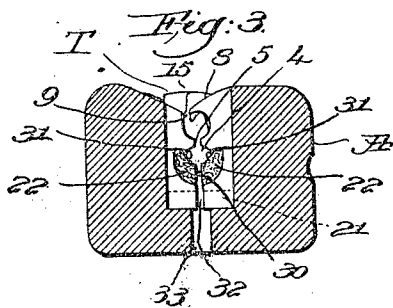
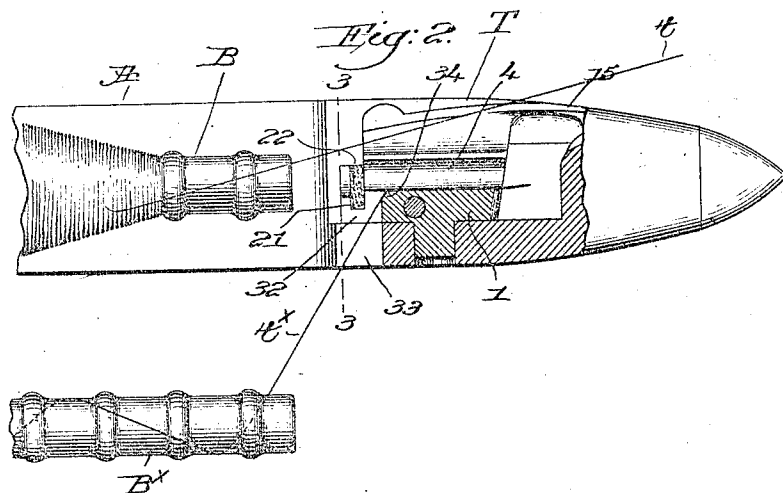
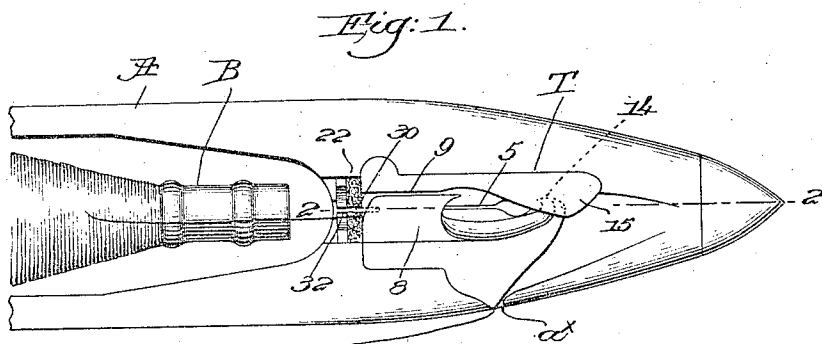


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PATENTED DEC. 4, 1906.

E. S. WOOD.
LOOM SHUTTLE.

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LOOM-SHUTTLE.

No. 837,765.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, EVERETT S. WOOD, a citizen of the United States, residing in Hopedale, county of Worcester, and State of Massachusetts, have invented an Improvement in Loom-Shuttles, of which the following description, in connection with the accompanying drawings, is a specification, like characters of the drawings representing like parts.

10 In looms of the type wherein the running shuttle is provided with a fresh supply of filling while the loom continues in operation—as, for instance, in the Northrop loom, one form of which is disclosed in United States Patent No. 529,940—the newly-inserted filling is automatically threaded, and thereby directed into the delivery-eye of the shuttle, while the more or less exhausted filling carrier or bobbin is ejected from the shuttle, and

20 when ejected the end of the filling leading therefrom should be promptly withdrawn from the delivery-eye. This old filling end should be withdrawn as quickly and completely as possible in order to obviate any chance of its fouling the new filling-thread or of being carried back into the cloth when the shuttle is picked after filling replenishment. This is particularly essential in so-called “feeler-looms” wherein the filling change or

30 replenishment is effected prior to complete exhaustion of the running filling, for if the old filling end is carried back it makes an imperfection in the cloth, and as the feeler type of loom is employed to make perfect cloth it will be manifest that the desired object is not attained if by the use of the feeler such faults are not obviated.

Shuttles are provided with a friction device to exert sufficient drag upon the thread of filling as it is drawn off from the filling-carrier, whereby the requisite tension is secured, and a common form of friction or tension device is a piece or pad of felt or similar material so located in the shuttle that the filling is engaged by it between the tip of the filling-carrier and the delivery-eye of the shuttle as the filling draws off to be delivered. Usually this tension device is located at or near the inner end of the threading device in an automatically self-threading loom-shuttle, so that when the spent filling-carrier is ejected the tension device acts upon and has a

50 very decided tendency to hold back or retard

the free movement of the old filling end as it is drawn backward out of the delivery-eye. 55 This retardation affords an opportunity for the old filling end to catch or foul the new filling end or may prevent the escape of the former from the shuttle before it is again picked.

If the ejected filling-carrier drops with its tip up, it will be obvious that the filling will pull off over the tip very easily, and the tension device acting upon such filling holds it back, so that it will not pull back through 65 the eye. When this happens, the shuttle is apt to be picked after filling replenishment with this length of old filling dragging after it onto the cloth, thus making a bad place.

Under the most favorable circumstances 70 the old filling end is quite long, for it leads from the inner end of the shuttle outward to the delivery-eye, then inward to the old filling-carrier, it being understood by those skilled in the art that the old filling end is cut close to the inner end of the shuttle by suitable means. One form of such means is shown in United States Patent No. 677,096, granted to Northrop June 25, 1901, to which reference may be had, and from the foregoing 80 it will be seen that the rapid clearing of the old filling end from the shuttle is of great importance in a feeler-loom, and it is also desirable to effect such clearance in a non-feeler loom, while not so necessary.

My present invention has for its object the production of exceedingly simple, but very efficient means to do away with this drag or retarding action upon the old filling end when filling change or replenishment is effected, so 90 that the filling end may free itself quickly and leave the shuttle and the delivery-eye thereof clear for the new filling.

The various novel features of my invention will be fully described in the subjoined 95 specification, and particularly pointed out in the following claims.

Figure 1 is a top plan view of the delivery end of an automatically self-threading loom-shuttle with one form of my present invention 100 embodied therein, the shuttle being shown as threaded. Fig. 2 is a partial longitudinal section on the line 2 2, Fig. 1, showing a filling-carrier as just ejected from the shuttle by the incoming filling-carrier to illustrate how 105 by means of my invention the old filling end

freed itself promptly from the control of the tension device and will not interfere with the fresh filling-thread; and Fig. 3 is a transverse section on the line 3 3, Fig. 2, looking toward the right.

The shuttle-body A, open at top and bottom to receive the filling-carrier B, Fig. 1, (the shuttle in practice having suitable jaws, (not shown,) to grasp and hold the head of the filling-carrier,) the side delivery-eye a^x , and the automatic threading device or block T may be and are all substantially of well-known construction and familiar to those skilled in the art.

Herein the threading device is substantially that shown in United States Patent to Northrop, No. 769,914, dated September 13, 1904, such device being illustrated for convenience and not in any way restricting my invention thereto.

The block 1 has a tubular thread-passage 4, Fig. 2, an inlet 5 in its top, a guard 8, thread-entrance 9, a beak 14, and an overhanging shield 15, and at the inner end of the block 1 is a transverse seat 21 to receive a piece of felt 22, which serves as the tension device hereinbefore referred to. Ordinarily this piece of felt extends across the inner end of the thread-passage 4, and as the filling-thread whirls around in a spiral as it draws off the tip of the filling-carrier it drags over the upper edge of the felt and is retarded thereby. When the ejected filling-carrier pulls back the old filling end, it must necessarily draw over the upper edge of the tension device, and the friction of the latter either prevents it from drawing out rapidly from the delivery-eye and the thread-passage or the drag may cause the filling end to break between the shuttle and filling-carrier, leaving a loose piece of thread in the shuttle.

In accordance with my present invention I vertically slit or separate the felt centrally, as at 30, Figs. 1 and 3, dividing the same into two parts, and preferably the upper ends of the slit are widened or flared, as at 31, Fig. 3. The part of the threading-block which forms the seat 21 is also slotted at 32 to form a continuation of the slit 30, and the shuttle-body A is cut away or notched at 33 below the slot. I also prefer to round off the portion of the block 1 at 34, Fig. 2, where the front end of slot 32 intersects the thread-passage 4. In Fig. 1 the filling-thread t is shown as led across the tension device 22, through the thread-passage 4, and out through the delivery-eye a^x .

When the filling-carrier is ejected by being pushed out and downward from the shuttle, as at B^x, Fig. 2, the filling end t^x is instantly pulled down through the slit 30 and passes into the slot 32 of the threading-block entirely clear of the tension device, the filling end then leading directly from the rounded part 34 of the block to the filling-carrier, which

falls into a suitable receptacle. As it falls it pulls the end t^x out clearly and quickly, freeing it from the delivery-eye and the threading device, it being impossible for the tension device to exert any control whatever over it. Consequently there is no chance of the new filling-thread t fouling with the old filling end, as the thread t leads off from the freshly-inserted filling-carrier B, Fig. 2, above the tension device, nor can any portion of the old filling end remain in the shuttle to be carried back into the cloth.

The recess or notch 33 in the shuttle-body provides a complete clearance, removing all obstruction to the withdrawal of the filling end which might be offered by the shuttle-body, and the rounding of the block 1 at 34 obviates any sharp corner at that point, and thereby reduces friction to a minimum. The flared mouth of the slit 30 assists in directing the filling end into the slit when the filling-carrier is ejected and also provides ample surface for the filling-thread to engage when the shuttle is running normally and the thread is whipping around as it draws off to be delivered.

In actual practice there is no tendency whatever of the thread to catch in the slit when the thread is being drawn off the filling-carrier during the weaving operation, the tension device at such time acting in usual manner upon the thread. The direct downward pull, however, exerted by the descent of the ejected filling-carrier draws the filling end down into and through the slit 30 and then through the clearances 32 and 33.

My invention is not restricted to the particular form of threading device herein shown nor to the precise construction and arrangement of the tension device and clearances, for the same may be modified in different particulars without departing from the spirit and scope of my invention.

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

1. A shuttle-body having a delivery-eye and an opening for the reception and passage therethrough of a filling-carrier, means to direct the filling-thread to the delivery-eye, and a tension-pad to normally act upon said thread as it passes to the eye, said pad having a slit through it and a clearance-space being formed below the slit in the thread-directing means and the shuttle-body, the ejection of a filling-carrier drawing its filling end through the slit into the clearance-space and free from the control of the tension-pad.

2. A shuttle-body having a delivery-eye and an opening for the reception and passage therethrough of a filling-carrier, a thread-directing device having a longitudinal thread-passage, and means to guide the filling-thread therefrom to the delivery-eye, a vertically-slotted transverse seat at the inner end

of the thread-passage, the shuttle-body being recessed below the slot, and two pieces of felt held in the seat with their adjacent upright edges presenting a narrow slit communicating with the slot in the seat, whereby the downward pull on the filling end by an ejected filling-carrier draws such filling end through the slit, and the seat into the recess in the shuttle-body clear of the felt, the latter acting normally to exert requisite tension on the filling-thread as it passes through the thread-passage.

3. An automatically self-threading loom-shuttle having a delivery-eye and an opening to receive a filling-carrier, a longitudinal thread-passage through which the filling-thread travels to the eye, a tension device at the inner end of said passage to normally act upon the filling-thread, and means to free the latter from control of the tension device by or through ejection of the filling-carrier from the shuttle.

4. An automatically self-threading loom-shuttle having a delivery-eye and an opening to receive a filling-carrier, a longitudinal thread-passage through which the filling-thread travels to the eye, a transverse, slotted seat at the inner end of the said passage, and pieces of felt held in the seat, at opposite sides of the slot, to normally exert tension upon the filling-thread, ejection of a filling-carrier from the shuttle drawing its filling end down between the inner edges of the felt pieces and through the slot of the seat, whereby the filling end will draw back freely from the delivery-eye and through the thread-passage.

5. An automatically self-threading loom-shuttle having a side delivery-eye and an opening to receive at its top a removable filling-carrier, and permit its ejection from the bottom of the shuttle, a tension device to normally act upon the filling-thread as it is drawn from the filling-carrier, and means whereby the ejection of the filling-carrier from the shuttle instantly releases the filling end from engagement with the tension device

and permits its ready withdrawal from the delivery-eye.

6. In a loom-shuttle adapted to contain a supply of filling and provided with a delivery-eye and a device to automatically direct the filling-thread thereto, a tension device to normally act upon the filling-thread delivered from the shuttle, and means to permit the old filling end to be drawn downward through and below the tension device and free of control thereby when a change of filling is effected.

7. In an automatically self-threading loom-shuttle adapted to receive from above an incoming filling-carrier and to permit ejection of a filling-carrier through the bottom of the shuttle, a tension device to normally act upon the filling-thread as it is drawn off the filling-carrier, and means to direct the old filling end below and out of contact with the tension device when the filling-carrier is ejected from the shuttle.

8. In an automatically self-threading loom-shuttle, a tension device to normally act upon the filling-thread, and means to free the latter from the control of the tension device when the filling-carrier is ejected from the shuttle.

9. In an automatically self-threading loom-shuttle, adapted to receive from above an incoming filling-carrier and to permit ejection of the spent filling-carrier through the bottom of the shuttle, a tension device located below the path of the thread as it draws off from the freshly-inserted filling-carrier, and means to direct the old filling end below and out of control of the tension device when the spent filling-carrier is ejected from the shuttle.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EVERETT S. WOOD.

Witnesses:

GEORGE OTIS DRAPER,
ERNEST WARREN WOOD.