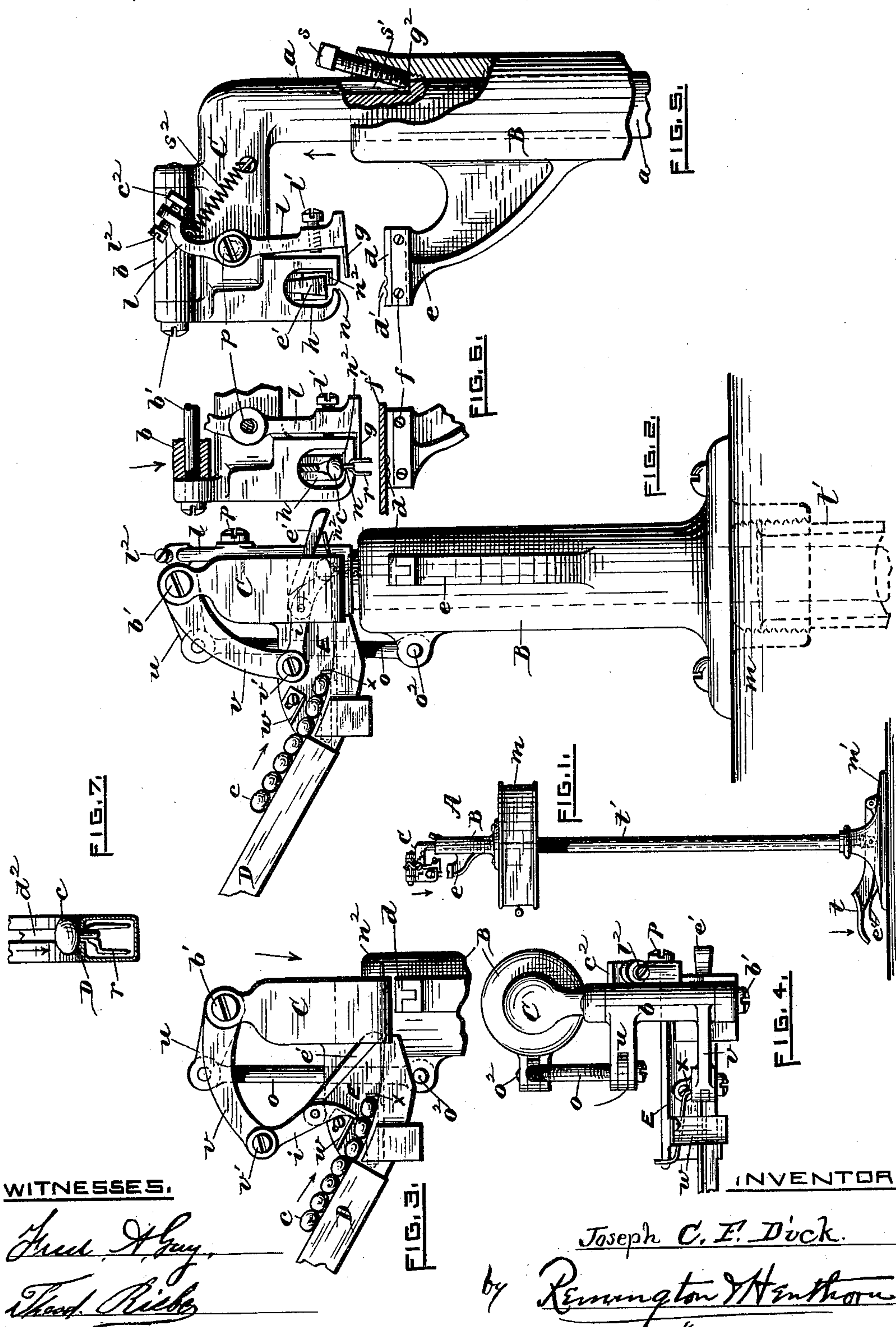


(No Model.)

J. C. F. DICK.  
BUTTON MACHINE.

No. 389,453.

Patented Sept. 11, 1888.





# UNITED STATES PATENT OFFICE.

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## BUTTON-MACHINE.

SPECIFICATION forming part of Letters Patent No. 389,453, dated September 11, 1888.

Application filed April 24, 1888. Serial No. 271,658. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH C. F. DICK, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Button-Attaching Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My present invention embodies in a button-attaching machine a stationary die or anvil, on which the work quietly rests during the attaching operation, in combination with a vertically-reciprocating head or holder portion provided with a button and fastener carrying tube or runway, a feeding device, and a guide for holding the pronged fasteners in a vertical position during the clinching operation, all attached to and reciprocating with said head or holder. Usually, heretofore, in machines of this class the clinching die or anvil moves or vibrates in unison with the operating treadle or lever, the button (with its metallic-pronged fastener depending therefrom) being retained in a slotted head or holder communicating with a slotted tube or runway, in which a number of the threaded buttons are carried, and from which they are intermittently and automatically fed to the holder and retained in position by mechanism actuated by the treadle. An example of a button-attaching machine of this character is shown in the United States Patent No. 310,934, granted to me January 20, 1885.

An objection to such former machines is that the work or fabric becomes more or less disarranged, due to the movement of the anvil, thereby requiring greater care and skill on the part of the attendant to maintain the work in position. Another disadvantage is that the buttons are liable to become clogged in the tube at times, thereby obviously detracting from the efficiency of the machine.

The object of my invention is to produce a more efficient button-attaching machine, and

one, also, in which the defects just pointed out are practically overcome.

By the aid of my improved machine the attendant is enabled to attach buttons to shoes or other articles of wearing-apparel more rapidly and with greater accuracy. The act of reciprocating the mechanism imparts a jarring motion to the button-tube, thereby insuring the presentation of a button to the feeding-finger as wanted, all as will be more fully hereinafter specified and claimed.

In the accompanying sheet of drawings, Figure 1 represents a perspective view of a button-attaching machine having my improvements incorporated therein. Fig. 2 is a front view, enlarged, of the upper portion of the machine, the parts being in their normal position. Fig. 3 is a similar view, the head being depressed to its limit and showing the feeding finger or lever in the act of engaging the first or lowest button in the runway preparatory to placing it in position in the holder. Fig. 4 is a plan view of the parts corresponding to Fig. 2. Fig. 5 is a side view, in partial section, viewed from the right of Fig. 2. Fig. 6 is a partial side view showing the head, &c., in the act of descending to force the prongs of the fastener through the fabric and clinch them thereunder, said fabric resting upon the stationary die; and Fig. 7 is an enlarged cross-sectional view of the button and fastener carrying tube.

The construction and arrangement of my improved button-attaching machine more in detail are as follows: A, referring again to the drawings, designates the machine as a whole, the same consisting of the head portion, an enlarged base portion, as *m'*, united by a standard, *t'*, and adapted to be operated by a treadle, *t*, as shown in Fig. 1. The standard, as drawn, is represented as tubular, within which the operating-rod *a* freely reciprocates. The lower end of said rod is jointed to the treadle *t*, the upper portion at the same time being adapted to carry the button-feeding devices, &c., hereinafter described.

B indicates a stationary top frame or head, which is secured to the upper end of the tube, as represented in Fig. 2 by dotted lines. A wooden box, *m*, having drawers therein, may be secured to the head B, if desired, as clearly



shown. A rigid arm, *e*, extends laterally from and forms a part of the head B, the same serving as an anvil block or holder, in which the clinching-die *d* is, if desired, adjustably secured. The die-block *d* is let into the holder and is held in position by the screws *f*. The operating-rod *a* is fitted to travel up and down in the head, (see Fig. 5,) and is prevented from turning by means of a slot, *s'*, cut into the rod, in conjunction with an adjusting-screw, *s*, tapped into the head adjacent to the slot. This device also serves to adjustably limit the upward stroke of the rod by reason of the engagement of the screw with the lower end of the slot, as at *g*<sup>2</sup>.

The upper portion or head, C, of the rod *a* is enlarged and represents approximately an inverted U. It is obvious, however, that this enlarged portion may be made from a separate piece of stock and then rigidly secured to the rod without departing from my invention.

The under side of the head or holder portion C is cut out transversely at *h*, Figs. 5 and 6, to permit of the passage of buttons *c*, and also to receive the feeding-finger *i*, together with its connected ejector *e'*. The bottom face of the head is cut through, as at *n*, thereby forming a narrow slot for the eye-shanks of the buttons and the connected fasteners (see Fig. 6) as they are intermittently fed from the tube or reservoir.

E indicates a short arm extending from the left side of the head, in which is formed a groove or slot communicating with the one just described. A spring-stop, *x*, is mounted in said arm for the purpose of limiting the free movement of the column of buttons, a guard, *w*, (adjustably mounted with relation to the said stop,) serving at the same time to arrest the movement of the free end of the feeding-finger, so that the latter will properly engage a button at each stroke of the treadle. A runway, D, having a longitudinal slot, *d*<sup>2</sup>, therein, arranged to coincide with the groove and slot *n*, before described, is removably secured to and mounted at an angle with the extension E. This runway I preferably make tubular, and also angular in cross-section, as indicated in Fig. 7, and of any desirable length. It will be seen that the shanks of the buttons pass through the slot *d*<sup>2</sup>, and that the fasteners *r*, connected with the buttons, lie wholly within the tube.

To the upper side of the head C is mounted a pin or shaft, *b'*, on which a two-arm lever, *b*, is adapted to vibrate. The longer or front arm, *v*, has the feeding-finger *i* jointed to its free end *v'*, while the shorter arm, *u*, is jointed at its free end to a link or connection, *o*, which in turn is jointed at its lower end to a pin, *o*<sup>2</sup>, mounted in ears formed on the left side of the stationary head B.

A lever, *l*, is pivoted at *p* to the right side of the head C. This lever extends upwardly beyond the pivot and is provided with an adjusting-screw, *l*<sup>2</sup>, whose point engages a cam-shaped lug, *c*<sup>2</sup>, secured to the hub of the said lever *b*, a spring, *s*<sup>2</sup>, serving to maintain the parts in

contact. The lower portion of the lever *l* is also provided with an adjusting-screw, *l'*, and a thin plate, *g*, secured to the bottom face of the lever. By means of this arrangement the inner edge of said plate serves upon the vibration of the levers *b* and *l* to adjust the fastener so that its prongs stand in a vertical position, thereby insuring a proper entrance of the prongs through the fabric and the subsequent clinching of them thereunder.

The general operation of the machine, as in attaching buttons, is as follows: A tube, D, filled with buttons *c* and connected fasteners *r*, substantially as shown in Fig. 7, is first mounted at the entrance of the slot communicating with the head-slot *n*, the lowest or first button to be attached then resting against the stop *x*, as shown in Fig. 2. Now, upon depressing the treadle to its limit against the resistance of a spring, *e*<sup>4</sup>, the descending rod *a*, through the medium of the stationary link *o*, will cause the lever *b* to vibrate, thereby carrying the feeding-finger *i* to the extreme position against the guard *w* and past the first button, the connected ejector *e'* being well past the center of the head, as shown in Fig. 3. Upon removing the foot from the treadle the spring *e*<sup>4</sup> immediately acts to elevate the rod *a*, thereby returning the parts to their normal position, the screw *s*, Fig. 5, limiting the upward movement of the rod, said movement also, by means of the fixed link *o* and its connected lever *b*, &c., forcing the button and its fastener from the stop *x* and placing them in position (see dotted lines, Fig. 2) to be attached to the fabric. It will be noticed that the button is forced over a thin spring, *n*<sup>2</sup>, the tendency of which is to slightly elevate the button, thereby causing the upper portion of the fastener to bear snugly against the under side of the head adjacent to the slot *n*, which is cut away to conform to the head of the fastener, as shown in Fig. 6. Now, having the first button thus brought into position, the leather or fabric, *f'*, to which it is to be attached is next placed upon the stationary die-block *d*. The operator then forces the treadle downwardly to its limit, thereby forcing the prongs of the fastener through the fabric, and by means of the die-cavities *d'* clinches them thereunder. During this downward movement of the rod *a*, &c., the consequent rearward vibration of the lever *b* will have removed the cam *c*<sup>2</sup> from the stop *l*<sup>2</sup>, thereby allowing the spring *s*<sup>2</sup> to swing the lower portion of the lever *l* inwardly to engage and adjust the fastener immediately preceding the insertion of the prongs into the fabric. While the prongs are being clinched the fingers *i* and *e'* will again assume the position shown in Fig. 3 preparatory to taking another button and fastener from the runway and carrying them to the holder. Upon removing the pressure from the treadle the parts again return to their normal position. At the same time, however, the ejector *e'* forces the now-attached button from the holder, immediately followed by the re-



placing of a new button and fastener in position by the action of the finger *i*, as just stated.

The operation of attaching buttons by the aid of my improved machine carries the runway, buttons, &c., bodily up and down in unison with the movement of the main or center rod, *a*, thereby producing a shaking of the runway, and consequently insuring the filling of the space adjacent to the stop *x* by a new button immediately one is carried ahead by the feeding-finger. The machine can be successfully operated as fast as the attendant can handle the work.

I claim as my invention—

1. The button-attaching machine hereinbefore described, consisting of a standard portion, a stationary die-block adapted to clinch the prongs of a fastener, a reciprocating head or holder, a feeding device, and a runway adapted to receive connected buttons and fasteners secured to said holder, and means for reciprocating the holder, substantially as set forth.

2. In a button attaching machine, the combination, with a stationary anvil having a clinching-die mounted therein, of a slotted reciprocating head or holder, *C*, an inclined raceway arranged to carry connected buttons and fasteners secured to the holder *C*, and a feeding-finger actuated by the movement of said holder, substantially as hereinbefore described.

3. The combination, with a stationary head portion having a clinching-die secured thereto and a link, as *o*, pivoted to the head, of the slotted button and fastener carrying holder

mounted to travel to and from said die and a button-feeding device pivoted to the holder and connected with said link *o*, substantially as hereinbefore described, and for the purpose specified.

4. In a button-attaching machine, the combination of a slotted reciprocating head or holder, a stationary clinching-die, a button and fastener feeding device secured to said holder, a runway secured to said holder, and a fastener-adjusting lever, as *l*, pivoted to the holder, substantially as shown and hereinbefore described.

5. In a button-attaching machine, the combination, with the reciprocating main rod *a*, having a slot, *s'*, therein, of a stationary frame having an adjustable stop, *s*, mounted therein and engaging said slot, whereby the upward movement of the rod is limited, and also serving to prevent the rod from turning, substantially as shown and hereinbefore described.

6. In a button-attaching machine, the combination, with a stationary frame having an extension or anvil in which a clinching-die is mounted, of a reciprocating slotted head or holder having a feeding mechanism, a self-adjusting fastener device, and a button and fastener carrying runway secured thereto, substantially as hereinbefore described.

In testimony whereof I have affixed my signature in presence of two witnesses.

JOSEPH C. F. DICK.

Witnesses:

CHARLES HANNIGAN,  
F. A. SMITH, Jr.