(No Model.)

J. C. F. DICK.

BUTTON ATTACHING MACHINE.

No. 310,934. Patented Jan. 20, 1885.

Fig. 1.

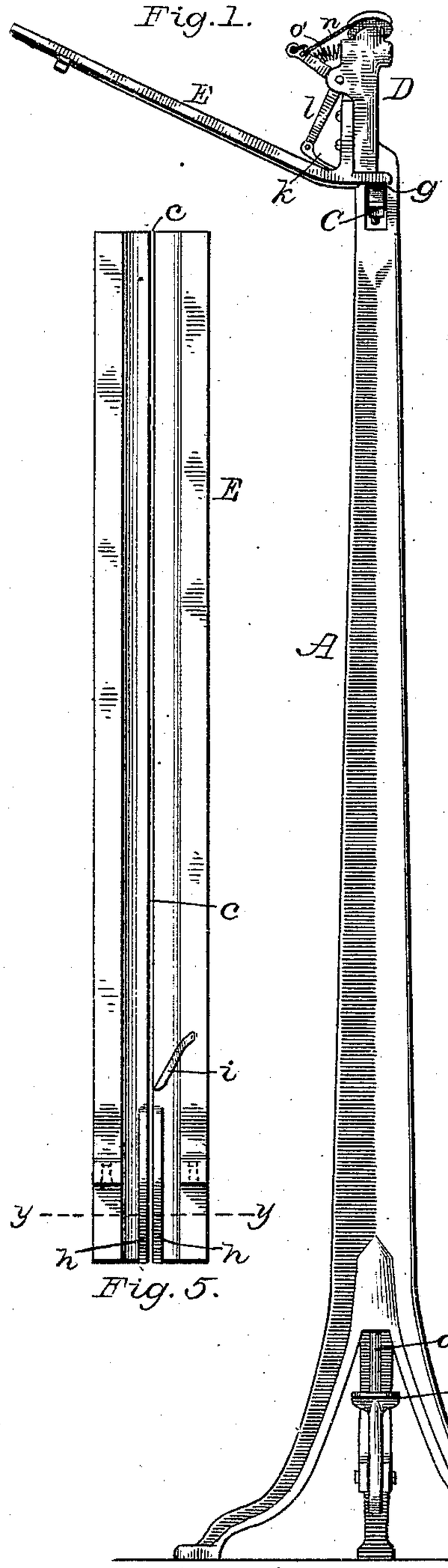


Fig. 5.

Fig. 2.

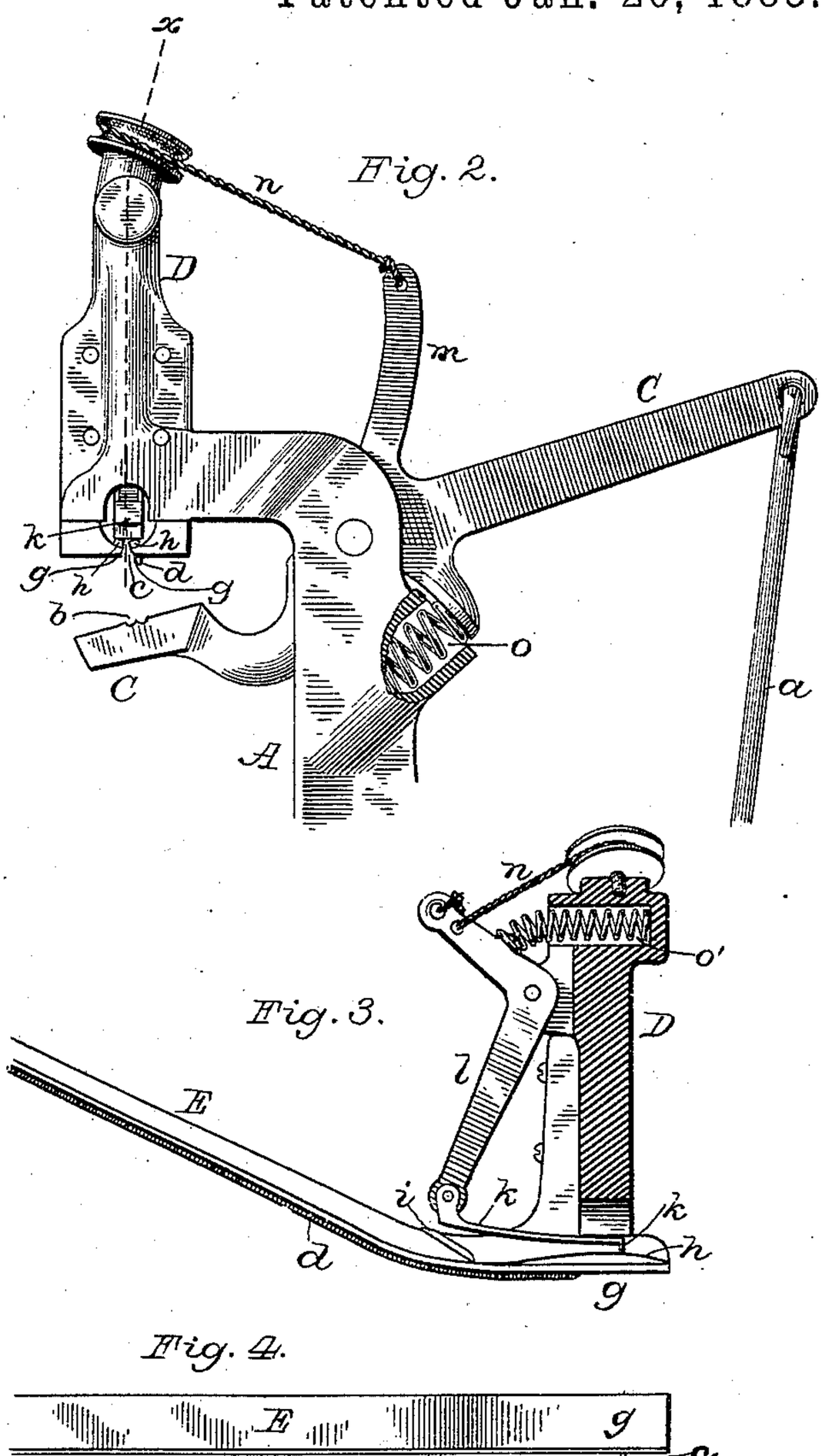


Fig. 3.

Fig. 4.

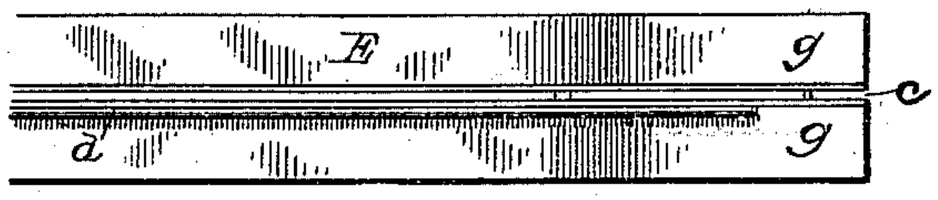
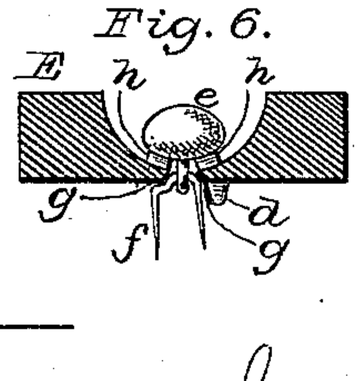


Fig. 6.



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UNITED STATES PATENT OFFICE.

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BUTTON-ATTACHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 310,934, dated January 20, 1885.

Application filed March 28, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH C. F. DICK, of Belvidere, in the county of Boone and State of Illinois, have invented certain new and useful Improvements in Machines for Attaching Buttons to Wearing-Apparel; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear, true, and complete description of my invention.

My machine is intended for service in attaching buttons by means of separable button-fasteners, which must be entered through the eye of a shank-button prior to the piercing or clinching operation, in contradistinction to certain other general classes of fasteners, which are either simultaneously forced through the eye of a button and the fabric, or are first pierced through the fabric and then clinched through the eye of a button; and the particular variety of fasteners with which my machine is intended to operate are the well-known "Heaton Fasteners," and have three puncturing-prongs. Machines for attaching buttons with said Heaton fasteners have heretofore been devised, and while I employ in a general way more or less of the elements which are common not only to said prior machines, but also to many other still older and more or less analogous machines, I have organized said elements in certain novel combinations, which have been proved to possess much practical value, and I have also devised certain other novel features, all of which will be duly specified in the several claims hereunto annexed.

Referring to the drawings, Figure 1 is a front elevation of a machine embodying the several features of my invention. Fig. 2 is an enlarged side elevation of the upper portion of the same. Fig. 3 is an enlarged view of the head of the machine in vertical section on line *x*, Fig. 2. Fig. 4 is a bottom view of the head of the machine and a portion of the raceway. Fig. 5 is a top view of the entire button-raceway detached. Fig. 6 illustrates said raceway at the head of the machine in cross-section on line *y*, Fig. 5.

The machine here shown is adapted to be operated by foot-power applied to a treadle for setting each button; but it will be obvious that it may be organized to be operated by steam or other power without departure from the main features of my invention.

For use in retail stores the standard or frame A is provided with feet, punctured to receive screws, by which it may be firmly secured to the floor in a manner common to other machines of this general class. A treadle, B, is pivoted at the base of the standard, and is coupled by a link, *a*, to the rear end of the pivoted clinching-jaw C, so that the working end of the latter, having on its upper surface the usual clinching-die, *b*, can be raised and made to operate like the corresponding jaw of the well-known hand-tool used for setting buttons.

While I make special claim to a treadle in certain combinations, I do not preclude myself from employing a clinching-die mounted upon the upper end of a vertically-sliding rod or spindle actuated by a treadle or otherwise in connection with certain other features of my invention.

The head D of the machine corresponds in a general way with the upper or button-holding jaw of the well-known hand-tool; but it is constructed rigidly upon, and as here shown it is in part integral with, the standard A, and projects horizontally as an arm or bracket from the top thereof. To one side of this head there is secured an inclined raceway or chute, E, composed of two parallel sections, affording a longitudinal slot, *c*, between the sections, of such width as to receive the eye-shank of a button flatwise and prevent its rotation therein. The under surface of the chute, at one side of the slot *c*, is provided with a longitudinal rib, *d*, which, as a novel feature, serves to prevent such a tipping of a pendent fastener as would result in its falling from the eye of a button, one of the latter in Fig. 6 being shown at *e* with the fastener *f* in proper engagement therewith, it being seen that the sidewise contact of a prong of the fastener with the edge or side of said rib serves to prevent the fastener from tipping and slipping from the shank-eye while it and the button are sliding downwardly in the chute, and as said rib is in light contact with but one of the prongs of the fastener the friction therewith does not retard the descent of the buttons and fasteners. At the foot of the chute the two sections thereof are horizontal,

and the rib *d* terminates at a point near the foot of the inclined portion, so as to afford flat surfaces *g*, which in part serve as the working portion of the upper jaw of the machine.

Within the head of the machine, and in the vertical plane occupied by the lower jaw, there is at each side of the slot *c* an upwardly-curved spring, *h*, (heretofore used in a different form and arrangement in some hand-tools,) said springs serving to so lift the buttons as to hold them firmly, regardless of the variable length of the button-shanks liable to occur, and to cause the top of the fasteners to be always held snugly against the surfaces *g* at both sides or edges of the slot *c*.

Adjacent to the bottom of the inclined portion of the chute there is on one side of the slot a stop or spring, *i*, which extends with its free end diagonally forward on the upper surface of the chute, as seen in Fig. 5, sufficiently near the slot *c* to operate as a button-stop, for preventing the passage of buttons beyond that point, except when detached therefrom one by one and moved forward into proper position for setting by means of the vibrating feeding-finger *k*, which is loosely pivoted to the end of the lower arm of the bell-crank lever *l*, which is in turn pivoted to the head of the machine, and is also connected with or coupled to the treadle, so that when the latter is vibrated said lever will also be vibrated and carry the feeding-finger *k* rearwardly when the treadle is depressed, thus causing said finger to drop behind the button with which the button-stop spring *i* is in contact, and then when the treadle is next permitted to rise said finger will force the button forward upon the button-lifting springs into position for setting.

It is immaterial in what manner the feeding-finger is connected with the treadle under certain features of my invention; but I employ the vertical arm *m* on the clinching-jaw C, back of the head D, which is coupled with the bell-crank lever *l* by means of a cord or wire, *n*, passing over a grooved sheave or pulley. It is also immaterial as to how the treadle, after being depressed, is caused to resume its elevated position, or how the feeding-finger is caused to make its rearward or its forward movement, so long as said movements are in harmony with the movements of the lower jaw; but, as here shown, the treadle is lifted by the spring *o*, housed in the standard, and the feeding-finger is moved forward by the expansive spiral spring *o'*, interposed between the upper arm of the bell-crank lever *l* and the opposite surface of the head of the machine, which is recessed to afford a seat for said spring. It will be seen that if the chute be filled with buttons having the three-pronged fasteners first applied thereto, and the treadle be vibrated, a button with its fastener will be forced into the slot above the lower jaw, and upon the lifting-springs and in proper position for setting, and if then the flap of a shoe or a piece of leather be placed flatly on the lower jaw and the treadle depressed the prongs of the fastener will be forced through the interposed material and be clinched on the under side, and thereafter on removing the set button from the slot further depressions of the treadle will result in the setting of buttons, one of which, with its fastener, will be always placed in proper position for setting by the time the lower jaw completes its falling or opening movement.

The machines hereinbefore referred to as having been heretofore devised for operating with fasteners of the character described have embodied vertically-reciprocating plungers, having near their lower ends a lateral recess for receiving the head of a button and an open slot for receiving the shank-eye, so that after a button, with its fastener, has been fed to the plunger, it is then forced downwardly upon a stationary clinching-die, the prongs passing through the interposed fabric; and in some cases such a plunger has been heretofore combined with a raceway and provided with a feeding-finger, by which the recess in the plunger can be automatically supplied with a button and its fastener at the termination of each upward movement of the plunger, the feeding-finger operating against the fasteners at the under side of the raceway.

In my machine the upper or button-holding jaw has no movement, and hence a button-fastener suspended therefrom can be so held that there can be no liability of such a variation of its position as would result in a failure of the prongs to properly puncture or to be properly clinched. As a rule, when a fastener is above the clinching-die, it is inclined a little and the side thereof having the two prongs hangs lower than the opposite side; but as the clinching-jaw rises and places the leather or other material into initial contact with said two prongs the fastener is thereby caused to assume a practically vertical position, and with its top in firm contact with the adjacent surfaces *g* before the puncturing operation begins.

For obtaining the best results, the machine with all its parts substantially as shown should be employed; but certain of the combinations therein contained can be profitably employed independently of the others—as, for instance, the automatic feeding-finger can be detached, and yet leave a valuable machine as compared with any other known to me, because with his finger the operator can push forward a button and fastener from the button-stop spring and readily locate it in proper position for clinching; or the feeding-finger can be uncoupled from the clinching-jaw and treadle, so as to be vibrated by hand, thus enabling the button and its fastener to be properly located in the holding-jaw without the exercise of skill or judgment by the operator; and, in lieu of the treadle, a hand-lever can be relied upon for vibrating the clinching-jaw and nevertheless be oper-

ated with economy in time as compared to the use of a hand-tool.

It is obvious that a machine constructed as described can be produced at such low cost as to warrant its general use by retail shoe-dealers, and that it can be successfully operated by persons of ordinary judgment and skill.

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

1. The combination, substantially as hereinbefore described, of the raceway adapted to receive shank-eye buttons with pronged fasteners suspended therefrom, the stationary slotted button-holding jaw provided with button-lifting springs and mounted upon a standard, and the reciprocating clinching-jaw.

2. The combination, substantially as hereinbefore described, of the slotted stationary button-holding jaw mounted on a standard, the inclined raceway having a slot communicating with the slot in the holding-jaw, a button-stop in said raceway, a feeding-finger, and a reciprocating clinching-die.

3. The combination, substantially as hereinbefore described, of the stationary head mounted upon a standard, the inclined slotted raceway attached to said head, the button-stop in said raceway, the button-holding slot within said head, the springs at each side of the slot within the head, for lifting the button when in position for setting, the reciprocating clinching-die, and the feeding-finger coupled to and moved by the clinching-die.

4. The combination of the slotted stationary jaw for holding and setting shank-eye buttons with three-pronged fasteners, and the raceway longitudinally slotted for receiving the button-shank eyes flatwise while fasteners are suspended therefrom, and having a longitudinal rib on the under side at one side of its slot, substantially as described, for preventing the disengagement of the pendent fasteners from the shank-eyes during the descent of the buttons in the raceway, as set forth.

5. The combination of the stationary head mounted upon a standard and containing a stationary button-holding jaw which is provided with a slot, and button-lifting springs on each side of said slot, the raceway attached to said head and having a slot communicating with the slot in the holding-jaw, the button-stop in said raceway, the vibrating feeding-finger for carrying the buttons one by one from the button-stop to the button-lifting springs, the pivoted clinching-jaw, and the treadle for imparting motion to said clinching-jaw and feeding-finger, substantially as described.

J. C. F. DICK.

Witnesses:
A. W. SWIFT,
H. W. PIER.