

No. 647,548.

Patented Apr. 17, 1900.

E. E. WINKLEY.
SOLE MACHINE.

(Application filed Apr. 29, 1899.)

(No Model.)

4 Sheets—Sheet 1.

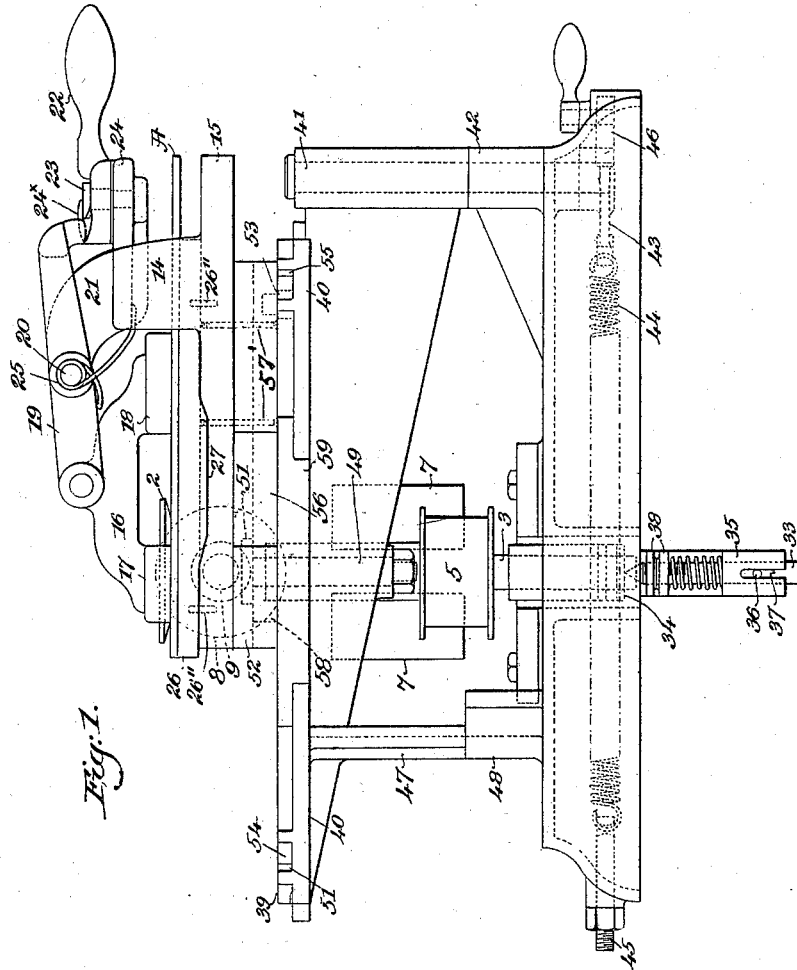


Fig. 1.

Witnesses:

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C. Kitching

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4 Sheets—Sheet 2.

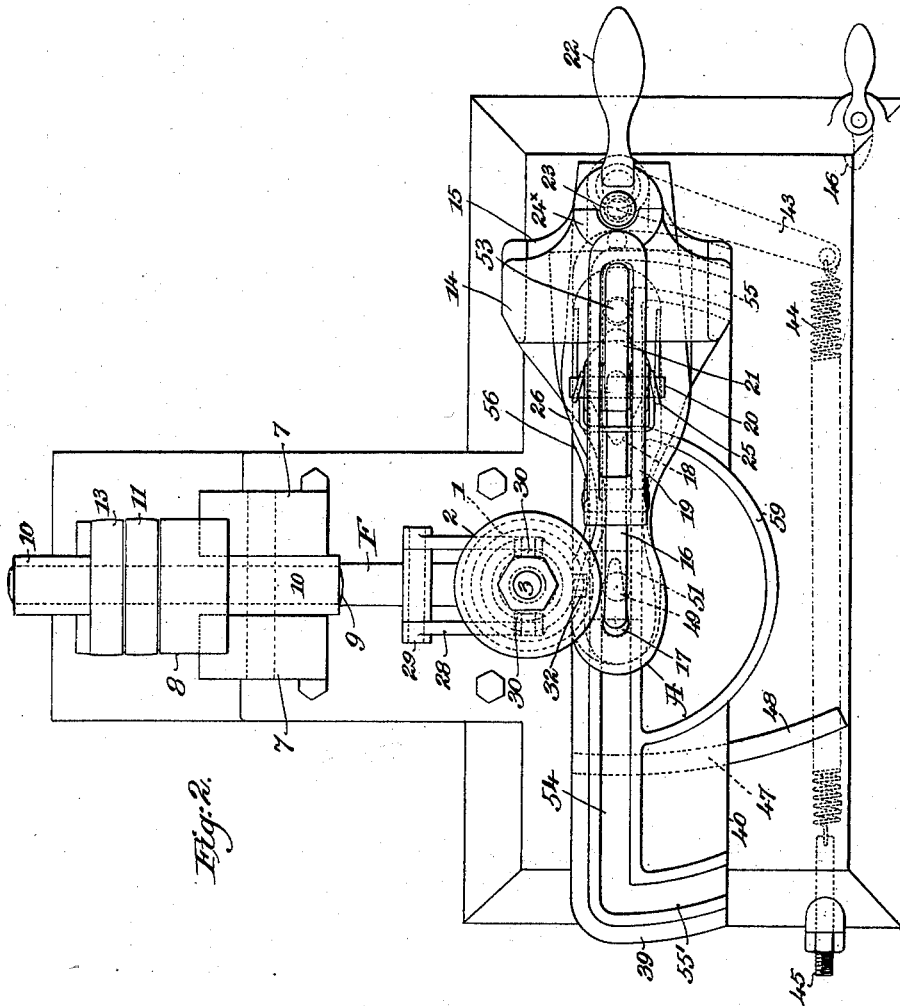


Fig. 2.

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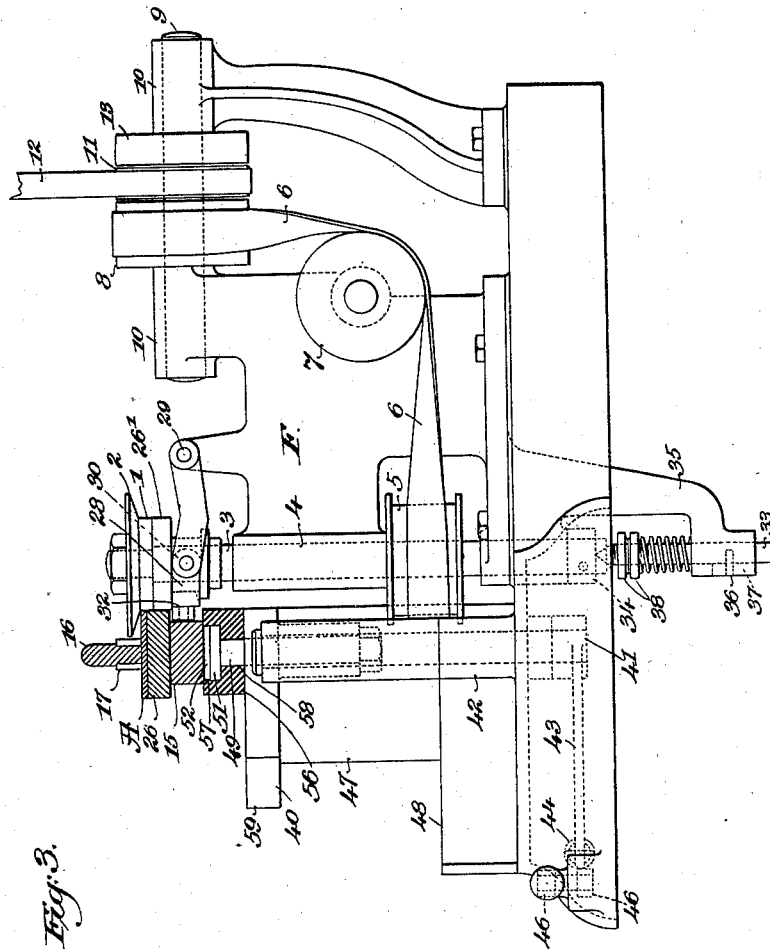
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4 Sheets—Sheet 4.

Fig. 4.

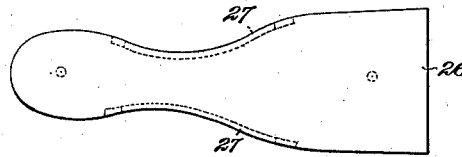


Fig. 5.

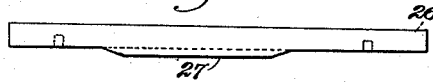


Fig. 6.

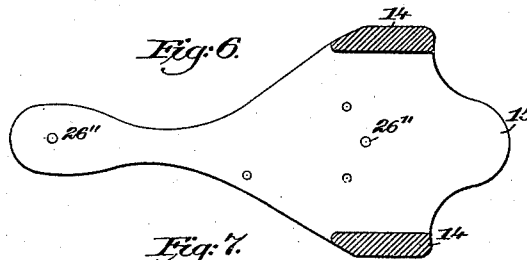


Fig. 7.

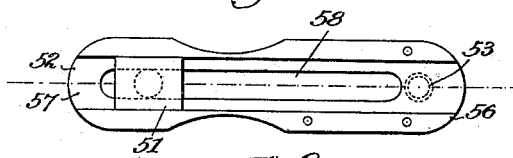


Fig. 8.

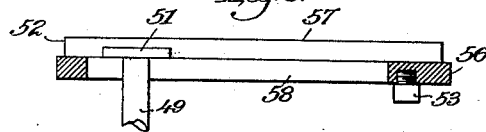


Fig. 9.



Fig. 10.



Fig. 11.



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UNITED STATES PATENT OFFICE.

ERASTUS E. WINKLEY, OF LYNN, MASSACHUSETTS.

SOLE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 647,548, dated April 17, 1900.

Application filed April 29, 1899. Serial No. 714,990. (No model.)

To all whom it may concern:

Be it known that I, ERASTUS E. WINKLEY, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Sole-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.

The present invention relates to improvements in sole-machines, and more particularly to a machine for rounding and skiving sole-blanks.

Heretofore it has been customary, after the welt has been stitched to the lasted upper and insole, to temporarily attach a roughly shaped or blocked sole-blank to the shoe, such blank being only approximately shaped and commonly made square at the heel and toe portions. After such blank has been attached to the shoe by an operation commonly known as the "sole-laying" operation it is formed to more accurately conform to the shape required in the finished shoe, and at the same time a channel is cut therein to receive the outseam, which attaches the sole to the welt. It has heretofore been the practice to reduce the thickness of the edge of the sole along the shank portion to give the shank of the finished sole a thinner and more desirable appearance. In so far as I am advised of the art this operation of thinning the sole along the edges of the shank, which is commonly called "skiving" the shank, has been accomplished either by skiving the shank of the roughly-shaped blank or else by skiving the shank of the formed sole after it has been temporarily attached to the shoe. The first of these methods has been found to be objectionable in that it is difficult to secure an even thickness of the edges at the inner and outer sides of the shank, and, further, because it is difficult to adjust the skived blank upon the shoe so that it will be laid in correct relation thereto to bring the skived portion into its proper position. Where this work of skiving the shank of the sole has been done after the sole-laying operation by any of the several forms of shanking-out machines or by hand, the sole is necessarily loos-

ened from the shoe at the shank, so that it is difficult to secure the successful operation of the outsole stitcher to properly secure the sole of the welt.

To overcome these objections is the object of the present invention, by the preferred embodiment of which I have produced a new sole-blank having a rounded heel and a rounded and skived shank and a block fore part. The use of this blank enables the operator to easily and correctly position the sole upon the shoe and does away with the use of shanking-out machines or the hand operation of shanking-out after the sole has been laid—that is to say, temporarily attached to the lasted upper and the insole.

To the above ends the present invention consists of a machine whereby at a single operation a block sole-blank may be rounded or trimmed around the shank and heel and skived along the edges of the shank portion. I desire to say in this connection that in so far as I am advised of the state of the art I am the first to produce a machine which will at one and the same operation round and skive a shoe-sole or any portion thereof, and it will be obvious to those skilled in the art that the machine hereinafter described may be, without any departure from the present invention, adapted to round the entire sole and skive any portion thereof upon which it is desired to perform such operation.

In the accompanying drawings, illustrating the preferred form of my invention, Figure 1 is a front elevation. Fig. 2 is a plan. Fig. 3 is a side elevation with parts shown in section. Figs. 4, 5, 6, 7, and 8 are detail views of parts of the machine. Fig. 9 is a plan of a rough sole-blank. Fig. 10 is a plan, and Fig. 11 is a section, of the finished sole-blank produced by my machine.

The machine consists generally of cutters for rounding the heel and rounding and skiving the shank of the sole-blank, a blank-carrier for supporting and holding the blank, and suitable pattern devices for guiding and controlling the relative movements of the carrier and cutters during the operation of the machine.

The cutter for rounding the heel and shank of the sole-blank in the illustrated embodiment of the invention is shown as a rotary

knife 1, which describes a cylindrical path. The cutter for skiving the shank is shown as a rotary knife 2, which describes a frusto-conical path the angle of inclination of which corresponds to the angle of inclination of the skiving to be removed from the shank of the sole-blank thereby. In the machine of the drawings the cutters are mounted upon a cutter-shaft 3, mounted in a suitable bearing 4 upon the frame F of the machine and carrying a pulley 5, adapted to receive a belt 6, running over idler-pulleys 7 from a pulley 8 on a shaft 9, mounted in bearings 10 10, in turn driven from any suitable source of power by the belt 12, running on the fast pulley 11 and adapted to be thrown onto the loose pulley 13 when the machine is stopped.

The blank-carrier consists of suitable means for supporting and holding the blank and in the machine of the drawings is shown as having a frame 14, with a base 15 and a clamp 16, between which and the base the sole-blank A is adapted to be clamped. The clamp 16 is preferably provided with two clamping-faces 17 and 18, adapted to engage, respectively, the heel and fore part of the sole-blank, and is carried by a lever 19, pivoted on the pin 20 of the upwardly-projected arm 21 of the frame 14. Any suitable means may be provided for operating the lever 19 to clamp the sole-blank, that shown in the drawings consisting of the hand-lever 22, pivoted on the pin 23, supported in the part 24 of the frame 14 of the carrier, which lever presents a spiral cam-surface 24* to the under side of the end of the lever 19 and when turned about its pivot 23 in one direction raises the end of lever 19, thus clamping the sole-blank. A spring 25 raises the clamp 16 when the lever 22 is turned in the opposite direction to release the sole-blank.

The pattern device for guiding the rounding-cutter preferably consists of a templet 26, supported on the base 15 of the carrier and upon which the sole-blank rests directly. The shape of the templet corresponds in form to the desired shape of the heel and shank of the finished sole-blank, and its edge is intended to cooperate with the collar 26' on the cutter-shaft, so as to govern the operative relation to the rounding-knife and the work. The templet is held in proper position on the carrier by the pins 26''.

In the operation of the machine of the present invention it is designed that the cutters 1 and 2 shall operate simultaneously to round and skive certain portions of the shoe-sole, as along the shank portions thereof, and that the cutter 1 shall act independently of the cutter 2 to round the shoe-sole, as around the fore part and heel, or, as in the illustrated embodiment of the present invention, wherein the heel and shank portions only of the sole-blank are rounded, such independent action of the cutter 1 takes place in rounding the heel of the blank. This action of the cutters

1 and 2 may be accomplished in many ways; but in the machine of the drawings a simple manner of securing the same has been shown, which consists of means whereby at certain times the skiving-cutter is moved toward or away from the sole-blank, such movement being accomplished and controlled by certain pattern mechanism, which will now be described.

In the illustrated embodiment of the invention there are provided on the under side of the templet 26 suitable cams 27, the position of which determines the places where the skiving-cutter shall be brought into and withdrawn from operation and the depth of which determines the depth of the cut made by the skiving-cutter. These cams are adapted to cooperate with a yoke 28, pivoted to the frame at 29 and provided with rolls 30, which enter a groove 31 in the cutter-shaft 3, and carrying a roll 32, adapted to be depressed by the cams 27 to lower the skiving-knife. The cutter-shaft 3 is made capable of vertical movement in its bearing and normally held in its raised position by a spring-pressed pin 33 and prevented from rising beyond a certain height by a collar 34, adjustably secured on the shaft. The pin 33 is supported in a suitable bearing in line with the shaft in a bracket 35, depended from the main frame of the machine. A pin 36, working in the groove 37, holds the pin 33 from rotation, and the pressure of the spring may be adjusted by means of the lock-nuts 38, screwed on the pin 33.

The templet 26 is shown in detail in Figs. 4 and 5 of the drawings. The outline as shown in Fig. 4 corresponds with the shape of the heel and shank of the finished sole-blank. The cams 27 on the under side of the templet determine the places where the skiving-cutter shall be brought into and withdrawn from action and the depth of the skiving cut, for where the cams 27 begin to depress the skiving-cutter there begins the skiving, and where the cam fades away, permitting the skiving-cutter to rise, there ends the skiving, the position of the cams thus determining the location of the skiving, and the depth of the cut, for when the depth of the cams is made greater the depth to which the skiving-cutter will be depressed will be increased and the depth of the skiving cut will be correspondingly increased. The cams 27 and the yoke 28 thus constitute means for bringing into and withdrawing from operation the skiving-cutter, at the same time determining the location and depth of the cut made by the skiving-cutter. It will of course be understood that the rounding-cutter acts at all times around that portion of the sole which it is desired to round.

A support is provided for the blank-carrier to maintain it in proper operative relation to the cutters. This blank-carrier support by

preference presents the plane surface 39, upon which the blank-carrier may be moved to present it to the knives.

The machine just described is complete and operative for performing the described operations upon a block sole-blank to transform it into my improved sole-blank having rounded heel and rounded and skived shank; but it is preferred to use in connection therewith means normally acting to press the sole-blank against the rounding-cutter, and while any suitable means may be employed for this purpose it is preferred to embody such means in the form illustrated in the accompanying drawings, in which the plane surface 39 above referred to is the upper surface of a table 40, movable toward and from the cutters in conformity with the outline of the templet and with which the carrier is operatively connected to move therewith. The table is shown as supported on the shaft 41 at one end of the table, supported in a suitable bearing 42 in the frame, the shaft being secured to the table and having on its lower end an arm 43, by which the table is adapted to be swung by a spring 44, attached thereto normally to press the table toward the cutters, the opposite end of the spring being secured to the adjusting-screw 45, by which the force with which the table is pressed in the direction of the cutters may be adjusted. There may also be provided means for holding the table away from the cutters, and for this purpose there is shown the hook 46, adapted to engage and hold the arm 43 in opposition to the pull of the spring 44. This constitutes a useful adjunct when it is desired to remove a finished blank and insert a new one in the carrier. The opposite end of the table from the shaft is preferably provided with a downwardly-extended leg 47, adapted to rest upon a slide-way 48 to support and steady the table. Suitable operative connections between the blank-carrier and the table are provided, whereby the table will press the carrier against the cutters and by means of which the manipulation of the blank-carrier by the operator may to a certain extent be aided and controlled. For this purpose the table is provided with a bolt 49, revolvably mounted in a suitable bearing therein and having on its upper end a head 51, adapted to be received in the T-shaped slot 52 in the under side of the blank-carrier, and the blank-carrier is provided with a downwardly-projected pin 53, adapted to be received in the groove 54 in the upper surface 39 of the table. The groove 54 is intersected at its middle by the bolt 49, which passes down through it, and the ends 55 55' of the groove are arc-shaped, with the bolt 49 as the center of curvature. The block 56, secured by any suitable means, as the screws 57', (see Fig. 1,) to the base of the carrier, contains the T-shaped slot 52 referred to, the upper part 57 of the slot being continuous throughout the length of the block and the lower part 58 of the slot being closed

at its ends, (see Figs. 1, 7, and 8,) so that when the carrier is moved to its extreme right-hand position the shank of the bolt 49 engages the end of the lower part 58 of the slot 52, and at the same time the pin 53 is brought to the end of the straight portion of the groove and is ready to enter the curved end thereof. Then the carrier may be turned on the bolt 49 as a pivot, and the pin 53 will move out through the one curved end of the groove 54, around through space and enter the other curved end of the groove, the carrier during the intervening interval being supported on the forward extension 59 of the table.

The operation of the machine of the drawings is as follows: The table 40 being swung forward and held there by the hook 46, and the blank placed in the blank-carrier and clamped therein, the carrier occupying a position on the table to the left of that shown in Fig. 1, the machine is ready for operation. The operator grasping the carrier releases the hook 46 and permits the spring to move the table toward the cutters. The rounding-cutter commences its cutting action on the sole-blank on one side thereof and in front of the shank, as at *a* in Fig. 10, the operator, all of the time permitting the table to be freely acted upon by its spring to tend to move it toward the cutters, moves the carrier to the right, and the action of the rounding-cutter on the blank rounds the shank, and the cam 27 at the proper time depresses the skiving-cutter, causing it to skive the shank as the carrier is moved along, the position of the cam 27 determining the location of the skiving and depth of the cam determining the depth of the cut made by the skiving-cutter. The motion of the carrier to the right is continued until the bolt 49 brings up against the end of the slot 58, and then the carrier is swung around on the bolt 49 as a pivot to round the heel, the pin 53 moving in the right-hand curved end 55 of the groove 54, out thereof, and around and into the other curved portion 55' of the groove. After the carrier is thus turned end for end it is moved to the right again, and the opposite side of the blank is rounded and skived in the same manner as the former side, the operation concluding on the opposite side of the sole-blank and in front of the shank, as at *b* in Fig. 10. The table is then swung outwardly and locked by means of the hook and the sole-blank is removed and another inserted in the carrier. The hook is released and the rounding and skiving begin again at *b*, on the opposite side of the blank from the next previous one, by moving the carrier to the left and swinging it around to the right, and are completed by moving it to the left in its reversed position, concluding at *a*, whereupon the table is brought forward again, the blank removed, and the machine is ready to repeat the cycle of operations.

While I have described herein a new sole-blank having a rounded heel and rounded and skived shank and a block fore part, I do not

claim the same herein, as I have made it the subject-matter of another application, filed by me August 12, 1899, Serial No. 727,000.

Having thus described my invention, I claim as new and desire to secure by Letters Patent of the United States—

1. In a sole-machine, the combination with sole-rounding mechanism comprising a rounding-cutter, of a skiving-cutter, and pattern mechanism for changing the relative position of the sole-blank and skiving-cutter to bring the skiving-cutter into, and withdraw it from operative position during the operation of the rounding mechanism, substantially as described.

2. In a sole-machine, the combination with sole-rounding mechanism comprising a rounding-cutter, of a skiving-cutter and pattern mechanism for bringing the skiving-cutter into, and withdrawing it from, operative position, and for determining the location and depth of the cut made thereby, substantially as described.

3. In a sole-machine, the combination with a sole-rounding cutter, of a skiving-cutter,

and a templet for guiding the work with relation to the rounding-cutter, cams carried by the templet and connected mechanism for bringing the skiving-cutter into, and withdrawing it from, operative position, substantially as described.

4. In a sole-machine, the combination with a rotary cutter-shaft having rounding and skiving cutters mounted thereon, of a spring-pressed table, a sole-blank carrier, operative connections between the table and carrier whereby the table tends to press the carrier against the rounding-cutter, a templet for guiding the carrier with relation to the rounding-cutter, cams carried by the templet and connected mechanism for bringing the skiving-cutter into and withdrawing it from, operation, substantially as described.

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

ERASTUS E. WINKLEY.

Witnesses:

T. HART ANDERSON,
A. E. WHYTE.