April 11, 1950 L. J. NOECKER 2,503,589

MACHINE FOR TURNING AND BINDING THE EDGES OF LEATHER

Filed July 16, 1948 2 Sheets-Sheet 1

Fig. 1.

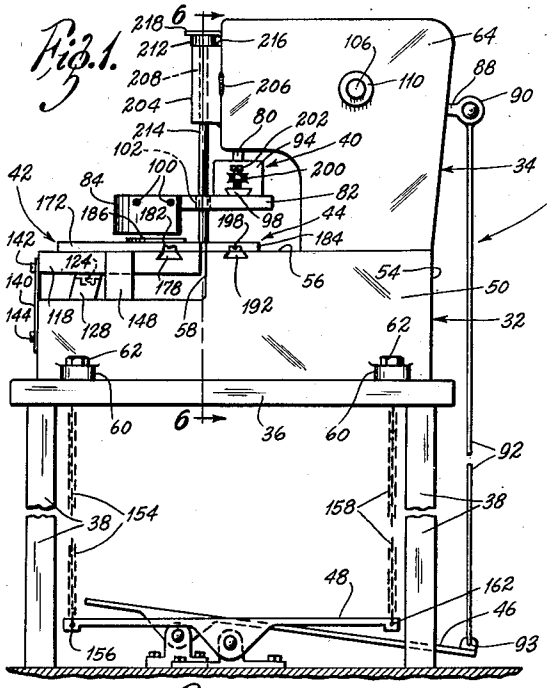


Fig. 3.

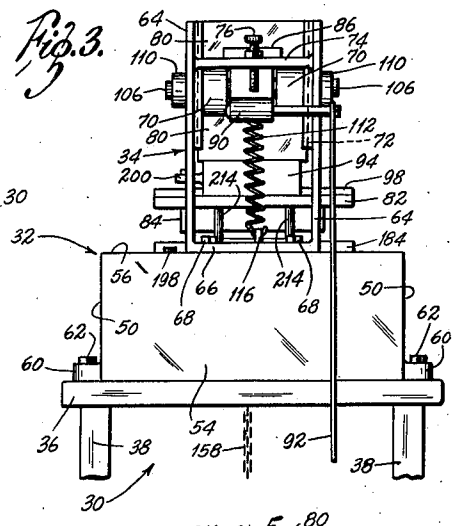


Fig. 2.

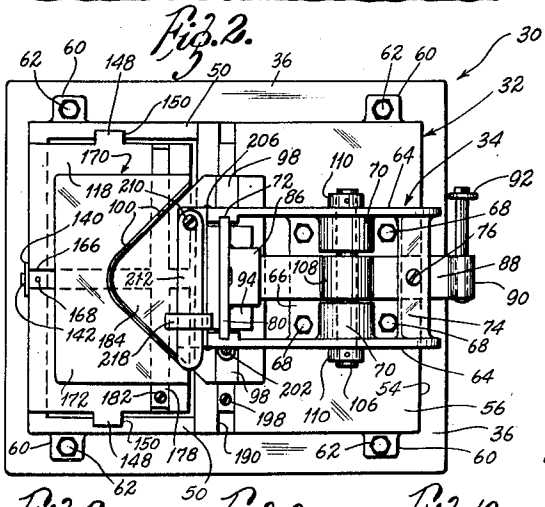


Fig. 4.

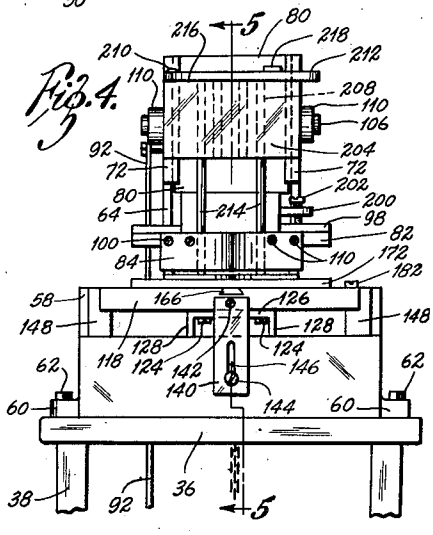


Fig. 8.

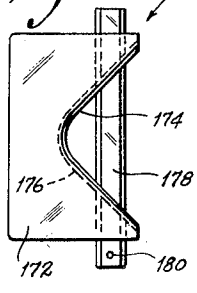


Fig. 9.

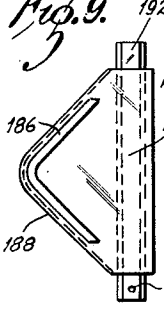


Fig. 10.

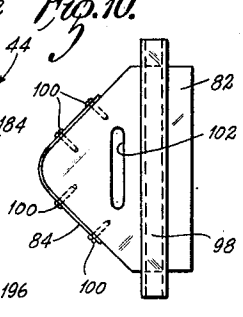


Fig. 17.

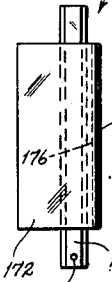


Fig. 18.

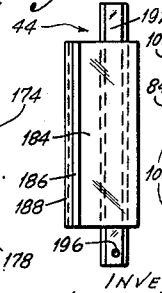
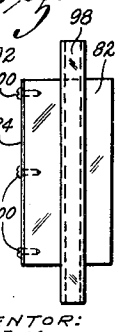


Fig. 19.



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April 11, 1950 L. J. NOECKER 2,503,589

MACHINE FOR TURNING AND BINDING THE EDGES OF LEATHER

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Fig. 5.

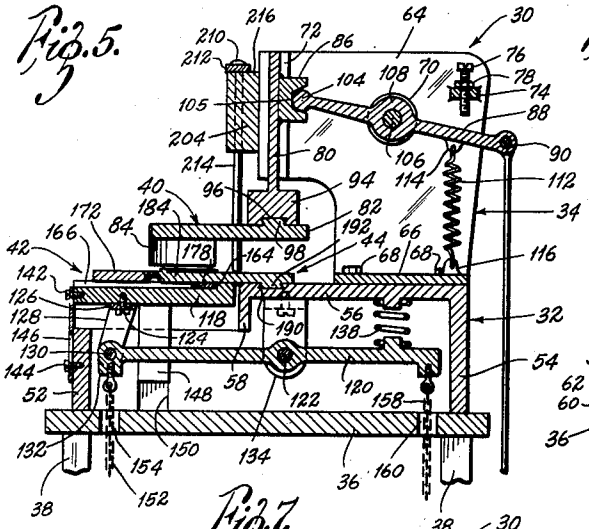


Fig. 6.

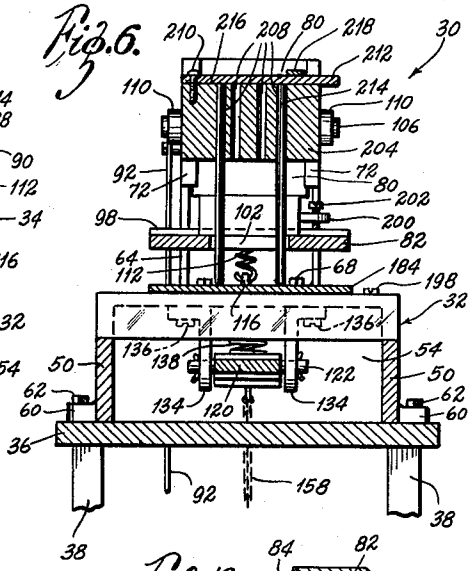


Fig. 7.

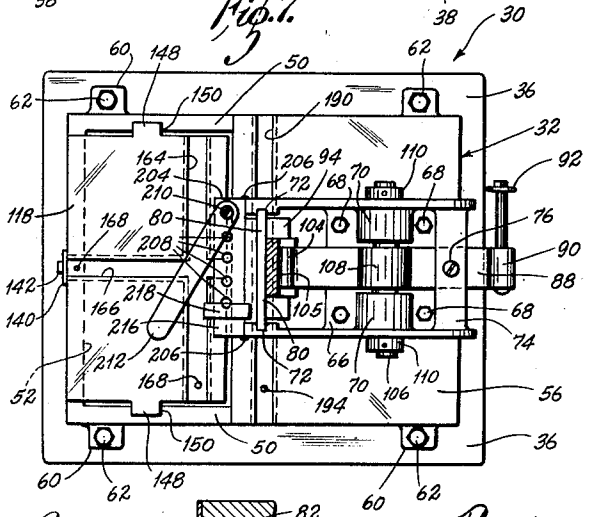


Fig. 13.

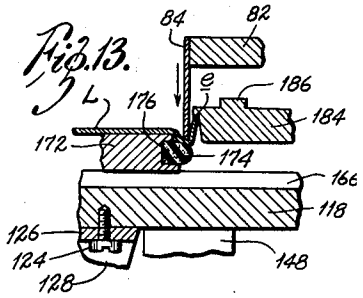


Fig. 14.

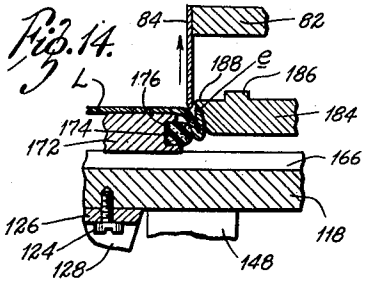


Fig. 11.

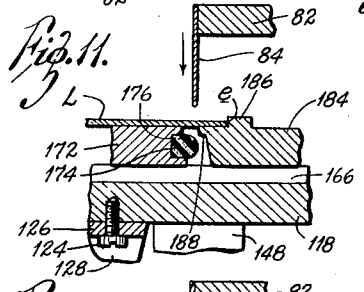


Fig. 16.

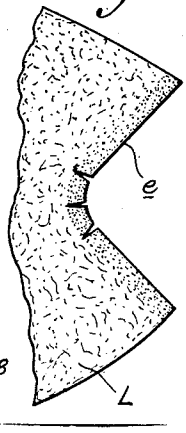


Fig. 12.

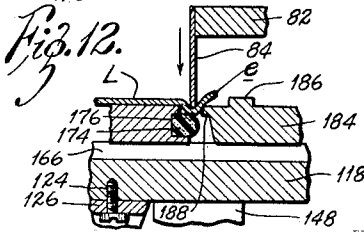
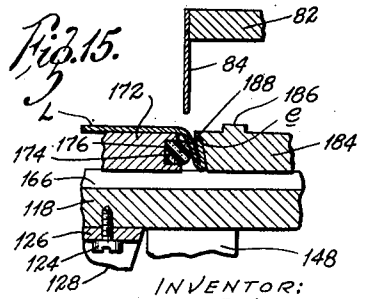


Fig. 15.



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Patented Apr. 11, 1950 2,503,589

UNITED STATES PATENT OFFICE

2,503,589

MACHINE FOR TURNING AND BINDING THE EDGES OF LEATHER

Louis J. Noecker, St. Clair, Mo.

Application July 16, 1948, Serial No. 38,965

14 Claims. (Cl. 69—1)

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Generally, the invention herein disclosed concerns a novel machine adapted for use in the manufacture of leather goods, for example, in the shoe and hand bag industries.

In the manufacture of items of this nature, it is desirable to have any raw or unfinished edges of pieces of leather turned or folded inwardly against the main body portion of each piece and permanently secured thereto, so that the unfinished edge portions are transformed into smooth, finished edge portions.

Granted to me on April 20, 1948 were Letters Patent No. 2,440,113. Said patent discloses a power-driven machine, operable in cycles at the will of the operator, and adapted to achieve the results above set forth.

In said patent, all of the moving parts of the machine are so coordinated as to operate in a cycle, clutch mechanism being provided whereby an attendant may, at will, cause the moving parts to function in proper sequence, and then be automatically arrested in movement at the end of each cycle.

Broadly, the objects of the present invention are analogous to those expounded in said patent. The novel mechanism for attaining these objects however, is operable at the will of the operator by the manipulation of a pair of treadles. In other words, the present machine is not power driven, its action being responsive to foot power supplied by the operator.

It is obviously to be understood, that the instant invention in no way disparages the machine of the patent. That machine has been found to achieve its objects in a most efficient manner. However, it has also been found, that from a safety standpoint, its operation requires skilled attendants, since once a cycle has been inaugurated, the moving parts cannot be arrested until said cycle has been completed.

It has further been found, that in some cases, skilled operators are not available. Under such circumstances, it is considered folly to risk injury to the hands of an unskilled operator.

By means of the present invention, an operator may be trained in the various manipulations required, so that within a short period of time, he may operate the automatic machine without danger.

This is not to say however, that the present invention is designed for training purposes only, since it is capable of performing all of the turning and binding operations effected by the machine disclosed in said patent.

Furthermore, the present machine has been found to be slightly more efficacious when dealing with pieces of leather the thickness of which is somewhat above normal.

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In other words, means are provided whereby the edges of a piece of leather may be subjected to an additional final pressure-applying action which more positively binds them, after being turned, to the body portion of the leather.

In carrying out the invention, a quick-drying cement or other adhesive is applied to a narrow marginal portion of the leather along the raw or unfinished edge prior to subjecting the piece to the action of the machine. In the machine, the marginal edge is turned or folded under, and by applied pressure, bound against the main body portion of the leather. As a result, when a piece of leather is removed from the machine, the former raw edge has been transformed into a smooth, finished edge which is permanent and does not require stitching, except for ornamentation, if desirable.

As in the machine of my said patent, pieces of leather of various contours and sizes may be submitted to the action of the machine, it being necessary only to mount the proper combination of blade, forming block, and anvil elements, on the vertically reciprocable parts thereof.

Advantages and features not hereinbefore referred to, will be apparent or specifically pointed out in the description to follow, reference being had also to the accompanying drawings, in which is illustrated the preferred embodiment of the invention.

In said drawings:

Fig. 1 is a side elevational view of the machine attached to a supporting table or stand;

Fig. 2 is a top plan view of Fig. 1;

Fig. 3 is a rear elevational view of the machine;

Fig. 4 is a front elevational view thereof;

Fig. 5 is a vertical sectional view taken approximately on line 5—5 of Fig. 4;

Fig. 6 is a similar view on line 6—6 of Fig. 1;

Fig. 7 is a top plan view similar to Fig. 2, with certain removable parts omitted, another part in horizontal section, and a movable part in different position;

Fig. 8 is a top plan view of a combined anvil and pressure plate;

Fig. 9 is a top plan view of a forming block;

Fig. 10 is a top plan view of a creasing blade supporting member;

Fig. 11 is a fragmentary vertical sectional view, on an enlarged scale, of portions of Fig. 5, with a piece of leather being shown in position for the initial step in a turning and binding operation;

Figs. 12, 13, 14, and 15 are similar views illus-

trating respectively some of the successive steps in said turning and binding operation;

Fig. 16 is a fragmentary view of a piece of leather to one marginal edge of which a quick-drying cement has been applied, as indicated by stippling;

Fig. 17 is a top plan view of modified combined anvil and pressure plate;

Fig. 18 is a top plan view of a modified forming block associated therewith;

Fig. 19 is a top plan view of a creasing blade supporting member which may be employed in combination with the elements of Figs. 17 and 18.

With particular reference now to Figs. 1 to 7 inclusive, the machine comprising the present invention is designated as a whole, by the reference numeral **30**. It includes a substantially rectangular base portion generally designated **32**, and a substantially U-shaped frame member mounted thereon, and generally designated **34**.

The machine is mounted on an elevated platform such as a table **36** or the like, the latter supported by legs or standards **38**. The table **36** occupies a horizontal plane above the floor level a distance to accommodate the legs of the operator, as is understood.

A vertically reciprocable creasing assembly, supported by the frame **34**, is generally designated **40**; a vertically reciprocable pressure applying assembly, supported by the base **32** is generally designated **42**; and a stationary forming block assembly, also supported by said base, is generally designated **44**.

As will appear, reciprocal movements of the creasing assembly are effected by the manipulation of a treadle **46**, and similar movements of the pressure assembly by the manipulation of a treadle **48**.

These two treadles are illustrated only in Fig. 1, and there, more or less diagrammatically, since obviously, they may be of any suitable construction adapted to effect the required action.

With reference now to the base **32**, it is seen to include side walls **50**, a front wall **52**, a rear wall **54**, a top wall **56**, and a shallow transverse wall **58** depending from said top wall. Preferably, but not necessarily, the base **32** is integrally formed, and the side walls are provided with outstanding lugs **60** apertured to receive bolts **62**, whereby the entire machine **30** is securely attached to said table, as shown.

With reference now to the frame **34**, it is seen to include side walls **64**, and an integral bottom or connecting wall **66** which rests upon the top wall **56**, and is rigidly secured thereto by means of bolts **68**, as shown.

Each side wall **64** is provided approximately centrally of its forward and rear edges with an inwardly extending bearing portion **70**, and adjacent its forward edge with a vertical slideway **72**.

Adjacent the rear edges thereof, the walls **64** are connected by a cross bar **74**, the latter having a threaded central aperture to receive an abutment screw **76** which may be locked in desired position of adjustment by a nut **78**.

The creasing assembly **40** includes a crosshead **80** vertically slideable in the slideways **72**, a horizontally disposed plate **82**, a creasing blade **84**, a channel shaped block **86** rigid with said crosshead, and a lever **88** the rear end **90** of which has a pivotal connection with the upper end of a vertical rod **92**. This connection includes a pivot pin rigid with the end of said lever, as shown. The lower end of the rod **92** has a pivotal connection as at **93** with the rearward portion of the treadle **46**.

As shown particularly in Figs. 1 and 5, the crosshead **80** terminates at its lower end in an extended portion **94**, in the bottom face of which is formed a transverse dove-tail groove **96**, adapted to slidably receive a similar upwardly projecting crossbar **98** provided on the blade supporting plate **82**.

The creasing blade **84** may be secured to the member **82** by screws or the like **100**, as shown particularly in Fig. 10, or it may be formed as an integral depending extension of said member if desired. As also seen to best advantage in this view, the member **82** is provided with an elongated transverse slot **102**, the purpose of which will appear hereinafter.

As shown especially in Figs. 5 and 7, the forward end of the lever **88** terminates in a rounded portion **104** in constant engagement with the recess **105** of the block **86**. Said lever is pivotally supported approximately centrally thereof on a crossshaft **106** passing through a hub portion **108** thereon, through the bearings **70**, and projecting laterally beyond the walls **64**. Collars **110**, or other means, maintain the shaft **106** in position.

In order to normally maintain the crosshead **80** in its elevated position, a tension spring **112** is provided. As shown in the drawings, the upper end of this spring is secured to a lug **114** depending from the lever **88**, and the lower end to a lug **116** projecting upwardly from the bottom wall **66** of the frame **34**.

The vertically reciprocable pressure applying assembly **42** includes a horizontally disposed plate **118**, and a similarly disposed lever **120** pivotally mounted on a cross shaft **122**. Rigidly secured to the underside of the plate **118** as by screws **124** is a depending bracket **126**, the depending legs **128** of which are apertured to receive the ends of a pivot pin **130** which passes therethrough and through the forward end **132** of said lever **120**.

The cross shaft **122** is supported in a pair of angle brackets **134** secured to the underside of the wall **56** by screws **136**, as best seen in Figs. 5 and 6. The plate **118** is normally maintained in its elevated position by means of a coil spring **138** interposed between the lever **120** and the wall **56**, as shown in Fig. 5.

A suitable device to limit the upward movement of said plate under the pressure exerted by the spring **138** upon the rear portion of lever **120** is provided. It may comprise a vertically disposed strap member **140** rigidly attached at its upper end to said plate by a screw **142**, and at its lower end to the wall **52** by a screw **144**. The latter screw passes through an elongated slot **146** in said strap.

Therefore, as best seen in Figs. 4 and 6, whereas the plate **118** may be depressed, it cannot rise above the plane of the upper surface of the wall **56**. In other words, the arrangement is such that normally the top surfaces of the plate **118** and the wall **56** are flush.

In order to insure smooth reciprocation of the plate **118**, between its said upper limit and its lower limit of movement as will appear, said plate is provided on opposite sides with vertical slide members **148** which operate in similar slideways **150** formed in the forward portions of the side walls **50**.

As shown especially in Fig. 5, there is a flexible connection or chain attached to either end of the lever **120**. The forward chain **152** passes downwardly through an opening **154** provided in table **36**, and has its lower end attached to the front

end of treadle 48, as at 156. The rearward chain 158 passes downwardly through an opening 160 provided in said table, and has its lower end attached to the rear end of said treadle, as at 162.

As shown particularly in Figs. 5 and 7 formed in the upper face of the plate 118 is a transverse dove-tail groove 164, and a longitudinal dove-tail groove 166. Adjacent one end of each said grooves, there is provided a shallow threaded hole 168.

These dove-tail grooves serve to removably mount an anvil and pressure plate of selected contour on the member 118. Obviously, the contour selected matches that of the selected creasing blade 84.

The particular anvil member 170 associated with the machine in the drawings is illustrated per se in Fig. 8. It is of identical construction with the anvil member of said patent, and will be but briefly described. It includes a solid plate portion 172, and a resilient arcuately edged portion 174 imbedded in a recess 176. It should be noted however, that in some operations, the portion 174 need not be of a resilient composition.

For use in the present machine, each anvil and pressure member 170 is provided with a depending dove-tail cross bar 178 adapted to be slidably received by either the groove 164, or the groove 166, depending on whether said bar extends transversely or longitudinally. It may be said that, except in rare instances, all anvil members will be provided with a transverse bar, and therefore the description will be limited thereto. Adjacent one end, each bar 178 is provided with an aperture 180. This aperture is formed a predetermined distance from the longitudinal centerline of the anvil, said distance being identical with that obtaining between the threaded hole 168 and the longitudinal centerline of the machine.

Thus, any selected anvil member may be centrally mounted by aligning the holes 180 and 168, whereupon a set screw 182 may be employed to prevent fortuitous displacement during continued operations.

The forming block assembly 44, as has been stated, is stationary, and, as seen especially in Fig. 9, of a configuration corresponding to that of its associated anvil member and creasing blade. As in said patent, each forming block assembly includes a horizontally disposed plate 184, a raised guage portion 186, and a protruding lip portion 188.

To mount a selected forming block assembly in proper position, the upper face of the wall 56 is provided with a transverse dove-tail groove 190 adapted to slidably receive a downwardly projecting dove-tail cross bar 192 with which each plate 184 is equipped. A shallow threaded hole 194, an aperture 196, and a set screw 198, provide an arrangement for properly locating the forming block, similar to that described in connection with the anvil member.

It is noted that one of the functions of the treadle 48 is to facilitate the positioning of the assembly 170, when it is not of a type similar to that illustrated in Fig. 17. Thus for example, in order to mount the assembly of Fig. 8 with the assembly of Fig. 9 already in place, the forward end of the treadle 48 is depressed to bring the upper face of the plate 118 slightly below the lower face of the stationary plate 184.

It is also noted that after the anvil assembly 170, and the forming block assembly 44, have been mounted in position on the machine, the

creasing assembly is slid into proper position and so maintained. The means provided for this latter purpose comprise a laterally projecting lug 200 having a threaded aperture to engage the shank portion of a set screw 202 the lower extremity of which may be brought to bear against the upper face of the dove-tail bar 98.

Referring now briefly to Figs. 17, 18 and 19, a complementary set, or combination, of modified anvil, forming block, and creasing blade elements is portrayed.

This combination will obviously produce a straight finished edge. To obviate prolix description, reference characters, whose meaning has already appeared, are applied to the parts.

It is noted that, when this modified set or one analogous thereto is employed, the machine thus far described will function in a highly efficient manner.

However, to insure similar functioning when the set portrayed in Figs. 8, 9, and 10, or one analogous thereto, is employed, the machine is equipped with mechanism which will now be described.

Thus, as shown in the drawings, a rectangular block 204 of metal is welded to, as at 206, and spans the distance between, the front vertical edges of the vertical walls 64. Formed in the block 204, is a plurality of elongated vertical openings 208, each of which extends from top to bottom of said block, as specifically shown in Fig. 6.

Flush with the upper face of block 204, and pivotally mounted on the unthreaded shank portion of a screw 210, is a horizontally disposed latching arm 212 the free extremity of which extends beyond the adjacent vertical side of said block.

Assuming that the forming block of Fig. 9, or one analogous thereto is being employed, the arm 212 is swung forwardly, as suggested in Fig. 7, and one or more rods 214 are inserted into, and passed through selected openings 208 of the block 204. These rods are of such length that when their lower extremities are in contact with the upper surface of plate 184, their upper extremities are flush with the upper face 216 of the block. With the rods 214 in place, the arm 212 is swung into its Fig. 2 position, whereby said rods are retained rigidly in position against the plate 184.

As will appear in the description of the operation to follow, upward pressure is at times exerted against said block, and it is important that it be maintained rigid.

Therefore, when a forming block is employed which projects forwardly a considerable distance beyond the wall 58, the arrangement described is employed. The slot 102 permits passage of the rods through the creasing blade supporting plate 82. To remove any undue strain on the pivot screw 210, an abutment angle 218 is provided. Its vertical leg portion is rigidly secured to the rear face of the block 204, and its horizontal leg portion extends forwardly in contact with the free end of said arm, as shown.

The operation of the machine is as follows:

Assuming that the piece of leather L portrayed in Fig. 16 is to have its edge e turned and bound, it is placed in position with its adhesively treated side up, and with said edge in contact with guage 186, as in Fig. 11.

The operator now depresses the forward end of treadle 46 with his left foot causing the creasing blade to descend and impinge upon the leather adjacent the adhesively coated margin thereof.

At such time, it is noted that the leather is, so to speak, pinched between the blade 84 and the resilient portion 174 of the anvil. Slippage of the leather is thus obviated. This relation of parts is illustrated in Fig. 12.

Further descent of the creasing blade to its predetermined limit effects the result portrayed in Fig. 13. It is noted that the adjustable abutment screw 76 determines the extent of creasing blade descent. As shown, the resilient member 174 yields somewhat so that the free marginal edge of the leather now springs outwardly into engagement with the underside of the projecting lip 188.

It is to be noted, that while the blade 84 is descending, it is forcing the anvil supporting plate 118 downwardly thereby compressing the spring 138.

Assuming that the operator now removes his foot from the treadle 46, the spring 112 will cause the creasing blade 84 to ascend.

Simultaneously, the spring 138 will cause the plate 118, and the anvil 172 to do likewise. The approximate position of the parts shortly after the beginning of these movements is illustrated in Fig. 14, wherein it is seen that the partial adhesion of the marginal portion to the body portion of the leather has now been effected.

Complete adhesion will ordinarily have been effected when the force of pressure exerted by the spring 138 against the lever 120 has been expended. At such time the upper face of the anvil member 172 will occupy a plane below that of the forming block approximately equal to the thickness of the leather, as is understood without requiring illustration.

However, since under these conditions, a slight further ascent of the plate 118 is permitted because the lower end of slot 146 is not in contact with abutment screw 144, the operator by depressing the rear portion of treadle 48 may elevate the anvil-pressure plate 172 to the position shown in Fig. 15.

This additional pressure, though limited, has been found to be highly effective, particularly in binding relatively thick stock.

To remove the leather L with its now finished edge, the operator depresses the forward end of treadle 48 to lower the plate 118, as is understood. Upon removal of his foot from said treadle, the machine is ready for the reception of a similar piece of leather.

It is to be understood that the precise mechanism illustrated and described is subject to modifications without departing from the spirit of my invention, which is characterized by suitable means that may be manually operated to first crease a piece of leather adjacent the edge thereof to be finished, and thereafter fold and bind said edge to the body portion of the leather.

Therefore, the scope of the invention is to be limited only by the appended claims.

What I claim is:

1. In a machine of the character described, a vertically reciprocable creasing assembly, a vertically reciprocable pressure applying assembly, a stationary forming block assembly, means for manually lowering the creasing assembly, means for thereafter automatically raising the creasing assembly, means for manually lowering the pressure applying assembly, means for thereupon automatically raising same, and auxiliary means for thereupon manually raising said pressure applying assembly slightly.

2. In a machine of the character described, a vertically reciprocable creasing assembly including a blade and a supporting block therefor, a vertically reciprocable pressure applying assembly including a solid plate portion and an anvil portion, a stationary forming block assembly including a guage portion and a projecting lip portion, means for thereafter automatically raising the creasing assembly, means for manually lowering the pressure applying assembly, means for thereupon automatically raising same, and auxiliary means for thereupon manually raising said pressure applying assembly slightly.

3. The machine of claim 2 wherein the means for manually lowering the creasing assembly includes a reciprocable crosshead operable in slideways provided on the machine, a channel shaped block rigid with said crosshead, a lever the rear end of which has a pivotal connection with the upper end of a vertical rod and the forward end of which terminates in a rounded portion in constant engagement with said block, a pivotal support approximately centrally thereof for said lever, and a treadle the rear end of which has a pivotal connection with the lower end of said rod.

4. The machine of claim 2 wherein the means for automatically raising the creasing blade assembly following the manual lowering of same comprises a tension spring the upper end of which is attached to a pivoted lever included in the lowering mechanism, and the lower end of which is attached to the top wall of the base of the machine.

5. The machine of claim 2 wherein the means for manually lowering the pressure assembly includes an inverted channel shaped bracket member secured to the underside of a reciprocable supporting plate for said assembly, a pivot shaft supported by said bracket and passing through the forward end of a horizontally disposed lever pivotally mounted approximately centrally thereof on a cross shaft supported in angle brackets depending from the top wall of the base of the machine, a treadle, and a flexible connection between the forward end of said lever and the forward end of said treadle.

6. The machine of claim 2 wherein the means for automatically raising the pressure assembly following the lowering of same comprises a coil spring interposed between a horizontally disposed lever included in said lowering mechanism and the top wall of the base of the machine.

7. The machine of claim 2 wherein the means for manually raising the pressure assembly slightly following the automatic raising thereof comprises a flexible connection between the rear end of a horizontally disposed lever included in the automatic raising mechanism and the rear end of a treadle also included in said mechanism.

8. In a machine of the character described, a combined anvil and pressure plate assembly, means for mounting said assembly on a vertically reciprocable plate, chain and treadle means for reciprocating said plate, a stationary forming block, means for mounting said block on the base of the machine, a creasing blade secured to a horizontally disposed supporting plate, a vertically reciprocable crosshead, means for mounting said creasing blade supporting plate on the crosshead, and rod and treadle means for lowering said crosshead.

9. In a machine of the character described, a combined anvil and pressure plate assembly, means for mounting said assembly on a vertically reciprocable plate, a horizontally disposed lever pivotally supported on the base of the machine,

a bracket secured to the underside of said reciprocable plate, a pivotal connection between said bracket and one end of said lever, a spring interposed between the other end of said lever and the top wall of said base to normally maintain said reciprocable plate flush with said top wall, chain and treadle means for reciprocating said plate, a stationary forming block, means for mounting said block on the base of the machine, a creasing blade secured to a horizontally disposed supporting plate, a vertically reciprocable crosshead, means for mounting said creasing blade supporting plate on the crosshead, and rod and treadle means for lowering said crosshead.

10. In a machine of the character described, a combined anvil and pressure plate assembly, means for mounting said assembly on a vertically reciprocable plate, a horizontally disposed lever pivotally supported on the base of the machine, a bracket secured to the underside of said reciprocable plate, a pivotal connection between said bracket and one end of said lever, a spring interposed between the other end of said lever and the top wall of said base to normally maintain said reciprocable plate flush with said top wall, chain and treadle means for reciprocating said plate, a stationary forming block, means for mounting said block on the base of the machine, a creasing blade secured to a horizontally disposed supporting plate, a vertically reciprocable crosshead, means for mounting said creasing blade supporting plate on the crosshead, rod and treadle means for lowering said crosshead, and spring means for thereafter automatically raising said crosshead.

11. The machine of claim 8 wherein the means for mounting the combined anvil and pressure plate assembly on said vertically reciprocable plate comprises a depending dove-tail bar rigid with said assembly, a dove-tail groove formed in the upper face of said plate adapted to slidably receive said bar, an aperture in the bar adjacent one end thereof, a threaded hole in said plate adjacent one end of the groove, and a set screw adapted to pass through said aperture into engagement with said hole to maintain said assembly in position.

12. The machine of claim 8 wherein the means for mounting the stationary forming block comprises a depending dove-tail bar rigid with said block, a dove-tail groove formed in the upper face of the top wall of the base of the machine and adapted to slidably receive said bar, an aperture in the bar adjacent one end thereof, a threaded hole in said base adjacent one end of the groove, and a set screw adapted to pass through said aperture into engagement with said hole to maintain said block in position.

13. The machine of claim 8 wherein the means for mounting said creasing blade supporting plate on the crosshead comprises an upwardly projecting dove-tail bar rigid with said plate, a dove-tail groove formed in the lower face of said crosshead and adapted to slidably receive said bar, a lug provided with a threaded aperture projecting laterally from one side of said crosshead in vertical alinement with and above said groove, and a set screw adapted to engage said aperture and impinge at its lower end against he upper face of said bar.

14. In a machine for turning and binding the edge portions of pieces of leather, means for maintaining the forwardly projecting portion of a forming block rigid during applications of pressure thereto from below, said means including a rectangular block rigid with a frame portion of the machine, a plurality of vertical openings each extending from top to bottom thereof formed in said block, one or more rods each passing through a selected opening in said block and resting on said forwardly projecting portion of the forming block, a horizontally disposed latch arm pivotally mounted at one end on the unthreaded shank portion of a vertical screw carried by said block and adapted to maintain said rods in firm contact with said projecting portion, and an abutment angle the vertical leg portion of which is secured to the rear face of said block, and the horizontal leg portion of which extends forwardly in contact with the free end of said latch arm.

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No references cited.