

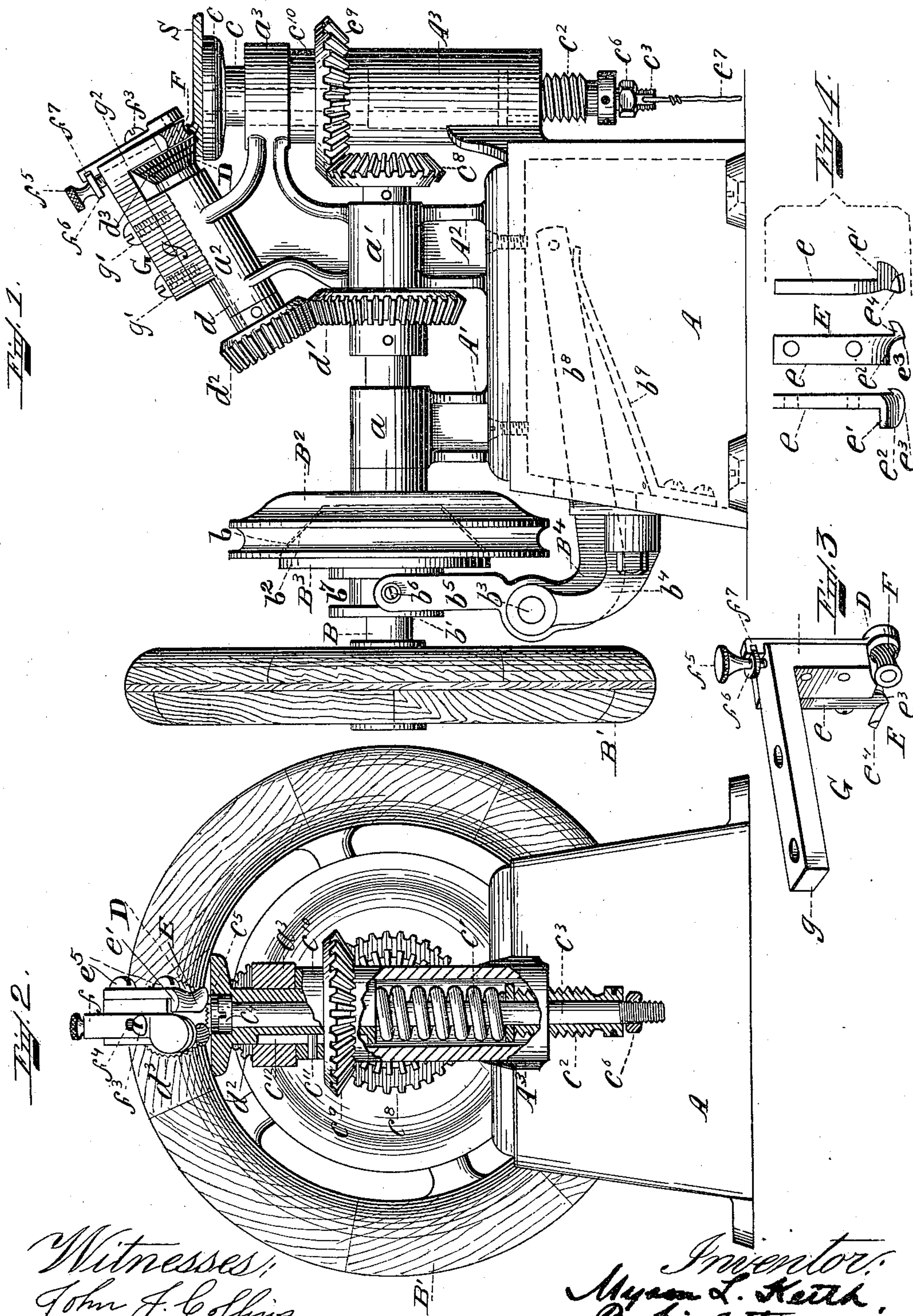
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M. L. KEITH.
LIP TURNING MACHINE.

(Application filed Apr. 1, 1897.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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LIP-TURNING MACHINE.

SPECIFICATION forming part of Letters Patent No. 610,326, dated September 6, 1898.

Application filed April 1, 1897. Serial No. 630,263. (No model.)

To all whom it may concern:

Be it known that I, MYRON LEE KEITH, a citizen of the United States, residing at Brockton, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Lip-Turning Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

In the manufacture of insoles for welted boots and shoes and of outsoles for turned boots and shoes it is customary to provide a lip which projects laterally from the sole adjacent its edge along the shank and fore part. The lip above referred to is commonly formed by splitting the sole along its edge and turning up and pressing back one of the divisions so formed, so that it will normally stand out substantially transversely to the plane of the face of the sole, the other division being left projecting in substantially the plane of the upper face of the sole to form the feather.

The present invention relates to improvements in machines for turning up and pressing back the lip as above noted, said machines being commonly termed "lip-turning" machines.

The object of the present invention is to provide a machine which will not only turn back the lip from the feather, but will so press the lip along the bend or fold that the lip after being turned will remain in the required position.

A further object of the present invention is to so arrange the feeding and work-supporting devices that the sole will be supported in a proper manner and the edge thereof positively gripped and fed past the lip-turning devices, operating at the same time to impart the proper "set" to the "feather" or edge of the sole.

A further object of the invention is to so construct the feed-wheel and arrange the same in the machine that the wheel itself performs both the feeding and guiding functions, thus obviating the necessity of providing an edge-gage for the machine and enabling a more compact arrangement of the lip turning and pressing devices to be obtained, whereby

soles having pointed ends may be readily and accurately operated upon.

To the above end the present invention consists of the devices and combination of devices which will be hereinafter described and claimed.

The invention is shown in the accompanying drawings, in which—

Figure 1 represents the same in side elevation. Fig. 2 represents a front elevation, parts being in section to show the construction of the work-support. Fig. 3 shows a perspective view of the bracket carrying the plow and lip-setting device. Fig. 4 represents front, side, and rear elevations of the plow.

Similar letters of reference represent corresponding parts throughout the several views.

In the drawings, A represents the frame, of suitable shape to support the working parts. Projected vertically from the frame A are the standards A' and A², the standard A' having a bearing *a* and the standard A² having bearings *a'*, *a*², and *a*³, as clearly shown in Fig. 1.

B represents the main shaft of the machine, mounted to turn in the bearings *a* and *a'*, but prevented from moving longitudinally therein by any suitable means. Mounted upon shaft B is a hand-wheel B', and a suitable clutch mechanism may be provided to control the rotation of said shaft.

The clutch mechanism of the machine of the drawings consists of a driving-pulley B², which is loosely mounted upon the shaft B and which may be rotated to rotate said shaft by a belt from any suitable source of power, said pulley having an inclined clutch-face *b*, forming the fixed member of the clutch. The movable member of the clutch B³ comprises a collar *b'*, splined to the shaft B to rotate therewith and adapted to have a limited movement along said shaft and which is provided with a cone-face *b*², adapted to engage the inclined face *b* upon the pulley B² to lock said pulley and shaft together to operate the machine. The movable member B³ of the clutch may be moved along said shaft B by any convenient mechanism, and it is preferred that the mechanism for this purpose shall act to normally maintain the clutch-faces *b* and *b*² out of contact and the machine at rest. Any suitable mechanism for actuating the

movable clutch member may be employed. That shown in the drawings comprises a bent lever B^4 , which is fulcrumed at b^3 upon a bracket b^4 or other suitable fixed part of the frame A.

The upper end b^5 of the lever B^4 is forked, and the arms thereof have studs or rollers b^6 , which engage a groove b^7 in the collar b' in a manner common to devices of this character. The end b^8 of the lever B^4 is connected by any suitable means to a foot-treadle, (not shown,) whereby the movable clutch member may be moved along the shaft B and the clutch-faces b and b^2 brought into contact to cause the shaft B to rotate and actuate the machine. In order to normally maintain the clutch-faces b and b^2 out of contact, the machine of the drawings has a suitable spring to act upon and raise the end b^8 of the lever B^4 , said spring being shown as a flat spring b^9 , secured to frame A in any suitable manner and having its free end bearing against the end b^8 of the lever B^4 .

In the present machine the sole to be operated upon is placed upon a work-supporting table, the face of which is substantially flat and horizontal, and said table is preferably arranged to be rotated in unison with the feed-wheel, the feed-wheel bearing upon the upper surface of the edge or feather of the sole, the work-support being sustained by a spring, whereby the edge of the sole or the feather is engaged by the parallel faces of the feed-wheel and work-support, and as the feed-wheel and work-support are rotated to feed the sole beneath the lip raising and turning devices the edge of the sole or the feather will be compressed and flattened out and shaped by the pressing action of the work-support and feed-wheel. The work-support is shown at C and is substantially a disk-shaped table carried upon a sleeve c , said sleeve c being mounted to rotate in a tubular bearing A^3 , projected from the forward end of the frame A, and in a bearing a^3 , projected from the front of the standard A^2 , the bearings a^3 and A^3 being placed in vertical alinement with each other. The sleeve c is adapted to have a longitudinal reciprocating movement along the bearings a^3 and A^3 for the purpose of moving the work-support C toward and away from the feed-wheel, the upward movement being preferably imparted by a suitably-placed spring, which in the machine of the drawings is shown as a coiled spring c' , placed within the tubular bearing A^3 and bearing at its upper end against the end of the sleeve c and at its lower end against a washer supported by an adjustable hollow screw c^2 , tapped into the bottom of the tubular bearing A^3 , whereby the tension of the spring c' may be adjusted and the pressure of the work-support against the bottom face of the sole may be increased or diminished. The work-support C is depressed by a rod c^3 , having a head c^4 loosely fitting a central recess c^5 in the face

of the work-support C, said rod passing loosely through the sleeve c and through the spring c' and adjusting-screw c^2 , the lower end of said rod being threaded and carrying a nut c^6 , which engages the end of adjusting-screw c^2 to limit the upward movement of the work-support C, the end of said rod c^3 being connected by a link c^7 to a suitable treadle, (not shown,) whereby it may be drawn down to depress the work-support, all as clearly shown in Fig. 2. The work-support C is rotated directly from the main shaft B by means of a bevel-gear c^8 , mounted upon the end of said shaft, and a bevel-gear c^9 , carried by a collar c^{10} , which is splined to the sleeve c by means of a pin c^{11} , projecting from the interior of said collar c^{10} and engaging a vertical groove c^{12} cut in the side of the sleeve c , whereby said work-supporting sleeve c is adapted to be rotated with the collar c^{10} and gear c^9 , but is permitted a free longitudinal movement through said collar and gear.

D represents the feed-wheel, which is substantially frusto-conical in form, the larger end arranged to engage in the angle formed by the lip and feather of the insole, as shown in Fig. 1, and to thus act as a gage or guide for the sole, as before described.

In order that the inclined face of the feed-wheel D shall be parallel with the upper surface of the work-support C at the point where said wheel is adapted to engage the feather or edge of the sole, and thus effectually clamp and feed the work, said wheel D is mounted upon a shaft d , held to rotate in the inclined bearing a^2 , as shown in Fig. 1. The feed-wheel D is also arranged to be driven directly from the shaft B and in unison with the work-support C by means of a bevel-gear d' , mounted upon the shaft B, and a bevel-gear d^2 , fixed to shaft d and meshing with the bevel-gear d' , the result being that the feed-wheel D and work-support C are synchronously actuated to feed the insole past the lip-turning devices. The inclined face of the feed-wheel C may be milled or serrated, as shown at d^3 , if desired, to insure a more positive gripping of the edge of the sole.

The lip turning and setting devices consist of a plow E and a setting-roll F, mounted upon a bracket G, said bracket having an arm g fixed to the upper surface of the bearing a^2 by the screws g' and having a downturned end g^2 , to which are secured the plow E and setting-roll F, as will now be described.

The plow E comprises a shank e , the lower end of which is extended laterally to the left, as shown at e' , and has a downwardly and backwardly curved face, as shown at e^2 , terminating in a sharp edge e^3 , from which extends rearwardly a toe-piece e^4 , which when the plow is in position upon the end g^2 of the bracket G is substantially parallel with the upper surface of the work-support C and the under surface of the feed-wheel D at the point where said feed-wheel contacts with

the work. The plow E is fixed to the side of the arm g^2 in any convenient manner, as by the screws e^5 , and when in position the toe portion e^4 thereof is adapted to fit closely beneath the edge of the feed-wheel D.

Located adjacent to the plow E and immediately adjacent the front face of the feed-wheel D is the lip-setting roll F, which is adapted to act upon and set the lip after the same has been lifted or turned up by the plow E as the sole is fed along. Said lip-setting roll F is preferably concaved, as shown, and milled or otherwise roughened and is mounted to turn upon a stud fixed to the inner face of a slide f , which is mounted for a vertical adjustment upon the front face of the arm g^2 by a stud f^3 , which engages a slot f^4 in said slide f . The slide f is adapted to be raised and lowered by any suitable means, such as the screw f^5 , provided with a collar or flange f^6 , engaging the forked end f^7 of the slide f , whereby the turning of said screw will act to raise or lower the slide f and the lip-setting roll F to position said roll relative to the height of the lip.

By concaving the lip-setting roll F, as shown, and mounting it upon the inclined stud said roll F acts upon the lip in an inclined direction and practically from the base or angle formed by the lip and feather to the edge of said lip, thereby more effectually setting and shaping said lip. It will be noted that by concaving the lip-setting roll F as the lip is turned the upper edge of the lip is allowed to roll over, so that the lip can be compressed along its base to give it the required set without jamming or breaking it down, a feature which is of great importance if the sole is to be covered with a reinforcing-covering indented over the lip.

The operation of the machine is as follows: The sole S, a section of which is shown in Fig. 1, is placed in position with its edge or feather between the feed-wheel D and the work-support C, the sole resting squarely upon the face of the work-support C and firmly supported thereby and pressed by the spring c' toward the feed-wheel D and the lip-turning devices. The plow E being inserted beneath the lip and power being applied to the shaft B, said shaft causes the feed-wheel and work-support to rotate, thus feeding the sole along and bringing the lip under the action of the

setting-roll F to cause said roll to impart to the lip the set and shape desired.

With slight modifications the machine of the drawings may be adapted to turn back and set a channel-flap of a channeled sole.

I am aware of the state of the art as disclosed in the following Letters Patent of the United States: Gusetti, No. 138,883, dated May 13, 1873; Ballou, No. 141,025, dated July 22, 1873; Chickering and Tuttle, No. 141,693, dated August 12, 1873; Fischer, Reissue No. 9,372, dated September 7, 1880, and Moody, No. 471,395, dated March 22, 1892, and I claim nothing shown therein; but I do not consider my present invention limited to the specific mechanism; but

I claim as novel and desire to secure by Letters Patent of the United States—

1. In a lip-turning machine, the combination with a lip-turning plow and a lip-setting roll located adjacent thereto, of a work-support arranged to hold the work against said plow and roll, the lip-setting roll being inclined relatively to the surface of the work-support, substantially as described.

2. In a lip-turning machine, the combination with a work-support, of a lip-turning plow and a concaved lip-setting roll located adjacent the plow and arranged to follow it along the edge of the sole, said lip-setting roll being inclined relatively to the work-bearing surface of the work-support, substantially as described.

3. In a lip-turning machine, the combination with a lip-turning plow and a lip-setting roll arranged adjacent to and following the plow, of a work-support rotating in a horizontal plane and a rotating feed-wheel arranged to enter the angle between the feather and lip of the sole, substantially as described.

4. In a lip-turning machine, the combination with a lip-turning plow and a lip-setting roll, of a work-support, and a beveled feed-wheel mounted on an axis inclined relatively to the axis of the work-support so that its gripping-face will be parallel to the surface of the work-support, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

MYRON LEE KEITH.

Witnesses:

WILLIAM ELLISON,
WENDELL S. HOWES.