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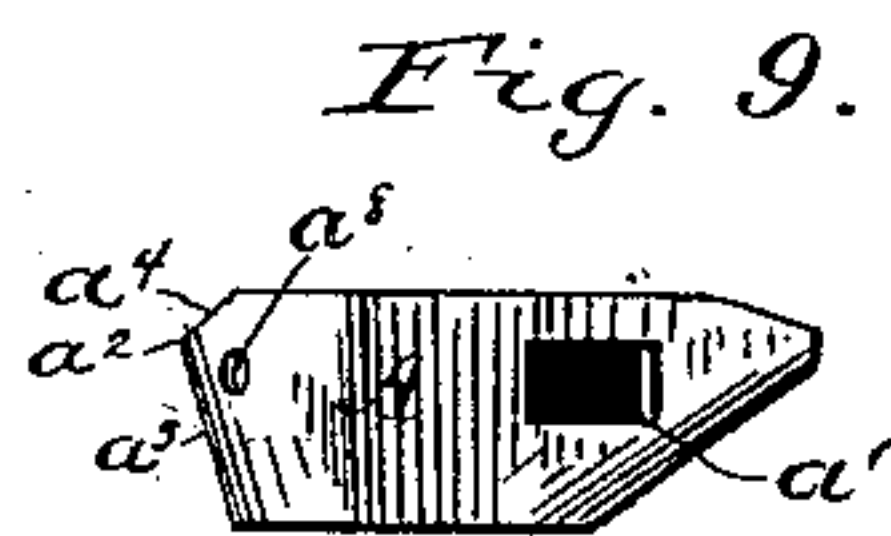
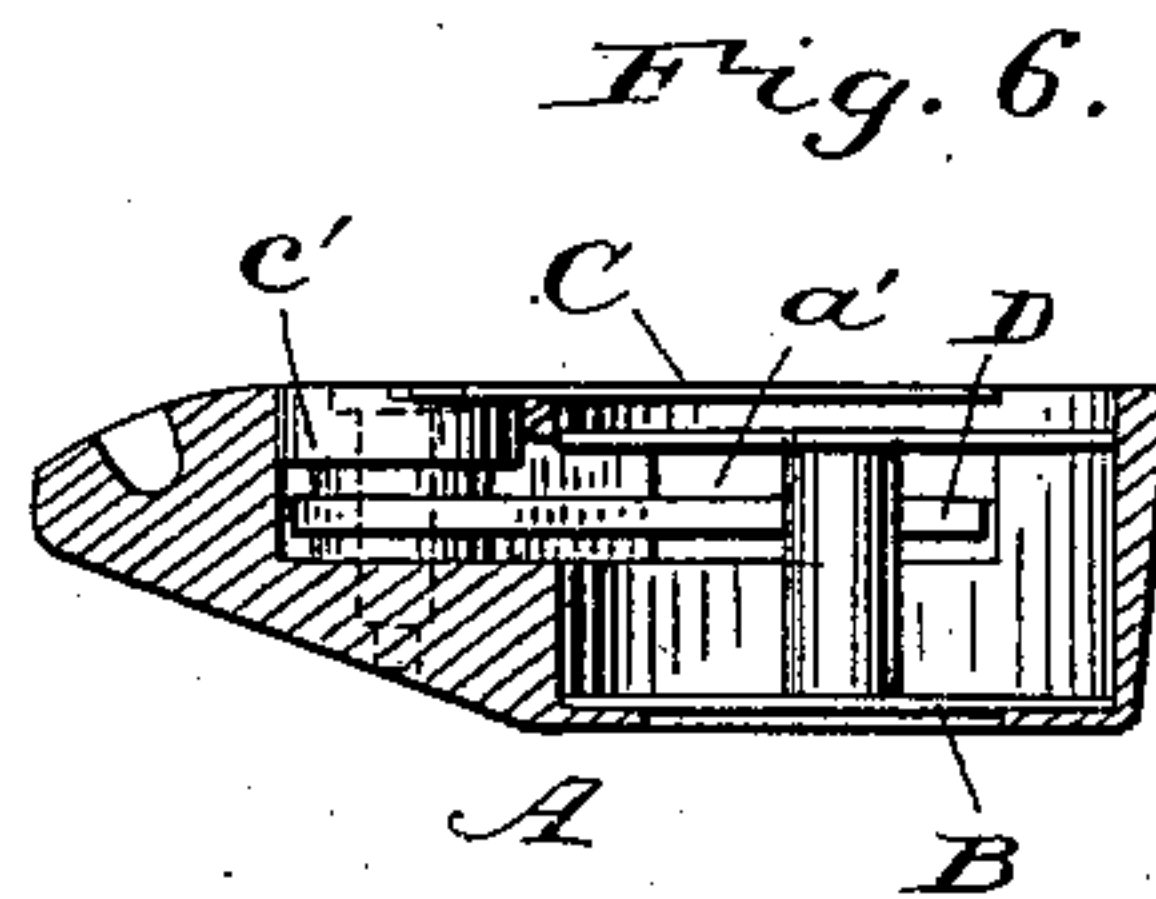
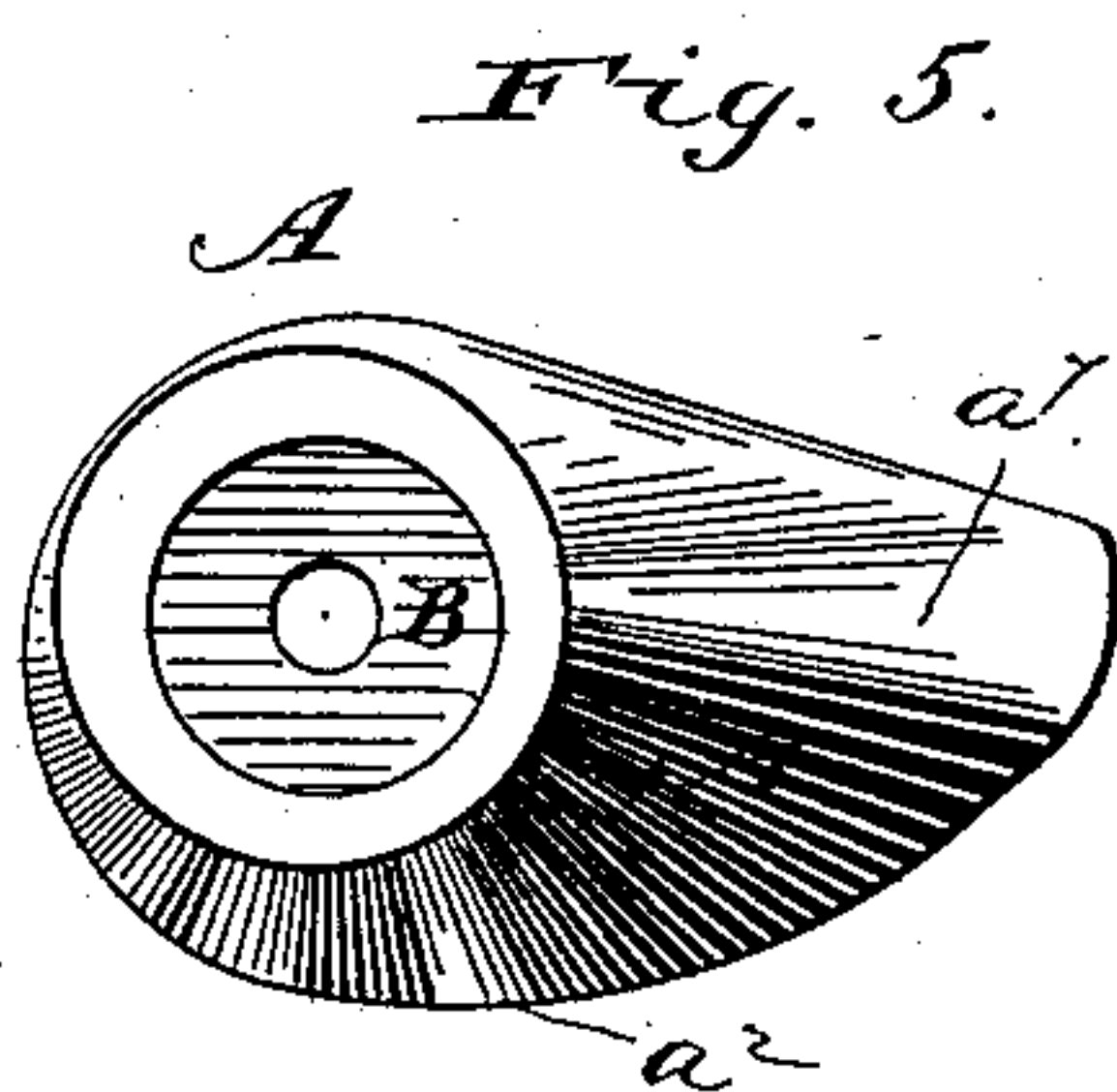
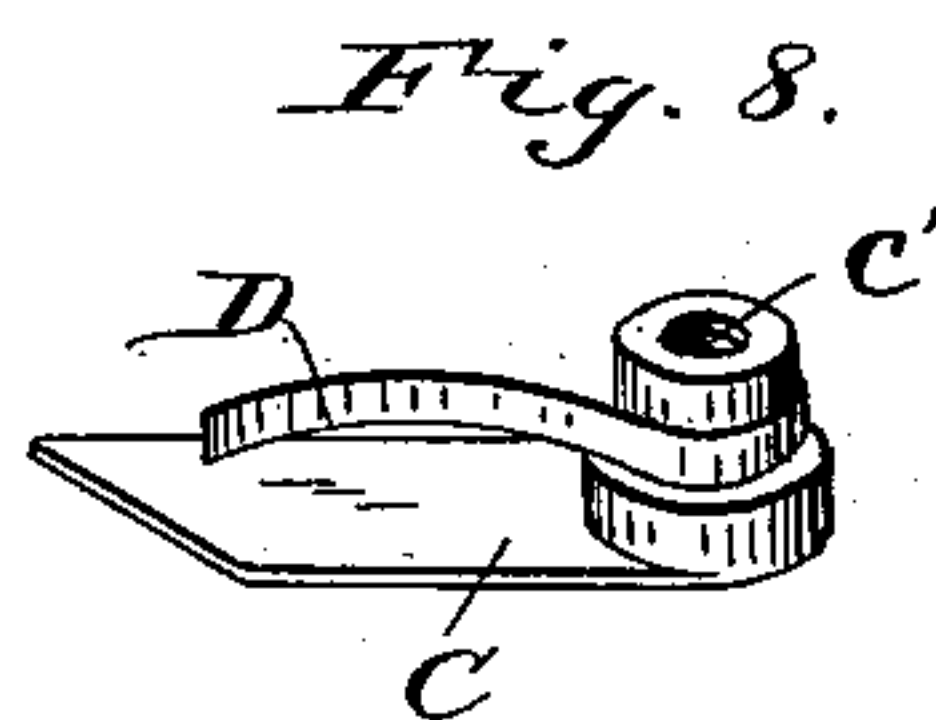
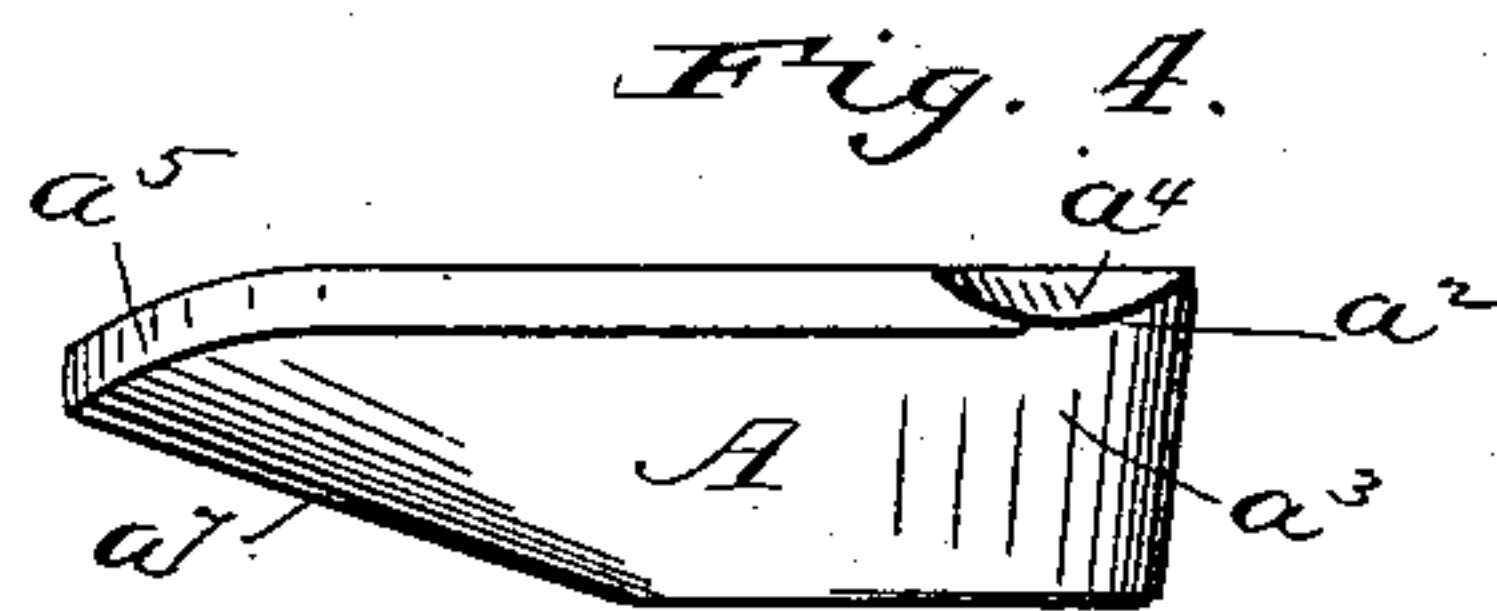
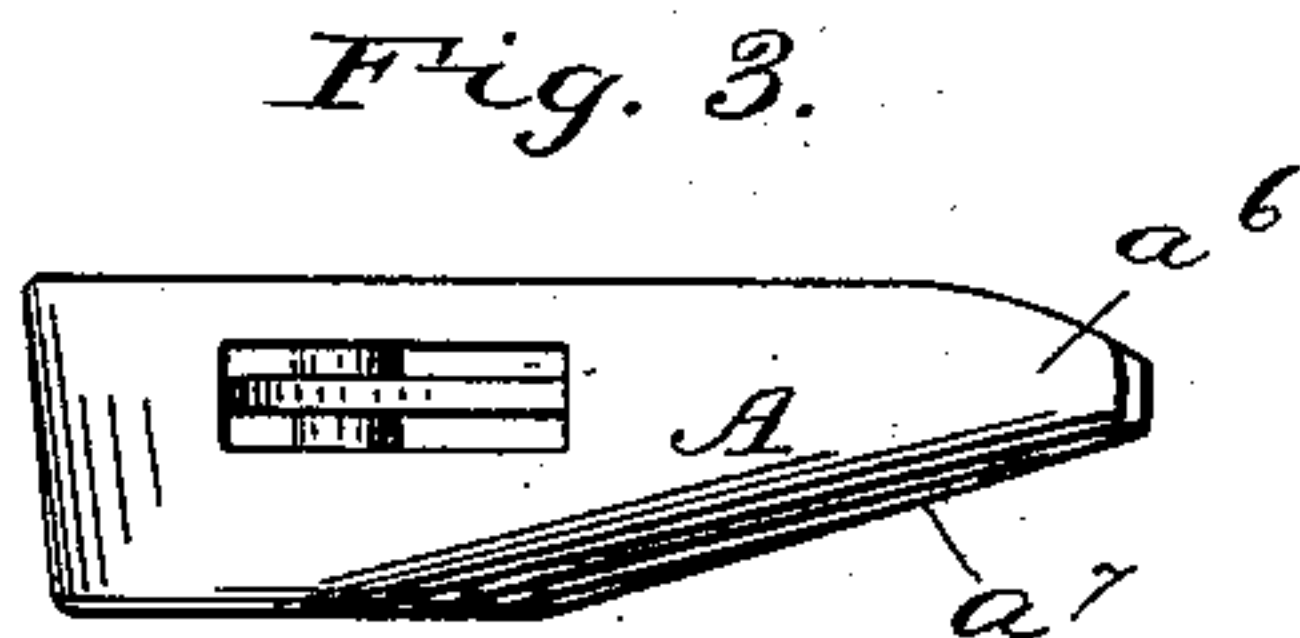
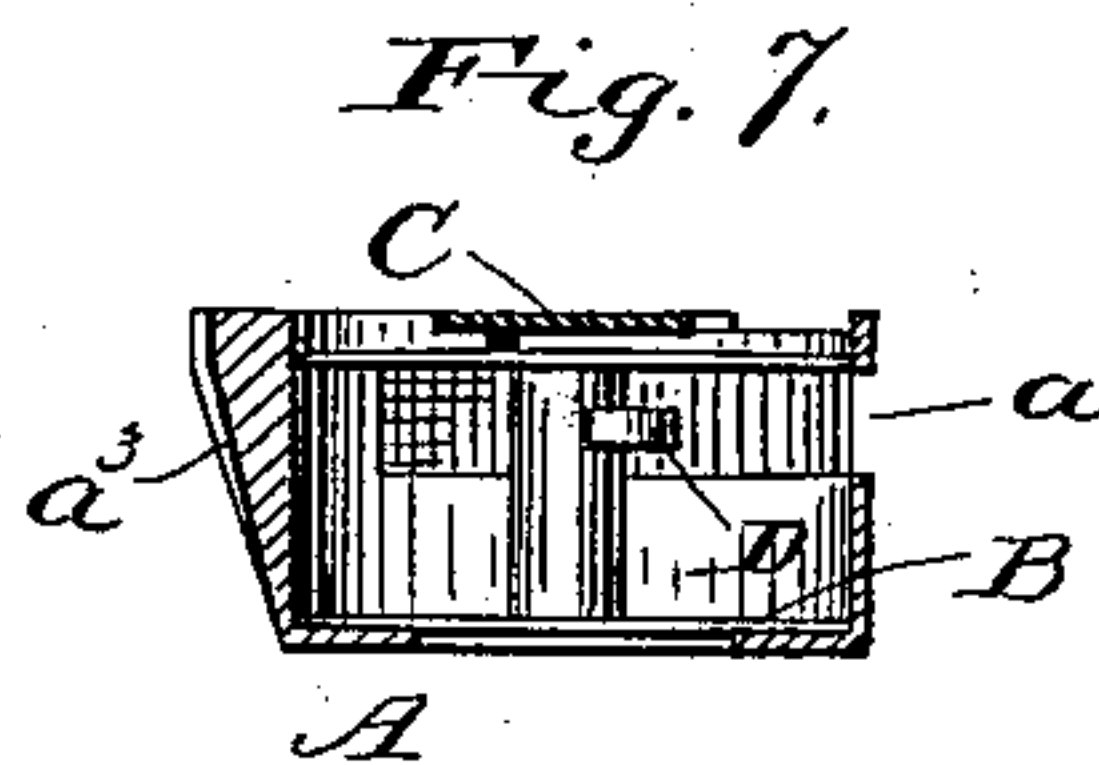
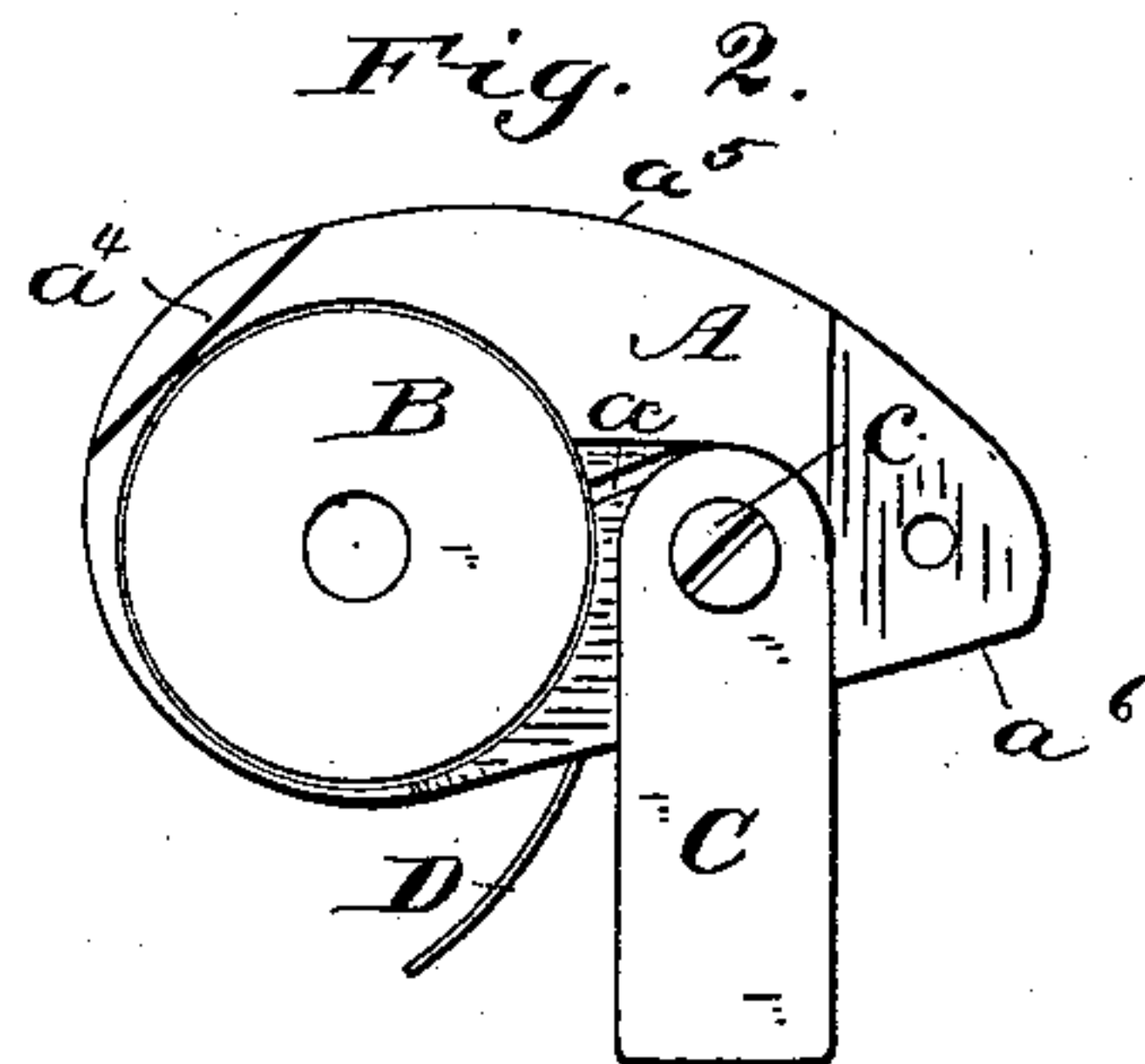
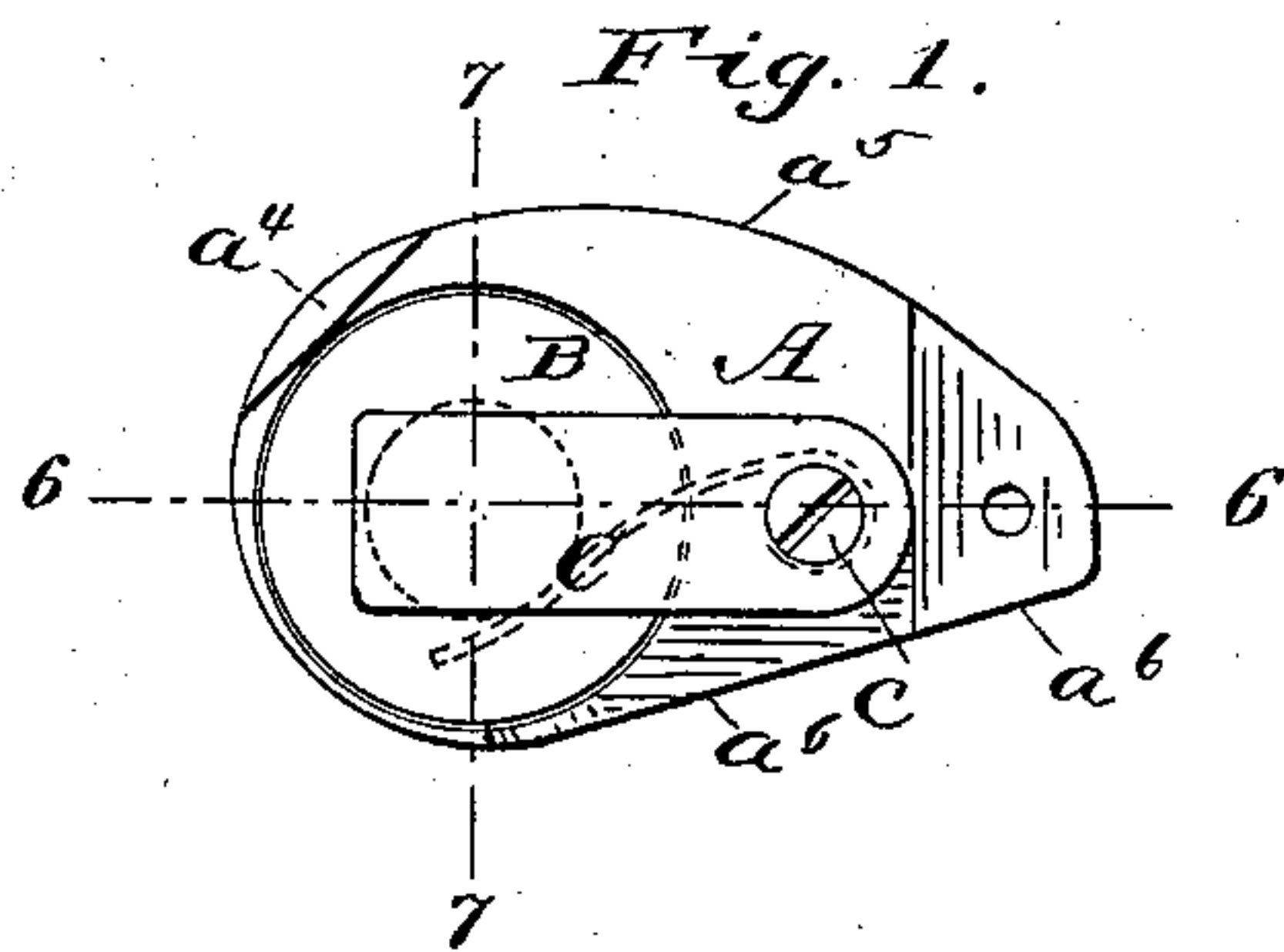
2 Sheets—Sheet 1.

S. ARNOLD.

SHUTTLE AND SHUTTLE HOLDER FOR SEWING MACHINES.

No. 324,351.

Patented Aug. 18, 1885.



Witnesses:
H. N. Low
William Calver.

Inventor:
S. Arnold
by Henry Calver, atty.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 10.

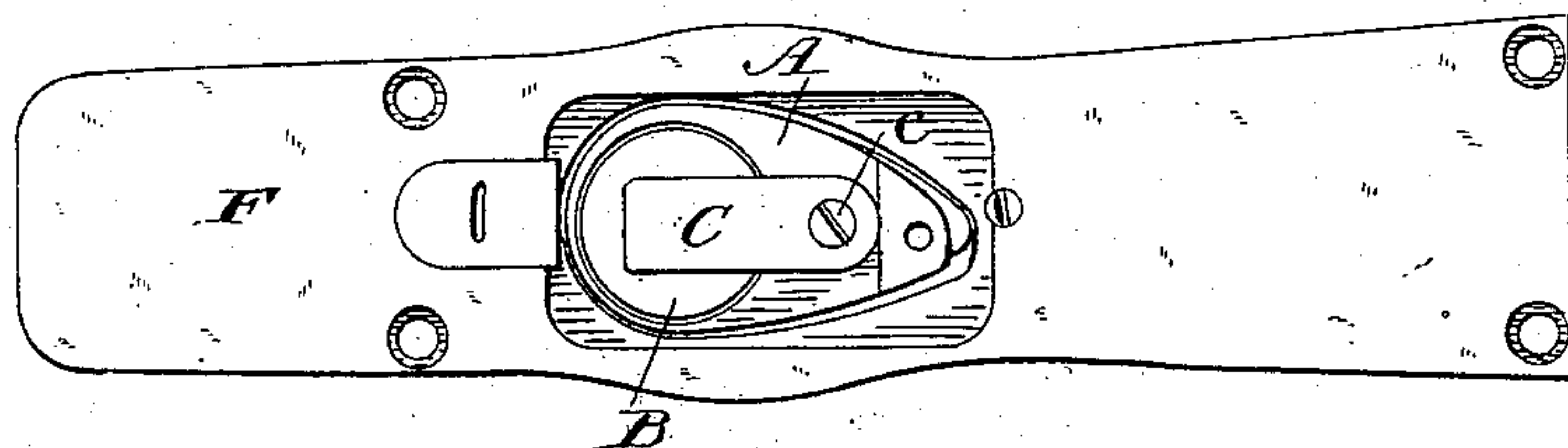


Fig. 11.

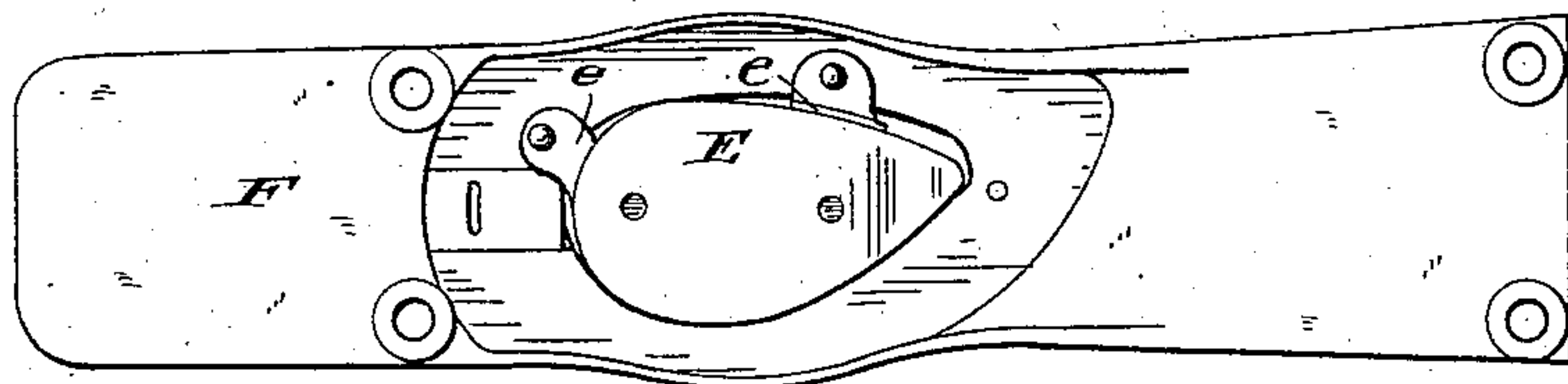


Fig. 12.

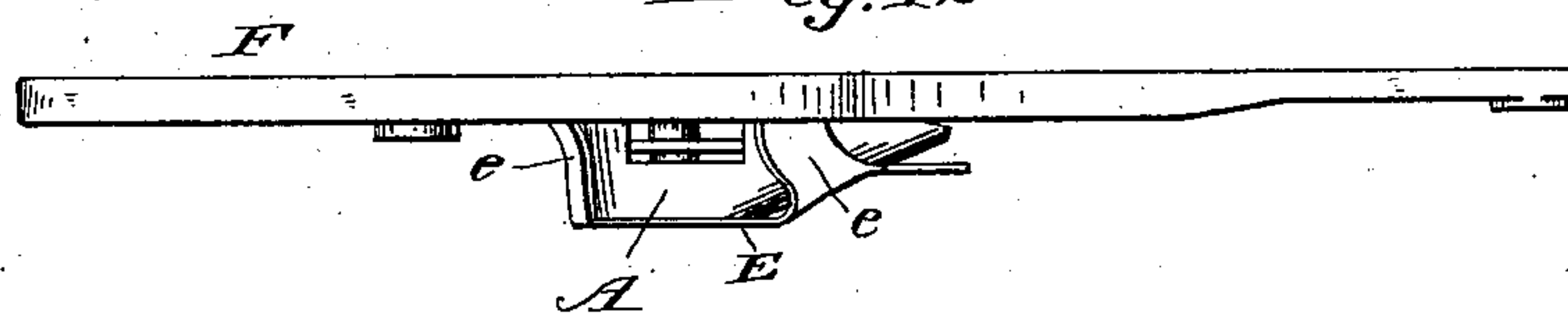


Fig. 13.

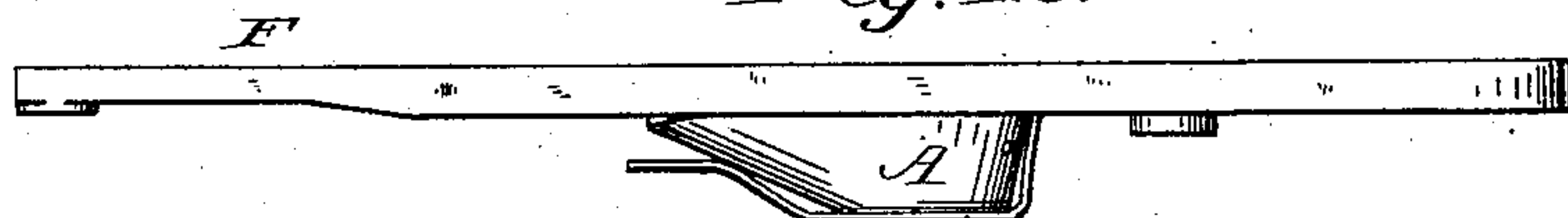
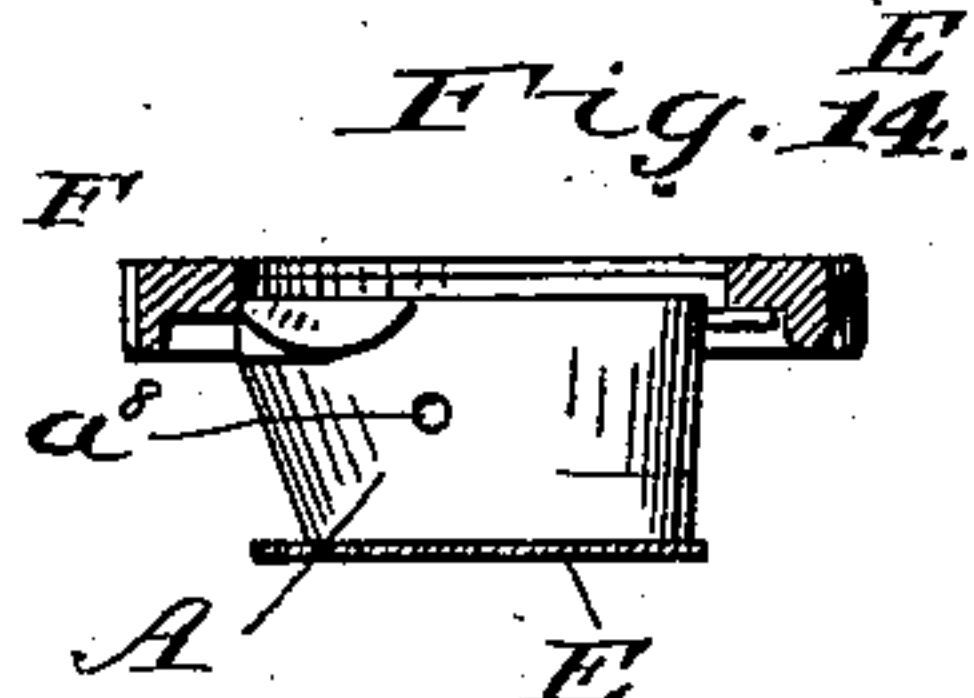


Fig. 14.



Witnesses:

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UNITED STATES PATENT OFFICE.

SATTERLEE ARNOLD, OF BROOKLYN, NEW YORK, ASSIGNOR TO ANNA M. ARNOLD, OF SAME PLACE.

SHUTTLE AND SHUTTLE-HOLDER FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 324,351, dated August 18, 1885.

Application filed June 28, 1884. (No model.)

To all whom it may concern:

Be it known that I, SATTERLEE ARNOLD, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Shuttles and Shuttle-Holders for Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to a stationary shuttle and a holder for the same specially adapted to the machine fully shown and described in my application No. 131,487, and also shown in my application No. 131,488, both filed May 12, 1884.

In the drawings, Figure 1 is a top plan view of my shuttle, and Fig. 2 a similar view, with the bobbin-cover and its attached tension-spring swung aside. Figs. 3 and 4 are opposite side views of the shuttle. Fig. 5 is a bottom view, and Figs. 6 and 7 longitudinal and cross sections of the same on the lines 6-6 and 7-7, respectively, Fig. 1. Fig. 8 is a detail perspective view of the bobbin cover and tension-spring. Fig. 9 is an oblique elevation of the shuttle. Fig. 10 is a plan view of the work-plate with the shuttle-cover removed, showing the shuttle in position. Fig. 11 is a bottom view of the work-plate and shuttle-holder. Figs. 12 and 13 are opposite side views of the shuttle-holder and shuttle; and Fig. 14 is a cross-section of the work-plate and shuttle-holder, showing the shuttle in elevation.

A indicates the shell or body of my shuttle, which has flattened upper and lower sides, and which, as seen from its top or bottom, is ellipsoidal in form, corresponding, approximately, to the path described by the hook or looper which carries the needle-thread around it. This shuttle-shell A is formed with a circular recess or cavity at its larger end for the reception of an ordinary disk-bobbin, B, which carries the thread. A swinging gate or cover, C, serves to retain the loosely-fitting bobbin in position, and when swung aside on its pivot-screw *c*, as shown in Fig. 2, the bobbin may be removed from or inserted in its recess. The cover C, which is a light metallic plate, is attached to or formed integral with a boss or hub, *c'*, and to the latter is preferably attached

the tension-spring D, which bears directly on the thread carried by the bobbin. To permit of the insertion or removal of the tension-spring with the hub *c'* of the bobbin-cover, a small slot, *a*, is cut in the shuttle-shell; and to permit said spring to be swung aside with the said cover entirely clear of the flanges of the bobbin, and thus freely admit of the removal or insertion of the latter, the shuttle-shell is formed with a recess or opening, *a'*, adjacent to the bobbin-cavity, into which said spring may pass when swung aside, as in Fig. 2.

The cover C is a thin spring-plate, and when in place rests in a slight recess in the upper face of the shuttle-shell, or is held in place by frictional contact with the latter, and being connected with the tension-spring, as above described, it serves as an arm or holder to retain said spring in its operative position.

When the bobbin is full of thread the leverage of the latter on the bobbin as it is drawn therefrom is the greatest, and the stress of the tension-spring on the thread is also greatest; but as the quantity of bobbin-thread diminishes, the stress of the tension-spring, as the latter approximates its normal position, likewise decreases, thus compensating for the lessening leverage of the thread and automatically maintaining a uniform tension.

The shuttle-shell A is formed with an obtuse wedge-shaped portion, *a*², on its loop-approaching side, to facilitate the dividing of the loops of needle-thread. This wedge-shaped portion or loop-divider results from making the shuttle-shell thicker at its top than at its bottom, as shown by the inclined portion *a*³, and by chamfering off the top of this thickened portion, as indicated at *a*⁴, thus forming the wedge-shaped loop-divider *a*². From its bobbin end the shuttle-shell tapers toward a blunt point at its opposite end, this tapering or loop-spreading portion having a convex side, *a*⁵, which is the loop-spreader proper, and a straight side, *a*⁶, the latter facilitating the casting off of the loop from the hook or looper. Thus as the elliptically-moving hook or looper draws the loop of needle-thread against the shuttle, the divider *a*² causes one limb of the said loop to pass over the top of the shuttle, while the other

limb thereof slides down the incline a^3 toward the bottom of the shuttle, which rests loosely in the holder. The continued movement of the hook or looper carries the loop around the spreader a^5 and the blunt point of the shuttle. In passing the convex side or spreader a^5 the loop will be sufficiently enlarged, so that when the looper is passing the straight side a^6 there will be slack enough to permit the looper to cast off or drop the loop easily, and, as the loop will then have been carried positively somewhat more than half-way around the shuttle by the looper, the labor of the take-up, which next comes into operation to tighten the loop, and thus complete the stitch, is rendered light and easy, the lower limb of the loop riding smoothly down the incline a^7 on the lower side of the pointed end of the shuttle as the loop is tightened by the take-up.

The shuttle is loosely sustained by a holder, E, around which the looper travels. This holder is shown as being attached to the under side of the work-plate F by two arms, e , one at the bobbin end of the shuttle and the other near its pointed end, but both on the same side of the shuttle, so as to leave the loop-approaching and loop-spreading side of the latter entirely unobstructed, as shown in Fig. 13. Displacement of the shuttle from the open or unobstructed side of the holder is prevented by making the holder sufficiently shallow or the shuttle sufficiently deep to cause the upper edge of the latter to have a slight engagement with the work-plate when it moves toward the open side of the holder, as will be understood by reference to Fig. 14, the top of the shuttle being slightly above the lower side of the recessed part of the work-plate.

The bobbin-thread emerges from the shuttle through a hole, a^8 , at the bobbin end, or at the end thereof which is opposite the tapering end or spreader.

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

1. A sewing-machine shuttle-shell having a bobbin-cavity at one end, a tapering loop-spreading portion at the other end, and a wedge-shaped loop-divider, as a^2 , on its loop-approaching side at its larger or bobbin end, substantially as set forth.

2. A sewing-machine shuttle-shell having flattened upper and lower faces, a bobbin-cavity at one end, a tapering loop-spreading portion at the other end with straight and convex sides, and a wedge-shaped loop-divider, as a^2 , on its loop-approaching side at its larger or bobbin end, substantially as set forth.

3. The combination, with a sewing-machine

shuttle-shell having a bobbin-cavity and an opening or recess in its side adjacent to said cavity, of a swinging tension-spring projecting normally within said cavity, but entering said recess when swung aside, and a swinging holder connected with said spring, and thus adapted to retain the latter in its operative position and to be swung aside therewith, substantially as set forth.

4. The combination, with a sewing-machine shuttle-shell, of a swinging cover for retaining the bobbin therein and a tension-spring attached to the part forming the axis of the said cover, substantially as set forth.

5. The combination, with a sewing-machine shuttle-shell, of a swinging cover for retaining the bobbin therein and a tension-spring connected with said cover and arranged to bear directly on the thread of the bobbin, substantially as set forth.

6. The combination, with a sewing-machine shuttle-shell having a bobbin cavity and a tension-spring opening or recess adjacent thereto, of a swinging cover for retaining the bobbin in place and a tension-spring which is connected with said cover so that, when swung aside with the latter, it may pass into said opening or recess, and thus be out of the way of the flanges of the bobbin which is to be removed from or inserted into the shuttle-shell, substantially as set forth.

7. The combination, with the shuttle-shell A, having slots a and a' , of the swinging cover C, having hub c' , and the tension-spring D, attached to said hub, substantially as set forth.

8. In a sewing-machine, the combination, with a stationary shuttle—such, for example, as is herein shown—of a horizontally-arranged holder for the same, which is entirely open or unobstructed on one side, substantially as set forth.

9. In a sewing-machine, the combination, with the work-plate thereof and a horizontally-arranged shuttle-holder placed beneath the same and having an open side and arms on its other side by which it is attached to said work-plate, of a stationary shuttle—such, for example, as is herein shown—loosely supported in said holder and having a depth slightly greater than that of the latter, so that its upper surface will be above the lower side of the work-plate, substantially as set forth.

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

SATTERLEE ARNOLD.

Witnesses:

PERCIVAL J. PARRIS,
GEO. B. LAUCK.