July 7, 1942. C. L. FLINDT 2,288,897

SOLE TRIMMING MACHINE

Filed July 28, 1939 2 Sheets-Sheet 1

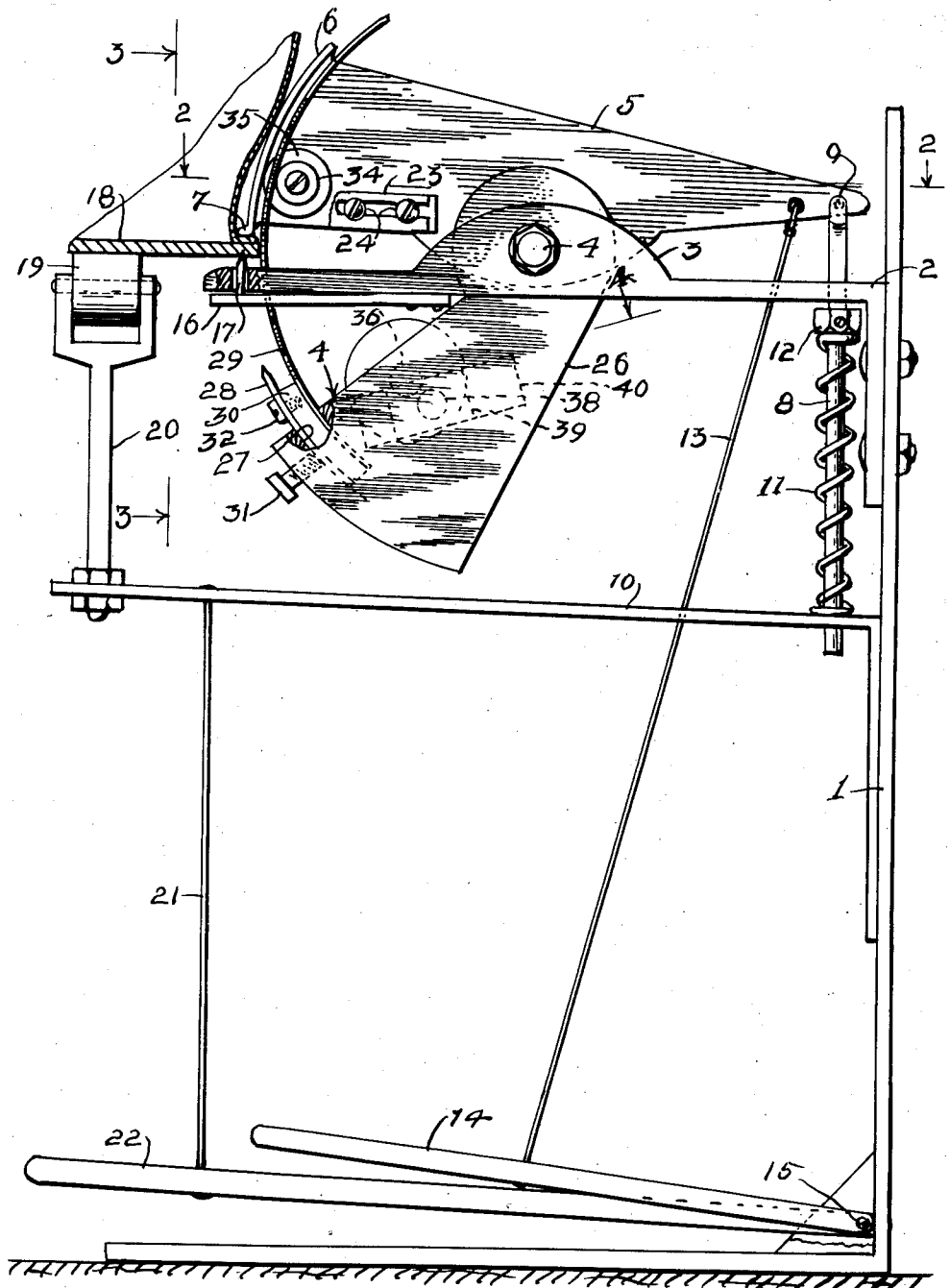

FIGURE 1

INVENTOR
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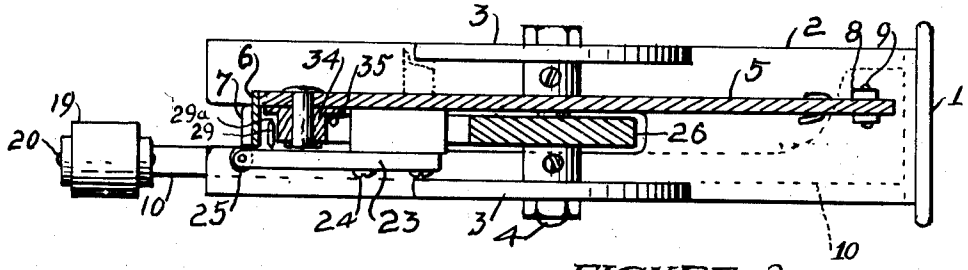

FIGURE 2

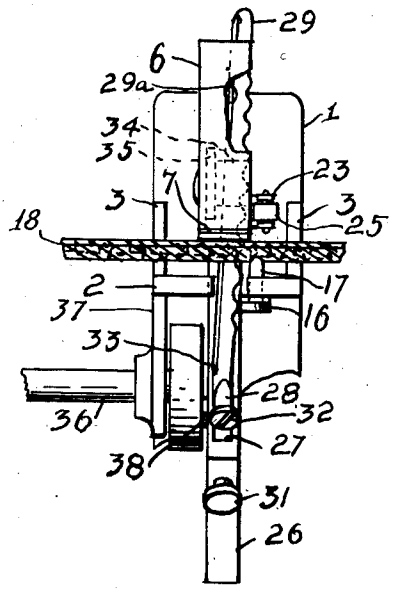

FIGURE 3

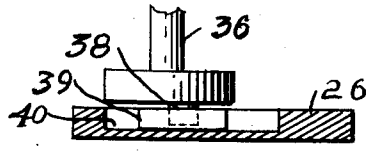

FIGURE 4

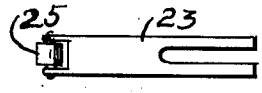

FIGURE 5

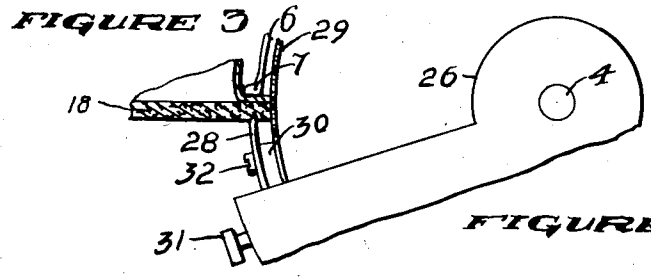

FIGURE 6

INVENTOR

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Patented July 7, 1942 2,288,897

UNITED STATES PATENT OFFICE

2,288,897

SOLE TRIMMING MACHINE

Charles L. Flindt, San Jose, Calif.

Application July 28, 1939, Serial No. 287,093

11 Claims. (Cl. 12—18)

The invention relates particularly to a machine for trimming shoe soles, and is useful for trimming the soles and heels of shoes preparatory to their introduction to the stitching machines for sewing.

One object of the invention is to provide a machine particularly adapted to work on rubber, cord and composition bottoms as well as leather.

Another object is to provide a machine that will form a groove in the shoe sole simultaneously with the trimming, to house the subsequent stitching.

A further object is to provide a machine of the character indicated that will enable the operator to trim closely to the shoe when rounding in the shoe arch, and to perform this operation easily and without danger of injury to the shoe upper.

Finally, it is an object to provide a machine of the character indicated that will be simple, serviceable and practical; that will smoothly trim a sole and heel, regardless of the material used, and prepare the same for stitching, in one operation, and that will effectually protect the shoe upper against injury during the operation by the cutter used; and wherein the cutting blade is so formed and placed that it will cut or trim faster than devices heretofore used, and at the same time permit easier feeding of the work.

Further objects and advantages will appear in the following description and in the drawings, in which,

Figure 1 is a front elevation of a machine embodying my invention, parts being broken away.

Figure 2 is a sectional view on line 2—2, Figure 1.

Figure 3 is a left side elevation of a portion of the machine as indicated at 3—3 on Figure 1, parts being broken away.

Figure 4 is a detail section of a portion of the operating mechanism of the trimming blade taken on line 4—4 of Figure 1.

Figure 5 is a detail front elevation of the shoe-top gauge.

Figure 6 is a detail illustration of a portion of the grooving and blade operating mechanism.

The machine as disclosed comprises a supporting frame 1 carrying a horizontal table portion 2 provided with upstanding side flanges 3—3 supporting a transverse and fixed shaft 4.

At 5 is a rocker arm journaled on the shaft 4 and having one end extending to a point adjacent the free end of the table 2 where it is fitted with an arcuate plate 6. The plate 6 extends at right angles to the plane of arm 5 and is concentric with shaft 4, its bottom end being formed into a foot-piece 7. The other end of the arm 5 is pivotally engaged by a vertical rod 8 as at 9, the rod passing downwardly through the laterally extending member 10 on frame 1. A coiled spring 11 is mounted on the rod 8 to seat against member 10 and a stop 12 fixed to the rod just below table 2. A flexible cable 13 is connected the arm 5 adjacent rod 8, and to a lever or pedal 14 pivotally mounted on the frame 1 at 15.

Mounted on the under side of table 2 is a spring member 16 carrying an upstanding shoe supporting element as 17 that projects above the top surface of table 2.

In placing the material to be trimmed the operator operates pedal 14 to raise the presser-foot 7 and then places the shoe sole 18 on the support 17. When the pedal 14 is released the spring 11 operates to press the foot piece 7 firmly against the work, even to the point where the spring member 16 is slightly depressed as shown. By operating pedal 14 the presser-foot may be elevated to accommodate any thickness of sole, and by adjusting the position of stop 12 any desired clearance can be maintained below the presser-foot. By pressing on pedal 14 until the clearance between the presser foot and the support 17 is enough for heavy leather, and then adjusting stop 12 to contact with frame 2, clearance for medium thick leather, in loose fit relation between the presser foot and the support, is provided; this is desirable when trimming such soft substance as crepe rubber soles and such where pressure thereon retards feeding.

To further support the work I provide a roller 19 journaled on standard 20 which in turn is mounted on the free end of member 10 which is a resilient member. A cable 21 connects the member 10 to a pedal 22 which is pivotally mounted on frame 1 at 15.

When the work is in position it is effectually held against slipping by the sharp top edge of support 17, and by operating pedal 22 and depressing roller 19 the work may be firmly supported at any desired inclination necessary to permit close trimming in the arch of a shoe.

If, in operating the machine it is desired to trim the sole flush with the welt, then the welt itself is used as a guide for the blade about to be described, but when it is desired to trim the welt and sole simultaneously, then a gauge must be used. The gauge comprises a member 23 longitudinally adjustable on the free end of arm 5 as at 24 and fitted with a terminal roller 25. When in use the roller 25 is projected beyond the end

of the arm 5 and the edge of plate 6 and adjusted to contact the shoe upper, the amount of overhang past the upper that the sole and welt will have being governed by the adjustment of the roller.

To effect the trimming I provide an arm 26 journaled on the shaft 4 to move in a plane parallel with the plane of arm 5, and extending angularly downward relative to the plane of table 2. A recess 27 is provided in the forward edge of this arm and near its free end, and in the recess are seated a grooving punch 28 and a trimming blade 29 separated by a spacer 30 and held rigidly in place by a set screw 31. The punch 28 is further secured to the part 30 by a screw 32. This arrangement secures the punch 28 and blade 29 securely in position, yet permits their quick and easy removal for changing.

The blade 29 is arcuate in form and disposed in concentric relation to shaft 4. This blade is also inclined forwardly in the direction of its cutting edge from a point adjacent its seat in arm 26, as shown at 33 and the effect of this is to cause faster cutting; this follows for the reason that the cutting stroke is on the downward movement and the blade advances in the cut it makes because of the said forward inclination; also it will be noted that presser foot 6 at all times is between the blade and the upper of the shoe and protects same from possible injury by the blade. It will also be noted that the blade has a wavy hooked cutting edge which in practice cuts more rapidly than a smooth edge.

At 34 is shown a roller mounted on the arm 5 in a position to support the blade 29 from the back. The roller is provided with a flange 35 on the end adjacent the arm 5 and in a position to contact and support the rear edge of the blade 29 at the beginning of its cutting stroke. Such rear edge support of the blade is not necessary during the major portion of the cutting stroke because the pressure on the blade is relieved by the cutting operation.

The arm 26 is reciprocated in the following manner. A drive shaft 36 is mounted on the frame 1 in any suitable manner as 37 and provided with a terminal crank 38 which in turn is journaled in a shoe 39 slidably mounted in a guideway 40 in the arm 26. By rotating the shaft 36 the arm 26 is reciprocated on its shaft 4 through the medium of the crank and sliding shoe.

At the same time that the blade 29 is reciprocated as above described the grooving punch 28 is similarly operated, and its position relative to the blade 29 is such that each time the blade 29 is advanced to its uppermost position the punch is likewise moved upwardly until it strikes the work, or shoe sole 18. The continuous operation of the punch 28 as a unit with the cutting blade causes it to form a groove in the bottom of the shoe sole to receive the stitching, and this groove is of uniform depth because the punch 28 operates directly opposite the presser-foot 7. The action of punch 28, as it grooves the shoe sole, causes an intermittent upward movement of the presser foot; the spring 11 is of such strength as to allow the slight lift desired for this arrangement enables easier hand feeding of the work against the blade than would be possible in case the shoe sole was in continual contact with its support. It will be noted that while the cutting blade 29 operates against the resistance of the part 17, while the grooving element operates against the resistance of the presser-foot 7, and that the blade 29 may also have its rear edge sharpened as at 29a to make it easier for the blade to follow a sharply curved cut in firm materials.

Having thus described my invention what I claim as new and desire to protect by Letters Patent is:

1. The combination in a sole trimming machine of devices for supporting the sole of a shoe while being trimmed, a blade in arc form with the face thereof perpendicular to the plane of the said arc and having a sharpened edge extending along one edge of the length of the blade for trimming the said sole, means mounting the said blade for oscillation about an axis equidistant from all points on one face of the said blade, means for oscillating said blade mounting means thereby to oscillate the blade in a to-and-fro manner to draw the said sharpened edge against the said sole to trim same, and holding means for the said sole pivoted on the same axis line as that of the said blade to insure thereby a constant clearance distance between the blade and the holding means in holding soles of different thicknesses.

2. The combination in a sole trimming machine, of a unit mounted on an axis which extends in the direction of the trimming path, a blade with one of the edges of its length sharpened for trimming a shoe sole and formed normally in rigid arcuate shape with the cutting edge of the blade at right angles to the curve of the blade to allow closer entry toward the arch of the shoe when trimming the shank of the sole, means attaching the said blade to the said unit with all points on one side and on the cutting edge of the blade equidistant from the said axis, means imparting motion to the blade through the said unit obtaining a drawing cut of the said sharpened edge against the shoe sole to trim same with the naked blade, means protecting the upper of the shoe from possible injury from the sharp edge of the blade, and means for supporting and holding a shoe sole while trimming same.

3. The combination in a sole trimming machine, of an oscillating mechanism, a blade with a sharpened edge extending along one edge of its length, said blade being formed into arcuate shape with the cutting edge thereof at right angles to the curve of the blade obtaining thereby clearance for that part of the blade passing the upper of the shoe when the operator of the machine trims very close when shaping the shank portion of the sole, means attaching the blade to the said mechanism, devices supporting and holding the sole of a shoe while same is being fed against the said blade to trim it, means guiding the blade to insure accurate cutting of the naked blade through the work, a foot operative member controlling the said sole holding device to facilitate the introducing or removing of the shoe sole to or from the machine thereby obtaining freedom of the hands for exclusive duty directing and holding the work, and shoe upper protecting means comprising a device for contacting with the upper in position to prevent engagement of the blade with the overhanging portion of the upper held out in a prominent and protruding position by the last in the arch portion thereof at the time the machine operator trims the shank section of the sole.

4. The combination in a sole trimming machine, of a blade in arc form with the sides thereof perpendicular to the plane of the said

arc and having a sharpened edge extending along one edge of the length of the blade for trimming a shoe sole, means mounting the said blade for oscillation about an axis equidistant from all points on one side and the cutting edge of the said blade, means for oscillating said mounting means to draw the sharpened edge of the blade in a to-and-fro manner against the said sole to trim same, holding means for the said sole arranged to insure a constant clearance distance between the blade and the holding means when holding soles of different thicknesses, and means protecting the upper of the shoe sole from all possible injury from the said sharpened edge when the operator trims the closely cut shank portions of the sole in the arch of the shoe.

5. The combination in a sole trimming machine, of devices supporting and holding a shoe sole while same is being trimmed, a blade with one of the edges of its length provided with a toothed sharpened edge for engagement with the sole and formed in arcuate shape with the cutting edge thereof at right angles to the curve of the blade to enable thereby closer entry toward the shoe when trimming the shank of the sole, means imparting motion to the said blade to trim the sole with a drawing cut of the blade, means projecting above the surface of the said sole support having capacity to assist in holding the sole when the blade arrives on or near the edge of the work, and a foot operative member attached to the said device holding the shoe sole obtaining for the operator control for releasing the said holding device when introducing or removing the work to or from the machine thereby insuring exclusive use of the hands for directing the work.

6. The combination in a sole trimming machine of a blade in arcuate form with both edges thereof in identical curvature with one of the edges of its length sharpened for engagement with a shoe sole for trimming same with a drawing cut, said blade having the other edge beveled to produce a thinner edge than the middle of the blade for the purpose of reducing the friction caused by the rear edge of the blade binding against the cut off edge of the sole and the body of the sole when trimming a sharply curved toe or shank of firm material, a carrier for the said blade and means attaching the blade thereto, means obtaining an intermittent forward movement of the blade in the cut it makes to produce more effective trimming, a support for the sole, a device holding the shoe sole on the support while trimming same, a foot controlled member attached to the said shoe holding device for use by the operator of the machine when introducing or removing the shoe sole to or from the machine to thereby permit the use of both hands for the exclusive use of holding and directing the shoe and shoe sole when trimming, and means protecting the upper of the shoe from possible injury comprising a device contacting the upper in position to prevent the passing blade from engaging the upper as the operator trims close in the arch position when cutting the shank of the sole.

7. The combination in a trimming machine supporting and holding a shoe sole while trimming it, a blade with one edge of its length toothed and sharpened for engagement with the said sole, a carrier for the blade and means attaching the blade to the carrier, means imparting motion through the said carrier to obtain a drawing motion of the said blade against the sole to trim same, means intermittently lifting the sole from its support thereby obtaining easier feed of the work for the operator than would be true were the holding device keeping the work in continual contact with its support, means protecting the upper of the shoe from all possible accidental injury from the sharp edge of the blade, means contacting the blade directing its path, a support for the said sole located adjacent to the runway of the blade and additional contact for the sole supporting it away from the first mentioned support near the middle of the sole in position to insure a constant angle relationship of the cut made by the blade to the bottom of the sole when trimming the toe and ball portions thereof, and means obtaining clearance for that part of the blade passing the arch of the shoe when the shank of the sole is being trimmed.

8. The combination in a sole trimming machine, of a support for a shoe sole, a blade with a sharpened edge extending along one edge of its length for engagement with the said sole to trim same, a device for holding the said sole on its support while trimming it, adjustable means obtaining holding pressure on the sole in firm or loose relationship as desired by the operator of the machine while trimming, means parallel with the blade and extending as high as the arch of the shoe for protecting from possible injury by the blade that part of the shoe upper held out prominently by the protruding part of the last in the arch when the operator trims the closely cut shank portion of the sole, a device contacting the blade to guide same located on the supported side of the work, another blade guide device permanently located adjacent the opposite side of the work from the supported side and together with the first mentioned guide obtaining accurate movement of the naked blade through the work, means gaining clearance for that part of the blade passing the arch of the shoe when the shank thereof is being trimmed, and a foot operative member attached to the said device for holding the sole and arranged to enable the operator of the machine to release the said device when introducing the said shoe or removing it from the machine thereby obtaining for the operator exclusive use of the hands in holding and directing the shoe and shoe sole as he feeds the latter against the trimming blade.

9. The combination in a shoe sole trimming machine, of a blade with a longitudinal sharpened edge for engagement with a shoe sole, a carrier for the blade, means imparting motion to the carrier to produce a drawing action of the blade against the sole to trim same, means holding the said sole against the welt of the shoe comprising a device contacting the welt of the shoe and another device contacting the bottom of the sole and arranged to hold the welt and sole together to thereby assist the operator of the machine as he feeds the work against the blade, means intermittently vibrating the sole and welt between the said holding devices to enable easier feed of the work against the blade by reducing the resistance to the feeding operation which is present when the said holding devices are in continual contact with the welt and sole and hold same together firmly, a support for the sole of the shoe located adjacent to the runway of the blade and additional support for the sole of the shoe

located away from the first mentioned support toward the middle of the sole in position to insure a constant and even angle of the cut made by the blade in its relation to the bottom of the sole when the operator trims the ball and toe sections, and means protecting the upper of the shoe from all possible injury by the blade when the operator trims the shank of the sole.

10. The combination in a sole trimming machine, of devices for supporting and holding the sole of a shoe while trimming same, a blade with one of the edges of its length provided with saw teeth for engagement with the said sole, a carrier for the said blade and means attaching one end of the blade thereto, means obtaining a forward movement intermittently of the blade in the cut it makes as the blade is drawn against the sole to insure more effective cutting, means imparting motion to the said blade through its carrier to obtain the said drawing motion of the blade against the sole, said motion being of sufficient length to cause a portion of the blade to pass by the upper of the shoe after or before severing the marginal portion of the sole, upper protecting devices comprising means for contacting the upper above the insole line of the shoe in position to prevent accidental puncturing by the free end of the said blade of that part of the upper held out in an overhanging position in the arch of the shoe at the time the operator trims the shank of the sole, and means for creating a channel in the said sole in which the stitch may be housed when the sole is sewed.

11. In a machine of the class described, the combination, of a blade provided with a longitudinal sharpened edge, said blade being formed into arcuate shape with the cutting edge thereof at right angles to the curve of the blade obtaining thereby clearance for that part of the blade passing the upper of the shoe when the operator of the machine shapes the shank of the sole, a carrier for the blade and means imparting motion through the carrier to oscillate the blade, said motion causing part of the blade to pass by part of the upper of the shoe, means causing an intermittent forward movement of the blade in the cut it makes, means for contacting the said upper above the insole line of the shoe in position to prevent accidental puncturing by the free end of the blade of that part of the upper held out in an overhanging position in the arch of the shoe at the time the operator trims the shank of the sole, and means for contacting the upper of the shoe and gauging therefrom to space the amount of sole overhang the trimmed edge will have to thereby trim both the welt and sole simultaneously with a uniform sole extension.

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