(No Model.) 4 Sheets—Sheet 1.

I. VAUGHN.

PUTTING OUT MACHINE.

No. 537,254. Patented Apr. 9, 1895.

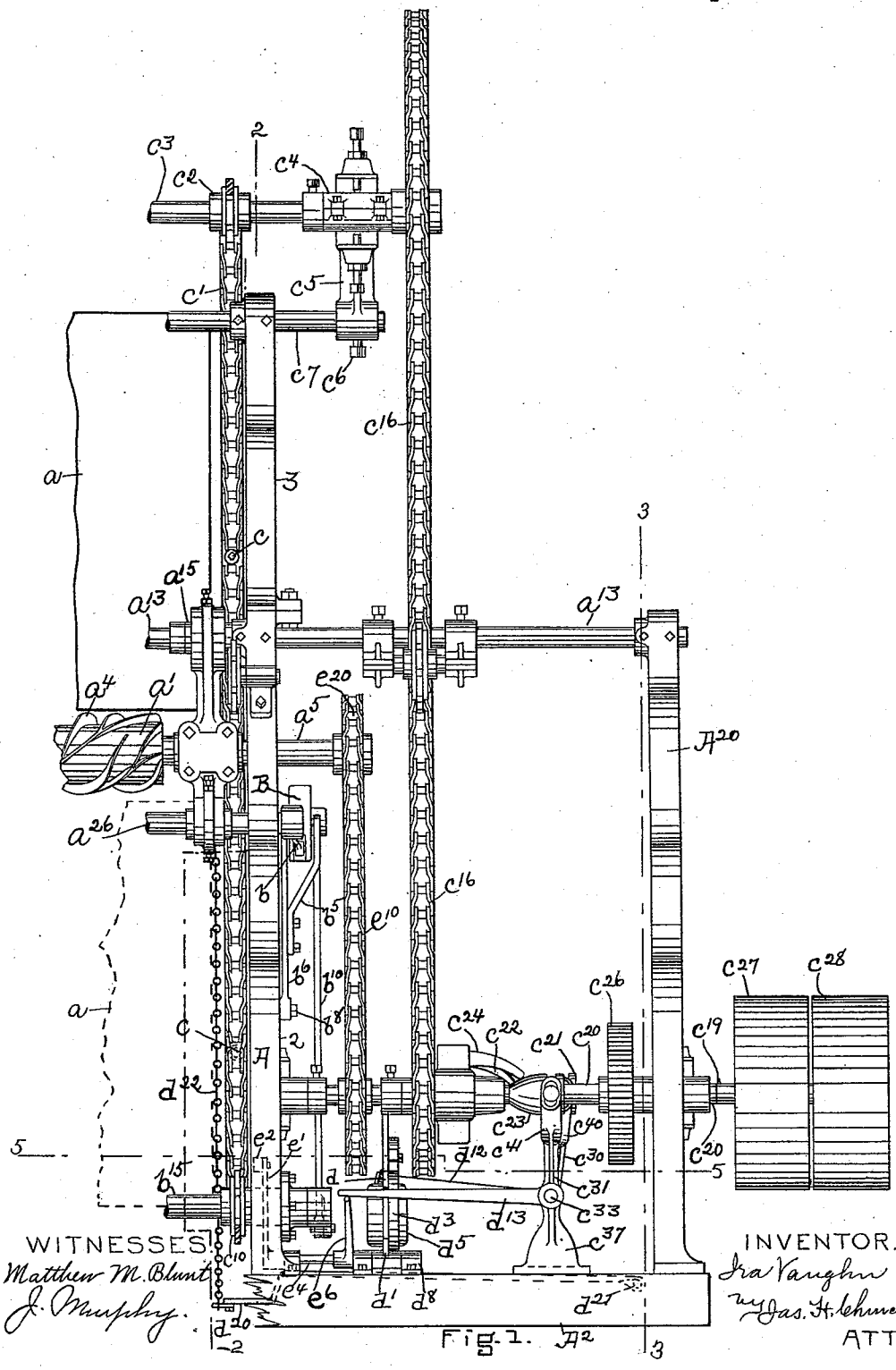

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Fig. 1.

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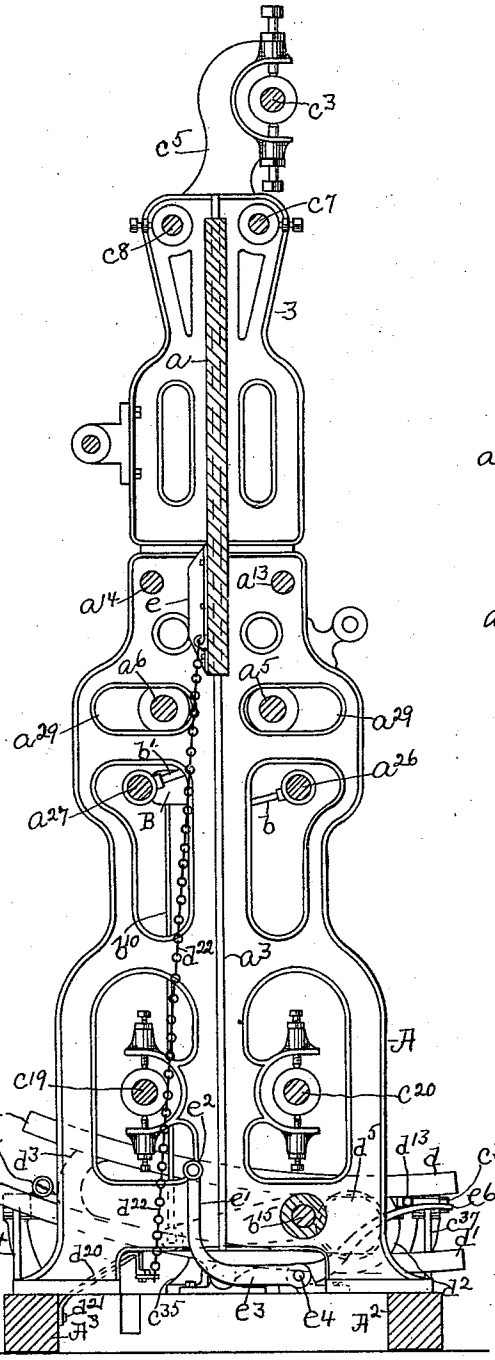

Fig. 2.

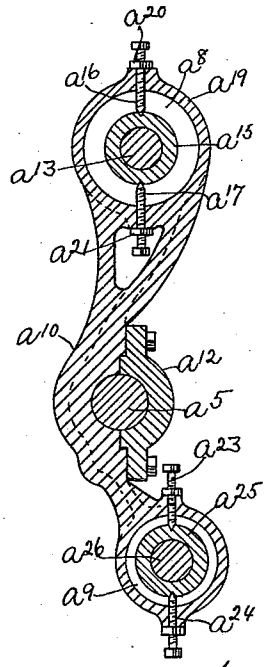

Fig. 6.

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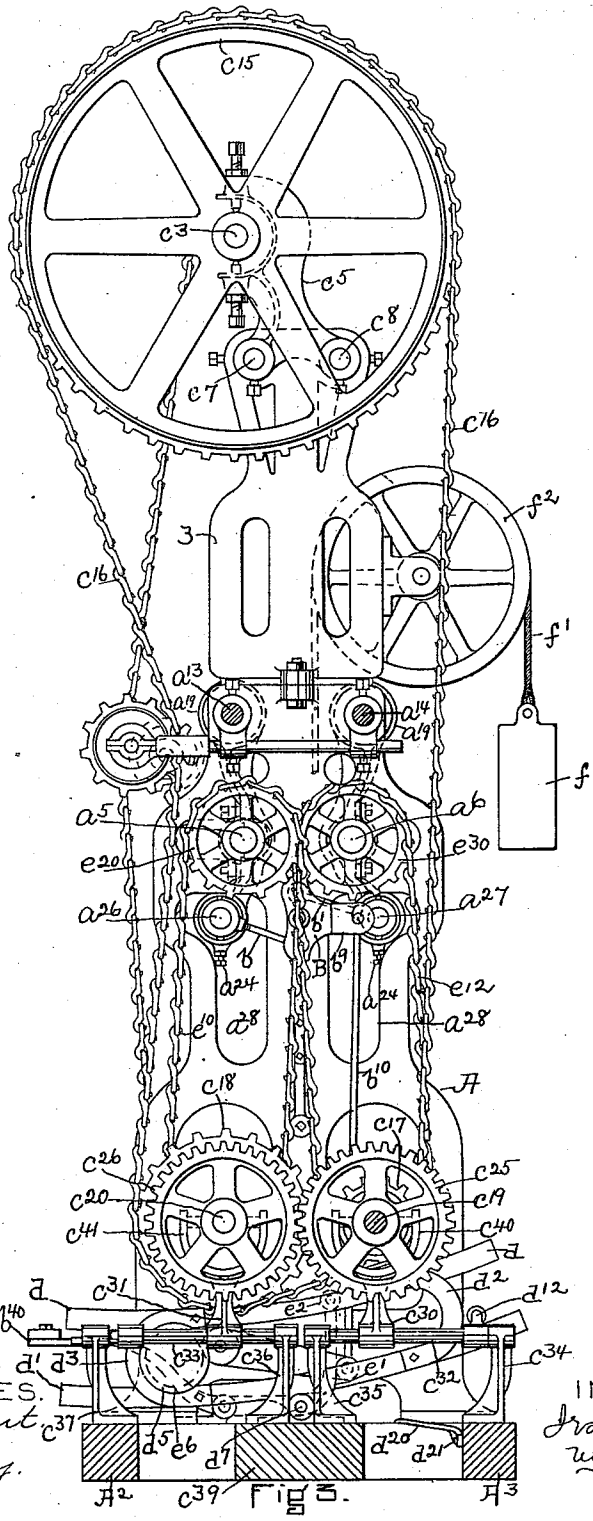

Fig 3.

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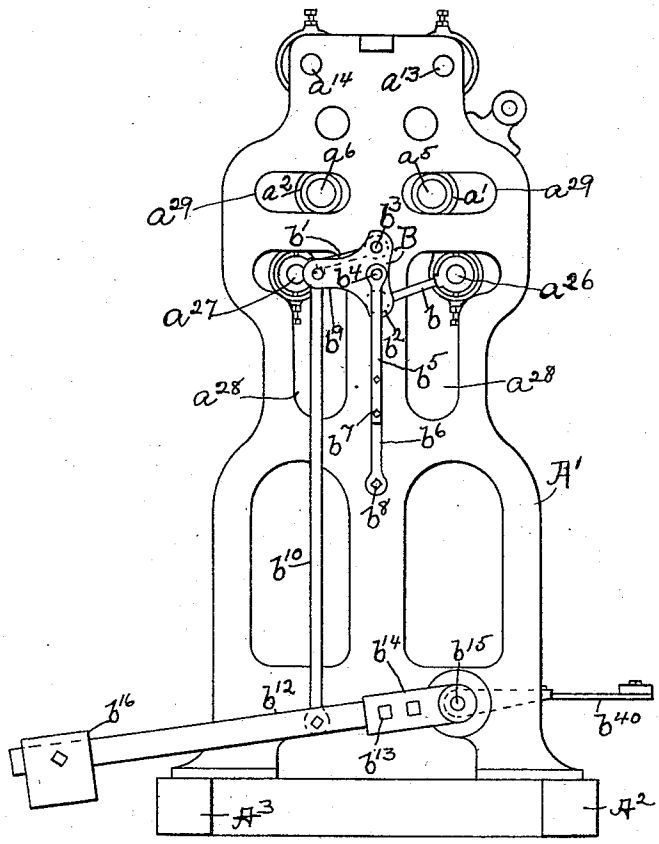

Fig. 4.

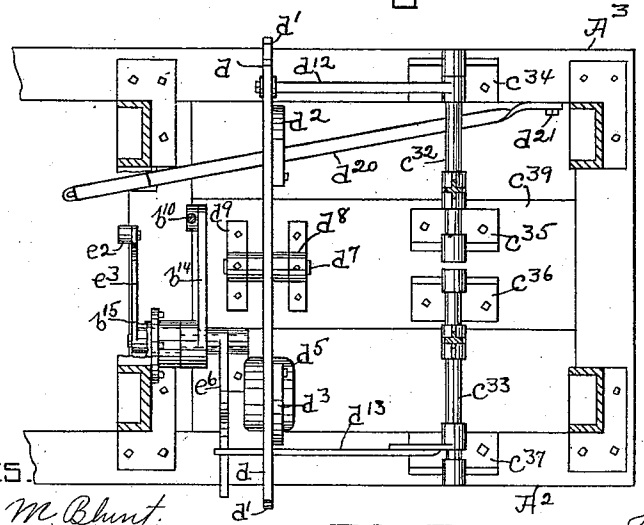

Fig. 5.

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UNITED STATES PATENT OFFICE.

IRA VAUGHN, OF SALEM, MASSACHUSETTS, ASSIGNOR TO THE VAUGHN MACHINE COMPANY, OF PORTLAND, MAINE.

PUTTING-OUT MACHINE.

SPECIFICATION forming part of Letters Patent No. 537,254, dated April 9, 1895.

Application filed August 2, 1894. Serial No. 519,266. (No model.)

To all whom it may concern:

Be it known that I, IRA VAUGHN, residing in Salem, in the county of Essex and State of Massachusetts, have invented an Improvement in Putting-Out Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters and numerals on the drawings representing like parts.

This invention relates to machines or apparatus for the treatment of leather, either tanned or untanned, and among other uses, the invention is particularly well adapted for putting out, setting out, scouring, &c.

My present invention is herein embodied in a machine or apparatus of substantially that class shown and described in United States Patent No. 274,858, dated March 27, 1883, to which reference may be had.

In the class of machines referred to, the hide or skin to be treated is carried by a movable holder or support between two operating rolls, which are normally close together, the said holder or support being made wedge-shaped to facilitate it spreading apart the operating rolls as it passes between them. In practice, it has been ascertained, that in treating fine or the nicer grades of leather, the latter was liable to be injured or damaged by the shock or strain upon it, caused by the wedging action of the holder or support upon the operating rolls to force the same apart, which shock or strain often resulted in discoloring and tearing the leather.

My present invention has for one of its objects to overcome the defect above mentioned, which is accomplished in a manner as will be described.

Another feature of this invention consists in a novel manner of supporting the operating rolls, whereby hides or skins of uneven thickness may be acted upon uniformly irrespective of their thickness, as will be described.

My invention further consists in a machine in which the traveling support or holder is positively moved in both directions, as will be hereinafter pointed out.

These and other features of this invention will be pointed out in the claims at the end of this specification.

Figure 1, is a front elevation of a sufficient portion of a machine or apparatus embodying this invention to enable it to be understood; Fig. 2, a vertical sectional detail on the line 2—2 looking toward the right in Fig. 1, the driving chains for the parts shown in Fig. 2 being omitted; Fig. 3, a vertical section of the apparatus shown in Fig. 1 on the line 3—3 looking toward the left; Fig. 4, a detail in elevation of the lower portion of the opposite end of the machine from that shown in Fig. 1, to more clearly show the improved roll operating mechanism; Fig. 5, a sectional plan view on the line 5—5, Fig. 1, to more clearly show the automatic reversing mechanism, and Fig. 6, a sectional detail on an enlarged scale through one of the hanger boxes to be referred to.

In the machine herein shown as embodying this invention, the operating parts, to be hereinafter described, are supported in a framework comprising essentially two uprights A A′ supported upon a suitable foundation shown as stringers or beams A^2 A^3. The uprights A A′ are preferably composed of a lower part 2 and an upper part 3 (see Figs. 1 and 2) suitably bolted or otherwise secured together.

The framework referred to, supports the operating parts of the apparatus, which consists essentially of a table, holder or carrier a and two operating rolls a' a^2, the said table being vertically movable between the uprights A A′ comprising the frame, and preferably guided by means of guide bars or rods a^3 (see Fig. 2) secured to or forming part of the inner sides of the uprights. The operating rolls a' a^2 are and may be of any suitable or desired construction, but preferably of the construction shown and described in United States Patent No. 444,173, dated January 6, 1891, each roll being provided on its surface with vanes, teeth or projections a^4 of suitable shape or construction according to the work to be performed by the machine.

In accordance with this invention, the operating rolls a' a^2 have their shafts a^5 a^6 supported at the opposite ends of the rolls in hanger boxes, preferably of the construction herein shown, each box being provided at its upper end with a substantially large eye or

opening a^8, and at its lower end with a similar eye or opening a^9, the roller shaft being secured to the intermediate portion a^{10} of the hanger by the removable box or cap a^{12}. (See Fig. 6.) Inasmuch as both operating rolls a' a^2 have their opposite ends supported in the same manner, and inasmuch as the hanger boxes for the ends of each roll are the same, the specific construction of the manner of hanging a single box will be sufficient to enable this feature of the invention to be understood.

In accordance with this invention, the hanger boxes for the roll a' are supported so as to have a pivotal movement in two directions, or what may be regarded as a double pivotal movement, that is, the said hanger boxes are supported so as to have a swinging bodily movement toward and from the plane in which the movable carrier a travels, and also a partial rotary movement, which rotary movement is substantially at right angles to the bodily movement referred to. This double pivotal movement of the hanger boxes and the operating rolls carried thereby, is effected in the present instance by pivotally supporting the upper end of each hanger, and also pivoting the lower portion of each hanger as will be described.

The hangers for the roll a' are supported upon a stationary rod a^{13} (see Figs. 1 and 3) suitably supported in the uprights A A', and preferably also supported in an auxiliary upright A^{20} shown in Fig. 1. The rod a^{13} in the present instance, has mounted upon it a loose collar or sleeve a^{15} (see Figs. 1 and 6) having suitable sockets for the reception of the pointed or conical ends of set screws a^{16} a^{17} substantially diametrically opposite, and extended through the annular portion or ring a^{19} forming the eye or opening a^8, the said set screws being secured in their adjusted position by suitable check nuts a^{20} a^{21}. The eye or opening a^9 at the lower end of the hanger is also provided with similar set screws a^{23} a^{24} substantially diametrically opposite and, as shown, arranged in a substantially vertical plane, the set screws a^{23} a^{24} engaging suitable sockets in a sleeve a^{25} loose on a rod a^{26}. The hanger boxes for the operating roll a' may be supposed to be connected by the pivotal set screws a^{23} a^{24} to the rod a^{26}, and the hanger boxes for the operating roll a^2 may be supposed to be secured by like pivotal screws a^{23} a^{24} to a similar rod a^{27}. These rods a^{26} a^{27} are extended through suitable openings a^{28} in the uprights A A', and the shafts a^5 a^6 are also extended through suitable openings a^{29} in the said uprights, to permit of bodily movement of both of the rods a^{26} a^{27} and the rolls a', a^2.

By an inspection of Fig. 6, it will be seen that the hanger box therein shown, is free to move in an arc of a circle with a rod a^{13} as a center, which movement takes place when the rod a^{26} is moved bodily, to move the operating roll carried by the said hanger bodily toward and away from the plane of travel of the movable holder or carrier a, and it will also be noticed that the hanger is free to turn on the pivots a^{16} a^{17}, a^{23} a^{24}, and the extent of movement, which, for sake of distinction, may be regarded as a rotary movement of the hanger, is limited by the distance between the sleeve a^{15} and the inner side of the ring portion a^{19}, for it will be seen that the hanger may turn on the pivots a^{16} a^{17} a^{23} a^{24} until one of the sides or edges of the ring portion a^{19} strikes against the sleeve a^{15}. By means of this rotary movement of the hanger, either end of the operating roll may be carried farther toward the movable table or carrier a than the other, as will be described which is of special advantage in the treatment of hides or skins of uneven thickness.

The operating rolls a' a^2, in accordance with this invention, are normally held away from the table or carrier, a sufficient distance to readily permit the said table or carrier to travel between them without contact, and by this arrangement, the injurious effect to the hide or skin occasioned by a sudden contact with the operating roll is avoided. This result may and preferably will be accomplished by means of a mechanism as will now be described. The rods a^{26} a^{27} at each end and preferably on the outside or beyond the uprights A A', have pivotally secured to them, links b b' pivotally connected as at b^2 b^3 to the opposite ends of a substantially T-shaped lever B pivotally supported at its center upon a rod or pin b^4 in arms b^5 b^6 between which the lever B is interposed as clearly shown in Fig. 1, the arm b^5 being firmly secured as by bolts b^7 to the arm b^6, which is pivoted as by the bolt b^8 to the framework. The lever B is provided with an arm b^9 connected by a link b^{10} to a rod or arm b^{12}, shown in Fig. 4 as secured by bolts b^{13} to a crank b^{14} on a rock shaft b^{15}, which is supported in the uprights A A' at the front of the machine, the rod b^{12} forming a counterbalancing rod for the operating rolls and being provided with one or more counterbalancing weights b^{16}.

It will be understood that the rods a^{26} a^{27} at each end of the machine or apparatus are provided with a construction of levers and links just described, both being actuated by the rock shaft b^{15}, which may and preferably will be provided with a treadle b^{40}, and operated by the foot of the operator.

By means of the construction of the lever B and its connection with the rods a^{26} a^{27} shown in Fig. 4 and herein described, a uniform pressure of the operating rolls upon the hide or skin is maintained throughout the travel of the holder or carrier, thereby resulting in a more effective working of the skin or hide. In the normal condition of the apparatus, the operating rolls a' a^2 are substantially widely separated owing to the construction of the levers B and their connection with the shafts a^{26} a^{27}, and as a result, the table, support, or carrier a for the hide or skin, does not need to be wedge-shaped at its upper end as in the

Patent No. 274,858 above referred to, but may be rectangularly shaped as shown in Fig. 2, or it may be of any desired or suitable shape, and of operating rolls may be brought in contact with the skin by the operator working the rock shaft b^{15}, so as to bring the operating rolls toward the plane of travel of the table or support a, and the pressure may be regulated by the operator as desired or required. In this way, danger of imparting shocks or strains to the finer qualities of leather may be avoided.

Referring to Fig. 4, it will be seen that when the treadle b^{40} is depressed, the rock shaft b^{15} is rocked, so as to elevate the arm b^{12} at each end of the machine, and as the arms b^{12} are elevated, the T-shaped lever is turned on its pivot b^4, its arm b^9 moving upward and the arms carrying the pivots b^3 b^2 moving in a circular path with the pivot b^4 as a center, the pivot b^3 moving toward the right (viewing Fig. 4) and the pivot b^2 toward the left. The movement of the pivots b^3 at the opposite ends of the machine produces a movement of the hanger boxes carrying the roll a^2 toward the right (viewing Fig. 4), that is, toward the table or support a. The movement of the pivots b^2 at the opposite ends of the machine produces a movement of the hanger boxes carrying the roll a' toward the left, that is, toward the table. The movement of the hanger boxes carrying the rolls a' a^2 is a swinging or pivotal movement of the sleeves or collars a^{15} of the hanger boxes on the rods a^{13} a^{14}. The pivotal movement of the hanger boxes on the shafts a^{13} a^{14} away from the table is effected when the pressure on the treadle b^{40} is released, and the counterweights b^{16} restore the T-shaped levers to their normal positions shown in Fig. 4. It will thus be seen that the hanger boxes have a pivotal movement on the shafts or rods a^{13} a^{14} toward and away from the table, effected by means of the connection between the hanger boxes and the rock-shaft b^{15}. If the skin or hide operated upon was of uniform thickness, this pivotal movement of the hanger-boxes on the rods a^{13} a^{14} toward and away from the table would suffice, as both operating rolls would be brought in contact with the hide throughout their length. On the contrary, the hides or skins are thicker in some parts than in others, and as a result, the pivotal movement of the hanger boxes on the shafts or rods a^{13} a^{14} would move the operating rolls toward the skin or hide, until contact was made with the thick portion of the hide.

Now the part of the hide on one side of the table might be of uniform thickness, or of substantially uniform thickness, while the other part of the hide on the other side of the table might be of very uneven thickness. Let it be supposed that the part of the hide acted upon by the roll a^2 is of uniform thickness, while that part of the hide acted upon by the roll a' is thicker at one end than at the other. In this case, when the treadle is depressed, the hanger boxes carrying the roll a^2 will be moved on the rod a^{14} as a center, and will be moved toward the table a until the roll a^2 is brought in contact with the hide on that part of the table, and as this part of the hide is of uniform thickness, the roll a^2 will be brought in contact with the hide throughout its length, and this uniform contact of the roll a^2 with the hide of uniform thickness will be accomplished by one movement of the hanger boxes carrying said roll, namely, the pivotal movement of the hanger boxes on the shaft or rod a^{14} effected by the depression of the treadle. The operating roll a', on the other hand, has only one end in contact with the thick end or portion of the hide on the other side of the table or support, but by means of the hanger boxes carrying the said roll being pivotally supported by the set screws a^{16} a^{17}, a^{23} a^{24}, the said hanger box can be turned or partially rotated on the said set screws so as to move the roll obliquely to the table or support a, and bring the roll a' into contact with the hide throughout its length. The thick portion of the hide acts as a fulcrum upon which the operating roll a' turns, and as the operator continues to press upon the treadle b^{40}, the hanger box supporting the end of the roll a' out of contact with the thin portion of the hide, is brought nearer the table a, without causing the same end of the roll a^2 to be moved away from or out of contact with the hide on the other side of the table. This second pivotal, or what I prefer to designate as a rotary movement of the hanger boxes, is brought about in the present construction of apparatus, by pivoting the supports for the T-shaped levers B, the said supports being pivoted as at b^8.

By an inspection of Fig. 4, it will be seen that the center b^4 of the T-shaped lever, in the case above supposed, namely, with the roll a^2 in contact with the hide throughout its length, and one end of the roll a' in contact with a thick portion of the hide, while the other end of the roll a' is removed from contact with the hide, which latter end may be supposed to be that shown in Fig. 4, would occupy the position shown in said figure, but on the continued pressure upon the treadle b^{40}, the center of the T-shaped lever B shown in Fig. 4, would be moved toward the side of the table against which the roll a^2 acts, the support for the lever B turning on the pivot b^8 toward the left, viewing Fig. 4. The movement of the center b^4 from the position shown in Fig. 4 toward the left would naturally carry the end of the roll a^2 adjacent to the lever B shown in Fig. 4 away from the table or support, but the roll a^2 is in reality held in contact with the hide on the support while the lever B turns still farther toward the right, (viewing Fig. 4,) which additional movement of the lever B causes the end of the roll a' out of contact with the hide to be brought in contact with the hide, the drawing-in movement of the roll or rather the rod a^{26} causing the hanger boxes carrying the roll a' to turn on the pivot screws a^{16} a^{17} a^{23} a^{24}, the remote

or opposite end of the roll a' remaining in contact with the thick portion of the hide while this rotary or second pivotal movement incidentally effected by the thick portion of the hide, takes place. From this it will be seen that the normal position of the operating roll with relation to the carrier a and the hide or skin supported thereby, is parallel, but this parallelism may be destroyed or changed, and the operating roll placed at an angle to the table or carrier according to the uneven thickness of the hide or skin being acted upon.

In the machines of the class upon which this invention is an improvement, the traveling table has been positively moved in but one direction, namely, in its forward or upward direction between the rolls, and has been allowed to descend by gravity, the operating rolls at such time being separated to permit of the ready descent of the said table.

In practice, it has been demonstrated that a more efficient working of the leather may be accomplished, by having the operating rolls work upon the leather in both directions, and to accomplish this result, the traveling table or support a is positively driven in both directions. This result may be effected by mechanism as will now be described.

In the present instance, the traveling table or support a is secured at its opposite ends by bolts c (see Fig. 1) to sprocket chains c', only one of which is shown in said figure, the said sprocket chains being passed about a suitable sprocket wheel c^2 on a shaft c^3 supported at the top of the machine in suitable boxes c^4 sustained by a yoke or forked upright c^5, secured as by set screws c^6 to rods c^7 c^8 supported by the upper part 3 of each upright A A'. The sprocket chain c' is passed over the sprocket wheel c^2 and carried down and around a sprocket wheel c^{10}, which may be loosely mounted on the rock or treadle shaft b^{15}, or which may be mounted on a stud or pin at the bottom of the upright A, the two ends of the sprocket chain being suitably fastened to the table or support a, as by the bolts c. This manner of connecting the chains to the table is substantially the same as shown and described in United States Patent No. 444,173, dated January 6, 1891. The shaft c^3 constitutes what may be termed the table operating shaft, and in accordance with this invention, is positively rotated in opposite directions, that is, in one direction to elevate the table, and in the opposite direction to lower the table. This result may be effected after a manner as will now be described.

The shaft c^3 has mounted upon it a substantially large sprocket wheel c^{15} (see Fig. 3) about which is passed an endless chain c^{16}, which is passed about two sprocket wheels c^{17} c^{18} loosely mounted on independent shafts c^{19} c^{20} extended in the direction of the length of the machine and having bearings in the uprights A and A^{20}. The sprocket wheels c^{17} c^{18}, which are loose upon their respective shafts c^{19} c^{20}, may be rendered fast thereon by suitable clutch mechanisms, which may be of any suitable construction, but preferably of substantially the construction shown and described in the Patent No. 444,173 above referred to. The sprocket wheel c^{17} is adapted to be rendered fast on its shaft c^{19}, by the engagement of the clutch hub or sleeve c^{21} with the pivoted finger c^{22} (see Fig. 1), and the sprocket wheel c^{18} is adapted to be rendered fast on its shaft c^{20} by the engagement of the clutch hub c^{23} with the pivoted finger c^{24}. The shafts c^{19} c^{20} are coupled together to rotate in opposite directions by gears c^{25} c^{26}, which mesh with each other as shown in Fig. 3, and either shaft may be the main or driving shaft and be provided with fast and loose pulleys c^{27} c^{28}, the shaft c^{19} in the present instance, being represented as provided with the said fast and loose pulleys.

In practice it is preferred to have the table or support a travel downward at a faster rate than when traveling upward, and to accomplish this result, the sprocket wheel, which effects the positive downward movement of the table, is made larger than the sprocket wheel, which effects the upward movement of the table.

In the present instance, the sprocket wheel c^{18} is made larger than the sprocket wheel c^{17}, and the sprocket wheel c^{18} when rendered fast to its shaft c^{20} as represented in Fig. 1, causes the positive downward movement of the table or support a. The clutch hubs c^{21} c^{23} are operated by independent mechanisms, herein shown as elbow levers c^{30} c^{31} (see Figs. 1 and 3) fast on rock shafts c^{32} c^{33}, the rock shaft c^{32} having bearings in suitable uprights c^{34} c^{35}, and the rock shaft c^{33} having bearings in suitable uprights c^{36} c^{37}. In the present instance, the uprights c^{34} c^{37} are supported upon the beams A^3 A^2 and the uprights c^{35} c^{36} upon the cross beam c^{39} forming part of the foundation and shown in Fig. 5. The clutch operating levers c^{30} c^{31} are provided with forked upright arms c^{40} c^{41} respectively, and engage the grooved clutch hubs c^{21} c^{23} to produce a reciprocating motion of the said hubs on their respective shafts c^{19} c^{20} after the usual manner of clutch mechanisms.

The clutch operating levers c^{30} c^{31} may and preferably will be operated by an actuating mechanism, preferably of the construction herein shown, it consisting of a substantially open framework consisting of an upper curved bar d, a lower curved bar d' and substantially semi-circular tie bars d^2 d^3, the latter being secured to or forming part of the upper and lower bars d d' within their ends so as to form an open way for the travel of a grooved roller or weight d^5.

The actuating frame referred to, is mounted to rock in opposite directions, its lower curved bar d' having a shaft, pivot or rod d^7 mounted in suitable uprights d^8 d^9 on the supporting frame c^{39}. (See Figs. 3 and 5.) The rock shaft c^{32} is provided with an arm d^{12}, which projects

between the upper and lower bars comprising the frame at one end thereof, namely, at the rear end of the machine, and the rock shaft c^{33} is provided with a similar arm or crank d^{13} extended between the upper and lower bars d d' at the opposite or front end of the frame.

When the rocking frame is in its central position, that is, with the weighted roller d^5 supported above the pivot d^7 for the frame, the cranks or arms d^{12} d^{13} are at such time out of engagement with the upper and lower bars d d' of the rocking frame, and both clutch hubs are at such time withdrawn from engagement with the pivoted fingers c^{22} c^{24} of the clutch mechanisms, thereby rendering both sprocket wheels c^{17} c^{18} loose on their respective shafts. When it is desired to start the machine in operation, the rocking frame is tipped or turned from its central position in either direction, so that the weighted roller will automatically follow the inclination of the frame and run to either end of the same.

As represented in Figs. 1 and 3, the roller d^5 is, at what may be termed, the front end of the rocking frame, and at such time, the upper bar d has been depressed sufficiently to engage the horizontally extended arm d^{13} of the clutch operating mechanism, to rock the shaft c^{33} sufficiently to carry the clutch hub c^{23} forward and into engagement with the pivoted finger c^{24}, thereby rendering the sprocket wheel c^{18} fast on its shaft c^{20}. When the sprocket wheel c^{18} is rendered fast on its shaft, the sprocket chain c^{16} is caused to move in such direction as to rotate the substantially large sprocket wheel c^{15}, and the smaller sprocket wheel c^2 on the shaft c^3 in a direction to positively move the sprocket chain and its attached table in a direction to lower the table from its full line into its dotted line position in Fig. 1. When now it is desired to start the table A in its upward direction, the operator may rock the actuating frame on its pivot d^7, so as to elevate the front end of the same sufficiently to start the weighted roll d^5 toward the rear of the machine, and if the elevation of the front end of the rocking frame is sufficient to cause the weighted roller d^5 to run to the opposite end of its frame, the latter will be turned on its pivot d^7 so as to depress the rear end and elevate the front end. As the rear end of the rocking frame is depressed, its upper bar d engages the crank or arm d^{12} and depresses the same sufficiently to rock its shaft c^{32} in such direction as to move the clutch hub c^{21} forward or into engagement with the pivoted finger c^{22}, thereby rendering the loose sprocket wheel c^{17} fast on its shaft c^{19}, and at or about the time the crank or arm d^{12} is being acted upon to engage the clutch hub c^{21} with its pivoted finger c^{22}, the lower arm d' of the rocking frame engages the crank or arm d^{13} of the rock shaft c^{33} to elevate the said arm, and thereby rock the said shaft in a backward direction to disengage the clutch hub c^{23} from its co-operating pivoted finger c^{24}, thereby rendering the sprocket wheel c^{18} loose on its shaft. The sprocket wheel c^{17} being rendered fast on its shaft, causes the shaft c^3 to be rotated in the proper direction to elevate or raise the table a. When the table a has reached the limit of its movement in an upward direction, effected by the sprocket wheel c^{17}, the direction of travel of the table a may be positively reversed, by the operator bringing the rocking frame back into the position shown in Fig. 3, but I prefer to provide an automatic reversing mechanism, which will operate upon the rocking frame and elevate the rear end of the same sufficiently to cause the weighted roller to run to the opposite or front end of the same, and thereby render the sprocket wheel c^{17} loose on its shaft, and the sprocket wheel c^{18} again fast on its shaft. This automatic reversing mechanism may and preferably will be made substantially as herein shown, it consisting of a movable lever or bar d^{20} (see Figs. 1 and 5) pivoted as at d^{21} to the supporting beam or stringer A^3 and extended beneath the lower bar d' of the rocking frame, it having its front end joined by a flexible connection represented as a chain d^{22}, to the under side of the table or support a.

When the support or table a is in its normal or lower position represented in Fig. 1 by dotted lines, the chain or flexible connection d^{22} is slack and may rest upon the floor or other support, but in the upward travel of the table, the chain or flexible connection d^{22} is elevated along with the table, and when the table or support has reached the limit of its upward movement, the chain has been rendered taut and will elevate the front end of the lever or bar d^{20}, thereby causing it to elevate the rocking clutch actuating frame sufficiently to cause the roller d^5 to move to the front end thereof or into the position represented in Fig. 3.

It is desirable also to provide an automatic stopping mechanism for the apparatus when the table has reached the limit of its downward movement, that is, when the table has returned to its normal position. This result may be accomplished by a mechanism, preferably of the construction as will now be described.

The table or support has secured to it a cam or projection e (see Fig. 2) adapted to engage an upright arm e' preferably provided with a roller e^2, the upright arm being herein shown as provided with a horizontal extension e^3 fast on a rock shaft e^4 suitably supported upon the foundation and provided with a crank or arm e^6 upwardly curved as herein shown (see Figs. 1, 2 and 3) and extended under the crank or arm d^{13}, so as to engage the same when the rock shaft e^4 is rotated in a proper direction. Referring to Fig. 2, it will be seen that when the table or support a arrives at or near the limit of its downward movement, the cam e will engage the roller e^2 and will depress the arm e' sufficiently to rock the shaft e^4 in such direction

as will elevate the arm e^6, which on its upward movement will carry the lever d^{13} and the bar d of the clutch actuating frame upward from the position shown in Figs. 1 and 3, sufficiently far to bring the weighted roller d^5 to its central position substantially over the pivot d^7, in which position both clutch hubs will be disengaged, and both sprocket wheels c^{17} c^{18} will be loose on their respective shafts, the machine at such time being at rest.

The rolls a' a^2 are and may be rotated in opposite directions from the shafts a^{19} a^{20} by the sprocket chains e^{10} e^{12} (see Fig. 3) passed about sprocket wheels on the shafts a^{19} a^{20} and about sprocket wheels e^{20} e^{30} on the shafts or journals of the rolls a' a^2.

I prefer to employ two operating rolls a' a^2, but it is evident that some features of this invention may be applied to a machine employing but a single operating roll.

If desired, the table or support a may have connected to it a counterweight f suspended by a cord f' passed about a pulley f^2.

I claim—

1. In a machine of the class described, the combination of the following instrumentalities, viz:—a table or carrier to support the hide or skin, operating rolls between which the said table or carrier travels, and a driving mechanism which positively moves said table or carrier in opposite directions and an automatic reversing mechanism operated on the upward movement of the table, for the purpose specified.

2. In a machine of the class described, the combination of the following instrumentalities, viz:—a table or carrier to support the hide or skin, an operating device to act on the said hide or skin, hangers for said operating device pivotally supported to swing bodily toward the said table or carrier and capable of swinging different distances, and to partially rotate to permit the operating device to be presented at an angle to the said table or support and mechanism to effect the said partial rotation, for the purpose specified.

3. In a machine of the class described, the combination of the following instrumentalities, viz:—a table or carrier to support the hide or skin, a rotary lifting shaft connected to the table to lift the same, driving shafts rotatable in opposite directions, mechanism connecting the said lifting shaft with the oppositely rotatable driving shafts, and a reversing mechanism operated on the upward movement of the table to operatively connect one of the driving shafts with the lifting shaft and to disconnect the other driving shaft therefrom, substantially as described.

4. In a machine of the class described, the combination of the following instrumentalities, viz:—a table or carrier to support the hide or skin, operating rolls between which the said table or carrier travels, a driving mechanism to positively move said table or carrier in opposite directions, and an automatic stopping device operatively connected to the driving mechanism and actuated on the downward movement of the table to stop the operation of the driving mechanism producing said downward movement, for the purpose specified.

5. In a machine of the class described, the combination of the following instrumentalities, viz:—a table or support for the hide or skin, two operating rolls to act on the hide or skin on opposite sides of the said table or support, movable hangers to support said rolls, mechanism to normally hold said rolls separated to permit of the free passage between them of the said table, and comprising the substantially centrally pivoted levers B and links b b' pivoted supports for the levers B and means to operate said mechanism, substantially as described.

6. In a machine of the class described, the combination of the following instrumentalities, viz:—a table or support for the hide or skin, an operating roll co-operating therewith, hangers to support said roll and movable bodily toward the said table and rotary with relation thereto, to permit the operating roll to be presented at an angle to the said table, for the purpose specified.

7. In a machine of the class described, the combination of the following instrumentalities, viz:—the roll hangers having double pivotal supports at their upper ends and a pivotal support at their lower ends to permit the said hangers to swing bodily in one plane or direction and to move or partially rotate in another plane or direction, and an operating roll carried by said hangers, substantially as and for the purpose specified.

8. In a machine of the class described, the combination of the following instrumentalities, viz:—a reciprocating table to support the hide or skin, two operating rolls co-operating therewith, and a driving mechanism which positively moves the said table in both directions but at different speeds, and an automatic reversing mechanism operated on the upward movement of the table substantially as described.

9. In a machine of the class described, the combination of the following instrumentalities, viz:—the rods a^{26} a^{27}, the levers B and links b b' connecting the said levers to said rods, pivoted supports for the levers B the power shaft provided with cranks or arms and the links or rods connecting said levers to said cranks or arms, substantially as described.

10. In a machine of the class described, the combination of the following instrumentalities, viz:—a reciprocating table or support for the hide or skin, and a driving mechanism to positively move said table in opposite directions and consisting of two shafts a^{19} a^{20}, sprocket wheels loose thereon, clutch mechanisms co-operating with said loose sprocket wheels, and a clutch actuating mechanism consisting of a pivoted frame and a movable weight or roller carried thereby to operate, substantially as described.

11. In a machine of the class described, the combination of the following instrumentalities, viz:—a vertically movable table or carrier to support the hide or skin, two operating rolls located on opposite sides of the said table and normally separated, doubly pivoted hangers normally supporting said rolls substantially parallel with the plane of travel of the table, but capable of a rotary motion to permit the operating rolls to be presented at an angle to said table whereby skins of uneven thickness may be acted upon, substantially as described.

12. In a machine of the class described, the combination of the following instrumentalities, viz:—a vertically movable table or carrier to support the hide or skin, two operating rolls located on opposite sides of said table and normally separated, doubly pivoted hangers normally supporting said rolls, substantially parallel with the plane of travel of the table, but capable of a rotary motion to permit the operating rolls to be presented at an angle to said table to permit skins of uneven thickness to be acted upon, a power shaft provided with cranks or arms, and intermediate levers connected to the said cranks or arms and operatively connected to the said rolls, substantially as described.

13. In a machine of the class described, the combination of the following instrumentalities, viz:—a vertically movable table or carrier to support the hide or skin, two operating rolls located on opposite sides of said tables and normally separated, doubly pivoted hangers normally supporting said rolls substantially parallel with the plane of travel of the table, but capable of a rotary motion to permit the operating rolls to be presented at an angle to said table to permit skins of variable thickness to be acted upon, mechanism to positively move said table in opposite directions, and an automatic reversing mechanism operated on the upward movement of the table, substantially as described.

14. In a machine of the class described, the combination of the following instrumentalities, viz:—a reciprocating table or carrier to support the hide or skin, sprocket chains to which said table is secured, a shaft c^3, sprocket wheels thereon and about which the said sprocket chains are passed, a sprocket wheel c^{15}, independent driving shafts provided with loose sprocket wheels, a sprocket chain passed about said loose sprocket wheels and the wheel c^{15}, clutch mechanisms co-operating with said loose sprocket wheels, and an actuating mechanism for said clutch mechanisms to alternately render the loose sprocket wheels fast on their respective shafts, substantially as described.

15. In a machine of the class described, the combination of the following instrumentalities, viz:—a table or carrier to support the hide, operating rolls between which the said table or carrier travels, and a driving mechanism for said table or carrier comprising a table lifting shaft, oppositely-rotating shafts connected with the said lifting shaft, and mechanism to positively connect the lifting shaft with the said driving shafts, for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

IRA VAUGHN.

Witnesses:
JAS. H. CHURCHILL,
J. MURPHY.