

July 30, 1946.

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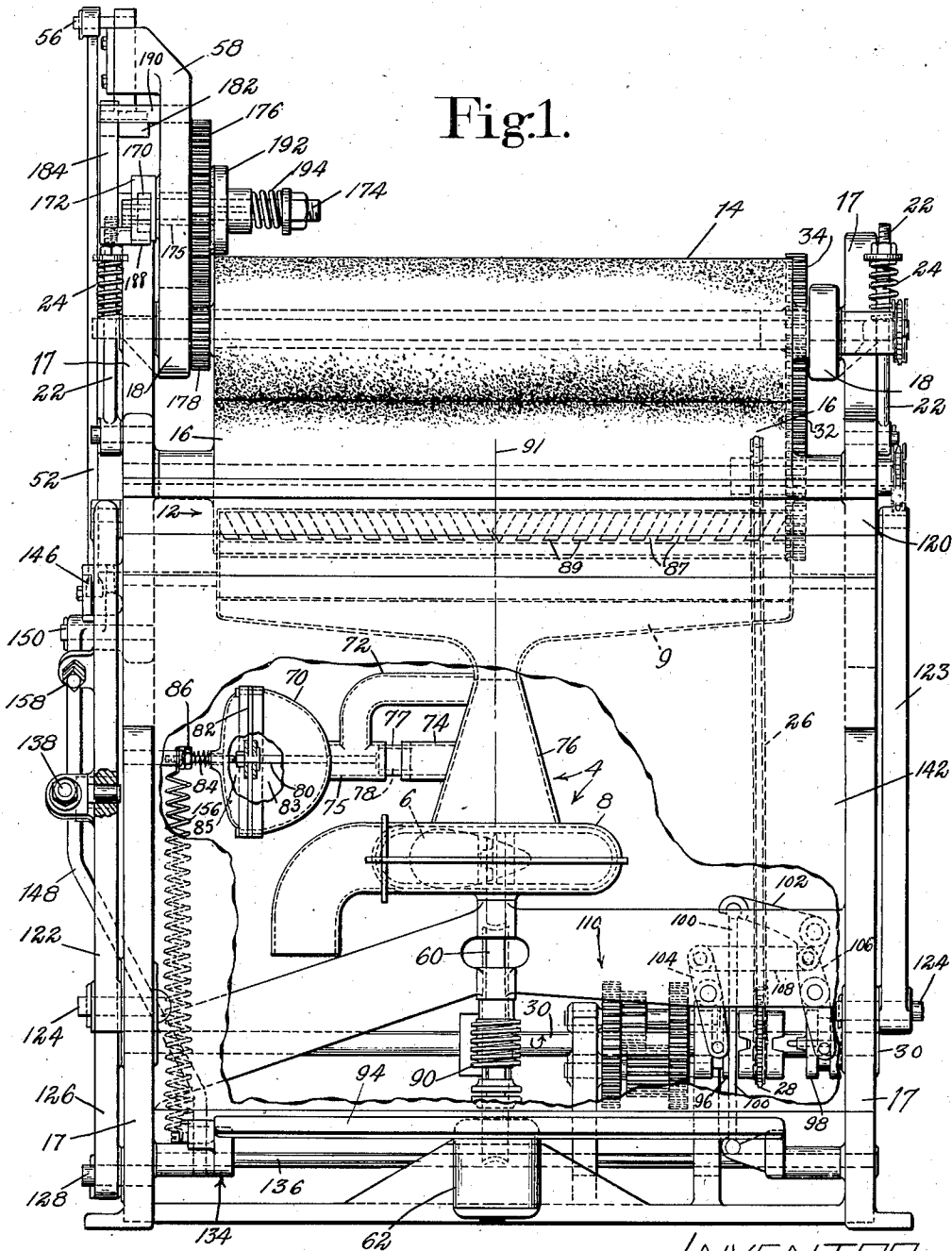
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MACHINE FOR TREATING TANNED SKINS

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3 Sheets-Sheet 1

Fig.1.



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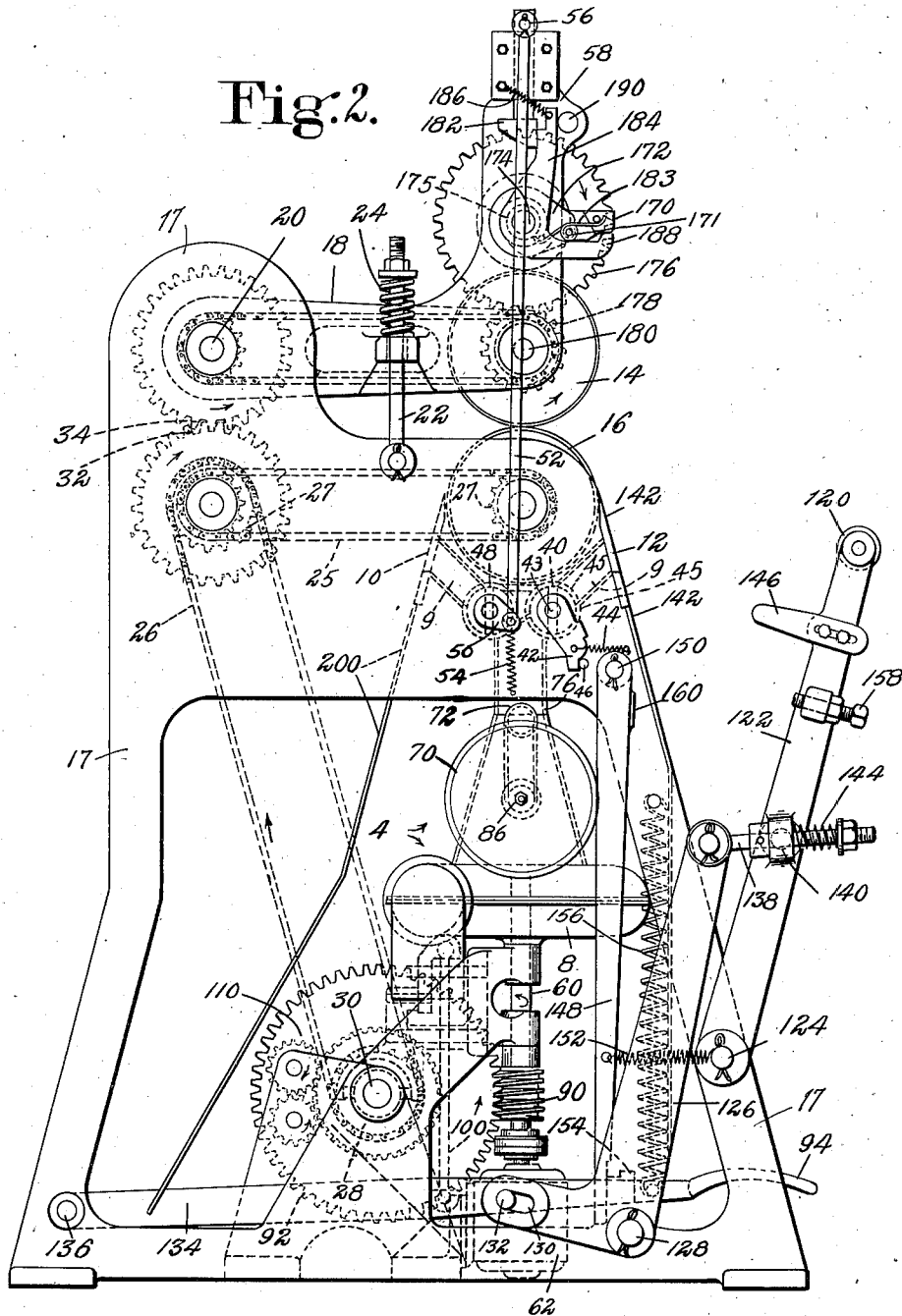
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MACHINE FOR TREATING TANNED SKINS

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3 Sheets-Sheet 2



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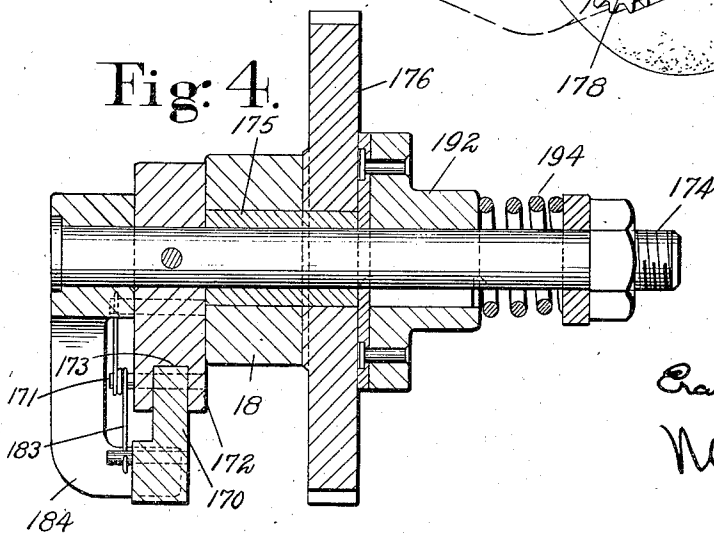
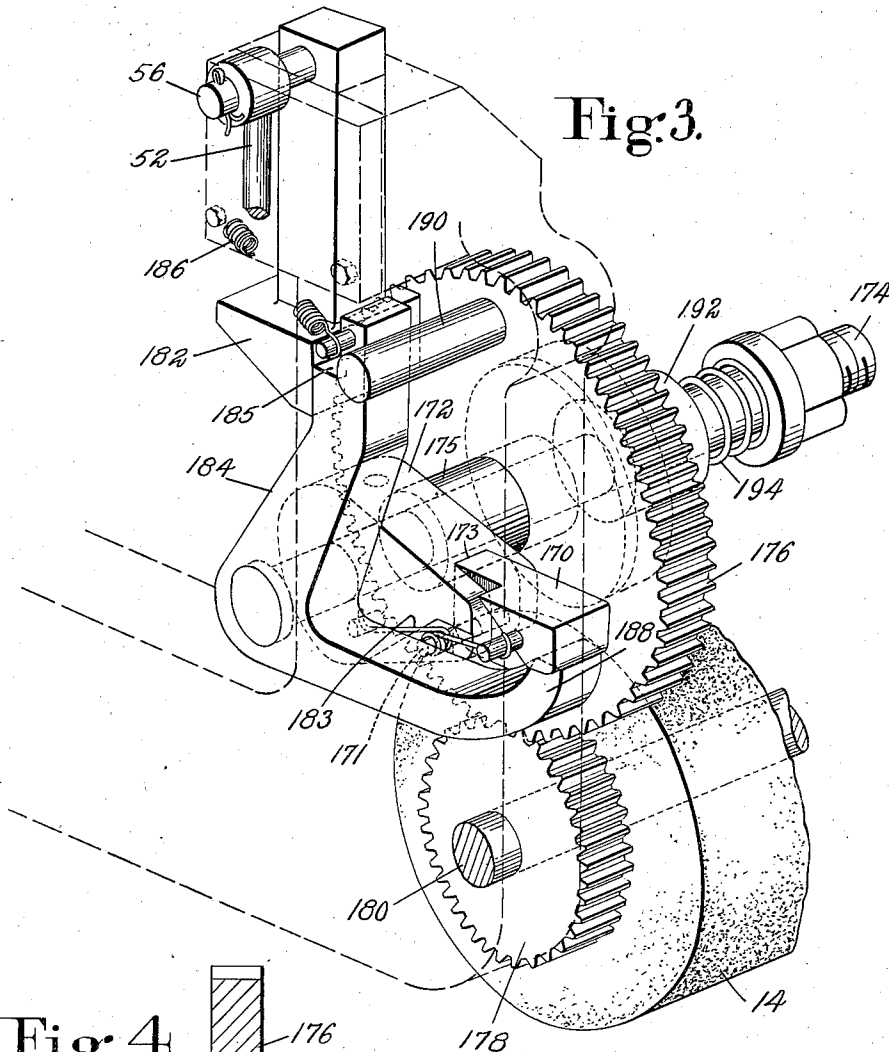
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MACHINE FOR TREATING TANNED SKINS

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3 Sheets-Sheet 3



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MACHINE FOR TREATING TANNED SKINS

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Application May 3, 1941, Serial No. 391,725

20 Claims. (Cl. 15—15)

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This invention relates to a machine for treating tanned skins for the purpose of removing excess water therefrom. The invention is illustrated with reference to a suction apparatus operative to withdraw liquid material from successive portions of a skin progressively during movement of the latter. It is to be understood that the machine invention and various important features thereof may have other applications and uses.

Heretofore, it has been the common practice to dry freshly tanned hides and skins in drying lofts, where they are hung up to remain until they are substantially dry throughout the entire substance thereof. Alternatively, hides and skins are dried in chambers through which air currents are passed to take the moisture from the work pieces, while the latter are either stationary or traveling through the chamber or chambers. In either case, the hide or skin is commonly dried to such an extent that it must subsequently be moistened or wet back before any other operation can be performed thereon, whether such operation be a purely mechanical one, such as staking, or an operation which involves the application of treating liquids.

It is an object of this invention to provide an improved machine which will remove water or other excess liquid material from freshly tanned skins to a point such that they are left in a suitable condition for the application of other treating liquids, such as seasoning liquids, colors or dyes in solution, and fatliquors. It is a further object of the invention to provide a machine which will leave the skin in a soft flexible condition after each of these operations and treat the skin in removing liquid therefrom in such a manner as to leave it in fully extended condition.

To these ends, and in accordance with an important characteristic of the invention, water or other liquid material is withdrawn from a tanned skin by air passing through the thickness dimension thereof, the suction means operating under such control as to leave the desired minimum of moisture in the skin, so that the latter remains soft and flexible and readily receptive to other liquid material, as in coloring, seasoning, or fatliquoring operations.

It is an important feature of the illustrated machine that the suction means employed in removing liquid material from a skin includes means for automatically controlling the force of the suction means, to the end that the suction effect on each unit area of the skin is substantially the same irrespective of the area of the

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portion of the skin being treated at any given instant, it being understood that the area of the treated portion at any given instant may vary somewhat due to irregularity in the contour of the leather being treated.

As shown, a skin is moved by suitable means over a slot in a supporting table in a construction in which the slot serves as the mouth of a suction means, the latter having associated therewith a valve mechanism including a flexible diaphragm, so arranged as to control the force of the suction per unit area of portions of the hide or skin passing over said slot. Since the suction on the skin during passage of the latter over the slot provides substantial resistance to movement of the skin past the slot, it is clear that the skin is being stretched out to its full extent during treatment, thus tending to maintain the full area of the treated work piece.

An important feature of the illustrated machine is found in a feeler or detector means provided to terminate the operation of a work treating means as a preliminary to initiation of treatment of another portion of the work piece by the same or a similar work treating means. Conveniently the feeler or detector means may also be utilized to terminate feeding of the work piece in one direction and to initiate the operation of feeding it in the opposite direction.

Another feature of importance resides in the provision of means for measuring the portion of the work piece first treated by a work treating means so that such treated portion will escape a repetition of the treatment, the said measuring means becoming operative after the passage of the treated portion of the work piece to initiate treatment of the remaining portion of the work piece. It is an advantage of the illustrated construction that different portions of a work piece may be treated by the same or different work treating devices while traveling first in one direction and then in the reverse direction, a timing means being provided to insure that all portions of the work piece are adequately treated.

These and other important characteristics and features of the invention will now be described in detail in the specification and then pointed out more particularly in the appended claims.

In the drawings:

Fig. 1 is a view in front elevation of a machine adapted for use in carrying out the novel method and embodying novel features of the invention, a portion of the frame of the machine being broken away to show more clearly the construction thereof;

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Fig. 2 is an end view of the machine shown in Fig. 1, looking from the left in the latter figure;

Fig. 3 is an enlarged perspective view of the valve operating mechanism shown in the top portion of Fig. 2, the supporting frame member being shown in phantom form for clarity of illustration; and

Fig. 4 is a plan view, in section, taken through the parts arranged on the upper shaft of Fig. 3.

In the illustrated machine, which is specially designed to remove moisture from tanned skins, there is provided a suction device 4 comprising a power driven fan 6 (Fig. 1) enclosed in a lower chamber 8, the said suction device having upper chambers or conduits 9 ending in long narrow openings or slots 10 and 12 (Fig. 2) over which the leather is drawn at a suitable speed while air is being sucked through said slots with a force sufficient to cause considerable amounts of air to pass through a tanned skin, thereby removing moisture therefrom. It is to be understood that the suction device 4 is not drawn to scale but will be large enough to provide the necessary suction effect.

For feeding the skin and thus drawing it over one slot or the other, there is provided a pair of feed rolls 14 and 16. As shown, the lower feed roll 16 is journaled in bearings in the end frames 17 of the machine while the upper feed roll 14 is mounted in bearings formed at the forward ends of two arms 18 loosely mounted on a rotary shaft 20 supported by suitable bearings in the machine frame. As shown, means is provided to pull the arms 18 yieldingly in a direction to hold the feed roll 14 in contact with the roll 16 with pressure sufficient to insure proper feeding of the skin, the said means comprising bolts 22 pivoted to the machine frame and having each a spring 24 for exerting yielding pressure in a downward direction upon an arm 18. For driving the lower feed roll 16 there are provided a suitable chain 25 and sprocket wheels 27, the driving means including a chain 26 passing around a sprocket wheel 28 on a driven shaft 30 having suitable bearings in the lower part of the machine frame. As shown, the upper feed roll 14 is driven by the same driving means, including the sprocket chain 26 and the sprocket 28, by reason of intermeshing gears 32 and 34 (Fig. 2). Since the driving means for the rolls outlined above is of a well-known construction and constitutes no part of the invention, further detailed description thereof is not considered necessary.

The suction device 4 referred to above is provided with a valve member 40 (Fig. 2) movable to close the passageway 9 between the slot 12 and the fan chamber 8, said valve member being also movable to permit free passage of air through said passageway. As shown, the valve member is secured to a pintle 43 rotatably mounted at each of its ends in the end frames 17 of the machine, and is held against displacement by a slotted and perforated hollow cylinder 45 mounted at its ends in the machine frame. To operate the valve member 40 there is secured thereto an arm 42 normally held by a spring 44 against a stop 46 (mounted on the outside surface of an end frame of the machine) in position such that the valve member 40 closes the passageway. A valve member 48, mounted similarly to member 40, is provided for controlling the passage of air through the passageway leading from the slot 10, said valve member 48 having secured thereto an arm 50 to the free end of

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which is secured a rod 52 yieldingly held by a spring 54 in a position such that the valve member 48 closes said passageway from the slot 10. As shown, the upper end of the rod 52 carries a pin 56 which is adapted to contact the upper end of a bracket 58 carried by the left (Fig. 1) upper arm 18, the arrangement being such that the pin and bracket limit the downward movement of the rod 52 under the pull of the spring 54. To open the passageway past the valve member 48, the rod 52 is lifted against the tension of the spring 54 by means which will hereinafter be described.

As already stated, the suction device 4 comprises the fan 6 which is secured to the upper end of a shaft 60 arranged to be continuously driven by any suitable means such as electric motor 62 coupled to the lower end of the shaft 60.

In order to adjust the suction device to variations in the width dimension of a skin passing over either of the slots 10 and 12, there is connected to the suction device 4, at a point between said slots and the fan chamber 8, a chamber 70 (Fig. 1) having two pipe connections 72, 74 with a conduit 76 extending upwardly from the fan chamber at 8 to the upper chamber or conduits 9. As shown, the pipe 74 has an opening or interruption at 77 arranged to be controlled by a tubular valve member 78 slidably fitted in the pipe 74. Said valve 78 is connected by a piston rod 80 with a flexible diaphragm 82 in the chamber 70. As shown, the piston rod 80 passes completely through the chamber 70 and through the flexible diaphragm 82 (to which it is secured) and has its free end surrounded by a spring 84 arranged to be adjustably tensioned by some means 86, the latter furnishing means for regulating the suction means. It will be understood that the diaphragm 82 is impervious to air and is firmly clamped in position to provide an air-tight wall for the larger compartment 83 of the chamber 70, while the smaller compartment 85 beyond the diaphragm 82 is open to the air, by a space of a suitable size about the piston rod 80 where it passes through the wall of the chamber 70 adjacent to the spring 84. When the suction device 4 is treating a portion of the skin passing over one of the slots 10 or 12 (depending on which valve 40 or 48 is in open position) air will be forcibly drawn through the passageway leading to the slot in operation and the force of this suction will be regulated by the valve at 78. If, for instance, the width of the leather passing over the slot is such as to cover the slot completely, the suction within the fan chamber 8 and the conduit 76 will be such as to exert a heavy suction effect in the chamber 70 and on the flexible diaphragm 82, pulling the latter toward the right in Fig. 1 and moving the valve 78 to a position such that air is admitted around the edge of the valve 78 into the pipe 72 and thence into the conduit 76 and fan chamber 8. This of course reduces the suction effect on the leather over the slot 10 or 12. If, on the other hand, the skin does not quite cover the slot 10 or 12 the suction effect on the diaphragm 82 will not be so great as in the case where the skin covers the slot completely. Hence, the spring 84 and the diaphragm 82 will move the valve 78 to close the opening at 77 more or less completely depending on the amount of the slot 10 or 12 left uncovered by the skin. By this means there is secured a substantially uniform suction effect upon the skin portions passing over the slot 10 or 12, it being understood in this connection that the variations in the transverse dimensions

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of the trimmed skins undergoing treatment are not marked.

It will be readily understood that the suction effect through the slots 10 and 12 is so considerable as to place substantial tension on the portion of the work piece between the operating suction device (with its slot 10 or 12) and the work feeding means. This tends to keep the work piece well spread out. In addition, bars 87 (Fig. 1) over both slots 10 and 12 are so arranged as to keep the work piece spread out in lateral directions when drawn over these bars, as will be evident from an inspection of Fig. 1, the bars 87 (and slots 89 therebetween) extending in a different angular relationship to the horizontal edges of the slot (10 or 12) from opposite sides of the vertical median line 91. It will be noticed that portions of the work piece drawn upwardly over each bar 87 also pass over an adjacent slot 89 to have moisture sucked therefrom by air drawn in by the fan or blower 6 in compartment 8.

As stated above, the drive for the feed rolls 14 and 16 comes from the driven shaft 30 by way of the sprocket wheel 28 and sprocket chain 26. Conveniently, the shaft 30 is driven by the motor 62 by means of a worm 90 and a large worm gear 92 (Fig. 2) meshing therewith, the said gear 92 being secured to the shaft 30. In the construction shown, the sprocket wheel 28 is loosely mounted on the shaft 30 but is kept from endwise movement thereon by means of suitable collars (not shown). When the treadle member 94 is in the raised position shown in Fig. 2, a driving clutch member 96 (Fig. 1) is engaged with a clutch member secured to the left side of the sprocket wheel 28. If, on the other hand, the treadle member 94 be depressed, a driving clutch member 98 will be moved to the left in Fig. 1 into clutching engagement with a clutch member secured to the right face (Fig. 1) of the sprocket wheel 28. These movements of the driving clutch members 96 and 98 are obtained by a link 100 connected at its lower end to the treadle member 94 and at its upper end to a bell-crank lever 102 arranged to operate both clutch levers 104, 106 which are interconnected by a link 108. It is to be understood that the shaft 30 is driven continuously in one direction, indicated by the arrow in Fig. 1, and that the driving clutch member 98 is splined to the shaft 30 so that when moved to operative position it drives the sprocket wheel 28 in the direction of the arrow on the shaft 30. However, the driving clutch member 96 is loose on the shaft 30 and is driven by suitable gearing indicated in general by the reference character 110 to rotate in a direction the reverse of that of the shaft 30. When, for instance, the treadle 94 is in its raised position (Fig. 2) the driving clutch member 96 is in driving engagement with the adjacent clutch member on the sprocket wheel 28 to drive the sprocket wheel, the sprocket chain 26 and the feed rolls 14 and 16 in the directions indicated by the arrows in Fig. 2. When, however, the treadle 94 is depressed, the driving clutch member 96 is moved to disengaging position while the driving clutch member 98 is moved into driving relation with respect to the sprocket 28 with the result that the feed rolls 14 and 16 are driven in the direction the reverse of that indicated by the arrows in Fig. 2. In the latter case, a skin presented to the feed rolls will be fed to the left in Fig. 2 with a portion thereof passing over the slot 12 opening into chamber or conduit 9 leading to the suction device 4. When the skin has passed by the slot 12 a feeler device, including a roller 120, will be

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operated to initiate reversal in the direction of feed of the feed rolls 14 and 16 and at the same time to close the slot 12 by the valve 40, the slot 10 being opened by proper movement of the valve member 48 so that another portion of the skin is treated while it is being fed to the right in Fig. 2.

The feeler or detector mechanism referred to in the foregoing paragraph comprises the roller 120 mounted for free rotation in the upper ends of two arms 122, 123 (Fig. 1) pivotally mounted upon pivot pins 124 carried by the end frame members of the machine. For moving the arms 122, 123 and therefore the roller 120, between operative and inoperative positions, there is provided a bell-crank lever 126 pivoted at 128 on the machine frame and having a slot 130 for the reception of a pin 132 extending laterally from one of a pair of side members 134 of the treadle 94, the said side members of the treadle being pivoted to the machine frame at 136. Since the upper end of the bell-crank lever 126 is pivotally connected to the arm 122 by a link member 138, which passes slidably through an eye member 140 rotatably mounted in the arm 122, it is clear that depression of the treadle 94 will result in swinging both the bell crank 126 and the arms 122, 123 to the left in Fig. 2 to bring the feeler member or roller 120 into contact with a guard member 142 along a line closely adjacent the upper margin of the slot 12. By providing a spring 144 on the link member 138, the roller 120 is held yieldingly in its operative position where it contacts the skin passing over the guard member 142 and hence over the slot 12. The arm 122 may conveniently be used to control the valve member 49 of the suction device. For this purpose the arm 122 carries a finger 146 adjustably secured thereby by bolts receivable in a slot in the said finger, the position of the finger 146 being such that, upon movement of the arm 122 to press the roller 120 against a work piece, the said finger 146 contacts the arm 42 pressing it back against the tension of the spring 44 and thus rotating the valve member 40 from closed to open position, whereby the work piece is subjected to the effect of suction of air through the suction device by way of the slot 12. The described depression of the treadle 94 also resulted in driving the feed rolls 14 and 16 in a direction the reverse of that indicated by the arrows in Fig. 2, the timing being preferably such that the feed rolls are reversed in their direction of rotation and the work piece fed far enough for the rolls to get a substantial grip on the work piece before the finger 146 operates the valve 40. It follows that, during feeding of the work piece from right to left in Fig. 2, portions of said work piece passing over slot 12 are treated by having air sucked there-through by the suction device 4 which is continuously in operation under the drive of the electric motor 62.

In a preferred construction, the treadle 94 is latched in its depressed position by means of a latch member 148 pivoted at 150 on an end frame 17 of the machine and having connected thereto a spring 152 which constantly urges the latch member 148 to the right in Fig. 2, the other end of the spring 152 being connected to the adjacent pin 124 as shown or to the frame 17. Hence, upon depression of the treadle 94, the lower end of the latch member 148 is moved to the right by the spring 152 until it comes in contact with a stop 154 on a part of the treadle. Means is provided for tripping the latch 148 and thereby releasing the treadle to the action of a spring

156 for upward movement of the treadle, the said means comprising in the illustrated construction an adjustable contact member 158 carried by the arm 122. This member 158 strikes against a boss 160 near the upper end of the latch member 148, tripping the latch, when the feeler roll 120 drops off the end of the work piece. When the treadle 94 is lifted following displacement of the latch 148, the arms 122, 123 move to open position, the spring 44 closes valve 40, and the clutch members are shifted to change the direction of rotation of the feed rolls 14 and 16, as heretofore described. Hence, these rolls then turn in the direction of the arrows in Fig. 2 to feed the work piece toward the operator at the front of the machine. At the proper time in this feeding operation, the suction device 4 becomes operative through the slot 10 by proper adjustment of the valve member 48 to treat that portion of the work piece which was not subjected to treatment while the work piece was being moved over the slot 12.

Operation of the valve 48, referred to in the foregoing paragraph, is accomplished automatically following reverse rotation of the feed rolls 14 and 16. In the illustrated construction, the automatic means comprises the rod 52 pivotally connected at its lower end to the valve operating arm 50, together with means for elevating this rod 52 against the tension of the spring 54 and subsequently tripping the elevating means to permit return of the valve 48 to closed position. The said elevating means (Figs. 2, 3 and 4) comprises a pawl member 170 pivoted at 171 on an arm 172 secured to a shaft 174 which passes through a hollow shaft 175 to which is secured a gear 176 arranged to be constantly in mesh with a pinion 178 secured to a shaft 180 which also carries the upper feed roll 14. While the feed rolls 14 and 16 are rotating in a direction the reverse of that indicated by the arrows in Fig. 2 (to feed the work piece in an upward direction over the slot 12), the pivoted pawl 170 moves in a counterclockwise direction and wipes by a block 182 rigidly secured to the rod 52 by the pin 56. This action of the pawl is rendered possible by reason of the fact that a spring 183 yieldingly holds the pawl against a shoulder 173 (Figs. 3 and 4) on the arm 172. Upon reversing the direction of rotation of the feed rolls 14 and 16, and hence of the gear 176 and the arm 172, the pawl 170, during its rotation in clockwise direction (Fig. 2) lifts the block 182 and also the attached rod 52. Hence the valve member 48 is moved from closed to open position. When the block 182 is lifted to its uppermost position by the pawl 170, a latch member 184 is moved by a spring 186 to engage a shoulder 185 (Fig. 3) thereon under the block 182. As shown, the latch member 184 remains in latching position until the pawl 170 strikes against a projecting finger 188 (Figs. 1 and 2) on said latch member. When that happens, the latch member 184 is rocked to the right against the tension of the spring 186, a stop pin 190 (Figs. 1 and 2) being provided to limit such movement of the latch member 184. In order that the pawl 170 and its carrying arm 172 may be stopped by the latch member 184 substantially in the position shown in Fig. 2, the said arm 172 is driven yieldingly through a friction disk 192 (Fig. 1) keyed to the shaft 174 (Figs. 1 and 4), said disk being pressed yieldingly by a spring 194, against the rear face of the gear 176. When the latch 184 is moved to its inoperative position (shown in Fig. 2) the rod 52 is at once

moved downwardly by its spring 54 whereby the valve member 48 is moved to its closed position, thus terminating the suction air treatment of the work piece.

It is an important feature of this construction that the operation of both valves 40 and 48 is controlled to secure treatment of different portions of the work piece in such manner that a work piece introduced into the machine is completely treated when it is delivered back to the operator standing at the right in Fig. 2. In the illustrated construction, the gear ratio of gears 176, 178 and their size relationship to the rolls 14 and 16 are such that the arm 172 and pawl 170 never make a complete revolution in treating work pieces of the size for which the machine is designed. Hence, during rotation of the feed rolls 14 and 16 in a direction the reverse of that indicated by the arrows in Fig. 2, the arm 172 and the pawl 170 rotate in a counterclockwise direction and end up in a position short of the under surface of the finger 188 on the latch 184. When the feed rolls 14 and 16 are reversed through the action of the feeler roll 120 to feed the work piece toward the front of the machine, the work is fed throughout the greater part of its length with both valve members 40 and 48 in closed position, since the greater part of the work piece passing between the feed rolls 14 and 16 had been treated while passing over the slot 12. As the untreated portions of the work piece approach the slot 10, while moving in an upward direction over a guard or supporting member 200, the pawl 170 lifts the block 182 and the rod 52 connected thereto, whereby the valve member 48 is moved to open position. The result is that the work piece portions then and thereafter passing over the slot 10 are treated, the valve member 48 remaining in open position until the latch 184 is tripped in the manner described. It will be seen, therefore, that the distance in the clockwise direction between the block 182 and the finger 188 on the latch member 184 corresponds, approximately, to the distance between the upper edge of the slot 12 and the bite of the feed rolls 14 and 16, it being understood that the portion of the skin initially extending between the upper edge of the slot 12 and the bite of the feed rolls 14 and 16 constitutes the part of the work piece which is not treated by being drawn over the slot 12. Hence this is the part which must be treated by being drawn over the slot 10, upon reversal of the direction of feed of the work piece. However, the portion to be treated by being passed over the slot 10 must be, as a practical matter, somewhat greater than that indicated in order to be sure to overlap the treated portion somewhat and by reason of the necessity of engaging a sufficient part of the forward end of the work piece to insure that such work piece will be fed properly by the feed rolls in spite of the suction effect on those parts which are passing over the slot 12.

It is important to note that the pawl 170 is in effect an indicator member since the extent of its travel corresponds exactly to the longest dimension of the work piece (in the direction of feed of such work piece), minus the fixed distance between the upper edge of the slot 12 and the line of contact of the rolls 14 and 16. More particularly, the travel of the pawl varies with the length of that part of the work piece which is treated by passing over the slot 12, since that part of the work piece initially above the upper margin of the slot 12 during introduction of the work piece is always the same, at least substan-

tially so. Hence, the pawl 170 (and its driving means), in its clockwise movement, measures out the variable treated part of the work piece before it lifts the block 182 and thus initiates treatment of the remaining portions of the work piece as they pass over the slot 10. From another viewpoint, the pawl 170 is a timing device for the work treating means (comprising slot 10) since, although it travels a variable distance clockwise with each piece of work, it initiates the operation of said work treating means and thus determines the time of operation of the latter.

In operating the machine, the operator places a tanned skin (which is to be dried) inside of the feeler roll 120 with a portion thereof resting on the combined support and guard 142. One end of the skin is made ready for introduction between the feed rolls 14 and 16 as soon as the treadle 94 is depressed, since the latter operation at once changes the direction of rotation of the rolls so that the work piece will be gripped and fed into the machine. By the time the feed rolls have fed enough of the forward end of the work piece to secure a good grip thereon, the feeler roll 120 has reached operative position as has also the finger 146, the latter operating to move the valve 40 to open position so that the work piece is treated while being drawn over the slot 12 of the suction device 4. As soon as the feeler roll 120 drops off the end of the work piece, the treadle 94 is released to the action of the spring 156 so that it moves upwardly to effect reverse movement of the feed rolls 14 and 16 to feed the work piece out of the machine and toward the operator. During the feeding out of the work piece, the portion untreated through failure to pass over the slot 12 is now treated by being passed over the slot 10.

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

1. In a machine of the character described, means for feeding a work piece first in one direction and then in the reverse direction, driving mechanism for said work feeding means, work treating means spaced with respect to each other for treating different full width portions of the work piece, a detector device arranged to contact the work piece to be controlled thereby, said detector device having means associated therewith and being operative to initiate operation of one of the work treating means to treat an entire width portion of the work piece, said detector device also having connections to initiate feeding of the work piece in said reverse direction, a timing device, and means controlled by said timing device to initiate operation of the other work treating means after reversal of the direction of feed of the work piece to complete treatment of the latter.

2. In a machine of the character described, adjacent feed rolls, means for rotating the feed rolls to feed a work piece between them first in one direction and then in the other, multiple work treating means operative upon opposite sides of the line of engagement of the feed rolls with the work piece, a detector device controlled by the work piece to terminate rotation of the feed rolls for feeding in one direction and to initiate feeding in the opposite direction, one of said work treating means being operable to treat the work piece while it is moving in the first direction, and timing means for initiating operation of the other work treating means on the remaining untreated portion of the work piece after

reversal of the direction of feed of the work piece by said feed rolls.

3. In a machine of the character described, means for feeding a work piece first in one direction and then in the other, means spaced from each other for treating different portions of the work piece, each portion extending entirely across the work piece, a detector device arranged to be controlled by the work piece, means associated with the detector device arranged to initiate operation of one of the work treating means while the work piece is fed in one direction, said detector device also having means controlled by the detector device and being operative to terminate feeding of the work piece in said one direction and to initiate feeding thereof in the opposite direction, a timing mechanism driven by the work feeding means, and means controlled by the timing mechanism to initiate operation of the other work treating means to further treat the work piece after the feeding in the opposite direction has been initiated.

4. In a machine of the character described, means for feeding a work piece first in one direction and then in the reverse direction, driving mechanism for said work feeding means, work treating devices spaced from each other in the direction of feed of the work piece for treating different portions of the work piece, means arranged to be driven by said driving mechanism for measuring the portion of the work piece first treated so that the said treated portion may be completely fed in the reverse direction before the second work treating device begins its operation to treat the remaining portion of the work piece, and means associated with the measuring means to initiate the operation of the second work treating device.

5. In a machine of the character described, means for feeding a work piece, driving mechanism for said work feeding means, work treating devices spaced from each other in the direction of feed of the work piece for treating different portions of the work piece, a detector device arranged to contact the work piece to be controlled thereby, said detector device having means associated therewith and being operative to initiate operation of one of the work treating devices, means arranged to be driven by the said driving mechanism for measuring the portion of the work piece first treated so that the said treated portion may be completely fed past the second work treating device before the latter begins its operation to treat the remaining part of the work piece, and means for initiating the latter operation through the operation of the measuring means.

6. In a machine of the character described, means for feeding a work piece first in one direction and then in the reverse direction, driving mechanism for said work feeding means, work treating devices spaced from each other in the direction of feed of the work piece for treating different portions of the work piece, a detector device arranged to contact the work piece to be controlled thereby, said detector device having means associated therewith and being operative to initiate operation of one of the work treating devices and also termination of such operation, means arranged to be driven by the said driving mechanism for measuring the portion of the work piece first treated so that the said treated portion may be completely fed in the reverse direction before the second work treating device begins its operation to treat the remaining part

of the work, and means under control of the measuring means for initiating the latter operation.

7. In a machine of the character described, means for feeding a work piece first in one direction and then in the reverse direction, driving mechanism for said work feeding means, work treating devices spaced from each other in the direction of feed of the work piece for treating different portions of the work piece, a detector device arranged to be controlled by the work piece, said detector device having a member associated therewith and operative to initiate operation of one of the work treating devices and having connections to terminate feeding of the work piece in one direction and to initiate feeding of the work piece in the opposite direction, means arranged to be driven by the said driving mechanism for measuring the portion of the work piece first treated so that the said treated portion may be fed in the reverse direction before the second work treating device begins its operation to treat the remaining part of the work, and means operated by said measuring means for initiating operation of the second work treating device.

8. In a machine of the character described, adjacent feed rolls for feeding a work piece between them, first in one direction and then in the other, driving mechanism for said feed rolls, work treating devices upon opposite sides of the line of engagement of the feed rolls with the work piece for treating different portions of the work piece, a detector device arranged to be controlled by the work piece, said detector device having connections to initiate operation of one of the work treating devices, said detector device being also provided with means operative to terminate feeding of the work piece in one direction and to initiate feeding of the work piece in the reverse direction, and a measuring means arranged to be driven by the said driving mechanism to measure the length of that portion of the work piece treated by the first-mentioned work treating device, said work measuring means being also operative to remeasure the same treated portion of the work piece during reverse movement of the latter thereby to avoid repetition of treatment of such portion of the work piece, and connections between the measuring means and the second work treating device to initiate operation of the latter at the proper time whereby the second work treating device completes treatment of the work piece.

9. In a machine of the character described, means for feeding a work piece first in one direction and then in the reverse direction, driving mechanism for said work feeding means, suction devices spaced from each other in the direction of feed of the work piece, each suction device including a valve for rendering said suction device operative or inoperative, a detector device arranged to be controlled by the work piece, said detector device having a member associated therewith and operative to open a valve to initiate operation of one of the suction devices, a work measuring means arranged to be driven by the work feeding means to measure the length of that portion of the work piece treated by said one of the suction devices, said measuring means being operative to remeasure the same treated portion of the work piece upon reverse movement of the latter so that only the untreated portion of the work piece will be subjected to treatment by the second suction device, and con-

nections between said measuring means and the valve of the second suction device to initiate operation of the latter at the proper time to complete treatment of the work piece.

10. In an apparatus for treating skins, a support for a skin, said support having a slot of fixed width dimension extending transversely across the width of the support, power means for feeding said skin over said slot, suction means associated with the slot to draw moisture or other watery material through successive portions of the skin as the latter is passed over the slot, and a valve mechanism controlled by the air under suction in the suction device to regulate the force of the suction through said slot.

11. In an apparatus for treating skins, a support for a skin, said support having a slot of fixed width dimension extending transversely across the width of the support, power means for feeding said skin over said slot, a suction device comprising a suction conduit opening into said slot, a pipe opening into the suction conduit below said slot, said pipe having also an opening to the outside air, and a valve mechanism comprising a piston arranged to be controlled by the force of the suction in the suction device, said piston being arranged to control said opening from the outside air into said pipe, thereby to regulate the force of the suction through said slot.

12. In an apparatus for treating skins, a support for a skin, said support having a slot of fixed width dimension extending transversely across the width of the support, power means for feeding said skin over said slot, a conduit leading from said slot, a pipe opening into said suction conduit below said slot, a second pipe opening into the suction conduit, and a valve mechanism comprising a piston slidable in said second pipe whereby said piston is controlled by the force of the suction in said suction conduit, said piston having openings therein which may be exposed to the outside atmosphere upon movement of the piston in one direction and closed upon movement of the piston in a reverse direction, whereby air may enter the suction conduit through said openings and the first-mentioned pipe to regulate the force of suction through said slot.

13. In an apparatus for treating skins, a support for a skin, said support having a slot extending transversely across the width of the support, a conduit leading away from said slot, a pipe opening into said suction conduit below said slot, a second pipe opening into the suction conduit, a piston movable in said second pipe, a chamber connected to the second pipe, a flexible diaphragm in the chamber, a piston rod connected to the diaphragm and to said piston, spring means associated with the piston rod and adjustable as to tension to vary the resistance offered by the piston to the suction effect in the suction conduit and in said second pipe, said piston having a portion exposed to the atmosphere and having openings therein arranged to be uncovered when the piston is moved in one direction under the force of high suction effect in the suction conduit whereby air may enter through said openings in the first-mentioned pipe and thence to the suction conduit, thereby regulating the force of suction through said slot.

14. In a machine of the character described, means for feeding a work piece in one direction for a substantial distance along the length of said work piece, work treating means arranged to treat an area of the work piece defined by the width of said work piece and the said distance

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while the work piece is moving in said one direction, a detector device operated by the work piece while so moving, and means controlled by the detector device which is operative to reverse the feeding and to initiate treatment of the remaining untreated length of the work piece by the work treating means.

15. In a machine of the character described, adjacent rolls for feeding a work piece pressed between them, work treating means at one side of the rolls arranged to treat the work piece entering at that side of the rolls, a detector device operated by the work piece, means controlled by the detector device to reverse the feeding of the work piece and terminate operation of the said treating means after a substantial portion thereof has been treated, and means on the other side of the rolls for initiating treatment of the remaining portion of the work piece upon such reversal.

16. In a machine of the character described, adjacent feed rolls for feeding in either direction a work piece pressed between them, means for treating a substantial length of said work piece while being fed in one direction, a detector device controlled by the work piece to reverse the rotation of the feed rolls to feed the work piece in the other direction, means for treating the remaining length of said work piece upon such reversal, and timing means controlled by the detector device to initiate operation of the latter treating means.

17. In a machine of the character described, multiple work treating means spaced apart, each treating means arranged for treatment of the full width of a work piece, means for feeding the length of the work piece by each of said treating means first in one direction and then in the other for said full width treatment, means for controlling the work treating means and a detector device actuated by the work piece when in proper position relative to the feeding means for operating said controlling means and rendering each treating means effective on a separate length section of said work piece.

18. A machine of the character described, com-

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prising adjacent feed rolls operative to feed a work piece between them first in one direction and then in the other, suction means having an air intake on each side of the line of engagement of the rolls with the work piece, said air intakes arranged to engage the work piece, a valve controlling each air intake, and a detector device operated by the work piece having means associated therewith for opening one of said valves while the work piece is moving in the one direction to treat a portion of the work piece, said detector device having other means associated therewith and being operative to reverse the direction of feed and to open the other valve to further treat the work piece.

19. A machine of the character described, comprising means operative to feed a work piece first in one direction and then in the opposite direction, suction means having an air intake on each side of the feeding means, said intakes being arranged to engage the work piece, a detector device operated by contact with the work piece, means under control of the detector device to reverse the direction of feed and to close one of said air intakes after a substantial portion of the work piece has been fed in the one direction, and timing means under the control of the detector device to operate the means for controlling the other of said air intakes whereby first one portion of the work piece is subjected to suction from one intake and then another portion is subjected to suction from the other intake.

20. In a machine of the character described, multiple work treating means spaced apart, each treating means being arranged for spreading out the full width of a work piece by air suction, means for feeding the work piece by each of said treating means first in one direction and then in the opposite direction, means for controlling the work treating means, and a detector device arranged to be actuated by the work piece when in proper position relative to the feeding means for operating said controlling means and for rendering each treating means effective on a separate length section of said work piece.

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