

Sept. 28, 1943.

W. M. CUTLER

2,330,271

MACHINE FOR TREATING HIDES AND SKINS

Filed May 3, 1941

4 Sheets-Sheet 1

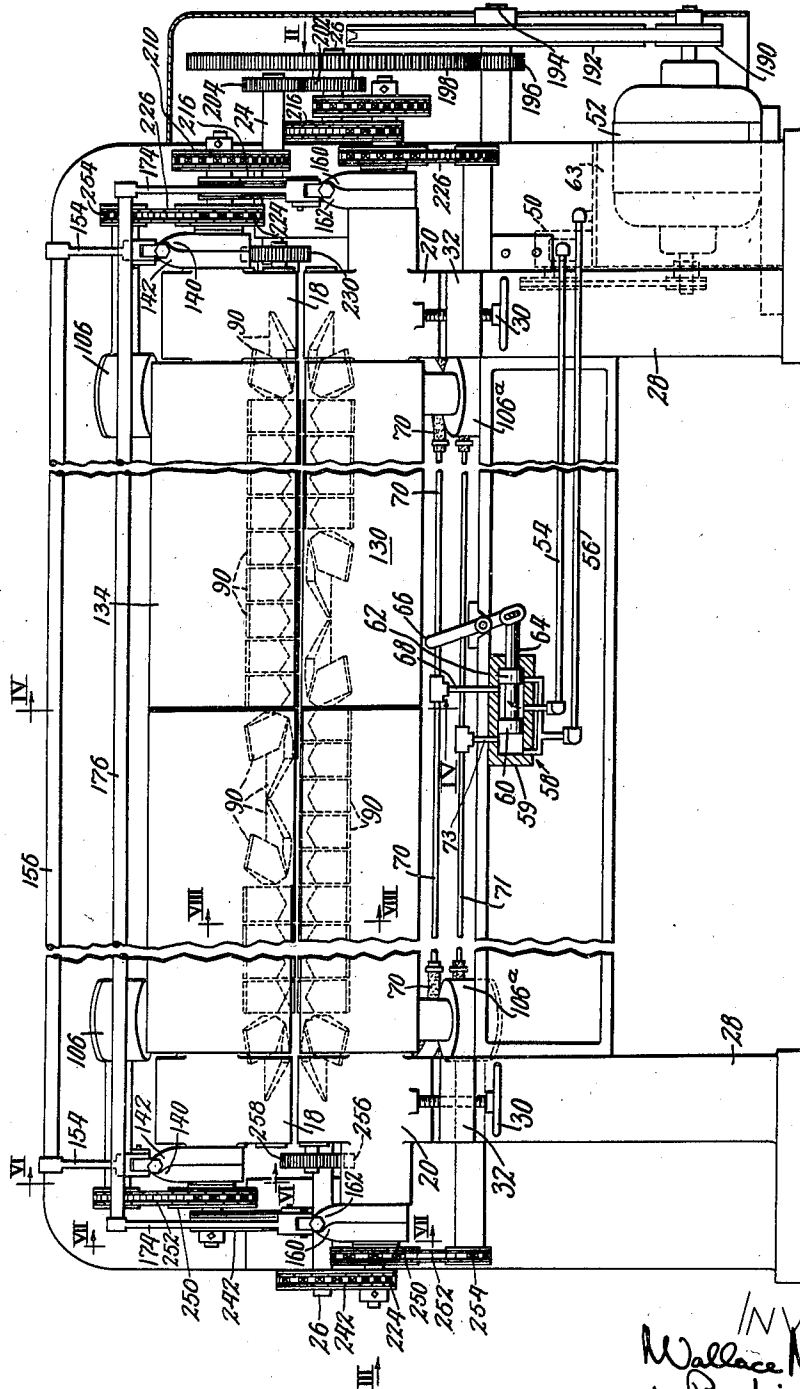


Fig. 1.

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4 Sheets-Sheet 2

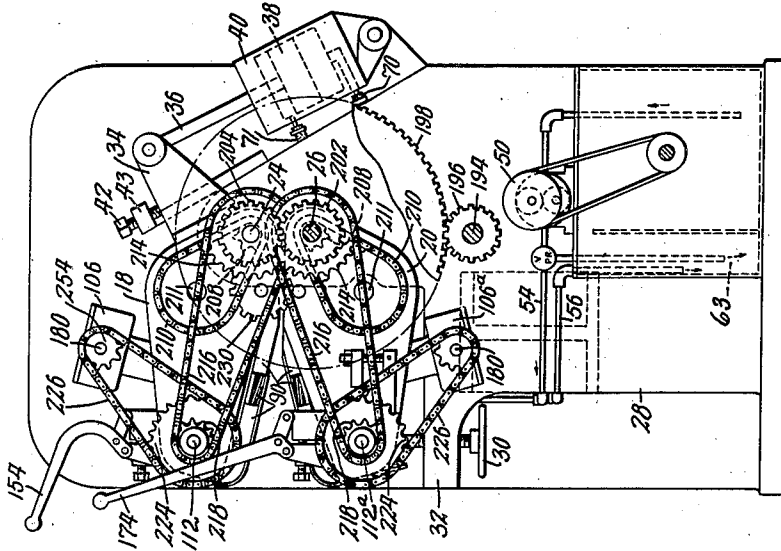


Fig. 2.

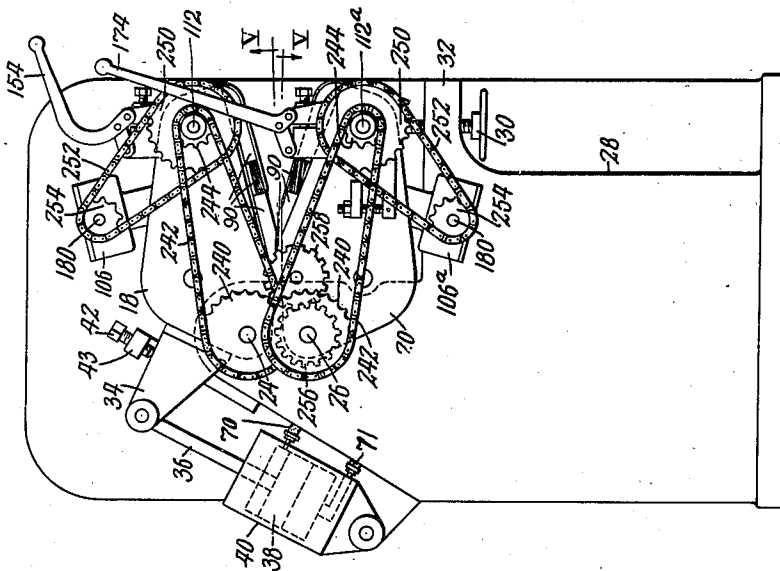


Fig. 3.

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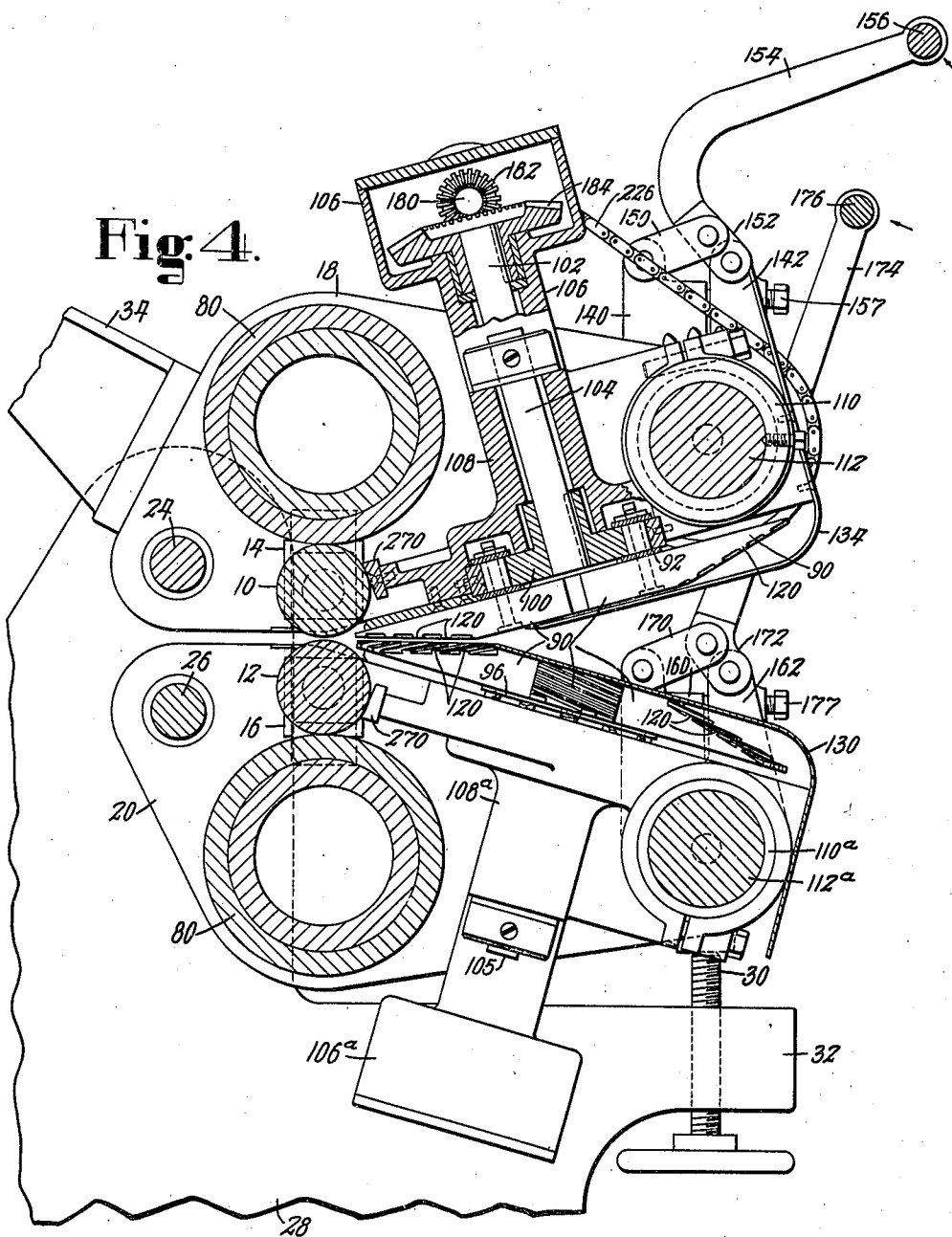
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MACHINE FOR TREATING HIDES AND SKINS

Filed May 3, 1941

4 Sheets-Sheet 3



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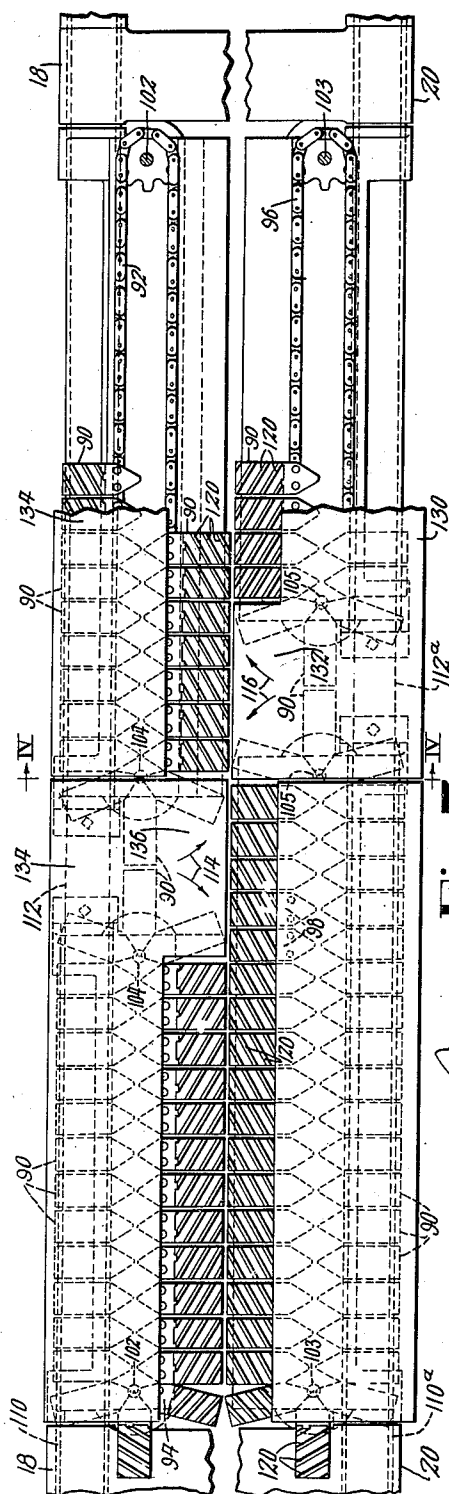
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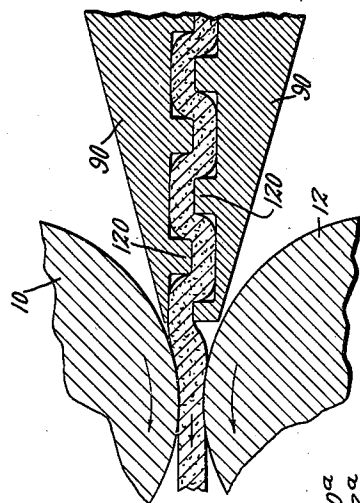
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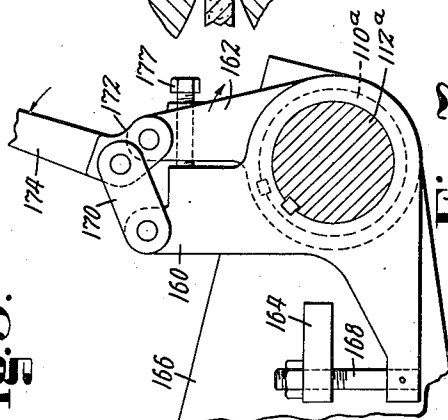
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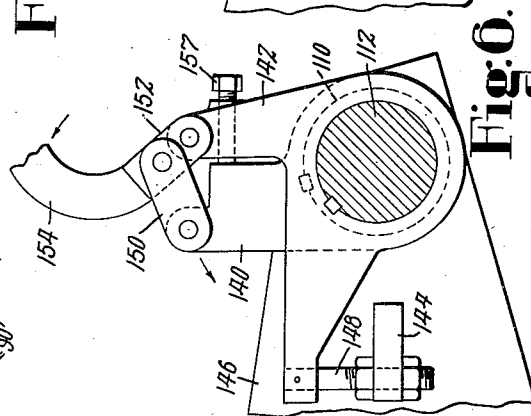
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UNITED STATES PATENT OFFICE

2,330,271

MACHINE FOR TREATING HIDES AND SKINS

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Application May 3, 1941, Serial No. 391,743

23 Claims. (Cl. 69—43)

This invention relates to machines for treating hides and skins and is herein illustrated as embodied in a machine for performing putting-out and wringing operations upon wet hides or skins. It is to be understood, however, that the invention in various novel aspects is not thus limited in use and various important features thereof may have other applications and uses.

It is an object of the present invention to facilitate the introduction of sheet material into the grip of work treating rolls with which machines of the above-mentioned type are provided and more particularly to facilitate the introduction of work pieces such as wet hides and skins. Since work pieces of that character are flaccid difficulty has been experienced heretofore in introducing such work pieces into the work treating rolls. It is, accordingly, a further object of the invention to provide improved means which will not only spread out the hide or skin but will at the same time advance it into the bite of the rolls. A still further object is to provide for ready control of the combined spreading and feeding-in means by the operator so that the action of this means may be suited to the individual work piece.

For the purposes in view and in accordance with one feature of the invention the work spreading means is located in close juxtaposition to a pair of work treating rolls to spread out the work piece just before it enters the bite of the rolls, it being a marked advantage of the new work spreading means that it spreads successive portions of the work piece and keeps them under lateral tension as such portions enter the grip of the rolls, thereby eliminating the formation of creases or folds even in such difficult work as that presented by wet hides or skins.

In the illustrated construction, the work spreading means is so constructed as to be effective to advance the work piece edge-on toward and into the bite of the work treating rolls. This construction makes it possible to enter a flaccid piece of work at one end thereof into a work treating means and complete the treatment thereof in one passage through the machine, whereas it has heretofore been common practice to enter a flaccid work-piece at or near its transverse median line and treat approximately one-half thereof and then to re-enter such work piece to complete treatment thereof.

Conveniently, manually controllable means is provided in conjunction with the work spreading means to enable the operator to vary at will the tension at which the spreading operation is performed, so that the latter may be suited to work

pieces which vary in thickness and in stretchability. Such manual control also enables the operator to apply greater spreading pressure on the work piece at one side of the median line thereof than on the other side and thus to correct any tendency to sidewise displacement of the work piece while it is being fed to the work treating rolls. Preferably also means is provided under the control of the operator for varying the pressure of the wringing rolls independently of the tension in the work piece during the spreading operation. It is, therefore, possible so to relate the operation of the work treating rolls with respect to the work spreading means as to enable the operator to increase or to reduce substantially the spreading tension on the work-piece in any given case with or without a corresponding change in the wringing pressure, whereby work pieces differing in thickness and in other qualities may be suitably spread out prior to the operation of the work treating rolls on successive portions of the work piece.

These and other important features of the invention including various novel details of construction and combinations of parts 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 front elevation of a machine illustrating one embodiment of the invention;

Fig. 2 is a view looking in the direction of the arrow 2 in Fig. 1;

Fig. 3 is a similar view looking in the direction of the arrow 3 in Fig. 1;

Fig. 4 is a vertical sectional view taken along the line IV—IV of Fig. 1;

Fig. 5 is an assembly of two plan views, one looking upwardly from the line V and the other plan view looking downwardly from a similar line V in Fig. 3;

Fig. 6 is a section taken along the line VI—VI of Fig. 1;

Fig. 7 is a similar view taken along the line VII—VII of Fig. 1; and

Fig. 8 is a vertical section taken along the line VIII—VIII of Fig. 1.

In the illustrated machine, which is specially designed to perform wringing operations upon hides and skins, there are provided upper and lower wringing rolls 10 and 12 (Fig. 4), mounted respectively in blocks 14 and 16 which are slidably supported in arms 18 and 20. It is to be understood that there are two pairs of arms 18 and 20 (Fig. 1), one pair at each end of the ma-

chine and that the rolls 10 and 12 extend the whole width of the machine. Preferably, the arms 18 and 20 are pivotally mounted upon parallel shafts 24, 26 (Figs. 2, 3 and 4) which extend the full length of the machine and are supported by suitable bearings in the frame 28. For adjusting the lower arm 20 about its pivot 26 there are provided hand screws 30 screw threaded into extensions 32 from the end frames (Figs. 1 to 4, inclusive). Each upper arm 18 has fixedly secured thereto a bracket 34 (Figs. 2 and 3) to which is pivoted a piston rod 36 secured at its lower end to a piston 38 slidable in a cylinder 40. It will be readily understood that air may be forced into the lower end of each cylinder 40 to effect upward movement of the pistons 38 whereby the arms 18 will be caused to move in a clockwise direction (Figs. 3 and 4) about the pivot shaft 24 thereby increasing pressure upon the work piece at the time between the wringing rolls 10 and 12. To limit downward movement of the arms 18 about the pivot shaft 24 (Fig. 3) there is provided in connection with each arm 18 an adjustable screw 42 carried by a bracket 43 rigid with the machine frame, it being understood that prior to entrance of a work piece between the wringing rolls 10 and 12 the latter may be separated by movements of the pistons 38 in a downward direction (Fig. 3) which will lift the upper arms 18, and that additional pressure for the wringing operation may be secured through operation of the pistons 38 in the cylinders 40 in an upward direction, as heretofore described.

Means is preferably provided under control of the operator for operating the pistons 38 to separate the rolls 10 and 12 or alternatively to increase the wringing pressure. For this purpose there is provided a geared pump 50 (Fig. 2) arranged to be driven by any suitable means such as an electric motor 52 (Fig. 1). Connected to the chamber of the pump 50 by a pipe 54 is a valve member 58 in the form of a cylinder 59 having slidably mounted therein a double piston 60, 62 connected by a piston rod 64 to a hand lever 66. As shown, the valve cylinder 59 is connected to a reservoir 63 (Figs. 1 and 2) of pressure liquid by a relief or return pipe 56. When the hand lever 66 is moved in a counterclockwise direction (Fig. 1), liquid under pressure passes from the cylinder 59 through pipes 68, 70 to both cylinders 40, such liquid under pressure entering the upper ends of the cylinders 40, as most clearly shown in Fig. 3, and forcing the pistons 38 downwardly thereby effecting movement of the arms 18 in a counterclockwise direction (Figs. 3 and 4) about their pivot shaft 24 to separate the wringing rolls 10 and 12 to decrease the pressure of the wringing operation and to facilitate the introduction of a work piece. Movement of the manually operable lever 66 in the reverse direction moves the double piston 60, 62 to the left in Fig. 1 to a point where the pressure pipe 54 is connected to pipes 71 through pipe 73 whereby the pressure liquid reaches the bottoms of the cylinders 40 to increase the pressure of the wringing rolls 10 and 12. As shown, the top and bottom ports of the cylinders 40 are alternately connected to relief sides of the valve 58, whereby pressure is relieved in the cylinders 40 and in corresponding parts of the valve cylinder 59 by passage of the pressure medium through the relief pipe 56 back to the reservoir 63.

It is to be understood that the hydraulic circuit will be provided with a relief valve set for a

relatively low pressure, said valve being readily adjustable to enable the operator to adjust the pressure for different batches of work.

In order that wringing operations may be effectively performed, the wringing rolls 10 and 12 are constructed of small diameter, since it has been found that the smaller the wringing roll the more effectively it wrings moisture from the wet hide or skin. In order to support such relatively slender wringing rolls and prevent bowing thereof, there are provided rubber covered backing rolls 80 (Fig. 4) also mounted in the arms 18 and 20, respectively.

Means is provided, in accordance with my invention, to spread in lateral directions away from a median line thereof a hide or skin being advanced edge-on toward the bite of the wringing rolls 10 and 12. In the illustrated construction, the spreading means comprises a plurality of spreader members 90 (Figs. 1, 4 and 5), said members being in the form of plates substantially wedge shaped in cross section (Fig. 4) so that the relatively sharp edges of each wedge may be presented close up into an angle between the upper and lower wringing rolls 10 and 12. The spreader members 90 are carried by endless sprocket chains 92, 94, 96 and 98 (Fig. 5). In other words, the spreader members 90 are arranged in four sets of which the two upper sets are carried by chains 92, 94, respectively, in an arrangement in which the endless chain 92 is carried at its opposite ends by sprocket wheels 100 at the lower ends of a driven shaft 102 (Figs. 4 and 5) and an idle shaft 104, both of these shafts being mounted in journal members 106, 108, respectively, integral with a sleeve 110 rotatable on a shaft 112 fixed at its opposite ends in the forward ends of the upper arms 18. Similarly, the endless sprocket chain 94 is carried at its opposite ends by sprockets on the lower ends of a driven and an idle shaft corresponding exactly to the driven shaft 102 and the idler shaft 104 (Fig. 4) which support and operate the endless sprocket chain 92. It will be observed that the two idler shafts 104 are spaced from each other so that the spreader members 90 may have room to rotate about the centers of the two idler shafts 104 in passing from the inoperative run or line to the operative run or line of spreader members in the direction indicated by the arrows 114 in Fig. 5. In this connection it will be noted that the chain 92 is longer than the chain 94. Similarly, the lower chain 96 is longer than the lower chain 98, and the idler shafts 105 (corresponding to the upper idler shafts 104) are spaced from each other on the other side of the median line of the machine indicated by the line IV-IV in Figs. 1 and 5. In this connection, it is noted that the lower sets of spreader members 90 are driven by shafts 103 (corresponding to driven shafts 102 of the upper chain belts 92 and 94) and that they rotate about the axes of the idler shafts 105 in the direction of the arrows 116 in Fig. 5 in passing from the inoperative run or line of spreader members to the operative run or line of spreader members. Furthermore, the space between the two sets of spreader members carried by chains 92 and 94, respectively, is staggered with respect to the space between the sets of spreader members carried by the endless chains 96 and 98, respectively, as most clearly shown in Fig. 5. The shafts 103 and 105 are journaled in journal members 105^a, 103^a carried by sleeves 110^a on the lower shaft 112^a, these parts corresponding ex-

actly to the shafts 102, 104 and the journal member 106, 108 carried by the sleeve 110 on the upper shaft 112.

The spreader members 90 are provided on their work contacting surfaces with elements which have the effect of engaging the hide or skin as said spreader members move away from each other on opposite sides of a line corresponding to the median line of the hide or skin entering the bite between the wringer rolls 10 and 12. In the illustrated construction, the work engaging elements on the spreader members 90 are in the form of ribs 120. It will be noted that the ribs 120 on spreader members or plates 90 in both upper and lower sets of spreader plates to the right of the median line IV—IV (Fig. 5) of the machine are inclined in directions to co-operate with each other in engaging the upper and lower surfaces of a hide or skin to spread the engaged portions to the right away from said median line and that the said ribs 120 on the spreader members or plates to the left of said median line are inclined at different angles (from those at the right) to engage and spread the hide or skin portions to the left away from said median line, so that the two sets of upper and lower spreader members spread the hide or skin in opposite directions away from the median line thereof and place it under tension prior to its entrance edge-on into the bite of the wringing rolls 10 or 12. Preferably the rolls 10 and 12 will operate at a speed such that the work piece will be under some tension in that portion extending between said rolls and the spreader member 90.

If desired, the sole function of ribs on the spreader members may be to effect the spreading action just described. However, in the illustrated construction, the ribs 120 are so arranged angularly on the spreader members 90 as to exert a component of force in the forward direction thereby effecting a feeding-in of the hide or skin, that is, in a direction to advance the forward end of the hide or skin into the bite of the wringer rolls 10 and 12. This arrangement of the ribs 120 will be utilized in all of those cases in which water is being removed from wet hides and skins since in this case the hides or skins are so flaccid that it is difficult to advance the forward ends thereof into engagement with the wringer rolls. Where the hides or skins are relatively dry and are being fed into the bite of rolls having a function other than that of wringing water from work pieces, it is contemplated that the ribs may be so arranged as to have only a spreading action on successive portions of the work piece as the latter is progressed through the bite of the work treating rolls. In the latter case, the members 90 may be regarded as spreader blades, and the chains 92, 94, 96, and 98 as bladed chains or belts.

To facilitate introduction of work pieces into the machine and to cover the idle run or line of the work spreading members associated with the lower chains 96 and 98, there is provided a member 130 (Figs. 1, 4 and 5) which may be of metal or other suitable sheet material and which serves as a guard and also as a work support. This member 130 extends toward the work treating rolls 10 and 12, as shown in Fig. 4, but leaves uncovered the operative runs or lines of lower spreader members, as clearly indicated in the plan view shown in Fig. 5, so that these spreader members may contact the lower surface of the work piece being shoved over the work supporting part of the guard 130. Furthermore, this guard

130 has an extension at 132 (Fig. 5) which covers the space where the lower spreader members 90 are turning about the axes of the shafts 106, as indicated by the arrows 116, this projecting portion 132 of the guard serving also to support the forward edge of the hide or skin against the pressure of a certain number of the upper spreading members 90 which are carried by the endless belt 92 in the operative run or line thereof. Similarly, there is provided also an upper guard member 134 (Figs. 1, 4 and 5) which protects the operator from the spreader members moving along in opposite directions from the median line of the machine in their inoperative runs or lines, these spreader members being carried by the upper chains 92 and 94. The guard member 134 also has an extension 136 (Fig. 5) which covers the space where the spreader members 90 are making their turn about the axes of the shafts 104 from the inoperative runs of such spreader members to the operative runs or lines thereof, as indicated by the arrows 114 in Fig. 5. This guard extension 136 serves also as a backing for the work piece that is being engaged by the spreader members 90 carried by the lower chain 98 adjacent to the median line of the machine. It will be clear, then, that the guard extensions 132 and 136 furnish a support or a backing for the work piece in those places where the spreader members themselves cannot offer backing or support because of the fact that they must have space to turn from the inoperative to the operative runs of said members, as most clearly shown in Fig. 5.

In the illustrated machine, means is provided to enable the operator to vary at will the pressure of the spreading operation by the spreader members and therefore the tension of the spreading operation in relation to any given work piece in accordance with the thickness and other characteristics such as the stretchability of said work piece. This means comprises two pairs of levers 140, 142 connected to the upper sleeves 110, that is, a pair of levers at the outer end of each sleeve 110 on the shaft 112, the levers 140 being secured to said sleeve. As shown in Fig. 6, the lever 142 is rotatable on the sleeve 110 and is secured to a bracket 144, rigid with a stationary frame member 146, by means of a bolt 148. Pivoted to the upper ends of the levers 140, 142 is a pair of toggle links 150, 152, the link 152 having integral therewith a lever member 154, the arrangement being such that swinging of the lever 154 in the direction of the arrow in Figs. 4 and 6 will result in counterclockwise movement of the sleeve 110 on the shaft 112 with the result that the upper sets of spreader members in their operative runs or lines are depressed toward the lower set of spreader members, thereby increasing the pressure of the spreader members on the work piece. In other words, the spreading effect is increased and the tension on the work piece in lateral directions from the median line thereof also increased to suit the particular piece of work as determined by the operator. To facilitate the work of the operator the levers 154 at each end of the machine are joined by a bar 156 (Fig. 1) which extends clear across the front of the machine within easy reach of the operator. Set screws 157 may be adjusted to vary the normal position of the upper spreader members with respect to the work piece. Similarly, the sleeves 110^a on the lower shaft 112^a, which sleeves carry journal bearings 106^a, 108^a for the lower sets of

sprocket shafts 103, 105, respectively, are also provided with levers 160, 162 (Figs. 4 and 7) of which the levers 162 are fixedly secured to the sleeve 110^a, the lever 160 being rotatable with respect to the sleeve and being secured to a bracket 164 rigid with a stationary frame member 166, by means of a bolt 168 (Fig. 7). At their upper ends the levers 160, 162 have pivotally connected thereto a pair of toggle links 170, 172, the link 170 having rigid therewith a lever 174, the arrangement being such that movement of the lever 174 in the direction of the arrow in Figs. 4 and 7 results in swinging of the sleeves 110^a in a clockwise direction to lift the lower sets of spreader members, in the operative run on line thereof, toward the upper spreader members, thereby increasing the pressure of the spreader members on the work piece with the result that a greater spreading effect is produced on the work piece just as it is entering into the bite of the work treating rolls 10 and 12. As shown, the levers 174 at each end of the machine are connected by a bar 176 (Fig. 1) within easy reach of the operator so that the operator may increase the effect of either the upper or the lower set of spreader members or of both sets of spreader members where they are contacting with the work piece. Set screws 177 may be adjusted to vary the normal position of the lower spreaders with respect to the work piece.

While, as stated above, variation in pressure of the sets of spreader plates 90 upon a work piece introduced between them may be for the purpose of accommodating the pressure to work pieces different in thickness and in other characteristics such as stretchability, the most important use of the hand operated mechanism for adjusting the spreading pressure with respect to the work piece is that which relates to the maintenance of the proper feeding-in of the work piece with respect to the work treating rolls 10 and 12. It will be understood in this connection that a hide or skin will be presented to the machine with the backbone line thereof coinciding as nearly as may be reasonably practicable with the median line of the machine, as indicated by the line IV-IV of Figs. 1 and 5 of the drawings. This is because the sets of spreader plates are arranged to travel in opposite directions from this median line. However, it is but seldom that a work piece is symmetrical with respect to its median or backbone line. In other words, there is usually substantially more hide or skin area on one side of the backbone line than on the other side. Hence, the spreader devices on one side having more hide or skin substance to contact on that side than on the other are very apt to carry the hide or skin laterally away from the median line of the machine. As soon as this becomes noticeable at all, the operator prevents or corrects such dislocation of the work piece by pressing upwardly on the levers 154 and 174 on that side of the machine where the lesser area of the hide or skin is being engaged by the outwardly moving presser plates. By thus increasing the pressure of these spreader plates on the side of lesser area, the operator is enabled to offset the effect of the spreader plates on the other side of the median line of the machine which are engaging a larger area of the skin. In this way the tendency to sideslip is prevented and gradually corrected, particularly if the operator is giving the proper attention to his job. In order to operate the levers 154 and 174 at one

end of the machine in preference to the similar levers at the other end of the machine, the operator has only to press upwardly on the bars 156, 176 at a point or points adjacent to the levers which it is desired to operate, this being true because of the fact that the rods 153, 176 are long and with more or less tendency to give or yield at one end with respect to the other end thereof, so that upward movement of said bars 156, 176 will effect one set of levers 154, 174 more than the other set, depending upon the point of application of pressure upon said bars 156, 176.

As heretofore stated, the sprocket shafts 102 located at the outer ends of the endless spreader chains 92, 94, and also sprocket shafts 103 for chains 96 and 98, respectively, are driven shafts, power being supplied thereto by means of upper and lower shafts 180 (Figs. 2 and 3) each of which carries adjacent its ends bevel gears 182 (Fig. 4) constantly in mesh with bevel gears 184 at the upper and lower ends, respectively, of the driven sprocket shafts 102 and 103.

As shown in Figs. 1 and 2, power for driving the movable parts of the machine is supplied by the electric motor 52 mounted on one of the frames 28. A pulley 190 on the motor shaft drives a larger pulley 192, at a reduced speed, on a stub shaft 194. Conveniently, a pinion 196 on the stub shaft 194 is in constant mesh with a gear 198 secured to the shaft 26 in a construction in which a gear 202 on the shaft 26 drives a gear 204 fastened on the shaft 24. As shown in Fig. 2, the shafts 24 and 26 have secured thereto sprocket wheels 208 adapted to drive, through link chains 210, shafts 211 of the large rolls 60, the latter serving to furnish backing for the wringing rolls 10 and 12, respectively. Also mounted on the shafts 24 and 26 are sprocket wheels 214 each adapted to drive through a link chain 216 one of a pair of sprocket wheels 218 (Fig. 2) which are free on the reduced ends of the shafts 112 and 112^a. Fixedly secured to the sprocket wheels 218 are sprockets 224 each adapted to drive through a link chain 226 one of the pair of shafts 180 at a relatively high rate of speed. Since the shafts 180 are connected through bevel pinions 182, 184 to drive the sprocket shafts 102, 103 (which serve as the driving means for the endless spreader chain belts) it follows that these belts are driven at a rate to be effective in spreading the hide or skin prior to its entrance into the grip of the wringer rolls 10 and 12.

On the other ends of the shafts 24 and 26, as shown in Fig. 3, are sprockets 240 adapted to drive through link chains 242, sprockets 244 free on the other ends of the shafts 112 and 112^a. Integral with or fixedly secured to the sprockets 244 are sprockets 250 adapted to drive through link chains 252 and sprockets 254 the shafts 180 on the left side of the machine. At one side of the lower sprocket 240 is a gear 256 meshing with a gear 258 on the shaft of the lower wringer roll 12 and driving it in the proper direction. By means of intermeshing gears (not shown) on the shafts of the rolls 10 and 12, the latter are driven in proper relation to each other. While a detailed description has been given of the illustrated driving mechanism for the wringer rolls and the sets of spreader belts, it is to be understood that other driving means may be substituted, since the particular driving means disclosed forms no part of the invention.

If desired, other means than the backing rolls

80 may be provided to prevent displacement of the wringing rolls 10 and 12 while under heavy pressure. As shown in Fig. 4, the journal members 108, 108^a have projections which carry backing plates 270 which bear against the wringing rolls 10 and 12 to support the latter against bowing forwardly during increased pressure thereon. Since the bearing surfaces of the plates 270 are substantially on arcs struck from the centers of the shafts 112, 112^a, the said bearing surfaces retain the same relation to the rolls 10 and 12 during adjustment of the sleeves 110, 110^a by the levers 154 and 174, as above described. Again, such means may be in the form of laterally disposed rods or rolls contacting the wringing rolls to prevent lateral bowing thereof, such a construction being shown in United States Letters Patent No. 295,948, granted April 1, 1884, upon application of W. A. Sawyer.

In the operation of the machine, power is applied to drive the sets of spreader members and the work treating rolls 10 and 12, all as above described. The operator introduces the forward end of a hide or skin over the combined guard and work supporting member 130 by shoving it over said member 130 until the forward end thereof is engaged between the upper and lower sets of spreader members 90 which are traveling in opposite directions from the median line of the machine and of the hide or skin which will be presented with a median line thereof substantially coinciding with the median line of the machine. Since the ribs 120 are arranged, in the illustrated construction, not only to effect spreading of the hide or skin but also a feeding-in operation thereof, the work piece, although flaccid and therefore difficult to advance in the direction of the bite of the rolls 10 and 12, will be moved in that direction by the said feeding-in and spreader members 90. Finally, the forward edge of the work reaches the rolls 10 and 12 which not only operate on the work piece but assist markedly in feeding it in while the spreader members continue to spread out the successive portions of the work piece just before the latter are engaged by the work treating rolls 10 and 12. During the progress of the work piece through the machine the operator may increase the spreading pressure of the spreading members by operating either or both of the bars 156, 176. Movement of these bars in the direction of the arrows in Fig. 4 results in increasing the pressure of the spreader members on the work piece, thus suiting the spreading pressure to the particular work piece undergoing treatment. Greater pressure by the spreader members on that portion of a hide or skin at one side of the median line thereof will tend to shift the hide or skin to that side of the median line of the machine, thus enabling the operator to correct any tendency of a given hide or skin to side-slip, whereby correct feeding of the hide, or skin in a direction parallel to the backbone line may be readily maintained. By means of the spreading devices herein disclosed the hide or skin is kept spread out so that there is thus eliminated any possibility of pleating or folding any portion of the work piece which might occur if the work were not well spread out prior to its entrance into the bite between the rolls 10 and 12. Where the hide or skin is wet with moisture following a tanning and/or dyeing operation it is desirable to remove the greater part of said moisture before subjecting it to any other treatment. In its passage through the machine herein disclosed

the hide or skin is not only put out in extended condition but has a greater part of the moisture wrung therefrom by the wringing rolls 10 and 12.

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 for treating sheet material, a pair of work treating rolls between which a work piece is passed in one direction to complete treatment thereof upon one introduction into the machine, and power-driven spreader devices located on the feeding-in side of the work treating rolls and mounted to project closely up into the angle between said rolls, said spreader devices being operative to spread the entering end of the work piece in lateral directions from a median line thereof and to present such entering end edge-on to the rolls in properly spread out condition, said devices operating also to spread successive portions of the work piece and to hold each portion in spread-out condition for the operation of the work treating rolls.

2. In a machine for treating sheet material, a pair of work treating rolls between which a work piece is passed for treatment to complete treatment thereof upon one introduction into the machine, and a plurality of sets of spreading devices located on the feeding-in side of the work treating rolls and movable in opposite directions from the median line of the machine and operative close up in the angle between said rolls to place the entering end of the work piece in spread out condition for entrance edge-on to said rolls.

3. In a machine for treating sheet material, a pair of work treating rolls between which a work piece is passed for treatment, a plurality of sets of work engaging members movable in opposite directions from the median line of the machine to exert a spreading action on the work piece simultaneously with the movement of the work piece into the grip of the work treating rolls, and manually controllable means to exert greater spreading pressure on the work piece on one side of such median line than on the other side thereof.

4. In a machine for treating sheet material, a pair of work treating rolls between which a work piece is passed for treatment, a plurality of sets of spreader members arranged to engage opposite surfaces of the work piece and movable in opposite directions from the median line of the machine and of the work piece, the sets of spreader members on one side of the median line being mounted independently of the sets on the other side thereof, and means under the control of the operator to exert greater pressure on the sets of spreader members on one side of the line than on the other sets, thereby to control the direction of movement of the work piece and to correct any tendency for sidewise movement of the work piece while it is being fed into said work treating rolls.

5. In a machine for treating hides and skins, a pair of work treating rolls between which the hide or skin is passed in one direction only, and a power-driven feeding-in device located on the feeding-in side of the work treating rolls and mounted to project into the angle between said rolls, said feeding-in device being operative not only to feed the work piece edge-on into the grip of the rolls but also to spread out in lateral directions the entering end of the work piece to insure that it is properly presented to the rolls with all folds and wrinkles effaced.

6. In a machine for treating hides and skins, a pair of work treating rolls between which the hide or skin is passed for treatment, said rolls being operated to rotate in opposite directions, and a feeding-in device located on the feeding-in side of the work treating rolls and mounted to project closely into the angle between said rolls to deliver the hide or skin edge-on to said rolls, said feeding-in device having elements moving in opposite directions from about the middle points of the lengths of said rolls to spread out the hide or skin before it is engaged by the rolls.

7. In a machine for treating hides and skins, a pair of work treating rolls between which the hide or skin is passed for treatment to complete treatment thereof upon one introduction into the machine, and a plurality of sets of feeding-in devices located on the feeding-in side of the work treating rolls and movable in opposite directions from the median line of the machine and operative close up in the angle between said rolls to direct the entering end of the work piece edge-on to said rolls.

8. In a machine for treating hides and skins, a pair of work treating rolls between which the hide or skin is passed for treatment, and a plurality of sets of work engaging members located on the feeding-in side of the work treating rolls and movable in opposite directions from the median line of the machine and operating close up in the angle between said rolls to feed the hide or skin edge-on into the grip of said rolls and also to exert a spreading action simultaneously with the feeding-in operation so that the hide or skin is properly spread out in lateral directions at the same time that it is being presented to the grip of the work treating rolls.

9. In a machine for treating hides and skins, a pair of work treating rolls between which the hide or skin is passed for treatment, a plurality of sets of spreader members movable in opposite directions from the median line of the machine, the sets of spreader members on one side of the median line being mounted independently of the sets on the other side thereof, and means under the control of the operator to cause the sets of spreader members on one side of the line to exert greater spreading pressure on the hide or skin than the corresponding spreader members on the other side of the line, thereby to control the direction of movement of the hide or skin and to correct any tendency for sidewise movement of the hide or skin while it is being fed into said work treating rolls.

10. In a machine for treating hides and skins, a pair of work treating rolls between which the skin is passed for treatment thereof, and a pair of bladed belts having their operative runs moving in opposite directions from a center line of the machine and of the hide or skin, each bladed belt having a relatively thin edge and said operative runs so being mounted as to project said thin edge closely into the angle between said rolls to effect spreading out of the hide or skin closely adjacent to the rolls as successive portions of the hide or skin are being presented to the latter.

11. In a machine for treating hides and skins, a pair of work treating rolls between which the skin is passed for treatment thereof, and pairs of bladed belts co-operating with each other to engage opposite surfaces of the hide or skin, each bladed belt being wedge-shaped in cross section and said pairs of bladed belts having their operative runs so mounted as to project the thin edge

of the wedge closely into the angle between the work treating rolls to spread the hide or skin transversely of its direction of travel as successive portions of the latter are presented to said work treating rolls.

12. In a machine for treating hides and skins, a pair of work treating rolls between which the hide or skin is passed for treatment thereof, a pair of bladed chain belts moving in opposite directions from a center line of the machine and of the hide or skin to effect spreading out of the latter as successive portions of the hide or skin are being presented to the work treating rolls, a shaft extending parallel to said work treating rolls, and sleeves on said shaft having a supporting and driving mechanism for the bladed chain belts, said sleeves being adjustable on their supporting shaft to vary the pressure of the bladed chain belts on the hide or skin and thus regulate the spreading effect of the bladed chain belts on the hide or skin.

13. In a machine for treating hides and skins, a pair of work treating rolls between which the hide or skin is passed for treatment thereof, a pair of bladed chain belts moving in opposite directions from a center line of the machine and of the hide or skin to effect spreading out of the latter as successive portions of the hide or skin are being presented to the work treating rolls, sprockets and sprocket-carrying shafts for supporting and operating said bladed chain belts, a shaft extending parallel to said work treating rolls, and sleeves on the last-mentioned shaft having a supporting structure for the sprocket-carrying shafts, said sleeves being adjustable about their supporting shaft to vary the pressure of the bladed chain belts on the hide or skin.

14. In a machine for treating hides and skins, a pair of work treating rolls between which the hide or skin is passed for treatment thereof, upper and lower pairs of bladed belts co-operating with each other to engage opposite surfaces of the hide or skin to spread the latter transversely of its direction of travel as successive portions of the hide or skin are presented to said work treating rolls, sprockets and sprocket-carrying shafts for supporting and operating said bladed chain belts, upper and lower shafts extending parallel to said work treating rolls, and sleeves on the last-mentioned shafts each having a supporting structure for sprocket-carrying shafts, said sleeves being adjustable about their supporting shafts to vary the pressure of the bladed chain belts on the hide or skin between them.

15. In a machine for treating hides and skins, a pair of work treating rolls between which the skin is passed for treatment thereof, and a plurality of work treating members movable in opposite directions from a median line of the machine and of the skin to spread the latter transversely of its direction of travel before it enters the bite of the work treating rolls, said members having ribs disposed thereon in angular relation to the direction of travel of the members and of said ribs such as to effect forward movement of the hide or skin at the same time that another component of the force exerted by the ribs spreads the hide or skin prior to the entrance of the latter into the bite of the work treating rolls.

16. In a machine for treating hides and skins, a pair of work treating rolls between which the skin is passed for treatment thereof, and a pair

of endless traveling members carrying plates having ribs on the work contacting surfaces thereof, said ribs being arranged on the surfaces of the plates to exert a force to spread portions of the skins laterally away from a median line of the skin, the said ribs being exposed at an angle such as to exert a force to feed the hide or skin in a direction toward the bite of the work treating rolls, whereby the hide or skin is not only spread by the ribbed plates but is fed into the bite of the work treating rolls.

17. In a machine for treating hides and skins, a pair of work treating rolls between which the skin is passed for treatment thereof, endless traveling members having their operative runs moving away from each other upon opposite sides of a median line of the machine and of a hide or skin, and plates carried by said endless members, said plates having ribs on the work contacting surfaces thereof to operate on the hide or skin to spread the same before each successive portion thereof enters the bite of the work treating rolls, and said plates being wedge shaped in cross section whereby a thin edge portion of each of said plates is presented close up into the angle between the upper and lower work treating rolls so that each successive portion of a hide or skin is under control of said ribbed plates just prior to its engagement by said work treating rolls.

18. In a machine for treating hides and skins, a pair of work treating rolls between which the skin is passed for treatment thereof, means furnishing support for the hide or skin closely adjacent to the bite between said rolls, endless traveling members above the work supporting means having their operative runs moving away from each other upon opposite sides of a median line of the machine and of a hide or skin, and plates carried by said endless members, said plates having ribs on the work contacting surfaces thereof to operate on the hide or skin to spread the same before each successive portion thereof enters the bite of the work treating rolls, and said plates having their ribbed work contacting surfaces arranged in a substantially horizontal plane to cooperate with said work supporting means in spreading the hide or skin prior to its entrance into the bite of the work treating rolls.

19. In a machine for treating hides and skins, a pair of work treating rolls between which the skin is passed for treatment thereof, endless traveling members having their operative runs moving away from each other upon opposite sides of a median line of the machine and of a hide or skin, plates carried by said endless members, said plates having ribs on the work contacting surfaces thereof to operate on the hide or skin to spread the same before each successive portion thereof enters the bite of the work treating rolls, and upper and lower pairs of shafts carrying said endless members, certain of said shafts being driven to effect travel of said endless members,

said shafts being tipped out of the vertical whereby said endless members with the plates carried thereby are angularly related to each other in their inoperative runs to form a wedge shaped space therebetween for the reception of the hide or skin, and said ribbed portions of the plates in the operative runs thereof being arranged in parallel planes, respectively, above and below the plane of a work piece introduced therebetween, whereby only the ribbed portions of the plates on the operative runs of the endless members engage the work piece to spread the latter.

20. In a machine for treating hides and skins, a pair of work treating rolls between which the skin is passed for treatment thereof, a pair of endless members arranged to have operative runs moving away from each other upon opposite sides of the median line of the machine and of a hide or skin moving into the bite of said work treating rolls, said endless members having ribbed plates operative to spread the hide or skin in opposite directions from said median line, pairs of shafts carrying said endless members, journal members for said shafts, a shaft extending parallel to said work treating rolls and spaced above the plane of the work contacting surfaces of said ribbed plates, sleeves carried by the last-mentioned shaft and supporting said journal members, and means operable by the operator to rock said sleeves about their supporting shafts thereby to press the ribbed plates more or less firmly into contact with the hide or skin so to vary the spreading tension of the ribbed plates in their spreading action on the hide or skin.

21. In a machine for treating sheet material, a pair of driven work treating rolls arranged for the introduction between them of a leading edge of a work piece for concurrent treatment of said work piece by said rolls, power driven spreader devices located on the feeding-in side of the work treating rolls and operative to advance the said leading edge directly into the bite between said rolls and to remove folds or wrinkles from the work piece.

22. In a machine for treating sheet material, power rotated rolls to grip a work piece for treatment by said rolls of the entire work piece in a single continuous operation, power driven opposed spreaders arranged on the feeding-in side of the rolls for advancing every portion of the said work piece directly to the roll treating position without folds or wrinkles.

23. In a machine for treating sheet material, work treating rolls arranged for power operation about horizontal axes to grip sheet material being fed to said rolls in a substantially horizontal path, power operated means located closely adjacent to the bite of the rolls and arranged to spread out the sheet material and to insert the same directly into the bite of the rolls whereby lateral tension is kept in the portion of the sheet material entering the bite.

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