

C. J. GLASEL.
 MEANS FOR TANNING AND DEPILATING HIDES AND SKINS.
 APPLICATION FILED DEC. 13, 1905.

931,858.

Patented Aug. 24, 1909.

3 SHEETS—SHEET 1.

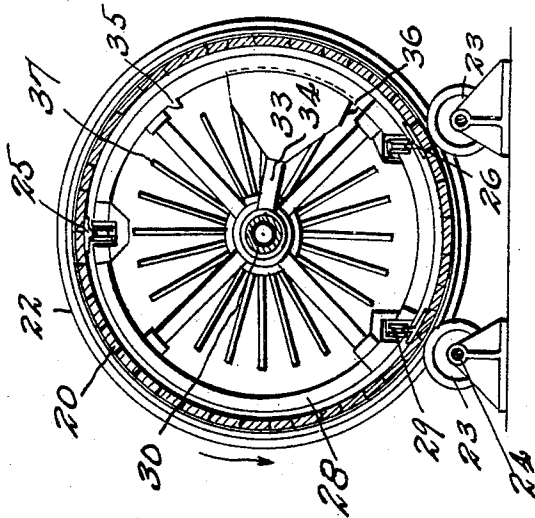


FIG. 2.

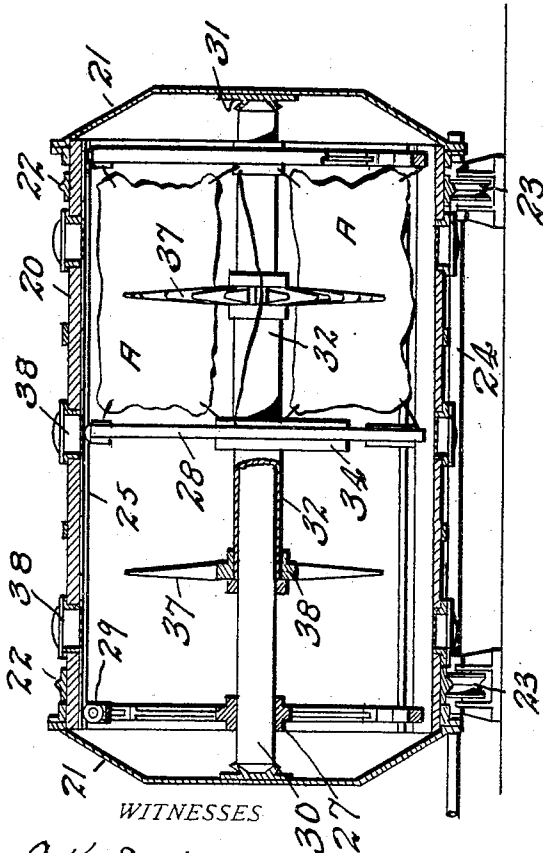


FIG. 1.

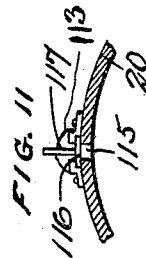


FIG. 11.

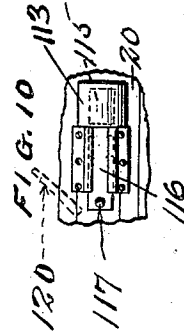


FIG. 10.

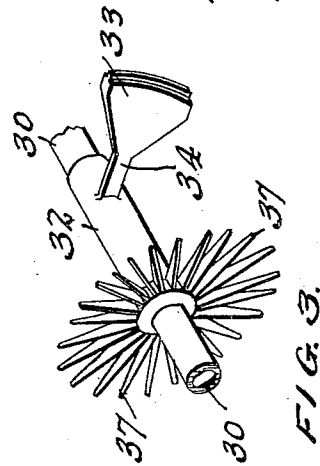


FIG. 3.

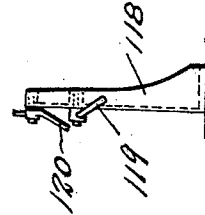


FIG. 12.

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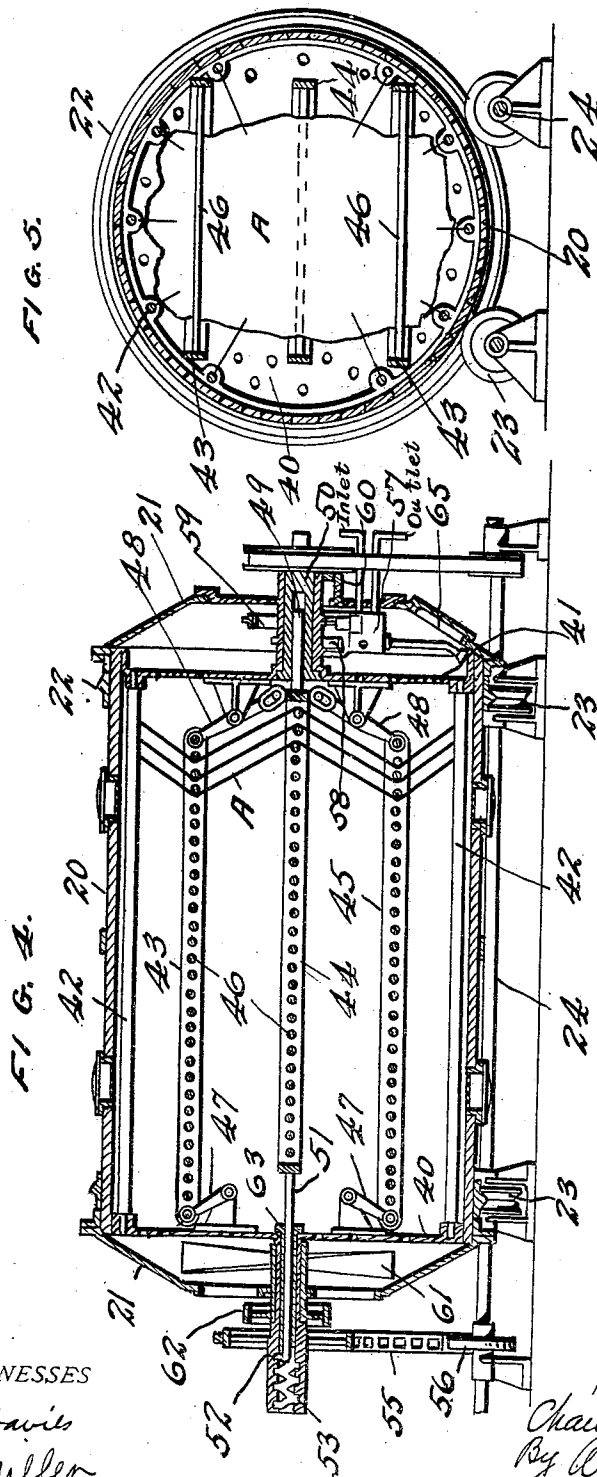
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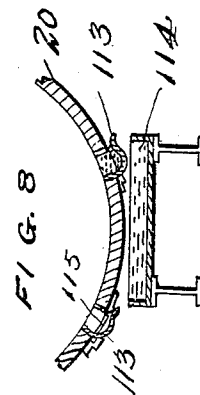
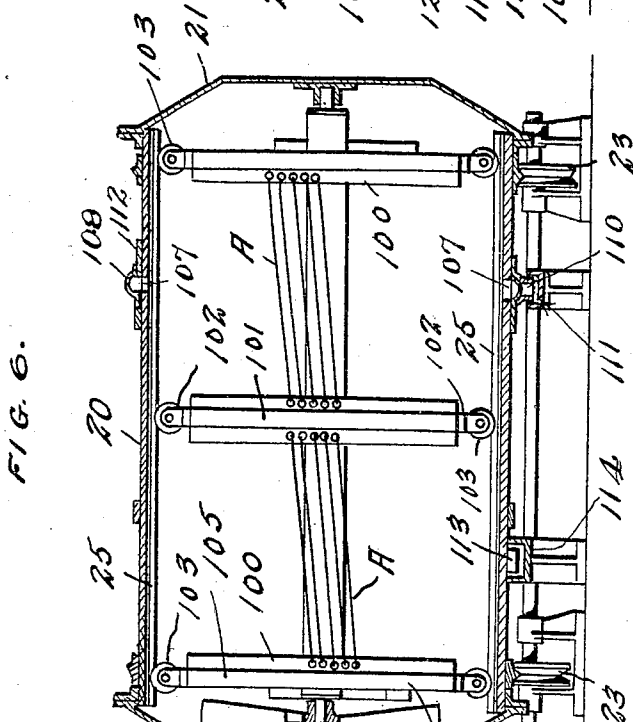
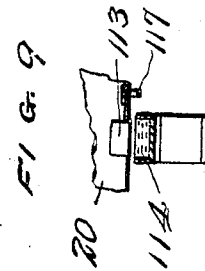
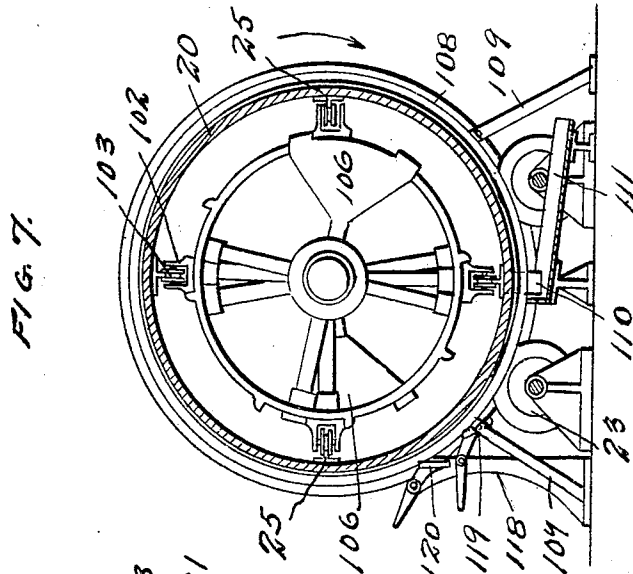
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 3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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MEANS FOR TANNING AND DEPILATING HIDES AND SKINS.

931,858.

Specification of Letters Patent. Patented Aug. 24, 1909.

Application filed December 13, 1905. Serial No. 291,535.

To all whom it may concern:

Be it known that I, CHARLES JOHN GLASEL, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Means for Tanning and Depilating Hides or Skins, of which the following is a specification.

This invention has relation to the tanning or depilating of hides or skins, and has for its object to provide a method and means for accomplishing such tanning or depilating in a shorter period of time than has heretofore been possible.

I have found by actual experience and practice that hides and skins may be tanned most effectively and expeditiously by shaking or alternately stretching or straining them in one or more directions, and then permitting them to contract, or otherwise subjecting the hides or skins to agitation or manipulation for the purpose of squeezing or forcing from the pores thereof, the tanning liquor and permitting fresh liquor to be drawn into the interstices or pores of the hides or skins. By subjecting the hides or skins to this operation, which may be continued for a few days, (during which time the tanning liquids or gases are supplied to the skins or hides by any suitable means,) they are, as a result, evenly and effectively tanned or depilated.

I have found that the manipulation of the hides may be accomplished either in a vat or in a rotary cylinder, although for obvious reasons, I prefer to employ a receptacle such as last referred to for containing the skins or hides, inasmuch as the tanning or depilating may be accomplished with a minimum quantity of tanning or depilating material. A variety of means may be utilized for effecting the intermittent stretching or straining of the skins or hides, and in following out my method the operator may select any desired mechanism for accomplishing this result.

On the accompanying drawings, I have illustrated several forms of machines which embody the invention and which may be utilized in carrying out my process.

Referring to these drawings,—Figure 1 represents in longitudinal section a machine in which the skins or hides are arranged substantially in radial lines and are secured at their ends so that the stretching or straining devices may intermittently operate upon them. Fig. 2 represents a vertical trans-

verse section through the same. Fig. 3 represents in detail one of the stretching devices utilized in this machine. Fig. 4 represents in vertical section another embodiment of the invention, in which the skins are arranged substantially transversely to the axis of the cylinder. Fig. 5 represents a transverse section through the machine shown in Fig. 4. Fig. 6 represents a longitudinal section of another embodiment of the invention in which the hides are stretched intermittently by the hide-supports without the employment of supplemental stretching devices. Fig. 7 represents a transverse vertical section through the same. Figs. 8, 9, 10, 11, and 12 show in detail the means by which the tanning materials are supplied to the interior of the cylinder.

Referring to Figs. 1, 2 and 3, the machine embodying the invention, (and which may be used for carrying out my process) is shown as comprising a cylinder 20 having removable ends or heads 21. This cylinder is arranged with its axis substantially horizontal and it is provided with peripheral tracks 22 which rest upon grooved rollers 23 by which its rotation is effected. The rollers 23 are secured upon shafts 24, which may be rotated from any convenient source of power. In the interior of the cylinder are arranged a plurality of parallel tracks or guideways 25 26 26, and movable on said guideways are frames or hide-supports 27 27 28. These frames are of wheel-like construction, each being formed with a hub, a rim, and radial spokes. The rim of each of the frames is provided with grooved rollers 29 for engaging the guide-rails 25 26. The frames are all placed on a central bar or shaft 30, the conical ends of which may be supported in sockets 31 in removable heads 21. By removing one of the cylinder heads, the three frames, together with their connecting bar 30, may be withdrawn bodily from the cylinder for the removal of the hides or skins which have been treated, and the insertion of untreated hides. The rims of the frames and the hubs may be provided with a plurality of hooks or other suitable fastening devices, by means of which the hides, such as indicated at A, may be attached thereto. The hooks may be engaged directly with the hides, or cords or ropes may be fastened to the hides and attached to the hooks or other fasteners. In this particular embodiment of the invention, the

hides are preferably all arranged radially of the axis of the cylinder, each hide being doubled on a line connecting the neck and butt, as shown. Thus the hides occupy the space between the connecting bar 30 and the wall of the cylinder.

For the purpose of effecting the intermittent stretching or straining of the hides so as to cause them to absorb and then expel the tanning material, I may utilize the following devices: On the bar or shaft 30 between two collars affixed thereon is a sleeve 32 which is connected with a weight 33 by an arm 34 which radiates from said sleeves and lies closely adjacent the hub of the frame 28. The weight 33 is curved on its outer edge and is provided with a tongue lying in a groove in the rim of the frame 28, as clearly shown in Fig. 2. The weight is adapted to have a limited motion between two stops 35 36 formed on the rim of the frame 28. As the cylinder and the frames rotate in the direction of the arrow in Fig. 2, the weight will be carried upward by the stop 36 until it is moved slightly past a vertical line extending upward from the axis of the cylinder. The weight will then fall forward until it engages the stop 35. During the next half of the revolution of the cylinder, the weight will continue to rest against the stop 35 until it hangs vertically downward where it will remain quiescent until engaged by the stop 36. To the sleeve 32 are secured a plurality of radiating arms or bars 37. This may be formed on hubs 38 which are secured in any suitable way to the ends of the sleeve 32. Preferably these hubs 38 are arranged substantially midway between the frame 28 and the frames 27, so that each arm will lie between two adjacent hides A. From this description, it will be apparent that as the cylinder and the frames are rotated, the arms or bars 37, which may be termed stretching devices or actuators, will be oscillated first in one direction and then in the other direction, so as to intermittently stretch or strain the hides and permit them to contract or relax.

The cylinder is supplied with suitable tanning liquid, and with gases or air, as may be desired, and as the hides each revolve about the axis of the cylinder, they are immersed in the liquor and are then removed therefrom as they pass above the bar 30. The tanning materials may be supplied to the cylinder by any convenient mechanism such as hereinafter described. Where powdered or solid chemicals or chemical compounds are used in connection with the tanning of the skins, they may be located in receptacles 38 arranged in the walls of the cylinder 20. In this event the receptacles 38 are internally perforated to permit the escape of the chemicals into the cylinder or to permit of the entrance of the liquid con-

tained in the cylinder. In lieu of such receptacles, however, normally closed openings in the cylinder may be provided, in order that the operator may from time to time observe the condition of the hides or skins.

It is quite apparent that the process may be carried out in other machines, such, for instance, as that shown in Figs. 4 and 5. In this case the cylinder 20 is provided with transverse plates 40 41 near its ends, which are apertured to permit the tanning materials to pass from end to end of the cylinder. Between these plates are arranged parallel rods 42 which are placed relatively near the walls of the cylinder to afford means for supporting the hides, separate portions of which are attached thereto. The plates and the rods form, as it were, a frame or cage, so that the hides A may be located within the cylinder substantially in parallelism across the axis of the cylinder. To effect the intermittent stretching or straining of the hides, I employ in this embodiment of the invention, a plurality of stretching devices which are indicated at 43 44 and 45 respectively. Each of these devices comprises a grid having side bars with cross bars or actuators 46. The hides extend between the cross-bars of the stretching devices, as clearly shown in Fig. 4. The grids 43 45 are moved simultaneously in one direction while the grid 44 is moved in the opposite direction, in consequence of which the hides are alternately stretched and relaxed to cause the absorption and expulsion of the tanning material into and from the pores of the hides. To accomplish the actuation of the stretching devices, those at 43 and 45 are supported by pivoted arms 47 47, 48 48, the arms 48 having a pin-and-slot connection with the grid 44. The said grid 44 has at one end a bar 49, extending into a socket in a shaft 50. At its other end the grid 44 has a bar 51, on the outer end of which there is a pin 52 engaged with an endless internal groove in the extended hub 53 of a sprocket-wheel 54 driven by a sprocket-chain 55 from a wheel 56 on one of the shafts 24. As the cylinder is rotated, the grids are reciprocated by the devices just described to effect the intermittent stretching of the hides. I find it convenient to provide means for pumping in and pumping out the tanning liquid, and to this end I provide a duplex pump which is indicated as a whole at 57. The inlet and the outlet pump plungers are operated by eccentrics 58 59 on the shaft 50, to which reference has been previously made, said shaft being driven by suitable mechanism from one of the shafts 24. In this connection, it will be observed that the cylinder-head or end 21 is mounted to rotate about a stationary fitting 60 which supports the pumping mechanism 57. This support will be held stationary by the weight of the pump

or it may be held stationary by any suitable devices. The inlet and the outlet pipes for conducting the liquid to the pumps and conducting it away therefrom may be connected with the fitting 60 which is provided with suitable chambers for the liquid. It will be observed that the pumping mechanism is located in the cylinder in the space between the plate 41 and the adjacent head 21. It is sometimes desirable to force air into or out of the cylinder, and for this purpose, I locate in the space between the plate 40 and its adjacent cylinder head or end 21, a fan 61. The hub of this fan is secured upon a sleeve to which is attached a belt-wheel 62, by which it may be rotated in either direction for effecting the rotation of the fan. This sleeve is journaled in a bearing afforded by the cylinder-head 21, and between it and the bar or rod 51, there is a sleeve which is indicated at 63. The cylinder-head near the fan is provided with a series of openings 64, which, if desired, may be closed by suitable caps, there being in the opposite cylinder head an opening 65 which may likewise be closed by a cap, when desired. The openings 64 and 65 provide for a thorough ventilation of the cylinder, and in addition thereto, the opening 65 provides for a quick discharge of such tanning liquid as may remain in the cylinder when the tanning operation is completed, and also permits access to the pumping mechanism. Under usual conditions, the openings 64 and 65 may be closed by suitable caps. A sufficient quantity of tanning material being placed in the lower portion of the cylinder, so that the hides may be immersed therein, as the cylinder rotates, the liquid tanning material is circulated by the pumping mechanism, the exhausted or depleted material being withdrawn and a fresh supply being constantly added.

In some instances it is unnecessary to utilize stretching devices which move relatively to the skin supports for effecting the intermittent stretching of the skins, as I may utilize devices for effecting an intermittent movement of the hide-supports themselves to effect the stretching operation.

In Figs. 6 and 7, a machine is shown in which the hide-supports are moved by gravity relatively to the cylinder about the axis of the cylinder to effect the intermittent stretching or straining of the skins or hides. The hide-supports in this case are indicated at 100 100 101. The intermediate support 101 is provided on its periphery with brackets 102 which are rigid therewith, and which carry rollers 103 which engage tracks or guideways 104 inside of the cylinder, substantially similar to those shown at 25 26 in Fig. 2. The supports 100 100 are adapted to rotate to a limited extent relatively to that at 101. The supports are provided with fastening devices at their rims and hubs

to which hides may be attached as indicated at A in Fig. 6. The hide-supports 100 are located in proximity to and in sliding engagement with the rings 105 which carry rollers 103 similar to those previously described for engagement with the guides 104. Each of the hide supports 100 carries a weight 106 on one side of its axis so that as the cylinder rotates in the direction of the arrow in Fig. 7, the frames 100 will first be oscillated in one direction and then in the other direction, during one complete rotation of the cylinder, there being stops for limiting the extent of this movement. It is quite apparent that instead of having the two outer hide-supports oscillate, they may be stationary relatively to the frame and the intermediate hide-support 101 may be arranged to oscillate. In accordance with this relative movement of the hide-supports, the skins are intermittently stretched or strained and allowed to relax or contract to carry out my method of tanning. Any suitable means may be utilized for effecting a circulation of the tanning material in the cylinder, that is, for removing the deteriorated material and supplying fresh material.

As one means for effecting the removal of the deteriorated material, the cylinder may be provided with one or more apertures through its cylindrical wall. This aperture or these apertures discharge into an annular chamber, surrounding the cylinder, said chamber being formed by a ring or annulus 108, which is held against rotation by braces 109 and which has a discharge-port 110 located to discharge the material into a trough 111, (see Fig. 7). Each of the apertures 107 may be closed at will by a suitable slide or valve 112. For admitting or introducing tanning or other liquor into the receptacle, the cylinder may be provided with a plurality of exterior buckets 113, (see Figs. 8 to 12, inclusive.) These buckets are arranged to dip into a tank 114 as the cylinder rotates. The buckets may be of any suitable shape, being preferably so designed that as each one passes through the tank 114, it will lift a certain amount of the liquid, as shown in Fig. 8, and temporarily retain it. Each bucket is adapted to communicate with the interior of the cylinder through an opening or aperture 115, for each of which there is a sliding valve 116 with a projecting pin 117, (see Figs. 10 and 11). These pins are adapted to be engaged by stationary cam devices to first move the valve to open position to allow the tanning liquor to enter the cylinder, and then to close the opening. These cam devices are arranged in proximity to the cylinder, as shown in Fig. 7. In this figure, 118 represents a bracket carrying two cam devices 119 120 respectively. Each of these devices may be moved into and out of active position, as desired. The cylinder ro-

tates in the direction of the arrow, in Fig. 7, and as each bucket approaches the cam devices, after dipping up a supply of liquor, the pin 117 is engaged by the cam 119 and is moved to open the port or aperture 115, as shown in Fig. 10. The liquor immediately runs from the bucket into the interior of the cylinder, and as the cylinder continues to rotate, the pin 117 is engaged by the cam 120 and the valve is moved to closed position, as shown in Fig. 11. In this manner the tanning liquid may be continuously supplied to and removed from the cylinder at any rate that may be desired.

It will be understood that the cylinders and the various operating instrumentalities will be formed of suitable material, preferably non-ferruginous, which will not injure the hides during the tanning operation. In all of the machines which I have thus described, the skins are supplied with proper tanning material and are intermittently stretched or strained so as to remove from their pores the deteriorated tanning compound or material, and then permitted to relax to provide for the absorption of fresh material. I have found by actual practice that the hides treated according to my method may be tanned in a few days and that the hides will be evenly tanned throughout.

The hides may be introduced into the machine by the removal of the cylinder-heads which will permit the entrance and removal of the hide-supports and the operating instrumentalities.

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. In a tanning machine, the combination with a receptacle of a hide supporting frame movable therewith, and means movable with said receptacle and frame and also having movement independent thereof for stretching and relaxing the supported hide.

2. The combination with a rotary receptacle and hide supporting frame carried therein of means rotatable therewith, but having movement independent thereof to stretch the supported hide.

3. The combination with a movable receptacle and hide supporting means carried therein, of means movable therewith but having movement independent thereof to stretch the supported hide.

4. The combination with a rotary receptacle of a detachable hide supporting frame carried therein and rotatable therewith, and a member having movement independent of said receptacle and frame to stretch the supported hide.

5. In a machine of the character referred to, a movable receptacle for the tanning material, supports carried therein to which the hides may be attached, stretching devices movable independent of said supports for said hides, and means by which said stretching devices may be actuated.

6. In a machine of the character referred to, a rotary receptacle for the tanning material, supports therein for the hides, and instrumentalities movable relative to the supports for intermittently stretching said hides.

7. In a machine of the character referred to, a receptacle for the tanning material, supports therein for the hides, and instrumentalities located between said supports and movable independent thereof for intermittently stretching said hides.

8. In a machine of the character referred to, a receptacle, supports therein to which separate portions of a hide may be attached, and means supplemental to said supports for moving the remaining portion of the hide relatively thereto.

9. In a machine of the character referred to, a receptacle, supports for holding spaced hides, stretching devices located in the spaces between the hides, and means by which said stretching devices are operated.

10. A machine of the character referred to, comprising a receptacle, hide supports therein, and a hide-stretching device having a plurality of bars arranged to engage the hides.

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

CHARLES JOHN GLASEL.

Witnesses:

C. C. STECHER,
L. E. KENNEDY.