(No Model.)

I. VAUGHN.

5 Sheets—Sheet 1.

APPARATUS FOR TREATING HIDES OR SKINS.

No. 525,372. Patented Sept. 4, 1894.

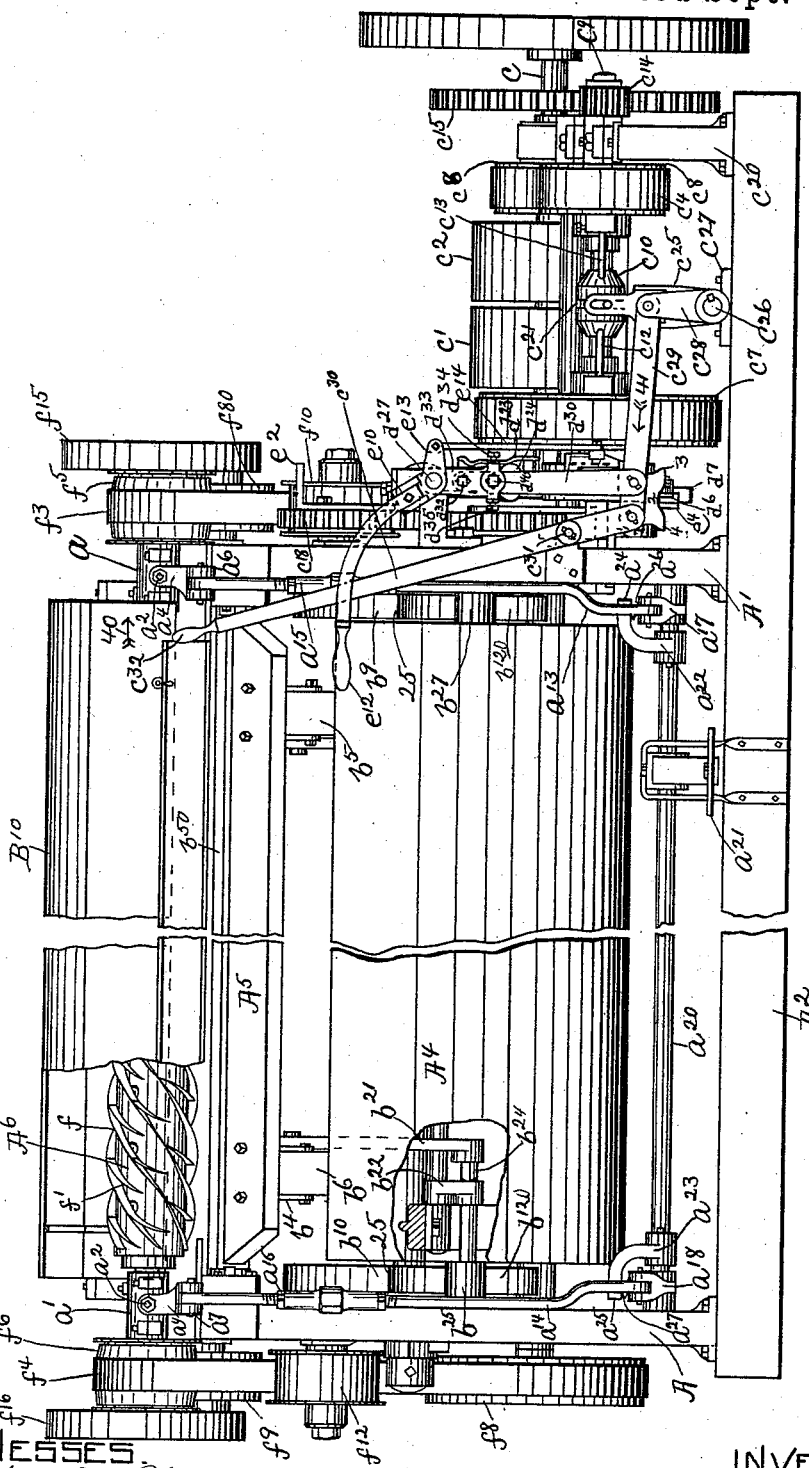

Fig. 1.

WITNESSES.
Matthew M. Blunt.
J. Murphy.

INVENTOR
Ira Vaughn
by Jas. H. Churchill
Atty

(No Model.) 5 Sheets—Sheet 2.

I. VAUGHN.

APPARATUS FOR TREATING HIDES OR SKINS.

No. 525,372. Patented Sept. 4, 1894.

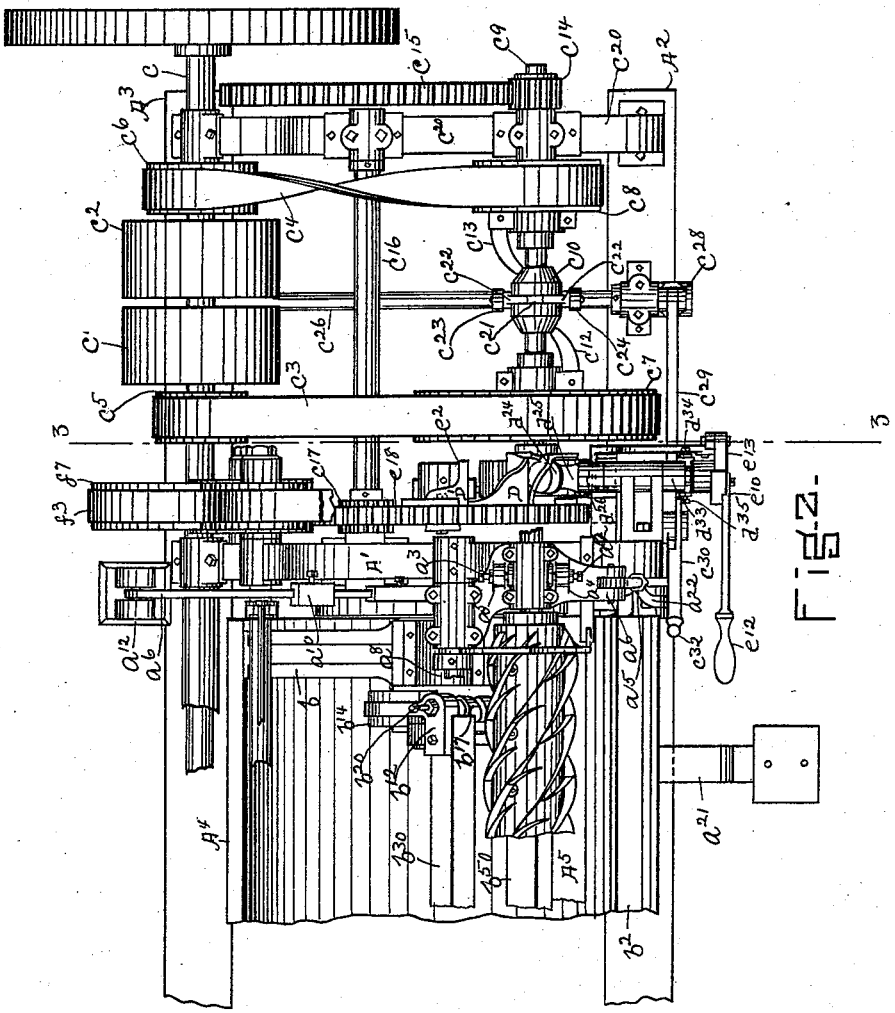

FIG. 2.

WITNESSES.
Matthew M. Blunt.
J. Murphy.

INVENTOR.
Ira Vaughn
by Jas. F. Schmehil
Atty.

(No Model.) 5 Sheets—Sheet 3.

I. VAUGHN.

APPARATUS FOR TREATING HIDES OR SKINS.

No. 525,372. Patented Sept. 4, 1894.

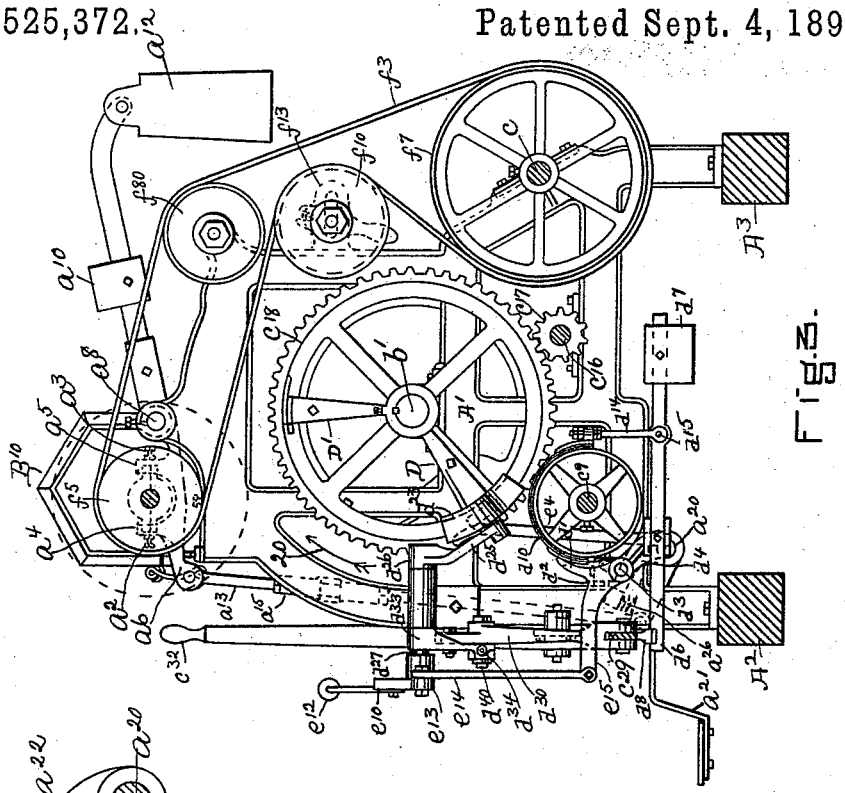

Fig. 3.

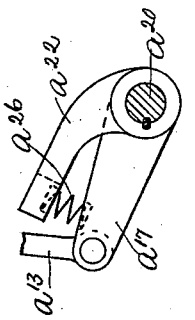

Fig. 5.

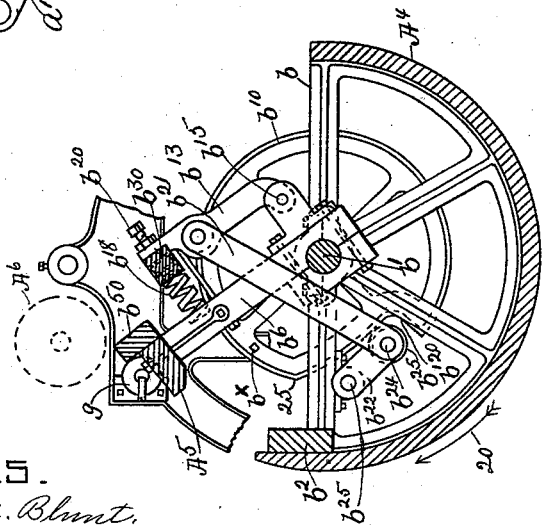

Fig. 4.

WITNESSES.
Matthew M. Blunt.
J. Murphy.

INVENTOR.
Ira Vaughn
by Jas. H. Lehmuhill
Atty.

(No Model.) I. VAUGHN. 5 Sheets—Sheet 4.

APPARATUS FOR TREATING HIDES OR SKINS.

No. 525,372. Patented Sept. 4, 1894.

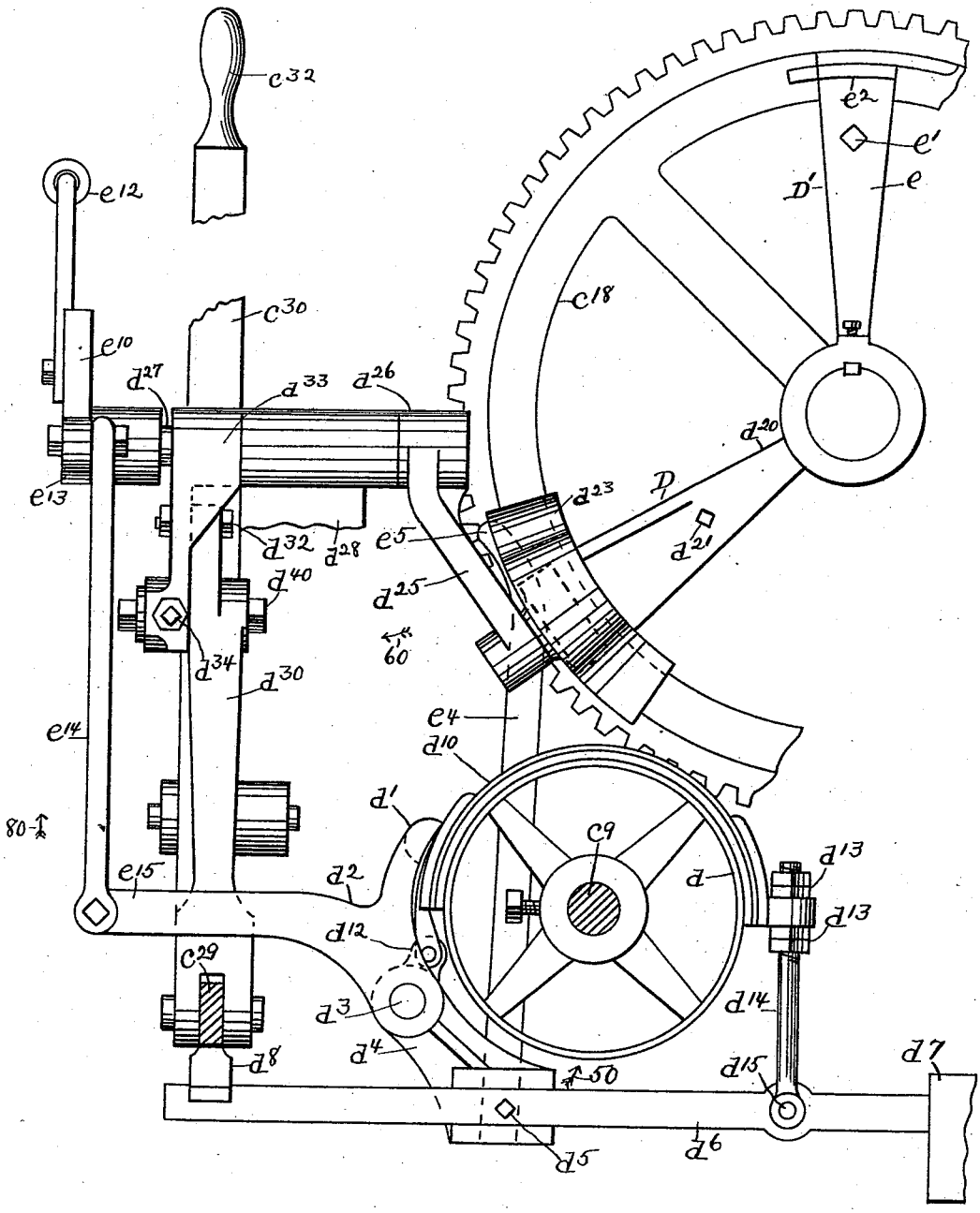

Fig. 6.

WITNESSES.
Matthew M. Blunt.
J. Murphy

INVENTOR.
Ira Vaughn
by Jas. H. Schenchler
Atty.

(No Model.) 5 Sheets—Sheet 5.

I. VAUGHN.

APPARATUS FOR TREATING HIDES OR SKINS.

No. 525,372. Patented Sept. 4, 1894.

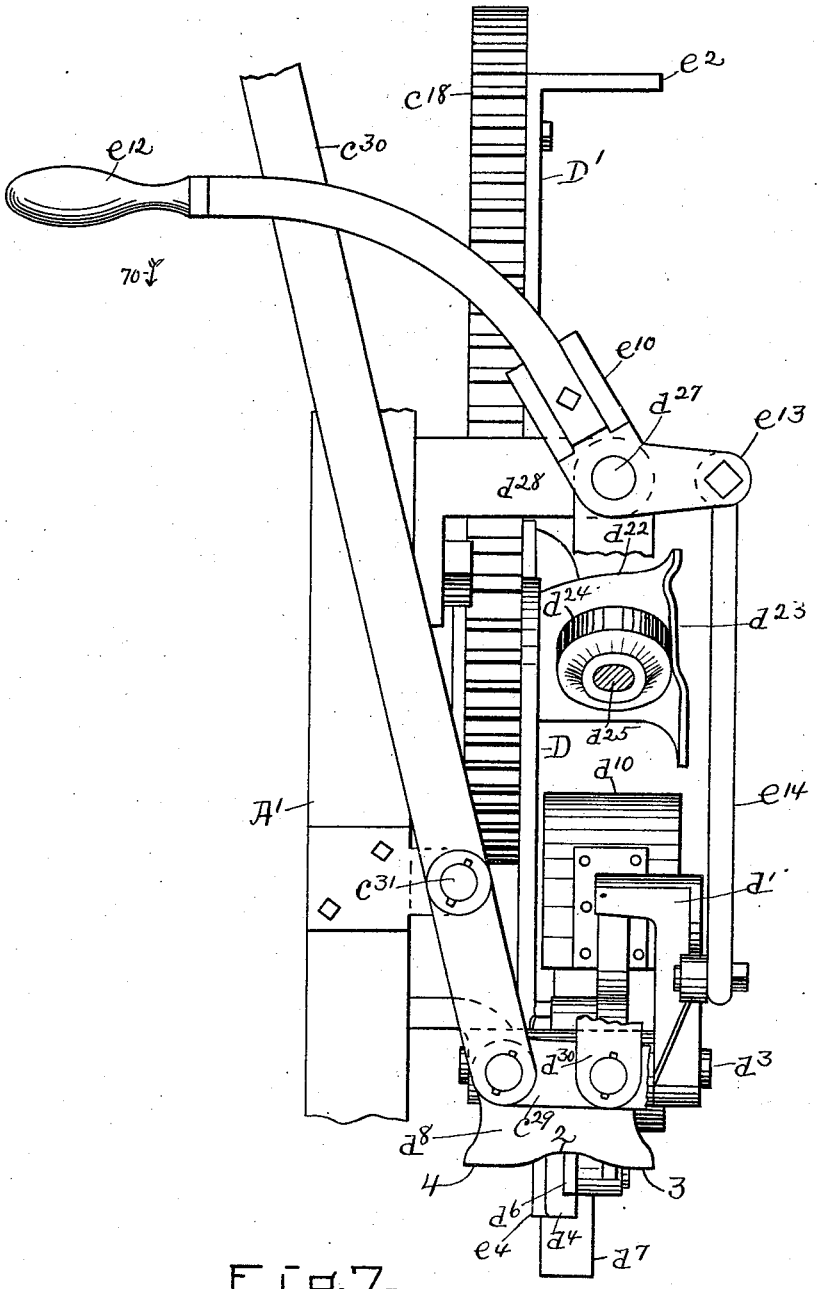

Fig. 7.

WITNESSES.
Matthew M. Blunt.
J. Murphy.

INVENTOR.
Ira Vaughn
by Jas. H. Lehmachie
Atty.

UNITED STATES PATENT OFFICE.

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

APPARATUS FOR TREATING HIDES OR SKINS.

SPECIFICATION forming part of Letters Patent No. 525,372, dated September 4, 1894.

Application filed February 14, 1894. Serial No. 500,152. (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 Apparatus for Treating Hides or Skins, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

This invention relates to a machine or apparatus for the treatment of hides and skins, either untanned or tanned, and such for instance as breaking and fleshing, unhairing, slating, working-out, green shaving, scouring, scrieving and shaving, setting-out, buffing and whitening, but which for the purpose of this invention may be described as for unhairing the hide or skin.

My present invention is embodied in a machine of the class shown and described in United States Patent, No. 373,112, dated November 15, 1887, to which reference may be had, wherein a working roll co-operates with a supporting drum or table upon which the hide is placed, one part being movable bodily toward and from the other part, the working roll in the machine shown in the patent referred to, being the movable part, but which latter might be the drum or table.

One feature of this invention consists in providing a machine of the class referred to and including a working roll and a supporting drum or table, one of which is movable with relation to the other, with a yielding connection between the movable part and the power required to move said part, and in providing the movable part with pivotal or universal bearings whereby the normal parallelism between the two parts may be changed to effect an efficient and uniform action upon a hide of varying thickness, so that the thin parts of the hide may be acted upon to the same extent as the thick parts of the hide.

Another feature of this present invention consists in a positively operated clamp, preferably of a construction as will be described, whereby the hide or skin being acted upon may be more firmly gripped, which is especially advantageous with slippery hides or skins and obviates all danger of the hide or skin being drawn out of the clamp by the action of the working roll, even when a great pressure is exerted upon the movable part.

This invention further consists in a positive driving and stopping mechanism as will be described, whereby a more sensitive and controllable machine is obtained, which can be started and stopped by the operator substantially in an instant with the parts in any position, an advantage which will be hereinafter specifically referred to.

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 partially broken out of a machine or apparatus for treating hides and skins and embodying this invention. Fig. 2, is a top or plan view partially broken out of the right hand portion of the apparatus shown in Fig. 1; Fig. 3, a transverse section on the line 3—3, Fig. 2 looking toward the left; Fig. 4, a sectional detail to more clearly show the construction of the clamp; Fig. 5, a detail of one form of yielding connection to be referred to; Fig. 6, a detail in side elevation and on an enlarged scale to more clearly show the form of stopping mechanism preferred by me, and Fig. 7, a detail in front elevation of the portion of the apparatus shown in Fig. 6.

In the machine herein shown, the operating parts are supported in a suitable framework which is represented in Fig. 1 as consisting of two sides or uprights A A′ secured at their front and rear ends to a suitable foundation or support represented as two longitudinally extended beams A^2 A^3 (see Fig. 3). Each of the side frames A A′ is preferably made open or after the manner shown in Fig. 3. The operating parts supported by the framework consists essentially of a drum, table or support A^4, a clamping bar A^5 co-operating therewith as will be described, and an operating roll A^6. In the present embodiment of this invention, the operating roll A^6 is movable toward and away from the drum or table A^4, and one of the features of this invention consists in providing a construction as will be described, which enables the roll or movable part A^6 to accommodate itself to skins of varying thickness, when the latter are placed in operative position on the drum

or table A^4. To effect this result, the roll A^6 is supported or journaled in boxes $a\ a'$, each of which is pivotally supported substantially at right angles to the length of the roll as by set screws $a^2\ a^3$ (see dotted lines Fig. 3) in lugs or ears $a^4\ a^5$ on pivoted levers $a^6\ a^7$, the said levers being pivoted as at a^8 in the side frames A' A. The levers $a^6\ a^7$ are provided at their rear ends with one or more counterbalancing weights $a^{10}\ a^{12}$, and the said levers are connected at their front ends by links $a^{13}\ a^{14}$, preferably provided with extensible sections $a^{15}\ a^{16}$, to cranks $a^{17}\ a^{18}$ loosely mounted on a rock shaft a^{20}, herein represented as having fast to it a foot treadle a^{21}, the said rock shaft in the present embodiment of this invention constituting the power shaft by which the movable roll or part A^6 of the machine is brought toward the drum A^4. The treadle or power shaft a^{20} has keyed or otherwise fastened to it near its opposite ends, two cranks or arms $a^{22}\ a^{23}$ herein shown as provided with bent fingers or portions $a^{24}\ a^{25}$, which extend over and above the cranks or arms $a^{17}\ a^{18}$, and between which cranks or arms and the said fingers are interposed yielding devices or substances, herein represented as spiral springs $a^{26}\ a^{27}$, but which may be of rubber or other suitable material.

The operation of the rock or power shaft a^{20} by the depression of the treadle a^{21} compresses the springs $a^{26}\ a^{27}$ until the power is transmitted to the cranks $a^{17}\ a^{18}$, and from the said cranks the said power is transmitted by the connecting links $a^{13}\ a^{14}$ to the ends of the pivoted arms $a^6\ a^7$, which are turned on their pivots a^8 by such application of power so as to bring the roll A^6 down toward the drum or support A^4, and by reason of the journal boxes of the said roll being pivoted in the said arms, it will readily be seen that if one end of the roll is arrested in its movement toward the drum A^4 as by the interposition of a thick portion of the hide or skin, the other end of the roll is free to be carried down still farther toward the drum A^4 as will be more fully set forth hereinafter.

The drum or table A^4 may and preferably will be made substantially as described in the patent above referred to, it consisting of a series of metal arms or spiders b (see Fig. 4) to which the circumference of the drum preferably of wood is secured, the said metal arms or spiders being fast on a shaft b' journaled in suitable boxes supported by the side frames A A'. In the present instance, the drum or table A^4 is shown as substantially semicircular and is provided at the front portion of the machine with a longitudinally extended bar b^2, beyond which the periphery of the drum is preferably extended, as clearly shown in Fig. 4, to form a jaw on the drum with which co-operates the jaw or bar A^5 constituting one member of the movable jaw of the skin or hide clamping mechanism, the said clamping jaw being preferably made as herein shown (see Fig. 1) it consisting of a single bar firmly secured as by bolts b^4 to arms $b^5\ b^6$ loosely mounted on the drum shaft b'. The member A^5 of the movable jaw of the clamp may be reinforced by a back piece b^{50} firmly secured to or forming part of the jaw or bar A^5. The movable member or bar A^5, in accordance with this invention, is positively acted upon by cams $b^9\ b^{10}$, which in practice are stationary, and are secured to the side frames A' A as by suitable bolts $b^\times$ (see Fig. 4). The cams $b^9\ b^{10}$ are shown in the present instance as peripheral cams, and have their periphery reduced in diameter or cut away for a portion of their length as at b^{120} (see Figs. 1 and 4) for a purpose as will be described.

In order to obtain a gradual gripping of the movable jaw A^5 against the hide or skin carried by the drum, the clamp carrying arms $b^5\ b^6$ are acted upon by levers $b^{12}\ b^{13}$ (see Figs. 2 and 4) constituting the second movable member of the clamping mechanism, the said levers being pivoted at one end in suitable lugs or uprights $b^{14}\ b^{15}$ erected from the clamp carrying arms $b^5\ b^6$, and having interposed between them and the member A^5, buffers or cushions, preferably spiral springs $b^{17}\ b^{18}$, suitably seated in the clamp carrying arms $b^5\ b^6$ and in the levers $b^{12}\ b^{13}$, the said springs being represented as capable of adjustment to regulate their tension by means of screws b^{20} extended through the ends of the levers $b^{12}\ b^{13}$. Each lever $b^{12}\ b^{13}$ is connected by links $b^{21}\ b^{22}$ (see Fig. 4) to a rod or shaft b^{25} supported in suitable bearings attached to the spiders or arms b of the drum, the link b^{21} attached to the lever b^{13} being connected by a rod or pin b^{24} to the link b^{22}, the said rod or pin having mounted upon it a loose roller b^{25}, which co-operates with the cam b^{10}, and the link b^{21} connected to the lever b^{12} is joined to its operating link b^{22} by a rod similar to the rod b^{24} and upon which is mounted a loose roller b^{27} shown at the right in Fig. 1.

In the normal position of the apparatus when not in use, the loose rollers $b^{25}\ b^{27}$ engage with the cut-away portions b^{120} of the stationary cams $b^9\ b^{10}$, and in the forward movement of the drum or table A^4 in the direction indicated by arrow 20, Fig. 4, the said rollers are carried with the drum up onto the periphery of the stationary cams $b^9\ b^{10}$, and when the said rollers have reached the full periphery of the said stationary cams at the point marked 25, Figs. 1 and 4, the springs or buffers $b^{17}\ b^{18}$ will at such time be placed under compression, and the clamping jaw A^5 will at such time firmly clamp the hide or skin between it and the fixed jaw on the drum, as will be hereinafter more specifically described in the operation of the apparatus.

The levers $b^{12}\ b^{13}$ are preferably connected together by means of a tie bar b^{30} (see Figs. 2 and 4) which serves to strengthen the clamping mechanism. The drum or table A^4 is designed to have an oscillating or rotary reciprocating motion, and one of the features of

this invention consists in providing a positive driving and stopping mechanism for the said drum, by means of which a more sensitive and controllable machine may be obtained, and whereby the starting and stopping of the mechanism substantially in an instant from any position or any point, may be effected, which is especially advantageous in that the operator can stop the machine at any point in the travel of the drum A^4, if he should see that a particular portion of the hide or skin was not going to be acted upon correctly, thereby avoiding damage to the skin by such improper action of the operating roll A^6.

The positive driving mechanism referred to in the present instance, comprises essentially a main shaft c, which may be positively driven in any suitable manner, and which is represented herein as provided with a fast and loose pulley c' c^2. The main shaft c is connected in the present instance to a counter shaft c^9 by a straight belt c^3 and a cross belt c^4 passing respectively over pulleys c^5 c^6 fast on the main shaft c and over pulleys c^7 c^8 on the counter shaft c^9, upon which latter the pulleys c^7 c^8 are loosely mounted, but which are adapted to be rendered fast to the counter shaft by a clutch mechanism, which may and preferably will be of a construction such as shown and described in United States Patent No. 444,173, dated January 6, 1891, and which clutch mechanism is not herein claimed broadly. The clutch mechanism referred to, consists of a movable hub c^{10} keyed to the counter shaft c^9 and adapted to engage pivoted arms or clutch levers or fingers c^{12} c^{13}, operatively connected to the pulleys c^7 c^8 respectively, so that when the clutch hub c^{10} is moved under the pivoted finger or arm c^{12}, the pulley c^7 will be rendered fast to the counter shaft c^9, and when the said clutch hub is moved under the pivoted finger or arm c^{13}, the loose pulley c^8 will be rendered fast to the counter shaft c^9. The counter shaft c^9 is positively connected to the drum or table A^4 to drive the same by suitable gearing, herein shown as consisting of a pinion c^{14} on the counter shaft c^9 in mesh with a gear c^{15} on one end of a shaft c^6, having at its other end a pinion c^{17}, which meshes with a gear c^{18} keyed or otherwise firmly secured to the drum shaft b', as clearly shown in Figs. 2 and 3. The shafts c, c^9, c^{16} are and may be supported in suitable bearings at one end in the side frame A' and at their other end in a substantially small upright or frame c^{20}. The clutch hub c^{10} is and may be of any usual construction, it being provided with an annular groove c^{21}, engaged by studs c^{22} carried by the forked arms c^{23} c^{24} on a crank or arm c^{25} fast on a rock shaft c^{26}, herein shown as extended from the front to the rear of the machine and supported in suitable bearings c^{27}, preferably resting upon the supporting beams A^2 A^3.

The rock shaft c^{26} and the clutch hub c^{10} are designed to be both positively and automatically operated to engage the clutch hub c^{10} with one arm or finger c^{12} to render the pulley c^7 fast on the counter shaft c^9, and with the arm or finger c^{13} to render the loose pulley c^8 also fast on the shaft c^9.

As represented in the drawings, the rock shaft c^{26} has fast on it a crank or arm c^{28}, connected by a link c^{29} to one end of a lever c^{30}, pivoted as at c^{31} to the side supporting frame A', the said lever being provided as shown with a handle c^{32} by which the operator may actuate the rock shaft c^{26} and the clutch hub c^{10} connected therewith.

When the handle c^{32} of the lever c^{30} is moved in the direction indicated by arrow 40 from its normal position shown in Fig. 1, the lever c^{30} is turned on its pivot so as to move the link c^{29} in the direction of arrow 41 and thereby rock the shaft c^{26} so as to bring the clutch hub c^{10} under the pivoted finger or arm c^{12}, and thereby lock the loose pulley c^7 to the counter shaft c^9. When the loose pulley c^7 is thus locked to the shaft c^9, the said shaft is driven in a direction to move the drum or table A^4 in the direction indicated by arrow 20 in Figs. 3 and 4, and when the handle c^{32} of the lever c^{30} is moved from its normal position indicated in Fig. 1 to the left or in the direction opposite to the arrow 40, the link c^{29} is moved in a direction opposite to that indicated by the arrow 41, and the rock shaft c^{26} is rocked in such direction as will bring the clutch hub c^{10} under and into positive engagement with the pivoted finger or arm c^{13} thereby locking the loose pulley c^8 to the counter shaft c^9, which, by reason of the cross belt c^4 is driven in a reverse direction, so as to produce a reverse movement of the drum or table A^4, that is, in a direction opposite to that indicated by arrow 20 in Figs. 3 and 4, which reverse movement brings the drum back into its starting position, and when in this position, the operator brings the lever c^{30} into the position indicated by full lines in Fig. 1, at which time the clutch hub c^{10} is practically disengaged from the pivoted fingers or arms c^{12} c^{13}, and the pulleys c^7 c^8 are at such time loose on the counter shaft c^9.

The apparatus herein shown is provided with a brake mechanism preferably of the construction herein shown (see Figs. 6 and 7) it consisting of a brake wheel d fast on the counter shaft c^9, and in the present instance located on the said shaft between the loose pulley c^7 and the side frame A'. The brake wheel d has co-operating with it a brake shoe d' secured to or forming part of the lever d^2 pivoted as at d^3 to a suitable stationary portion of the framework and having an arm e^{15}, to which is connected an operating mechanism as will be described.

The pivot d^3 has loose on it a second lever d^4 having secured to it as by bolt d^5, (see Fig. 6) a rod or bar d^6 provided at its rear end with a suitable weight d^7 and having its front end extended beneath a cam shaped piece d^8 secured to or forming part of the lever c^{29}. The brake wheel d has co-operating with it a

strap d^{10}, adapted to engage the upper portion of the brake wheel d, and having one end pivotally secured to an arm d^{12} of the lever d^4, the other end of the brake strap d^{10} being preferably adjustably secured as by check nuts d^{13} to a rod d^{14} pivotally connected as at d^{15} to the rear end of the bar d^6. In the present instance, the cam shaped piece d^8 is provided with a substantially central depression marked 2 in Fig. 7, with which portion the end of the rod or bar d^6 is normally engaged, the said brake cam being made thicker at its ends as at 3—4, so that when either end of the brake cam is moved into engagement with the upper surface of the bar d^6, the said bar will be depressed at its front end and its rear end will be elevated, thereby turning the lever d^4 upward or in a direction indicated by arrow 50, Fig. 6, so as to withdraw the brake strap d^{10} from engagement with the brake wheel d, thereby leaving the shaft c^9 free to be rotated.

By an inspection of Fig. 6, it will be seen that when the bar d^6 is in engagement with the reduced portion 2 of the brake cam d^8, the weight d^7 predominates and moves the rear end of the bar d^6 downward, and by means of the rod d^{14} brings the brake strap d^{10} into engagement with the brake wheel d'. The brake cam d^8 is moved so as to bring the active surface 3 into engagement with the bar d^6, when the lever c^{30} is moved so as to engage the clutch hub c^{10} with the finger or arm c^{12}, and thereby rotate the drum in its forward direction, and the active surface 4 of the brake cam d^8 will be brought into engagement with the bar d^6, when the lever c^{30} is moved to the left in Fig. 1, so as to bring the clutch hub c^{10} into engagement with the finger c^{13} to produce reverse movement of the drum A^4.

When the lever c^{30} is in its central position represented in Figs. 1 and 7, the bar d^6 is engaged by the reduced portion 2 of the brake cam d^8, and the weight d^7 at such time automatically applies the brake band or strap d^{10} to the brake wheel d, thereby automatically but positively stopping the machine.

In practice, the movement of the drum or table A^4 both in a forward and in a backward direction is preferably positively controlled by the operator actuating the lever c^{30}, but in order to guard against accident in case the attention of the operator should be diverted, I prefer to provide the apparatus with automatic mechanism as will now be described, by means of which the forward rotation or movement of the drum or table A^4 may be automatically limited, as may also the return or backward movement of the said drum or table.

In order to automatically stop the machine on the return movement of the drum A^4 in case the operator should neglect to throw the lever c^{30} to its normal or central position, as for instance by reason of his attention being momentarily diverted from his work, a cam D is secured to the gear wheel c^{18}, the said cam being preferably made as herein shown and consisting of a stem or shank d^{20} adapted to be attached as by a bolt d^{21} to a spoke of the gear wheel c^{18}, and having at its outer end a bent arm comprising the members d^{22} d^{23} (see Fig. 7) the member d^{22} being made of sufficient length to enable the member d^{23} to pass by, but to engage a roller d^{24} on an arm d^{25} of a hub d^{26}, fast on a shaft d^{27}, having bearings in suitable brackets d^{28} attached to the side frame A'. The member d^{23} of the cam D is suitably shaped to engage the roller d^{24} on the movement of the drum in a direction opposite to that indicated by the arrow 20, so as to turn the shaft d^{27} in such direction as will bring the clutch hub c^{10} to its central position, represented in Figs. 1 and 2, the reduced portion 2 of the brake cam being also brought into engagement with the bar b^6. The movement of the clutch hub c^{10} may and preferably will be accomplished by a construction substantially as herein shown, it consisting of a link d^{30} (see Figs. 1 and 6) pivotally connected at its lower end to the link c^{29}, and having its upper end loosely pivoted as at d^{32} to a crank or arm d^{33}, fast on the shaft d^{27} and provided in the present instance with an adjustable connection between the link d^{30} and the crank or arm d^{33}, which adjustable connection is represented in Figs. 1 and 6 as obtained by two set screws d^{34} d^{35} extended through the opposite sides of the crank or arm d^{33} and engaging, as shown in the present instance, a bolt or rod d^{40} extended through the link d^{30} and the crank or arm d^{33}, and practically forming a lug or projection on the link d^{30}. The bolt or rod d^{40} is adapted to be positively engaged by the set screws d^{34} d^{35} and firmly clamped between the same, after the link d^{30} has been moved or adjusted to place the clutch hub c^{10} in its central position.

As above described, the member d^{23} on the cam D is adapted to engage the roller d^{24} and rock the shaft d^{27}, its attached crank d^{33} and the link d^{30}, so as to bring the clutch hub c^{10} into its central position, and at the same time bring the reduced portion 2 of the brake cam into engagement with the bar d^6, to permit the brake strap d^{10} to be automatically applied to the brake wheel d on the return or backward movement of the drum or table A^4, in case the operator should fail to positively move the operating lever c^{30} so as to control the clutch hub c^{10} and apply the brake.

On the forward movement of the drum or table A^4 in the direction of the arrow 20, it might happen that the drum may be carried farther than would be desired, if the operator should neglect to reverse the actuating lever c^{30}, and to automatically prevent this taking place, the gear wheel c^{18} has attached to it a second cam D' shown in Fig. 6 as an arm e attached as by a bolt e' to a spoke of the gear wheel c^{18}, and provided with a substantially right angled triangular shaped piece e^2 (see Figs. 1, 2 and 6) constituting a cam, which

is adapted, on the movement of the gear wheel c^{18} in the direction indicated by arrow 20 beyond the point at which it is normally desired the rotation of the drum should be stopped, to engage the roller d^{24} and rock the shaft d^{27} so as to move the clutch hub c^{10} back into and beyond its central position to thereby engage the said clutch hub with the finger c^{13} to render fast to the shaft c^9, the pulley c^8, which produces a reverse movement of the drum, and the said cam also preferably engages an upright arm or rod e^4, secured to or forming part of the lever d^4, the arm e^4 being preferably bent at its upper end as at e^5, so that the cam e^2 will act gradually to force the arm or rod e^4 downward and toward the front of the machine or in the direction indicated by arrow 60 (Fig. 6), so as to move the lever d^4 substantially in the direction of arrow 50, to remove the strap d^{10} when the clutch hub c^{10} is brought into its central position, as the said clutch hub is moved by the reversing cam from engagement with the finger c^{12}, thereby automatically stopping or limiting the rotation of the drum in its forward direction and at the same time starting the drum on its reverse rotation.

In some instances, it may be desired to apply the brake to the brake wheel substantially in an instant without necessitating the movement of the brake cam d^8, and this result may be accomplished as herein shown by means of a lever e^{10} (see Fig. 7) provided with a handle e^{12} and loosely mounted on the shaft d^{27}, the said lever having its arm e^{13} joined by a link e^{14} to the arm e^{15} of the brake lever d^2, and by an inspection of Figs. 6 and 7, it will be seen that, when the handle e^{12} is moved in the direction indicated by the arrow 70, the lever e^{10} will be turned on its pivot d^{27} so as to lift the link e^{14}, and thereby move the arm e^{15} of the brake lever d^2 in the direction indicated by arrow 80, Fig. 6, to apply the brake shoe d' to the brake wheel d.

The drum or table A^4 in practice may if desired be provided with a covering of felt or rubber and leather, substantially as shown and described in United States Patent No. 373,112, dated November 15, 1887.

The operating roll A^6 may and preferably will be provided with spiral vanes f extending from substantially the center of the roll toward its opposite ends as indicated in Figs. 1 and 2, and the said roll may be also provided if desired with auxiliary vanes f' extending from the spiral vanes f at an angle thereto, the said vanes in practice constituting the acting blades of the roll. The operating roll A^6 may be driven from the main shaft c by means of belts f^3 f^4 passed about pulleys f^5 f^6 on the opposite ends of the shaft of the roll A^6, and also about driving pulleys f^7 f^8 (see Figs. 1 and 3) fast on the shaft c, and for the best results, I prefer that the belts f^3 f^4 should pass over idler pulleys f^8, f^9 pivotally mounted in the side frames A′ A, and also about auxiliary pulleys f^{10} f^{12} which latter pulleys are for the best results adjustably secured in slotted arms f^{13} attached to or forming part of the side frames A′ A, the shafts of the pulleys f^{10} f^{12} being adapted to be adjusted in slots in the arms f^{13} to take up the slack of the belts f^3 f^4. I prefer also to provide the shaft of the operating roll A^6 at its opposite ends with balance wheels or disks f^{15} f^{16}.

In the operation of my improved machine or apparatus, the hide or skin to be treated may and preferably will be placed over the edge of the drum or table A^4, so that the said hide or skin may be clamped firmly between the fixed jaw b^2 carried by the drum and the movable jaw A^5 of the clamp. In practice, it is customary for the workman to place the hide or skin, so that substantially one-half of the said hide or skin is on the outside of the drum, and the other half of the skin lies within the drum, only one-half of the surface being acted upon in one complete movement of the drum.

In order that the operation of the apparatus may be more clearly comprehended, let it be supposed that the operator has placed a skin so that substantially one-half of the skin or hide lies upon the outside of the drum or support, the remaining half lying within the drum. When the skin is thus placed upon the drum or support A^4, the operator moves the lever c^{30} in the direction indicated by arrow 40, Fig. 1, and thereby brings the clutch hub c^{10} into engagement with the pivoted finger or arm c^{12}, so as to render the loose pulley c^7 fast to the counter shaft c^9, and thereby produce movement or rotation of the drum or support A^4 in the direction indicated by arrow 20, Fig. 4. As the drum A^4 is moved in the direction indicated by the arrow 20, it carries the skin with it, which hangs loose and unclamped on the fixed jaw b^2 carried by the drum, until the drum has been carried sufficiently far to strike against the clamping jaw A^5, at which time the rollers b^{25} b^{27} will have been carried by the movement of the drum up onto the point 25 of the stationary cams b^9 b^{10}, and on the continued movement of the drum A^4 in the direction indicated by arrow 20, these rollers travel over the full periphery of the cams b^9 b^{10}, and through the intervention of the links b^{21}, move the levers b^{12} b^{13} so as to compress the springs b^{17} b^{18} and firmly yet yieldingly press the member or jaw A^5 of the clamp against the fixed jaw b^2, thereby firmly securing the hide or skin to the drum A^4 and maintaining the said hide thus firmly clamped during the forward and backward movement of the drum, until released by the rollers b^{25} b^{27} passing off from the periphery of the stationary cams into the cut-away portions b^{120} of the said cam, on the backward movement of the drum A^4. It will thus be seen that the hide or skin is positively and firmly clamped between the jaws $A^5 b^2$, and this is of special advantage when slippery or slimy hides are

being treated, as the hide is so securely clamped that all danger of its being drawn out from between the clamp by the operating roll A^6 is avoided, even when the said roll is caused to act on the hide under substantially great pressure.

As the drum or support A^4 is moved forward in the direction indicated by arrow 20, the operator in the present construction of apparatus depresses the treadle a^{21}, so as to move the operating roll A^6 down into contact with the hide or skin on the drum, at or about the time the said hide or skin has been firmly secured between the clamping jaws b^2 A^5. When the treadle a^{21} is depressed, the power shaft a^{20} is rocked, and this rocking motion is transmitted to the levers a^6 a^7 in which the journal boxes of the roll A^6 are pivotally supported, and by reason of the pivotal support for the ends of the shaft of the operating roll A^6, which it will be remembered for the purpose of this invention is to be regarded as the movable member or part of the apparatus, and also by reason of the yielding connection interposed between the power shaft a^{20} and the roll A^6, which yielding connection in the present instance is shown as spiral springs a^{26} a^{27} interposed between the fingers a^{22} a^{23} and the cranks or arms a^{17} a^{18} connected by the links a^{13} a^{14} to the levers a^6 a^7, the normal parallelism of the roll A^6 to the drum A^4, is automatically changed according to the thickness of the hide or skin supported upon the drum and acted upon by the roll A^6. To illustrate, if the hide or skin carried by the drum should be of greater thickness at one end than at another, as for instance, if the thicker side of the hide or skin should be carried by the right hand portion of the drum or support A^4 (viewing Fig. 1), it will be seen that on the depression of the treadle a^{21}, the right hand portion of the operating roll A^6, (viewing Fig. 1) would come in contact with the thicker portion of the skin and would operate upon this portion, while the left hand portion of the operating roll A^6 (viewing Fig. 1) would be held away from the thinner portion of the hide or skin, if provision was not made to permit the parallelism of the roll A^6 to the supporting drum A^4, to be destroyed or changed. By means of the yielding connection, no matter of what form, between the power shaft a^{20} and the operating roll A^6 in connection with the pivotal bearings for the movable part, the latter is enabled to be tilted or inclined from its normal position substantially parallel with the drum or support A^4, so that in the case above supposed, when the right hand portion of the roll A^6 is brought in contact with the thicker portion of the skin or hide by the depression of the treadle a^{21}, the left hand portion of the operating roll A^6 would still be free to descend or move toward the drum until it engaged with the thinner portion of the hide or skin, for when the power is first applied to the rock shaft a^{20}, both ends of the roll A^6 move at the same time toward the drum or support A^4, and the roll A^6 is at such time substantially parallel with the said drum, but when the right hand portion of the roll A^6 meets the thicker portion of the hide, it is prevented from moving farther toward the drum, while the left hand portion of the roll is free to descend still farther toward the drum, by reason of the capability of the journal boxes for the roll to pivot or swing, and also by reason of the yielding connection between the power shaft a^{20} and the roll.

When the right hand portion of the roll A^6 is engaged with the thicker portion of the hide or skin, the power shaft a^{20} is still free to continue in its movement by reason of the yielding connection, in the supposed illustration, between the finger a^{22} and the crank or arm a^{27}, and this yielding connection will give way before the power applied to the shaft a^{20}, until the left hand portion of the roll A^6 is brought in contact with the thinner portion of the hide or skin. In this manner, it will be seen that the operating roll is inclined or tilted from its normal parallelism with the drum A^4, and so as to accommodate itself to the surface of the hide or skin. I have herein shown one form of yielding connection between the power shaft and the movable member of the apparatus, but as I believe myself to be the first to provide a machine of the class described, capable of adjusting the operating parts to the surface of the hide or skin being treated, I do not desire to limit my invention to the particular construction of yielding connection herein shown. The operating roll A^6 is rotated in a reverse direction from that in which the drum or support A^4 rotates, and acts upon the skin or hide as the said table or support moves under the roll in the direction indicated by arrow 20, and when the said table or support is moved sufficiently far to have the whole of that portion of the hide on the outside of the drum acted upon by the operating roll A^6, the operator moves the lever c^{30} from its position at the right of the full line position shown in Fig. 1, back into its normal or full line position, and then still farther to the left of its normal position shown in Fig. 1. When the lever c^{30} is moved back into its central position, the clutch hub c^{10} is placed in its central position shown in Figs. 1 and 2, and at such time, the reduced portion 2 of the brake cam is in engagement with the bar d^6, thereby automatically applying the brake to the counter shaft a^9 as above described, and positively stopping the forward movement of the drum, and when the lever c^{30} has been brought into its reverse position at the left of the position shown in Fig. 1, the clutch hub c^{10} is engaged with the clutch finger c^{13} and the loose pulley c^8 is rendered fast to the counter shaft c^9, so as to produce a reverse rotation of the drum A^4, the thickened end 4 of the brake cam at such time engaging the brake bar d^6 and removing the brake strap d^{10} from engagement with the brake wheel d,

the thickened portion 3 of the brake cam d^8 being in engagement with the bar d^6 to accomplish the same purpose, when the lever c^{30} is moved into its forward position to produce forward rotation of the drum or support A^4. It will be understood that these movements of the lever c^{30} and the parts actuated by it, are made very quickly, so that substantially little time is lost between the stopping of the drum A^4 on its forward movement, and the commencement of its backward movement.

During the backward movement of the drum A^4, the operating roll A^6, may and preferably will be, in a majority of cases, removed from contact with the hide or skin by the operator relieving the pressure upon the treadle a^{21}, which permits the counter weights a^{12} to move the levers a^6 a^7 so as to restore the operating roll A^6 into its normal position. On the backward movement of the drum A^4, the clamping bar A^5 remains in engagement with the skin carried by the drum, until the rolls b^{25} b^{27} pass off from the full periphery of the stationary cams b^9 b^{10}, at the point 25, and at or about the time the said rollers pass off from the full periphery of the stationary cams, the movement of the clamping jaw A^5 with the drum in the backward direction opposite to that indicated by arrow 20, is arrested, which may and preferably will be effected by means of cushioning stops g, secured to the side frames A A′ and only one of which is represented in Fig. 4. These cushioning stops may be made in the form of rubber rollers and are adapted to engage the ends of the tie bar b^{50}. When the movement of the clamping bar A^5 is arrested by the cushioning stops g, the drum A^4 continues on its backward movement until it reaches substantially its starting position or until sufficient clearance has been obtained to permit the operator to easily handle the hide or skin, at which time the operator moves the lever c^{30} to its normal or central position, shown in Fig. 1, thereby placing the clutch hub c^{10} in its central position and applying the brake to the counter shaft c^9. The operator then removes the skin or hide from the drum and replaces the same in a reverse position, that is, that portion or half of the hide which was before within the drum is now placed on the outside of the drum, and that portion which has been treated, is placed within the drum, and when the hide is thus placed in proper position on the drum, the latter is again started on its forward movement, and the operating roll is again caused to act upon the previously untreated portion of the hide.

By reason of the positive driving and stopping mechanism for producing rotation of the drum, it can be seen that the drum may be stopped at any point in its movement, substantially in an instant, which is a great advantage, for if the operator, after starting the apparatus in motion, should discover that a portion of the hide was not going to be acted upon properly by the roll, he could instantly stop the machine before the hide or skin was engaged by the roll and before it could be damaged by the same.

The apparatus may and preferably will be provided with a suitable hood or cover B^{10} for the operating roll A^6, which hood or cover may be attached to the frame work in any suitable or convenient manner. In the present embodiment of my invention, the operating roll is described as movable with relation to the drum or table A^4, and the yielding connection is interposed between the power shaft a^{20} and the operating roll A^6 for the purpose above described, and while I may prefer this construction of apparatus, I do not desire to limit the yielding connection feature of this invention to the particular apparatus herein shown, as the advantages resulting from the yielding connection and the pivotal journal boxes for the movable part, may be obtained in a machine in which the operating roll remains stationary, and the rotating drum is movable with relation to the said roll. In this latter case, the drum A^4 would have the journals of its shaft supported in pivotal boxes and would be connected to a suitable mechanism for applying the power by which the said frame could be moved toward the operating roll A^6.

In the construction of clamping mechanism herein shown, the bar A^5 and the levers b^{12} b^{13} constitute two members of the movable jaw of the clamp, and by means of the cushions, buffers or springs interposed between the said members, it will be seen, that the member A^5 is positively yet yieldingly engaged with the hide or skin.

I claim—

1. In an apparatus for treating hides or skins, the combination of the following instrumentalities;—viz:—an operating roll, and a movable support for the hide or skin to be treated, one of which parts is movable bodily with relation to the other, of pivotal bearings for the movable part, a power shaft to operate it and a yielding connection between the movable part and each end of the power shaft, substantially as described.

2. In an apparatus for treating hides or skins, the combination with a movable drum or support, of a clamping jaw co-operating with the said drum or support, stationary cams to positively operate the said clamping jaw, and intermediate mechanism movable with the drum or support to engage the said stationary cam and thereby actuate the clamping jaw, substantially as described.

3. In an apparatus for treating hides or skins, the combinatian with a movable drum or support, of a clamping jaw co-operating with the said drum or support, stationary cams, pivoted levers co-operating with the said clamping jaw, cushions interposed between said levers and the clamping jaw, and mechanisms connected to said levers and movable with the said drum or support to engage

the said stationary cams and actuate said levers and clamping jaw, substantially as described.

4. In a machine for treating hides or skins, a positive clamping mechanism consisting of a movable jaw, levers $b^{12}b^{13}$, movable with the said jaw, cushions interposed between said jaw and levers, and means to act on said levers, substantially as described.

5. In a machine for treating hides or skins, the combination of the following instrumentalities, viz:—a support or drum for the hide or skin, an operating roll co-operating with said drum or support, journal boxes in which said roll is mounted, pivots for said journal boxes, pivoted levers carrying the pivots for said journal boxes, a power shaft operatively connected to said levers, and a yielding connection intermediate of the power shaft and the said levers, substantially as described.

6. In a machine for treating hides or skins, the combination of the following instrumentalities, viz:—a movable support for the hide or skin, and an operating roll co-operating therewith, one of which is movable bodily toward the other, movable supports for the movable part to permit the movable part to be moved bodily toward the other, journal bearings for said movable part pivotally sustained by the said movable supports to permit the said movable part to be turned on its pivots in a plane substantially at right angles to the plane of movement of the said movable supports, a power shaft, an intermediate connection between said power shaft and the said movable part, and a yielding medium forming part of said intermediate connection, substantially as described.

7. In a machine for treating hides or skins, the combination of the following instrumentalities, viz:—a rotatable support or drum for the hide or skin, a main shaft, a counter shaft c^9 provided with loose pulleys connected to pulleys on the main shaft by straight and cross belts, gearing to connect the said counter shaft with the said drum or support, a clutch mechanism comprising a clutch hub adapted to render the pulleys on the counter shaft fast thereon, a cam movable with the said drum or support, and mechanism operatively connected to the clutch hub and adapted to be acted upon by the said cam to center the said clutch hub, substantially as described.

8. In a machine for treating hides or skins, the combination of the following instrumentalities, viz:—a rotatable drum or support, a clamp co-operating therewith to hold the hide on the said support a driving mechanism for said drum or support, a starting mechanism for said driving mechanism, and a brake mechanism controlled by said starting mechanism and co-operating with the said driving mechanism to positively control the movement of the said drum or support, substantially as described.

9. In a machine for treating hides or skins, the combination of the following instrumentalities, viz:—a rotatable drum or support, a driving mechanism therefor, a starting mechanism for said driving mechanism, a cam movable with the said drum or support and adapted to operate said starting mechanism, and a brake mechanism adapted to be operated by said cam to stop the movement of the said drum or support, substantially as described.

10. In a machine for treating hides or skins, the combination of the following instrumentalities, viz:—a rotatable drum or support, a driving mechanism for said drum or support, a starting mechanism for said driving mechanism, and a brake mechanism for said driving mechanism, controlled by said starting mechanism, and means to operate said brake mechanism independent of the starting mechanism, substantially as described.

11. In a machine for treating hides or skins, the combination of the following instrumentalities, viz:—a rotatable drum or support, a driving mechanism for said drum or support, a brake mechanism for said driving mechanism consisting of a brake wheel, a brake strap, a lever to which said brake strap is connected, a rod or bar carried by said lever, a brake cam co-operating with the said bar or rod, and means to operate said brake cam, substantially as described.

12. In a machine for treating hides or skins, the combination of the following instrumentalities, viz:—a rotatable drum or support, a clamp co-operating therewith to hold the hide or skin on said support a driving mechanism for said drum or support, a brake mechanism for said driving mechanism consisting of a brake wheel positively connected to the said drum or support to move simultaneously therewith, a brake shoe co-operating with the said brake wheel, a lever carrying said shoe, and means to operate said lever, substantially as described.

13. In a machine for treating hides or skins, the combination of the following instrumentalities, viz:—a rotatable drum or support, a clamp co-operating therewith a driving mechanism for said drum or support, a cam movable with said drum, and an adjustable mechanism connected to the driving mechanism and adapted to be operated by said cam to stop the rotation of the said drum, the said mechanism being adjustable to permit the driving mechanism to be placed in correct operative condition, substantially as described.

14. In a machine for treating hides, the combination of the following instrumentalities, viz:—a movable support for the hide or skin and an operating roll, one of which is movable bodily toward and from the other, a power shaft, cranks loosely mounted thereon and connected to the part movable bodily toward the other, arms fast on the said power shaft, and yielding mediums interposed between

said arms and cranks, substantially as described.

15. In an apparatus for treating hides or skins, the combination of the following instrumentalities, viz:—an operating roll, and a movable support for the skin or hide to be treated, one of which parts is movable bodily with relation to the other, movable supports for the said movable part to permit the bodily movement of the said movable part toward and from its co-operating part, and bearings for the movable part pivotally supported in said movable supports to permit the said movable part to turn on its pivots in a plane substantially at right angles to the plane in which the said supports are moved, for the purpose specified.

16. In a machine for treating hides, a positive clamping mechanism comprising a fixed jaw and a movable jaw composed of two members provided with a yielding medium or cushion between the members comprising the movable jaw, substantially as described.

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.