

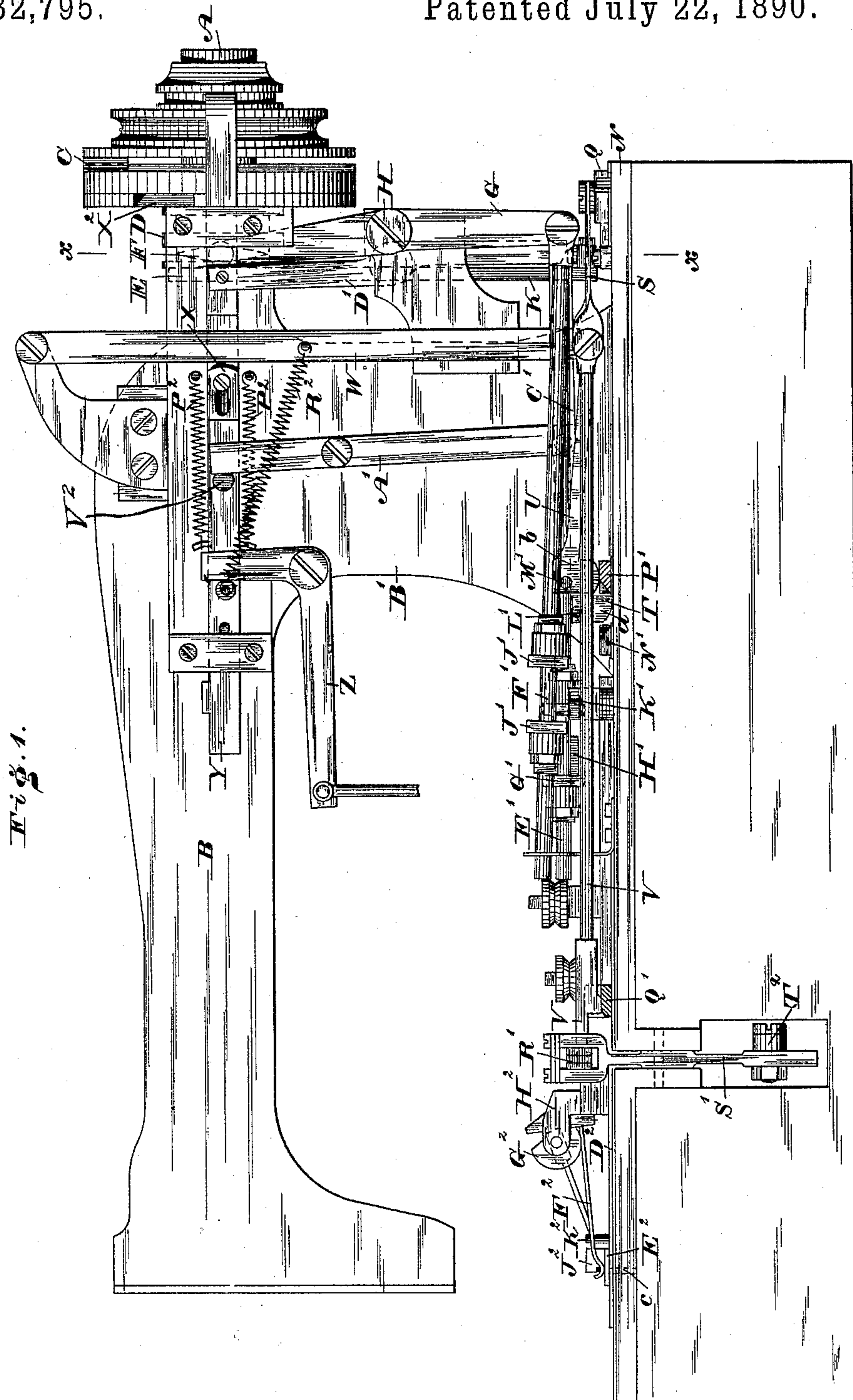
(No Model.)

3 Sheets—Sheet 1.

H. M. ESSINGTON.
BUTTON HOLE BARRING MACHINE.

No. 432,795.

Patented July 22, 1890.



WITNESSES:

Th. Rollé.
A. P. Jennings,

INVENTOR: Harry M. Essington
BY Dexterheim & Kitchner
ATTORNEYS.

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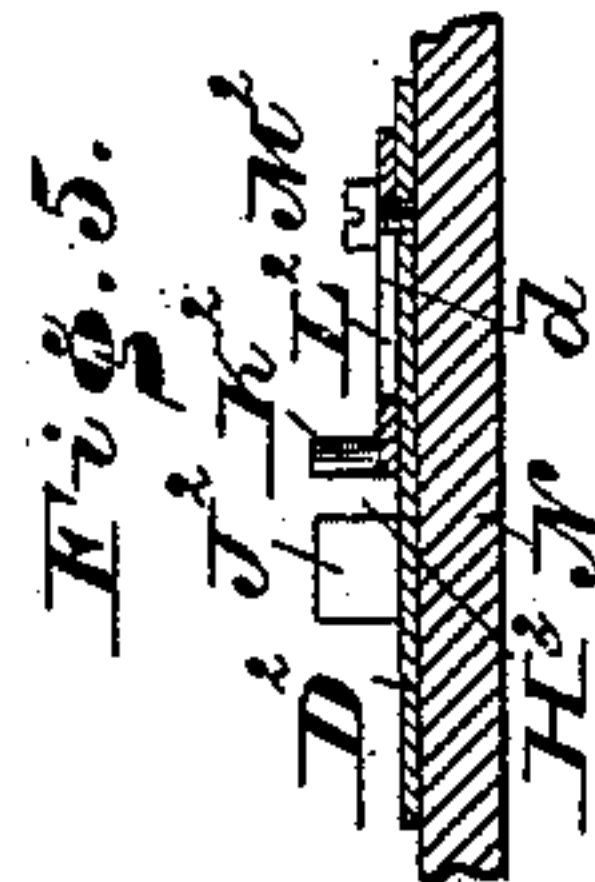
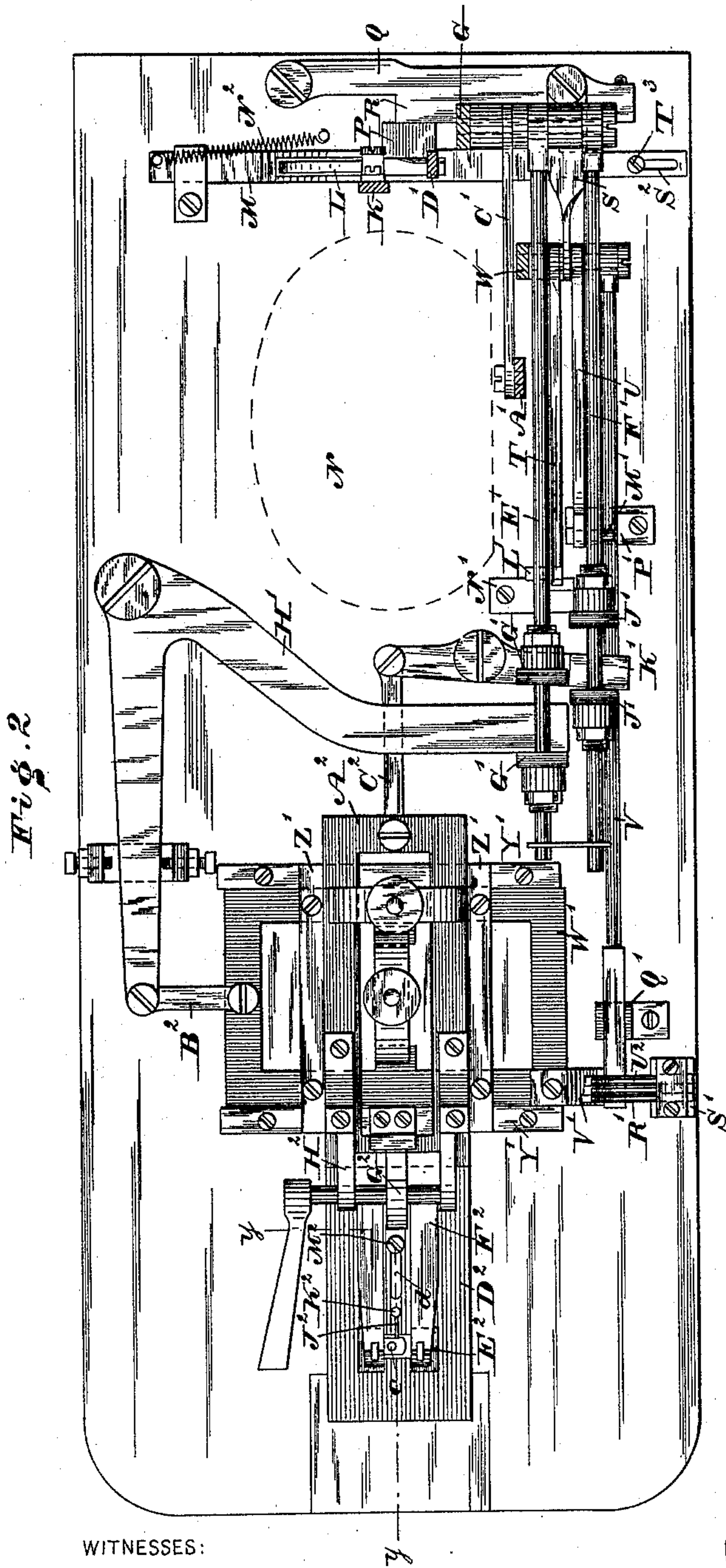
(No Model.)

3 Sheets—Sheet 2.

H. M. ESSINGTON.
BUTTON HOLE BARRING MACHINE.

No. 432,795.

Patented July 22, 1890.



WITNESSES:

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(No Model.)

3 Sheets—Sheet 3.

H. M. ESSINGTON.
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Fig. 3.

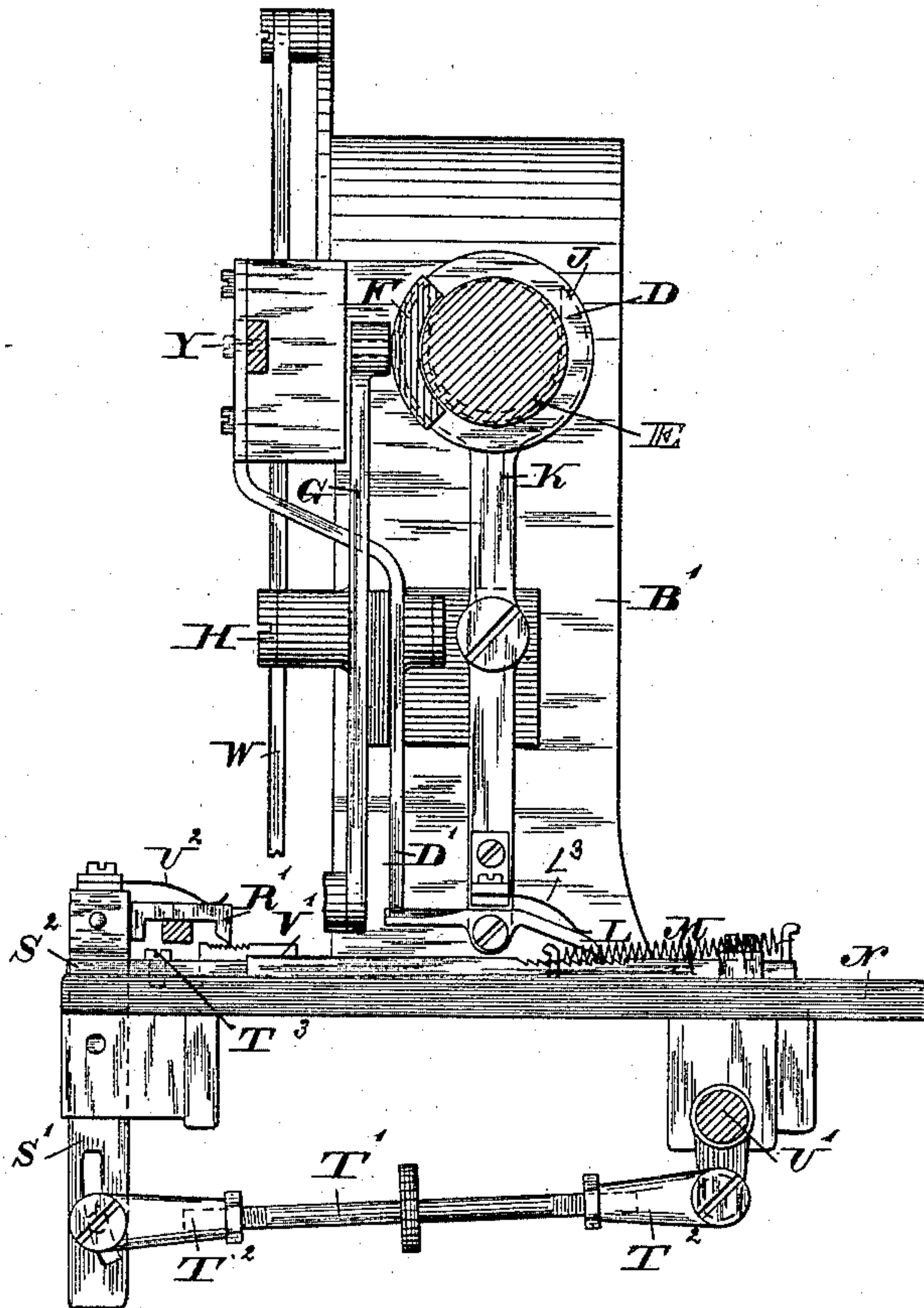
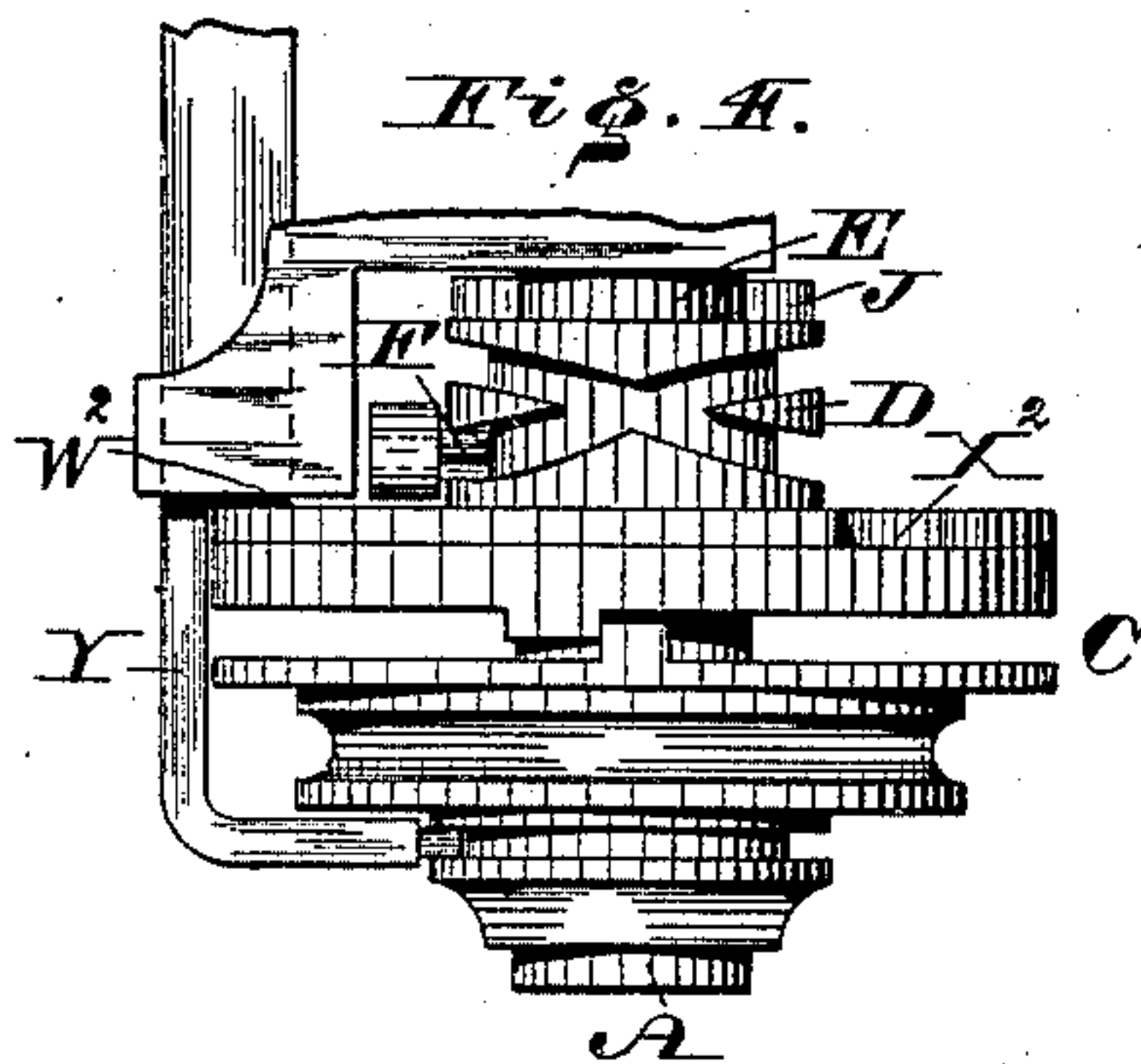


Fig. 4.



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UNITED STATES PATENT OFFICE.

HARRY M. ESSINGTON, OF CAMDEN, NEW JERSEY, ASSIGNOR TO THE ESSINGTON BUTTON HOLE FINISHING AND MACHINE COMPANY, OF NEW JERSEY.

BUTTON-HOLE-BARRING MACHINE.

SPECIFICATION forming part of Letters Patent No. 432,795, dated July 22, 1890.

Application filed November 21, 1887. Renewed September 24, 1889. Serial No. 324,886. (No model.)

To all whom it may concern:

Be it known that I, HARRY M. ESSINGTON, a citizen of the United States, residing in the city and county of Camden, State of New Jersey, have invented a new and useful Improvement in Button-Hole-Finishing Machines, which improvement is fully set forth in the following specification and accompanying drawings.

My invention consists of improvements in a button-hole-finishing machine adapted to form a stitch at the end of a button-hole and an overlying row of stitches over said stitch at a right angle thereto.

Figure 1 represents a side elevation of a button-hole-finishing machine embodying my invention. Fig. 2 represents a partial top or plan view and a partial horizontal section thereof. Fig. 3 represents a partial end view and partial vertical section thereof in line *x x*, Fig. 1. Fig. 4 represents a view of a detached portion, including the clutch, switch-cam, and adjacent parts. Fig. 5 represents a vertical section of a detached portion in line *y y*, Fig. 2.

Similar letters of reference indicate corresponding parts in the several figures.

A represents the driving-shaft of the needle-bar, which is mounted on the arm B and carrying the clutch C, the switch-cam pulley D, and eccentric E. In the switch-cam of the pulley D is a cam-follower F, to which is pivoted the lever G, the latter having its axis H on the side of the vertical limb B' of the arm B. Encircling the eccentric E is the yoke J of a lever K, the latter being pivoted to the side of the limb B' at a right angle to the lever G and carrying at its lower end the pivoted pawl L, whose point engages with the sliding rack-bar M, which is supported on the table N of the machine, said rack-bar having on its side the projection P, which is adapted to bear against the side of a bar Q, which is pivoted to the table N, and also engage with a shoulder R on the inner side of said bar. Secured to the lever K is a spring L³, bearing upon the pawl L, so as to keep the same in engagement with the rack-bar M during the movement of the said bar by the said pawl. To the end of the bar Q, opposite to its pivot, is pivoted a link S, to which are pivoted the parallel arms T U V, which extend in the longitudinal direction of the machine above

the table N. To said link S is also pivoted the vertical lever W, whose axis is at the top of the arm B, said lever being so disposed that it may be engaged by the shoulder X on the horizontal sliding bar Y, which is guided on the arm B and has one end bent to engage with the loose-pulley of the clutch C. Engaging with the bar Y is an elbow-lever Z, which is pivoted to the limb B' of the arm B and connected with a foot-treadle, whereby said slide may be moved and the clutch C locked for starting the machine. Engaging with the bar Y is a vertical lever A', which has its axis on limb B' and is pivoted to the horizontal link C', the latter being pivoted to the lower end of the lever G. Pivoted to the bar Y is a lever D', whose axis is on the limb B', and has its lower end so disposed that it is adjacent to the heel end of the pawl L, said heel being beveled, whereby when said lever D' is operated in one direction by the sliding bar Y the lever D' comes in contact with said heel, so that the pawl is raised clear of the rack-bar M. To the lower end of the lever G are pivoted the parallel rods E' F', which extend in the longitudinal direction of the machine, the rod E' having collars G', which occupy positions on opposite sides of the elbow-lever H'. The rod F' has also collars J', which occupy positions on opposite sides of the lever K', said levers H' K' being pivoted to the table N. The arm T has a pin L' which projects under the rod E', and the arm U has a pin M' which projects under the rod F'. The ends of the arms T U have feet *a b*, respectively, which rest at times on the block N' and block P', respectively, said blocks being secured to the table N, and having their upper faces beveled, as will be seen in Fig. 1. The forward end of the arm V rests on a block Q', which is secured to the table N, and having its upper face beveled, said end of the arm being beneath the dogs R', which are hung on the upper end of the rocking arm S', the latter being mounted on the side of the table N, and having attached to it the connecting-rod T', which is pivoted to the crank of a rock-shaft U', which is mounted beneath the table N and receives motion from any suitable member of the machine. The dogs R' are adapted to engage with a rack-bar V', secured to the slide W', which is fitted between guides Y' on the table N, said slide carrying

guides Z' for a slide A^2 , it being noticed that the guides are at a right angle to each other, whereby the slides are permitted to move in directions at a right angle to each other. The elbow-lever H' is connected with the slide W' by means of a link B^2 , and the lever K' is connected with the slide A^2 by means of a link C^2 .

To the slide A^2 is connected the clamping mechanism for the fabric containing the button-hole, and consisting of the base-plate D^2 , which rests on the table N , and feet E^2 on said plate D^2 , between which plate and feet the fabric is clamped, the plate having an opening adjacent to the throat c in the table for the passage of the needle, it being observed that the sewing is accomplished as usual in sewing-machines. The feet E^2 are attached to the ends of springs or spring-plates F^2 , which are secured to the slide A^2 and adapted to be pressed by the action of a rotary cam or eccentric head G^2 , which is mounted on ears H^2 , connected with the slide A^2 , and provided with a handle, whereby by rotating said head in one direction the springs F^2 are pressed downwardly, thus forcing the feet E^2 against the plate D^2 , causing the fabric to be held in a reliable manner. By rotating the head in the opposite direction the springs, and consequently the feet E^2 , are released and the fabric may be removed.

H^3 represents a guide which enters the button-hole and prevents shifting thereof, said guide consisting of the flat strip J^2 , which rises from the base-plate D^2 , and the pin K^2 , which rises from a plate L^2 , the latter being placed on the plate D^2 , and having a slot d , through which passes a screw M^2 , which is fitted to the plate D^2 , whereby the plate L^2 may be moved and the strip J^2 and pin K^2 set nearer to or farther from each other, thus adjusting the guide to button-holes of different lengths. A spring N^2 is connected with the table N and rack-bar M for restoring the latter to its normal position. The bar M is prevented from returning during the successive stitches, owing to the friction between the projection P and the bar Q , due to the action of the spring R^2 on the lever W and the link S being greater than the power of the spring N^2 . Springs P^2 are connected with the sliding bar Y and the arm B for restoring said bar to its normal position. A spring R^2 is connected with the bar Y and lever W for moving the latter and connected parts, as will be hereinafter set forth.

On the table N is a bar S^2 , which is slotted and connected with said table by a screw T^3 , the latter passing freely through said slot and into the table, the head of the screw bearing against the bar, so as to clamp or bind it to the table. By means of this construction the position of the bar S^2 may be laterally adjusted as to its position relatively to the rack-bar M , thereby increasing or decreasing the throw of the said rack-bar, and thus regulating its movements, and consequently those of the slide W' .

The connecting-rod T' is formed in sections, the ends of the middle section thereof having right and left screw-threads, and entering corresponding threaded ends of socket-pieces T^2 , one of which pieces is attached to the rocking arm S' , and the other piece to the crank of the shaft U' , it being evident that by rotating said middle section the length of the rod may be adjusted in order to advance or set back the dogs R' , and thus cause the latter to take more or less teeth of the rack-bar V' , and so adjust the travel of the slide W' in forming the second row of stitches. The dogs R' are held in contact with the rack-bar V' by means of springs U^2 , as will be seen in Fig. 3.

The operation is as follows: The parts being in position shown in the drawings, the rod E' having its collars G' engaged with its lever H' , and the rod F' having collars J' raised clear of the lever K' . The arm V is elevated by means of the block Q' , whereby the dogs R' are disengaged from the rack-bar V' of the slide W' . The lever Z is depressed by the treadle, whereby the bar Y is moved, thus coupling the clutch and causing the operation of the cam-follower F and oscillations of the lever G , whereby the rod E' operates the lever H' , and transverse motions are imparted to the slide W' . As the slide A^2 is carried by said slide W' and the clamping mechanism is attached to the slide A^2 , the fabric is carried in transverse directions, whereby a row of stitches is formed on the fabric at the end of the button-hole at a right angle thereto. The oscillating lever K causes the pawl or dog L to engage tooth by tooth of the rack-bar M , whereby the latter is advanced. When the projection P of the rack-bar clears the shoulder R of the lever Q , the latter is no longer controlled by the rack-bar, and said lever, under the action of the spring R^2 , connected with the lever W , is immediately moved toward the needle end of the machine, and the arms $T U$ are advanced, so that the arm T ascends the block N' , and its pin L' thereby raises the rod E' clear of the lever H' . The arm U , however, descends its block P' , whereby the pin M' permits the rod F' to lower, thus placing the collar J' in position to engage with the lever K' . As the said lever now receives motion from the rod F' , the slide A^2 is reciprocated and the fabric is moved in a longitudinal direction of the machine backward and forward, it being noticed that the lever H' is at rest. As the rod V is advanced with the arms $T U$, the forward end of said rod V descends the block Q' , thus allowing the dogs to drop and engage with the rack-bar V' . As the crank-shaft U' rocks and swinging motions are communicated to the arm S' , the dogs R' move the rack-bar V' tooth by tooth, and consequently moving the slide W' in the transverse direction of the machine, while the slide A^2 continues its motions in a longitudinal direction to the machine, and thus an overlying row of stitches is formed on the

previously-formed row of stitches at a right angle thereto, thus finishing the button-hole. The bar Y has a pin or lug V^2 , whereby it may engage with the lever A' , as has been stated, said lever being connected by the link C' with the lever G and oscillating with the latter. Now when the cam-follower is in the side of the switch-cam toward the needle the upper end of the lever A' abuts against the pin V^2 , and thereby prevents the motion of the bar Y toward the clutch. When the cam-follower is in the opposite side of the switch-cam, the upper end of the lever A' is removed from the pin V^2 , whereby said bar is not controlled by said lever A' , and it moves to its full extent, thus uncoupling the clutch. The shoulder W^2 on the bar Y drops into the recess X^2 of the said clutch. The lever W is also moved, thus withdrawing the arms T U V, the effect of which is to lower the rod E' , raise the rod F' , and also operate the arm V and raise the dogs R' clear of the rack-bar V' . Simultaneously therewith the bar Y uncouples the clutch C, as has been stated, thus stopping the machine. The lever W also moves the lever Q in a direction from the rack-bar M, whereby the projection P is freed from engagement with the shoulder R of the bar Q, and the said bar Q being no longer held against the said projection the power of the spring N^2 returns the bar M to its first position.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A clamp for a button-hole having a guide to enter the button-hole, consisting of an upright strip attached to the base-plate of said clamp, and an upright pin attached to another plate, said plates being adjustably connected, whereby the guide is adjustable in length, substantially as described.

2. In a button-hole sewing-machine, slides having a cloth-guide thereon, mechanism connected therewith and with the driving-shaft, substantially as described, for alternately reciprocating said slides, the transversely-moving rack-bar M with spring N^2 for controlling the operation of said reciprocating mechanism, and an adjustable bar or stop for limiting the play of said rack-bar, said parts being combined substantially as described.

3. In a button-hole sewing-machine, a guide for the button-hole, consisting of the base-plate D^2 , with the flat strip J^2 rising therefrom, the slotted plate L^2 on the plate D^2 and having the pin K^2 rising therefrom, and the screw M^2 , passing through slot of said plate L^2 and fitting into the plate D^2 , said parts being combined substantially as and for the purpose set forth.

4. In a button-hole sewing-machine, the lever K, with a pawl at the lower end, the table N, the transverse rack-bar M, operated by the oscillations of said lever and pawl, and having the projection P, the pivoted lever or bar

Q, with shoulder R, the link S, pivoted to the bar Q, parallel arms pivoted to said link and provided with pins, blocks secured to the table and adapted to engage said pins, reciprocating rods with collars, slides having a cloth-guide and connected with levers pivoted to the table and operated by the movement of said reciprocating rods, and a bar adapted to be adjustably secured to said table having its end abutting against the end of said rack-bar at the commencement of its forward movement, said parts being combined substantially as and for the purpose described.

5. In a button-hole sewing-machine, the slide A^2 , having a clamping device and a button-hole guide thereon, mechanism, substantially as described, for reciprocating the same, the slide W' , movable at right angles to said slide A^2 and provided with a rack-bar, the rocking arm S' , having the pawls R' on the upper end thereof, the rod T' , connected to said arm S' , the rock-shaft U' , having a crank-arm pivotally attached to said rod T' , the beveled face-block Q' , and the rod V, with mechanism, substantially as described, for reciprocating the same, the said rod V being adapted to engage the said pawl R' , said parts being combined substantially as and for the purpose set forth.

6. In a button-hole sewing-machine, the reciprocating-slide A^2 , in combination with the table N, having the throat c therein, the base-plate D^2 , with opening adjacent to the throat c, and provided with the feet E^2 and the screw M^2 , the spring-plates F^2 , attached at their ends to the feet E^2 and to the slide A^2 , a rotary cam mounted in ears on the slide A^2 , the plate L^2 , with slot d, and having the pin K^2 , and the strips J rising from the base-plate D^2 , substantially as described.

7. In a button-hole sewing-machine, the reciprocating slides A^2 and W' , the latter having the rack-bar V' , a driving-shaft, and mechanism, substantially as described, connected therewith for operating said slides, the pivoted bar Q in contact with said slides-operating mechanism, the link S, pivoted to said bar and having pivotally connected therewith the parallel arms T U V, extending longitudinally of the machine, the clutch mechanism C, and a loose pulley on said driving-shaft, the sliding bar Y, with the shoulder X thereon, and an end adapted to engage the said clutch, the vertical lever W, pivoted to the said link S and adapted to engage said shoulder X, a rocking arm having pawls engaging said rack-bar V' , and mechanism, substantially as described and connected therewith, for oscillating said rocking arm, the said arm V being adapted to raise the said pawls R' , said parts being combined substantially as described.

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Witnesses:

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