

(No Model.)

2 Sheets—Sheet 1.

L. E. CHACE.

MACHINE FOR MAKING BUTTONS.

No. 359,997.

Patented Mar. 29, 1887.

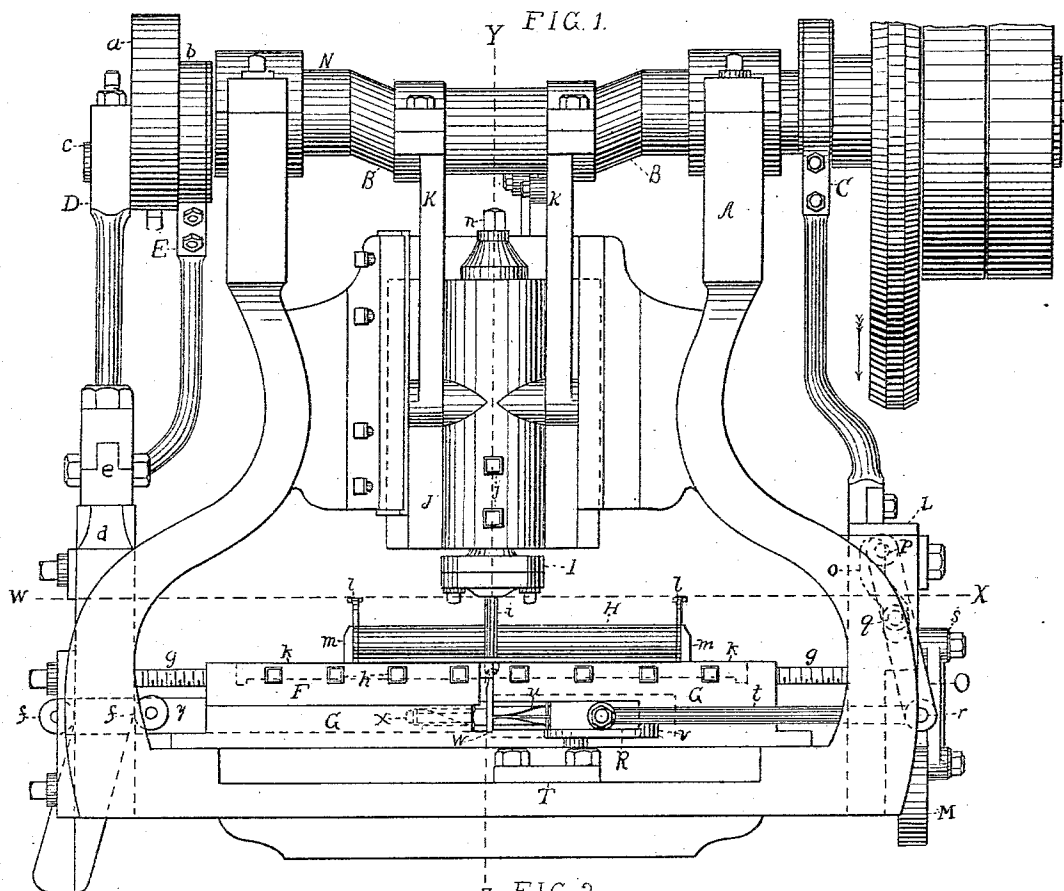
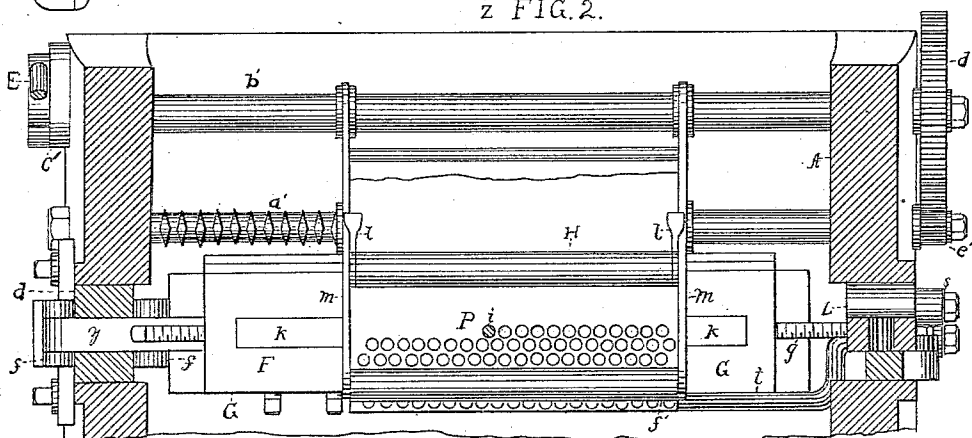


FIG. 2.



WITNESSES:

Lauritz M. Möller.
John R. Snow.

INVENTOR

Lincoln E. Chace,
BY
J. E. Maynard
ATTORNEY

(No Model.)

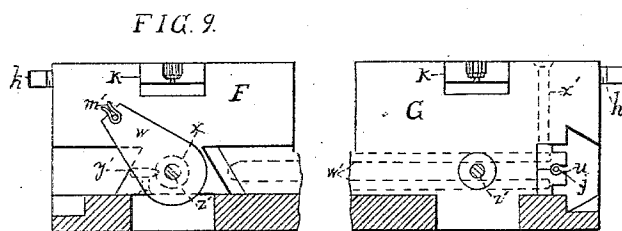
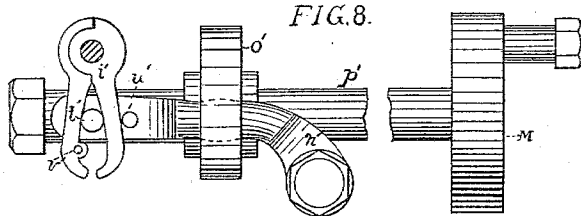
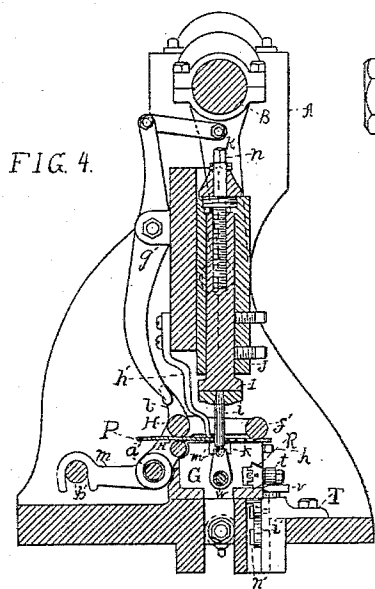
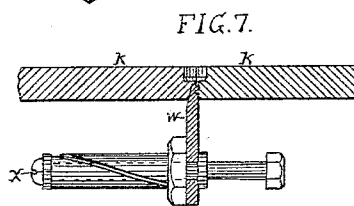
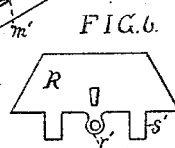
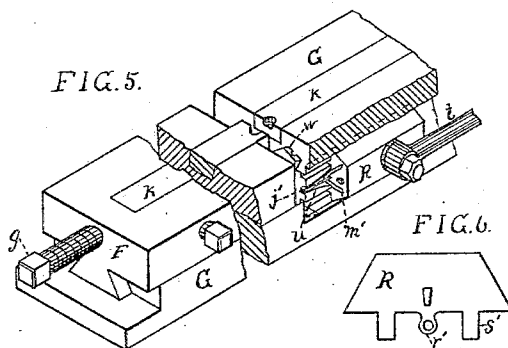
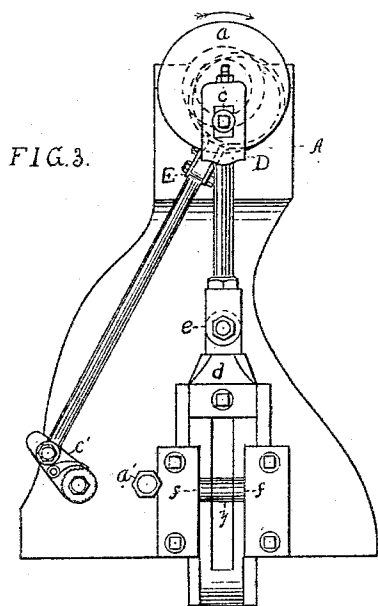
2 Sheets—Sheet 2.

L. E. CHACE.

MACHINE FOR MAKING BUTTONS.

No. 359,997.

Patented Mar. 29, 1887.



WITNESSES:

Laurens W. Moller,
John R. Knorr.

INVENTOR
Lincoln E. Chace,
BY
J. E. Magnusson
ATTORNEY

UNITED STATES PATENT OFFICE.

LINCOLN E. CHACE, OF FREETOWN, ASSIGNOR OF ONE-HALF TO FRANCIS E. FULLER, OF TAUNTON, MASSACHUSETTS.

MACHINE FOR MAKING BUTTONS.

SPECIFICATION forming part of Letters Patent No. 359,997, dated March 29, 1887.

Application filed September 2, 1886. Serial No. 212,483. (No model.)

To all whom it may concern:

Be it known that I, LINCOLN E. CHACE, of Freetown, in the county of Bristol and State of Massachusetts, have invented a new and useful
5 Machine for Making Buttons, of which the following is a specification, reference being had to the accompanying drawings.

Machines for making buttons from pasteboard or like material are of two classes. In
10 one class the blanks are fed from a hopper, while in another class they are punched from a ribbon or strip of sheet material whose width is a little more than the diameter of the blank.

The object of my invention is to provide a
15 machine in which a sheet of pasteboard can be made into buttons, the sheet being fed so that a row of blanks is punched in one direction when the sheet is fed in a direction at right
20 angles to the direction of the first feed, and a second row of blanks is punched, and so on, the sheet being fed at the end of every row, so as to bring that part of the sheet from which the next row is to be punched in proper relation with the punch.

25 My invention consists, mainly, in this compound or double feed—that is, a feed which feeds the sheet so that a row of blanks is cut in combination with a second feed, which operates only at the end of each row. The advantages of this feature of my machine will be obvious to all skilled in the art without further
30 description.

Another feature of my invention relates to forming the eye; and it consists in a guideway so
35 flared that at its larger end it will receive the short piece of wire from which the eye is made, while it is so shaped that when this short piece of wire is forced sidewise through it the wire will be bent into the form of the eye, there being
40 in the guideway a central guiding-pin, around which the eye is bent. This device is simple in construction, positive in its action, and very durable.

In the drawings, Figure 1 is a front elevation of my improved machine. Fig. 2 is a section on the line W X, Fig. 1. Fig. 3 is a side
45 view looking at the left of Fig. 1. Fig. 4 is a section on line Y Z, Fig. 1. Fig. 5 is a detail illustrating the eye forming and carrying
50 mechanism. Fig. 6 is an end view of the slide

of the eye-forming mechanism. Fig. 7 is a sectional detail illustrating the button-forming dies and the eye-carrier. Fig. 8 illustrates the wire-feeding mechanism; Fig. 9, an end view of the dies and die-blocks.

55 A is the frame. N is the main shaft. B is the crank for actuating the punch-stock I and punch *i*. The rod E is reciprocated endwise by an eccentric on the main shaft, and actuates the pawl-carrier *c'*. The rod D is reciprocated endwise by the crank-pin *c* on the disk
60 *a*, fast to main shaft B, and this rod D is jointed at *e* to the slide *d*, which, being slanted, as shown in Fig. 1, moves the die-block F by means of the stem *y* and anti-friction rolls *f, f*,
65 the die-block F moving in and out as the slide *d* reciprocates endwise. The rod C is reciprocated endwise by an eccentric on the main shaft N, and actuates the wire-feed and the eye-forming mechanism, as is more fully de-
70 scribed below.

The sheet P (of pasteboard, from which the blanks are punched) is fed sidewise by the rod E actuating the pawl-carrier *c'*, the pawl actuating its ratchet, which is fast to the shaft *b'*,
75 and this shaft *b'* is geared by the gears *d'* and *e'* to shaft *a'*, which has two threads—one right, the other left—formed upon it for about half its length. This right-and-left screw on shaft *a'* engages with its swivel upon the
80 bracket *m* in a manner familiar to all mechanics, the result being that the bracket *m* is moved step by step from left to right and then from right to left the width of the sheet of pasteboard carried by the bracket *m* and by the
85 rolls H H', assisted by the roll *f'*. The motion of the bracket *m* insures the feeding of the sheet P sidewise, so that the punch *i* makes a row of holes across the sheet P, and as the punch rises from the last hole in any crosswise
90 row one of the pawl-carriers *l* is brought into line with the end of lever *g'*, so that when the end of lever *g'* is thrown back by the motion of the rod K (which is linked to lever *g'*, as
95 shown in Fig. 4) the pawl-carrier *l* is struck by the end of the lever *g'* and the roll H is rotated by the ratchet of the pawl on pawl-carrier *l* sufficiently to feed the sheet P forward far enough to cause the punch *i* at its next
100 descent to make the first hole of the next row—

that is to say, the sheet P is first fed intermittently sidewise until a row of blanks has been punched from it by the action of the punch; then fed forward, ready for the next row of blanks to be punched out; next fed sidewise in the opposite direction and a second row of blanks punched out; then fed forward again, and so on, until the sheet P is used up. This is the main feature of my invention, and so far as I know is wholly new with me.

Each blank as it is punched from the sheet P is carried directly by the punch *i* into the dies *k k*, the blank being forced upon the prongs of the eye and molded by the descent of the punch. The eye is formed from a coil of wire, the end of which is passed between the jaws of the nipper *i'*. This nipper *i'* has one of its members rigidly attached to a slide, as indicated in Fig. 4, so that the nipper can be reciprocated bodily a sufficient distance to feed the length of wire required to form the eye. The nipper is reciprocated and its jaws opened and closed by means of the lever *n'* and the pins *t'* and *u'* fast to it. The first part of the upward motion of the lever *n'* forces the pin *t'* against the movable member of the nipper *i'*, and thereby forces the jaws together and nips the wire firmly. The further upward motion of lever *n'* moves the slide to which the nipper is fast and feeds the wire. The first part of the backward motion of the lever *n'* carries the pin *u'* against the movable member of the nipper *i'* and thereby releases the wire from the nipper, while the continued backward motion of the lever *n'* moves the nipper *i'* and its slide back, ready for the next succeeding feed.

The wire is fed back of the guide-pin *j*, and the proper length to form the eye is cut off by the cutter *r*, which is thrown forward by the slide R when near the end of its back-stroke. The forward stroke of the slide R carries the piece of wire *m'*, Fig. 5, sidewise through the flaring guideway or eye-former *u*, which at its largest part is large enough to receive the piece of wire *m'* before it is bent, but which gradually grows smaller and is so curved that when the wire *m'* is forced through it by the slide R the wire is bent to form the eye, (see Figs. 5 and 9,) and also forced into a groove of the proper shape to receive it, which groove is formed in one side of the eye carrier *w*, which is brought into proper relation with the outlet of the eye-former *u* as the slide R moves forward.

The slide R is actuated by the reciprocating rod C and its slide L by means of arm O and rod *t*, the arm O, hung at *p*, being vibrated by the slot *o* in slide L working upon the stud *q*, fast to arm O. This slide L also serves to actuate lever *n'* by means of the rock-shaft *p'*, whose slotted arm *o'* acts directly upon lever *n'*, the rock-shaft *p'* being rocked by the link *s*, which is jointed at one end to slide L and at the other end to disk M.

The eye-carrier *w* is actuated by the motion of the die-block F, a pin, *y'*, Fig. 9, projecting from the die-block F and entering a spiral

groove in the sleeve *x*, to which the carrier *w* is fast.

The operation is as follows: The sheet P is inserted between the rolls H H' and under the roll *f'*, and is thereby held in place upon the bracket *m*, and also down upon the upper surface of the die-blocks F G. The front edge of the sheet P is adjusted with one corner under the punch *i*, so that the first row of holes will be made along the front edge of the sheet P. The machine is then started and the punch descends, punching out a blank and forcing it into the dies *k k*, which are then butted end to end, and the blank is thereby shaped and forced upon the prongs of the eye. As the punch rises the wire is fed, cut off, and the eye formed and carried into the eye-carrier. As soon as the punch on its upward stroke releases the blank from pressure the die-block F is drawn back, and its backward motion turns the sleeve of the eye-carrier and also moves it slightly endwise, thereby insuring the clearance of the button, for the button cannot stick in the moving die carried by the moving die block F, because the eye-carrier *w* prevents it, and the motion of the carrier on its axis will clear it from the stationary die-block G in case it sticks in that die. The button falls through the hole below the carrier *w*. (Seen in Figs. 4 and 9.) As soon as the punch rises clear of the sheet P the bracket *m* is fed sidewise a little more than the diameter of the blank, and as the punch descends the die-block F is moved forward, bringing the dies *k k* together, and also bringing the carrier *w* into place with the eye, with its prongs projecting into the recess of the dies *k k*. The punch then completes its descent and forms another button. This operation is continued until the first row of blanks has been punched out across the sheet. The lengthwise feed of the sheet then takes place (by the arm *g'* striking one of the pawl-carriers *l*) and the second row of blanks is punched out. After the last blank in the second row is punched out the arm *g'* strikes the other pawl-carrier *l* and feeds the sheet forward for the third row of blanks, and so on, the feed of the sheet being first for one row of blanks, then across the first feed for the first blank of the next row, then back to complete that row, and again across for the first blank of the third row, and so on.

What I claim as my invention is—

1. In combination, bracket *m*, shaft *a'*, threaded as shown, rolls H H', pawl-carriers *l*, and lever *g'*, substantially as and for the purpose set forth.

2. The eye-forming mechanism consisting of the flaring eye-former *u*, the guide-pin *j*, and slide R, combined and operating substantially as described.

3. In combination, the eye-former *u*, guide-pin *j*, slide R, eye-carrier *w*, dies *k k*, and punch *i*, substantially as described.

4. In combination, eye-forming mechanism, button punching and molding mechanism, and

double-feed mechanism, each substantially
such as is above described, one feed mechan-
ism feeding the sheet between the punch and
forming-dies until a row of blanks is punched
5 out, forced back upon its eye, and molded, and
the other feed mechanism operating at the end
of each row to feed the sheet from row to row,

the whole combination arranged and operat-
ing, substantially as described, to form buttons
directly from the sheet.

LINCOLN E. CHACE.

Witnesses:

J. E. MAYNADIER,
F. E. FULLER.