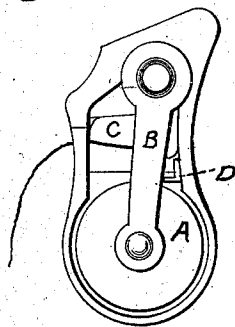


J. B. HERRESHOFF.  
Sewing-Machine Shuttle.

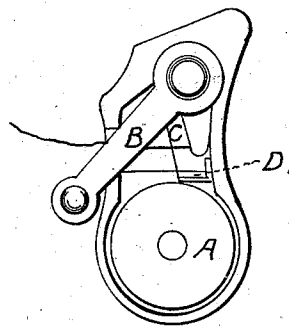
No. 100,627.

Patented March 8, 1870.

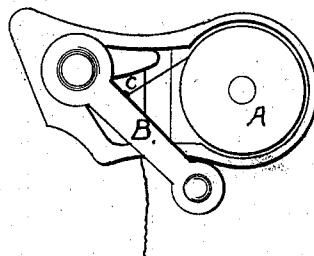
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



WITNESSES:

William C. King,  
George D. Hall

INVENTOR:

James B. Herreshoff  
By his atty. W. B. Vincent

# United States Patent Office.

JAMES B. HERRESHOFF, OF BRISTOL, ASSIGNOR TO GUSTAVUS A. WILLIAMSON AND SAMUEL T. SHATTUCK, OF PROVIDENCE, RHODE ISLAND.

Letters Patent No. 100,627, dated March 8, 1870.

## IMPROVEMENT IN SHUTTLE FOR SEWING-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

### To all whom it may concern:

Be it known that I, JAMES B. HERRESHOFF, of Bristol, in the county of Bristol and State of Rhode Island, have made certain new and useful Improvements in "Shuttles for Sewing-Machines;" and I do hereby declare that the following specification taken in connection with the drawings making a part of the same, is a full, clear, and exact description thereof.

Figure 1 shows my improved shuttle ready for the machine.

Figure 2 is the same with the spring removed from the bobbin.

Figure 3 shows a shuttle without my improvements.

It is well understood by those familiar with the use of sewing-machines that for the successful operation of the same, both as regards the appearance of the seam and its durability, it is necessary that the thread should at all times preserve the same degree of tension.

My improvement relates more particularly to what is known as the "American sewing-machine." I shall, therefore, describe my invention in connection with the same, though it may be used with equally good effect in all machines employing a shuttle, a slight variation in construction alone being necessary.

In sewing-machines now in use, the thread, after leaving the bobbin, either passes through a hole in the cross-bar and afterward through a hole in the side of the shuttle, or, if a cross-bar is not used, through a series of holes in the shuttle.

The thread thus receives a certain amount of friction, which, together with the strain upon it necessary to unwind it from the bobbin, is all that keeps it taut. This, however, would be sufficient, provided the bobbin at all times remained of the same diameter, but it will be readily seen that, as the thread unwinds and the diameter of the bobbin decreases, the friction upon the thread will increase in a corresponding proportion.

This difficulty has been partially overcome in the machines now in use by turning the cross-bar, so as to give the thread an extra turn upon it when the bobbin is full, and afterward turning it back after a portion of the thread has been unwound, or, if a cross-bar be not used, the thread may be released from some of the holes in the side of the shuttle. This, however, fails not only to entirely remove the difficulty, but subjects the operator to much loss of time and inconvenience in removing the shuttle for such purposes.

The object of my invention is to overcome these difficulties, and so construct a shuttle that the thread shall at all times be of the same tension, whether the bobbin be full or empty.

In the drawings—

Fig. 1 shows my improved shuttle ready to be placed in the machine.

The bobbin A is full and held in place by the spring B.

The end of the thread passes through a hole in the cross-bar C, and through the side of the shuttle.

Upon the inside of the shuttle in front of the bobbin and extending nearly half its width, I place a projection, D, across the edge of which the thread passes after leaving the bobbin, as shown in fig. 2.

When the bobbin is full, the thread passing therefrom bears or is bent about and in contact with the edge of the projection D, causing considerable friction, but as the thread unwinds and approaches the center of the bobbin, it bears gradually less and less against the edge, and the friction is gradually diminished.

When the bobbin is full the strain on the thread to turn it is much less than when it is partly empty, consequently, as the thread winds off the tension is gradually increased, and it is to compensate for this variation in tension that I have arranged the projection D between the usual tension-post C and the bobbin, and so that the thread is caused to bear on a greater or lesser portion of the surface of the projection, as described.

The thread is not drawn through a slot or hole in the projection D, but simply across its edge, which is equal in width to the length of the bobbin A, so that the thread, in unwinding, as it moves up and down upon the bobbin, will correspondingly change its point of contact with the projection D, which preserves its evenness of tension.

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

In a shuttle having a bobbin, the spring B and the tension-post C, the arrangement between the bobbin and the tension-post of the projection D, having its edge parallel with the axis of the bobbin, and located as shown.

JAMES B. HERRESHOFF.

Witnesses:

NAT. T. SANDERS,  
JAMES F. HAYARD.