(No Model.)

3 Sheets—Sheet 1.

L. J. DRISCOLL.

BUTTON SEWING MACHINE.

No. 395,384. Patented Jan. 1, 1889.

Fig. 1.

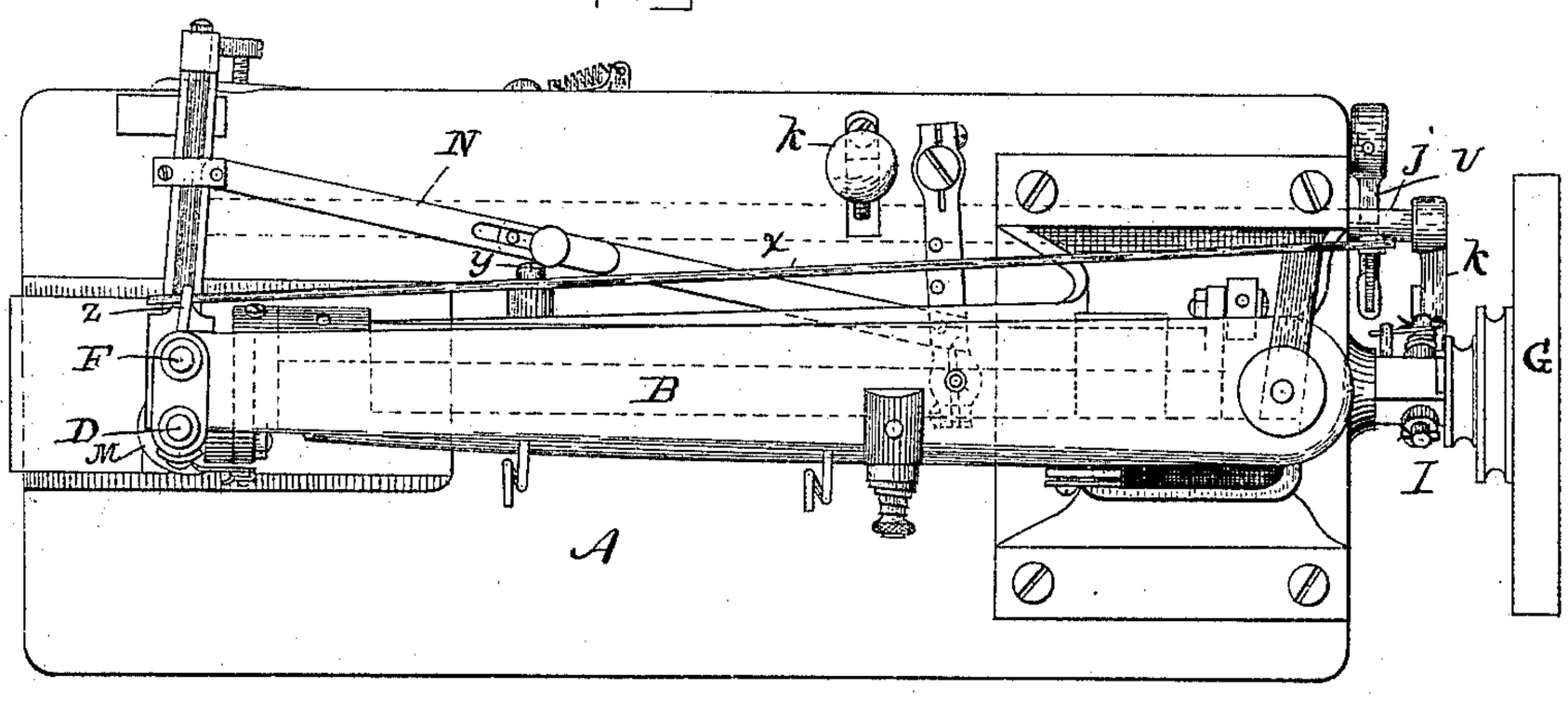
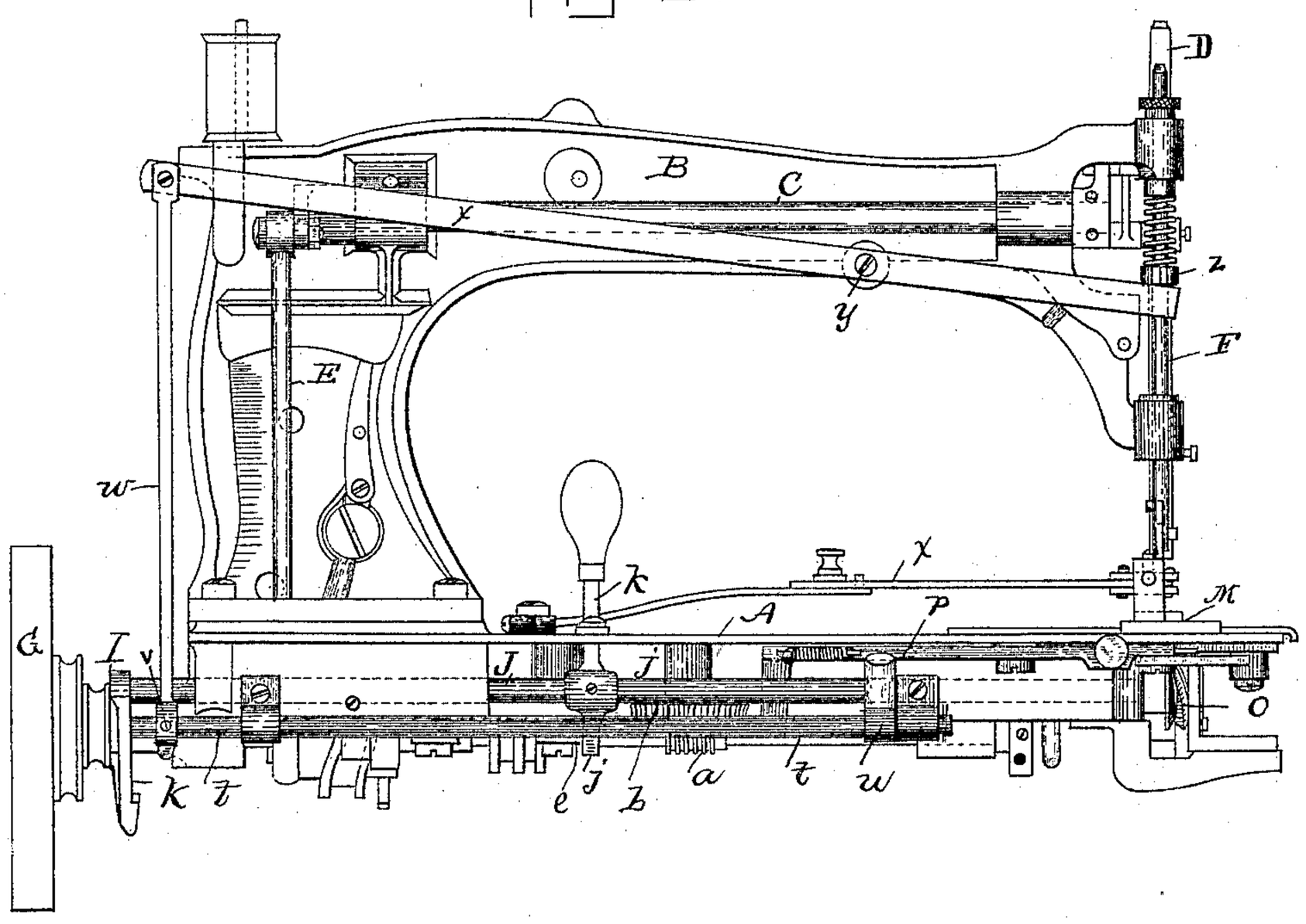


Fig. 2.



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(No Model.) 3 Sheets—Sheet 2.

L. J. DRISCOLL.

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Fig. 3.

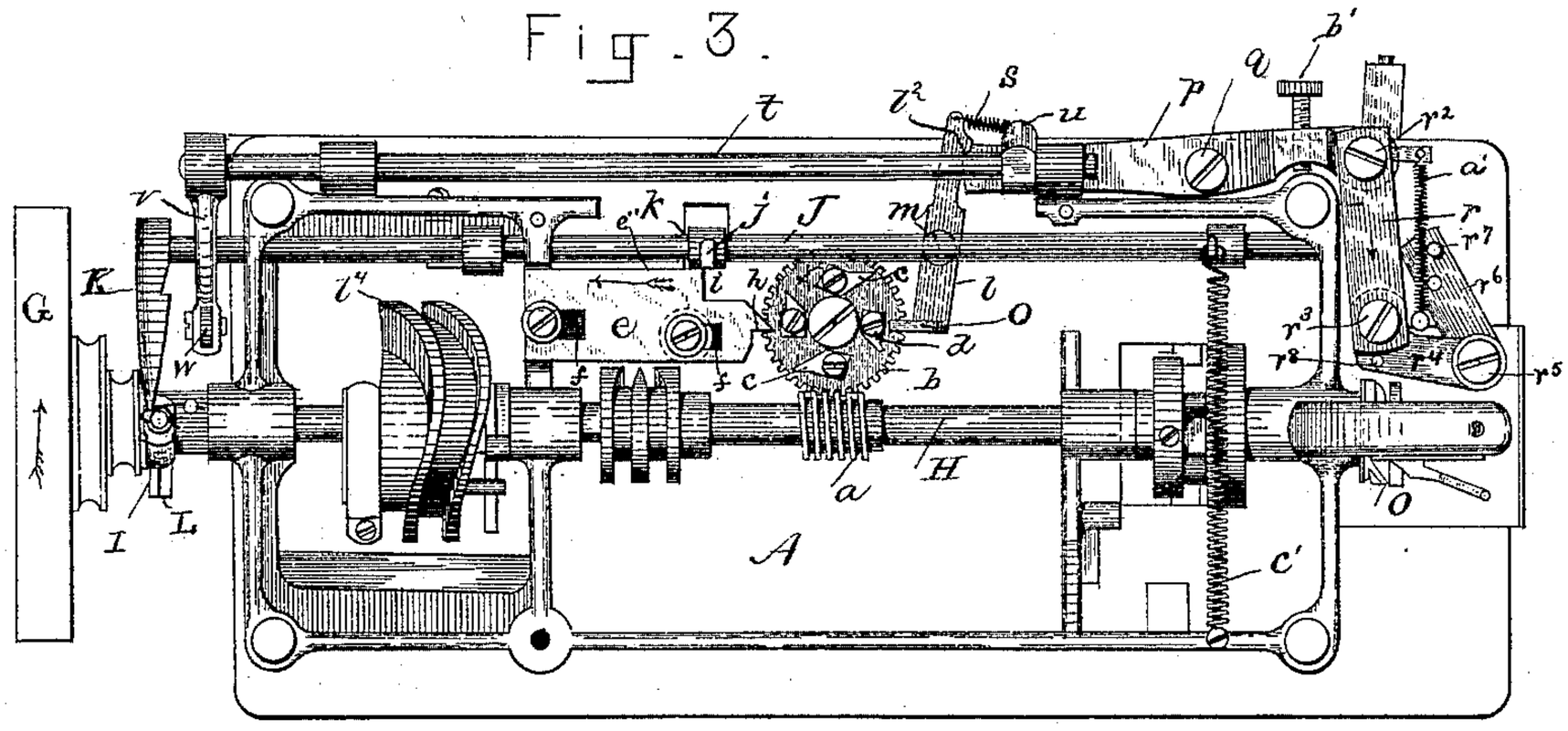
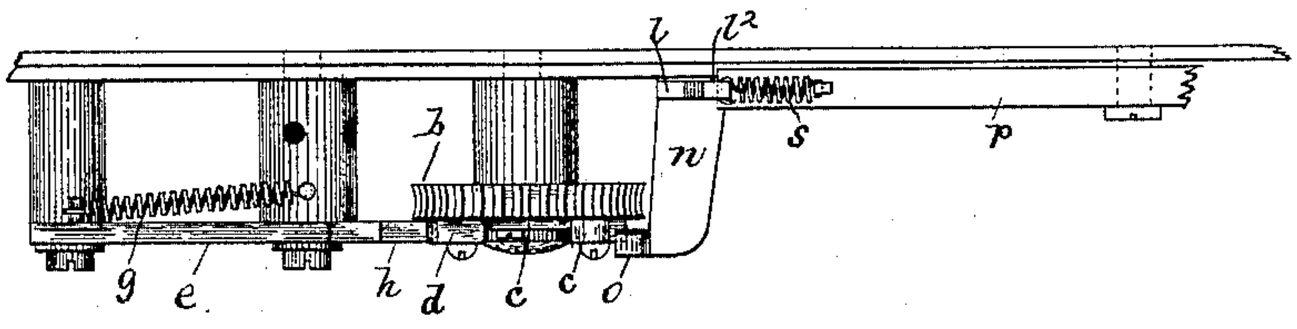


Fig. 4.



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3 Sheets—Sheet 3.

L. J. DRISCOLL.

BUTTON SEWING MACHINE.

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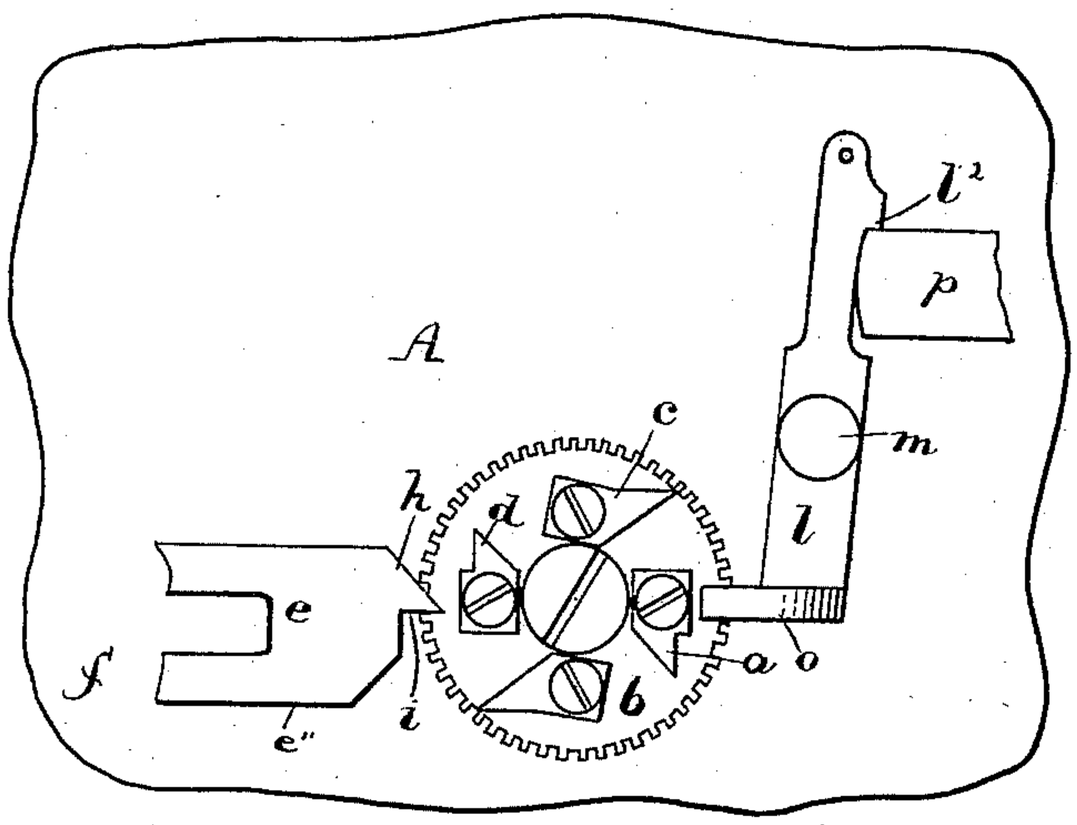

Fig. 5.

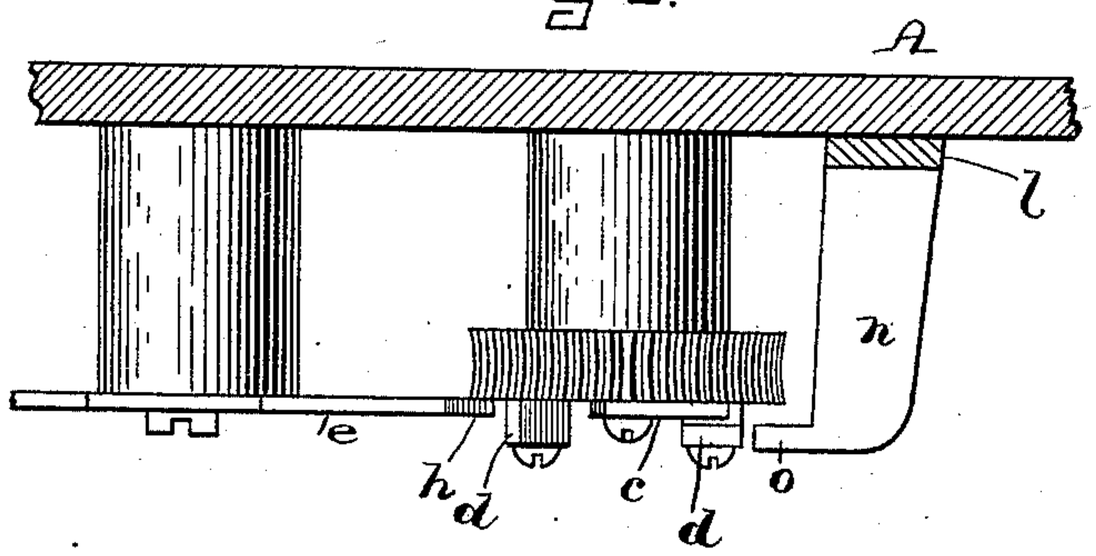

Fig. 6.

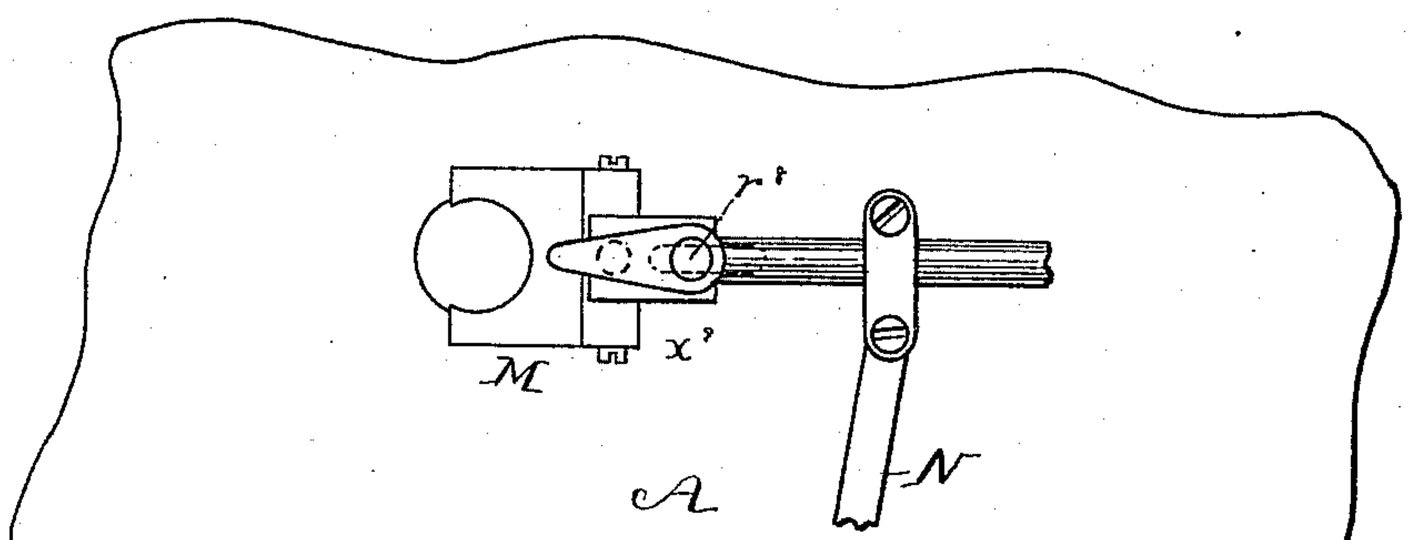

Fig. 7.

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UNITED STATES PATENT OFFICE.

LAWRENCE J. DRISCOLL, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE UNION BUTTON SEWING MACHINE COMPANY.

BUTTON-SEWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 395,384, dated January 1, 1889.

Application filed September 4, 1886. Serial No. 212,677. (No model.)

To all whom it may concern:

Be it known that I, LAWRENCE J. DRISCOLL, of Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Button-Sewing Machines, of which the following is a specification.

My invention relates to button-sewing machines, and is an improvement upon certain devices shown and described in the patent granted to me December 16, 1884, No. 309,209.

It is the object of my invention to simplify and otherwise improve the mechanism connected with the main shaft, whereby when the machine is operated to sew on a button having four holes the button-carrier may be shifted after a certain number of stitches have been taken in two holes of the button to bring the other two holes into proper position to have the needle stitch therethrough.

It is also the object of my invention to improve the means whereby the shipper-rod is automatically actuated to stop the machine after a predetermined number of stitches have been taken through the holes of the button and the fabric sufficient to attach the button to such fabric.

It is also the object of my invention to provide means connected with the presser-foot and button-carrier, or devices for raising the same, whereby when the button-carrier and presser-foot are raised for the purpose of inserting a button and manipulating the fabric and it is desired to operate the machine to sew on a four-hole button said button-carrier may be automatically "set" so as to have the needle operate first through two holes or eyes of the button and be in position to be shifted to have the needle operate through other eyes of the button, as aforesaid.

Having thus indicated the nature and purposes of my invention, I will now proceed to fully explain its construction and operation, having reference to the accompanying drawings, and to the letters of reference marked thereon, forming a part of this specification, the invention being particularly pointed out in the claims hereinafter made.

Of the drawings, Figure 1 represents a top plan view of a button-sewing machine embodying my invention. Fig. 2 represents a side view of the same. Fig. 3 represents a bottom plan view of the same, and Fig. 4 is a detail view hereinafter referred to. Figs. 5 and 6 are detail views of the pattern-wheel and associated parts. Fig. 7 is a detail view of the button-holder.

Similar letters of reference indicate similar parts in all of the figures.

A represents the bed-plate; B, the over-hanging arm; C, the needle-bar-actuating shaft; I, the clutch mechanism for connecting the fly-wheel with and disconnecting it from the main shaft; J, the shipper-rod; K, an arm rigidly secured to or on the shipper-rod, adapted to be operated so as to bring it within the path of the latch or dog L on the main shaft to disconnect the same from the fly-wheel; M, the button holder or carrier; N, a lever or link above the bed-plate and immediately connected with the button-carrier for actuating the same, so that the needle will operate first through one hole and then the other of any two holes through which it may be desired to take stitches, and O the bobbin and its associated devices.

The foregoing parts may all be of the form and construction represented in my patent, No. 309,209, aforesaid, and other parts necessary to completely equip a button-sewing machine, not particularly described hereinafter and in no wise modified or changed by me, may be the same as shown and described in said patent, which may be referred to for a fuller understanding of my invention.

In carrying out my improvements I provide the main shaft H with a worm, *a*, the threads of which intermesh with the teeth of a worm-gear, *b*, termed by me a "pattern-wheel," which wheel is provided on its lower face with small triangular pattern-lugs or cam-pieces *c d*. A slide, *e*, is attached to studs or posts extending down from the bed-plate, so as to have a longitudinal movement thereon to the extent permitted by the slots *f*, through which one of the attaching-screws or like contrivances extend, the spring *g*, attached by one end to the bed-plate and by the other to said

slide, tending to hold the latter in a position toward the wheel *b*, so that in the rotation of said wheel the inclined faces of cam-pieces *c* will come in contact with the inclined end of finger *h*, formed on the forward end of slide *e*, and move said slide in the direction of the arrow marked thereon in Fig. 3.

Slide *e* has a notch, *i*, formed in its rear edge at its forward end, into which the lower end, *j*, of the locking-lever *k*, secured on the shipper-rod J, is permitted to drop when slide *e* is moved in the direction of the arrow, as aforesaid, it being understood that the end *j* of the shipper-rod, when not permitted to drop in the notch *i* of the slide *e*, will ride on the rear face, *e''*, of said slide, as shown in Figs. 2 and 3.

l represents a lever pivoted at *m* to the bed of the machine and having a downwardly-extending arm, *n*, formed on its inner end, the lower end of which arm is provided with a laterally-projecting finger, *o*, extending out of the path of travel of the cam-pieces *d*. (See particularly Figs. 5 and 6.) Lever *l* is provided on its forward end with a hook or catch, l^2, (shown in Figs. 3 and 5,) adapted to hook over or catch upon the adjacent end of a lever, *p*, as represented in Figs. 3 and 5, pivoted at *q* to the bed of the machine, the opposite end of which lever *p* is pivotally connected, as at r^2, to one end of a link, *r*, the latter being pivoted at its other end, as at r^3, to a link, r^4, which in turn is pivoted, as at r^5, to a vibratory link or lever, r^6, pivoted at r^7 to the bed of the machine.

r^8 indicates the pivot upon which the button-carrier vibrates, and whereby it is connected to link r^4, so that as link *r* is shifted, as before explained, the button-carrier will be shifted also, said pivot r^8 extending through a slot in the needle-plate or bed of the machine, as indicated in dotted lines at x^9, Fig. 7.

A spring, *s*, connected by one of its ends to the outer end of lever *l* and at its other end to the adjacent end of lever *p*, tends to operate said end of lever *l* to draw its hook or catch l^2 over the contacting end of lever *p*. (See Fig. 3.) As shown, locking lever or handle *k* extends through a slot in and above the bed of the machine, and is rigidly secured below the bed to the shipper-rod J.

t represents a rod extending parallel with shipper-rod J and adapted to rock in suitable bearings secured to the bed of the machine, to the forward end of which rod *t* is rigidly secured a finger, *u*, adapted at its upper end to rest against the outer edge of the rearward end of lever *p*. (See Fig. 2.) At its opposite or rear end rod *t* is provided with an arm, *v*, extending horizontally toward the center of the machine, and connected at its inner end by a link, *w*, with the rearward end of a lever, *x*, pivoted at *y* to the overhanging arm and having its forward end extending under a lug or projection, *z*, extending out from the presser-bar, as shown in Figs. 1 and 2.

It is to be noticed that the points of the cam-pieces *c* extend outward nearer to the periphery of the wheel *b* than do the cam-pieces *d*, so that the latter may pass the point *h* of slide *e* without coming in contact with and actuating the same, and that the cam-pieces *d* are of greater depth or thickness than cam-pieces *c*, so that the latter may pass above finger *o* of arm *n* without coming in contact with or influencing the same, all as clearly portrayed in Figs. 5 and 6.

A pin (not shown) extends down from lever l^3 (see Fig. 1) through the bed-plate into the groove in cam l^4 on main shaft H. Lever l^3 is connected with button-carrier M through the medium of lever or link N.

The operation of my improvements thus far described will now be readily understood. It being supposed that a four-hole button has been placed in the button-carrier, and that one of the cam-pieces *c* on the pattern-wheel *b* has just passed the point *h* of slide *e*, and that otherwise the parts are in the position in which they are represented in Figs. 3, 5, and 6, by rotating the fly-wheel G in the direction of the arrow marked thereon, and consequently the main shaft in the same direction, the machine will be operated to sew first through one and then the other of two holes in a four-hole button until an inclined cam-piece, *d*, on the wheel *b* comes in contact with the finger *o* on arm *n* of lever *l*, when said lever will be actuated to throw its outer or catch end, l^2, out of engagement with the adjacent end of lever *p*, which lever will be moved by spring *a'* to actuate link *r* and attached parts, hereinbefore described, and through the same the button holder or carrier, so as to bring the other two holes of the button in line with the needle, when the operation of sewing proceeds, as before, through said last-mentioned holes of the button. Set-screw *b'* limits or regulates the extent of throw forward of lever *p*, occasioned by the operation of spring *a'*. When the sewing has progressed through the last-mentioned holes of the button and until wheel *b* has been turned to bring the inclined end of one of the cam-pieces *c* into contact with the end *h* of slide *e*, said slide will be moved rearwardly or in the direction of the arrow marked thereon, so as to permit the lower end, *j*, of locking-lever *k*, fast on shipper-rod J, to drop into notch *i*, said rod being rocked so as to cause this operation by means of spring *c'*. (See Fig. 3.) This act will bring arm K in the line of travel of dog L of the clutch mechanism I and disconnect the main shaft from the driving means, and thus stop the machine. This completes the sewing on of a four-hole button. The operator now draws down the rear end of lever *x*, which operation raises the presser-bar and its presser-foot and button-carrier for the insertion of a new button, and at the same time through the medium of the link *w*, attached to the inner end of arm *v*, the other end of which is secured to rod *t*, rocks said rod *t*, so as to cause the upper end of

finger *u* to press the rearward end of lever *p* inward, so as to permit the contacting hooked end of lever *l* to snap thereover and hold the parts in the position represented in Figs. 3 and 5. A button having been placed in position in the button-carrier and it being desired to again start the machine to repeat the operation of sewing on a button, as before mentioned, the upper end of shipper-lever *k* is moved inward, thus rocking the shipping-rod, so as to disengage arm K from dog L, when the clutch mechanism will reconnect the main shaft H with the driving means, and the slide *e* will be moved by spring *g* in a direction opposite the arrow marked thereon in Fig. 3, and the lower end, *j*, of shipper-lever *k* will rest on the rear face of slide *e*, holding the machine in operative position.

It is obvious that by replacing cam-pieces *d* with cam-pieces *c*, and dispensing with the uss of the button-carrier-shifter means, and properly adjusting the position of the button-carrier four two-holed buttons may be sewed on at each revolution of the pattern-wheel *b* in the machine as here organized, the machine being stopped after each two-hole button has been sewed on. Other changes in the form and arrangement of parts within the limits of mechanical skill may be made without departing from the nature or spirit of the invention.

It has not been considered necessary to explain more fully the operation of the means for moving the button-carrier, so that the needle will descend first through one eye of the two presented to it for its operation therethrough, and then the other, or to describe in detail the other parts of the machine to which my invention does not extend, as all this is, as has been said, the same as disclosed in my before-mentioned patent.

It may be stated that the worm on the main shaft, and the worm-wheel provided with cams or wipers, which worm-wheel is directly operated from the main shaft by said worm, as well also as the contrivances immediately connected with the worm-wheel, are important features of my invention, being simple in construction, compact in form, and certain in operation.

I am aware that it has been proposed in button-hole sewing-machines to employ a cam-wheel provided with devices adapted to operate to trip the mechanism connected with stop-motion contrivances; but such cam-wheel was operated by means of a ratchet-wheel and pawl and devices intermediate of the pawl and a cam on the main shaft. These devices, unlike my improvements, are complicated in character, uncertain in operation, and liable to become disarranged or disorganized.

Having thus described my invention, what I claim is—

1. A sewing mechanism, a button-carrier, mechanism to reciprocate it to present first one hole of a button and then another to the needle, locking devices consisting of a lever, *l*, a lever, *p*, and links or levers intermediate of the lever *p* and button-carrier to hold the latter in one reciprocating position, a spring to move the button-carrier to a second reciprocating position, a rotary shaft, a worm thereon, a wheel engaging and operating said worm, and a cam-piece or wiper on said wheel, said cam-piece being constructed and arranged to engage the lever *l*, whereby said lever may be moved to release the locking devices and permit the spring to move the button-carrier into the second-mentioned position, substantially as hereinbefore set forth.

2. In a button-sewing machine, the main shaft, means to drive the same, a clutch mechanism adapted to be operated to connect the driving means with the main shaft and disconnect it therefrom, a worm on the main shaft, a gear provided with a cam-piece or wiper engaged with and operated by said worm, a shipper-rod provided with devices connected with the clutch mechanism to hold the same out of operative position and allow the driving means to become connected with the main shaft, a shipper lever or handle, *k*, on said rod, a spring to rock said shipper-rod to cause its connected devices to operate said clutch mechanism to disconnect the driving means from the main shaft, and a slide, *e*, constructed and arranged to engage said shipper lever or handle *k* to lock or hold said shipper-rod and its connected devices against the tension of said spring and out of operative position with respect to the driving means, said slide being also arranged with respect to the cam-piece or wiper on said worm-wheel to be engaged thereby and be moved to permit the shipper lever or handle to be released or unlocked, and its connected devices to be moved by said spring into operative position, all combined substantially as hereinbefore set forth.

3. The sewing mechanism, a button-carrier and mechanism to move it to present first one hole of a button and then another to the needle, locking devices to hold the button-carrier in one reciprocating position, a spring to move the button-carrier into a second reciprocating position, a lever pivoted to the machine constructed and arranged to engage said button-carrier to raise the same, a rod provided with a finger constructed to engage said locking means and connected devices to move the same into the first-mentioned position, and a link connecting said rod with said lever, whereby when the latter is operated to raise the button-carrier said rod will be rocked and said finger operated, as before stated, all combined substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 25th day of August, 1886.

LAWRENCE J. DRISCOLL.

Witnesses:

ARTHUR W. CROSSLEY,

C. F. BROWN.