

I. SNOW.
 AUTOMATICALLY THREADING LOOM SHUTTLE.
 APPLICATION FILED JUNE 3, 1910.

1,006,801.

Patented Oct. 24, 1911.

2 SHEETS—SHEET 1.

Fig 1.

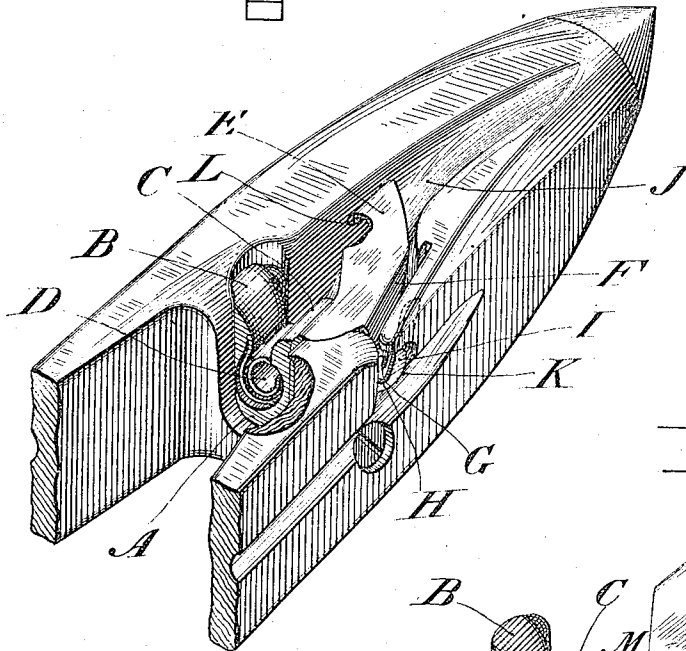


Fig 2

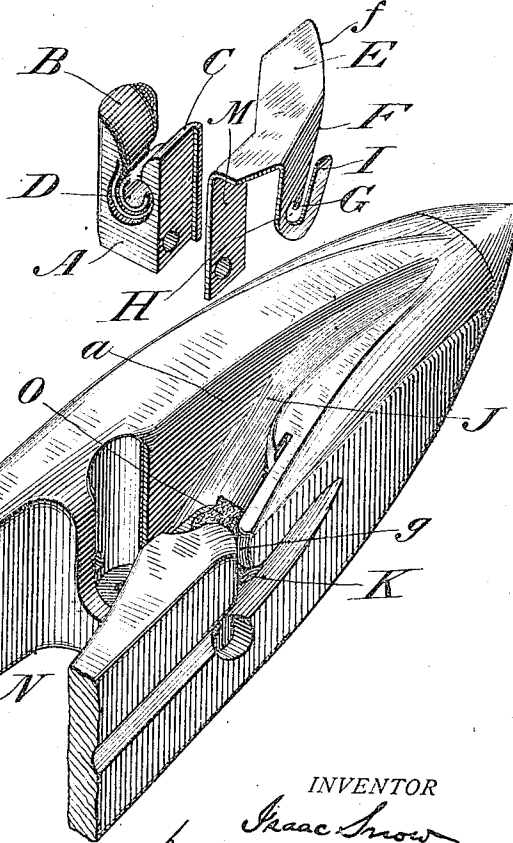
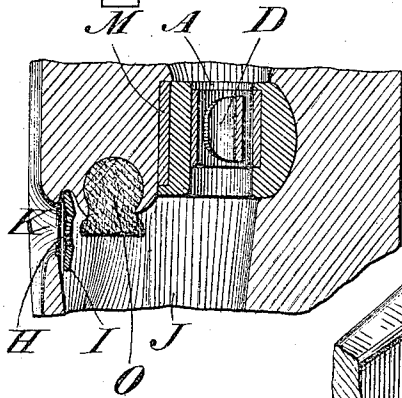


Fig. 7.



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2 SHEETS-SHEET 2.

Fig. 3

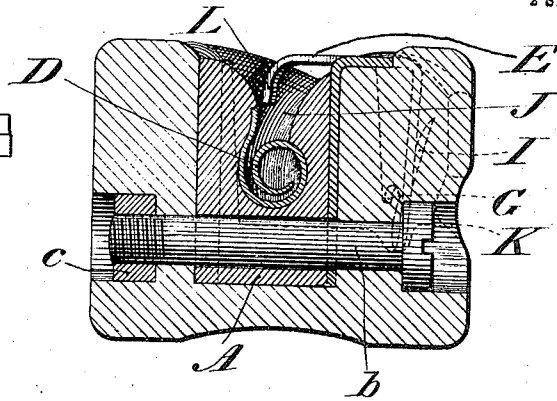


Fig. 4

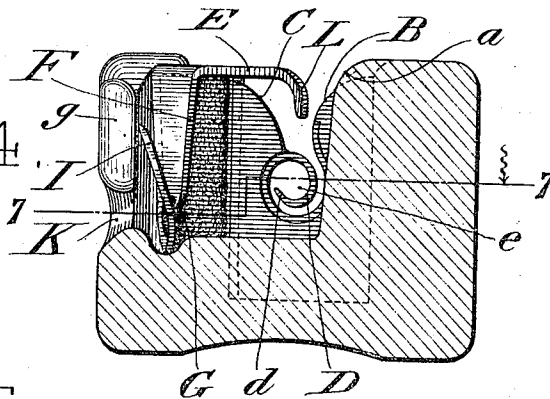
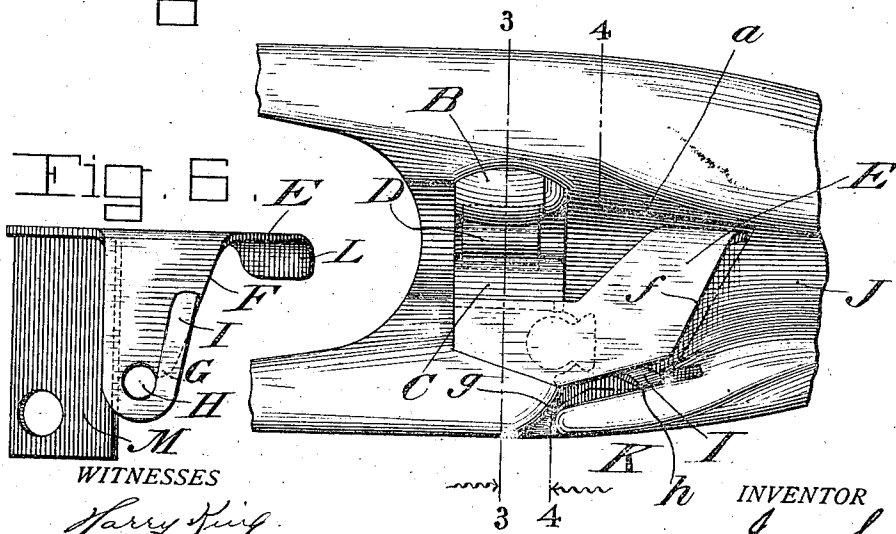


Fig. 5



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AUTOMATICALLY-THREADING LOOM-SHUTTLE.

1,006,801.

Specification of Letters Patent.

Patented Oct. 24, 1911.

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To all whom it may concern:

Be it known that I, ISAAC SNOW, of Lawrence, in the county of Essex and State of Massachusetts, have invented a new and Improved Automatically-Threading Loom-Shuttle, of which the following is a specification.

This invention relates to the automatically threading devices of shuttles which are used in looms wherein the weft is automatically replenished by ejecting the spent weft-carrier within the shuttle and inserting a fresh weft-carrier. In such looms the threads of the spare weft-carriers are located in an appropriate magazine and the weft-ends are secured to a weft-end holder. Accordingly, when a fresh weft-carrier is inserted into the working shuttle and the shuttle makes its first traverse across the lay, the thread is drawn off from the weft-carrier within the shuttle owing to its end being held. On the return traverse of the shuttle the thread is held by the selvage of the cloth. During these two traverses of the shuttle after receiving the fresh weft-carrier the shuttle eye is automatically threaded. A loom of this character is disclosed in United States Letters Patent of Northrop, No. 529,940, Nov. 27, 1894. In such looms it is important that the thread shall be surely inserted into the eye of the shuttle and that it shall not accidentally become displaced therefrom.

The present invention consists primarily in the automatic threading instrumentalities of a loom shuttle which render certain the automatic threading during the two flights of the shuttle following the reception of the fresh weft-carrier; and which prevent the accidental escape of the thread from the eye.

The improvements are illustrated in the following drawings, in which—

Figure 1, is a perspective view of the eye end of the shuttle. Fig. 2 is a similar perspective view showing the eye end of the shuttle and the cooperating threading instrumentalities detached. Fig. 3 is a cross section in the plane indicated by the line 3—3 in Fig. 5. Fig. 4, is a cross section in the plane indicated by the line 4—4 in Fig. 5. Fig. 5, is a plan view of the eye portion of the shuttle. Fig. 6, is a side view of the thread director. Fig. 7, is a horizontal section of a portion of the shuttle at the eye.

The automatically threading features of the shuttle are illustrated separately in Fig. 2, and comprise, structurally, appropriate passages formed in the body of the shuttle at its eye end forward of the usual chamber containing the weft; a block A, having a scroll D, for the reception and retention of the thread extending forwardly from the weft-carrier within the shuttle chamber; and a thread director E, F, G, which directs the thread to the open slotted side eye K.

As shown in Fig. 2, the shuttle body has a thread passage J, at its forward or eye end communicating both with the weft-chamber N of the shuttle and with the shuttle-eye K. This thread passage J, extends downwardly and divergently from near the shuttle-tip to the weft-chamber, and its side or guard wall *a*, remote from the side-eye K, inclines from the weft-chamber toward the tip of the shuttle in a direction toward the eye wall, thus directing eyeward the thread in contact therewith.

Near the intersection of the thread passage J, with the weft-chamber of the shuttle, the body of the shuttle is formed with a socket to receive the slotted metal thread block A, which is secured in place therein by a customary transverse bolt *b*, and nut *c*, as shown in Fig. 3. This thread block A, has a scroll D, within its thread slot, and above the scroll the walls B, and C, of the thread slot are flared upwardly so as to furnish a wide flaring entrance or mouth to receive the thread and to direct the thread into the scroll D. The scroll D, is a separate piece of sheet metal and is turned in the appropriate direction to accommodate the whirl of the thread as it unwinds from the weft-carrier within the shuttle, so that the whirl of the thread tends to retain it within the eye *e* of the scroll. The point *d* of the scroll is above its bottom, so that when the thread is quiescent during the occupancy of the shuttle-boxes by the shuttle the thread does not tend to gravitate out of the scroll-eye. During the backward travel of the shuttle on its first receiving a fresh weft-carrier the thread is drawn off from the weft-carrier into the thread passage J, and is guided by the walls D, and C, and by the whirl of the thread into the eye of the scroll D. During the next flight of the shuttle in the opposite direction the thread is directed

into the slotted side-eye K, of the shuttle by means of the thread director E, F, G. This thread director, as illustrated, is made of sheet metal and comprises the substantially horizontal guard E, the downwardly extending attaching wall M, the downwardly extending directing wall F, and the upwardly and outwardly extending guide tongue I. The attaching wall M, is located between the block A, and the adjacent side wall of the shuttle body and is locked in place by the same bolt and nut which secure the block A, as shown in Fig. 3. The top overhanging guard E, extends forward of block A, and the side-eye K, and in an inwardly inclined direction nearly across the thread passage J and beyond the center line of the shuttle and hence beyond the center of the scroll-eye, which is substantially coincident with the central longitudinal axis of the shuttle. The inner end of the guard E, is downturned at L, thus constituting a downturned horn extending into the thread passage J. The upper surface of this horn is downcurved, as is likewise the opposite guard wall a, of the thread passage J, thus affording a second flaring entrance for directing the thread into the thread passage J. Accordingly, during the first flight of the shuttle with a fresh weft-carrier the thread is drawn into the thread passage below the horn L, of the overhanging guard E. The leading edge f of the guard E, is inclined from the horn L, laterally toward the side-eye K, and rearwardly toward the weft-chamber of the shuttle, first gradually and then more abruptly, as shown in Fig. 5. This edge merges into the forward edge of the directing wall F, which extends downwardly laterally and rearwardly to the thread delivery eye H, at the bottom. This directing wall F, is in one piece with the guide finger I, which is extended outwardly forwardly and upwardly, the thread delivery eye H, being formed at the union between the wall F, and finger I. The wall F, has at its forward lower edge a downwardly extending spur G, which extends down nearly to the plane of the center of the thread delivery eye H. During the second traverse of the shuttle after receiving a fresh weft-carrier, during which flight the eye end of the shuttle is advancing, the thread is guided by the forward edges of the guard E, and the directing wall F, downwardly through the passage between wall F, and finger I, into the thread delivery eye H, and concurrently through the slot g, into the side-eye K, of the shuttle, which is laterally opposite the thread delivery eye H. It will be noted that the finger I, inclines outwardly and upwardly away from the wall F, and to the front wall h, of the shuttle forward of the slot g, to the side-eye, so as to present a flaring entrance for the thread

to facilitate receiving the thread and directing it downwardly into the thread delivery eye H, and the side-eye K. This flaring entrance between the finger I, and wall F, communicates with the slot g, leading to the side-eye K. At the same time, at its lower end where the finger I, is opposite the spur G, a narrow laterally located entrance or throat of minimum width to the thread delivery eye H, is presented just sufficient for the passage of the thread. Accordingly, the thread is directed certainly into the thread delivery eye and hence into the side-eye of the shuttle; and at the same time the thread when once inserted is surely retained in place against accidental discharge. When threaded the thread extends laterally from the eye of the scroll D, across the forward face of the block to the delivery eye H, as shown in Fig. 7, and to get out of place it is necessary not only that it should escape forwardly and upwardly through the narrow passage between the spur G, and the finger I, but also that it should work its way out of the eye scroll D; and should it do both of these things the thread would still be beneath the guard E, and horn L, which would prevent any detrimental effect. The inserted thread is hence thoroughly guarded against accidental escape. The rear edge of the finger I, is between the side-eye K, and the spur G, and as far back as the point of the spur so that no draft on the thread tends to cause its escape. In passing from the eye of the scroll to the thread holder H, the thread draws across a felt friction pad O, located in a slot of the shuttle body, and maintained in place by the guard E. It will be noted that during both flights of the shuttle the thread draws against metal in passing out through the side-eye, since it draws either against the finger I, or against the juncture between said finger and the directing wall F.

I claim:

1. An automatically threading loom shuttle having a slotted side-eye; a thread passage extending from the weft-chamber forward of the side-eye and communicating with said chamber and side-eye, said passage inclining down and toward said eye from the point of the shuttle, and having its guard wall opposite said eye inclining from the shuttle chamber toward said side-eye; a block located in said thread passage between the side-eye and the shuttle-chamber having a thread slot with a flaring mouth; a scroll in said thread slot below its flaring mouth having a thread-receiving eye extending lengthwise and centrally of the shuttle; a thread-director comprising (a) a guard overhanging said thread passage forward of said scroll and side-eye and having a downturned horn at its free end near the guard wall of the thread passage and beyond the

central longitudinal axis of the shuttle and having its front edge inclining rearwardly toward the side-eye, (b) a directing wall extending downwardly and outwardly from said overhanging guard to and opposite said side-eye with its forward edge downwardly and rearwardly inclined, and having a downwardly extending spur at its bottom, (c) a guide finger extending upwardly and outwardly from the lower edge of said directing wall to the front wall of said thread passage forward of said side-eye, thus providing a flaring entrance for the thread between said guide finger and said directing wall which at their union are formed with a thread delivering eye having a narrow thread receiving laterally located throat guarded by said spur, the rear edge of said guide finger being between said spur and said side-eye, and (d) an attaching wall extending down from said overhanging guard between said scroll-block and the adjacent shuttle wall; and a friction pad beneath said overhanging guard and in the path of the thread between said scroll eye and said delivery eye.

2. An automatically threading loom shuttle having a slotted side-eye; a thread passage extending from the weft-chamber forward of the side-eye and communicating with said chamber and side-eye; and a thread-director comprising (a) a guard overhanging said thread passage forward of said side-eye and having a downturned horn at its free end near the back wall of the thread passage and having its front edge inclining rearwardly toward and back of the slot of the side-eye, (b) a directing wall extending downwardly and outwardly from said guard to and opposite said side-eye separating said side-eye from the initial thread receiving portion of said thread passage and with its forward edge downwardly and rearwardly inclined, and having a downwardly extending spur at its bottom, (c) a guide finger extending upwardly and outwardly from the lower edge of said directing wall to the front wall of said thread passage forward of the slot of said side-eye, thus providing a free space to said slot and a flaring entrance for the thread between said guide finger and said directing wall which at their union are formed with a thread delivering eye having a narrow thread receiving laterally located throat guarded by said spur, the rear edge of said guide finger being between said spur and said side-eye, and (d) an attaching wall extending down from said overhanging guard to the adjacent shuttle wall.

3. An automatically threading loom shuttle having a slotted side-eye; a thread passage extending from the weft-chamber forward of the side-eye and communicating with said chamber and side eye; and a

thread-director comprising (a) a guard overhanging said thread passage forward of said side-eye and having a downturned horn at its free end near the guard wall of the thread passage and having its front edge inclining rearwardly toward and back of the slot of the side-eye; (b) a directing wall extending downwardly and outwardly from said guard to and opposite said side-eye separating said side-eye from the initial thread receiving portion of said thread passage and with its forward edge downwardly and rearwardly inclined, and having a downwardly extending spur at its bottom, and (c) a guide finger extending upwardly and outwardly from the lower edge of said directing wall to the front wall of said thread passage forward of the slot of said side-eye, thus providing a free space to said slot and a flaring entrance for the thread between said guide finger and said directing wall which at their union are formed with a thread delivering eye having a narrow thread receiving laterally located throat guarded by said spur, the rear edge of said guide finger being between said spur and said side-eye.

4. An automatically threading loom shuttle having a slotted side-eye; a thread passage extending from the weft-chamber forward of the side-eye and communicating with said chamber and side-eye; and a thread director comprising (a) a guard overhanging said thread passage forward of said side-eye and having its front edge inclining rearwardly toward the side-eye, (b) a directing wall extending downwardly and outwardly from said guard to and opposite said side-eye, and (c) a guide finger extending upwardly and outwardly from the lower end of said directing wall to the front wall of said thread passage forward of the slot of said side-eye, thus providing an entrance for the thread between said guide finger and said directing wall, which at their union are formed with a thread delivering eye having a narrow thread receiving laterally located throat.

5. An automatically threading loom shuttle having a slotted side-eye; a thread passage extending from the weft-chamber forward of the side-eye and communicating with said chamber and side-eye; a thread director comprising a guard overhanging said thread passage and extending forward of said side eye; and a friction pad located in a slot in the shuttle body beneath said overhanging guard and in the path of the thread between said weft-chamber and said side-eye.

6. An automatically threading loom shuttle having a slotted side eye; a thread passage extending from the weft-chamber forward of the side-eye and communicating with said chamber and side-eye; a block

located in said thread-passage between the side-eye and the shuttle-chamber having a thread-slot with a flaring mouth; a sheet metal scroll in said thread-slot below
5 said flaring mouth having a thread-receiving eye extending lengthwise and centrally of the shuttle; a thread director forward of said scroll to direct the thread to said side-eye; and a friction pad in the path of the
10 thread between said scroll eye and said side-eye.

7. An automatically threading loom shuttle having a slotted side-eye; a thread passage extending from the weft-chamber forward of the side-eye and communicating
15 with said chamber and side-eye; a block located in said thread-passage between the side-eye and the shuttle-chamber having a thread slot with a flaring mouth; a scroll in
20 said thread slot below its flaring mouth hav-

ing a thread-receiving eye extending lengthwise and centrally of the shuttle; and a thread-director comprising a guard overhanging said thread passage forward of
25 said scroll and side-eye and having a downturned horn at its free end near the guard wall of the thread passage and beyond the central longitudinal axis of the shuttle and having its front edge inclining rearwardly
30 toward the side-eye, and a directing wall extending downwardly and outwardly from said guard to and opposite said side-eye to direct the thread to said slotted side-eye.

In witness whereof, I have hereunto signed my name in the presence of two sub-
35 scribing witnesses.

ISAAC SNOW.

Witnesses:

DUNCAN WOOD,
JOHN M. DUFFY.