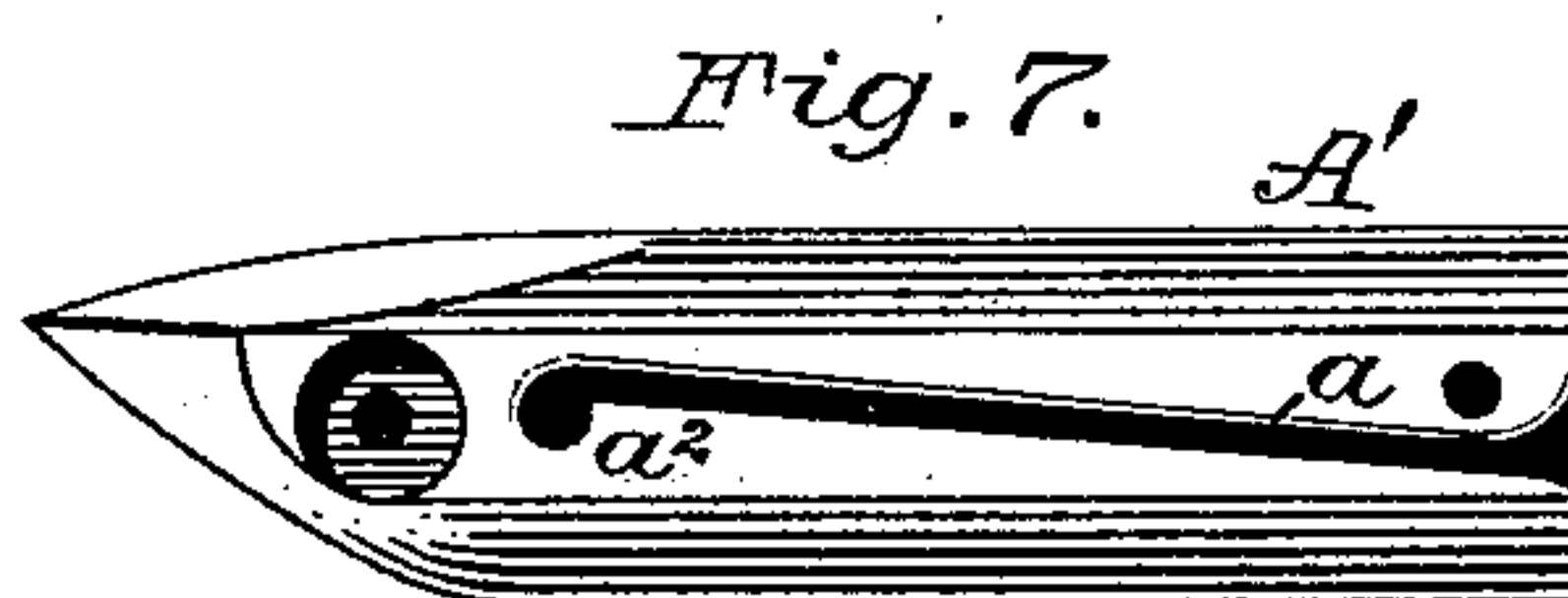
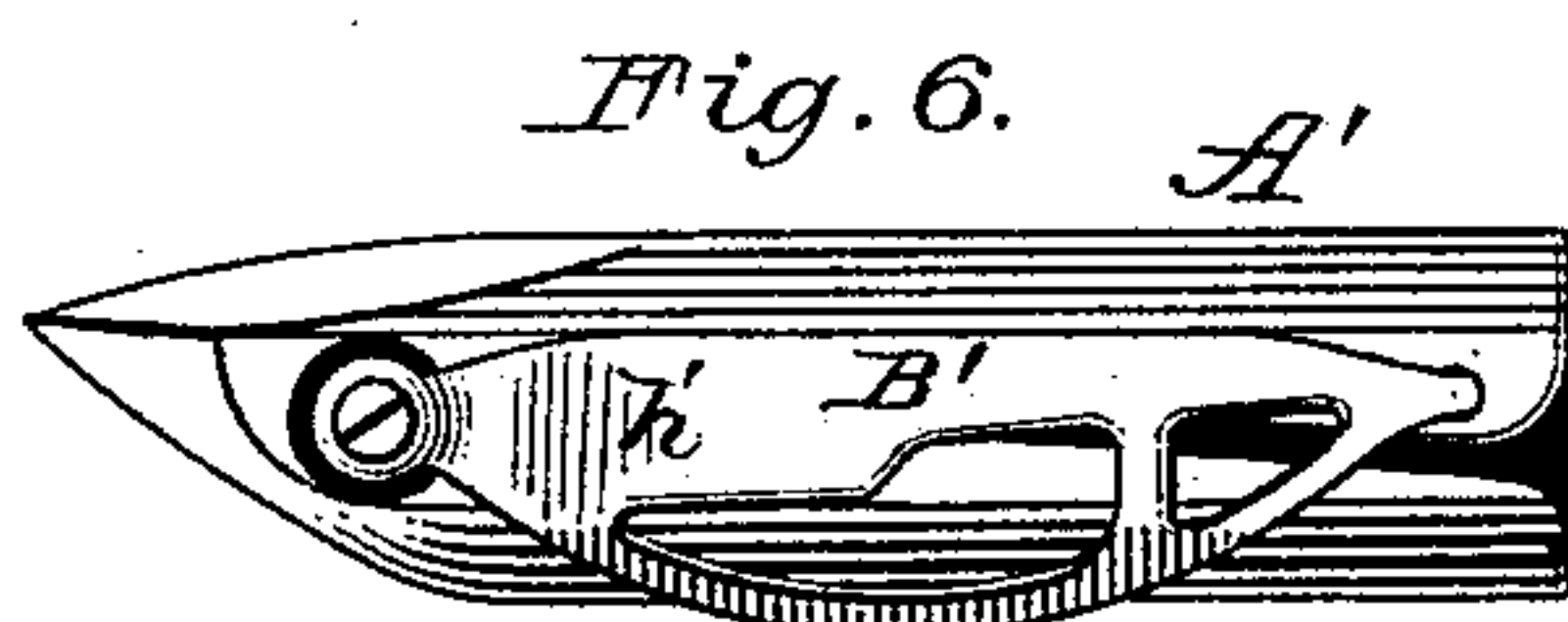
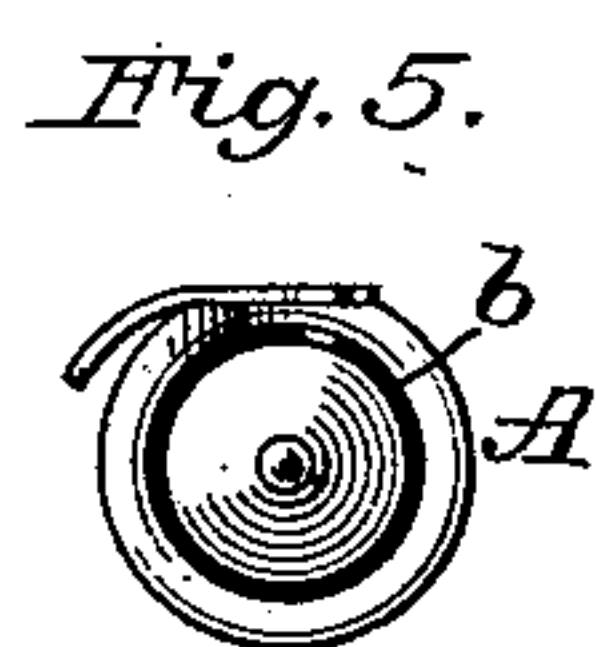
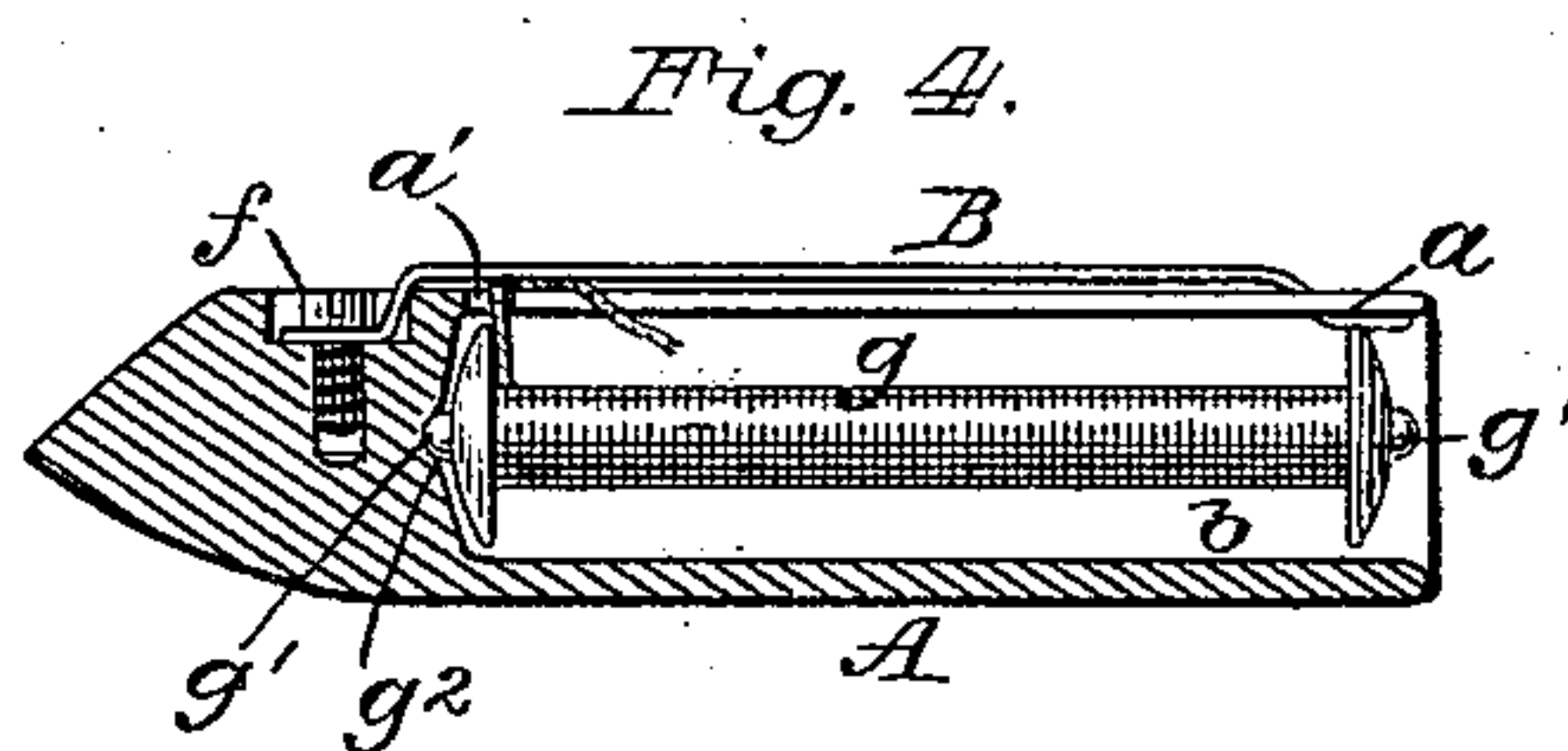
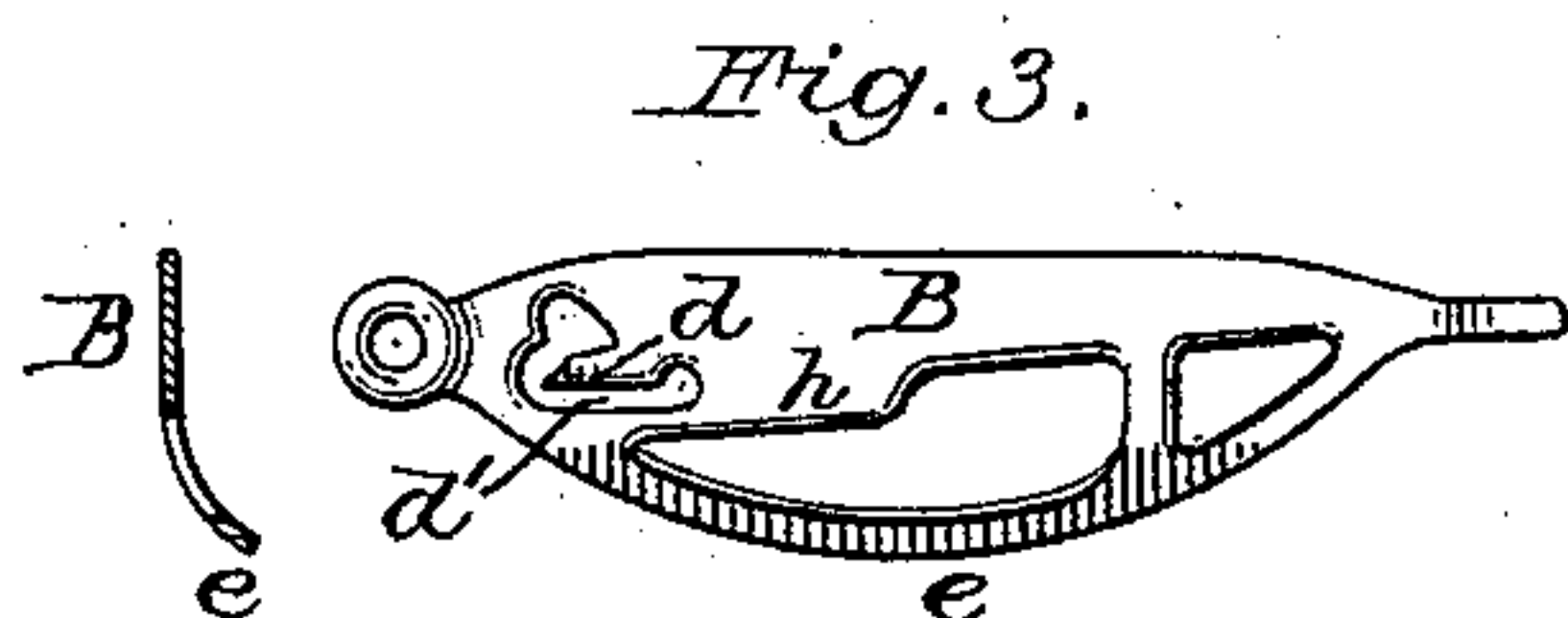
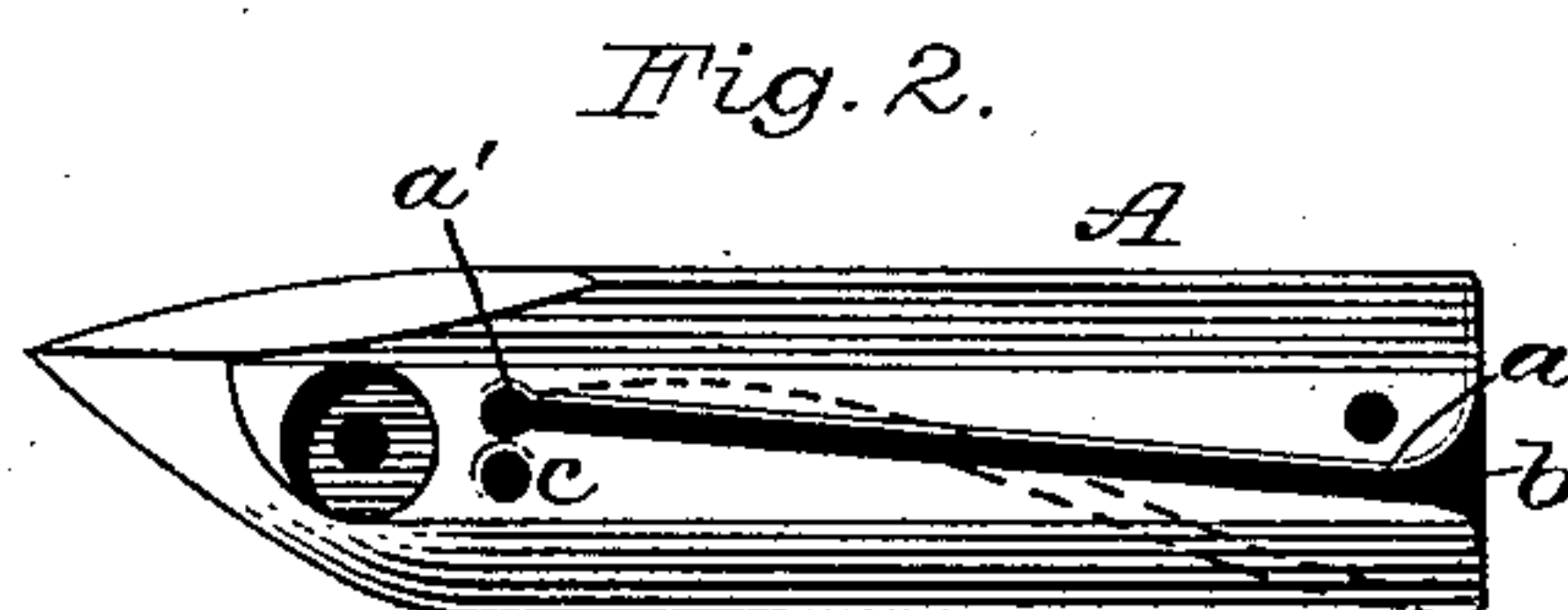
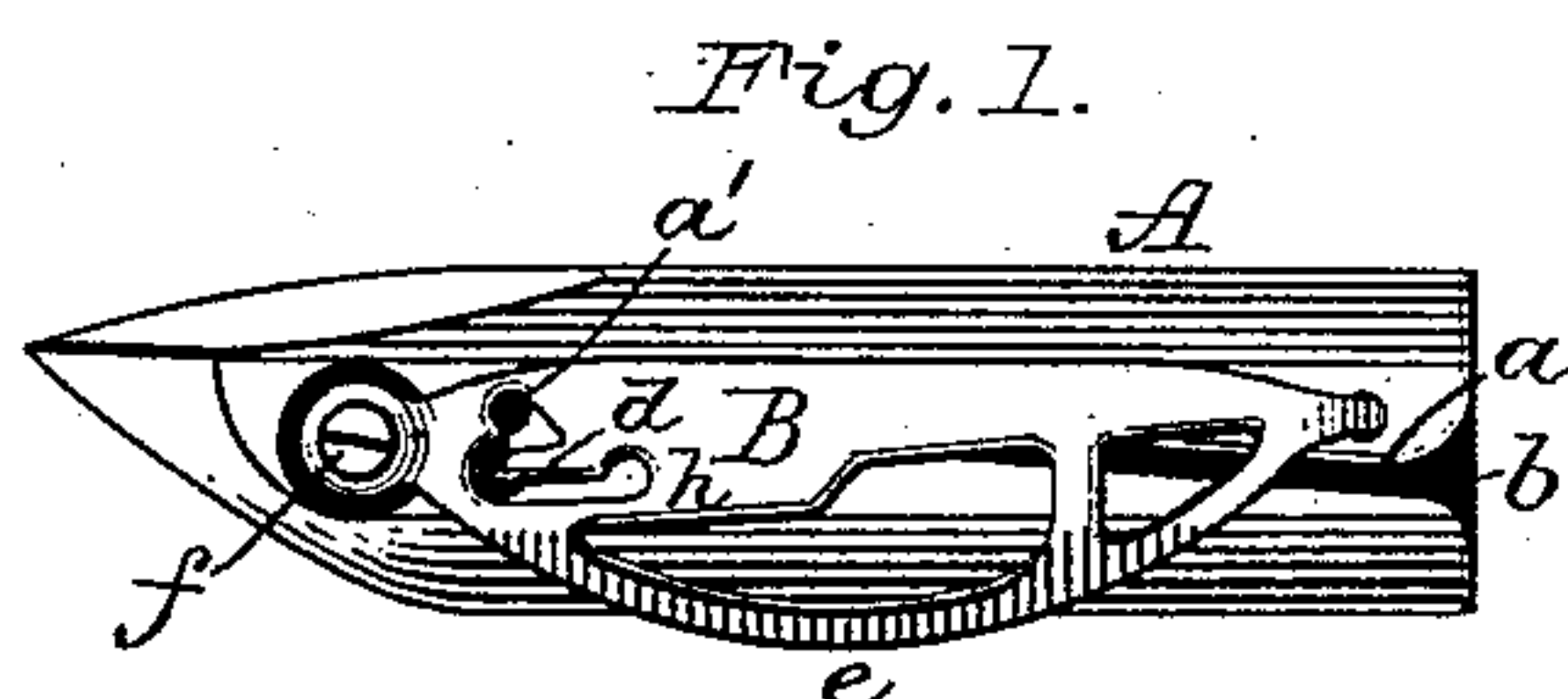


(No Model.)

J. ROBERTSON.
SHUTTLE FOR SEWING MACHINES.

No. 500,430.

Patented June 27, 1893.



Witnesses
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UNITED STATES PATENT OFFICE.

JAMES ROBERTSON, OF NORTHAMPTON, MASSACHUSETTS, ASSIGNOR TO THE FLORENCE MACHINE COMPANY, OF SAME PLACE.

SHUTTLE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 500,430, dated June 27, 1893.

Application filed February 17, 1887. Serial No. 227,867. (No model.)

To all whom it may concern:

Be it known that I, JAMES ROBERTSON, of Northampton, in the county of Hampshire and State of Massachusetts, have invented certain new and useful Improvements in Sewing-Machine Shuttles; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part thereof, is a clear, true, and complete description of the several features of my invention.

My said improvements, relate exclusively to that class of cylindrical shuttles, which have open rear ends, and carry bobbins which loosely occupy the bobbin chamber. It is well known, that in the use of these shuttles, when a bobbin has been nearly emptied of its thread, the rear flange or head of the bobbin, frequently laps to the one side, beyond the rear open end of the shuttle, thus causing the front end of the bobbin, to so crowd against one side of the inner end of the shuttle, as to result in breakage of the thread. This liability to derangement, I find to be due to the fact, that always heretofore the path of the thread from the bobbin, through the shell of the shuttle, is such, that when thread is drawn from the forward, or inner end of the bobbin, the latter is pulled backward in the bobbin chamber, thus tending to its undue longitudinal displacement. I have obviated this difficulty, by locating the thread eye so as to be in direct communication with the threading slot and closely adjacent to the inner end of the bobbin chamber, and hence the path of the thread from the bobbin, is always toward the nose of the shuttle, and as a consequence, the draft of the thread always exercises a forward pull on the bobbin, and reduces the liability of rearward displacement to a minimum. The bobbins usually employed in open ended shuttles, have axial tips, and the inner end of the bobbin chamber, has a central depression, serving as an endwise bearing seat for the bobbin, and hence in my shuttles, the bobbins being constantly pulled forward by the draft on the thread, the front tip is maintained in uniform bearing contact, thus greatly contributing to uniformity in tension. In its best form, my shuttle has a threading slot, terminating closely adjacent to the inner or front

end of the bobbin chamber, and a tension spring, provided at its front end with a V-shaped tongue, a slot, and a bearing face, and so applied, that a portion of said slot in the spring, with the front end of the threading slot, forms a thread eye, at the inner end of the bobbin chamber, from which the thread passes over said tongue and beneath said bearing face.

After describing the shuttles illustrated in the drawings, the features deemed novel, will be specified in the several clauses of claim hereunto annexed.

Referring to the drawings—Figure 1, illustrates in top view one of my shuttles in its best form. Fig. 2, is a similar view, without the tension spring. Fig. 3, in top view and central section, shows the tension spring detached. Fig. 4, is a central vertical longitudinal section, with a nearly emptied bobbin in position, and with thread passing outwardly from the extreme inner end thereof. Fig. 5, is a rear end view of the shuttle and its bobbin. Fig. 6, in top view illustrates a cylindrical shuttle embodying the main feature of my invention, in a modified form. Fig. 7, is a similar view of the same without the tension spring.

The cylindrical shuttle shell A, Figs. 1, to 5, has a threading slot *a*, extending forward from the rear or open end, and although I prefer to have said slot straight, and slightly angular to the axis of the shell, as shown, it may be parallel with said axis, or spiraled, as indicated in dotted lines, without departure from my invention. As an essential feature, however, the threading slot must terminate closely adjacent to the inner end of the bobbin chamber *b*, and as a rule, on top of the shell. As here shown, said slot terminates in a small drill hole *a'*. Another drill hole *c*, at one side of the first, and disconnected therefrom, serves merely as a recess in the shell for the reception of the downwardly bent tip, of the V-shaped tongue *d*, in the front end of the tension spring B. This spring is provided with the usual guard *e*, and is as heretofore adjustably secured to the shell, by means of a tail piece, at its rear end, occupying a hole in the shell, and a screw *f*, at its front end. The tongue *d*, is formed in the

spring by cutting a V-shaped slot d' , therein, and one end of this V-slot, overlies the inner end of the thread slot a , thus forming a thread eye in direct communication with said thread slot, for the passage of thread from the bobbin. The bobbin g , being in the chamber, the free end of the thread is drawn into the threading slot, at its rear open end, and on being pulled forward, the thread slips beneath the tongue, and then over it, and its path is thereafter restricted from the bobbin, through the thread eye over said tongue, and beneath the bearing face h , of the tension spring, when in use and during the forward movement of the shuttle.

The bobbin g , has at each end, the usual axial tip g' , and the inner end of the bobbin chamber, has a central recess as at g^2 , which serves as an endwise bearing seat for the inner bobbin tip.

With a thread eye, or equivalent controlling medium in the path of the thread from the shuttle, located as heretofore, at some point to the rear of the inner end of the bobbin chamber, the bobbin is sometimes pulled forward, and sometimes backward, according to the part of the bobbin, from which the thread is drawn, but with my shuttle, the bobbin is always pulled forward by the draft of the thread, and hence its front end occupies substantially uniform relations with the inner end of the chamber at the bearing seat, resulting in a corresponding uniform tension, and also reducing the breakage of thread to a minimum, because of the non-liability of the derangement, in the position of the bobbin, heretofore incident to its undue rearward displacement.

The tension spring B, has a peculiarly delicate resiliency, because near the adjusting screw, the body of the spring is divided by the V-shaped slot, leaving a narrow strip at each side of the spring, and enables it to freely twist in adapting itself to unevenness in thread passing beneath the bearing face.

While the shuttle thus far described embodies all of my improvements in their best form, the main feature of my invention is not restricted to that precise arrangement of threading slot, or thread eye, or form of spring. As for instance in Figs. 6 and 7, I show a shuttle shell A' , having a threading slot a , which is extended to the front or inner end of the bobbin chamber and terminates in a drill hole a^2 , so far to the one side of the slot, as to serve effectually as a thread eye directly communicating with the threading slot.

The tension spring B' , has no tongue, but

near its front end it has a depression or bearing face h' , so overlying the eye a^2 , as to preclude the escape of the thread laterally into the threading slot.

In this shuttle, the bobbin chamber at its inner end, has a bearing seat for the bobbin tip, and the forward draft of the thread, keeps the bobbin always in contact with said seat, as with the preferred form of shuttle first described. With the use of this plain spring B' , fairly good results will accrue, but it is obvious that the tension on the thread, cannot be so delicately controlled as with the spring B.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. An open end cylindrical shuttle provided with a tension spring, and a longitudinal threading slot terminating at and directly communicating with a thread eye closely adjacent to the inner or front end of the bobbin chamber, substantially as described, whereby during the draft of thread from a bobbin, the latter will be constantly restrained against rearward misplacement and maintained in contact with the inner end of said chamber.

2. In a sewing machine shuttle, the combination substantially as hereinbefore described, of a cylindrical shell, open at its rear end and having a threading slot extending to the inner end of the bobbin chamber, and a tension spring secured at both ends of the shell overlying the inner end of said slot and in such close relation thereto, as to form, in substance a thread eye, closely adjacent to the inner end of the bobbin chamber.

3. In a sewing machine shuttle, the combination substantially as hereinbefore described, of a cylindrical shell, open at its rear end, and having a threading slot extended therefrom to the inner or front end of the bobbin chamber, and an overlying tension spring secured at both ends to the shell and provided near its front end with a V-shaped tongue, and a bearing face at the rear of said tongue, and slotted to form a thread eye closely adjacent to the inner end of said chamber, whereby the path of thread from a bobbin will always be toward the inner end of the bobbin, thence through said eye, over said tongue, and beneath said bearing face, and constantly maintain the bobbin against rearward displacement, and in contact with the inner end of the bobbin chamber.

JAMES ROBERTSON.

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