V. LEVÉQUE.

COTTON LOOM SHUTTLE.

APPLICATION FILED MAY 1, 1908.

947,830. Patented Feb. 1, 1910.

Fig. 1.

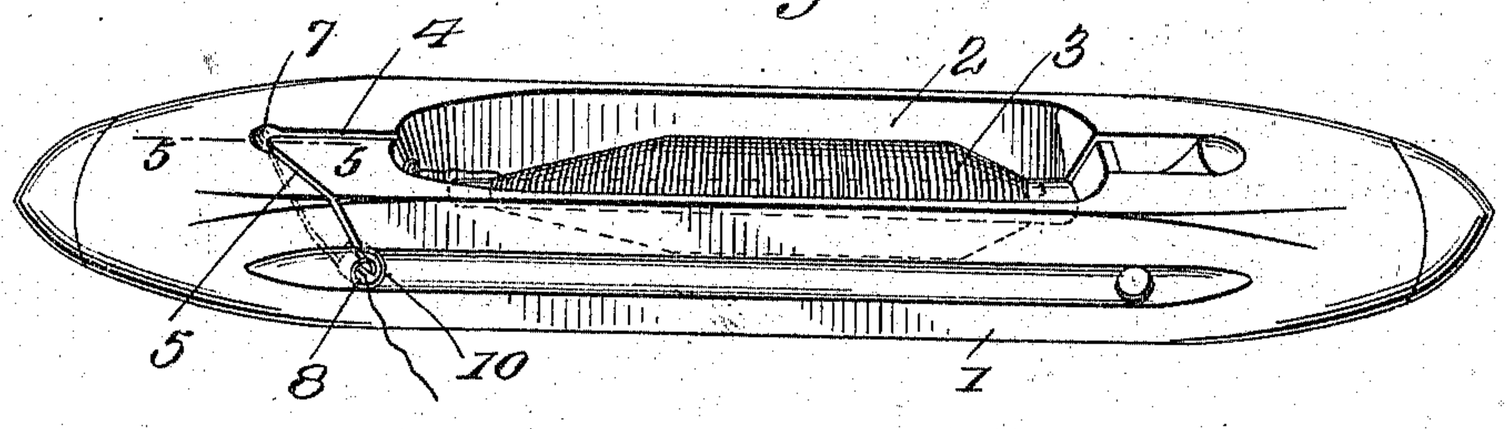



Fig. 2.

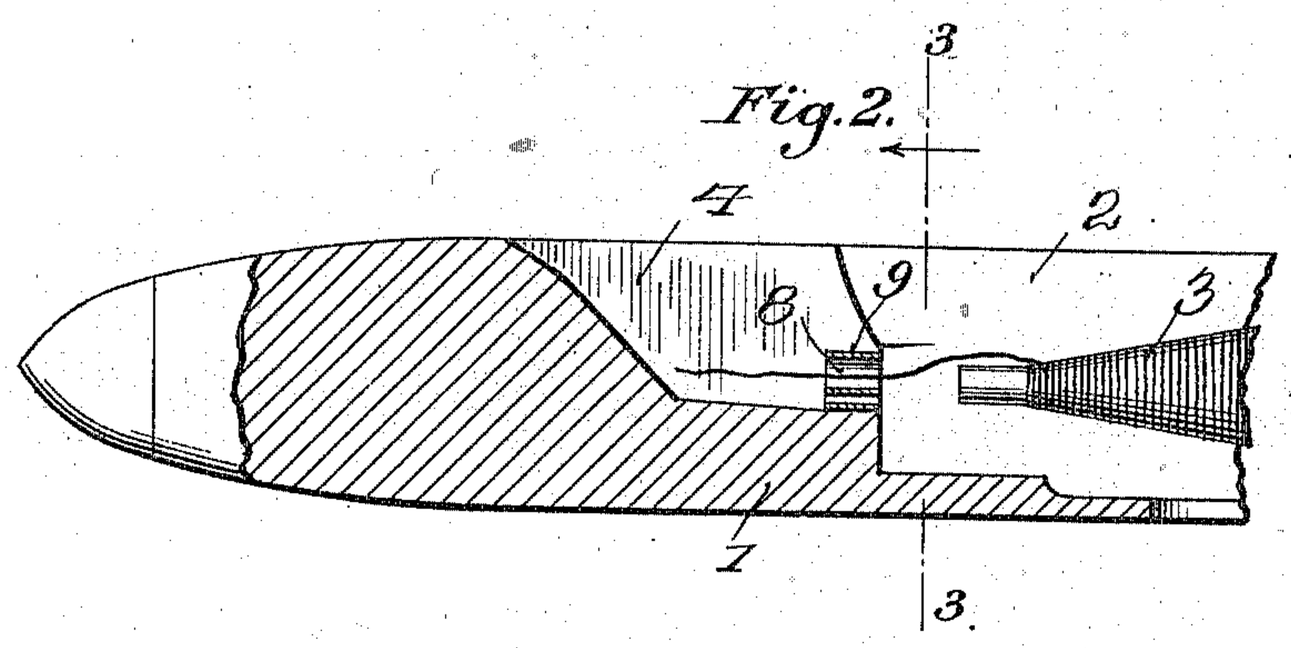



Fig. 3.

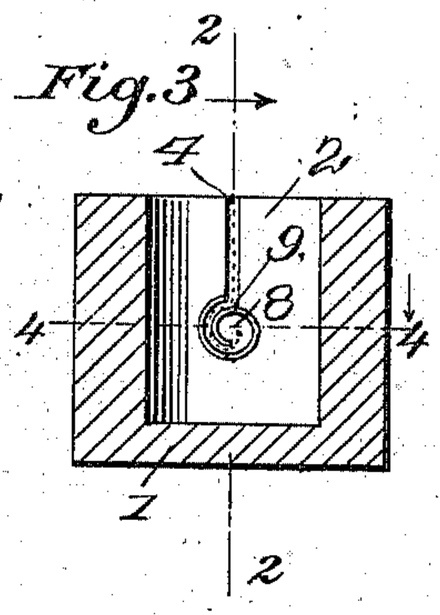



Fig. 4.

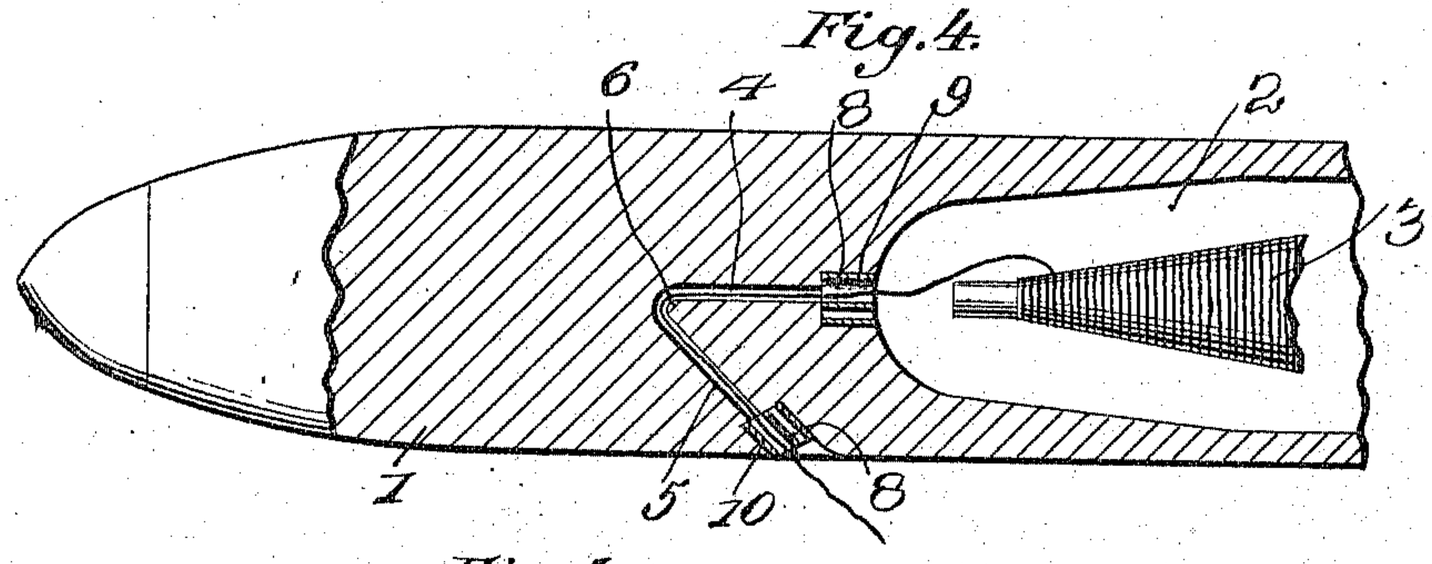



Fig. 5.

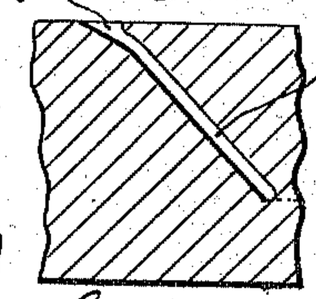
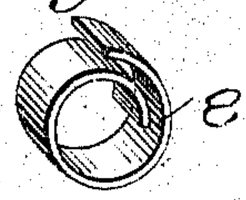



Fig. 6.

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## COTTON-LOOM SHUTTLE.

947,830. Specification of Letters Patent. Patented Feb. 1, 1910.

Application filed May 1, 1908. Serial No. 430,328.

*To all whom it may concern:*

Be it known that I, VALÉRIE LEVÈQUE, a citizen of the United States, residing at Fall River, in the county of Bristol and State of Massachusetts, have invented a new and useful Improvement on Cotton-Loom Shuttles, of which the following is a specification.

My invention relates to shuttles and has for its object to improve the so-called hand-threading shuttles in use on cotton and other looms.

Many weaving mills still use a shuttle provided with an inclosed, curved passage through which the weaver sucks the new filling. This shuttle is strong, light, well balanced, impossible to unthread while the thread remains intact, and is inexpensive. Its disadvantages are: the time consumed in threading and the injury to the health of the operative due to the lint drawn into the lungs.

One type of hand threading shuttle is provided with a heavy mass of metal formed to guide and to assume control of the thread. This type of shuttle is structurally weak owing to the amount of wood which must be removed to receive the threading device, and is also heavy, unbalanced, liable to unthread, and expensive. Another type of hand-threading shuttle is provided with narrow slits in the top and side of the shuttle, with separate devices, usually of metal or porcelain, at the entrance and delivery eyes. These last named devices are generally fastened in place by rivets or the like. Shuttles of this type are unsatisfactory, owing to the location of the slits which are often difficult to make, so placed that they weaken the shuttle, and frequently so formed that they leave projections on the shuttle to catch the warps. They likewise unthread very easily, and it has been found that the rivets jar out as the shuttle becomes dry with age, thus allowing the guiding devices to fall out and injure the loom and the fabric. These eyes are also heavy and expensive.

In my improved shuttle, I have tried to combine the advantages of a hand-threading shuttle with those inherent in the closed-passage type. The slits in my shuttle have been placed to facilitate quick threading, to avoid weakening the shuttle body, to avoid all projections which might catch the warps, and so that they may be made easily and quickly. The entrance and delivery eyes are provided with devices which are simple, light, inexpensive, and self fastening, requiring no rivets or other holding means, and which adjust themselves to moisture changes in the shuttle wood. The thread is also positively trapped when once inserted and cannot unthread.

An important feature of my shuttle is the entire arrangement of parts in such a way as to prevent the unthreading of the shuttle due to kinks formed in any way, but particularly to those formed by the unwinding of the bobbin and by the natural twists of the thread itself.

The details of my invention are explained in the following description, and an attempt has been made to point out in the claim the novel features above enumerated.

It will be understood that while the claim is intended to read on the specific form shown by the drawing, and on a shuttle of the species described, I desire it to include those obvious modifications within the doctrine of equivalents which, while somewhat different from my specific device, will readily occur to those interested in this art, and which will allow my device to be used on thread carriers of all kinds and types.

Figure 1 is a perspective view of a shuttle showing at one end my improvements. Fig. 2 is a longitudinal section of said end taken on the line 2—2, Fig. 3, looking in the direction of the arrow. Fig. 3, is a cross section on the line 3—3, Fig. 2, looking in the direction of the arrow. Fig. 4, is a horizontal section of said end, taken on the line 4—4, Fig. 3, looking in the direction of the arrow. Fig. 5, is a longitudinal detail section taken on the line 5—5, Fig. 1, looking toward the longitudinal center of the shuttle. Fig. 6, is a perspective detached view of the spiral spring forming either the entrance or the delivery eye.

The shuttle disclosed is of ordinary construction, composed of a body 1, with a bobbin opening 2, which is adapted to receive an ordinary bobbin 3.

A longitudinal slit 4 leads from the bobbin chamber 3 toward the tip of the shuttle. A lateral diagonal slit 5 leads directly from the end of said slit 4 to the delivery eye. The thread passage has but one turn, therefore, which makes it easy to construct, and it will be noted that the shuttle is but little weakened. The junction of the slits is rounded as at 6, Fig. 4, to prevent undue

wear of the thread, and a slight depression 7, Fig. 1, is formed at the top of this junction in which to place the finger during the threading operation, and also to obviate any sharp point, or projection at this place to catch the warps. The diagonal slit 5 is slanted somewhat sharply from the top to the bottom in the direction toward the bobbin chamber as shown in Fig. 5. The bottoms of the slits 4 and 5 are slightly rounded as shown in Figs. 4 and 5. This helps to maintain the thread in place.

The spring retaining device 8 is shown in Fig. 6. It is formed of a short spiral piece of spring metal easy and cheap to manufacture, light in weight, self retaining when placed in position, adjustable in size by compression within certain limits, and reversible. One of these retaining devices is snapped into place in the entrance eye 9 and another into the delivery eye 10, and are held in place by their own resiliency. If one works loose, it may be slightly expanded and put again into place without delay or the use of tools or special skill. Its reversible feature allows it to be used in either the entrance eye or in the delivery eye.

As disclosed in the drawing, the spiral at the entrance eye is turned to the right and is intended to be used with a bobbin unwinding in the opposite direction. The spiral at the delivery eye is turned in the opposite direction to that in the entrance eye to prevent complete unthreading from kinks. As is well known, the sudden stoppage of the shuttle throws these kinks forward, thereby unthreading the shuttle. To prevent this, the spirals of the entrance and delivery eyes are turned in opposite direction. The slits 4 and 5, are also made very narrow above their bottom and the slant of the slits 5, and the rounded bottom of the slits prevents the kinks from working to the surface. If the delivery eye 10, for example, becomes unthreaded, it will be evident that the entrance eye 9 and the slant of the slit 5 will prevent the thread from coming to the top of the shuttle. The slant of said slit 5 acts as an overhanging point to always retain the thread in place. It will also be noticed by viewing Fig. 3, that the distance between the inner end of the spiral and the outer body of the spiral constantly grows less as it approaches the extreme inner end. This is designed to trap the thread positively. The spiral is so bent and adjusted that the thread must force this inner end back slightly so that once within the center of the spiral the thread is positively trapped. This feature can be readily adjusted to accommodate the nature of the filling used. The delivery eye is used in the same way, but it will be understood that this positive trapping feature by the resiliency of the spiral may or may not be used as is deemed best.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:—

A shuttle having a thread passage comprising a narrow longitudinal slit, a second narrow slit leading transversely from the outer end of said first named slit to the side of the shuttle in a diagonal direction away from the tip of the shuttle, said second slit being slanted from the top to the bottom toward the center of the shuttle, the end of the first mentioned slit away from the tip of the shuttle being enlarged at the bottom portion of said slit, and the outer end of the second named slit being also enlarged at its bottom portion, a thread retaining device mounted in each of the enlarged portions, and the corner formed by the intersection of the two slits being rounded.

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