*, and *h* is a narrow horizontal passage or cut extending from the passage *g* along the head of the shuttle and leading to said passage *f*. The thread-guide is a metallic structure consisting of a plate or sheet of metal the main portion or barrel *k* of which is cylindrical and circular and adapted to fit snugly in the passage *f* and provided with reversely formed and disposed teeth below described, a series of narrow necks *i* extending from and making a part of the outer ends of one of the sets of teeth and radial with the barrel, and a flat longitudinal and

substantially radial raised rib *n* supported by said necks at a distance from the line of circumference of the main portion of the barrel, whereby longitudinal spaces *j* are produced next the outer set of teeth, the said rib extending into a corresponding cut or groove *m* in the head of the shuttle for the purpose of preventing the thread-guide from rotating in the passage.

The barrel or body portion *k* of the thread-guide is provided with a deep opening or port *p* which, when the guide is in place, opens into the shuttle, being next the chamber *l* in the shuttle and opposite the adjacent end of the spindle. This opening or port *p* is curved at its inner end to prevent catching and cutting the thread, and extends from the barrel or main portion *k* through the rib *n*, its mouth *q* opening into both the passages *g* and *h*.

At *s* one or more substantially triangular openings are made in the barrel *k* whereby teeth *w* are formed, the central tooth *w* being substantially triangular in shape and the outer ones, that is, that next the notch *p* and that next the outer end of the barrel, being partially triangular. The ends of these teeth *w* do not come to a point but are formed with the integral extensions or necks *i* which are bent up radially with the barrel and support at their outer ends the raised rib *n* above described, said rib, necks and teeth *w* being integral, and the teeth *w* being on true circles and corresponding with the shape of the rest of the main portion or barrel.

The edge *t* of the barrel extends to the bases of the necks or extensions *i* which support the rib *n*, and completes the true circle of the barrel, but extending from this edge *t* integral therewith are teeth *u* corresponding substantially in number and substantially in shape with the triangular openings *s* and extending centrally opposite said openings, the outer surfaces of the teeth *u* being ground down, as illustrated particularly in Fig. 5, whereby although the inner surfaces of the teeth are in line with the true circle of the inner surface of the barrel, and the barrel itself is in contact with the smooth wall of the passage *f*, the outer surfaces of the teeth are ground away from the line of the outer surface of the barrel (Fig. 5), and the edges of the triangular teeth *u* are ground away for the purpose of leaving narrow spaces between said teeth and the adja-

cent edges of the main portion or barrel *k*, as illustrated in Figs. 3 and 4. Thus by means of the ground outer surfaces of the teeth *u* and the position of their edges with relation to the adjacent edges of the teeth *w*, and the distance from the main portion or barrel at which the rib *n* is held at the outer ends of the supporting necks or extensions *i* whereby longitudinal spaces *j* are produced between said rib and the rear or thick ends of the teeth *u*, the thread is enabled to pass without obstruction under the rib *n* and over the adjacent portions of the teeth *u* and over the points of said teeth *u* between the edges of the teeth *u* and the edges of the teeth *w* into the barrel.

In practice in threading the shuttle, the thread is laid or inserted in the passage *g* at any convenient point and is drawn into said passage and under the corner *c* into the passage *h*, and as both of these passages lead to the port *p* the thread enters this port, and as it cannot pass over the rib *n* which fits snugly in the head nor between the main or circular portion of the barrel and the wall of the passage *f*, (the barrel fitting snugly in said passage) it passes below said raised rib and by means of the spaces *j* over the outer surfaces of the rear portions of the teeth *u* and under the teeth *w*, guided by said necks *i*, and then over the ground portions of the surfaces of the teeth *u* passing through the spaces between the edges of the teeth *u* and those of the teeth *w* over the points or ends of the teeth *u* into the barrel, as illustrated in Fig. 3, and thence out through the outer end of the barrel at the eye *y* of the shuttle, as shown in Figs. 2 and 3. By means of the ground outer surfaces of the teeth *u*, although the inner surfaces are on a true circle, and by means of the spaces *j* produced by the radial necks *i* which hold the ribs away from the main portion or barrel, the course of the thread is down through the passage *g*, horizontally along the passage *h*, into the port *p*, under the rib *n* and through the spaces *j*, and thence over the teeth *u* and under the teeth *w* and around the points of the teeth *u* into the barrel and out through the thread-eye. While the thread is taking this course it is practically in a straight line from the port *p* to the eye, as illustrated in Fig. 3, and it is effectually prevented by the necks *i* which raise the rib and produce ample space between it and the broad ends of the teeth *u*, and by the ground outer surfaces of said teeth *u* whereby space is produced between the teeth *u* and the wall of the passage *f*, from catching at any point and breaking, although the spaces between the adjacent edges of the sets of teeth *u* and *w* are narrow. The edge *t* of the barrel is cut away at *t'* opposite the port *p* in order to aid in guiding the thread under the first tooth *w* and over the first tooth *u*.

Having thus fully described our invention, what we claim, and desire to secure by Letters Patent, is:—

1. In a shuttle of the character described having a transverse circular passage connected with the interior of the shuttle and extending through the head to the outer surface and a passage extending from said transverse passage to the upper surface of the head, a thread-guide comprising a barrel circular in cross section and fitting in said circular passage, said barrel being provided with a port opening into the interior of the shuttle and registering with the inner end of the passage which extends to the outer surface of the head, and said barrel being further provided with two reversely formed and disposed sets of teeth, the teeth in one set being provided at their outer ends with substantially radial extensions or necks supporting and integral with a raised rib whereby longitudinal spaces or openings are formed between said raised rib and the periphery of the barrel, and the teeth in the other set extending into notches between the teeth in the first named set and corresponding approximately in shape to said notches and being formed on their inner surfaces on a true circle corresponding with the circle of the inner surface of the barrel and having their outer surfaces ground down toward the ends of the teeth whereby said surfaces toward the ends of the teeth are located within and at a distance from the line of the outer surface of the barrel but outside the line of the inner surface of the barrel; for the purpose of providing space for the passage of the thread between said rib and the barrel over the teeth provided with the ground surfaces into the interior of the barrel and under the teeth which are provided with said necks for supporting the rib.

2. A shuttle thread-guide comprising a barrel circular in cross section and adapted to be placed in a correspondingly shaped passage in the head of a shuttle provided with a passage extending from the circular passage to the exterior of the head, said barrel being provided with a port adapted to connect with both of said passages, and said barrel being further provided with two reversely formed and disposed sets of teeth, the teeth in one set being provided at their outer ends with substantially radial extensions or necks supporting and integral with a raised rib whereby longitudinal spaces or openings are formed between said raised rib and the periphery of the barrel, and the teeth in the other set extending into notches between the teeth in the first named set and corresponding approximately in shape to said notches and being formed on their inner surface on a true circle corresponding with the circle of the inner surface of the barrel and having their outer surfaces ground down

toward the ends of the teeth whereby said
surfaces toward the ends of the teeth are
located within and at a distance from the
line of the outer surface of the barrel but
5 outside the line of the inner surface of the
barrel; for the purpose of providing space
for the passage of the thread between said
rib and the barrel over the teeth provided
with the ground surfaces into the interior
10 of the barrel and under the teeth which are

provided with said necks for supporting the
rib.

In testimony whereof we have signed our
names to this specification in the presence of
two subscribing witnesses.

ISAAC SNOW.

GEORGE STUBBINGS.

Witnesses:

JOHN W. DUFFY,
JOSEPH SPENCER