

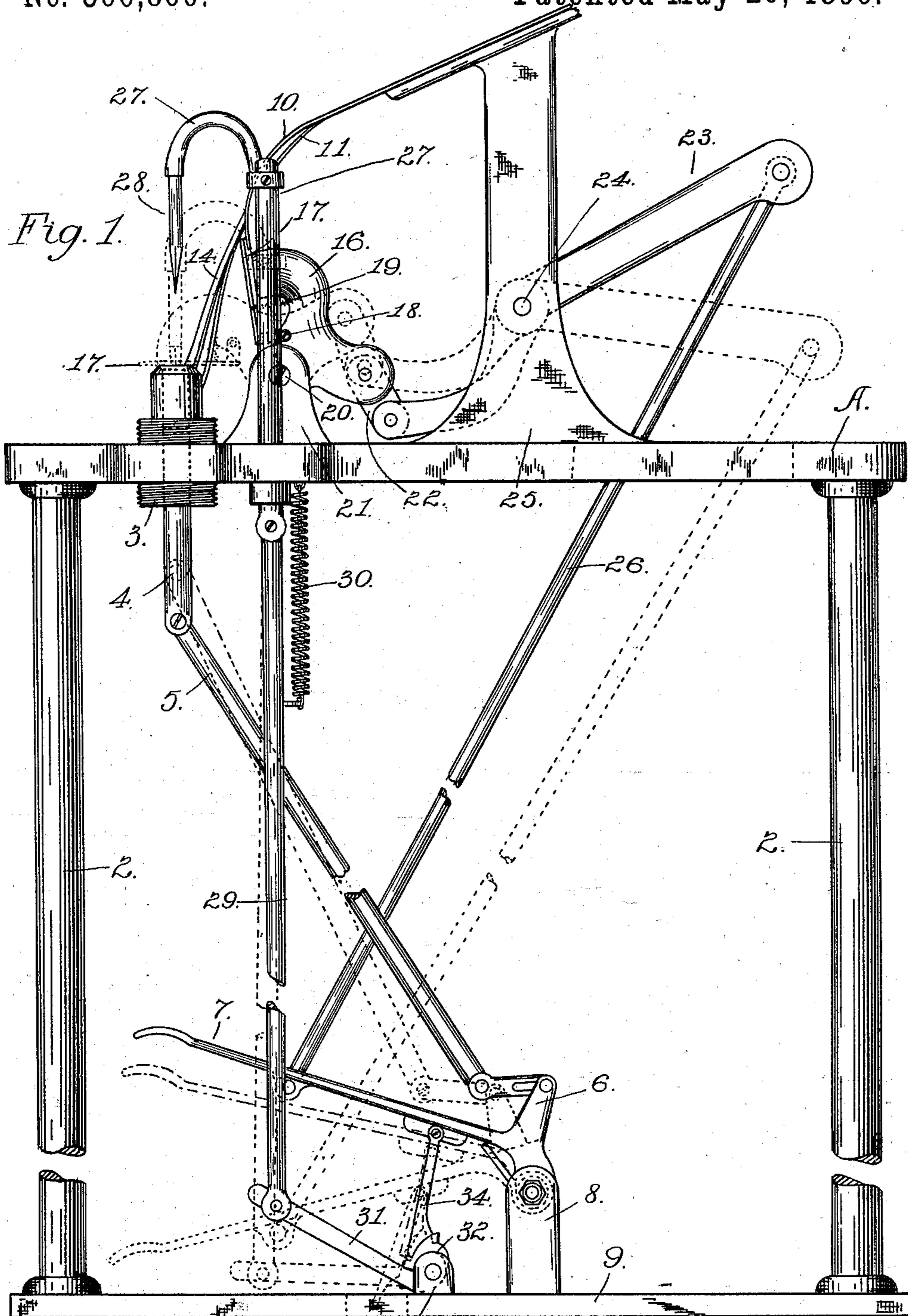
(No Model.)

2 Sheets—Sheet 1.

F. A. RYNO.  
BUTTON ATTACHING MACHINE.

No. 560,866.

Patented May 26, 1896.



Witnesses:

F. J. Bradbury.  
H. C. Swift.

Inventor:

Frederick A. Ryno.  
per: J. D. Morin  
Attorney.

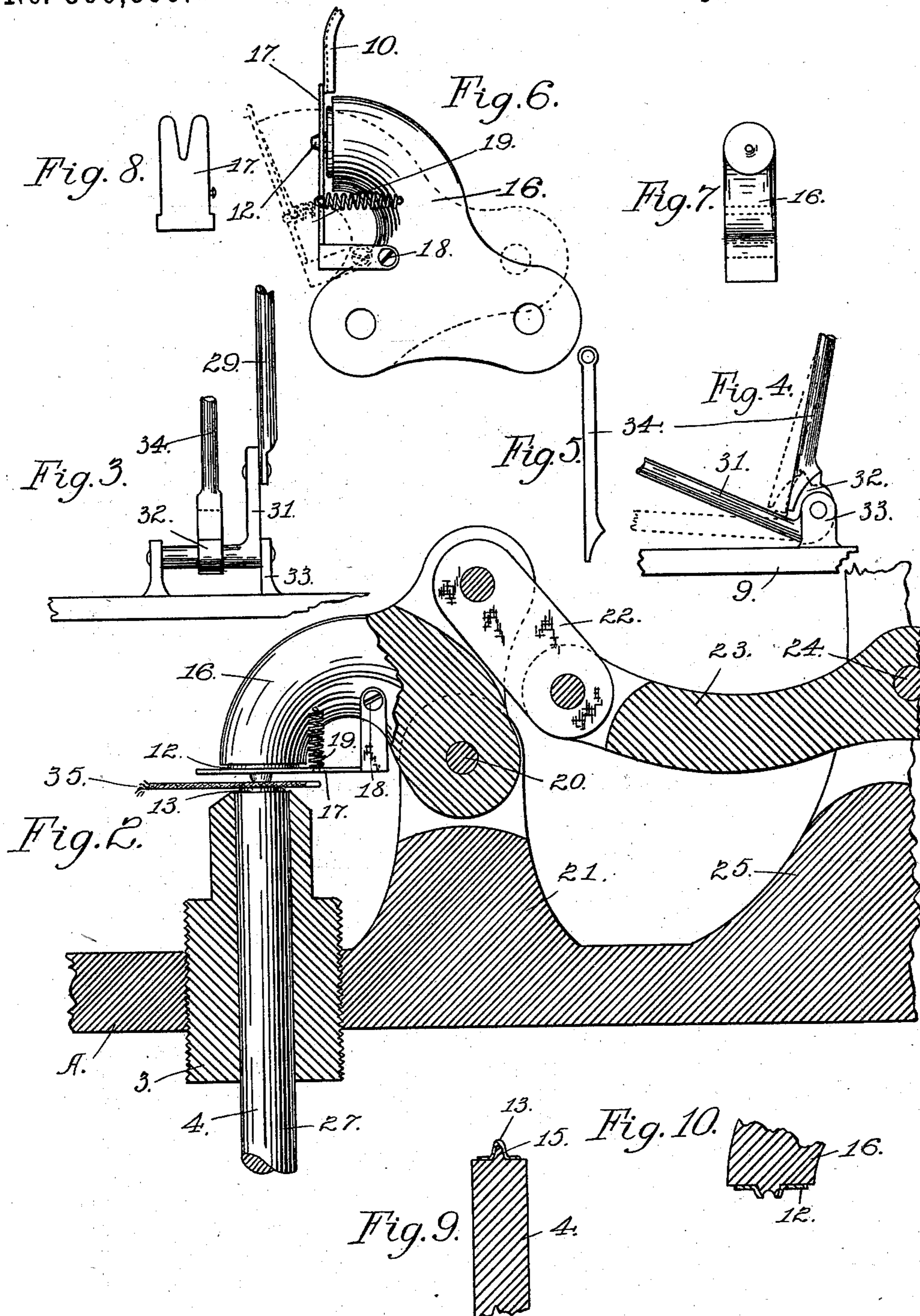
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per: T. D. Merwin  
Attorney.

# UNITED STATES PATENT OFFICE.

FREDERICK A. RYNO, OF ST. PAUL, MINNESOTA, ASSIGNOR OF ONE-HALF  
TO ALVA H. WARREN, OF SAME PLACE.

## BUTTON-ATTACHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 560,866, dated May 26, 1896.

Application filed June 30, 1894. Serial No. 516,206. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK A. RYNO, of St. Paul, Ramsey county, Minnesota, have invented certain Improvements in Button-Attaching Machines, of which the following is a specification.

My invention relates to improvements in machines designed for riveting buttons upon garments, its object being to provide a simple mechanism which will perform all the separate movements occurring during the attachment of a button by one depression of the treadle.

To this end my invention consists of a properly-supported perforator, plunger, and hammer, with suitable connecting mechanism for operating the several parts from a common application of power.

My invention further consists in the construction and combination hereinafter particularly described and claimed.

In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation of my improved machine. Fig. 2 is a sectional detail of the plunger-cylinder, hammer, and connected mechanism. Figs. 3 and 4 are detail front and side elevations of the dog and ratchet operating the perforator. Fig. 5 is a detail view of the dog. Figs. 6 and 7 are detail side and front elevations, drawn to different scales, of the hammer, the latter figure having the slotted plate for holding the button removed from the hammer-face. Fig. 8 is a detail view of said plate. Fig. 9 is a vertical section of the upper end of the plunger and a rivet thereon, and Fig. 10 is a vertical section of the lower end of the hammer and a button placed thereon.

In the drawings, A represents the table of the machine, supported upon suitable standards 2. At or near the front of the machine is arranged the hollow cylinder or guide 3, preferably screw-threaded into the table A, so as to be held firmly in vertical position. In this cylinder works the plunger 4, which is pivoted to the connecting-rod 5, leading to the upwardly-projecting arm 6 of the treadle 7, pivoted to the standard 8, upwardly projecting from the bed 9 of the machine.

Above the table of the machine are suitably supported button and rivet receptacles.

(Not shown.) Leading from these receptacles are the conduits 10 and 11, having a suitable actuating mechanism, (not shown,) which serves to pass the buttons 12 and rivets singly, with each operation of the machine, down the conduits. The rivet-conduit 11 is twisted at the point 14, so that its lower end may run horizontally into the side of the plunger-cylinder, thereby serving to guide the rivets 13 onto the projection 15 upon the upper end of the plunger 4. The button-conduit 10, ending directly above the head of the hammer 16, serves to engage the slotted plate 17, pivoted at 18 on the hammer and normally held closely thereto by the spring 19, and to hold the plate, as the hammer moves backwardly, so that the plate and hammer will be separated sufficiently to permit the buttons passing down the conduit to slip into position between the plate and the face of the head of the hammer.

The hammer is pivoted at 20 upon the lug 21, upwardly projecting from the table A of the machine. The opposite end of the hammer has the toggle-joint connection 22, with the lever 23 pivoted at 24 upon the standards 25, upwardly projecting from the table A of the machine, which standard also serves to support on its upper end the button and rivet conduits 10 and 11. This lever 23 is suitably connected by the pivoted rod 26 with the treadle 7.

The perforator 27, which is shaped as a hook, having a downwardly-directed sharpened point 28 and a connecting-rod 29, is normally held with its point at some distance directly above the opening in the plunger-cylinder by means of the coiled spring 30, connected to the table A of the machine and to a suitable lug on the rack 29. The lower end of this shank is pivotally attached to the projecting arm 31 of the ratchet 32. This ratchet is pivoted in the lug 33, upwardly projecting from the bed 9 of the machine. Resting upon this ratchet is the dog 34, pivotally connected at its upper end to the treadle 7. Upon the depression of the treadle the heel of the dog resting upon the end of a tooth of the ratchet gradually carries the dog forward until the toe is thrown from engagement with the ratchet, when the connecting-rod, perforator, and ratchet are quickly re-

turned to their normal positions by the spring 30. (See dotted-line positions, Figs. 1 and 4.)

In operation the garment 35 is placed across the top of the cylinder 3 in position to receive the button. The treadle 7 is worked, which multiplies its direct motion upon the perforator, thereby quickly thrusting the point 28 through the garment, when the dog 34 will slip on the ratchet 32, allowing the spring 30 to quickly return the perforator to its normal position. The movement of the treadle simultaneously acts upon the plunger 4 and the hammer 16, but not with the same directness as upon the perforator, the motion being lost in the connecting mechanism of each, respectively, on account of the great angle between the directions of travel of the plunger and of the upper arm of the treadle and in the toggle-joint connection. In their proper order the perforator first descends and punches the garment and is quickly withdrawn by the coiled spring 30, and then simultaneously the plunger is thrust upward by means of the movement of the arm 6 actuating the connecting-rod, and the hammer is thrust forward by means of the downward movement of the connecting-rod 26, the lever 23, and the toggle-joint connection 22, thereby pressing the rivet through the perforation in the garment and then driving the button down over the rivet and pressing the two together.

I claim—

1. In a button-attaching machine, the combination of the pivoted hammer, the slotted plate pivoted thereto, the spring adapted to hold the plate normally upon the face of the hammer, and the button-conduit adapted to engage said plate and withdraw it from the hammer-face and to deliver a button into the space between the plate and hammer.

2. In a button-attaching machine, the combination with the reciprocating plunger and the pivoted hammer, of the perforator reciprocating in line with said plunger, the treadle for operating said plunger and hammer and the dog and ratchet connection between said treadle and said perforator whereby the perforator is operated in advance of the plunger and hammer.

3. In a button-attaching machine, the combination of the plunger, the rocking hammer, automatic means for conveying rivets and buttons singly to said plunger and hammer respectively, the right-line traveling perforator, its retracting-spring and means for successively actuating said perforator and said plunger and hammer, the perforator being released in advance of the operation of said plunger and hammer.

4. In a button-attaching machine, the combination with the riveting mechanism, of the spring restrained, vertically-reciprocating perforator, the treadle for operating the riveting mechanism, the pitman for operating the perforator, the dog and ratchet mechanism interposed between the treadle and the pitman whereby the initial movement serves to operate the perforator, and the further movement disengages the interposed mechanism allowing the perforator to be withdrawn before the operation of the riveting mechanism.

5. In a machine of the class described, the combination with the hammer, of the bifurcated or slotted clamp normally bearing upon its face with elastic tension, and the button-conduit adapted to engage said clamp when the hammer is in retracted position so as to force the same away from the hammer and to deliver a button between them.

6. In a machine of the class described, the combination of the plunger serving as an anvil, the conduit leading thereto, the hammer, the spring-clamp for holding a button upon the face of the hammer, the conduit adapted to engage said clamp when the hammer is in retracted position and to force the same away therefrom, and to deliver a button between it and the hammer, the spring-restrained perforator working in line with said plunger, and the treadle for actuating primarily the perforator and subsequently and simultaneously the plunger and hammer.

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

FREDERICK A. RYNO.

Witnesses:

H. S. JOHNSON,

W. C. SWIFT.