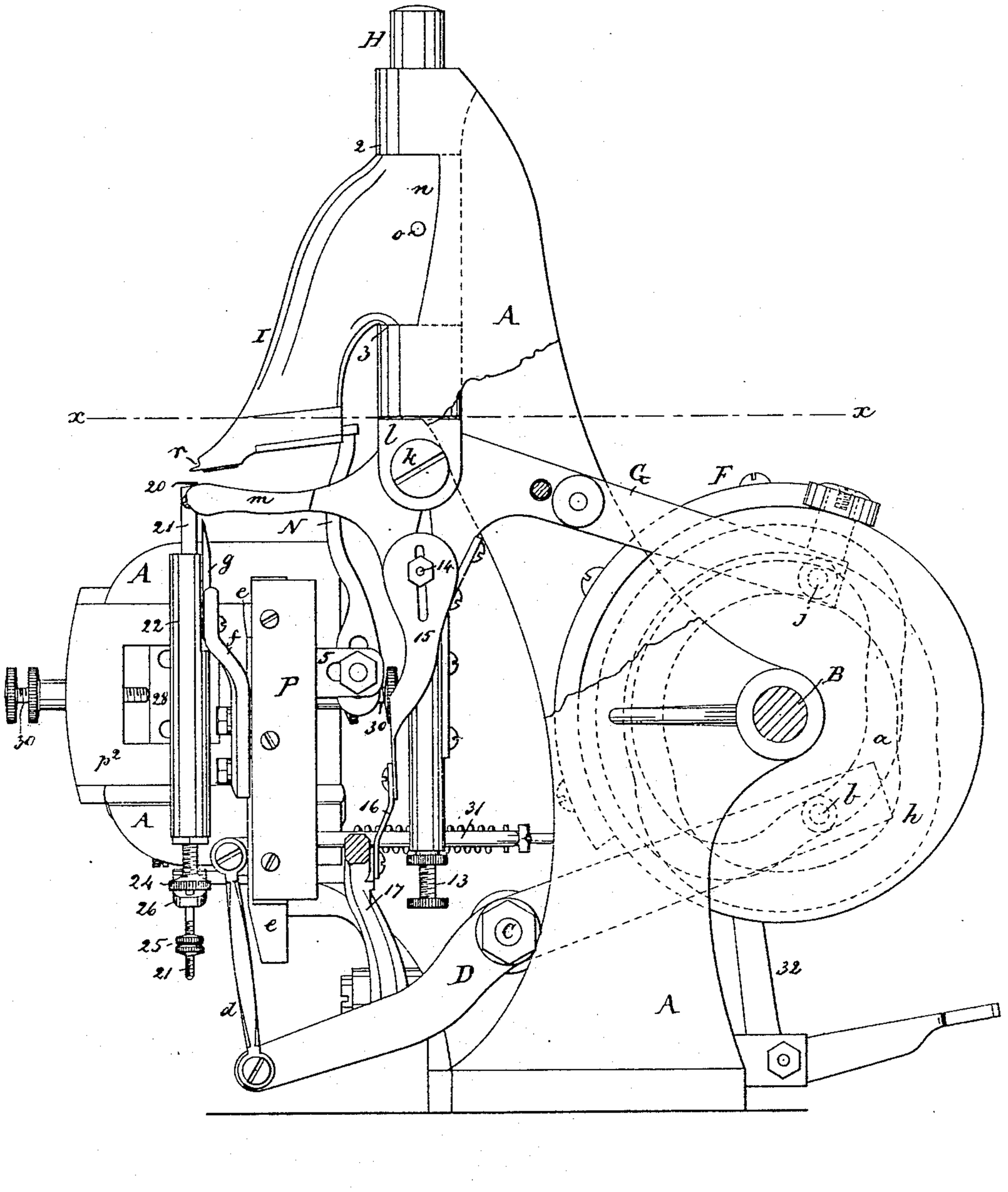
4 Sheets--Sheet 1.

J. S. TURNER.

Machine for Channeling and Trimming Boot and Shoe Soles.

No. 232,382. Patented Sept. 21, 1880.

Fig: 1



Witnesses.

Jos. P. Livermore

C. F. Connor

Inventor.

Joseph S. Turner,

by Crosby & Gregory Attys

4 Sheets--Sheet 2.

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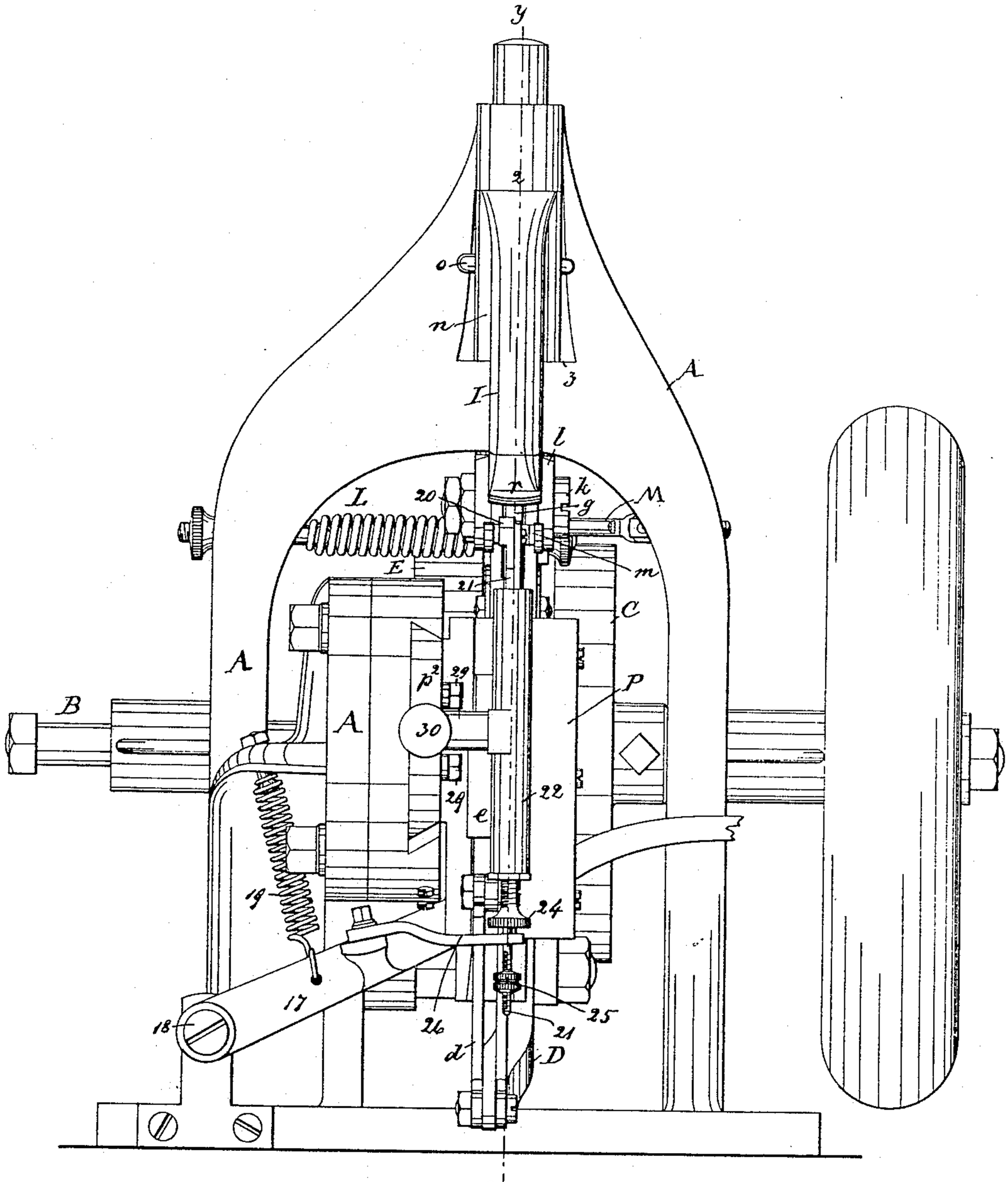
Fig: 2.



Witnesses.
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4 She ' -Sheet 3.

J. S. TURNER.

Machine for Channeling and Trimming Boot and Shoe Soles.

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Fig: 3.

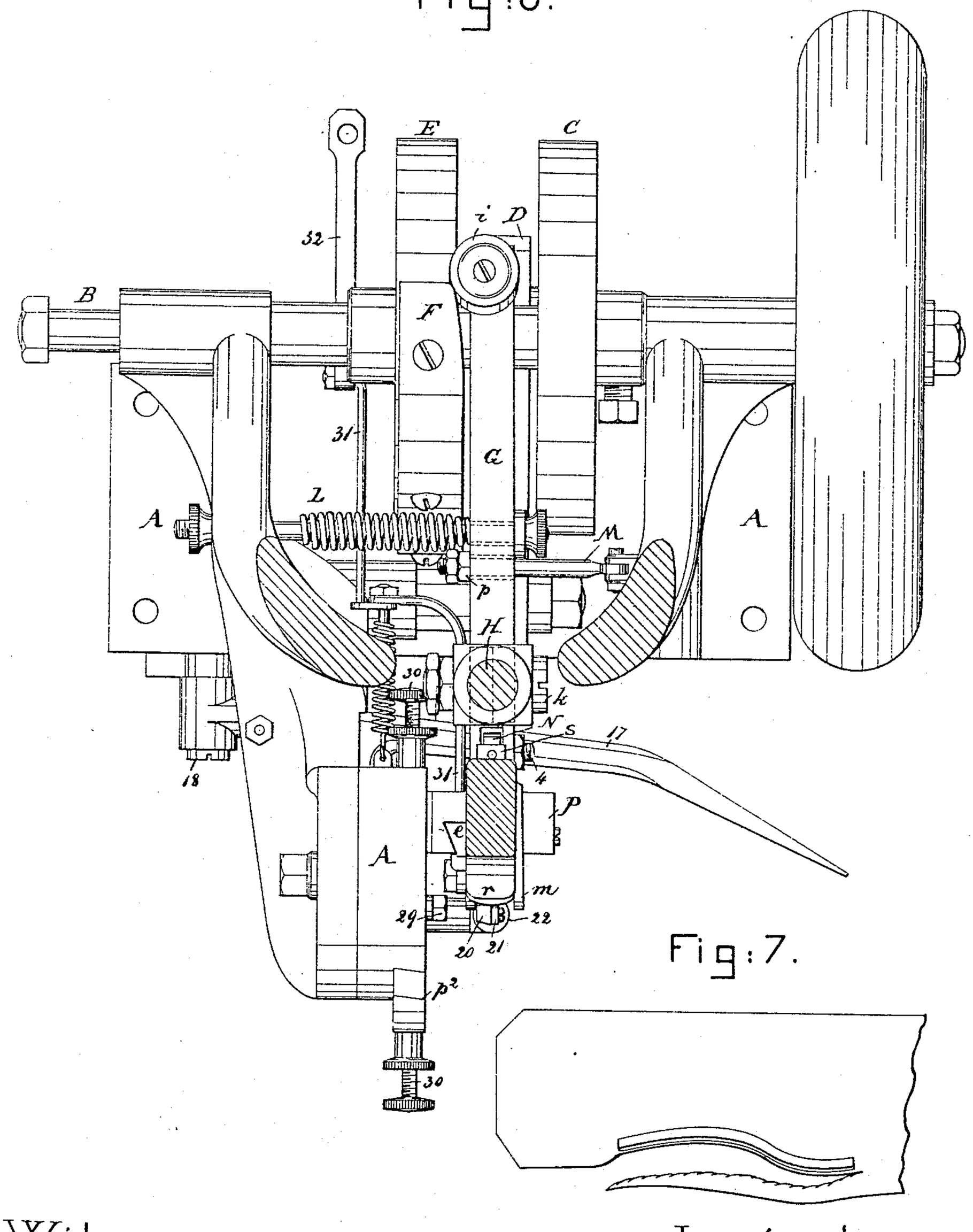

Fig: 7.

Witnesses.

Jos. P. Livermore

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4 Sheets--Sheet 4.

J. S. TURNER.

Machine for Channeling and Trimming Boot and Shoe Soles.

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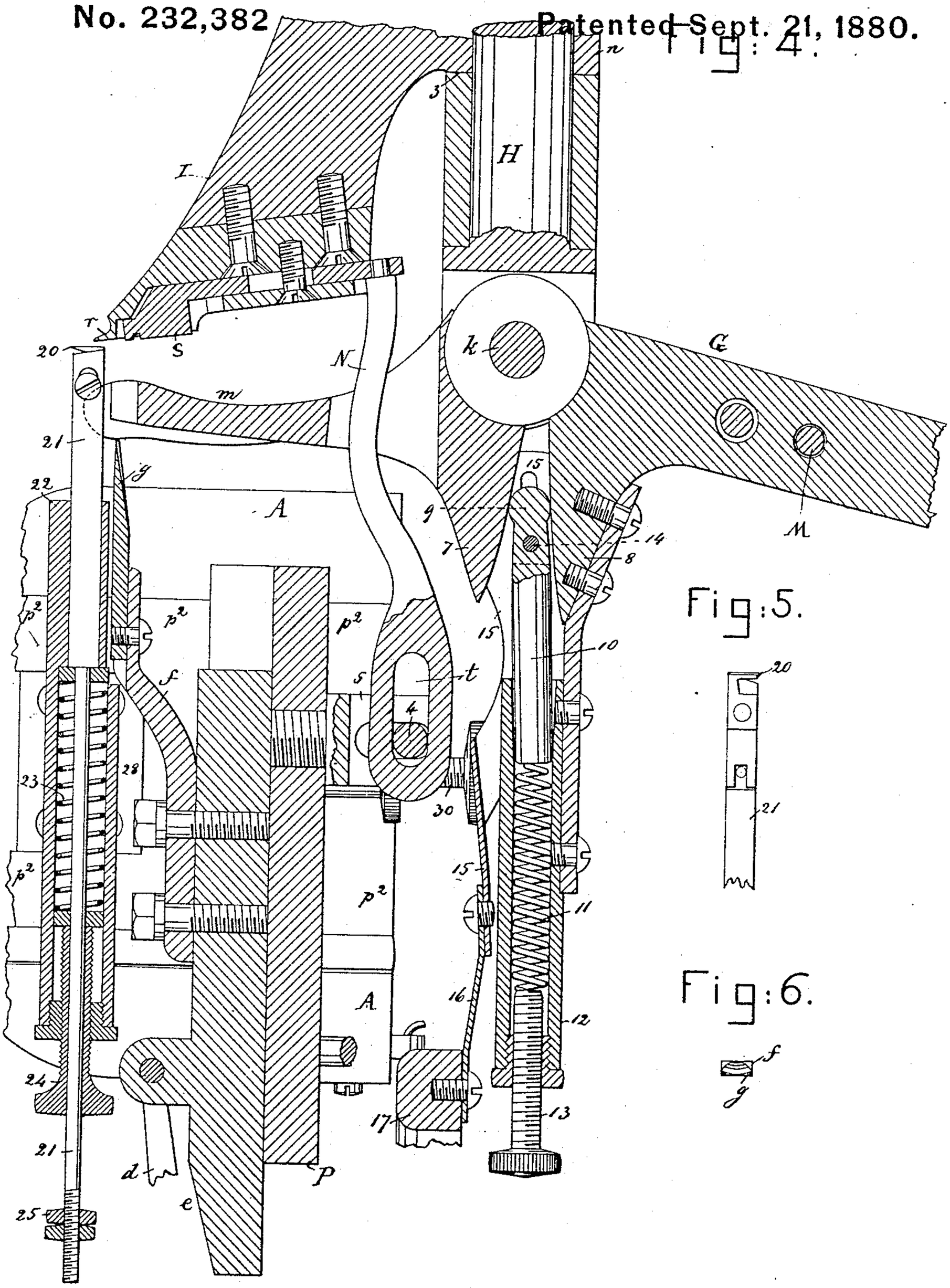

Fig: 5.

Fig: 6.

Witnesses.
Jos. P. Livermore
L. F. Connor

Inventor.
Joseph S. Turner
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UNITED STATES PATENT OFFICE.

JOSEPH S. TURNER, OF ROCKLAND, MASSACHUSETTS.

MACHINE FOR CHANNELING AND TRIMMING BOOT AND SHOE SOLES.

SPECIFICATION forming part of Letters Patent No. 232,382, dated September 21, 1880.

Application filed January 2, 1880.

To all whom it may concern:

Be it known that I, JOSEPH S. TURNER, of Rockland, county of Plymouth, State of Massachusetts, have invented an Improvement in Machines for Channeling and Trimming Soles for Boots and Shoes, of which the following description, in connection with the accompanying drawings, is a specification.

This invention relates to mechanism for channeling and trimming soles for boots and shoes, and has for its object to channel, or both channel and trim, a sole of a lasted shoe. By my machine and process the outline of the channel is determined by the last, as is also the trimming of the sole.

In an invention heretofore patented to me I provided for trimming and perforating a sole at a uniform distance from the last and edge of the inner sole, but I did not therein show a channel-cutter.

This my present invention is of especial advantage in the preparation of soles for the McKay sewing-machine, and for nailed work in which the nailing is done in the channel.

My invention consists, essentially, in the production of a machine containing a channel-cutter and a reciprocable edge-trimming device or blade to channel and trim a sole on a lasted shoe; also, in a gage to bear against the upper or last on the last, combined with a channel-cutter and edge-trimmer; also, in a gage, an edge-trimming blade and throat, and means to connect the throat and blade-carrier, to permit the said blade and throat to be adjusted together toward and from the gage; also, in a channel-cutter and edge-trimming blade, combined with feeding mechanism to intermittingly grasp and move the sole so as to be both channeled and trimmed.

Figure 1 represents, in side elevation, a machine embodying my invention; Fig. 2, a front elevation thereof; Fig. 3, a section on the line *x x*, Fig. 1; Fig. 4, a partial vertical section on the line *y y*, Fig. 2; Figs 5 and 6, details of the channel-cutter and trimming-blade; and Fig. 7 a view of a part of an outer sole partially channeled and trimmed as it will be by my process.

The frame-work A of the machine is of suitable shape to support the working parts and the main shaft B, driven in any usual way. This shaft has upon it a cam-grooved disk, C, provided with a cam-groove, *a*, as designated in dotted lines, Fig. 1, to receive a roller-stud, *b*, of a lever, D, pivoted at *c*, and connected by link *d* with a slide or carriage, *e*, upon which is attached the holder *f*, to which is secured the edge-trimming device or blade *g*, herein shown as a chisel or gouge like device, which strikes through and cuts away the sole-edge.

By the connections thus far described the said trimming-blade is reciprocated to enter and trim the edge of the sole at a uniform distance back of the acting face or end of the gage, which co-operates in defining the shape of the sole, and the trimming is herein performed while the sole is held clamped and at rest after having been fed forward.

The cam-disk E is grooved, as shown by dotted lines *h*, Fig. 1, to receive a roll or stud, *j*, on an arm, G, hung at its outer end on the bolt *k*, extended through ears *l* of an oscillating shaft, H. The bolt *k* also serves as the fulcrum of the calipering or pressing jaw *m* of the clamping and feeding mechanism. The upper member, I, of this clamp or feeding mechanism has a sleeve-like part, *n*, which is entered between the shoulders 2 3 of the frame A, and is attached to the shaft H by the pin *o*.

The arm G, by the action of the groove *h*, is vibrated about the bolt *k*, and as the roller *i* of the arm meets the edge-cam F, attached to the disk E, the said arm is moved laterally to oscillate the shaft H and its attached parts for the distance it is desired to feed the sole or shoe forward, the two parts of the clamp or feed then grasping the sole.

An adjustable spring, L, connected with the frame A and arm G, keeps the roll *i* against the arm F, and also acts to move the feeding mechanism backward, an adjustable stop, *p*, on a rod, M, Fig. 3, determining the backward position of the said clamping and feeding mechanism.

The lower end of the upper member, I, of the clamping and feeding mechanism has its acting face made as a gage, *r*, with a lip to enter the groove between the lasted upper and sole, or is so shaped as to act upon the upper next the edge of the bottom of the last, or, if desired, the edge of the inner sole, the said outer-sole material being connected and mov-

ing with the said last and inner sole. The under side of this member I, at the rear of the gage-face *r*, has a throat or slot, into which is received the end of the trimming-blade after its passage through the sole. The block *s*, (see Fig. 4,) forming a part of this throat, is connected with the finger N, slotted at *t* and adjustably secured by pin 4 to the ear 5, projected from the rear side of the guideway P, which has a slotted stand, p^2, dovetailed into and made adjustable horizontally in the frame part A, as hereinafter described, whenever it is desired to trim the sole at a greater or less distance from the rear of the gage-face *r*, so as to insure the proper or desired width of sole-edge beyond the upper. This finger is to insure the movement of the block *s* in unison with the trimming-blade when the guideway P is adjusted horizontally, or to adjust the throat and blade simultaneously.

The movable part *m* of the clamp and feed and the arm G each have toes, as at 7 8, between the sides of which is placed a wedge or movable fulcrum-block, 9, carried at the upper end of a vertically-movable rod, 10, normally pressed upward by a spring, 11, in a tube, 12, connected with the arm G, the said spring 11 being regulated as to its force by a screw, 13.

A pin, 14, extended through the wedge-block, is acted upon by the slotted fork 15, connected by link 16 with the hand or foot lever 17, pivoted at 18, and held normally upward by the spring 19.

When a sole is to be channeled the lever 17 is depressed so as to lower the wedge-block sufficiently below the fulcrum-bolt *k* to permit the clamp *m* to fall far enough below the lower face of I to receive the sole, and then the spring 19 acts to lift the lever 17 and wedge-block, and cause the clamp *m* to rest against the outer face of the sole, whatever may be its thickness.

When the toe 8 is thrown toward the toe 7 the wedge-block will descend more or less, according to the stress of the spring 11, thereby controlling the force or extent of pressure of *m* upon the sole, and as the toe 8 is moved away from 7, as is the case when the clamp and feed are being moved backward, then the stress of the spring is lessened a little and the pressure of *m* upon the sole is somewhat released. During this backward movement of the clamp and feeding mechanism the trimming-blade is engaged with the sole to prevent the latter being also moved backward.

The channel-cutter 20 is composed of a steel block and cutting-edge adjustably attached to a bar, 21, contained in a sleeve, 22, and is acted upon by a spring, 23, to hold the channel-cutter pressed upward against the sole to be channeled. The stress of this spring 23 is regulated as may be desired by the screw 24 and set-nuts 25. The channel-cutter is depressed for the introduction of the sole by means of the arm 26 of lever 17, it acting upon the set-nuts 25 at the lower end of rod 21.

The sleeve 22 is connected with a horizontally-adjustable block, 28, connected with the frame A, as herein shown, within a slot in the stand p^2, to thereby permit the channel-cutter and its sleeve to be adjusted horizontally toward and from the gage *r*. The stand has adjusting devices 30 (shown as screws) at each end of its slotted center, and connected with the said stand is a rod, 31, which is extended backward to one arm of a lever, 32, with which a treadle under the control of the operator will be suitably connected, so as to permit the operator, by pressure thereon, to move the stand, guideway, and trimming-blade and throat horizontally, as may be desired, to thereby trim the sole more or less close to the channel. The adjusting devices 30 will be so placed as to permit the stand to slide more or less before the ends of the said devices 30 strike the block 28. When one of the said devices 30 is against one edge of 28 the sole will be trimmed, say the greatest distance from the channel, as when working about the fore part, and when the other of the said adjusting devices is against the other edge of block 28 the sole will be trimmed the least distance from the channel, as at its shank part. The sole, while clamped between the clamping devices I *m*, will be moved forward against the channel-cutter and be channeled, and as the sole comes to a position of rest the edge-trimming blade will be elevated to trim the sole-edge, and then the clamp and feed will be moved backward, and after that the trimming-blade will be retracted.

In the preparation of soles for the McKay machine the sole is cut out by a die or shaped by a pattern, and then it is channeled on a separate machine and placed in position on the lasted shoe.

In some nailed work the same process is carried out. In pegged work and surface-nailed work the same process is carried out except the channeling. A workman is liable, when placing a died-out and channeled sole upon the inner sole, to get it out of position, so that the line of channel does not conform with the edge of the inner sole, and the stitches or other fastenings will therefore be made or inserted more or less near, and will sometimes run completely off the edge of the inner sole; but by assembling the parts of the shoe as hereinafter described by me, and then subsequently channeling and trimming the sole, this can never happen.

By my process the shoe is lasted in the usual way, and a piece of leather large enough for an outer sole is attached to the inner sole by the usual sole-tacks, and then the shoe so assembled is placed in my machine, and the outer sole is simultaneously channeled and trimmed at a uniform distance from the upper or inner sole or edge of the last, the gage co-operating therewith to define the outline of the channel and edge of the sole, causing them to assume the contour of the last-bottom or inner sole, thereby making a more symmetrical shoe, and

at the same time saving time and reducing the number of different handlings, and consequently the cost of manufacture. According to this my process the channel and edge of the outer sole are both defined by the shape of the upper where it touches upon the inner sole next the bottom of the last, and therefore the inner sole and channeled outer sole may always be made to accord with each other in shape.

I do not broadly claim a channel-cutting device and a knife to trim the edge of the sole, the latter being a stationary blade against which the sole, held upon a sliding and rotating carriage, is forced, the said sole in such case being unattached to a shoe.

I claim—

1. A channel-cutter to channel the sole, combined with the reciprocating trimming-blade to trim and give shape to the edge of the sole outside the channel, substantially as described.

2. The gage to bear against the upper of a lasted boot or shoe near the inner sole or last, substantially as described, combined with the channel-cutter and the reciprocating edge-trimming blade, to channel and trim or give shape to the edge of the outer sole to conform to the shape of the inner sole or last of the shoe to be produced.

3. The gage combined with the reciprocating edge-trimming blade and throat, and means, substantially as described, to connect them, to permit the blade and throat to be adjusted in unison toward and from the gage, substantially as and for the purpose set forth.

4. The gage and channel-cutter, combined with the reciprocating edge-trimming blade and throat, and means, substantially as described, to adjust them toward and from the gage and channel-cutter, substantially as and for the purpose described.

5. The channel-cutter and edge-trimming blade, combined with feeding mechanism I *m*, to intermittingly clamp and move the sole forward, whereby it may be both channeled and trimmed, substantially as described.

6. In a sole channeling and trimming machine, the reciprocating edge-trimming blade, combined with clamping and feeding mechanism, substantially as described, to automatically adapt itself to varying thicknesses of soles, substantially as described.

7. In a sole channeling and trimming machine, the channel-cutter, combined with the feeding mechanism to clamp and feed the sole forward intermittingly, and with the reciprocating edge-trimming blade and mechanism, substantially as described, to operate it, the said blade holding the sole while the feeding mechanism is moved backward, substantially as described.

8. That improvement in the art or method of preparing boots and shoes to be sewed by a sewing-machine which consists in first lasting the shoe, and then at a single operation trimming the sole-edge to shape it to correspond with the shape of the last or inner sole employed, and channeling the sole for the reception of the stitches to unite the outer sole, upper, and inner sole, all substantially as described.

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

JOSEPH S. TURNER.

Witnesses:
G. W. GREGORY,
N. E. C. WHITNEY.