

(No Model.)

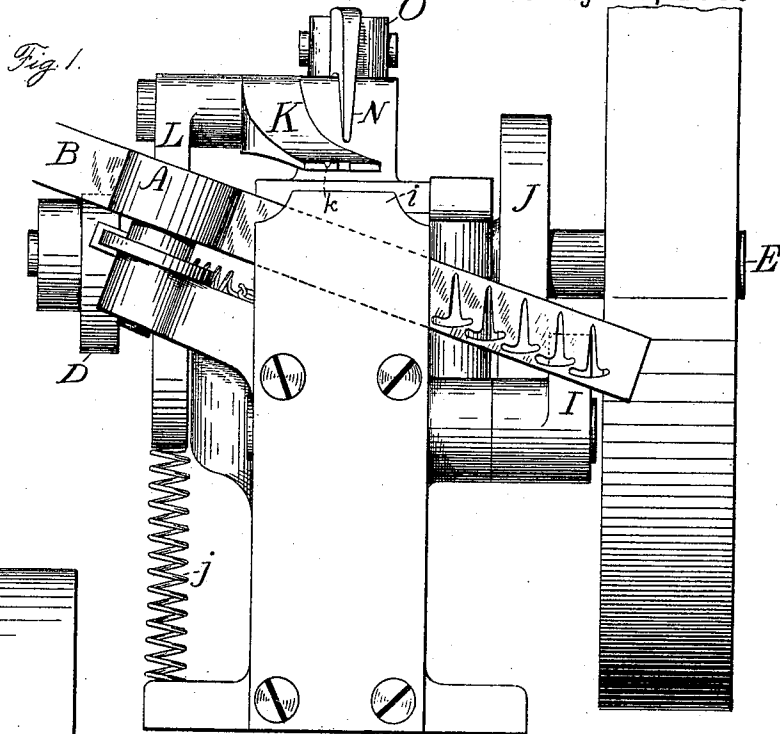
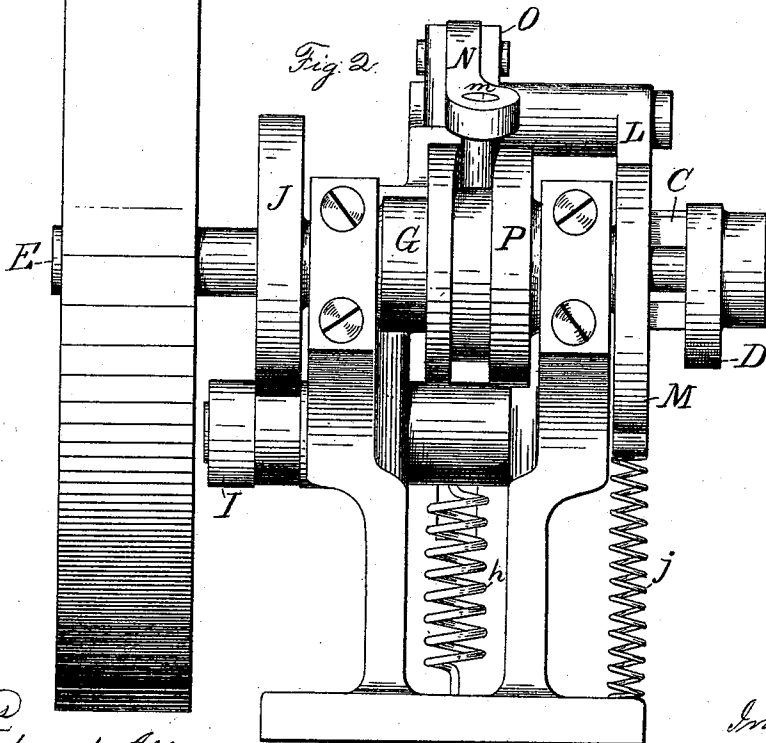
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F. H. RICHARDS.

MACHINE FOR MAKING AND SETTING BUTTON FASTENERS.

No. 322,972.

Patented July 28, 1885



Witnesses
John Edwards Jr.
Eddy N. Smith

Inventor.
Francis H. Richards.
By James Shepard.
Atty

(No Model.)

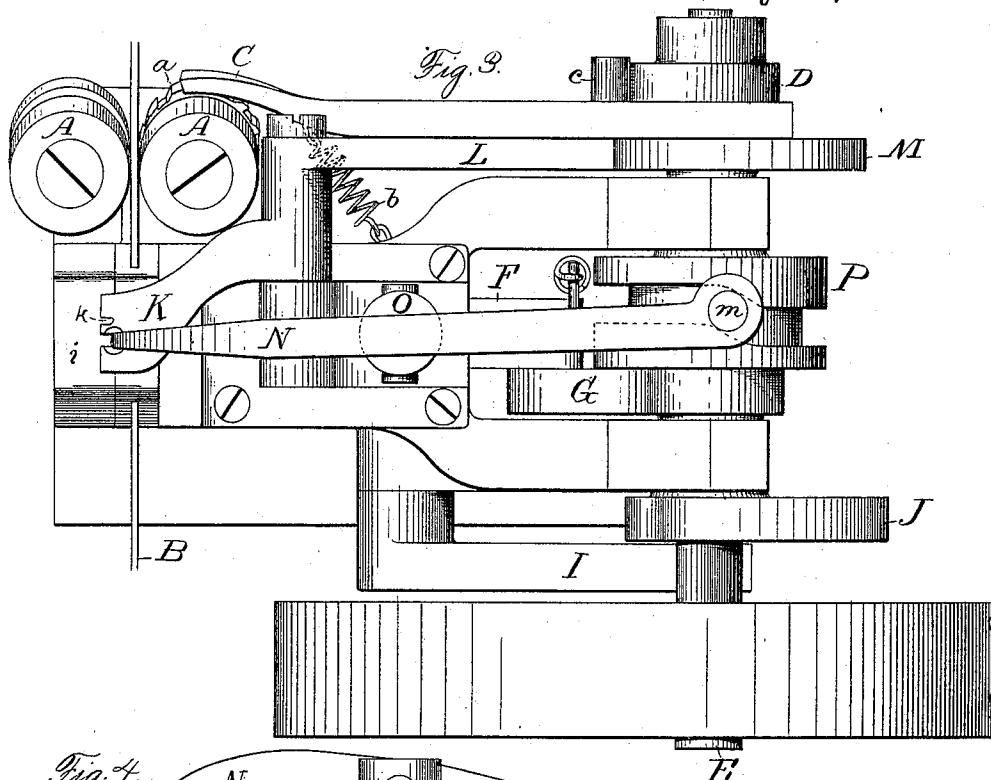
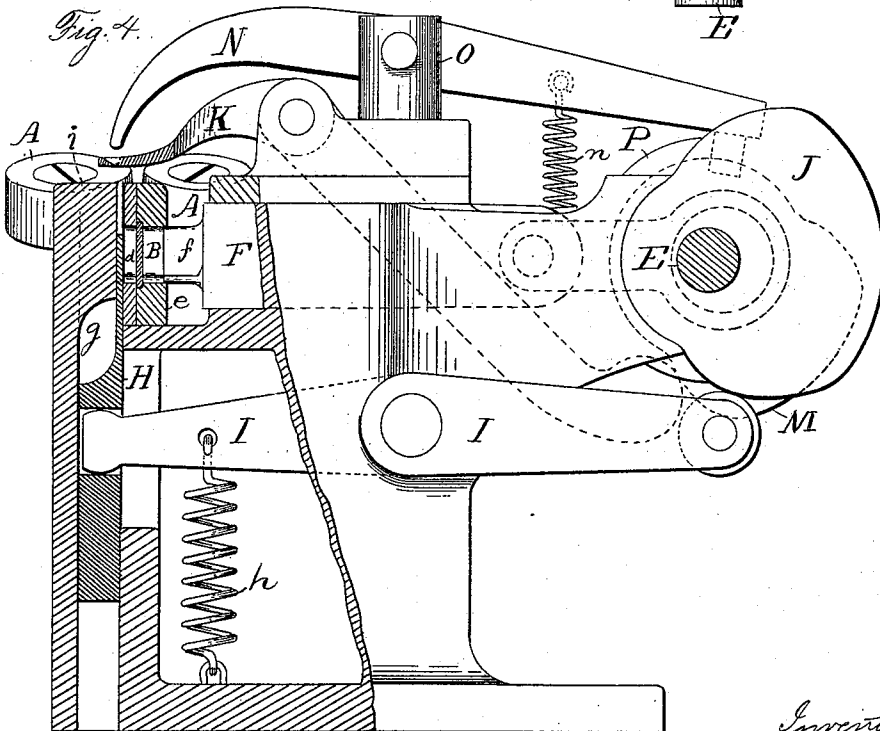
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3 Sheets—Sheet 3.

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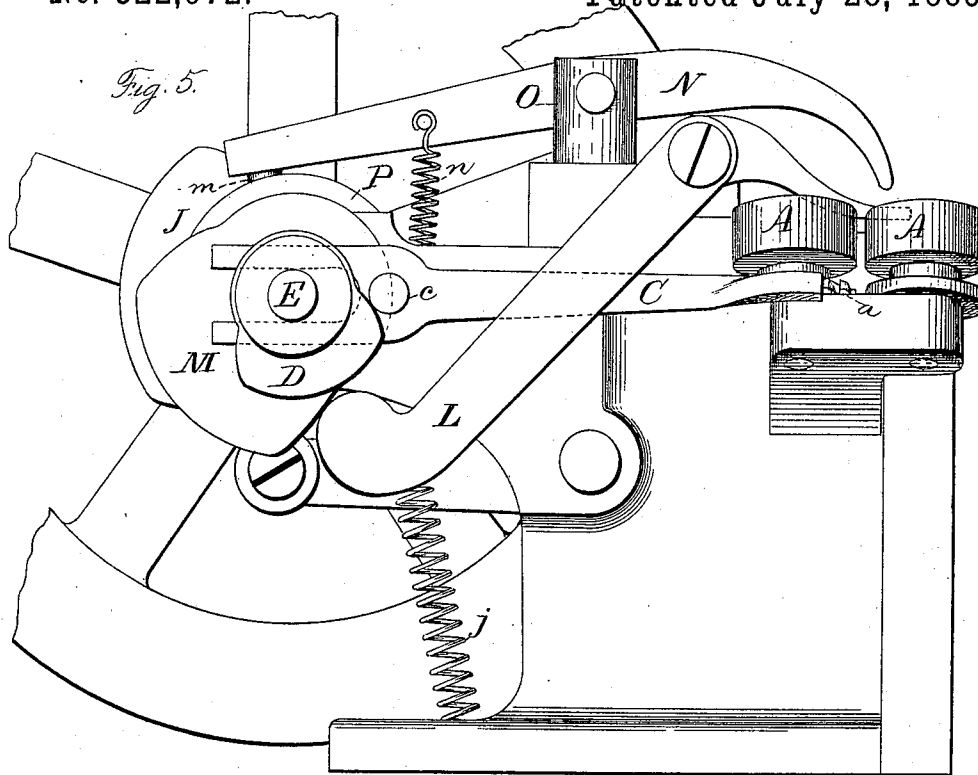


Fig. 6.

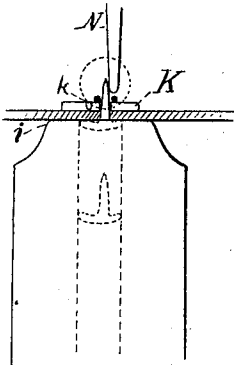


Fig. 7.

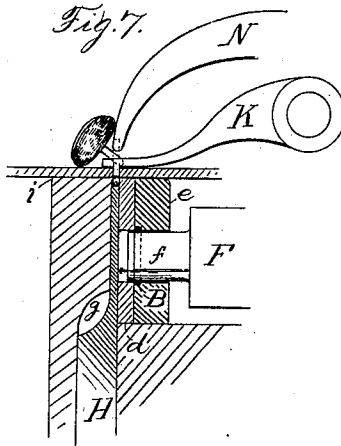
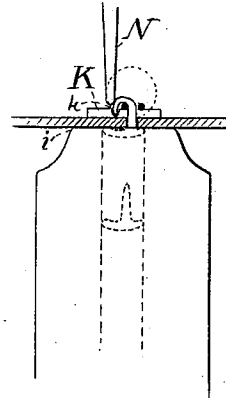


Fig. 8.



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UNITED STATES PATENT OFFICE.

FRANCIS HENRY RICHARDS, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR
TO THE AMERICAN BUTTON FASTENER COMPANY, OF NEW BRITAIN,
CONNECTICUT.

MACHINE FOR MAKING AND SETTING BUTTON-FASTENERS.

SPECIFICATION forming part of Letters Patent No. 322,972, dated July 28, 1885.

Application filed December 8, 1884. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS HENRY RICHARDS, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Machines for Making and Setting Button-Fasteners, of which the following is a specification.

My invention relates to improvements in button-setting machines.

One object of my invention is to dispense with the complicated machinery which is necessary for taking fasteners as they lie promiscuously in a hopper, and arranging them in proper order for feeding; and to this end I make the fasteners in the button-setting machine, and carry them directly from the punching mechanism to the button-setting machine.

In the accompanying drawings, Figure 1 is a front elevation of my button-setting machine. Fig. 2 is a rear elevation. Fig. 3 is a plan view. Fig. 4 is in part a vertical section and in part a side elevation. Fig. 5 is a side elevation showing the opposite side of the machine. Fig. 6 is a front elevation of a detached portion of my machine. Fig. 7 is another detached view, partly in side elevation and partly in vertical section; and Fig. 8 is a front view corresponding to Fig. 6, but illustrating a subsequent stage in the operation of the machine.

A A designate feed-rollers, between which a metal strip or ribbon, B, is fed downward obliquely through a suitable channel, so as to present the metal to the punching mechanism. One of the feed-rollers A has secured to it a ratchet-wheel, *a*. The forward end of the pawl C is grooved, so as to embrace the sides of the ratchet-wheel as well as its edge. This pawl is held in contact with this ratchet-wheel and pulled backward by means of a spring, *b*, Fig. 3. It is pressed forward by means of the cam D on the main shaft E, which cam acts against the side projection or pin, *c*, Figs. 3 and 5, that projects from the side of the pawl C.

Other mechanism for feeding the stock with an intermittent motion may be employed, if desired, without departing from the spirit of my invention.

Another suitable mechanism for this purpose is that shown in United States Patent No. 261,977, to John Adt, "machine for making split keys."

The cutting-die *d* is shown in Figs. 4 and 7, while its position is indicated by broken lines in Figs. 1, 6, and 8.

Just back of the die *d* is the grooved guide-block *e*, through which the stock is fed in front of the die, and which also serves as a picker or take-off, the same being provided with an orifice through it from front to rear, of the proper form to receive the punch *f*, Figs. 4 and 7. This punch is secured to the slide F, Figs. 3, 4, and 7, which slide is reciprocated by means of the pitman G, Figs. 2 and 3, one end of which pitman embraces an eccentric upon the main shaft E.

Immediately in front of the die *d*, and upon the side toward which the metal is punched, is the vertically-reciprocating driver H, Figs. 4 and 7, the upper end of which driver is slightly recessed or made hollowing to conform to the convex edge of the head of the fastener. In order to strengthen this driver it is provided with ribs *g* near each edge, the front edge of said rib in side view being indicated by the vertical broken line in Fig. 4. This driver H is reciprocated by means of the crank-lever I, which is moved in the direction to throw the driver downward by means of the spring *h*, Figs. 2 and 4, and in the direction to carry the driver upward by means of the cam J.

Above the die, at the front of the machine, is a small table or platform, *i*, upon which to place the leather or fabric to which buttons are to be attached. Above this table is a presser-foot, K, for holding the fabric in position. This foot has a slot through it at its front end, around which is a recess for receiving the eye of a button, and at one side of this slot and recess is a groove, *k*, to receive the point of the button-fastener after it is bent. This presser-foot K is operated by means of a lever, L, the spring *j*, and the cam M upon the main shaft E.

Above the presser-foot K is the finger N, which has both a horizontal and vertical movement. This finger is in the form of a hooked

lever, and is pivoted to the post O, so that it can oscillate vertically, the said post also being pivoted to the framing of the machine, so that it can turn therein for moving the finger horizontally. The horizontal movement of the finger N is caused by the side walls of the cam-groove in the cam P, which is secured to the main shaft E, the rear end of said finger N being provided with a pin or projection, *m*, which enters said cam-groove. The vertical movement of the finger N is caused by making the bottom of the cam-groove in the cam P eccentric to move the finger in one direction, while the spring *n*, Figs. 4 and 5, moves said finger in the opposite direction.

In the operation of the machine the stock is fed to a point in front of the die and stopped. The leather or fabric to which the button is to be attached is placed upon the table; the presser-foot comes down to hold it in place; the punch comes forward to punch out a fastener and carry it forward through the die, and then deposit it upon the upper end of the driver H. The driver H rises to carry the fastener bodily upward just as the punch is about to retreat, and while it is still forward far enough to form a guide to assist in guiding the fastener in its upward course. The driver stops after it has forced the prong through the fabric and presser-foot, as shown in Figs. 6 and 7. A button is also placed in the recess of the presser-foot, so that the prong of the fastener projects upward through its eye, which button is shown in full lines in Fig. 7, and its eye is shown in section in Figs. 6 and 8, and the position of its head in said figures is indicated by the broken circle therein. The finger N then lies by the side of the prong of the fastener, as shown in Figs. 6 and 7. By means of its vertical and horizontal movement the point of the finger is carried into the position shown in Fig. 8, and in doing so it bends the point of the fastener and clinches it over the button-eye, as shown, to secure the button to the fabric. When thus clinched the extreme point of the fastener enters the groove *k*, so that said point is brought near to said fabric. The finger and the presser-foot again rise up out of the way; the fabric is lifted up by hand and passed along to bring the point desired for attaching another button into proper position, the other parts of course returning to their former position at the proper times, so that the operation may be repeated indefinitely. The several cams are so set upon the main shaft that the operation of the several mechanisms or parts may take place in their proper order at the proper time, substantially as hereinbefore described.

It is evident that if the stock from which the button-fasteners are made were fed by hand it would not materially change the operation of the other parts.

From the foregoing description it will be seen that I have combined in one machine mechanism for feeding the stock from which the fasteners are punched, mechanism for

punching the fasteners therefrom, mechanism for taking the fasteners as fast as made and driving them into position for setting, mechanism for holding the material to which the buttons are to be attached, and mechanism for clinching or bending the end of the fastener to secure it to the button-eye.

It is evident that the essence of the invention pertaining to such combination of mechanisms, or a part of them, will not be changed by the substitution in the combination of other known mechanism for any one or more of the mechanisms which go to make up said combination.

I am aware that a prior patent shows mechanism for cutting shoe-nails from a strip or plate of metal, and then driving them into a boot or shoe heel; also, that another patent shows a button-setting instrument with mechanism for feeding wire through a button-eye, then cutting off a proper length for a staple, then bending to form while the middle portion of the wire remains within the button-eye, then forcing the points of the staple-legs through the material to which the buttons are to be attached, and then clinching the ends of said legs to hold the staple in place. All of such prior art is hereby disclaimed.

I claim as my invention—

1. The combination of mechanism for clinching or bending the fasteners with the die and punch for cutting the fasteners from a strip or plate of metal, and a driver adapted to receive and carry a fastener from the cutting-dies bodily to said clinching or bending mechanism, substantially as described, and for the purpose specified.

2. The combination of mechanism for clinching or bending the fasteners, mechanism for feeding the strip or plate of metal to the cutting-dies, dies for cutting the button-fasteners from said strip or plate, and a driver adapted to receive and carry a fastener from the cutting-dies bodily to said clinching or bending mechanism, substantially as described, and for the purpose specified.

3. The combination of the presser-foot and table for holding the material to which buttons are to be set, mechanism for cutting button-fasteners from the stock and presenting it to a driver, the driver for carrying the fastener from the cutting mechanism to the material-holding mechanism and for forcing it through the material held thereby, and mechanism for bending the prong of the fastener to clinch it upon the button-eye, substantially as described, and for the purpose specified.

4. The combination of the table *i*, the die *d* and punch *f* underneath said table, and the reciprocating driver H, having an anvil-face at its upper end, substantially as described, and for the purpose specified.

5. In a button-setting machine, the combination of the table *i*, upon which to place the material to which the buttons are to be attached, the presser-foot K, having a slot in its end, through which the prong of the fast-

ener may pass, and a driver for forcing the fastener through said material and slot while it is being held by the presser-foot, substantially as described, and for the purpose specified.

5 6. In a button-setting machine, the combination of the presser-foot K, the finger N, and mechanism for moving said finger both vertically and laterally, substantially as described, and for the purpose specified.

10 7. The combination of the punch *f*, for use in connection with a proper die, the driver H, presser-foot K, the finger N, the driving-shaft E, having a set of cams thereon, and means

for operatively connecting said cams with the said several parts, substantially as described, and for the purpose specified.

8. The combination of the feeding mechanism, the punching mechanism for cutting out button-fasteners, the driver H, having an anvil-face at its upper end, the presser-foot K, the finger N, and their operating mechanisms, substantially as described, and for the purpose specified.

FRANCIS HENRY RICHARDS.

Witnesses:

C. O. PALMER,
H. W. FAULKNER.