

(No Model.)

3 Sheets—Sheet 1.

E. D. WELTON.
BUTTON SETTING MACHINE.

No. 571,207.

Patented Nov. 10, 1896.

Fig. 1.

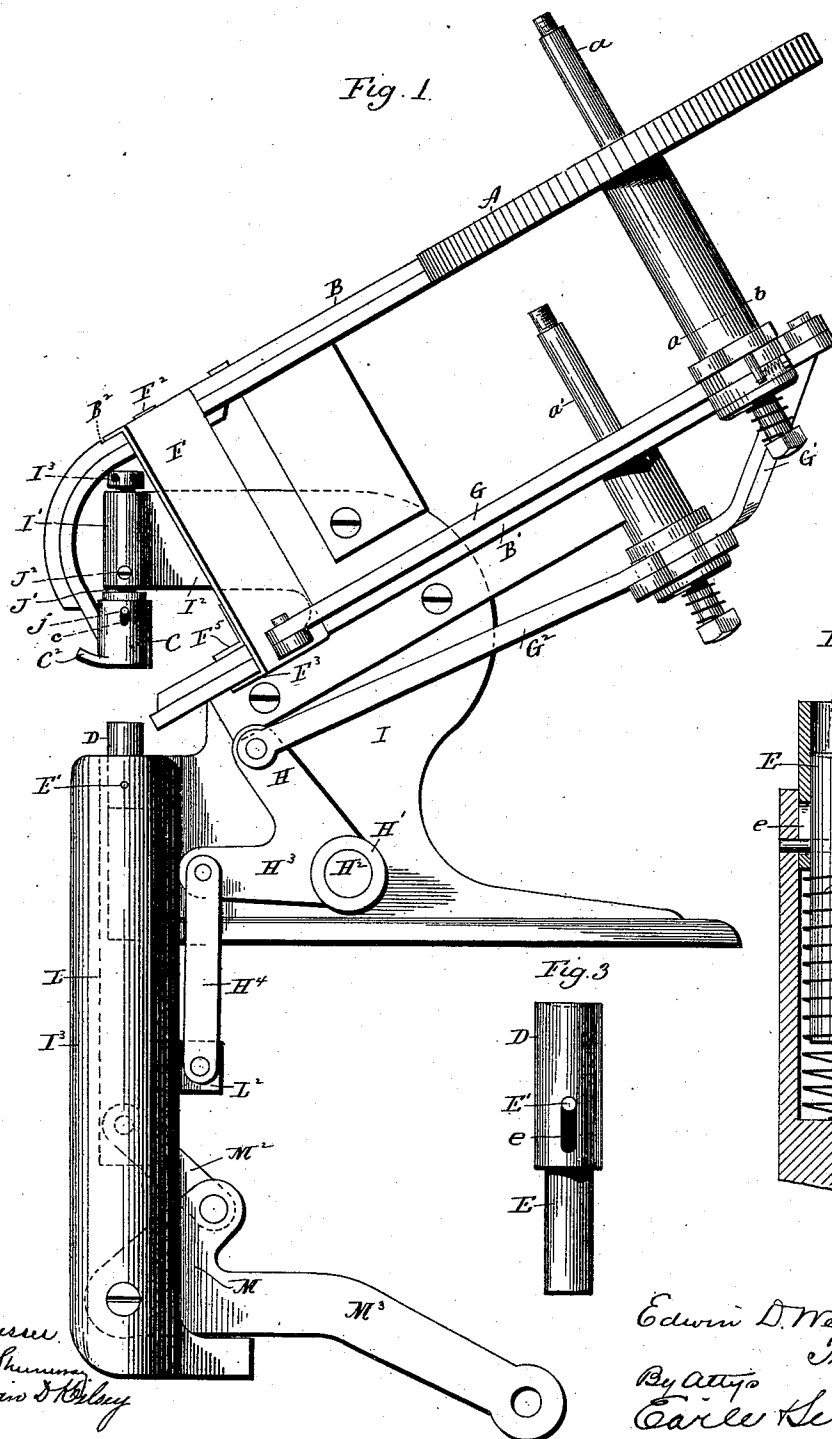


Fig. 2.

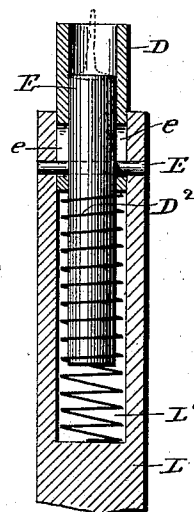
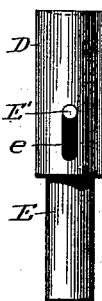


Fig. 3.



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Fig. 4

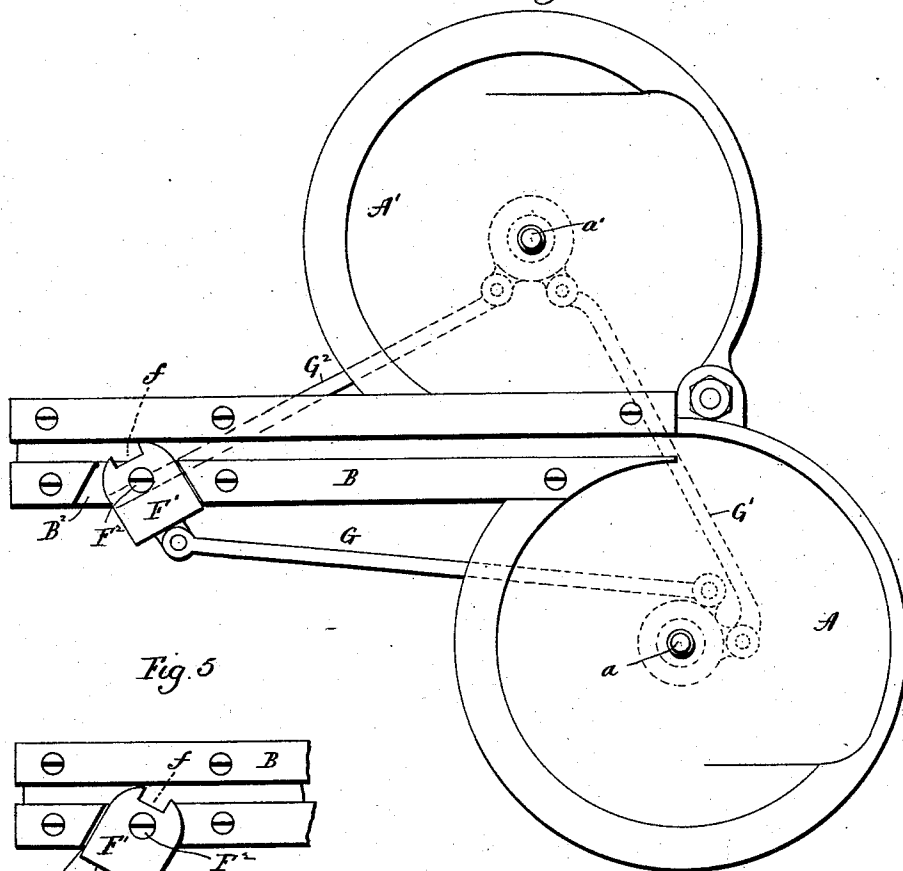


Fig. 5

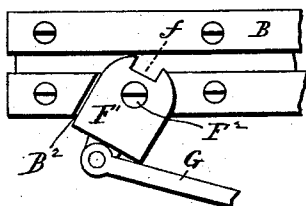
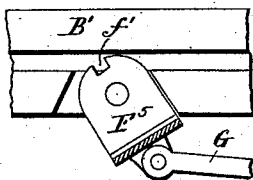


Fig. 6



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Fig. 7

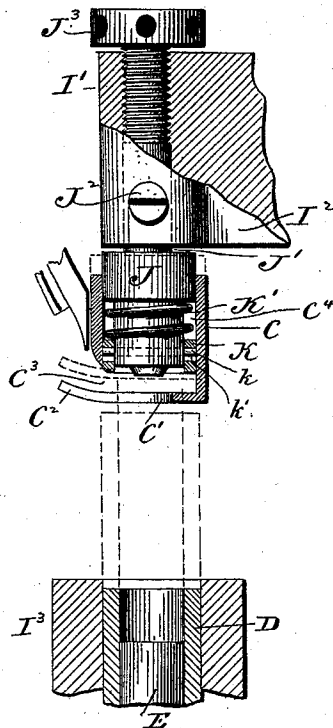


Fig. 9

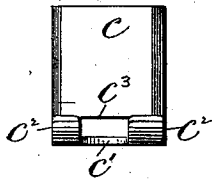


Fig. 10

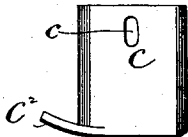


Fig. 13

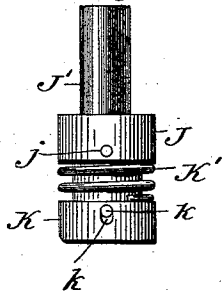


Fig. 8

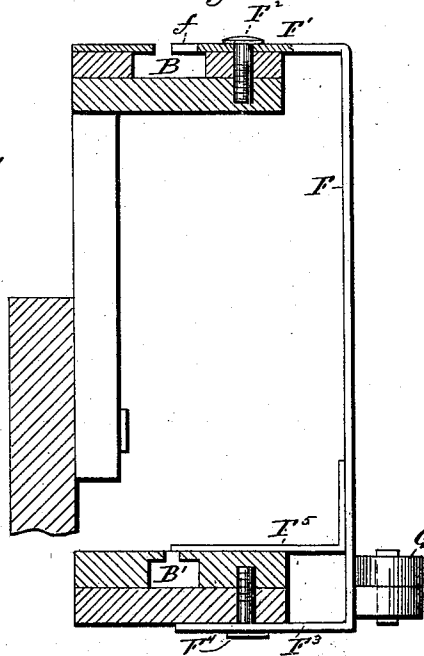


Fig. 12

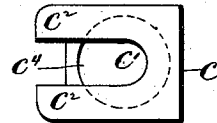


Fig. 11

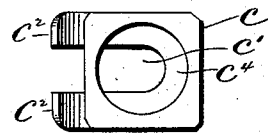


Fig. 14



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UNITED STATES PATENT OFFICE.

EDWIN D. WELTON, OF WATERBURY, CONNECTICUT, ASSIGNOR TO THE
SCOVILL MANUFACTURING COMPANY, OF SAME PLACE.

BUTTON-SETTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 571,207, dated November 10, 1896.

Application filed January 21, 1895. Serial No. 535,662. (No model.)

To all whom it may concern:

Be it known that I, EDWIN D. WELTON, of Waterbury, in the county of New Haven and State of Connecticut, have invented a new
5 Improvement in Button-Setting Machines; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact de-
10 scription of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a view in side elevation of one form which a machine constructed in accord-
15 ance with my invention may assume; Fig. 2, an enlarged broken view, in vertical section, showing the anvil, the annular fender or guard-sleeve combined therewith, and the plunger in which the said anvil and sleeve
20 are mounted; Fig. 3, a detached view in elevation of the anvil and sleeve; Fig. 4, a plan view of the machine, showing the two hoppers, the button-head chute, and the upper end of the double cut-off in its discharging
25 position therein; Fig. 5, a broken view showing the said end of the cut-off in its receiving position in the button-head chute; Fig. 6, a similar view showing the lower end of the cut-off in its receiving position in the fastener-chute; Fig. 7, a broken enlarged view,
30 in vertical section, through the centering and compensating collar, the button-head holder, and the anvil and sleeve; Fig. 8, a view on the same scale, showing the button-head and
35 fastener chutes in transverse section and the combination of the double cut-off with them; Fig. 9, a detached view, in front elevation, of the button-head holder; Fig. 10, a side view thereof; Fig. 11, a plan view thereof; Fig.
40 12, a reverse plan view thereof; Fig. 13, a detached view, in side elevation, of the die and the centering-collar and the spring thereof; Fig. 14, a detached view of the said collar.

My invention relates to an improvement in
45 that class of button-setting machines designed to combine a button-head containing an anvil with a tack-like fastener which completes the button and secures it to the fabric, the particular object of my present
50 invention being to produce a simple, compact, and conveniently-operated machine having a

large capacity for work and constructed so that button-heads of different sizes and shapes may be used without changing the die.

With these ends in view my invention con- 55
sists in a machine having certain details of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In carrying out my invention as herein 60
shown the device is provided with two hoppers A and A', respectively designed to receive button-heads and tack-like button-fasteners in bulk, the said hoppers being located in inclined positions in parallel planes, but 65
the former being located above the latter and the two extending in opposite directions from the vertical plane of the machine. The particular construction of these hoppers may be varied as desired. They are not fully shown, 70
but sufficiently illustrated for the purpose of disclosing my invention.

An inclined button-head chute B leads out of the upper hopper A and has its lower end curved downward and inward, so as to de- 75
liver button-heads to the vertically-movable box-like button-head holder C, while a correspondingly-inclined fastener-chute B' leads out of the lower hopper A' and extends down- 80
ward into position to deliver the tack-like fasteners into the open upper end of the annular fender or guard-sleeve D, which surrounds the anvil E.

It is necessary that some cut-off should be employed to control the feeding of the but- 85
ton-heads and fasteners through the two chutes. Each chute may have an independent cut-off, if desired; but I prefer to employ a double cut-off arranged to feed a
90 button-head and a fastener at exactly the same time. As herein shown, my double cut-off consists of a plate F, having its upper end bent at a right angle to form an arm F', the extreme end of which extends into the pas-
95 sage of the button-head chute, as shown in Fig. 4, and is constructed with a notch *f*, adapted in size to the size of the button-heads being fed. A screw F², passing through this arm, as shown in the said figure, connects the upper end of the cut-off with the said button- 100
head chute. The lower end of the cut-off is turned inward at a right angle to form an arm

F^3 , extending under the fastener-chute B' and receiving a screw F^4 , by means of which the lower end of the cut-off is pivotally connected with the said fastener-chute. The lower end of the cut-off is also furnished with a cut-off finger F^5 , made independent of and secured to it and extending inward into the path of the fastener-chute B' , as shown in Figs. 6 and 8, and constructed with a clearance-notch f' , the size of which is determined by the size of the tack-like fasteners to be fed. I should further mention that the upper face of the button-head chute B is recessed, as at B^3 , as seen in Fig. 4, to receive the arm F' of the cut-off. When the body of the cut-off is thrown forward and downward, the arm at its upper end and the cut-off finger at its lower end will be turned upward and rearward, as shown in Fig. 5, so as to bring their notches into their receiving positions in the paths of the chutes, the lowest button-head in the column in the button-head chute B and the lowest fastener in the column in the fastener-chute B' will then glide into the notch f and the notch f' , respectively. Then when the cut-off is swung upward and backward, as shown in Fig. 4, the notches will be faced around and brought into their discharging positions, so as to deliver the said button-head and fastener into the lower portions of the chutes, down which they will then glide alone, while the column of heads and fasteners in the respective chutes will be kept back by the engagement of their lowest members with the beveled upper edges of the arm F' and cut-off finger F^5 .

The cut-off may be operated by any approved mechanism. As herein shown, it is pivotally connected with the forward lower end of a long link G , which is actuated, as shown, through the medium of the mechanism employed for rotating the shafts a and a' of the hoppers A and A' , the said shafts being provided with means (not shown) for causing the button-heads and fasteners in the respective hoppers to be agitated, and so delivered into the chutes B and B' , leading out of those hoppers. It is deemed unnecessary to describe such mechanism in detail, but it may be said that it includes links G' and G^2 , the latter being attached to the upper arm H of a two-armed lever H' , which rocks upon a horizontal stud H^3 , mounted in the frame I of the machine. Under the construction shown the double cut-off will be operated simultaneously with the operation of the hopper-shafts, but this is not necessary, although it is a good construction.

If desired, either or both hoppers and their related mechanisms may be dispensed with and the button-heads and fasteners fed by hand. In case I employ only one hopper I should of course have only a single cut-off.

The box-like button-head holder C , before mentioned, is rectangular in general form and closed at its lower end except for a forwardly-opening feed-slot C' , which is wider than the

diameter of the shanks of the button-heads. The said holder is also constructed with two forwardly-extending upwardly-turned feeding-fingers C^2 , the inner edges of which form continuations of the feed-slot C' aforesaid. These fingers extend upward in front of a horizontal feed-opening C^3 , formed at the lower end of the front wall of the holder and intersecting the feed-slot C' , and adapted in its dimensions to pass a button-head thereinto. The said fingers and horizontal opening coact with the lower end of the chute B in guiding the button-heads into the button-holder, and also permit button-heads to be fed by hand to the button-holder when desired.

The button-holder is constructed with a large circular chamber C^4 , the lower end of which receives the button-heads, while its upper end adapts the button-holder to receive the die J , to which the holder is secured with capacity for vertical movement by means of a pin j passing horizontally through the die and projecting at its ends therefrom, its projecting ends entering short vertically-arranged slots c , formed in the side walls of the holder, as shown in Fig. 10. It is sufficient if the holder is allowed to move vertically through a distance a little longer than the thickness of the button-heads, this amount of movement being required to permit the holder to drop downward far enough to form a space between it and the die large enough to readily receive the button-heads and then to permit the holder to be lifted and retired when the shank of the fastener is being upset.

The stationary die J is furnished with a shank J' , which extends upward into a vertical sleeve-like bearing I' , formed in the forward end of an arm I^2 of the machine-frame I . The said shank is secured in the said bearing in any desired position of vertical adjustment by means of a set-screw J^2 , and at its upper end abuts against an adjustable abutment-screw J^3 , mounted in the top of the sleeve and extending downward thereinto, as shown in Fig. 7. The lower end of the die is reduced in diameter to receive a vertically-movable centering and compensating collar K , the lower edge of which normally extends below the extreme lower end or face of the die, to which the collar is secured by means of a horizontal pin k , passing through the die and extending at its projecting ends into vertically-elongated slots k' , formed at opposite points in the collar, which corresponds in external diameter to the external diameter of the upper portion or body of the die. The said collar and body portion of the die constitute the bearing-surfaces upon which the button-head holder C works up and down, as seen in Fig. 7. A heavy coiled spring K' , interposed between the body of the die and the upper edge of the collar, exerts a constant effort to push the same downward, so that its lower edge will project beyond the face of the die. The said face of the die has a raised

center, which takes into the central portion of the button-heads and backs the same up, so to speak, while the machine is operated for upsetting or curling the ends of the tack-like fasteners. The said collar engages with the edges of and centers the button-heads with respect to the face of the die and compensates for variations in the size and form of the button-heads, for without the collar arranged as described and engaging with the edges of the button-heads the face of the die would have to conform in size and configuration to the button-heads or they would not be properly supported during the upsetting operation. The collar also prevents the button-heads from tilting and insures right vertical as well as horizontal positions for them. It will be understood, of course, that when the upsetting action of the machine occurs the collar is forced to retire against the tension of the spring K' until it is lifted, so that its lower edge is at least flush with the face of the die.

The tacks are supported upon and lifted by the vertically-movable anvil E, which has already been mentioned. This anvil, as shown, consists of a long cylindrical pin, having its upper end or face slightly concaved to conform to the exterior contour of the head of a tack-like fastener, and is mounted by a horizontal pin E' in a long plunger L, the upper end of which is counter-bored to form a deep cylindrical chamber L', which receives the said anvil, and also the annular fender D, before mentioned, and the spiral spring D², by which the same is operated. The said annular fender or guard-sleeve D corresponds in internal diameter to the external diameter of the anvil and in external diameter to the internal diameter of the chamber or counterbore L'. The sleeve is combined with the anvil and limited in its reciprocation by means of the pin E', which passes through two corresponding vertically-elongated slots e, formed at opposite points in the sleeve, as clearly shown in Fig. 2. It will be understood that normally the sleeve is maintained by the spring L' in a position in which it projects above the anvil, as shown in the said figure. In this position it forms a guard or fender for preventing the tack-like fastener on the anvil from being canted thereon or knocked therefrom by the fabric when the same is introduced into the machine. Fig. 2 illustrates the described function of the fender or sleeve, which is therein shown to be protecting a tack-like fastener illustrated by broken lines. As the anvil and sleeve are raised together, the sleeve will be engaged with the lower face of the die and retired against the tension of the spring E', whereby the anvil is permitted to advance the die for the upsetting of the shank of the fastener. The plunger L is vertically reciprocated in the sleeve I³, forming a part of the frame of the machine, by means of an angle-lever M, the arm M' of which is con-

nected with the lower end of the plunger by means of a link M², while the rearwardly-extending arm M³ of the said lever is connected with a foot-treadle of any approved construction. For the actuation of the two-armed lever H', and hence of the hopper-shaft and cut-off, the lower arm H³ of the said lever is connected by a link H⁴ with an arm L², extending rearward from the lower end of the plunger L, as clearly shown in Fig. 1.

In the operation of my improved machine as it is preferably constructed button-heads and tack-like fasteners are fed in bulk to the proper hoppers, from which they pass into the chutes leading therefrom. Each actuation of the double cut-off then permits one button-head and one tack-like fastener to pass from the chutes respectively into the button-head holder and into the annular fender or guard-sleeve, within which it finds a seat upon the anvil. The treadle is now operated to lift the anvil and fender or sleeve vertically toward the die, but before this is done the cloth to which the button is to be attached is interposed between the sleeve or fender and the button-head holder. As the plunger is lifted the upper edge of the fender or sleeve engages with the lower face of the button-head holder, which then retires or lifts vertically until any clearance between the button-head in it and the collar projecting below the die has been taken up. The fender or sleeve then begins to retire, so as not to interfere with the upsetting action of the anvil, which forces the shank of the tack-like fastener upon the anvil within the button-head, so as to cause the said shank to be curled up and the fastener and button-head secured together. Before the heavy pressure between the anvil and die is exerted, however, the spring controlling the vertically-movable collar on the die yields to permit the collar to retire, so that at the time of the heavy pressure the button-head has full bearing on the die. The cloth with the button-head applied to it is then moved on and the treadle operated to allow the plunger to descend, during which time the button-head holder will gravitate back into position to receive another button-head, while the fender or sleeve will again be projected by its spring into position to receive and guard another tack-like fastener. When the treadle is depressed again, the cut-off will again be actuated for feeding another head and tack-like fastener, the plunger lifted, and so on. Of course the action of the button-head holder, the collar on the die, the anvil, and the fender or guard will be the same whether the hoppers and cut-off are employed or not. Nor is the centering and upsetting collar on the die necessary to the action of the button-head holder, or the guard-sleeve or fender, or to the other parts of the machine, though it increases the efficiency thereof.

In view of the various suggestions of modifications and changes which may be made, I

would have it understood that I do not limit myself to the exact construction herein shown and described, but hold myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of my invention.

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

1. In a button-setting machine, the combination with a punch and means for reciprocating the same, of a stationary die, means for adjusting the same, a centering and compensating collar movably secured to the stationary die and normally projecting below the face thereof, a spring combined with the collar for normally holding it in such projection, but yielding to permit it to retire under the action of the punch, a vertically-movable chambered button-head holder applied over the die upon which it is vertically movable, and means for automatically feeding button-heads to the said button-head holder.

2. In a button-setting machine, the combination with a punch and means for reciprocating the same, of a stationary die adapted to afford a bearing for the button-heads, a centering and compensating collar mounted upon the lower portion of the die which is reduced in diameter for the purpose, and movable upon the said portion of the die, a spring encircling the reduced portion of the die and engaging at its lower end with the upper edge of the collar, and at its upper end with the shoulder formed by reducing the die, and exerting a constant effort to maintain the same with its lower edge projected beyond the face of the die, and a vertically-movable button-head holder, chambered to adapt it to fit over the die and collar, including the shoulder of the former, and adapted to have button-heads fed into it under the die and the said collar.

3. In a button-setting machine, the combination with a stationary die adapted to afford a bearing for the button-heads, of a punch and means for actuating the same, a vertically-movable button-head holder, chambered to adapt it to fit over the die upon which it is vertically movable, and constructed with a feed-slot adapted in dimensions to pass a button-head to the die, a feed-opening intersecting the said slot, and two forwardly-projecting upturned feeding-fingers, substantially as described.

4. In a button-setting machine, the combination with a punch and means for reciprocating the same, of a stationary die adapted

to afford a bearing for the button-heads, a spring-actuated centering and compensating collar mounted upon the said die and normally projecting below the face thereof, a vertically-movable button-head holder, chambered to adapt it to fit over the die and collar, and constructed to have button-heads fed into it one at a time at a point below the face of the die and the collar, and means for feeding button-heads into the said holder.

5. In a button-setting machine, the combination with two independent hoppers respectively designed to receive button-heads and tack-like fasteners, of independent chutes leading from the said hoppers, a double cut-off extending into both of the said independent chutes, and means for operating the said cut-off to simultaneously feed button-heads and tack-like fasteners through the chutes, substantially as described.

6. In a button-setting machine, the combination with two hoppers, of two independent chutes leading therefrom, and a double cut-off consisting of a plate provided at its respective ends with notched arms respectively entering the passages of the chutes, and means for operating the said double cut-off which simultaneously feeds button-heads and tack-like fasteners through the chutes, substantially as described.

7. In a button-setting machine, the combination with a plunger having its upper end chambered, of an anvil consisting of a long pin located in the said chamber, an annular fender or guard-sleeve located in the upper end of said chamber, inclosing the upper end of the anvil, and constructed with two elongated slots located opposite each other, and a pin passing transversely through the upper end of the plunger and the chamber therein, and also passing through the anvil which it supports in said chamber, and through the slots in the fender, the reciprocating movement of which it limits, and a spiral spring located in the lower portion of the chamber, encircling the lower end of the anvil, and impinging at its upper end against the fender which it normally projects beyond the face of the anvil, substantially as described.

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

EDWIN D. WELTON.

Witnesses:

T. R. HYDE, Jr.,
EDWARD O. GOSS.