

April 23, 1940.

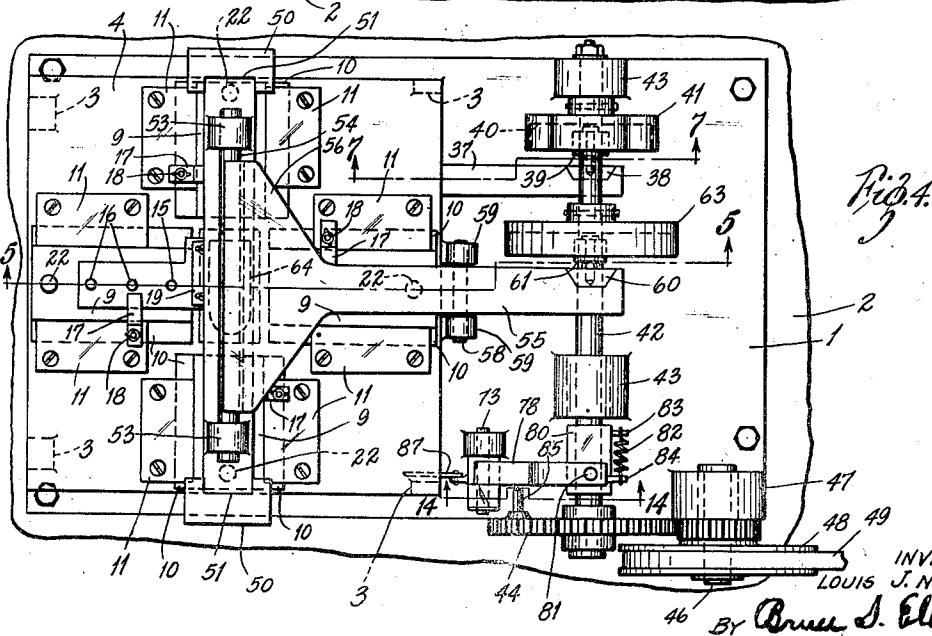
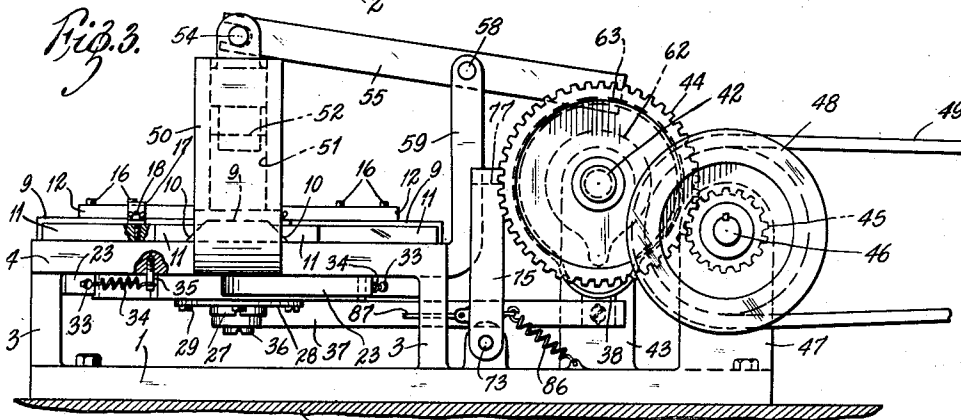
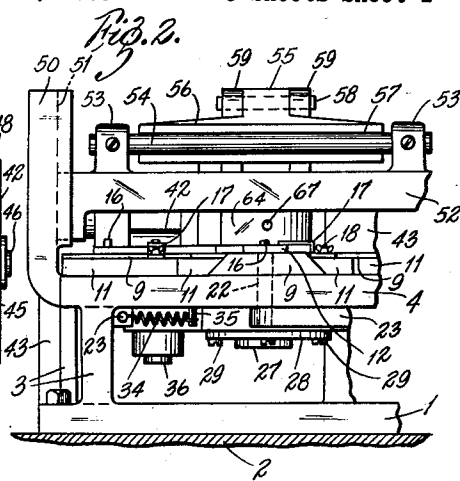
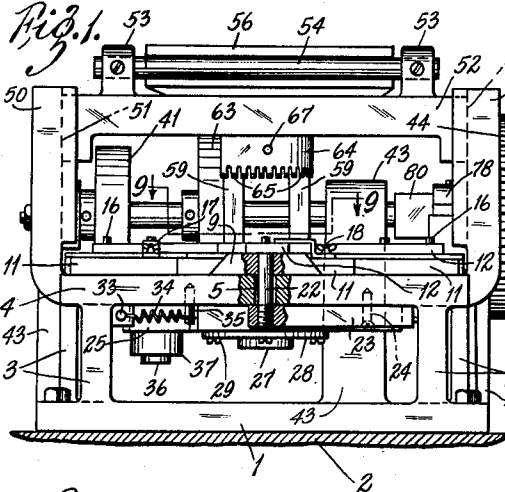
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2,198,456

MACHINE FOR TURNING AND BINDING THE EDGES OF LEATHER

Filed May 11, 1939

3 Sheets-Sheet 1



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MACHINE FOR TURNING AND BINDING THE EDGES OF LEATHER

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3 Sheets-Sheet 2

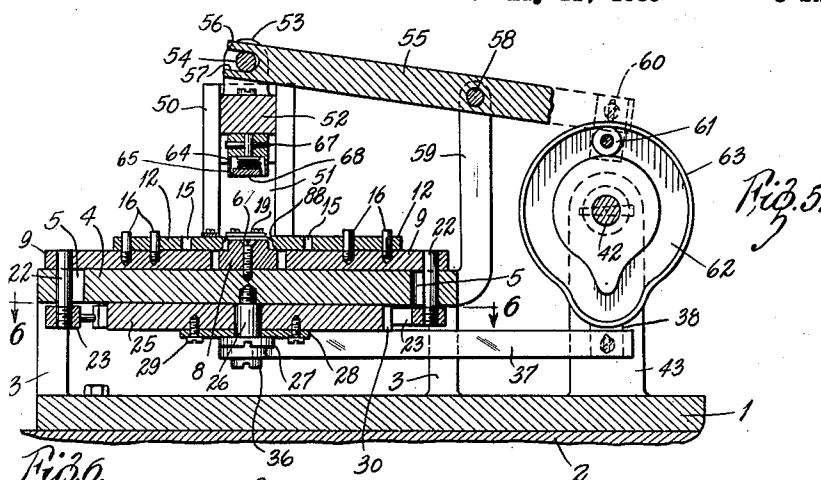


Fig. 5.

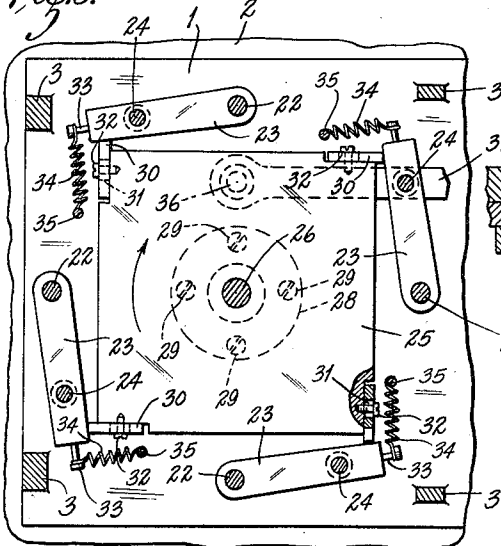


Fig. 6.

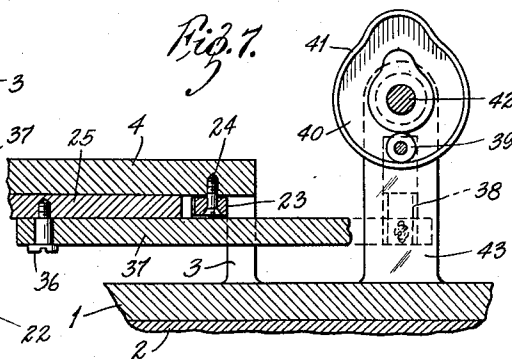


Fig. 7.

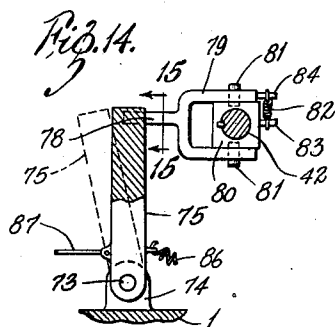


Fig. 14.

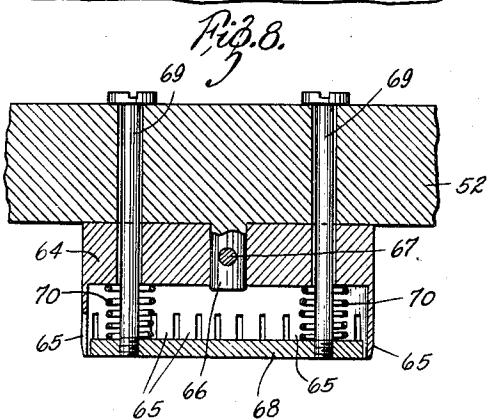


Fig. 8.

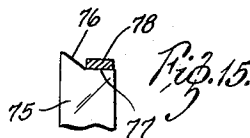


Fig. 15.

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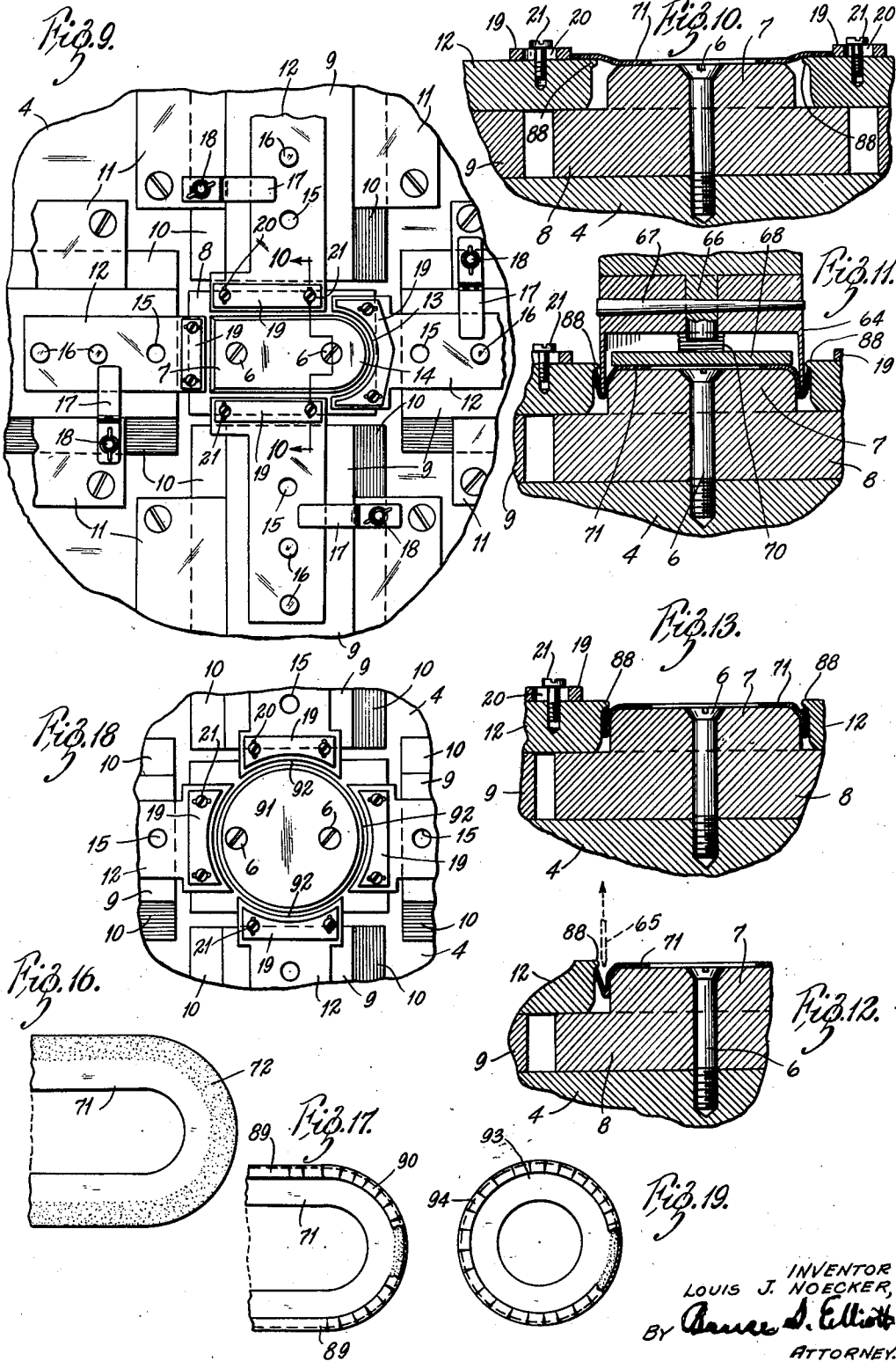
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MACHINE FOR TURNING AND BINDING THE EDGES OF LEATHER

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3 Sheets-Sheet 3



UNITED STATES PATENT OFFICE

2,198,456

MACHINE FOR TURNING AND BINDING THE
EDGES OF LEATHER

Louis J. Noecker, St. Clair, Mo.

Application May 11, 1939, Serial No. 273,056

8 Claims. (Cl. 12—55)

The general object of this invention is to provide a machine for use, particularly, in the shoe industry which will enable pieces of leather presenting a raw, or unfinished edge, to have such edge portions turned inward and permanently bound so as to provide a smooth finish.

The machine of my invention is especially adapted for finishing the edges of vamps, quarters, or other parts of the uppers of ladies' shoes, pumps, or slippers, and enables the operator to turn and bind edge portions of such parts of the shoe which are ordinarily provided with a line of stitching adjacent to the cut edges to impart a finished appearance.

In the present state of the art, where it is desired to turn over and bind, by stitching or otherwise, the curved edge of a piece of leather, it is necessary to cut out small V-shaped sections in order to permit the turned-in edge portion to have a flat smooth appearance, as otherwise the leather at the curve will crease and bunch, and present a rough surface. In the use of my invention, the edges of curved, and even circular, pieces of leather may be readily turned in and bound to the surrounding body of the leather, the creasing, or bunching of the leather at the curved edge being smoothed out by pressure applied to the edge portions after the turning operation. In a case of relatively thick leather the edge portion may be skived off to reduce it to a proper degree of thinness, but with thin leather of the type usually employed in making ladies' footwear, the raw edge of the leather may be readily turned in and bound in a single operation by the use of my machine.

The binding of the turned-in edge portion is effected by applying paste thereto, before submitting the leather to the action of the machine, and in operation a narrow marginal portion of the leather, to which a quick drying paste has been applied, is turned in and such edge portion subjected to pressure all in a continuous operation, so that when removed from the machine the otherwise raw edge appears a smooth finished edge, and the necessity of stitching is entirely obviated; although, for ornamental purposes, or for any other reason, the leather may be subsequently stitched around the edge if desired.

My invention is characterized by the use of a forming block which, in the preferred embodiment of the invention will have three straight sides and a semi-circular end, co-operating with which are three slidable pressure plates having straight ends lying opposite corresponding straight sides of the forming block, and a fourth slidable

pressure plate having a curved or semi-circular recess in its end lying opposite the semi-circular end of the forming block. Mounted over the forming block is a plunger carrying a hollow forming tool, or die, of the shape of the forming block but of a slightly greater size.

The operation involved consists in placing a piece of leather on the forming block with its pasted edge portion to be turned lying uppermost and projecting beyond the corresponding edge of the forming block, lowering the plunger to cause the corresponding edge of the forming tool to force such edge portion of the leather downward in the space between the forming block and the ends of the pressure plates (which are only slightly removed from the sides and ends of the forming block), which operation causes the marginal portion of the leather to be turned upward, as it is dragged over the upper edges of the pressure plates, then raising the plunger to withdraw the forming die from about the forming block and simultaneously forcing the pressure plates inward to firmly press the turned pasted edge portion against the body of the leather, to which it is thereby caused to adhere, the power applied to the pressure plates being sufficient to "mash" the creased or bunched portion of the leather at any curved edge thereof turned in so as to provide a smooth, bound edge.

The parts of the machine are so coordinated in their movements as to operate, at the will of the operator, in the order given, the machine operating in cycles, when placed in operation, to turn in and bind the edge of the leather and then to release engagement of the forming die and pressure plates therewith, so that the leather may be removed. Suitable clutch mechanism is provided which may be operated by the hand or foot of the attendant, said clutch causing the mechanism described to be placed in operation and then to be automatically arrested in movement at the close of each cycle of operation.

An important feature of the invention is the provision of means for preventing the pasted edge portion of the leather, which will be in contact with the side of the forming die, from being lifted out of the space between the forming block and the pressure plates when the forming die is raised prior to the inward movement of the pressure plates. The means for this purpose finds its preferred embodiment in a narrow projection, or lip, provided at the upper inner edge of each of the pressure blocks, and under which the edge of the marginal portion of the leather will spring when the projecting portion of the

leather is forced downward between the forming block and the pressure plates and thus be prevented from being moved upward with the forming tool as the latter is raised.

5 Various sizes and shapes of forming blocks and co-operating dies may be employed and the pressure plates are adapted to be adjusted in position relative to the forming block to adapt them to the various sizes of the leather which may be employed.

10 Ordinarily, pieces of leather which will be subjected to the operation of my machine will have a part of each portion straight, and a part curved, and the turning and binding of the straight and curved portion of each may be effected simultaneously, if the contour of the edge is such as to permit this, or the straight portion may first be turned and bound, and thereafter the curved portion be similarly treated. It is within the purview of my invention, however, to operate on the edge of leather which is entirely circular in contour, and the invention thus contemplates the use of a circular forming block and four circular pressure plates having circular recesses at their ends.

25 In any period of operation of the machine, the pieces of leather which are to have their edges turned in and bound as described, will be of uniform size and shape, and the pressure plates are provided on their upper sides with adjustable gauges which provide a recess, or depression, above the top of the forming block into which the leather may be properly positioned prior to the operation of the machine.

35 Other novel features of the invention will be explained in the course of the detail description of the machine illustrated in the accompanying drawings, in which,

40 Fig. 1 is a view in front elevation, partly in section, showing the forming die in an elevated position;

Fig. 2 is a similar view, part of the machine being broken away, showing the forming die in its lower, or operative, position;

45 Fig. 3 is a view in side elevation, partly in section, viewed from the right of Fig. 1;

Fig. 4 is a top plan view of Fig. 3;

Fig. 5 is a longitudinal sectional view taken on the line 5—5 of Fig. 4;

50 Fig. 6 is a horizontal sectional view taken on the line 6—6 of Fig. 5 showing the cam for operating the pressure plates;

Fig. 7 is a vertical sectional view taken on the line 7—7 of Fig. 4, illustrating a roller and cam arrangement for operating the cam shown in Fig. 6 to effect the inward movement of the four pressure plates co-operating with the forming block.

Fig. 8 is a vertical sectional view of the forming die assembly mounted on a cross-head;

60 Fig. 9 is a broken plan view on an enlarged scale, indicated approximately by the line 9—9 of Fig. 1;

Fig. 10 is a vertical sectional view on a greatly enlarged scale taken on the line 10—10 of Fig. 9, and showing a piece of leather in position on the forming block and pressure plates;

Fig. 11 is a similar view showing the forming die lowered to force the marginal portions of the leather between the sides of the forming block and the ends of the pressure plates with the edge of the leather engaged under the projections, or lips, of the pressure plates;

Fig. 12 is a view similar to Fig. 11, showing diagrammatically how the marginal portion of

the leather is held in place by the projection on a pressure plate as the forming die rises;

Fig. 13 is a view similar to Fig. 11, omitting the forming die, and showing the pressure plates moved inwardly to press opposing adhesively coated surfaces of the leather into contact;

Fig. 14 is a vertical section on the line 14—14 of Fig. 4 illustrating a form of clutch mechanism for operating the machine in cycles;

Fig. 15 is a broken section on the line 15—15 of Fig. 14;

Fig. 16 is a fragmentary view of a piece of leather having adhesive applied to the marginal portion thereof as indicated by the stippling;

Fig. 17 is a view, partly in section, of the same piece of material, after it has been subjected to the action of my machine;

Fig. 18 is a broken plan view, similar to Fig. 9, showing the arrangement for turning and binding the edge of a circular piece of leather, and

Fig. 19 is a view similar to Fig. 17, showing a circular piece of leather after it has been acted on by my machine.

Referring now to the drawings, the numeral 1 indicates the base of the machine, which may be secured on the top of a table, or other support, 2. Rising from the base 1 are standards 3 which support at their ends a platform 4 provided with enlarged openings 5. Secured centrally on the platform 4 by means of screws 6, is a forming block 7, which in the preferred form of the invention is of the shape shown in Fig. 9; that is, it is rectangular in shape as to all but one end, which is curved or semi-circular. The forming block 7 is mounted on, or formed integral with, a widened base 8, which is rectangular in shape and projects beyond the forming block proper at both sides thereof. Supported on the upper side of the platform 4, are four rectangular slide-plates 9, each of which is chamfered at opposite sides to provide right-angular recesses 10, which receive the inner sides of correspondingly shaped guide members 11, which hold the slide plates 9 on top of the platform and guide the movements of the same over the platform and toward the forming block in right lines. Mounted on each of the slide plates 9 is a pressure plate 12, three of which have straight, or flat ends lying opposite the corresponding straight sides of the forming block 7, and the fourth of which is provided with a circular recess 13 in its end which lies opposite to, and is concentric with the circular end 14 of the platform 7, all as clearly shown in Fig. 9. The pressure plates 12 are adapted to be adjusted in position to have their inner ends lie at a greater or less distance from the sides and ends of the forming block 7, such adjustment being preferably accomplished by forming each pressure plate with three or more apertures 15, any two of which may be fitted over two pins 16 secured in and rising from each slide plate 9, after which the pressure plates may be held in position on the slide plates by means of clamps 17, one of which, as shown, is pivotally mounted at 18 on each of the guide members 11. The inner ends of the pressure plates 12 are slidably supported on the upper side of the projecting portion, or ledge, of the base 8 of forming block 7, as shown more clearly in Figs. 9 and 10, and adjustably mounted on the upper side of the inner end of each of these pressure plates is a gauge 19, the adjustment being secured by forming the gauges with slots 20 through which pass

binding screws 21 engaging in the pressure plates. By loosening these screws the gauges 19, which are, respectively, as to their outer sides, of the same shape as the ends of the pressure plates on which they are mounted, may be adjusted into position closer to, or farther from, the ends of the pressure plates to regulate the size of the pocket, or recess, surrounding the upper side of the forming block 7, in order that said recess may receive the piece of leather to be acted on, and properly position the same on the forming block. Secured in and projecting downwardly from the outer end of each of the slide plates 9, through one of the enlarged openings 5, previously referred to, is a pin 22, (Fig. 5) the lower end of which is screw threaded and engaged in the outer end of a lever 23, (Fig. 6), each of the four levers 23 being pivotally mounted near its inner end on a pivot pin 24 secured in and projecting downwardly from the under side of the platform 4, as shown by dotted lines in Fig. 1, and in section in Fig. 7. For actuating the levers 23, and through them the slide plates 9 and pressure plates 12, the following mechanism is provided.

The numeral 25, (Figs. 5 and 6) indicates a square cam which is mounted for rocking engagement on a stud 26 secured centrally in the under side of the platform 4, said cam being supported on an enlarged head 27 formed on the lower end of said stud, which head engages a centrally apertured bearing plate 28, secured by screws 29 on the under side of said cam and rotatively receiving the stud 26. The cam 25 has secured at each corner a projecting contact 30, each of these contacts being slotted, as indicated as to one of them in section in Fig. 6 at 31, and adjustably secured on the cam by means of binding screws 32. The inner ends of each of the levers 23 is provided with a pin 33 which is engaged by one end of a coil spring 34, the other end of said spring being secured to a pin 35, secured in the inner side of the platform 4, as shown, as to one of these pins, in Fig. 3. The springs 34 operate to hold the inner ends of the levers 23 in yielding engagement with the contacts 30. Pivotally secured at 36 to the under side of the cam 25, at one side thereof, is one end of an actuating bar 37 (Figs. 5, 6 and 7) the opposite end of which is provided with an adjustable mounting 38 (shown by dotted lines in Fig. 7) on the upper end of which is a roller 39 which works in a cam groove 40 provided on one face of a cam 41, which is mounted on a shaft 42. The shaft 42 is rotatably mounted in bearings on the upper end of standards 43 rising from the base 1, and is provided on one end with a gear 44 in mesh with a pinion 45 (Fig. 4). The pinion 45 is mounted on a stub shaft 46 supported in a standard 47 on base 1, the stub shaft being provided at its outer end with a pulley 48 driven by a belt 49 from any suitable source of power.

The shaft 42 being driven by the mechanism described, the cam 41 through roller 39 and the mounting 38 will cause the actuating bar 37 to be moved first in an outward direction to rock the cam 25 in the direction indicated by the arrow thereon in Fig. 6, and then inward, to return the cam to the normal position in said figure. This constitutes a cycle of movement of this element, the machine being started, and automatically stopped after each cycle of movement, by means of suitable clutch mechanism to be later described.

In the outward movement of the actuating bar

37, the four contact members 30 will have imparted to them comparatively small arcs of movement, which are sufficient to force the inner ends of the four levers 23 outward, or away from the cam, against resistance of the springs 34, causing the outer ends carrying the pins 22 to move inward, thus forcing the slide plates 9, with their pressure plates 12 inward, or toward the forming block 7. In the inward movement of the actuating bar 37, pressure of the contacts 30 on the inner ends of the levers 23 is released, and springs 34 operate to move the outer ends of levers 23 in an outward direction, moving the slide plates 9 and pressure plates 12 away from the forming block. As will be seen by observing Fig. 5, the distance the slide plates 9 is moved by the levers 23 is very slight, in most cases being approximately an eighth of an inch. In the movements of the slide plates 9, the pins 22 work back and forth in the enlarged openings 5, as will be understood. I will now describe the mechanism for folding the pasted edge of the leather in order that its pasted surfaces may be forced into firm engagement with the body of the leather by the pressure plates 12 and thus form a bound, or finished, edge, this mechanism being fully illustrated in the first five figures of the drawings.

Rising upward from the opposite sides of the platform 4 are two parallel frame members 50, which are grooved on their inner sides to provide guide-ways 51, which slidably receive the opposite ends of a reciprocal cross-head 52. Mounted near opposite ends of the cross-head on its upper side are apertured lugs 53 in which are secured the opposite ends of a cross-bar 54. The cross-head 52 is adapted to be raised and lowered by means of a lever 55 having a widened outer end 56, which is bifurcated throughout its length, as indicated at 57, to fit over and loosely receive the cross bar 54. The lever 55 is pivotally mounted at 58 between two upright arms 59, rising from the support 4, and its inner end is provided with an adjustable mounting 60, shown by dotted lines in Fig. 5, on the lower end of which is mounted a cam roller 61, which works in a cam groove 62, provided in one face of a cam 63, which is mounted on the shaft 42.

Mounted centrally on the cross-head 52, on its upper side, is a forming die 64, which is of the shape of the forming block 7, but of slightly greater area. The lower hollow portion of the die, adapted to engage over the forming block, is relatively thin and is serrated throughout to provide spaced prongs 65, (Figs. 1 and 8) the slots operating to minimize adhesion of the die to the pasted leather; and the prongs affording a slight yielding contact with the leather to avoid crushing it as it is forced by the die over the forming block. I have shown the forming die as being mounted on a stud 66 projecting from the under side of the cross-head 52, and secured thereon by means of a cross-pin 67, but any other means could be employed for this purpose.

Mounted within the forming die 65 is a stripper plate 68, which is secured on the lower ends of screws 69 which pass loosely through the cross-head 52 and the upper solid portion of the die, and are supported on the former by their heads. The stripper plunger plate 68 is normally pressed outward to lie substantially flush with the lower edge of the die by means of coil springs 70 mounted on screws 69 and interposed between the stripper plate and the upper solid portion of the die. In the operation of the die, stripper plate 68 operates to hold the leather firmly on

the forming plate and yields to permit the die to descend over the forming block. When the die rises the stripper plate still maintains its contact with the leather and prevents it from being lifted off of the forming block.

The gear 44 (Figs. 3 and 4) is adapted to be continuously rotated, being loose on the shaft 42, while the mechanism for effecting the turning and binding of the edges of the leather pieces is operated in stages, or cycles, at the will of the operator. To accomplish this, I employ a simple clutch mechanism, which will now be described, referring to Figs. 4, 14 and 15.

Pivotally mounted on its lower end, by means of a stub shaft 73 mounted in a bearing 74 provided on the upper side of base 1, is a latch 75, the upper free end of which is provided with an inclined portion 76, and a flat portion 77 on which normally rests a pivoted crank arm 78. This crank arm is provided at its rear end with a yoke 79 which embraces opposite sides of a rectangular block 80, and is pivoted thereon by means of pivot pins 81. The block 80 is fast on the shaft 42. A coil spring 82 is secured at one end to a pin 83 mounted on the rear side and near the inner end of block 80, and at its other end to a pin, or extension, 84, projecting rearwardly from one arm of the yoke 79. The crank arm 78 normally rests on the flat portion 77 of the latch 75, and is normally pressed outward, or toward the inclined portion 76, by tension of spring 82 exerted on the rear end of pivoted yoke 79, of which the crank arm is a part. Secured on the gear 44 and projecting inwardly therefrom is a crank pin 85. The latch 75 is normally held in an upright position by means of a coil spring 86, secured at one end to the base 1, and at its other end to the rear side of the latch 75, as clearly indicated in Figs. 3 and 14. The front side of the latch 75 has connected to it one end of a pull rod 87, which may be connected by suitable linkage to a treadle, or it may be hand operated.

The operation of bending and binding the edge of a piece of leather, will now be described:

Assuming the piece of leather to be acted on is of the shape of the forming die, such as the piece of leather indicated by 71 in Fig. 16, the marginal portion of the leather is first supplied with paste, indicated by the stippling at 72, and the piece of leather is then placed on the forming block 7, with its pasted side up, the gauges 19 enabling the operator to correctly position the leather with its pasted edge portions projecting uniformly beyond the sides and ends of the forming block, as shown by Fig. 10. The operator now pulls on the rod 87, turning the latch 75 to the position shown by dotted lines in Fig. 15, and thus carrying its upper end beyond the crank arm 78. When this occurs, the spring 82 causes the crank arm to be thrown outwardly and into the path of the crank pin 85 which, in the continued rotation of gear 44, engages the crank arm and causes shaft 42 to rotate, thus rotating the cams 41 and 63. These cams are oppositely positioned on shaft 42 in such manner that the cam roller 61 will cause a reciprocation of the lever 55 before the cam roller 39 will cause a reciprocation of the actuating bar 37. As the lever 55 forces the cross-head 52 downward, the lower edge of forming die 64 will engage the marginal pasted portion of the piece of leather centrally on the width of said pasted portion, and force said marginal portion of the leather into the space between the sides and ends of the forming block and the ends of the pressure plates 12, as

clearly indicated in Fig. 11. As heretofore stated, the end of each of the pressure plates is provided at its upper side with a lip indicated at 88, and when the parts are in the position above described and illustrated in Fig. 11, the outer portion of the piece of leather will spring out and engage under these lips. In the further movements of cam 63, the forming die will be lifted by lever 55 out of the spaces between the forming block and the pressure plates, as indicated diagrammatically in Fig. 12, and the engagement of the edge of the leather under the lips 88 will prevent the leather from being carried up with the die, and will also permit the die to separate from the pasted portion of the leather with which it has been engaged.

As soon as the forming die 64 has cleared the top of the forming block, the cam 41 functions to move the actuating bar 37 outward, or to the right as viewed in Fig. 6, imparting a partial rotation to the cam 25, the contacts 30 on which engage the inner ends of levers 23 to force the outer ends inward, in which movement pins 22 cause the slide plates 9 to be moved inward forcing the ends of pressure plates 12 into engagement with the pasted and folded marginal portions of the leather, as indicated by Fig. 13. In the further movement of the two cams the cross-head 52 will be raised to the position shown in Fig. 5, the actuating bar 37 will be moved inward to return the cam 25 to the position shown in Fig. 6, and the springs 34 will operate to move the outer ends of lever 23 outward, thereby correspondingly moving the pressure plates 12 outward, or to the position shown in Figs. 5, 9, 10, and 11. Just as this movement is completed, the crank arm 78 will engage the inclined portion 76 of the top of latch 75, which will cause said crank arm to be moved inward, or out of the path of the crank pin 85, so that the further rotation of shaft 42 and the cams thereon is arrested. The leather is then removed from the machine and the straight and curved portions thereof will have the appearance, respectively, indicated by the numeral 89 in Fig. 17, as to the straight portions, and by the numeral 90 as to the curved portion.

The modification shown in Fig. 18 is for use in folding and binding a circular piece of leather, and to this end the machine is provided with a circular forming block 91, and the pressure plates 12 are provided with circular recesses 92. The forming die (not shown) used with this modified construction will of course be circular, and the operation of folding and binding the leather proceeds in the manner previously described with reference to the shape of the forming block shown in Fig. 9. The circular piece of leather, indicated by 93 in Fig. 19, will, when acted on by the machine, have its entire edge portion simultaneously folded, or turned-in, and bound, imparting to it the appearance indicated at 94 in Fig. 19.

While I have described my invention as applicable to binding the edges of pieces of leather, it is obvious that material other than leather could be acted on by the machine in the same way. It is also obvious that leather or other material used for other purposes than making shoes, such as, for example, for manufacturing hand bags, could be acted on by the machine to bind raw edge portions thereof.

I wish it understood, furthermore, that my invention is not limited to the particular operating mechanism described, but that any other

suitable mechanism that will operate to first actuate the forming die and then the pressure plates, in cycles, or stages, could equally well be employed.

I claim:

1. In a machine for turning and binding the edge portion of leather, a forming block adapted to have positioned thereon a piece of leather with its marginal portion supplied with paste and projecting beyond the edge of the forming block, a forming die, a pressure plate, means for reciprocating said forming die to cause it to engage the marginal portion of the leather to fold the same and force it between the forming block and pressure plate and then to withdraw from such engagement, means on the pressure plate adapted to be engaged by the edge of the fold to prevent the fold from being withdrawn with the forming die, and means for reciprocating said pressure plate to bring it into engagement with said folded edge portion and force the latter firmly against the body of leather to bind it thereto and then to move out of contact with the leather.

2. In a machine for turning and binding the edge portion of leather, a forming block having a straight and a curved portion and adapted to have positioned thereon a piece of leather with its marginal portion supplied with paste and projecting beyond the edges of the straight and curved portion of the forming block, a forming die complementary in shape to the forming block, independent spring-controlled pressure plates having, respectively, straight and curved contact surfaces lying opposite the corresponding surfaces of the forming block, means for reciprocating said forming die to cause it to engage the marginal portion of the leather to simultaneously bend it over the straight and curved portions of the forming block and fold and force the same between the said portions of the forming block and the corresponding contact surfaces of the pressure plates, and then to withdraw from such engagement, and a plural-pointed cam operable to simultaneously force said pressure plates into engagement with said folded edge portion and force the latter firmly against the body of the leather to bind it thereto and then to release said pressure plates to permit them to be moved out of contact with the leather by the action of their springs.

3. In a machine for turning and binding the edge portion of leather, a forming block adapted to have positioned thereon a piece of leather with its marginal portion supplied with paste and projecting beyond the edge of the forming block, a forming die, a pressure plate, means for reciprocating said forming die to cause it to engage the marginal portion of the leather to fold the same and force it between the forming block and pressure plates and then to withdraw from such engagement, a lip projecting from the upper side of said pressure plate under which the edge of the fold is adapted to engage to prevent the fold from being withdrawn with the forming die, and means for reciprocating said pressure plate to bring it into engagement with said folded edge portion and force the latter firmly against the body of the leather to bind it thereto and then to move it out of contact with the leather.

4. In a machine for turning and binding the edge portion of leather, a forming block of general rectangular shape but having a curved end and adapted to have positioned thereon a piece of leather with its marginal portion supplied with

paste and projecting beyond the straight and curved edges of the forming block, a hollow forming die complementary in shape to the forming block but of slightly greater size, a series of pressure plates, three of which are provided with straight contact surfaces lying opposite the corresponding sides of the forming block, and a fourth of which is provided with a curved contact surface lying opposite the curved portion of the forming block, means for reciprocating said forming die to cause it to engage the projecting marginal portion of the leather to bend and fold the same and force it between the sides and ends of the forming block and the corresponding sides and ends of the pressure plates and then to withdraw from such engagement, and means for simultaneously reciprocating said pressure plates to bring them into engagement with said folded edge portion and force the latter firmly against the body of the leather to bind it thereto and to compress and smooth the creases in the curved portion thereof and then to move out of contact with the leather.

5. In a machine for turning and binding the edge portion of leather, a forming block of general rectangular shape but having a curved end and adapted to have positioned thereon a piece of leather with its marginal portion supplied with paste and projecting beyond the straight and curved edges of the forming block, a hollow forming die complementary in shape to the forming block but of slightly greater size and having a serrated contact edge, a series of pressure plates, three of which are provided with straight contact surfaces lying opposite the corresponding surfaces of the forming block and a fourth of which is provided with a curved recess lying opposite the curved portion of said forming block, means for reciprocating said forming die to cause it to engage the projecting marginal portion of the leather to bend and fold the same and force it into the continuous space between the forming block and the pressure plates and then to withdraw from such engagement, and means for simultaneously reciprocating said pressure plates to bring them into engagement with said folded edge portion and force the latter firmly against the body of the leather to bind it thereto and compress and smooth the creases in the curved portion thereof and then to move out of contact with the leather.

6. In a machine for turning and binding the edge portion of leather, a forming block of general rectangular shape but having a curved end and adapted to have positioned thereon a piece of leather with its marginal portion supplied with paste and projecting beyond the straight and curved edges of the forming block, a hollow forming die complementary in shape to the forming block but of slightly greater size, a series of pressure plates, three of which are provided with straight contact surfaces lying opposite the corresponding sides of the forming block, and a fourth of which is provided with a curved contact surface lying opposite the curved portion of the forming block, means for reciprocating said forming die to cause it to engage the projecting marginal portion of the leather to bend and fold the same and force it between the sides and ends of the forming block and the corresponding sides and ends of the pressure plates and then to withdraw from such engagement, a lip projecting from the upper side of each of said pressure plates under which the edge of the fold is adapted to engage to prevent the fold from being with-

drawn with the forming die, and means for simultaneously reciprocating said pressure plates to bring them into engagement with said folded edge portion and force the latter firmly against the body of the leather to bind it thereto and to compress and smooth the creases in the curved portion thereof and then to move out of contact with the leather.

7. In a machine for turning and binding the edge portion of leather, a forming block presenting a plurality of contact surfaces and adapted to have positioned thereon a piece of leather with its marginal portion supplied with paste and projecting beyond the upper edges of the contact surfaces of the forming block, a hollow forming die complementary in shape to the forming block but of slightly greater size, a series of slide bars respectively lying opposite the contact surfaces of the forming die and movable toward and from the same, a series of pressure plates adjustably mounted on said slide bars and having contact surfaces lying opposite to, and normally at a slight distance from, the contact surfaces of said forming block, means for reciprocating said forming die to cause it to engage the projecting marginal portion of the leather to bend and fold the same and force it into the space between the contact surfaces of the forming block and those of said pressure plates and then to withdraw from

such engagement, and means for simultaneously reciprocating said slide bars to bring the contact surfaces of said pressure plates into engagement with the folded edge portion of the leather and force the same firmly against the body of the leather to compress and bind it thereto and then move out of contact with the leather.

8. In a machine for turning and binding the edge portion of leather, a forming block adapted to have positioned thereon a piece of leather with its marginal portion supplied with paste and projecting beyond the edge of the forming block, a forming die, a pressure plate, a drive-shaft, means operated from the drive-shaft for reciprocating said forming die to cause it to engage the marginal portion of the leather to fold the same and force it between the forming block and pressure plate and then to withdraw from such engagement, means operated from the drive-shaft to thereafter reciprocate said pressure plate to bring it into engagement with said folded edge portion and force the latter firmly against the body of the leather to bind it thereto and then to move out of contact with the leather, means, operable at will for placing the drive-shaft in rotation and acting automatically to arrest its rotation after the reciprocations of the forming die and pressure plates described.

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