

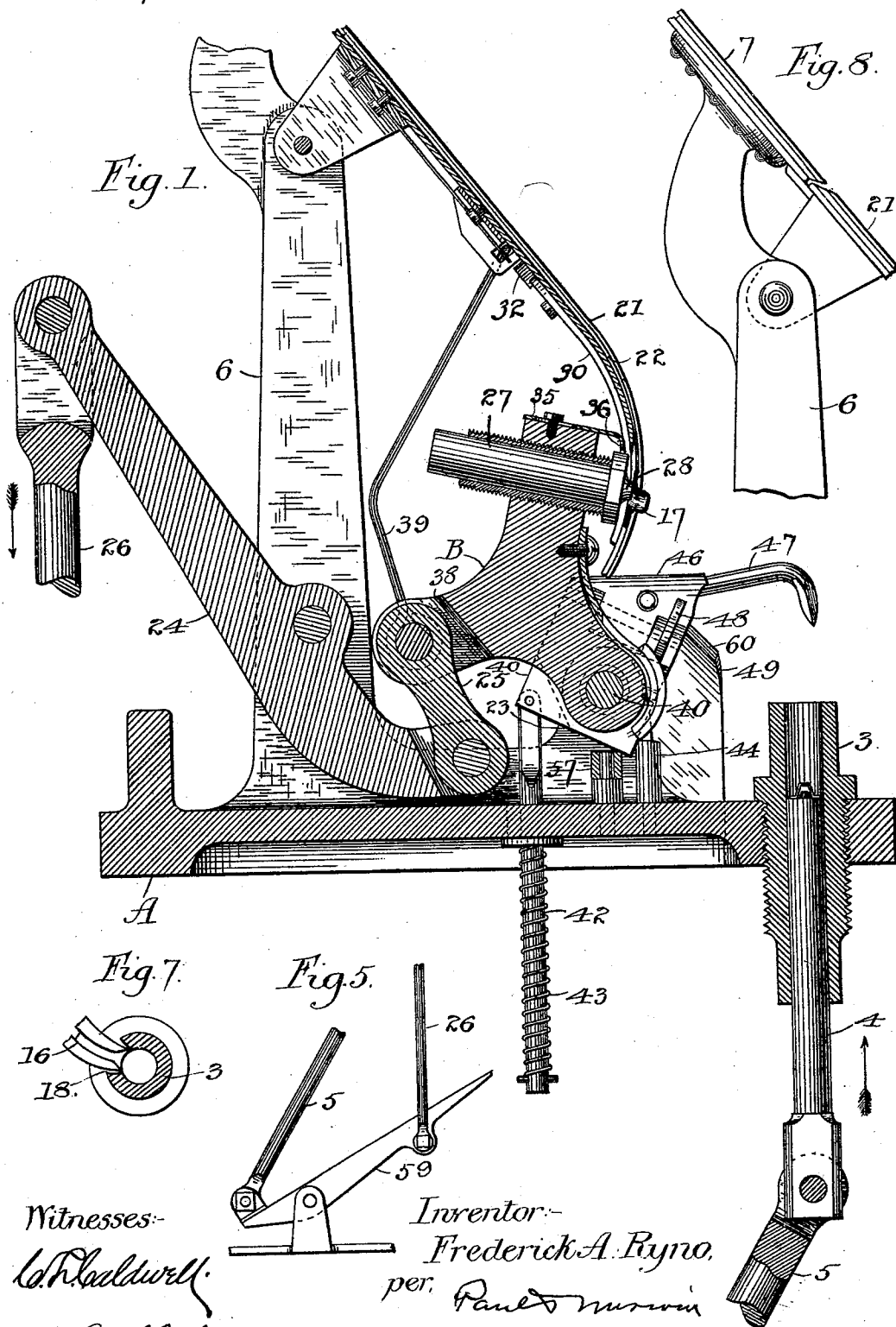
(No Model.)

2 Sheets—Sheet 1.

F. A. RYNO.
BUTTON ATTACHING MACHINE.

No. 517,485.

Patented Apr. 3, 1894.



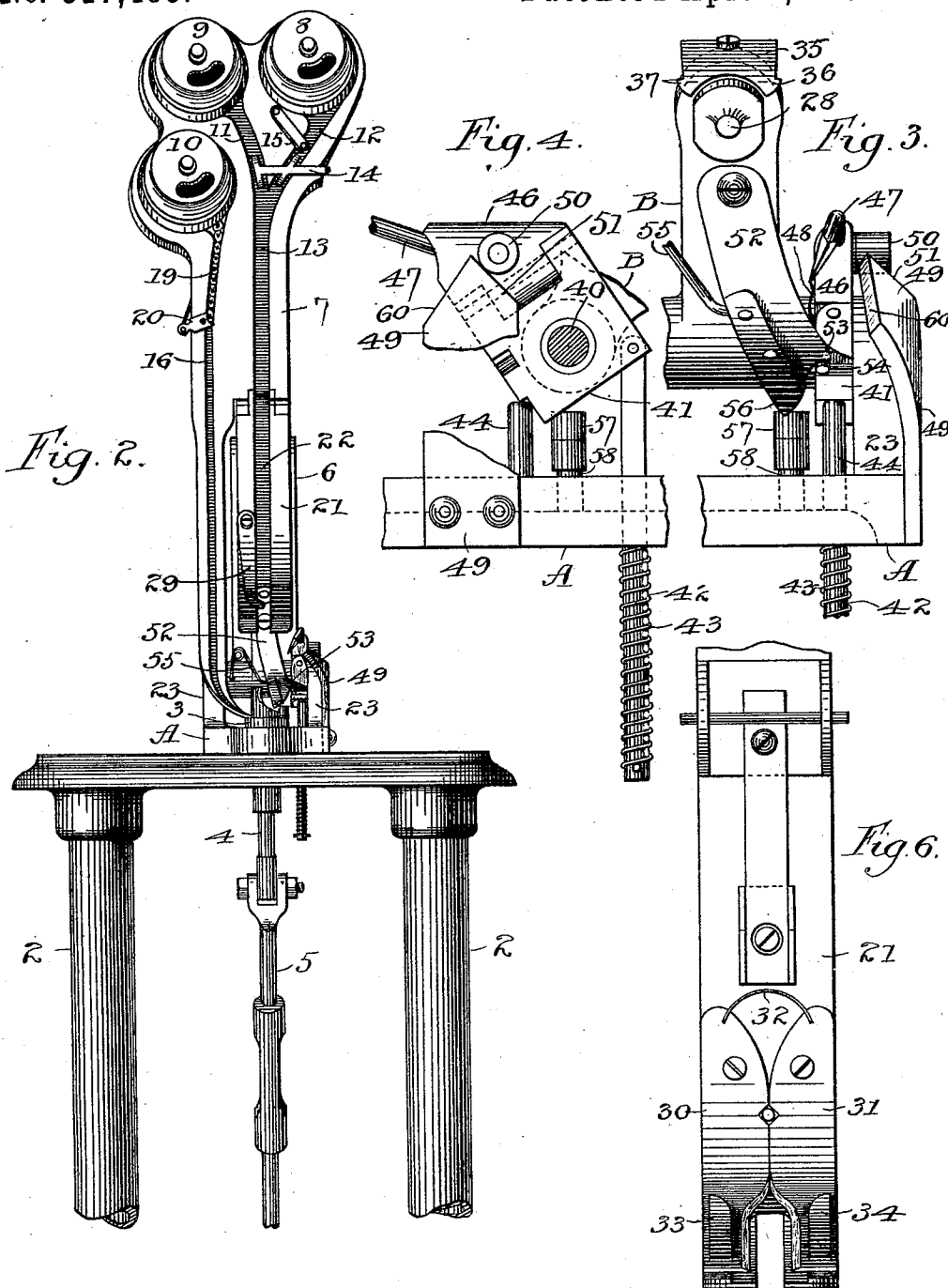
Witnesses:
W. H. Caldwell
H. S. Johnson

Inventor:
Frederick A. Ryno
per *Paul & Munroe*
Attorneys.

F. A. RYNO.
BUTTON ATTACHING MACHINE.

No. 517,485.

Patented Apr. 3, 1894.



Witnesses:

W. H. Caldwell
H. S. Johnson

Inventor:-

Frederick A. Ryno,
per. Paul D. ...

Attorneys.

UNITED STATES PATENT OFFICE.

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

BUTTON-ATTACHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 517,485, dated April 3, 1894.

Application filed March 3, 1893. Serial No. 464,490. (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 and inexpensive mechanism which will perform all the operations by simply working the treadle.

To this end my invention consists in the improved features of construction hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional side elevation of my improved machine. Fig. 2 is a front elevation of the same. Fig. 3 is a detail front elevation of the perforator and its carrying block. Fig. 4 is a detail side elevation of the same. Fig. 5 is a detail of the treadle and its connecting rods. Fig. 6 is an inverted plan view of the oscillating button carrying plate. Fig. 7 is a sectional detail of the plunger cylinder, and Fig. 8 is a detail of the lower end of the conduit bed and the pivoted plate connected with the same.

In the drawings A represents the table or base 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 treadle of the machine. The bed 7 having suitable rigid support upon the machine is fitted with the button receptacles 8 and 9 and the rivet receptacle 10. Leading from the receptacles 8 and 9 are the conduits 11 and 12 which converge and unite in the main conduit 13. Just above the point of junction a rocking gate 14, operated by suitable connections with the running parts of the machine, serves to pass the buttons 17 singly down one of the branch conduits 11 and 12 to the main conduit 13, a switch stop 15 being pivoted between the branch conduits 11 and 12 and adapted to be swung over and stop the but-

tons in either conduit as desired, thus permitting the buttons to pass but from one receptacle at a time to the machine. Similarly the receptacle 10 is connected by means of a conduit 16 with a slotted opening 18 in the side of the cylinder 3 and the delivery of the rivets 19 singly along the conduit is secured by means of the pivoted gate 20 connected in any suitable manner with the operating mechanism, so as to permit one rivet to pass with each operation of the machine. The plate 21 is pivotally supported upon the standard 6, and has jointed connection with the bed 7, and is provided with a button conduit 22 connecting with the main conduit 13. The plate 21 is curved downward and backward, as shown.

Pivoted upon the standard 23 is the head B, which is turned by means of the operating lever 24 connected thereto by means of the link 25, the lever being operated by means of the connecting rod 26, leading to the treadle of the machine. The head B carries a hammer 27 threaded into the head so as to be accurately adjusted. This hammer is a permanent magnet and is formed with a central boss 28 at the end to fit to the hollow in the center of the button. The hammer stands immediately back of the lower end of the plate 21, so that as the button drops down in front of the hammer it is drawn against the hammer and held by the magnetic attraction. A stop 29 secured to the plate 21 adjacent to the conduit 22, and projecting over the same, serves as a stop against which the button strikes as it falls down the conduit. This stop stands normally below the center of the hammer so that the button is stopped directly in front of it. The plate 21 at the bottom of the conduit is cut away at this point, and the bent fingers 30 and 31 are pivotally secured to the under surface of the plate, and project downward with their ends slightly separated from each other over the opening through the plate. These fingers are held normally closed together by means of a spring 32 engaging their upper ends, in such position that there is not sufficient space between their tips for a button to pass through. The tips of the fingers are provided with stops 33 and 34 with which the beveled spurs 36 and 37 upon the

adjustable plate 35 carried by the hammer head engages, with the first forward movement of the head. The fingers are thus thrust apart sufficiently to allow a button to be drawn through between them by the magnetic attraction of the hammer. The projection 38 on the rear portion of the head to which the link 25 is attached, is also connected by means of the bent rods or wires 39 to the plate 21.

Mounted upon the pivot 40 of the head B and adjacent to the head, is a block or hub 41 to which is pivoted the plunger rod 42. This rod passes down through the base plate A and is provided with a spiral spring 43 engaging a stop on the lower end of the rod and the under side of the base plate. The spring thus tends to keep the rod thrust downward and the block turned backward, the limit of its movement in that direction being determined by the stop 44 fixed in the plate and engaging a projection 45 upon the under side of the block. Pivoted to this block and hinged to turn laterally thereon, is the block or head 46 carrying the bent needle or perforator 47. The head 46 is held from turning toward the head B by means of the spring 48, and is stopped from turning outward by the post 49, with which engages the anti-friction roll 50 carried by the head 46. This post is beveled on its rear and front sides as shown, so that as the head turns on the pivot the anti-friction roll rides up on the rear beveled surface 51 and thrusts the perforator over toward the cylindrical guide 3, the parts being so adjusted that its point will enter the center of the opening in the cylinder.

Pivoted to the front of the head B is the finger 52 having a lateral projection 53, adapted to engage a stop 54 on the head 46, as actuated by the spring 55, which tends to thrust the finger laterally. As the head B turns forward, the head 46 is rocked until the perforator enters the cylinder 3. Thereupon the end 56 of the finger 52 strikes upon the anti friction roll 57 which is supported on a pivot post 58 in the base, by which it is thrust away from the head, thus releasing it and allowing the spring 43 upon the plunger 42 to reverse the movement of the head 46 and withdraw the perforator from the cylinder, and out of the path of the hammer in time for the latter to descend.

The operation of the machine is as follows: The garment being placed across the top of the cylinder 3 in position to receive the button, the treadle 59 is worked so as to operate the switches adjacent to the conduits, as above described, and allow a button to descend in front of the hammer, and a rivet to enter the cylinder 3. When the treadle is again operated, the initial movement turns the head B, throwing the hammer forward, the rods 39 connecting the head with the plate 21, at the same time carrying the lower end of the plate 21 outward. The plate 35 carried by the head

B engages the stops upon the fingers 30 and 31 spreading them, and allowing the button to be drawn inward against the face of the hammer. At the same time the finger 52 engages the block 41 turning it forward with the head B. The anti friction roll carried by the head 26 rides up the inclined surface 51 of the post 49 throwing the perforator over toward the center of the cylinder, the roll descending along the oppositely inclined face 60, which thus serves as a guide to direct the perforator to the opening in the cylinder, perforating the garment laid thereon. With the continued movement of the parts the finger 52 strikes the anti friction roll 57 throwing it out of engagement with the block 41, which is instantly thrown backward carrying the perforator out of the path of the hammer. The hammer continues to descend and the plunger 4 is simultaneously thrust upward in the cylinder 3, carrying the rivet to the under side of the garment and through the opening therein, while the hammer brings the button down upon the top of the garment, the rivet entering the opening in the hub of the button, where it is riveted by impact against the boss on the face of the hammer.

I claim—

1. In a button attaching machine, the combination of the plunger, the conduit leading thereto, the hammer working toward and from said plunger, the conduit leading to the face of the hammer when raised, means for receiving a button from said conduit and holding it upon the face of the hammer, the spring restrained perforator working in line with said plunger, and means carried by said hammer for actuating it in advance of the hammer, substantially as described.

2. 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 rocking perforator mounted upon the same pivot as the hammer, its retracting spring, means carried by said hammer adapted to engage said perforator and to rock the same in advance of the hammer, the guide for directing said perforator toward said plunger, and means for releasing said perforator at a pre-determined point in its movement, substantially as described.

3. In a device of the class described, the combination with the plunger and the rocking hammer, of the hub mounted upon the same pivot as the hammer, its retracting spring, the block carried by said hub and hinged to swing laterally thereon, the perforator carried by said block, the guide for directing the perforator toward the plunger, and means for actuating said hub to carry said perforator through said garment and withdraw it therefrom in advance of the hammer, substantially as described.

4. In a device of the class described, the combination with the pivoted hammer and the

hub arranged at one side thereof and having a common pivot therewith, its retracting spring, the block carried by said hub and having a hinged connection therewith, permitting it to turn toward the path of the hammer, the spring tending to hold said block away from the path of the hammer, the inclined guide adapted to be engaged by said block when carried forward by said hub and turned by it against the tension of its spring, the perforator carried by said block, the spring controlled finger carried by said hammer adapted to engage said hub to rock it with said hammer, and automatic means for disengaging said finger from said hub at a predetermined point, substantially as described.

5. In a device of the class described, the combination with the rocking hammer, of the rocking hub mounted on its pivot, the perforator carried by said hub and having a laterally swinging hinge connection therewith, the guide adapted to be engaged by said perforator, and to turn the same into the path of the hammer, and automatic means for actuating said perforator in advance of said hammer, substantially as described.

6. In a device of the class described, a perforating mechanism comprising in combination the hub, its retracting spring, the perforator carried thereby, and having a laterally swinging connection therewith, the spring holding said perforator out of line with the riveting mechanism, the guide adapted to be engaged by said perforator and to turn it into line with the riveting mechanism, and means for automatically actuating said perforating

mechanism in advance of the riveting mechanism, substantially as described.

7. In a button attaching machine, the combination with the rocking hammer, of the hub mounted on the same pivot, its retracting spring, the perforator hinged to said hub, and adapted to swing toward and from said hammer, the spring holding it normally away from said hammer, the inclined guide adjacent to said perforator, the anti friction roll carried by said perforator adapted to engage said guide when carried forward by the rocking of the hub, so as to swing the perforator into the path of the hammer, the spring controlled finger carried by said hammer and engaging said hub, and the stop for tripping said finger so as to release said hub and allow it to withdraw said perforator under the impulse of its spring in advance of the descent of the hammer, substantially as described.

8. In a device of the class described, the combination with the rocking magnetic hammer, of the conduit terminating in front of the hammer when raised, the spring controlled button stops, projections carried by said hammer and adapted to engage said stops, so as to release the button and allow it to be drawn against the face of the hammer, substantially as described.

In testimony whereof I have hereunto set my hand this 24th day of February, 1893.

FREDERICK A. RYNO.

In presence of—

T. D. MERWIN,
H. S. JOHNSON.