No. 772,669. PATENTED OCT. 18, 1904.

A. PHELPS.

BUTTON MAKING MACHINE.

APPLICATION FILED FEB. 29, 1904.

NO MODEL. 3 SHEETS—SHEET 1.

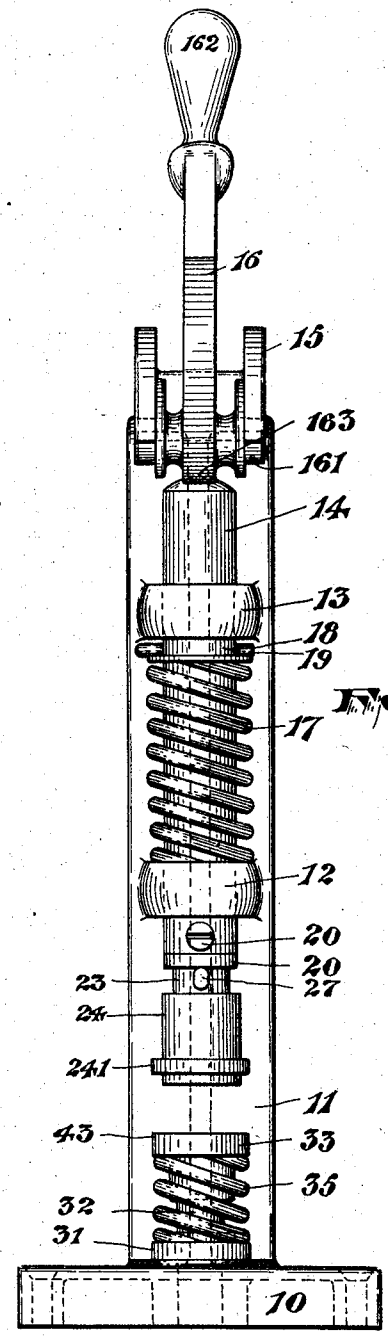

Fig. 1.

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NO MODEL. 3 SHEETS—SHEET 2.

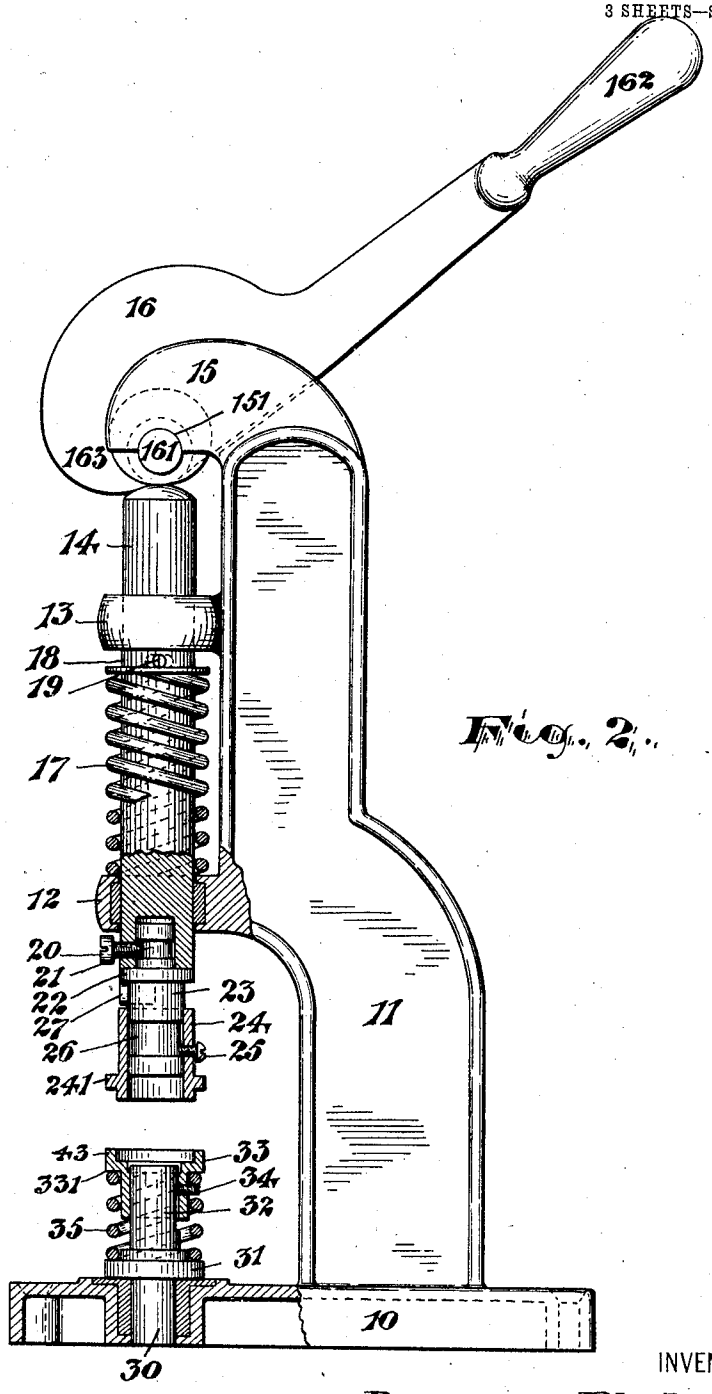

Fig. 2.

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NO MODEL. 3 SHEETS—SHEET 3.

Fig. 6.

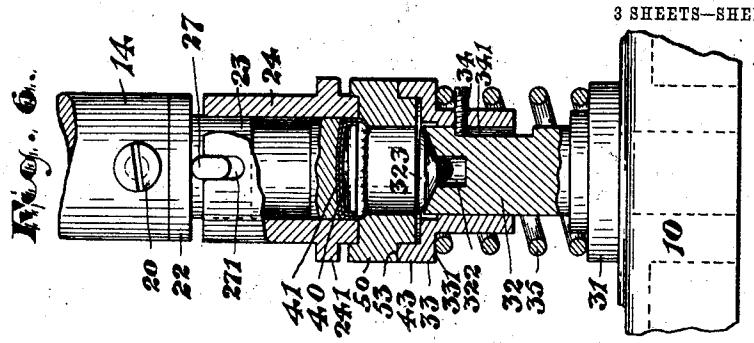


Fig. 5.

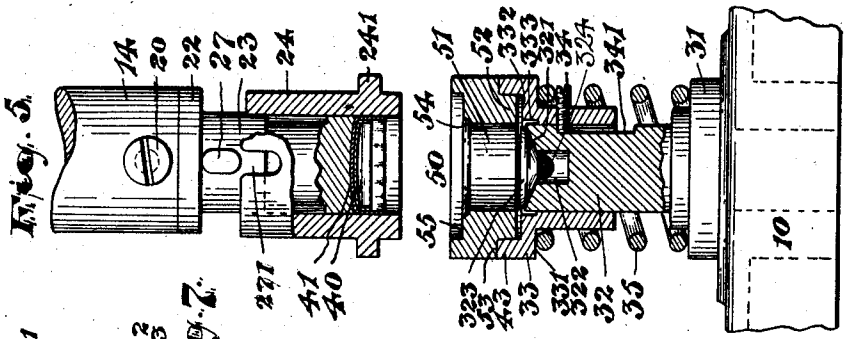


Fig. 7.

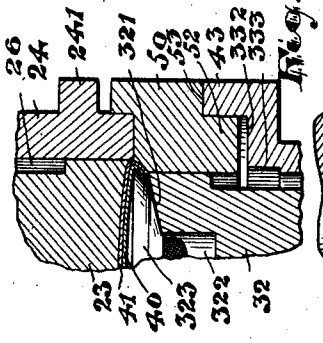


Fig. 4.

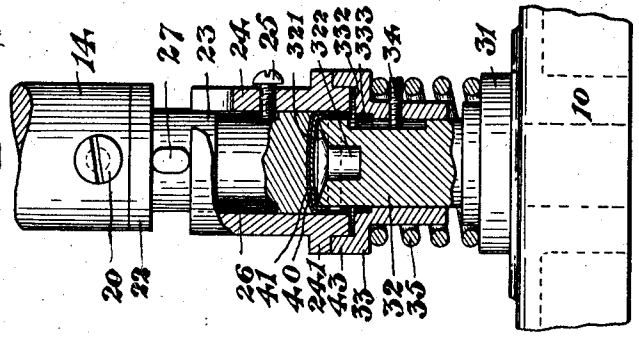
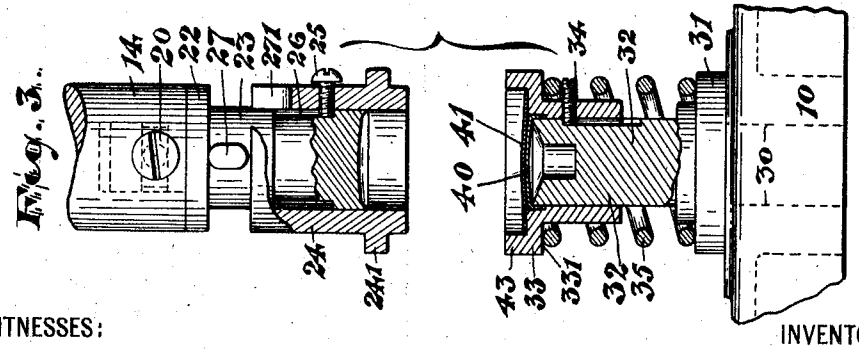


Fig. 3.



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No. 772,669. Patented October 18, 1904.

UNITED STATES PATENT OFFICE.

AUGUSTUS PHELPS, OF NEWARK, NEW JERSEY.

BUTTON-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 772,669, dated October 18, 1904.

Application filed February 29, 1904. Serial No. 195,720. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTUS PHELPS, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Button-Making Machines; 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 appertains to make and use the same, reference being had to the accompanying drawings, and to numerals of reference marked thereon, which form a part of this specification.

The objects of this invention are to facilitate the work of manufacturing covered buttons such as are commonly found on the market covered with cloth, celluloid, or other material, to reduce the cost of construction, to provide a more durable machine, and to prevent the loss incident to the insertion in the machine of blank parts too large for a proper operation, such parts being heretofore spoiled because of the operation thereon of the machine, and to secure other advantages and results, some of which may be referred to hereinafter in connection with the description of the working parts.

The invention consists in the improved button-making machine and in the arrangements and combinations of parts of the same, all substantially as will be hereinafter set forth, and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like figures of reference indicate corresponding parts in each of the several figures, Figure 1 is a front elevation of the improved machine. Fig. 2 is a side view of the same, the dies being partly in vertical section; and Figs. 3, 4, 5, 6, and 7 are detail sections, on an enlarged scale, of the dies or formers, showing the operations of manufacturing the buttons more clearly and perfectly.

In said drawings, 10 indicates a base-plate having a standard 11, with laterally-extending arms 12 and 13, in which the plunger 14 has its bearings and above said arms 12 and 13 having a pair of fulcrum extensions 15. Said extensions 15 have recesses 151 on their under sides, in which the fulcrums 161 of a cam-lever 16 are held. The handle 162 of said cam-lever extends away from an eccentric surface bearing 163 on the plunger 14, which is pressed down with great power to form the button, as will be hereinafter described, when said handle is turned on the fulcrums.

A spring 17, curled about the plunger 14 and bearing downwardly on the bearing-arm 12 and upwardly against a collar 18, fastened upon the plunger by means of a set-screw 19, serves to hold the plunger in a normally elevated position and in turn the fulcrums 161 in their respective recesses 151.

At the lower end of the plunger 14 below the arm 12 the said plunger is provided with means for holding the upper die thereto, said means preferably comprising a set-screw 20 or any other suitable means. The upper die preferably consists of a shank 21, adapted to enter a socket formed in the lower end of the plunger and to be held therein by the said set-screw 20, a flange 22, adapted to be engaged by the lower end of the plunger 14, and the cylindrical body portion or plunger extension 23, adapted to enter a collar 24, sometimes known as the "cover-slide," and have a sliding relation therein, whereby said collar or slide 24 may move vertically on said cylindrical portion a limited distance. The slide or die-collar 24 is prevented from falling from said cylindrical portion 23, and its movement is limited by means of a screw 25, which enters a recess 26 in the said cylindrical body, as shown in Fig. 2.

The upper end of the cover-slide or collar 24 when at its upper limit of movement with respect to the cylindrical body 23 impinges upon the under side of the flange 22, and when at its lower limit of movement it may be turned by hand, so that it impinges on the laterally-projecting pin or projection 27, the said pin or projection being adapted to lie in a recess or slot 271 in the upper edge of the die-collar, as shown in Figs. 3, 5, and 6. Near its lower end the slide or collar 24 has an annular bearing-rib 241, which lies a little up and away from its lower extremity, as shown.

The lower die comprises a shank 30, Fig. 2, adapted to enter a hole or socket in the bed-plate 10 vertically in line with the plunger 14, a flange 31 of said die resting upon said bed-plate. Above said flange is a cylindrical extension or "bottom post" 32, at the upper end of which is arranged another sliding die member, 33, sometimes called the "bottom slide." This is slidably held on said post 32 by means of a screw 34, extending into a vertical groove or recess 341, which permits a limited movement vertically. A spring 35 normally holds the bottom slide 33 at its upper limit of movement, as in Fig. 5. At the upper end of the post 32 the same is concaved, as at 321, and centrally recessed at 322 to receive the button-back 323, while the bottom slide 33 at its upper end is provided with an enlargement or shoulder 331 to provide an upper bearing for the spring 35 and above said shoulder an annular flange or extension 43, into which the lower end of the upper die may enter. The upper end of said annular flange 43 is adapted to engage the under side of the annular bearing-rib at the periphery of the cover-slide in a manner hereinafter described. Within the flange 43 of the bottom slide is a horizontal seat or bearing 332, and at the inner side of this last said bearing a recess 333, for the depending annular edge of the shell 40 is formed, which recess lies vertically in the inner wall of the post-passage of the bottom slide.

Fitting onto the top of the bottom slide 33 is a removable die member 50, Figs. 5, 6, and 7, sometimes known as the "thimble" or "tube." This piece consists of an annular block having its central perforation 51 adapted to receive and fit the post 32 and at its base having a lower extension 52, adapted to fit within the flange 43, and a shoulder 53, adapted to hold the bottom of said extension 52 a little up and away from the seat or bearing 332 of the bottom slide. At the top of said thimble or tube 50 the same is provided with an inturning recess 54, adapted to turn the lower edge of the button-cover 41 inward, as hereinafter described, and outside of said inturning recess a seat or bearing 55 to receive the lower end of the cover-slide 24 and at the outside of said seat or bearing an annular flange 56 to properly center the parts 24 50 in their relation to one another.

In operating the device, and referring now to Figs. 3, 4, 5, 6, and 7, I first drop the shell 40 into the lower die, as shown in Fig. 3, the depending flange of the said shell fitting onto the post 32 and into the annular recess 333, and above said shell 40 I insert in the flange 43, which serves as a gage, a cover 41, of cloth or celluloid, the said cloth being brought into proper relation to the shell by means of said annular gaging-flange 43, the said cloth or other covering resting on the seat 332 and fitting within the flange with greater or less precision. Before or after inserting these button parts 40 41 into the lower die the upper die is brought to the relation shown in Fig. 3, the collar or slide 24 being in its lower position and turned by hand, so that the lateral extension 27 rests upon the upper end of the said slide or collar outside of the notch 271 therein. Thus when the plunger 14 is pressed downward by the cam-lever 16 the collar 24 enters at its lower end within the gage-flange 43; but the bearing-rib 241 prevents said lower end from pressing on the edges of the cover 41, so as to hold the same. Continued pressure on the plunger and cover-slide effects a down movement of the bottom slide on its post, so that the latter forces the shell and cover into the cover-slide, as shown in Figs. 4 and 5, the cover being bent downwardly at its edges. Pressure on the lever is then relaxed, and the plunger 14 and its slide 24 are raised by the spring 17, the shell and cover, caught in the cover-slide, following upward with said slide, as indicated in Fig. 5. The button-back 323 is then placed on the post 32, the convex or conical rear surface engaging the concave surface 321 and the protuberance 324 of said button-back, by which the button is fastened to the garment lying in the central recess 322. This being accomplished, the thimble or tube 50 is placed in position on the bottom slide, and the slide or collar 24 is turned so that the slot 271 is brought into coincidence with the pin or projection 27, when the hand-lever is again pressed down and the plunger 14 forces the cover-slide, now bearing at its upper end against the annular flange 22, against the thimble 50, and the latter, with the bottom slide, is pressed down against the power of the spring 35, so that the post 32, with the button-back thereon, enters through the central perforation 51, the downwardly-extending edges of the cover 41 being turned inward by engagement with the curved surface of the recess 54. The upper edge of the button-back catching the inwardly-turned cover bends it sharply around the lower edge of the shell, and the latter is finally bent inwardly at its depending edges under the flaring upper edges of the said button-back to fasten the parts securely and permanently together. The several parts referred to are formed, arranged, and timed to accomplish the desired results.

I am aware that various detail variations may be made in the construction of my improved machine, and I do not wish to be understood as limiting myself by all the positive descriptive expressions above employed excepting as the prior state of the art may require.

Having thus described the invention, what I claim as new is—

1. The improved button-machine, comprising a bed-plate having a standard providing

bearings for a plunger and having a hand-lever fulcrumed thereon to press said plunger, said plunger having a recessed cover-slide thereon, said plunger having bearings 22 and 27, at different points in its length, the bearing 22, being adapted to receive the upper end of the cover-slide during certain prescribed operations in the button-making operation, and the bearing 27, holding said cover-slide down or away from said bearing 22, in other prescribed operations, the said bearing 27, then taking the pressure of said slide, a spring for raising said plunger, a lower die having a post, a spring-actuated slide and a spring, and a separable thimble or tube adapted to be seated on the last said slide and be engaged by the cover-slide to effect a fastening together of the button parts, substantially as set forth.

2. In a button-machine, the combination with the bed-plate having a post and a lower or bottom slide and a spring on which said slide is seated, the post at its upper end having a seat or bearing for a button-back, of a separable thimble or tube having at its top a bearing for a cover-slide, an annular recess formed within said bearing having inwardly and downwardly curved walls for inturning the cover of the button and a central post-passage formed on vertical lines within said curved walls, and extending entirely through said separable thimble, a plunger, a cover-slide arranged thereon, said slide having independent bearings on said plunger at different points in the length of said plunger, the said cover-slide being adapted to be adjusted to bear upward against either of said bearings, and means for forcing said plunger to move longitudinally.

3. In a button-machine, the combination with the bed-plate, standard, lever, and plunger having the bearing 22, and a lateral projection 27, a cover-slide having a notch or recess into which said projection 27, enters when the upper end of said slide is in engagement with said bearing 22, a post and bottom slide adapted to force the shell and cover into said cover-slide and a separable thimble or tube adapted to be seated on said bottom slide and having means for turning the peripheral parts of the shell and cover inward into permanent relation to the button-back, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 19th day of February, 1904.

AUGUSTUS PHELPS.

Witnesses:
CHARLES H. PELL,
C. B. PITNEY.