

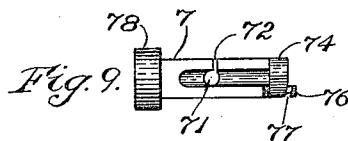
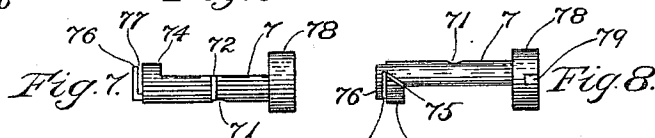
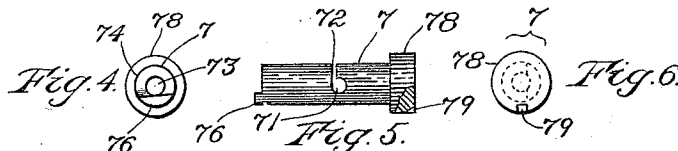
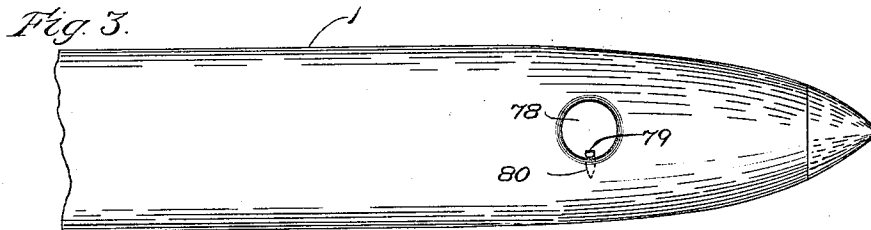
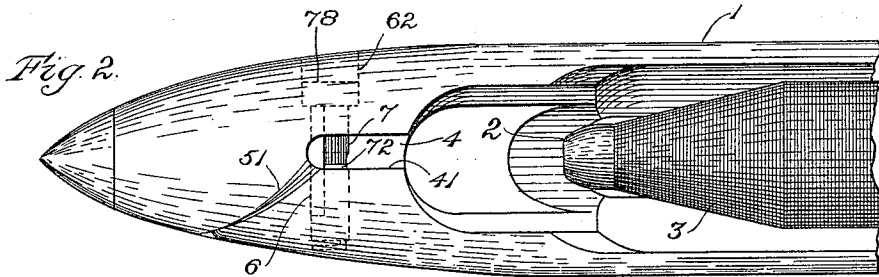
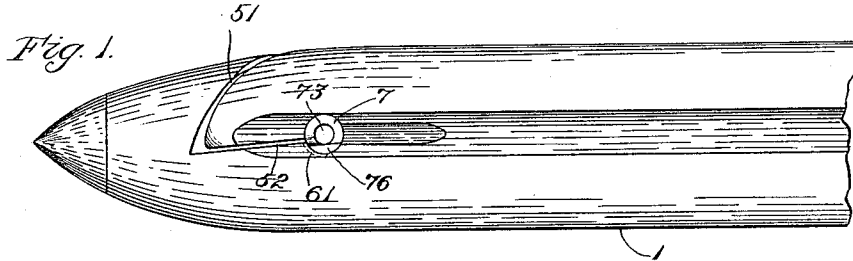
A. W. SAUNDERS & C. O'NEIL.

LOOM SHUTTLE.

APPLICATION FILED JUNE 12, 1911.

1,042,282.

Patented Oct. 22, 1912.



Witnesses:
Oscar F. Hill.
Ellen O. Spring.

Inventors:
Arthur W. Saunders
Charles O'Neil
by Chas. F. Randall
Attorney.

UNITED STATES PATENT OFFICE.

ARTHUR W. SAUNDERS AND CHARLES O'NEIL, OF LOWELL, MASSACHUSETTS.

LOOM-SHUTTLE.

1,042,282.

Specification of Letters Patent.

Patented Oct. 22, 1912.

Application filed June 12, 1911. Serial No. 632,674.

To all whom it may concern:

Be it known that we, ARTHUR W. SAUNDERS and CHARLES O'NEIL, citizens of the United States, residing at Lowell, in the county of Middlesex, State of Massachusetts, have invented a certain new and useful Improvement in Loom-Shuttles, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to the threading devices of loom-shuttles, and comprises improvements in the construction and form of the eye-piece of a loom-shuttle.

The invention is illustrated by the accompanying drawings.

In the latter,—Figure 1 shows in side elevation a portion of a loom-shuttle having the invention applied thereto. Fig. 2 shows the same in plan. Fig. 3 is an elevation of the same from the side opposite that represented in Fig. 1. Fig. 4 shows the eye-piece in end elevation, looking at the end thereof that is seen in Fig. 1. Fig. 5 shows the eye-piece separately in side elevation, viewing the side thereof that is presented toward the weft-chamber of the shuttle, a small portion of the enlarged head being broken away. Fig. 6 is an end elevation of the head-end of the eye-piece. Fig. 7 is a top or plan view of the eye-piece. Fig. 8 is a bottom view thereof. Fig. 9 is a side elevation thereof, looking at the side which faces toward the adjacent end of the shuttle.

The shuttle-body is marked 1. Fig. 2 shows portions of a weft-bobbin 2 and of its yarn-load 3 within the weft-chamber of the shuttle. Fig. 2 also shows the throat 4 which leads from one end of the weft-chamber toward the adjacent end of the shuttle. The threading slit that is formed in the wood of the shuttle-body is shown at 51, 52, Figs. 1 and 2. The portion 51 of the said slit extends through the upper portion of the shuttle-body from the closed end of the throat 4 obliquely toward the adjacent end of the shuttle, outward to the front side of the shuttle-body. It also inclines downward from the top of the shuttle-body transversely inward, its inner end being located somewhat to the rear of the middle of the width of the shuttle-body. The portion 52 of the said slit extends from the bottom of the portion 51 toward the weft-chamber, and intersects the transverse hole 6 which is

made in the shuttle-body to contain the eye-piece 7.

The eye-piece 7 crosses the throat 4 near the closed end of the latter. It is formed in that portion thereof which is located within the throat, with a leading-off eye 71 passing horizontally therethrough at right angles to the length of the eye-piece, and through which the yarn draws on its way from the weft-carrier 2 to the delivery-eye. To admit the yarn into the said leading-off eye in threading the shuttle, a slit 72 is made in the top of the eye-piece, such slit extending down to and intersecting the said eye 71.

The delivery-end of the eye-piece is formed with a delivery-eye 73 having a narrow wall 74 at the side thereof toward the adjacent end of the shuttle. A threading-slit 75 intersects the delivery-eye 73 at the underside of the delivery-end of the eye-piece. Such threading-slit is located at the lower end of the said narrow wall 74. It is disposed obliquely with respect to the longitudinal axis of the eye-piece; that is to say, it extends from the junction of the inner portion of the delivery-eye with the intermediate part of the eye-piece obliquely outward and away from the adjacent end of the shuttle. The delivery-end of the eye-piece is provided with a spur 76 located at the outer end of the delivery-eye 73, and below the latter. This spur extends alongside the lower portion of the delivery-eye, from which it is separated by a slit 77, with which the slit 75 communicates at its outer end. The exterior of the wall 74 of the delivery-eye is smooth and serves as a guide to conduct the yarn to the slits 77 and 75 in threading the eye-piece. The transverse hole 6 in the shuttle-body is slightly chambered out or enlarged, as shown by dotted lines at 61, Fig. 1, below and adjacent the portion 52 of the threading-slit; that is to say, opposite the lower portion of the narrow wall 74; but the chamber or enlargement 61 does not extend to the exterior of the shuttle-body. A lip formed by a part of the wood of the shuttle-body makes contact with the exterior of the spur 76 of the eye-piece, as represented in Fig. 1. The enlargement or chamber, however, extends outward as far as the slit 77 between the spur and the adjacent portion of the eye-piece. The threading-slit 75 of the deliv-

ery-eye intersects the slit 77 at the root of the spur 76; that is, adjacent the connection of the said spur with the delivery-end of the eye-piece. The spur, therefore, bridges the threading-slit 75, and its root-portion is located properly to detain the yarn during the threading operation and facilitate its entrance into the threading-slit 75. As seen in Fig. 1, the spur 76 and threading-slit 75 are entirely below the intersection of the portion 52 of the threading-slit in the shuttle-body with the enlargement or chamber 61 of the transverse hole 6.

In threading the shuttle, the free end of the weft-yarn wound on the weft-carrier 2 is taken hold of by the weaver and drawn forward over the throat 4 and the portion of the shuttle-body containing the portion 51 of the threading-slit 51, 52. Then the hand holding the said end is moved downward so as to depress the yarn within the said portion 51 and the throat, and the yarn having been caused to enter the portion 52 of the said threading-slit at the exterior of the shuttle such hand is moved in a horizontal direction toward the opposite end of the shuttle, carrying the yarn along the said portion 52 of the threading-slit until the yarn encounters the exterior guide-surface 30 of the narrow wall 74 of the delivery-eye, and slips downward around such surface within the chamber or enlargement 61. As the yarn thus slips downward the outer portion thereof catches upon the top of the free end of the spur 76 and is upheld thereby, while the adjacent portion of the yarn moves along under the wall 74 and within the slit 77 until it arrives against the intermediate portion of the eye-piece and the root-portion of the spur. This places such portion of the yarn in line with the oblique slit 75, and a continued pull on the yarn causes it to rise through such slit into the delivery-eye. As soon as it arrives within the delivery-eye it draws out through the same in line with the axis of such eye, crossing the slit 75 at an angle so that it has no tendency to reënter the latter. The portion of yarn occupying the throat 4 and the portion 51 of the main threading-slit passes down, in the threading operation, around and under the triangular pointed portion of the wood of the shuttle-body at the intersection of the portions 51, 52 of the said threading-slit with each other and the closed end of the throat 4. Such portion coming to bear upon the top of the shank of the eye-piece, it finds its way through the slit 72 into the leading-off eye 71. To facilitate the entrance of the yarn into the said slit one side wall, as 41, of the throat 4 is located close to the middle of the width of the shuttle and one side wall of the slit 72 is located in line vertically with the said side wall 41. This side wall of the throat is

located approximately in the axial line of the shuttle-body, and the slit 72 enters the leading-off eye at one side of the latter so that the main portion of the said eye is overhung by the top of the wall thereof. These features, combined with the extent of the projection of a V-shaped portion of the wood of the shuttle-body transversely beyond the slit 72 and the leading-off eye 71, effectually operate to prevent the shuttle from becoming unthreaded either through ballooning or through slackening and kinking of the yarn during the movements of the shuttle in weaving. The enlargement or chamber aforesaid of the transverse hole 6 in the shuttle-body permits the yarn to pass freely from the portion 52 of the threading-slit against and around the lower portion of the narrow wall 74 of the delivery-eye, and into the threading-slits 77, 75. The upper edge of the spur 76 serves to support the yarn at the outer end of the delivery-eye above the slit 75, and as the said spur extends some distance past the outer end of the said slit it serves effectually to prevent the yarn from accidentally finding its way out through the said slit so as to cause unthreading of the delivery-eye. The body-portion of the eye-piece 7 is recessed on its side next the closed end of the throat 4 to afford a large space for clearance between such shank and the V-shaped tongue of wood at the said closed end of the throat. This clearance affords ample room for the accommodation and free transverse movement of the yarn in finding its way down to the bottom of portion 51 of the main threading-slit, around the said tongue and along the said shank into the portion 52 of the threading-slit, and into the slit 72 and leading-off eye 71. The wall 74 of the delivery-eye 73 is quite narrow, so that it forms practically a mere rim around the delivery-eye, and the yarn does not make contact with any portion thereof in the threading operation until carried against the exterior of the said rim in being drawn horizontally along the portion 52 of the threading-slit, whereupon it slips around the smooth periphery of the said rim until it lodges in the bend of the spur 76 and rises through the threading-slit 75 into the delivery-eye.

As a matter of convenience in fitting the eye-piece to the shuttle-body, its different portions are mainly cylindrical in contour exteriorly. Thus its delivery-end fits the corresponding portion of the cylindrical transverse hole 6 that is bored within the shuttle-body, and its enlarged opposite end-portion 78, termed by us the head, occupies an enlargement or counterbore, shown in Fig. 2 in dotted lines at 62, in the wood of the shuttle-body at one end of the said hole.

In applying the eye-piece to a shuttle- 130

body it is pushed, delivery-end first, through the counterbore into the hole 6 until the shoulder constituted by the inner side of the enlarged head 78 brings up against the shoulder constituted by the inner end of the counterbore. Thereby the proper position of the eye-piece is fixed. To prevent the eye-piece from becoming dislodged, and also for the purpose of holding the eye-piece from turning out of its proper working position, a notch 79 is made in the outer portion of the head 78 of the eye-piece and a pin 80, Fig. 3, is driven obliquely through the said notch and into the wood of the shuttle-body around the counterbore. This pin constitutes an efficient means of securing the eye-piece in place and preventing it from turning, and is not liable to become loosened and dislodged during the use of the shuttle. Its use dispenses with necessity for screw-threading the eye-piece, and screwing it into place in the shuttle-body.

What is claimed as the invention is:

An eye-piece for loom-shuttles, having a leading-off eye crossing the length thereof 25 and a threading slit intersecting such eye, a delivery-eye at one end having a narrow rim-like wall 74, a threading slit intersecting such delivery-eye and formed at an oblique angle relative to the axis of the eye-piece, an outstanding spur 76 connecting with the delivery-end of the eye-piece adjacent the outer end of such diagonal slit and bridging such outer end, and an entrance slit formed between the said spur and delivery end and leading to the said outer end of the diagonal slit. 30 35

In testimony whereof we affix our signatures, in presence of two witnesses.

ARTHUR W. SAUNDERS.
CHARLES O'NEIL.

Witnesses:

CHAS. W. EATON,
TYLER A. STEVENS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."