

J. S. McCURDY.
Sewing Machine Shuttle.

No. 49,904.

Patented Sept. 12, 1865.

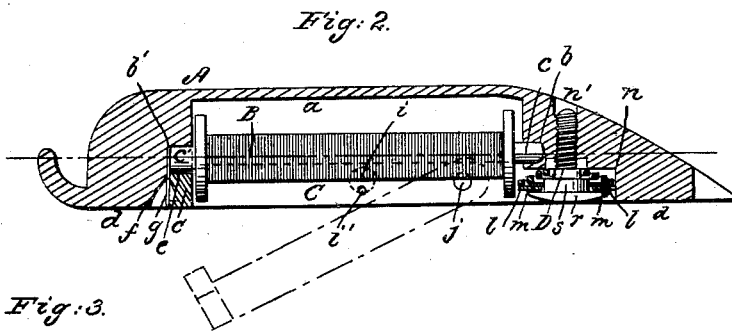
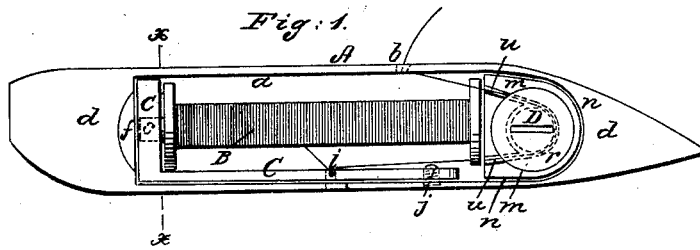


Fig. 3.

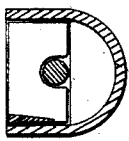


Fig. 5.

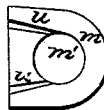
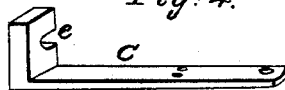


Fig. 4.



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UNITED STATES PATENT OFFICE.

JAMES S. McCURDY, OF BRIDGEPORT, CONNECTICUT.

IMPROVEMENT IN SEWING-MACHINE SHUTTLES.

Specification forming part of Letters Patent No. 49,904, dated September 12, 1865.

To all whom it may concern:

Be it known that I, JAMES S. McCURDY, of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Shuttles of Sewing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a face view of a shuttle with my improvements. Fig. 2 is a horizontal longitudinal section of the same. Fig. 3 is a transverse section of the same in the plane indicated by the line *x* in Fig. 1. Fig. 4 is a perspective view of the device which confines the spool in its place and through which the thread passes from the bobbin to the tension device. Fig. 5 is a front view of one portion of the tension device.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in an improved construction and arrangement of the movable bearing provided in the shuttle for one of the journals of the bobbin, for the purpose of permitting the removal and replacement of the bobbin, whereby the use of a longer bobbin in a shuttle of a given length is provided for; also, in an improved arrangement of the holes provided in the friction-bar of the shuttle for the passage of the thread on its way from the bobbin to the eye of the shuttle, whereby the friction to which the thread is subject in passing through the said holes is rendered more nearly uniform; and, further, in a novel tension device for producing a graduated tension upon the shuttle-thread.

To enable others skilled in the art to make and use my invention, I will proceed to describe it with reference to the drawings.

A is the body of the shuttle, provided with the usual cavity, *a*, for the reception of the bobbin B. In one end of this cavity there is a hole, *b*, Fig. 2, which forms a fixed bearing for the journal *c* of the bobbin, and in the other end of the said cavity there is formed a square recess, *b'*, extending from top to bottom of the said cavity and from the face *d* of the shuttle back to a distance beyond the line in which the axis of the bobbin is situated equal to half the diameter of the journal *c'* of the bobbin.

C is a thin flat bar, arranged to lie lengthwise of the shuttle within the cavity *a*, and close to the bottom thereof. This bar is pivoted at one end by a pin, *j*, to the body of the shuttle near the fixed bearing *b*, and at the other end is turned up or formed with a perpendicular projection, *O'*, to fit the square recess *b'*, before mentioned. In the back edge of this projection there is a notch, *e*, of a width and depth equal to the diameter of the journal *c'* of the bobbin, and which combines with the opposite portion of the back of the recess *b* to form the bearing for the said journal. When the said bar is pushed into the shuttle as far as the back of the recess *b'* its front edge is flush with the face of the shuttle, and the said bar is thus prevented from slipping out of its place and made to hold the bobbin in the shuttle without the use of a spring for that purpose by coming in contact with the face of the raceway of the sewing-machine when the shuttle is in its place in the machine.

To provide for the removal of the bobbin from the shuttle when the latter is taken out of the sewing-machine, there is a notch, *f*, provided in the face of the shuttle at the edge of the recess *b'*, and a notch, *g*, in the end of the bar to receive the end of the thumb or finger nail, and thereby enable the bar to be drawn out from the shuttle in the manner shown in dotted outline in Fig. 2, thus liberating the bobbin. By this construction and arrangement of the movable bearing the shuttle is enabled to receive a longer bobbin than when a longitudinally-movable bearing held up by a spring is provided at one end of the shuttle, as a less length of solid metal is required at the end of the shuttle where the movable bearing is situated.

The long straight portion of the bar C, which is arranged lengthwise of the shuttle, it will be seen, resembles the friction-bar used in some sewing-machine shuttles, having provided in it holes *i i*, through which the thread coming from the bobbin is laced for the purpose of producing friction upon it and conducting it to the tension device hereinafter described; but the holes *i i*, instead of being arranged in a line parallel with the length of the shuttle, are arranged in a transverse line, as shown in Fig. 2. By this arrangement of the holes the thread, in being drawn from the bobbin, from either side of the

first hole which it enters, or from either end of the bobbin, forms a similar bend over the edge of the hole, according to the distance from the hole at which it leaves the bobbin, and hence the friction is the same in either case; but when the holes are arranged in a line parallel with the length of the shuttle, the thread, in being drawn from the part of the bobbin on one side of the first hole, forms a very slight bend over the edge of the hole, and in being drawn from the part of the bobbin on the other side of the hole forms a bend varying from ninety degrees to one hundred and eighty degrees, and hence the friction produced on the edge of the hole is very unequal.

The improved tension device consists of a screw, *D*, a spring, *l*, and a slotted plate, *m*, (the latter is shown separate in Fig. 5,) the thread passing between the said plate and the head *r* of the screw, and the plate being pressed up toward the head of the screw by the spring *l*. The said spring *l* and plate *m* are applied within a recess, *n*, formed in the face of the shuttle at one end of the cavity *a* provided for the reception of the bobbin, and the screw *D* passing through and fitting easily to a hole, *m'*, in the plate and through the spring, and screwing into a transverse tapped hole, *n'*, in the shuttle, and its head *r* being received within the said recess *n*. The spring *l*, which lies against the back of the recess *n*, is of spiral construction, and, in order to allow it a considerable range of motion without making the recess *n* of great depth, it is made of conical volute form, that its coils may pass one within another. The shuttle-thread, coming from one of the holes *i i* in the bar *C*, passes under, partly around, and over the screw on its way to the eye *t* of the shuttle, and the plain portion *s* of the screw next to the head, around which the shuttle-thread passes, is of larger diameter than the threaded portion of the screw, and should preferably be tapered toward the head *r*, as shown in Fig. 2, to draw the shuttle-thread toward the inner face of the screw.

The face of the plate *m* has provided in it

two grooves, *u u*, of a depth less than the thickness of the finest thread, which is to be used in the shuttle to guide the thread to and from the part *s* of the screw and prevent too great a pressure being produced upon it between the plate *m* and the head of the screw. The outer surface of the head of the screw must not project beyond the face *d* of the shuttle. The said head has provided in it a notch, *v*, or its equivalent, for the reception of a screw-driver or other implement for turning it, and the tension of the shuttle-thread is regulated by screwing in the screw more or less to produce a greater or less compression of the spring, and thereby produce a greater or less friction upon the thread.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The bar *C*, constructed with a projection, *C'*, entering a recess, *b'*, at one end of the cavity *a* of the shuttle, and with a notch, *e*, or its equivalent in the said projection for the reception of one of the journals of the bobbin, and otherwise applied in combination with the shuttle, substantially as and for the purpose herein specified.

2. The arrangement of the holes *i i* in the bar *C* in a line transverse to the length of the shuttle, substantially as and for the purpose herein specified.

3. The tension device consisting of a screw, *D*, a slotted plate, *m*, and a spring, *l*, combined and applied to operate within a recess, *n*, in the face of the shuttle, substantially as and for the purpose herein described.

4. A sewing-machine shuttle which is constructed with a pivoted bar, *C*, adapted to form a bearing for one end of the bobbin, in combination with a tension device consisting of an adjusting-screw acting directly upon a slotted spring-plate, substantially as described.

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Witnesses:

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