

A. B. WEISSENBORN.

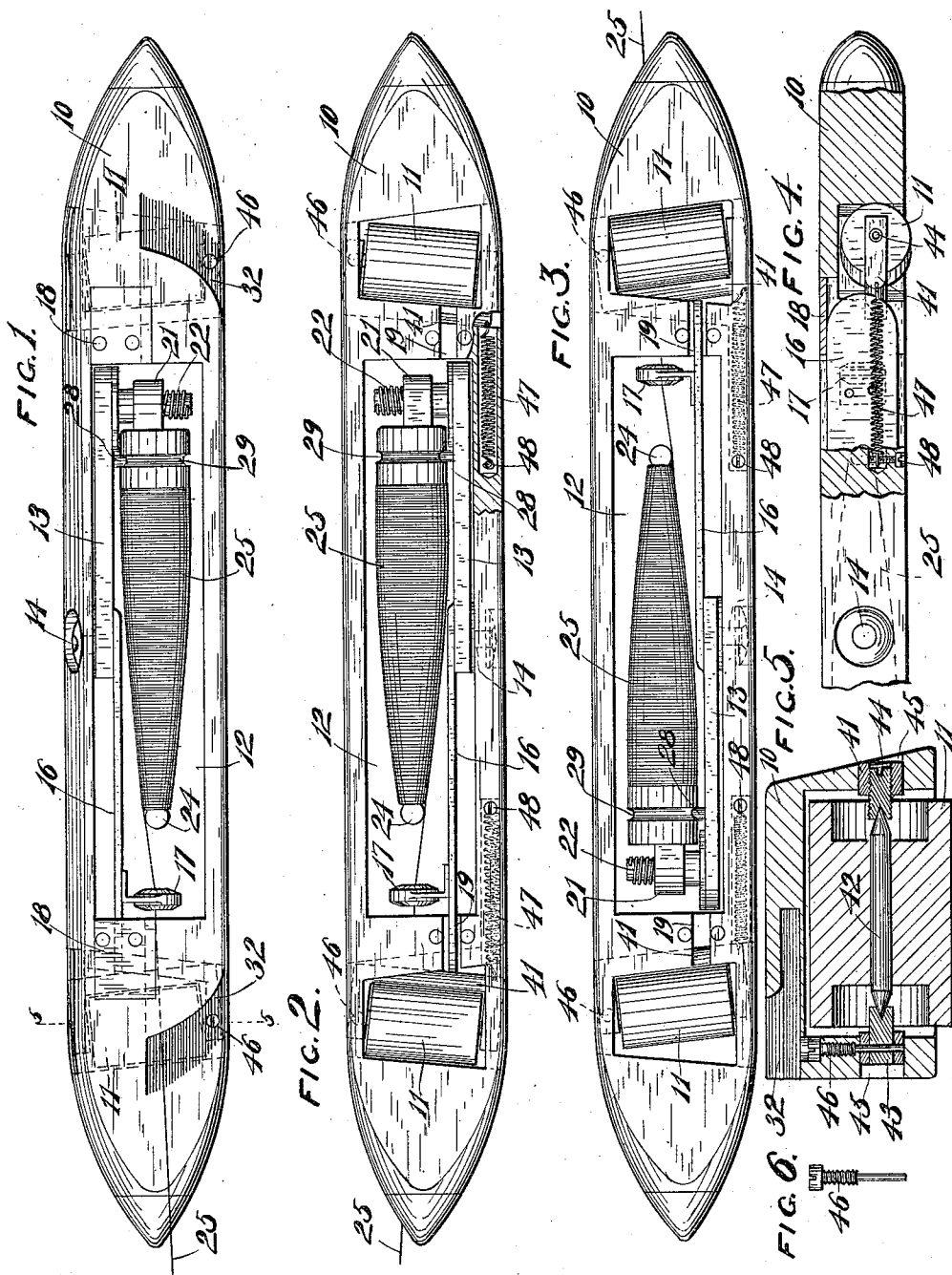
LOOM SHUTTLE.

APPLICATION FILED JUNE 11, 1909. RENEWED DEC. 12, 1910.

1,015,524.

Patented Jan. 23, 1912.

2 SHEETS—SHEET 1.



WITNESSES.

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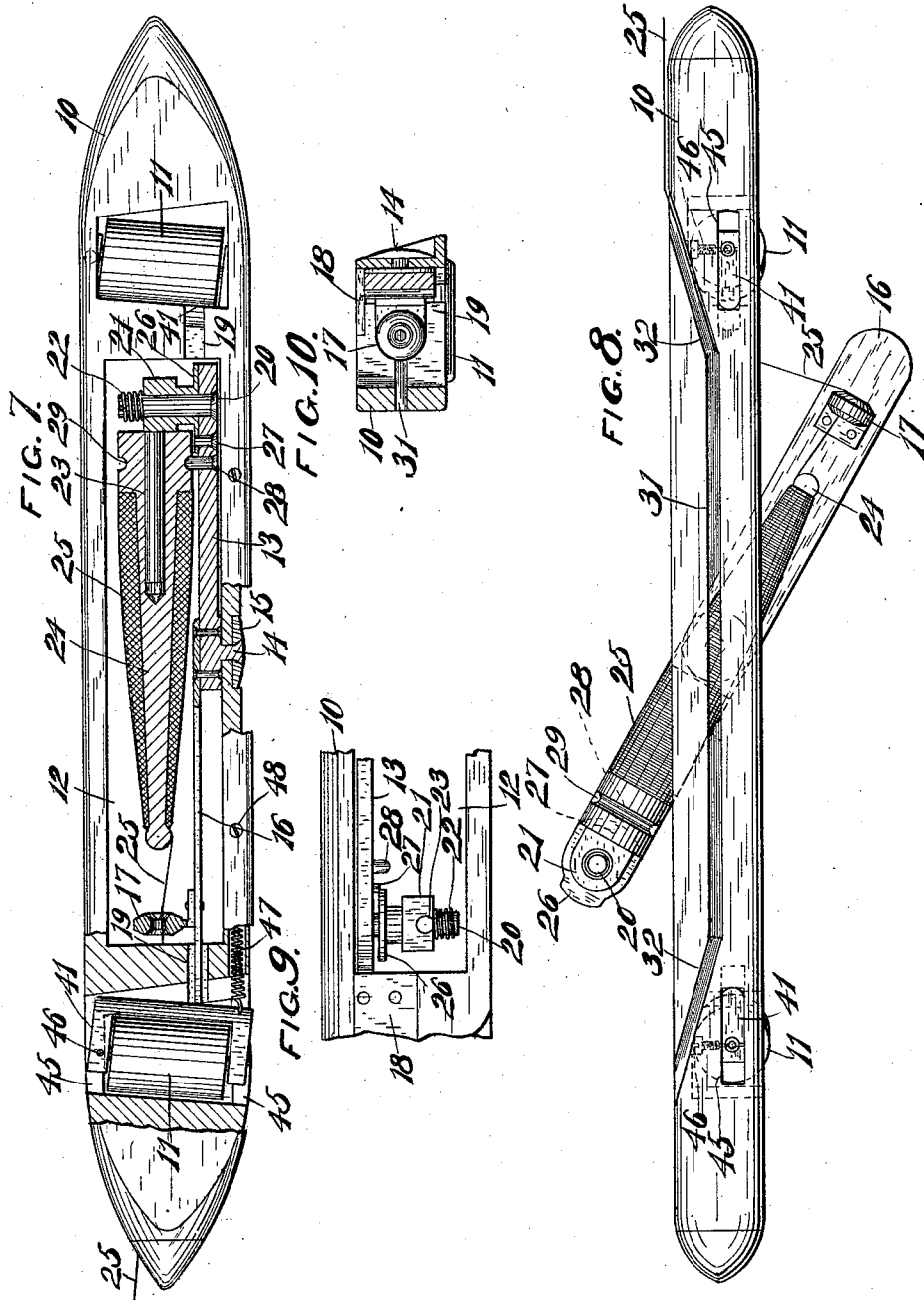
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UNITED STATES PATENT OFFICE.

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LOOM-SHUTTLE.

1,015,524.

Specification of Letters Patent.

Patented Jan. 23, 1912.

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To all whom it may concern:

Be it known that I, ALBERT B. WEISSENBORN, residing in Appleton, in the county of Outagamie and State of Wisconsin, have invented new and useful Improvements in Loom-Shuttles, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

10 This invention has for its object to provide a shuttle designed for use in wire weaving looms, though novel features thereof may be used in shuttles generally.

15 One of the main features of novelty of this invention is a bobbin holder which may be swung from one position to another so as to stand in the same relative position to the front end of the shuttle in either direction of movement thereof.

20 Another main feature of novelty of this invention is the provision of means for shifting the axis of the rollers on which the shuttle travels to cause the shuttle to hug close to the reed in traveling in either direction, 25 this means being preferably, though not necessarily, operated by the swinging movements of the bobbin holder.

Another feature of novelty in the present invention is a pivoted bobbin supporting stem which is normally locked in its closed position but which may be easily swung open to permit of the bobbin being quickly and easily placed thereon, the bobbin being automatically locked on the stem when the 35 stem is turned to its closed position.

The invention has the above features of novelty as its objects and has the further object of providing various details of construction incident to such features of novelty. 40

I desire it to be understood that this invention is not limited to any specific form or arrangement of parts except insofar as such limitations are specified in the claims.

45 With the above and other objects in view the invention consists in the shuttle herein shown and described its parts and combinations of parts and all equivalents.

Referring to the accompanying drawings in which like characters of reference indicate the same parts in the different views; Figure 1 is a plan view of a shuttle constructed in accordance with this invention; Figure 2 is a bottom view thereof with a part 55 broken away to show the spring for a roller frame; Fig. 3 is a similar view with the

bobbin holder swung to a position opposite the position in which it is shown in Fig. 2 and the rollers shifted accordingly; Fig. 4 is a sectional view of one end of the shuttle 60 showing the engagement between the bobbin holder and the roller frame; Fig. 5 is an enlarged transverse sectional view on the plane of line 5—5 of Fig. 1; Fig. 6 is a detail view of the pivotal screw for the roller 65 frame; Fig. 7 is a bottom view of the shuttle with the bobbin holder and the bobbin in section and a portion of the shuttle body in section; Fig. 8 is a front elevation of the shuttle with the bobbin holder in the act 70 of changing from one position to the other; Fig. 9 is a plan view of a portion of the shuttle showing the bobbin stem turned to its open position for replacing the bobbin; and, Fig. 10 is a transverse sectional view of 75 the shuttle looking toward the eye of the bobbin holder.

In these drawings 10 indicates the shuttle body mounted upon the rollers 11 which are slightly obliquely disposed, as shown, and 80 which are adapted to be shifted in position to cause the shuttle to hug the reed during its travel in either direction. Each of the rollers 11 is mounted in a U-shaped roller frame 41 by having the conical trunnioned 85 ends of its axle 42 fitting in correspondingly shaped recesses or sockets in plugs 43 and 44 in openings in the ends of the roller frame 41. The rollers 11 with their frames are contained within openings in the ends of the 90 shuttle body and the frames fit within slots 45 in the sides of the shuttle body which form guides therefor. The plug 43 is locked in position in the frame by having the pin-like end of a pivot screw 46 passing through 95 it and through the end of the roller frame 41, said screw being threaded in the shuttle body and serving as a pivotal connection on which the roller frame 41 may swing to give the roller either of the oblique posi- 100 tions shown in Figs. 2 and 3. The plug 44 is threaded in the roller frame so as to adjust the fit of the roller in its bearings. A coil spring 47 is provided for each of the roller frames 41 and connects the free end 105 thereof to a screw 48 or other means of connection on the shuttle body to give the roller frame the normal tendency to swing to its innermost position, as shown at the right of Fig. 2, said spring 47 being con- 110 tained within a bore or drill opening in the shuttle body.

The central opening 12 in the shuttle body contains a reversible bobbin holder 13, which is pivotally mounted on the slanting reed side of the shuttle by means of a pivotal connection 14 with its pin passing through an opening in the side of the shuttle and riveted to a washer 15 countersunk on the outside. The heavy metal strip forming the main portion of the bobbin holder and the lighter strip 16 carrying the guide eye 17 are riveted or otherwise suitably secured together so that the entire bobbin holder swings on the pivotal connection as a fulcrum. At each end of the central opening in the shuttle body is a stop plate 18 closing the upper end of a slot 19 and engaged by the projecting end of the member 16 to limit the movements of the bobbin holder in either direction, said end of the member 16 being rounded and serving as a cam to engage and swing either of the roller frames 41 against the action of its spring 47 and then being limited in its movement by its engagement with the stop plate 18 where it will be held against rebounding by means of the spring retracted roller frame 41 as shown in Fig. 4.

A stud or boss 20 is carried by the end of member 13 and a sleeve 21 is loosely mounted on the stud and is held with spring pressure against the member 13 by a coil spring 22 secured to the end of the stud and bearing on the sleeve, said sleeve being provided with a stem or pin 23 to receive the bobbin 24 having the wire 25 or other weaving filament wound thereon. The sleeve 21 is provided with a flange 26 at its base which contains an opening to receive a pin 27 projecting from the member 13 and thereby locks the sleeve against turning on the stud when the pin 23 is directed toward the eye 17. Another pin 28 projecting from the member 13 enters an annular groove 29 in the base of the bobbin 24 when the sleeve is turned to the position in which it is locked by the pin 27, and thus serves to prevent the removal of the bobbin from the pin 23. In order to move the bobbin it is only necessary to draw the sleeve 21 against the action of spring 22 so that the opening in the flange 26 is freed from the pin 27 and then turn the sleeve so as to carry the bobbin away from pin 28 and out of alinement with the eye 17. The bobbin may then be removed and replaced by another and as soon as the sleeve is swung back to its normal position the spring 22 causes it to snap over the pin 27 when the opening is in register therewith and at the same time the pin 28 enters the groove 29 of the bobbin to lock it in place.

The end of the bobbin is provided with a spherical head or enlargement 30 which prevents convolutions of wire being prematurely drawn off the bobbin by the pull upon the unwinding convolution, and further serves as a guide for the wire when it is

unwinding from the smaller end of the bobbin requiring the pull thereon to be somewhat outwardly instead of more directly in line with the axis of the bobbin, as would otherwise be the case, thus preventing the wire being drawn sharply against the smaller convolutions as the unwinding approaches the smaller end of the bobbin. Without the head 30 the convolutions at the smaller end of the bobbin would be liable to be drawn off of the bobbin with the unwinding convolutions and form a tangle, also the bend of the wire at the smaller end of the bobbin as the unwinding of the convolutions approaches the end of the bobbin would be so sharp as to bind upon the end convolutions to either entirely prevent the wire being drawn off or to interfere with the travel of the shuttle so as to interrupt the work.

To enable the wire being drawn directly from the bobbin in either direction of movement of the shuttle there is a slot 31 in the side of the shuttle terminating in inclined slots 32 at the ends thereof and the wire switches from one end of the shuttle to the other through the slots so that with the turning of the bobbin holder the wire is fed off of the bobbin in the same manner and under same conditions during both directions of travel of the shuttle.

The swinging of the bobbin holder at the end of the movement of the shuttle in either direction may be accomplished in any desirable manner, either by hand or by suitable mechanism, such as that shown in my Letters Patent No. 978,248 for looms, dated December 13, 1910, and by reason of its placing a greater weight at the front of the shuttle it serves to assist in causing the shuttle to travel in a straight course. By reason of the bobbin being directed toward the rear of the shuttle in its travel in either direction the unwinding of the wire therefrom is greatly facilitated. Also because of the bobbin holder carrying with it the guide eye 17 the wire is caused to be drawn off in the line of axis of the bobbin at all times. The shifting of the bobbin holder from one position to the other accomplishes the change in position of the rollers so that whenever the bobbin is in position for the shuttle to move to the right the rollers are likewise in a position to cause the shuttle to tend to ride toward the reed and thus assure its traveling in the proper course. When the bobbin holder is swung to the other position for the travel of the shuttle to the left the rollers are changed accordingly so that the tendency of movement of the shuttle is still toward the reed. In either position of the bobbin holder the rollers stand approximately parallel to each other as shown in Figs. 2 and 3.

What I claim as my invention is:

1. A shuttle having a pivotally mounted

bobbin holder adapted to be swung from one position to a reverse position to cause the bobbin to stand in approximately the same relation to the direction of travel of the shuttle at all times.

2. A shuttle, comprising a shuttle body, and a bobbin holder pivotally mounted thereon to have its position reversed with relation to the shuttle body for the different directions of travel of the shuttle.

3. A shuttle, comprising a shuttle body, a bobbin holder pivotally mounted thereon with one end heavier than the other and adapted to be swung to reverse its position and place the heavier end thereof at the front of the shuttle in either direction of movement of the shuttle.

4. A shuttle, comprising a shuttle body, a bobbin holder pivotally mounted thereon to have its position reversed to direct the free end of the bobbin to the rear of the shuttle in either direction of movement of the shuttle.

5. A shuttle, comprising a shuttle body, a bobbin holder pivotally mounted thereon with one end heavier than the other, and stops for limiting the pivotal movement of the bobbin holder and holding it in either a position where the weighted end thereof is located at one end of the shuttle or in a position where the weighted end is at the other end of the shuttle.

6. A shuttle, comprising a shuttle body having an opening therein, and a bobbin holder pivotally mounted in the opening of the shuttle body and capable of swinging from one position to an opposite position therein for the different directions of travel of the shuttle.

7. A shuttle, comprising a shuttle body, a bobbin holder pivotally mounted thereon to swing from one position to a reversed position and provided with means for supporting a bobbin, and a guide eye carried by the bobbin holder.

8. A shuttle, comprising a shuttle body, a bobbin holder pivotally mounted thereon with a bobbin supporting pin at one end, and a guide eye carried by the bobbin holder at the other end thereof, said bobbin holder being adapted to be swung on its pivotal mounting to reverse its position.

9. A shuttle, comprising a shuttle body, a bobbin holder pivotally mounted thereon, a bobbin supporting pin pivotally mounted on the bobbin holder to be capable of swinging from a closed position close to the bobbin holder to an open position away from the bobbin holder, and spring actuated means for locking the bobbin supporting pin in its closed position.

10. A shuttle, comprising a shuttle body, a bobbin holder pivotally mounted thereon, a stud carried by the bobbin holder, a spring pressed sleeve slidably and pivotally

mounted on the stud, a pin on the bobbin holder for engaging the sleeve and locking it in its normal position, and a bobbin supporting pin on the sleeve.

11. A shuttle, comprising a shuttle body, a bobbin holder pivotally mounted thereon, a stud on the bobbin holder, a spring pressed sleeve slidably and pivotally mounted on the stud, a pin on the bobbin holder to engage an opening in the sleeve for locking it in its normal position, a bobbin supporting pin on the sleeve, adapted to support a bobbin having a groove in its base, and a pin on the bobbin holder for engaging the groove of the bobbin for locking the bobbin on the bobbin supporting pin when the sleeve is in its normal position.

12. A shuttle, comprising a shuttle body having an opening therein, and a bobbin holder pivotally mounted in the opening of the shuttle body and adapted to be swung from one position to a reverse position, there being a slot in one side of the shuttle body terminating in inclined slots at the ends of the shuttle body through which the filament from the bobbin may travel from one end of the shuttle to the other.

13. A shuttle, comprising a shuttle body having an opening therein, a bobbin holder pivotally mounted in the opening of the shuttle body, stops at the ends of the opening of the shuttle body and engaged by the bobbin holder in opposite positions thereof, a stud on one end of the bobbin holder, a spring pressed sleeve slidably and pivotally mounted on the stud, a pin on the bobbin holder to engage and lock the sleeve in its normal position, a bobbin supporting pin on the sleeve, for supporting a bobbin provided with a groove in its base, a pin on the bobbin holder to engage the groove of the bobbin to lock it in place when the sleeve is in its normal position, and a guide eye carried by the other end of the bobbin holder, there being a slot in one side of the shuttle body terminating in inclined slots at the ends of the shuttle body through which the filament from the bobbin may pass from one end of the shuttle to the other.

14. A shuttle, having a pivotally mounted bobbin holder adapted to be swung from one position to another to cause the bobbin to stand in approximately the same relation to the direction of travel of the shuttle at all times, and pivotally mounted rollers on which the shuttle travels adapted to be swung from one oblique position to another with relation to the line of travel by the change in position of the bobbin holder.

15. A shuttle, comprising a shuttle body, a bobbin holder pivotally mounted thereon to have its position reversed with relation to the shuttle body, spring retracted pivotal frames on the shuttle body, and rollers on which the shuttle travels mounted in the

pivotal frames, said pivotal frames being in the path of the bobbin holder to be struck thereby and caused to swing to different oblique positions.

5 16. A shuttle, comprising a shuttle body, a bobbin holder pivotally mounted thereon with one end heavier than the other and adapted to be swung to reverse its position and place the heavier end thereof at the
10 front of the shuttle in either direction of movement of the shuttle, spring retracted frames pivotally mounted in the shuttle body, and rollers carried by the frames, said frames being adapted to be engaged and
15 swung by the bobbin holder for causing the rollers to stand in different oblique positions in the different directions of movement of the shuttle.

17. A shuttle, comprising a shuttle body,
20 a bobbin holder pivotally mounted thereon to have its position reversed and direct the bobbin to the rear of the shuttle in either direction of movement of the shuttle, one end of the bobbin holder having a projection
25 to swing into slots of the shuttle body, frames pivotally mounted in openings of the shuttle body and in position to be engaged by said projection of the bobbin holder, rollers carried by the frames, and springs
30 for holding the frames in a normal position from which they are moved by the engagement with the projection of the bobbin holder to cause the rollers to stand in different oblique positions in different directions
35 of movement of the shuttle.

18. A shuttle, comprising a shuttle body,

a bobbin holder pivotally mounted therein, U-shaped frames in slots in the shuttle body, bearing plugs mounted in the ends of the frames, a pivotal pin for each frame pass- 40 ing through the shuttle body and through one end of the frame and through the bearing plug at that end of the frame, the bearing plug at the other end of the frame being adjustably mounted therein, a roller having 45 trunnions fitting in the bearing plugs of each frame and contained within an opening of the shuttle body, and springs for holding the frames in normal positions, there being a projection on the bobbin holder adapted to 50 engage the frames for swinging them against the action of their springs for shifting the rollers to different oblique positions for different directions of movement of the shuttle.

19. A shuttle, comprising a shuttle body, 55 a bobbin holder pivotally mounted therein, spring-controlled pivoted frames in the shuttle body in position to be engaged by the bobbin holder during its swinging movements, stops to be engaged by the bobbin 60 holder for limiting its swinging movements, and rollers carried by the frames to be shifted by the movements of the bobbin holder, said bobbin holder adapted to be held in position by the spring action of the frames. 65

In testimony whereof, I affix my signature, in presence of two witnesses.

ALBERT B. WEISSENBORN.

Witnesses:

FRED V. HEINEMANN,
SELMA RHODE.