

(No Model.)

3 Sheets—Sheet 1.

W. W. WADE.  
BUTTON MAKING MACHINE.

No. 362,335.

Patented May 3, 1887.

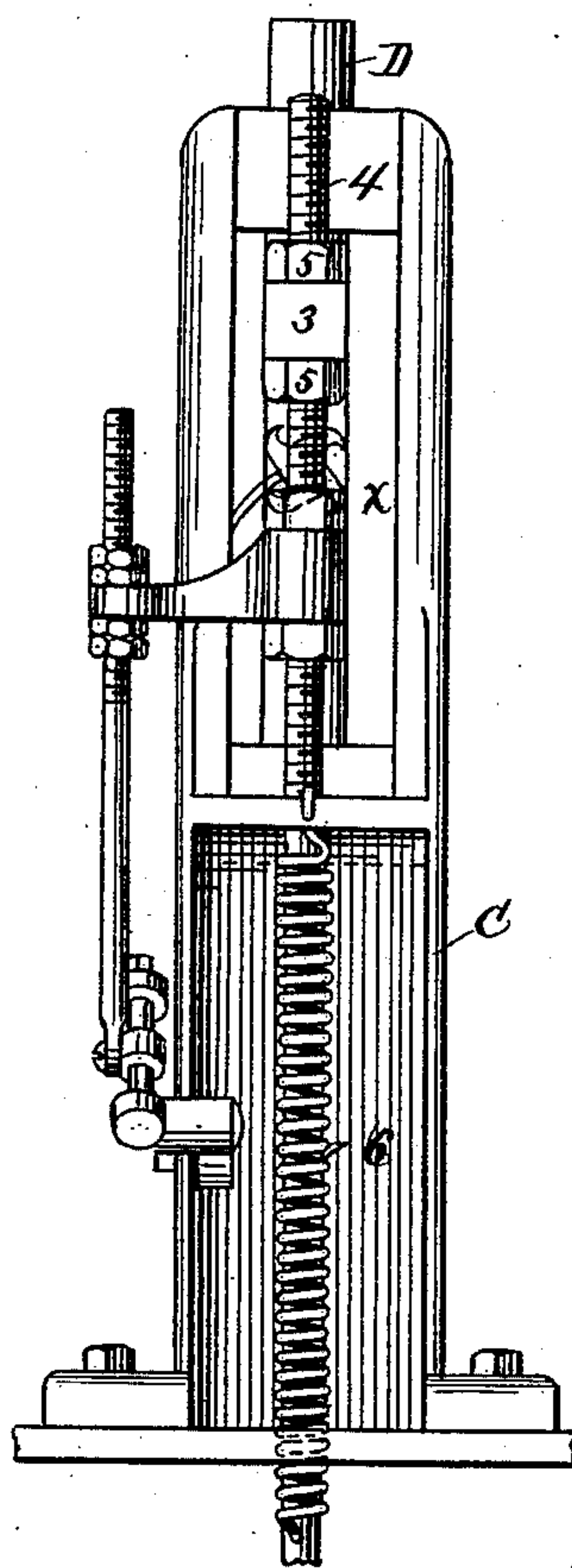


Fig. 4.

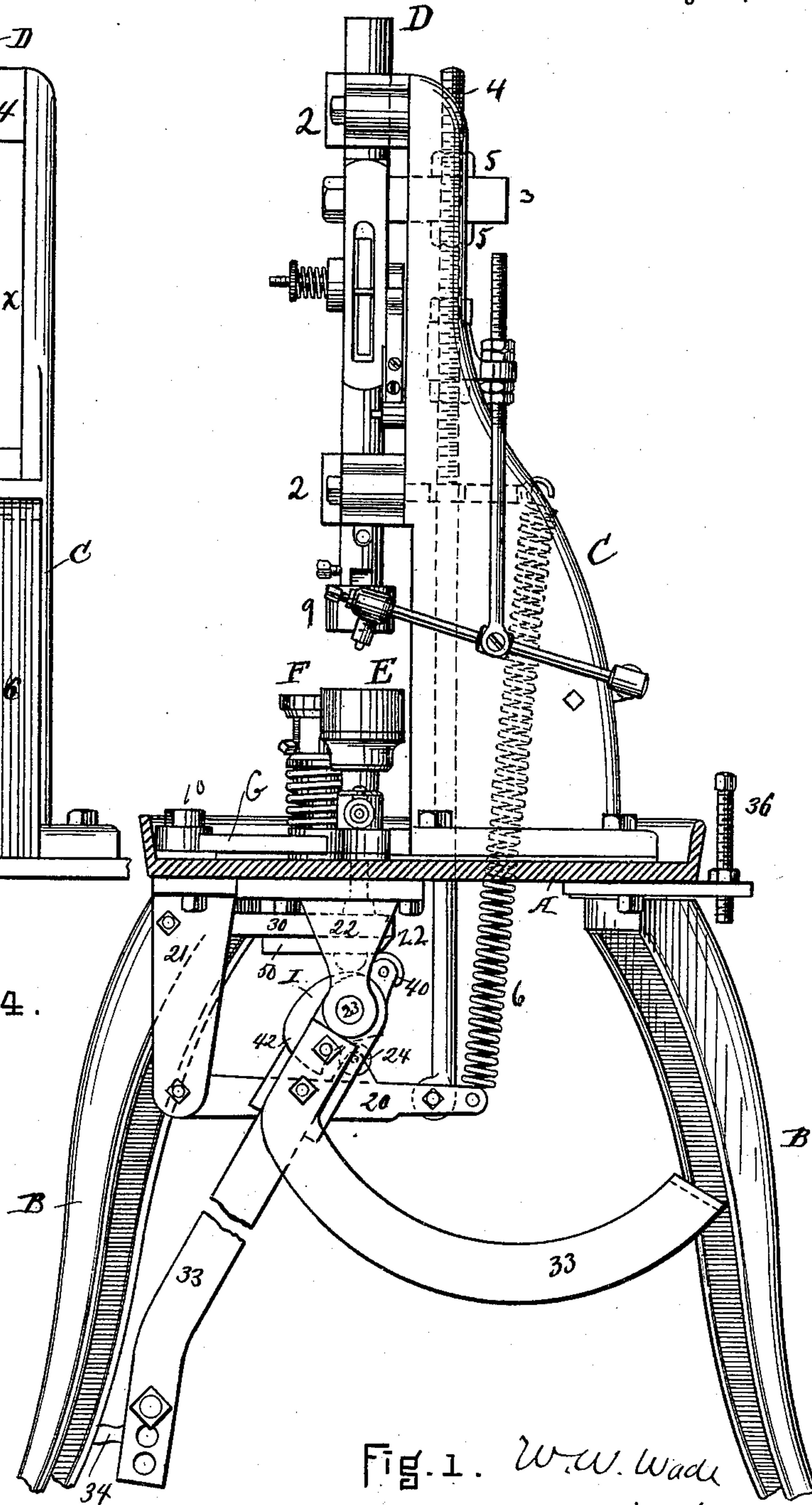


Fig. 1. W. W. Wade

WITNESSES.

*Wm. A. Harris*  
*A. E. J. Farnmann.*

INVENTOR, *W. W. Wade*

*Foster & Freeman*  
*attys.*

(No Model.)

3 Sheets—Sheet 2.

W. W. WADE.  
BUTTON MAKING MACHINE.

No. 362,335.

Patented May 3, 1887.

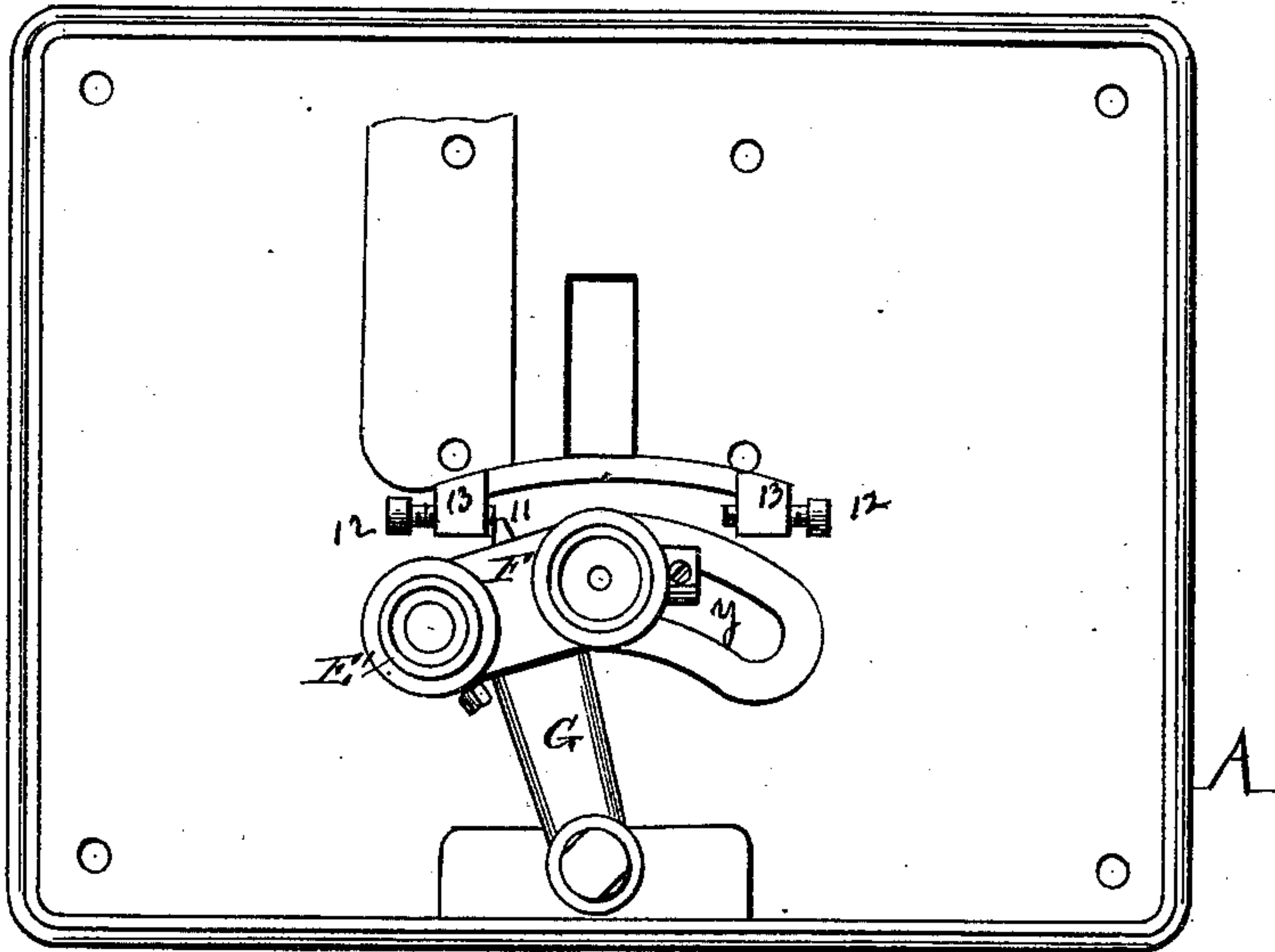


Fig. 2.

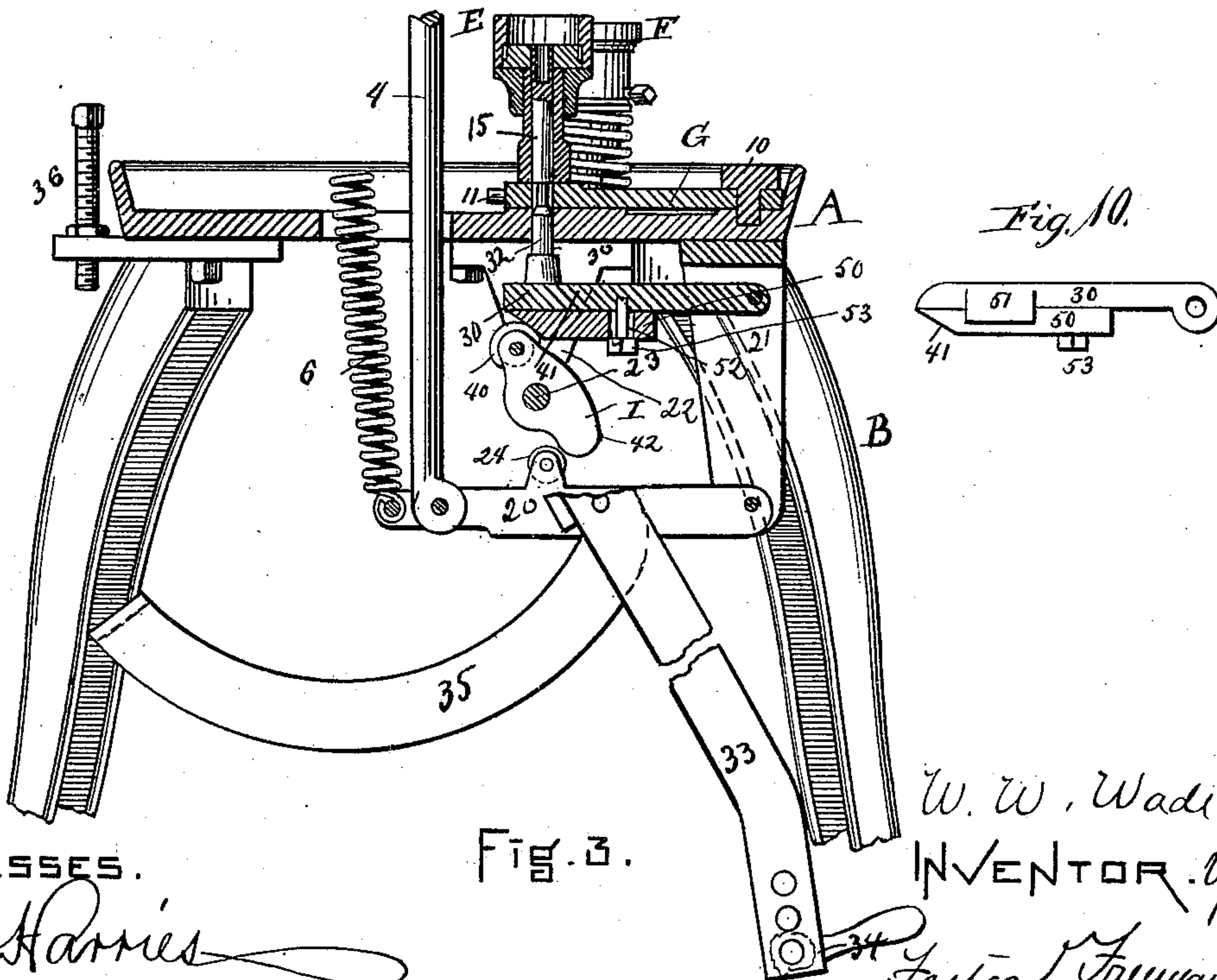


Fig. 3.

Fig. 10.

WITNESSES.

*Wm. A. Harris*

*A. E. Hornsman.*

*W. W. Wade*  
INVENTOR.

*Foster Freeman*  
*att'y*

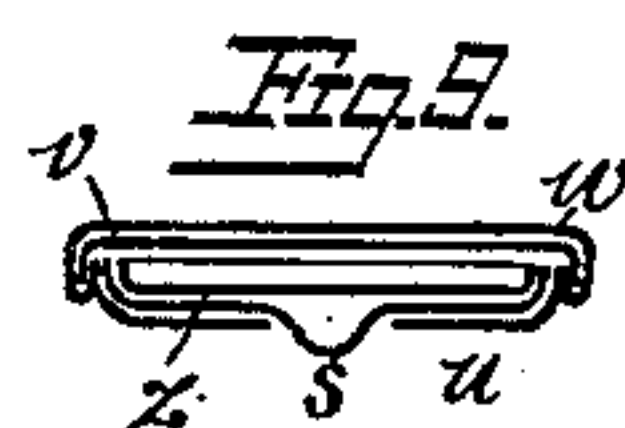
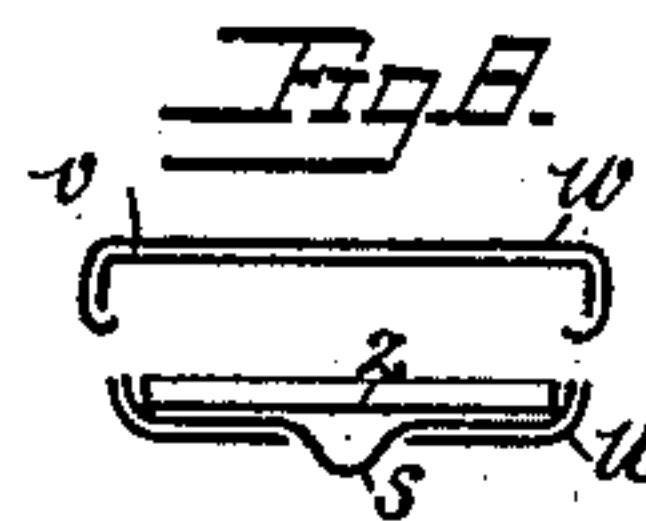
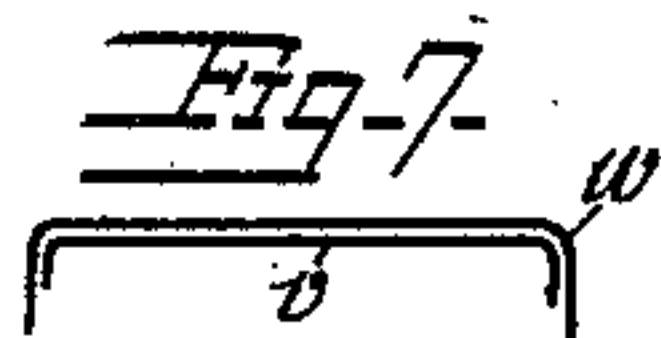
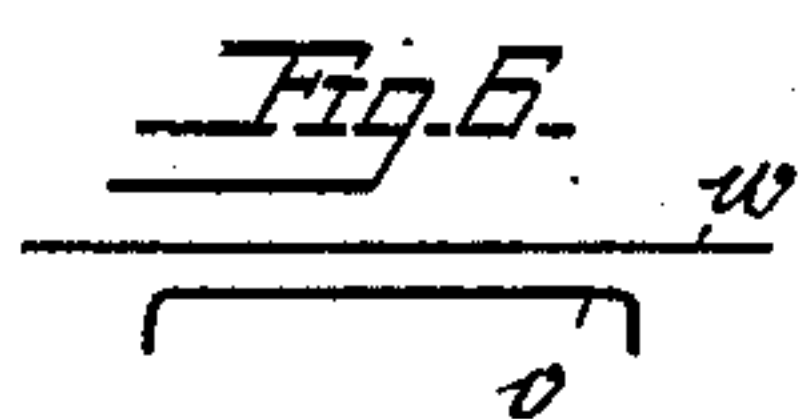
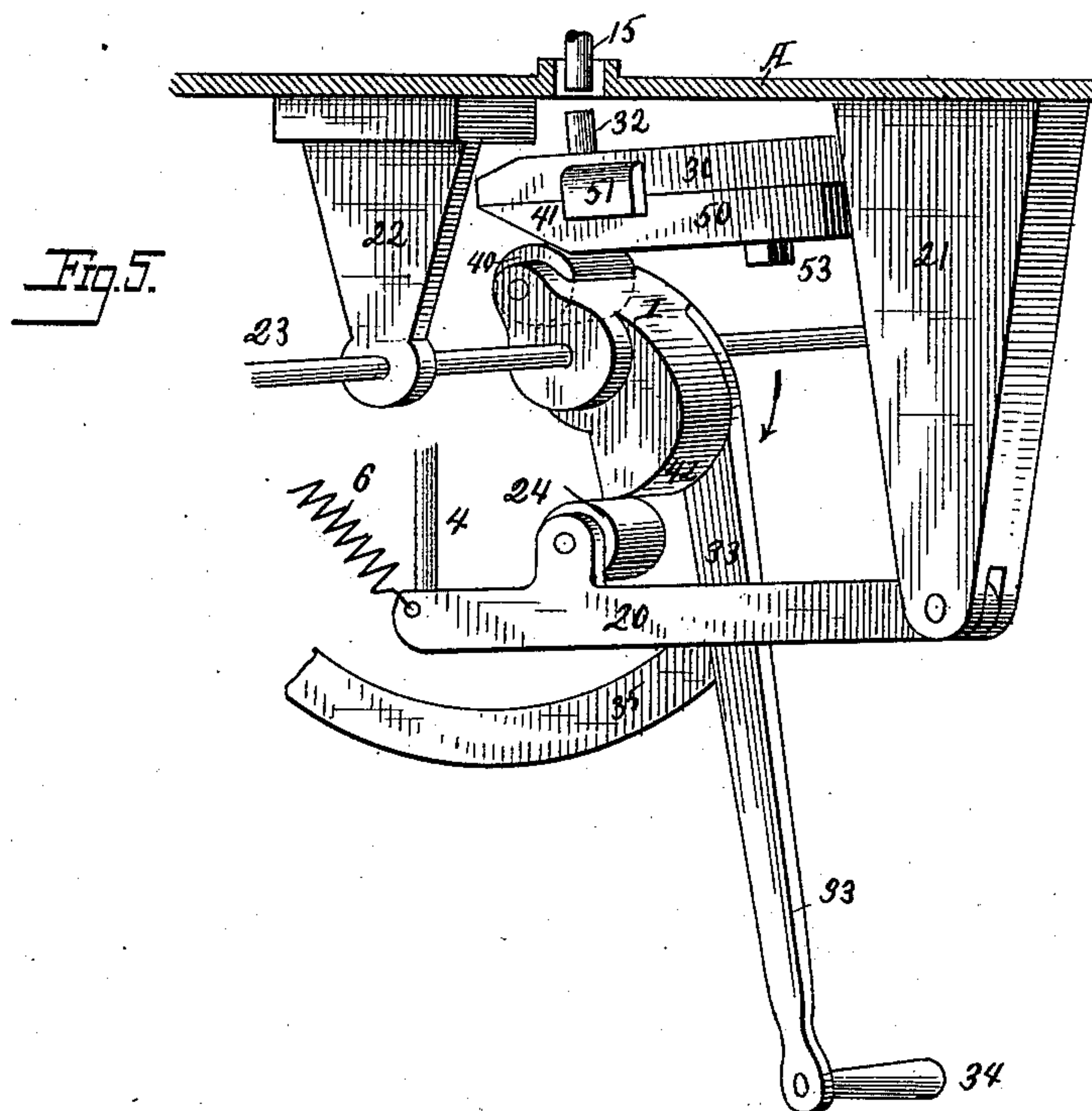
(No Model.)

3 Sheets—Sheet 3.

W. W. WADE.  
BUTTON MAKING MACHINE.

No. 362,335.

Patented May 3, 1887.



Witnesses:

Wm. A. Harris  
A. E. Hermann.

W, W, Wade

Inventor: by  
Foster & Freeman  
attys



# UNITED STATES PATENT OFFICE.

WILLIAM W. WADE, OF MEDFORD, MASSACHUSETTS.

## BUTTON-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 362,335, dated May 3, 1887.

Application filed August 5, 1886. Serial No. 210,110. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM W. WADE, a citizen of the United States, and a resident of Medford, Middlesex county, Massachusetts, have invented certain new and useful Improvements in Button-Making Machines, of which the following is a specification.

My invention relates to machines for putting together the parts constituting compound buttons; and it consists in an upper die and bed-dies arranged upon a movable carriage, and certain devices for operating the dies and regulating their movements, all as set forth hereinafter, and as illustrated in the accompanying drawings, in which—

Figure 1 is a vertical sectional elevation of a button-making machine illustrating my improvements. Fig. 2 is a plan of the bed-plate and attachments thereto. Fig. 3 is a longitudinal central section through the bed-plate and its attachments. Fig. 4 is a rear elevation of the bed-plate and parts supported thereby. Fig. 5 is a perspective view of the parts below the bed-plate. Figs. 6 to 9 are views illustrating the manner in which parts of a button are put together. Fig. 10 is a detail view of one of the operating-levers.

The bed-plate A is shown as oblong in form, supported by legs B, and supporting a standard, C, provided with guides 2 2, in which slides a die-rod, D. Through a slot, *x*, in the standard C extends an arm, 3, projecting from the rear of the die-rod, and through this arm extends a screw-rod, 4, provided with nuts 5 5, by which it can be adjusted vertically in respect to the arm 3, and a spiral spring, 6, is connected to an eye on the standard and to the lower end of the rod 4, or attachment thereto, so as to lift the rod 4 and die-rod to the limit of their upward movement.

With a die, 9, carried by the rod D, co-operate two bed-dies, E F, which are supported by a movable carriage, G. The said carriage may slide between guides, or may be otherwise guided on the bed-plate A and limited in movement, so that the bed-dies may be brought alternately beneath the die 9. As shown, the carriage G is pivoted by a pin, 10, to the bed-plate, to oscillate upon said pin, and a finger, 11, on the carriage plays between set-screws 12 12, turning in studs 13 13 on the bed-plate, and serving to limit the oscillation of the car-

riage. By adjusting the screws 12 the movements of the carriage are so defined that each bed-die can be brought into exact coincidence with the die 9. In the bed-plate is a slot, *y*, through which extends the spindle or stem 15 of the die E.

It will not be necessary to describe in detail the construction of the dies, which constitute no part of this invention, and which will vary according to the character of the buttons to be made. The general form of such dies is set forth in Letters Patent of the United States issued to me June 1, 1880, No. 228,233. The operation of the dies in putting together the parts of one form of button is shown in Figs. 6, 7, 8, and 9. In said figures *w* is the fabric-covering of the button; *v*, the metallic flanged shell; *z*, the paper wad or filling; *u*, the collet, with central eye for the nipple of canvas *s*.

The shell is placed in the bed-die F, with the covering-disk above the same. The said die is brought beneath the die 9, and the shell is forced onto the latter, the covering being thus folded down across the edge of the shell, as in Fig. 7. The bed-die E is then brought beneath the die 9, and the latter is brought down toward the die, as shown in Fig. 8, and the filling and collet are forced into the shell, and the flange of the latter is bent in to hold all the parts in place together, as shown in Fig. 9. After this operation is completed the die 9 is raised and the completed button removed. The carriage G is swung or carried back and forth by hand, the stop devices defining the position of each bed-die in respect to the die 9 with great precision.

The movements of the spindle 15 of the die E and of the die 9 are effected by the mechanism which I will now describe.

The lower end of the rod 4 is connected to the outer end of a lever, 20, pivoted to a hanger, 21, below the bed-plate, and in hangers 22 22, also below the bed-plate, turns a rock-shaft, 23, carrying a cam, I, which occupies a position directly above a friction-roller, 24, carried between ears on the lever 20. To the hanger 21 is also pivoted the rear end of a lever, 30, extending over the cam I, having a beveled lower face, 41, on the outer end, and provided with a stud, 32, which, when the bed-die E is below the die 9, occupies a position



directly below the stem 15. From the shaft 23 extends an arm, 33, from the lower end of which projects laterally a foot-piece, 34, so that the operator by applying his foot to the foot-piece can vibrate the shaft and its cam. From the arm 33 extends a stop-arm, 35, and an adjustable stop-bolt, 36, supported by the bed-plate, is arranged to be struck by the arm 33, and serves as a means of limiting and defining the rocking motion of the shaft.

The cam I carries at one end a friction-roller, 40, and the other end has a curved face, 42, coinciding with a circle of which the axis of the shaft 23 is the center.

When the bed-die F is below the die 9, the rocking of the shaft 23 in the direction of its arrow, Fig. 5, will bring the curved face 42 of the cam I to bear on the lever 20, which will be depressed, and thereby draw down the die-rod D and die 9 until the shell *v* and covering *w* are transferred to the die 9. The shaft 23 is then rocked in a reverse direction as the carriage G is moved to bring the bed-die E below the die 9, after which the shaft 23 is again rocked in the direction of its arrow. As the cam I is thus brought toward a vertical position its face 42 is brought against the roller 24 of the lever 20, and its roller 40 is brought against the inclined face of the lever 30. The lever 20 is thus depressed, moving downward the die 9, and the lever 30 is raised, bringing its lug 32 against the stem 15 of the bed-die E, and lifting the said stem so that the button is compressed between the ascending portion of the bed-die and the descending die 9 until the filling and collet are forced into the shell and the flange of the latter is bent in to lock the parts together. The stop-arm 35 now strikes the stop-pin 36, whereby the further motion of the shaft 23 is arrested and the crushing of the button prevented.

It will be seen that as the face 42 of the cam I coincides with a circle the lever 20 is not moved after the edge of the cam passes the center of the roller 24, whereby the upper die, 9, is held stationary after being depressed, but that as the roller 40 strikes the inclined face 41 of the lever 30 the latter is gradually lifted, while the die 9 is held in place, and that as the cam I gradually assumes a vertical position between the bearing 24 41 and greater pressure is required the leverage increases, the strains all being in a vertical line and upon opposite sides of the cam, so there is no tendency to force the shaft 23 against its bearings and unduly wear the machine and increase the labor of operating it, as would be the case if the strains were on one side of the shaft.

As the motion of the shaft is reversed the lever 30 gradually drops; but the lever 20 and die 9 are not moved until the lug 32 is free from contact with the stem 15, when the die 9 will be quickly lifted and the carriage G can be shifted to repeat the operations described. It will be seen that the beveled face 41 of the lever 30 secures a more gradual lifting of the lever 30 and a greater pressure.

In order to reduce wear and facilitate repairs, the bearing-face of the lever may be upon a steel or hard-metal plate, 50, lying against the lower side of the lever between ears 51, and this plate may be adjustable, to insure the lifting of the lever at the proper time. Thus the plate 50 may have a slot, 52, through which extends a fastening-bolt, 53, the latter being loosened to move the plate longitudinally and tightened to secure the plate.

Without limiting myself to the precise construction and arrangement of parts shown, I claim--

1. The combination, in a button-making machine, of an upper die arranged above the bed-plate, and bed-dies secured to a carriage connected to the bed-plate to be reciprocated thereon, substantially as set forth.

2. The combination of the bed-plate, upper die, reciprocating carriage upon the bed-plate, bed-dies supported by said carriage, and side stops for limiting the movement of the carriage, substantially as set forth.

3. The combination of the bed-plate, standards supporting the upper die, reciprocating carriage supporting lower dies, and adjustable stops for limiting the lateral movement of the carriage, substantially as set forth.

4. The combination, with the upper die-rods sliding in guides, of a lever pivoted below the bed-plate connected to the die-rod, a spring for lifting the lever, a rock-shaft and a cam carried thereby for depressing the lever, substantially as set forth.

5. The combination, with the slotted bed-plate and reciprocating carriage carrying bed-dies, of a lever pivoted below the dies, and a cam for elevating the lever into contact with the stem of the die above the lever, substantially as set forth.

6. The combination of the slotted bed-plate, reciprocating carriage carrying bed-dies, lever pivoted below the plate provided with a stud for making contact with the stem of the die, and cam arranged below the lever, substantially as set forth.

7. The combination, with the bed-plate, reciprocating carriage carrying bed-dies, a bracket supporting the sliding rod, of an upper die, a lever pivoted below the bed-plate and connected with the upper die-rod, a second lever pivoted below the bed-plate to contact with the stem of one of the bed-dies, and a shaft carrying a cam arranged between the two levers, substantially as set forth.

8. The combination, with the bed-die-actuating lever 30 and the upper die-actuating lever, 20, of an intermediate rock-shaft provided with a cam, the bearings of the levers upon the cam being in substantially a vertical line extending from the cam-shaft, substantially as set forth.

9. The combination, with the levers 20 30, of a cam arranged upon the intermediate shaft, and provided with an end curve to correspond with a circle having the axis of the shaft for its center, for the purpose set forth.



10. The combination, with the cam curved at one end, of a lever, 20, with a bearing for said curved end, and a lever, 30, having an inclined face, 41, substantially as and for the purpose set forth.

11. The combination, with the lever 30 and cam I, of a detachable plate, 50, adjustable on said lever and having a beveled end, substantially as set forth.

12. The combination, with the lever 30 and cam I, of a detachable plate, 50, having a double face, 41, secured adjustably to the lever, substantially as and for the purpose set forth.

13. The combination of the rock-shaft, cam, 15 bed-dies, lever 30, and arm connected with the rock-shaft and adjustable stop 36, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM W. WADE.

Witnesses:

SAML. W. CREECH, Jr.,  
B. E. PERRY.