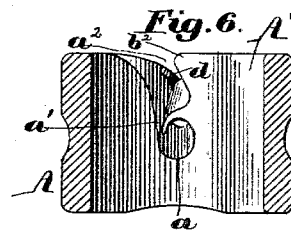
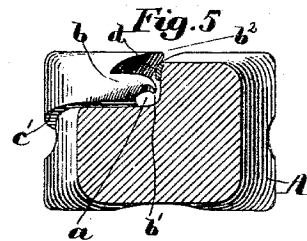
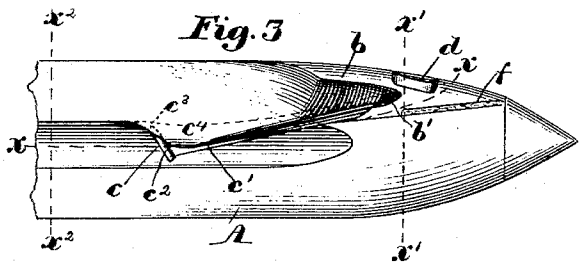
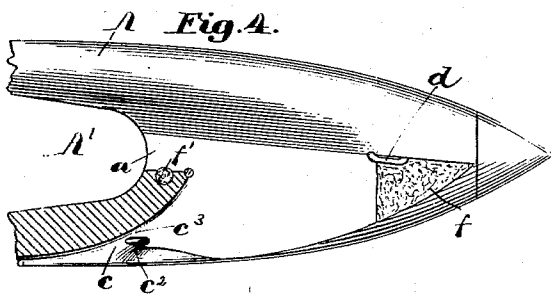
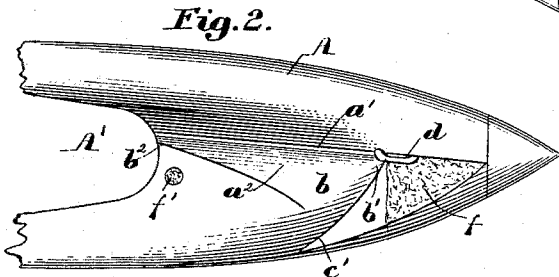
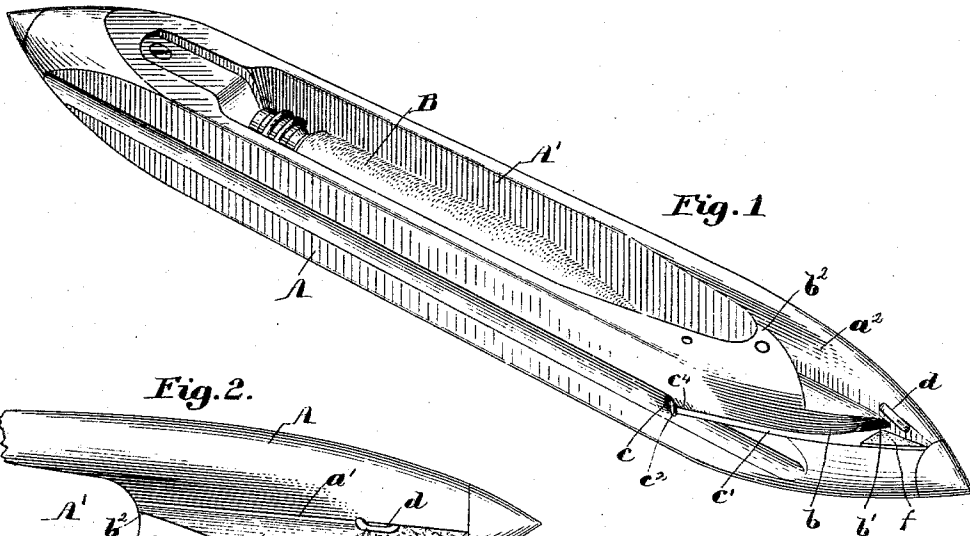


(Model.)

W. F. DRAPER & J. H. NORTHROP.
SELF THREADING LOOM SHUTTLE.

No. 569,862.

Patented Oct. 20, 1896.



Witnesses:
Walter E. Lombard.
A. C. Harmon.

Inventors:
William F. Draper,
James H. Northrop,
by Crosby Gregory. Atty's.

UNITED STATES PATENT OFFICE.

WILLIAM F. DRAPER AND JAMES H. NORTHROP, OF HOPEDALE, MASSACHUSETTS, ASSIGNORS TO GEORGE DRAPER & SONS, OF SAME PLACE.

SELF-THREADING LOOM-SHUTTLE.

SPECIFICATION forming part of Letters Patent No. 569,862, dated October 20, 1896.

Application filed January 11, 1896. Serial No. 575,108. (Model.)

To all whom it may concern:

Be it known that we, WILLIAM F. DRAPER and JAMES H. NORTHROP, of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Self-Threading 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 the production of a simple and effective self-threading shuttle having as small a number of metal parts as possible.

Self-threading shuttles have heretofore been used to a comparatively limited extent, owing to certain difficulties encountered in their construction and operation in the loom.

A shuttle having what is technically termed the "self-threading" feature must have a free entrance to the thread-eye, as compared with the common shuttle having a closed thread eye or hole, and the existence of an open entrance to the thread-eye in the former shuttle of necessity presents an opportunity for the thread of filling to escape through such entrance or slot while the shuttle is in operation.

In the loom the shuttle is thrown from one side across the warp with great speed and is suddenly and violently checked at the other side, and the recoil throws the thread of filling forward from the filling-carrier or bobbin, and it is very apt to escape through the entrance-opening. This is one of the main faults in self-threading shuttles. In most shuttles of this character the filling-thread is led through a slot and around a corner or point, so as to be guided into the side eye. This corner or point makes trouble, as the thread, thrown forward from the filling-carrier, as hereinbefore noted, is very apt to loop around the point in such manner as to surely break the thread when the shuttle is thrown on its next flight. It is therefore essential to protect or hide this corner or point in such a way that looping of the filling-thread around it will be prevented.

When self-threading shuttles are used in a loom provided with means for automatically changing its filling, as, for instance, in the loom shown in United States Patent No.

529,940, dated November 27, 1894, the action of threading is purely mechanical, and consequently a two-part problem is presented for solution—viz., first, to automatically guide the filling-thread by mechanical means into the thread-eye of the shuttle, and, second, to keep it in the thread-eye after having been guided therinto. The end of the filling-thread being held or restrained, the flight of the shuttle automatically leads the thread into the eye, the path of the shuttle being such that the thread will be drawn into the filling-slot. As the thread is unwound from the round filling-carrier its rotary motion also is of service in guiding the thread into the eye.

Figure 1 is a perspective view of a self-threading shuttle embodying our invention, showing the thread-eye and parts adjacent thereto. Fig. 2 is an enlarged top or plan view of the delivery end of the shuttle shown in Fig. 1. Fig. 3 is a side elevation of the delivery end of the shuttle. Fig. 4 is a partial sectional view taken below the irregular line $x x$, Fig. 3. Fig. 5 is a transverse section on the line $x' x'$, Fig. 3, looking toward the left; and Fig. 6 is a similar view on the line $x^2 x^2$, Fig. 3, looking to the right.

The shuttle-body A has an open portion A' to receive a suitable filling-carrier or bobbin B, Fig. 1, and a central longitudinal thread-receiving eye a in the delivery end of the shuttle-body extends from the front wall of the opening A' in an upward incline beneath the point or beak b' of a horn b . Above this eye the shuttle is cut away to form a wide entrance or mouth a^2 for an open threading-slot a' , leading to the central eye a , said entrance forming with the front wall of the opening A' a supplementary horn or corner b^2 above and at one side of the central eye and near the rear end of the slot a' .

A transverse slot or groove c is made in the side of the shuttle, extending forward from the side eye c beneath the horn b and intersecting the central or threading eye under the point or beak b' . This point or beak is herein shown as protected by a projection or guard d , illustrated as a lug fastened in the shuttle above but not touching the point b' , leaving the way clear beneath it for the filling-thread to pass around the point b' , but

only as it is bent out of line by the projection *d*, so that the thread cannot fly up thereafter out of the slot *a*. The side eye *c* is partially closed at its front side by a pin *c*², extending upwardly from the bottom of the groove *c*¹ toward but not quite to its top, leaving a thread-passage *c*³ therebetween, as shown in Figs. 1 and 3, said pin being preferably rearwardly inclined.

The shuttle is preferably provided with a shoulder *c*⁴, projecting over and protecting the point of the pin *c*², and in front of the beak *b*¹ of the horn is placed a friction-pad *f*, over which the thread runs while it is being led into the central eye *a* and beneath the horn *b*. By this means tension is put upon the thread as the shuttle is thrown across the warps the first time and before the thread has been guided to the side eye *c*.

A second friction device may be inserted in the central eye *a*, if desired, such device being shown as a roll of felt or other suitable material *f*¹, held in holes in the shuttle end.

As the shuttle is thrown the first time the filling-thread, in its rotary unwinding motion off of the filling-carrier *B*, will first be caught by the supplementary horn *b*² and restrained thereby in such position as to naturally lead it into the open mouth *a*² of the slot *a*¹. From the open slot *a*¹ the thread passes into the central eye *a* and between the guard *d* and

beak *b*¹ into the groove *c*¹, beneath the horn *b*, passing over the friction-pad *f*. As the shuttle comes back the thread is drawn into the groove *c*¹, toward the side eye *c*, and, passing under the shoulder *c*⁴, is drawn over the top of pin *c*², through the passage *c*³, into the side eye *c*. The shuttle is thus automatically threaded at its second throw, and thereafter the thread is delivered from the eye *c* in the side of the shuttle.

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

A self-threading shuttle having in its delivery end a longitudinal thread-eye and an open slot leading thereto, a horn forming one side of said slot and having a beak at its front end, combined with an independent guard projecting across the slot above the beak, an open side eye in the shuttle, and a guard for the opening of said eye, the horn guiding the thread from the longitudinal eye to the side eye, substantially as described.

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

WILLIAM F. DRAPER.
JAMES H. NORTHROP.

Witnesses:

GEO. OTIS DRAPER,
C. N. NICHOLS.