T. L. MILLER.

**Channel-Opener and Molder for Boots and Shoes.**

No. 168,045 Patented Sept. 21, 1875.

FIG. 1

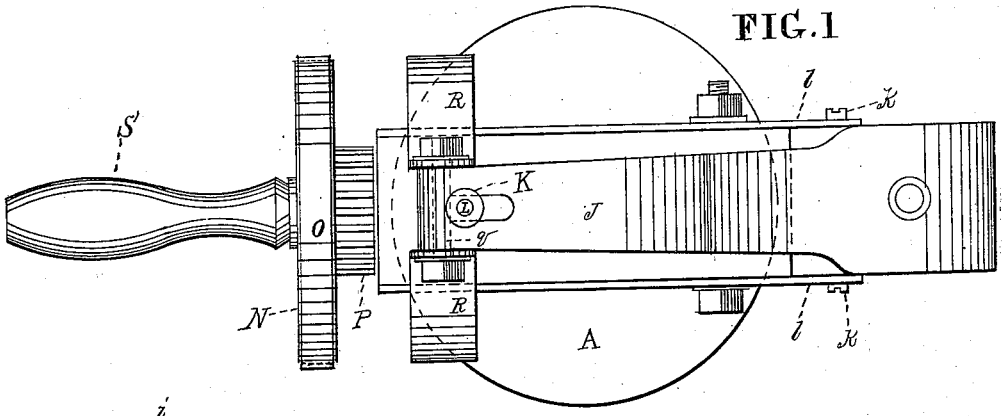
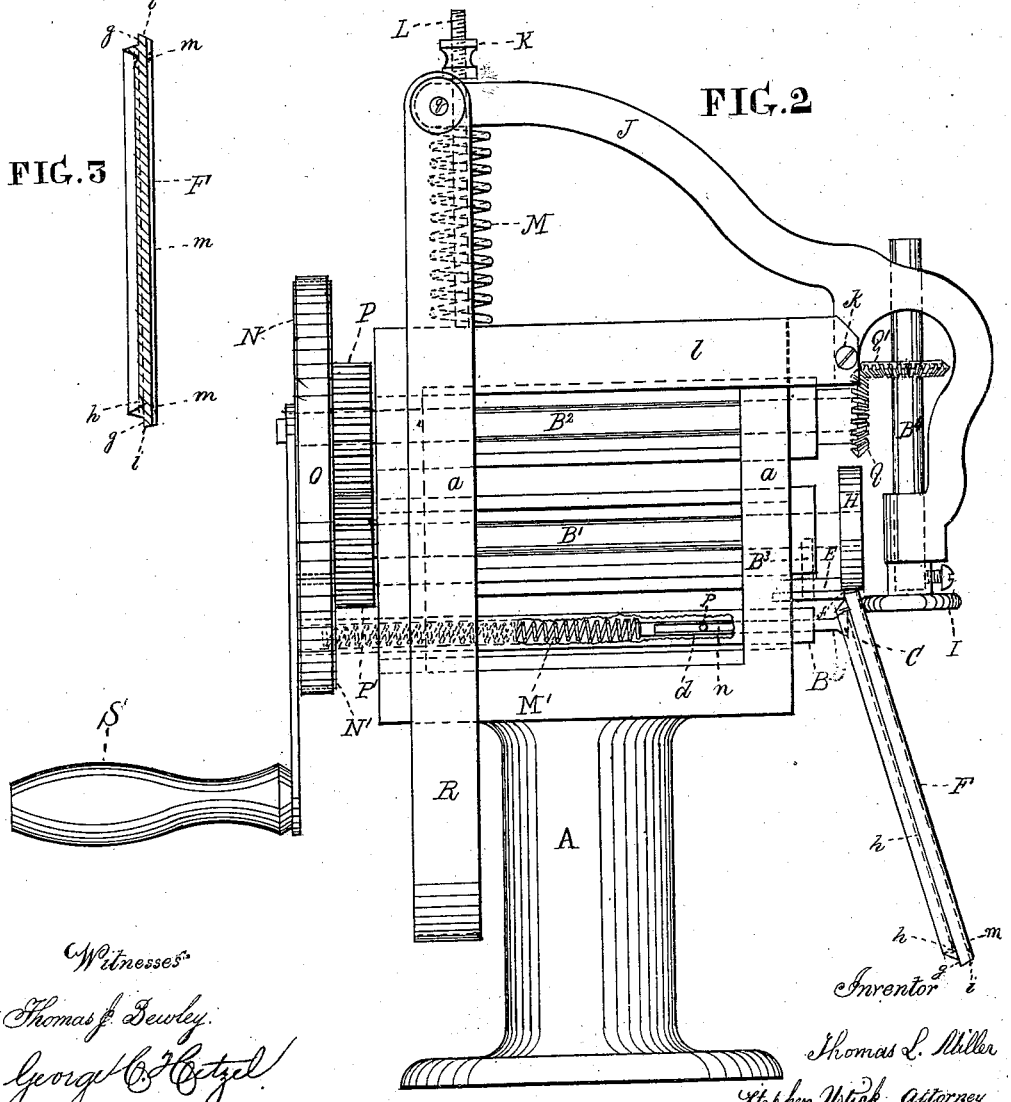



FIG. 3




FIG. 2




Witnesses

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THOMAS L. MILLER, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN CHANNEL OPENERS AND MOLDERS FOR BOOTS AND SHOES.

Specification forming part of Letters Patent No. **168,045**, dated September 21, 1875; application filed July 29, 1875.

*To all whom it may concern:*

Be it known that I, THOMAS L. MILLER, of the city and county of Philadelphia, in the State of Pennsylvania, have invented a Combined Channel Opener and Molder of Shoe-Soles, of which the following is a specification:

My invention consists mainly in the combination of a revolving channel-opener with a wheel having a square edge, which revolves in a plane at right angles to that of the opener, for forming the marginal surface outside of the channel; a like wheel, having a square edge, revolving in a plane at right angles to the latter wheel, for guiding the edge of the sole, thereby regulating the width of said marginal surface, and gaging the distance of the channel from the edge of the sole; and a wheel with a round edge revolving in a plane at right angles to the said gage-wheel, which presses toward the channel-opener; and the wheel which forms the marginal surface for bending the sole, as hereinafter fully described.

The channel-opener is on one end of a rod, which is situated in the bore of a revolving shaft, which also contains a wire spring, which forces the channel-opener forward after the operation of opening the channel and molding the sole, and the bending-wheel has been thrown outward from the sole, thereby relieving the sole from its connection with all the wheels, to be readily removed from the channel-opener, the throwing back of the said bending-wheel being effected by the movement of a lever, with which the shaft of the said wheel is connected.

In the accompanying drawings, Figure 1 is a plan view of the combined channel opener and molder. Fig. 2 is a side elevation of the same. Fig. 3 is a longitudinal section of the sole F.

Like letters of reference in all the figures indicate the same parts.

A is a stand, with which the several parts of the machine are connected. Its uprights *a* *a* are slotted to receive the bearings of the horizontal revolving shafts B $B^1$ $B^2$. C is a revolving channel-opener on the outer end of the stem D, situated in the bore *d* of the shaft B. E is a wheel on the vertical stud-shaft $B^3$, whose projecting edge *f* bears against the sole F, to form the margin *g* outside of the channel *h*. H is a wheel on one end of the shaft $B^1$, against the periphery of which the edge *i* of the sole F bears in its passage to gage the margin *g*, and the distance of the bottom of the channel *h*. I is a wheel on the lower end of the revolving shaft $B^4$, which has its bearings in the lever J, hung on the fulcrum-pin *k*, which passes through the cheeks *l l* of the stand A. This wheel has a rounded edge for molding the part *m* of the sole. The lever J is adjustable, by means of the nut K, on the upper end of the rod L, which projects upward from the top of the standard A, whereby to vary the distance between the periphery of the wheel I and that of the wheel E, to regulate the thickness of the sole at its edge. M is a spring, which surrounds the rod L, and bears the free end of the lever upward against the nut, but yields sufficiently to the reaction of the sole, to prevent a too compact condensation of the same.

The shaft $B^2$, which in the present arrangement of the gearing is the driving-shaft, has a band-wheel, N, which connects by means of the band O with the wheel N′ on the shaft B, for revolving the channel-opener C.

Motion is communicated from the driving-shaft $B^2$ to the shaft $B^1$, by means of the spur-wheels P and P′ on said shafts, respectively, to revolve the gage-wheel H, which in its revolutions revolves the wheel E, by its inner side, at the periphery of the wheel, bearing against the peripheral surface of the rabbet *m* of said wheel E. The molding-wheel I is revolved by means of the geared connection of its shaft $B^4$ with the driving-shaft, through the miter-wheels Q and Q′.

The stem D of the channel-opener has a slot, *n*, (seen in Fig. 2,) which extends over the pin *p*, whose ends are fast in the shell of the shaft B, to admit of the inward movement of the stem. R is a treadle-strap, whose ends are hung on the rod *q*, which passes through the free end of the lever J.

When a sole is to be placed in the machine for opening the channel and molding its edge, the free end of the lever is borne down, whereby the wheel I is thrown backward out of the way, for connecting the channel-opener with the channel. Then the lever is allowed to come

into the position shown in Fig. 2, pressing the wheel I hard upon the sole, and causing the opposite side of the latter to bind hard against the edge of the wheel F, the spring M yielding to the pressure until the channel-opener is forced into its position. (Seen in Fig. 2.) Then, as the crank S is turned in either direction, the wheels E, H, and I, and the channel-opener C, are revolved, and the sole carried around, whereby the channel is opened, and the required formation given to the edge of the sole.

For the removal of the sole from the machine, the free end of the lever J is borne down, whereby the wheel I is removed from the sole, and the spring M′ forces the channel-opener outward, and thus relieves the sole from contact with the other wheels E and H, for its removal from the machine.

I claim as my invention—

1. The combination of the channel-opener C, gage-wheel H, and molding-wheels E and I, arranged and operating in relation to each other, substantially as and for the purpose set forth.

2. The combination of the wheel I and shaft $B^4$ with the lever J, substantially as and for the purpose set forth.

3. The combination of the spring M′ with the hollow shaft B, and channel-opener C, as and for the purpose set forth.

THOMAS L. MILLER.

Witnesses:
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