

E. WOODWARD & E. D. GOODSON.

Eyeletting-Machines.

No. 156,902.

Patented Nov. 17, 1874.

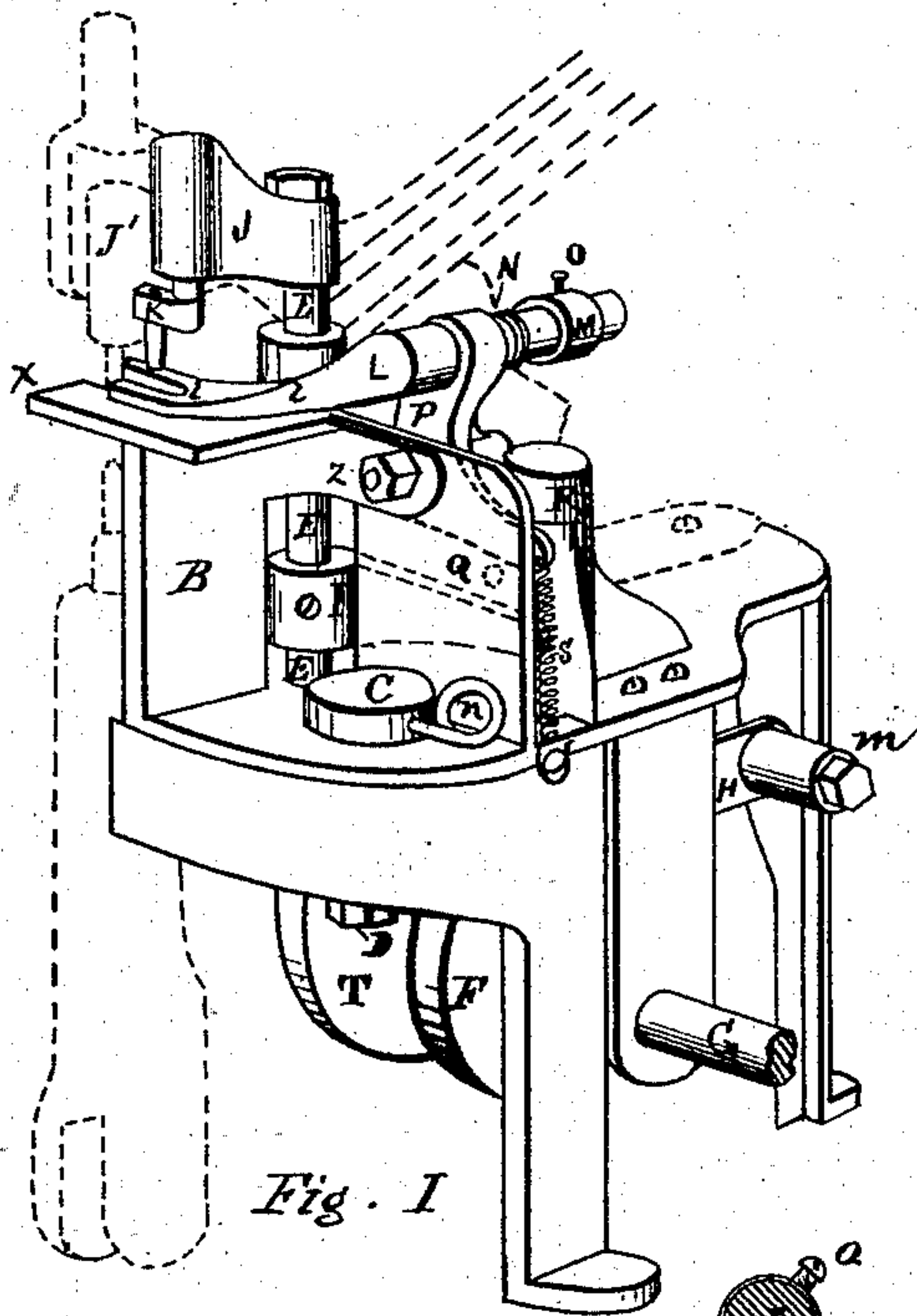


Fig. 1

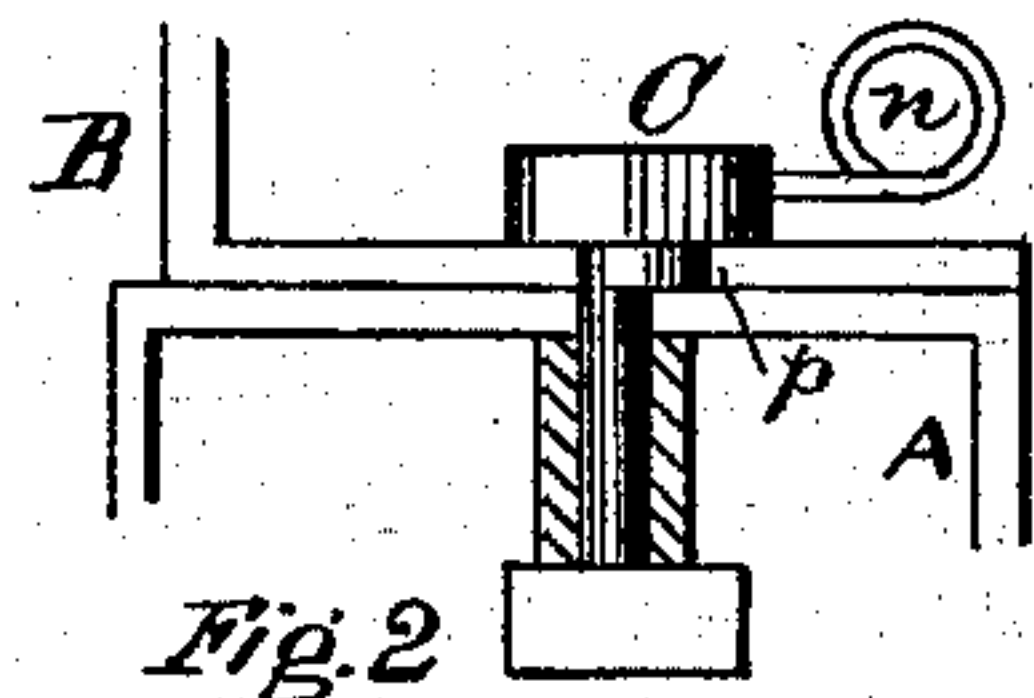


Fig. 2

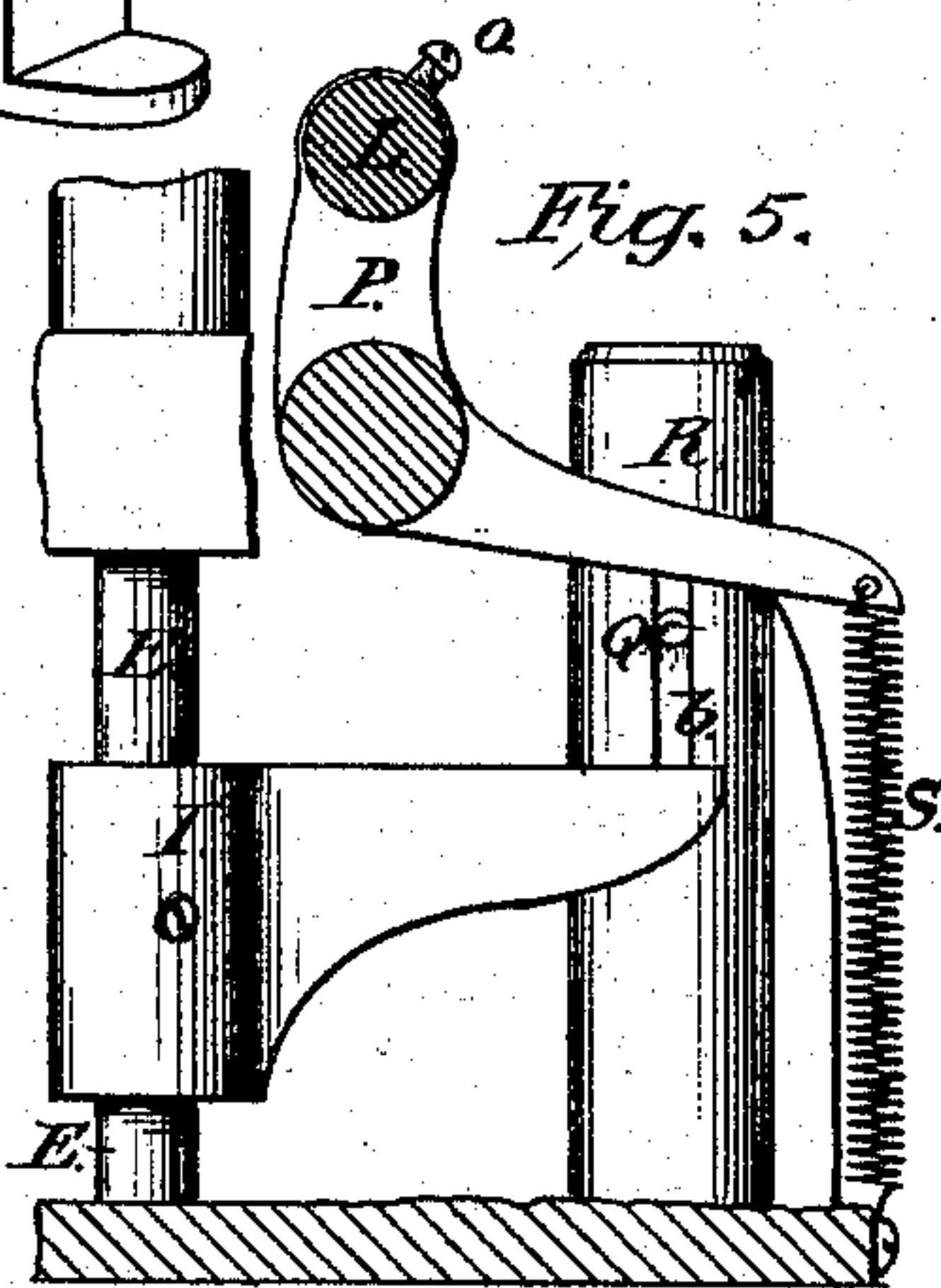


Fig. 5.

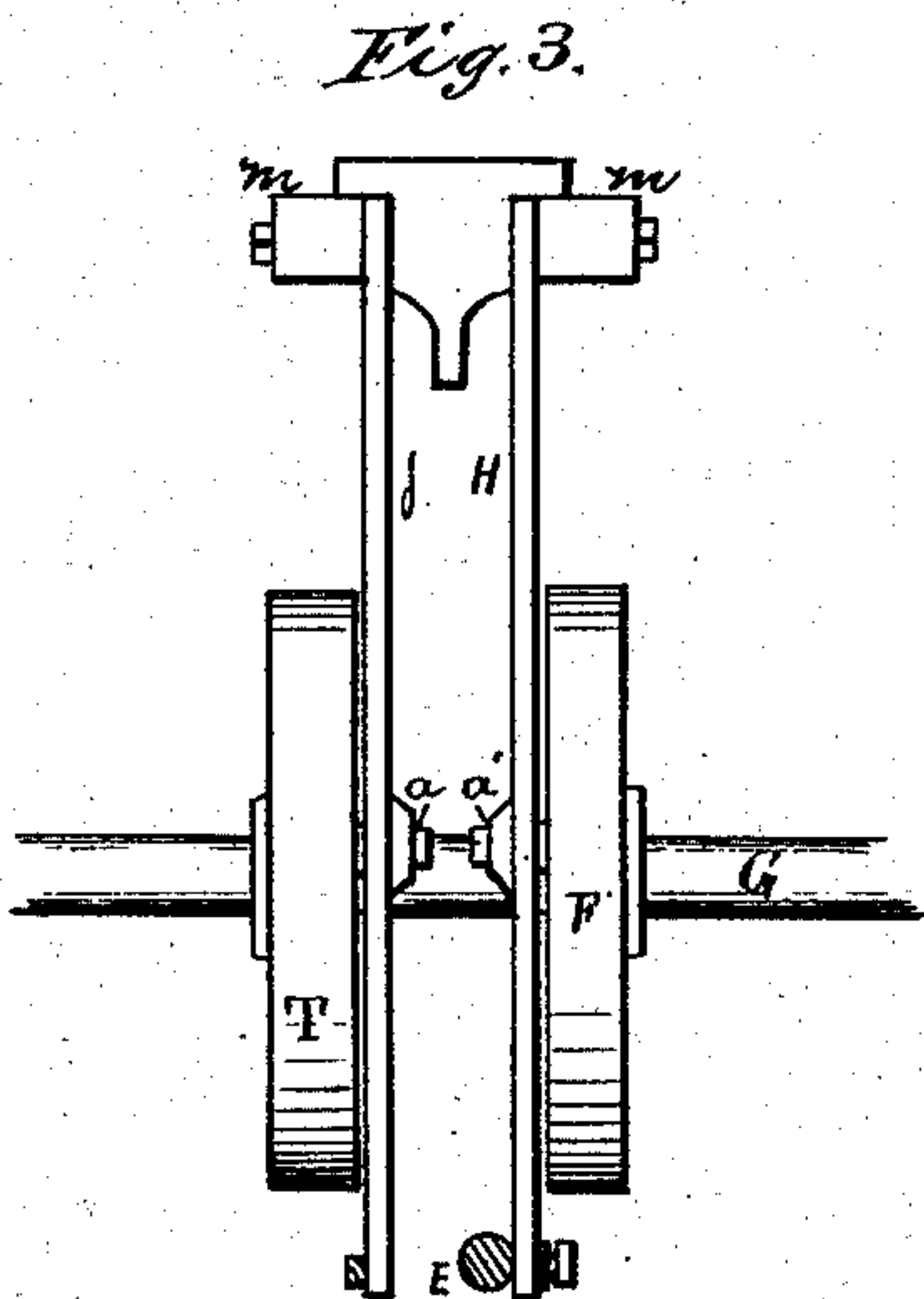


Fig. 3.

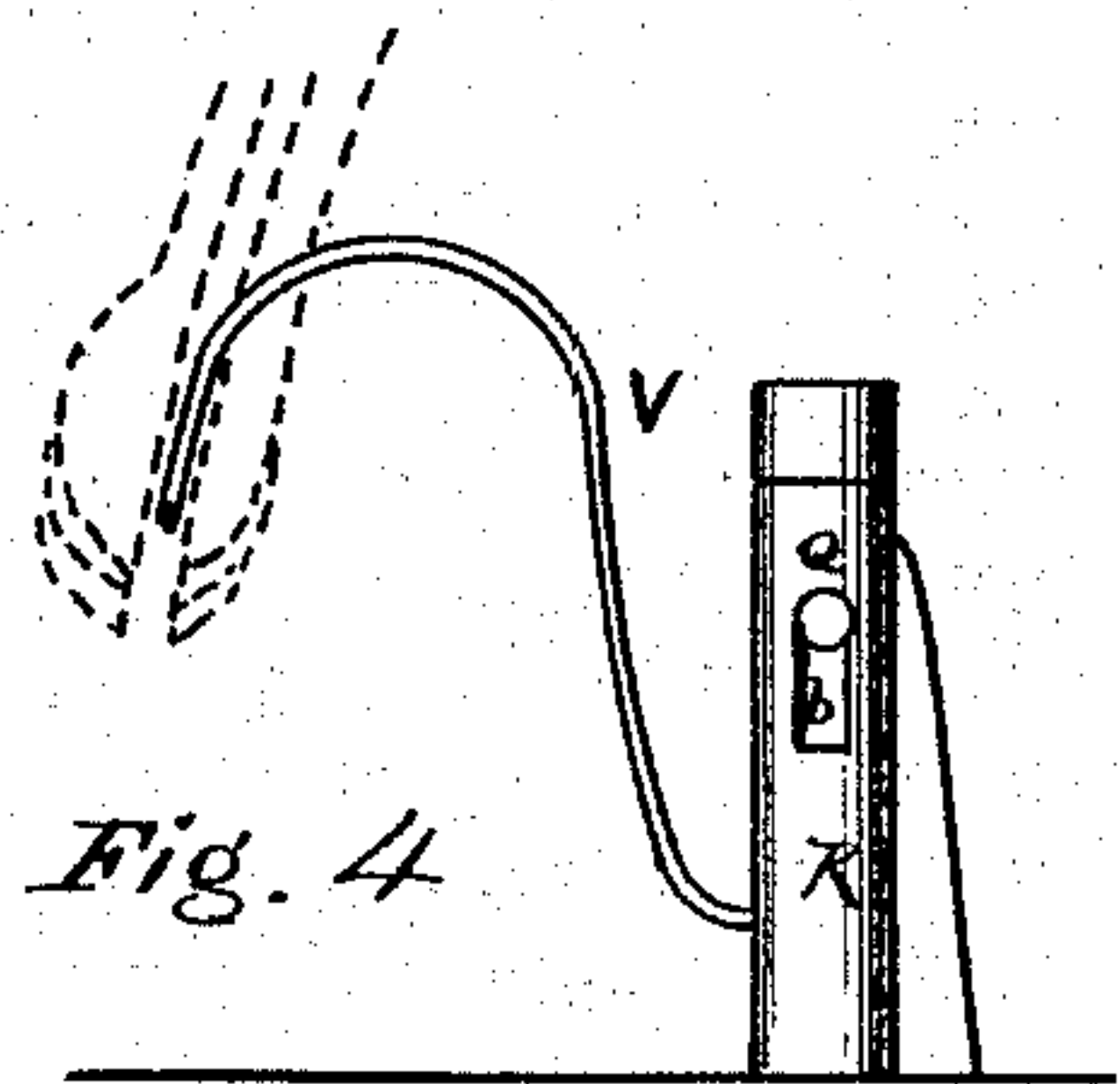


Fig. 4

Witnesses:  
H. E. Metcalf  
M. D. Filding

Inventor:  
Erastus Woodward,  
Edward D. Goodson,  
By C. A. Shaw,  
Att'y



# UNITED STATES PATENT OFFICE.

ERASTUS WOODWARD AND EDWARD D. GOODSON, OF BOSTON, MASS.

## IMPROVEMENT IN EYELETING-MACHINES.

Specification forming part of Letters Patent No. **156,902**, dated November 17, 1874; application filed September 15, 1874.

*To all whom it may concern :*

Be it known that we, ERASTUS WOODWARD and EDWARD D. GOODSON, of Boston, in the county of Suffolk, State of Massachusetts, have invented a certain new and useful Improvement in Eyeletting-Machines, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which our invention appertains to make and use the same, reference being had to the accompanying drawing, forming a part of this specification, in which—

Figure 1 is an isometrical perspective view, showing our improvement; Fig. 2, a sectional view, showing the eccentric for changing the feed and adjusting the punching mechanism relatively to the sets; Fig. 3, a sectional view, showing the actuating mechanism; and Fig. 4, a view of the air pipe or blower and the hollow standard; Fig. 5, a sectional view of the interior of the machine.

Like letters of reference indicate corresponding parts in the different figures of the drawing.

Our invention relates more especially to that class of eyeletting-machines which are employed on shoe-work, and which have usually been driven by foot-power; and consists in a novel construction and arrangement of the parts, as hereinafter more fully set forth and claimed, by which the capacity of the machine is greatly increased, and many other advantages are attained over those in ordinary use.

In the process most usually employed for eyeletting shoes and other similar work, the eyelet-holes are punched by a machine entirely disconnected from the eyeletting or setting mechanism, and the eyelet-rings are then inserted and "set" by a special machine for that purpose, the article to be eyeleted being moved or fed through the machine by hand, which renders the operation very slow and expensive.

Our invention is designed to obviate these difficulties and objections, and to this end we combine with the eyeletting mechanism a device for punching the holes and feeding the goods to the punch and setting tools, and also a blower for assisting in delivering the eyelet-

rings and removing obstructions, the whole being constructed and arranged to operate in a very simple and effective manner.

As the ordinary foot-power eyeletting-machine has a movable lower set acting upwardly and vertically in conjunction with an upper set, and has a magazine and channel or runlet for containing and delivering the eyelet-rings to the sets, no novelty is claimed for these parts, (which are represented by the dotted lines in Fig. 1,) when in and of themselves considered.

In the drawing, A is the body or bed-piece of the machine, on which the carriage B is arranged, having the table Z. A stud, *z*, projects laterally from the upper part of the carriage, and loosely fitted upon this stud there is a bell-crank lever, P, to the horizontal arm of which is attached by one end the coiled spring *s*, the opposite end of the spring being fastened to the bed A. Disposed in the vertical arm of the lever P there is a rocker-shaft, L, having a curved arm, which terminates in an ordinary bifurcated feeding-pad, *l*, resting upon the table *z*, the pad being caused to exert a yielding pressure upon the table after the manner of the feeding-bar in a top-feed sewing-machine by means of the spring N and collet M, which is held upon the shaft by the set-screw Q. Mounted upon the main shaft G are two wheels, T F, Fig. 2. The inner or contiguous faces of these wheels are provided with cam-grooves, into which project the studs *a a'*, which are made fast in the levers *j H*, respectively. These levers are pivoted to the frame of the machine at the rear ends, or have their center of motion at *m m*, the forward end of the lever H being pivoted to and carrying the vertical shaft E, Fig. 1, and the forward end of the lever *j* being pivoted to and carrying the stock of the lower setting-tool of the machine. The shaft E is fitted to slide in bearings in the frame of the machine, and has a laterally-projecting adjustable arm, *g*, upon its upper end, in which the punch K is disposed, and also a horizontal arm, I, projecting in the same direction, but below the horizontal arm of the lever P. Passing through the carriage B and table A there is a stud or headed bolt, C, Fig. 2, provided with the ec-



centric or cam *p*, lever or handle *n*, and nut *D*. This bolt is for the purpose of moving the carriage on the bed *A*, and thus bringing the punch and feeding-pad nearer to or removing them farther from the setting-tools, as may be desired. Projecting from the bed *A* there is a hollow vertical standard, *R*, Fig. 4, having an elongated vertical slot, *b*, in the side nearest the horizontal arm of the lever *P*. Fitted to slide in this standard there is a short rod or piston having a stud projecting laterally through the slot *b* and between the horizontal arm of the lever *P* and the arm *I*. There is also a curved air-pipe or blower, *v*, passing through the standard *R*, and connecting with its central aperture below the piston-rod. The upper setting-tool *j'* of the machine, instead of being fixed in the usual manner, is fitted to slide vertically, receiving motion from the shaft *G* by means of a proper train of mechanism (not shown) after the manner of the needle-bar in an ordinary sewing-machine.

From the foregoing the nature and operation of our invention will be readily understood by all conversant with such matters.

The leather or work to be eyeleted is placed in a proper position upon the table *x* under the feed-pad of the arm on the shaft *L*. Power is then applied to the shaft *G*, causing the wheels *T F* to revolve, the cams in the wheels being so arranged or timed as to cause all of the parts to act at the proper moment—that is to say, the sets being at the greatest distance from each other, the punch first descends and forms the hole or eyelet, and is then withdrawn; the feed then acts, carrying the article to be eyeleted forward the proper distance to bring the hole thus formed on a line with the sets. The upper set then descends and remains stationary, while the lower set ascends, picking up or taking the eyelet-ring from the race or channel in the usual manner, and carrying it upward through the hole and setting it in the goods. The feed-pad is then withdrawn, and the sets separate preparatory to repeating the operation as the shaft *G* revolves.

The operation of the feeding device is as follows: The arm *I*, as the shaft *E* ascends, strikes the stud *Q*, forcing it against the under side of the horizontal arm of the lever *P*, and as the arm *I* continues its upward course, causes the lever to turn upon the stud *z*, thus carrying the feed-pad forward, and causing the goods on the table *x* to advance toward the sets. When the shaft *E* descends, the spring *s*, by its contractile action, assisted by the spring *N*, depresses the horizontal arm of the lever *P*, causing the stud *Q* and its piston to slide downward, and also withdrawing the feed-pad from the sets. The standard *R* being stationary on the bed *A*, it will be seen that as the carriage *B*, to which the lever *P* is pivoted, is moved from or toward the sets, the relative position of the stud *Q* to the lever *P* will be changed, and that consequently

the feed will be correspondingly changed. It will also be seen that, when the carriage is moved to bring the punch farthest from the sets, the distance between the stud *Q* and the fulcrum *z* of the lever *P* will be shortened, thus causing the lever to rock or vibrate to a greater extent, giving a longer stroke to the feed-pad, and vice versa, the feed being in that respect automatic—that is to say, when the punch and sets are farthest apart, a long stroke of the feed-pad will be required in order to carry the goods along sufficiently far to bring the eyelet-hole on a line with the sets, and in this position the stud *Q* is always nearest the fulcrum of the lever *P*, or in just the position to give the longest stroke to the feed-pad; and when the punch is nearest the sets the stud is farthest from said fulcrum, or in the position to cause correspondingly short strokes of the pad.

In the use of the ordinary eyeleting-machine we have found that the eyelet-rings sometimes clog in the race near the sets, or are not delivered freely, and that broken eyelets and foreign matters sometimes collect in the path of the sets, causing imperfect work. To obviate these difficulties we make use of the air-pipe *v*, which, with the hollow standard *R*, slot *b*, and the piston-rod in the standard, forms a blower which removes all obstructions from the path of the sets, and causes the eyelets in the race to be delivered properly, the discharge-nozzle of the pipe *v* being arranged a short distance in the rear of the point at which the sets meet, and on a line with the eyelets in the race, or so that the current of air discharged from the pipe will force the eyelets forward to the sets at the proper time.

The piston-rod in the standard *R* is of such a length that when the stud *Q* is at its highest point the lower end of the rod is above the lower end of the slot *b*; thus, when the piston is raised, tending to form a vacuum in the lower end of the vertical central aperture in the standard, as the rod passes the slot the air rushes in and fills the vacuum below the rod, and when the piston descends, by the action of the spring *s*, the air will be forced out through the pipe *v*.

It will be seen that our improvement can be readily adapted to the ordinary foot-power machines already constructed, thus greatly increasing their capacity and utility.

Having thus described our improvement, what we claim is—

1. In an eyeleting-machine, the rocker-shaft *L*, provided with the bifurcated feeding-pad *l*, and operated by the vertical arm of the crank-lever *P*, in combination with the lever *P*, the vertical shaft *E* carrying the adjustable arm *J*, on which is fitted the punch *K*, the horizontal bar *I*, and the lever *H*, all constructed and operated substantially as and for the purpose set forth.

2. In an eyeleting-machine, the rocker-shaft *L*, provided with the feeding-pad *l*, the bell-



crank lever P, vertical shaft E, adjustable arm J, and horizontal bar I, in combination with the stud Q, working in the slotted standard R, and movable carriage B, substantially as and for the purpose set forth.

3. In the eyeleting-machine described, the shaft C, provided with the eccentric *p* and nut D for moving and securing the carriage B on the bed A, substantially as specified.

4. In an eyeleting-machine, the pipe *v*, in combination with the piston in the head of the hollow standard R, substantially as and for the purpose set forth.

5. In an eyeleting-machine, the shaft G,

cam-wheels T F, and pivoted levers *j* H, combined with the punch-shaft and set-stock, to operate substantially as and for the purpose specified.

6. In an eyeleting-machine, the hollow slotted standard R, having a piston-rod, provided with the stud Q, the lever P, arm I, spring *s*, and shaft E, combined to operate substantially as and for the purpose set forth.

ERASTUS WOODWARD.

EDWARD D. GOODSON.

Witnesses:

C. A. SHAW,

H. E. METCALF.