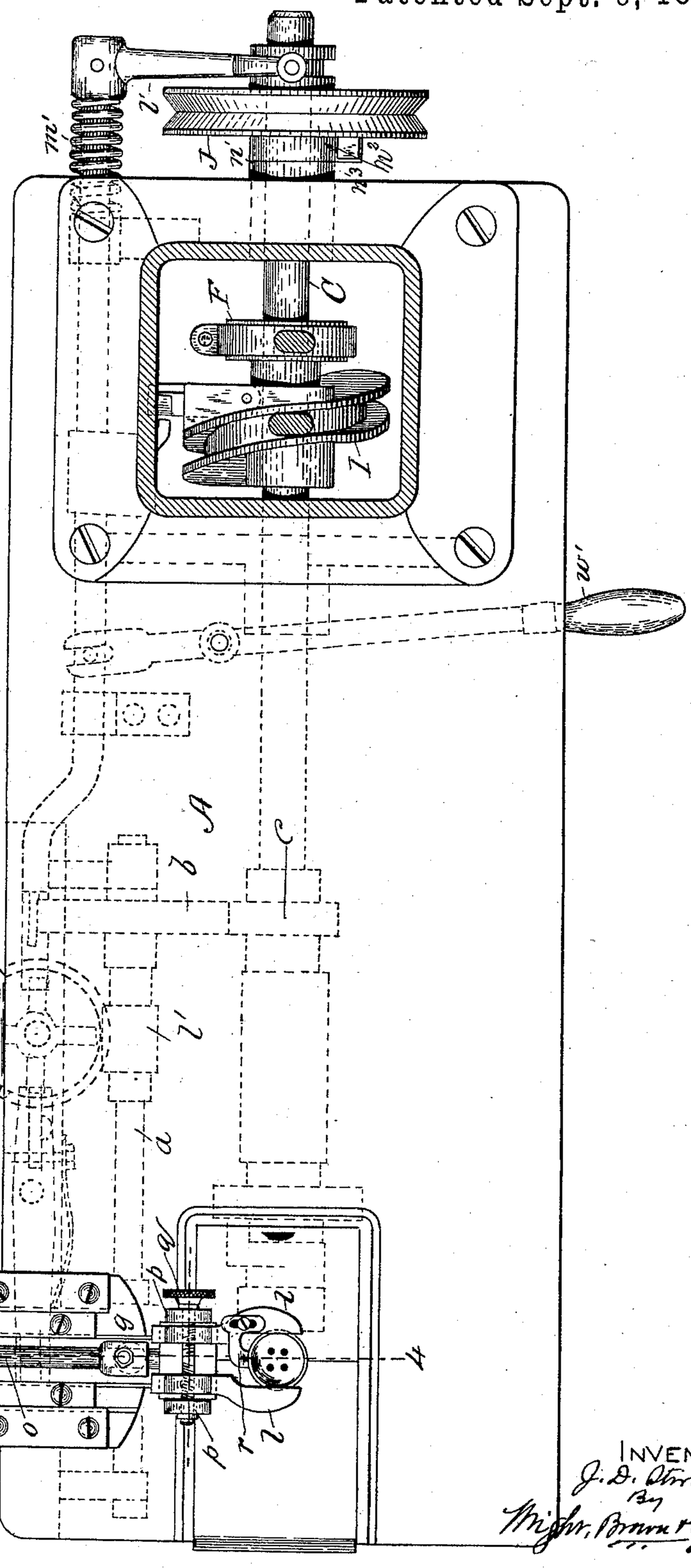
(No Model.) 4 Sheets—Sheet 1.

# J. D. STIRCKLER.

## MACHINE FOR SEWING ON BUTTONS.

No. 436,321. Patented Sept. 9, 1890.

Fig. 1.




WITNESSES:
A. D. Harrison.
W. B. Ramsay.

INVENTOR:
J. D. Stirckler
By
Wm. Brown Lowsley
Atty.

(No Model.)

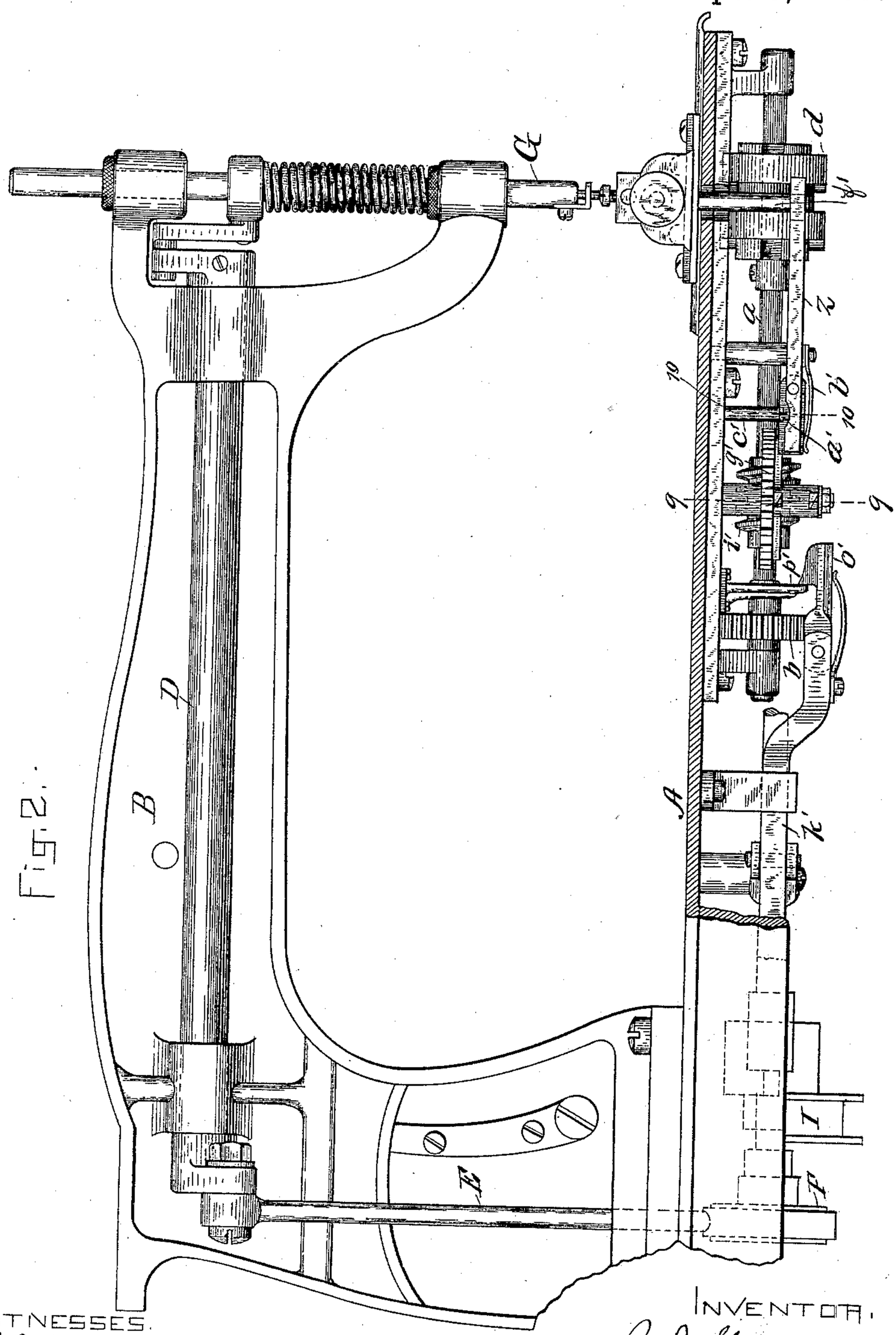
4 Sheets—Sheet 2.

# J. D. STIRCKLER.

## MACHINE FOR SEWING ON BUTTONS.

No. 436,321. Patented Sept. 9, 1890.

Fig. 2.




WITNESSES.
A. D. Harrison.
W. C. Ramsay.

INVENTOR.
J. D. Stirckler.
By
Wight, Brown & Crossley.
Attys.

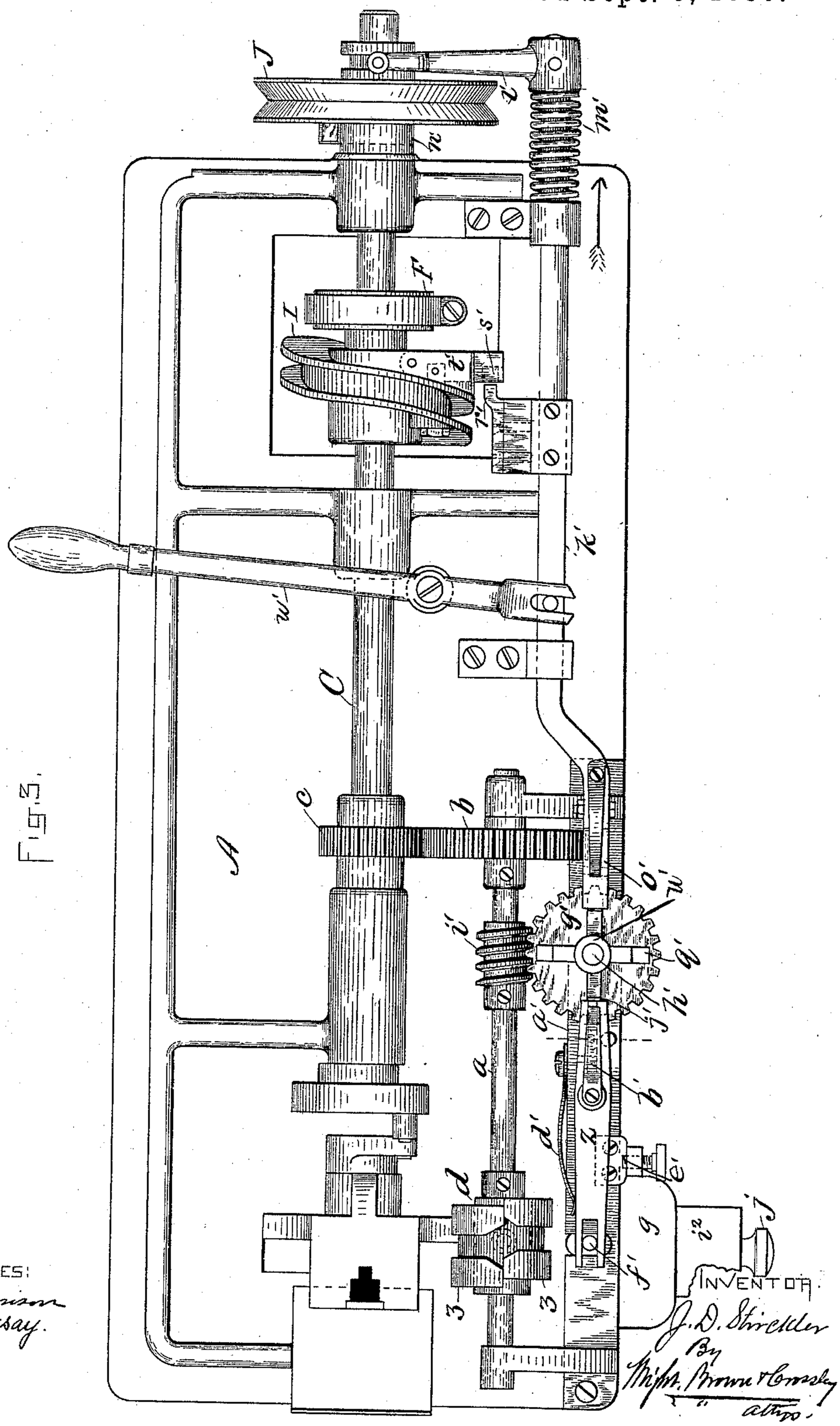
(No Model.) 4 Sheets—Sheet 3.

# J. D. STIRCKLER.

## MACHINE FOR SEWING ON BUTTONS.

No. 436,321. Patented Sept. 9, 1890.

Fig. 3.




WITNESSES:
A. D. Harrison
W. E. Ramsay.

INVENTOR.
J. D. Stirckler
By
Whitt, Brown & Crossley
attys.

(No Model.) 4 Sheets—Sheet 4.

# J. D. STIRCKLER.

## MACHINE FOR SEWING ON BUTTONS.

No. 436,321. Patented Sept. 9, 1890.

Fig. 7.

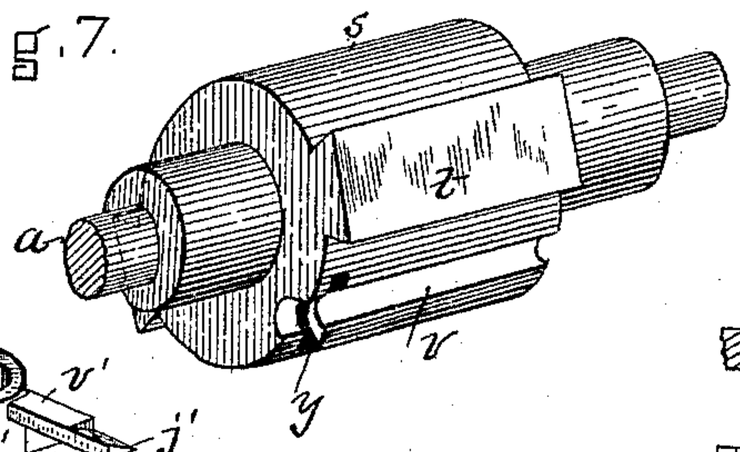



Fig. 10.

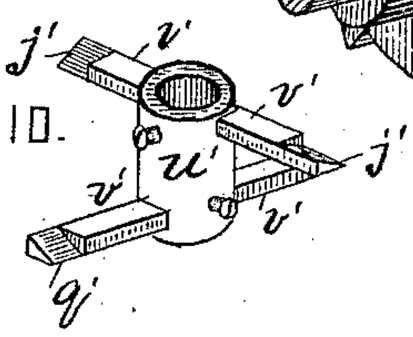



Fig. 9.

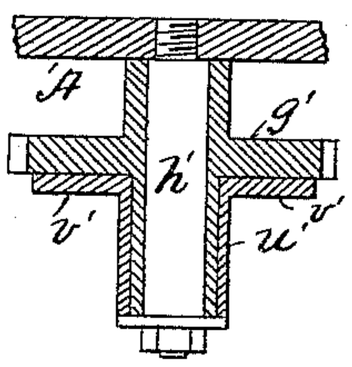



Fig. 4.

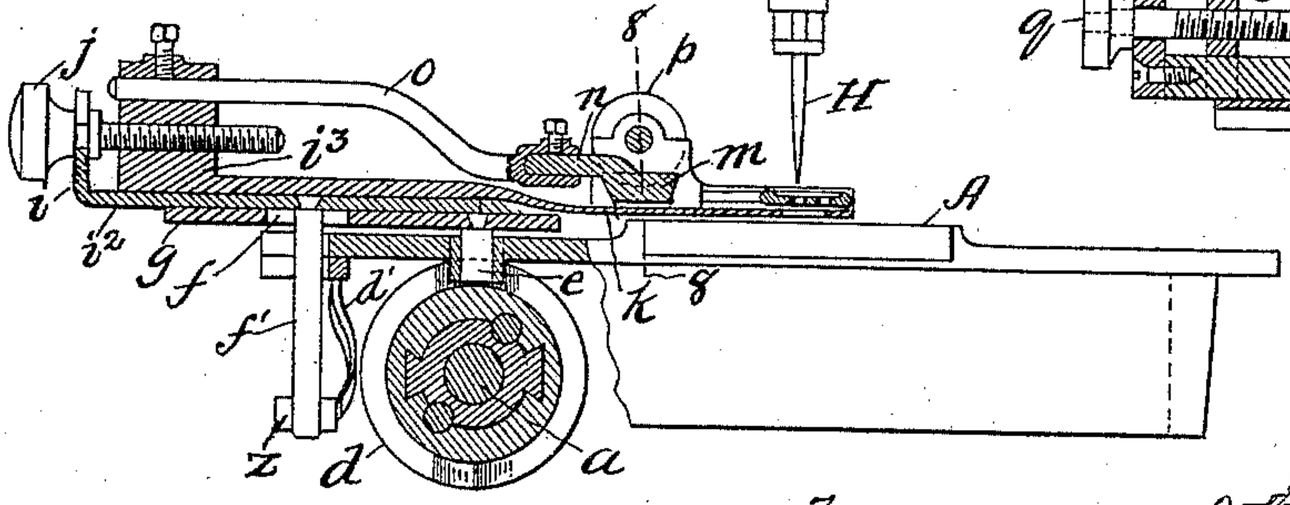



Fig. 8.

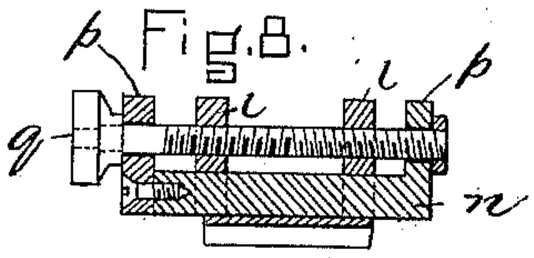



Fig. 8.*

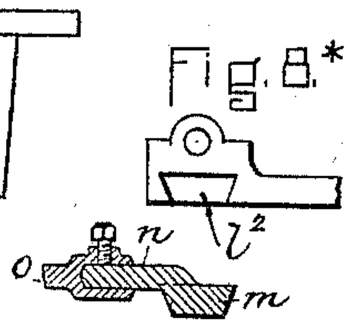



Fig. 5.

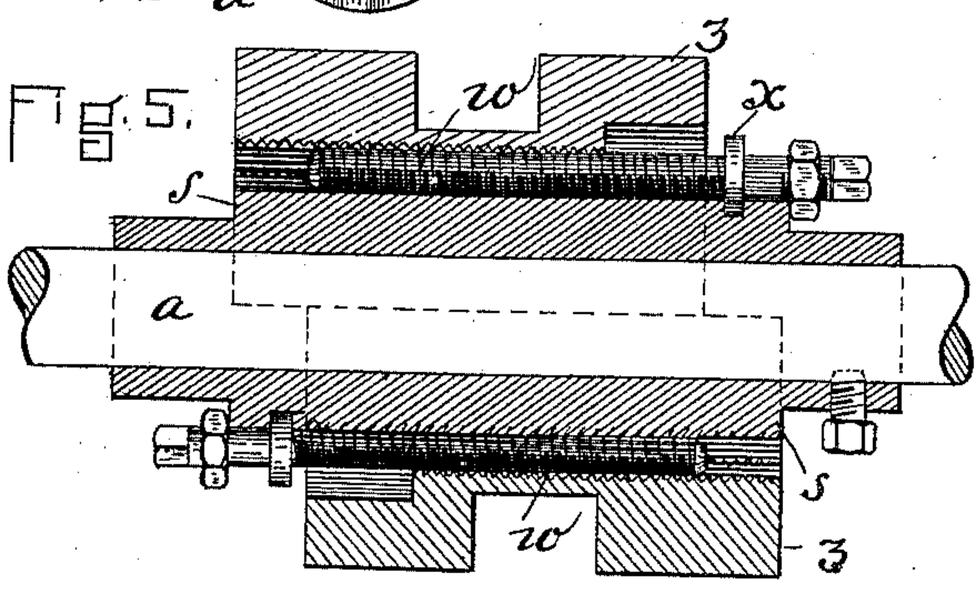



Fig. 11.

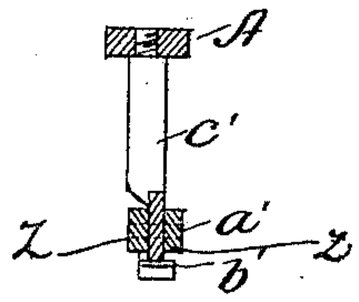
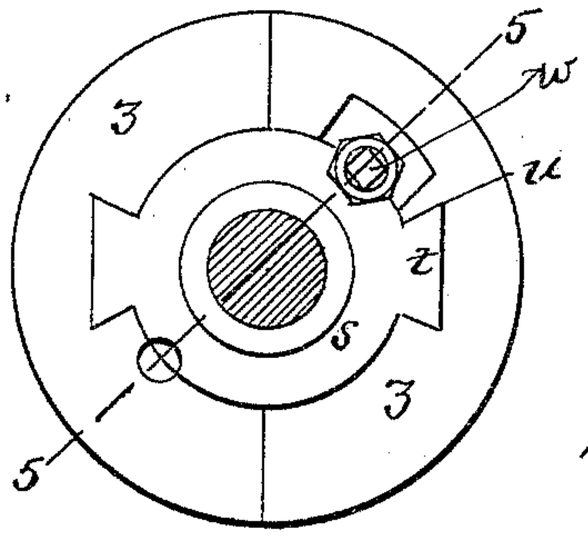



Fig. 6.




WITNESSES:
A. D. Hansom.
W. B. Ramsay.

INVENTOR:
J. D. Stirckler.
By
Wight, Brown & Crosley
" attys.

# UNITED STATES PATENT OFFICE.

JOHN D. STIRCKLER, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE UNION BUTTON SEWING MACHINE COMPANY, OF MASSACHUSETTS.

## MACHINE FOR SEWING ON BUTTONS.

SPECIFICATION forming part of Letters Patent No. 436,321, dated September 9, 1890.

Application filed December 7, 1888. Serial No. 292,904. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN D. STIRCKLER, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Button-Sewing Machines, of which the following is a specification.

It is the object of my invention, first, to provide improved means for holding the button and for adjusting the button-holder so as to properly "position" the button with respect to the needle; second, to provide improved means for operating the button-holder so as to present first one eye or hole and then another to the needle or sewing mechanism; third, to provide improved means for adjusting the extent or throw of the vibrating movement of the button-holder; fourth, to provide improved means for shifting the position of the button-holder so that after sewing through two eyes of a four-hole button the other two eyes may be properly presented to the needle or sewing mechanism; fifth, to provide improved means for stopping the machine after completing the sewing on of a button with the needle in raised position, and, sixth, to provide other improvements incidental to the foregoing.

I will first proceed to describe my invention, in connection with the accompanying drawings and letters of reference marked thereon, and then particularly point out and distinctly claim the improvements comprising said invention.

In the drawings, Figure 1 is a top plan view of the bed and its adjuncts, the standard supporting the overhanging arm and the parts contained therein being shown in horizontal section. Fig. 2 is a side view of a complete machine embodying my improvements; parts of the bed and frame being broken away. Fig. 3 is a bottom plan view of the machine. Fig. 4 is a sectional view on the line 4 4, Fig. 1. Fig. 5 is a sectional detail taken on the line 5 5 of Fig. 6. Fig. 6 is an end view of the button-holder-operating cam. Fig. 7 is a perspective view of the hub of the button-holder-operating cam. Fig. 8 is a sectional detail on the line 8 8. Fig. 8* illustrates details, detached, of the button-jaw-adjusting mechanism, Fig. 4. Fig. 9 is a sectional detail on the line 9 9, Fig. 2. Fig. 10 is a detail in perspective, hereinafter more particularly described. Fig. 11 is a sectional detail, likewise more fully referred to hereinafter.

Similar letters of reference designate similar parts or features, as the case may be, wherever they occur.

In the drawings, A designates the bed of the machine; B, the overhanging arm; C, the main shaft; D, the needle-bar-operating shaft; E, the pitman connecting the eccentric F on the main shaft with the needle-operating shaft; G, the needle-bar; H, the needle; I, the take-up-operating cam on the main shaft, and J the band-pulley adapted to run loosely on the main shaft and to be moved longitudinally thereon to a limited extent. These parts, as also the shuttle and its supporting and operating adjuncts on the forward end of the main shaft, may be of common or suitable construction and function, and hence need not be further explained herein.

Beneath the bed A and arranged in suitable bearings parallel with the main shaft C is a counter-shaft *a*, provided with a gear-wheel *b*, engaged and driven by a gear-wheel *c* on the main shaft, the construction of the two gears being such that it will require two rotations of the gear-wheel *c* to effect a single rotation of gear *b* and its shaft *a*.

Counter-shaft *a* is provided on its forward end with a cam *d*, consisting of a cylindrical body provided in its periphery with a groove into which extends a stud *e*, projecting down from the button-holder, the latter device being fulcrumed at *f* on a stud *f'*.

The form of the groove in cam *d* is such as to operate on stud *e* with the result of vibrating the button-holder, so as that if a two-eye button should be placed in the holder in proper relationship to the reciprocating needle, first one eye and then the other would be presented to the said needle.

*g* designates the base-plate of the button-holder, consisting of a broad piece of sheet metal provided at its sides with gibs *h* to guide the button-holder proper in its adjustments transversely of the bed of the machine, the but-

ton-holder proper embracing a bed-plate $i^2$, having a vertical projection $i$ at the rear, in which projection is journaled a thumb-bolt $j$, having a screw-threaded connection at its inner end with a block $i^3$, connected with the button-grasping parts, whereby the aforesaid transverse adjustment of the button-holder on the bed-plate $i^2$ is effected.

$k$ designates a thin plate extending forward from the block $i^3$ and affording a vertical support for the button, the latter being grasped or held at its edge by the jaws $l\,l$, adjustable laterally in order to suit them to buttons of varying size. This lateral adjustment of the jaws $l\,l$ may be accomplished in several ways, that here shown consisting of providing the shanks of the jaws with dovetail grooves $l^2\,l^2$, adapted to fit over a dovetail projection $m$ of a block $n$, secured to the forward end of a rod or bar $o$, connected at its rear end with the block $i^3$, said block $n$ being provided with ears or lugs $p$, in which is journaled a thumb-bolt $q$, provided with right and left screw-threads, one of which screw-threads engages the shank of one jaw and the other thread the other jaw, so that by turning the thumb-bolt $q$ the jaws may be adjusted toward or from each other, as will be clearly understood by an inspection of Figs. 1, 4, and 8 of the drawings.

A finger $r$ is adjustably secured to one of the jaws and arranged in such position as to afford a back stop for the button—that is, a stop against which the rear edge of the button may come when placed in position in the holder.

As is shown, the cam $d$ is made in two parts 3 3, each of which is adjustable with respect to the other to vary the movement of the button-holder to meet the requirements of various sized buttons.

As here represented, $s$ designates a hub secured to the counter-shaft $a$, which hub is provided with a dovetail projection $t$, which is is adapted to be received in a dovetailed groove $u$, formed on the inner side of each part 3 3 of the cam.

The hub $s$ is provided on opposite sides with a half-round groove $v$, in which a screw $w$ is adapted to turn, said screw being provided on its outer end with a flange $x$, engaging a groove $y$, formed in the hub $s$. Opposite groove $v$ is a like screw-threaded groove formed in one of the adjustable parts 3 of cam $d$, so that by turning screws $w$ the two parts 3 3 of cam $d$ may be adjusted in opposite directions on the hub $s$, so as to vary the throw of the button-holder, as will appear obvious from what is shown in Figs. 2, 4, 5, 6, and 7.

Fulcrum-stud $f'$ of the button-holder extends down through a slot formed in the base-plate $g$ and bed A, and is engaged at its lower end by the forward end of a lever $z$, the rear end of which lever is bifurcated, and pivoted in said bifurcation is a latch $a'$, which is held upward in normal position by a spring $b'$, secured at one end to the lever $z$ and bearing at its free end against the latch $a'$. $c'$ designates a stud extending down from the bed of the machine to position behind the latch $a'$ when the latter is in its normal position, as fully shown in Fig. 2 and in the detail view, Fig. 11.

A spring $d'$ is secured at one end to the bed of the machine and bearing at its free end against the inner side of the forward portion of lever $z$, whereby said lever and parts connected therewith will be maintained in the position in which they are shown in Fig. 3, in which position the button-holder may be supposed to so hold a four-eye button as to first present one eye and then another of two or a pair of eyes of the button to the needle H. Should latch $a'$ be depressed, however, so as to pass below stud $c'$, (see Fig. 11,) spring $d'$ will operate to move lever $z$ on its fulcrum until the forward end is brought into contact with adjustable stop $e'$, which will result in moving the button-holder through the medium of stud $f'$ backward on the base-plate $g$ between the gibs $h$, so as to present first one hole and then the other of the other pair of eyes of the four-hole button to the needle.

The tripping of latch $a'$ may be effected by various means. That here shown as employed will next be described. $g'$ designates a gear journaled on a stud $h'$, connected with the bed A, which gear is engaged and rotated by a worm $i'$ on the counter-shaft $a$, and is provided with cams or wipers $j'$, as hereinafter described, so arranged as that when gear $g'$ is rotated said cams or wipers will be brought into contact with the upper face of latch $a'$ and depress the latter to permit spring $d'$ to turn lever $z$ on its fulcrum and shift the button-holder, as before explained.

After the sewing on of a button has been completed it is necessary to stop the machine with the needle in raised position, and this is accomplished by the means I will now explain. $k'$ designates a bar or rod longitudinally movable in bearings connected with the bottom of the bed and provided at its rear end with a laterally-projecting forked arm $l'$, engaging the grooved hub of driving-pulley J, which pulley is arranged to rotate on main shaft C and to be longitudinally movable thereon. A spring $m'$, coiled around rod $k'$ and bearing at one end against the hub of arm $l'$ and at the other end against one of the bearings of the said rod, operates when the latter is free to move it in the direction of the arrow, Fig. 3, and consequently move pulley J in the same direction, which pulley is also constructed as a clutch, constructed and arranged to be engaged with or disengaged from a clutch part $n'$ affixed to the main shaft C. Said pulley is provided with a lateral lug $n^2$, extending from its inner side, and another lug $n^3$ extends from the periphery of the shaft C, the two lugs forming a clutch $n'$, that will permit the pulley to be rotated independently of the shaft

C in one direction, but the lug $n^3$ on the shaft forming a stop to the lug $n^2$ on the pulley, when the latter is attempted to be turned in the opposite direction. When therefore pulley J is moved by the spring $m'$ in the direction of the arrow, Fig. 3, said pulley will be disengaged from the clutch part $n'$ $n^3$ and turn loosely on main shaft C; but when moved in the opposite direction it will be engaged with said clutch part and operate said shaft. The forward end of rod $k'$ is bifurcated, and in said bifurcation is pivoted a spring-latch $o'$, similar to latch $a'$, on the rear end of lever $z$, which latch $o'$ is constructed and arranged when in its normal position to catch over a stud $p'$, attached to the bed A. (See Fig. 2.) Gear $g'$ is provided with cams or wipers $q'$, as hereinafter described, arranged at a lower plane than wipers $j'$, which wipers $q'$ are arranged so as that at the proper time they will come in contact with latch $o'$ and depress it, allowing spring $m'$ to move rod $k'$ rearwardly, disengaging pulley J from clutch part $n'$ and so running freely on main shaft C. $r'$ designates a dog connected with rod $k'$ and arranged, as said rod is moved in the direction of the arrow, Fig. 3, to engage a notch $s'$, (shown in dotted lines in Fig. 3,) formed in a block $t'$, connected with the take-up-operating cam I, and so stop the rotation of shaft C, the timing of the parts being such that when dog $r'$ snaps into notch $s'$ the machine will be stopped with the needle in raised position.

As a convenient means of connecting the wipers or cams $j'$ $q'$ with gear $g'$, I construct a sleeve $u'$, (see Fig. 10,) which is adapted to fit upon and be secured to the stud $h'$, upon which gear $g'$ is journaled, said sleeve being provided with arms $v'$, the ends of which are constructed and arranged to operate as cams or wipers, as aforesaid.

$w'$ designates a forked lever fulcrumed on the bed of the machine and at its inner end engaged with rod $k'$, so that said rod can be moved in its bearings against the stress of spring $m'$ to engage latch $o'$ with stud $p'$ after it has been disengaged therefrom by the action of wiper $q'$.

After latch $a'$ is disengaged from stud $c'$ and lever $z$ is moved by spring $d'$ to shift the position of the button-holder, said parts may be moved to and latched in the position in which they are represented in Fig. 3 by pressing against thumb-stud $j$ and moving the button-holder in the direction of the arrow, Fig. 1.

The operation of the machine is as follows: Suppose it be desired to sew a button having four eyes upon a piece of goods. The goods are placed on the plate $k$ under the jaws $l$ $l$. The button (see Figs. 1 and 4) is then inserted between said jaws and its edges held closely by the same, said jaws having been adjusted by the means above described, and the button in position with one eye under the needle. The shaft C is then rotated by the pulley J, and through the pitman and needle-shaft the needle will be vertically reciprocated through one eye of the button and the goods. At the same time the shaft C, by means of its gear $c$, will cause to rotate through the gear $b$ the shaft $a$ and its cam $d$, there being two rotations of the shaft C to one of the shaft $a$, the sewing of the button through one eye taking place during this period. When the shaft $a$ has completed one revolution, the cam $d$ operates the stud $e$ on the button-holder, thus swinging the same laterally a slight distance to present another eye of the button to the needle. The revolution of the worm $i'$ by the shaft $a$ also rotates the gear $g'$ and the cams or wipers $j'$, which force down the latch $a'$ below the stud $c'$, and permit the spring $d'$ to swing the lever $z$ until it abuts against the stop $e'$, and this movement of the lever $z$ will, through the pivot $f'$, swing the button-holder to present another eye of the button to the needle, when the rotation of the shaft C will cause the needle to sew through said eye. After the sewing has been done through one eye of the button the rotation of the gear $g'$ will cause one of the wipers $q'$ to depress the latch $o'$ below the stud $p'$, allowing the spring $m'$ to move the rod $k'$ rearwardly, and thus disengaging the pulley J from the clutch $n'$, when said pulley will revolve loosely on the shaft, and the latter will remain stationary, and the mechanism connected with said shaft will be stopped. When desired to again bring the shaft C and connecting parts into active operation, the pulley J, by means of the hand-lever $w'$ and the rod $k'$, is slid into engagement with the clutch $n'$. At the same time that the pulley J is disengaged from the clutch $n'$, as above described, the sliding of the dog $r'$ on the rod $k'$ engages with the notch $s'$ on the block $f'$, which is connected with the cam I, and stops the rotation of the shaft C and the movement of the needle in its raised position. When the rod $k'$ is slid back by the lever $w'$ the lug $r'$ will be released from the notch $s'$ and allow the shaft C to revolve.

It is obvious that changes may be made in the form and arrangement of parts comprising my invention without departing from the nature or spirit thereof.

Having thus described my invention, I declare that what I claim is—

1. The combination, with a sewing mechanism, of a button-holder comprising a bed-plate $i^2$, provided with a vertical projection $i$, a block $i^3$, button-grasping devices connected with said block, and thumb-bolt $j$, journaled in said vertical projection and having a screw-threaded connection with said block, as set forth.

2. The combination, with a sewing mechanism, of a button-holder fulcrumed on the bed, a rotary grooved cam, and a stud extending from said button-holder into the groove of said cam, said rotary cam consisting of the two adjustable parts 3 3 to vary the throw of the button-holder, as set forth.

3. The combination, with a machine-bed

and a sewing mechanism, of a button-holder fulcrumed on the bed, a rotary grooved cam, a stud extending from said button-holder into the groove of said rotary cam, and the latter consisting of a hub *s*, provided with the dovetailed projections *t*, and the separate parts 3, provided with dovetailed grooves *u*, adapted to fit over said dovetailed projections and adjustable on said hub, as set forth.

4. The combination, with a sewing mechanism, of a button-holder, a base-plate *g*, supporting said holder and provided with guideways within which the holder may be moved or adjusted, a stud *f'*, connected with said button-holder, a lever *z*, connected at one end with said stud, a latch on the opposite end of said lever, a stationary stud to engage said latch, a rotary wheel provided with wipers or cams to engage said latch and release it from said stationary stud, and a spring *d'* to move said lever after said latch is released, as set forth.

5. The combination, with a sewing mechanism, a vibrating button-holder, a rotary wheel *g'*, and connections between said wheel and button-holder for shifting the latter, of the main shaft, the driving-pulley J thereon, constructed and arranged to turn loosely on said shaft and to be moved longitudinally thereon, a clutch part *n*, fixed on the main shaft, with which the pulley is adapted to engage, a longitudinally-movable rod *k*, provided with the forked arm *l*, to engage said pulley, a spring to move said rod, a latch *o'* on one end of said rod, a stationary stud with which said latch is adapted to engage, and cams or wipers on said rotary wheel to engage said latch and disengage it from said stationary stud, as set forth.

6. The combination, with a sewing mechanism, a vibrating button-holder, a rotary wheel *g'*, and connections between said wheel and holder for shifting the latter, of the main shaft, clutch-pulley J thereon, the take-up-operating cam on the main shaft, a notched block connected with said cam, a longitudinally-movable rod *k*, connections between said rod and pulley, a spring to move said rod, a dog *r* on said rod to engage said notched block, a latch *o'* on one end of said rod, a stationary stud with which said latch is adapted to engage, and cams or wipers on said rotary wheel to engage said latch and disengage it from said stationary stud, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 17th day of November, A. D. 1888.

JOHN D. STIRCKLER.

Witnesses:

ARTHUR W. CROSSLEY,

A. D. HARRISON.