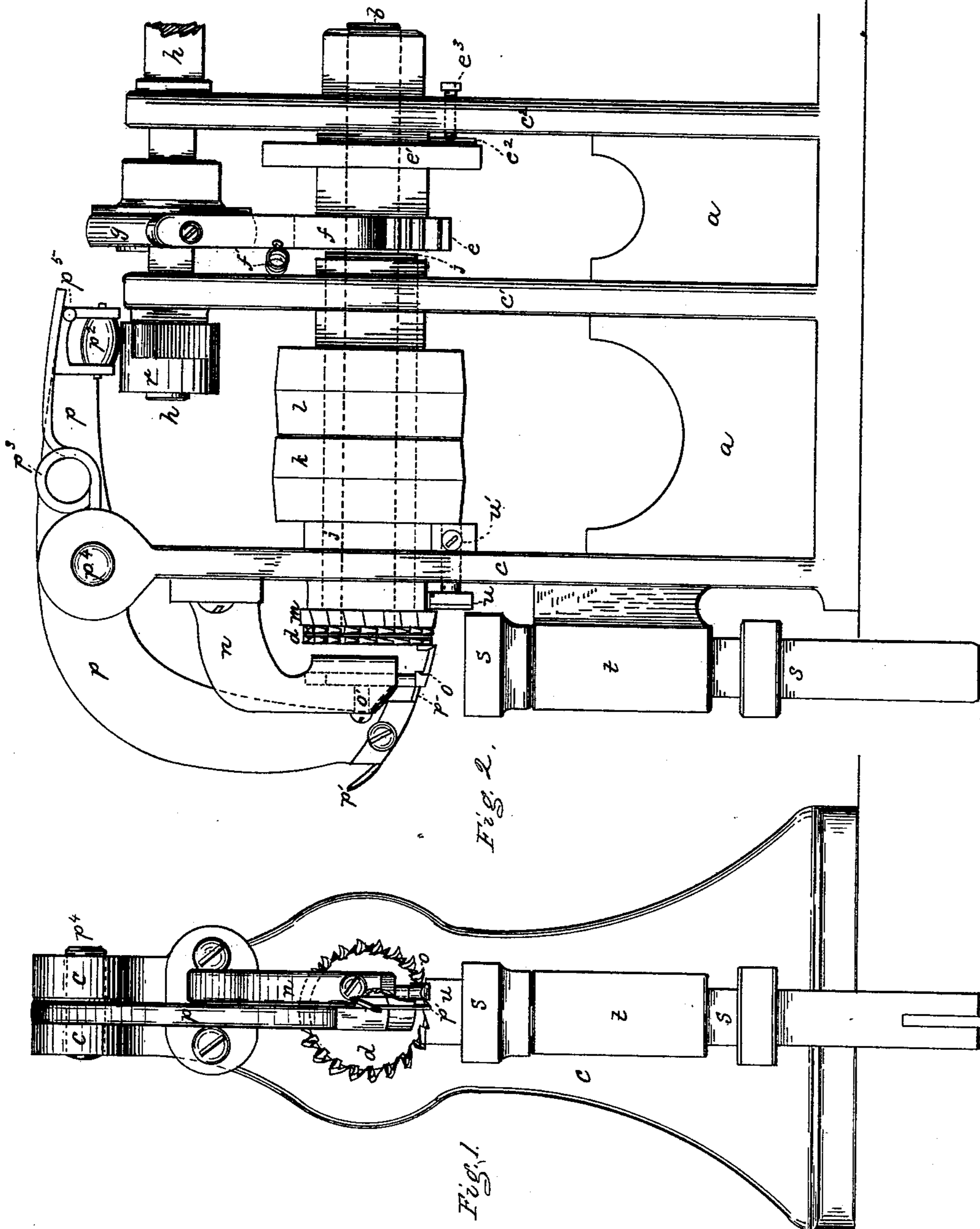


F. D. BALLOU.
Machine for Channeling and Perforating the Soles
of Boots and Shoes.

No. 221,660.

Patented Nov. 18, 1879.



Witnesses.
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IMPROVEMENT IN MACHINES FOR CHANNELING THE SOLES OF BOOTS AND SHOES.

Specification forming part of Letters Patent No. **221,660**, dated November 18, 1879; application filed August 16, 1879.

To all whom it may concern:

Be it known that I, FRANCIS D. BALLOU, of Marlborough, in the county of Middlesex, Commonwealth of Massachusetts, have invented a new and useful Improvement in Machines for Channeling and Perforating the Soles of Boots and Shoes ready for use, of which the following specification, taken in connection with the accompanying drawings and forming a part thereof, is a full, true, and complete description thereof.

My said invention relates to a machine for preparing the inner soles of boots and shoes, as for hand-sewing, so that the same are ready to be sewed or stitched to the welt and upper without any further manipulation by the workman.

Heretofore inner soles have been prepared for use by hand, the workman skiving or chamfering the face of the sole around the edge, and then cutting or making a channel upon the surface of the sole equidistant from and corresponding to the line of the skiving or chamfering already made, or as nearly so as the workman can make it with ordinary care and skill, thus leaving a ridge through which the stitches are made to connect the inner sole with the welt and upper.

In applying the inner sole the workman with an awl pierced through the upper welt and ridge of leather thus made, and then drew through the waxed thread or waxed end with bristle attached, thus making the inner seam, so called. The disadvantages arising from this method of preparing the inner soles are, first, the length of time necessary to prepare them, which varies from thirty minutes to three-quarters of an hour, according to the skill of the workman for each pair of soles, and next the workman, varies the number of stitches to the inch in working around the sole in sewing it to the welt and upper, and also varies the depth of the holes for the stitches with relation to the face of the ridge through which the stitches are taken, thereby causing an uneven strain upon the stitches, thus weakening the inner seam of the boot or shoe, and causing the stitches to break away.

The object of my invention is to produce a machine for skiving, channeling, and piercing innersoles for boots and shoes all at one and the same time and in one operation, so that the sole when made and prepared by said machine shall have the holes for the stitches equidistant, of the same depth with relation to the face of the ridge, and the skiving and channeling uniform throughout, the time occupied in producing such sole by this machine being merely nominal.

My invention consists in the combination of a rotary and stationary cutter, a piercing-awl, an intermittently-rotating feed, and an adjustable rotating work-support, all arranged and operating in the manner and for the purposes hereinafter specified.

In the accompanying drawings, Figure 1 is a front elevation of a machine embodying my said invention, and Fig. 2 is a side elevation thereof.

In the frame *a* is hung a shaft, *b*, having its bearings in the standards *c c' c²*, and carrying on its outer end a feed-wheel, *d*, which is rotated intermittently by means of a ratchet-wheel, *e*, fixed to the shaft at a point between the standards *c' c²*, and held from overthrowing by a friction-wheel, *e'*, which is pressed against the hub of the ratchet-wheel *e* by a spring, *e²*, operated by a set-screw, *e³*, in the standard *c²*.

The ratchet-wheel *e* is operated by a pawl, *f*, which is held against it by a spring, *f'*, the pawl *f* being attached to and actuated by a cam, *g*, fixed upon and revolving with a shaft, *h*, having its bearings in the upper end of the standards *c' c²*. The front end of this shaft *h* carries a cam, *r*, upon which rests a friction-roller, *p²*, hung in bearings in the end of the vibrating awl-carrying arm *p*, pivoted at *p⁴* in the upper end of the standard *c*. The roller *p²* is kept down upon the cam *r* by means of a spring, *p³*, one end of which is fixed in the standard *c*, the other pressing downward upon a pin, *p⁵*, in the end of the arm *p*. In the lower end of the arm *p* is clamped an awl, *p'*, which reciprocates in the rear of a stationary channel-cutting knife, *o*, vertically adjustable by

means of a set-screw, o' , in a bent or rectangular arm, n , attached to the face of the standard c .

In the rear of the feed-wheel d is a rotary cutter, m , which is fixed to a hollow shaft or sleeve, through which the feed-carrying shaft b passes. This hollow shaft j has its bearings in the standards c c' , and has arranged upon it between its bearings a driving-pulley, k , and loose pulley l . At the front of the standard c , just below the rotary cutter m , and horizontally adjustable by means of a set-screw, u' , is an edge-guide, u , below which is hung a vertically-adjustable work-support, s , in bearings t , attached to the face of the standard c .

The operation of the machine is as follows: A sole having been cut out of the required size is placed upon the work-support, with its edge resting against the edge-guide u . It is then thrown up into contact with the feed-wheel d , which carries it forward against the edge of the stationary cutter o , which cuts the channel in the face of the sole, while the rotary cutter m , which rotates in a direction opposite to that of the feed d , chamfers or bevels the face of the sole above the edge, thus leaving a ridge beneath the feed-wheel d , which is pierced by the awl p' , the distance between the punctures being regulated by the ratchet-wheel on the feed-shaft b .

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

1. The combination of a stationary and a rotating cutter and an intermittently-rotating feed and a suitable work-support, combined and arranged substantially as shown and described.

2. The combination of a stationary and a rotating cutter, a vibrating arm carrying an awl, an intermittently-rotating feed, and a suitable work-support, combined and arranged substantially as shown and described.

3. In combination with an intermittent feed and work-support, a vibrating arm carrying and moving an awl in an oblique path to the work-supporting surface, arranged and operating substantially as shown and described.

4. The combination of a rotating and stationary cutter, an intermittently-rotating feed, and the adjustable work-support, combined and arranged substantially as shown and described.

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