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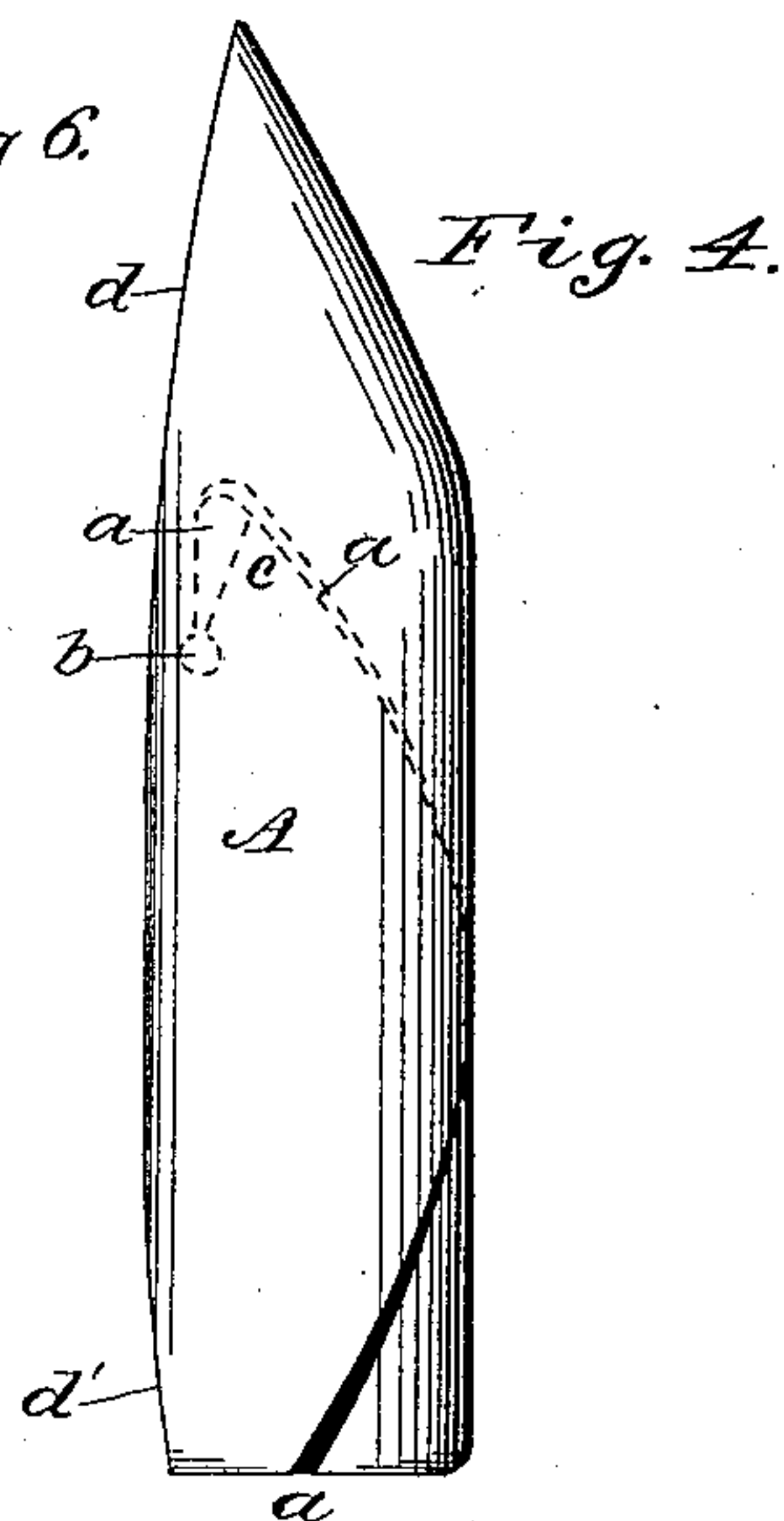
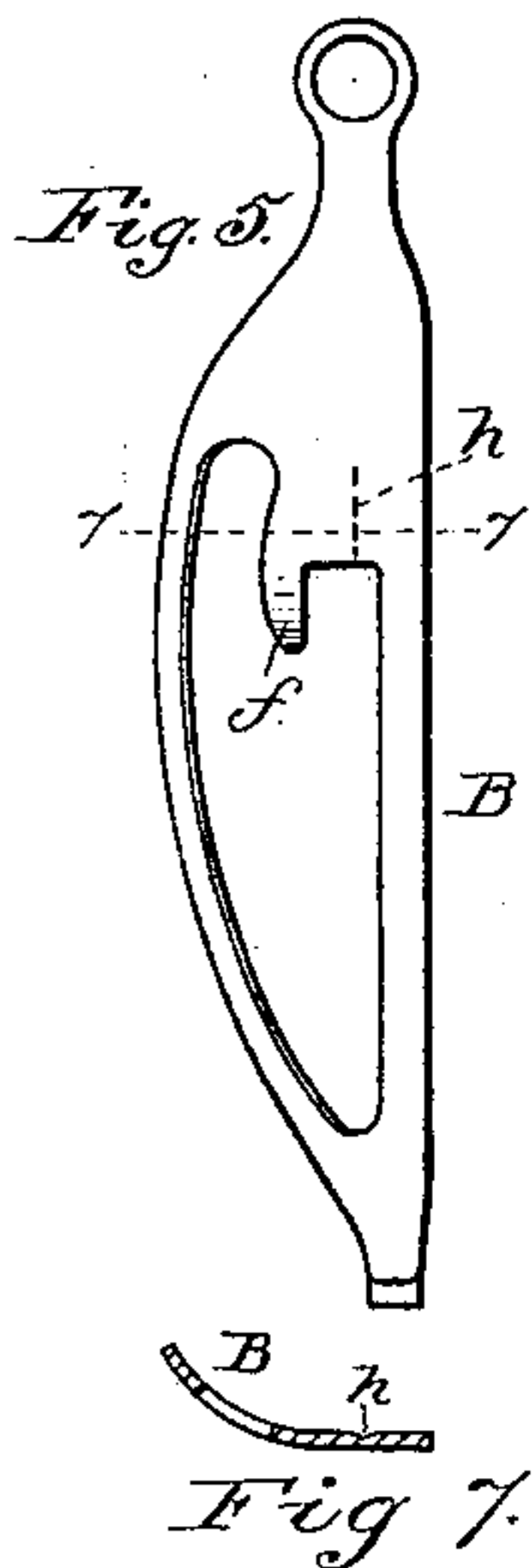
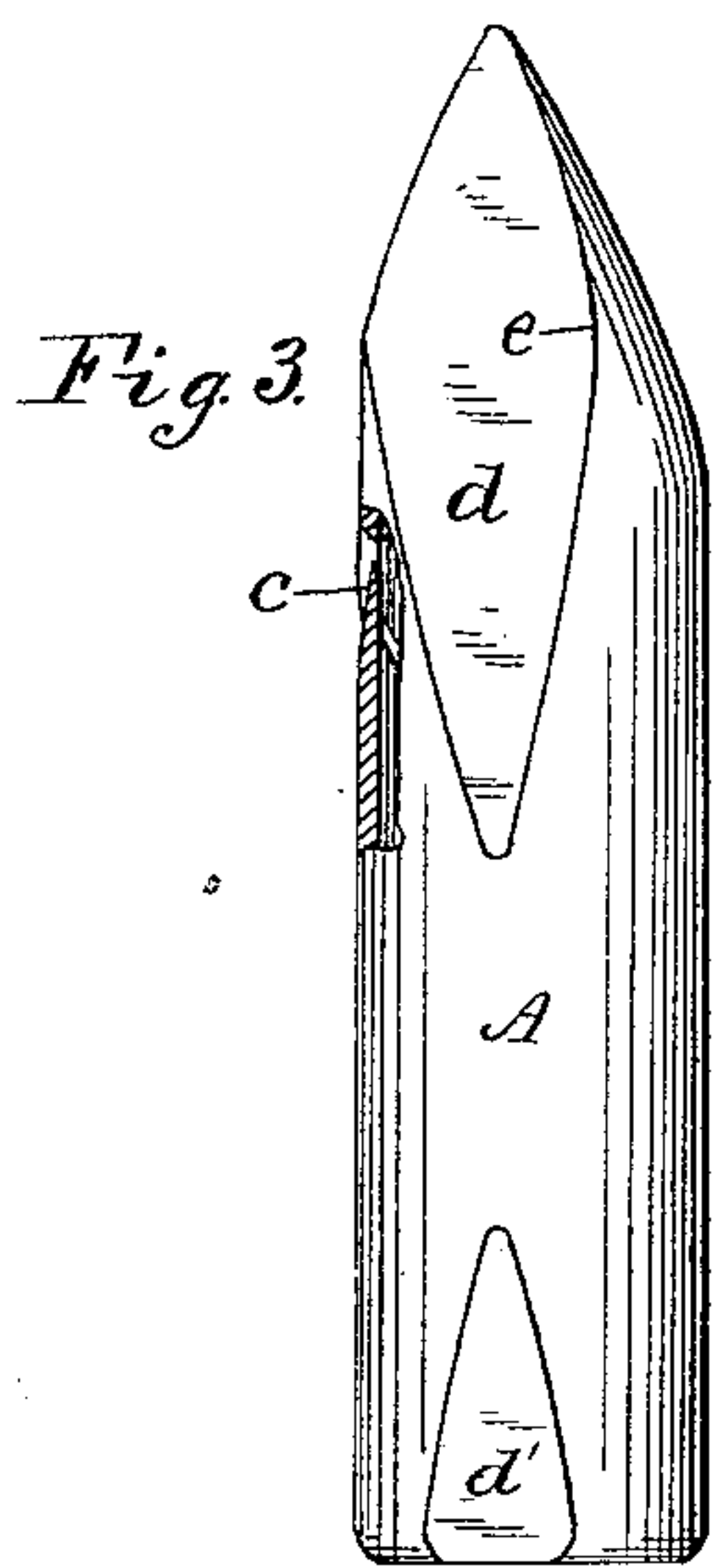
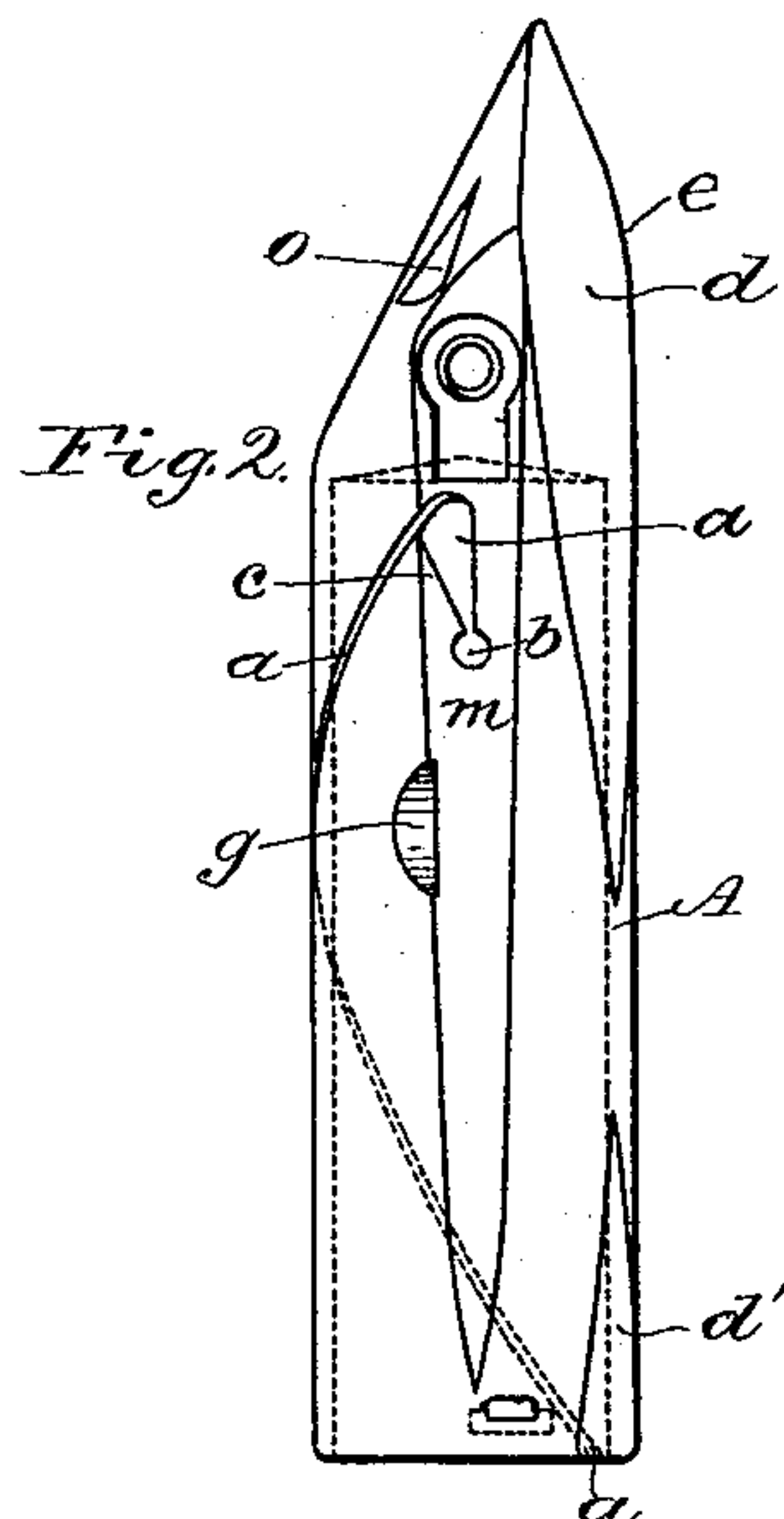
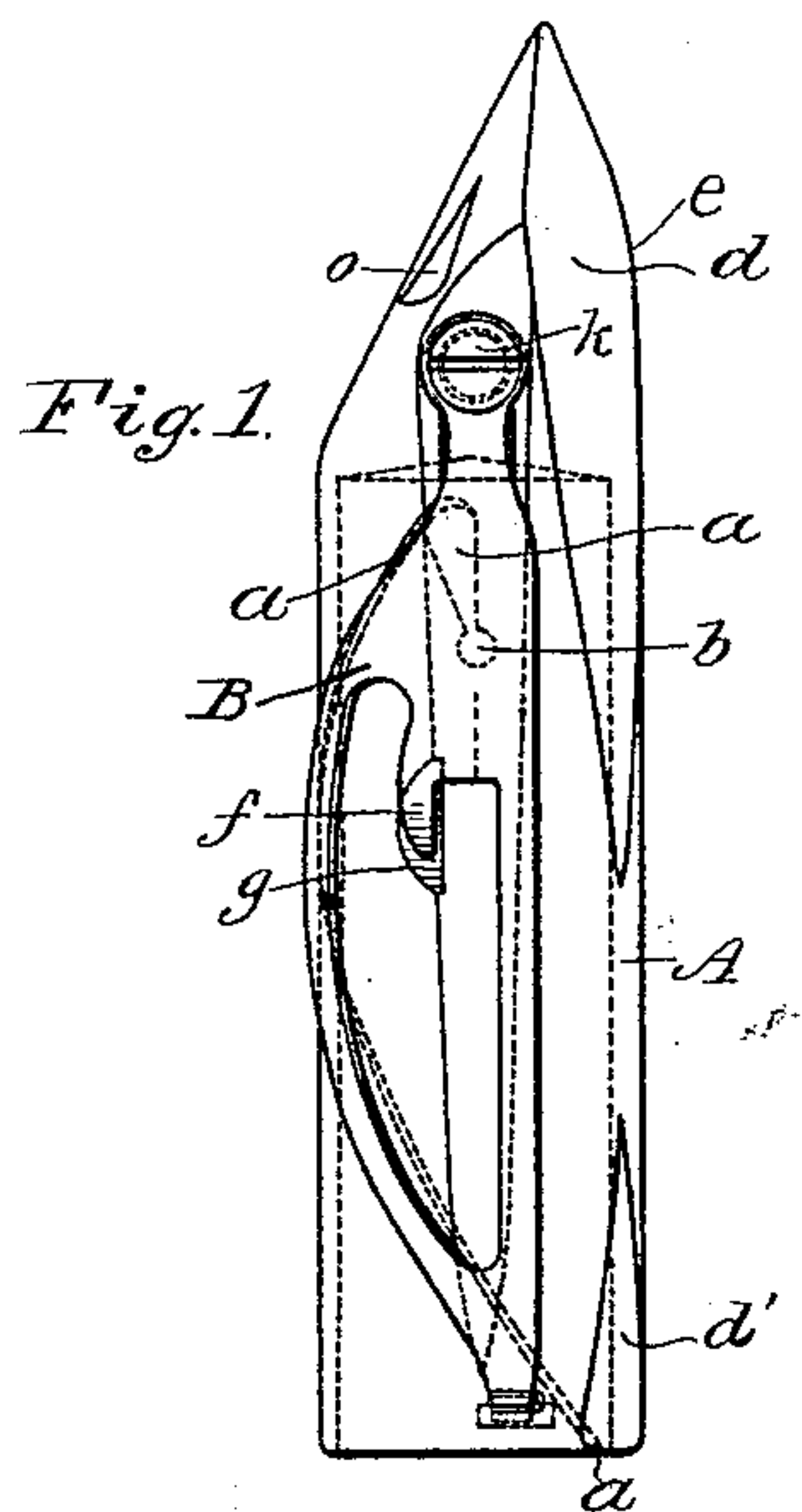
2 Sheets—Sheet 1.

W. H. INSLEE.

SHUTTLE AND SHUTTLE CARRIER FOR SEWING MACHINES.

No. 366,666.

Patented July 19, 1887.



WITNESSES:

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Chas. L. Taylor

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(No Model.)

2 Sheets—Sheet 2.

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Fig. 8.

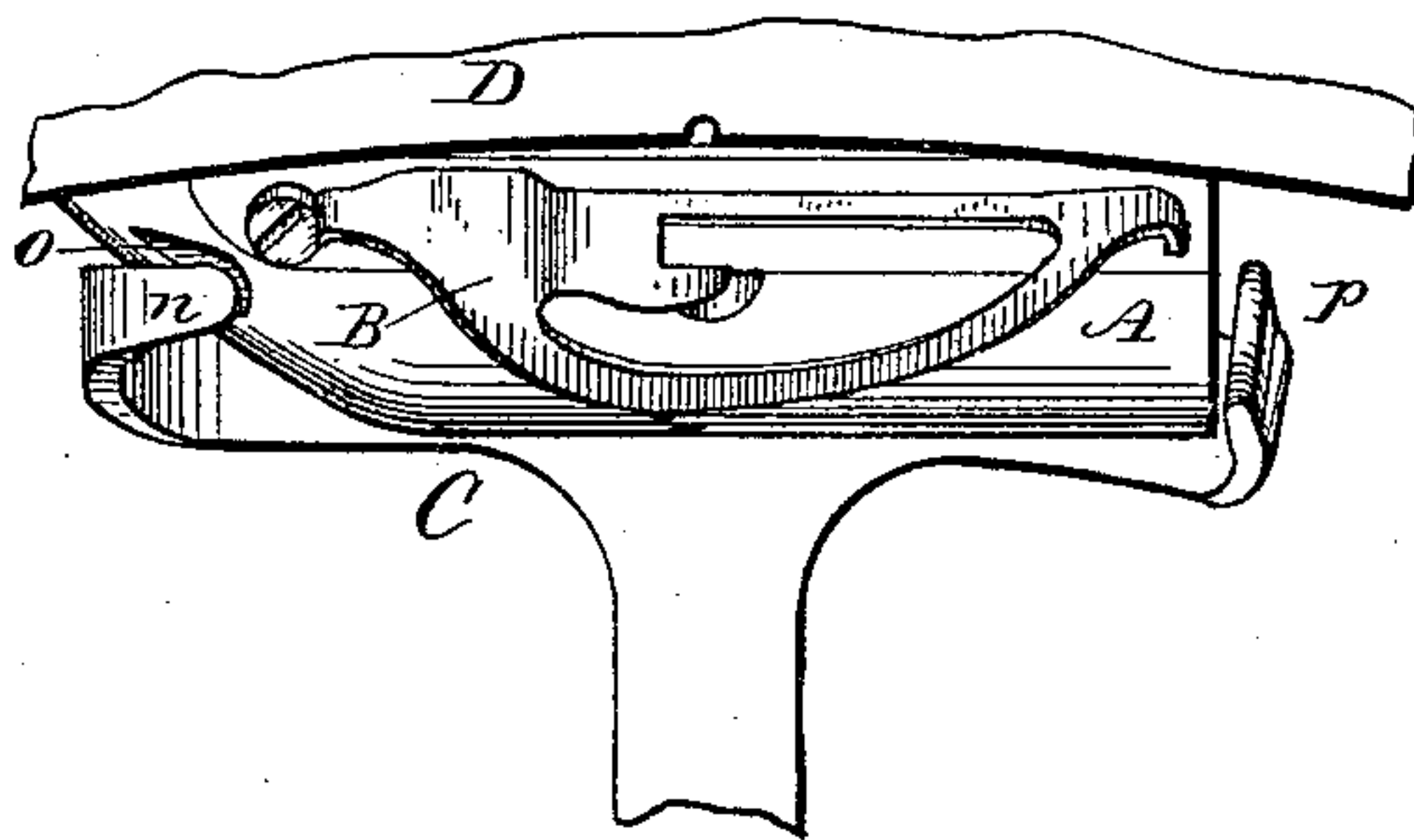
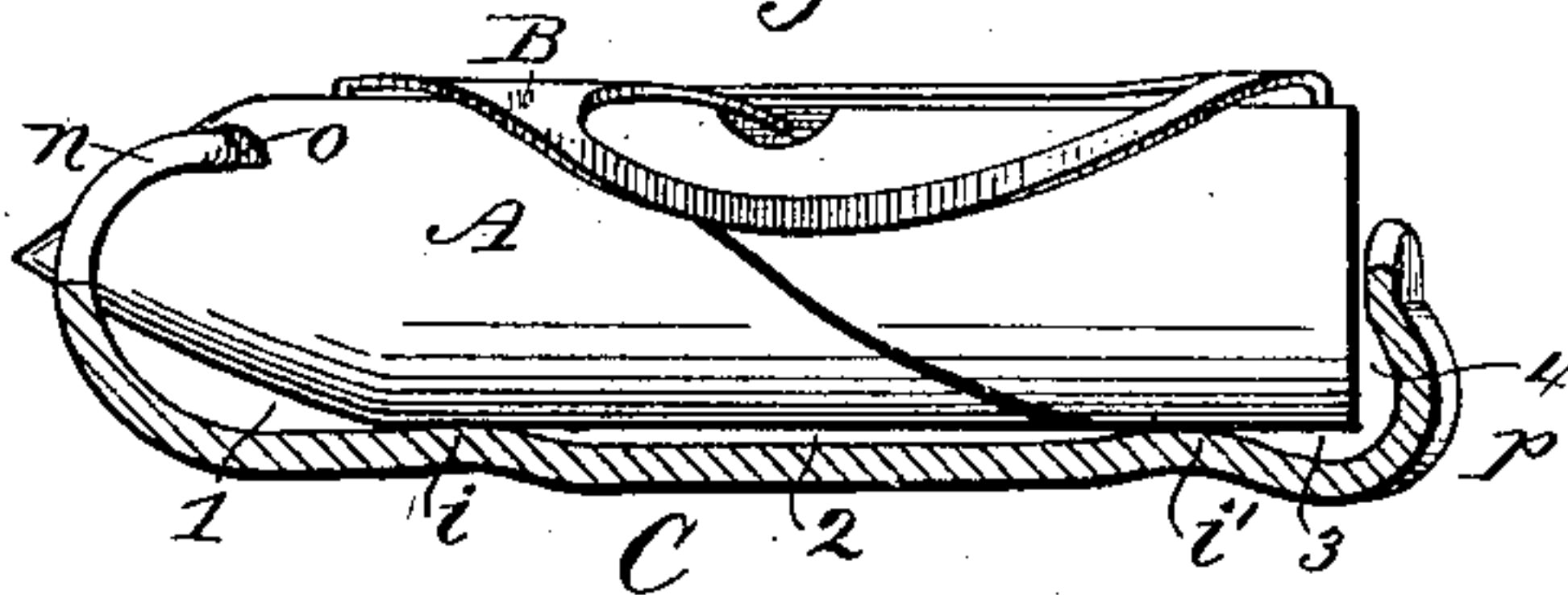


Fig. 9.



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UNITED STATES PATENT OFFICE.

WILLIAM H. INSLEE, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE SINGER
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SHUTTLE AND SHUTTLE-CARRIER FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 366,666, dated July 19, 1887.

Application filed June 9, 1886. Serial No. 204,633. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. INSLEE, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Shuttles and Shuttle-Carriers for Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to that class of cylindrical sewing-machine shuttles open at their rear ends and provided with open-ended threading-slots, such shuttles being commonly known as "open-ended" and "self-threading."

The object of my invention is to provide a shuttle of the class referred to which will be simple in construction and convenient for use, and from which the thread will run with a uniform tension without danger of catching on any part of the shuttle.

In connection with my shuttle I prefer to use a shuttle-carrier constructed in such a manner that the loops of needle-thread can pass around the shuttle with the greatest possible ease and smoothness.

In carrying my invention into effect, I provide the shell or body of my open-ended shuttle with an open-ended threading-slot extending from the heel of the shuttle, at the lower side or bottom of the shuttle-shell, forward and upward to the top of said shell at a point near the forward end of the bobbin-cavity, whence it runs rearward for a short distance to a thread-delivery hole or aperture, the rearwardly-extending portion of said slot flaring forwardly, so that the thread runs easily into it in threading. The point between the forward and rearward parts of the threading-slot is preferably depressed slightly below the adjacent portions of the outer surface of the shuttle-shell, so as to facilitate threading when the bobbin is inserted in the shuttle so that the thread runs from the top thereof, but preventing threading when the bobbin is inserted so that the thread runs from the bottom thereof. With this construction it is possible to thread the shuttle when the bobbin is almost empty without difficulty, if the bobbin be rightly inserted. The tension-spring is provided with a single downwardly-bent thread finger, entering a small recess in the shuttle-shell, said

spring also having on its under side a slight groove to guide the thread into proper tension position and hold it there.

The carrier which I prefer to use with my shuttle has two bearing portions near the opposite ends of the shuttle, on which portions the shuttle is supported. This construction of the carrier affords three clearances for the loops of needle-thread around the shuttle, the first of these clearances being near the nose of the shuttle forward of the front bearing portion of the carrier. The second or central clearance is afforded by a long hollow or depression between the front and rear bearing portions of the carrier, and the third is at the heel of the shuttle. The rear horn of the carrier is also hollowed out and bent or inclined, so that only its rear upper corner will bear against the shuttle. The shuttle is provided on its front face with the usual flattened portions bearing against the shuttle-race and with an ordinary recess near its forward end, into which the front horn of the carrier projects, and when held in the carrier there is only sufficient room for the coarsest thread to pass between the shuttle and the carrier and race, except at the clearances above noted. Thus the shuttle is so held as to prevent rolling or turning in the carrier or the pulling up of the heel of the shuttle by the loops of needle-thread, and breaking or bruising of said thread between said heel and the angle or upright portion or rear horn of the carrier is avoided.

In the drawings, Figure 1 is a top view, slightly turned over, of a shuttle embodying my invention. Fig. 2 is a similar view with the tension-spring removed. Fig. 3 is a side view of the shuttle-shell, partly in section. Fig. 4 is a bottom view of my shuttle. Figs. 5, 6, and 7 are detail views of the tension-spring, Fig. 7 being a section on line 7 7, Fig. 5. Fig. 8 is a plan view of my shuttle and carrier, and Fig. 9 shows the carrier in section and the shuttle in elevation.

A denotes the shuttle shell or body, and B the tension-spring secured thereto in the usual manner by an attaching and adjusting screw, *k*. The shell A is provided with an open-ended threading-slot, *a*, extending from the heel of the shuttle at the lower side thereof forward and upward to a point near the

ward end of the bobbin-cavity and beneath the forward end of the tension-spring, whence it runs rearward into a thread-delivery hole or aperture, *b*, the rearward or return portion of said slot flaring forwardly or converging rearwardly, as clearly shown in Fig. 2, so that it is widest at its forward end. The point *c* between the forward and return portions of the slot *a* is preferably depressed slightly below the adjoining portions of the outer surface of the shuttle-shell, (see Fig. 3,) this construction facilitating the passage of the thread around said point in threading the shuttle when the bobbin is inserted in the shuttle so that the thread runs from the top of the former, but preventing threading when the bobbin is wrongly inserted. The shuttle is provided with the usual flattened faces, *d* and *d'*, which fit against the shuttle-race *D*, the lower side of the forward flattened face, *d*, being rounded off at *e* to prevent abrading or cutting the needle-thread as the loops thereof pass around the shuttle.

The tension-spring *B* is provided with a single thread-finger, *f*, entering a recess, *g*, in the shuttle-shell, said finger preventing the escape of the thread from beneath the said spring. To guide the thread into proper tension position and to keep it in place against the flattened portion *m* of the shuttle, I prefer to provide the lower face of said spring with a slight groove or recess, *h*. (Shown in Fig. 7, and indicated by the dotted line in Fig. 5.)

The shuttle-carrier *C* is provided with two bearing portions, *i* and *i'*, on which the shuttle rests, as shown in Fig. 9 of the drawings, so as to afford three clearances, 1, 2, and 3, for the thread between the shuttle and carrier, the central clearance, 2, being due to the hollow or depression between the said bearing portions. The overhanging front horn, *n*, of the carrier extends into an ordinary recess, *o*, near the nose of the shuttle. The upwardly-projecting rear horn, *p*, of the carrier is bent or hollowed out, so as to afford a clearance, 4, for the thread around the lower part of the heel of the shuttle, said horn being also preferably inclined horizontally, as shown in Fig. 8, so as to flare outward slightly from the shuttle. From this construction it results that the said horn will bear against the shuttle only at one point, and that at the rear side thereof at some distance above the bottom of the heel, and thus the shuttle will be so held as to prevent the heel thereof from jumping up as the loops pass.

With the carrier constructed as above described, it is obvious that the shuttle will come in contact with the same only at the front and rear horns (alternately) and at the bearing portions *i* and *i'*, so that the shuttle may be held in the carrier against the shuttle-race *D* with so nice a fit that there need be no more space around the shuttle at the contact-points than is required for the passage of the heaviest or coarsest thread between the shuttle and the

shuttle race and carrier, the thread passing easily at the clearances. Thus the shuttle will be held so firmly that rolling thereof (an objection peculiarly incidental to cylindrical shuttles) will be effectively prevented, and the shuttle will have no tendency to rise from the carrier, even when the machine is run at a high speed with the shuttle-slides removed, the peculiar shape of the rear horn of the carrier and the construction of the latter by which the clearances described are afforded permitting so close a fit of the shuttle between the carrier and race that the greatest possible quietness and smoothness of action are secured.

The shuttle is threaded simply by drawing the thread forward into the slot *a* and then rearward into the thread-delivery hole *b* and beneath the thread-finger *f*. As the opening of the slot *a* at the heel of the shuttle is at the lower side thereof, it is quite out of the way of the shuttle-thread, so that the latter cannot by any possibility catch therein, and the spiral form and extent of the twist of the said slot effectively prevents any catching of the loops of needle-thread therein as they pass around the shuttle.

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

1. A sewing-machine-shuttle shell having a threading-slot extending first forward and then rearward, and a thread-delivery aperture, into which the said slot leads, the rearward or return portion of said slot flaring forwardly, or being widest at its forward end, substantially as set forth.

2. A sewing-machine-shuttle shell having a threading-slot extending forward and then rearward, the outer surface of the point between the forward and rearward or return portions of said slot being below or within the adjacent outer surface of said shell, substantially as set forth.

3. The combination, with a sewing-machine-shuttle shell, having an open-ended threading-slot extending from the lower side of said shell forward and upward to a point near the forward end of the bobbin-cavity on the upper side of said shell and thence rearward to a thread-delivery aperture, of a tension-spring having a thread-finger extending into a recess in the said shell rearward of the said aperture, substantially as set forth.

4. The combination, with a sewing-machine-shuttle shell having a flattened outer surface over which the thread passes, of a tension-spring, having on its under side a groove or recess for guiding the thread into proper tension position and keeping it there, substantially as set forth.

5. A sewing-machine-shuttle carrier open at its top and having an overhanging front horn and an upwardly-projecting rear horn and two bearing portions adapted to come beneath the shuttle near the ends thereof, with a recessed or hollowed-out portion between said bearing portions, substantially as set forth.

6. A sewing-machine-shuttle carrier open

at its top and having an overhanging front horn and an upwardly-projecting rear horn and two bearing portions adapted to come beneath the shuttle near the ends thereof, with
 5 a recessed or hollowed-out portion between said bearing portions to afford a central clearance for the thread, said carrier having also clearances for the thread forward and rearward of said bearing portions, substantially
 10 as set forth.

7. The combination, with a sewing-machine shuttle, of a carrier provided with an upwardly-projecting rear horn, and having also a recess or clearance, as 3, below the heel of
 15 the shuttle, and a clearance, as 4, between said heel and the said rear horn of the carrier, substantially as set forth.

8. The combination, with a sewing-machine shuttle, of a carrier having a bearing, as *i*,
 20 just forward of the shuttle-heel, a thread-clearance, as 3, rearward of said bearing, and an upwardly-projecting rear horn having a bearing or contact point for the shuttle-heel above the lower edge of the latter, with a
 25 clearance, as 4, below said bearing, substantially as set forth.

9. The combination, with a sewing-machine shuttle, of a carrier having an overhanging

front horn, two bearings, as *i* and *i'*, affording front, central, and rear thread-clearances, 1, 2, 30 and 3, at the points where the loops of needle-thread are spread, drawn along, and pulled up, respectively, said carrier having also an upwardly-projecting rear horn provided with
 35 a bearing or contact point for the shuttle-heel above the bottom or lower side of the latter, leaving a clearance, as 4, below said bearing or contact point, substantially as set forth.

10. The combination, with a sewing-machine shuttle having flattened faces *d* and *d'*, 40 the former rounded off on its lower side, as at *e*, of a shuttle-carrier provided with the bearings *i* and *i'*, affording the thread-clearances 1, 2, and 3, said carrier having also an upwardly-projecting rear horn adapted to bear
 45 against the heel of the shuttle above the lower side of the latter, with a clearance, as 4, rearward of said heel below the bearing-point of the said horn, substantially as set forth.

In testimony whereof I affix my signature in
 50 presence of two witnesses.

WILLIAM H. INSLEE.

Witnesses:

PHILIP DIEHL,
 JAMES G. GREENE.