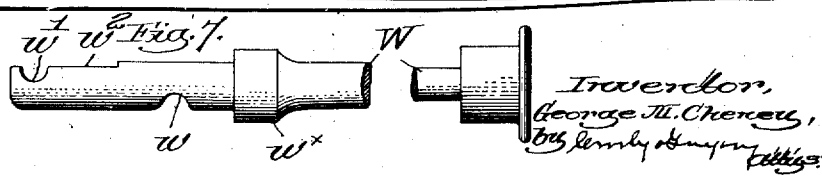
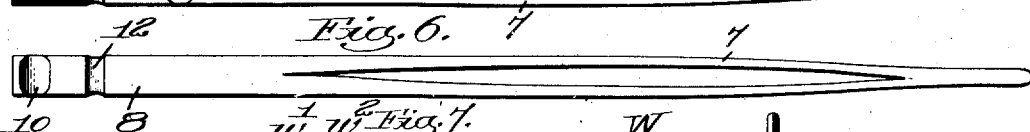
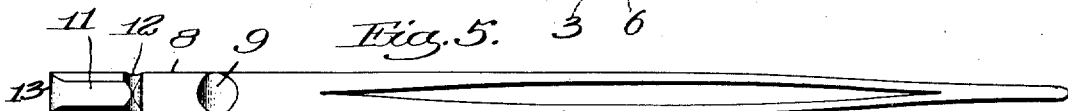
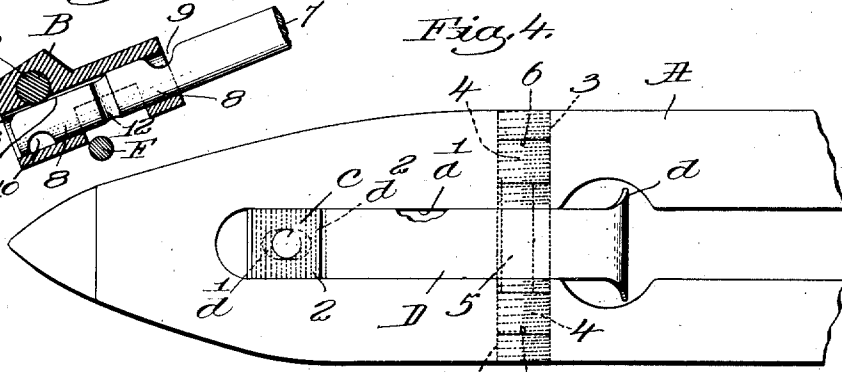
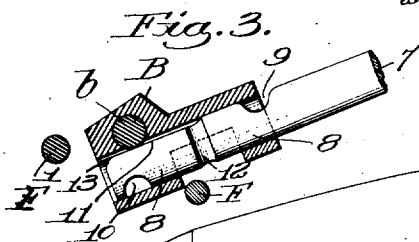
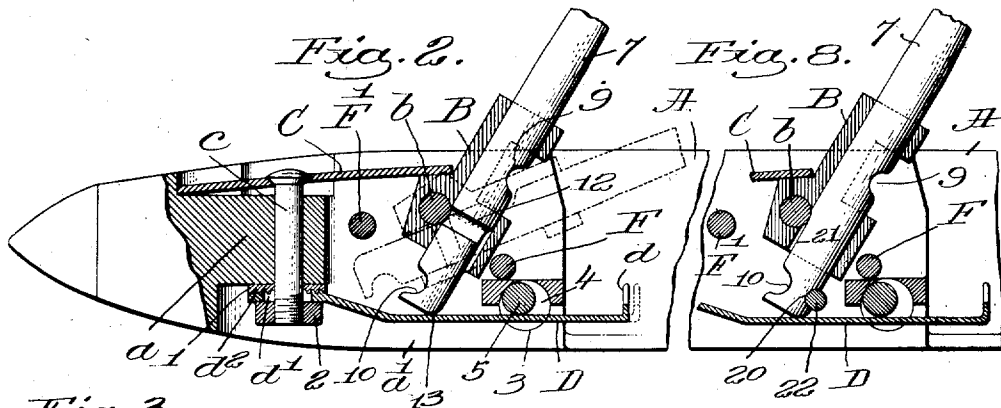
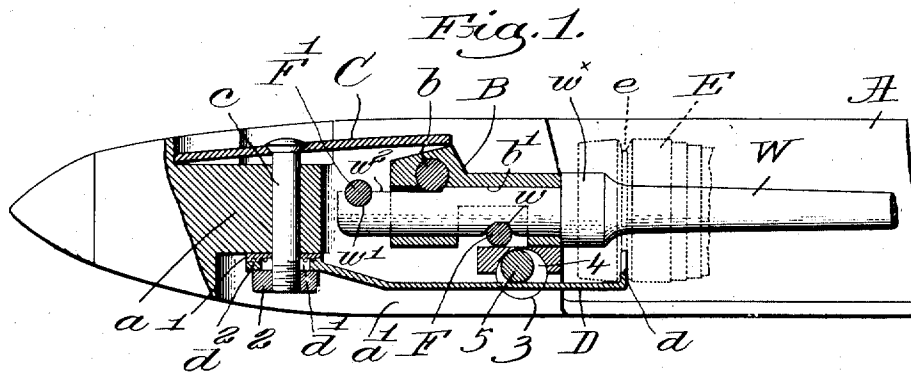


G. M. CHENEY.
 LOOM SHUTTLE AND SPINDLE.
 APPLICATION FILED DEC. 24, 1910.

1,054,391.

Patented Feb. 25, 1913.



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UNITED STATES PATENT OFFICE.

GEORGE M. CHENEY, OF SOUTHBRIDGE, MASSACHUSETTS.

LOOM SHUTTLE AND SPINDLE.

1,054,391.

Specification of Letters Patent.

Patented Feb. 25, 1913.

Application filed December 24, 1910. Serial No. 599,174.

To all whom it may concern:

Be it known that I, GEORGE M. CHENEY, a citizen of the United States, and resident of Southbridge, county of Worcester, State of Massachusetts, have invented an Improvement in Loom Shuttles and Spindles, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention has for its object the production of a novel shuttle and spindle for looms so constructed and arranged that either cops or bobbins can be used, as may be desired.

In many mills the yarn used is wound sometimes on paper tubes, cones or cops, and sometimes on bobbins, and generally a large supply of shuttles must be kept on hand, some for use with bobbins and others for use with cops or the like.

The so-called socket spindle comprises a body or spindle proper, which enters the bobbin, and a socket or head which receives one end of the body and which is pivoted in the shuttle-body, the spindle being withdrawn from the head for the application or removal of the bobbin, as the tip of the spindle has a retaining cap thereon to hold the bobbin in place when in the shuttle.

A cop spindle or skewer is usually split and spread or sprung laterally to fit the cop tightly when pressed thereon from the tip end, such spindles being permanently pivoted in the shuttle body, and obviously cannot be used for bobbins on account of the large bore of the latter. Conversely, a socket spindle is not adapted for cops, as it is too large in diameter, and has no means for gripping or firmly securing the cop thereon, and even if the cop could be held tightly on the spindle the latter would have to be withdrawn from the socketed head in order that the empty cop could be worked off.

In my present invention the socketed head is employed, so that the ordinary worsted spindle can be used when desired, but I have provided means whereby a cop spindle can also be used and locked in the head when swung up out of the shuttle, and at the same time held from rotation in the head, so that a tight-fitting cop can be worked on or off readily.

The heads of some kinds of bobbins are generally provided with an annular groove or "crease" to be engaged by the upturned

lip of a bobbin-catch at the bottom of the shuttle for retaining the bobbin on the spindle, and as the diameter of the head varies with different bobbins, and the location of the crease varies, much annoyance and trouble is met with because the catch on a given shuttle will not coöperate properly with the crease or the bobbin-head, either or both.

In my present invention I have provided means whereby the bobbin-catch can be adjusted longitudinally to fit different locations of the crease, and it can also be adjusted to accommodate bobbin-heads of various diameters. The adjustments are independent of each other so that either or both adjustments can be made, as required, and in a very simple, easy and effective manner.

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

Figure 1 is a side elevation and longitudinal section of the spindle-supporting end of a loom shuttle embodying one practical form of my present invention, showing a bobbin spindle in operative position, and the butt of a bobbin indicated in dotted lines in coöperation with the bobbin-catch, to illustrate the operation thereof; Fig. 2 is a similar view, but with the spindle swung up out of the shuttle for the application or removal of a cop, the dotted line position of the socketed head and the spindle showing the latter in readiness to be withdrawn from the head or to be locked therein; Fig. 3 is a detail of the socketed head in section and the cop spindle inserted partway therein; Fig. 4 is a bottom view of the end of the shuttle and the bobbin-catch, with the retaining nut therefor; Fig. 5 is an under side view of the cop spindle for use in the shuttle, in accordance with my invention; Fig. 6 is a top plan view thereof; Fig. 7 is a side elevation, with the blade broken out, of the ordinary worsted spindle having the enlarged retaining tip. Fig. 8 is a part sectional detail of a modified form of locking device for the spindle when in position for the reception or withdrawal of a yarn-carrier, to be referred to.

It is to be understood that when cops or the like are used the bobbin catch has no function, as the cop is held by frictional engagement with the spindle body, said

catch coming into action only when bobbins or other forms of headed yarn-carriers are employed which must be positioned on the spindle by the catch.

Referring to Figs. 1 and 2, the shuttle-body A, of substantially well known construction, is longitudinally recessed to receive the head B fulcrumed on the transverse pin *b* fixed in the shuttle-wood, said pin extending slightly into the longitudinal socket *b'* which receives the end of the spindle. The top-spring C coöperates as usual with the top of the head and is held in position by the headed, vertical bolt *c* which passes through the portion *a* of the shuttle-wood and projects at its lower end into the longitudinal recess *a'* in the bottom of the shuttle made to receive the shank of the bobbin-catch D. Said catch is substantially of usual construction, having at its inner, free end the upturned lip *d* to enter the crease *e* of the bobbin-head E, see dotted lines, Fig. 1, but in accordance with this part of my invention I provide the outer end of the catch with an elongated longitudinal slot *d'* for the bolt *c*, and I transversely corrugate the adjacent upper face of the shank, at *d''*, Fig. 4. Between the bottom of the shuttle-wood *a* and the corrugated part of the shank of the catch I interpose a correspondingly-corrugated washer 1, and a retaining nut 2 outside the shank receives the threaded end of the bolt *c* and locks the catch securely in place.

By turning back the bolt *c* to relieve the pressure of the nut 2 the bobbin-catch D can be moved longitudinally to properly adjust the position of the lip *d* for the crease in the bobbin-head, the corrugated opposing faces of the shank and washer 1 maintaining the adjustment when the bolt *c* is again set up. Thus the longitudinal adjustment of the bobbin-catch, hereinbefore referred to, is effected, the sides of the recess *a'* preventing rotation of the locking nut when the bolt *c* is turned.

To elevate or depress the lip of the catch, for bobbin-heads of different diameters, I bore the shuttle-body transversely at 3, see dotted lines, Fig. 4, to receive the threaded ends 4 of an eccentrically connected, cylindrical bearing portion 5 which extends across the shank of the bobbin-catch near its free end, and is adapted to engage the upper face thereof. One or both of the ends 4 of the adjusting device will in practice be nicked, at 6, for the reception of the blade of a screw-driver, so that the device 4, 5 can be rotated more or less in the hole 3.

If rotation is from left to right, Figs. 1 and 2, the bearing portion 5 will be raised as the ends 4 are revolved, and the lip *d* of the bobbin-catch will be permitted to rise accordingly, to coöperate with a bobbin-head of smaller diameter, whereas if rotation is

from right to left the bearing portion 5 will be lowered and will depress the lip, to coöperate properly with a bobbin-head of larger diameter, the resiliency of the catch D at all times holding it against the part 5 of the adjusting device.

Manifestly either adjustment of the bobbin-catch is made independently of the other adjustment, and both adjustments are effected easily and quickly whenever desired.

The inner and outer leveling pins F, F' are as usual in socket spindles, being fixedly held in the shuttle-wood to engage the usual transverse notches on the lower and upper sides, respectively, of the end of the spindle when turned down into the shuttle.

In Fig. 7 the notches *w'* and *w* of a common form of worsted spindle W coöperate with the pins F' and F, the annular enlargement *w''* abutting against the outer end of the socketed head B when the spindle is inserted therein, and the side of the spindle base adjacent the notch *w'* is slabbled off or flattened at *w''* to clear the exposed portion of the fulcrum pin *b*.

A spindle having its base formed as shown in Fig. 7 is shown in operative position in the socketed head B in Fig. 1, and it will be observed that the flattened part *w''* of the spindle base is uppermost, to clear the fulcrum pin *b*, the latter preventing rotative movement of the spindle in the head B when swung up out of the shuttle.

In Figs. 5 and 6, I have shown a cop spindle constructed for use in the shuttle illustrated in Figs. 1 and 2, and in accordance with this part of my invention the base 8 of the usual split blade 7 has inner and outer transverse notches 9, 10 and a slabbled-off or flattened portion 11 on that side of the base opposite to the notch 10, see Fig. 5, and also Figs. 2 and 3. At the inner end of the flattened portion 11 the base has formed in it an annular groove 12, and the outer end of the flat portion or face 11 widens out laterally at 13.

To insert the spindle in the head it is grasped with the face 11 up and then slid into the head socket *b'* the head B at such time being in the intermediate position shown in Fig. 3 and in dotted lines Fig. 2, the face 11 sliding under the projecting part of the fulcrum pin *b* until the latter is opposite groove 12. Now the spindle is given a half revolution to reverse its base in the head, thereby bringing the notch 10 up and turning notch 9 down, the coöperation of the pin *b* and groove 12 permitting such revoluble movement of the spindle. At such time the intermediate, dotted line position of the socketed head B, Fig. 2, causes the outer end of the base to clear the adjacent part of the shank of the bobbin-catch D, so that it offers no opposition to the turning of the spindle on its longitudinal axis.

Just as soon as the pin *b* enters any part of the annular groove 12, however, the spindle will be locked from longitudinal movement in the head, but the half revolution of said spindle is necessary to position the notches 9 and 10 for cooperation with the leveling pins *F*, *F'* when the spindle is swung down into the shuttle. Thus by the revoluble movement of the spindle as described it is locked positively in the head and cannot be withdrawn therefrom no matter what may be the position of said head, but when the latter and the spindle are swung up into full line position, Fig. 2, the spindle is not only locked against withdrawal but it is also locked from rotation, for the widened end 13 of the face 11 then abuts squarely against the upper, flat face of the shank of the bobbin-catch, as is clearly shown.

In the full line position of the parts shown in Fig. 2 the spindle is ready for the reception or removal of a cop, and the latter can be worked on or off by the weaver just as if the spindle were permanently attached to the shuttle.

To remove the cop spindle from the head the latter must be swung to intermediate or releasing position so that the spindle can be revolved to bring the face 11 uppermost and clear the pin *b* from the locking groove 12, and then the spindle can be pulled out of the head, as will be obvious. Thus while the bobbin-catch performs no function as a catch when the shuttle is used with a cop spindle the shank of the bobbin-catch acts in conjunction with the part 13 of the spindle base to hold the spindle from rotation when swung up out of the shuttle.

From the foregoing description, taken in connection with the drawing, it will be apparent that the shuttle is adapted for use with various forms of detachable spindles, whether for bobbins or cops, the structure of the cop spindle enabling use thereof with a socketed head in the shuttle.

In the modified structure shown in Fig. 8 the socketed head *B* fulcrumed on the transverse pin *b*, the leveling pins *F*, *F'* to cooperate respectively with the notches 9 and 10 of the spindle when the latter is swung into the shuttle, the spring *C*, and the bobbin catch *D*, are substantially all as shown in Fig. 2. The spindle 7 is provided with a notch 20, in Fig. 8, opposite notch 10, and a transverse locking pin 22 is fixed in the shuttle body in such position that when the spindle is swung into the position shown, for the reception or removal of a yarn-carrier, the notch 20 is entered by the locking pin. Such cooperation of the notch and pin locks the spindle in the head *B*, precisely as locking is effected in Fig. 2 by cooperation of pin *b* and the annular groove 12, so that the spindle cannot

be withdrawn from the head *B*. To withdraw the spindle it must be swung toward the shuttle far enough to disengage the notch 20 from the pin 22.

In the modification the flattened face 21 of the spindle is on the side adjacent the notch 10, to clear the projecting part of pin *b*, as shown, said pin by its cooperation with the flattened face 21 preventing rotation of the spindle in the head *B*.

Various changes or modifications in details of construction and arrangement can be made by those skilled in the art without departing from the spirit and scope of my invention as set forth in the claims annexed hereto.

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

1. In a loom-shuttle having a longitudinally adjustable bobbin-catch with an upturned engaging lip at its free inner end, an adjusting member movably mounted in the shuttle-body transversely thereof and provided with a cam portion cooperating with the bobbin-catch between the lip thereof and its outer end, movement of said member in the shuttle-body acting through the cam portion to cause the lip of the catch to be raised or lowered to accommodate bobbins having heads of different diameters.

2. In a loom-shuttle, a bobbin-catch having an upturned lip at its free inner end and fixedly attached at its outer end to the shuttle-body, and an eccentric adjusting member rotatably mounted in the shuttle-body and bearing against the upper face of the catch to vary the position of the lip with relation to the longitudinal axis of the shuttle.

3. The combination with the body of a loom-shuttle having a longitudinal recess in its bottom and a transverse hole intersecting such recess, of a bobbin-catch having an elongated shank seated in the recess and fixedly held at its outer end, and an adjusting device comprising threaded ends and a cylindrical pin eccentrically connecting them, the pin engaging the upper face of the shank and the threaded ends being mounted in the hole in the shuttle-body at opposite sides of the shank, rotation of said ends turning the eccentric pin to act upon the shank and thereby vary the distance between the bobbin-engaging end of the catch and the longitudinal axis of the shuttle.

4. The combination with the body of a loom-shuttle, and a bobbin-catch mounted thereon and having an upturned engaging lip at its free inner end, of a rotatable, eccentrically mounted member supported transversely in the shuttle-body and cooperating with the catch, to cause its lip to be raised or lowered to accommodate bobbins of different diameters.

5. In a loom-shuttle, in combination, a socketed head fulcrumed therein, a fulcrum pin intersecting the socket, and a spindle having its base annularly grooved and provided with a flat face extended outward therefrom, to clear the pin when the base is inserted in the head, a partial revolution of the spindle effecting coöperation of said pin and groove to lock the spindle in the head.
6. In a loom-shuttle, in combination, a socketed head fulcrumed therein, a fulcrum pin intersecting the socket, inner and outer leveling pins fixed in the shuttle-body, a spindle having notches on opposite sides of its base to coöperate with said pins, said base being

flattened opposite the outer of said notches, and an annular groove in the base at the inner end of the flattened portion, the latter clearing the fulcrum pin when the spindle base is inserted in the head, a partial rotation of the spindle effecting coöperation of the fulcrum pin and the groove to lock the spindle in the head.

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

GEORGE M. CHENEY.

Witnesses:

JOHN C. EDWARDS,
FREDERICK S. GREENLEAF.

Correction in Letters Patent No. 1,054,391.

It is hereby certified that in Letters Patent No. 1,054,391, granted February 25, 1913, upon the application of George M. Cheney, of Southbridge, Massachusetts, for an improvement in "Loom Shuttles and Spindles," an error appears in the printed specification requiring correction as follows: Page 3, line 106, for the word "combustion" read *combination*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 25th day of March, A. D., 1913.

[SEAL.]

C. C. BILLINGS,

Acting Commissioner of Patents.

5. In a loom-shuttle, in combination, a socketed head fulcrumed therein, a fulcrum pin intersecting the socket, and a spindle having its base annularly grooved and provided with a flat face extended outward therefrom, to clear the pin when the base is inserted in the head, a partial revolution of the spindle effecting coöperation of said pin and groove to lock the spindle in the head.
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flattened opposite the outer of said notches, and an annular groove in the base at the inner end of the flattened portion, the latter clearing the fulcrum pin when the spindle base is inserted in the head, a partial rotation of the spindle effecting coöperation of the fulcrum pin and the groove to lock the spindle in the head.

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