J. NORTHROP.

SHUTTLE.

APPLICATION FILED MAY 6, 1916.

1,257,102. Patented Feb. 19, 1918.

Fig. 1.

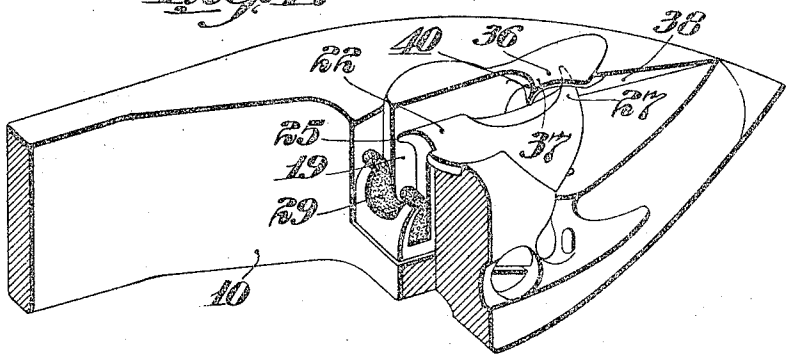



Fig. 2.

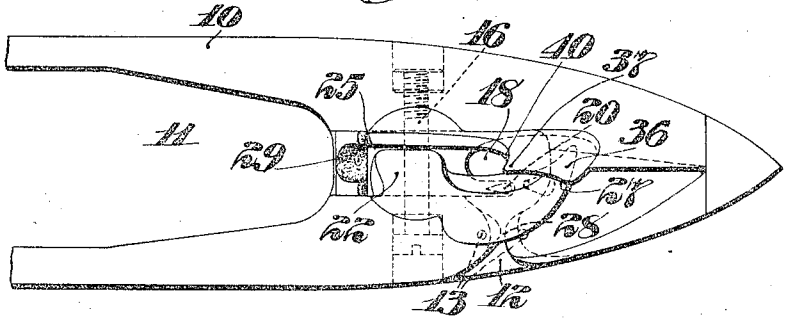
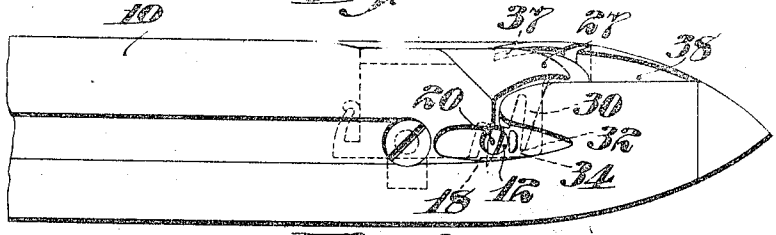



Fig. 3.



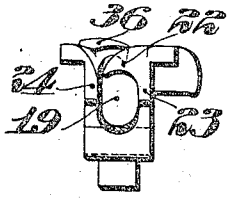




Fig. 4.

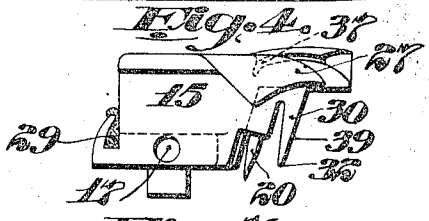



Fig. 5.

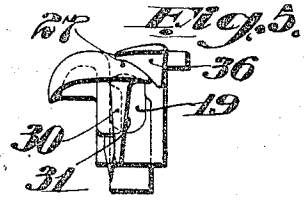
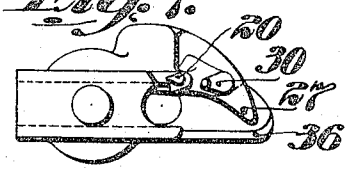



Fig. 6.

Witness:
Merton W. Willmore.

Fig. 7.




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Jonas Northrop
by his attorneys
Philip Van Dusen Fisk

# UNITED STATES PATENT OFFICE.

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## SHUTTLE.

1,257,102. Specification of Letters Patent. Patented Feb. 19, 1918.

Application filed May 6, 1916. Serial No. 95,924.

*To all whom it may concern:*

Be it known that I, JONAS NORTHROP, a citizen of the United States, residing at Hopedale, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Shuttles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to an improvement in self-threading shuttles for weft replenishing looms, and more particularly to an improvement in thread blocks for such shuttles.

The object of the invention is to produce a thread block of simple construction such that the operation of self-threading may be performed with certainty, and, after the thread has been placed in a deliverable position, dethreading will be rendered impossible. To the accomplishment of this object the invention consists in the improved thread block for self-threading shuttles hereinafter described and particularly pointed out in the claims.

In the accompanying drawings illustrating the preferred form of the invention, Figure 1 is a perspective view of a portion of the delivery end of a self-threading shuttle showing the application of the improved thread block thereto; Fig. 2 is a top plan of the delivery end of the shuttle and of the thread block; Fig. 3 is a front elevation of the parts shown in Fig. 2; Fig. 4 is a front elevation of the thread block; Fig. 5 is an elevation of the outer or delivery end of the thread block; Fig. 6 is an elevation of the inner or inlet end of the thread block; and Fig. 7 is a bottom plan of the thread block.

The self-threading shuttle illustrated in the drawings comprises a shuttle body 10 provided with a central opening or chamber 11 for the reception of the bobbin or filling carrier. In the front wall of the shuttle is formed the delivery eye 12, wear pins 13 being disposed at each side of the delivery eye to prevent the filling from wearing away the wood of the shuttle. The thread or filling is led from the bobbin chamber 11, out through the delivery eye 12, by means of the thread block generally indicated at 15. The thread block is formed of a single casting and is received into a recess formed in the delivery end of the shuttle, being held in place therein by means of a bolt 16 passing through a hole 17, in the thread block, which registers with holes in the shuttle body.

As the thread is fed from the bobbin chamber out through the delivery eye, it passes through a thread passage 19 formed longitudinally of the thread block. The bottom of the outer end of the thread passage 19 is the surface 18 of the shuttle body which is depressed below the inner end of the passage, and as the thread is fed from the inner end of the thread passage out through the outer end thereof to the delivery eye, it is directed downwardly around a guide pin 20 of which the point is inserted in a socket in the surface 18. On the first pick of the shuttle away from the replenishing side of the loom after the weft replenishing operation, the thread encounters a cover 22 projecting rearwardly from the top of the front wall 23 of the thread block toward the rear wall 24, and being separated therefrom by a very narrow inlet or passageway 25 which gives into the thread passage 19. The top surface of the cover 22 slopes downwardly toward the rear wall 24 of the thread block, so that, as the thread is drawn against it on the first pick of the shuttle after the replenishing operation, the thread is deflected downwardly through the inlet 25 into the inner end of the thread passage. On the top outer end of the front wall 23 of the thread block is formed a beak 27 which overhangs the outer end of the thread passage 19. Projecting downwardly from the beak 27 is a horn 30 which slopes somewhat inwardly. The function of this horn 30 is to deflect the thread into the delivery eye passage 28. It will be observed that the rear side 31 of the horn 30 constitutes a part of the front wall of the thread passage 19. The bottom end 32 of the horn 30 is separated from the surface 18 of the shuttle body by a very narrow slit 34 which permits the thread to be drawn into the delivery eye passage, but is so situated as to prevent its egress therefrom. On the top outer end of the rear wall 24 is formed a shield 36 which extends forwardly and overlaps the beak 27. The inner end of the shield 36 is provided with a forwardly, inwardly, and downwardly extending portion 37 which serves as a dethreading preventer or guard. This guard 37 operates to prevent the dethreading of the thread block

in case the thread is not deflected into the delivery eye passage on the first return pick of the shuttle after replenishment. The first return pick is the first pick of the shuttle toward the replenishing side of the loom after the replenishing operation. If on this pick, the thread is not fed from the delivery eye but leads inwardly from the outer end of the thread passage over the beak to the selvage at the side of the cloth farthest from the replenishing mechanism, the thread will draw against the guard 37 and thereby be prevented from being deflected over the tip of the beak. A felt pad 29 located at the entrance to the thread passage 19, serves as a tension device to prevent the formation of loops as the thread is paid out.

On the first pick of the shuttle after replenishment, the thread draws down over the cover 22, through the inlet 25, into the inner end of the thread passage 19; then draws over the beak 27, under the shield 36, passing around the tip of the beak until it draws against the upper rear side of the horn 30, being delivered into the shed by way of the recessed portion 38 in the delivery end of the shuttle. On the first return pick of the shuttle the thread draws against the outer side 39 of the horn and is deflected thereby into the delivery eye passage 28 and against the guide pin 20. The thread is now in its ultimate delivery position. It will be observed that the bottom of the delivery eye is raised above the surface 18, and is therefore above the slit 34 formed between the point 32 of the horn and the adjacent surface 18 of the shuttle body. Consequently, the thread is prevented from passing under the horn once the shuttle has been completely threaded.

The shuttle is picked from side to side across the lay with considerable velocity and force, and is stopped very suddenly in either shuttle box at the end of each pick. This sudden stopping of the shuttle frequently causes a loop or bight of thread being thrown forward over the delivery end of the shuttle, and often results in dethreading. In order to prevent dethreading from this cause, the inner end of the shield 36 is provided with a curved portion 40 which, in conjunction with the guard 37, forms a hook to catch the loop of thread and thereby prevent its escape from the thread block.

Having thus described the invention, what is claimed is:—

1. A thread block for self-threading shuttles having, in combination, a longitudinal thread passage, an inlet thereto, means for guiding the thread to the delivery eye of the shuttle, a beak overhanging the outer end of the passage, and a shield overlapping the beak provided with a guard for preventing dethreading of the block when the thread is drawn from the thread passage over the beak and inwardly against the guard.

2. A thread block for self-threading shuttles having, in combination, a thread passage, an inlet to the passage, means for directing the thread from the passage to the delivery eye of the shuttle, a beak overhanging the outer end of the passage, and a shield overlapping the beak provided with a forwardly and inwardly extending guard coöperating with the directing means to prevent dethreading of the thread block.

3. A thread block for self-threading shuttles having, in combination, a thread passage, a cover for the inlet end of the passage extending from one side toward and near to the other side in the direction of motion of the thread unwinding from the bobbin, a beak extending from the same side wall toward and near to the other side wall, and a shield extending from the latter wall out over the beak, the inner forward end of said shield being curved so as to form a hook which coöperates with the beak to prevent dethreading.

4. A thread block for self-threading shuttles having, in combination, a thread passage, an inlet to the passage, means for directing the thread from the passage to the delivery eye of the shuttle, a beak overhanging the outer end of the passage, and a shield overlapping the beak provided with a forwardly, inwardly, and downwardly extending guard coöperating with the directing means to prevent dethreading of the thread block.

5. A thread block for self-threading shuttles having, in combination, a thread passage, an inlet to the passage, means for directing the thread from the passage to the delivery eye of the shuttle, a beak overhanging the outer end of the passage, and a shield overlapping the beak provided with an inwardly and forwardly curved horn for preventing dethreading by reason of the formation of loops or bights when a shuttle comes to rest at the end of a pick.

6. A thread block for self-threading shuttles having, in combination, a thread passage, an inlet to the passage, means for directing the thread from the passage to the delivery eye of the shuttle, a beak overhanging the outer end of the passage, and a shield overlapping the beak provided with a downwardly extending guard at its inner end coöperating with the directing means to prevent dethreading of the thread block.

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