

Jan. 16, 1940.

L. J. BISHOP

2,187,073

CONVEYER SYSTEM

Filed Dec. 9, 1936

9 Sheets-Sheet 1

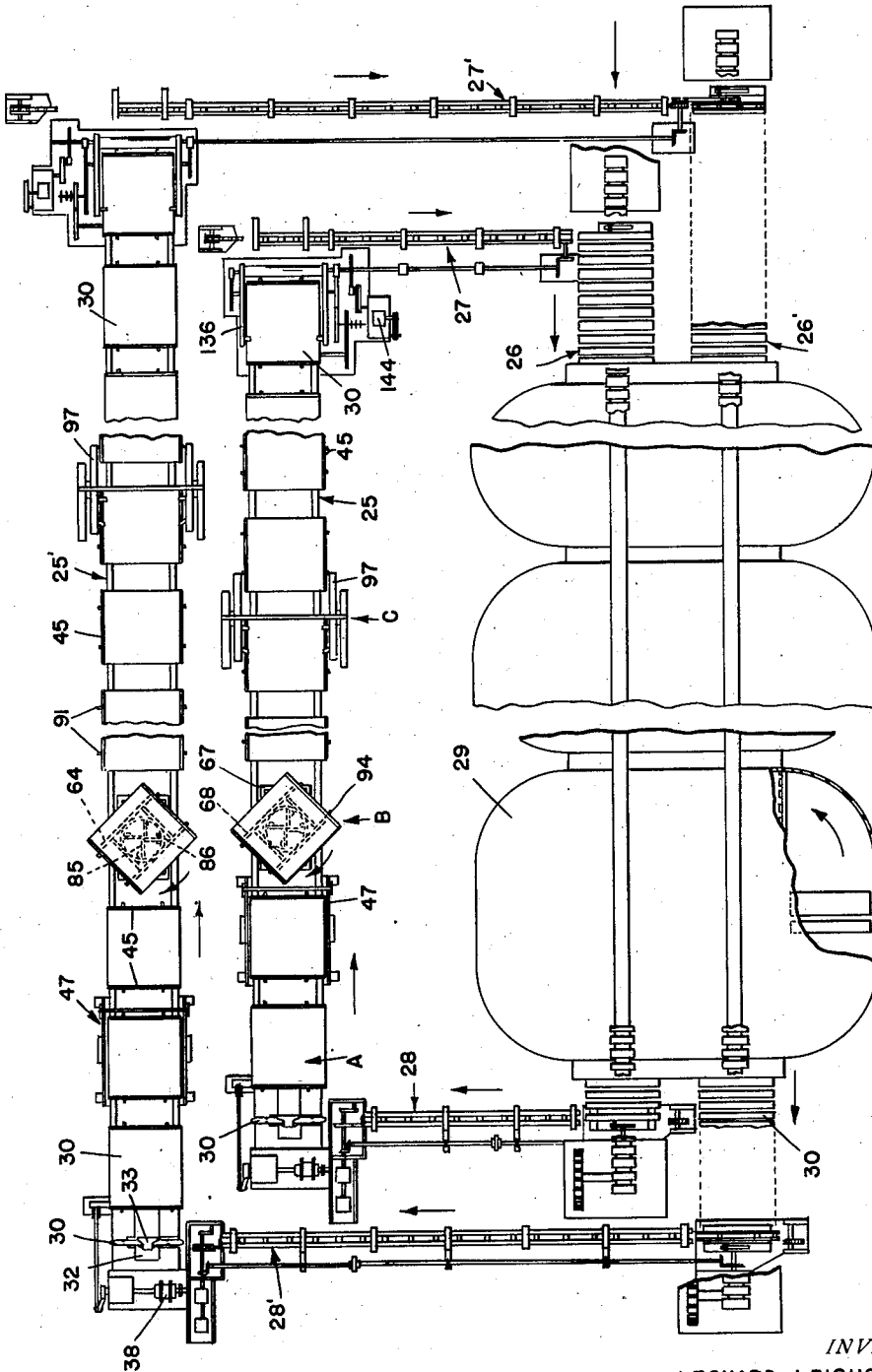


FIG. 1.

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9 Sheets-Sheet 2

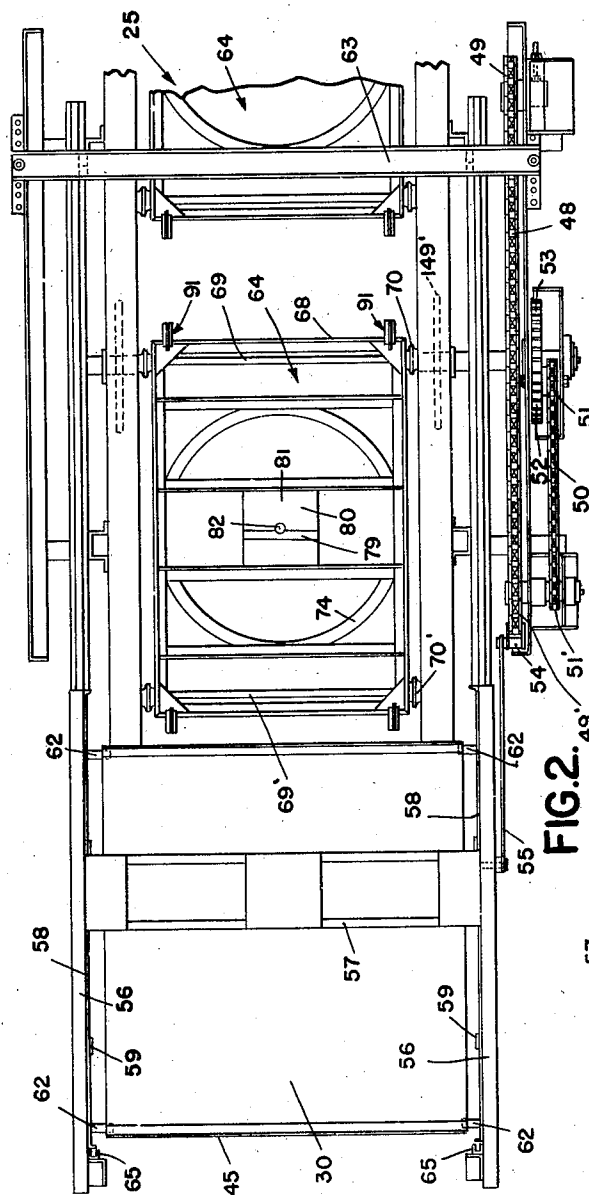


FIG. 2.

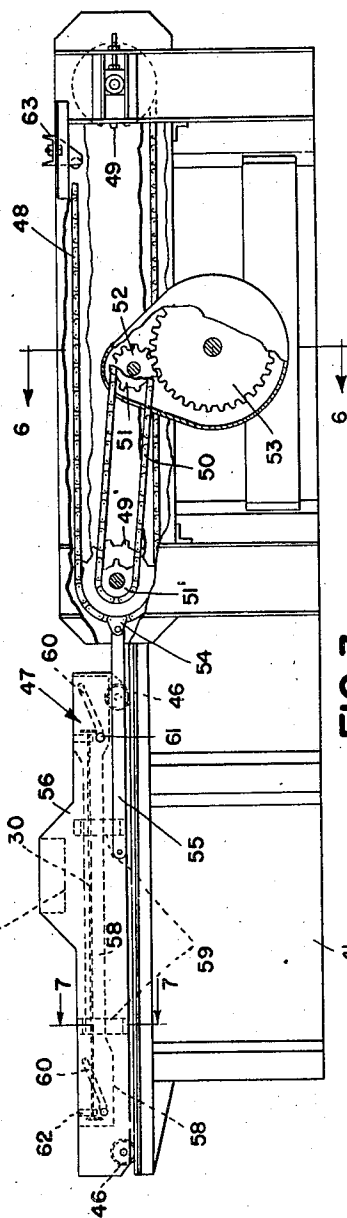


FIG. 3.

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CONVEYER SYSTEM

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9 Sheets-Sheet 3

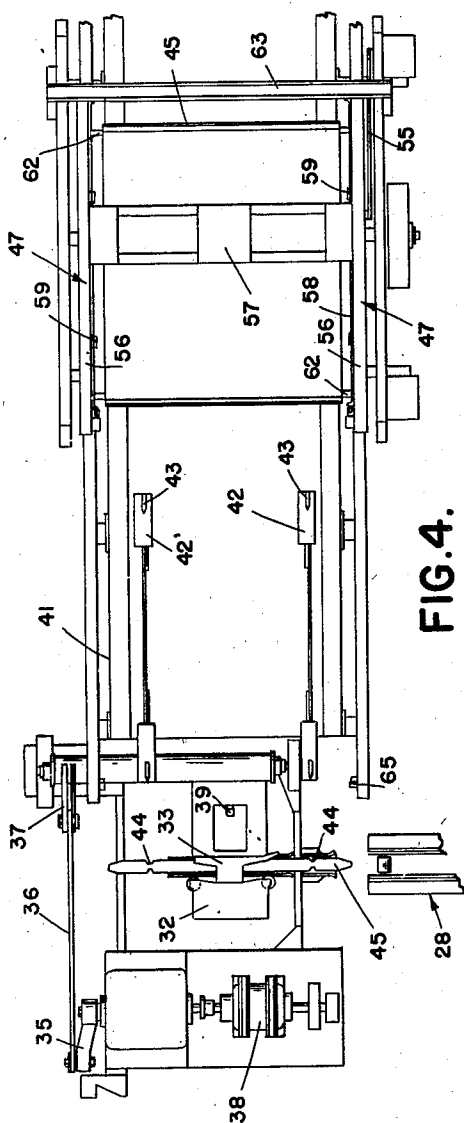


FIG. 4.

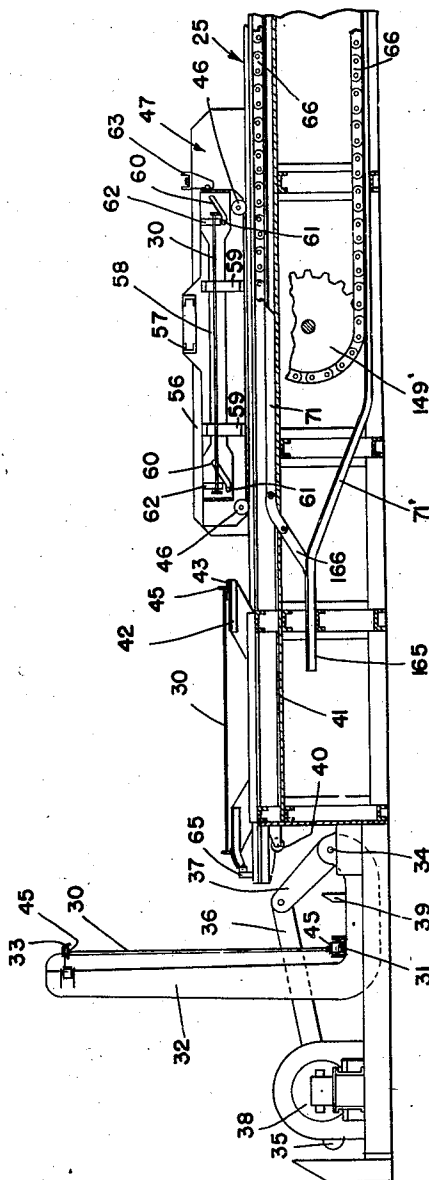


FIG. 5.

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## CONVEYER SYSTEM

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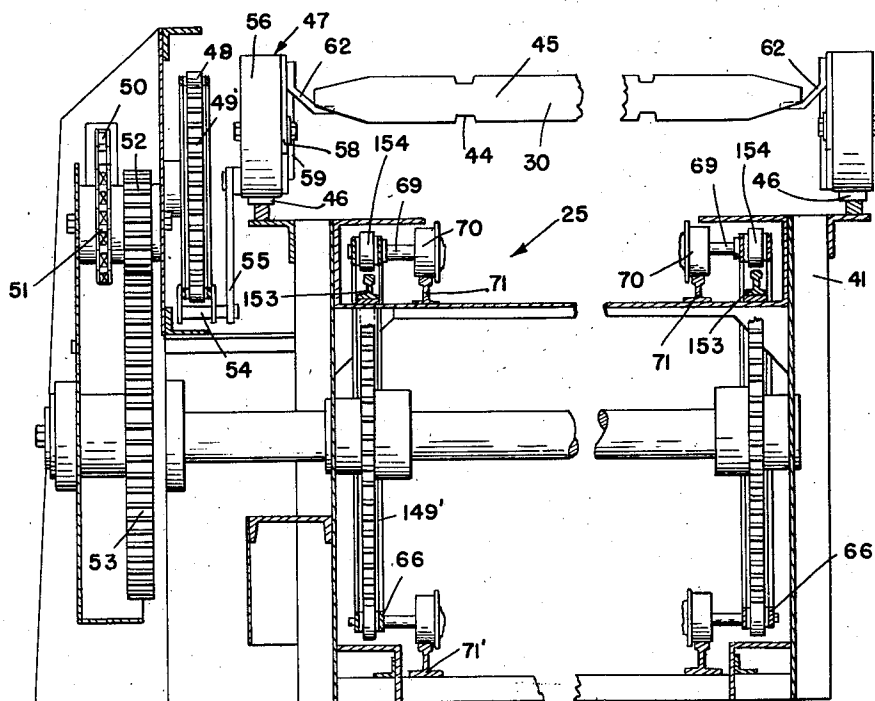


**FIG.6.**

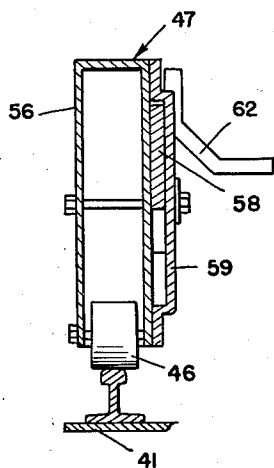


**FIG.7.**

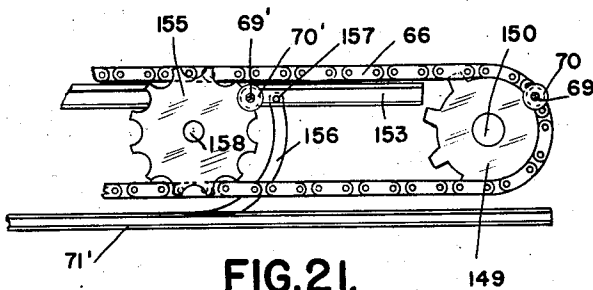


FIG.21.

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CONVEYER SYSTEM

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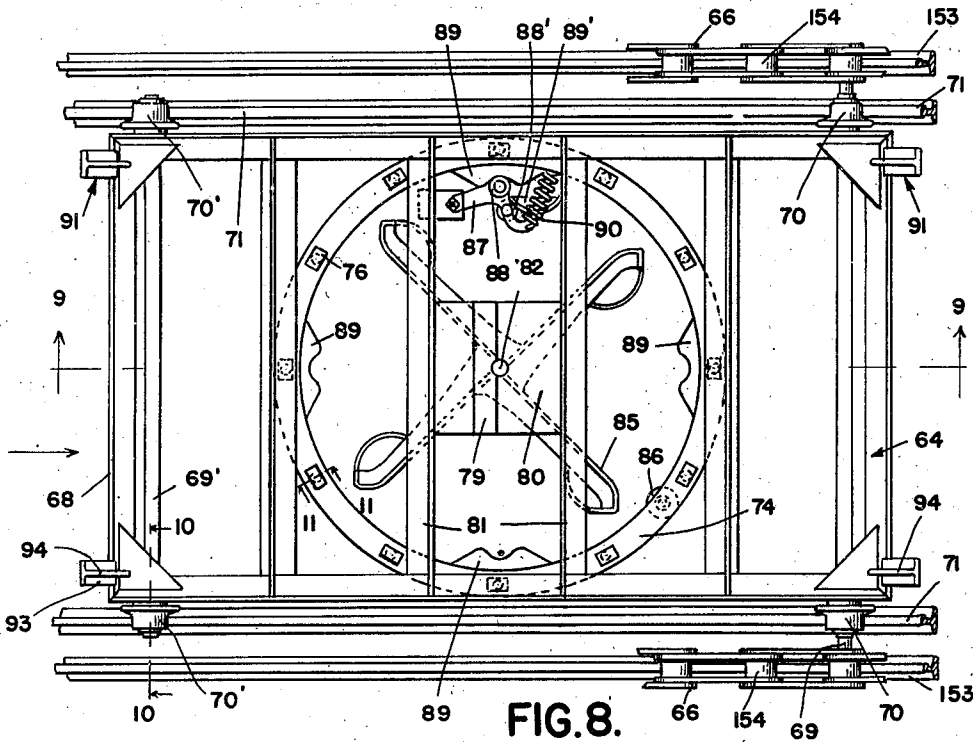


FIG. 8.

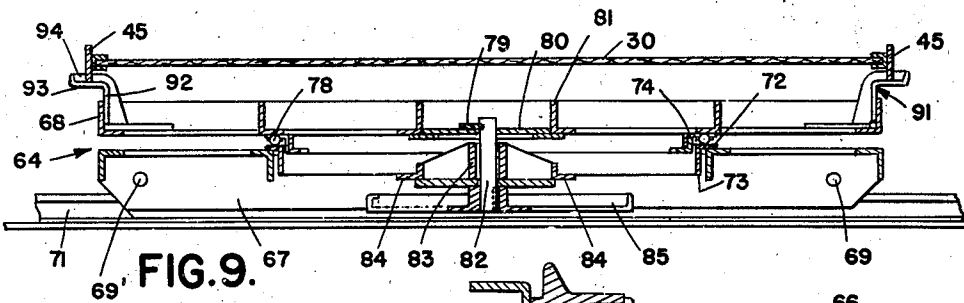


FIG. 9.

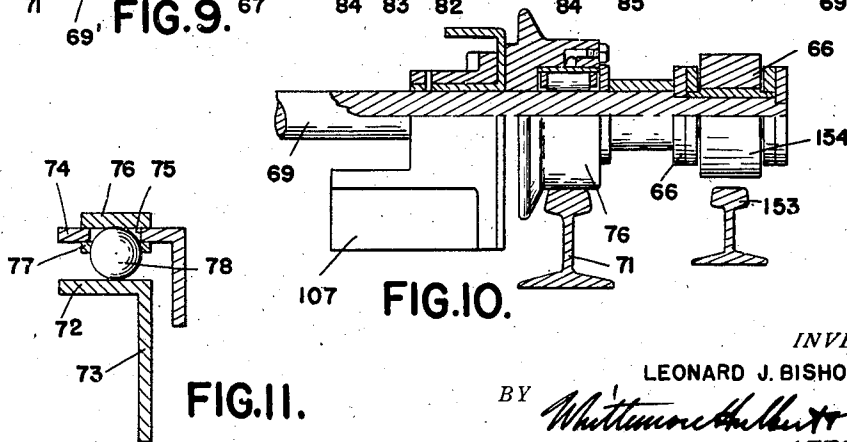


FIG. 10.

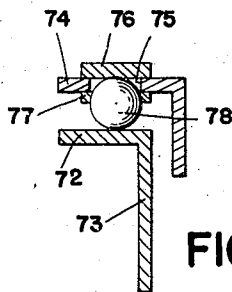


FIG. 11.

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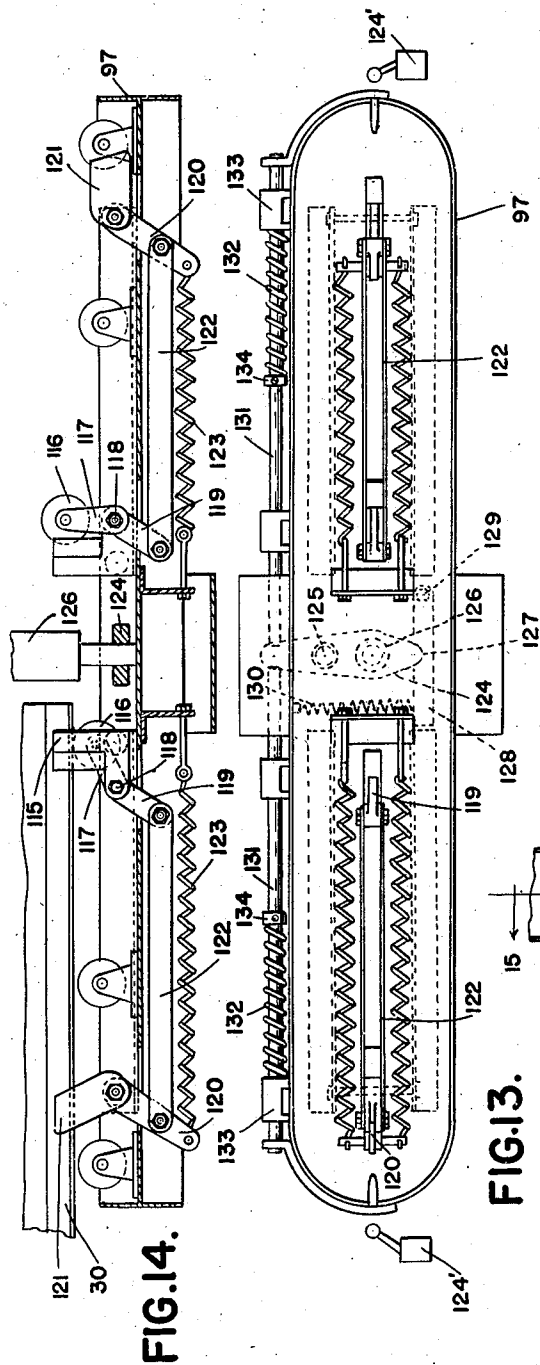
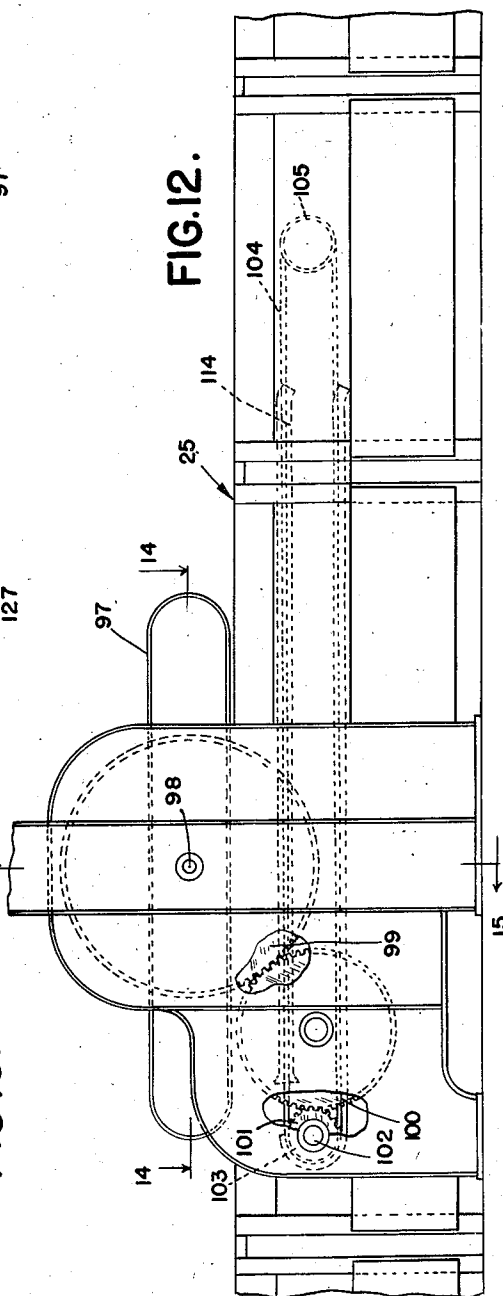
**Jan. 16, 1940.**

**L. J. BISHOP**  
**CONVEYER SYSTEM**

**2,187,073**

Filed Dec. 9, 1936

9 Sheets-Sheet 6



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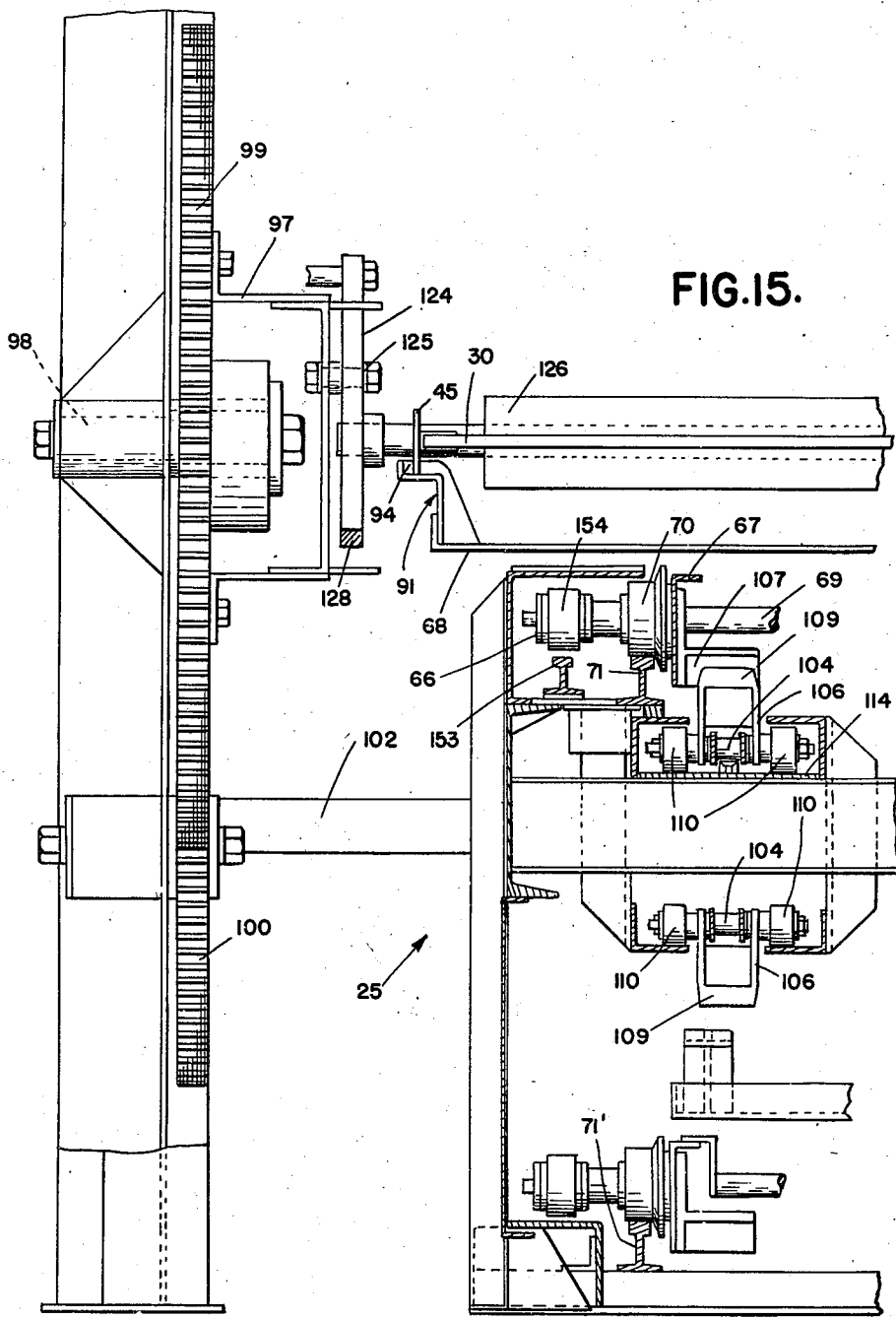
**L. J. BISHOP**

**2,187,073**

## CONVEYER SYSTEM

Filed Dec. 9, 1936

9 Sheets-Sheet 7



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CONVEYER SYSTEM

2,187,073

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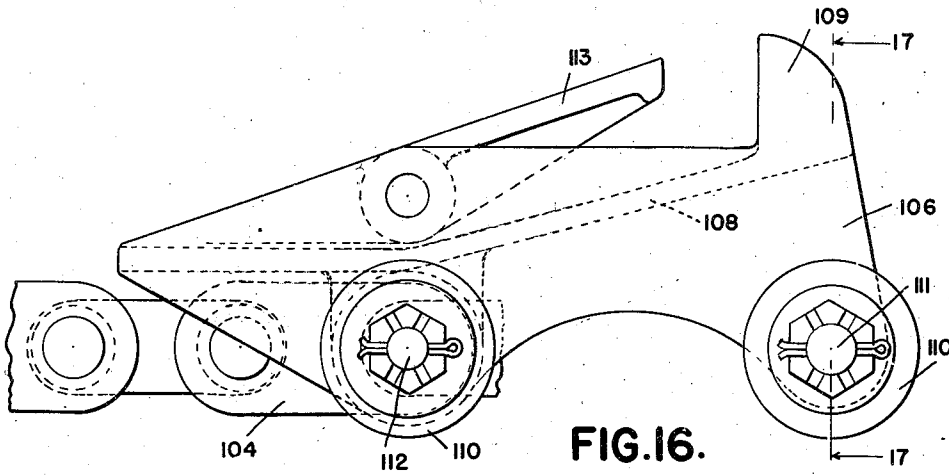


FIG. 16.

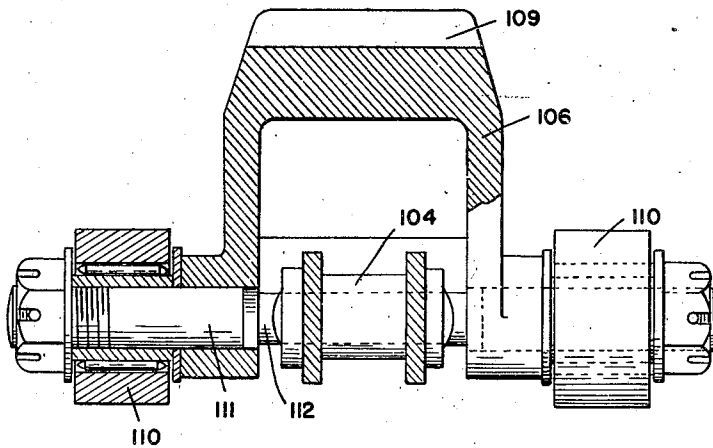


FIG. 17.

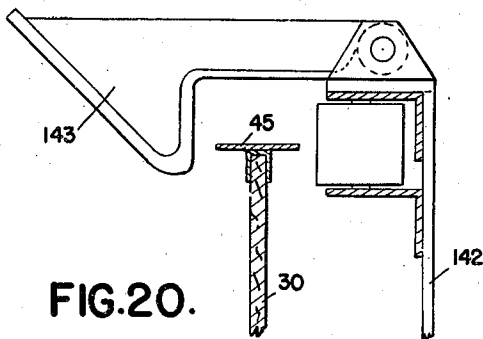


FIG. 20.

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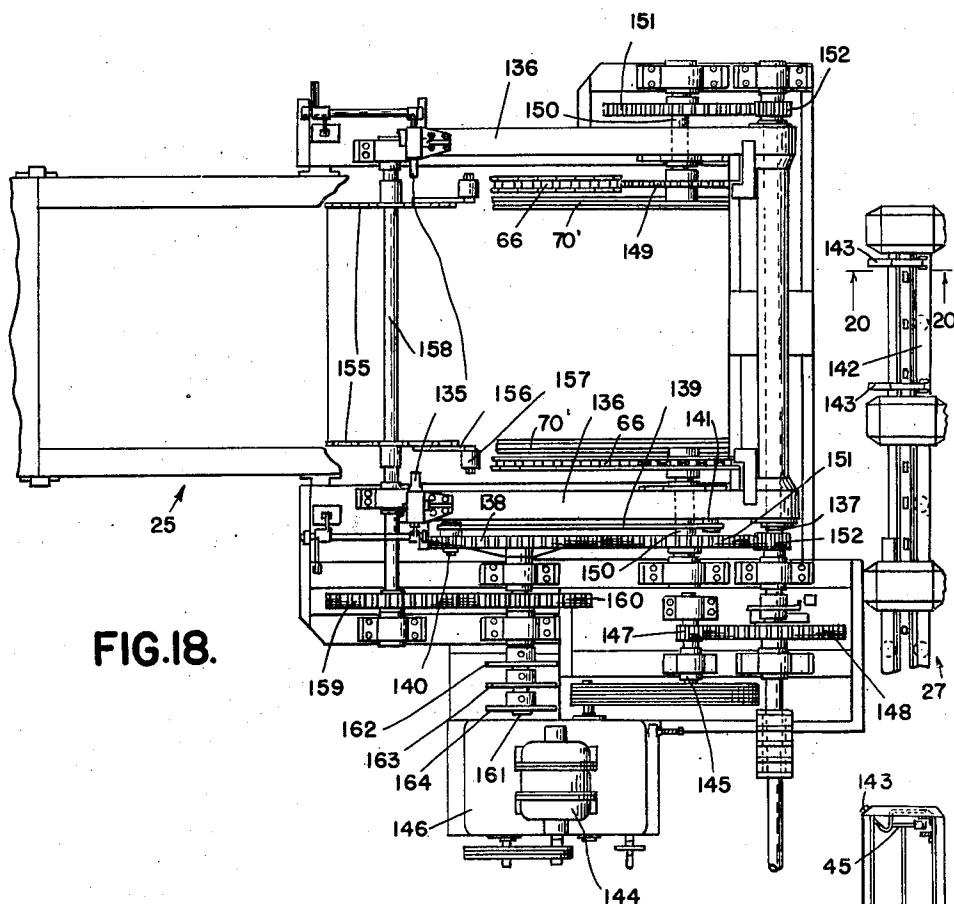
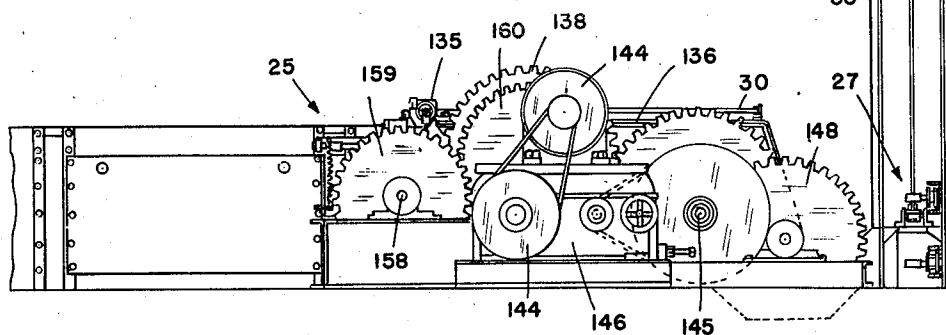
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**2,187,073**

## CONVEYER SYSTEM

Filed Dec. 9, 1936

9 Sheets-Sheet 9



INVENTOR

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## UNITED STATES PATENT OFFICE

2,187,073

## CONVEYER SYSTEM

Leonard J. Bishop, Detroit, Mich., assignor to Mechanical Handling Systems, Inc., Detroit, Mich., a corporation of Michigan

Application December 9, 1936, Serial No. 115,041

11 Claims. (Cl. 149—19)

The present invention relates to conveying and manipulating mechanism, and more particularly to apparatus employed in hide drying operations. The primary object of the invention is to expeditiously transfer boards of the type used for holding skins and hides from an initial point where the hides are fastened on the board; turning and reversing said boards during transfer; then to and through a drying oven and back to said initial point.

It is customary in drying hides to secure them to relatively large boards by tacking or otherwise, the hides resting substantially flat and stretched on the boards. Usually a hide is attached to each side of the board. Because of the sizes of the average hide, it is difficult for workmen to tack one along all its edges to the board, unless the workman is possessed of considerable reach. One of the objects of the present invention is the provision of an initial conveyer including a transfer mechanism which deposits the boards on horizontally disposed carriages. Another object of the invention is to turn each carriage about an axis perpendicular to the flat surface thereof to make more accessible all of the edges of the hide.

It is still another object of the invention to invert the board so that hides may be fastened to and removed from both sides thereof. It is a further object of the invention to return the boards from the drying oven to the initial conveyer where the dried hides are removed and other hides secured to the boards. Other objects of the invention will be apparent from the following description thereof and from the appended drawings of preferred forms of the several mechanisms constituting the general combination which comprises the complete conveying and manipulating system.

In the drawings:

Fig. 1 is a general plan view of the conveying system and oven, parts thereof being broken away;

Fig. 2 is an enlarged plan view of an initial transfer device for depositing the boards on carriages forming part of the main conveyer;

Fig. 3 is a side elevation of the device shown in Fig. 2, parts thereof being broken away;

Fig. 4 is a plan view of one end of the conveyer showing the transfer and a carriage;

Fig. 5 is a side elevation, partly in section, of the mechanism shown in Fig. 4;

Fig. 6 is an enlarged section taken on line 6—6 of Fig. 3;

Fig. 7 is an enlarged fragmentary section taken on the line 7—7 of Fig. 3;

Fig. 8 is a plan view of the carriage and means for turning the same;

Fig. 9 is a section taken on line 9—9 of Fig. 8;

Fig. 10 is an enlarged fragmentary sectional view taken on line 10—10 of Fig. 8;

Fig. 11 is an enlarged sectional view taken on line 11—11 of Fig. 8;

Fig. 12 is a side elevation of the inverter and its driving mechanism, parts thereof being broken away;

Fig. 13 is an enlarged side view of the inverter;

Fig. 14 is a sectional view taken on line 14—14 of Fig. 12;

Fig. 15 is an enlarged sectional view taken on line 15—15 of Fig. 12;

Fig. 16 is a side view of one of the dogs and part of the chain for driving the inverter mechanism;

Fig. 17 is a section taken on line 17—17 of Fig. 16;

Fig. 18 is a plan view of one end of the conveyer and the means for driving the same, parts thereof being broken away;

Fig. 19 is a side elevation of the end of the machine shown in Fig. 18;

Fig. 20 is a section of the end conveyer taken on line 20—20 of Fig. 18; and

Fig. 21 is a fragmentary elevation of one end of the conveyer driving chain.

Referring to Fig. 1, there is shown a dual conveying system wherein there are two main conveyers 25, 25', two oven conveyers 26, 26', and pairs of transverse conveyers 27, 27', 28, 28' at the ends of oven 29 connecting with the main conveyers. The arrows indicate the direction of travel of the several conveying elements. It is apparent from the drawings that an article placed on conveyer 25, for instance, is carried the length thereof, transferred to transverse conveyer 27, then to conveyer 26 which carries it through the oven, and then by means of end conveyer 28, it is transferred to the main conveyer by suitable transfer means.

It will be assumed that the initial position of a board is that indicated at point A, but the mechanism for depositing the board horizontally on the main conveyer from a vertical position on conveyer 28, indicated in Fig. 5, will first be described. It will be seen in this figure that board 30 is in a vertical position, resting on rollers, one of which is shown at 31, on an L-shaped loading arm 32, the upper edge of the board being held by a pivoted flange member 33 at the upper end of the arm. The board assumes this position after leaving conveyer 28. Arm 32 is pivoted at

34 and is adapted to be rocked to bring the long leg thereof into horizontal relation with the conveyer by crank 35, link 36 and arm 37, the latter rigidly connected to arm 32. Crank 35 is intermittently rotated by motor 38, suitable control means being provided to effect periodic operation of the motor in timed relation to the conveyer. The pivoted member 33 is lifted to release the board when the latter is substantially horizontal by mechanism (not shown) which includes a trip member 39 engageable with a roller or abutment 40 on the main conveyer frame 41.

Disposed at the forward end of the frame 41 are a pair of supports 42, 42' having ribs 43 thereon adapted to register with recesses 44 in flanges 45 on the board when the latter is deposited thereon by arm 32. The board is thus accurately centered with respect to the conveyer. Arranged to reciprocate on frame 41 and supported on rollers 46 is a frame 47. As shown in Figs. 2 and 3, the means for reciprocating the frame includes a chain 48 on sprockets 49, 49', the latter being driven by chain 50 on sprockets 51, 51' and gears 52, 53. Attached to one link of chain 48 is a yoke or similar member 54 to which is pivotally connected one end of link 55, the other end of which is pivotally connected to frame 47. Frame 47 comprises a pair of spaced channel-shaped side members 56 connected by a cross piece 57. Slidably mounted on each side member is a bar 58 held in engaging relation therewith by straps 59. It will be noted that the intermediate portion of each of the bars is sufficiently narrow to move vertically as well as horizontally with respect to straps 59, and that the ends of the bars are enlarged. An inclined cam slot 60 in each enlarged portion cooperates with a pin 61 on frame 47, whereby the bar is raised or lowered when reciprocated relatively to the frame. Board supporting fingers 62 are attached to bars 58.

In Fig. 5 frame 47 supporting a board 30 is approaching its rearwardmost position and bars 58 are about to engage a stop piece 63 on frame 41. Further rearward movement of frame 47 and pin 61 thereon causes the cam slots 60 to lower bars 58 to deposit the board on carriage 64, described more fully hereinafter. Frame 47 then moves forwardly to the position shown in Fig. 3, bars 58 still being lowered. As the frame approaches its forwardmost position, bars 58 engage an abutment 65 on a frame 41, at which time the cam slots elevate bars 58 and fingers 62 lift a board from supports 42, 42'. The frame is again moved rearwardly to transfer the board to a carriage 64.

Each main conveyer comprises a chain 66 and a plurality of carriages 64 mounted thereon. Each carriage is made up of an under frame 67 and an upper frame 68 mounted for rotation on the under frame. It will be seen that the axles 69, 69' pass through the sides of the under frame and have journaled thereon wheels 70, 70' riding on tracks 71. Axle 69 not only supports one pair of wheels, but is extended on each side thereof to form a pin cooperating with each of the chains 66. The other axle is, however, not connected to the chain for a reason to be explained hereinafter. As is shown in Figs. 9 and 11, there is secured to the under frame a circular track 72 having an annular depending flange 73 thereon. Secured to the upper frame is a circular member 74 also having a depending flange, the diameter of which is less than that of track 72, so that relative radial movement of the member

and track is limited. At spaced points member 74 is provided with openings 75. Above each opening there is secured to the member a bearing plate 76 and below the opening is a plate 77 apertured to receive an antifriction ball 78. It will thus be seen that frame 68 is rotatable on frame 67.

To each of the carriages there is keyed by means of bar 79 and plate 80 secured to cross members 81, a shaft 82 journaled in bearing 83, the latter being supported on cross members 84 forming part of the under frame. Keyed to the shaft 82 is a star-shaped spider 85 which, as the carriage advances, engages rollers 86 supported on conveyer frame 41 at spaced intervals. The spider acts as a cam to rotate table 64 through 90°. In order to hold the upper frame in predetermined relation to the under frame, a latch member 87 having a roller 88 thereon is pivoted to the lower frame, the roller cooperating with a notched flange 89, of which there are four at 90° intervals on the upper member. Spring 90 normally holds the latch in the flange notch, but the flange has inclined surfaces adjacent the notch to permit the roller to ride into the notch. Also, journaled on member 87 is a second roller 88' adapted to engage a cam 89' on the frame 41, to lift roller 88 out of the notched flange at the beginning of the rotation of the spider. With this mechanism it will be apparent that the upper frame is rotated with respect to the lower frame at suitable intervals during the travel of the conveyer, and that it is positively positioned by the latch member after it has been rotated through 90°. Thus the several edges of the boards are successively brought into parallel relation with the conveyer chains, and each edge of the board is positioned to be easily accessible to workmen standing on the sides of the conveyer.

Fastened to the upper frame of the carriage at each corner thereof is a supporting bracket 91 having a vertical leg 92 projecting above the top of the frame and a horizontal leg 93, a rib 94 being formed on each of the legs. The boards 30 are provided at each end thereof with lateral flanges 45 having spaced notches 44 in each edge, these notches cooperating with ribs 94 to accurately position the board on the conveyer and to insure rotation of the board with the upper frame when the latter is rotated. In Fig. 1, one of the carriages is shown being turned at point B. It is to be understood that the carriage may be turned as often as desired during its travel, a suitable number of stationary abutments 86 being provided for this purpose.

While the conveyer is moving from point A to point C, a dried skin is removed and one to be dried is tacked on one side of the board. At point C the board is inverted to bring the other side thereof uppermost on the conveyer to permit a skin to be secured to that side of the board. The mechanism for inverting the board is shown in Figs. 12, 13 and 14, the inverter comprising a rotatable oblong frame 97 fast on the gear 99 on each side of the conveyer. Each of the gears 99 is journaled on a stub shaft 98 and is driven through gears 100, 101 from a jack shaft 102 to which is secured sprocket 103. Roller chain 104 engages sprockets 103 and 105 and carries a plurality of dogs 106 adapted to be engaged by an abutment 107 on the lower frame of each of the conveyer carriages. Each of the dogs is substantially H-shaped in section, the web 108 thereof being inclined at the forward portion of the dog and merging into an upwardly extending pro-

jection 109. The dog carries a pair of spaced rollers 110 at each side thereof, the forward rollers being mounted on pins 111 and the rear rollers on a single pin 112 which extends across the dog and through the chain 104. Pivoted to the dog is a rockable stop piece 113 having its upper surface normally inclined toward projection 109. In the present machine there are four dogs on each of the chains 104 and these are spaced apart a distance somewhat less than the pitch distance between the conveyer carriages. A pair of tracks are disposed below the carriage tracks for the purpose of guiding and maintaining each dog in engaging relation with one of the abutments 107 on a carriage. As the abutment engages the dog, it first rocks stop member 113 to ride thereover, after which it engages projection 109 to move the dog and the chain to which it is attached. The abutment having ridden over the stop piece, the latter rocks to its normal position in which it acts a stop to prevent further relative movement of the dog and carriage. The length of track 114 is such that, at the proper time, corresponding with a horizontal position of the rotatable inverter, the forward part of the dog falls below the carriage abutment and the chain stops. The inverter remains stationary until the abutment on the next succeeding carriage engages another dog to again move the chain and turn the inverter 180°. It will be noted that track 114 is inclined at its forward and rear ends to guide the dog on to and from the track at the proper time.

In Figs. 13 and 14 there is shown the board engaging mechanism on the inverter. Secured to one side of the inverter are a pair of fixed U-shaped guides 115 which are adapted to receive a board. Between these guides there is a roller 116 mounted on an arm 117 secured to pin 118 journaled in the inverter frame. Also fastened to pin 118 is an arm 119 forming in effect with arm 117 a bell crank lever. Near each end of the frame is a similar bell crank arrangement of arms 120, 121, the former being connected to arms 119 by links 122 and the latter constituting retractible forks designed to engage the board when the latter contacts roller 116 and thereby rocks the arms. The arms 121 are normally retracted by springs 123. When the board 30 reaches the position shown in Fig. 14, the carriage engages one of the dogs 106 and moves chain 104 to rotate the inverter. The arrangement of gears is such that after the inverter has made one-half revolution, the forward end of the dog falls from track 114, thus stopping rotation of the inverter. At this time, the board is again deposited on the carriage with the side which was previously accessible from above the carriage now undermost. During the revolving of the inverter, means in the nature of the cross member 126 is engageable with the board as it slides in the guides 115 to limit its sliding and to position it in desired relation to the receiving carriage.

Since the conveyer is a continuously moving unit, it is desirable that safety means be provided to insure proper timing and operation of the inverter. For this purpose there are provided means for stopping the conveyer in the event that the inverter fails to rotate when the board is properly positioned thereon. These means comprise, in addition to the cross member 126, a lever 124 pivoted at 125 on each inverter frame attached to the cross member which is in the path of the boards. Normally, the lower end of

the lever is engaged in a depression 127 in arm 128, pivoted to the frame at 129 and held in engaging relation with the lever by spring 130. The lever is then disposed at right angles to the longitudinal center line of the inverter. The upper end of the lever is adapted to engage the end of either of the rods 131 slidably mounted on the inverter frame, these rods being held in the position shown in Fig. 13 by springs 132 bearing against fixed guides 133 on the frame and collars 134 fastened to the rods. Limit switches indicated at 124' are designed to stop the conveyer and are actuated by the rods when the latter are reciprocated. It will be seen from Figs. 13 and 15 that if the inverter fails to lift a board from one of the conveyer carriages, continued forward movement of the board will cause the board to engage cross member 126 and rock lever 124, thus actuating the limit switches and stopping the conveyer motor.

After the board has been inverted, it continues to move along the conveyer on its carriage. The latter may then be turned to bring its edges in parallel relation with the sides of the conveyer. When the boards reach the end of the conveyer, they are positioned in the same manner as when they were deposited on the forward end of the conveyer, namely, with the flanges 45 disposed transversely of the conveyer. At this time suitable clamping members 135 on an oscillating unloading arm 136 pivoted about the shaft 137 grip the board. The arm is then raised to a substantially vertical position, carrying the board therewith. The means for oscillating the arm include a gear 138 and connecting rod 139, the latter being pivoted to the gear at 140 and to the unloading arm at 141. While the clamping members may be mechanically actuated, they are in the present instance electrically actuated, to grip the board when the unloading arm is horizontal and the board has advanced to a position where its forward edge lies at the forward end of the arm, whereupon the board is lifted from the conveyer. When the arm is in a substantially vertical position, the clamping members 135 engage an abutment on the end frame 142 to effect release of the board. Pivoted latch members 143 on the end frame permit the board to pass under these members, but prevent the board from falling back on the unloading arm, so that the end conveyer 27 will engage the board and move it laterally towards the oven conveyer 26 while the board is in its vertical position.

The means for driving the main conveyer and controlling the intermittent movements of the other conveying mechanisms are shown in Figs. 18 and 19. A motor 144 drives shaft 145 through suitable variable speed gearing in box 146. From shaft 145 jack shaft 137 is driven through gears 147 and 148. The main conveyer chains 65 are driven by sprockets 149 on stub shafts 150, the latter having keyed thereto gears 151 which mesh with pinions 152 on the jack shaft. As shown in Figs. 6 and 21, there are supplemental tracks 153 on which chain rollers 154 ride. Spaced from one end of the main conveyer a distance equal to the space between shafts 69, 69' is a sprocket 155 designed to cooperate with wheels 70'. As stated hereinbefore, shaft 69' does not extend through the chain. It is therefore apparent that, although shaft 69 and wheel 70 will follow chain 66 around sprocket 149, wheel 70' and shaft 69' are not constrained to move with the chain. On the other hand, wheel 70' is guided by means of sprocket 155 and guide 156 to lower track 71'

in such a manner that the carriage always remains upright. In order that wheel 70 may pass guide 156, the latter is hinged to track 153 at 157. Thus the guide may be lifted by wheel 70 to permit its passage thereby, but it engages track 71' to prevent its swinging below the track. Sprockets 155 are fast to shaft 158 driven by gears 159 and 160 at the same angular velocity as sprockets 149. Gears 160 and 138 are on the same shaft, indicated at 161. This shaft also has thereon cams 162, 163 and 164 which operate limit switches to control clamping means 135, the loading arm motor 38 and the oven conveyor drive respectively, to provide for intermittent operation of these mechanisms in timed relation to the main conveyor.

In Fig. 5 it will be noted that the lower track 71' is inclined upwardly and then extended horizontally as shown at 165. The upper track 71 is provided with a downwardly inclined hinged section 166. As the carriage moves toward this end of the conveyor, wheels 70' rise on the inclined section of the track and lift the hinged section 166 to pass on to the horizontal extension 165. As wheels 70 follow the chain around sprocket 149', the direction of travel of wheels 70' is reversed. The hinged section 166 will have swung back to engage track 71', thus permitting wheel 70' to ride up on to track 71. Thus the carriage is permitted to maintain its upright relation to the conveyor.

From the foregoing description, the operation of the system will be obvious. The boards pass through a continuous cycle in which hides are fastened to and removed from the boards as the latter are supported on the carriage; the boards are rotated and inverted to permit access to all edges and to both sides thereof; they are lifted by the unloading arm to position them vertically on one transverse conveyor, being maintained in vertical position during transfer to, through and from the oven; and finally, the loading arm places the boards in horizontal position on the main conveyor, after which the same cycle of operations is repeated.

The apparatus shown and described is a preferred arrangement of the several mechanisms and the details thereof. While the machine illustrated has proven to be conducive of efficient operation, it is nevertheless intended that structural changes of the parts may be made without departing from the novel combinations claimed herein.

What I claim as my invention is:

1. In a conveyer system, a traveling element, means for supporting an article on said traveling element in a horizontal position to advance the article edgewise, an oven laterally spaced from said traveling element, a second traveling element extending within said oven, means on said second traveling element for suspending an article in a vertical position to advance the article sidewise, and means for transferring an article from horizontal position to vertical position and from the first-mentioned traveling element to said second traveling element, all of said traveling elements being disposed in substantially the same horizontal plane.

2. In a conveyer system, a traveling element, means for supporting an article on said traveling element in a horizontal position to advance the article edgewise, an oven laterally spaced from said traveling element, a second traveling element extending within said oven, means on said second traveling element for suspending an

article in a vertical position to advance the article sidewise, a third traveling element for transferring an article from the first mentioned traveling element to the second traveling element, means for removing an article from said first mentioned traveling element and depositing the article on the third traveling element, and means for transferring an article from the third traveling element to the second traveling element, all of said traveling elements being disposed in substantially the same horizontal plane.

3. In a conveyer system, a traveling element, means for supporting an article on said traveling element in a horizontal position to advance the article edgewise, means for angularly changing the horizontal relationship between the article and the traveling element, an oven laterally spaced from said traveling element, a second traveling element extending within said oven, means on said second traveling element for suspending an article in a vertical position to advance the article sidewise, and means for transferring an article from horizontal position to vertical position and from the first-mentioned traveling element to said second traveling element, all of said means and said traveling elements being disposed in substantially the same horizontal plane.

4. In a conveyer system, a traveling element, means for supporting an article on said traveling element in a horizontal position to advance the article edgewise, means for angularly changing the horizontal relationship between the article and the traveling element, means for inverting the article on said traveling element, an oven laterally spaced from said traveling element, a second traveling element extending within said oven, means on said second traveling element for suspending an article in a vertical position to advance the article sidewise, and means for transferring an article from horizontal position to vertical position and from the first mentioned traveling element to said second traveling element, all of said means and said traveling elements being disposed in substantially the same horizontal plane.

5. In a conveyer system, a traveling element, means for supporting an article on said traveling element in a horizontal position, an oven laterally spaced from said traveling element, a second traveling element extending within said oven, means on said second traveling element for suspending an article in a vertical position, means for transferring an article from horizontal position to vertical position and from the first mentioned traveling element to said second traveling element, means for continuously driving said first mentioned traveling element, and means for intermittently driving said second traveling element.

6. In a machine for stretching and drying hides on flat boards, a main conveyor provided with means for supporting a board in horizontal position, said main conveyor advancing the board edgewise, a drying oven laterally spaced from said main conveyor, an oven conveyor extending within said drying oven and provided with means for supporting a board in vertical position, said oven conveyor advancing the board sidewise, and transfer conveyers between the unloading and loading portions of said main and oven conveyers respectively and the unloading and loading portions of said oven and main conveyers respectively, said transfer conveyers provided

with means for supporting a board in vertical position and advancing the board edgewise.

7. In a machine for stretching and drying hides on flat boards, a main conveyer provided with means for supporting a board in horizontal position, said main conveyer advancing the board endwise, means on said main conveyer for rotating the board through an angle of substantially 90° in a horizontal plane, means on said main conveyer for inverting the board, a drying oven laterally spaced from said main conveyer, an oven conveyer extending within said drying oven and provided with means for supporting a board in vertical position, said oven conveyer advancing the board sidewise, and transfer conveyers between the unloading and loading portions of said main and oven conveyers respectively and the unloading and loading portions of said oven and main conveyers respectively, said transfer conveyers provided with means for supporting a board in vertical position and advancing the board edgewise.

8. In a machine for stretching and drying hides on flat boards having flanges on opposite ends thereof, a main conveyer provided with means engaging the flanges on the board for supporting the board in horizontal position with the flanges extending transversely of the conveyer, means for rotating the board to a position whereby the flanges on the board extend longitudinally of the conveyer, and mechanism engageable with the flanges on the board and operable to invert the board on the conveyer.

9. In a machine for stretching and drying hides on flat boards having flanges on opposite ends thereof, a main conveyer provided with means engaging the flanges on the board for supporting the board in horizontal position with the flanges extending transversely of the conveyer, means for rotating the board to a position whereby the flanges on the board extend longitudinally of the conveyer, mechanism engageable with the flanges on the board and operable to invert the board on the conveyer, and means for rotating the inverted board to a position whereby the flanges on the board again extend transversely of the conveyer.

10. In a machine for stretching and drying hides on flat boards, a drying oven, an oven conveyer extending within the drying oven, means on said oven conveyer for supporting boards thereon to advance the boards sidewise, a tacking conveyer laterally spaced from the drying oven and including an endless chain, a plurality of carriages engageable with said endless chain and adapted to support boards thereon in horizontal position for advancing the boards edgewise and to permit hides to be stretched on the boards and the opposite edges of the hides fastened thereto, means at one point in the travel of said chain operable to rotate a carriage and the board supported thereon through an angle of substantially 90 degrees about a vertical axis to turn the board to a position whereby the remaining edges of the hide may be fastened thereto, means for transferring a board from the delivery end of the tacking conveyer to the receiving end of the oven conveyer, and means for transferring a board from the delivery end of the oven conveyer to the receiving end of the tacking conveyer, both of said conveyers and all of said means being disposed in substantially the same horizontal plane.

11. In a machine for stretching and drying hides on flat boards, a main conveyer provided with means for supporting a board in horizontal position, said main conveyer advancing the board endwise, a drying oven laterally spaced from said main conveyer, an oven conveyer extending within said drying oven and provided with means for supporting a board in vertical position, said oven conveyer advancing the board sidewise, transfer conveyers between the unloading and loading portions of said main and oven conveyers respectively and the unloading and loading portions of said oven and main conveyers respectively, means forwardly of the main conveyer adapted to receive boards from one of said transfer conveyers, and a horizontally reciprocable frame adapted to transfer boards from said receiving means to said main conveyer.

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