

No. 621,453.

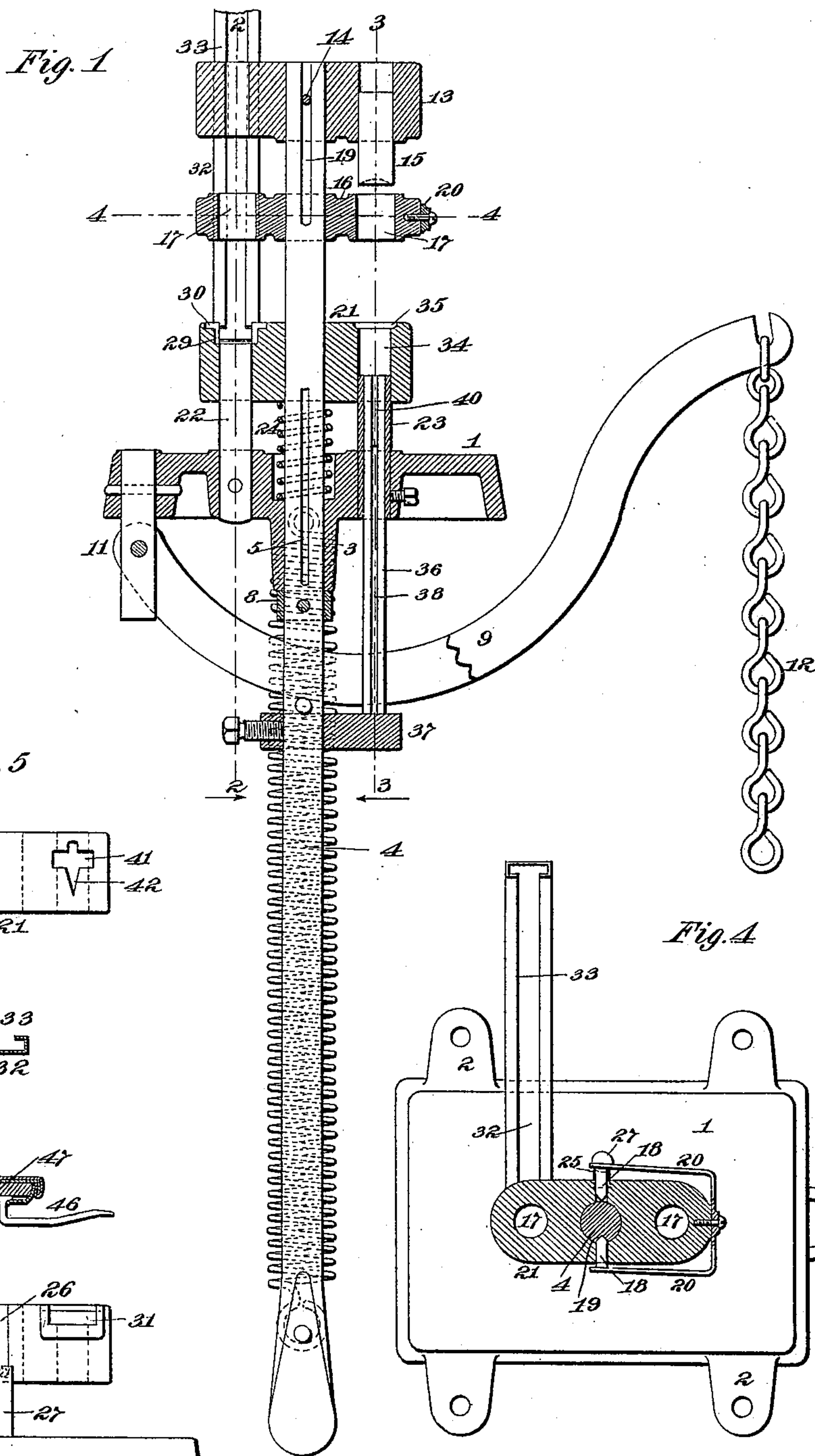
Patented Mar. 21, 1899.

C. W. GARIS.
BUTTON MACHINE.

(Application filed June 7, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

Jas. F. Coleman
Pearl L. Ayer

Inventor

Cornelius Weygandt & Son
By Rich. H. Ayer Atty.

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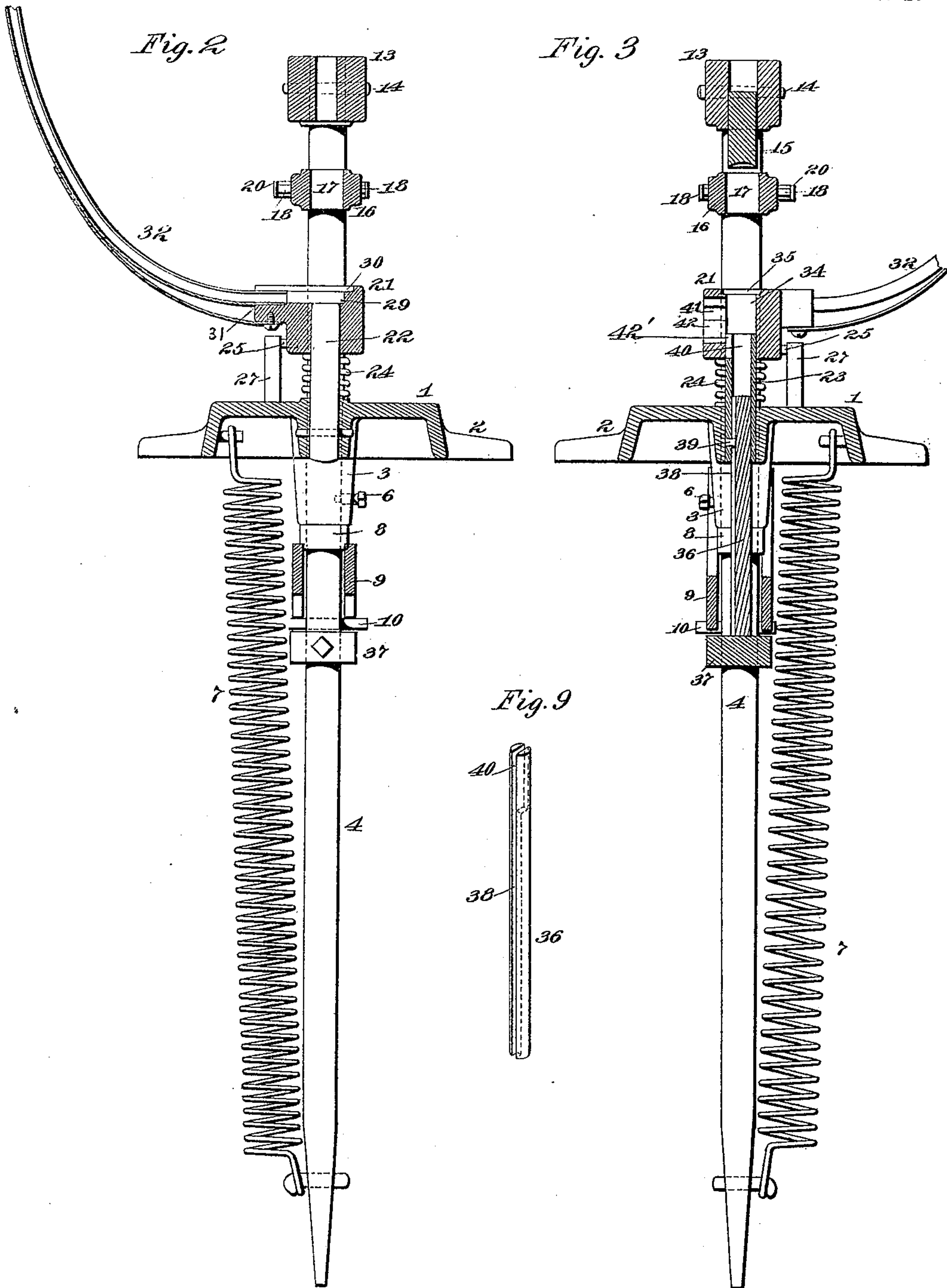
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Jas. F. Coleman
Frank L. Dyer

Inventor
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By Rich. H. Dyer. Atty.

UNITED STATES PATENT OFFICE.

CORNELIUS WEYGANDT GARIS, OF EASTON, PENNSYLVANIA, ASSIGNOR OF
ONE-THIRD TO PAUL G. KLINGLER, OF SAME PLACE.

BUTTON-MACHINE.

SPECIFICATION forming part of Letters Patent No. 621,453, dated March 21, 1899.

Application filed June 7, 1898. Serial No. 682,803. (No model.)

To all whom it may concern:

Be it known that I, CORNELIUS WEYGANDT GARIS, a citizen of the United States, residing at Easton, in the county of Northampton and State of Pennsylvania, have invented a certain new and useful Improvement in Button-Machines, of which the following is a specification.

My invention relates to various new and useful improvements in machines for making buttons, and more especially to machines for assembling and engaging the elements of buttons made in whole or in part of sheet metal and which preferably are covered with cloth or leather.

My improved machine is adapted for operation in the making of many kinds of assembled buttons, either of common and ordinary type or of special type, such, for example, as that which I have invented and which is described and claimed in Letters Patent of the United States granted to me September 7, 1897, and numbered 589,525.

The objects of my invention are to produce a very simple and cheap device for the purpose which shall be capable of effective and rapid operation.

In order that my invention may be better understood, attention is directed to the accompanying drawings, forming part of this specification, and in which—

Figure 1 is a vertical sectional view of the entire device; Fig. 2, a section on the line 2 2 of Fig. 1, showing the feed-trough; Fig. 3, a section on the line 3 3 of Fig. 1, showing the forming-dies and ejector; Fig. 4, a section on the line 4 4, showing particularly the carrier by which the shells after having the cloth or other textile cover applied thereto will be moved into line with the forming-dies for operation thereby; Fig. 5, a front elevation of the die-body, showing the specific construction of the same when the machine is employed in the making or assembling of the parts of my improved button as described in said patent; Fig. 6, a cross-section of the feed-trough; Fig. 7, a section of one of my patented buttons as the same will be made in my improved button-making machine; Fig. 8, a rear elevation of the die-body, and Fig. 9 a perspective view of the ejector.

In all of the above views corresponding parts are represented by the same numerals of reference.

1 is the base of the device, which is preferably cast as light as possible and carries lugs 2, by which the base may be secured to a table or other stand. The base is preferably formed on its under side with an integral boss 3, forming a bearing for a main operating-rod 4, which rod is adapted in the operation of the device to work perpendicularly with respect to said base. In order that the said rod may be prevented from rotating in the base, I form the same with a keyway 5 therein, in which a set-screw 6 is adapted to work. The rod 4 is maintained in a normally-elevated position by means of a spiral spring 7, in lieu of which a weight may be substituted, as will be obvious. Vertical movement of the rod 4 upwardly is limited by a sleeve 8, secured to said rod and adapted to engage the lower end of the boss 3. The rod 4 is moved downward to effect the operation of covering the button in any suitable way, but preferably by means of a curved lever 9 straddling the rod and engaging a pin 10 thereon, the said lever being fulcrumed to a post 11, carried by the base 1 and having a hook at its outer end with which a chain 12 may engage. The said chain connects with a treadle, (not shown,) by which the lever 9 may be actuated to move the rod 4 downward. The rod 4 carries at its upper end a head 13, secured in place by a pin 14 and carrying a die 15, the lower face of which is slightly concave, as shown. Below the die 15 and on the rod 4 is located a revoluble carrier 16, having two cylindrical passages or bores 17 therein, arranged equidistant from the center of the rod. The carrier 16 is, as stated, rotatably mounted on the rod 4 and is capable of vertical movement with respect to the same. In order that the carrier may be locked with either of the openings 17 in line with the die 15, I provide the carrier with two diametric pins or projections 18 18, either of which is adapted to engage in a V-shaped keyway 19, formed in the rod 4, the said pins being held inwardly by leaf-springs 20 or by a double leaf-spring, as shown.

21 is a die-body mounted on the rod 4 and

capable of vertical movement with respect to the same. The said die-body is prevented from rotating with respect to the rod 4 by a plunger 22 at one side and a die-plunger 23 at the other, said plunger and die-plunger being rigidly carried by the base 1. The die-body is normally maintained in an elevated position by a spiral spring 24, which surrounds the rod 4 and is arranged between the die-body and the upper face of the base 1. Upward movement of said die-body is limited by a stop-pin 25, (see Fig. 8,) working in a vertical slot 26, formed in the rear face of said die-body, the said pin being carried by a post 27, secured to the base 1. The said post is capable of rotating with respect to the base, and the slot 26 is provided with a horizontal extension 28, arranged a short distance above the lower end of said slot, so that by slightly depressing the die-body until said extension is coincident with the pin 25 the post 27 may be rotated to allow the pin to work within said extension to clear the slot, whereby the die-body may be then removed when desired. The plunger 22 works within a passage formed in the die-body, said passage, immediately above the plunger when the die-body is in its normal elevated position, being provided with a small shoulder 29 for receiving the shell or upper part of the button. Surrounding the opening in which the plunger 22 works is a broader shoulder 30 for receiving the disk of cloth or leather with which the button is to be covered. A channel 31 (see Fig. 8) is formed in the die-body in line with the plunger 22, which channel extends flush with or slightly above the shoulder 29, whereby blank shells may be fed by a feed-trough 32 and will drop in place on the shoulder 29 immediately above said plunger. The feed-trough is made preferably of sheet metal and is provided with overturned edges 33 at the sides, by which the blanks will be guided therein. This feed-trough is carried by the die-body, as shown, and rises and falls therewith.

The die-plunger 23 is arranged in line immediately below the die 15 and works in a passage 34 in the die-body. Said passage is provided at its upper end with crimping-shoulders 35, by means of which the shells of the buttons will be forced over upon and clamp the shanks or collets thereof. The die-plunger 23 is provided with an ejector 36, working vertically therein, said ejector being engaged at its lower end by an arm 37, carried on the rod 4, whereby upon the return movement of said rod the ejector will be thrown upward to remove the finished button. The ejector 36 is provided with a slot 38 therein, with which a pin 39 engages and by which the said ejector will be prevented from rotating relatively to the die-plunger 23. Preferably the ejector 36 is provided with a diametrical slot 40, (see particularly Figs. 1 and 9,) formed at its upper end, for the reception of buttons having extensive

shanks, of which the straight-nail-shank button is an example.

In order that a machine may be obtained which may operate to assemble the parts of my improved button described and claimed in the patent before referred to and which makes use of a bent shank, I provide the die-body 21 with an opening 41 therein, extending inward to the passage 34, said opening 41 having an extension 42, in which the bent shank of the button rests. By providing the said die-body with an opening, as described, a shank having a bent arm thereon, as I describe in my patent, may be inserted through said opening, with the shank resting in position upon the die-plunger and the bent arm extending out through said opening and resting in the extension 42 thereof. The die-plunger 23 is also provided with a slot 42' at its upper end, in line with the slot 40, and in which the bent arm of the button may enter when the die-body moves downward in the operation.

In Fig. 7 I illustrate in section one of my improved buttons in order that the operation of the machine in the making of such buttons may be understood. The button comprises a sheet-metal shell 43, having a cloth or leather covering 44 thereon, and a sheet-metal shank 45, over which the shell and covering are adapted to be crimped, as is common. The shank is provided with a bent nail or extension 46, which passes through an opening in the lower end of said shank and being held in its normal position by a wad 47 within the shank and engaging the head of said extension. In the making or assembling together of the parts of a button of this type the following operation will be carried out: A series of shells 43 will be placed in the feed-trough 32, and as the work progresses the said feed-trough will be supplied by hand with such shells. These shells descend in the feed-trough, and the lower shell will be forced by its companions downward until it rests on the shoulder 29 immediately above the plunger 22. The disk of cloth, leather, or other covering substance (if covered buttons are to be made) is now placed by hand on the shoulder 30, the disk therefore being placed in line with the shell, but above the same. Power is now applied to the lever 9 and moves the rod 4 downward until the blank-carrier 16 engages with the die-body 21. The rod 4 now moves, with reference to both the die-body and the carrier, until the head 13 engages with said carrier, whereupon both the head, carrier, and die-body will be moved downward against the tension of the springs 7 and 24. Since the plunger 22 is stationary, this movement will cause the plunger to force the shell upward, and the latter, engaging the disk of cloth or other covering material, will be forced, with the latter, into the opening 17 of the carrier and will maintain its position in said opening by the friction of the covering material. In one of the openings 17 of the carrier it will

therefore be observed there will be located a shell with the covering material placed thereon. The carrier is now given a half-rotation until one of the pins 18 engages the keyway 19 to lock the carrier in position to maintain the filled opening in line between the die 15 and die-plunger 23. As soon as the shell is forced by the plunger 22 to carry the shell and covering material into the opening 17 and the parts, returning to their normal position, allow the die-body to move upward a new shell from the feed-trough will automatically seat itself on the shoulder 29 for further operation. The operator therefore places another disk of cloth, leather, or other covering material on the shoulder 30, so that when the rod 4 is again operated the second shell will be forced, with its cover, into the other opening 17 of the carrier. After the carrier has been moved, as stated, to bring the filled opening 17 in line with the plungers 15 and 23 one of the shanks 45, carrying the bent extension 46, is inserted in the opening 41 until the shank rests on the die-plunger 23, the bent extension thereof extending out through the opening 41 and resting in the groove 42. When now the lever 9 is again depressed to cause the second shell to be forced, with its covering material, into the opening 17, the plunger or die 15 will force the first-mentioned shell and cover from the opening 17 and maintain the same on the crimping-shoulder 35, and the further movement of the rod 4 downward, causing the head 13, the carrier 16, and the die-body 21 to move therewith, will move the covered shell toward the shank 45, and the engaging pressure produced by the movement of the die 15 will cause the edges of the shell to be crimped over upon the shank to form a complete button, as will be understood. Upon the return movement of the parts the engagement of the arm 37 with the lower end of the ejector will elevate the latter to eject the finished button.

In the operation of my improved button-machine it will thus be observed that a practically continuous operation is carried on, a complete button being formed at each downward movement of the operating-dies, whereby the buttons may be made with greater rapidity than is possible with the machines now on the market and by which the application of the cover to the shell is effected by substantially the same die that is employed for the engagement between the shell and the shank.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is as follows:

1. In a machine for assembling the parts of covered buttons, the combination of a carrier having a plurality of openings therein, a plunger cooperating with said carrier for applying a covering-disk to a button-shell, and a die for engaging the covered shell with a button-shank, the said carrier being rotatable with respect to the plunger and die, and the open-

ings in said carrier being brought into line respectively with said plunger and die, substantially as set forth.

2. In a machine for assembling the parts of covered buttons, the combination of a carrier having a plurality of openings therein, a plunger cooperating with said carrier for applying a covering-disk to a button-shell, a die for engaging the covered shell with a button-shank, the said carrier being rotatable with respect to the plunger and die, and the openings in said carrier being brought into line respectively with said plunger and die, and an ejector for ejecting the finished buttons, substantially as set forth.

3. In a machine for assembling the parts of covered buttons, the combination of a carrier having a plurality of openings therein, a plunger cooperating with said carrier for applying a covering-disk to a button-shell, a die for engaging the covered shell with a button-shank, the said carrier being rotatable with respect to the plunger and die, and the openings in said carrier being brought into line respectively with said plunger and die, and an ejector working within the die for ejecting the finished buttons, substantially as set forth.

4. In a machine for assembling the parts of covered buttons, the combination of a carrier having a plurality of openings therein, a plunger cooperating with said carrier for applying a covering-disk to a button-shell, a die for engaging the covered shell with a button-shank, the said carrier being rotatable with respect to the plunger and die, and the openings in said carrier being brought into line respectively with said plunger and die, an ejector for ejecting the finished buttons, and a feed-trough for automatically feeding the button-shells above said plunger, substantially as set forth.

5. In a machine for assembling the parts of covered buttons, the combination with a die-body, a plunger and a die-plunger cooperating therewith, of a main operating-rod, a die carried by said rod and cooperating with the die-body and die-plunger, and a carrier rotatably mounted on said rod and having a plurality of openings therein adapted to be brought in line with the plunger and die-plunger respectively, substantially as set forth.

6. In a machine for assembling the parts of covered buttons, the combination with a die-body, a plunger and a die-plunger cooperating therewith, of a main operating-rod, a die carried by said rod and cooperating with the die-body and die-plunger, a carrier rotatably mounted on said rod and having a plurality of openings therein adapted to be brought in line with the plunger and die-plunger respectively, and means for locking the said carrier in its respective positions, substantially as set forth.

7. In a machine for assembling the parts of covered buttons, the combination with a die-body, a plunger and a die-plunger cooperating therewith, of a main operating-rod, a die

carried by said rod and cooperating with the die-body and die-plunger, a carrier rotatably mounted on said rod and having a plurality of openings therein adapted to be brought in line with the plunger and die-plunger respectively, means for locking said carrier in its respective positions, and an ejector for ejecting the finished buttons, substantially as set forth.

8. In a machine for assembling the parts of covered buttons, the combination with a die-body, a plunger and a die-plunger cooperating therewith, of a main operating-rod, a die carried by said rod and cooperating with the die-body and die-plunger, a carrier rotatably mounted on said rod and having a plurality of openings therein adapted to be brought in line with the plunger and die-plunger respectively, means for locking said carrier in its respective positions, and an ejector working within the die-plunger for ejecting the finished buttons, substantially as set forth.

9. In a machine for assembling the parts of covered buttons, the combination with a die-body, a plunger and a die-plunger cooperating therewith, of a main operating-rod, a die carried by said rod and cooperating with the die-body and die-plunger, a carrier rotatably mounted on said rod and having a plurality of openings therein adapted to be brought in line with the plunger and die-plunger respectively, means for locking said carrier in its respective positions, an ejector working within the die-plunger for ejecting the finished buttons, and a feed-trough for automatically feeding the button-shells above said plunger, substantially as set forth.

10. In a machine for assembling the parts of covered buttons, the combination with a base, a plunger and a die-plunger rigidly carried by said base, of a die-body mounted upon the plunger and die-plunger and movable toward the base, a spring for elevating the die-body, a main operating-rod, a die carried by said rod and cooperating with the die-plunger, and a carrier rotatably mounted on said rod and having a plurality of openings therein adapted to be brought respectively in line with the plunger and die-plunger, substantially as set forth.

11. In a machine for assembling the parts of covered buttons, the combination with a base, a plunger and a die-plunger rigidly carried by said base, of a die-body mounted upon the plunger and die-plunger and movable toward the base, a spring for elevating the die-body, a main operating-rod, a die carried by said rod and cooperating with the die-plunger, a carrier rotatably mounted on said rod and having a plurality of openings therein adapted to be brought respectively in line with the plunger and die-plunger, and an ejector for ejecting the finished buttons, substantially as set forth.

12. In a machine for assembling the parts of covered buttons, the combination with a base, a plunger and a die-plunger rigidly carried

by said base, of a die-body mounted upon the plunger and die-plunger and movable toward the base, a spring for elevating the die-body, a main operating-rod, a die carried by said rod and cooperating with the die-plunger, a carrier rotatably mounted on said rod and having a plurality of openings therein adapted to be brought respectively in line with the plunger and die-plunger, an ejector for ejecting the finished buttons, and a trough for automatically feeding the button-shells above the plunger, substantially as set forth.

13. In a machine for assembling the parts of covered buttons, the combination with a base, a plunger and a die-plunger rigidly carried by said base, of a die-body mounted upon the plunger and die-plunger and movable toward the base, a spring for elevating the die-body, a main operating-rod, a die carried by said rod and cooperating with the die-plunger, a carrier rotatably mounted on said rod and having a plurality of openings therein adapted to be brought respectively in line with the plunger and die-plunger, an ejector for ejecting the finished buttons, and a trough carried by the die-body and movable therewith for automatically feeding the button-shells to the plunger, substantially as set forth.

14. In a machine for assembling the parts of covered buttons, the combination of a base formed with a vertical bearing therein, a main operating-rod mounted in said bearing and movable vertically with respect to the base, means for maintaining said rod in a normally-elevated position, a plunger and die-plunger rigidly carried by the base, a die-body mounted on said plunger and die-plunger, a spring for normally elevating said die-body, a die carried by the main operating-rod and cooperating with the die-plunger, a carrier rotatably mounted on the main operating-rod between the plunger and die-plunger and having a plurality of openings adapted to be brought into line respectively with the plunger and die-plunger, and a feed-trough carried by the die-body and movable therewith for automatically feeding the button-shells above the plunger, substantially as set forth.

15. In a machine for assembling the parts of covered buttons, the combination of a base formed with a vertical bearing therein, a main operating-rod mounted in said bearing and movable vertically with respect to the base, means for maintaining said rod in a normally-elevated position, a plunger and die-plunger rigidly carried by the base, a die-body mounted on said plunger and die-plunger, a spring for normally elevating said die-body, a die carried by the main operating-rod and cooperating with the die-plunger, a carrier rotatably mounted on the main operating-rod between the plunger and die-plunger and having a plurality of openings adapted to be brought into line respectively with the plunger and die-plunger, a feed-trough carried by the die-body and movable therewith for automatically feeding the button-shells above

the plunger, an ejector mounted within the die-plunger, and an arm carried by the main operating-rod for engaging said ejector on the upstroke of said arm for ejecting the finished buttons, substantially as set forth.

16. In a machine for assembling the parts of covered buttons, the combination of a die-body, a die-plunger working with respect to said body, said die-body having a passage therein extending through its walls and com-

municating above the die-plunger, and a die cooperating with said die-plunger for engaging the shell of a button with a shank, substantially as set forth.

This specification signed and witnessed this 15
4th day of June, 1898.

CORNELIUS WEYGANDT GARIS.

Witnesses:

CHAS. B. BRUNNER,
WM. G. ZULICK.