

No. 679,752.

Patented Aug. 6, 1901.

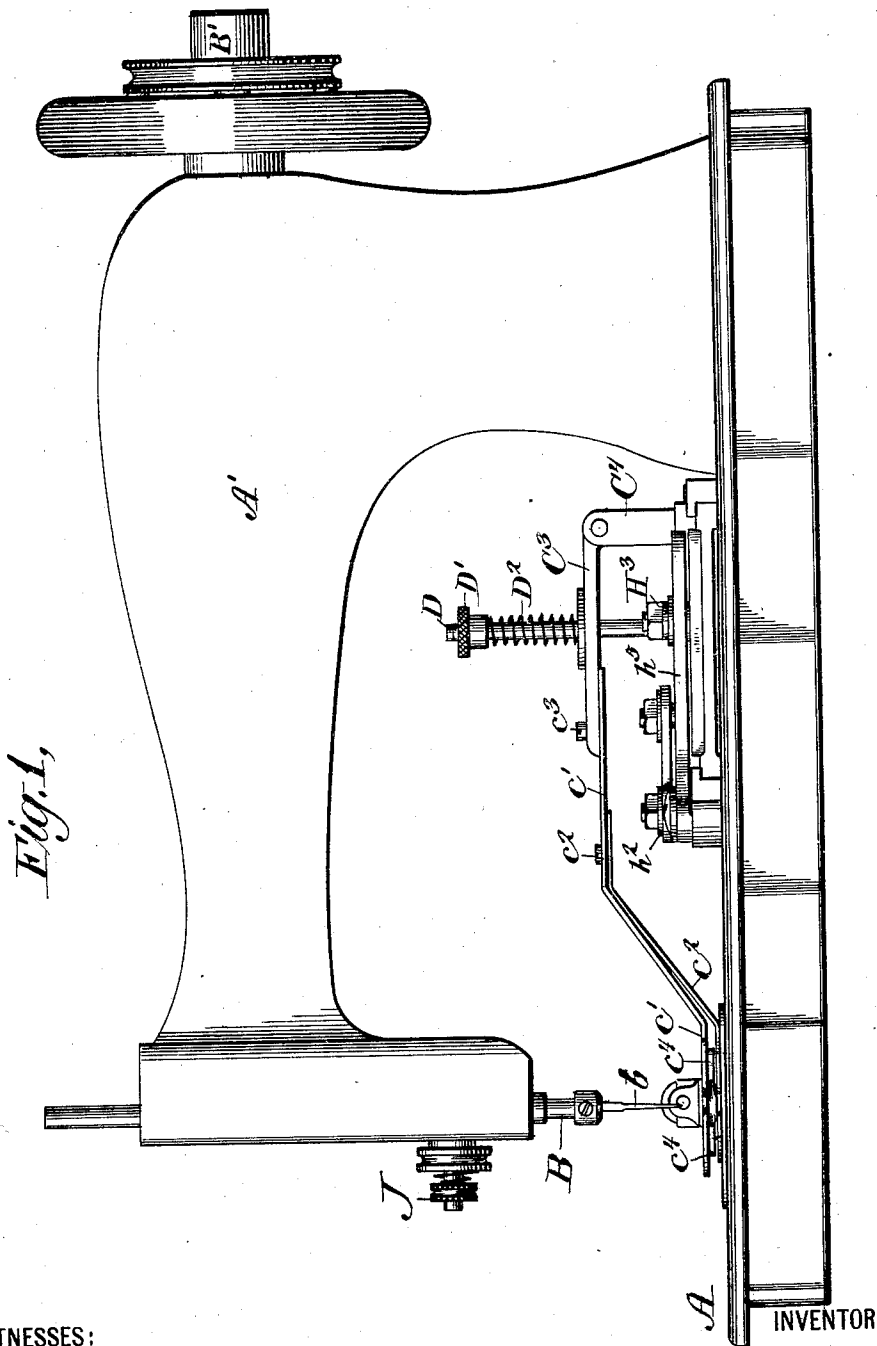
J. T. HOGAN.

MACHINE FOR SEWING BUTTONS TO FABRICS.

(Application filed Feb. 14, 1900.)

4 Sheets—Sheet 1.

(No Model.)



WITNESSES:

R. H. Hayford
Charles D. Jones.

INVENTOR

James T. Hogan.
BY
Edwin H. Brown
HIS ATTORNEY

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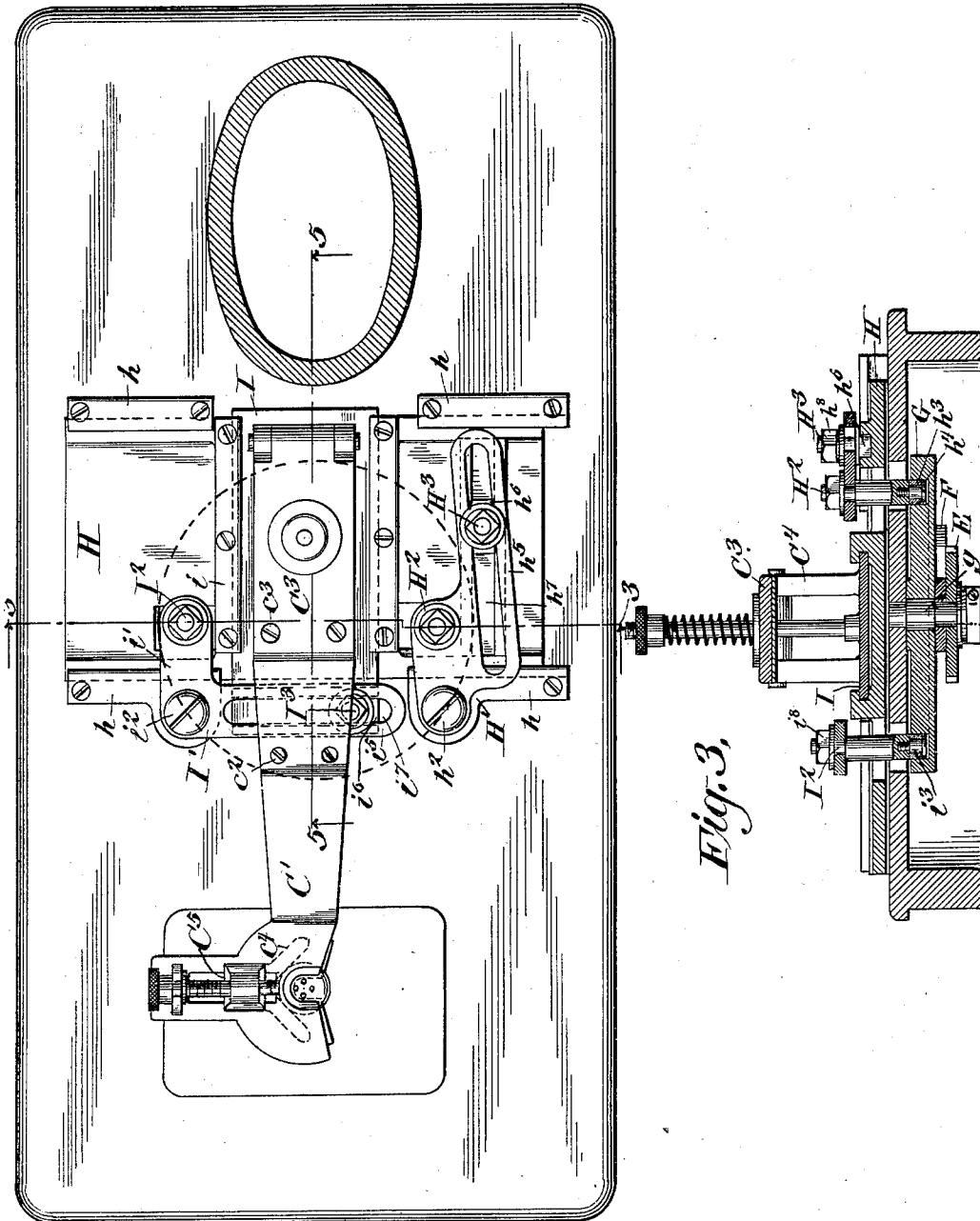
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WITNESSES:

D. N. Kaymont
Charles S. Jones. *Fig. 2.*

INVENTOR

James T. Hogan.
BY
Edwin H. Brown
HIS ATTORNEY

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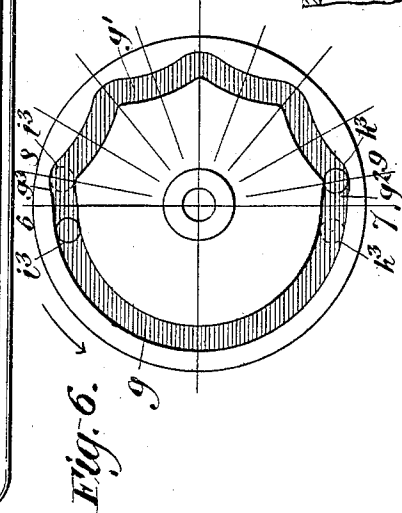
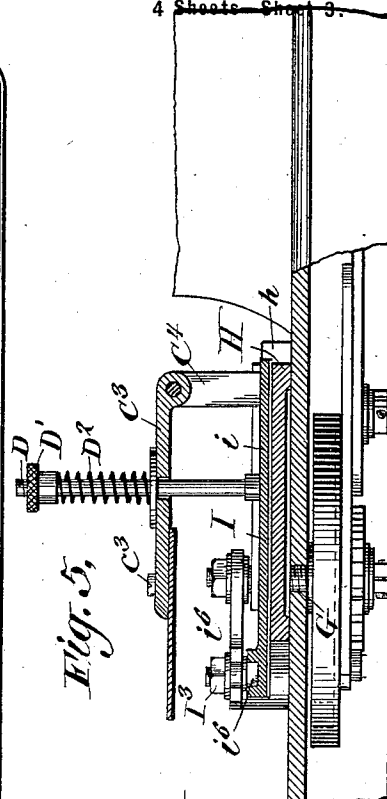
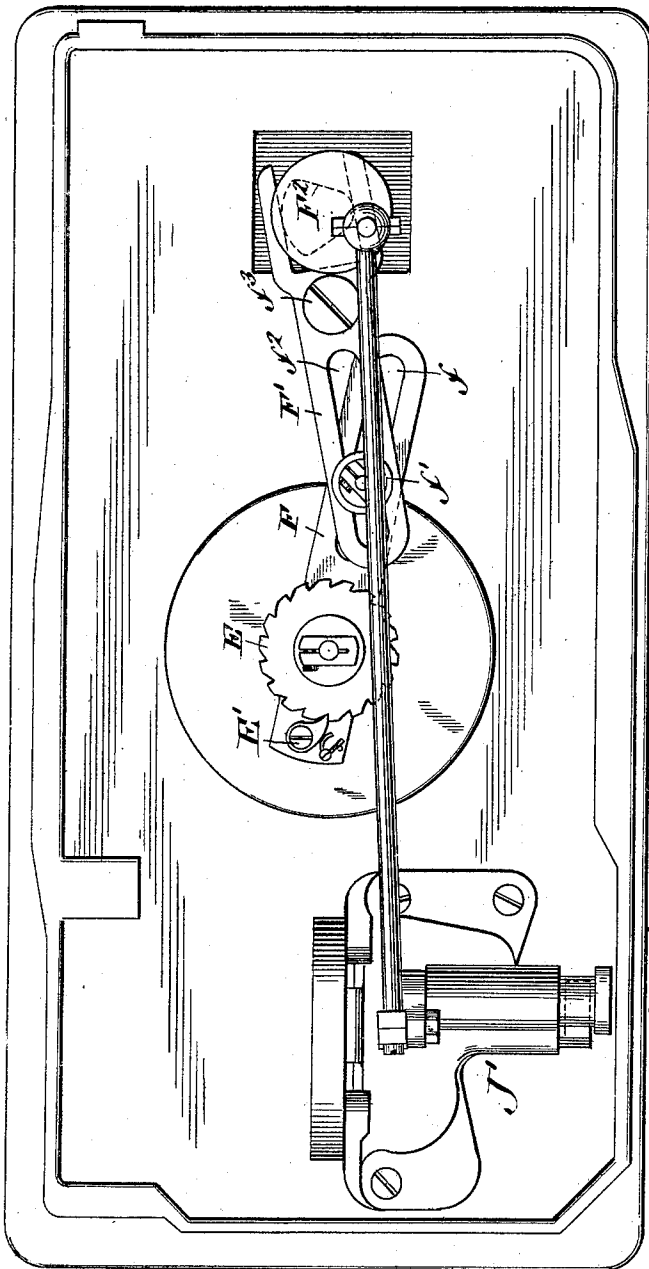
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4 Sheets Sheet 3.



WITNESSES:

O. R. Raymond
Charles A. Jones
Fig. 4.

INVENTOR

James T. Hogan.

BY

Edwin H. Brown
HIS ATTORNEY

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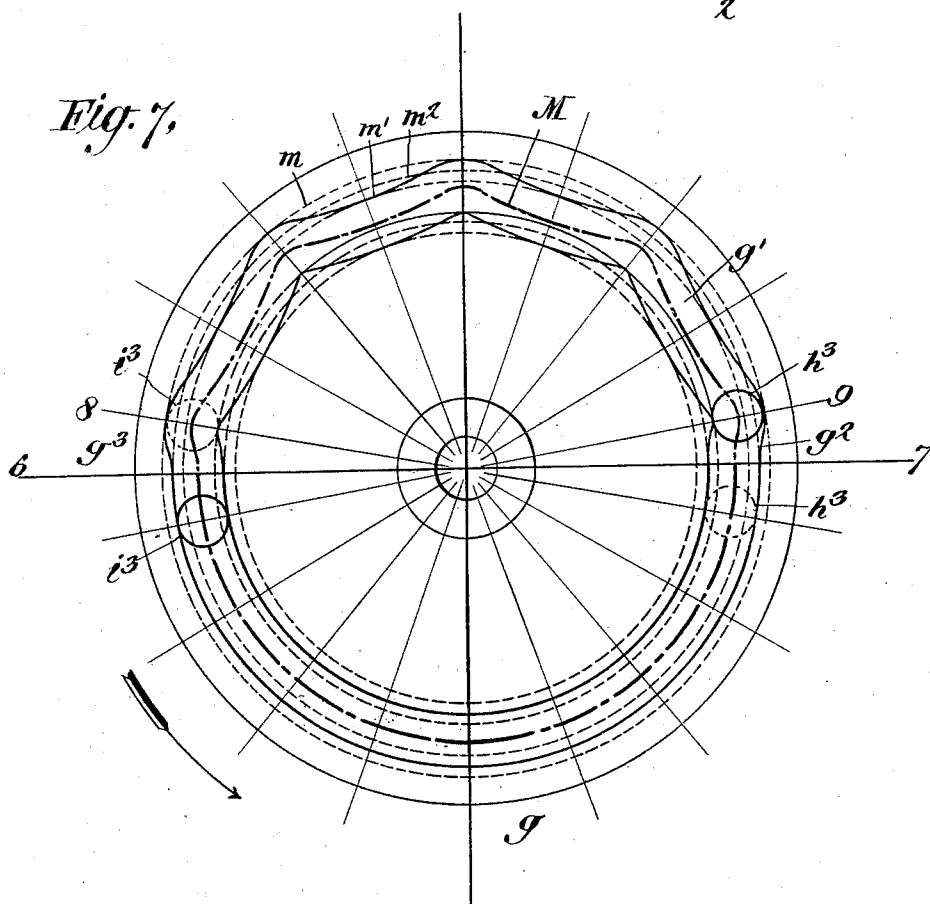
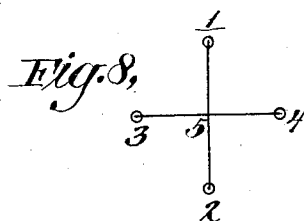
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(No Model.)

4 Sheets—Sheet 4.



WITNESSES:

Charles D. Jones.
Geo. E. Eames

INVENTOR

James T. Hogan.

BY

Edwin H. Brown.
HIS ATTORNEY

UNITED STATES PATENT OFFICE.

JAMES T. HOGAN, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO THE
NATIONAL MACHINE COMPANY, OF NEW YORK, N. Y.

MACHINE FOR SEWING BUTTONS TO FABRICS.

SPECIFICATION forming part of Letters Patent No. 679,752, dated August 6, 1901.

Application filed February 14, 1900. Serial No. 5,182. (No model.)

To all whom it may concern:

Be it known that I, JAMES T. HOGAN, of Jersey City, in the county of Hudson and State of New Jersey, have invented a new and useful Improvement in Machines for Sewing Buttons to Fabrics, of which the following is a specification.

I will describe a machine embodying my invention and then point out the novel features thereof in the claims.

In the accompanying drawings, which form a part of my application, Figure 1 is a side elevation of a sewing-machine, showing the parts above the bed-plate. Fig. 2 is a plan view of the button-holder and the connected slide-plates, these parts being above the bed-plate. Fig. 3 is a vertical section on the plane of the line 3 3 of Fig. 2. Fig. 4 is an inverted plan view of the feeding and shuttle mechanism located below the bed-plate. Fig. 5 is a vertical section on the line 5 5 of Fig. 2. Fig. 6 is a plan view of the cam for imparting the desired movements to the button-holder, the two cam-followers being shown. Fig. 7 is a diagrammatic view to show the change of position of the cam-followers to effect the desired movements of the button-holder, and Fig. 8 is a diagrammatic view showing the manner of laying the stitches in sewing a button according to my present invention.

Similar characters of reference indicate similar parts in the several views.

My invention is adapted to sew buttons to fabrics by means of two sets of stitches crossing each other, as illustrated in Fig. 8. The button to be sewed in this manner has of course four holes 1, 2, 3, and 4. The machine may also have the capacity of sewing a button having but two holes by a single set of stitches.

A designates the bed-plate, and A' the head, of a machine of any ordinary construction. B designates the needle-bar, to which is attached the needle *b*. The needle-bar is given a vertical reciprocating movement by means of a crank operated by the main driving-shaft B' in a well-known manner. In the present example of my improvement the needle and needle-bar have a vertical reciprocating movement only, the desired alternate to-and-fro

movements necessary to effect the sewing of a button being imparted to the button-holder.

The button holder or clamp may be of any approved construction—such, for example, as either one of the holders shown in my applications for patents, Serial Nos. 736,226 or 736,227, filed November 8, 1899. As here shown, the button-holder consists, essentially, of two plates C' C², the former or upper plate being provided with a shank *c'* for attachment by means of screws *c*³ to a lever C³, hinged to standards C⁴, which standards are seated in a slide-plate I, to be hereinafter described. The bottom plate C² may be secured to the plate C' by means of screws *c*². The top plate is made comparatively stiff, and the bottom plate is resilient and has a tendency to move away from the upper plate. D designates a post seated in said plate I and passing through an opening in the lever C³, and D² a spring surrounding said post and bearing upon said lever. A nut D' engages the screw-threaded upper end of said post and bears upon the upper end of the spring D² to impart the desired pressure upon the plates C' and C² to hold the button firmly in position. An adjustable piece C⁵, comprising two inclined surfaces *c*⁴, may be employed to center the button with reference to the sewing mechanism.

G designates a cam mounted rotatably on a stud *g*, which cam imparts to the button-holder the desired alternate to-and-fro movement for the sewing of a button. This cam is given a progressive rotary movement by a ratchet-wheel E, said wheel being actuated by a pawl E', carried by a pawl-lever F, having a longitudinally-slotted arm *f*, which arm is connected by a screw *f*¹ with a longitudinally-slotted arm *f*² of a lever F'. The lever F' is fulcrumed on a screw *f*³, affixed to the bed-plate, and is bifurcated at one end to embrace a cam F², deriving its motion from the main driving-shaft B' in a well-known manner.

To move the button-holder to and fro for the sewing of stitches, I provide two slide-plates H and I. The plate H is seated upon the bed of the machine and held in its proper relation by guides *h*, secured by screws to the bed-plate.

H' designates a lever fulcrumed on a stud h^2 , secured to the bed of the machine, which said lever carries on its arm h' a stud H^2 , extending through openings in the plate H and the bed-plate A, said stud carrying at its lower end a follower h^3 , which engages the cam G. The follower h^3 may be made in the form of a roller and secured to the stud H^2 by means of a tap-screw h^4 . The other arm h^5 of the lever H' is slotted, as shown, to receive a stud H^3 , which stud carries at its lower end a block h^6 , which block is adapted to travel in the groove h^7 , formed in the plate H.

To move the button-holder to and fro in a direction at right angles to the direction of its movement through the plate H, I provide a plate I, seated upon the said plate H and movable thereon between guides i , forming a part of or secured to the plate H. The bell-crank lever I', fulcrumed on a stud i^2 , secured to the bed-plate, carries on its arm i' a stud I^2 , to which is secured a roller i^3 to engage the cam G. The arm i^5 of the bell-crank lever I' is slotted, as shown, to receive a stud I^3 , which carries at its lower end a block i^6 , which travels in the groove i^7 , formed in the plate I. The angle between the grooves h^7 and i^7 of the plates H and I, respectively, is the same as the angle between vertical planes passing through the holes 1 2 and 3 4 of the button to be sewed. In the present case such angle is a right angle.

The cam G, as shown in Figs. 6 and 7, comprises an inactive portion g for one-half of its entire travel. The remainder of the said cam upon the other side of the diameter 6 7 is divided into a certain number of active portions of equal length having radii equal to each other, but different from the radius of the inactive portion, these portions giving the desired to-and-fro movements to the plates H and I, and consequently to the button-holder. Between the radii 6 8 and 7 9 the cam G has equal portions g^2 and g^3 , which parts throw the plates H and I one-half the distance that such plates are moved by the portions between the radii 8 9.

The method of operation of my improved machine is as follows: The rollers h^3 and i^3 , through which motion is imparted to the plates H and I, respectively, are always at diametrically opposite points in the groove of the cam G, and it is clear that when the roller h^3 is in the inactive part g the roller i^3 is in the active part g' , and the plate I will be given a to-and-fro movement to sew stitches between the holes 3 4 of the button, while the plate H remains stationary. When the roller h^3 passes to the active part g' of the cam, the roller i^3 passes to the inactive part g and the to-and-fro movement of the plate I will be suspended; but such plate being carried by the plate H will partake of the to-and-fro movement of the latter during the sewing of stitches between the holes 1 2 of the button. Referring to Figs. 6 and 7, suppose the cam G to be rotated in the direction of the arrow and

the roller h^3 at the position shown in full lines. Then the roller i^3 will be at its position indicated in full lines diametrically opposite the roller h^3 —that is, the roller h^3 is at the end of its travel in the part g' of the cam G after moving the plate H to and fro to sew stitches between the holes 1 2 of the button. As the cam G continues to rotate the roller h^3 travels over the space g^2 , or from the radius 9 to the neutral radius 7, and thereby moves the plate H one-half the distance said plate was thrown by the part g' . This brings the button to a central position, or to such position that if the needle descended it would strike the point 5 in Fig. 8. At the same time that this movement occurs the roller i^3 passes from the position shown in full lines (Figs. 6 and 7) to the neutral radius 6 without imparting any movement to the plate I. The roller h^3 then passes from the radius 7 into the inactive part g of the cam G, or to the position shown in dotted lines. The roller i^3 travels over the space g^3 , moving the plate I, and consequently the button, one-half the distance between the holes of the button, or out from the position 5, so that the needle when it descends will strike the hole 3 of Fig. 8. This positions the button for sewing stitches between the holes 3 4, when at the end of the sewing operation the parts are shifted, as already described, to bring the holder into position to sew between the holes 1 2 of the next button.

In Fig. 7 the circle m represents the outer limit, and the circle m' represents the inner limit, of the throw of a point on the periphery of one of the rollers. The circle M represents the path of travel of the central point of the cam follower or roller h^3 and i^3 . When the rollers pass from the active to the neutral position of the cam G, the throw of a point on the periphery of the roller is from the circle m' to the circle m^2 , or one-half the difference between the radii of the circles m and m' . Suppose the throw of the parts g' is one-quarter of an inch between the circles m and m' . Then the throws given by the spaces g^2 and g^3 will be first one-eighth of an inch for one plate and then one-eighth of an inch for the other plate outwardly in a direction at right angles to the direction of the first movement, or the distance between the circles m and m^2 .

The radii of Figs. 6 and 7 are drawn to show the space passed over by each roller as the cam is advanced one tooth by the ratchet-wheel E. As here shown, the cam G is divided into eighteen equal parts, eight such parts being for the to-and-fro movement of the active roller. The ratchet-wheel E is therefore provided with eighteen teeth, or one tooth for each division of the cam. I may of course vary the number of divisions of the cam G and may make a corresponding change in the number of teeth in the ratchet-wheel.

When the rollers are on the neutral diame-

ter 6 7, the levers F and F' are overlapped, or in a central position, and the arms h^3 and i^3 of the levers H and I, respectively, are at right angles to each other. The said levers F and F' are slotted to adjust them relatively to each other when the ratchet and cam are changed to sew a greater or less number of stitches. When once adjusted, (excluding adjustment for wear,) the levers F and F' remain the same for any particular ratchet and cam.

The stud H^3 is screw-threaded at its upper end and adjustable to any position along the arm H^5 of the lever H' by means of a nut h^8 .

The stud I^3 is likewise adjustable along the arm i^5 of the bell-crank lever I' by means of a nut i^8 . These adjustments permit buttons having different distances between the eyes to be sewed on the same machine.

The machine is provided with the usual tension device J and shuttle mechanism J'.

What I claim, and desire to secure by Letters Patent, is—

In a button-sewing machine, the combination with sewing mechanism comprising a reciprocating needle-bar, of a button-holder and mechanism for producing a vibratory movement of the button-holder relatively to the needle in two directions at an angle to each other, said mechanism comprising a rotatable cam having an active and an inactive portion, pivoted levers each having one arm slotted, a pair of plates both of which move the button-holder and with which the slotted arms are connected, one slotted arm with one plate and the other slotted arm with the other plate, and followers operated by said cam and connected with the other arms of the levers.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES T. HOGAN.

Witnesses:

GEO. E. CRUSE,

CHARLES S. JONES.