No. 843,912. PATENTED FEB. 12, 1907.

F. H. STETSON.

LOOM SHUTTLE.

APPLICATION FILED MAR. 9, 1904.

Fig. 1.

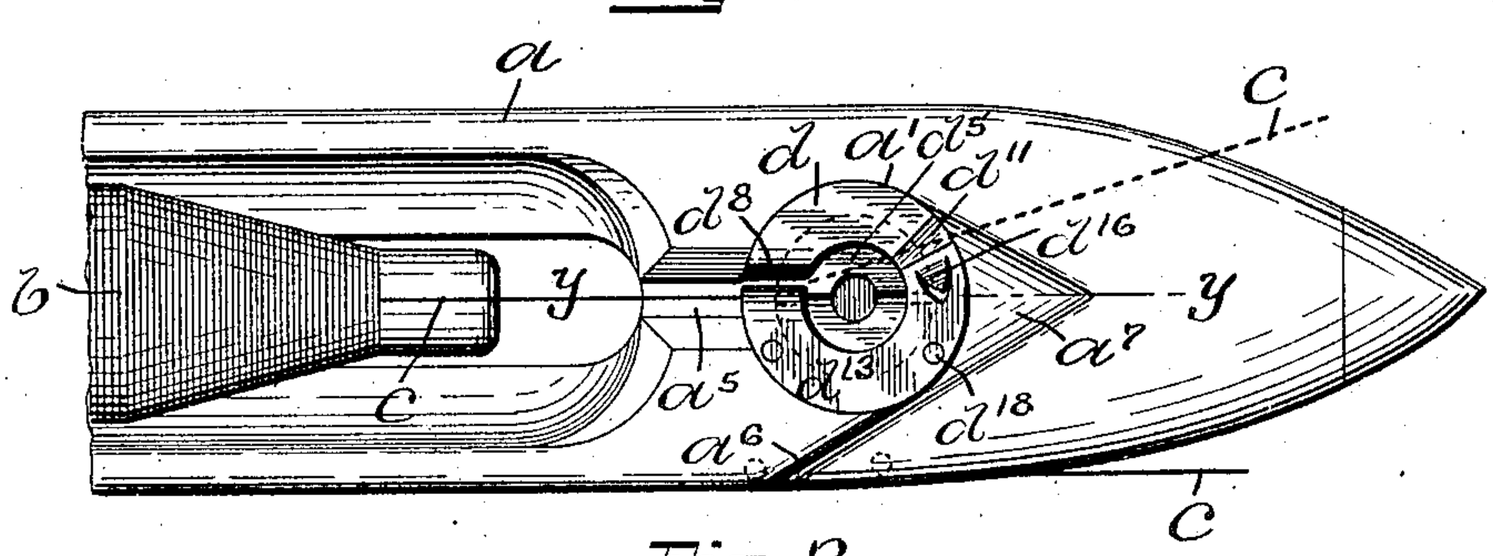

Fig. 2.

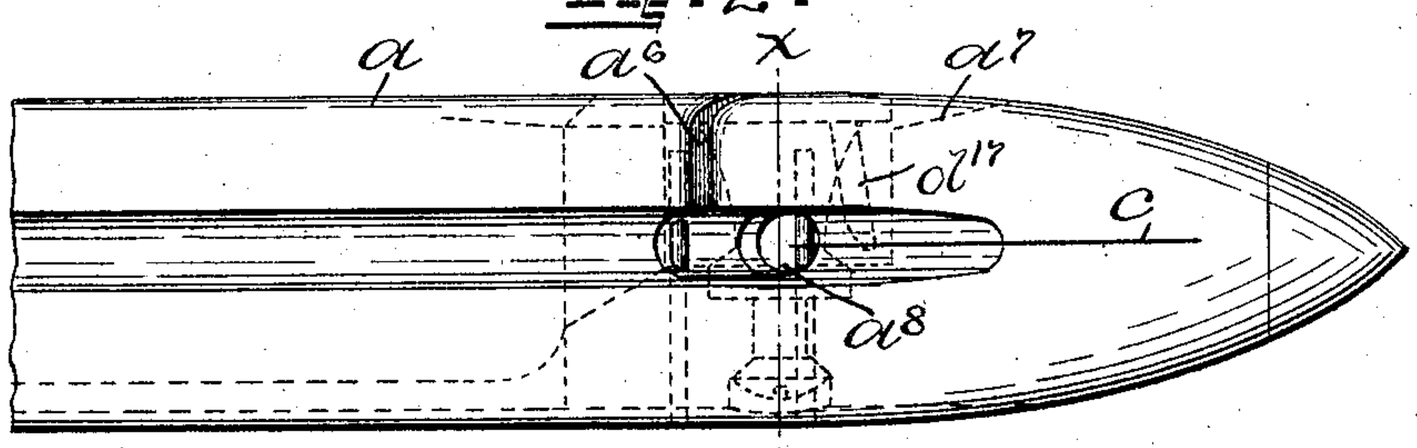

Fig. 3.

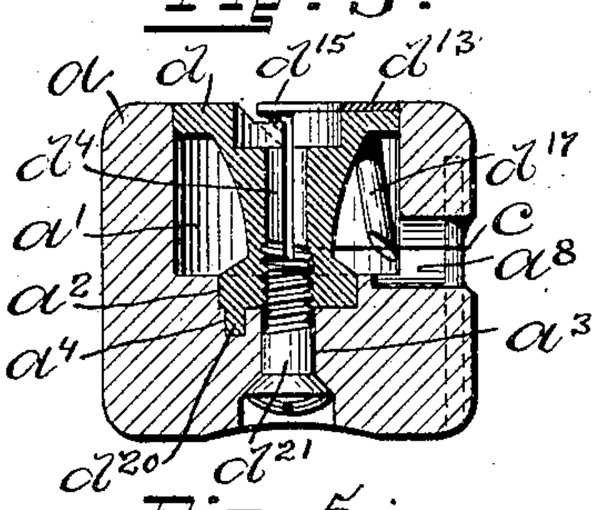

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Fig. 4.

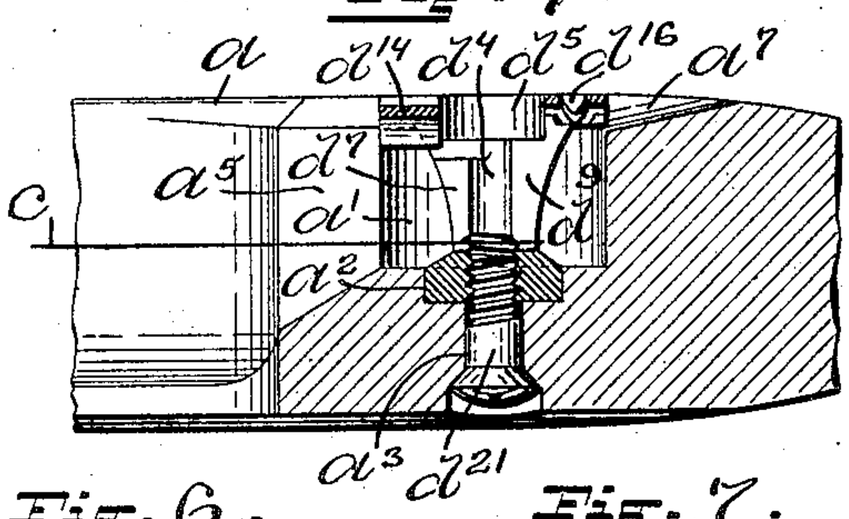


Fig. 5.

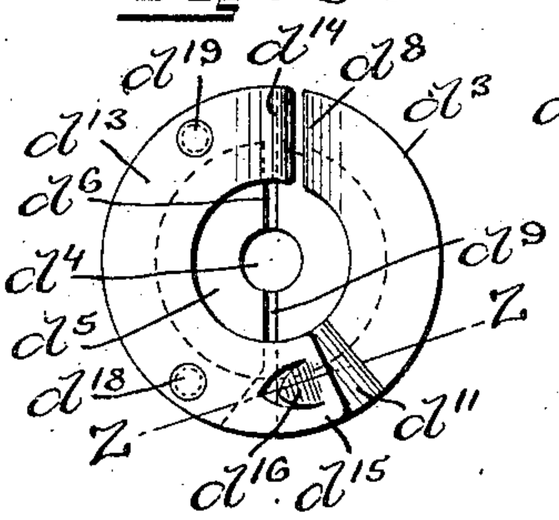


Fig. 6.

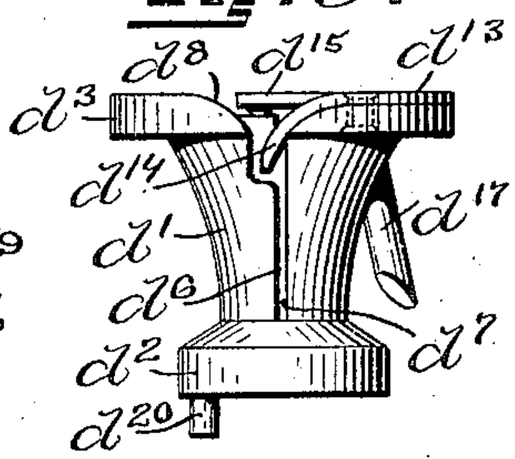


Fig. 7.

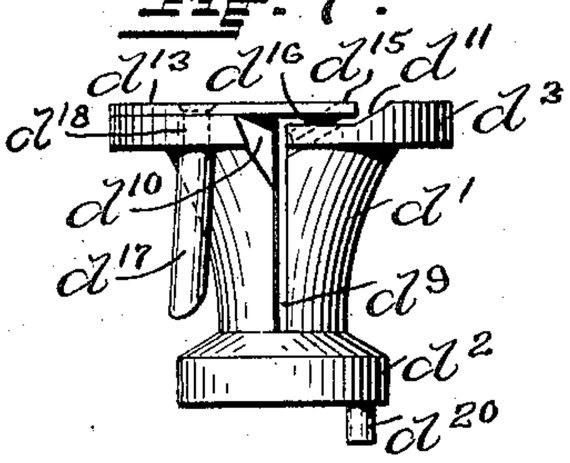
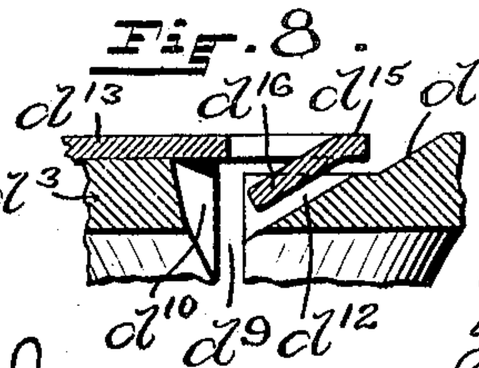


Fig. 8.



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ATTORNEYS.

UNITED STATES PATENT OFFICE.

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LOOM-SHUTTLE.

No. 843,912. Specification of Letters Patent. Patented Feb. 12, 1907.

Application filed March 9, 1904. Serial No. 197,335.

To all whom it may concern:

Be it known that I, FRANK H. STETSON, a citizen of the United States, residing at Lawrence, in the county of Essex and State of Massachusetts, have invented a new and useful Improvement in Loom-Shuttles, of which the following is a specification.

This invention has reference to an improvement in loom-shuttles, and more particularly to an improvement in automatic or self-threading loom-shuttles.

In self-threading loom-shuttles the threading mechanism is adapted to carry the thread from the bobbin in the shuttle to the delivery-eye of the shuttle automatically, the threading mechanism exerting the required tension on the thread.

As heretofore constructed the threading mechanism has failed to always carry the thread to the delivery-eye or to hold the thread in the delivery-eye of the shuttle, such failure causing the breaking of the weft-thread or the imperfect laying of the weft-thread in the shed of the loom.

The object of my invention is to improve the construction of a self-threading loom-shuttle whereby the weft-thread is automatically carried from the bobbin to the delivery-eye and positively prevented from returning or getting out of its proper position in the automatic threading mechanism of the shuttle.

My invention consists in the peculiar and novel construction of a loom-shuttle having mechanism for automatically carrying the weft-thread from the bobbin to the delivery-eye of the shuttle and preventing a return movement of the thread through the threading mechanism, said mechanism consisting of constructing the shuttle-body to have a circular recess extending downward near the point of the shuttle, a longitudinal slot connecting the circular recess with the bobbin-cavity, a slot connecting the circular recess with a hole through the side wall forming the delivery-eye, said slot being shaped at its upper end to extend partly around the circular recess and extending from a point near the top of the recess upward at an angle to the surface and toward the point of the shuttle, an automatic threading device secured in the circular recess by a screw and having a vertical slot forming inlet and outlet openings for the weft-thread, means for catching and guiding the thread to the slot, means in the inlet-opening for limiting the upward movement of the thread, and means in the outlet-opening and adjacent to the outlet-opening to prevent a return movement of the thread, as will be more fully set forth hereinafter.

Figure 1 is a top plan view of the delivery end of my improved shuttle, showing the weft-thread entering the automatic threading device in broken lines and leaving the delivery-eye of the shuttle in full lines. Fig. 2 is a side view of Fig. 1, showing the slot connecting the automatic threading device with the delivery-eye of the shuttle. Fig. 3 is a transverse sectional view taken on line X X of Fig. 2 through the shuttle delivery-eye and automatic threading device. Fig. 4 is a sectional view taken on line Y Y of Fig. 1 lengthwise through the shuttle and automatic threading device. Fig. 5 is an enlarged top plan view of the automatic threading device removed from the shuttle. Fig. 6 is a vertical view of the automatic threading device looking at the inlet-opening. Fig. 7 is a vertical view of the automatic threading device looking at the outlet-opening, and Fig. 8 is a still further enlarged detail sectional view taken on line Z Z of Fig. 5, showing one of the means for preventing a return movement of the weft-thread.

In the drawings, a indicates the shuttle; b, the bobbin; c, the weft-thread, and d my improved automatic threading device. The shuttle a has the circular recess a', in the bottom of which is the circular cavity a^2, the central hole a^3 extending downward through the bottom of the shuttle and the offset hole a^4, the slot a^5 connecting the recess a' with the bobbin-cavity and the slot a^6 connecting the recess a' with a hole in the side of the shuttle forming the delivery-eye a^8 of the shuttle. The upper end a^7 of the slot a^6 extends partly around the circumference of the recess a' below the surface of the shuttle and from a point near the top of the recess a' inclines upward toward the point of the shuttle. From the recess a' the slot a^6 extends downward through the side wall to the delivery-eye a^8 of the shuttle. Otherwise the shuttle may have the construction of any of the well-known forms of loom-shuttles.

The threading device d has the tapering cylindrical body d' with the circular base d^2 and the circular flanged top d^3, the central vertical hole d^4 screw-threaded at its lower end and enlarged at its upper end to form the cavity d^5, the vertical slot d^6, extending centrally through the body d' from the base d^2

upward and forming the inlet-opening d^7, having the recessed and rounded mouth d^8, and the outlet-opening d^9, having the cut-away portion d^{10} on the left and the inclined depressed portion d^{11} on the right, having the downwardly-inclined groove d^{12}, forming the mouth of the outlet-opening d^9, the semicircular flat ring d^{13}, having the downwardly-curved end d^{14}, adapted to enter the mouth d^8 of the inlet-opening d^7, and the overlapping end d^{15}, having the downwardly-bent point d^{16}, adapted to enter the groove d^{12} in the mouth of the outlet-opening d^9, the wire arm d^{17}, extending downward and slightly outward from the under side of the flanged top d^{13}, adjacent the outlet-opening, the rivet d^{19}, formed on the upper end of the arm d^{17}, and the rivet d^{19} for securing the semicircular plate d^{13} to the top d^3, and the offset pin d^{20}, extending downward from the base d^2. The threading device d is secured in the recess a' by the screw d^{21} through the hole a^3 and is prevented from turning by the offset pin d^{20} in the hole a^4, as shown in Fig. 3.

In the operation of automatically threading my improved shuttle the end of the weft-thread c is secured to the loom on the right and the shuttle thrown to the left in the usual way. This brings the weft-thread into the mouth of the inlet-opening d^7 and the mouth of the outlet-opening d^9 of the threading device d, as shown in broken lines in Fig. 1. In the return throw of the shuttle the weft-thread catches under the overlapping end d^{15} and enters the depressed portion d^{11}. It now passes between the point d^{16} and the walls forming the groove d^{12} to the slot forming the outlet-opening d^9 and the slot a^6 in the shuttle. From the upper end a^7 of the slot it passes down through the slot over and off the wire arm d^{17} to the hole forming the delivery-eye a^8, through which it passes to the outside of the shuttle, as shown in Figs. 2 and 3. After the shuttle is threaded the thread passes from the bobbin b through the slot a^5, the recess a', and the slot d^6 in the threading device d, then slightly backward under the wire arm d^{17} and out through the delivery-eye a^8. The construction of the recessed and rounded portion d^8 and the downwardly-curved end d^{14} allows the thread to easily enter the slot forming the inlet-opening d^7, but prevents the thread from leaving the slot, limits its upward movement, and prevents excessive ballooning of the thread in the shuttle by the thread catching under the end d^{14}, as shown in Fig. 6. If by accident or other means the thread should leave the delivery-eye of the shuttle and return through the slot a^6 in the shuttle, it would catch on the wire arm d^{17} when the next throw of the shuttle to the right would carry the thread back into the delivery-eye of the shuttle. If the thread should fail to catch on the wire arm d^{17}, it would ride upward in the slot forming the outlet-opening d^9 and catch on the downwardly-bent point d^{16}, as shown in Fig. 8, the next throw of the shuttle to the right returning the thread to the delivery-eye of the shuttle.

By my improved construction of a loom-shuttle the shuttle is threaded automatically, excessive ballooning of the thread in the bobbin-cavity is prevented, the thread is prevented from leaving the automatic threading device, a more perfect self-threading shuttle is constructed, and a better weave attained by the use of the shuttle than has heretofore been done.

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

1. In a loom-shuttle, an automatic threading device, consisting of a cylindrical body having a central vertical slot forming inlet and outlet openings for the weft-thread, a recessed and rounded portion forming the mouth of the inlet-opening, a downwardly-curved arm in the mouth of the inlet-opening, a cut-away portion and an inclined depressed portion having a downwardly-inclined groove forming the mouth of the outlet-opening, an overlapping arm having a downwardly-bent point adapted to enter the inclined groove in the mouth of the outlet-opening, a downwardly-extending arm adjacent the outlet-opening, and means for operatively securing the threading device in the shuttle, as described.

2. In a loom-shuttle, an automatic threading device consisting of a tapering cylindrical body having a circular base and a circular flanged top, a central vertical slot extending from the base upward through the top and forming inlet and outlet openings for the weft-thread, a recessed and rounded portion forming the mouth of the inlet-opening, a semicircular ring secured to the top and having a downwardly-curved end adapted to enter the mouth of the inlet-opening, a cut-away portion and an inclined depressed portion with a downwardly-inclined groove forming the mouth of the outlet-opening, an overlapping end on the semicircular ring having a downwardly-bent point adapted to enter the inclined groove in the mouth of the outlet-opening, a downwardly-extending arm secured to the top adjacent the outlet-opening, and means for operatively securing the threading device in the shuttle, as described.

3. In a loom-shuttle, the combination of the body of the shuttle having walls forming a circular recess in the bottom of which is a circular cavity, walls forming a central hole extending from the cavity through the bottom of the shuttle and an offset hole in the bottom of the cavity, walls forming a slot connecting the circular recess with the bobbin-cavity, walls forming a slot in the side

connecting the circular recess with the delivery-eye of the shuttle, said slot being shaped at its upper end to extend partly around the circumference of the recess below the surface of the shuttle, and from a point near the top of the recess to incline upward toward the point of the shuttle, and an automatic threading device consisting of a tapering cylindrical body having a circular base and a circular flanged top, a central vertical slot forming inlet and outlet openings, a recessed and rounded portion forming the mouth of the inlet-opening, a semicircular ring secured to the top, a downwardly-curved end on the ring adapted to enter the mouth of the inlet-opening, a cut-away portion and an inclined depressed portion with a downwardly-inclined groove forming the mouth of the outlet-opening, an overlapping end on the semicircular ring having a downwardly-bent point adapted to enter the inclined groove, a wire arm secured to the top adjacent the outlet-opening, and means for securing the threading device in the circular recess, consisting of a screw through the central hole in the circular cavity, as described.

4. In a loom-shuttle, an automatic threading device consisting of a cylindrical body having a central vertical slot forming inlet and outlet openings for the weft-thread, a downwardly-curved arm in the mouth of the inlet-opening, a downwardly-bent point in the outlet-opening, and a downwardly-extending arm adjacent to the outlet-opening, as described.

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

FRANK H. STETSON.

Witnesses:

FRED H. RECTOR,

FREDERIC N. CHANDLER.