

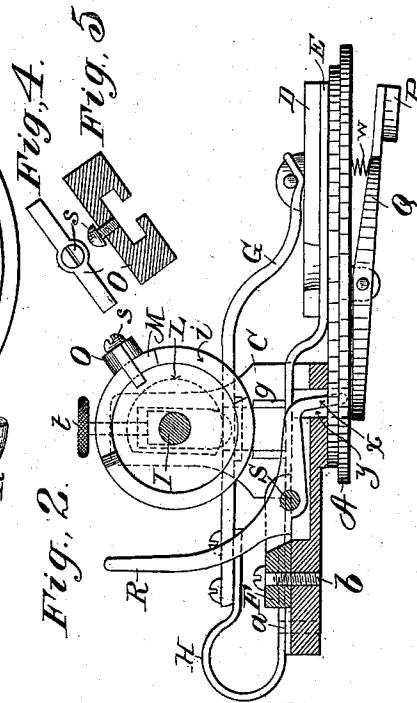
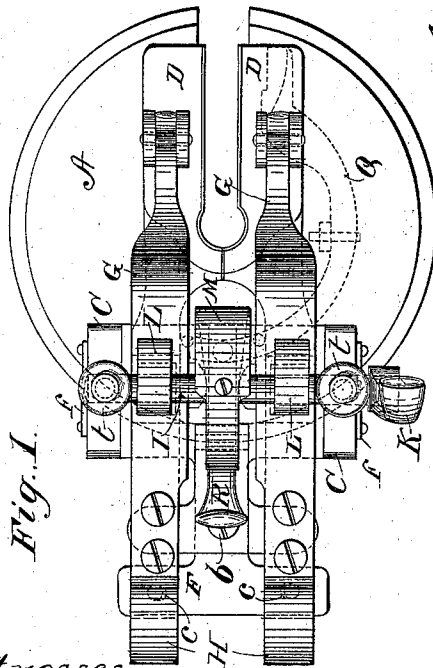
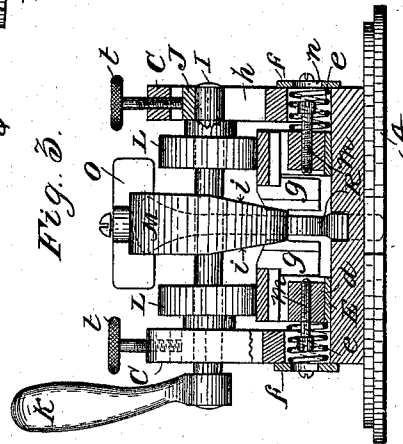
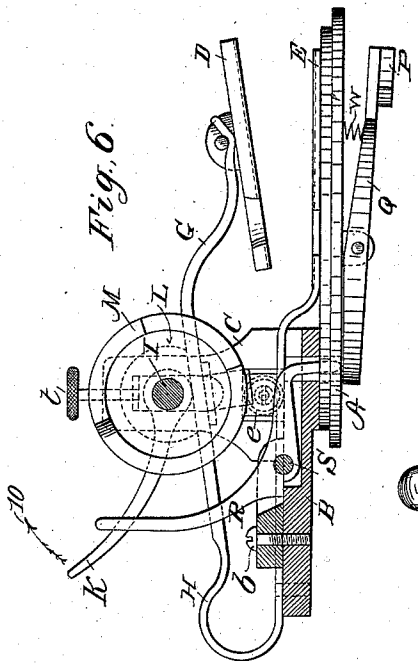
(No Model.)

R. L. PLUMLEY.

CLAMPING DEVICE FOR BUTTONHOLE SEWING MACHINES.

No. 567,723.

Patented Sept. 15, 1896.



Witnesses.
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UNITED STATES PATENT OFFICE.

RAYMOND L. PLUMLEY, OF WILMINGTON, DELAWARE, ASSIGNOR TO THE TRUMP BROS. MACHINE COMPANY, OF SAME PLACE.

CLAMPING DEVICE FOR BUTTONHOLE-SEWING MACHINES.

SPECIFICATION forming part of Letters Patent No. 567,723, dated September 15, 1896.

Application filed June 6, 1895. Serial No. 551,872. (No model.)

To all whom it may concern:

Be it known that I, RAYMOND L. PLUMLEY, a citizen of the United States, residing at Wilmington, Newcastle county, Delaware, have invented certain new and useful Improvements in Clamping Devices for Buttonhole-Sewing Machines, of which the following is a specification.

The present invention consists in certain improvements in the cloth clamping and holding devices, usually known as "buttonhole-clamps," which are used with machines for stitching eyed buttonholes. A clamp of this character is constructed with clamping-jaws which clamp the material in place, and, after the material is thus clamped, the buttonhole-slit is spread apart, so that the needle will surely pass through the slit and not stitch opposite margins together, and then the clamp travels in an appropriate path, thus feeding the material while the stitching mechanism applies the stitches to the straight margins and curved eye of the buttonhole. The garment which has its buttonholes stitched on a machine of this character is usually composed of several layers of fabric through which the buttonhole-slit is cut, as, for example, the outer material of a coat, the facing and the intermediate canvas or other lining, and the garment is ordinarily placed with its right or outer side down and its inner or wrong side up, and consequently it is desirable that when the margins of the buttonholes are separated by the spreading action of the clamping-jaws the buttonhole margins of the upper layers of the garment should be separated farther apart than the lower or exterior layer, in order that there may be no possibility of the lining (which is usually of a different color than the outer fabric) showing from the outside, a further object being to keep the margins of the buttonhole on the right side of the goods as close together in the finished buttonhole as possible.

A main object of the present invention is to so construct the clamping-jaws and their operating mechanism that the spreading action of the upper jaws shall exceed in extent the spreading action of the lower jaws.

A further object of the invention is to pro-

vide improved means for regulating the extent of spread of the buttonhole-slit.

A further object of the invention is to simplify the construction and pivotal connections of the clamping-jaws.

A further object of the invention is to provide improved means for operating the "loose tooth" or guide-pin which engages the feed-wheel to effect the feed or traverse of the clamp.

The improved clamp which achieves these objects is illustrated in the accompanying drawings, wherein—

Figure 1 is a plan view of the improved clamp. Fig. 2 is a side view partly in section. Fig. 3 is a front view partly in section. Figs. 4 and 5 are detail views. Fig. 6 is a side view, partly in section, of a modification.

A is the base-plate of the clamp, having bracket B with vertical standards C C thereupon.

D D are the upper and E E the lower clamping and spreading jaws. The rear ends of the lower jaws E E are pivoted to pins *a a* on the bracket B, and they pass beneath an overhanging guide and retaining-plate F, fastened to the bracket B by a screw *b*, and then between the standards C C. The upper jaws D D are, as usual, pivotally hung upon jaw-arms G G, and for convenience of reference the arms G G, together with the jaws D D proper, will be hereinafter referred to as the upper jaws. The upper jaws are mounted in a novel manner. Each jaw G D is secured at its rear end to the upper member of a flat metal loop-spring H. The lower member of each spring H rests upon the rear end of the corresponding lower jaw E. Its inner end passes beneath the retaining guide-plate F, and it has a laterally-extending slot *c*, embracing the pivot-pin *a*, to compensate for its lateral movement. The torsional resilience of the springs H holds the upper jaws normally elevated to receive the goods, maintains them together when lifted, and enables them to act as pivots for the jaws when the jaws are moved downwardly for clamping, thus performing three offices. Each lower jaw E has a block *d* on its upper side, against which a coiled spring *e* acts, which is held in a recess

in the corresponding standard C, being held therein by a plate *f*. The spring *e* presses the jaw E inward and toward the other lower jaw. Each upper jaw has a depending block *g* located inside of the upwardly-extending block *d* of the corresponding lower jaw. When the upper and lower jaws occupy their normal positions ready to receive the garment, the jaws of each pair abut against each other, as shown in Fig. 1, and when in this position the blocks *g g* of the upper jaws are inside of the blocks *d d* on the lower jaws, with spaces between them, as shown in Fig. 3.

I is the horizontally crosswise extending operating rock-shaft for the jaws, and is mounted in vertical slots *h h* in the standards C, vertically-adjustable upper bearing-blocks J J being provided. The shaft I is rocked by finger-arm K. Rigidly secured to the shaft I are two clamping-cams L L and one spreading-cam M with two cam-faces *i i*. The clamping-cams operate upon the upper faces of the upper jaws G G, and the spreading-cam faces *i i* operate between and upon the blocks *g g* of the upper jaws.

The several parts being in their normal position, the garment is inserted between the jaws, and thereupon the shaft I is rotated in the direction of the arrow 10. The cams L L first act to depress the upper jaws and clamp the goods, and immediately thereafter by the same continuous movement of the shaft I the spreading-cam faces *i i* act to spread apart the jaws. At first the upper jaws alone move apart, until they have been moved a sufficient distance to bring their blocks *g g* into contact with the blocks *d d*, and thereafter both upper and lower jaws move apart simultaneously until the desired extent of spread is secured. Since the upper jaws move farther in spreading than do the lower jaws, the buttonhole-slit margins of the different layers of the garment are spread apart to different extents in the desired manner. It is here to be noted that in Fig. 2 the cam-shaft I is in such position that the clamping-cams have completed their clamping action, and that the spreading-cam has not yet begun its spreading action.

The different extent of spreading movement of the two pairs of jaws is regulated by adjustable stops *m m*, which screw into the blocks *d d*, and which are rendered accessible by ports *n n* in the plates *f*. The adjustable stops *m m* might be carried by the blocks *g g* on the upper jaws, but less conveniently, the essence of the invention in this respect residing in the adjustable contact between the jaws.

To regulate the extent of spread of both pairs of jaws, an adjustable stop O is provided. This stop is adjustably mounted upon the wide and uniform part of the rim of the spreading-cam M. Said stop slides along the peripheral rim of the cam, and is held in any desired position by the set-screw *s*. When

the stop O is properly adjusted for the desired extent of spread, the further spreading movement of the cam M is positively stopped by the stop O coming in contact with the jaws G G. This enables the work to be absolutely uniform in character on the same garment without any attention on the part of the operator.

The clamping movement of the jaws to accommodate them to garments of different thicknesses is affected by the vertical adjustment of the bearings J by means of the set-screws *t t*.

The loose tooth P is carried at one end of a curved lever Q, pivoted to the lower side of the base-plate A. The tooth is held depressed by a spring or springs *w*. To elevate the tooth out of engagement with the feeding mechanism, a hand bell-crank lever R is employed, having its operating end *x* extending through a slot *y* in the bracket B and bed-plate A. The lever R is pivoted upon a pin or arbor S, which is held in place upon the bracket B by the plate F, the plate F and bracket B being suitably shaped to receive or constitute bearings for the arbor S. The lever R is located centrally as shown.

In the modification shown in Fig. 6 the upper jaw-arms G G are shown as in one with their respective springs H H; and also, as a further modification, the lower jaws D D may be in one with the said springs, as shown also in this figure.

This improved buttonhole-clamp, while possessing a variety of valuable features and performing all the functions which the work demands, is exceedingly simple in its construction and organization, is composed of few parts, is light in weight, and economical in manufacture.

In the subjoined claims the recitations of the several parts by the designations and letters of reference given to them in the description are to be regarded as designations merely, and not as limitations, since the form and construction of the several parts can be modified without departing from the principles of the invention.

I claim as my invention—

1. A buttonhole-clamp having expanding upper and lower clamping and spreading jaws, in combination with means for positively spreading said upper jaws apart, and for positively spreading said lower jaws to a less extent than said upper jaws, substantially as set forth.

2. A buttonhole-clamp having expanding upper and lower clamping and spreading jaws, in combination with means for positively spreading said upper jaws apart, while said lower jaws remain stationary, and for thereafter positively spreading both pairs of jaws simultaneously, substantially as set forth.

3. In a buttonhole-clamp, the lower spreading and clamping jaws having upwardly-pro-

jecting blocks extending above the material clamped between said jaws, in combination with the upper spreading and clamping jaws having depending blocks which, when the upper jaws are clamped down, are between said blocks on the lower jaws but out of contact therewith, and spreading means acting upon the upper jaws to first spread the upper jaws until their blocks come in contact with the blocks on the lower jaws, and thereafter to spread both pairs of jaws in unison, substantially as set forth.

4. In a buttonhole-clamp, the upper spreading jaws, and the lower spreading jaws having a less range of lateral movement than said upper jaws, in combination with means for initially spreading the upper jaws while the lower jaws remain stationary, springs which press said lower jaws together and prevent the outward spreading movement of said lower jaws during the initial spreading movement of said upper jaws, and means for thereafter positively spreading both jaws in unison, substantially as set forth.

5. In a buttonhole-clamp, the combination of the upper and lower clamping and spreading jaws, said upper jaws having a greater extent of lateral movement than said lower jaws, means for spreading said upper jaws, said upper jaws acting upon said lower jaws to spread the same, and said upper and lower jaws having adjustable contact with each other to adjust the difference in their extent of spread, substantially as set forth.

6. The combination of the chambered standards C, C, bearing-plates *f, f*, with ports *n, n*, the lower jaws E, E, having blocks *d, d*, springs *e, e*, between said plates *f, f*, and said blocks, adjustable stops *m, m*, in said blocks in line with said ports *n, n*, the upper jaws G, D, having blocks *g, g*, which, when said upper jaws are clamped down, are located between said stops *m, m*, and the rotary spreading-cam M, acting upon and between said upper jaws to spread them and the lower jaws apart, substantially as set forth.

7. The upper spreading and clamping jaws, in combination with the rotary spreading-cam acting upon said jaws, and the stop adjustable along the periphery of said cam for reg-

ulating the extent of spread of said jaws, substantially as set forth.

8. The upper clamping and spreading jaws, in combination with the springs carrying said jaws and connecting them to the clamp, said springs constituting the pivotal connection between said jaws and the clamp, and serving to restore and maintain said jaws in their elevated and approached position, substantially as set forth.

9. The bracket B, having studs *a*, the lower clamping-jaws pivoted upon said studs, the springs H, pivoted upon said studs, the upper clamping-jaws carried by said springs, and means for bringing said jaws together and for swinging them and their springs H, transversely on said studs, in combination with the retaining and guide plate F, secured to said bracket and extending over the lower jaws and the ends of the springs H, whereby said lower jaws and springs are retained in place and guided, substantially as set forth.

10. The base-plate A, the curved lever Q having the loose tooth P, said lever Q being pivoted beneath the base-plate, and a spring for moving said lever in one direction, in combination with the pivoted bell-crank operating-lever having one arm extending above the clamp, and having its operating end *x*, extending through an aperture in the base-plate and contacting with the lever Q, to move it against the tension of said spring, substantially as set forth.

11. In a buttonhole-clamp, the clamp and base-plate, upper and lower clamping and spreading jaws, the loose tooth and its lever, the loose-tooth-operating lever R, and the pivot-pin S, of said lever, in combination with the bracket B, secured to said base-plate, and the plate F, retaining said pivot-pin S, in place, and also serving to retain and guide the said upper and lower jaws, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

RAYMOND L. PLUMLEY.

Witnesses:

THOS. H. HORTON,
O. P. PERRY.