

112. SEWING MACHINES,

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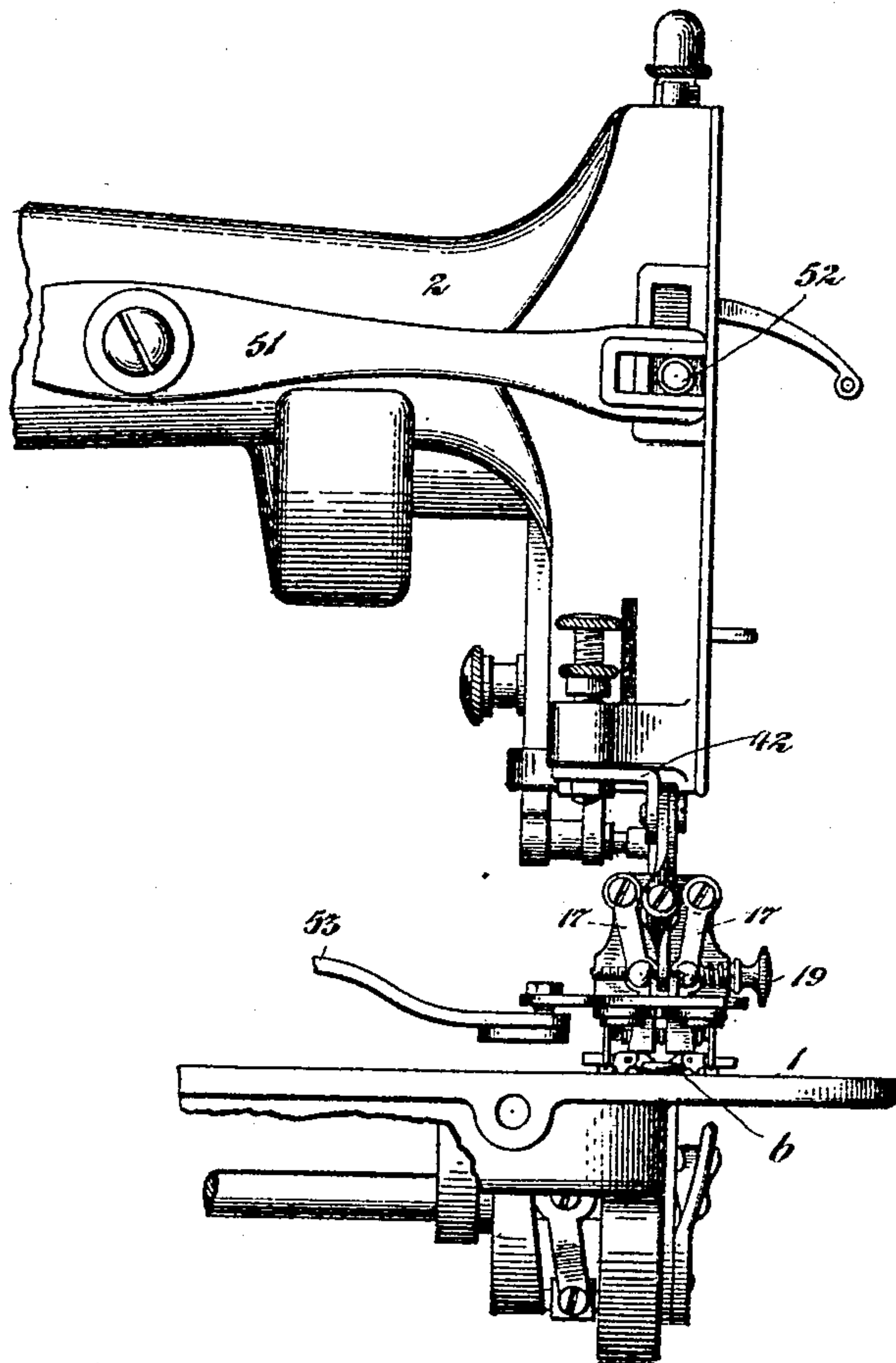
No. 820,089.

PATENTED MAY 8, 1906.

A. A. BOUTON.
BUTTON SEWING MECHANISM.
APPLICATION FILED NOV. 20, 1901.

3 SHEETS—SHEET 1.

Fig. 1.



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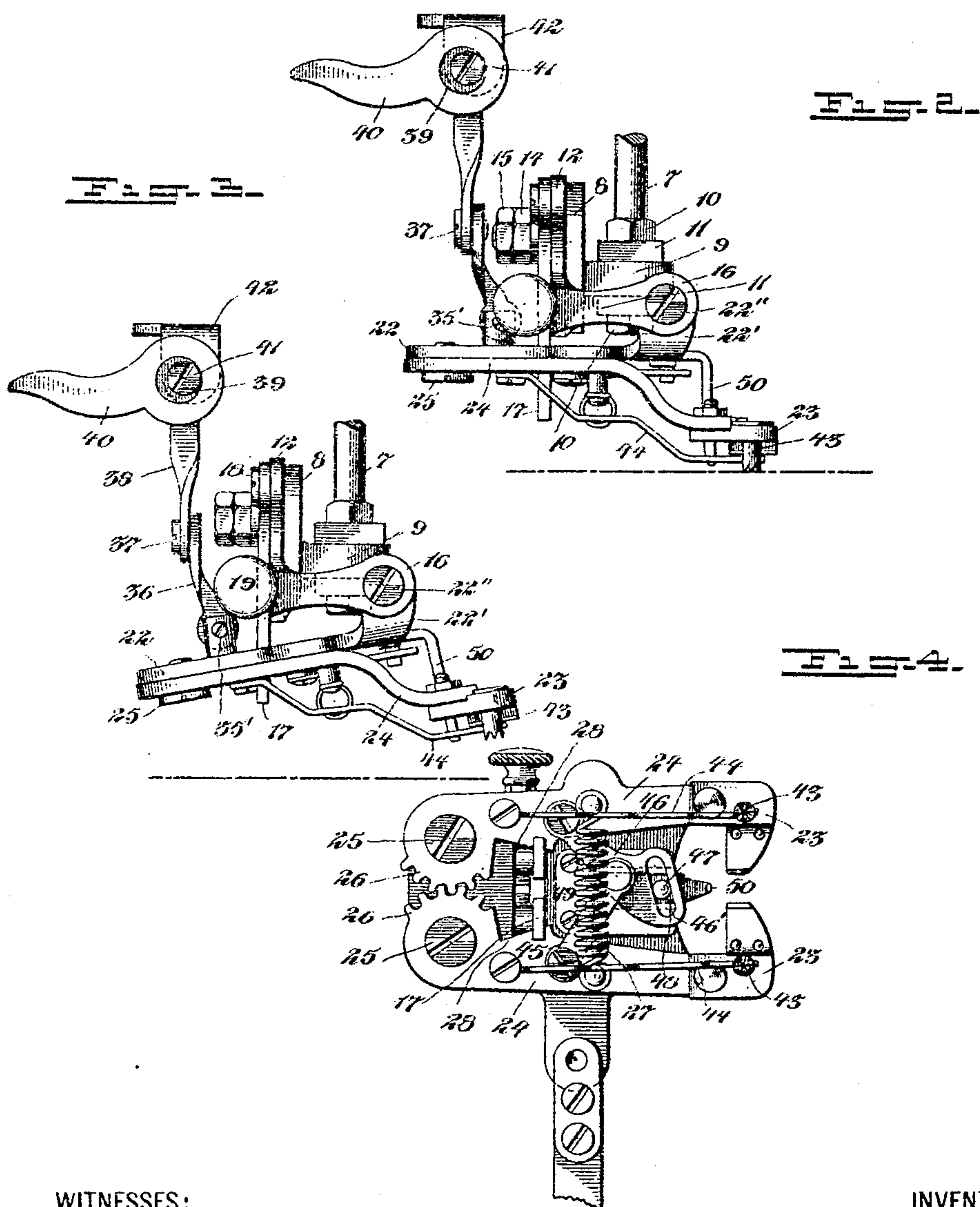
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3 SHEETS—SHEET 2.



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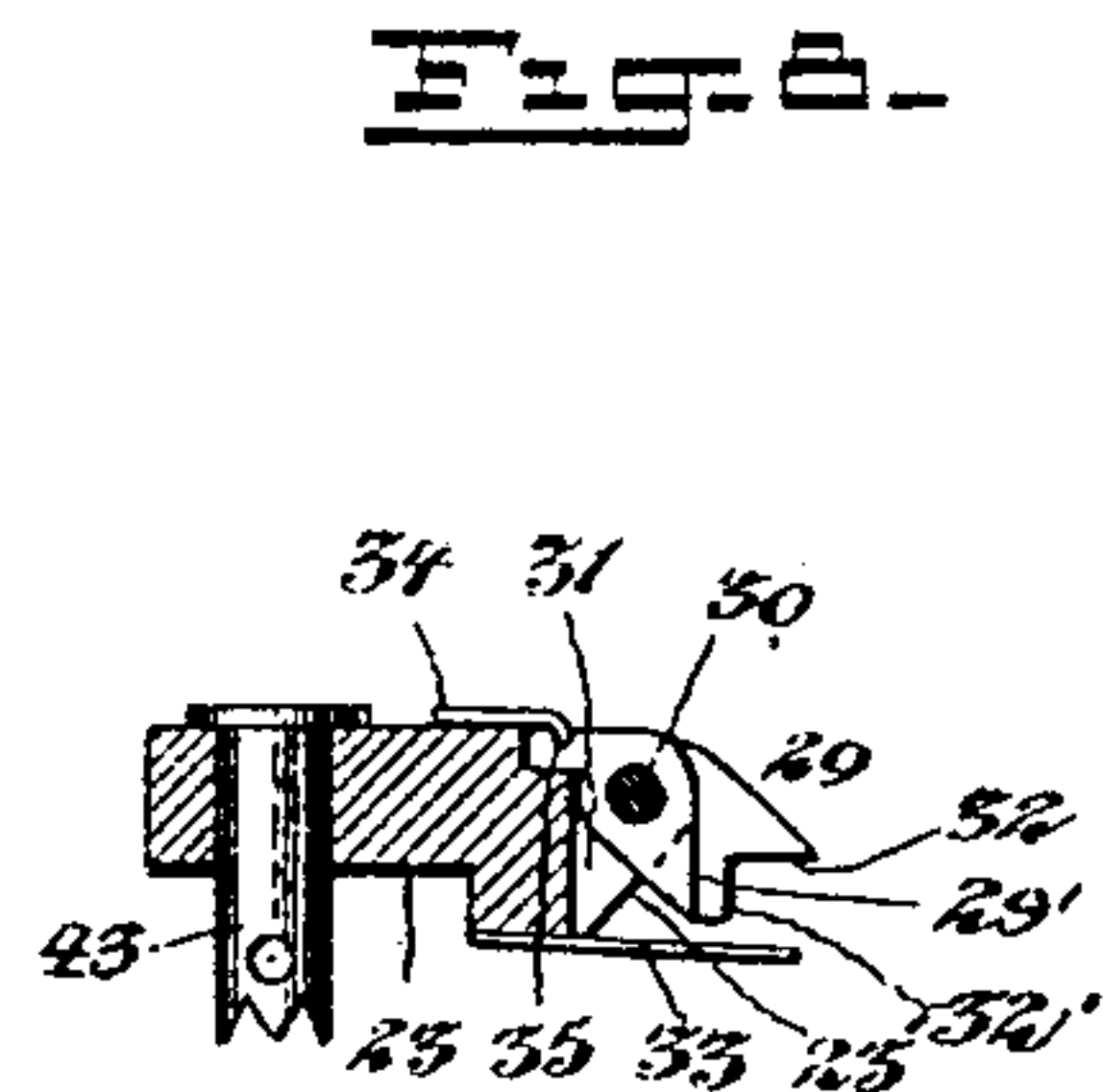
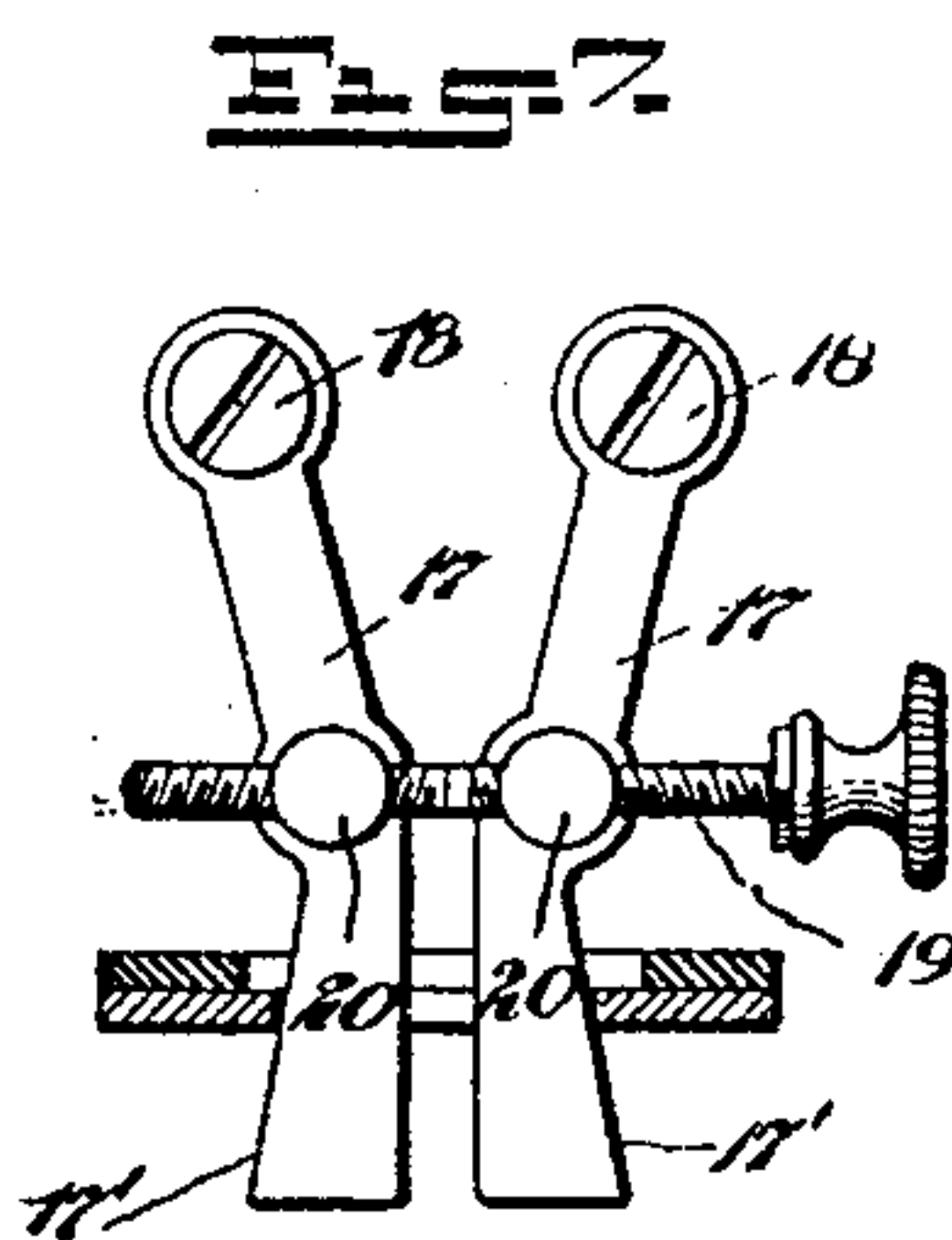
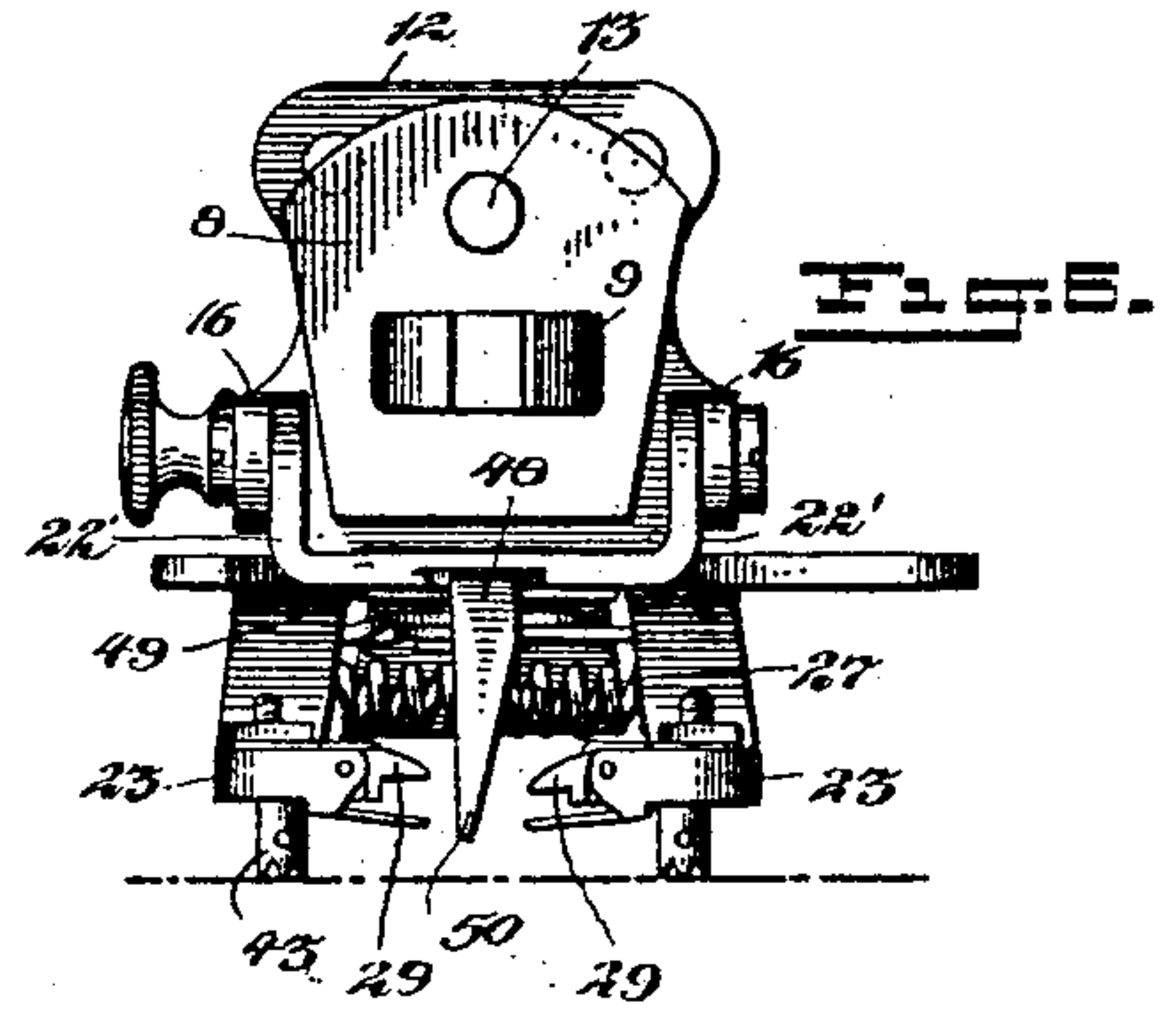
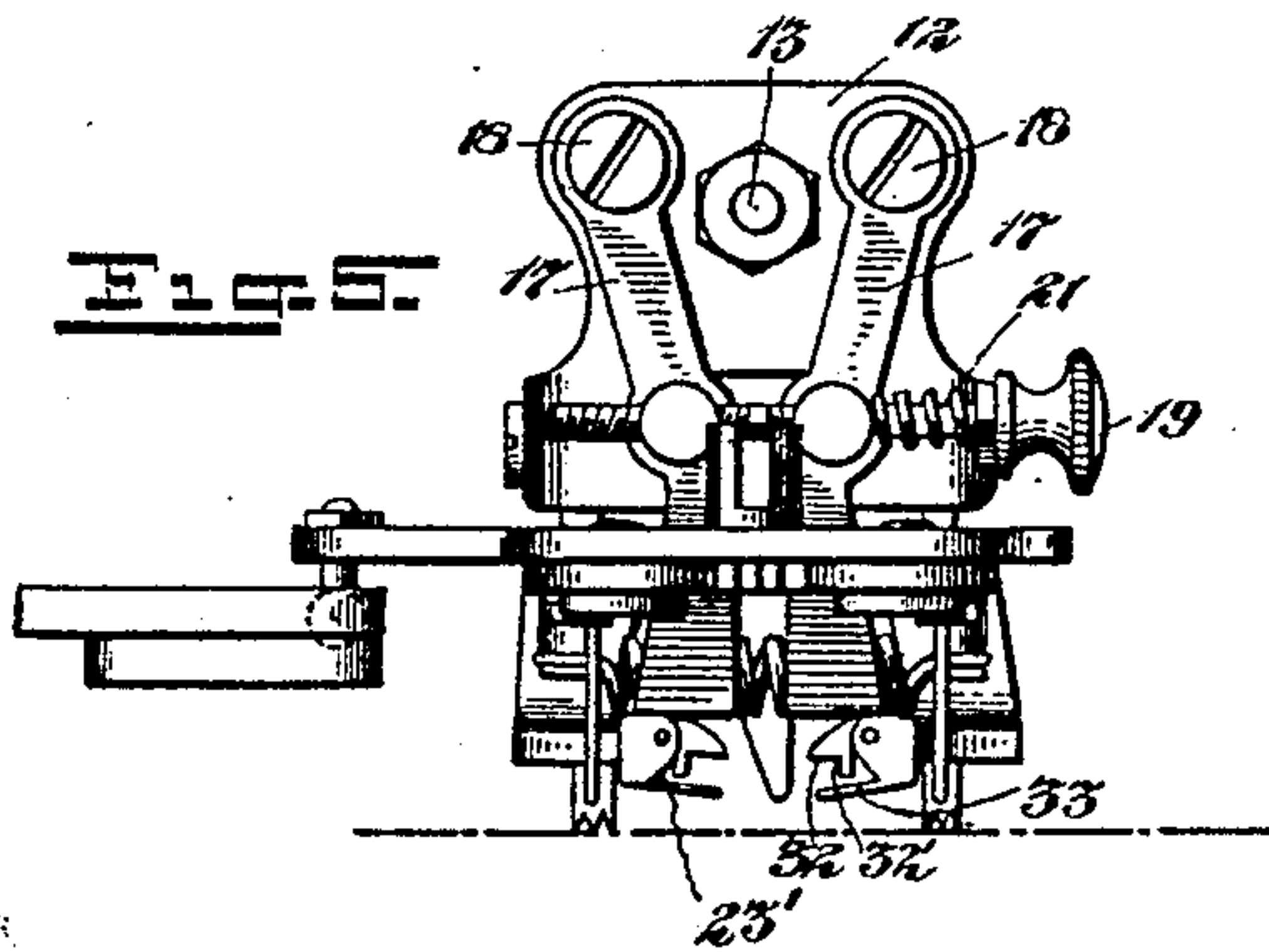
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3 SHEETS—SHEET 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ARTHUR A. BOUTON, OF CLEVELAND, OHIO, ASSIGNOR TO STANDARD SEWING MACHINE COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

BUTTON-SEWING MECHANISM.

No. 820,089.

Specification of Letters Patent.

Patented May 8, 1906.

Application filed November 20, 1901. Serial No. 82,969.

To all whom it may concern:

Be it known that I, ARTHUR A. BOUTON, a citizen of the United States, residing at Cleveland, Cuyahoga county, State of Ohio, have
5 invented certain new and useful Improvements in Button-Sewing Mechanism, of which the following is a specification.

This invention relates to button-sewing mechanism, and particularly to a button-
10 holding device for locating a button in proper position relative to the needle while the button is being sewed upon the garment or other work.

One of the main objects of the present invention is to provide an improved button-
15 holding device having button-holding jaws that may be tilted to an angular position relatively to the work in order to facilitate the insertion of a button into or removal from its position between said jaws. In order to accomplish this result, I make use of a button-
20 holding device having a tiltable or pivoted portion carrying the button-holding jaws, and this tiltable portion of the button-holding device will preferably be controlled in its
25 operation by the presser-bar of a sewing-machine of suitable construction—such, for example, as the "Standard" button-sewing machine, with which my improved button-holding device will usually be employed—said
30 presser-bar when raised serving to raise the button-holding jaws and the button and also to tilt them to an angular position away from the work. Moreover, the button-holding
35 jaws of the device will usually be released from the button by a jaw-spreading device operated by the presser-bar, and in the preferred construction the jaw-spreading device is fastened directly to the presser-bar of the
40 machine and the button-holding jaws are pivotally connected with the jaw-spreading device in such a manner that as the jaws are tilted away from the work they are simultaneously spread apart to release them from
45 the button.

When a button-holding device having a tilting movement is employed and the axis of movement is shifted by the presser-bar as the latter is raised or lowered for thick or thin
50 goods, the button is thrown slightly away from its central position with respect to the needle, and an adjusting device for centering the button, regardless of the vertical position

of the axis of its tilting movement, is an important feature of my invention.

In order to adapt a button-holding device
55 for use with buttons of various sizes, it is desirable to provide means for locating the button at a third point in its edge, and an important feature of my improved button-holding device is an adjustable stop movable with
60 one or both of the button-holding jaws to accommodate itself to buttons of different diameters and locate the eyes of the buttons in the proper position with respect to the needle
65 regardless of the size of the button.

In sewing buttons of different thicknesses it is difficult to clamp the buttons securely at their edges when jaws having a single depth
70 of opening for the edges of the buttons are employed, and another feature of my invention relates to an adjustable jaw constructed so as to center itself automatically regardless of the thickness of the button to be clamped
75 thereby.

Referring to the accompanying drawings, Figure 1 is a rear elevation of a portion of a Standard button-sewing machine having
80 my improved button-holding device applied thereto. Fig. 2 is an enlarged side elevation of the button-holding device in its operative position in engagement with the work. Fig. 3 is a similar view showing the button-holding jaws tilted away from the work when the
85 presser-bar is raised. Fig. 4 is an under side view of the button-holder and illustrates the jaw-spreading means and the adjustable button-stop that is movable in unison with the button-holding jaws. Fig. 5 is a rear elevation of said button-holder with the jaws in
90 their closed position. Fig. 6 is a front elevation of the same. Fig. 7 is a sectional detail illustrating the adjustable jaw-spreading means. Fig. 8 is a sectional detail of one of the self-centering button-holding jaws.
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Similar characters designate like parts in the different figures of the drawings.

In said drawings the sewing-machine proper to which the button-holding device is applied, and which comprises the bed-plate 1
100 and overhanging arm 2, each supporting cooperating stitch-forming devices, may be of the usual construction as employed in said Standard machine and adapted to form
105 stitches, as in such machine, although the button-holding device may be used in con-

nection with other well-known sewing-machines.

My improved button-holding device is preferably connected with the presser-bar 7, forming part of such machine, that is supported to have an oscillating movement for the purpose of presenting to the needle in alternation either one of two eyes through which the needle is passed in sewing on a button; but as the devices for imparting this movement to the presser-bar constitute no part of my invention they are not illustrated herein.

In some respects the button-holding device herein shown is similar to other button-holders employed for clamping a button in place during the sewing on of the same—that is to say, said device has a pair of button-holding jaws capable of gripping and releasing a button and also movable toward and from the work to engage or release the same, the button-holder also having suitable means for holding the work in place on the cloth-plate as the needle is passed first through one and then through the other of a pair of eyes in the button. In the present construction, however, the button-holder is made up of two main parts hinged together to permit a pivotal or tilting movement of one part of the device relative to the other. In this construction the upper of these hinged portions of the button-holder is fastened directly to the presser-bar and its movements correspond exactly to those of said presser-bar, while the lower portion of the button-holder carries the button-holding jaws and is connected to a fixed point in such a manner as to permit a relative movement of the lower portion of the holder with respect to the part secured to the presser-bar, and this relative movement is made use of to tilt the jaws away from the work and to spread the same to release a button after it has been sewed on the work, the principal function of this tilting movement being to bring the button-holding jaws to such an angular position as will enable the operator to insert a button in place or remove the same readily and without loss of time. The upper portion of the button-holder embodies two principal parts, one of which is a plate 8, having a forked or bifurcated arm 9 projecting therefrom and adapted to straddle the presser-bar 7 and be clamped in place thereon by means of suitable clamp-nuts and washers, such as 10 and 11, the other principal element being a second plate 12, pivoted to the plate 8, as by means of a pin or stud 13, secured to the plate 8 and threaded at its outer end to receive clamping and check nuts 14 and 15 to hold said plates together and permit of a rocking or swinging movement of the plate 12 with its supported parts relative to the plate 8 in a manner to be hereinafter referred to. At the lower end thereof the plate 12

has a pair of forwardly-extending arms or ears 16, between which the lower portion of the button-holder carrying the gripping-jaws is intended to be pivoted.

The releasing or jaw-spreading means for disengaging the button-holder from a button will preferably have its operating element mounted on the upper portion of the button-holder, and in this construction I have illustrated at 17 a pair of jaw-spreading arms or cams, the cam-faces of which are designated by 17'. These cams are preferably adjustable toward and from each other for the purpose of coacting properly with the button-holding jaws when the latter are set to receive buttons of different diameters, and these jaw-spreading cams will preferably be pivoted to the upper portion of the plate 12, as by means of screws 18, and may be adjusted simultaneously toward and from each other by a suitable device, such as the right and left hand screw 19, passing through correspondingly-threaded openings in projections or bosses 20 on the spreading arms or cams 17, a coiled spring, such as 21, being placed between one of the studs 20 and the head of the screw 20 for the purpose of exerting endwise pressure on the latter and prevent undue turning or movement of the same after adjustment.

The main element of the lower or tiltable portion of the button-holder is a carrying or supporting plate, such as 22, to which the button-holding jaws are connected in such a manner as to be capable of gripping and releasing a button, this plate having in the present instance a pair of upturned arms or lugs 22', pivoted to the arms 16 of the upper portion of the button-holder by screws 22''. In this construction the button-holding or gripping-jaws proper (designated by 23) are carried at the ends of a pair of holding members or arms, such as 24, that are pivoted at their rear ends to the supporting-plate 22 by means of screws 25, synchronous opening and closing movements of said arms and jaws being obtained by providing at the adjacent edges of the arms 24 intermeshing gear-segments or gear-teeth 26.

Suitable means—such, for example, as the coiled spring 27, connecting the two arms 24—are employed for closing the jaws, and this spring, being a compression one, will normally tend to draw such jaws together when said arms 24 are released by the lowering of the jaw-spreading cams 17.

It will be evident that the jaw-spreading means should preferably embody a suitable member or members coacting with the cams 17, but located on the tiltable portion of the button-holder, for effecting the proper spreading of the arms 24 and their jaws 23. The coacting elements shown in the present construction are a pair of faces 28, located on the inner edges of the arms 24 and preferably

converging toward the forward end of the button-holder to form cam edges coöperative with the cam faces or edges 17' of the jaw-spreading cams 17, both of these complementary devices being provided with oblique faces in order to facilitate the spreading of the arms 24.

The button-holding or button-gripping jaws proper, which are designated by 23, are preferably so constructed as to be self-adjusting to buttons of different sizes and thicknesses. Each of them has in this case a pivoted gripping member 29, pivoted on pins 30 and working in openings 31 in the jaws 23, said pivoted gripping members having stop-walls 29', adapted to swing from the position shown in Fig. 8 into engagement with the walls 23' of the fixed portions of the jaws. Said pivoted gripping members are also undercut to form the button-gripping faces 32 and 32', which are normally in the positions shown in Fig. 8, but when turned on the pivot 30 will be brought closer to a coacting fixed face, such as 33, of the jaw 23, and thus reduce the depth of the opening between the faces 32 and 33 to conform to the thickness of the thinner button. It will be evident that as the jaws of the holder are brought close together to grip the button the periphery of a thin button will engage the walls 32' and force them outward until the upper side of said button is engaged by the walls 32, when all of the walls 32, 32', and 33 will clamp the button firmly. Suitable springs, such as 34, secured to the jaws 23, may press against heel portions 35 of the pivoted gripping members 29 and hold the same normally in the position shown in Fig. 8.

For the purpose of tilting the button-holding jaws away from the work I connect the plate 22 to a suitable fixed point in such a manner as to permit such plate and the gripping-jaws to oscillate about a given point, such as the pivot-pin 35'. This pivot-pin in the present construction passes through one end of a twisted link 36, the upper end of which is in turn pivoted to a screw 37 for movement about an axis at right angles to that of the pivot 35'. A second twisted link, such as 38, is mounted on the pivot-screw 37, and at its upper end is mounted on the eccentric 39 of the eccentric-lever 40, a pivot-screw 41 passing through the eye of said link and secured to a suitable fixed point, such as the depending arm of the angle-piece 42, secured to the lower end of the overhanging arm 2 of the machine, serving to support the rear end of the button-holder and permit a slight vertical shifting thereof when the eccentric-lever is turned, whereby the gripping-jaws may be centered again with respect to the needle if they have been tilted away from their normal position by the vertical movement of the presser-bar on the insertion of work of different thickness.

In connection with the gripping-jaws I may employ presser-feet, such as 43, movable in vertical openings in the fixed gripping-jaws 23 and preferably secured to springs, such as 44, which hold said presser-feet against the material. It will be evident that these presser-feet will grip the work and cause the same to readily move with the button and its holder during the sewing-on operation.

In order to locate buttons of different diameters with their eyes in proper position with respect to the needle, I make use of a button-stop, preferably located at the back of the button-holding jaws, and this stop may be adjustable with one or both of said jaws. In the construction shown the arms 24, by which the button-holding jaws are supported, are connected by a linkage comprising two links 45 and 46, the latter of which is extended at its forward end and has a cam-slot 46', in which works a pin 47, carried by a slide 48, working in a guideway formed between a guide-plate 49 and the carrier-plate 22, to which said guide-plate is fastened. At its forward end said slide has a button-stop 50, which depends into the plane of the button-gripping jaws and is movable therewith, it being evident that the construction described is such as to cause the button-stop to move away from the button-holding jaws as the latter spread apart and move toward said jaws as they approach each other, these jaws and the button-stop forming three elements of the button engaging and locating device and serving to hold buttons of different sizes firmly in place with their eyes in proper position with respect to the needle.

The button-holder may be shifted into and out of its working position, so that its presser-feet will engage or release the work, by any suitable means—such, for example, as a lever 51, operated either by hand or by a treadle from any suitable point (not shown) and having a loose connection, as indicated at 52, with the presser-bar. When the presser-bar is down, as shown in Fig. 2, the presser-feet will be in engagement with the material and the button-holding jaws will be clamped upon a button, such as *b*, the upper or narrow portion of the cam 17 (see Fig. 7) being at this time in engagement with the cam-faces 28 of the arms 24. When the presser-bar is raised, however, as shown in Fig. 3, to release the presser-feet and holder from the work, the cam 17 will immediately spread the arms 24 and the button-holding jaws (as well as the button-stop 50) and will simultaneously tilt said jaws about the pivot 35' and raise the cam 17 by the movement of the two portions of the button-holder about the pivot 22'.

When the buttons to be sewed to the work have two pairs of eyes therein, the presser-bar will be vibrated by its operating mechanism.

ism (not shown) in one direction so as to enable the needle to descend first through one and then through the other of a pair of eyes in the button at one side of its center (the
 5 button-holder turning slightly at such times about the pivot-points 35' and 41) until a certain predetermined number of stitches has been made, after which the button-holder may be automatically shifted about
 10 its pivot 13 in a direction lengthwise of the machine to bring the other pair of eyes in position to be vibrated and receive a like number of stitches through the same, a link or connecting-rod 52 being employed herein for
 15 this purpose and operated from a suitable mechanism (not shown) for switching the button-holder and its button at the proper time and presenting said other pair of eyes to the needle.

20 What I claim is—

1. In a button-sewing machine, the combination with a vertically-movable support and a vertically-stationary support, of a button-holder comprising two main parts or sections hinged together, one of said parts being
 25 attached to and carried by the said vertically-movable support and the other carrying a pair of button-holding jaws and being connected with the said stationary support, for the purpose set forth.

2. In a button-sewing machine, the combination with a vertically-movable support and a vertically-stationary support, both being carried by the overhanging arm of the
 35 machine in a position above the work-plate thereof, of a button-holder comprising two main parts or sections hinged together, one of said parts being attached to and carried by the said vertically-movable support and the
 40 other carrying a pair of button-holding jaws and being connected with the said stationary support, for the purpose set forth.

3. In a button-sewing machine, the combination with a movable support, of a button-holder carried by said support and having a
 45 pair of button-holding jaws tiltable relatively to the work, and adjustable means coöperative with said support for tilting the jaws, for the purpose set forth.

4. In a button-sewing machine, the combination with a movable support, of a button-holder carried by said support and having a
 50 pair of button-holding jaws tiltable relatively to the work, and adjustable means, embodying an eccentric-lever, coöperative with said support for tilting the jaws, for the purpose set forth.

5. In a button-sewing machine, the combination with a movable support and a stationary
 60 support, of a button-holder comprising two main parts or sections hinged together, one of said parts being attached to the said movable support and the other being provided with a pair of button-holding jaws and
 65 having an adjustable connection with the

said stationary support, for the purpose set forth.

6. In a button-sewing machine, the combination with a vertically-movable support, of a button-holder carried by said support and
 70 having a pair of button-holding jaws tiltable relatively to the work, means coöperative with said support for tilting the jaws, and jaw-spreading means carried by and vertically movable with the said support.

7. In a button-sewing machine, the combination with a movable support, of a button-holder carried by said support and having a
 80 pair of button-holding jaws tiltable relatively to the work, means coöperative with said support for tilting the jaws, and jaw-spreading means disposed between said jaws and being carried by and vertically movable with the said support.

8. In a button-sewing machine, the combination with a vertically-movable support, of a button-holder carried by said support and
 85 having a pair of button-holding jaws tiltable relatively to the work, means coöperative with said support for tilting the jaws, and adjustable jaw-spreading means disposed between said jaws and being carried by the said vertically-movable support.

9. In a button-sewing machine, the combination with a vertically-movable support
 95 and a vertically-stationary support, of a button-holder comprising two main parts or sections hinged together, one of said parts having a jaw-spreading device normally stationary with respect thereto and being attached
 100 to the said vertically-movable support, and the other having a pair of button-holding jaws and being connected with the said stationary support, for the purpose set forth.

10. In a button-sewing machine, the combination with the vertically-movable presser-
 105 bar thereof, of a button-holder carried by said presser-bar and having a pair of button-holding jaws movable both horizontally and vertically relatively thereto, means coöperative with the presser-bar for tilting the jaws
 110 vertically, and means carried by and vertically movable with the presser-bar for controlling the horizontal or spreading movement of the jaws.

11. In a button-sewing machine, the combination with the presser-bar thereof, of a
 115 button-holder carried by said presser-bar and having a pair of button-holding jaws tiltable relatively to the work, and a vertically-movable jaw-spreading cam carried by the presser-bar and being coöperative with one of the said jaws.

12. In a button-sewing machine, the combination with a button-holder movable to-
 125 ward and from the work and having a pair of button-holding jaws one of which is adjustable toward and from the other, of a jaw-spreading cam vertically movable between said jaws and being coöperative with one of
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the same and operative immediately on the withdrawal of the button-holder from the work.

13. In a button-sewing machine, the combination with a button-holder movable toward and from the work and having a pair of button-holding jaws adjustable toward each other, of a jaw-spreading cam vertically movable between said jaws and being coöperative with one of the same.

14. In a button-sewing machine, the combination with a button-holder movable toward and from the work and having a pair of button-holding jaws adjustable toward and from each other, of a jaw-spreading cam vertically movable between said jaws and being coöperative with both of the same and adjustable for openings of different widths.

15. The combination with a button-holder vertically movable toward and from the work and having a pair of button-holding jaws, of means normally tending to close such jaws, and a jaw-spreading cam vertically movable between said jaws and being in normal engagement therewith.

16. The combination with a button-holder vertically movable toward and from the work and having a pair of button-holding jaws, of means normally tending to close said jaws, and a combined jaw-spreading and jaw-adjusting device vertically movable between said jaws and engaging therewith.

17. The combination with a button-holder having a pair of button-holding jaws movable toward and from each other, of a linkage

connecting said jaws, one of the members of which is provided with a cam-slot, a slide supported independent of the jaws and having a pin extending into the said cam-slot to effect connection with the linkage and be controlled thereby, and a button-stop carried by said slide.

18. The combination with a pair of associated button-holding jaws movable in a horizontal plane toward and from each other, of a pair of pivoted coacting button-gripping members carried respectively by said jaws and being movable in a direction transversely to the plane of movement of the said button-holding jaws.

19. The combination with a pair of associated button-holding jaws movable in a direction toward and from each other and each being provided with a fixed button-engaging face, of a pair of pivoted spring-pressed button-gripping members carried respectively by said jaws and being movable in a direction transversely to the plane of movement of the said button-holding jaws and toward and from the said fixed button-engaging faces thereof.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 15th day of November, 1901.

ARTHUR A. BOUTON.

Witnesses:

CHAS. C. EMMONS,
W. C. WALKER.