

(No Model.)

G. HEUSER.
BUTTON MAKING MACHINE.

No. 466,304.

Patented Dec. 29, 1891.

WITNESSES:

Witnesses:
Frank S. Ober.

Edward A. Wagner.

INVENTOR
Gustav Heuser.

B-Y

W. J. Johnston
ATTORNEY.

UNITED STATES PATENT OFFICE.

GUSTAV HEUSER, OF BROOKLYN, NEW YORK.

BUTTON-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 466,304, dated December 29, 1891.

Application filed January 14, 1891. Serial No. 377,740. (No model.)

To all whom it may concern:

Be it known that I, GUSTAV HEUSER, a citizen of the United States, residing in Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Button-Making Machines, of which the following is a specification.

This invention relates to improvements in machines for making buttons, my improvements having particular reference to the manufacture of cloth-covered sheet-metal buttons. Heretofore in the manufacture of such buttons in which a pasteboard disk is interposed between a cup-shaped metallic back plate and cap it has been customary to press a disk of fabric into the back plate by the operation of one machine, then place the paper disk in the back plate, then to unite the cloth facing and cap-plate by another operation, and finally to connect all of the parts by another operation. In this form of button a portion of the back fabric is forced through an opening in the center of the back plate to form a tuft by which the button may be sewed to its support.

The object of my invention is to reduce the time and amount of handling in forming a complete button of the kind referred to and to provide simple and positive means capable of simultaneously performing the first and third operations above mentioned and of then, after the removal of one easily-displaced element of the mechanism, completing the formation of the button, whereby removal of part of a button from one machine to another is avoided.

To this end my invention consists in the construction and combination of parts, all as hereinafter more fully described and claimed.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of such parts of the machine as are necessary to illustrate my invention. Fig. 2 is a similar view of the formers in a different operative position. Fig. 3 is a plan view of the lower former, the intermediate former being removed. Fig. 4 is a perspective view of the several parts which are to be secured together to form a complete button, and Fig. 5 is a perspective view of a complete button.

The button shown in the drawings is of the form shown in Letters Patent No. 440,371,

dated November 11, 1890, in which a loop of braid or cord is permanently attached thereto; but it is to be understood that my method and machine are as well adapted to the manufacture of buttons of this class without the loop.

To a suitable bench or table-top A is secured the flange *b* of the fixed standard B, which is preferably cylindrical in shape and which receives upon it the sliding holder B'. A coiled spring *b'* is fitted between the lower end of the holder and the top of the flange *b*, and screws *b*², passing through the sides of the holder and having their inner ends entering a reduced portion of the standard, act as stops to limit the upward motion of the holder on the standard. Near the upper end the central opening is enlarged, forming an annular shoulder *b*³, immediately below which the metal is beveled to form an annular inclined neck *b*⁴, and the upper end of the holder is provided with a diametrical groove *b*⁵, the object of which neck and groove will presently be described. The standard B is provided with an axial opening *b*⁶, fitted to slide in which and in an opening in the bench corresponding therewith is a rod C, having a hook *c* at its upper end and a pad *c'* at its lower end. A spring *c*² is coiled around the rod and confined between the nut *c*³, carried by the rod, and the top of the enlargement in which the spring is located. A plate *c*⁴, secured to the under side of the bench and having an opening for the rod, serves to form a metallic bearing for the rod and a stop for the nut *c*³, whereby the downward motion of the rod is limited. Projecting upward from the flange *b* is a rod D, having its upper end curved or bowed to form a cam-surface *d*.

The standard B and sliding holder B' constitute the lower former, while the upper former consists of a rod or plunger E, carrying a sliding holder E', said holder having a pin *e* entering a groove *e'* in the side of the plunger to prevent the dropping of the holder off from the latter. The holder E' has a lateral shoulder *e*² and at its lower end has an annular recess *e*³, forming an annular punch *e*⁴. The rod or plunger E is screwed into a slide *e*⁵, fitted to suitable ways *e*⁶, and a set-nut *e*⁷ serves to firmly secure it in the

slide. A lateral projection from the nut carries a pivot for a latch or dog e^8 , having a lug e^9 and a cam-surface e^{10} at its lower end, and a spring e^{11} serves to insure the engagement of the lug e^9 with the shoulder e^2 of the holder E' .

The intermediate and removable former is constructed as follows: A cylinder H , which is preferably formed in two parts, as shown, for convenience in construction, is fitted at its lower end to the upper end of holder B' , so as to be capable of sliding thereon to the extent hereinafter described, and the upper end of the cylinder is formed with an annular upwardly-projecting rib h , capable of entering the recess e^3 of the upper holder E' . Inside of this rib is a circular depression h' , and a bearing or guide h^2 of less diameter than the depression h' is formed in the upper end of the cylinder. The interior of the cylinder is formed with an annular shoulder or seat h^2 near its lower end and another seat h^4 of slightly greater diameter about midway of its length. A circular guiding-plate h^5 rests normally on the lower seat and has a central opening, which receives and, in connection with the guide h^2 , guides the die H' in its vertical movements, hereinafter referred to. This die has a flange h^6 integral therewith or secured thereto at about its center, which flange normally rests on the upper seat h^4 of the cylinder. A spring h^7 is confined between the flange and the upper end of the cylinder, and a similar spring h^8 of less strength is confined between the said flange and the guiding-plate h^5 . The lower end of the die is formed with a central projection h^9 . Any suitable means, as a foot-lever and retracting-spring, (not shown,) may be utilized for causing the slide and its plunger and holder to move vertically to the desired extent and with the desired force.

The method which I have invented may be carried out by the following-described operation of the machine: The several parts which are to be united to form a complete button I and which are herein designated as the facing fabric i , cap or front plate i' , paper disk i^2 , tuft fabric i^3 , back plate i^4 , and loop i^5 , when the latter is employed, are to be understood as previously formed and ready for assembling. A back-plate i^4 is first dropped in the lower holder B' to the position shown in Fig. 1, the intermediate former being temporarily removed. The rod C is then pushed upward, a piece of loop-cord is laid across and in the groove b^5 and engaged by hook c , and the spring c^2 allowed to pull the cord down into the form of a loop, as shown in Fig. 1. A tuft-fabric disk i^3 is now laid on the shoulder b^3 , as shown in Fig. 1, and then an intermediate former having a cap-plate i' and facing-fabric disk i , placed as shown, is set above the lower former, as shown in said figure. The slide is brought down, and the holder E' , being forced to move with the plunger, owing to the engagement of the dog with the shoulder

e^2 , the edge of the facing fabric is turned down over the sides of the cap-plate by the punch e^4 . Then the spring h^8 yields and the lower end of the die H' carries the tuft fabric down into the back plate i^4 and the projection h^9 forces the central portion of the said fabric through the hole in the back plate to form a tuft. At this point the die stops; but the cylinder continuing, the spring h^7 yields and the cap-plate and facing fabric are forced into the holder E' , as shown in dotted lines in Fig. 1. The slide and upper former now rise, the intermediate former is removed to be refilled with a cap-plate and facing-fabric disk, a paper disk is dropped to the dotted-line position in Fig. 1, and the upper former is again brought down, but this time to a greater extent. When the end e^{10} of the dog e^8 strikes the cam-surface of rod D , the lug e^9 is removed from engagement with the shoulder e^2 of the upper holder E' , and therefore as soon as the recess e^3 of the latter receives the upper end of the lower holder B' the upper holder is stopped thereby; but the plunger, continuing, carries the cap-plate and facing fabric down until the edge of the latter is turned in under the edge of the former by the action of the inclined neck b^4 , and the plunger then forcing the lower holder down against the action of spring b' the said cap-plate and facing fabric are carried down over the paper disk and back-plate, and as the lower holder stops the end of the plunger at the same moment compresses the several parts of the button together and causes the edge of the cap-plate to be turned in by the action of inclined neck b^4 to firmly grasp and be secured to the back-plate, all as shown in Fig. 2. The upper former now rises, the completed button is removed, and another is formed in the same manner. If buttons having no loops i^5 are to be made, the same steps are performed, with the exception of laying a piece of cord in the grooves b^5 and the operation of the hook-rod C .

The form of button capable of being made with my machine consists of six different parts, as shown in Fig. 4; but, as above stated, the loop i^5 may be omitted, and in some cases the paper or other yielding disk i^2 might also be omitted. In such case the button will consist of the remaining four parts.

In the manufacture of buttons consisting of a facing fabric, a front plate, a tuft fabric, and a back plate it has been customary to exert three separate and distinct pressures at three different times before the button is finished. By my invention I reduce the amount of time and handling by simultaneously uniting the back plate with the tuft fabric and the front plate with the facing fabric and then uniting the whole, thus involving the exertion of pressure, either by hand or power, but twice, and consequently saving at least one handling.

Having thus described my invention, I claim—

1. In a button-making machine, the combination, with upper and lower formers, of an intermediate removable former consisting of a cylinder having a vertically-movable die therein, said die having a forming-punch at both its upper and lower ends, and springs for yieldingly holding said die in its normal position in the cylinder, substantially as described.

2. In a button-making machine, the combination, with an upper movable former, of a hollow standard below and in axial line therewith, a holder B', fitted to slide on the standard and having a spring and a stop, and a rod fitted to slide in the opening of said standard and having a hook at its end, substantially as described.

3. In a button-making machine, the combination, with a lower former consisting of a fixed standard and a holder fitted to slide thereon, of an upper former consisting of a plunger and a holder fitted to slide thereon, said holder having a lateral shoulder, an intermediate removable former consisting of a cylinder having a die fitted to slide therein, and a rigid but laterally-movable stop carried by the plunger and adapted to engage the shoulder of the upper holder, substantially as described.

4. In a button-making machine, a former consisting of a cylinder having two annular interior shoulders or seats, a guiding-plate fitted to slide in one end of the cylinder, a die fitted to slide in openings in the other end of the cylinder and in the guiding-plate, said die having a fixed flange intermediate of its ends, and springs in the cylinder above and below the said flange, substantially as described.

5. In a button-making machine, the combination, with the plunger E and its sliding holder E', provided at its lower end with the annular recess and punch $e^3 e^4$, of the standard B and its sliding and spring-mounted holder B', provided at its upper end with an annular shoulder b^3 , and the intermediate removable former consisting of cylinder H, having rib h , the die H', having flange h^6 , the sliding plate h^5 , and springs $h^7 h^8$, substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

GUSTAV HEUSER.

Witnesses:

WM. A. ROSENBAUM,
FRANK S. OBER.