

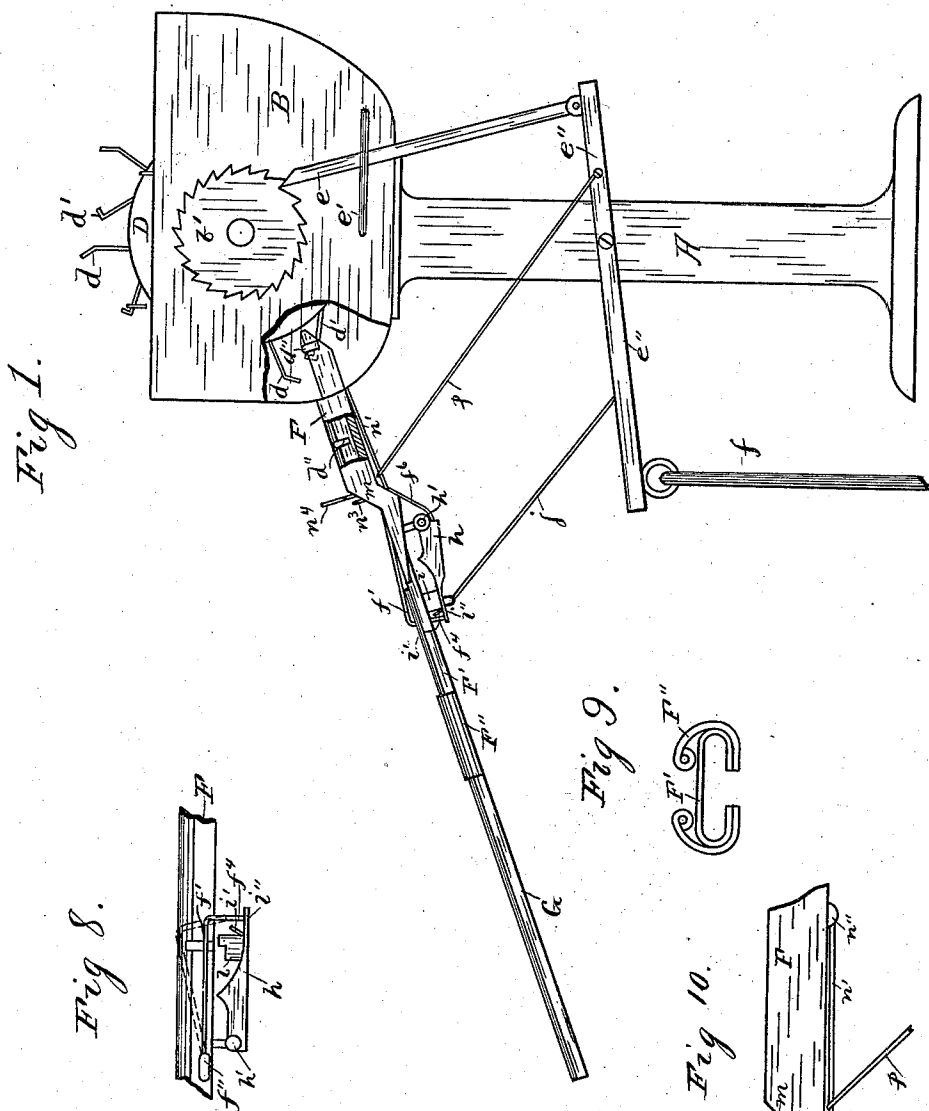
(No Model.)

3 Sheets—Sheet 1.

W. G. METCALF.
BUTTON AND STAPLE FEEDING MECHANISM.

No. 535,454.

Patented Mar. 12, 1895.



WITNESSES:

Lester L. Allen.
A. J. Froini

INVENTOR

W. G. Metcalf.

BY

BY *R. J. McCarty*
ATTORNEY.

(No Model.)

3 Sheets—Sheet 2.

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Fig 2.

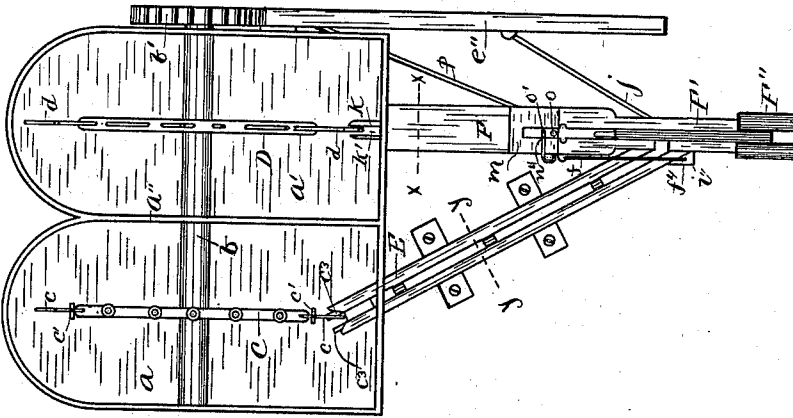


Fig 4.

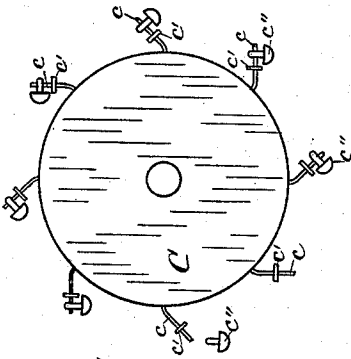


Fig 3.

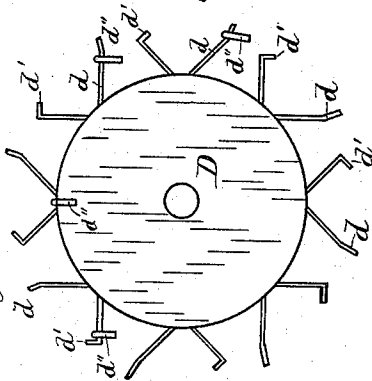


Fig 6.

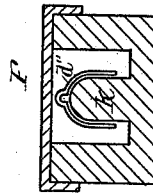


Fig 7.

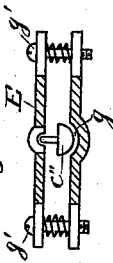
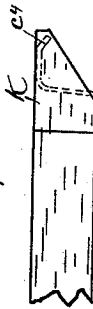


Fig 12.



WITNESSES:

Lester L. Allen.
A. J. Fiorini

INVENTOR

W. G. Metcalf.

BY

R. J. McCarly
ATTORNEY.

(No Model.)

3 Sheets—Sheet 3.

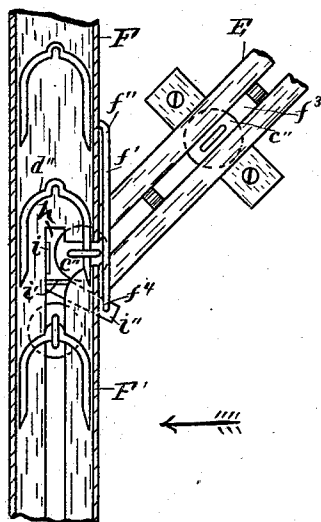
W. G. METCALF.

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Fig 5.



WITNESSES:

Lester L. Allen.
A. J. Fournier

INVENTOR

W. G. Metcalf.

BY

R. J. McCarty.
ATTORNEY.

UNITED STATES PATENT OFFICE.

WILLIAM G. METCALF, OF DAYTON, OHIO.

BUTTON AND STAPLE FEEDING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 535,454, dated March 12, 1895.

Application filed October 23, 1894. Serial No. 526,772. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM G. METCALF, of Dayton, county of Montgomery, State of Ohio, have invented new and useful Improvements in Button and Staple Feeding Mechanism; and I do 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 the letters of reference marked thereon, which form a part of this specification.

This invention relates to mechanism for feeding buttons and their fasteners to tubular receivers, from which they are fed directly to button-attaching machines of a well known type.

The object of this invention is to provide greatly improved means for rapidly and simultaneously feeding through separate chutes, the buttons and staples, and uniting them at a point where said chutes intersect, and from which point they are fed into the receivers.

The mechanism is especially adapted for feeding staples known in the trade as the "peninsular" staple.

Referring to the annexed drawings, forming a part of the specification, and on which similar letters of reference indicate the same parts in the several views, Figure 1, is a side elevation partly broken away, of my improved button and staple feeder; Fig. 2, a top plan view of the same; Fig. 3, an enlarged side elevation of the staple-carrying disk; Fig. 4, a similar view of the button-carrying disk; Fig. 5, an enlarged plan view of the chutes at the point of their intersection. The staple chute is shown in section, in order to exhibit the staple before it reaches the point where the button chute intersects, and to exhibit the button and staple united. Fig. 6, is an enlarged section of the staple chute on the line $x-x$ of Fig. 2; Fig. 7, an enlarged section of the button chute on the line $y-y$ of Fig. 2; Fig. 8, a side elevation of the portion of the chute wherein the buttons and staples are united; looking in the direction of the arrow in Fig. 5; the button chute being removed for the sake of clearness; Fig. 9, an end view of the spring clamp for attaching the receiving

tubes; Fig. 10, an enlarged side elevation of a portion of the staple chute, at the point of incline; looking on the side shown in Fig. 1; Fig. 11, an enlarged plan view of the inner end of the staple chute; Fig. 12, a side elevation of the upper end of the staple chute, showing the spring for dislodging the staples when they are improperly delivered to said chute.

The letter A designates a standard supporting a hopper B having two compartments (a) and (a') divided by a partition (a''). One of said compartments contains the buttons, and the other the staples in any suitable quantities. (b) designates a shaft extending through said hopper and suitably journaled therein. C and D designate, respectively, disks rigidly mounted on said shaft to rotate therewith in said compartments. The former disk rotates in the compartment (a) and from its periphery project a series of pins or pickers (c) each of which has a stop (c') to prevent more than one button from lodging thereon at a time. These pins pick the buttons (c'') up and deliver them to the button chute E down which said buttons slide; of which further mention will be hereinafter made. The latter disk, that is, disk D, rotates in the compartment (a') and has upon its periphery a series of angular pins or pickers (d) and (d') that alternately pick up the staples (d'') and deliver them to the staple chute F down which they slide; of which further mention will be hereinafter made. The shaft (b) is rotated by a ratchet wheel (b') keyed to an outer end of said shaft. (e) is a ratchet pawl engaging said wheel. This pawl is confined within a guide (e') or analogous device, attached to the side of the hopper, and has its lower end pivoted to an oscillating lever (e'') which is pivoted to a side of the standard.

(f) designates a rod loosely connected to the lever (e''), and to the lower end of which, may be attached, a foot treadle. (Not shown.)

The foregoing describes one mode of driving the shaft (b), but of course it will be understood, this shaft may be rotated in various ways; and the lever (e''), which has other functions to perform may be operated independently.

The button chute E is provided with suitable space, and channel (g) to enable the button to freely slide therein, and said chute is

also adjustable by set screws (g') whereby a single chute is adapted to accommodate different sizes of buttons. In an operative position, this chute projects into, and is rigidly supported in the button hopper (a) substantially as shown in Fig. 2, where it will be noted the end thereof is in a position to catch the buttons as they drop by gravity from the pins or pickers (c) during the rotation of the disk C. In Fig. 4, I have illustrated the respective positions of the buttons during the rotation of said disk.

Referring to Fig. 5, the buttons gravitate to the lower end of the chute, and are permitted to enter one at a time in the path of the gravitating staples, by an angular spring stop (f') which is attached at one end to the staple chute as at (f''). This stop lies across the upper side of the button chute, and is caused to descend in the path of the eye of each button (which eyes project through a longitudinal slot (f^3) in the upper side of said chute) at predetermined times as hereinafter described. Beneath the staple chute F, at the point where the button chute intersects, I pivot a plate (h) at (h'), having upturned flanges (i) and (i') that maintain the button in a position to receive the staple. These flanges or projections (i) and (i') may be soldered on the plate (h) or an integral part of said plate, and are arranged at right angles to each other as shown in Fig. 5. As the buttons one by one enter said plate the said flanges (i) and (i') maintain them in a proper position to receive the staple. As the plate (h) is lowered, each button with the united staple is allowed to pass down. See Fig. 5. (i'') is a projection from said plate upon which the vertical end (f^4) of the spring stop (f) rests and is thereby normally held away from the button chute. See Figs. 1, 5 and 8.

The plate (h) is held up by a spring (f^6) having a suitable mount on the staple chute F. Fig. 8, shows the stop (f) in a position to arrest a button. The dotted lines show its normal position, or the position which allows a button to enter the plate (h).

(j) is a rod connected to the plate (h) and lever (e'') by which said plate is drawn down to permit the button and staple to pass after they have united. Immediately after said button and staple pass from the plate (h), another button assumes a position thereon to receive a staple, and the downward movement of the spring stop (f) prevents more than one button at a time from crowding upon the plate (h).

Referring to the devices for feeding the staples; the pickers (d), as the disk D is rotated through the staples in the hopper (a'), pick up the staples (d''). The continued rotation of said disk transfers the staples to the pins (d'). See Fig. 3. The staple chute F is mounted in its respective hopper or compartment in a similar manner to the button chute. The opening in said chute is provided with a central longitudinal ridge (k) conforming to

the shape of the staple. This ridge extends beyond the inclosed portion of said chute, and has a slot (k'). See Figs. 2 and 11. The object of this slot is to permit the pickers or pins (d) and (d') to pass therethrough, and the pins (d') to deposit the staples upon said ridge (k) to slide downward. The staples, it will be understood, straddle the ridge (k) as seen in Fig. 6, while the pins pass downward through the slot (k'). At a lower point in the staple chute, it takes an incline as at (m), which causes the staples to take a position with the prongs foremost in order that the union with the button may be effected. It is necessary also to regulate or time the feed of the staples as they approach the point where they unite with the buttons. This is done by means of an angular stop, which is attached to a spring (n') having an attachment at one end to the lower side of the chute as at (n''). The ends (n^3) and (n^4) of this stop work in openings (o) and (o') in the incline portion (m).

(p) designates a rod coupled to the spring (n') and to the lever (e''). The end (n^3) normally projects through its opening (o), while the end (n^4) descends into its opening (o') in time to arrest further movement of a staple until the one in advance has been released from the end (n^3). Owing to the peculiar construction of this device, it will be understood that when the spring (n') is drawn down by the lever (e'') or released after being drawn down, the ends (n^3) and (n^4) will move in the same direction; the former, releasing a staple, and the latter arresting one, and vice versa.

(c^3) and (c^4) are springs attached to the lower sides of the button and staple chutes for removing buttons or staples that have been improperly delivered thereto. These springs are attached at the entrances of the chutes, as shown in Figs. 2 and 12, and in the path of the pins and pickers on the disks (C) and (D). As said disks revolve, the springs are borne downwardly, and released. As they rebound to their normal positions they naturally come in contact with a button or staple that has lodged at the mouth of its respective chute, on account of an improper delivery; for example, if a button is delivered with the eye downward; or a staple straddles only one of the prongs on the upper end of the chute (F). By thus controlling the movements of the buttons and staples, they are automatically united, one by one, and permitted to travel together through a common chute F' upon the end of which there are clamps F'' for attaching the receiving tubes G, which finally receive the buttons and staples for the attaching machine. The tube G of course is no part of my invention.

Briefly describing the operation, the lever (e'') is operated. This rotates the disks to feed the buttons and staples, and also simultaneously moves the staple stop (n') and button plate (h) through the rods (j) and (p). To the skilled mechanic some changes in the con-

struction of this feeding mechanism might be apparent without departing from the spirit of the invention.

Having fully described the invention, I desire to claim—

1. In a button and staple feeding mechanism, the combination with a hopper adapted to hold staples, and a staple chute leading from said hopper, of a disk mounted in said hopper, pickers or hooks (*d'*) projecting from the periphery of said disk, and adapted to pick up staples; pins (*d*) also projecting from the periphery of said disk, and adapted to receive staples from the pickers (*d'*) and to deliver them to the chute; and means for revolving said disk, substantially as described.

2. In a staple feeding mechanism, the combination with a hopper adapted to contain staples; of a disk revolubly mounted in said hopper; pickers or hooks (*d'*) mounted on the periphery of said disk and adapted to pick up staples from said hopper; delivery pins (*d*) also mounted on the periphery of said disk adjacent to the pickers (*d'*) and adapted to receive staples from said pickers; a chute to receive staples from said delivery pins (*d*), and means on the intermediate portion of said chute for causing said staples to proceed with their prongs foremost, substantially as described.

3. In a button and staple feeding mechanism, the combination with a hopper adapted to contain staples, and a hopper adapted to contain buttons; of a disk revolubly mounted in said staple hopper and provided with pickers (*d'*) adapted to pick up staples from said hopper; and delivery pins (*d*) adapted to receive staples from said pickers; a disk revolubly mounted in said button hopper and pro-

vided with delivery pins (*c*) adapted to pick up buttons from said hopper; chutes leading from said hoppers and intersecting with each other; an oscillating plate below said chute at the point of said intersection adapted to support the buttons in a position to receive the staples, and means for actuating said plate, and disks, substantially as described.

4. In a button and staple feeding mechanism, the combination with hoppers adapted to contain buttons and staples; of a disk revolubly mounted in said button hopper provided with a series of angular pins (*c*) projecting from the periphery of said disk and adapted to pick up buttons from said hopper; means for holding the buttons near the ends of said pins; a disk revolubly mounted in said staple hopper and provided with pickers (*d'*) adapted to pick up staples from said hopper; delivery pins (*d*) also on the periphery of said disk adjacent to the pickers (*d'*), and adapted to receive staples from said pickers; intersecting chutes to receive buttons and staples from said pins (*c*) and (*d*); and means for controlling the movement of said staples and buttons, substantially as described.

5. The combination of a staple chute provided with an inclined portion (*m*), and openings (*o*)—(*o'*) therein; staple stops movable therein; a button chute intersecting with the staple chute; a button stop (*f*); a vibrating plate (*h*) upon which the buttons and staples are united, substantially as is described.

In testimony whereof I have hereunto set my hand this 15th day of October, 1894.

WILLIAM G. METCALF.

Witnesses:

S. A. DICKSON,
R. J. MCCARTY.