

Aug. 14, 1956

P. A. BLATZ
LEATHER WORKING MACHINE

2,758,425

Filed March 8, 1952

2 Sheets-Sheet 1

Fig. 1

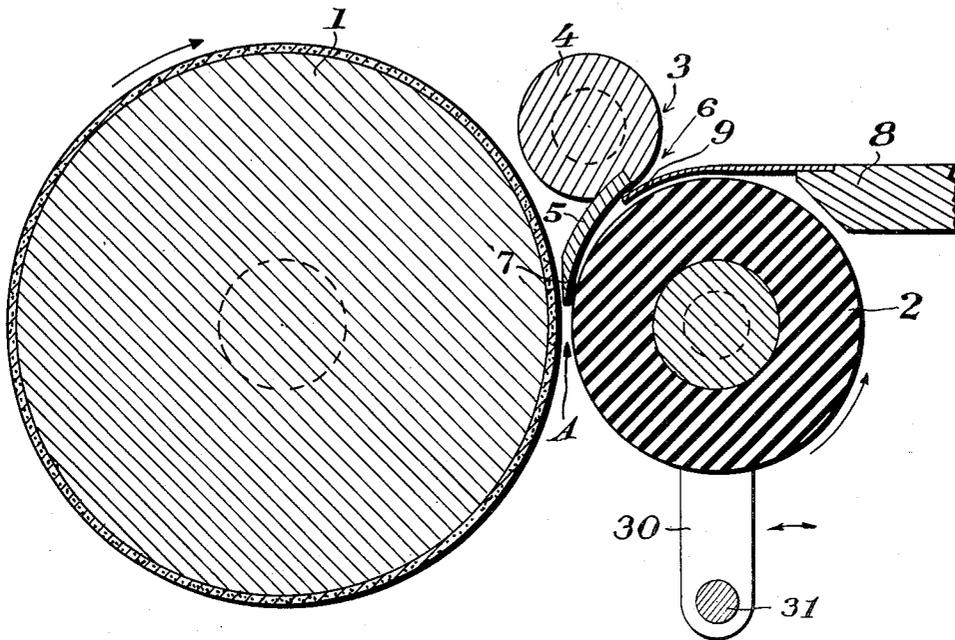


Fig. 3

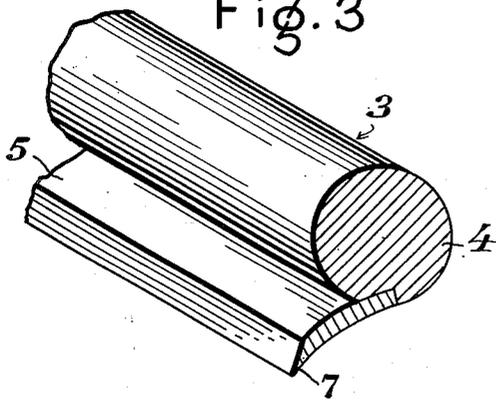
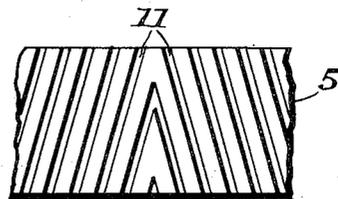


Fig. 4



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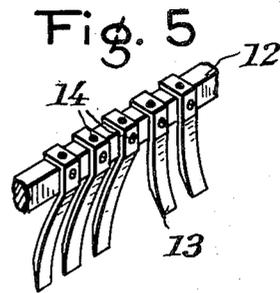
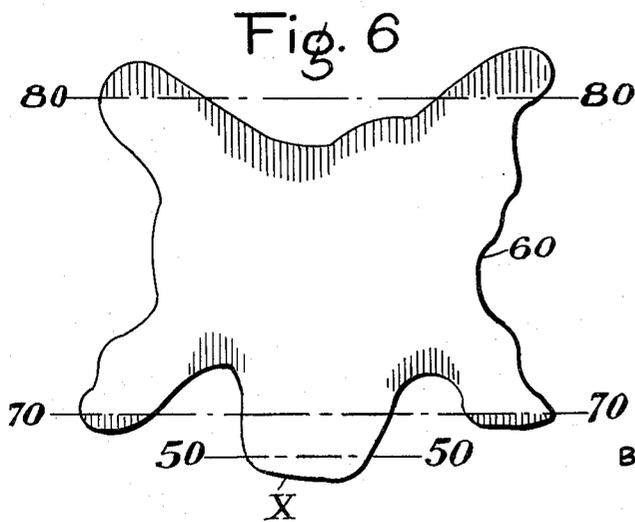
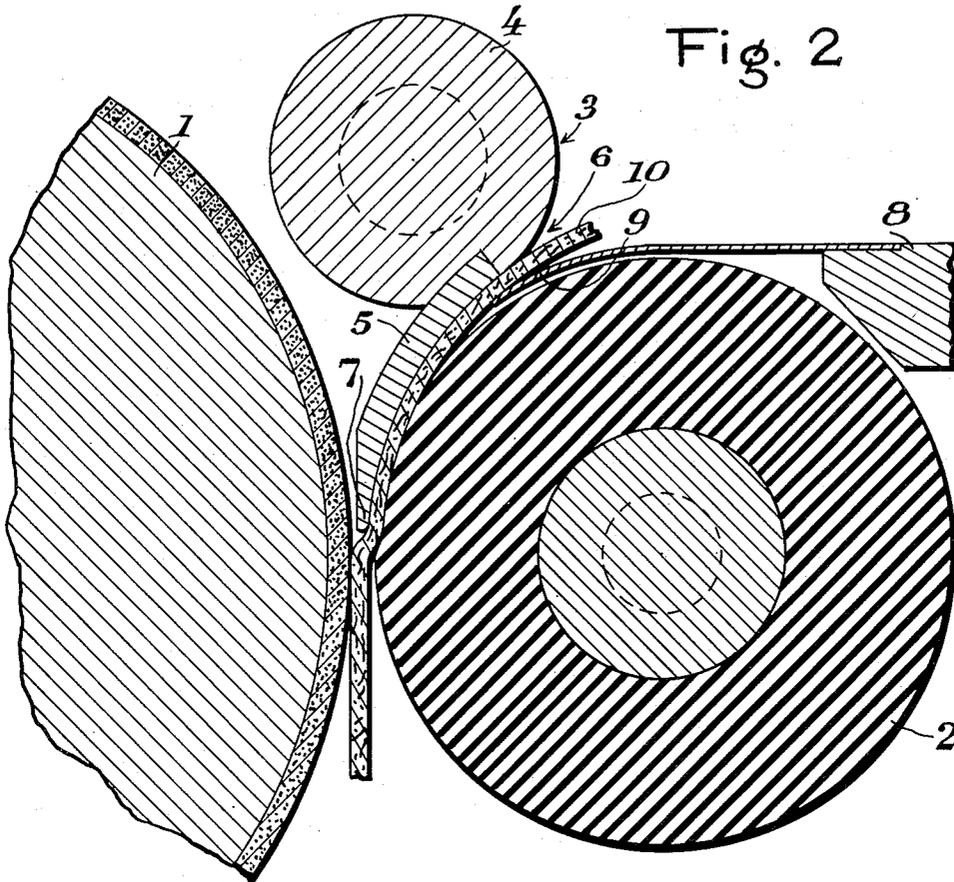
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LEATHER WORKING MACHINE

Filed March 8, 1952

2 Sheets-Sheet 2



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2,758,425

LEATHER WORKING MACHINE

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15 Claims. (Cl. 51—78)

This invention relates to leather working apparatus of the shaving and buffing type. More particularly, the invention relates to a leather working machine for shaving and buffing soft pliable skin leather, such as that used in making gloves and suede uppers for shoes.

The typical leather working machine for flexible skins comprises a rotating feed roll, a rotatable pinch roll, and a rotating work cylinder. The skin to be treated by the machine is hand fed into an adjustable opening between the rotating feed roll and the pinch roll, the rotating action of the feed roll brings the skin into contact with the surface of the work cylinder at the nip of the feed roll with the work cylinder. It is at this nip that the skin is treated. The surface of the working cylinder may comprise an abrasive buffing material, shaving blades, or the like.

Generally, the work and feed rolls are mounted in horizontal abutting alignment with the pinch roll vertically disposed above the feed roll but eccentric thereto. In general practice the feed roll is covered with several inches of rubber, while the work roll may contain a uniformly coated sand paper or other abrasive surface or shaving blades. Usually, the feed roll is adjustable on the horizontal axis toward and away from the work roll in order to permit insertion of the skins between the feed and pinch rolls and to permit manual release of the feeding action when a skin becomes excessively wrinkled.

Large quantities of soft pliable skin leather (hereinafter also referred to as "skins") have been ruined due to the irregular gripping and holding action of present leather working machines. Skins fed into these machines become snagged or wrinkled and as a result have been improperly buffed or shaved, resulting in the loss of a substantial part of the treated skin. Such losses have been costly, and the industry has long sought a means whereby consistently good buffing or shaving is assured.

It is imperative that the skin be fed flatly and without folds to the work cylinder. Folded and wrinkled areas of the skin will be cut or unevenly buffed by the working cylinder and result in a substantial monetary loss. It was at first thought that folds and wrinkles in the skin were due to the tendency of the skin to turn upwardly around the pinch roll. In order to eliminate this tendency it was proposed in U. S. P. 2,305,879 issued December 22, 1942, to J. E. Leach to provide a guide member mounted for adjustment about the surface of the pinch roll to prevent the skin from turning upwardly around the pinch roll and being thrown against the work cylinder. However, this did not eliminate the folding and wrinkling problem and the same losses were still incurred.

In accordance with the present invention it has been found that the folding and wrinkling of the skin is due to the uneven tension applied to the skin as it is fed into the working cylinder. Skins have neck and leg portions and are irregular in shape. In the prior skin leather working machines there is about 3½" between the skin gripping line and the nip of the feed roll with the working cylinder (the active working area of the machine). The

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working cylinder revolves at a relatively high speed (about 1300 R. P. M. during buffing) with respect to the feed roll, and a substantial tension is exerted upon the skin when it enters the working area. The skin is held at a substantial distance from the working area and owing to the irregular shape of the skin the gripping line is interrupted at various times during the feeding of the skin. Folding and wrinkling of the skin results and the parts of the skins where this occurs are seriously damaged by the action of the working cylinder.

In order to insure complete treatment of the skin in the prior skin leather working machines, the skin has frequently been fed into the machine until slightly more than one-half was treated, and was then removed and reversed in direction, thereby completing treatment of the other half. This was not satisfactory, since it required additional time and effort and resulted in the nap of the skin running in two different directions.

A further objection to the prior constructions is that numerous operators have been seriously maimed because their fingers have been caught in the opening between the revolving feed roll and the rotatable pinch roll of the working machines. Various attempts have been made to obviate this danger by having shields placed upon the machines to prevent such damage, but these did not eliminate the danger and in practice have failed to perform their intended function due to the apparent tendency in American workmen to disregard safety measures and equipment in general.

A still further object to the construction of known type skin working machines is their inherent sluggishness in responding to the operator's control action. As will be apparent from an inspection of Fig. 7 of the above-identified Leach patent, which patent typifies the major quantity of present commercially used machines, the feed roll must be moved a distance which is much greater than the thickness of the skin in order to release the skin from the feeding action of the nip between the pinch and feed roll. This excess movement has resulted in much damage being wrought to the excessively folded or wrinkled skin before the operator could effectively terminate the feeding action.

It is the main object of the present invention to overcome the foregoing and related problems. One object is to prevent the damaging of soft pliable skins due to irregular working. Another object is to provide a skin feeding unit that is instantly responsive to the operator's touch. A still further object is to provide a guardless and shieldless skin feeding unit for application to a skin working apparatus which is foolproof and safe. Moreover, it is the prime object of the present invention to produce a practical and inexpensive structure whereby skin leather working machines now in use may be readily modified with a minimum change of structure to produce consistently satisfactory buffing or shaving operations. These and other objects of the present invention will become apparent from the description and claims that follow.

The above objects are attained in accordance with the present invention by employing a stationary pressure member in lieu of the prior art type rotating pinch roll to provide the necessary feeding action in conjunction with the usual work and feed rolls. According to the present invention the axes of the work cylinder and the feed roll are positioned in substantially the same horizontal plane, with the feed roll being adjustable toward and away from the work cylinder in the usual manner. According to the invention it is essential that the pressure member firmly hold the moving skin against the surface of the feed roll in the immediate vicinity of the buffing or shaving area, and that the pressure member be stationary during operation. It is further essential

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that an area of the skin leather be embedded in the deformable rubber matrix of the feed roll by more than a mere line contact, or similar slight distance in area along the periphery of the feed roll; preferably it should be on an arcuate segment of approximately three-fourths inch. A mere guide member in close proximity to the feed roll will not accomplish the objects of this invention.

In one of its embodiments this invention is concerned with the above combination wherein the pressure member is an arcuate platen, the face of which has grooves therein arranged upon an angle and in diverging directions from the center of the platen for spreading the skins immediately before they enter into the active working area. In another embodiment the pressure member may have transversely extending openings therein by using spaced, depending fingers to form a comb-like member, the tips of the teeth of the modified pressure member forming a trailing edge and extending within about one inch or less of the nip and firmly holding the skins against the feed roll immediately adjacent the active working area. The active working area may be defined throughout the present disclosure as that area in which the skins are shaved or buffed by the work cylinder.

In one of the preferred embodiments of the invention there is provided a feed table for cooperation with the combinations previously defined, the surface of the feed table extending over the surface of the feed roll and having an extended curved edge portion, forming with the face of the pressure member a narrow, stationary skin-receiving throat.

The pressure member or platen, as noted above, may be modified in many ways. For instance, it need not consist of one rigid piece, but may be made up of several parts which may be resilient or otherwise, so long as they firmly hold the skins against the feed roll up to within one inch or less of the nip of the roll with the work cylinder. The member may consist of a rigid backing plate and a number of flexible teeth protruding therefrom. The contour of the surface of the pressure member preferably has a curvature somewhat wider, i. e. on a greater radius, than that of the feed roll, thus forming an acute, so-called "horn" angle which provides an ideal skin-receiving throat. The essence of this form of the invention lies in the combination of a narrow, skin-receiving throat formed by the curved pressure member and a spaced horizontal feed table wherein the skin changes from a substantially horizontal to a substantially vertical direction with the application of sufficient pressure to the skins to firmly hold them against the feed roll immediately preceding the active working area of the work cylinder.

The appended drawings illustrate several embodiments of the invention. For simplicity, mechanical structures not essential to the invention are not shown. Like numerals define like parts throughout the drawings.

Fig. 1 shows a sectional side view of one form of the improved skin-feeding device of the present invention;

Fig. 2 is an enlarged sectional view of the device of Fig. 1 illustrating the coaction of the feeding device with a leather skin;

Fig. 3 is an enlarged isometric view of one form of the pressure member of the present invention;

Fig. 4 is a fragmentary plan view of another form of a pressure member;

Fig. 5 is an isometric view of a modified pressure member;

Fig. 6 is a diagrammatic illustration indicating how various sections of a leather skin are affected by leather-working machines.

Fig. 1 illustrates the relative position of the work cylinder 1 with the feed roll 2, the pressure member 3, and the feed table 8 of the present invention. As indicated, the surface of the work cylinder 1 is covered with

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an abrasive material adapted to buff the surfaces of soft, pliable leather skins. It will be understood, however, that the surface of the work cylinder may be fashioned to contain shaving blades or other forms of buffing equipment. The feed roll 2 is covered with a thick layer of soft rubber and is adapted to operate as a primary driving means for conveying the skins to the working area of the cylinder 1 and is rotated by conventional driving mechanism (not illustrated). The working area (approximately one and one-half inches along the periphery) of the abrasive covered work cylinder 1 is generally indicated by the legend A and includes that portion of space wherein the peripheries of the feed roll 2 and the work cylinder 1 substantially contact on a vertical tangent line, the cylinder and roll being supported in the same horizontal plane. For the purposes of better illustrating the concept of the present invention, the work cylinder 1 and feed roll 2 have been illustrated as being separated along their aligned horizontal axes, although in practice the peripheral edge of the abrasive material of cylinder 1 will approximately contact the surface of roll 2 along the horizontal center line connecting the centers of the rolls.

Vertically disposed above the feed roll 2, but laterally offset therefrom, is positioned a stationary pressure member or platen 3 which includes a vertically depending finger portion 5. This finger portion 5 is positioned to extend vertically downward toward the bite or nip between cylinder 1 and feed roll 2 to the approximate boundary of the working area A. In this form of the invention a feed table generally indicated as 8 is fixedly positioned above the feed roll 2 and includes a thin horizontally extending work supporting surface which overlies the upper surface of the roll 2 and has an integral, downwardly curving, end edge portion 9 which substantially follows the curve of the periphery of the roll 2 but is spaced therefrom. This extended curved edge portion of the work-supporting table projects into the space between the pressure finger 5 of the pressure member 3 and the periphery of roll 2 for a short distance. With this construction the upper surface of the curved edge 9 of table 8 and the spaced underside of the pressure finger 5 of pressure member 3 form a curved, narrow skin-receiving throat 6 through which work may be fed to the working cylinder 1 with complete safety.

In practice, the curved throat or skin receiving space is bordered on one side by the underside of the curved pressure platen 5 and on the other side by the curved depending edge portion 9 of the table and the periphery of feed roll 2. The "horn angled" shape is provided by constructing the underside of the pressure finger member 5 to have a radius of curvature which is slightly greater than that of the rubber feed roll. A difference of $\frac{3}{8}$ of an inch has been found to be very effective in actual operation on most of the conventional soft leather buffing machines. In addition, the pressure platen is positioned in space adjacent the periphery of the feed roll along an arc which may be constructed from a radius having a point of center along the center line connecting the feed roll and work cylinder but spaced on the far side of the feed roll center a distance approximately equal to the aforementioned $\frac{3}{8}$ of an inch. By this means it is possible to position the pressure member so that it cooperates with the periphery of the feed roll to produce a narrow curved opening therebetween which gradually diminishes to a line contact adjacent the line of tangency between the feed roll and work cylinder. It will be readily understood, however, that the above mentioned $\frac{3}{8}$ inch dimension is not necessarily critical and may be varied depending upon specific circumstances of the apparatus' constructional features or operating conditions.

The pressure member or platen 3 is indicated in expanded view in Fig. 3. It comprises a backing or supporting structure 4 which is shown to be cylindrical in

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cross section, but which may have any desired shape such as rectangular, triangular, etc., so long as it provides the necessary rigidity. To the underside of this backing or anchoring structure is fastened a curved finger member 5 which may be formed from an arcuate segment of a metallic cylinder. The finger member 5 is fastened to the backing or anchoring structure 4 by any suitable means such as welding, bolting, etc. Preferably, the depending exposed edge of the finger 5 is chamfered or milled as indicated at 7 to provide a trailing edge surface which may be inserted near the working area A between cylinder 1 and roll 2, almost to the point of their tangency.

The feed roll 2, as is conventional, is adapted to be translatable toward or away from the work cylinder 1 by control structure well known in the art but graphically illustrated in Fig. 1 as comprising a crank arm 30 adapted to pivot about a shaft 31 in the direction of the arrow. It will be appreciated that the free end of crank arm 30 is connected to the spindle portion of feed roll 2 in a manner which permits free revolution of roll 2 during translation toward and away from the work cylinder.

In practice it is desirable that the pressure member 3 and its integral finger section 5 have a slight play or adjustable movement. Experience will dictate the most desirable limits for this movement in any given application, but it has been found that horizontal movement of $\frac{1}{16}$ of an inch for the trailing edge 7 above the nip or bite between cylinder 1 and roll 2 is generally sufficient for most operating conditions. This adjustability or play may be conveniently provided while utilizing the support shaft for the pinch roll of conventional machines as a backing or support structure by rotationally immobilizing such shaft; thus permitting use of the usual adjustable bearing supports of the machine to adjust the finger member 5 adjacent the bite or nip of the cylinder 1 and roll 2. As explained previously, it is desirable that the finger edge 7 of the pressure platen 5 positively abut the surface of roll 2 to provide the proper feeding action, and the above noted adjustable feature provides an easy and efficient means for accomplishing this adjustment.

Fig. 2 is a magnified view illustrating the function and operation of the novel feeding unit of the instant invention as applied to a soft, pliable leather skin. In this view a skin 10 is illustrated as being fed over the upper curved edge surface 9 of the work-supporting table 8 into the narrow horn-like throat 6 formed by the adjacent underside of the finger member 5. As indicated in the figure, the skin 10 touches the peripheral surface of the rubber roll 2 shortly after parting contact with the trailing edge of table 8, and is pressed down into firm frictional contact therewith by the stationary, curved, guiding action of finger 5. Since the feeding roll 2 is composed of deformable rubber, the stationary finger 5 forces the skin 10 down into the matrix of the rubber whereby the roll 2 is enabled to exert a constant driving force over an extended area of the skin 10. Further, the resilient nature of the deformable rubber matrix of roll 2 tends to press the soft leather skin against the smooth, immobile underside of the pressure finger 5 and eradicates wrinkles or folds therein. In the area just beyond the trailing tip edge 7 of the pressure finger 5, the pliable leather skin is returned by the resiliency of the rubber matrix of roll 2 to its normal peripheral position. This action produces a bending and flexing of skin 10 just beyond the trailing tip 7 of the pressure finger at the point where the abrasive cylinder 1 contacts the skin to buff it. The result of this phenomenon is that the skin has a two-fold movement, one in the direction tangentially along the line of contact between the working cylinder 1 and the feed roll 2, and a second radially along the horizontal line connecting the centers of the work cylinder and feed roll. This (double) planetary type flexing action in the skin produces an extremely sensitive and efficient buffing action result-

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ing in a characteristically superior finish. A further point which should be noted is that the skin 10 is pressed or imbedded into the deformable rubber matrix of the feed roll at a point midway from the trailing edge of the pressure finger 5 and shortly after passing over the end 9 of table 8. This construction, in itself, provides an exceedingly effective means for preventing formation of folds and wrinkles in the skin prior to its entering the working area A since the skin has little slack or play area within the narrow throat 6.

It should also be noted that the tension which is applied to the pliable skin by the high speed of the working cylinder 1 is restricted to that area between the points where the skin leaves contact with the trailing edge 7 of pressure finger 5 and the point where it is contacted by the periphery of the abrasive layer. Thus a constant and even tension will be assured throughout the entire extent of the skin during its feeding action except for the minute portions immediately adjacent its leading and trailing edges. With the above construction there is no possibility of the skin's becoming wrinkled or folded due to a flexing action, since it is effectively pressure fed throughout the major portion of its travel to the working area and has no freedom of movement with which to produce the wrinkling or folding encountered in prior feeding units.

A further advantage in using the above construction is the provision of the horizontal work-supporting area of table 8. This is particularly advantageous in permitting the operator of the machine to manually adjust and smooth out folds and wrinkles in the skin prior to and during its feeding through the machine while retaining a posture which is less likely to induce fatigue than the vertically positioned feed structures of many prior constructions.

The curved extension 9 of the table 8 provides an additional safe area in which the machine's operator may place his fingers to complete the smoothing and folding action of the skin immediately prior to its being gripped by the feed roll 2. The stationary pressure member 3 and the curved extension 9 of the stationary table 8 constitute a fool-proof safety device, completely obviating any danger of having a machine operator's fingers or limbs injured during operation of the machine.

Fig. 4 illustrates a modified form of pressure finger for use in the feeding device of the Fig. 1 construction. In this embodiment, the underside of the pressure finger 5 is formed by milling or other metal-working operations to have a plurality of equally spaced diverging grooves 11 therein. These grooves are formed to be generally contoured in the shape of a V with the vertex being positioned away from the trailing edge 7 of the finger member with succeeding grooves encompassing the first. With this construction, skins which are fed over the trailing edge of the curved portion 9 of table 8 will have their upper surface gripped by the minute grooves 11 in the finger member 5, and pinched or smoothed by the action of such grooves towards the ends of the feed roll 2 to produce a flat and substantially wrinkleless working surface for engagement by the abrasive substance of the working cylinder.

A further modification of the pressure member is shown in Fig. 5. In this instance the pressure member is formed to have a stationary backing or supporting structure 12 which is in the shape of a rectangular bar. To the bar are attached a plurality of spring steel fingers 13 which may be removably attached thereto, as by means of screws 14. If desired, the fingers could be immovably or stationarily positioned thereon as by welding or the like. As indicated in the figure, these fingers are grouped in sections to form diverging groups of teeth in the same manner as the grooves shown in the Fig. 4 construction. This diverging construction provides an improved spreading action for the skins which assists in smoothing them out prior to entering the working area

of the machine. It will be obvious that such divergence is not necessary and that the spring fingers may be positioned to depend perpendicularly in an orderly spaced fashion from the supporting or anchoring member 12. In this form of the invention, the spring fingers 13 bear upon the surface of the roll 2 with a resilient force which is particularly advantageous in compensating for excessive thickened segmental areas in the skin's depth. The stationary supporting or anchoring bar 12 may be adjustably mounted in the manner specified in the Fig. 1 construction, or if desired, any other conventional anchoring means may be utilized, such as supporting slots and cooperative adjustable set screws.

A further operative feeding device having a modified structure similar to, but distinct from those disclosed in Figures 1 through 3 inclusive, 4 and 5, may be constructed in the following manner. It is contemplated that in some specific application, use of the previously described curved pinch bar structures for forming a backing or anchoring member for the pressure fingers in the previously described constructions would not be desirable, particularly where additional operating treatments for the skin were contemplated within a single machine structure. Under such conditions it is proposed to replace the backing support or anchoring rod with its depending finger pressure member of the previously described constructions with a single flat rectangular plate having a depending trailing edge similar to the edge 7 of the Figure 1 construction. This plate would be mounted in a vertical position directly above the bite or nip between the work and feeding rolls with the trailing edge extending down near the working area and engaging the surface of the feed roll with fingertip pressure immediately adjacent the working area. It is also proposed to extend the curved extended edge portion 9 of the table 8 of the Figure 1 construction down and about the periphery of the feed roll to a point in space, which is separated from contacting or intersecting the surface of the vertical pressure plate by a distance slightly in excess of the greatest thickness of leather skins likely to be encountered in operation. The extended curved end portion 9 of the table 8 would form a continuous curved work supporting surface which follows the curvature of the feed roll 2 in an arcuate path for slightly under 90° and which terminates at a point spaced from the adjacent side of the vertically positioned pressure plate to form a minute feed throat through which the skins may be fed to the working area of the device but which will be too small to permit passage of an operator's fingers or limbs. With this construction it will be possible for the machine's operator to continuously and manually adjust the surface of the leather skin, while supported by the curved table edge during its progressive feed through the buffing machine without danger of having a finger or limb pinched, cut, or broken. In this construction, the wrinkling or smoothing action of the feed unit depends primarily upon the operator's skill and ability, but has been shown to be effective in operation although not quite as desirable as the preferred form of the invention illustrated in Figure 1. Although this form of the invention contemplates the use of a vertically disposed plate positioned to contact the surface of the skin leather, it will be understood that it may be modified in accordance with the teachings of Figures 4 and 5 to either form spreading or smoothing serrations on its depended work gripping surface as in Fig. 4, or it may be slotted to provide depending fingers or teeth similar to the construction shown in Figure 5.

Figure 6 illustrates a diagrammatic sketch depicting a representative leather skin having distinctly defined worked and non-worked areas thereon attributable to the buffing action produced by prior skin leather working constructions. In accordance with the conventional practice, the skin 60 may be considered as having been fed through one of the present commercial forms of leather

working machines, neck end first in a single pass. Under this hypothetical condition the tip of the skin X would be fed to the working zone or area of the buffing machine while the rest of the skin was held by the conventional rotatable pinch roll along the line 70—70. The distance between the holding line 70—70 and the working area 50—50 is generally 3½ inches or more. Due to the fact that the working cylinder rotates at an exceedingly high rate of speed, it would contact the leader X of the neck portion of the skin and tend to stretch it, i. e., pull it through the nip of the feed roll and the working cylinder. This action produces a stretching or tensioning of the skin between the line 70—70 and the working zone indicated by the line 50—50 and is equal to about 3½ inches along the peripheral surface of the feed roll 2. Due to this action and to the irregular shape of the skin, the critical areas of the skin, shown shaded in the drawing, are subject to folding and wrinkling. When these folds come into contact with the work cylinder portions of the skin at the apex of the fold or wrinkle will be cut while the portions of the skin depending between these folds or wrinkles will remain unbuffed. This undesirable action recedes as more regular areas of the skin are fed between the pinch roll-feed roll nip, as indicated by the unshaded areas in Figure 6. The loss incurred through this wrinkling and folding is generally confined to the skin area where the forelegs join the body adjacent the shoulder portion but constitutes a considerable monetary loss when multiplied by the large number of skins processed each day. In fact, the successful processing of this additional area alone would be a meritorious advance in the art. The instant invention, however, attains a much greater saving as will be apparent from the following discussion.

For reasons previously indicated, it is advantageous to feed the skin through the machines in only a single direction. However, this means that the last portion of the skin after it leaves the operator's hands will be snapped through the convention pinch roll feed type buffing machine without receiving any treatment, or at most, very little. This is due to the fact that the pressure line or gripping action which is a primary modifying feature in feeding the skin to the working cylinder lies between the pinch roll and the feed roll in these prior type constructions and is removed from the working zone by a distance of about 3½ inches or more. It will be thus readily understood that the tail end or last portion of the skin including an area of skin in excess of about 3½ inches will have no gripping or pressure producing means applied to it to restrict the forward movement due to the action of the high speed buffing cylinder. Under this condition, this portion of the skin will be whipped through the bite between the work cylinder and the feed roll while unchecked in any manner and will be untreated or completely cut up. This latter lost area of the leather skin is indicated in the drawing as being that portion of the skin above the line 80—80. It will also be noted that immediately adjacent the line 80—80 a considerable area of the skin is indicated as being shaded and represents an additional loss due to folding and wrinkling wherein the pressure applied by the pinch roll is applied only to the hind leg portions of the skin. The second shaded section is consequently stretched and drawn forward by the action of the work cylinder toward the nip between the feed roll and work cylinder, creating folds and wrinkles in this margin area of the skin which will be cut and unevenly buffed when it has reached the working area.

By means of the present invention, any losses due to wrinkling or folding between the holding line and working line or area is precluded because of the close spatial relationship between the pressure platen and working area. With the instant feed structure the distance between these critical points is reduced to approximately one-half inch. This effectively prevents such irregularly shaped skin portions, such as the legs from skewing or

twisting during the buffing operation. This is due to the fact that the pressure member of the instant invention maintains uniform holding or retarding action near the working area resulting in a constant feeding rate between the pressure member and the working area.

It will thus be seen that the present invention subjects a much greater portion of each skin, regardless of its irregular surface configuration, to a consistently even and efficient buffing action. This action is accentuated very effectively by the duplex curvature produced in the skin immediately adjacent to or in the working zone by the bulging of the deformable rubber matrix of feed roll 2 past the depending trailing edge 7 of the pressure plate whereby the skin is caused to move not only tangentially of the nip between the feed and work cylinder but also flexes on an eccentric radius of curvature in a direction axially of the horizontal center line connecting the feed roll and work cylinder. This phenomena produces a much more desirable and efficient buffing action for the skin, with the resulting finished product having a continuous, homogeneous and uniformly buffed surface, free of high spots which were characteristic of skins treated in prior buffing machines.

One additional feature which is distinctly advantageous and is common to all of the forms of the instant invention is the inherent ability of a buffing machine constructed according to the instant disclosure to provide instantaneous and "a feather-like touch" response to the machine operator's control actions in releasing the feeding action of the skin. This is due to the fact that the gripping of the treated skin between the feed roll and pressure member takes place in an area which is substantially colinear with the line of movement of the feed roll toward and away from contact from with the working cylinder (it being understood as aforesaid that the feed roll is normally positioned and connected in conventional machines to be reciprocated to and fro along the horizontal line connecting the centers of the work cylinder and feed roll). With the instant feed construction, a slight retraction of the feed roll away from the working cylinder will release the skin from the driving action of the feed roll. The distance of retraction necessary to eliminate this feeding action is less than the thickness of the skin and is generally below $\frac{1}{16}$ inch. When compared with the prior constructions, which are exemplified by the aforesaid Leach patent and require feed roll movements of the order of one inch and above, the instantaneous release control provided by the instant construction is a distinct contribution in the art.

A further advantage gained from the instant construction with respect to this action is the protection furnished by the pressure plate which prevents the skin from being flipped or thrown against the surface of the working cylinder when it is released from feeding action by retraction of the feed roll. The conventional structure provided in existing buffing apparatus may be used for this releasing action with no more than minor adjustments to compensate for the minute required movement of the feed roll.

If desired, the depending curved edge portion 9 of the work supporting table may have its tip edge approximately abutting the periphery of the feed roll to form thereby a continuous uninterrupted feeding surface. It will be appreciated that this innovation is readily applicable to all forms of the invention.

Only the essential members of the present invention have been shown in detail in the appended drawings. The remainder of the machine may be constructed like that shown in U. S. Patent No. 2,305,879, issued December 22, 1942, to J. E. Leach and entitled "Leather Working Machine." It is to be understood that the invention also pertains to other types of skin leather working machines and may be suitably mounted and used with any standard skin leather working machine.

The instant disclosure constitutes a continuation in part

of the inventor's prior application Serial No. 174,352 now abandoned.

As many apparently widely different embodiments of this invention may be made without departing from the spirit and scope hereof, it is to be understood that the invention is not limited to the specific embodiments hereof except as defined in the appended claims.

What is claimed is:

1. In a machine for the buffing of soft, pliable leather skins in combination with a high speed rotary work cylinder having buffing means, a rotary feed roll having a yieldable surface positioned with its rotary axis in horizontal alignment with the axis of said rotary work cylinder, means to rotate said cylinder and feed roll, mounting means for supporting said work cylinder and feed roll including structure for reciprocating said feed roll in a horizontal path toward and away from said work cylinder, the improvement of a pressure platen member vertically positioned above said feed roll but laterally disposed with respect thereto toward said work cylinder, said pressure member including a vertically depending curved finger member presenting a concave surface eccentric to said feed roll and having a trailing edge positioned near the bite between the work cylinder and feed roll, which member contacts said yieldable surface of said feed roll at a point adjacent the bite between said cylinder and roll to form thereby a narrow, progressively restricted feed throat between said finger member and said feed roll periphery.

2. The combination set forth in claim 1 in which said depending curved finger member is positioned to have its concavely curved underside coact spatially with the periphery of said feed roll to form a horn angle therebetween which opens in a vertical direction.

3. The combination set forth in claim 2 in which a horizontally disposed work table is positioned to overlie the vertical periphery of said feed roll and includes a trailing edge portion having a radius of curvature greater than that of the periphery of said feed roll and extending about said periphery for a distance equal to between $\frac{1}{4}$ and $\frac{1}{2}$ of the curved length of said finger member.

4. The combination set forth in claim 1 in which said finger member has a smooth curved underside adjacent the periphery of said feed roll, and a work supporting table positioned adjacent said feed roll opposite from said pressure member including a horizontal work supporting surface having a curved depending work supporting surface extending into the throat formed by the curved finger member and the adjacent periphery of said feed roll.

5. In a buffing machine for the treatment of the surfaces of soft pliable skin leather, the combination of a work cylinder having structure for buffing said skin, an advanceable working surface providing a feeding action for said skins positioned adjacent said work cylinder and having an arcuate path of motion for moving a skin into engagement with said work cylinder said advanceable working surface including a yieldable peripheral portion, said work cylinder and advanceable working surface being spatially mounted with their major axes horizontally aligned, driving means for operating said cylinder and said advanceable working surface, and a pressure member having a skin engaging face vertically positioned above said advanceable working surface but laterally disposed with respect thereto, adjustable means for adjustably anchoring said pressure member in a stationary position, said pressure member including a depending finger portion with a trailing edge adjacent the nip between said advanceable working surface and work cylinder and bearing against the said yieldable peripheral portion of said advanceable working surface.

6. The combination set forth in claim 5 in which said finger member is formed to have a radius of curvature greater than the radius of the arcuate motion path of

said advanceable working surface and is positioned in space to coincide with an arc constructed on a radius equal thereto and having its center on the horizontal center line connecting the axis of said work cylinder and arcuate motion path of said advanceable working surface but displaced therefrom in a direction away from said work cylinder by approximately the difference between said radii.

7. The combination set forth in claim 5 in which said pressure finger is constructed as a vertically disposed rectangular plate having its depending end edge surface chamfered and positioned to contact said advanceable working surface with finger-tip pressure at a distance closely adjacent to the center line connecting the axes of said work cylinder and the arcuate motion path of said advanceable working surface, a feed table extending over said advanceable working surface and having a depending curving edge portion which extends to a point adjacent to but spaced from the point of contact between said finger member and the periphery of said advanceable working surface.

8. The combination set forth in claim 1 in which said pressure finger member is composed of spaced elements of spring steel coactively disposed to form a depending comb-like structure, each of said fingers contacting the periphery of said feed roll in a region adjacent to the center line connecting the rotary axes of said cylinder and feed roll, but spaced therefrom, the contour of said spring steel fingers including a curved work engaging surface having a radius of curvature greater than that of the feed roll to coact therewith and form an acute horn angle through which pliable leather skins may be fed.

9. The combination set forth in claim 1 in which said pressure member includes a backing or supporting rod to which said depending finger member is integrally connected, the face of said finger member adjacent the periphery of said feed roll being serrated to form spaced grooves therein arranged upon an angle which diverges from the center of said finger member towards the lateral trailing depending ends thereof in order to provide effective wrinkle smoothing or spreading action for skins contacted thereby.

10. The combination set forth in claim 1 in which said pressure member is stationary and includes supporting means for adjustably positioning said member in said bite.

11. In a soft-leather working machine, a leather feeding throat comprising a working cylinder and a feed roll, support means rotatably mounting said working cylinder and said feed roll on substantially parallel axes with the surfaces of said working cylinder and said feed roll a working distance apart, a stationary pressure finger member inserted between said working cylinder and said feed roll, said pressure finger member being disposed relative

to the surface of said feed roll with its end contacting the surface of said feed roll a short distance from the nip between said working cylinder and said feed roll to form a leather feeding throat between said pressure finger member and said feed roll.

12. In a soft leather working machine, the combination as set forth in claim 11 wherein diverging grooves are provided in the leather-contacting surface of said stationary pressure finger member to spread and smooth said leather as it feeds through said throat.

13. In a soft leather working machine, the combination as set forth in claim 11 wherein a stationary work-supporting table extends into the entrance of said throat, said table member providing a stationary surface for manipulating said leather into said throat, and the stationary leather-contacting surface of said table being spaced from the stationary leather-contacting surface of said pressure finger member a distance sufficient to permit safe manipulation of said leather until it is within said throat.

14. In a soft leather working machine the combination as set forth in claim 11 wherein said end of said finger contacts said feed roll within one inch of the nip between said working cylinder and said feed roll.

15. In a soft working leather machine the combination as set forth in claim 11 wherein said pressure finger member is curved with a radius of curvature greater than the radius of curvature of said surface of said feed roll.

References Cited in the file of this patent

UNITED STATES PATENTS

D. 30,291	Merrill	Feb. 28, 1899
141,701	Davies	Aug. 12, 1873
233,471	Burrell	Oct. 1, 1880
798,073	Quigley	Aug. 29, 1905
1,306,646	Trier	June 10, 1919
1,401,773	Haldeman	Dec. 27, 1921
1,621,577	Blaney	Mar. 22, 1927
1,721,862	Dunn	July 23, 1929
1,735,746	Geer	Nov. 12, 1929
1,933,665	Duplessis	Nov. 7, 1933
1,986,456	Wood	Jan. 1, 1935
2,170,901	Jorgensen	Aug. 29, 1939
2,305,879	Leach	Dec. 22, 1942
2,334,276	Menzel	Nov. 16, 1943

FOREIGN PATENTS

128	Great Britain	Jan. 11, 1873
96,612	Germany	May 22, 1897
260,711	Germany	June 6, 1913
452,275	France	Mar. 3, 1913