

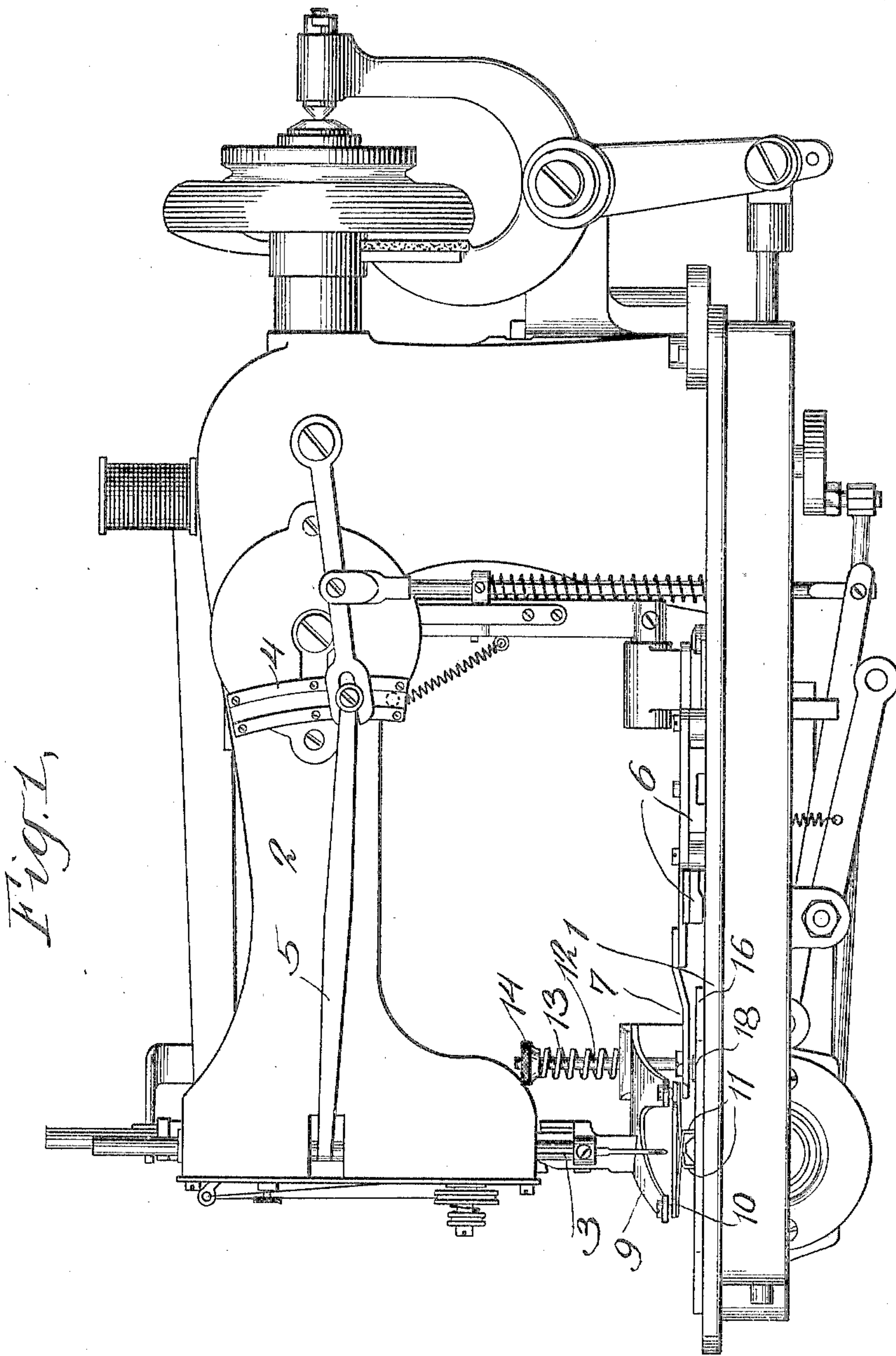
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PATENTED NOV. 14, 1905.

J. E. UMPLEBY.
BUTTONHOLE SEWING MACHINE.

APPLICATION FILED MAR. 19, 1903.

2 SHEETS—SHEET 1.



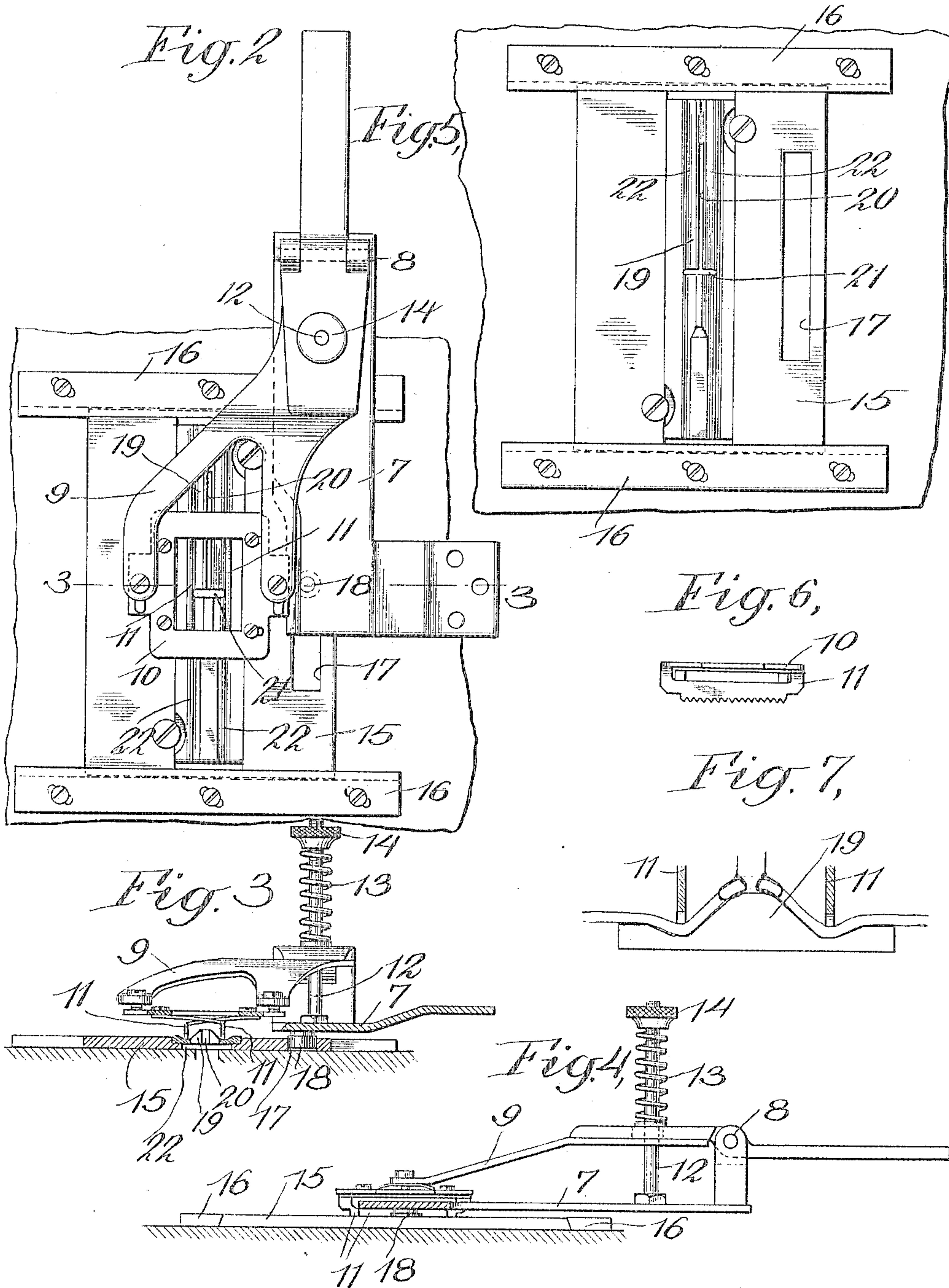
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BUTTONHOLE SEWING MACHINE.

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2 SHEETS—SHEET 2



WITNESSES:

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UNITED STATES PATENT OFFICE.

JAMES E. UMPLEBY, OF TROY, NEW YORK, ASSIGNOR TO THE NATIONAL MACHINE COMPANY, OF MAMARONECK, NEW YORK, A CORPORATION OF NEW YORK.

BUTTONHOLE-SEWING MACHINE.

No. 804,639.

Specification of Letters Patent.

Patented Nov. 14, 1905.

Application filed March 19, 1903. Serial No. 148,500.

To all whom it may concern:

Be it known that I, JAMES E. UMPLEBY, a citizen of the United States of America, and a resident of Troy, county of Rensselaer, State of New York, have invented certain new and useful Improvements in Buttonhole-Sewing Machines, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to buttonhole-sewing machines, and particularly to an improved mechanism therein for presenting the work for stitching.

My invention consists in certain improved means for holding and presenting the work for stitching, comprising a crowned and grooved throat-plate and a work-clamp having clamping-jaws fitted to the grooved portions of the throat-plate.

The object of my invention is to present the work for stitching in such a position that the purl will be formed as close to the edge of the buttonhole as possible and in so presenting the work to hold the same very firmly against accidental movement. It will be remembered that machines of this character in order to be economical must be run at quite high speeds, and if the work be not held very firmly it is liable to be misplaced during the rapid shifting movements of the work-clamping means. In grooving the throat-plate and fitting the clamping-jaws to the said grooves I have provided means whereby the work will be held very firmly against accidental movement and yet with little liability to tear the goods, while in crowning the throat-plate between the grooved portions I have presented the work for stitching in the most improved position.

I will now proceed to describe a device embodying my invention and will then point out the novel features in claims.

In the accompanying drawings, Figure 1 is a front view of a machine embodying my invention. Fig. 2 is a top view of certain portions comprising a portion of the bed of the machine, the work-clamp, and the throat-plate. Fig. 3 is a transverse sectional view of the same parts substantially upon the plane of the line 3 3 of Fig. 2. Fig. 4 is a side elevation of the same parts with the

work-clamp bracket in section. Fig. 5 is a view in detail of the work-clamp and its mounting. Fig. 6 is a detail side elevation of the clamping-jaws of the work-clamp and their support. Fig. 7 is a diagrammatic view illustrating the crowning of the work.

As my present invention relates solely to the improved means for holding the work and presenting the same to the needle for stitching, it will be unnecessary to describe in detail the somewhat-complicated mechanism of a buttonhole-sewing machine. I have therefore shown in the drawings, at Fig. 1, but a single view of the complete sewing-machine and in the other views have shown enlarged details of that portion thereof constituting my invention. The type of machine that I have illustrated is fully shown and described in United States Patent to James T. Hogan, No. 649,870, dated May 15, 1900. A machine of this type comprises a bed-plate 1, an arm 2, needle mechanism, including a reciprocating needle-bar, 3, means for producing a jogging movement of the needle and needle-bar to form side stitches, including a vibrating quadrant 4 and an arm 5, connecting same to the needle-bar frame, and a work-clamp-carrying bar 6, having a longitudinal and transverse movement imparted thereto by mechanism (not shown herein) in a manner well known. The longitudinal movement is for the purpose of imparting a feed to the work, so as to progressively side-stitch along the side of the buttonhole, and the transverse movement is to shift the work-clamp first of all to a central position for end barring, and, secondly, to shift the work so that side-stitching may be performed along the other edge of the buttonhole.

The work-clamp herein comprises a bracket 7, which is secured to the bar 6, and hence partakes of its transverse and longitudinal movement. Supported upon the bracket 7 by a pivotal or hinged connection 8 is a bifurcated arm 9. The bifurcated portion of the arm 9 carries a frame 10, to which are secured the clamping-jaws 11. A stud 12 is secured to the bracket 7 and passes through a perforation in the arm 9, and a helical spring 13 surrounds the said stud above the arm 9 and is caused to bear thereon, so as to press the said

arm and the clamping-jaws carried thereby downwardly by a nut 14, and by means of which the tension of the spring 13 may be regulated.

5 A throat-plate 15 is mounted upon the bed of the machine and is arranged to have a limited transverse movement thereon between slideways 16. The throat-plate has a slot 17 therein, which is engaged by a dependent stud 18, carried by the bracket 7 of the work-clamp. By reason of this connection the throat-plate 15 will be caused to partake of the transverse movement of the work-clamp when it is so moved by movement of the bar 6, but will in no way impede the free movement of the work-clamp longitudinally. It will itself, however, be held stationary against longitudinal movement by engagement with its slideways 16.

20 The throat-plate 15 has a portion longitudinally ribbed or crowned, as at 19, along the medial line of which is arranged the usual buttonhole-cutter slot 20 and transverse of which is the needle-slot 21. The apex of the longitudinal crown or ribbed portion is of a width less than the total range of the jogging movement of the needle on both sides of the buttonhole, so that the needle in its operation will penetrate the inclined portions of the crown of the work formed thereby. Upon opposite sides of the longitudinally crowned or ribbed portion 19 are two longitudinal grooves or recesses 22. These longitudinal grooves or recesses are arranged longitudinally beneath the clamping-jaws 11 of the work-clamp.

When the parts are in operative position, the work will be supported upon the throat-plate and engaged by the clamping-jaws 11 of the work-clamp. These jaws being arranged immediately above the grooves or recesses 22 in the throat-plate will stretch the fabric over the crowned portion 19 of the throat-plate, pressing the fabric at the sides into the grooves or recesses thereof. The material will thereby be held very firmly against accidental displacement and will be presented to the needle for stitching in a crowned condition. The diagrammatic illustration in Fig. 7 of the drawings illustrates this condition clearly. The work so crowned will then be stitched, and although the purl of the stitching may be drawn toward a central position beneath the needle the flattening out of the material after it is removed from the machine will draw the purl portions of the stitching upon opposite sides of the buttonhole together, so as to produce the desired condition and appearance. As shown, the needle is arranged to penetrate the inclined side portions of the work between the apex of the crowned or ribbed portion and the base of the recessed or depressed portions. The clamping-jaws will combine with the recessed portions of the throat-plate

to hold the work firmly in position, whether or not the central portion be crowned above the normal level of the throat-plate; but where the throat-plate is crowned, as shown, this combination is particularly useful and effective.

What I claim is—

1. In a sewing-machine, the combination with buttonhole-stitching mechanism, including a vertically-reciprocating needle-bar and means for producing relative lateral movements between the needle-bar and the work, of a throat-plate for supporting the work to be operated upon, said throat-plate having a longitudinal crown or rib, and having longitudinal grooves or depressions one upon each side of the said rib, work-clamping means comprising clamping-jaws arranged opposite the said longitudinal depressions and fitted thereto whereby the work is held securely against lateral displacement, and means for reciprocating the clamping-jaws relatively to the throat-plate.

2. In a sewing-machine, the combination with buttonhole-stitching mechanism, including a vertically-reciprocating needle-bar and means for producing relative lateral movements between the needle-bar and the work, of a throat-plate for supporting the work to be operated upon, said throat-plate having a longitudinal crown or rib, and having longitudinal grooves or depressions one upon each side of the said rib, work-clamping means comprising spring-actuated clamping-jaws arranged opposite the said longitudinal depressions and fitted thereto whereby the work is held securely against lateral displacement, and means for reciprocating the clamping-jaws relatively to the throat-plate.

3. In a sewing-machine, the combination with buttonhole-stitching mechanism, including a vertically-reciprocating and laterally-vibrating needle-bar, of a throat-plate having two longitudinal grooves arranged therein beyond the limits of the said lateral vibrating movements of the needle-bar, work-clamping means comprising two clamping-jaws, fitted to the said grooves whereby the work is held securely against lateral displacement, and means for reciprocating the clamping-jaws relatively to the throat-plate.

4. In a sewing-machine, the combination with buttonhole-stitching mechanism, including means for producing a jogging movement of the needle relatively to the work, of means for crowning the work at the point at which the needle is operating, including a throat-plate having a longitudinal crown or ribbed portion, the apex of which is of a width less than the range of the said jogging movement on both sides of the buttonhole, and having longitudinal grooves or depressed portions, one on each side of said crown or ribbed portion, work-clamping means comprising two clamping-jaws fitted to the said

grooved portions of the throat-plate, whereby the work is held securely against lateral displacement, and means for reciprocating the clamping-jaws relatively to the throat-plate,
5 said needle arranged in its movements to penetrate the inclined side portions of the work, intermediate the apex of the crowned

portion of the throat-plate and the base of the grooved or depressed portions thereof.

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Witnesses:

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