(No Model.) 6 Sheets—Sheet 1.

C. J. WOODWARD.

BUTTON HOLE CLAMP FOR SEWING MACHINES.

No. 411,703. Patented Sept. 24, 1889.

Fig. 1.

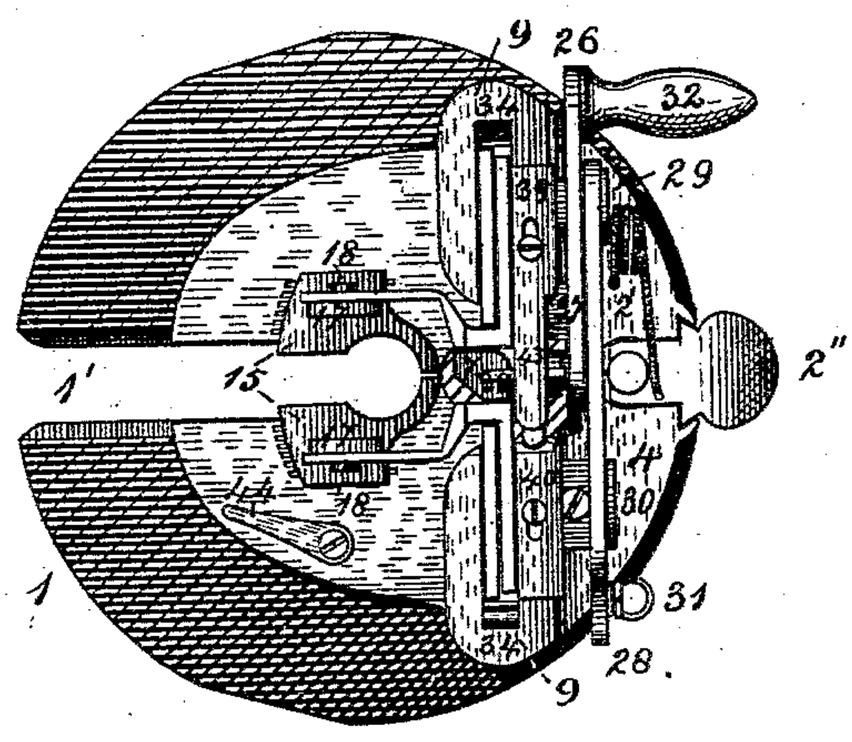

Fig. 2.

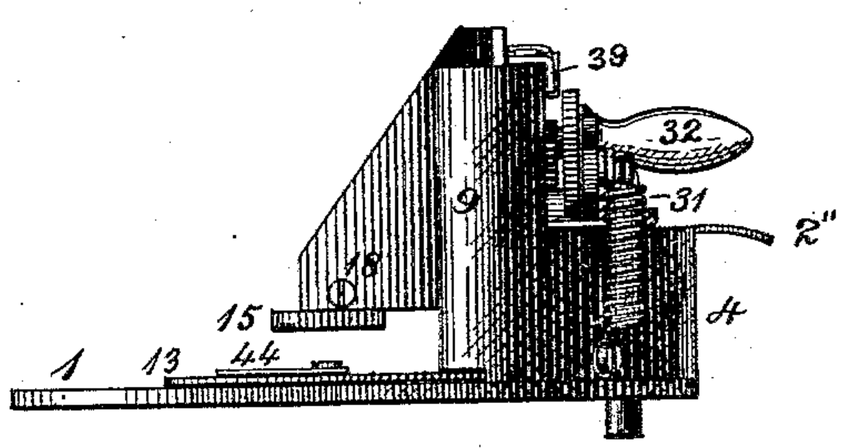

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Fig. 3.

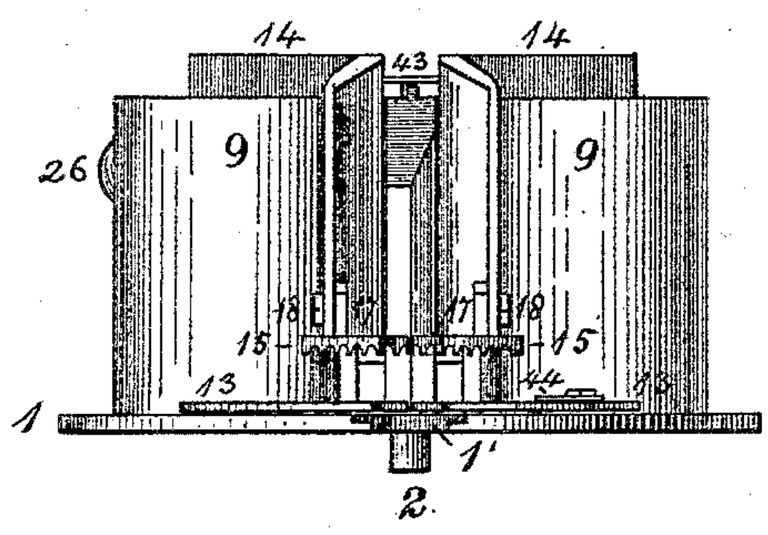

Fig. 4.

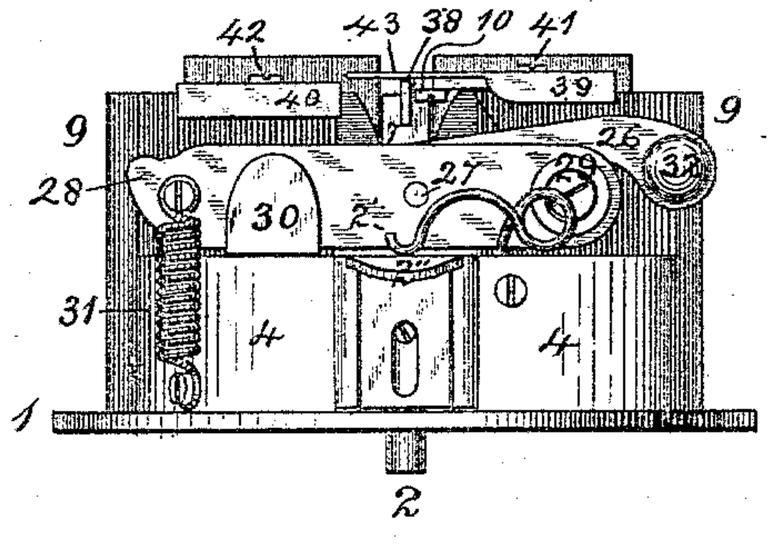

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Fig. 5.

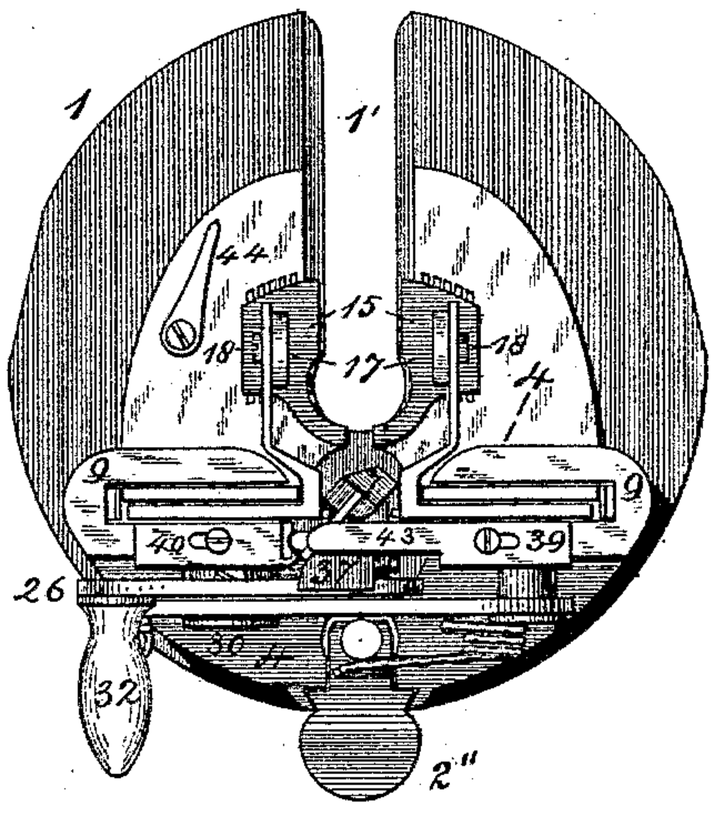

Fig. 6.

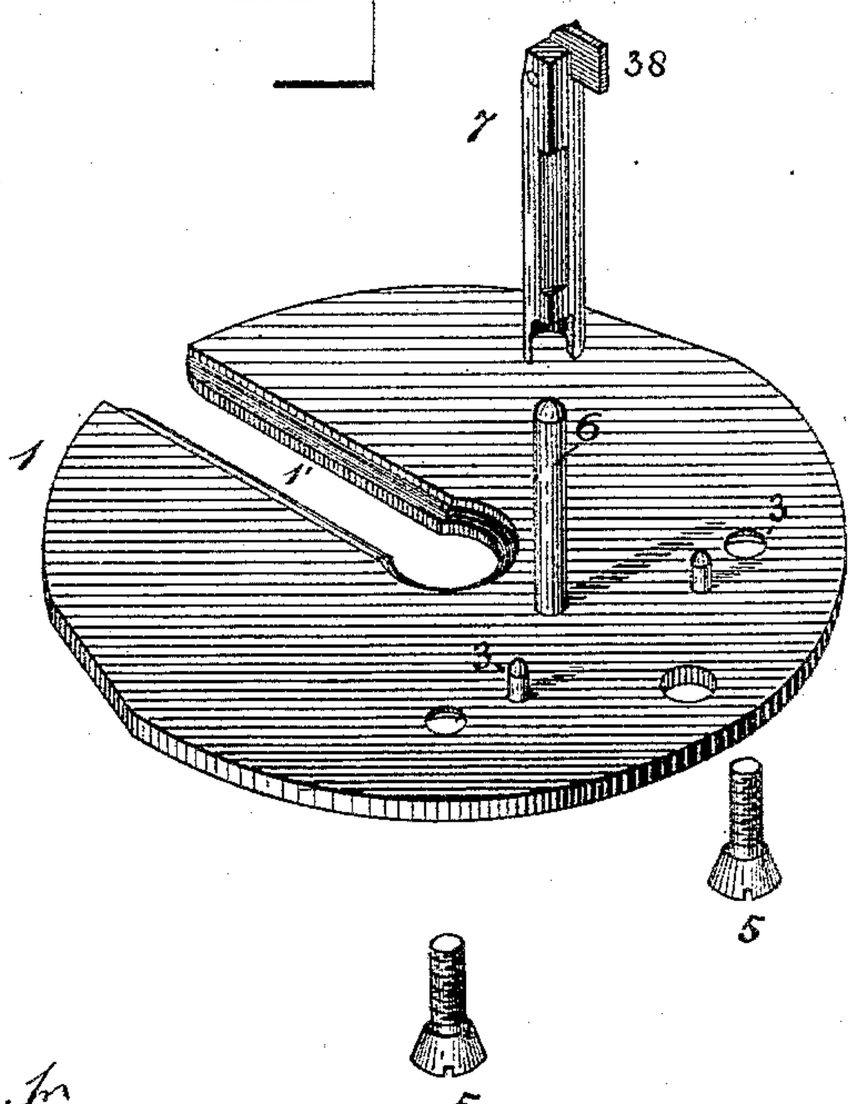

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Fig. 7.

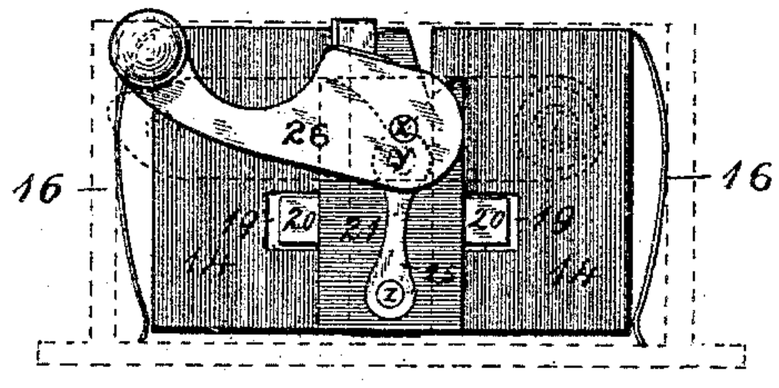

Fig. 8.

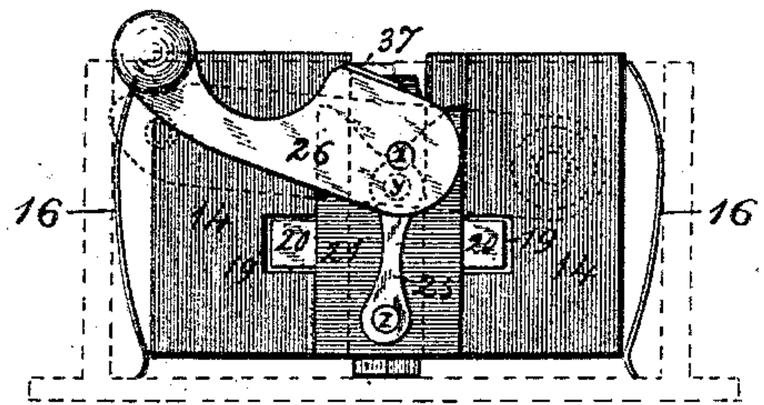

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Fig. 9.

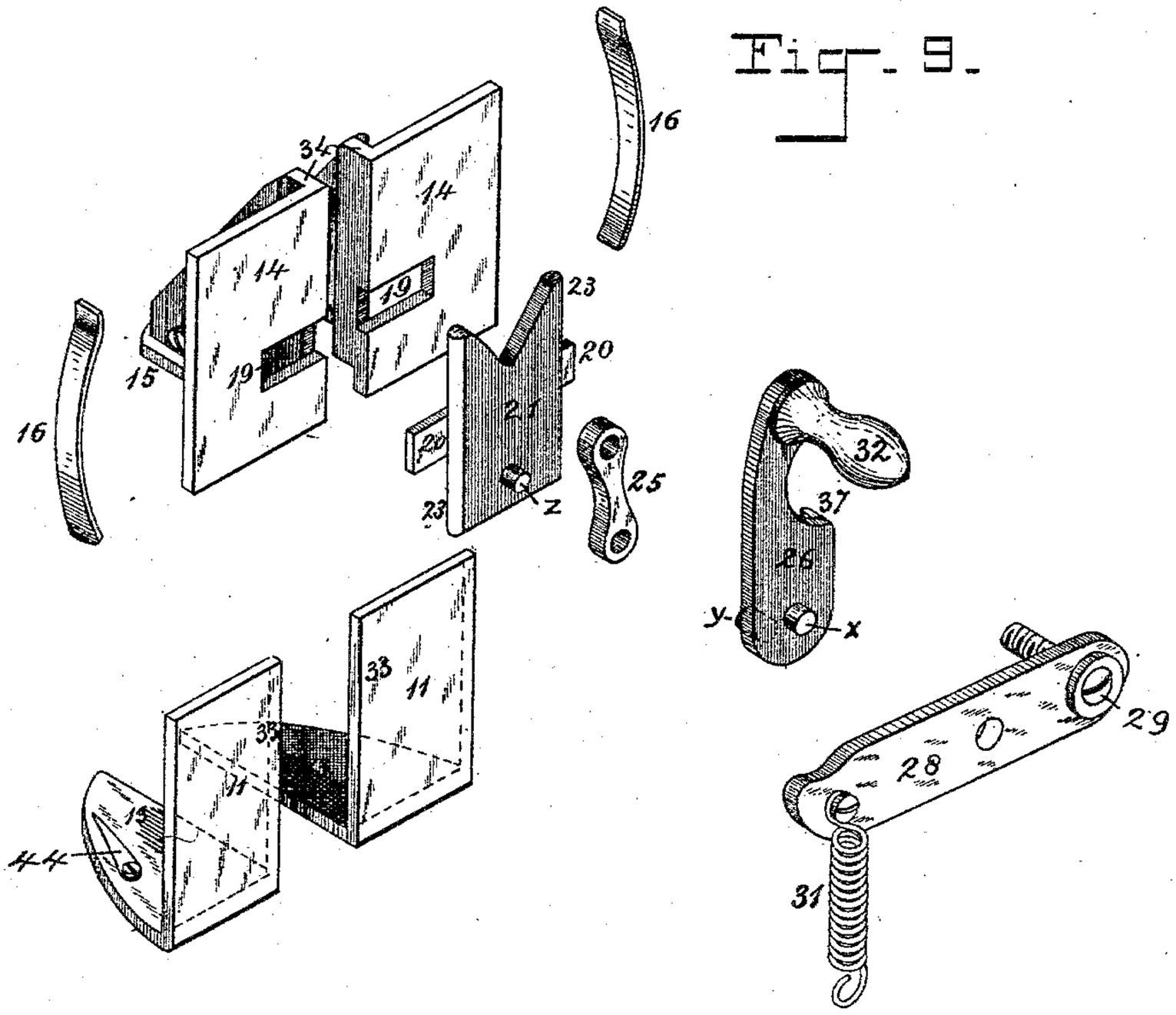

Fig. 10.

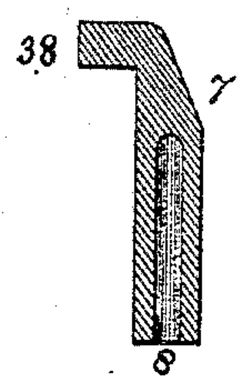

Fig. 11.

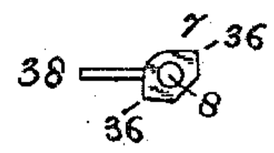

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Fig. 12.

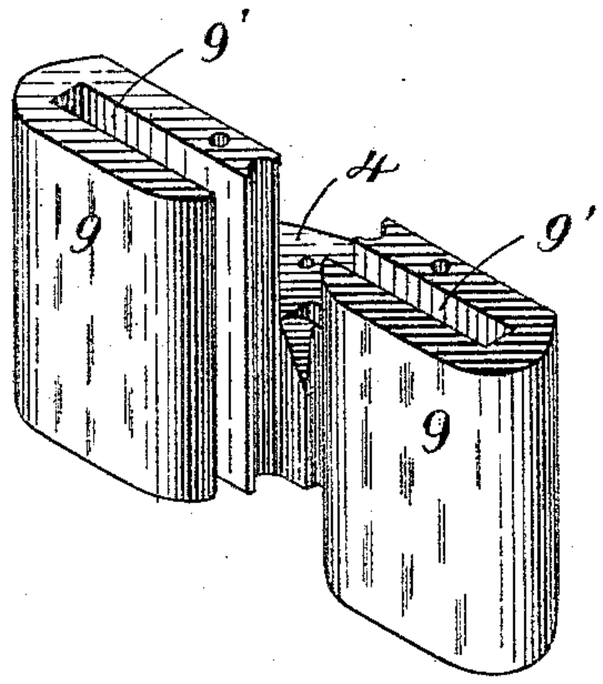
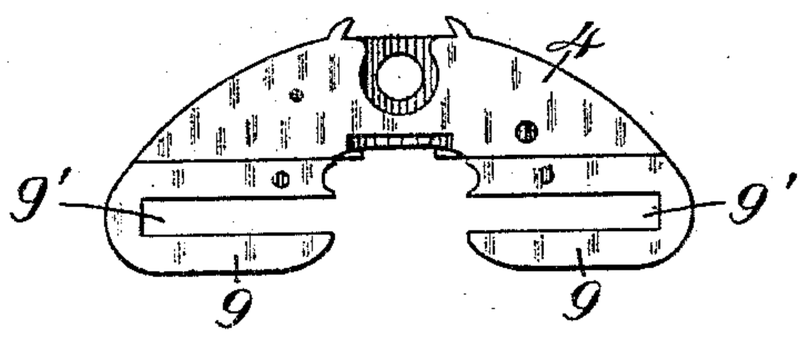


Fig. 13.



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UNITED STATES PATENT OFFICE.

CHARLES J. WOODWARD, OF BROOKLYN, NEW YORK.

BUTTON-HOLE CLAMP FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 411,703, dated September 24, 1889.

Application filed May 31, 1889. Serial No. 312,759. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. WOODWARD, a citizen of the United States, residing at Brooklyn, county of Kings, and State of New York, have invented a new and useful Button-Hole Clamp for Sewing-Machines, of which the following is a specification.

My invention relates to improvements in devices for gripping, spreading, and holding in the spread condition the cut edges of the cloth in button-hole sewing-machines, my improvements being such that by manipulation of a single lever a piece of goods of any thickness may be expeditiously inserted and clamped and the cut edges of the slit which is to form the button-hole be spread apart from one another and retained in the spread condition for the customary overcast or button-hole stitching.

My clamp being designed to be supported by and guided upon the sewing-machine table in the accustomed manner, no such table is here shown.

Referring to the accompanying drawings, which form a part of this specification, (showing a clamp embodying my improvements,) the first four figures show the instrument in condition to receive the goods, Figures 1, 2, 3, and 4 being respectively a top, side, front, and rear view. Fig. 5 is a top view which shows the operating-lever swung clear over and locked in position for holding the clamped and spread fabric. Fig. 6 is a perspective view of the base-plate and of the spreading-cam detached. Fig. 7 is a rear view of the lever, the link, the slide, and the clamping-jaws, the lever being shown locked to the clamping and spreading position for thin goods, the spring-bar being indicated by dotted lines. Fig. 8 shows the same parts in like condition for thick goods. Fig. 9 is a perspective view showing the same parts detached. Fig. 10 is a vertical section, and Fig. 11 a bottom view, of the spreading-cam. Fig. 12 is a perspective view of the standard. Fig. 13 is a top view of the same.

1 represents the base-plate of the device, having the usual notch 1′ to permit passage of the needle.

2 is a guide-toe or guide-pin to occupy the customary guide-slot of the sewing-machine table. This toe is normally depressed, as shown, by a spring 2′, but when desired can be momentarily raised from such depressed position by means of its lip 2″.

3 3 are dowels which, occupying sockets in the bottom of the rear extension 4 from the lower part of the standards 9 9, coact with screws 5 5 to hold said rear extension in place upon the base-plate.

6 is the pivot-post of the spreading-cam 7, whose orifice 8 for this purpose receives said pivot-post 6.

From the rear extension 4 rise two respectively right and left standards 9 9 of the represented U-formed horizontal section. Grooves 9′ in these standards receive vertical portions or shanks 11 11 and the horizontal portions of the bed or counter jaws 13 13, upon which the goods to be operated on rest. These grooves also receive the right and left L-formed shanks 14 14 of the upper clamp-jaws, having the gripping pieces or bits 15 15. Springs 16 16, which also occupy the said grooves, operate to impart to the upper and lower jaws on one side a normal tendency to approach the corresponding jaws on the other side. Recesses 19 19 in the inner adjacent edges of the shanks 14 14 of the clamp-jaws proper receive projections 20 from the vertically-slidable piece 21. These projections 20, besides their proper function of raising and depressing the jaws, engage behind the standards and assist in guiding the slide 21 to a vertical path. The guidance of the slide 21 is further aided by the fact that its convex edges 23 are confined in concave grooves in the standards.

Slide 21 is connected by link 25 with the operating-lever 26, which is fulcrumed at 27 to spring-depressed fulcrum-bar 28, one end of which is pivoted to the stationary parts of the machine, as at 29, and the other end of which is confined in a keeper 30 and is normally depressed by a spring 31. The lever 26 has a handle 32. The link-and-slide connection of the lever with the clamp-jaws and the fulcruming of the said lever in a pivoted bar capable of rising against a spring-pressure (instead of fulcruming said lever to a fixed member) enable the clamping of goods of any

thickness with equal facility and effectiveness and without subjecting the device to any strain.

The inner edges 33 of the shanks 11 11 bearing against the vertical walls 34 34 of the shanks 14 14, any action which tends to force asunder the shanks 14 14 operates in like manner on the shanks 11 11, and hence both upper and lower jaws are expanded simultaneously. The forcing apart of the right and left hand jaws while the fabric is firmly gripped by them, so as to spread or open the slit preparatory to the overcasting or stitching operation, is accomplished by partial rotation of the spreading-cam 7. This spreading-cam is so formed in transverse section that when in position shown in Figs. 1, 2, 3, 4, and 6 it is inert, but when partially rotated, as in Fig. 5, its salient portions 36 36, by pressing against the inner edges of the shanks 14 14, force away from one another the right and left hand jaws, as shown in said figures. This partial rotation of the spreading-cam is brought about by the impact of lip 37 of the lever 26 with wing 38 of the spreading-cam.

Adjustable stops 39 40, being set toward or away from each other, serve to regulate the amplitude of the partial rotations of the spreader-cam, and consequently the amount of the spread given to the jaws. These stops are held to their places of adjustment by set-screws 41 42. A lip 43 on stop 39 serves to confine the cam-post in direction of its length. A stud 10, that extends downward from stop 39, limits the backward or retractile swing of the cam-wing 38, and consequently of the cam itself. The forward swing of said cam is limited by impingement of its wing 38 against the adjustable stop 40. The customary hold-fast for the thread end is seen at 44.

The operation of my device is as follows: The clamp having been placed on the sewing-machine table with its toe 2 in the proper starting-place in the guide-groove, the lever 26 is swung to the right. (See Figs. 1, 2, 3, and 4.) This rightward swing operates, through link 25 and slide 21, to lift the jaws 15 15. For thin goods a very slight rightward deflection of the lever suffices. Figs. 1 to 4, inclusive, represent the lever swung to its extreme rightward position for very thick goods. The jaws 15 15 being thus lifted, the goods are so inserted as to place the cut slit centrally over the corresponding notch of the base-plate 1. The lever then being swung to the left, (see Figs. 5, 7, and 8,) so as to bring the centers x, y, and z in line, the lever operates through the same members 25 and 21 to depress the jaws 15 15 and grip the goods. Figs. 7 and 8 show how the gripping takes place by bringing the points x y z on "dead-center" with any fineness or thickness of goods, which could not be done had the lever-fulcrum x been in fixed bearings instead of in the shiftable spring-bar; but, being fulcrumed in said shiftable or yielding bar, the latter yields to the resistance made by the thick goods to the further depression of the jaws 15 15, and the three centers become as effective for thick goods at the greater elevation shown in Fig. 8 as they were for the thinner goods at the lower elevation shown in Fig. 7. The goods, of whatever thickness, having become effectually clamped, the two parts separated by the slit are spread asunder by shifting the lever 26 still farther to the left, in which its lip 37, impinging on and pressing before it the wing 38 of the spreading-cam 7, partially rotates the said cam, causing its salient portions 36 36 to elbow apart the two upper jaws 15 15 and the two corresponding lower jaws 13 13. This action, forcing the stud y a little past alignment with the studs x and z, effectually locks and retains the parts to the spread condition until their release by the operator.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In a button-hole clamp for sewing-machines, the combination, with spring-depressed fulcrum-bar, of operating-lever fulcrumed thereto and having link-and-slide connection with the clamp-jaws, whereby the same lever which raises the clamp-jaws is made available to depress them with clamping action on goods of any thickness.

2. In a button-hole clamp for sewing-machines, the combination, with the two sets of both laterally and vertically separable clamping-jaws, of the vertically-moved slide having a projection which occupies recesses in the upper clamping-jaws, an operating-lever linked to said slide and fulcrumed in spring-depressed fulcrum-bar, and whose lip is adapted to engage with and partially rotate the spreading-cam, the said fulcrum-bar, and the said spreading-cam, whereby the same lever is instrumental in the successive operations of raising the upper clamp-jaws, of depressing the same, and of spreading the two sets of lower and upper jaws and locking them to the clamped and spread condition on goods of any thickness, as set forth.

3. In a button-hole clamp for sewing-machines, the combination, with spreading-cam on vertical axis, of the spring-contracted upper and lower clamp-jaws, the lower clamp-jaw shanks being inclosed within and forced apart by the upper clamp-jaw shanks, as set forth.

4. In a button-hole clamp for sewing-machines, the combination of the pair of right and left U-formed standards, the inclosed jaw-shanks and their contracting-springs, the vertical spreading-cam, (separating the right and left cam-shanks,) and the operating-lever, as set forth.

5. In a button-hole clamp for sewing-machines, the combination, with the operating-lever and with the standards and the winged spreading-cam, of adjustable back-stop 39 10 41 and adjustable front or amplitude stop 40 42, as set forth.

6. In a button-hole clamp for sewing-ma-

chines, the combination, with base 1, having the pivot-post 6, and with standards 9 9 and the spreading-cam 7, of the back-stop 30 10 41, having the lip 43 for preventing vertical displacement of the spreading-cam.

7. In a button-hole clamp for sewing-machines, the combination of the following elements, to wit: the base-plate 1 1′, having the spreading-cam 7, the pair of right and left U-formed standards 9 9, having the rear extension 4, the quadruplex clamp 13 13 15 15, and the contracting-springs 16 16, as set forth.

8. In a button-hole clamp for sewing-machines, the combination of the following elements, to wit: the movable base 1, having the right and left U-formed standards 9 9, having the rear extension 4, the spring-depressed fulcrum-bar 28, the operating-lever 26 x y 37, the link 25, the slide 20 21, and the pair of normally-contracted upper clamp-jaws having the recesses 19 19, as and for the purposes set forth.

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