

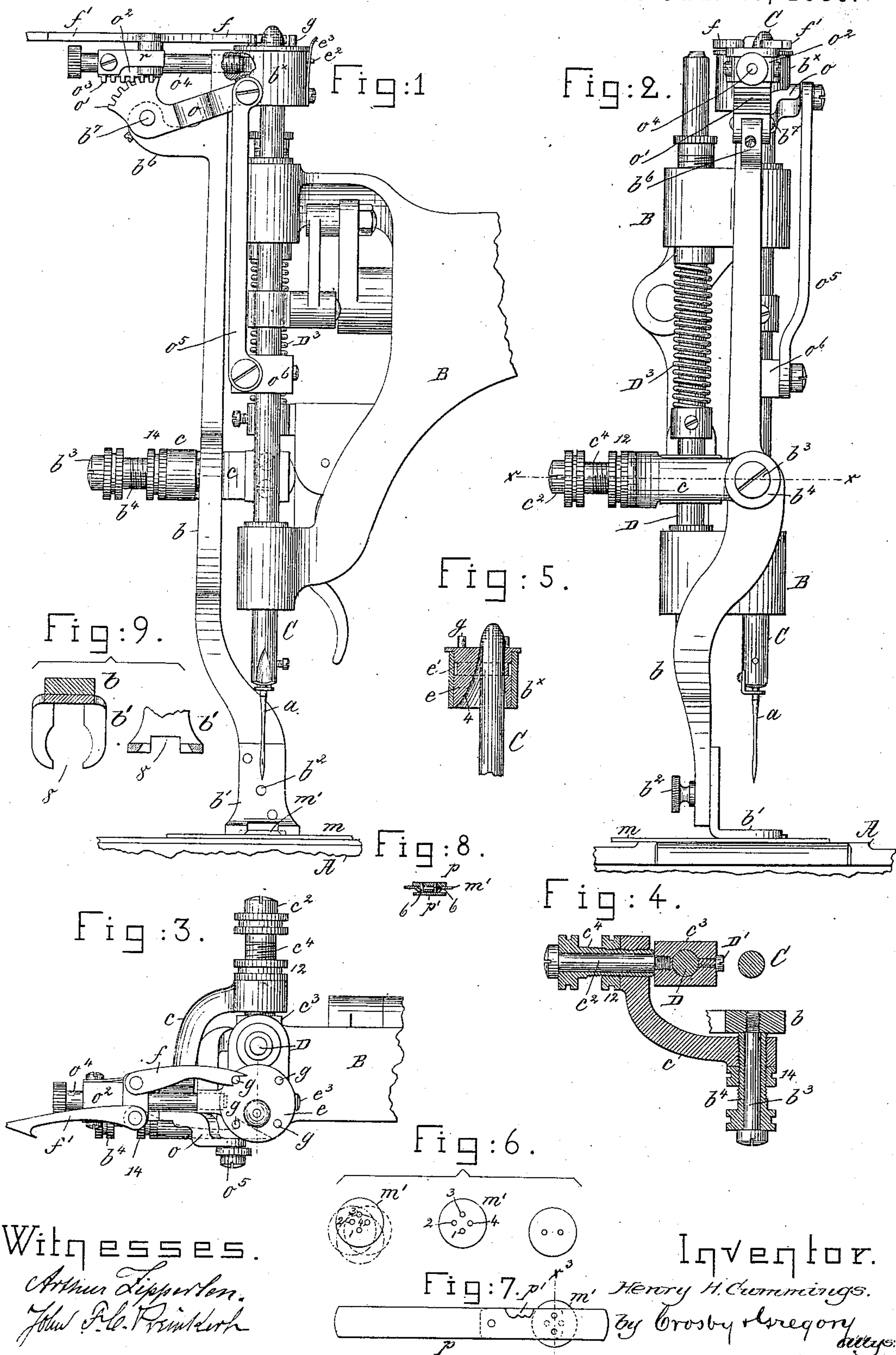
(No Model.)

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BUTTON HOLDING AND FEEDING ATTACHMENT FOR SEWING MACHINES.

No. 334,752.

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BUTTON HOLDING AND FEEDING ATTACHMENT FOR SEWING-MACHINES.

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To all whom it may concern:

Be it known that I, HENRY H. CUMMINGS, of Malden, county of Middlesex, State of Massachusetts, have invented an Improvement in Button Holding and Feeding Attachments for Sewing-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object the production of a button-holding attachment adapted to hold a button above the material upon which it is to be secured, so as to be entered by the eye-pointed needle of any suitable sewing-machine, the button holding and moving foot of the attachment also acting to feed or move the material, so that the needle penetrates in succession the holes of the button, whether the same has two or any usual number of holes.

In the present embodiment of my invention the button-holder is actuated by or from the needle-bar and is so constructed, as will hereinafter be described, as to be capable of having a substantially-universal movement imparted to it in any direction with relation to the needle-hole or line of reciprocation of the needle-bar.

My invention consists in a button holding or feeding attachment composed, essentially, of a lever of the first order having its fulcrum on a pivoted arm, and provided at one end with a button-holding foot, the said lever at its other end having a rotating feed-collar provided with an opening from end to end, which is inclined with relation to the axis of rotation of the collar, a needle or other reciprocating bar entering the said feed-collar, and thereby vibrating the button-holding foot, as will be described.

Figure 1, in front elevation, represents a sufficient portion of a sewing-machine with my attachment applied to enable the construction and operation thereof to be understood. Fig. 2 is a right-hand side view of Fig. 1. Fig. 3 is a top or plan view of Fig. 1. Fig. 4 is a sectional detail in the line xx , Fig. 2, to show the pivoted fulcrum for the button-feeding lever, and the manner of connecting the same with the presser-bar, the said figure showing the location of the needle-bar. Fig. 5 is an enlarged detail of the upper end

of the said lever, the rotating collar therein, and part of the reciprocating bar for moving the collar and lever laterally. Fig. 6 represents several diagrams, to show the different positions of the button. Fig. 7 is a plan view of the button-inserting device; Fig. 8, a section thereof in the dotted line x^3 . Fig. 9 is a top view of the button-holding foot and a section thereof.

The bed-plate A, overhanging arm B, needle-bar C, means to reciprocate it, the needle a , and the presser-bar D and its spring D^s are supposed to be the same as in the Wheeler & Wilson machine, style No. 10, and in practice the under-thread carrier will be as in the said machine.

In accordance with my invention a lever, b , provided at its lower end with a forked or other suitable-shaped button-holding foot, b' , attached to it in suitable manner, as by a screw, b^2 , is supported between its ends by a pin or stud, b^3 , thus making of it a lever of the first order. The pin or stud b^3 , which constitutes the fulcrum for the lever b , is extended loosely through a threaded sleeve, b^4 , screwed into an arm, c , which in turn has its fulcrum on a pin or stud, c^2 , herein shown as screwed into a block or collar, c^3 , attached to the presser-bar D by a screw, D' . The arm c , at its rear end, is provided with a threaded sleeve, c^4 , which receives the fulcrum pin or stud c^2 loosely.

The connection described, between the lever b and arm c , and between the latter and the block or collar c^3 is, it will be seen, such as to permit the lever b and arm c to turn each on its own fulcrum or pivot, located at right angles to the other, thus furnishing a practically universally-moving joint or support for the lever b , whereby it may be turned in such direction with relation to the line of movement of the needle as to enable the button-holding foot to be moved in such direction with relation to the path of movement of the needle, as to cause the latter to enter first one and then the next hole in the button, as will be described.

The sleeve b^4 is screwed into the arm c and made adjustable therein, the check-nut 14 holding the said sleeve in adjusted position. The sleeve c^4 is held in adjusted position in

the arm c by a check-nut, 12. By turning the screw-threaded sleeves c^4 b^4 out or in, the position of the lever b or its foot b' may be so adjusted with relation to the path of movement of the needle as to enable the holes in the button to be placed in the line of its reciprocation. The spring D^3 , which surrounds and holds down the presser-bar D , acts to retain the foot b' of the lever b down against the material m on the usual throat-plate and bed of the machine. The lever b is enlarged at its upper end to form a yoke, b^x , which receives the rotating feed-collar e , it being held loosely in the said yoke by means of a pin, e^2 , of a spring, e^3 , that enters an annular groove, e' , in the said collar. This collar has a hole or passage made through it at one side of its center line, and the walls of the passage so made are inclined, as shown in Fig. 5, to form an inclined surface, 4, against which may strike the upper end of a needle or other bar, C , which is reciprocated in fixed bearings. As the upper end of the bar C strikes the said inclined surface 4, the collar and the upper end of the lever will be moved away from that side of the needle-bar next which the inclined surface 4 rests as the bar C rises, and consequently the lower end of the lever and the foot, with the button held by it and the material, will be moved in the opposite direction.

To change the direction of movement of the lever, it is necessary to change the position of the collar with relation to the bar C as or before the latter enters the passage in the collar. To do this, the collar is provided with four pins, g , herein shown as located ninety degrees apart, such location of the pins being necessary when the buttons m' to be attached to the material m have either two or four holes, as shown in the drawings, for with such buttons the collar must be rotated either one hundred and eighty or ninety degrees at each step. The lever b , near its upper end, has a projection, b^6 , provided with a pin, b^7 , that serves as the fulcrum for a lever, o , having a toothed head, o' , that engages a pawl-carrying block, o^2 , provided with teeth o^3 , the said block being moved back and forth on a guideway, o^4 , screwed into the upper end of the lever b . This pawl-carrying block has pivoted upon it two pawls, one of which (marked f) is a push-pawl, while the other (marked f') is a pull-pawl, such construction enabling one to work at each movement of the pawl-carrier. If the button to be sewed has four holes, but one of the pawls will be retained in operation—viz., the pawl f —the other pawl, f' , being turned aside, as in full lines, the pawl f at each movement toward the collar acting on one of the pins g , and on each pin in succession, thus rotating the collar ninety degrees at each stroke, such change of position of the collar causing the foot to move in succession in the lines of a quadrangular figure, thus bringing the holes 1 2 3 4 of the buttons under the needle in succession, and causing the said button to

assume the various positions illustrated by the left-hand diagram. If the button has but two holes, as in the right-hand diagram, Fig. 6, the pawl f' will be thrown into operative position, as in dotted lines, and thereafter the collar will be moved for half a rotation, or for one hundred and eighty degrees, during each full reciprocation of the pawl-carrying block, both pawls acting, and the movement of the button will be as in the right-hand diagram; and the needle will enter first one and then the other hole in succession, the stitch in the latter case crossing the center of the button, which is not the case with a four-holed button.

To insure the movement of the upper end of the lever b in any desired direction, it is only necessary to turn the feed-collar so that the inclined wall 4 shall point or incline downward in the same direction.

Movement of the upper end of the lever in one direction compels the movement of the button-holding foot in the opposite direction, the joints described between it and the block o^3 permitting the free and easy movement of the lever and foot in any desired direction.

The button-holding foot b' has a central opening (see Fig. 9) of substantially the same shape as the button to be attached, and leading outward therefrom is a straight slot, 8, narrower than the said opening.

To properly insert a button, m' , into the central button-holding space of the foot V' , I have provided a registering device composed of a flat bar, p , having two very short projections or points, 6, (shown in Fig. 8,) which are just long enough to catch into the holes of the buttons to position them correctly with relation to the registering device, and a spring, p' , to keep the button in place on the said projections. The width of the registering device is substantially equal to that of the slot 8 in the foot b' .

To apply a button to the foot, place the button in the registering device, lift the foot slightly, and insert the registering device under it until the button occupies the circular space in the foot, then let the foot down upon the button. In this position the operator will slightly lift the other end of the part p of the registering device sufficiently to let the pins 6 slip out of the holes in the button m , and will then pull upon the registering device and draw it out longitudinally, the walls of the presser-foot holding the button from moving with the registering device.

The lever o derives its movement from the needle-bar by a link, o^5 , connected with a block, o^6 , secured to the said bar.

I do not broadly claim the rotating feed-collar having the inclined passage through it, as such is old in the Bonnaz and other embroidery-machines.

I have shown my improvements added to a Wheeler & Wilson form of machine; but I desire it to be understood that my invention

may be applied to any of the well-known forms of sewing-machines.

I claim—

1. A button holding and feeding device
5 composed of a lever having an attached foot, a rotating collar provided with an opening inclined with relation to the center of the collar, and an arm upon which the said lever is pivoted, and a block or collar in which the said
10 arm is pivoted, the said parts being at right angles each to the other, thus constituting a universally-jointed support for the said lever, to operate substantially as described.

2. The presser-bar, the lever *b*, provided
15 with the attached button receiving and holding foot, and rotating collar provided with the inclined passage, combined with the arm *c*, to receive the fulcrum-stud for the said lever, and pivoted upon a block connected with the presser-bar, and with the needle-bar to enter the
20 collar and move the lever *b*, substantially as described.

3. The lever *b*, provided with the button receiving or holding foot *b'*, stud *b*³, arm *c*, and
25 stud *c*², combined with the two adjustable screw-threaded sleeves, arranged at right angles each to the other and fitted to the said studs, adjustment of the said sleeves enabling the button to be placed in correct position under the needle, substantially as described.
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4. The lever *b*, provided at one end with the button receiving and holding foot and at its other end with the rotating toothed collar having the inclined passage formed through it,
35 combined with the needle-bar, and with means, substantially as described, between it and the said collar to rotate the same intermittingly, as set forth.

5. The lever *b*, provided with the button receiving or holding foot, and the rotating loose
40 collar provided with the inclined opening and ratchet-pins, and a pawl and pawl-carrier adapted to be moved by or from the needle-bar to rotate the said collar, combined with the pivoted arm to support the said lever, substantially as described. 45

6. The lever *b*, provided with the button receiving or holding foot, and the rotating collar *e*, provided with the inclined opening and
50 with ratchet-pins, and a pawl-carrier provided with a push and with a pull pawl, and arm *c*, to pivotally support the lever *b*, as described, combined with the needle-bar, and means, substantially as described, between it and the said
55 pawl-carrier to actuate the latter, the upper end of the needle-bar entering the diagonal hole in the collar, as set forth.

7. The button-holding presser-foot, combined with the button-registering device, constructed substantially as described, it consisting of the shank provided with projections 6,
60 and the connected spring, the shank and spring being of less width than the diameter of the button, the registering device enabling the button to be presented to the presser-foot in
65 correct position to be entered by the needle of the sewing-machine, as set forth.

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

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Witnesses:

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