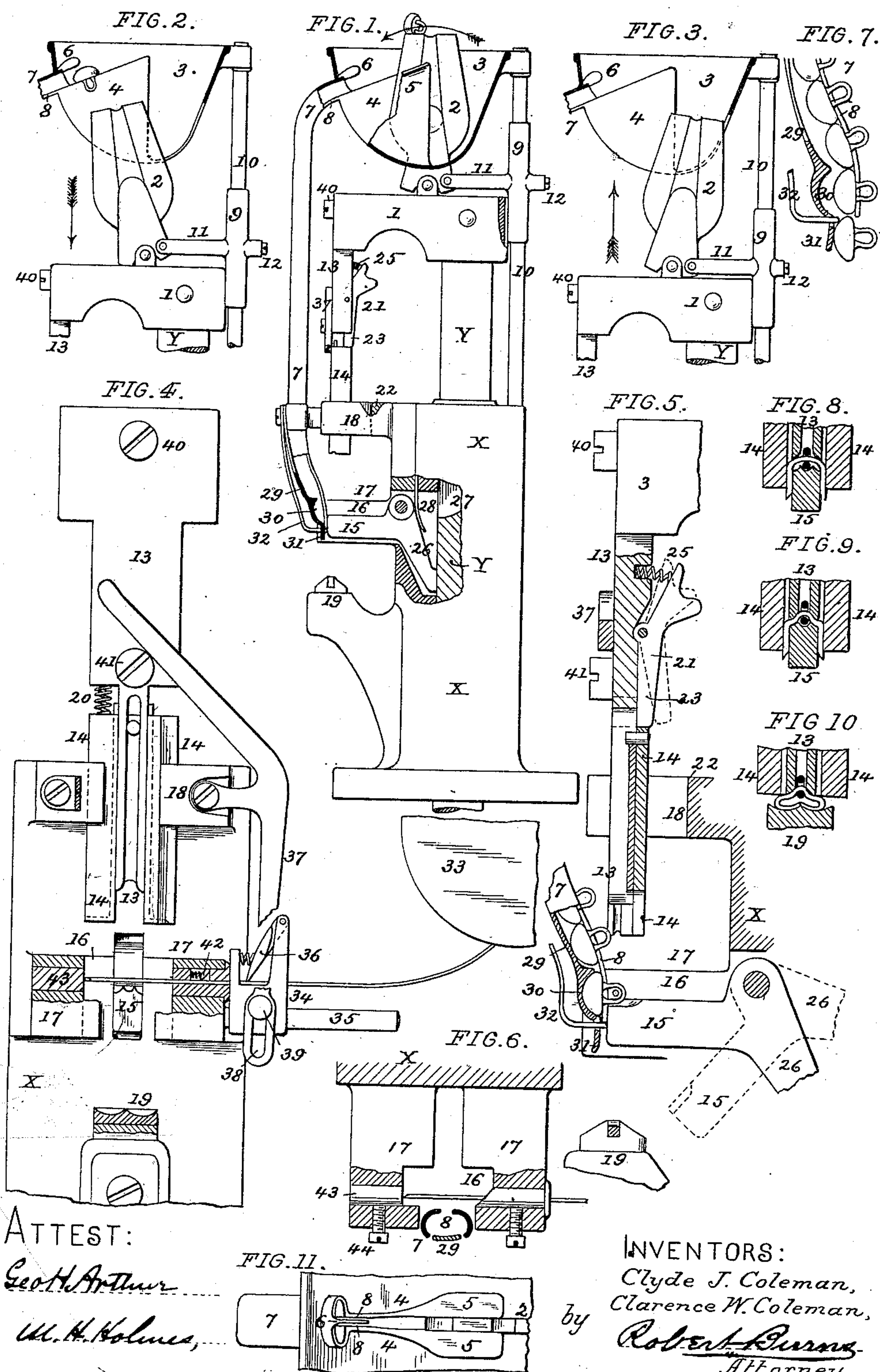


(No Model.)

C. J. & C. W. COLEMAN.
BUTTON ATTACHING MACHINE.

No. 432,375.

Patented July 15, 1890.



ATTEST:

Geo. H. Arthur

W. H. Holmes,

INVENTORS:

Clyde J. Coleman,
Clarence W. Coleman,

by Robert Burns
Attorney.

UNITED STATES PATENT OFFICE.

CLYDE J. COLEMAN AND CLARENCE W. COLEMAN, OF CHICAGO, ILLINOIS.

BUTTON-ATTACHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 432,375, dated July 15, 1890.

Application filed March 19, 1890. Serial No. 344,544. (No model.)

To all whom it may concern:

Be it known that we, CLYDE J. COLEMAN and CLARENCE W. COLEMAN, of Chicago, in the county of Cook and State of Illinois, have jointly invented certain new and useful Improvements in Button-Attaching Machines, of which the following is a specification.

This invention relates to the type of button-attachment machines described in Clyde J. Coleman's application for Letters Patent, Serial No. 319,668, filed August 3, 1889, and in which the buttons from a feeding-hopper are fed down a feed-chute by gravity into proper position with relation to the fastener, forming, and clinching dies to receive a section of wire that, in the operation of the machine, is first threaded through the eye or shank of the button, then severed, and bent into the required form to constitute the fastener or staple that clinches through the shoe-upper to attach the button thereto; and the present improvements have for their object, first, to provide a simple, durable, and effective mechanism for effecting the feed of the buttons from the button-hopper into the feed-chute, and insuring such a position of the buttons within the chute that their shanks will project through the longitudinal slot in the wall of the chute, so as to pass down into the path of and be threaded upon the fastener-forming wire in the operation of the machine; second, to provide means at the lower end of the button-chute for effectively holding the lowermost button, so that its shank will project between the fastener-forming dies and in the path of the fastener-forming wire, so as to be threaded thereon, the construction being such that the passage downward of the button out from the chute to the clinching-anvil will automatically open the holding mechanism at the lower end of the chute to receive and hold the next button in position to be threaded upon the fastener-forming wire in the continued operation of the machine; third, to afford a simple and effective automatically-operating feed mechanism for feeding the wire at proper intervals through the button-eye and across the severing-throat of the machine to be cut off at each operation of the machine into a section of the required length to form the staple or fastener; fourth, to supply a simple and durable construction of parts for

releasing the pivoted member of the fastener-forming dies after the fastener has been crimped thereon to form the central loop or eye for the shank or eye of the button; fifth, to provide a simple and effective locking and unlocking mechanism between the dual parts of the reciprocating member of the wire severing and fastening forming dies, which automatically locks the parts together during the severance of the section of wire and the formation of the same into a fastener and unlock the parts after such formation is effected, and before the clinching or setting operation takes place to attach the button to the shoe-upper. We attain such object by the construction and arrangement of parts illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation, partly sectionized, of our improved machine, the moving parts being shown in the upper position ready to descend; Fig. 2, a detail side elevation, partly sectionized, of the upper part of the machine, illustrating the button-feeding mechanism in the downward movement of the machine parts; Fig. 3, a similar view of the same during the upward movement of the machine parts; Fig. 4, an enlarged detail front elevation, partly sectionized, of the machine; Fig. 5, an enlarged detail longitudinal section of the same; Fig. 6, an enlarged detail horizontal section through the wire-severing throat of the machine; Fig. 7, an enlarged detail section of the lower end of the button-chute; Figs. 8, 9, and 10 are detail sectional diagrams illustrating the different steps and position of parts in the formation and attachment of the wire-fasteners, and Fig. 11 an enlarged detail plan of the stripping-plates in the button hopper or receptacle and its connections.

Similar letters and numerals of reference indicate like parts in the several views.

As represented in the drawings, the general arrangement of the wire cutting and forming dies for severing a section of wire, the threading of the same through the eye or shank of the button, the after formation of the wire into a fastener, and its subsequent clinching or setting in the shoe-upper, as well as the general arrangement of the mechanism for imparting motion to the parts, is substantially the same as that shown in application for

Letters Patent, Serial No. 319,668, filed August 3, 1889, by Clyde J. Coleman.

Referring to the drawings, X represents the supporting-standard of the machine, through the center of which passes and is properly guided the vertically-moving stem Y, the lower end of which is suitably connected to the foot-treadle or to any other suitable driving mechanism, so as to receive a reciprocating movement therefrom, while its upper end carries an overhanging cross-head 1, to the top of which is attached in a pivotal manner the magnet 2, that by its magnetic attraction lifts the buttons by their metallic eyes or shanks from the stationary button receptacle or hopper 3 and deposits the same on top of the stripping-plates 4, with the button-shanks lying between said plates. The top edges of these plates are inclined toward the forward end of the hopper, so as to shed the buttons by gravity into the button-receiving chute 7 of the machine, and are formed with lateral horizontal flanges 5, that widen toward their rear ends, as shown in Fig. 11, so as to afford a support to the body of the button while the magnet 4 is drawing the button-stem into the space between such plates.

6 is a central guard-finger projecting inwardly above the mouth of the chute 7, the purpose of which is to divert back into the hopper any button that may roll along the top of the plate without its shank being in proper position in the space between the plates. The distance between these stripping-plates is just sufficient to receive the button-shank, so that the body of the button will ride upon the top of the said plate and be guided in its descent into the button-chute 7 by means of its shank or eye, the longitudinal slot 8 in the rear wall of the button-chute 7 being a continuation of the narrow space between the plates 6. With this improved construction the proper position of the button in the button-chute is absolutely insured—to wit, with their shanks or eyes projecting through the longitudinal slot 8 in the rear wall of said chute.

The movement of the magnet 2 is of a four-motion nature—to wit, upward in a rear vertical plane back of the stripping-plates 4, as illustrated in Fig. 3, then forward in an upward and substantially horizontal plane, as illustrated in Fig. 1, then downwardly in a forward vertical plane between the stripping-plates 4, as illustrated in Fig. 2, and then backwardly in a horizontal plane to the point of starting, as above set forth. This compound movement is imparted to the magnet during its ascent and descent with the cross-head 1 by means of a sleeve 9, sliding with some friction on a stationary guide-stem 10 and having a horizontally-extending arm 11, that has pivotal connection at its forward end with the hub of the magnet 2 at one side, and to the rear of the pivotal connection of the magnet to the cross-head, as clearly illustrated in Figs. 1, 2, and 3. The action of this

improved construction is as follows: As the cross-head 1 and magnet 2 commence to descend, the friction of the sleeve 9 upon its guide-rod 10 retards or checks its movement along with the magnet, so as to tilt or draw the upper end of the magnet forward in a horizontal plane, and in like manner, as the cross-head and magnet commence to ascend, the friction of said sleeve upon its guide-rod will check or retard the upward movement of said sleeve along with the magnet and cross-head, so as to tilt or draw the upper end of the magnet backward in a horizontal plane. 12 is a temper-screw on the sleeve 9 for adjusting and regulating the friction between the same and its guide-stem.

The magnet 2 is preferably of a horseshoe shape, as shown. A bar or other suitably-shaped magnet may, however, be used instead without departing from the spirit of our present invention.

The cross-head 1, in addition to carrying the button-feeding magnet 2, also carries at its forward end the vertically-moving two-part member 13 14 of the wire severing and forming dies. The companion member of such dies consists of an angular lever pivoted in the main standard X, with its anvil portion 15 projecting into the wire-severing throat 16, formed in the stationary bench 17 upon the standard X, as clearly indicated in Figs. 1, 4, and 5. The general construction of these parts is in the main substantially the same as the mechanism set forth in the aforesaid application of Clyde J. Coleman, Serial No. 319,668.

Such mechanism for severing a section of wire, forming it into a staple or fastener, and clinching it in the shoe-upper consists, briefly, as follows: The wire-severing throat 16 in the bench 17, across which the wire is fed, a descending plunger 14 for severing a section of the same and bending it into a staple form upon the pivoted die or anvil 15, a main plunger 13 for crimping the middle of the staple to form a receiving-loop for the button-shank, and a stationary clinching-anvil 19 on the standard X for clinching or setting the ends of the fastener in the shoe-upper. The plunger 14 is adapted to have a limited vertical movement on the plunger 13, a spring 20 being employed to hold the two in a separated condition, and a locking-dog 21 for locking the parts in such separated condition. The construction being such that the two parts will be fixedly held apart while the plunger 14 is severing the wire, forming the same into a staple, and carrying the same down onto the stationary clinching-anvil 19, at which point, and just before the clinching operation commences, by the further descent of the plungers 13 and 14, the parts are released by the rearwardly-projecting end of the dog 21 coming in contact with the rear edge 22 of a slot in the guide-bracket 18 of the plungers 13 and 14. The main plunger 13 is then free to further descend and complete the clinch-

ing or setting of the fastener in the shoe-upper as it rests upon the stationary anvil 19.

The dog 21 in the present invention is pivoted to the upper plunger 13, with its pendant portion 23 engaging the top edge of the plunger 14, while its upper end projects back in an inclined direction, so that as it passes the corner 22 of the bracket 18 it will be pressed inwardly to unlock the plungers from their engagement.

25 is a spring back of the dog 21, the tendency of which is to return the dog to its engaging position with the plunger 14.

The pivoted anvil 15, on which the staple is formed, is held in a proper horizontal position by its rearwardly-inclined arm 26 resting against the side of the vertically-moving stem Y of the machine, and it is released so as to move out of the way when the staple has been formed and crimped by the recess 27 in the stem Y, into which the end of the arm 26 swings when the proper position is reached. 28 is a spring for returning said pivoted anvil to its proper horizontal position in the severing-throat 16.

The button-chute 7 extends down the front side of the throat 16, so that the button-shanks will project into said throat, so as to be in proper position to be threaded onto the section of fastener-wire, and in order to effectively and positively hold the lowermost button in proper position while being threaded onto the wire the front of the chute, near the lower end, is cut away and provided with a spring-holder 29, the lower end of which is formed into a cup-shaped cavity 30, of a form approximating the body or head of the button and adapted to receive the same and firmly clamp it against the rear wall of the chute, as shown in Fig. 5, while the end of the fastener-wire is being passed through the eye or shank. The lower end of the spring-holder 29 is formed with a straight downwardly-extending skirt or extension 31, that bears against the button as it is drawn downward out of the button-chute, so as to keep the spring button-holder open to receive the next adjacent button into its holding-cavity 30.

32 is a spring-finger immediately below the holding-cavity 30, that rides over the out-passing button and springs in underneath the next button above to prevent it dropping out until the spring-holder 29 moves back to clasp such button in its holding-cavity 30.

In the present invention the fastener-wire is fed from a suitable reel 33 into the severing-throat 16 by the following automatically-operating mechanism:

34 is a reciprocating feed-head sliding upon a stationary guide-stem 35 and having a spring-dog 36, that engages the side of the fastener-wire as it lies in a horizontal trough-shaped passage or way in the feed-head 34, motion being communicated to the feed-head by means of a lever 37, pivoted to the bracket 18, its lower end being connected by an elon-

gated slot 38 and stud 39 to the feed-head, while its upper end projects between the upper and lower studs 40 41 on the plunger 13, to be operated by the same as it vertically reciprocates. In this construction the parts will be so proportioned that the feeding-head 34 at each forward stroke will feed the exact length of wire required to form the fastener.

42 is a spring-dog within the bench 17 for engaging the wire and preventing a retrograde movement of the same.

It is preferable to form the abutment for the end of the wire in the severing-throat 16 of an adjustable nature, so as to secure a central position of the fastener, and this is accomplished by providing the bench with an adjustable abutment-plug 43, held in place by a set-screw 44 or other like means.

Having thus fully described our said invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a button-feeding mechanism for button-attaching machines, the combination of the reciprocating cross-head 1 of the button-attaching mechanism, a stationary button hopper or receptacle, a button-receiving chute connected near the top of the hopper, a reciprocating magnet attached to and moving with the cross-head 1, and a pair of stripping-plates located at the sides of the magnet and forming an extension of the button-chute, substantially as set forth.

2. In a button-feeding mechanism for button-attaching machines, the combination of the reciprocating cross-head 1 of the button-attaching mechanism, a stationary button hopper or receptacle, a button-receiving chute connected near the top of the hopper, a reciprocating magnet attached to and moving with the cross-head 1, mechanism, essentially as herein described, for imparting a forward and backward horizontal movement to the magnet, and a pair of stripping-plates located at the sides of the magnet and forming an extension of the button-chute, substantially as described.

3. In a button-feeding mechanism for button-attaching machines, the combination of the reciprocating cross-head 1 of the button-attaching mechanism, a stationary button hopper or receptacle, a button-receiving chute connected near the top of the hopper, a reciprocating magnet attached to and moving with the cross-head 1, and a pair of stripping-plates located at the sides of the magnet and provided with lateral horizontal flanges, substantially as set forth.

4. In a button-feeding mechanism for button-attaching machines, the combination of the reciprocating cross-head 1 of the button-attaching mechanism, a stationary button hopper or receptacle, a button-receiving chute connected near the top of the hopper, a reciprocating magnet attached to and moving with the cross-head 1, and a pair of stripping-plates located at the sides of the magnet and

provided with lateral horizontal flanges that widen toward their rear ends, substantially as set forth.

5 5. In a button-feeding mechanism for button-attaching machines, the combination of the button hopper or receptacle, a button-receiving chute connected near the top of the hopper, a pair of stripping-plates forming an extension of the chute, a central guard-finger
10 projecting inwardly above the mouth of the button-chute, and a reciprocating magnet, substantially as set forth.

6. The combination, with the two-part plunger or die 13 14 and the slotted guide-bracket
15 18 of a button-attaching machine, of the locking-dog 21, pivoted in the plunger 13 and having a rearwardly-projecting upper end, and a pendent lower end 23, engaging the top of the plunger 14, essentially as set forth.

20 7. In a button-attaching machine, the vertically-reciprocating stem Y, formed with a recess 27, in combination with the pivoted anvil 15, having a rearwardly-extending arm 26, adapted to swing into the recess 27, essentially as set forth.
25

8. The combination, with the longitudinally-slotted button-chute 7 of a button-attaching machine, of the spring-holder 29, arranged

at the lower end of the chute and provided with a button-holding cavity 30, and a downwardly-extending skirt or extension 31, that is adapted to ride upon the outgoing button to hold the spring-holder open during the descent of the next button into the holding-cavity 30. 30

9. The combination, with the longitudinally-slitted button-chute 7 of a button-attaching machine, of the spring-finger 32, and the spring-holder 29, arranged at the lower end of the chute and provided with a button-holding cavity 30, essentially as set forth. 35 40

10. In a wire-feeding mechanism for button-attaching machines, the reciprocating feed-head 34, carrying the spring-dog 36, the bench 17, carrying the spring-dog 42, and the pivoted operating-lever 37, in combination with the operating studs 40 and 41 on the die or plunger 13, essentially as set forth. 45

In testimony whereof witness our hands this 17th day of March, 1890.

CLYDE J. COLEMAN.

CLARENCE W. COLEMAN.

In presence of—

ROBERT BURNS,

J. W. HARRIS.