(No Model.)

D. W. BROWN.

SHUTTLE FOR SEWING MACHINES.

No. 561,088. Patented June 2, 1896.

Fig. 1.

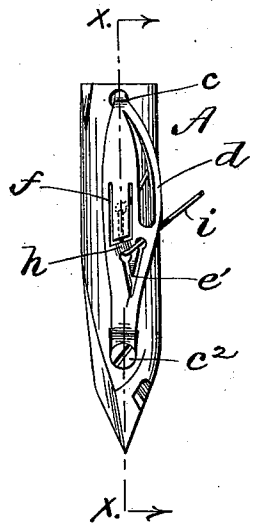


Fig. 2.

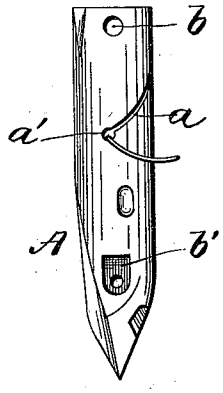


Fig. 3.

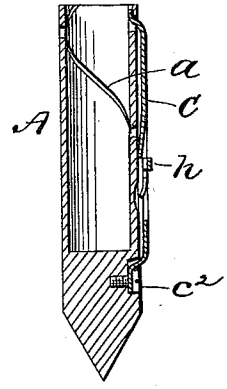
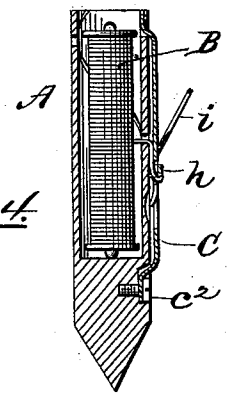


Fig. 4.



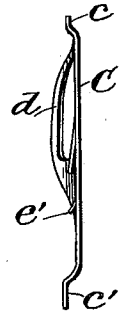


Fig. 5.

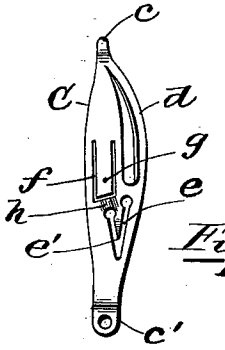


Fig. 6.

Witnesses

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UNITED STATES PATENT OFFICE.

DANIEL W. BROWN, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO THE HOUSEHOLD SEWING MACHINE COMPANY, OF SAME PLACE.

SHUTTLE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 561,088, dated June 2, 1896.

Application filed December 22, 1893. Serial No. 494,389. (No model.)

To all whom it may concern:

Be it known that I, DANIEL W. BROWN, of the city and county of Providence, in the State of Rhode Island, have invented certain new and useful Improvements in Sewing-Machine Shuttles; and I do hereby declare the following specification, taken in connection with the accompanying drawings, forming a part of the same, to be a full, clear, and exact description thereof.

The object of the invention is to improve the tension upon the shuttle-thread and to secure a tension which shall be certain to be yielding or elastic; and to that end the invention consists in the combinations and arrangements of parts hereinafter described.

Referring to the drawings, Figure 1 is a plan view of a shuttle with my improvements applied thereto. Fig. 2 is a like view of a shuttle-body. Fig. 3 is a longitudinal section of a shuttle on the line *x x*, Fig. 1. Fig. 4 is a corresponding view to Fig. 3, but showing the bobbin in place and the shuttle threaded. Fig. 5 is an edge view, and Fig. 6 a top view, of the shuttle-spring.

The present improvements are applicable to either an open-ended or a closed-end shuttle, only an open-ended shuttle, however, being shown in the drawings.

A represents the shuttle-body of usual form, and B the bobbin contained therein. The shuttle-body is provided with an angular slot *a* for the passage of the thread in threading the shuttle, said slot extending from the heel of the body to about midway the length of the bobbin-chamber and there terminating in a circular enlargement *a'*, as shown in Fig. 2. Said shuttle-body is also provided with a hole *b* near the heel thereof, and with a countersunk recess *b'* toward the point for the attachment of the shuttle-spring C. This shuttle-spring is attached to the shuttle-body in the usual manner, and for the purpose of such attachment is provided at one end with an offset *c*, adapted to enter the hole *a* and engage the shuttle-body, and at the other end with an offset *c'*, adapted to enter the recess *b'* in the shuttle-body, where it is held by a screw c^2. The shuttle-spring is provided with a curved portion or extension *d*, commonly called the "sword," and with a V-shaped slot *e*, forming between the legs of said slot a point *e'*, the ends of said slot terminating in circular enlargements, as shown in Figs. 1 and 6, such construction, in connection with the open-ended slot *a*, serving to form a self-threading shuttle.

It will be observed that the sword *d* is curved and projects for a considerable distance from the main portion of the shuttle-spring. As a result of this construction it has been found that the sword acts as a brace and serves to destroy to a large degree the elasticity or yield of the shuttle-spring, resulting in a stiff unyielding tension upon the shuttle-thread, which is very undesirable. To remedy this difficulty, I have provided a free-ended spring-tongue of such construction and arrangement that it will always secure a yielding or elastic tension, even when the shuttle-spring is provided with the projecting sword. This spring-tongue I prefer to form integral with the shuttle-spring, although this is not necessary, and in the drawings I have shown said spring-tongue *g* as formed by cutting a three-sided slot *f* in the shuttle-spring C, as clearly shown in Figs. 1 and 6. This spring-tongue *g* is formed so that it will overlie the hole *a'* in the shuttle-body, and with its free end projecting for some distance in front of said hole and overlying the shuttle-body.

Preferably the free end of the tongue *g* is depressed to a greater or less degree to increase the tension, as shown somewhat exaggerated in Figs. 3 and 5. Preferably also there is formed in that portion of the shuttle-spring C which lies just in front of the free end of the tongue *g* an offset *h*, as shown in the drawings.

When the bobbin is in place and the shuttle threaded, the thread *i* leads from the bobbin up through the hole *a'* at the end of the slot *a*, thence forward in the direction of the length of the tongue *g* and between said tongue and the body of the shuttle, thence under the offset *h*, up through the enlargement at one end of the V-shaped slot *e*, over the point *e'*, down through the enlargement at the other end of the slot *e*, and out between the shuttle-spring C and the shuttle-body, all as shown in Figs. 1 and 4. It will

be seen that the thread is thus led for some little distance between the spring-tongue *g* and the body of the shuttle, and so that a pressure or tension is produced upon the thread between said tongue and shuttle-body and before the thread passes to the thread-guides on the shuttle-spring C. By reason of this arrangement there is always a uniform tension on the thread before it passes through the guides on the shuttle-spring, and consequently the thread will be drawn through said guides smoothly and under a uniform tension. It will further be seen that this tension is always a yielding or elastic tension and is in no way affected by the presence of the sword. The tension produced by said spring-tongue may be regulated or adjusted by turning the screw c^2.

While I prefer to make the entire bar or strip C of spring metal and sufficiently thin to be of a spring character, and so as to thus increase the spring force of the tongue *g*, if desired all of the bar or strip C except the tongue *g* may be stiff and rigid.

I am aware of the patent to Blake, No. 149,565, granted April 14, 1874, and I do not claim what is disclosed therein.

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

1. The combination, with a shuttle-body having a thread-delivering aperture, of a bar attached to said body and provided with thread-guides, said bar being also provided with a free-ended spring-tongue to constitute a spring-tension for the shuttle-thread, said tongue being located in the path of the thread between the said aperture and guides whereby it will bear upon the thread as it comes from the shuttle-body and before the thread is threaded through the thread-guides on said bar, substantially as described.

2. The combination, with a shuttle-body having a thread-delivering aperture, of a shuttle-spring attached to said body and provided with thread-guides, said shuttle-spring being also provided with a free-ended spring-tongue located in the path of the thread between said aperture and guides whereby it will bear upon the thread as it comes from the shuttle-body, and before the thread is threaded through the thread-guides on the shuttle-spring, substantially as described.

3. The combination, with a shuttle-body having a thread-delivering aperture, of a shuttle-spring attached to said body and provided with thread-guides, said shuttle-spring being provided with a free-ended spring-tongue located in the path of the thread between said aperture and guides, and being also provided with an offset adjacent to the free end of said tongue for the passage of the thread, substantially as described.

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Witnesses:
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