

No. 656,458.

Patented Aug. 21, 1900.

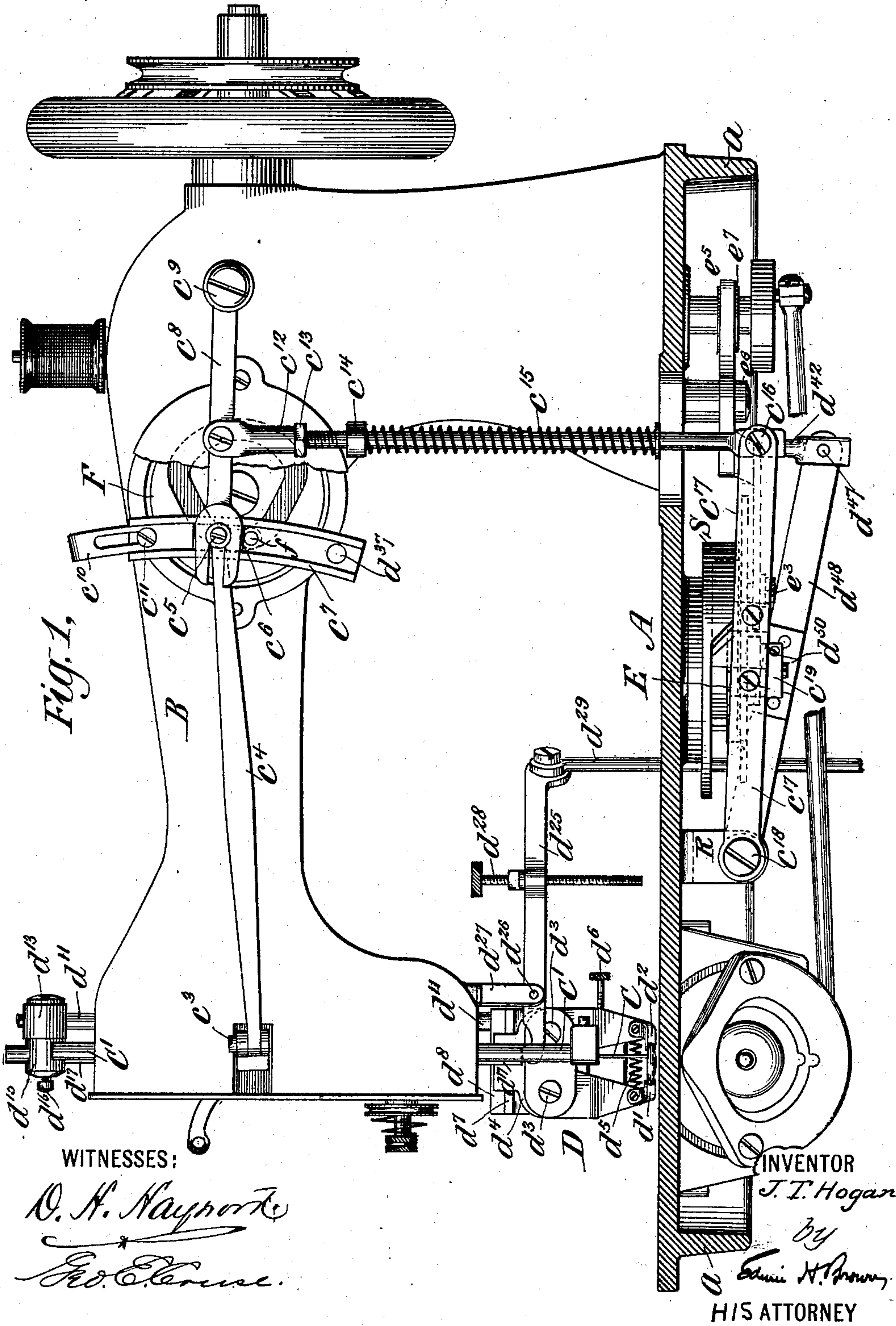
J. T. HOGAN.

MACHINE FOR SEWING BUTTONS TO FABRICS.

(Application filed Dec. 29, 1897.)

(No Model.)

5 Sheets—Sheet 1.



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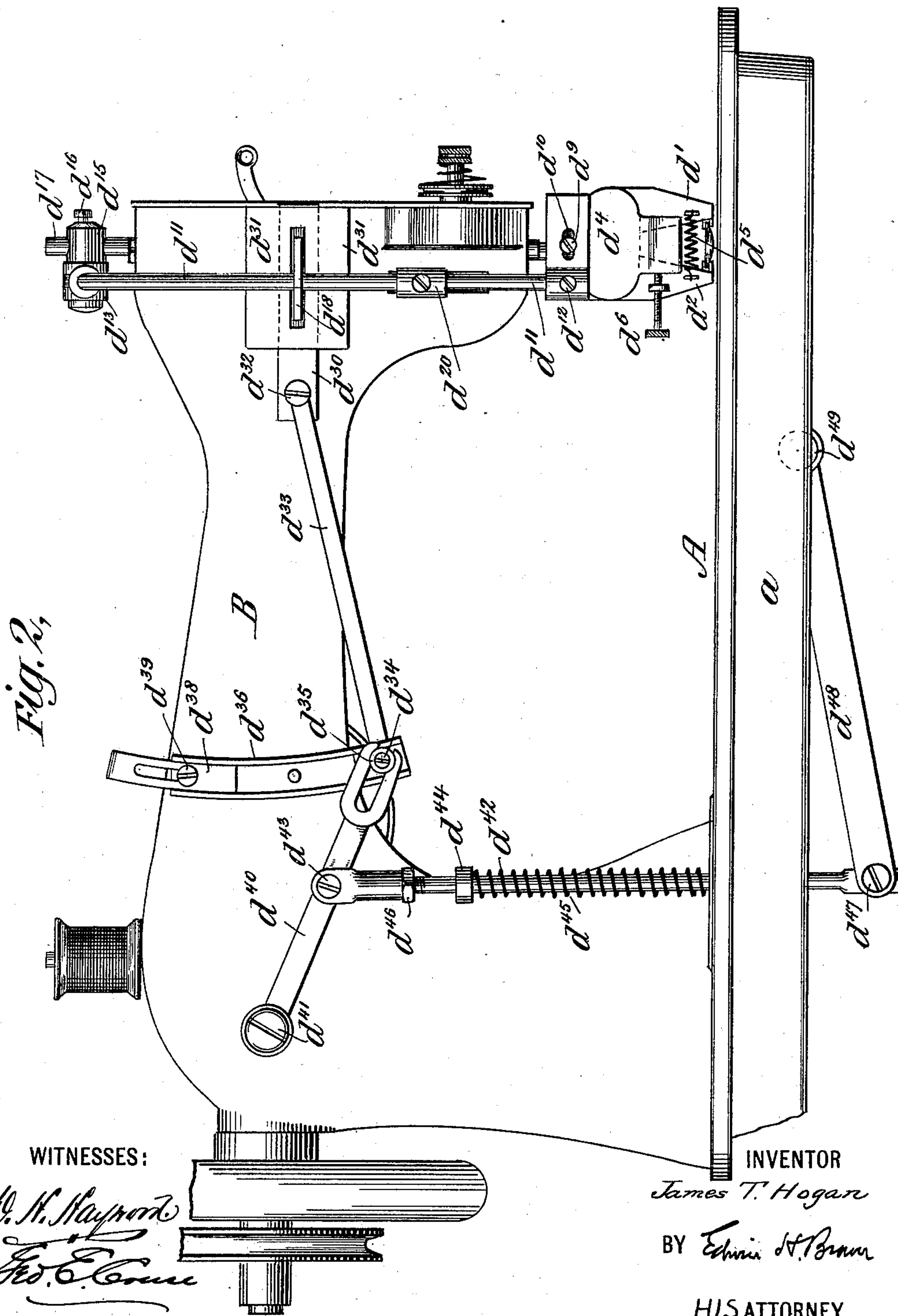
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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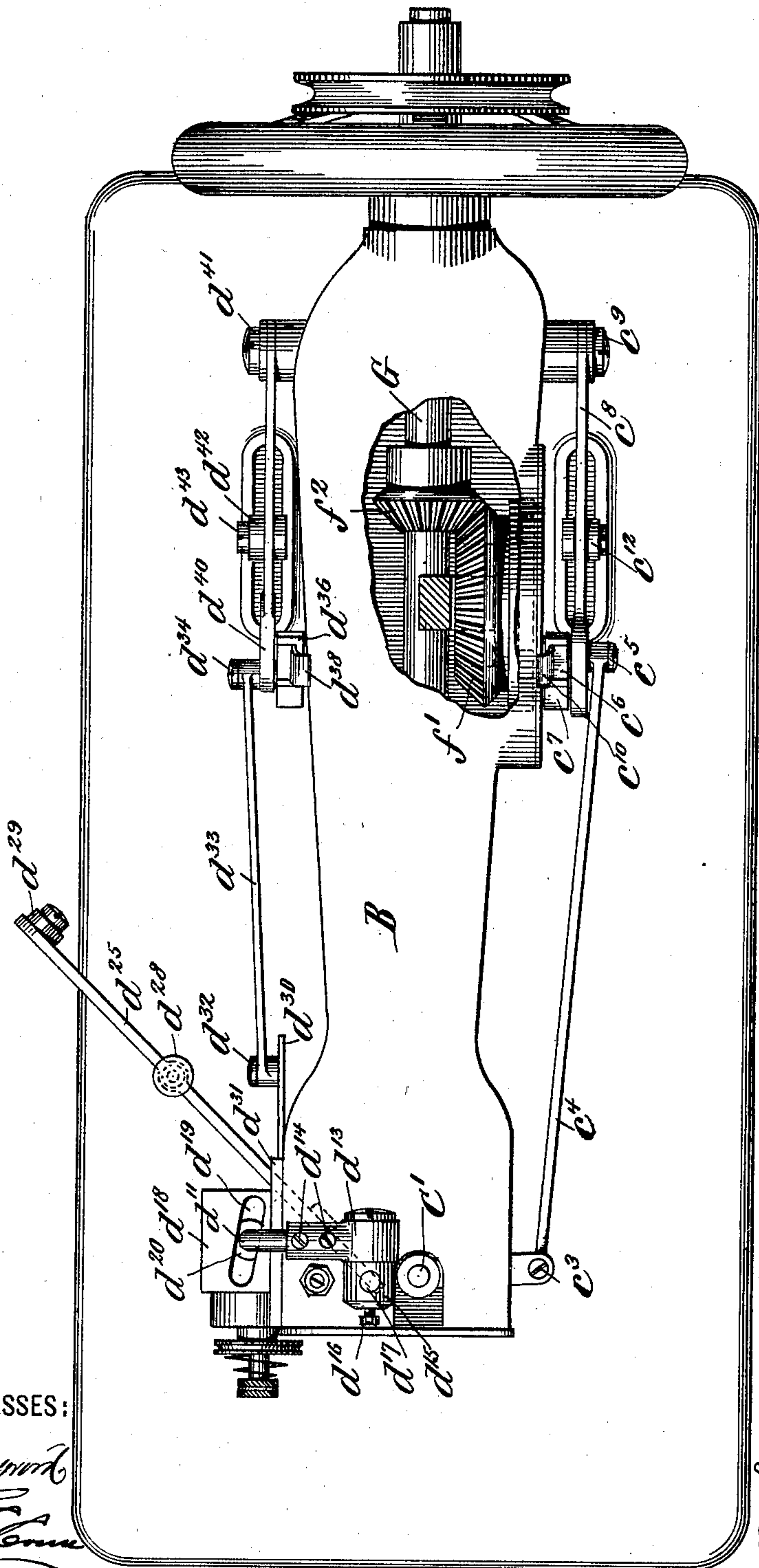
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Fig. 3.



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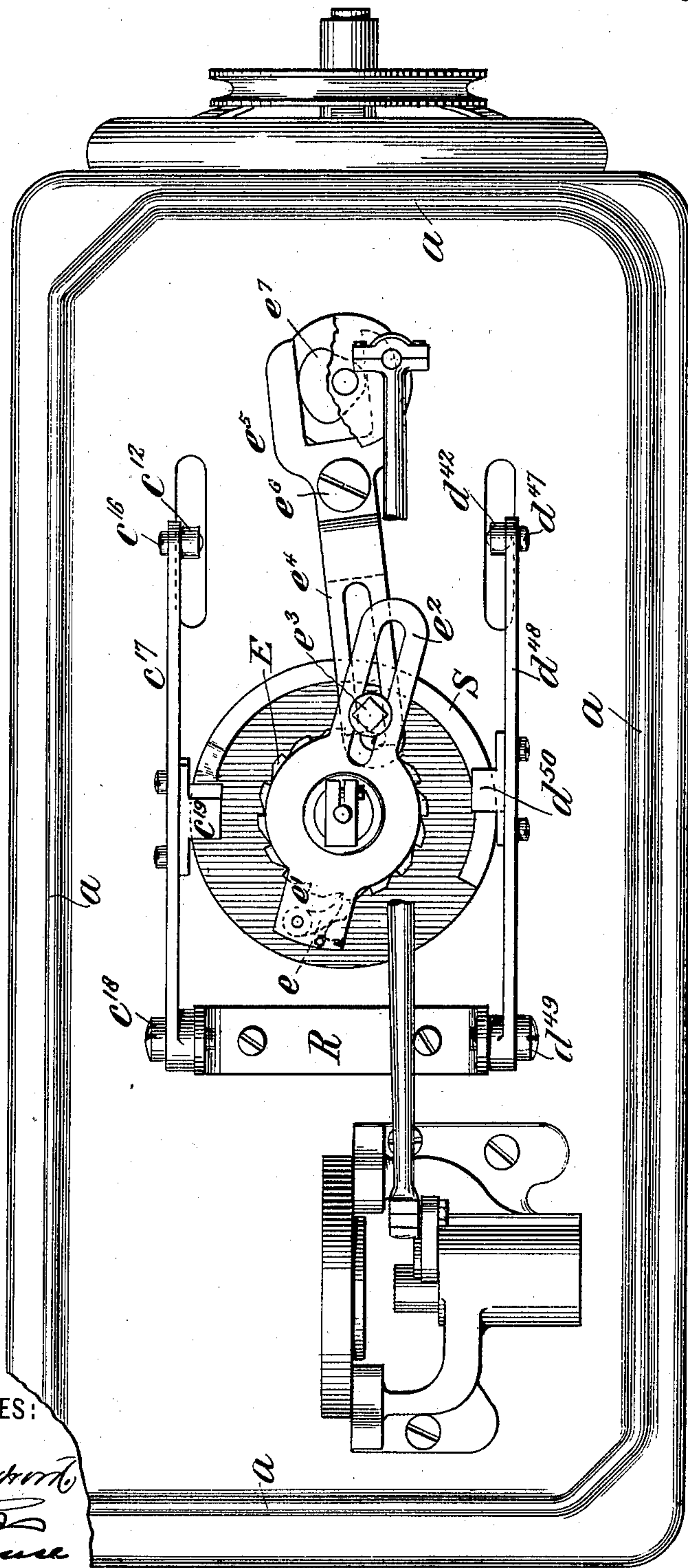
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Fig. 4,

A



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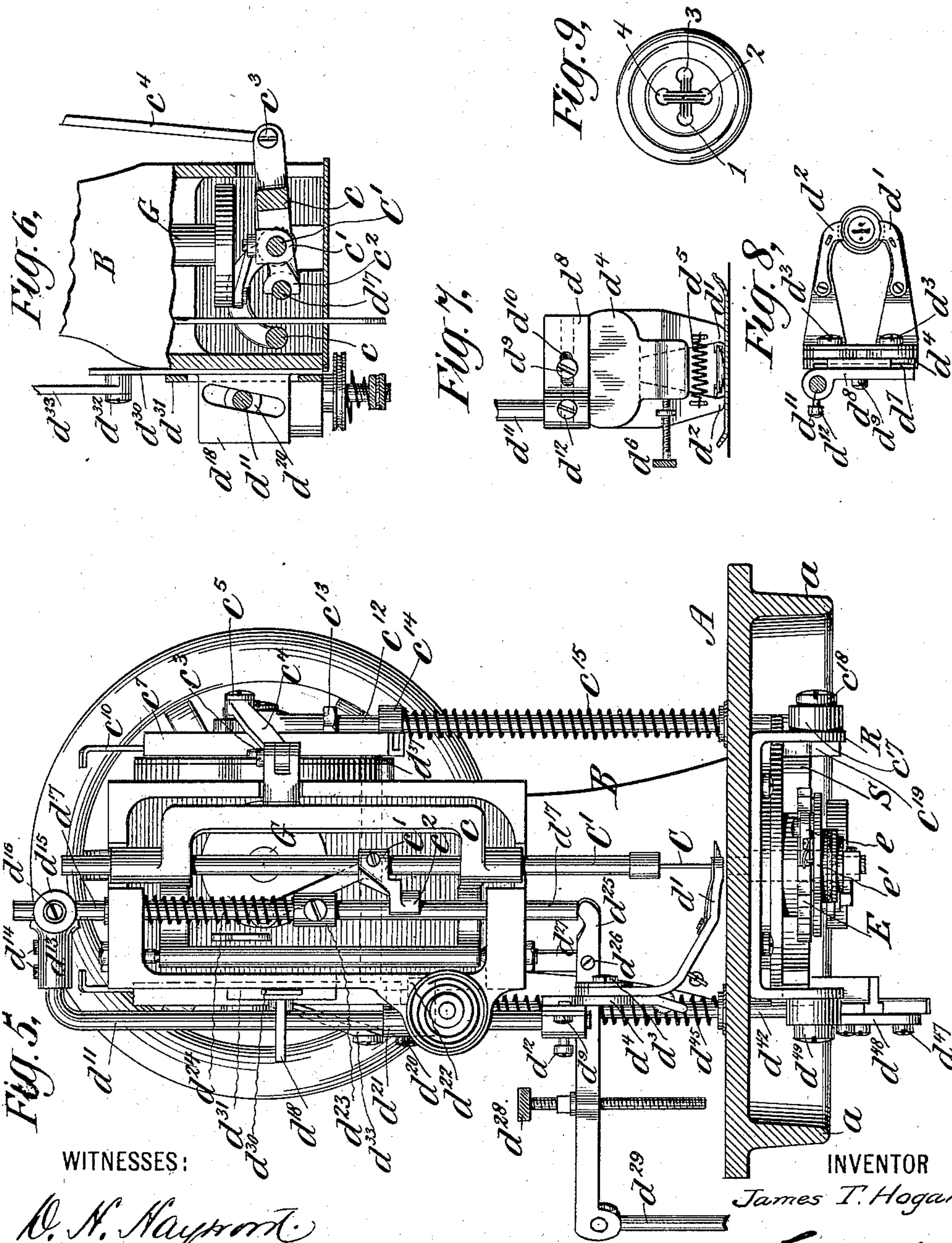
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5 Sheets—Sheet 5.



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UNITED STATES PATENT OFFICE.

JAMES T. HOGAN, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO THE
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MACHINE FOR SEWING BUTTONS TO FABRICS.

SPECIFICATION forming part of Letters Patent No. 656,458, dated August 21, 1900.

Application filed December 29, 1897. Serial No. 664,186. (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 certain new and useful Improvement in Machines for Sewing Buttons to Fabrics, of which the following is a specification.

An important object of my improvement is to provide practical mechanism whereby a button having four holes may be sewed to a fabric by two sets of stitches crossing each other and each set extending diametrically across the button.

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

In the accompanying drawings, Figure 1 is a side view of a machine embodying my improvement, certain parts being shown in section and others being broken away. This view, it will be understood, is of that side which is opposite the operator. Fig. 2 is an elevation of the other side. Fig. 3 is a top view of the machine, a certain part being broken away and certain portions being shown in section. Fig. 4 is an inverted plan or bottom view of the machine, certain parts being omitted. Fig. 5 is view of the left-hand end of the head of the machine with the end plate removed, the bed-plate being shown in section. Fig. 6 is a horizontal section of the left-hand portion of the machine-head and certain correlated parts. Fig. 7 is a rear view of the button-holder. Fig. 8 is a plan or top view of the button-holder. Fig. 9 is a top view of a button and two sets of stitches for securing it in place.

Similar letters and numerals of reference designate corresponding parts in all of the figures.

This machine is especially intended for sewing buttons to fabrics by means of two sets of stitches crossing each other and severally extending diametrically across the button, as illustrated in Fig. 9. It will be understood that a button to be sewed in this manner will necessarily have four holes 1 2 3 4, Fig. 9. The machine may also have the capacity of sewing a button having but two holes to a fabric by a single set of stitches.

A designates the bed-plate. It may be of

any ordinary construction. As here shown, it is provided with a depending rim *a* for fitting into a table.

B designates the head of the sewing-machine, and this also may be of ordinary form.

D designates the button holder or clamp. It may be of any suitable form. It is capable of having a motion to and fro in a straight line to present two diametrically-opposite holes of a button suitably for being sewed by diametrical stitches to a fabric. As here shown, this motion will be transversely to the length of the bed-plate.

C designates the needle of the machine. It is attached, as usual, to a vertically-reciprocating needle-bar C'; but in this example of my improvement the needle and needle-bar have also a horizontal to-and-fro movement at right angles to the to-and-fro movement of the button holder or clamp, so that by virtue of the to-and-fro movement of the button holder or clamp and the horizontal to-and-fro movement of the needle two sets of stitches crossing each other and arranged diametrically of a button may be made.

The button holder or clamp which I have illustrated consists of two jaws *d'* *d''*, suitably shaped at the end to grip and hold a button and forming parts of two arms having up-turned portions, whereby they are pivoted through the agency of screws *d'''* to a plate *d''''*. A spring *d'''''* tends to draw the arms together for the purpose of causing the jaws to grip and hold a button; but the movement of the jaws toward each other under the influence of the spring is restricted by means of a screw *d''''''*. This screw is carried by and works on one jaw of the clamp and has its other end abutting against or otherwise engaging the other jaw. The plate *d''''* is provided in the back with a horizontal groove fitting a rib *d''''''*, formed upon a block *d'''''''*. A set-screw *d''''''''*, passing through a horizontal slot *d'''''''''* in the block *d'''''''* and engaging with a tapped hole in the plate *d''''*, provides for clamping this plate to the block *d'''''''* in different positions. Thus adjustments of the button holder or clamp in the direction of the length of the bed-plate are provided. The block *d'''''''* is provided with a cylindric hole fitting a cylindrical rod *d'''''''''*. A set-screw *d''''''''''*, passing through the block and

engaging with the rod, secures the two-parts together in such a way as to provide for an adjustment rotarily of the block upon the rod. The rod d^{11} extends up adjacent to the head of the machine and at its upper extremity is bent horizontally to fit into a socket d^{13} . Set-screws d^{14} , passing through the socket and impinging against the rod, secure these parts together in such a way as to form an adjustable connection, for by loosening the set-screws and pulling out the rod and then retightening the set-screws the parts may be secured in different relations. The socket-piece d^{13} is pivoted to a collar d^{15} , that is secured by a set-screw d^{16} to a rod d^{17} . During the sewing of a button this rod d^{17} has no movement nor has it any function, except to support the pivot formed on the collar d^{15} and upon which the socket-piece d^{13} and consequently the rod d^{11} rock. It is this rocking movement of the rod d^{11} which provides the to-and-fro movement of the button holder or clamp transversely to the length of the bed-plate. Obviously by adjusting the relation of the rod d^{11} to the socket-piece d^{13} the button holder or clamp may be differently positioned with reference to the bed-plate. The rocking motion of the rod d^{11} is produced by means of a cam-plate d^{18} , provided with an oblique slot d^{19} , this plate being reciprocated once in each direction for every one of those stitches which will be made transversely to the length of the bed-plate. Preferably there will be a steadiment for the lower portion of the rod d^{11} , and consequently I have shown attached to it in any suitable manner—as, for instance, by a set-screw d^{20} —a collar d^{21} , which is provided with a finger d^{22} , working in a slot formed vertically in the head of the sewing-machine.

Before describing the means whereby the cam-plate d^{18} is operated I will give a few words of explanation as to the rod d^{17} . It is supported in bearings formed in the top and bottom of the chamber formed in the left-hand end of the head of the sewing-machine, so as to be free to slide vertically. Beneath the top of the chamber and above a collar d^{23} it is surrounded by a spiral spring d^{24} . The collar d^{23} may be secured in different positions by means of a set-screw to suitably adjust the tension upon the spring. The downward movement of the rod d^{17} is limited by the contact of the button holder or clamp with the bed-plate or the fabric supported by the latter. Under the lower end of the rod d^{17} extends a lever d^{25} , which is fulcrumed by a screw d^{26} to a bracket or arm d^{27} , depending from the head of the sewing-machine. By depressing the outer end of the lever d^{25} the rod d^{17} , and consequently the button holder or clamp, will be raised against the resistance of the spring d^{24} . This upward movement is limited by a screw d^{28} , which is connected with the outer arm of the lever and adapted to contact with the bed-plate. Any suitable means may be provided for rocking the lever d^{25} . As

here shown, a rod d^{29} extends from its outer end and may be connected with a treadle.

The cam-plate d^{18} is attached to a supporting-plate d^{30} . These plates d^{18} d^{30} are supported against the side of the head of the sewing-machine by means of a slotted plate d^{31} , which may be secured in place by screws entering the head of the sewing-machine. The plate d^{30} is pivotally connected by means of a screw d^{32} to one end of a rod d^{33} , whose other end is pivotally connected by means of a screw d^{34} to a stud d^{35} , extending from a block fitted to slide vertically in the groove of an arc-shaped lever d^{36} , secured at its lower end to a rock-shaft d^{37} . When the button holder or clamp is to be idle, the stud d^{35} occupies a position coincident with the rock-shaft d^{37} , so that no motion will be imparted by the lever d^{36} to the cam-plate d^{18} . During the time that the button holder or clamp is to have its to-and-fro movement transversely to the length of the bed-plate the stud d^{35} will be adjusted upwardly to its extreme position in order that it may participate in the oscillating movement of the lever d^{36} . Preferably the lever d^{36} will be provided with a stop d^{38} for limiting the upward movement of the stud d^{35} . This stop, as here shown, consists of a longitudinally-slotted plate fitted in the groove of the lever and secured by means of a screw d^{39} , passing through its slot and engaging with a tapped hole in the lever. This plate will be secured in different positions to permit of different adjustments of the stud d^{35} relatively to the lever d^{36} . Thus different amplitudes of the to-and-fro movement of the button holder or clamp may be provided. With the stud d^{35} engages one end of a lever d^{40} , which is fulcrumed at the other end to a screw d^{41} , secured to the head of the sewing-machine. The lever d^{40} is moved up and down by means of a rod d^{42} , connected with it by means of a screw d^{43} . This rod d^{42} extends downwardly through the bed-plate. Between the bed-plate and a collar d^{44} a spring d^{45} surrounds the rod d^{42} . The collar d^{44} is secured by a set-screw, and hence may be adjusted to provide the proper tension on the spring. Preferably the rod d^{42} is made in two parts adjustably secured together, and I have therefore shown its upper part as made bifurcate to embrace the lever d^{40} , and as made to constitute a socket in which the lower part of the rod may engage by means of a set-screw, a jam-nut d^{46} preferably being employed to make a secure union. It will of course be understood that the spring d^{45} has the function of moving the stud d^{35} upward in the lever d^{36} . The downward movement is produced in opposition to the spring.

It will be seen by reference to Figs. 1 and 4 that the rod d^{42} is pivotally connected below the bed-plate by a screw d^{47} to one end of a lever d^{48} , which at the other end is fulcrumed by a screw d^{49} to a bracket R, secured to the under side of the bed-plate. In-

intermediate the ends this lever is provided with a toe or finger d^{50} , coacting with a cam S, this cam being made of a rim extending about half-way around the under side of a disk, the rim being at one extremity inclined and at the other end vertical and being of uniform projection intermediate the ends. It will be readily understood that during about half of the rotation of the disk the cam will operate upon the lever d^{48} to hold the stud d^{35} in a position coincident with the rock-shaft d^{37} , to which the lever d^{36} is affixed, and that during about one-half of the rotation of the disk the spring d^{45} will sustain the stud in its elevated position, so as to participate in the oscillations of the said lever. As a consequence the to-and-fro movements of the button holder or clamp transversely to the length of the bed-plate will occur only during about one-half of the rotation of the said disk. The rock-shaft d^{37} is oscillated by means of a pin f , extending from a lever c^7 into the groove of a cam F, arranged in the head of the sewing-machine and geared by a bevel-gear f' with a bevel-gear f^2 upon the main shaft G of the machine.

The needle-bar C' is supported in a frame c, whose ends work through slots in the top and bottom of the chamber formed at the left end of the head of the sewing-machine. The needle-bar slides vertically in bearings formed in this frame and has affixed to it a collar c' , from which project fingers c^2 , embracing the bar d^{17} . These fingers form a fulcrum upon which the frame may swing horizontally. An arm comprised in the frame is pivotally connected by a screw c^3 , with one end of a rod c^4 , whose other end is pivotally connected by a screw c^5 to a stud c^6 extending from a block fitted to the groove of a lever c^7 , which at the lower end is affixed to the rock-shaft d^{37} . A lever c^8 , fulcrumed to a screw c^9 , which is fastened to the head of the sewing-machine, engages with the stud c^6 for the purpose of shifting it up and down in the groove of the lever c^7 . When shifted to one position, the stud will be coincident with the rock-shaft d^{37} , and then no motion will be imparted by the lever c^7 to the frame c, in which the needle-bar is supported. From this position the stud may be adjusted upwardly to participate in the oscillating movement of the lever. There will preferably be an adjustable stop for determining the position into which the stud may be shifted for this purpose. I have shown an adjustable stop c^{10} , consisting of a plate fitted to the groove of the lever and longitudinally slotted to receive a screw c^{11} , that engages with a tapped hole in the lever.

To the lever c^8 is pivotally connected a rod c^{12} , which preferably will be made in two pieces adjustably connected together by forming one into a screw-threaded socket and providing a screw-thread upon the other. Preferably a jam-nut c^{13} will be used to secure the joint. Upon the rod a collar c^{14} is affixed, and

between it and the base-plate a spiral spring c^{15} surrounds the rod. By this spring the lever c^8 is moved into its uppermost position whenever this is possible. The lower end of the rod is pivotally connected by a screw c^{16} with one end of a lever c^{17} , whose other end is fulcrumed to a screw c^{18} , affixed to the bracket R. Intermediate its ends this lever is provided with a toe or finger c^{19} for bearing upon the cam S. It will be understood that during about half the rotation of the disk upon which the cam is formed the lever c^{17} will be depressed by said cam, so as to depress the stud c^6 into a position coincident with the rock-shaft d^{37} , which forms the fulcrum of the lever c^7 , and that during about a half-rotation of said disk the lever c^{17} will be allowed to rise under the influence of the spring c^{15} , so that the stud c^6 may be shifted into a position to participate in the oscillating movement of the lever c^7 . Of course the levers d^{48} c^{17} are not operated by the cam at the same time unless momentarily at the beginning of the operation of one and the ending of the operation of the other by said cam. Therefore the cam will cause the to-and-fro movement of the button holder or clamp transversely to the length of the bed-plate to occur for one period and the to-and-fro horizontal movement of the needle with the frame c in the direction of the length of the bed-plate to occur at another period, and consequently will cause the sewing first of one set of stitches diametrically of a button and subsequently the sewing of a second set of stitches diametrically of the button, but crossing the first set of stitches—that is, during the to-and-fro movement of the button-holder the needle reciprocates only and the button-holder is at rest during the to-and-fro movement of the needle. Of course either one of these motions may be suspended by clamping in the lever d^{36} or in the lever c^7 the stud which works in said lever in a position coincident with the rock-shaft d^{37} .

The disk carrying the cam S is moved by a ratchet-wheel E, having any desired number of teeth and operated by a pawl e, carried by a pawl-lever e' , having a longitudinally-slotted arm e^2 , which is connected by a screw e^3 with a longitudinally-slotted arm e^4 of a lever e^5 , which is fulcrumed to a screw e^6 , affixed to the bed-plate. The stud e^3 may be adjusted along the slots in the levers e' e^5 for the purpose of varying the throw of the pawl, so as to make a greater or less number of stitches for sewing any button to a fabric. The lever e^5 is bifurcated at one end to embrace a cam e^7 , by which it is oscillated. The shaft carrying the cam e^7 derives motion from the main shaft of the machine.

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

1. In a button-sewing machine, the combination of sewing mechanism comprising a needle-bar and button-holder, said needle-bar and holder being each supported so as to be capable of a to-and-fro movement, means for

producing such to-and-fro movements of the button-holder and needle, and means for alternating such to-and-fro movements of the needle and button-holder, the latter being at rest during the to-and-fro movement of the needle, substantially as described.

2. In a button-sewing machine the combination of sewing mechanism comprising a needle-bar, means for imparting to said bar a reciprocating and also a to-and-fro movement, a button-holder, means for imparting to said holder a to-and-fro movement, a cam and means to actuate the same, and means actuated by said cam for positioning the parts so that the to-and-fro movement of the needle and button-holder will be alternated and the button-holder brought to a position of rest during the to-and-fro movement of the needle and the to-and-fro movement of the needle suspended during the to-and-fro movement of the button-holder, substantially as described.

3. In a button-sewing machine, the combination of a button-holder, and a needle and concomitant parts, of means in connection with said button-holder and needle for producing relative to-and-fro movements between them, first a movement of the needle relatively to the button-holder the latter being at rest during such time and secondly of the button-holder relatively to the needle and in a direction transverse to the first movement so as to produce two sets of stitches crossing each other and extending diametrically of the button, substantially as specified.

4. In a button-sewing machine, the combination of a button-holder and a needle each supported so as to be capable of relatively-transverse to-and-fro movement, levers for producing said to-and-fro movements, rods intermediate said levers and the parts they move, and a cam for alternately shifting said rods into operative coaction with said levers, substantially as specified.

5. In a button-sewing machine, the combination of sewing mechanism and a button-holder, said sewing mechanism comprising a needle-bar; a rock-shaft, two levers affixed to said shaft, means to actuate said levers, a rod intermediate of the needle-bar and one

of said levers, a rod intermediate of the button-holder and the other of said levers, each rod being connected with its lever so as to be capable of adjustment thereon to a position coincident with the rock-shaft, and means for alternately adjusting the point of connection between the rods and their respective levers, substantially as described.

6. In a button-sewing machine, the combination of sewing mechanism and a button-holder, said sewing mechanism comprising a needle-bar; a rock-shaft, two levers affixed to said shaft, means to actuate said levers, a rod intermediate of the needle-bar and one of said levers, a rod intermediate of the button-holder and the other of said levers, each rod being connected with its lever so as to be capable of adjustment thereon to a position coincident with the rock-shaft, a cam for alternately adjusting the point of connection between the rods and their respective levers, and means to cause the button-holder to vibrate at an angle to the direction of vibration of the needle-bar, substantially as described.

7. In a button-sewing machine, the combination of sewing mechanism and a button-holder, said sewing mechanism comprising a needle-bar; a rock-shaft, two levers affixed to said shaft, means to actuate said levers, a rod intermediate of the needle-bar and one of said levers, a rod intermediate of the button-holder and the other of said levers, each rod being connected with its lever so as to be capable of adjustment thereon to a position coincident with the rock-shaft, a cam for alternately adjusting the point of connection between the rods and their respective levers, means to vary the amplitude of the movements of the needle-bar and work-holder, and means to cause the button-holder to vibrate at an angle to the direction of vibration of the needle-bar, substantially as described.

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

JAMES T. HOGAN.

Witnesses:

JOHN J. SHAW,
N. C. TEMPLETON.