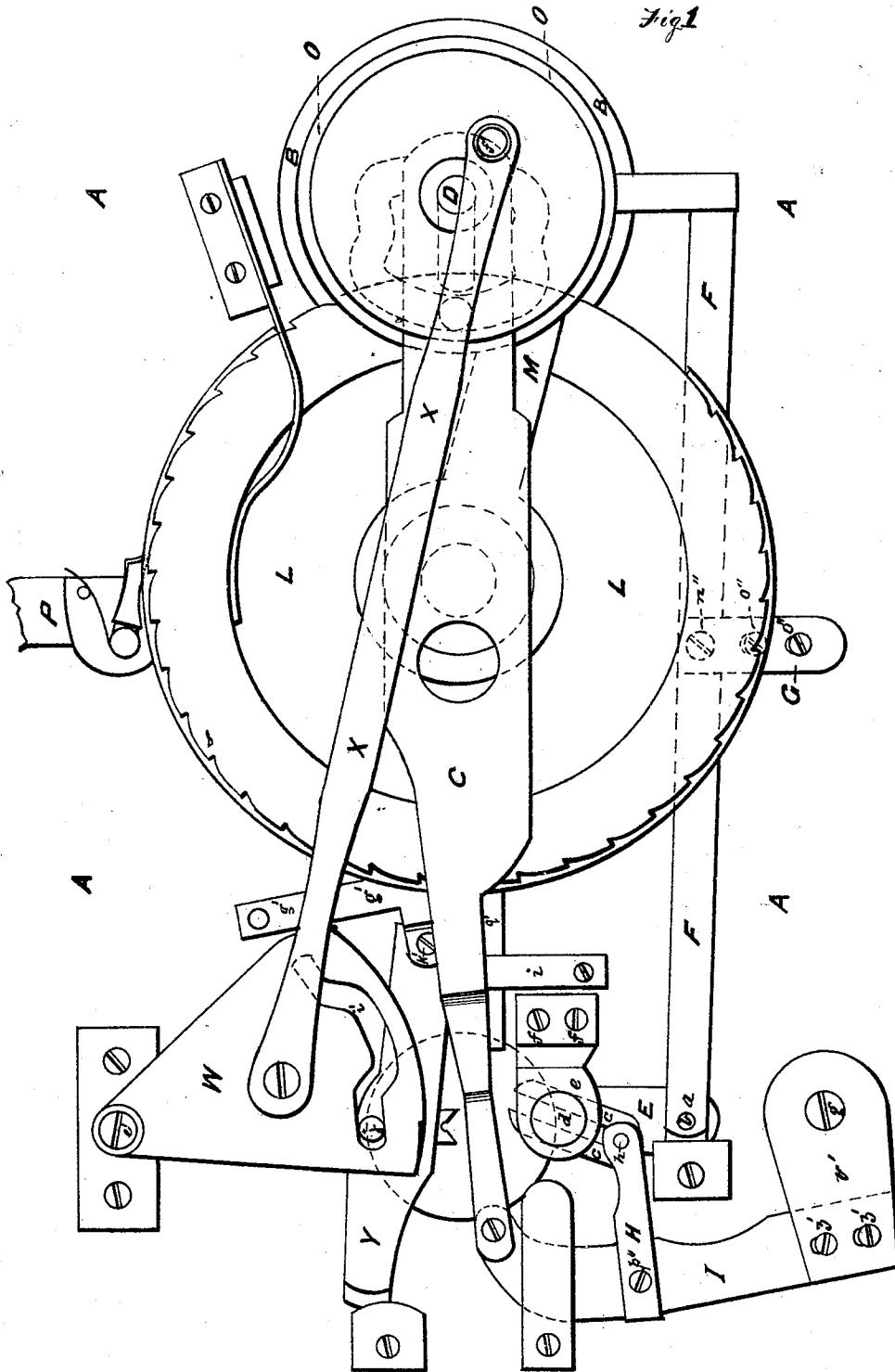


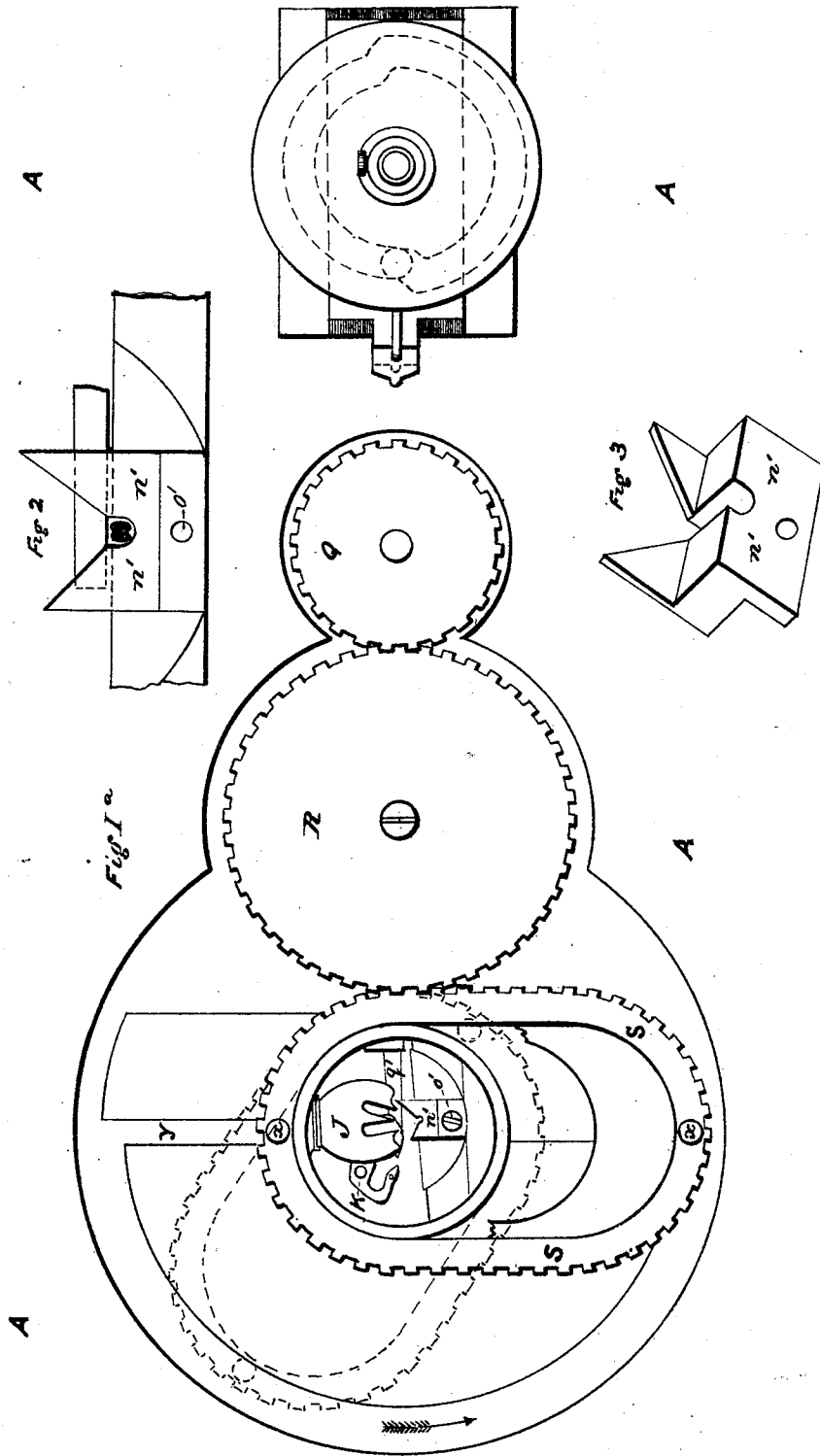
J. WENSLEY.
Machines for Stitching Button-Holes
No. 152,055. Patented June 16, 1874.



Witnesses.
Henry W. Green
Frederick V. Shepard

Inventor,
James Wensley

J. WENSLEY.
Machines for Stitching Button-Holes
No. 152,055. Patented June 16, 1874.



Witnesses
Henry W. Green.
Frederick V. Shepard

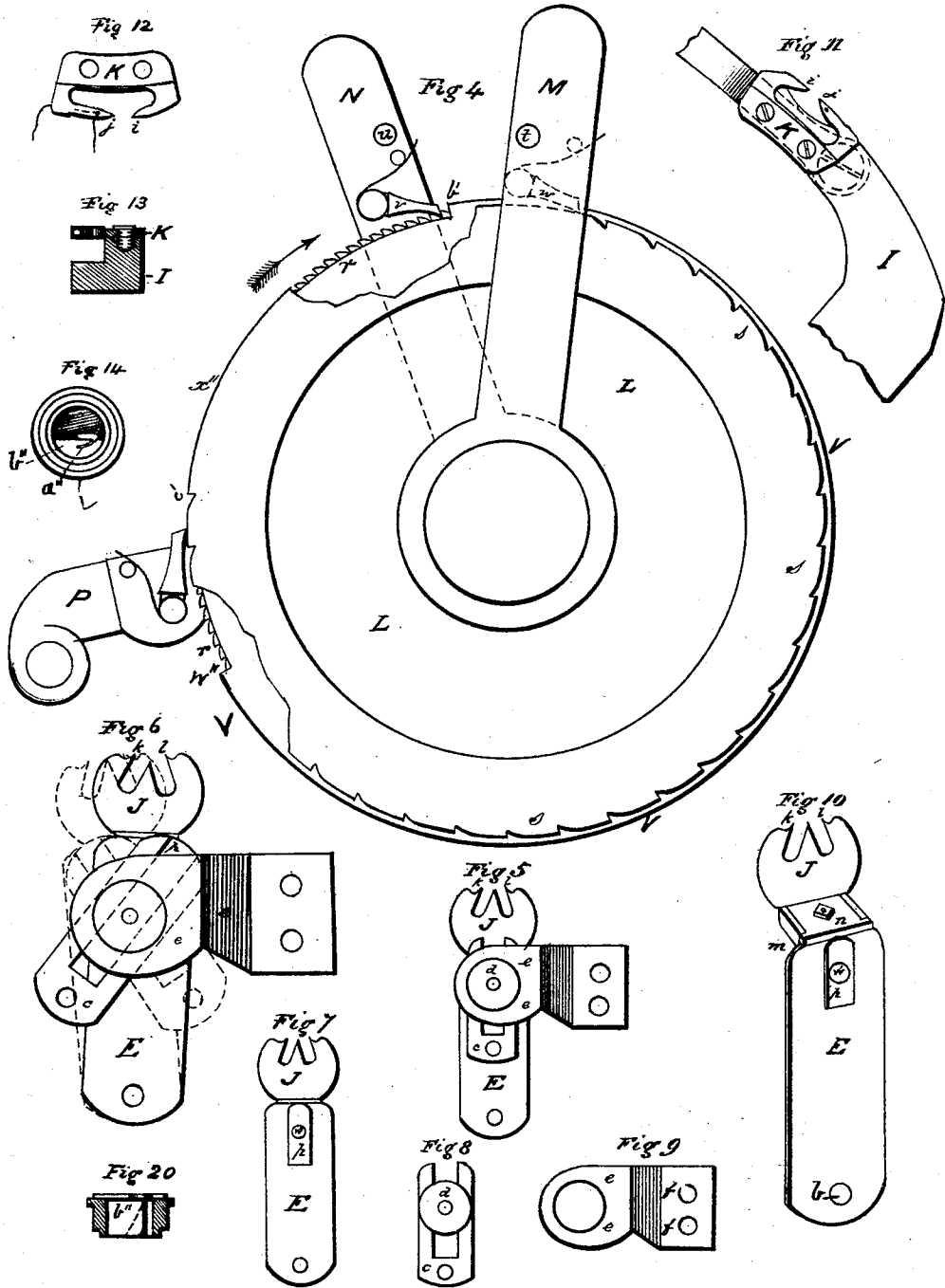
Inventor
James Wensley.

J. WENSLEY.

Machines for Stitching Button-Holes

No. 152,055.

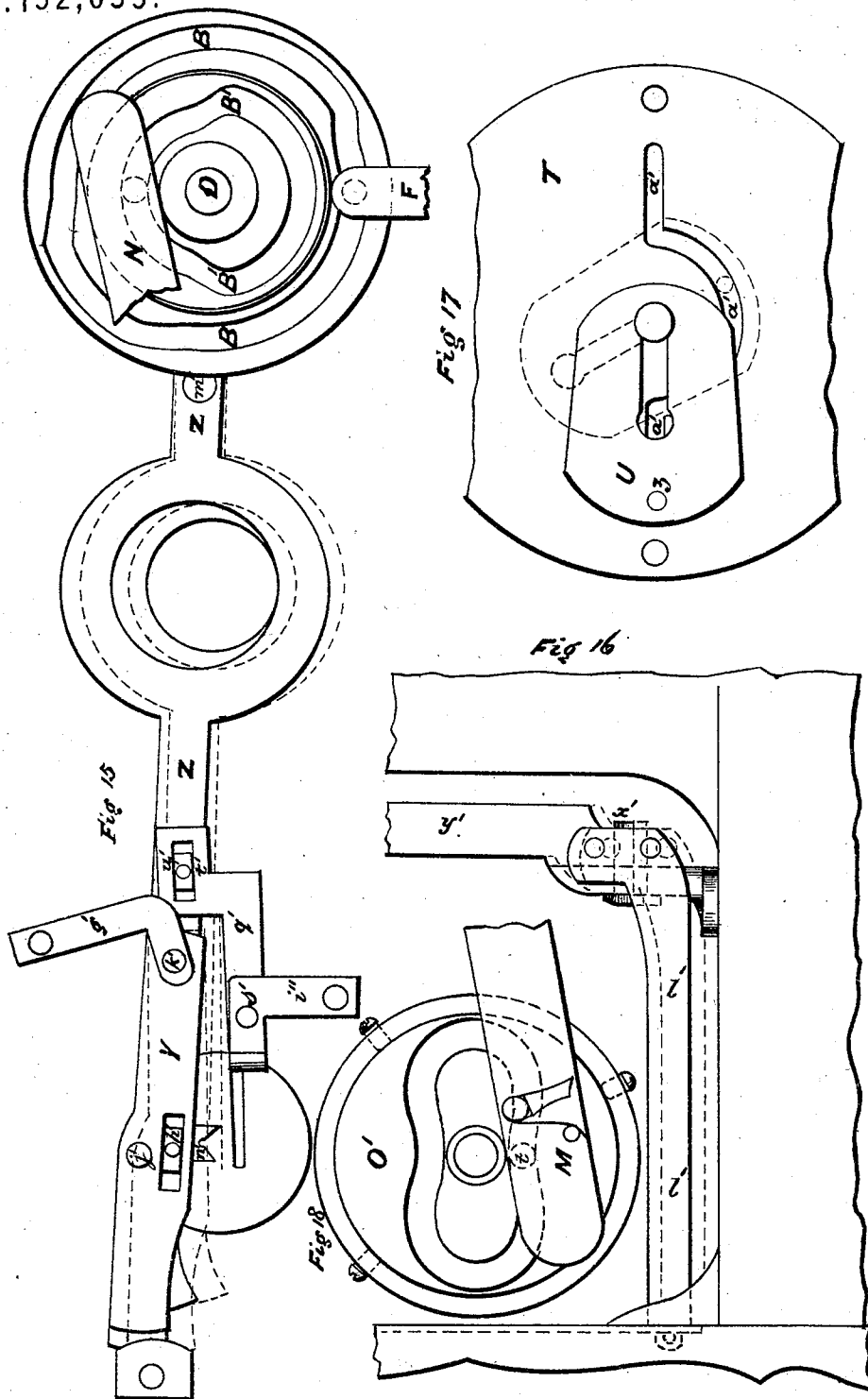
Patented June 16, 1874.



Witnesses.
 Henry W. Green.
 Frederick V. Shepard

Inventor.
 James Wensley

J. WENSLEY.
Machines for Stitching Button-Holes
No. 152,055. Patented June 16, 1874.



Witnesses
Henry W. Green
Frederick V. Shepard

Inventor.
James Wensley

UNITED STATES PATENT OFFICE.

JAMES WENSLEY, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN MACHINES FOR STITCHING BUTTON-HOLES.

Specification forming part of Letters Patent No. **152,055**, dated June 16, 1874; application filed May 1, 1874.

To all whom it may concern:

Be it known that I, JAMES WENSLEY, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in the Button-Hole Machine patented by W. G. Humphrey, October 7, 1862, and are as follows, namely:

First, a new and improved feeding mechanism, by means of which the liability of the Humphrey machine to form irregular stitches, or at different distances apart, is avoided, thus allowing the machine to run at a high rate of speed; second, a device for guiding and guarding the needle, and also assisting in the formation of the loop, thus doing away with the liability of the machine to break needles and miss stitches; third, a new arrangement of the looper and spreader.

Referring to the drawings, forming part of this specification, Figure 1, Drawing 1, is a plan view of the under side of the machine. Fig. 1^a, Drawing 2, is a plan view of the top part of the machine with the plate removed, showing or exposing the upper part of my improved feeding mechanism. Figs. 2 and 3 are views of needle guard and guide enlarged. Fig. 4, Drawing 3, shows the ratchet-wheel used for imparting motion to the intermediate gear, and from thence to feed-ring and clamp. Drawing 3 represents detached views, of which Fig. 5 is a view of my improved loop-spreading mechanism, showing the same when at rest. Fig. 6 is another view of the same, showing the two motions right and left. Figs. 7, 8, and 9 show the separate parts of Fig. 5. Fig. 10 shows the method of attaching the spreader to the spreader-carrier. Fig. 11 shows the method of attaching the looper to the looper-carrier. Fig. 12 is a plan view of looper. Fig. 13 is a sectional view of the looper, and block to which the looper is attached. Fig. 20 is a sectional view of my improved button; Fig. 14, a plan view of same. Drawing 4 represents detached parts, of which Fig. 15 is a plan view of my loop-guiding and needle-guarding mechanism. Fig. 16 shows the method of attaching the needle-guard to the needle-bar carrier. Fig. 17 shows a part of the plate with clamp attached. Fig. 18 is plan view of feed-cam.

Beginning with Drawing 1, the general description of the machine is as follows: A is the bed or table of the machine, to which the operating parts are attached. D is a vertical shaft, which, when rotated, imparts motion to the various mechanical devices of said machine. B is a cam, giving motion to the spreader-carrier E through the lever F, which lever is pivoted to the piece G by the screw *n''*, said piece being adjustable by the screws *o'' o''*, for the purpose of bringing the spreader in proper position relatively to the looper. Said lever has a trundle working in the cam B, (shown at Drawing 4, Fig. 15.) Into the end of said lever at *a* projects the pin *b* from the spreader-carrier E, through which a lateral motion is imparted to said spreader-carrier. *c* is a slide, having a circular part, *d*, working in the ring *e*, said ring being firmly secured to the machine by the screws *f f*. Into this slide *c* is fitted a block, *p*, as shown in Drawing 3, Fig. 6, (shown more fully at Figs. 7 and 10.) Into this block projects the pin *w'* from the spreader-carrier E, connecting the slide *c* with said carrier, which pin *w'*, by means of said slide, imparts a right and left oblique motion to said spreader, as hereinafter described. H is a connecting-rod, secured to the looper-arm I by the screw *p''*, and connected with the slide *c* by the pin *h*, said connecting-rod moving freely on the screw *p''* and pin *h*.

The operation of the spreading mechanism is as follows: When the right-hand point of the looper K, marked *i*, (Drawing 3, Fig. 12,) has carried to the left hand a loop of the upper thread, (formed by the needle in its passage through the edge of the material in which the button-hole is to be worked,) the point *k* of the spreader J takes one side of the loop; and after the needle has ascended and moved over laterally, so as to pass over the edge of the material in its passage downward, and has commenced to descend, it carries the thread so taken up beyond and to the right of the looper-point *i*, before mentioned, thus spreading and placing the loop in such a position that the needle, in its descent over the edge of the material, must pass through said loop; and when the point of the looper marked *j*, which is threaded with the under thread through an eye in said point, carries the un-

der thread to the right through the loop of the upper thread, the point *l* of the spreader *J* takes said thread and carries it forward and to the left of the eye in the looper, and remains in said position until the needle has passed down through the edge of the button-hole and through the loop formed by the under thread.

The result described above is accomplished in the following manner: The looper-arm *I*, Drawing 1, in its passage to the left, by being connected with the slide *c* by *H*, moves said slide in the direction shown in Drawing 1 and Fig. 6, Drawing 3, remaining stationary while the spreader *J* is moved forward, thus causing the spreader to move to the right in an oblique direction; and when said looper-arm is moved to the right, the slide *c* is moved in the direction shown by the dotted lines, Drawing 3, Fig. 6, remaining in this position while the spreader *J* is moved forward, by this means causing said spreader to move to the left at the same time that it is moved forward, thereby doing away with the necessity for the guide-plates formerly used in the button or throat of the machine.

The method described hereinafter of attaching the spreader *J* to the spreader-carrier *E* is new and advantageous, in that it does not allow the spreader to be adjusted either laterally or vertically, thereby doing away with the trouble and annoyance so often felt by inexperienced operators in not being able to adjust said spreader properly after removing the same for the purpose of sharpening the points, &c.

E is the spreader-carrier, with its end turned up, as shown in Drawing 3, Fig. 10, having said end recessed to receive the shank *n* of the spreader *J*, which shank is formed with shoulders, and made to fit in the recess before mentioned, and secured by the screw *o*.

The following is a description of my new feeding mechanism: *L* is a ratchet-wheel, having two sets of teeth, as shown at *r* and *s*, Drawing 3, Fig. 4. *M* and *N* are arms, having the trundles *t* and *u* at the outer end, working in cams *B'* and *O'*, Drawing 1 and Drawing 4, Figs. 15 and 18. Said arms are formed with rings at the inner end, as shown at Drawing 3, Fig. 4, which are fitted over the hub of *L*, and are provided with pawls, as shown at *v* and *w*. *P* is a hand-lever, for the purpose of moving the ratchet-wheel independent of the movement of the machine, and is used to bring the clamp into a proper position for stitching a button-hole. Attached to the upper side of *L* is the small geared wheel *Q*, Drawing 2 Fig. 1^a, having twenty-four teeth on its edge. *R* is another toothed wheel, used for transmitting the motion of *Q* to the feed-ring *S*, said ring having forty-eight teeth on its edge. *x x* are two holes, for the purpose of receiving the end of the clamp-pin when working button-holes. The holes *x x* are opposite each other in a horizontal direction, and exactly in the center of the feed-ring *S*. Directly under these holes

are two pins, projecting about one-eighth of an inch, which work in the groove *y* formed in the table of the machine, as shown in Drawing 2, Fig. 1^a.

Drawing 4, Fig. 17 represents the machine with the plate and clamp on, ready for work. *T* is the plate. *U* is the clamp; *Z*, the clamp-pin, working in the groove *a'*. The dotted lines show the motion of the clamp when working round the eye of the button-hole.

Drawing 2, Fig. 1^a represents the feed-ring *S* in position to commence working a button-hole.

By reference to Drawing 3, Fig. 4, it will be seen that the pawl *v* on the arm *N* has engaged with the first of the small teeth *r*, and, being moved by the cam *B'* in the direction of the arrow the distance of one tooth, the wheel *L* is made to revolve in said direction. The cog-wheel *Q*, being firmly fixed to the wheel *L*, revolves with said wheel, thus communicating to the ring *S*, through the intermediate gear *R*, a longitudinal motion. The pawl *v* on arm *N* continues to engage with the small teeth *r* in feeding the first side of the button-hole, until it has reached the plain part of the wheel *L*, marked *V*, at the same time the ring *S* has reached the center of the machine. The pawl *v* then moves on said plain part, and takes no teeth until it has reached the point *b'*. Simultaneously, as the pawl *v* reaches the commencement of the plain part of the point *W''*, the pawl *W* on arm *M* (having moved over the other plain part of the wheel *L*, marked *x''*) arrives at the point *c'*, and engages the large teeth marked *s*. It then continues to move the wheel *L*, by means of said large teeth, until the feed-ring *S* has made one-half revolution, (as shown by dotted lines,) and traversed the eye of the button-hole. The said pawl *W* then, in its turn, moves on the plain part *x''*, and the pawl *v* on arm *N* engages the small teeth, as before, and so feeds the button-hole down the other side.

Drawing 1, *W* is a quadrant-shaped cam pivoted to the table of the machine at *e'*, and receives its motion from the crank-pin *f'* through the connecting-rod *X*. *Y* is a lever pivoted to the piece *g'* at *h'*, and has a trundle, *j'*, working in the cam-groove *i'*. This lever has a slot, shown at Drawing 4, Fig. 15, in its outer end, into which is fitted the block *h'*. Into said block projects a pin from the needle-guard carrier *Z*. Said needle-guard carrier is pivoted to the bar *l'* (Drawing 4, Fig. 16) at *m'*, Fig. 15. The bar *l'* is firmly secured to the needle-bar carrier *y'* at *x'*, thereby transmitting to said needle-guard carrier the lateral motion of the (shown by dotted lines) in its passage over the edge of the button-hole.

Drawing 2, Fig. 1^a, *n'* is the needle-guard, attached to the carrier by set-screw *o'*.

Drawing 4, Fig. 15, *q'* is a needle-guide pivoted to the piece *i''* at *s'*. In said needle-guide, at *t'*, is a slot in which is fitted a block, *u'*. Into this block projects a pin from the needle-guard carrier *Z*, through which motion is imparted to said needle-guide.

The operation and use of the needle-guard and guide just described, are as follows: The needle having passed through or over the edge of the goods in which a button-hole is to be made, and having reached a point just below the looper K, (Drawing 3, Fig. 12,) the guard *n'* commences to move forward toward the needle, and by the time the needle has reached its lowest point the guard has moved close up to the needle into the position shown in the enlarged drawing, (Drawing 2, Fig. 2.) At the same time, also, the needle-guide *q'* has moved toward said needle, (also shown at Fig. 2,) thus, together, placing and keeping the needle in proper position for the passage of the looper through the loop formed by said needle.

It is well known to operators that the needle in its passage over the edge of the goods glances in an oblique direction, thereby causing it to break; also damaging the looper, and causing it (the looper) to miss the loop.

My device remedies said defects by always placing the needle in a vertical position, and holding it in such position that the looper in its passage through the loop cannot strike said needle. The guard also places and keeps the needle and loop in such position, relatively to the looper, that said looper in its passage right and left must pass through the loop formed by said needle.

Pivoted to the table at *g*, Drawing 1, is my improved looper-carrier, consisting of two parts, I and *v'*, receiving, at the end to which the looper is attached, Drawing 3, Fig. 11, a reciprocating movement from the cam O through the connecting-rod C, which rod has a trundle working in said cam. Said carrier is adjustable laterally by the screws *z' z'*.

The advantages of said looper are, first, by being pivoted to the machine at *g*, in its movement right and left from the needle it describes an arc, thereby causing the looper, after it has passed through the loop, to move farther off from the needle than it was possible in the old arrangement, thus preventing the breaking of needles, &c.; second, by the adjustment of said looper-carrier at *z' z'* the looper can be removed for sharpening, &c., and replaced without altering its position, a necessity that has been felt very much by operators; third, the method of attaching the looper K to the carrier I (shown at Drawing 3, Figs. 11 and 13) is new and desirable, in that it allows said looper to be made of a flat piece of steel, as shown, Fig. 12, and can be made much cheaper, more accurate, and is more easily removed and replaced, as before mentioned, than the style used in the old machine.

Drawing 3, Fig. 14, shows my improved button looking from the under side. The improve-

ment consists in a block, *b''*, having a cut or groove, *a''*, said groove being cut obliquely, as shown in Fig. 20, from a point between the two positions of the needle in its passage over and through the button-hole. The object of said groove in the button is to cause the loop of the upper thread when carried to the left by the point *i* of the looper K, Fig. 12, to be caught in said groove, and to be held in such position until the needle has passed down over the edge of the button-hole, thus preventing said needle from passing on the outside of said loop, thereby preventing the skipping of stitches, &c., which has caused so much trouble and annoyance in the old machine.

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

1. The peculiarly-shaped spreader J formed with shoulders for attaching to the carrier E, the carrier E, piece G for adjusting the lever F, slide C, ring *e*, block *p*, pins *h* and *w*, and connecting-rod H, all operating together substantially as and for the purpose described.

2. The feeding mechanism, consisting of the ratchet-wheel L, having large and small teeth on its outer edge, marked *r* and *s*, and plain parts V and *x''*, arms M and N, with pawls *w* and *v*, small gear Q, large gear R, feed-ring S, and table provided with groove *y*, operating to produce a longitudinal and circular motion of the feed-ring S, substantially as described.

3. The needle-guard *n'*, the needle-guide *q'*, needle-guard carrier Z, lever Y, and bar *l'*, all operating together substantially as and for the purpose described.

4. The quadrant-shaped piece W, with its cam-groove *i'*, in combination with the connecting-rod or pitman X and crank-pin *f'*, when used for the purpose of giving motion to the needle guard and guide, substantially as described.

5. A reciprocating needle guard and guide when used in connection with an eye-pointed needle for the purpose of working button-holes, substantially as described.

6. The adjustable pivoted looper-carrier in two parts, I and *v'*, and in combination with the connecting-rod C, when combined and arranged to operate, and be adjusted, substantially as shown and described.

7. In combination with looper-carrier I and *v'* and connecting-rod C, the looper K, when made and formed to be attached substantially as described.

8. The block *b''*, with its cut *a''*, as shown, substantially as and for the purpose specified.

JAMES WENSLEY.

Witnesses:

HENRY W. GREEN,
FREDERICK V. SHEPARD.