

(Model.)

2 Sheets—Sheet 1.

E. J. TOOF.

BUTTONHOLE ATTACHMENT FOR SEWING MACHINES.

No. 551,010.

Patented Dec. 10, 1895.

Fig. 1.

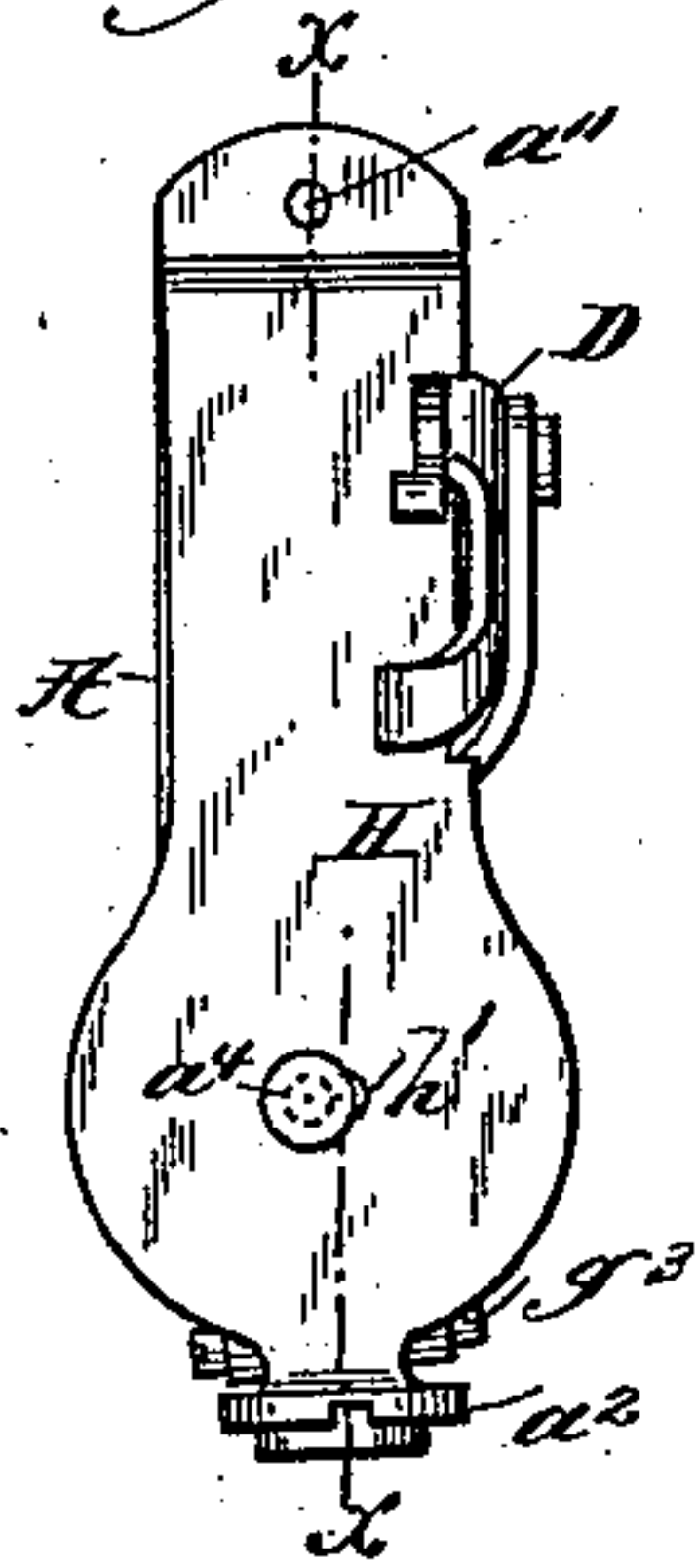


Fig. 2.

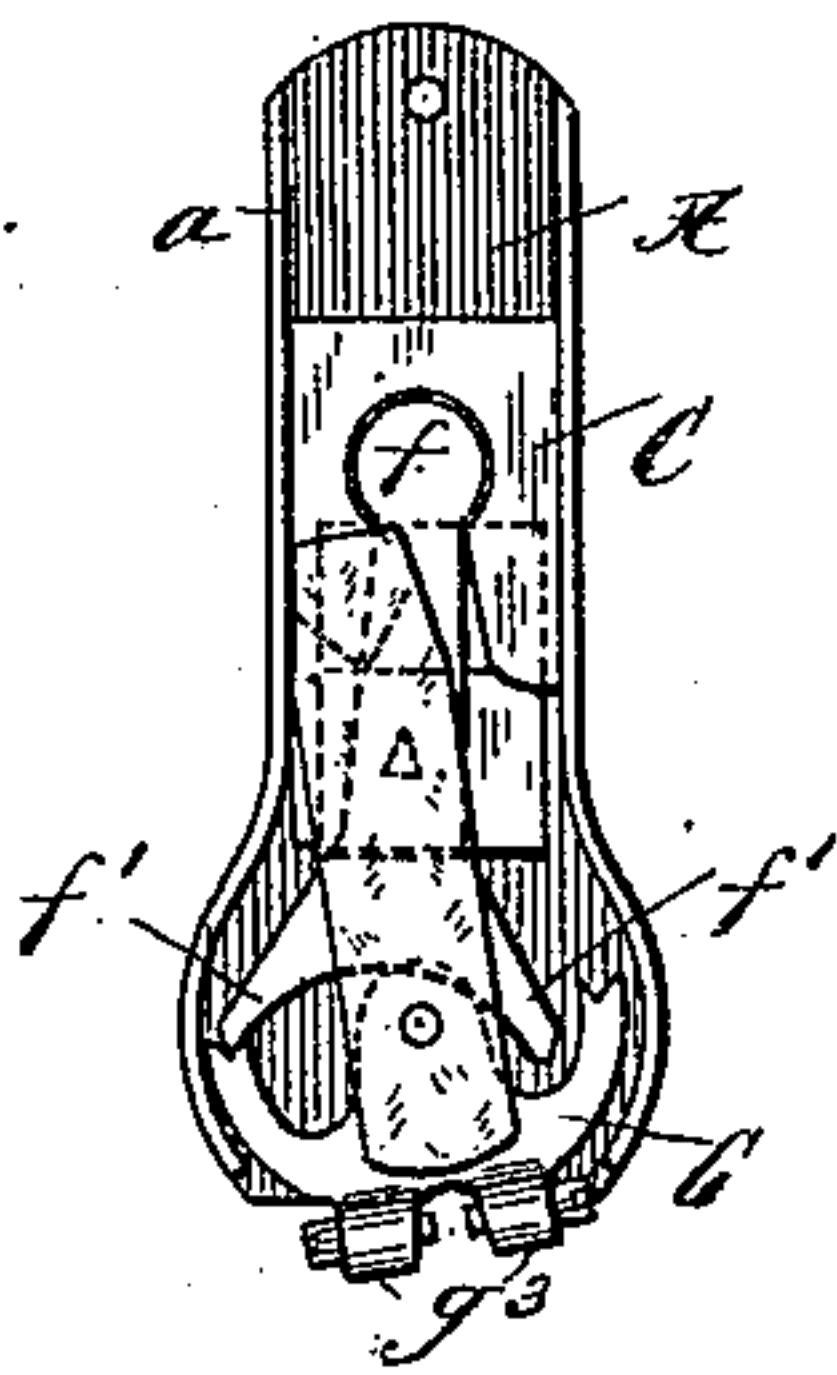


Fig. 3.

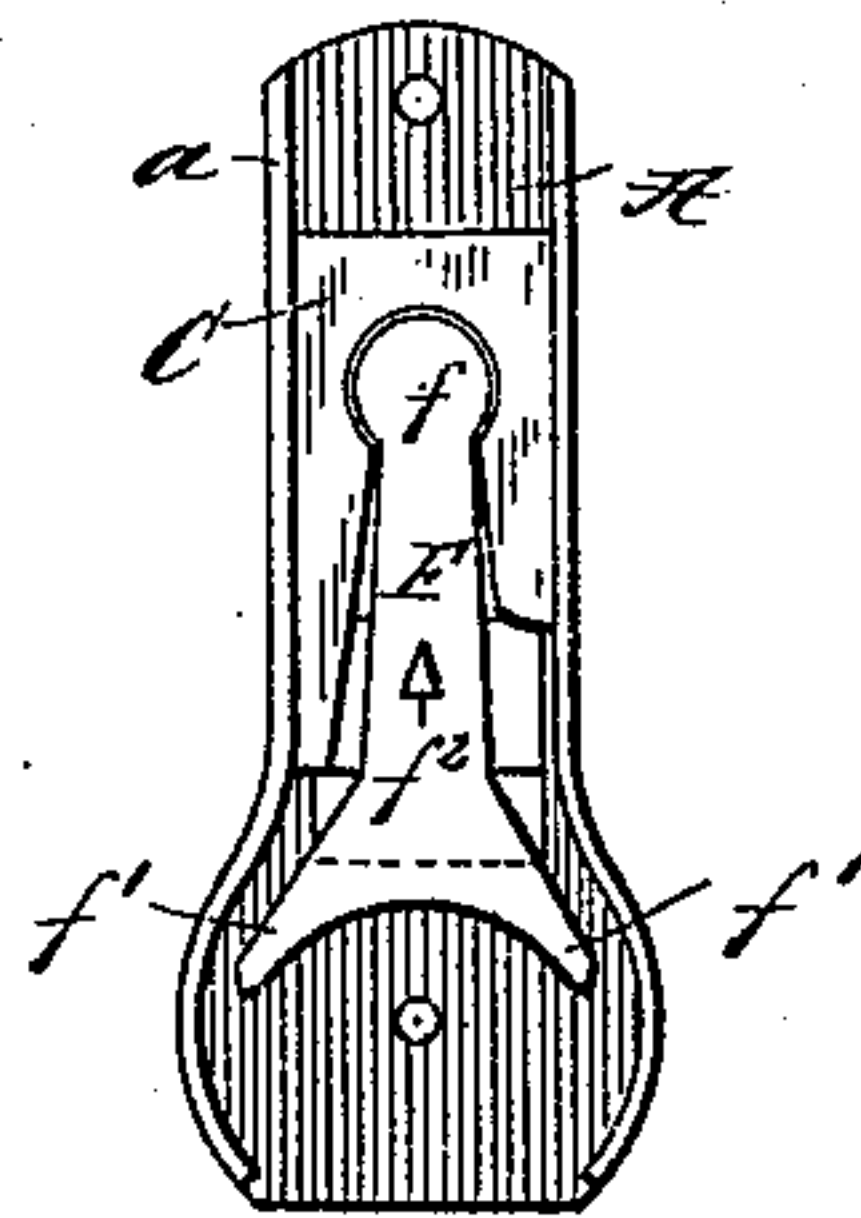


Fig. 4.

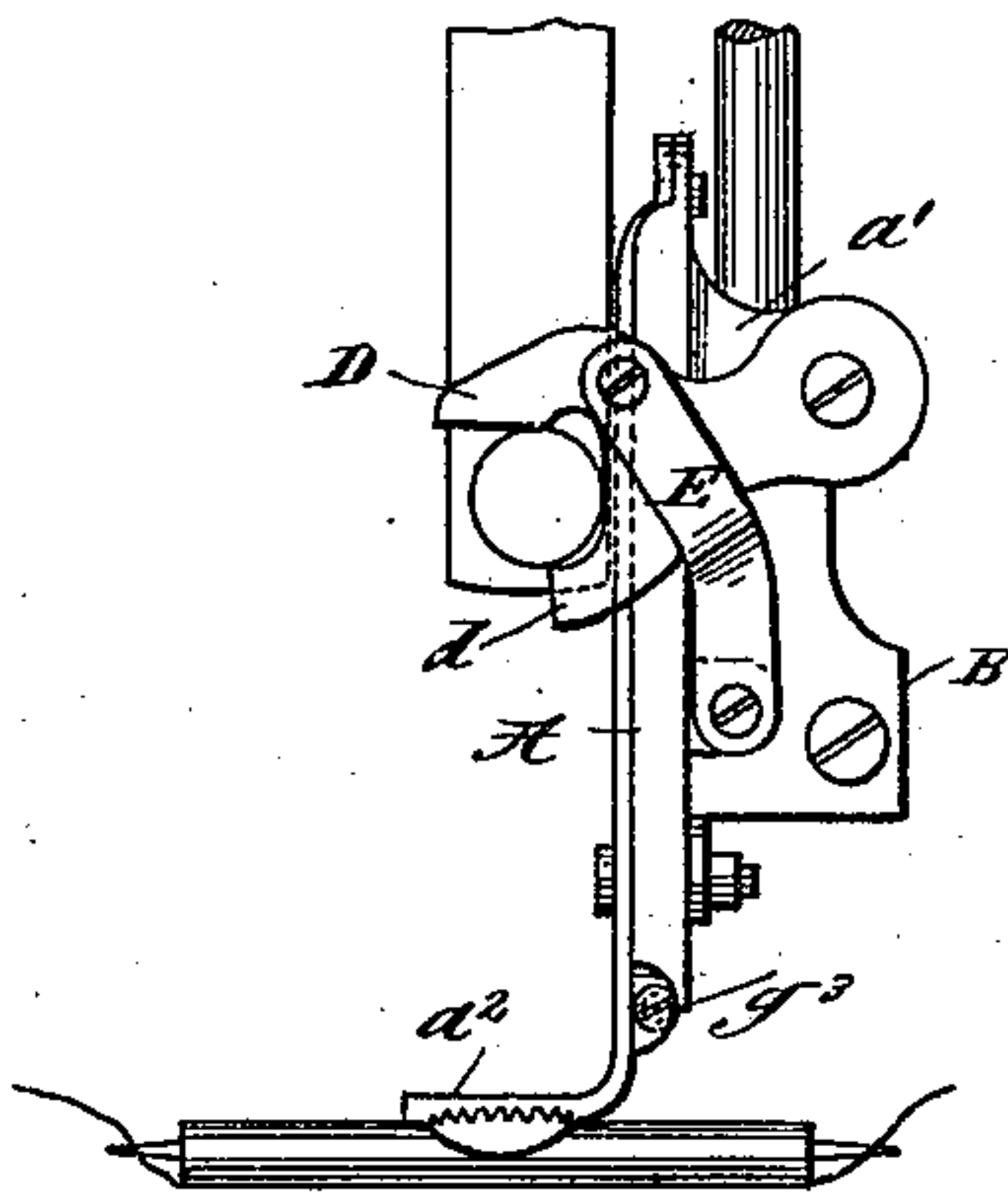


Fig. 5.

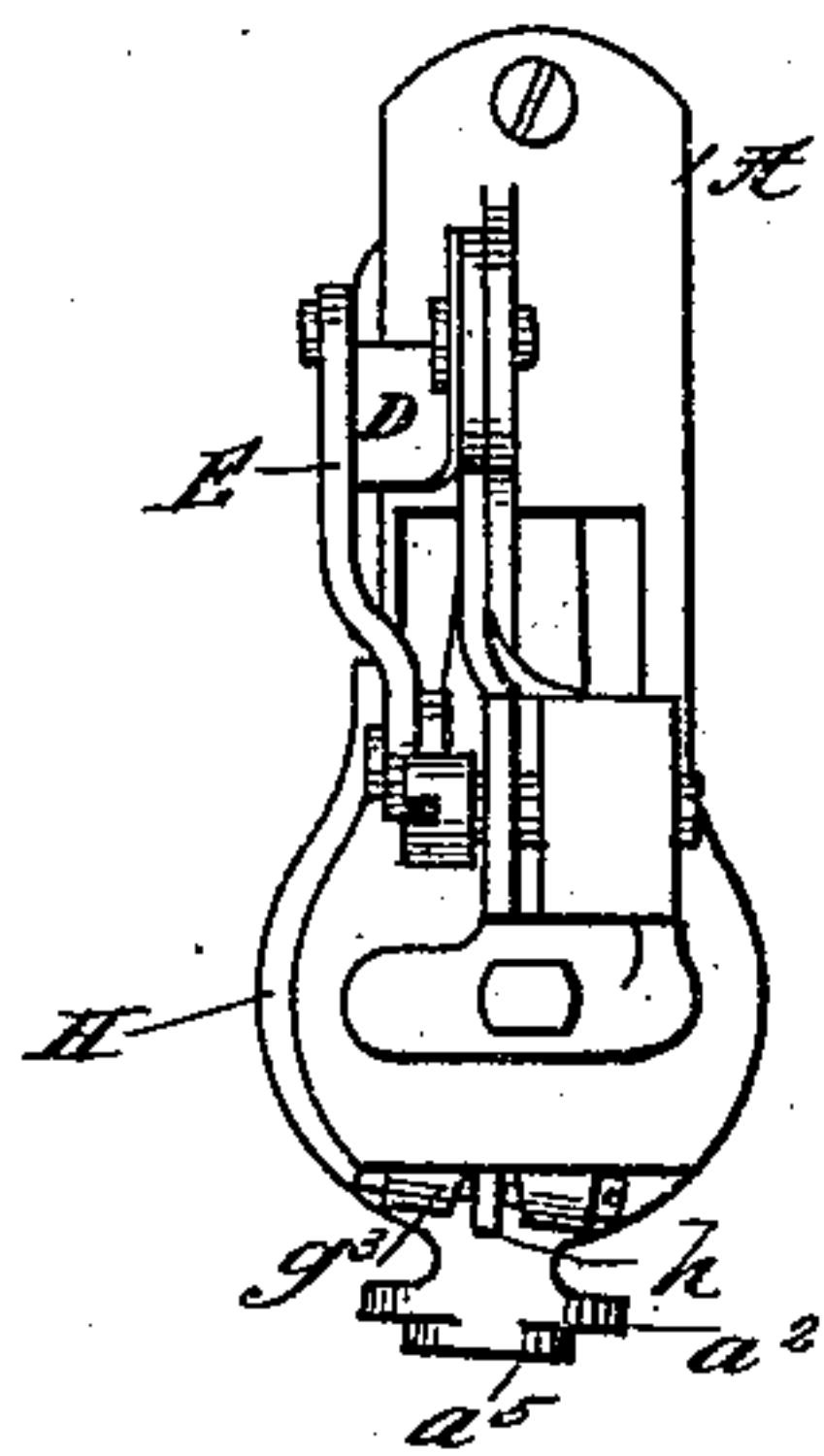


Fig. 6.

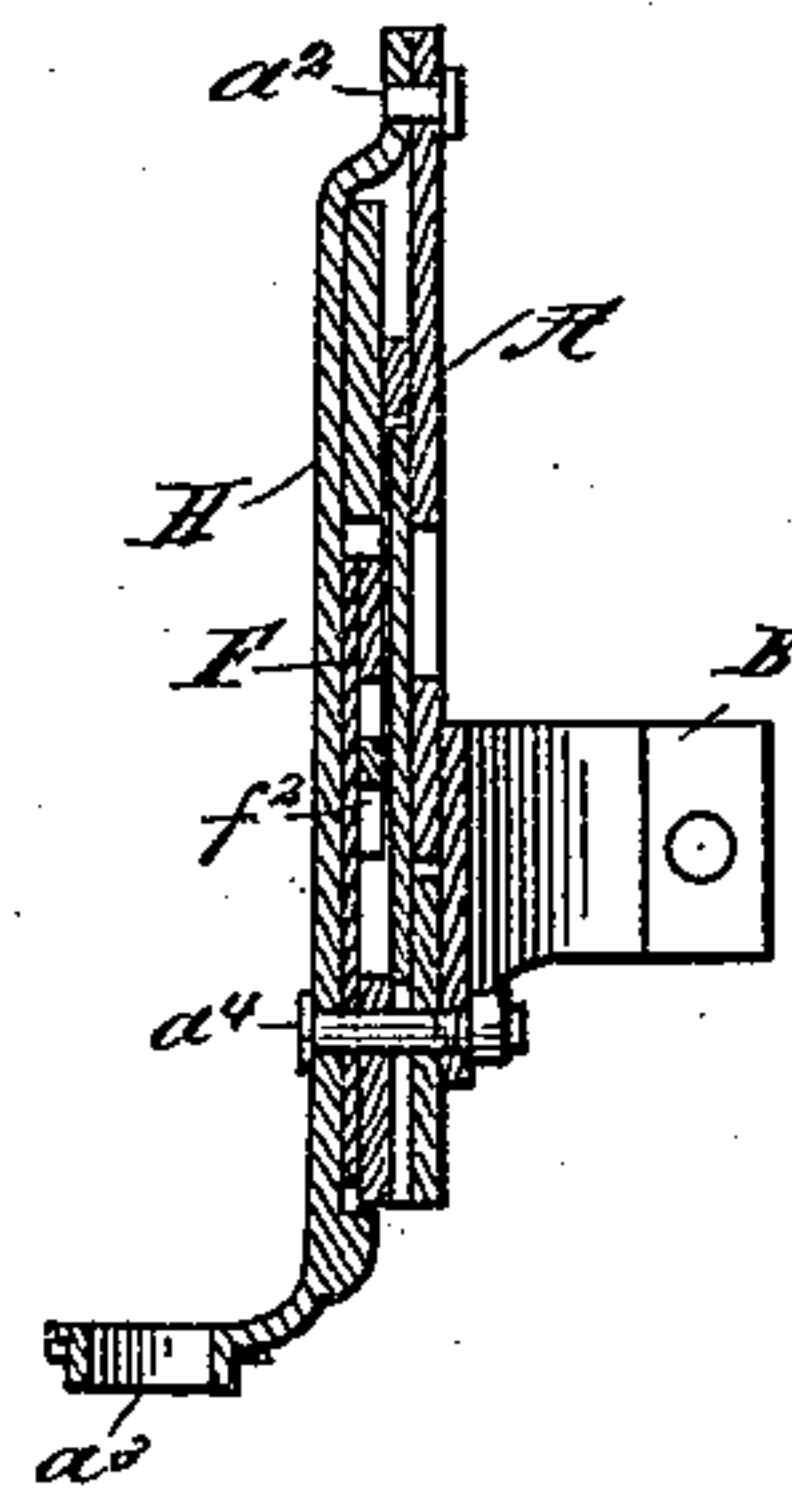


Fig. 7.

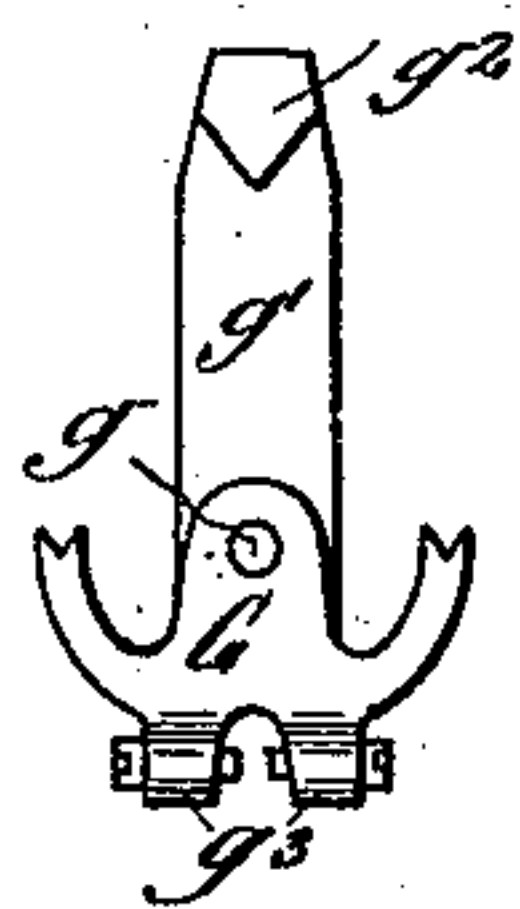
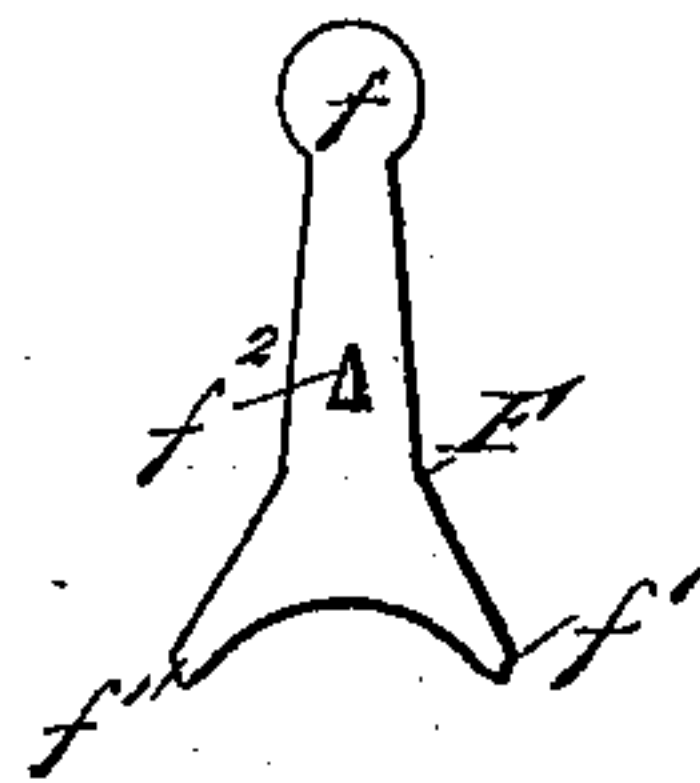


Fig. 8.



(Model.)

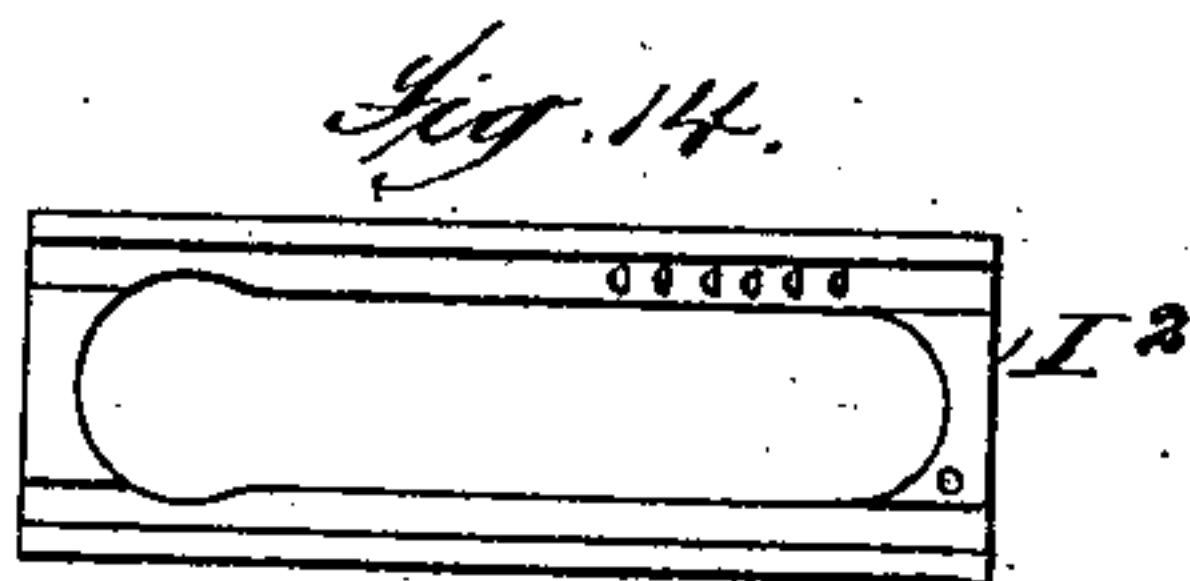
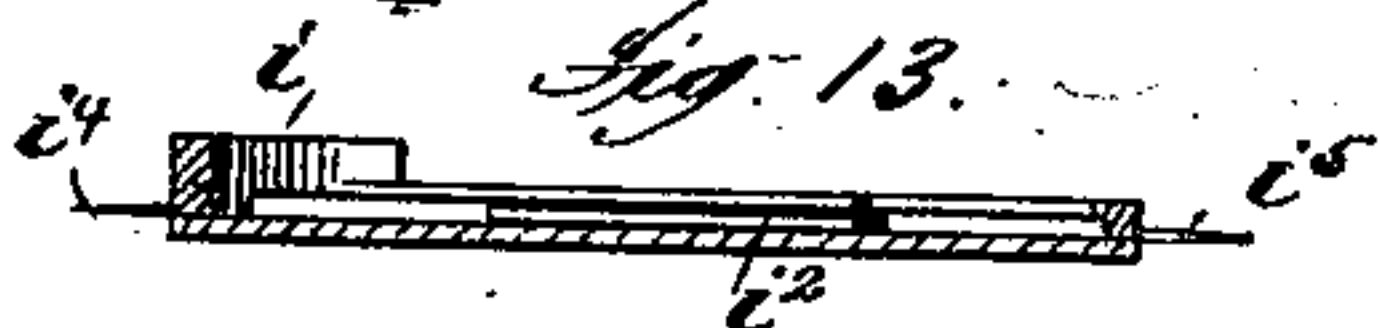
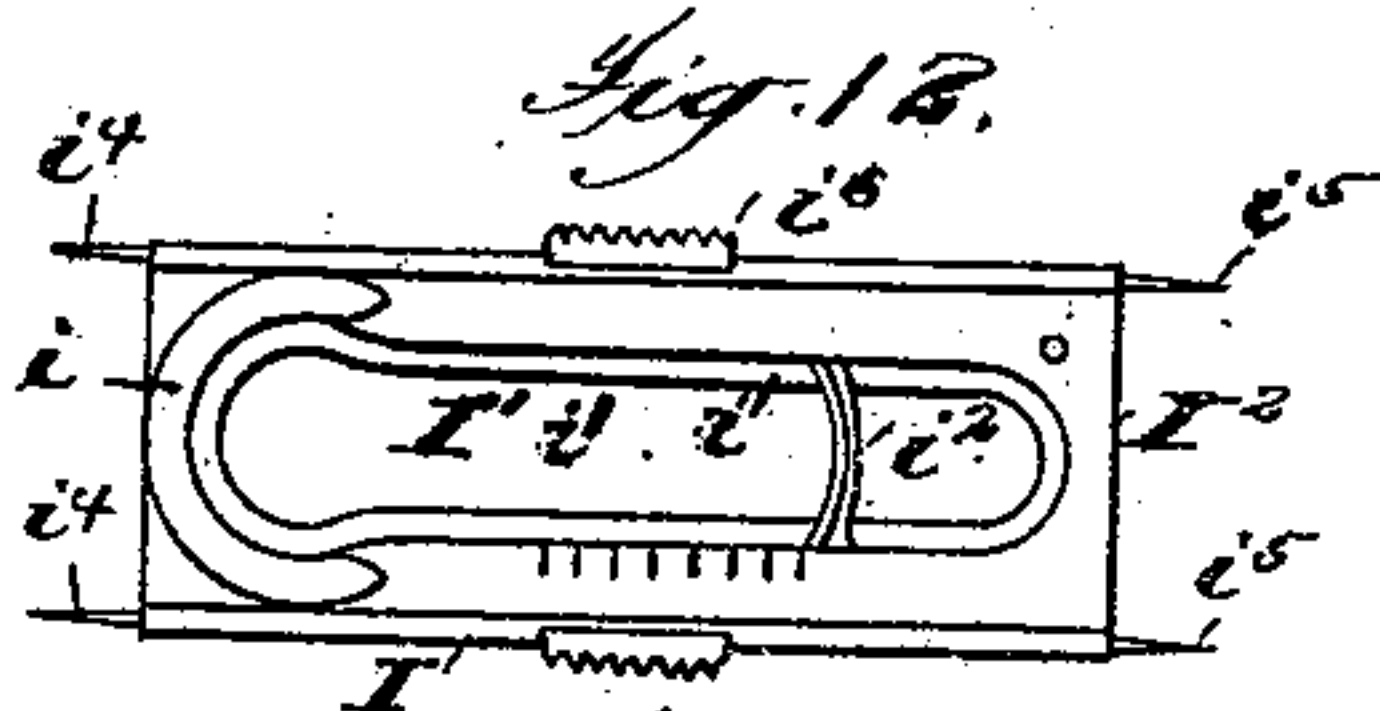
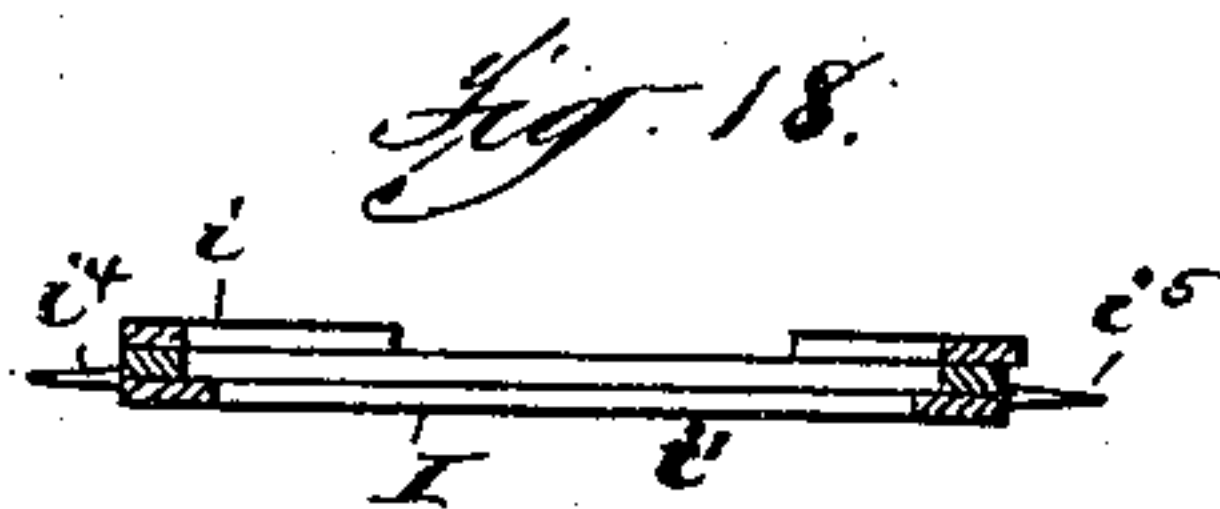
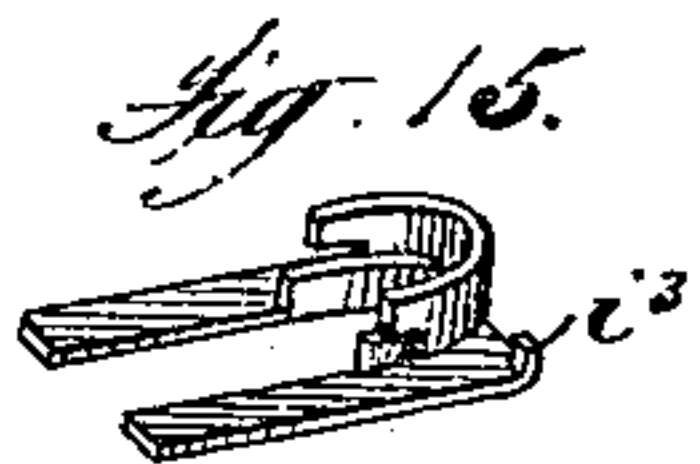
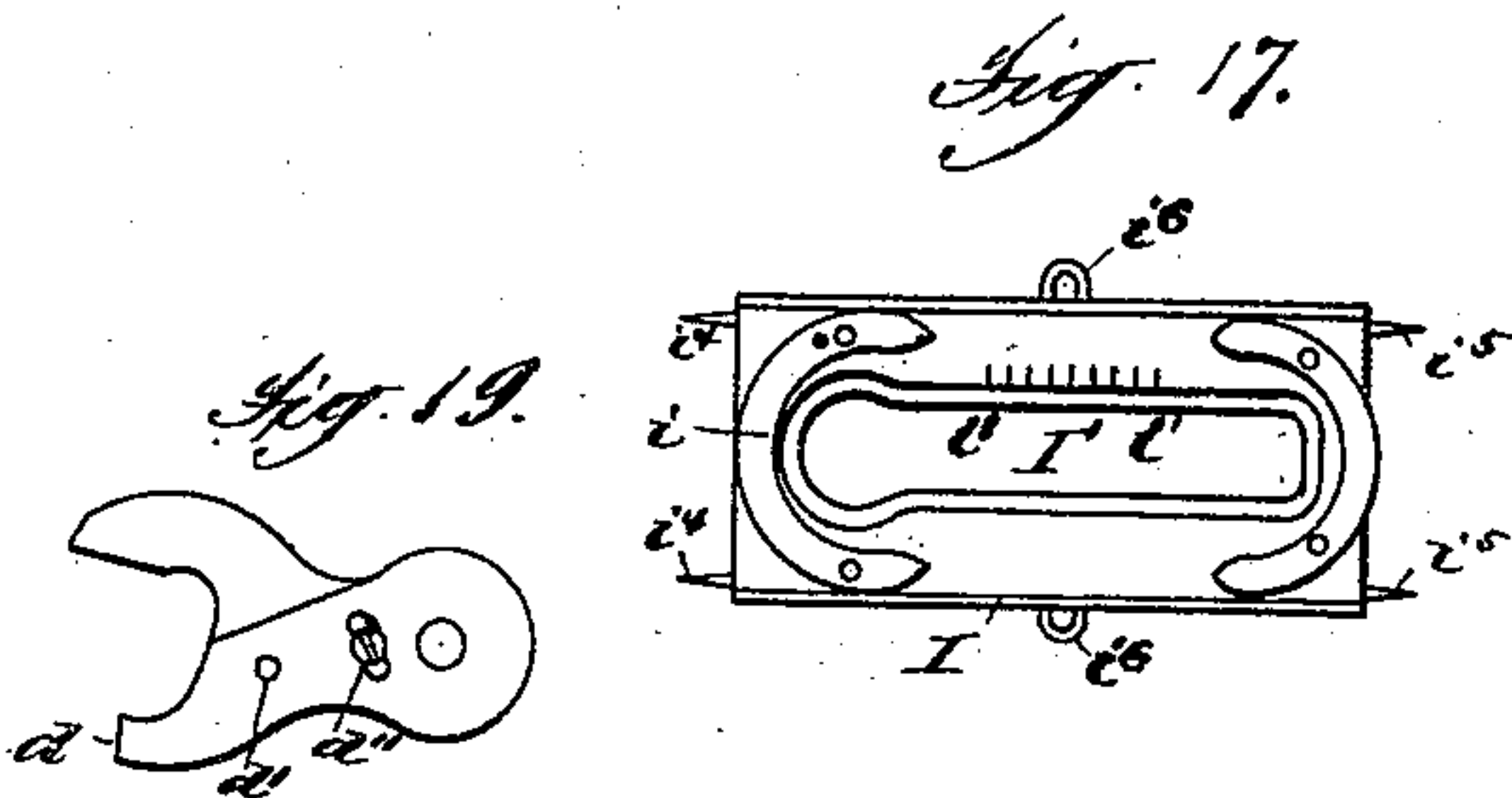
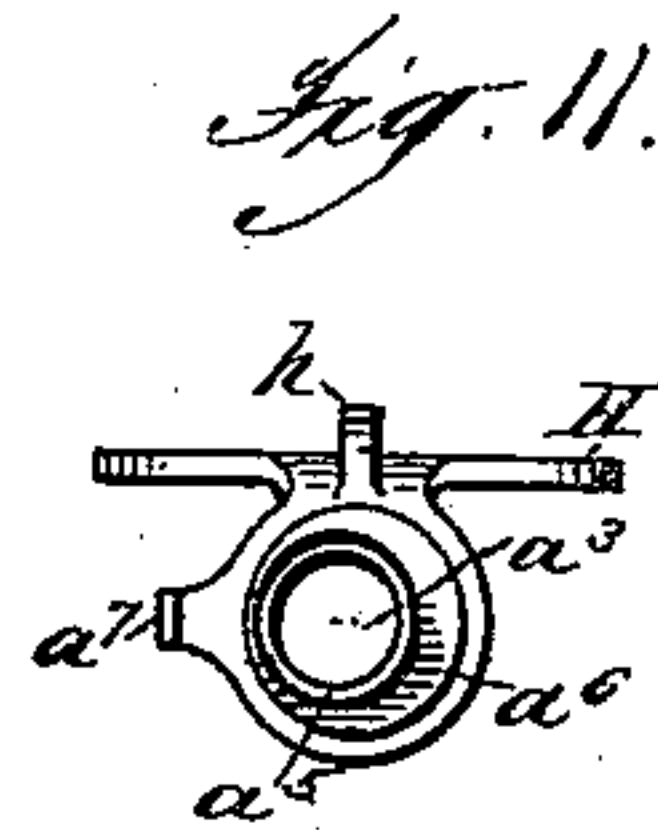
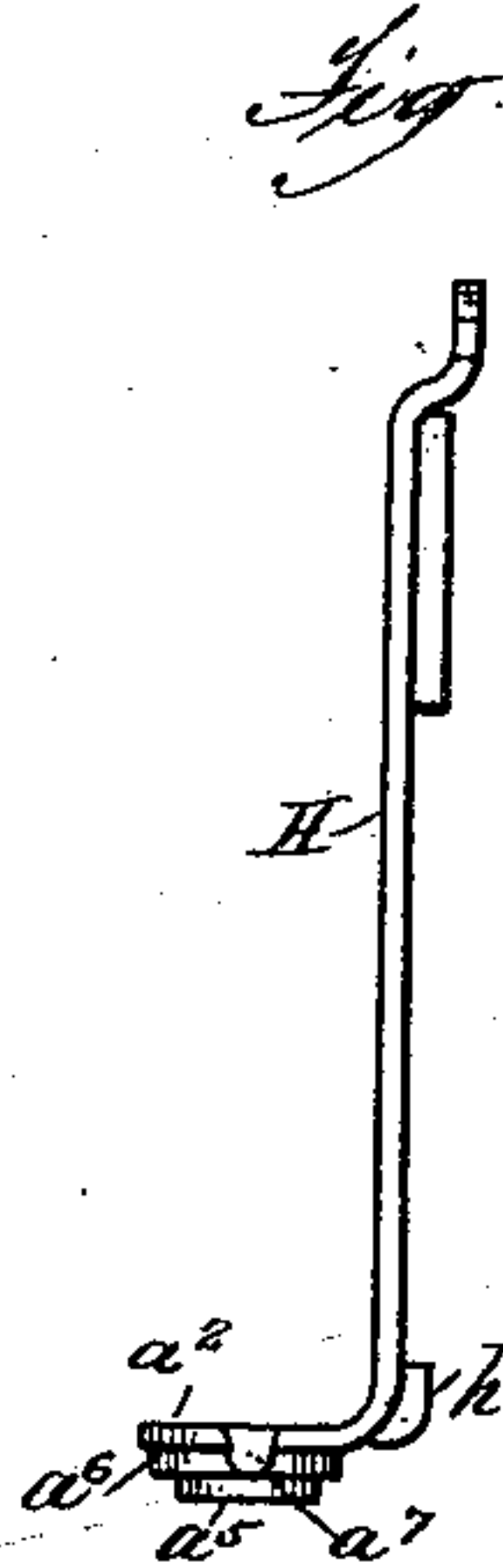
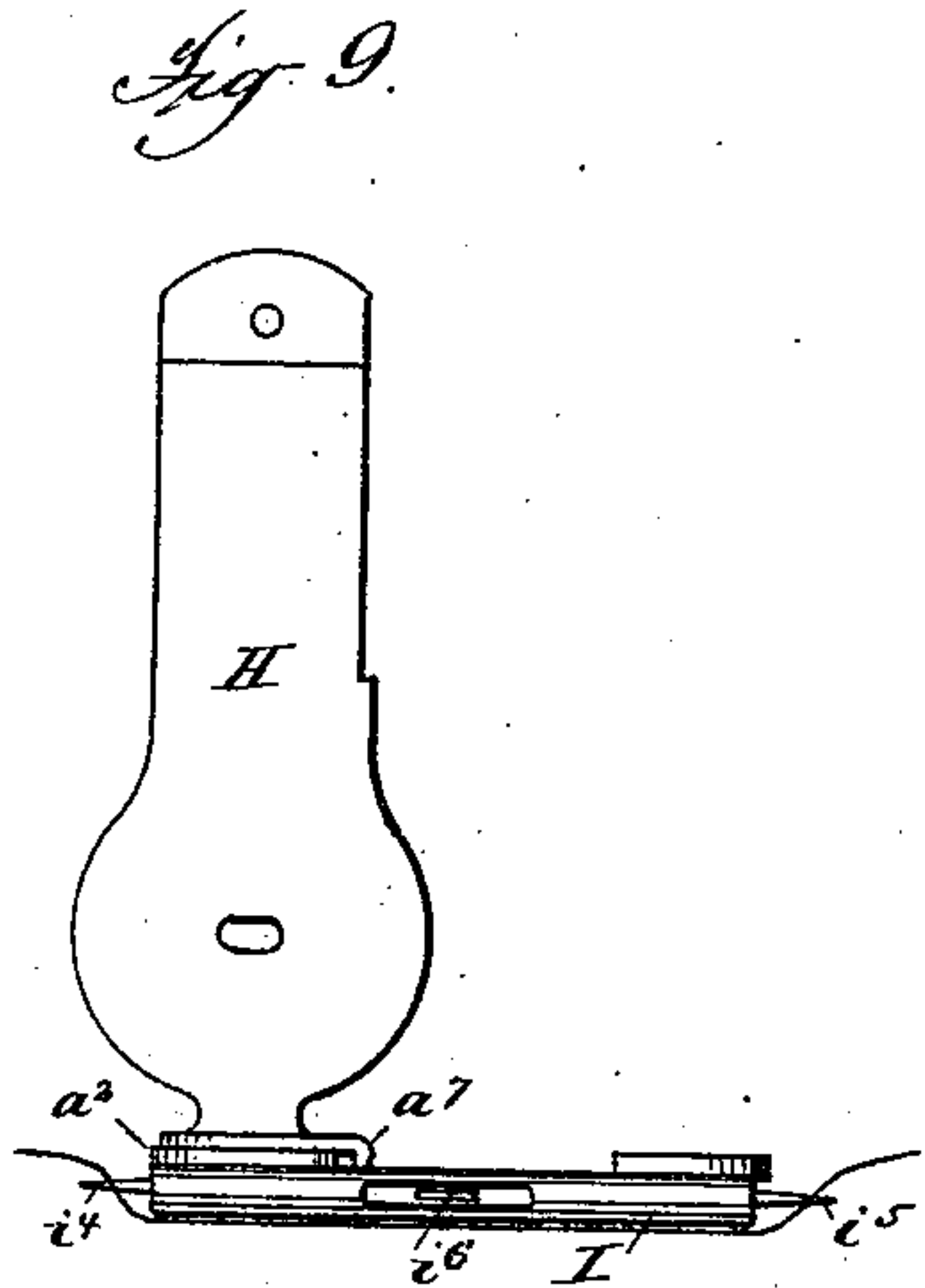
2 Sheets—Sheet 2.

E. J. TOOF.

BUTTONHOLE ATTACHMENT FOR SEWING MACHINES.

No. 551,010.

Patented Dec. 10, 1895.



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Inventor:
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by John Dane Jr.
Atty.

UNITED STATES PATENT OFFICE.

EDWIN J. TOOF, OF NEW HAVEN, CONNECTICUT.

BUTTONHOLE ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 551,010, dated December 10, 1895.

Application filed July 18, 1888. Serial No. 280,303. (Model.)

To all whom it may concern:

Be it known that I, EDWIN J. TOOF, a citizen of the United States, and a resident of the city and county of New Haven, State of Connecticut, have invented new and useful Improvements in Buttonhole Attachments, of which the following, taken in connection with the drawings, is a specification.

My invention relates to buttonhole attachments more particularly adapted to be detachably held to the usual family sewing-machine and operate in connection therewith; and it consists in the novel construction and arrangement of the operative elements whereby stability, simplicity, and cheapness are assured, all needful range of work provided for, with adjustments for such variations as the work operated upon may seem to require in practice, as will be hereinafter detailed, and more particularly pointed out in the claims.

Referring to the drawings, Figure 1 represents a face view of my improved buttonhole attachment. Fig. 2 is a view of the same with the cloth-holder-vibrating lever removed. Fig. 3 is a view of the supporting-frame and the carrier-slide with its connecting swinging lever. Fig. 4 is a view of the attachment in position on and in engagement with the presser and needle bars, respectively. Fig. 5 is a back view of the attachment. Fig. 6 is a sectional view through the line *xx* of Fig. 1. Figs. 7 and 8 represent detached views of the rocking device with arm or extension thereof and the swinging lever, respectively. Fig. 9 represents the cloth-holder-vibrating lever in engagement with the cloth-holder. Figs. 10 and 11 represent a side and bottom end view, respectively, of the same. Figs. 12, 13, 14, 15, 16, 17, and 18 represent different views of detached parts of the said cloth-holder, to be referred to and explained hereinafter. Fig. 19 represents a detached view of a modified form of the arm D.

In the drawings, A represents the supporting-frame on which the several parts forming the attachment are supported, and which in the present instance shown consists of a plate provided with raised or flanged sides, as shown at *a a*. (See Figs. 2 and 3.) B represents a bracket having a socket located on

the rear side of said supporting-frame for connection with the presser-bar of a sewing-machine, in this instance consisting of two arms forming a clasp having a suitable opening between the same for the reception of the presser-bar and connected at their outer or free ends by a screw adapted to tighten the same when the presser-bar is in position therein and hold the attachment rigidly in position on said presser-bar. C is a carrier-slide adapted to operate vertically on or within said supporting-frame and be guided by its flanged sides *a a*. The slide C is operated from the needle-bar of the sewing-machine through the medium of an arm D, which is pivotally secured at one end to an arm or projection *a'* of the supporting-frame, to which arm D the slide C is connected by a connecting-rod E. The free end of said arm D is bifurcated to form two arms for engagement with the projection on the needle-bar, the lower arm represented at *d* being shorter than the upper to allow the projection on the needle-bar to pass below or from engagement with the same at the downward stroke of the needle-bar. To adjust the space between the arms of the bifurcated arm D, the same are pivoted together at *d'* (see Fig. 19) and are caused to contact more or less rapidly with the needle-nut as the arms are nearer to each other or farther apart by a set-screw *d''*, adapted to adjust the same, and thus the throw or vibration of the cloth-holder-vibrating lever may be regulated accordingly.

F is a swinging lever having in the instance shown its upper end thereof rounded or circular in form, as shown at *f* in Fig. 3, and adapted to rest within a depression or opening corresponding in size and form in the carrier-slide C, in which it pivots, the lower part of said depression or opening being gradually widened to allow the said lever F to vibrate. By this mode of connection the necessity of pins or screws, &c., for pivoting said lever F is obviated and the amount of space reduced, although it is obvious that the pin may be used. Said lever F at its lower end has two extensions or arms *f' f'*, extending at an angle from either side thereof, (see Fig. 8), adapted to alternately engage with opposite sides of a rocking device G. (See Figs. 2

and 7.) Said rocking device consists of a segment, in this instance partly cut away, (more clearly shown in Fig. 7,) adapted to be pivotally secured at g in the lower portion of the supporting-frame, and is provided with an upright arm g' , having on its inner side at or near the top thereof a projection g^2 , slightly pointed near its center, as more clearly shown in Fig. 7, with which a projection f^2 on the upper side of the lever F (see Fig. 8) comes in contact, as will be explained hereinafter. The said rocking device is provided on its lower edge with two projections having adjusting-screws g^3 g^3 therein, adapted to vary the space between the said projections, in which space an arm or projection h of the cloth-holder-vibrating lever II extends to be vibrated, as more clearly shown in Fig. 5. The said cloth-holder-vibrating lever II, which is constructed to conform to the outline of the supporting-frame and serve as a covering or face plate to inclose the parts or mechanism supported upon or within the latter, is pivotally secured to the supporting-frame at a'' (see Fig. 1) and is provided at its lower extremity with a toe a^2 extending therefrom, having an opening a^3 therein for the passage of the needle.

a^4 is a pivot-pin upon which the rocking device G operates secured at one end in the supporting-frame and provided at its outer free end with an enlarged head adapted to span a horizontally-arranged slot h' (see Fig. 1) in the said cloth-holder-vibrating lever II, serving to retain in position and guide the same when vibrated by the rocking device G. The toe a^2 of said vibrating-lever II is provided on its underside with an annular flange or projection a^5 , surrounding the needle-opening a^3 therein, (see Figs. 10 and 11,) which is adapted to rest and operate on a rest or flange extending around the lower part of the opening in the cloth-holder shown in Fig. 12, as will be explained hereinafter.

The toe or extension a^3 of the lever II is provided with a cam a^6 on its underside surrounding the annular flange a^5 , and is also provided with a downwardly-projecting arm or lip a^7 at its outer edge, the function of which will be explained hereinafter.

Fig. 12 represents the cloth-holder, which consists of the supporting-plate I, provided with a longitudinal slot I' , enlarged at one end for the formation of the eyelet of the buttonhole, and provided with two fixed pins i^4 i^4 , projecting one end thereof, and two sliding pins i^5 i^5 , projecting the opposite end thereof, adapted to be operated or drawn back and forth by two projections i^6 i^6 , secured as shown. A secondary plate I^2 is located on the supporting-plate I, and is provided with a longitudinal opening therein of slightly larger dimensions than the corresponding one in the plate I, in order that the edge of the latter may form a rest or support, as at i , on which the annular flange a^5 on the vibrating-lever may rest to guide and operate the

cloth-holder. The plate I^2 is provided with a raised flange i' on its upper surface surrounding the enlarged end of the slot therein. The arm a^7 on the vibrating-lever passes around the outer edge of this guiding-flange i' , and the cam a^6 engages with the inner edge of the same and throws the cloth-guide off its central line of travel when being turned or reversed, in order to stitch around the eyelet of the buttonhole. The length of the buttonhole in this instance is determined by a movable end piece i^2 , a detached view of which is shown in Fig. 16, provided with a projection i^3 , adapted to engage with notches in the under side of the secondary plate I^2 , as clearly shown in Fig. 14, which represents the under side of said secondary plate.

Fig. 13 represents a sectional view of Fig. 12 through the center.

Fig. 15 represents a modification of the movable end piece shown in Fig. 16, provided with a raised edge or flange adapted to extend above the surface of the cloth-holder as a guide to turn the cloth-holder when it may be desired to stitch around the opposite end of the buttonhole.

Fig. 17 represents a modified form of the cloth-holder shown in Fig. 12, and Fig. 18 is a sectional view through the center of the same. In this modified form the movable end piece is done away with, and the length of buttonhole is simply determined by the scale located at one side of the longitudinal opening I' , as shown.

While I have explained a device as a whole and in detail that is sufficient to enable others skilled in the art to make and practice my invention, I do not wish to be understood as limiting myself to the special forms and details particularly described, but claim any variation that may be considered as an equivalent for and adapted to operate substantially the same as the said device specially detailed.

The attachment is secured to the presser-bar of a sewing-machine by means such as hereinbefore described. The cloth containing or to contain the buttonhole-slit is then secured to the cloth-holder by means of the pins i^4 i^4 and i^5 i^5 , the buttonhole-slit lying central with the longitudinal opening I' therein. The length of the buttonhole to be stitched may be determined by the scale located at either side of the said longitudinal opening, and the sliding or movable end piece i^2 is moved accordingly to the desired point. The cloth-holder is then placed under the toe a^2 of its vibrating-lever adjacent or in contact with the movable or sliding end piece i^2 , the annular flange a^5 resting on the lower rest or flange i . The sewing-machine now being put in motion the cloth-holder is fed along by the action of the feed against the cloth secured to the under side of the same, as before described, until the enlargement at one end of the longitudinal slot is reached. The cam a^6 then comes in contact with the inner edge of the flange or cam-plate i' and

serves to throw the cloth-holder from its central line of travel. At the same time the arm a^7 of the toe a^2 passes around the outer edge of the said flange or cam-plate, serving to guide the cloth-holder when being turned around as may be desired.

The cloth-holder is vibrated by the lever H, as follows: The slide C is operated vertically by the needle-bar through the medium of levers substantially as described, and at the downward stroke of the said slide one arm or extension of the swinging lever connected thereto, as described, comes in contact with one side or arm of the rocking device G, pushing the same downward, and the said rocking device being pivoted, the projections having the adjusting-screws therein on the bottom or lower edge of the same are moved to one side, at the same time carrying the lever H by means of the projection h on the same extending between the said adjusting-screws, and the top of the arm g' of said rocking device is thrown to one side, as shown in Fig. 2. At the upward stroke of the carrier-slide C the projection f^2 on the swinging lever F moves in contact with the projection g^2 on the under side of the arm g' , which serves to throw the lower end of the swinging lever F toward the opposite side, so that on the next downward stroke of the slide C an arm or extension f' of the swinging lever will engage with the opposite side or arm of the rocking device G and move the bottom of the same to the opposite side, by which described movement the said cloth-holder-vibrating lever receives its vibratory motion.

Having thus set forth my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A button-hole attachment for sewing machines, comprising the following elements, a supporting frame, a cloth-holder vibrating device or lever, a vertically reciprocating carrier-slide supported and guided upon said frame, carrying a swinging lever, a rocking device operated by said swinging lever, having connection with the said cloth-holder vibrating device or lever, and a cloth-holder connected with, and operated by the latter, substantially as described and for the purpose set forth.

2. A button-hole attachment for sewing machines, comprising the following elements, a supporting frame, consisting of a plate, a cloth-holder vibrating lever pivotally secured to said frame and constructed to substantially conform to the outline of the latter to serve as a covering or face-plate for the same, mechanism for operating said cloth-holder vibrating lever, located between the latter and the supporting frame, consisting of a reciprocating carrier slide guided upon said frame, provided with a swinging lever carried thereby, and a pivoted rocking device operated by said swinging lever, provided with means for engaging with the cloth-holder vibrating lever,

and a cloth-holder, substantially as described and for the purpose set forth.

3. In a button-hole attachment for sewing machines, the combination with a cloth-holder, and a cloth-holder vibrating lever constructed at one end for detachable connection therewith, of a supporting frame, a vertically moving carrier-slide supported and guided upon said frame provided with a swinging lever carried thereby having two arms or extensions, a pivoted rocking device operated by the alternate engagement therewith of the latter and provided with means for operating and regulating the movement of the said cloth-holder vibrating lever, substantially as described and for the purpose set forth.

4. In a button-hole attachment for sewing machines, the combination with a cloth-holder and a vibrating lever constructed at one end for connection therewith, of a vertically acting carrier-slide provided with a swinging lever carried thereby having a tapering or wedge-shaped projection thereon, a rocking device or lever provided with an inverted wedge-shaped projection thereon adapted for contact with the projection on the said vertically moving swinging lever to vibrate the latter for the purpose set forth, and means carried by said rocking device to operate the cloth-guide vibrating lever, substantially as described and for the purpose set forth.

5. In a button-hole attachment for sewing machines, the combination with a supporting frame, a vertical acting carrier-slide and a swinging lever carried by the latter, an actuating lever operated by the needle-bar of the sewing machine and having connection with said carrier-slide, and a pivoted rocking device operated by said swinging lever, of a vibrating lever operated by said rocking device, and a cloth-holder substantially as and for the purpose set forth.

6. In a button-hole attachment for sewing machines, the combination with a cloth-holder consisting of a plate provided with a longitudinal opening therein having an enlarged end, and a guide located thereon adjacent to the enlarged end of said opening, of a vibrating lever or device constructed for connection with said cloth-holder and provided with a cam for engaging with the guide located thereon, and mechanism for operating said vibrating lever or device, substantially as described and for the purpose set forth.

7. In a button-hole attachment for sewing machines, the combination with a supporting frame, a vibrating lever constructed for connection with a cloth-holder, and mechanism for operating said vibrating lever, of a slotted cloth-holder device provided with points adapted for detachable connection with the material to be stitched, and with a cam plate superimposed above the upper surface of said slotted guide substantially as set forth.

8. In a button-hole attachment for sewing

machines, the combination with a supporting frame, a vibrating lever provided with an annular flange or projection for connection with a cloth-holder, and mechanism for operating
5 said vibrating lever, of a slotted cloth-holder device provided with points adapted for detachable connection with the material to be stitched, and with a superimposed cam plate, and an adjustable slide for varying the space
10 within which the annular flange or projection on said vibrating lever traverses in practice, substantially as set forth.

9. In a button-hole attachment for sewing machines, the combination with a supporting
15 frame, a vertical acting carrier-slide and a swinging lever carried by the latter, an actuating lever having connection with said carrier-slide and constructed for connection with the needle bar of a sewing machine, a rocking
20 device operated by said swinging lever, a vibrating lever operated by said rocking device, and a cloth-holder, of an adjusting device whereby the throw or vibration of the cloth-holder may be regulated, substantially as de-
25 scribed and for the purpose set forth.

10. In a button-hole attachment for sewing machines, the combination with a cloth-holder, and a vibrating lever constructed at one end for connection with the cloth-

holder, of a rocking device constructed to en- 30
gage and operate said vibrating lever, and a vertically operated swinging lever constructed to engage and operate said rocking device, substantially as described and for the purpose set forth.

11. In a button-hole attachment, the combination of a cloth-holder provided with a longitudinal opening therein and with an adjustable slide for varying the length of said opening, and a vibrating device or lever constructed to engage with said cloth-holder
40 within the opening therein and operate the same, substantially as described and for the purpose set forth.

12. In a button-hole attachment for sewing
45 machines, the combination of a cloth-holder, consisting of a plate provided with a longitudinal opening therein and a guide located thereon adjacent to one end of said opening, and a vibrating device or lever constructed for
50 connection with said cloth-holder, and provided with an arm or lip for engaging with the guide on the latter, substantially as described and for the purpose set forth.

EDWIN J. TOOF.

Witnesses:

CHAS. F. DANE,

EMILIE J. CUNNINGHAM.