

(No Model.)

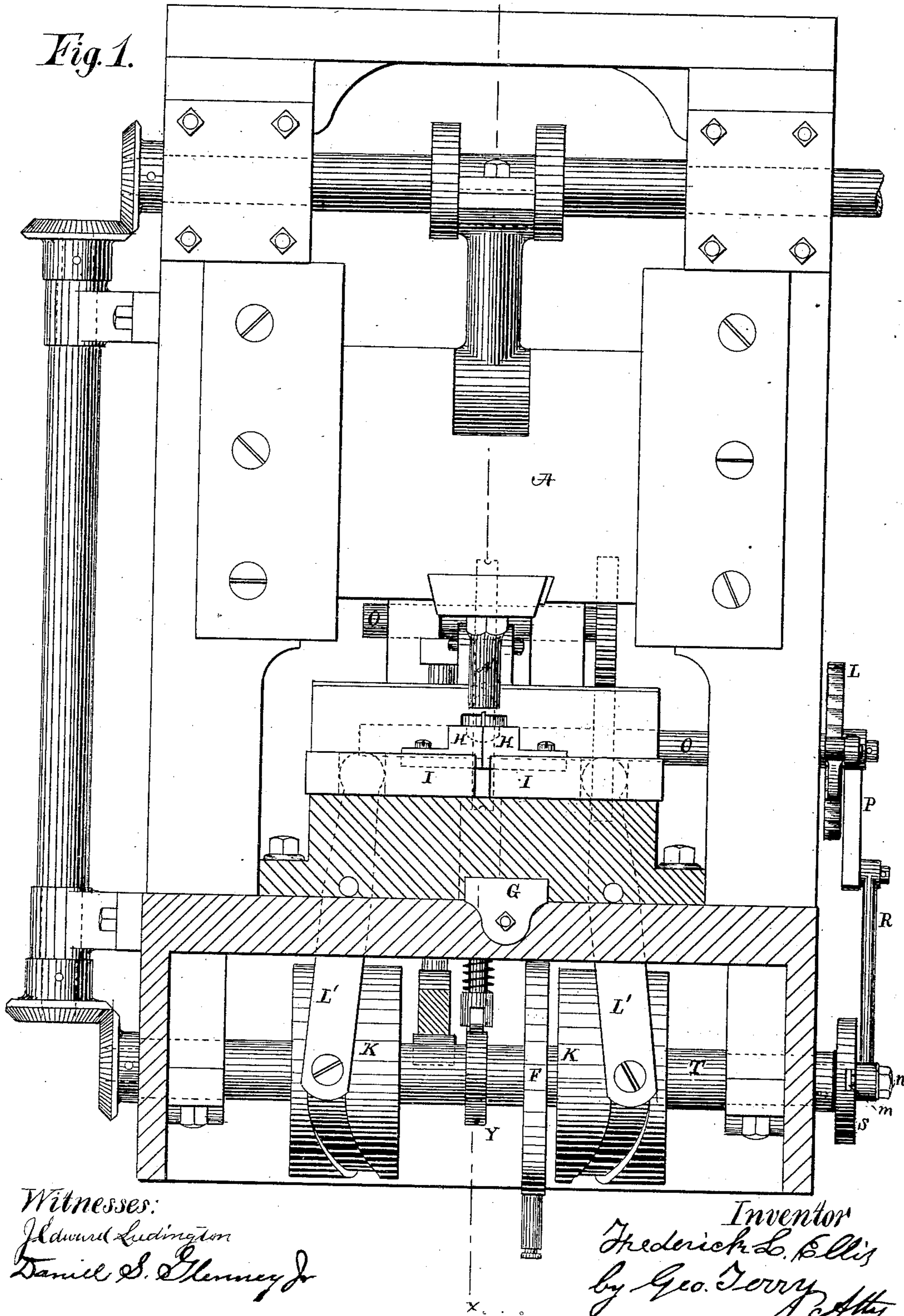
2 Sheets—Sheet 1.

F. L. ELLIS.  
ART OF MAKING BUTTONS.

No. 345,835.

Patented July 20, 1886.

Fig. 1.



(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

Fig. 3.

Fig. 4.



Fig. 5.

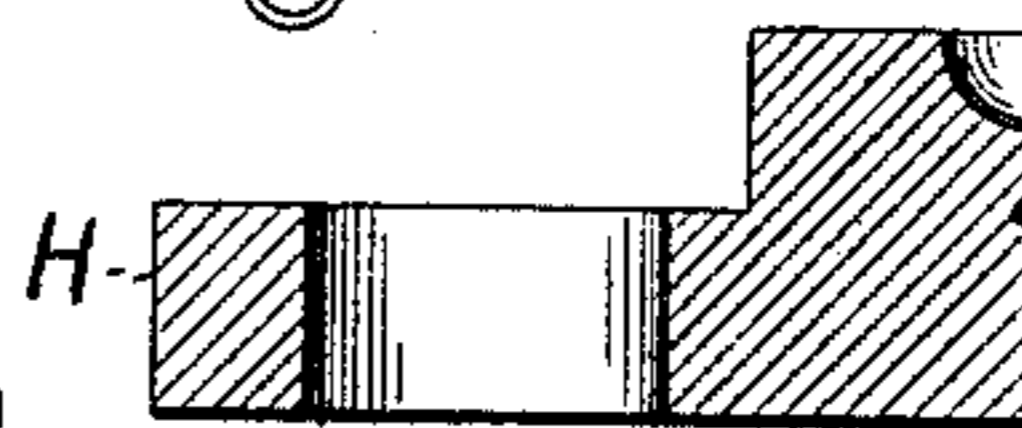
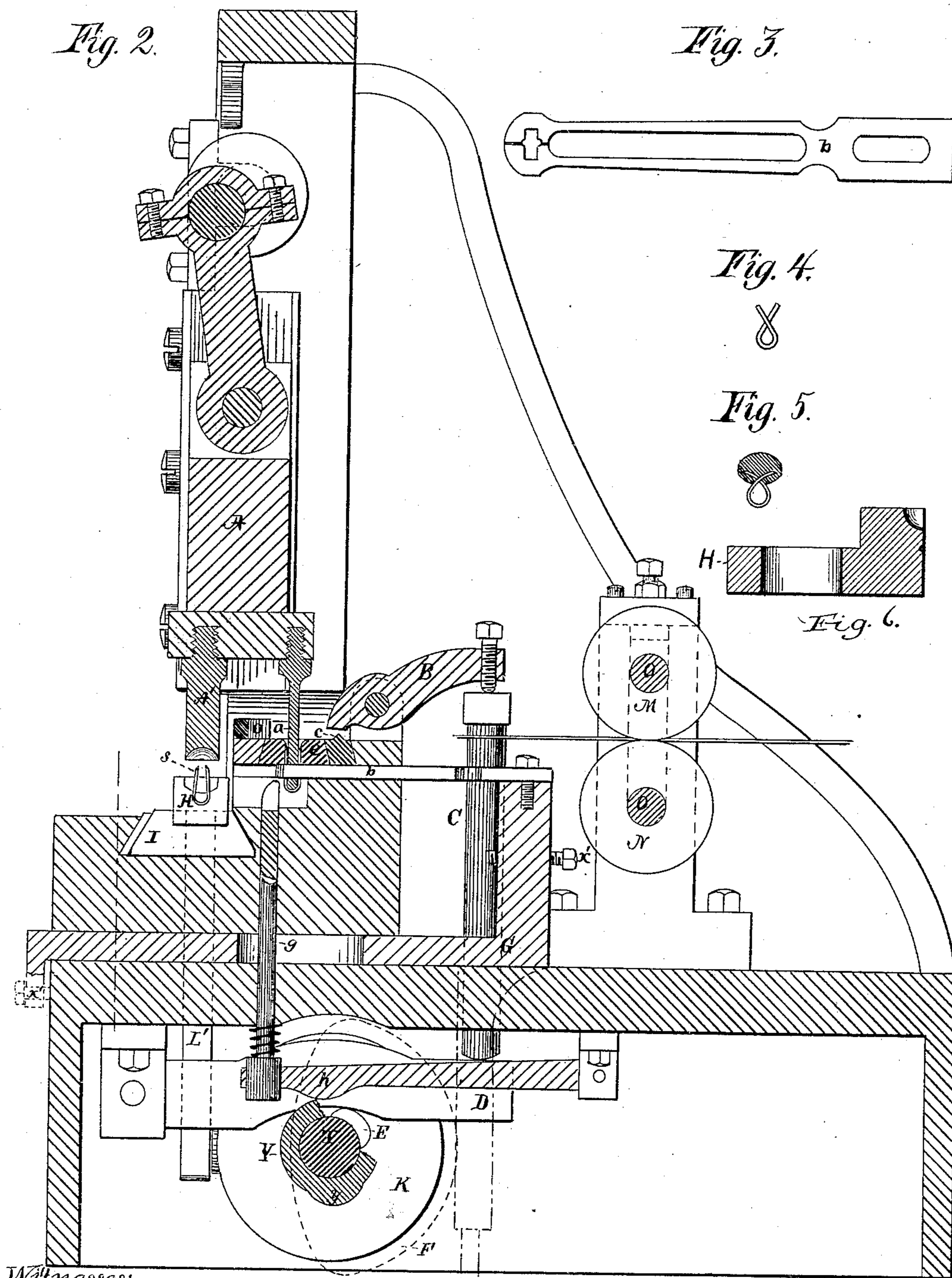


Fig. 6.



Witnesses:

Edward Ludington  
Daniel S. Cheney Jr.

Inventor  
Frederick L. Ellis  
by Geo. Terry atty.

# UNITED STATES PATENT OFFICE.

FREDERICK L. ELLIS, OF NEW HAVEN, CONNECTICUT.

## ART OF MAKING BUTTONS.

SPECIFICATION forming part of Letters Patent No. 345,835, dated July 20, 1886.

Application filed September 16, 1885. Serial No. 177,226. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK L. ELLIS, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in the Art of Making Buttons, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 is a front elevation of the machine, partly in section. Fig. 2 is a vertical section on line *x*, shown in Fig. 1. Fig. 3 is a view of the fingers for holding the eye. Fig. 4 shows an eye, and Fig. 5 is a section, of a button. Fig. 6 is a section of one of the dies H.

My invention relates to an improved method of making shoe, upholstery, and other buttons.

The object of my improvement in the art is to make an article of better appearance and better suited to the public taste. The materials I use in the manufacture are sole-leather, thick paper, or other suitable materials—as, for example, wood for making the heads, and wire for making the eyes.

To carry my improved method into effect, I employ the automatic press herein shown and described, so far as is requisite to describe it to enable others to understand the several operations which are performed by it in making a button.

The first step in my process is to draw the wire into the machine. This is done by means of the rolls M and N, Fig. 2. These rolls are fastened on the shafts O, and have an intermittent motion. This motion is produced by the ratchet-wheel L, Fig. 1, on the shaft O, a pawl attached to the arm P, connecting-rod R, and disk S, fastened to the shaft T. A slide, *m*, in the crank-pin *n* is fastened, is fitted in which the disk to vary the throw of the arm P. By these means the wire is drawn into the machine and against the stop *o*. The wire is cut off by the angular piece *c*, against which it is forced by the pivoted lever B. The upright bar C, lever D, and cam E operate the pivoted lever. The eye is made in the form of a staple by means of the punch *a*, (attached to the slide A,) and the die *e*, through which it is forced by the punch *a* into the fingers *b*, Figs. 2 and 3. The eye is shown in Fig. 2 in the fingers, and only a part of the way through

the die. The fingers, Fig. 3, have a slot to make room for the passage of the punch, and small grooves to hold the eye. They are fastened to the slide G, a part of which extends downward, and is held against the cam F (shown by broken lines) by a spiral spring attached to its end and to the frame, the attachment to the frame not being shown. Two set-screws, *x'*, adjust the movement of the slide, and by its movement the eye is carried between "split dies," to be described.

The function of the upright bar *g* is to spread the fingers and release the eye when it is carried between the split dies, to be described. A slot is made in its lower end, through which the lever *h* passes, and a spiral spring on the bar keeps the lever in contact with the disk Y, a part of which is cut away to show the cam E. The cam *y* is formed on the disk Y to operate the lever and bar. This device is not necessary to the successful operation of the machine, as the split dies hold the eye more firmly than the fingers, and cause the prongs to converge and partially release the eye, but the machine as such is more complete with it.

The split dies H, or, more correctly, a die in two parts, are fastened to the slides I. These slides are moved in a groove, Fig. 2, by the pivoted levers L'. Studs with rolls are fastened to their lower ends, and fit into grooves which form cams in the outer surfaces of the round disks K. By these means the split dies are opened and closed. The lower part of the frame is removed to show them, as indicated by the sectional lines in Fig. 1. The sides of these dies are shown in Fig. 1 with the ends of the fingers over the dies holding an eye. The end of one of them is shown in Fig. 2 with an eye in it. The depression in them gives form to the side of the button next to the eye. Below the depression a groove is made for holding the eye. The top parts of the groove converge, and they may converge so much that the prongs will pass each other. While the convergence of the top parts of the groove is less than half the diameter of the wire, the eye will not be an obstruction to the closing of the dies, and this convergence is made such as to move the prongs to a position in which they will be forced into the head of

the button, as shown in Fig. 5, as the head is forced down upon them. The convergence of the prongs gives direction to the prongs in the compressible material, and in a button of  
5 ordinary size the prongs may be made to come out on the side they entered. To make the prongs pass each other, the top part of one side of the groove in which the prongs are held is made a very little deeper than the top  
10 part of the other side of the groove. The groove in the other die is made in the same way to incline the other prong in the opposite direction. In this way the prongs are prevented from hitting each other as they pass.  
15 The punch A' is held in the slide A of the press in the usual manner. The depression in its end, which gives form to the outer surface of the button, is shown in Fig. 2. As it descends, it punches out the blank from which  
20 the button-head is made, forces the prongs into the blank by the movement of the blank and forms the button.

The construction of the several parts of the

machine not mentioned needs no description to be understood.

Reserving the machine for a separate patent, what I claim as new, and desire to secure by Letters Patent, is—

That improvement in the art of manufacturing buttons having heads of compressible material, and in which the prong ends are unexposed, which consists in so holding the eye that its upper ends while converging may pass each other, and then at one operation severing the blank for the head and forcing  
35 said blank onto the prongs, whereby the prong ends will be crossed and bent downwardly in the compressible material of the head, substantially as described.

In testimony whereof I affix my signature in  
40 presence of two witnesses.

FREDERICK L. ELLIS.

Witnesses:

GEORGE TERRY,

DANIEL S. GLENNEY, Jr.