

(No Model.)

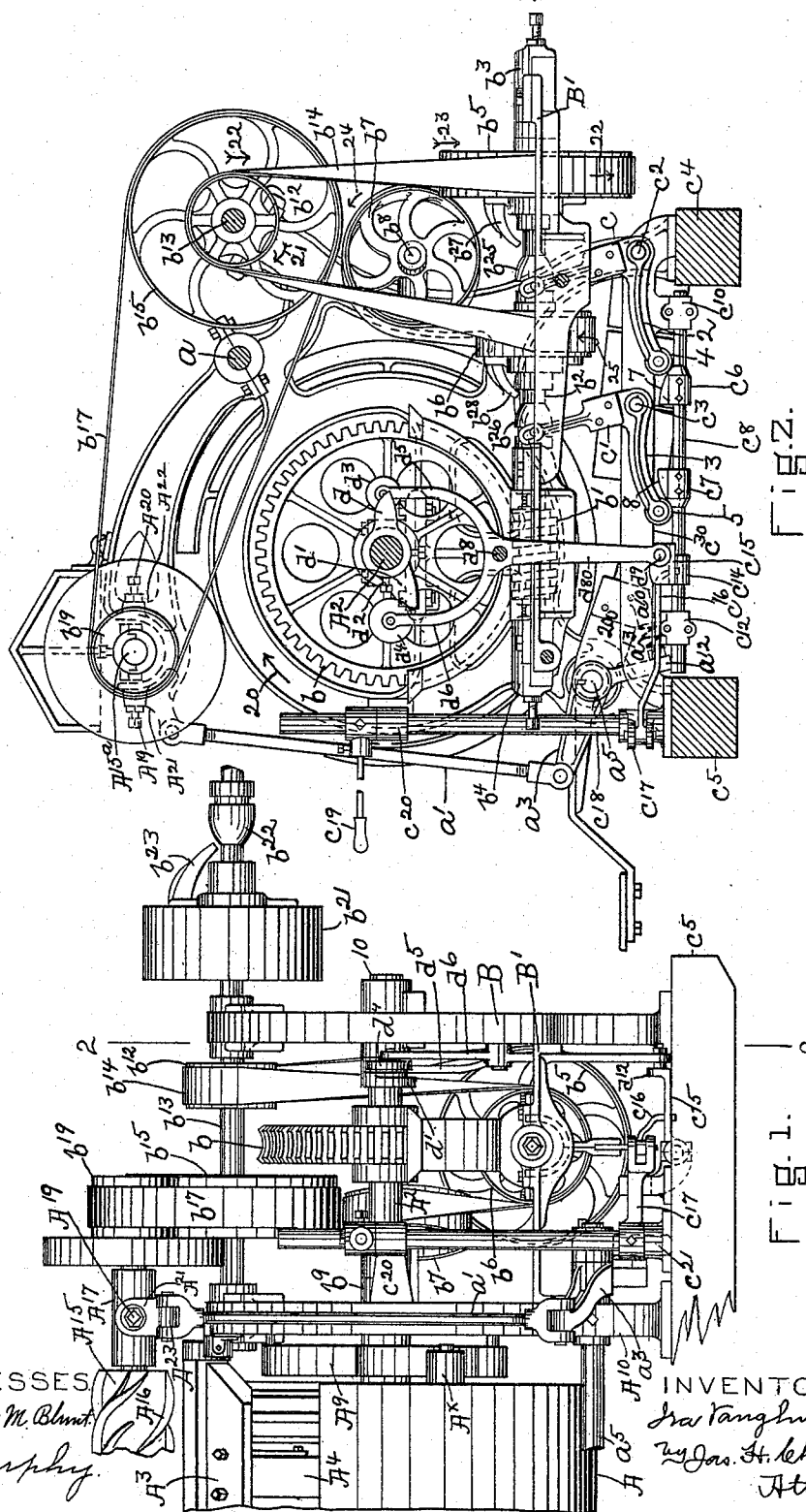
2 Sheets—Sheet 1.

I. VAUGHN.

MACHINE FOR TREATING HIDES OR SKINS.

No. 535,777.

Patented Mar. 12, 1895.



WITNESSES

Matthew M. Blum

J. Murphy

INVENTOR.

Ira Tanglin

By Jas. H. Churchill

Atty.

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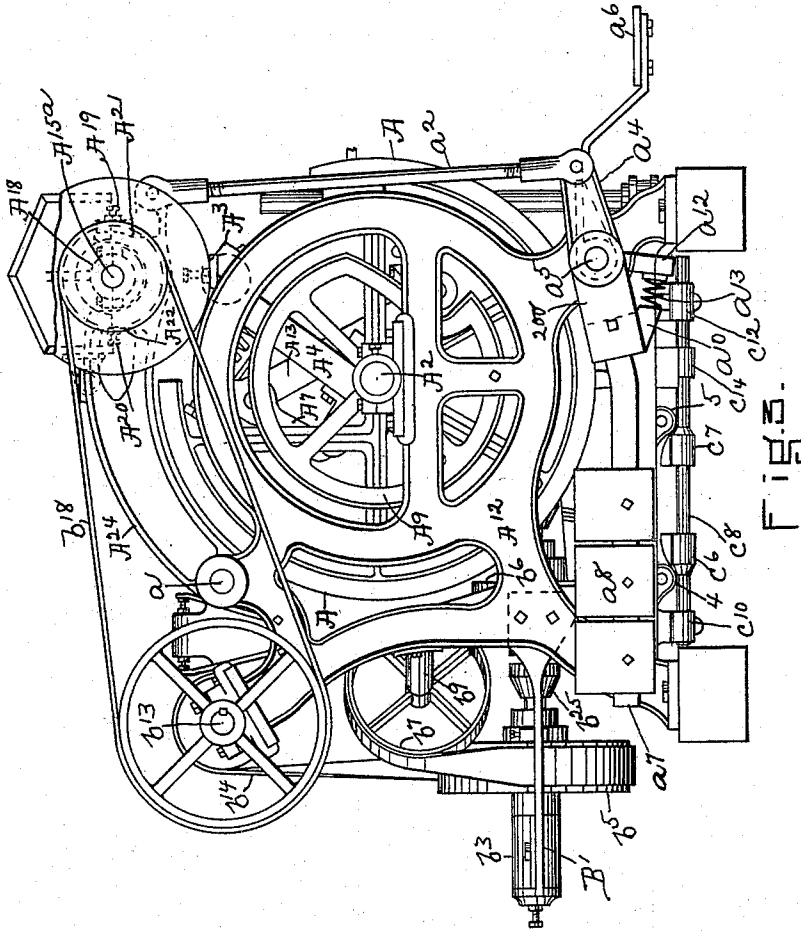


FIG. 5.

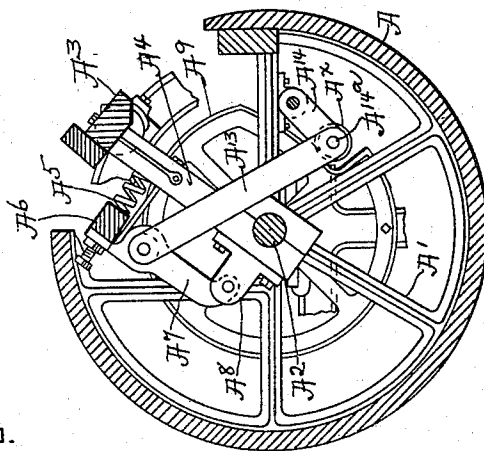


FIG. 4.

WITNESSES.

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UNITED STATES PATENT OFFICE.

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

MACHINE FOR TREATING HIDES OR SKINS.

SPECIFICATION forming part of Letters Patent No. 535,777, dated March 12, 1895.

Application filed August 2, 1894. Serial No. 519,265. (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 treating hides, either tanned or untanned, and is an improvement upon machines of that class shown and described in United States Patent No. 373,112, dated November 15, 1887.

My present invention is embodied in a machine or apparatus which embraces features shown and described in United States Patent No. 525,372, granted to me September 14, 1894, and is applicable to all of the various treatments of the hide or skin mentioned in said application, such as unhairing, breaking, fleshing, putting-out, green-shaving, buffing, whitening, &c., and is especially adapted for what may be termed heavy work, that is, the treatment of large and heavy hides or skins.

To facilitate description, I will hereinafter describe the machine as employed for unhairing the hide or skin.

One feature of this present invention consists in a novel driving mechanism by which the desired power for handling heavy work may be obtained.

Another feature consists in a novel construction of automatic mechanism for controlling the driving mechanism, as will be described.

The invention further consists in other features as will be hereinafter pointed out in the claims.

Figure 1 is a front elevation of a sufficient portion of the right hand end of a machine embodying this invention to enable it to be understood; Fig. 2, a section of the machine shown in Fig. 1 on the line 2—2 looking toward the left, the operating drum or support and its co-operating clamping mechanism being omitted; Fig. 3, an elevation of the opposite end of the machine from that shown in Fig. 1, and Fig. 4, a sectional detail to be referred to.

The main operating parts of the machine

herein shown, comprising the drum, table or support A secured to spiders or arms A' fast on a shaft A², the hide clamping mechanism co-operating with said drum and consisting of the clamping bar A³, its arms A⁴ loosely mounted on the shaft A² and operated upon by cushions or springs A⁵ interposed between the arms A⁴ and levers A⁷ pivoted to uprights A⁸ on the arms A⁴ and connected together by the cross-bar A⁶, the said levers being acted upon by stationary cams A⁹, secured to the framework of the machine, consisting of the upright frames A¹⁰ A¹²; the intermediate mechanism connecting the levers A⁷ to the spiders A' and consisting of the links A¹³ A¹⁴ joined together by the shaft or pin A^{14a} upon which is the roller A^x co-operating with a stationary cam A⁹, the operating roll A¹⁵ provided with acting vanes or knives A¹⁶ and having its shaft A^{15a} mounted in boxes A¹⁷ A¹⁸, pivotally supported by set screws A¹⁹ A²⁰ in lugs or ears A²¹ A²² secured to or forming part of levers A²³ A²⁴, are and may be of substantially the construction shown in the application referred to, except that in the present instance, the levers A²³ A²⁴ are shown as curved (see Fig. 3) and pivoted at their rear end as at a to the framework of the machine.

The levers A²³ A²⁴ are connected at their front end by adjustable rods a' a² to cranks or arms a³ a⁴ (see Figs. 1 and 4) loosely mounted on a rock shaft a⁵ having bearings in the upright frames A¹⁰ A¹² and provided, as herein shown, with a foot treadle a⁶, the said cranks or arms having rearward extensions 200, to which are secured rods or bars a⁷ having removably secured thereto or mounted thereon counter weights a⁸ for the operating roll A¹⁵. In the present instance, each rearward extension 200 of the cranks or arms a³ a⁴ has secured to or forming part of it a depending arm a¹⁰, with which co-operates a crank or arm a¹² fast on the rock shaft a⁵, and between them is interposed a coiled spring a¹³ or other yielding medium forming a yielding connection between the rock shaft and the operating roll A¹⁵, which yielding connection co-operates with the pivoted bearings for the said roll, to permit the said roll to accommodate itself to hides of uneven thickness, and thereby obtain a more effective action on the hide

or skin, as fully set forth in the application referred to.

In order that hides or skins of substantially large size and weight may be readily and easily operated upon, the movable support, drum or table A is driven or moved in opposite directions, by a substantially strong driving mechanism preferably of a construction as will now be described.

The driving mechanism referred to, consists essentially of a substantially large worm gear b fast on an extension 10 of the drum supporting shaft A^2 , the said extension being supported at its outer end in an upright frame B forming part of the framework of the apparatus. The worm gear b is rotated by means of a worm b' (see dotted lines Fig. 2) which worm is mounted on a shaft b^2 extended substantially at right angles to the drum shaft A^2 , and having bearings at its opposite ends in suitable boxes $b^3 b^4$ in a substantially horizontal framework B' , firmly secured in any suitable manner to the uprights A and A^{10} . The worm shaft b^2 is designed to have a rotary motion in opposite directions, in order to produce an oscillating movement of the drum A, and to effect this rotary movement of a worm shaft located substantially at right angles to the drum shaft, I employ a novel arrangement of pulleys and belts, which will now be described.

The worm shaft b^2 has loosely mounted on it a substantially large pulley b^5 and a preferably smaller pulley b^6 , and between the said pulleys is interposed an intermediate pulley b^7 loosely mounted on a stud or shaft b^8 having bearings in a bracket b^9 attached to the upright A^{10} . The pulleys referred to, are driven from a pulley b^{12} on a shaft b^{13} supported in bearings in the uprights A^{10} and B, the said pulleys having passed about them an endless belt b^{14} , which passes from the pulley b^{12} down under the loose pulleys $b^5 b^6$ and over the intermediate pulley b^7 .

The shaft b^{13} constitutes the main or driving shaft for the apparatus, and in the present instance, the said shaft has fast on it at opposite ends of the machine, pulleys $b^{15} b^{16}$ connected by belts $b^{17} b^{18}$ to pulleys $b^{19} b^{20}$ on the shaft A^{15a} of the operating roll A^{15} . The main or driving shaft b^{13} may be driven from a suitable power shaft or from any other source of supply, and in the present instance, the said shaft is represented in Fig. 1 as provided with a pulley b^{21} loose on it and adapted to be rendered fast thereon by means of a clutch mechanism, which may be of any suitable construction, but which is shown as consisting of a collar or sleeve b^{22} and a pivoted finger b^{23} with which the collar or sleeve is adapted to be brought into engagement, when it is desired to render the pulley b^{21} fast on its shaft b^{13} . This clutch mechanism may and preferably will be substantially the same as that shown and described in United States Patent No. 444,173, dated January 6, 1891.

By referring to Fig. 2, it will be noticed that the belt b^{14} passes from the pulley b^{12} down under the loose pulley b^5 from the left toward the right, looking from the rear of the machine, and thence over the intermediate pulley b^8 , thence down under the smaller loose pulley b^6 from right to left, looking from the rear of the machine, thence up over the pulley b^{12} . It will thus be seen that the pulleys $b^5 b^6$ are driven by the belt b^{14} in opposite directions, and in practice, it is preferred to have the drum travel slower in what may be termed the forward direction, that is, from the front toward the back of the machine or in the direction indicated by arrow 20, Fig. 2, than it travels in a backward direction, and for this purpose, the loose pulley b^5 is preferably made larger than the pulley b^6 .

The opposite rotations of the pulleys may be readily understood by the arrows in Fig. 2 showing the direction of travel of the belt, that is, when the main shaft and its pulley b^{12} are rotated in the direction indicated by arrow 21, the belt b^{14} is traveling in the direction indicated by arrow 22 and causes the pulley b^5 to rotate in the direction indicated by the arrow 23, that is, in the direction opposite to the movement of the hands of a watch, and the belt on its passage over the intermediate pulley rotates it in the direction indicated by arrow 24, and passing under the smaller loose pulley b^6 rotates it in the direction indicated by the arrow 25, which is in the same direction as the movement of the hands of a watch. The loose pulleys $b^5 b^6$ may and preferably will be rendered fast on the worm shaft b^2 by means of a clutch mechanism, which may and preferably will be of substantially the construction shown in the Patent No. 444,173 above referred to, and consisting essentially of the sliding collars or sleeves $b^{25} b^{26}$ and the pivoted fingers $b^{27} b^{28}$ co-operating therewith, after the manner described in said patent.

The sleeves or collars $b^{25} b^{26}$ are loose on the worm shaft b^2 to slide or move longitudinally thereon, and this sliding movement may be effected by mechanism preferably of the construction herein shown, it consisting of two elbow levers $c c'$ pivoted as at $c^2 c^3$ to a bar or frame c^{30} extended from the front to the back of the machine and resting as herein shown upon the longitudinal stringers or support-beams $c^4 c^5$.

The elbow levers $c c'$ have their upright arms loosely connected to the collars $b^{25} b^{26}$ to move the same longitudinally on the worm shaft b^2 , and their substantially horizontal arms 2—3 are preferably provided with rollers 4—5 to be engaged by collars or hubs $c^6 c^7$ fast on a longitudinally moving rod c^8 and provided with oppositely inclined surfaces 7—8 constituting cam surfaces, which co-operate with the rollers 4—5 on the arms 2—3 of the elbow levers, to tip the said elbow levers on their pivots $c^2 c^3$ and move the sliding collars or sleeves $b^{25} b^{26}$ longitudinally on the

worm shaft, to engage the fingers d^{27} d^{28} and render the loose pulleys b^5 b^6 fast on the said worm shaft, as will be hereinafter more specifically described.

5 The collars or sleeves b^{25} b^{26} in the present arrangement are moved in the same direction to engage the fingers b^{27} b^{28} , that is, in the direction indicated by arrow 40, Fig. 2, and in the opposite direction to disengage the said
10 fingers, and this movement of the collars or sleeves b^{25} b^{26} in the same direction, to render their respective pulleys fast on the worm shaft, is accomplished by mounting the cam hubs c^6 c^7 on the rod or bar c^8 , so that the cam
15 surfaces 6—7 incline in opposite directions and by moving the cam carrying rod c^8 in opposite directions, to bring the cam hub c^6 in engagement with the arm 2 of the lever c on the movement of the bar c^8 in one direction,
20 namely, in the direction indicated by arrow 40, and to bring the cam hub c^7 in engagement with the arm 3 of the elbow lever c' on the forward movement of the rod c^8 , that is, in the direction opposite to that indicated by
25 the arrow 40. The rod, c^8 , as herein shown, is free to slide in hangers or arms c^{10} , c^{12} depending from the supporting frame or bar c^{30} , and the said movement may and preferably will be effected after the manner herein
30 shown, and as will now be described. The reciprocating bar or rod c^8 has fast on it a collar or hub c^{14} herein shown as provided with a substantially horizontal arm c^{15} (see Figs. 1 and 2) connected by a link c^{16} to a
35 crank or arm c^{17} to which the said link is pivotally connected, the said crank or arm being secured to a vertical shaft or spindle c^{18} provided as herein shown with a handle c^{19} , the said shaft being supported at its upper end by a bracket c^{20} and at its lower end
40 by a suitable step c^{21} .

As represented in Fig. 2, the cam hubs c^6 c^7 are out of engagement with the friction rollers 4—5 of the clutch operating elbow
45 levers c c' , and in what may be termed their central or inoperative position, at which time the operating parts of the machine or apparatus are at rest. When it is desired to set the machine in motion to treat the hide or
50 skin carried by the drum A, the operator turns the handle c^{19} to the right (viewing Fig. 1), so as to move the clutch operating bar or rod c^8 in the direction indicated by arrow 40, which movement brings the cam hub c^6 under
55 the roller 4 of the clutch operating lever c , the said roller riding up the inclined or cam surface 7 of the said cam hub, and turning the clutch operating lever c on its pivot, so as to carry the clutch collar or sleeve b^{25}
60 in the direction indicated by arrow 40, and under the pivoted finger b^{27} , thereby rendering the loose pulley b^5 fast on the worm shaft b^2 . The worm shaft b^2 is, by this operation, set in motion, which rotates the worm gear
65 b in the direction indicated by arrow 20, thereby rotating the drum carrying shaft A² and its drum A in the same direction, which

may be regarded as in the forward direction, that is, toward the rear of the machine. When the drum is started in its forward rotation, the hide, which has been previously
70 placed upon it, preferably so as to fall partly within the drum and partly without, is firmly gripped by the clamping mechanism, when the drum has carried the levers or links A¹⁴
75 sufficiently far to bring the rollers A^x in contact with the periphery of the stationary cams A⁹, and at or about the time the hide is thus firmly clamped to the drum, the operator depresses the treadle a^6 , and causes the
80 cranks or arms a^{12} to compress the springs a^{13} between them and the arms a^{10} , and during the compressing action of the springs a^{13} , the cranks or arms a^3 a^4 are rocked on the power shaft so as to move the roller carrying levers
85 a^{23} a^{24} downward, and bring the operating roll A¹⁵ into contact with the hide or skin, to perform its work. When the drum or support A has been carried in its forward direction the desired or required distance for the proper
90 treatment of that portion of the skin on the outside of the drum, the operator reverses the movement of the handle c^{19} and moves it from its forward position at the right of that shown in Fig. 1 into its reversed position,
95 which would be at the left of that shown in Fig. 1 and toward the upright A¹⁰. This reverse movement of the handle c^{19} moves the clutch operating bar or rod c^8 from its extreme forward position into its central or normal
100 position and then into a position at the left of that shown in Fig. 2, namely, with the cam hub c^7 carried under the roller 5 of the clutch operating lever c' , while the cam hub c^6 would be withdrawn from the clutch oper-
105 ating lever c . The engagement of the cam hub c^7 with the roller 5 of the clutch operating lever c' , causes the said lever to turn on its pivot and move the clutch sleeve b^{26} in the direction indicated by arrow 40 and
110 under the pivoted finger b^{28} , thereby rendering the loose pulley b^6 fast on the worm shaft b^2 . As the cam hub c^6 is withdrawn from engagement with the arm 2 of the clutch operating lever c , the latter is turned back into its
115 normal position so as to move the clutch sleeve b^{25} away from the pivoted finger b^{27} , which movement of the clutch operating lever c may be effected by gravity or in any other suitable manner. When the loose pulley b^6 is rendered
120 fast on the worm shaft b^2 as just described, the said worm shaft is rotated in a direction so as to produce a rotation of the worm gear, its shaft and the drum A, in a backward direction, that is, in a direction opposite to that
125 indicated by the arrow 20; and on its backward movement, the operating roll A¹⁵ may or may not be held in engagement with the hide or skin, and the clamping bar A³ will firmly hold the hide or skin between it and
130 the drum, until the rollers A^x shall have passed off from the periphery of the stationary cams, and into their cut-away or re-entrant portions, which movement causes the opening

of the clamping bar at or about the time the drum has been returned to its normal position; and when the said drum has substantially reached its normal position, the operator brings the handle c^{19} to its central or starting position shown in Fig. 1, thereby bringing the cam hubs c^6 c^7 into their normal or central position shown in Fig. 2, and when in this position the power is withdrawn from the worm shaft, and the drum A is then at rest. The operator then reverses the position of the hide, that is, he removes the hide from the drum and again places it on the drum, so that that half which has been previously acted upon, will be within the drum, and that portion which was previously within the drum will be on the outside of the drum in position to be acted upon by the operating roll A¹⁵. As thus far described, the starting and stopping of the oscillating movements of the drum has been dependent upon the operator, but in order to automatically stop the rotation of the drum at the end of its forward movement and also at the end of its backward or return movement, to provide against accident in case the attention of the operator should be diverted from his work, the clutch operating bar c^8 is adapted to be automatically operated upon, to reverse the forward movement of the drum and to bring the drum to rest on its backward movement. This result may be accomplished by a mechanism substantially as herein shown, and consisting of two cams or dogs d d' preferably adjustably secured on the drum shaft A², as by set screws d^2 , the said dogs or cams being adapted to engage rollers d^3 d^4 pivotally mounted in the forked arms d^5 d^6 of a lever d^7 pivoted as at d^8 to the upright B (see Figs. 1 and 2) and having its lower arm d^{80} pivotally connected as at d^9 to the horizontally extended arm c^{15} on the rod or bar c^8 , the lever arm d^{80} being shown in Fig. 1 as pivotally connected to an upright ear d^{12} on the said horizontally extended arm.

The forked arms d^5 d^6 are placed out of line with each other as clearly shown in Fig. 1, and the dogs d d' are secured on the drum shaft so as to engage the rollers d^3 d^4 carried by the said arms, if the drum is permitted to rotate beyond the normal limit of its forward movement, and also beyond the normal limit of its backward movement, for in the forward movement of the drum A, the dog d' will engage the arm d^5 of the lever d^7 and will turn or rock the said lever, so as to move its arm d^{80} and the clutch operating bar or rod c^8 in a direction opposite to that indicated by the arrow 40, thereby withdrawing the cam hub c^6 from engagement with the clutch lever c , and the movement of the bar or rod c^8 in the direction specified, is continued by the engagement of the dog d' , until the cam hub c^7 is brought in engagement with the clutch lever c' to render the reversing pulley b^6 fast on the worm shaft.

On the reverse or backward movement of the drum A, the dog d acts on the arm d^6 of

the lever d^7 , if the drum is carried beyond its normal or starting position, and rocks or turns the lever d^7 so as to move its arm d^{80} and the clutch operating bar or rod c^8 , in the direction indicated by arrow 40, which movement disengages the cam hub c^7 from the clutch operating lever c' , and renders the reversing pulley b^6 again loose on the worm shaft, and the dog d is so shaped as to become inactive upon the arm d^6 of the lever d^7 , when the latter and the clutch operating bar or rod c^8 are in their normal, central or inoperative position, thereby withdrawing the power from the worm shaft, and stopping the drum. The apparatus or machine is then in its normal condition or position, ready for the treatment of a new hide or skin.

I claim—

1. In a machine for treating hides or skins, the combination of the following instrumentalities, viz:—a movable drum or support for the hide or skin to be treated, a worm gear connected to the said drum or support to move therewith, a worm shaft substantially at right angles to the said drum and having a worm in engagement with the said gear, normally loose pulleys on said worm shaft rotating in opposite directions, clutch mechanisms co-operating with said pulleys and comprising clutch collars or sleeves movable in the same direction, levers to operate them and a clutch operating rod to act on said levers, for the purpose specified.

2. In a machine for treating hides or skins, the combination of the following instrumentalities, viz:—a movable drum or support for the hide or skin to be treated, a worm gear connected to the said drum or support to move therewith, a worm shaft having a worm in engagement with the said gear, loose pulleys on said worm shaft, clutch mechanisms to engage said pulleys to render them fast on the said worm shaft and comprising clutch sleeves or collars adapted to slide on said worm shaft, clutch levers connected to said sleeves or collars, a clutch operating rod provided with cam surfaces to operate said clutch levers, and means to positively move said clutch operating rod, substantially as described.

3. In a machine for treating hides or skins, the combination of the following instrumentalities, viz:—a movable drum or support for the hide or skin to be treated, a worm gear connected to the said drum or support to move therewith, a worm shaft having a worm in engagement with the said gear, loose pulleys on said worm shaft, clutch mechanisms to engage said pulleys to render them fast on the said worm shaft and comprising clutch sleeves or collars adapted to slide on said worm shaft, clutch levers connected to said sleeves or collars, a clutch operating rod provided with cam surfaces to operate said clutch levers, and mechanism to automatically operate said clutch operating rod, substantially as described.

4. In a machine for treating hides or skins,

the combination of the following instrumentalities, viz:—a movable drum or support for the hide or skin to be treated, a worm gear connected to the said drum or support to move
 5 therewith, a worm shaft having a worm in engagement with the said gear, loose pulleys on said worm shaft, clutch mechanisms to engage said pulleys to render them fast on the said worm shaft and comprising clutch sleeves or
 10 collars adapted to slide on said worm shaft, clutch levers connected to said sleeves or collars, a clutch operating rod provided with cam surfaces to operate said clutch levers, a driving shaft, a pulley on said shaft, a pulley
 15 intermediate of the pulleys on the worm shaft, and an endless belt passed about said pulleys to produce opposite rotations of the loose pulleys on the worm shaft, for the purposes specified.

20 5. In a machine for treating hides or skins, the combination of the following instrumentalities, viz:—a movable drum or support for the hide or skin to be treated, an operating roll co-operating therewith, levers pivoted at

their rear ends and provided with pivotal supports for the journal boxes of the operating roll, a rock shaft, arms loose thereon, rods connecting said pivoted levers to the said arms, counter-balancing weights carried by said arms, cranks fast on the rock shaft, and
 30 springs or cushions interposed between the said cranks and arms, substantially as described.

6. In a machine for treating hides or skins, the combination with clutch hubs or sleeves
 35 movable in the same direction, a shaft on which said hubs or sleeves are mounted clutch levers to operate said sleeves or hubs, and a reciprocating bar or rod provided with oppositely inclined cam surfaces to act on said
 40 clutch levers, 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.