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[54] LEATHER PROCESSING

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[52] **U.S. Cl.** **69/42**

[51] **Int. Cl.** **C14b 1/06**

[58] **Field of Search** 69/21, 41, 42, 43; 271/77, 271/78, 67

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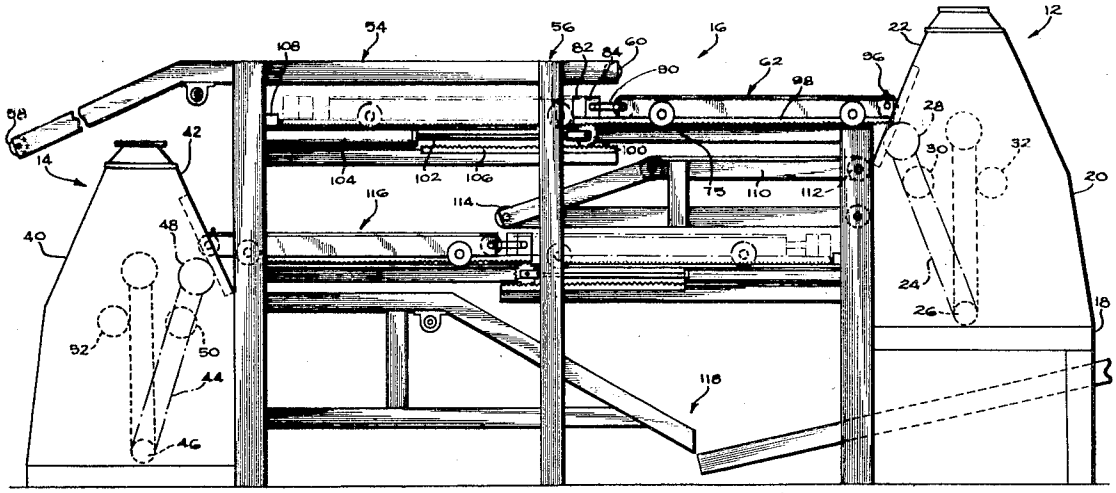
[57] **ABSTRACT**

A method and apparatus for processing leather hides utilizing a generally conventional first processing apparatus adapted to continuously process one-half only of the area of a leather hide, wherein a second processing apparatus identical in function to the first apparatus is provided in tandem, and wherein a hide is processed by first processing one-half only of the area of the hide utilizing the first apparatus and conveying the hide to the second apparatus for processing the other half of the hide without necessitating manual end-to-end reversal of the hide.

9 Claims, 2 Drawing Figures



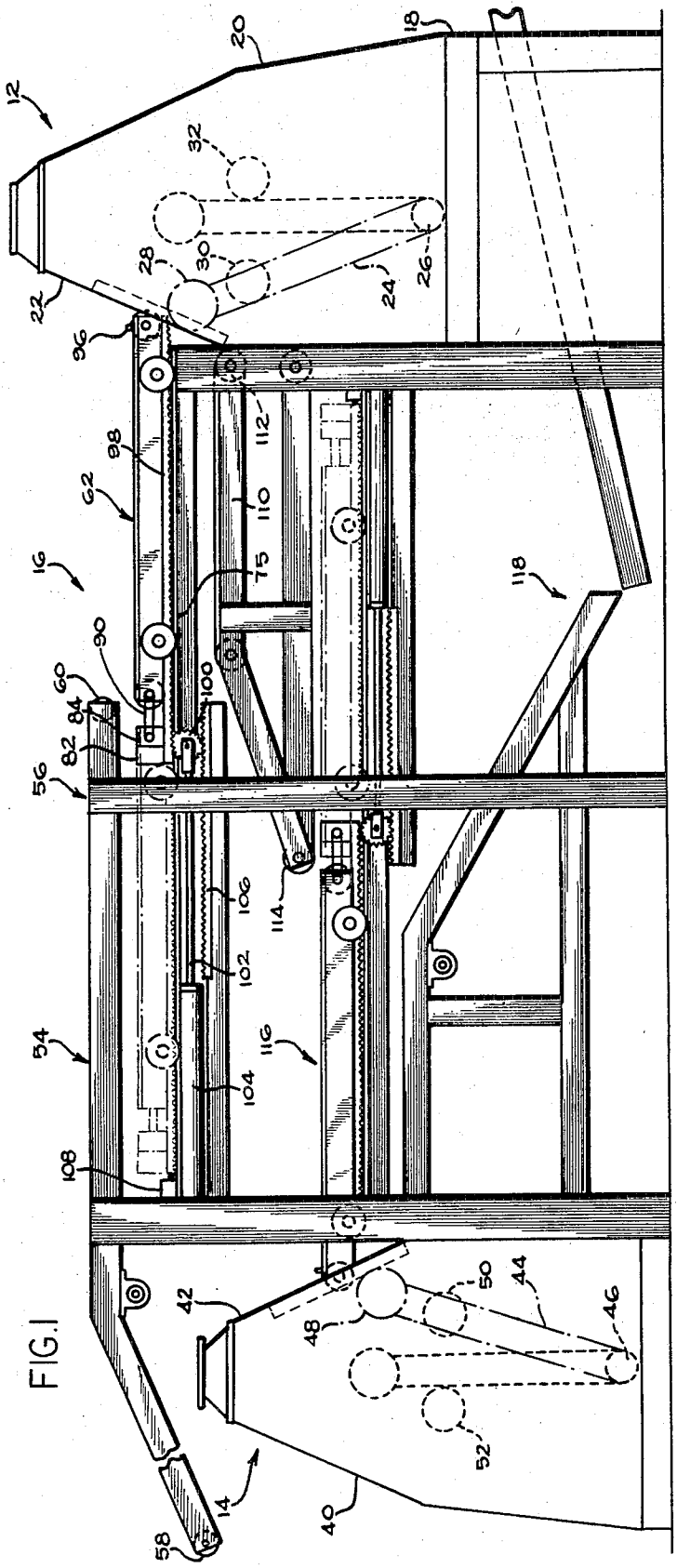


FIG. 1

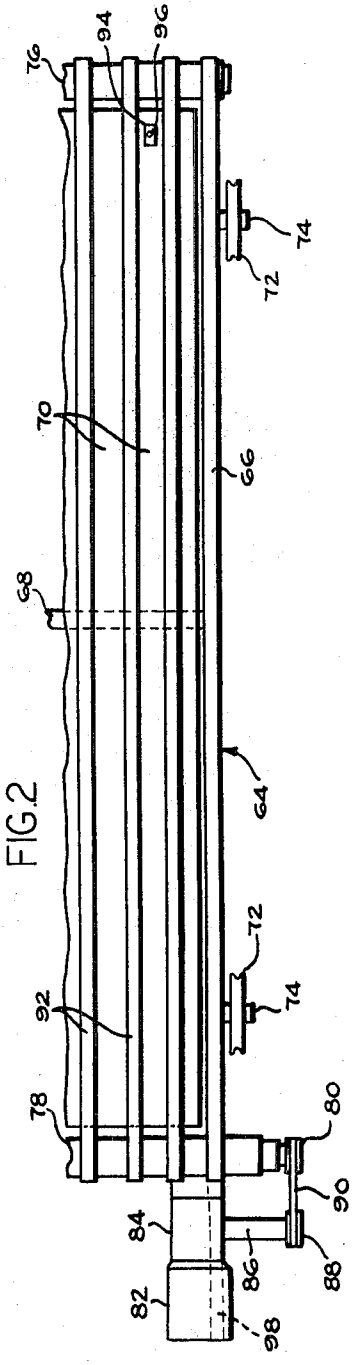


FIG. 2

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LEATHER PROCESSING

BACKGROUND OF THE INVENTION

In processing leather hides or sides, conventional construction of certain leather processing machines for wringing, fleshing, unhairing, scudding, setting out or whole hide staking usually requires that, in operation, after the leading one-half of the area or face of a hide is processed by a particular machine, the hide then be disengaged from the machine and manually reversed end for end to facilitate processing the formerly trailing other half of the hide in the same machine. To circumvent manual labor for performing the heretofore necessary hide reversal, continuous straight-through feed machines have been proposed recently as an alternative to the more common two-pass machines described above. However, substitution of new machines for the many presently on hand for a like function, is not always justifiable financially, as well as for operational reasons.

In this light, it is a general object of the present invention to make more efficient conventional leather processing practices by eliminating the need for manual labor for end-to-end reversal of a hide during leather processing by conventional machines heretofore requiring such reversal, without resort to new straight-through feed machine concepts.

SUMMARY OF THE PRESENT INVENTION

In achieving this general object, the present invention provides a leather processing method and apparatus for circumventing the problem heretofore noted. More specifically, the present invention provides a leather hide processing method and apparatus including a first hide processing apparatus adapted to continuously process the leading one-half only of the area of a hide and a second hide processing apparatus substantially identical in function to the first hide processing apparatus but intended to process the other half of the area of the hide. Power conveying means for conveying the hide from the first to the second processing apparatus is provided, the orientation and the operation of which is such to circumvent manual hide reversal.

BRIEF DESCRIPTION OF THE DRAWINGS

In describing the present invention, reference will be made to the accompanying drawing forming a part of the instant invention disclosure wherein:

FIG. 1 is a schematic elevational view of a leather processing system according to the present invention including first and second leather hide processing apparatus and an associated conveyor system therefor; and

FIG. 2 is a fragmentary plan view of a portion of one of the conveyors of the system shown in FIG. 1.

DETAILED DESCRIPTION OF THE INVENTION

Referring in more detail to FIG. 1 of the drawings, a processing system for processing leather hides or sides is shown therein comprising first and second leather hide processing apparatus or machines 12 and 14, respectively, along with and associated power conveyor system 16 for transporting leather hides or sides to and from the apparatus without the necessity of manual labor.

For purposes of the instant disclosure, the apparatus 12 and 14 may be described as conventional leather hide wringing machines such as manufactured by Stehling, but it should be understood that the present invention has equal applicability to conventional machines for fleshing, unhairing, scudding, setting out or whole hide staking. The machines1 2 and 14 are generally identical in construction and function but are positioned in opposed relation with the first machine 12 supported at a higher elevation by a support 18. The first wringing machine 12 comprises a closed housing 20 having an opening 22 on an upper forward wall thereof for feeding and removal of hides therethrough. Positioned in the housing 20 is a pivotable arm 24 pivoted on its lower end 26 for swinging movement

by a motor (not shown) from a lower or open position to a vertical, upper or closed position. On the upper end of the arm 24 a feed roller 28 is rotatably mounted for driven rotation in a clockwise direction. Positioned on the arm 24 below the feed roller 28 is a first wringing roller 30 adapted to be driven in a counterclockwise direction to cooperate with a second wringing roller 32 adapted to be driven in a clockwise direction for wringing a hide directed therebetween.

In conventional operation of such wringing machines, an operator manually positions a leading edge of a stretched out hide on the feed roller 28. After one-half of the hide is fed between the wringer rollers, the machine is closed by pivoting the arm 24 to the vertical position shown in FIG. 1. Power rotation of the wringer rollers results in wringing the leading half of the hide which is redirected back through the opening 22. At this point the operator conventionally reopens the machine, rotates the hide end for end, positions the formerly trailing edge upon the feed roller 28 and recloses the machine to repeat the wringing operation on the other or formerly trailing half of the hide.

The second wringing machine 14 is substantially identical in construction and function to the apparatus 12, it being understood that the description of the first machine 12 applies to the second, wherein a second housing 40, a second opening 42, a second arm 44, a second lower arm end 46, a second feed roller 48, and a second pair of wringer rollers 50, 52 are provided.

To circumvent the requirement for manual labor in feeding, reversal, refeeding and removal of hides during the wringing operation, the conveyor system 16 of the present invention is provided. The system 16 comprises a hide infeed conveyor 54 supported on a frame 56 extending laterally between the first and second wringing machines 12 and 14. The infeed conveyor 54 may be of any conventional design such as a motorized endless belt trained about first and second end rollers 58 and 60. Positioned subjacent the second end roller 60 of the infeed conveyor 54 is a first reciprocating conveyor assembly 62 adapted to receive hides delivered from the infeed conveyor 54 and deliver the same to the first machine 12. The reciprocating conveyor assembly 62 is narrower in width than the infeed conveyor 54 and is adapted to be moved entirely beneath the same.

The first reciprocating conveyor assembly 62 comprises a horizontally extending frame 64 including a pair of laterally spaced frame side members 66 one of which is shown in FIG. 2. The side members 66 are connected intermediate their length by at least one crossmember 68 to which a conveyor bed plate 70 is fixedly connected. A pair of track rollers 72 rotatably mounted on stub shafts 74 are positioned to project laterally from each side member 66 to movably support the assembly on tracks 75 fixed on the frame 56. Rotatably mounted on longitudinal ends of the side members 66 are a pair of rotatable roller shafts 76 and 78 to the latter of which a belt pulley 80 is drivingly connected. Fixedly mounted on an extension of frame 56 is an electric motor 82 drivingly connected to a reduction gearbox 84, an output shaft 86 of which is provided with a belt pulley 88 for driving the roller shaft belt pulley 80 through a belt 90. Movingly trained about the roller shafts 76 and 78, are a plurality of laterally spaced endless belt strips 92 spaced across the conveyor bed plate 70 for movement relative thereto. Spaced across the right-hand end of the conveyor bed plate 70 projecting upwardly between certain of the strips 92 are three electric micro or timing switches 94, one of which is shown in FIG. 2. A switch actuator 96 projects upwardly from the switch and is adapted to be actuated upon contact with a leather hide being conveyed thereacross by the conveyor assembly 62 for energizing an adjustable time (not shown) for controlling conveyor and machine operation.

The conveyor frame 64 is further provided with a longitudinally extending toothed rack 98 projecting from the lower end thereof which cooperates with a gear 100 rotatably mounted on the free end of a piston rod 102 of a fluid motor assembly 104 fixed to the frame assembly 56. Positioned

below the gear **100** and cooperating therewith, is a fixed toothed rack **106** fixedly mounted on the frame assembly **56**. In operation, upon introduction of air or other hydraulic fluid to the rod end of the cylinder assembly **104** from a conventional pump and valve assembly (not shown), the piston rod **102** is retracted causing counterclockwise rotation of the gear **100** and movement of the entire first reciprocating conveyor assembly **62** to the left, as shown in FIG. **1**, to the phantom line position shown therein. Upon completion of movement of the conveyor assembly **62** to an extreme left-hand end of the frame assembly **56**, the left-hand end of the conveyor assembly **62** contacts an electric stop switch **108** which, through suitable circuitry not shown, actuates the cylinder valve to direct fluid from the fluid pump to the piston end of the cylinder **104** to reverse movement of the first reciprocating conveyor assembly **62** back towards the position shown in full lines in FIG. **1**.

Positioned subjacent the reciprocating conveyor assembly **62** on the frame assembly **56**, is a motorized intermediate conveyor **110** of any conventional type which may be of an endless belt trained about end rollers **112** and **114** and adapted to receive hides processed by the first wringing machine **12** upon reciprocation of the reciprocating conveyor assembly **62** to the phantom line position and deliver the hides to a second reciprocating conveyor assembly **116**. The second reciprocating conveyor assembly **116** is identical in construction and function to the first reciprocating conveyor assembly **62** except that the endless belt strips thereof are driven in a counterclockwise direction and the entire second reciprocating conveyor assembly **116** is adapted to be moved to the right, as shown in FIG. **1** in phantom lines, to deliver hides processed by the second wringing machine **14** to an outfeed conveyor assembly **118** positioned therebeneath. The outfeed conveyor assembly **118** may be of any conventional motorized type such as an endless belt trained over end rollers for transporting hides to other type processing machines.

In operation, hides are intermittently delivered by the infeed conveyor assembly **54** to the first reciprocating conveyor assembly **62** positioned as shown in full lines in FIG. **1**. Clockwise movement of the endless belt strips **92** causes a hide to advance towards the first wringing machine **12** in a stretched out condition. When the leading end of the hide strikes one or more of the actuators **96**, an electric timing circuit is energized whereby, after sufficient time has elapsed for movement of one-half of the hide past the first wringing roller **30**, the pivotable arm **24** will be caused to move to the vertical closed position shown in FIG. **1**. The wringing rollers **30**, **32** are caused to rotate to commence a wringing function of the leading one-half of the hide. Upon commencement of the wringing function by the wringing rollers **30**, **32**, the fluid motor assembly **104** is actuated to move the first reciprocating conveyor assembly **62** to the left, as shown in FIG. **1**, to the phantom line position. Upon such movement, the trailing half of the hide supported on the first conveyor assembly **62** which is projecting from the first wringing machine **12**, remains relatively stationary as the reciprocating conveyor is moved from beneath the same. After sufficient movement of the conveyor assembly **62** to the left, the trailing half of the hide falls downwardly in a spread condition on to the intermediate conveyor assembly **110** for transportation to the second reciprocating conveyor assembly **116** for performance of the wringing operation on the formerly trailing, now leading, half of the hide by the second wringing machine **14**. The first reciprocating conveyor assembly **62** moves to the left until actuation of the stop switch **108** is contacted after which this conveyor assembly is returned to its initial position. Upon completion of the wringing operation on the second half of the hide, the second reciprocating conveyor assembly **116** is moved to the right, as shown in FIG. **1**. After sufficient movement of the conveyor, the free end of the hide projecting from the second wringing machine **14** is free to fall on the outfeed conveyor **118** for subsequent delivery to leather processing machines of basically different types required for completion of the leather processing operation.

Although but one embodiment of the present invention has been described, it should be appreciated that various modifications and substitutions may be made which are encompassed by the present invention, the scope of which is to be determined by reference to the accompanying claims.

We claim:

1. In a system for processing leather hides including first and second processing machines arranged in opposing relation, the combination comprising: a first conveyor adapted to receive hides and including powered belt means for supporting and feeding a hide to said first processing machine wherein one-half of one surface of said hide is processed; first reciprocating means for moving said first conveyor between a first position adjacent said first processing machine wherefrom said hide is fed into said first processing machine, and a second position remote therefrom; a second conveyor mounted beneath said first conveyor at said first position; and first control means responsive to said first machine's receiving approximately one-half of said hide surface for moving said first conveyor to said second position while said hide is held by said first machine whereby the untreated side of said hide falls spread out under gravity onto said second conveyor for conveying said hide toward said second processing machine with the same surface up.

2. The system of claim **1** further comprising means responsive to the retraction of said first conveyor to said second position for reversing said reciprocating means to move said first conveyor back to said first position whereby said first conveyor is adapted to feed a subsequent hide into said first processing machine.

3. The system of claim **1** wherein said first conveyor includes a frame; endless belt means rotatably mounted on said frame; wheel means supporting said frame; track means supporting said wheel means and extending between said first and second positions; and motor means on said frame for actuating said endless belt means to feed a hide into said first machine.

4. The system of claim **1** further comprising third conveyor means adapted to receive hides from said second conveyor and including powered belt means for supporting and feeding a hide to said second processing machine wherein the untreated one-half of said same surface of said hide is processed; second reciprocating means for moving said third conveyor between a first position adjacent said second processing machine wherefrom said hide is fed into said second processing machine and a second position remote therefrom; fourth conveyor means mounted beneath said third conveyor at said first position thereof; and second control means responsive to said second processing machine's receiving the second one-half of said hide surface for removing said third conveyor to said second position while said hide is held by said second processing machine whereby the first-treated side of said hide falls spread out under gravity onto said fourth conveyor means.

5. The system of claim **1** wherein said first control means comprises timing means including sensor means responsive to the position of said hides on said first conveyor means for timing the entry of approximately one-half of said hide into said first processing machine, said timing means thereupon energizing said first reciprocating means for retracting said first conveyor means to said first position, whereby the trailing edge of said hide falls onto said second conveyor means spread out and with the same surface up.

6. A system for treating said first and second sides of the same surface of a hide comprising: first and second processing machines, arranged in opposed relation; input feed means conveying a leading half of said hide followed by a trailing half; first reciprocating conveyor means adapted for reciprocation between a first position whereat said first conveyor means receives a hide from said input feed means and transports the same into said first processing machine, and a second position remote from said first processing machine; second conveyor means mounted beneath the first position of said first reciprocating conveyor means and adapted to receive the trailing half of a hide being processed in said first processing

machine when said second conveyor means is retracted to said second position thereof; timing means including a switch mounted on said input feed means adjacent the downstream end thereof and responsive to the leading edge of a hide for timing the intake of a hide into said first processing machine until approximately one-half of said hide enters said processing machine, said timing means thence causing said first reciprocating conveyor means to be retracted to said second position whereupon the trailing half of said hide will fall under gravity spread out onto said second conveyor means; and limit switch means responsive to the positioning of said first reciprocating conveyor means in said second position for returning said first reciprocating conveyor means back to said first position whereby said first reciprocating conveyor means is adapted to receive a subsequent hide; said second conveyor means thence conveying the trailing half of said hide from said first processing machine to said second processing machine for treatment therein with the same side up.

7. A system for sequentially treating a first half and a second half of the same side of a leather hide comprising: first and second processing machines, arranged in opposed relation; an infeed conveyor system for conveying hides toward said first processing machine with a leading edge followed by a trailing edge; a first reciprocating conveyor adapted to receive hides from said infeed conveyor in a first position and to feed a hide into said first processing machine, said first reciprocating conveyor including powered endless belt conveyor means for conveying hides into said first processing apparatus on said first position, said first reciprocating conveyor means being retractable to a second position out of supporting relation with the trailing half of said hide when the leading half of said hide is fed into said first processing machine; intermediate conveyor means located beneath said first reciprocating conveyor in said first position for receiving said trailing half after said first reciprocating conveyor has been retracted to said second position and for conveying said hide away from said first processing machine with said trailing edge first; second reciprocating conveyor means adapted to receive hides from said intermediate conveyor means in a first position wherein said second conveyor means feeds said hides into said second hide processing machine, said second reciprocating conveyor means being adapted to be retracted to a second position remote from said second processing apparatus and out of support with said leading half of said hide when said trailing half thereof is being held in said second processing apparatus; and outfeed conveyor means adapted to receive said trailing half of said hide when said second reciprocating conveyor means is retracted to said second position thereof for conveying said hide away from said second processing machine.

8. The system of claim 7 wherein each of said first and second reciprocating conveyor means includes sensor means responsive to the first-coming edge of a hide when the associated reciprocating conveyor means is in its infeed position, for timing the infeed of a hide into its associated processing machine so that approximately one one-half of a hide is feed into each machine for processing when said reciprocating conveyor means are retracted to said second positions.

9. The system of claim 8 wherein each of said first and second reciprocating means further include limit switch means responsive to the retraction of their respective reciprocating conveyor means for returning the same to their associated first positions when fully removed from supporting relation with a hide.

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