(No Model.)

5 Sheets—Sheet 1.

A. G. WILKINS.

BUTTON ATTACHING MACHINE.

No. 379,431. Patented Mar. 13, 1888.

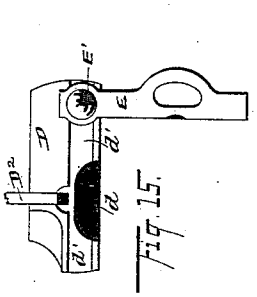


Fig. 15.

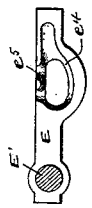


Fig. 14.

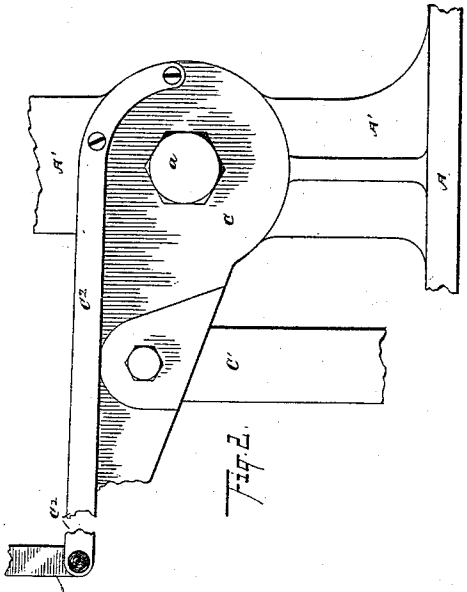


Fig. 2.

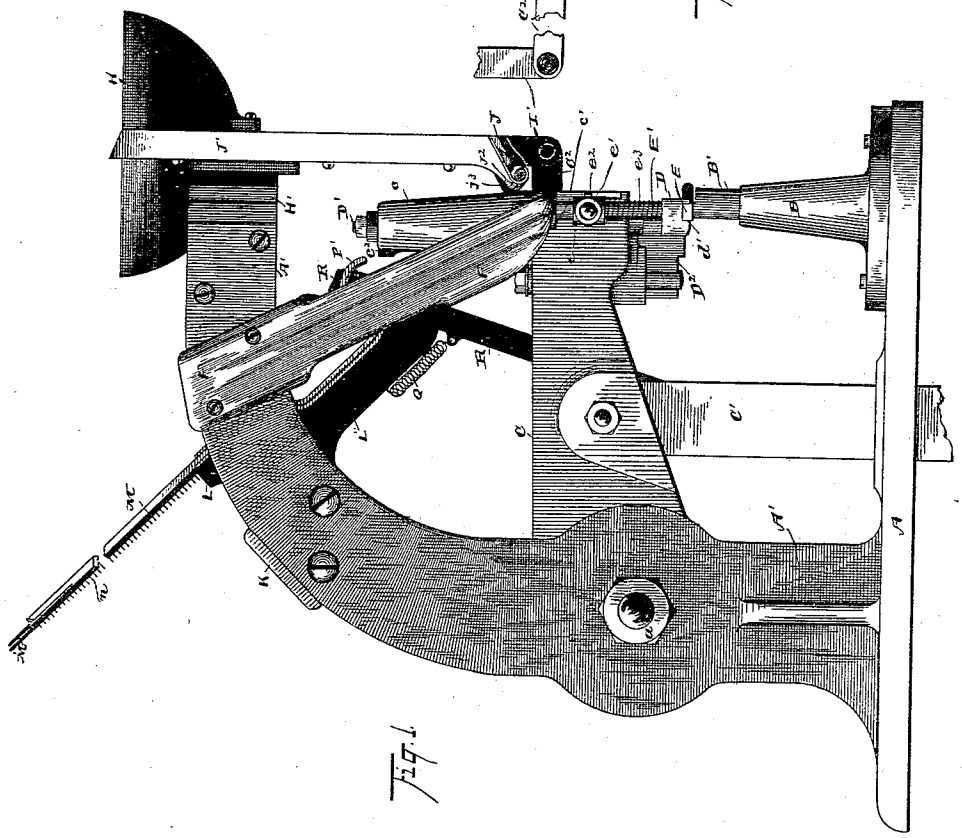


Fig. 1.

WITNESSES

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(No Model.) 5 Sheets—Sheet 2.

A. G. WILKINS.

BUTTON ATTACHING MACHINE.

No. 379,431. Patented Mar. 13, 1888.

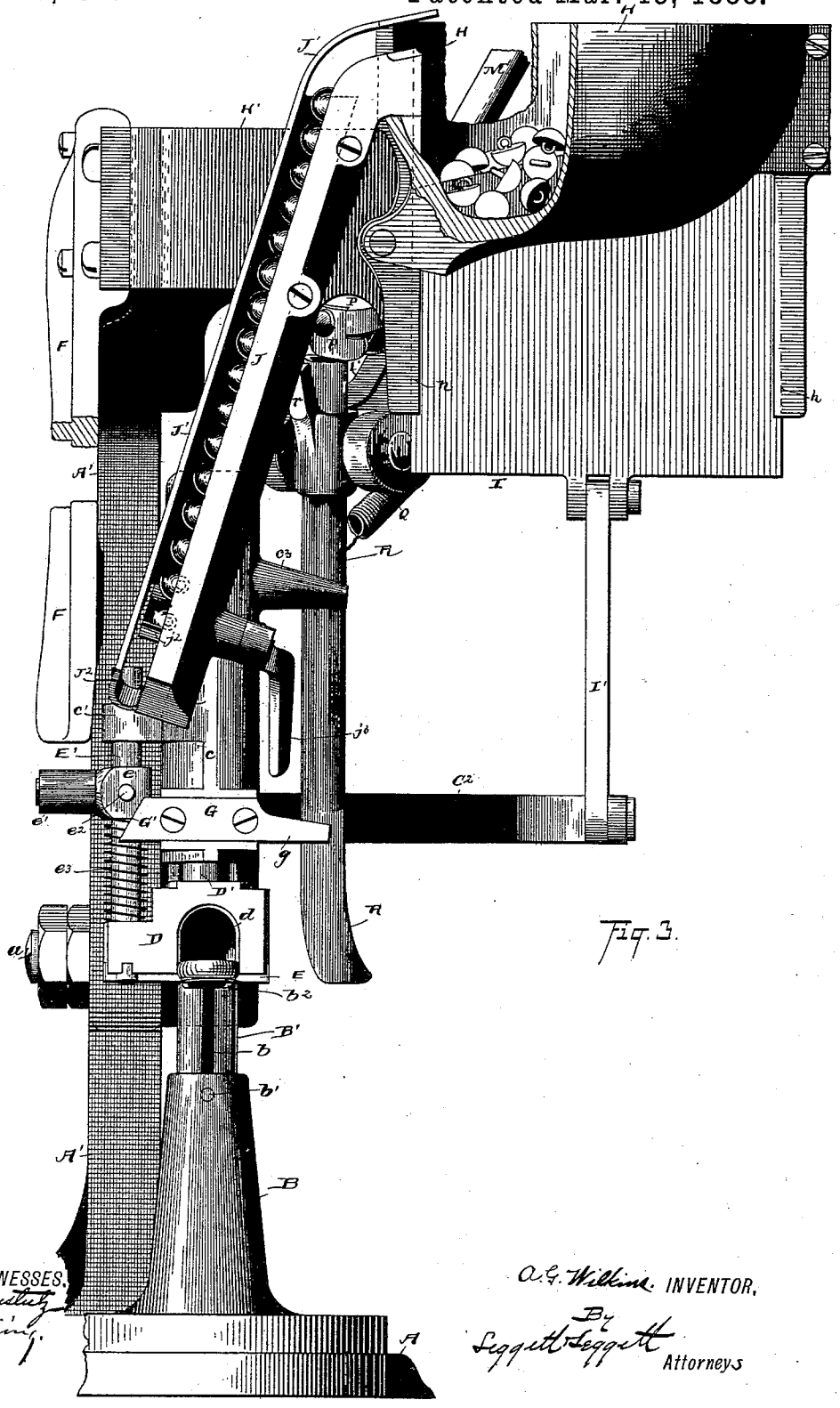


Fig. 3.

WITNESSES:
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(No Model.)

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A. G. WILKINS.

BUTTON ATTACHING MACHINE.

No. 379,431. Patented Mar. 13, 1888.

Fig. 4.

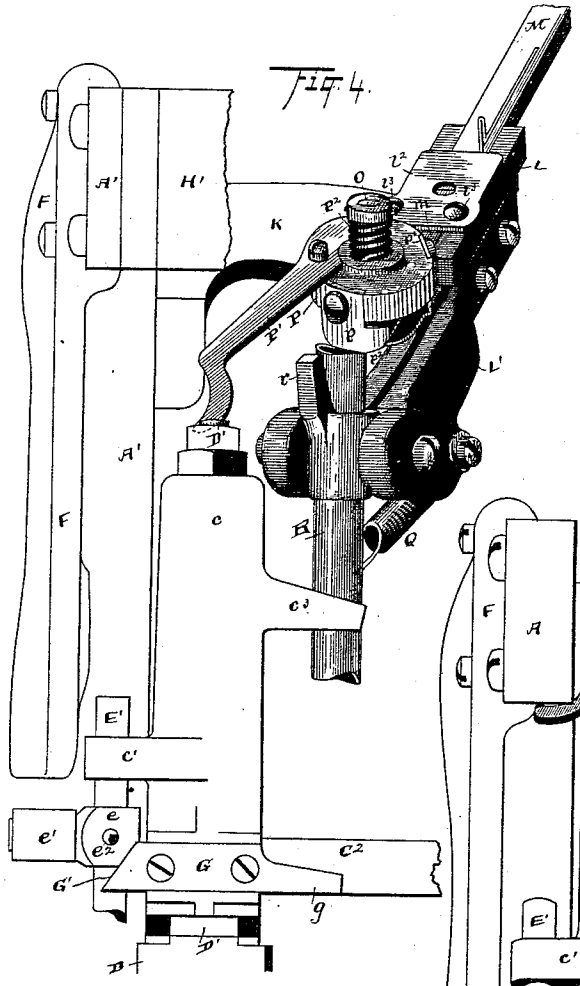
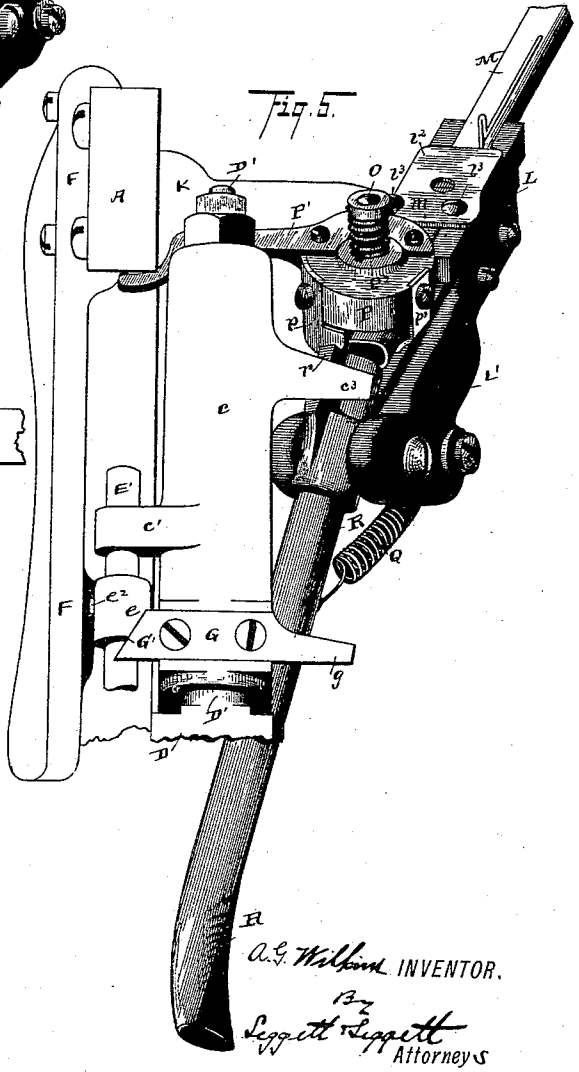


Fig. 5.



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(No Model.) 5 Sheets—Sheet 4.

A. G. WILKINS.

BUTTON ATTACHING MACHINE.

No. 379,431. Patented Mar. 13, 1888.

Fig. 7.

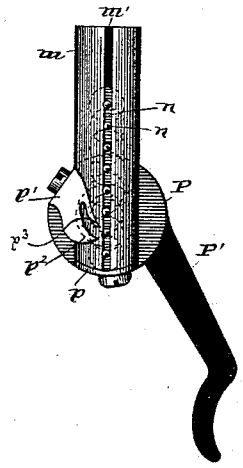
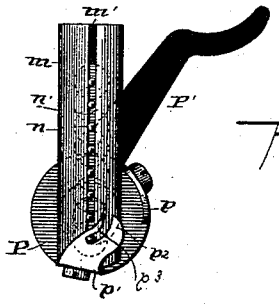


Fig. 8.



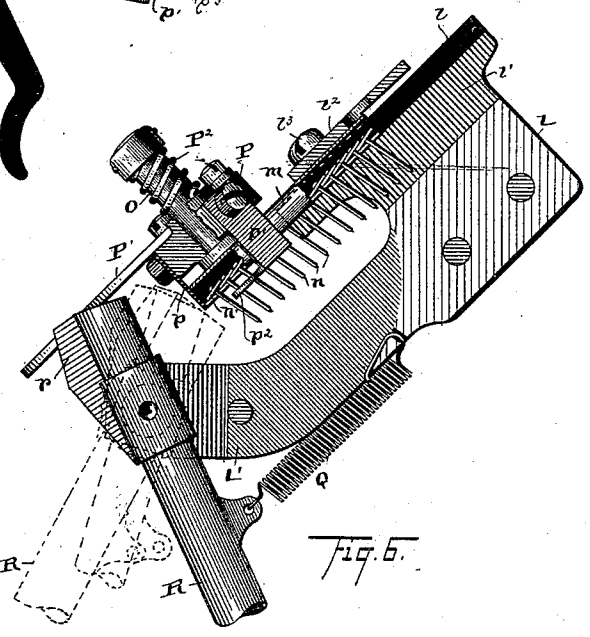


Fig. 6.

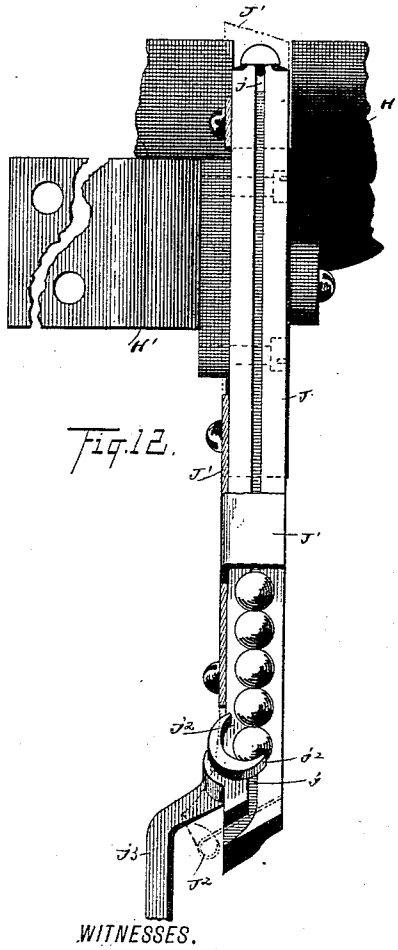


Fig. 12.

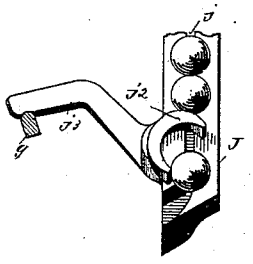


Fig. 13.

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(No Model.) 5 Sheets—Sheet 5.

A. G. WILKINS.

BUTTON ATTACHING MACHINE.

No. 379,431. Patented Mar. 13, 1888.

Fig. 11

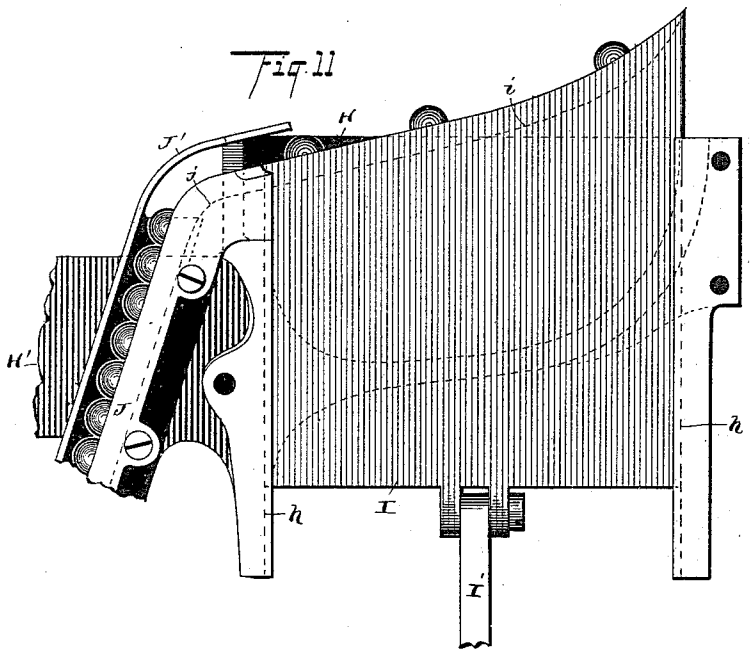


Fig. 9.

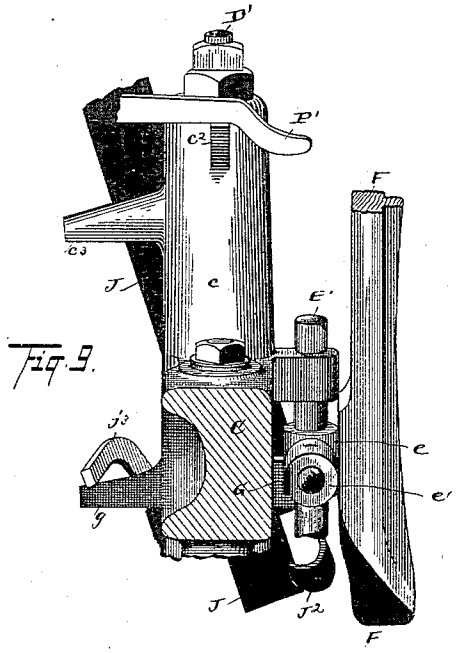
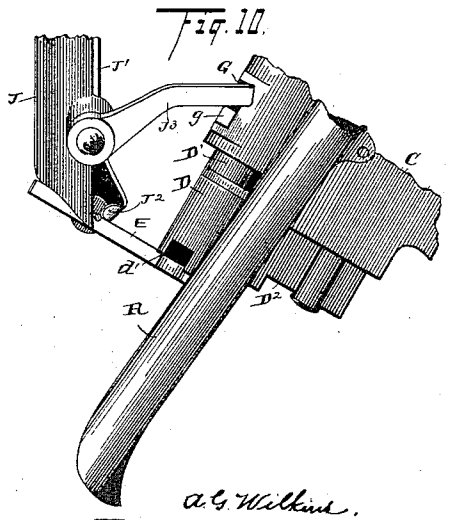
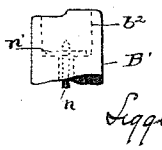


Fig. 10.





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INVENTOR.

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Geo. W. King.

By Siggett & Siggett Attorneys.

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UNITED STATES PATENT OFFICE.

ALEXANDER G. WILKINS, OF MEADVILLE, PENNSYLVANIA, ASSIGNOR TO THE RAILWAY SPEED RECORDER COMPANY, OF KENT, OHIO.

BUTTON-ATTACHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 379,431, dated March 13, 1888.

Application filed August 15, 1887. Serial No. 246,967. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER G. WILKINS, of Meadville, in the county of Crawford and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Attaching Buttons, more especially to shoes; 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 pertains to make and use the same.

My invention relates to improvements in machines for attaching buttons, more especially to shoes; and it consists in certain features of construction and in combination of parts hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a left-hand side elevation. Fig. 2 is a right-hand side elevation. Fig. 3 is a front elevation. Figs. 4 and 5 are front elevations illustrating more especially the fastener-feeding devices, the former showing the parts in their depressed and the latter in their elevated position, the button-feeding attachments having been removed. Fig. 6 is a right-hand side elevation, in section in detail, hereinafter described. Figs. 7 and 8 are bottom plans of the fastener-feed mechanism, showing the two positions for discharging and retaining the fasteners. Fig. 9 is a rear elevation of the lever-head *c* and attachments in their elevated position. Fig. 10 is a right-hand elevation of the lower portion of mechanism shown in Fig. 5. Fig. 11 is an elevation showing the plate I in its elevated position, the front portion of the button-container having been removed. Figs. 12 and 13 are elevations in detail showing the button cut out in its extreme positions. Fig. 14 is a top plan of the button-carrier. Fig. 15 is a bottom plan of the die-head and button-carrier, the latter being turned forward or crosswise of the die-head.

The frame-work of the machine consists of base A and goose-neck standard A′, the two being preferably cast integral. To the base is attached the upright hollow plug B, the same having a cylindrical bore, in which operates the reciprocating sleeve B′. The latter rests on a coil-spring, (not shown,) and the tension of the spring elevates the sleeve to the position shown in Fig. 3, with the end of the sleeve extending some distance above the turret. The sleeve is provided with a groove, *b*, extending from the top of the sleeve part way down the length thereof, and the plug is provided with a pin, *b′*, the inner end of which operates in the groove *b* and limits the upward movement of the sleeve. The upper end of the sleeve has an enlarged bore or annular recess, b^2, that receives the washer of the fastener, and the reduced part of the bore fits nicely around an upright stationary anvil or pin. (Not shown.) In the elevated position of the sleeve the pin of the fastener rests head downward on the anvil, the point of the fastener-pin slightly projecting above the washer and about flush with the top of the sleeve.

C is a lever pivoted on stud *a* of the standard, the lever vibrating in a vertical plane. The forward end of the lever terminates in an upwardly-projecting hollow head, *c*, the latter, with the depressed position of the lever, registering with the plug B. The lever C is operated by a foot-treadle, (not shown,) a pitman, C′, being provided to connect the lever C with such treadle. In the bore of head *c* is inserted the shank D′ of the die-head D, the shank being rigidly secured in its place, usually by means of jam-nuts located above, as shown. The die D and attachments and the aforesaid plug and connecting mechanism are substantially the same as shown and described in United States Letters Patent No. 334,321, granted January 12, 1886, to Wilkins and Bartlett. It is thought, therefore, that a brief description of these parts, sufficient to show their connection and co-operation with the other parts of the machine, will be all that is necessary in this specification. The die-head D has a recess, *d*, on the front side thereof for accommodating the button, and has a longitudinal recess, *d′*, made in the under face thereof for receiving and latching the button-carrier E.

On the rear side of the die-head is rigidly secured the so-called "clinching-die" D^2. The button-carrier E, near one end thereof, is rigidly attached to the lower end of an upright spindle, E′, the latter being journaled below in a vertical hole made near the left-hand end of die-head D and journaled above in a box,

c', connected or integral with the lever-head c, the arrangement being such that the spindle may reciprocate endwise a short distance, or turn on its axis about a quarter of a revolution. On spindle E′ is mounted a wrist, e, bearing a friction-roll, e', for engaging the inclined arm F, the latter being secured to the standard A′ in the position shown in Fig. 1. The wrist e is secured to the spindle E′ by means of a pin, e^2, the one end of this pin projecting far enough to engage the incline G′ of the plate G. A spring, e^3, is located between wrist e and die head D, the spring being coiled around the spindle and secured at the lower end to the head D, and the upper end of the spring being attached to the spindle or to the wrist-pin, the tension of the spring serving to elevate the spindle and attachments and to turn the spindle on its axis in the direction to bring the button-carrier under the die-head. The button-container H has a supporting-arm, H′, the latter being fastened to the standard A′. The container shown in the main is semi-spherical, but has a depression at the bottom on the side next the button-discharge. (See Fig. 3 and dotted lines, Fig. 11.) A central vertical slot is made through the bottom of the container, through which slot operates the plate I, the upper end of the plate being inclined, as shown in Fig. 11, and having a groove, i, for receiving the eyes of the buttons. The edges of the plate are embraced by ways h, that admit of the plate being reciprocated endwise, and to impart such vertical movement the plate is connected by link I′ with the free end of an arm, C^2, the latter being fastened to the lever C. (See Fig. 2.) A bar, J, is secured to the arm H′ or to the one side of the container, whichever may be preferred, in the inclined position shown in Fig. 3, said bar having a groove, j, on the upper face thereof, the bar and groove being located in the same plane with the plate I and groove i. (See Figs. 11 and 12.) When the plate I is in its elevated position, the grooves i and j register and form a continuous way for the button-eye to travel in. A quantity of buttons are kept in the container, and when the plate I is depressed so that its upper end is about flush with the inner bottom surface of the container the buttons by gravity tumble promiscuously over the end of the plate, (see Fig. 3,) and the eyes of some of these buttons accidentally get into and are retained in the groove i, and when the plate is again elevated such captured buttons slide by gravity onto the bar J, the button-eyes entering the slot j. (See Figs. 11 and 12.) A guard-plate, J′, the central portion of which in section is in the form of an angle-iron, has one leg attached to the rear side of bar J, with the other leg of the plate extending over and in front of the face of the bar, leaving just room enough between the plate and bar for the free passage of the button-heads, but confining the button-eyes to the groove j. The lower end of bar J comes in close proximity to the button-carrier when the latter is turned outward in its elevated position. (See Fig. 10.) The lower end of groove j deflects rearward, as shown at j', to turn the button-eyes so that the latter will rest flatwise on the button-carrier, the button-eye extending out through a niche, e^5, in the rear wall of the carrier. A curved lip, J^2, of the guard-plate forms a stop to prevent the button from rolling past the seat of the carrier. A crescent-shaped button "cut-out," j^2, is pivoted to the face of bar J near the lower end of the latter, the pivotal pin extending through a hole in the bar to the rear side thereof. A lever, j^3, is mounted on this pin, the gravity of the lever holding the cut-out in the position shown in Fig. 12, in which position the lower prong of the cut-out extends across the line of groove j and holds back the buttons above the prongs of the cut-out in a manner embracing the lower button. With the upright movement of lever C the projecting end g of the plate G engages the lever j^3 and turns the lever and cut-out to the position shown in Fig. 13, thereby releasing the lower button, and this occurs when the button-carrier is in its elevated forward position to receive the button. (See Fig. 10.) The fasteners for attaching the button to shoes consist of the well-known devices, pins n and washers n'. The mechanism for feeding these fasteners to the machine is as follows: To the standard A′ is fastened an arm, K. The latter supports the shoe L in the inclined position shown in Figs. 4, 5, and 6. The upper face of shoe L has a longitudinal recess, l, for receiving the flattened tubes M and m. The tubes correspond in cross-section and abut each other, the short tube m being permanently held in place by the cap l^2 and screw l^3. The tube M is removably secured by sliding the tube endwise into the recess l until the end of this tube enters under the cap l^2. Each tube M and m has a longitudinal slit, respectively, M′ and m', in the bottom wall thereof, that register with a deep groove, l', made longitudinally in the head L at the bottom and midway laterally of the recess l. The pins n are first inserted in the washers n'. These united pieces are consecutively inserted in the tube M—that is to say, the washers and pin-heads enter the tube, while the body of the pin extends through the slit M′. When a tube M is exhausted of fasteners, it is removed and another tube, filled with fasteners, is inserted in its place.

As the tubes m contain several fasteners, the changing of tubes M need not interrupt the working of the machine. The inclination of tubes M and m is sufficient to cause the fasteners to descend by gravity to the cut-out located at the lower end of tube m. The cut-out or device for feeding the fasteners one at a time is as follows: A small stud, O, is fastened to the top of tube m, near the lower end of the latter, the tube and stud standing approximately at right angles to each other.

On this stud is journaled a small disk, P, the latter having a lever, P′, attached for turn-

ing the disk on its axis. A spring, P^2, is coiled around stud O, the one end of the spring being attached to the disk and the other end attached to the stud. When the disk is turned by the action of the lever, the spring is strained, and when the lever is released the recoil of the spring returns the disk to its normal position. The form of lever P′ is shown more clearly in Figs. 7 and 8, the offset end of the lever being first engaged by the rounded upper edge of head *c* during the upward movement of the latter, and near the end of the upstroke of head *c* a lug, c^2, of the head engages the straight part of lever P′ and continues the upward and rearward movement of the lever. A lip, *p*, is fastened to the edge of disk P in position to cover the mouth of tube *m* when the disk P is in its normal position—that is to say, with the lever P′ depressed. An arm, *p*′, is attached to the periphery of disk P, this arm being located about one-third of the way around the disk from lip *p*. The arm *p*′ extends down below the bottom line of tube *m*, from whence it is bent back under the tube, this arm terminating in a curved forked end with prongs p^2 and p^3, (shown more clearly in Figs. 7 and 8,) these prongs being separated just far enough to embrace a pin, *n*. While the lip *p* is being moved away from the mouth of tube *m* the point p^2 enters between the first and second lower pins *n* in tubes *m*, cutting out the lower pin and passing it and the connected washer from the tube, and holding back the balance of the pins and washers, while the next pin *n* is embraced by the prongs p^2 and p^3, and is thereby held from canting, the respective positions of the forked ends of arms *p*′ being shown in Figs. 7 and 8. The shoe L terminates in a forked arm, L′, between the prongs of which is pivoted the delivery-tube R. A spiral spring, Q, is attached, the one end to arm L′ and the other end to tube R, some distance below the pivotal axis of the latter. (See Fig. 6.) The spring draws the tube back to the position shown in Figs. 3, 4, and 6, in which position the lower end of the tube is some distance away from plug B. A lug, c^3, projects laterally from head *c*, (see Figs. 3 and 9,) and with the upward movement of head *c*, and near the end of such upstroke, lug c^3 engages an incline, *r*, on the tube R, such incline being located above the pivotal axis of the tube, and by means of such engagement the tube R is swung forward until its lower end is in position over plug B. (See Fig. 10.) This occurs just as the fastener is delivered from tube *m*, the position of the upper end of tube R relative to the discharging end of tube *m* being shown more clearly in dotted lines, Fig. 6, (see also Fig. 5,) the position of the tubes being such that the washer and head portion of the fastening pin fall inside of tube R, the pin *n* striking the rear side of tube R near the point of the pin. The washer and head end of the pin tilt downward by gravity and fall head foremost into the tube, and are delivered in this position to sleeve B′, the washer resting in the recess b^2 of sleeve B′, the pin *n* passing down the bore of the sleeve until the head of the pin rests on the anvil, with the point of the pin protruding just above the washer and about flush with the upper end of sleeve B′, as aforesaid.

The delivery of the fastener to sleeve B′ occurs about simultaneously with the delivery of the button to the button-carrier. A slight downward movement of the head *c* allows the tube R to swing back out of the way, so that the shoe can be placed in position over the sleeve B′, the shoe, of course, resting on the upper end of the sleeve. As the downward movement of head *c* is continued, the spring e^3 turns the button-carrier as fast as the engagement of the roller *e*′ with the arm F will admit from a position crosswise of the die-head to its position lengthwise of the latter, and when the carrier registers with recess *d*′ the spring e^3 elevates the carrier to its latched position in the recess, by means of which the eye of the button is clamped between the die-head and carrier, the eye of the button protruding beyond the rear wall of the carrier far enough to admit the pin of the fastener through the button-eye. Just after the carrier reaches its latched position the carrier strikes the shoe. A further downward movement of the die-head and carrier depresses sleeve B′, causing the pin *n* to pierce the shoe and pass through the eye of the button, and by the engagement of the pin with the clinching-die the pin is coiled around the wire of the button-eye. The next upward movement of the parts carries up the shoe a short distance until the button-carrier is depressed and swung outward, and this, of course, releases the button that has just been attached to the shoe.

What I claim is—

1. In a machine for attaching buttons, the combination, with devices for feeding the fasteners, of a button-container and a reciprocating plate adapted to move within the container and provided with a groove in the upper end thereof to receive the button-eye.

2. The combination, with button-container having downwardly-converging walls and a slot in the bottom of the container, of a plate made to operate through such slot to elevate the buttons, said plate having an inclined upper end grooved to receive the button-eyes, substantially as set forth.

3. The combination, with button-container and reciprocating plate having a grooved upper end, of inclined bar located in position to receive the buttons from the reciprocating plate, said bar having a groove made to register with the groove of the reciprocating plate when the latter is in its elevated position, substantially as set forth.

4. The combination, with button-container, reciprocating plate having a grooved upper end, and grooved bar, substantially as indicated, of mechanism, substantially as described, for reciprocating said plate, whereby the

grooves of the plate and bar are made to register when the plate is in its elevated position, substantially as set forth.

5. The combination, with button-container, reciprocating plate having a grooved upper end, and grooved bar, substantially as indicated, of a guard-plate made to extend over the face of such grooved bar to hold the buttons in place on the bar, substantially as set forth.

6. The combination, with a grooved bar, of a guard-plate and button-carrier, the guard-plate having a curved end, which forms a stop for the button when the latter reaches its seat in the button carrier, substantially as set forth.

7. The combination, with grooved bar and guard-plate, substantially as indicated, of a crescent-shaped cut-out for buttons, such cut-out having an axial spindle journaled in a bearing secured to the grooved bar, and lever connected with the spindle for oscillating the cut-out, substantially as described, whereby one button at a time is discharged, substantially as set forth.

8. The combination, with tubes for discharging fasteners of the variety indicated, of spindle attached to the tube, disk journaled on the spindle, a lip connected with the disk for alternately opening and closing the mouth of the tube, and a pointed arm connected with the disk for cutting out the button-fasteners, substantially as set forth.

9. The combination, with tube *m*, spindle, disk mounted on the spindle, depending lip, and pointed arm connected with the disk, substantially as indicated, of a lever for operating the disk in one direction, and a spring for returning the disk to its normal position, the parts being arranged substantially as described, and for the purpose set forth.

10. The combination, with mechanism for discharging button-fasteners one at a time from supply-tubes, of a delivery-tube open at both ends and pivoted to the machine, and devices, substantially as described, for swinging said tube, whereby the upper end thereof is moved into a position to receive the fastener as the latter is discharged and the lower end moved to a position to drop the fastener into the sleeve, substantially as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 9th day of July, 1887.

ALEXANDER G. WILKINS.

Witnesses:
CHAS. H. DORER,
ALBERT E. LYNCH.