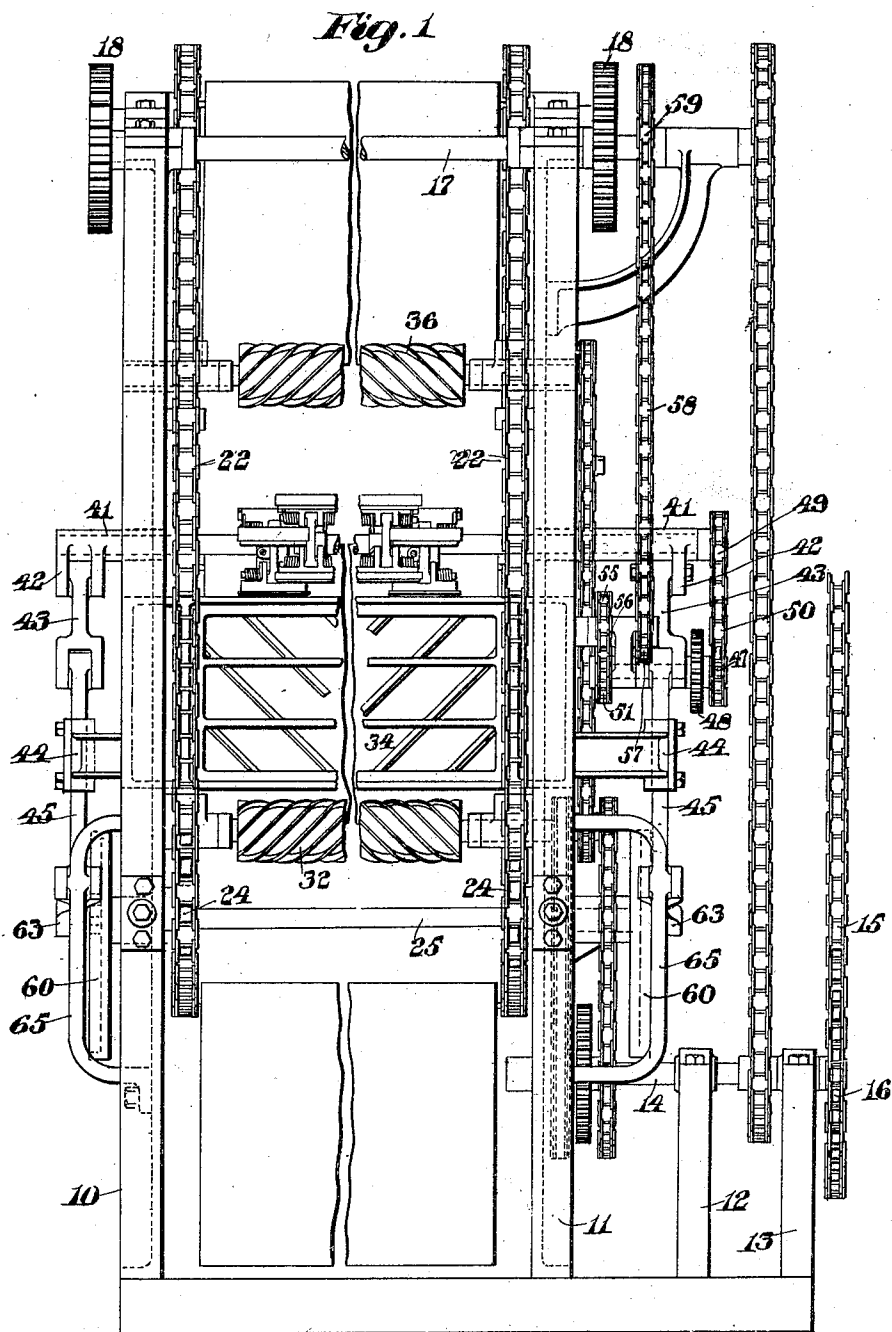


E. E. CHAIN.
MACHINE FOR TREATING HIDES, SKINS, OR LEATHER.

APPLICATION FILED OCT. 28, 1902.

6 SHEETS—SHEET 1.

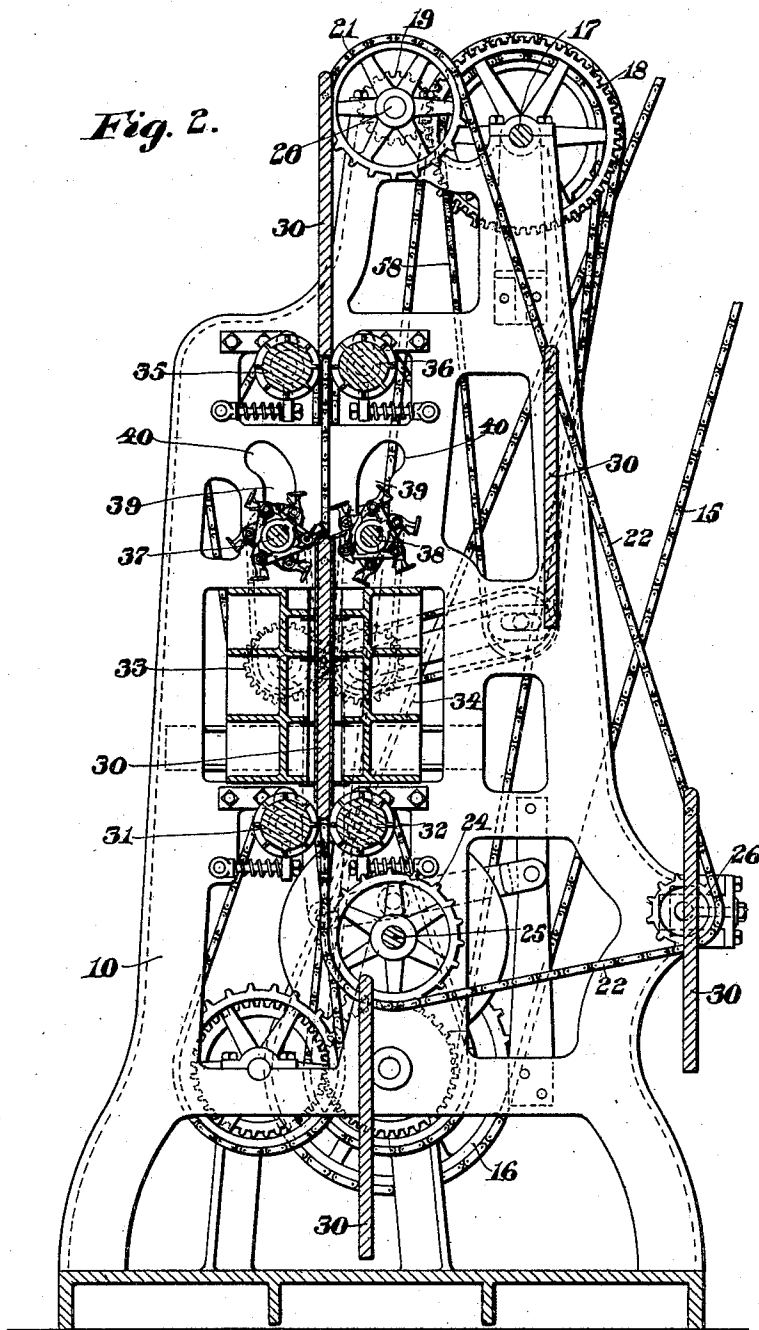
*Witnesses:**Edwin T. Luce**Walter E. Lombard**Inventor:**E. E. Chain*

by Wright, Brown & Dumbly
Attys.

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6 SHEETS—SHEET 2.

Fig. 2.



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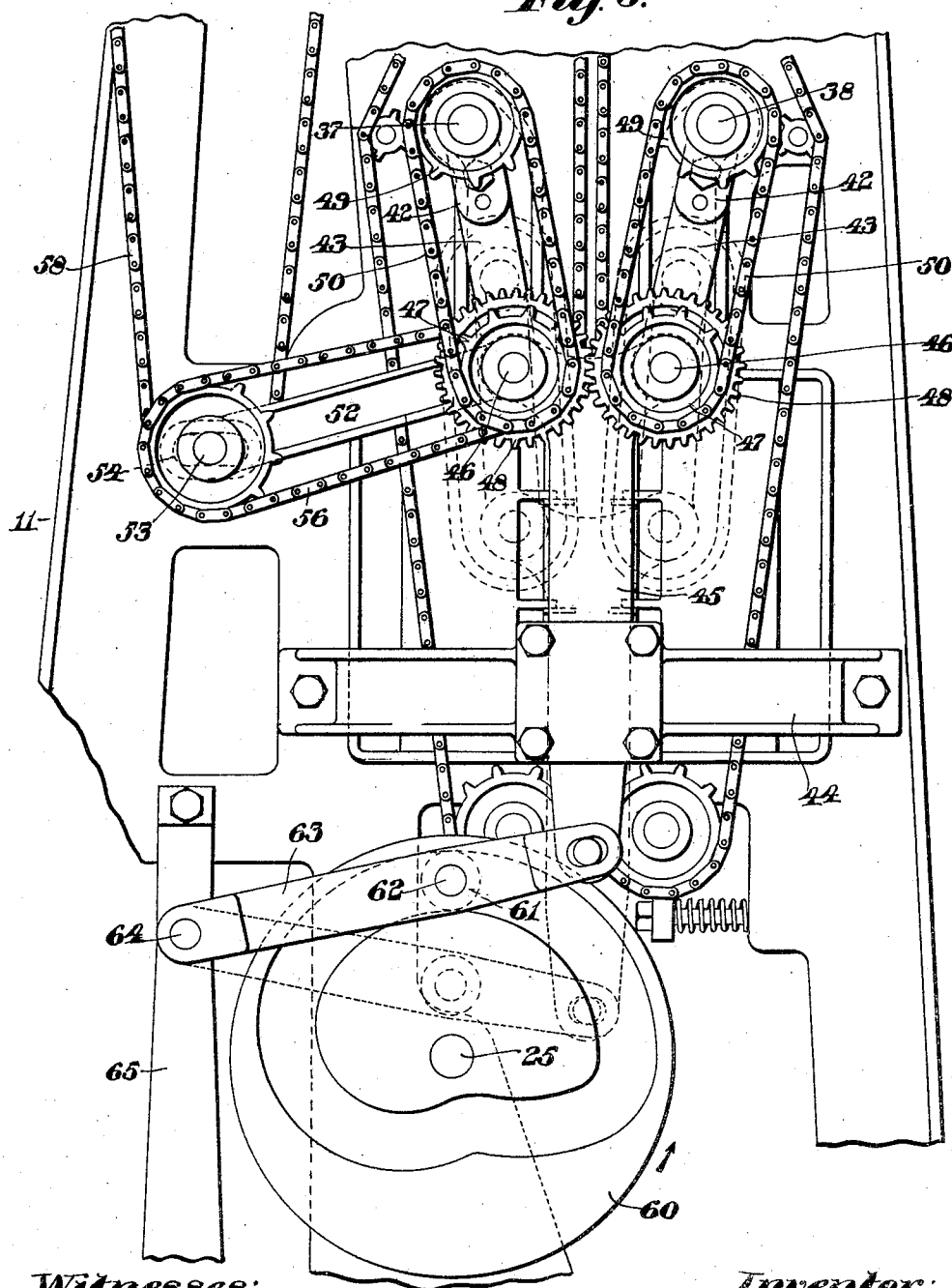
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6 SHEETS—SHEET 3.

Fig. 3.

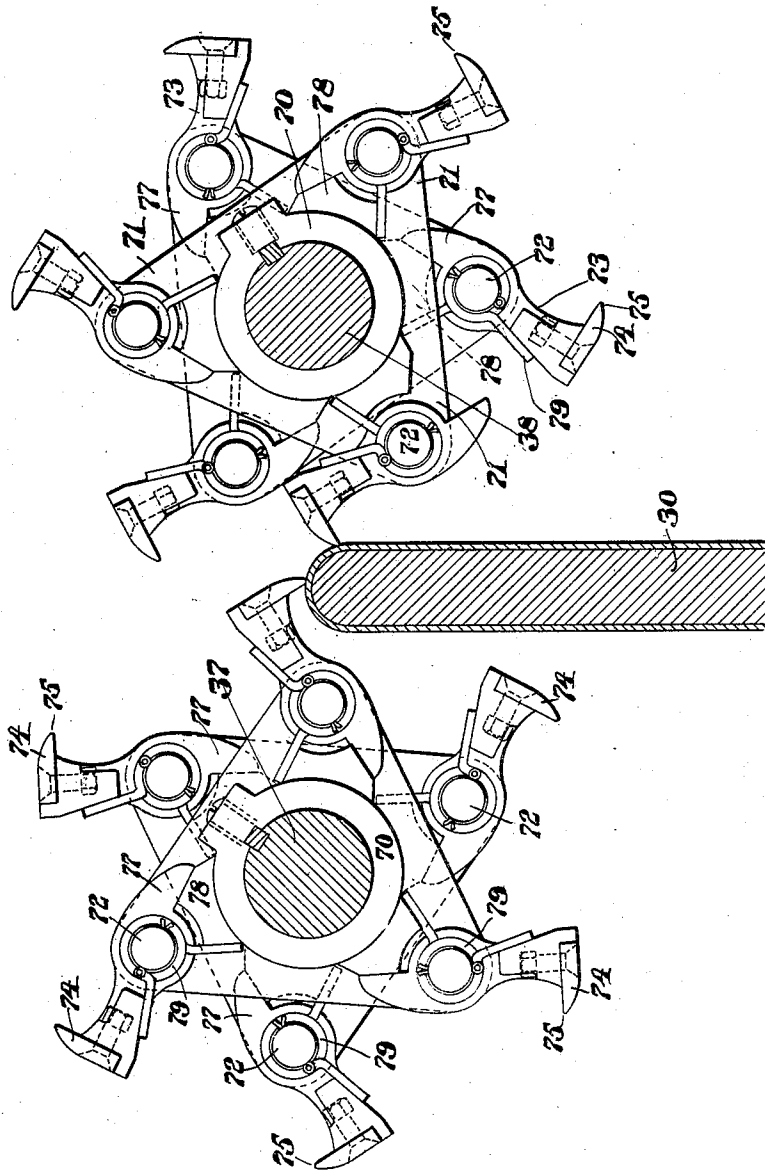
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6 SHEETS—SHEET 4.

Fig. 4.



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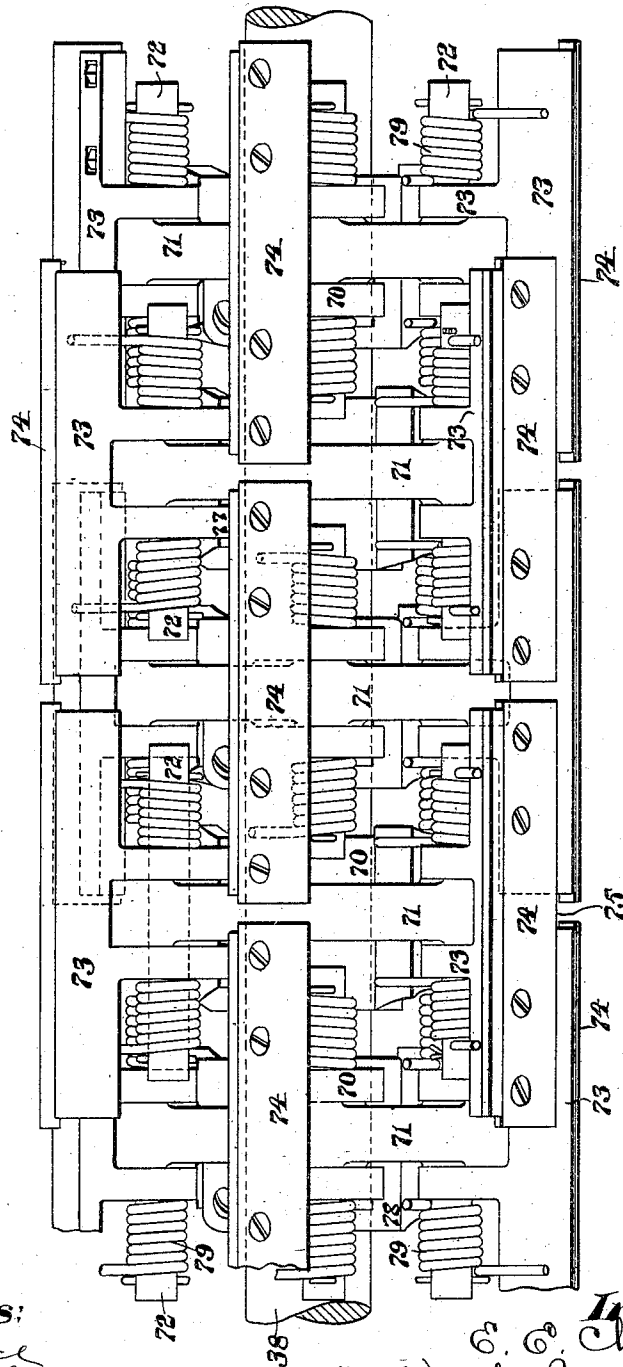
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6 SHEETS—SHEET 5.

Fig. 5.



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6 SHEETS—SHEET 6.

Fig. 6.

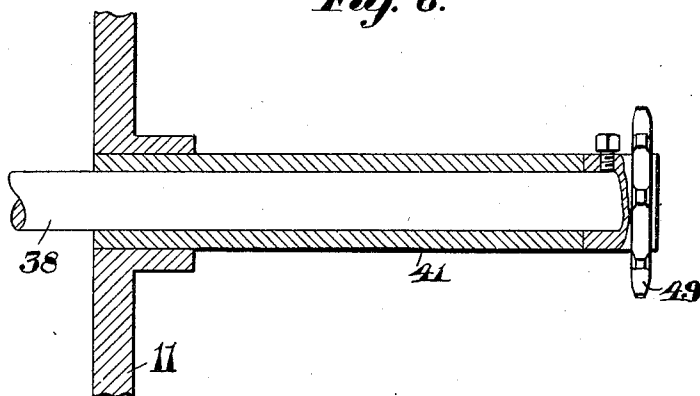
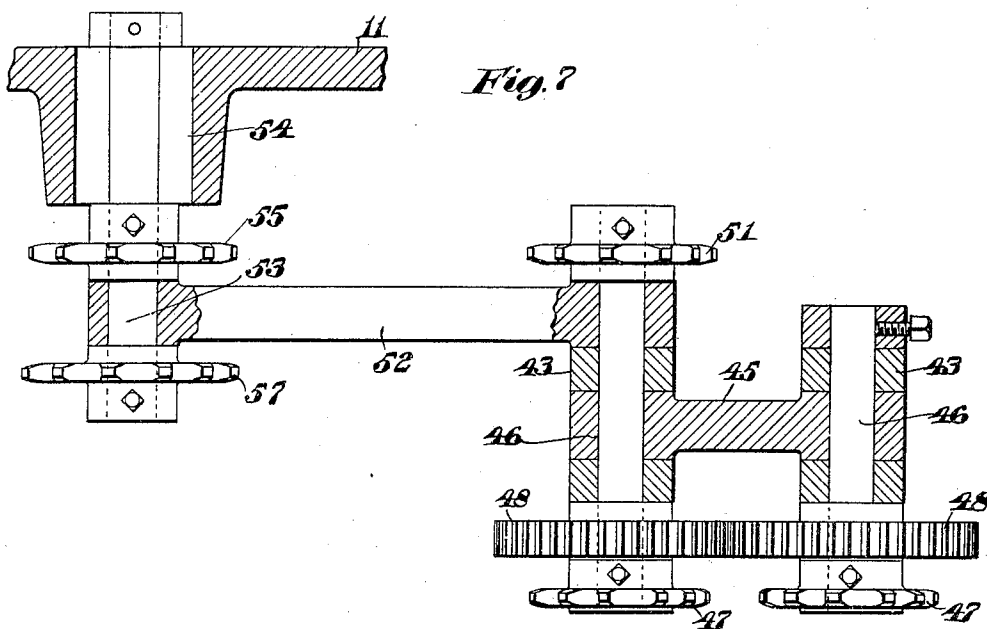


Fig. 7.



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his Attys.

UNITED STATES PATENT OFFICE.

ELMER E. CHAIN, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE
TURNER TANNING MACHINERY COMPANY, OF BOSTON, MASSA-
CHUSETTS, A CORPORATION OF MAINE.

MACHINE FOR TREATING HIDES, SKINS, OR LEATHER.

SPECIFICATION forming part of Letters Patent No. 791,006, dated May 30, 1905.

Application filed October 28, 1902. Serial No. 129,139.

To all whom it may concern:

Be it known that I, ELMER E. CHAIN, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Machines for Treating Hides, Skins, or Leather, of which the following is a specification.

This invention has relation to machines for operating upon hides, skins, and leather, and particularly to that type of machines in which a plurality of two-faced tables or supports, over the end of which the hide or skin may be folded to lie against the faces of said support or table, are mounted upon an endless carrier and are presented successively to the action of members or instrumentalities by which not only that portion of the skin which lies on the faces of the table, but also that lying on the end or edge of the table, is treated. The said members or instrumentalities may be adapted for any particular work, such as unhairing, fleshing, putting out, &c.; but in the particular embodiment of the machine which is illustrated upon the drawings and described in the following specification the members are so constructed as to put out the skin or hide which is presented to their action. In machines of this general character it has been heretofore proposed to employ a pair of helically-bladed rolls located directly in the path of movement of the tables, with such provisions that when the said rolls were engaged by the end of the table they would be pushed or forced laterally so as to permit the passage of the table between them. This construction and arrangement has numerous disadvantages, tending in many instances to work injury to the hide or skin. According to my invention, however, I employ a pair of operating members which are not located in the path of movement of the tables or supports. On the contrary, each member consists of a shaft or cylinders having a plurality of blades yieldingly supported thereby, with provisions whereby the said blades successively engage the skin on the end of the table as the said table moves between the two members. By the provision of the yielding

blades I am able to graduate the tension of the springs so as to secure the desired action of the blades on the skin or hide. In order to effect the engagement of the greatest number of the blades with the skin on the table, provision is made according to this embodiment of the invention to move the members by power in a direction parallel to the path of movement of the carrier so that for a limited time there is a simultaneous advance of the table and the said members. In case it seems advisable to have the said members operate only on the skin on the end of the support the said members may travel in guides which are divergent near their extremities, so that after the said members have moved a predetermined distance with the table they may be positively separated to permit the table to pass between them without the members operating on the skin on the face of the table. Thereafter the said members may be moved again to initial position for the engagement of the skin on the end of the next succeeding table.

On the accompanying drawings, Figure 1 represents in front elevation one embodiment of my invention which may be employed for putting out hides, skins, and leather. Fig. 2 represents a vertical section through the same from front to rear. Fig. 3 represents an enlarged side elevation of a portion of the machine, showing the mechanism for actuating the members which operate upon the skin on the end or edge of the table. Fig. 4 shows a table with a skin thereon and the operating members for treating that portion of the skin which is on the end of the table. Fig. 5 represents a portion of one of said members. Fig. 6 illustrates the shaft on which one of the members is secured and the means for journaling said shaft in the frame. Fig. 7 illustrates a portion of the mechanism for transmitting power to one of said members.

The machine is illustrated in the drawings as having upright standards 10 11. Journalled in the standard 11 and in brackets 12 13 is a main driving-shaft 14, to which power is transmitted by the sprocket-chain 15 and a

sprocket-wheel 16. From the shaft 14 power is transmitted to the various operative portions of the machine. Journaled on the top of the standards 10 11 is a shaft 17, driven by chain-and-sprocket gearing from the shaft 14. This shaft 17 is provided with gears 18, intermeshing with and driving gears 19 on short shafts 20, journaled on the top of the standards 10 11. Each shaft 20 carries a sprocket-wheel 21 to receive an endless chain 22. The said chains 22 pass around sprocket-wheels 24 on a shaft 25, journaled in the lower portion of the standards 10 11, and also around sprockets 26, journaled on stud-shafts adjustably mounted or secured to the front portions of the standards 10 11, as indicated in Fig. 2. The chains 22 thus move through a triangular course, as best shown in the last-mentioned figure, and they serve as an endless carrier for a plurality of tables or supports 30, which are pivoted at their side edges thereto. Each support or table has two parallel flat faces and a rounded end or edge over which the hide or skin may be folded, so as to lie against the said faces. The carrier is moved to cause the tables to be carried successively rearward from the front of the machine, thence vertically upward, and then downward to the initial starting-point.

In the illustrated machine there are four pairs of instrumentalities for operating upon the skin; but it will be understood that all may be dispensed with except that pair of members or instrumentalities which is designed to operate upon the skin on the end of the table. The other members comprise the helically-bladed rolls 31 32, which operate to remove from the hide or skin any blades or wrinkles which may be therein and to stretch it laterally as well as longitudinally on the table, a pair of bladed members, (indicated as a whole at 33 34,) which may be similar to those illustrated in my application for patent, Serial No. 75,554, filed September 16, 1901, and a pair of helically-bladed rolls 35 36, located near the top of the machine. The rolls 31 32 are actuated by suitable chain-and-sprocket gearing and are held yieldingly toward each other to engage the skin with a yielding pressure. The rolls 35 36 are likewise driven by a chain-and-sprocket mechanism, and they, too, are held yieldingly toward each other.

Located between the members 33 34 and the members 35 36 is a pair of members having provisions for acting upon that portion of the skin which lies upon the end of the table. The members comprise shafts, cylinders, or bodies 37 38. Each shaft projects through slots 39 39, formed in the standards 10 11. These slots are substantially parallel to the vertical path of movement of the tables, being, however, divergent at their upper end, as indicated at 40 40. Each of the shafts is mounted at its ends in sleeves 41.

(See Fig. 6.) Each of the sleeves is formed with lugs 42, secured to the upper end of an arm 43, so that each of the shafts is supported at each end by an arm 43.

Arranged in guides 44, formed by brackets projecting laterally from the standards 10 11, are two slides 45 45. The upper end of each slide is extended laterally to afford bearings for two short shafts 46 46, upon which the arms 43 43 are fulcrumed. To each shaft 46 is secured a sprocket-wheel 47 and a gear-wheel 48, the said gear-wheels being of the same size and having the same number of teeth and intermeshing, as shown in Figs. 3 and 7.

Each of the shafts 37 38 has secured to its end a sprocket-wheel 49, and connecting each sprocket 49 with sprocket 47 immediately therebelow there is a sprocket-chain 50. One of the shafts 46 is equipped at its inner end with a sprocket-wheel 51 and has also pivoted to said inner end the radius-bar 52. The said radius-bar is pivoted at its other extremity upon a shaft 53, which extends loosely into a guideway 54, formed in the standard 11. The shaft 53 has secured to it a sprocket-wheel 55, which is geared to the sprocket-wheel 51 by a sprocket-chain 56. The shaft 53 has secured to it another sprocket, 57, which is driven by the sprocket-chain 58 from a sprocket-wheel 59 on the shaft 17. (See Fig. 1.) The guideway 54 is substantially at right angles to the path of movement of the table, so that by moving the slide 45 vertically the shafts 37 38 may be raised vertically, being held in parallelism with the slots 39 until the said shafts enter the laterally-projecting portions 40 of said slots. During this movement the said rolls are positively rotated by means of the sprocket-gearing, which has been described.

As has been explained, it may be desired not to move the shafts 37 38 and the members thereon toward and from each other or longitudinally of the path of movement of the tables, in which event the slides 45 would be allowed to remain at their lower extremes of movement. To move said slides, however, the following mechanism may be employed: On each end of the shaft 25 there is a path-cam 60, into the groove of which projects a roll 61, journaled on a stud 62, projecting inwardly from a lever 63. The two levers 63 are each fulcrumed on a stud 64, supported by a bracket 65, attached to the standards or uprights 10 11. Each lever 63 has a pin-and-slot connection with the lower end of the slide 45. The action of these cams upon the members will be subsequently explained.

The devices which are mounted upon the shafts 37 38 and which treat the skin on the ends of the tables will now be described. As the mechanism upon the two shafts is the same, I shall describe only one of them, reference being had more particularly to Figs. 4 and 5. At regular intervals each shaft has

secured to it a collar 70 with a substantially triangular rib, the corners of which form lugs 71 71. These collars are so placed upon the shaft that the lugs of one collar are between the lugs of the two adjacent collars. Through each lug 71 is passed a stud-shaft 72, upon which is pivoted a blade-support 73. These supports are elongated longitudinally of the shaft, and they are adapted to receive the blades 74, which may be fashioned according to the work which they are to perform. If the machine is for putting out, these blades will be in the nature of slickers, whereas if the machine be for unhairing the blades will be in the form of knives, as will be readily understood. The term "blades," however, may be employed generically as specifying any form of device for operating on the skin. Each blade may have an operative edge 75, which as the shaft is rotated will be brought into engagement with the skin on the end of the table, as shown in the last-mentioned figure. Each support 73 has a finger 77, which is held against a projection 78 on the collar by a pair of coiled springs 79. These springs are coiled about the shaft 72 and have one end bearing against the support and the other end bearing against the stop or lug 78. The aligned blades 74 on the shaft break joint with the adjacent aligned blades, as best shown in Fig. 5, the blades in each line having their ends fairly close together, so that although each collar 70 carries but three blades and blade-supports, yet there are on each shaft six lines of blades which may be brought successively into engagement with the skin or hide on the end of the table. It will be understood that the two shafts 37 38 are rotated in opposite directions and that they are set close enough together so that the blades of each will engage the skin. The shafts are so adjusted that their blades will engage the work alternately, so that one will not interfere with the other. As each member rotates its blades will engage the skin on the end of the table, each blade yielding as its shaft rotates, so that its edge is caused to rub, unhair, put out, or otherwise treat the work, according to the particular form of blade that is used. Where the two members are stationarily mounted so as not to move with the table, the blades treat not only that portion of the skin which lies on the end of the table, but also those portions lying on the faces of the table during the time that the table passes between them. It is desired, however, in many cases to have the skin on the end of the table treated for the greatest length of time to successfully accomplish the ends for which the blades are designed, and consequently in such event the cams 60 are so formed that the shafts 37 remain in the lower ends of their guide-ways until the table reaches a position for the blades to engage the end thereof, as shown in Fig. 4 and in dotted lines in Fig. 3. Then

the slides 45 are raised as the table moves upward at the same rate of speed as the table, during which time the rotation of the members causes the blades to continuously engage and treat the work. As soon as the shafts reach the divergent ends of the slots they are carried laterally far enough to prevent the blades from continuing to engage the table, and the table therefore passes between them without the said blades treating that portion of the hide or skin which lies upon the faces of the table. The springs 79 may be formed of lighter or heavier stock to secure the proper pressure of the blades against the work, and by disconnecting the slides 45 from the levers 63 the bladed members will remain by gravity in position to treat the entire surface of the skin as the table passes between them.

The operation of the machine will be apparent from the foregoing description. Power being applied to the shaft 14 from the sprocket 15, the shaft 17 will be rotated through the sprocket-and-chain gearing shown, and consequently the endless carrier will be actuated to carry the tables successively between the working members, there being gearing (indicated at 18 19) for actuating the sprocket-wheels 21, over which the endless carrier-chains pass. The rolls 35 and 36 and 31 and 32 will be rotated by chain-and-sprocket gearing so that their blades will move in a direction reverse to the direction of movement of the tables. The shafts 37 and 38 will be rotated by the mechanism hereinbefore described from the shaft 17, so as to effect the rotation of the working members mounted upon said shafts. As each table emerges from between the working members 33 and 34 the cam 60 will be rotated, so as to move the arm 63 upwardly and carry upward the slide 45, so that the members on the shafts 37 and 38 will move upwardly with the table until said members are separated by the shafts 37 and 38, passing outwardly to the ends of the slots 40 40. The working members will remain in this position until after the table has passed, whereupon the further rotation of the cam 50 will permit the slide, and consequently said members, to drop to the dotted positions shown in Fig. 3.

Having thus explained the nature of the invention and described a way of constructing and using the same, although without attempting to set forth all of the forms in which it may be made or all of the modes of its use, I declare that what I claim is—

1. A leather-treating machine, comprising a movable two-faced table, a rotatable working member having yielding blades pivotally mounted thereon, the arc of movement of which intersects the path of movement of the table, means for rotating said member, means for holding said member against bodily lateral movement and means for moving said table.

2. A leather-treating machine comprising a movable two-faced table, and a pair of work-

ing members between which the table is adapted to pass, each member having a rotatable body and a plurality of yielding blades pivoted thereto.

5 3. A leather-treating machine comprising a movable two-faced table, and a pair of working members between which the table is adapted to pass, each member having a rotatable body and a plurality of yielding blades pivoted thereto, said members being disposed whereby
10 the arc of movement of said blades intersects the path of movement of said table, to treat the skin on the end thereof.

4. A leather-treating machine comprising a
15 two-faced table, adapted to have a skin folded over its end so as to lie against its faces, and a pair of rotary members between which the said table is adapted to pass, each member having a plurality of yielding blades pivoted
20 thereto and adapted to engage and treat the skin on the end of the table.

5. A leather-treating machine comprising a two-faced table, means for moving said table, a pair of operating members disposed to permit the table to pass between them without
25 their being moved bodily laterally, each member having a plurality of yielding blades whose operative edges are arranged to successively engage the work on the end of the table, and
30 means for rotating said members.

6. A leather-treating machine comprising a two-faced table, means for moving said table,

a pair of operating members arranged to engage the work on said table, means for rotating said members, and means independent of
35 said table for moving said members bodily a predetermined distance with said table to increase the period of engagement of said members with the work.

7. A leather-treating machine comprising a
40 two-faced table, a pair of operating members adapted to engage the work on the table, means for moving said table, means for rotating said members, carriers for the said members, and means for bodily moving said carriers longi-
45 tudinally of the direction of movement of said table.

8. A leather-treating machine comprising a two-faced table, means for moving said table, a pair of operating members arranged to en-
50 gage the work on said table, means for rotating said members, means independent of said table for moving said members bodily a predetermined distance with said table to increase the period of engagement of said members
55 with the work, and means for causing the lateral movement of said members to disengage them from the work.

In testimony whereof I have affixed my signature in presence of two witnesses.

ELMER E. CHAIN.

Witnesses:

M. B. MAY,

C. C. STECHER.