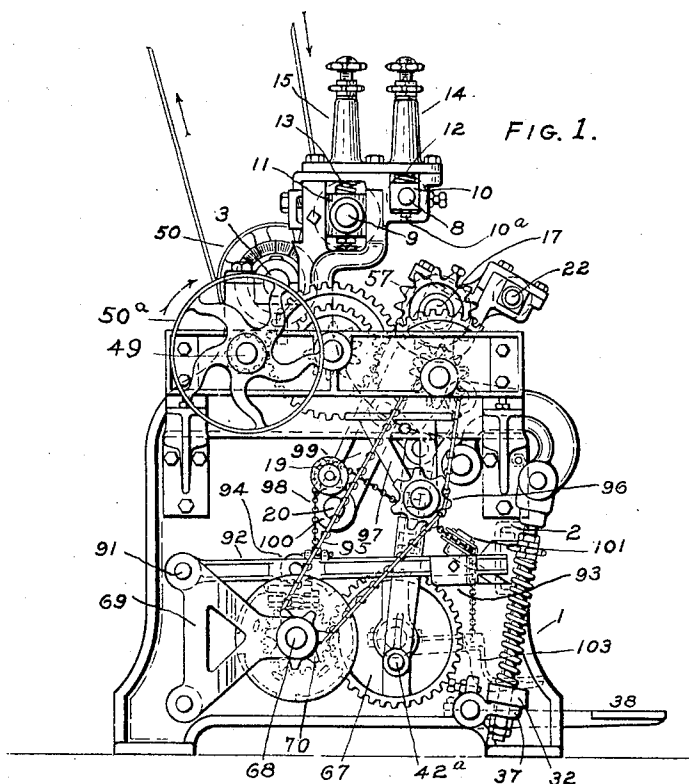
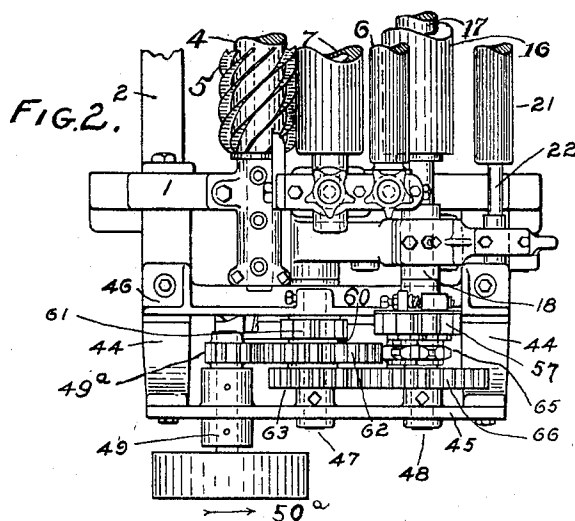


No. 829,613.

PATENTED AUG. 28, 1906.

R. F. WHITNEY.
HIDE WORKING MACHINE.
APPLICATION FILED AUG. 5, 1905.

4 SHEETS—SHEET 1.



WITNESSES.

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4 SHEETS—SHEET 2.

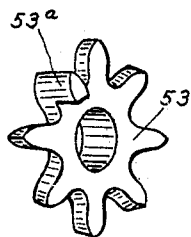


FIG. 11.

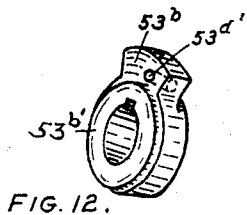


FIG. 12.

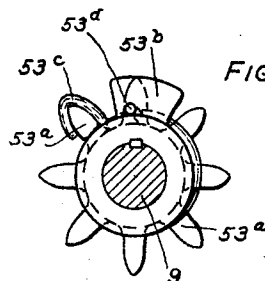


FIG. 10.

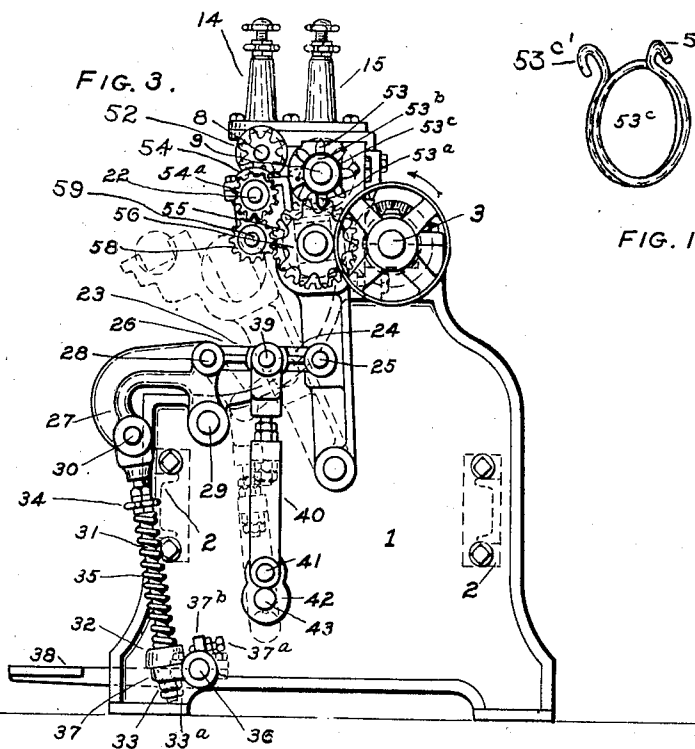


FIG. 13.

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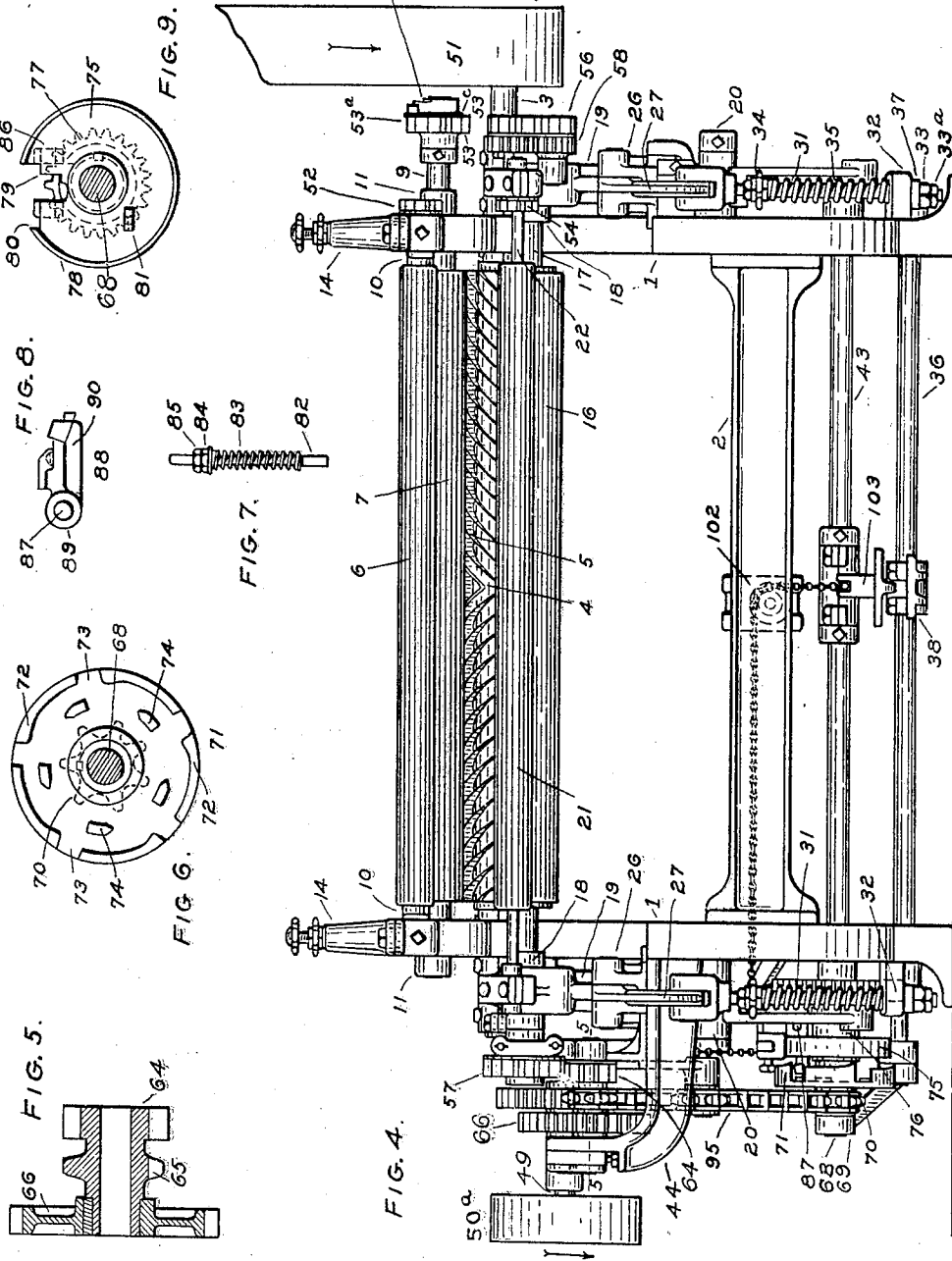
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4 SHEETS—SHEET 3.



WITNESSES.

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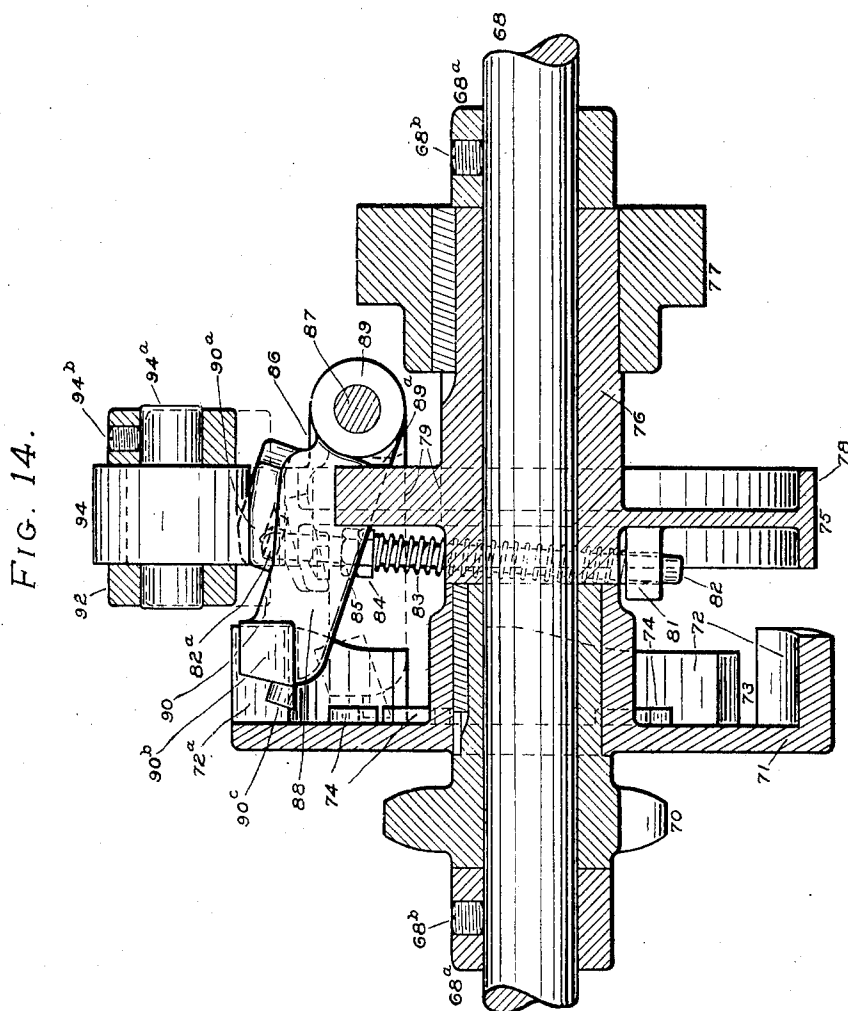
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

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CHUSETTS.

HIDE-WORKING MACHINE.

No. 829,613.

Specification of Letters Patent.

Patented Aug. 28, 1906.

Application filed August 5, 1905. Serial No. 272,837.

To all whom it may concern:

Be it known that I, ROBERT F. WHITNEY, a citizen of the United States, and a resident of Winchester, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Hide-Working Machines, of which the following is a specification.

My invention relates to machines for un-
hairing and working hides; and its object is to provide means for easily, quickly, and accurately performing the work.

It is illustrated by the accompanying drawings, in which—

Figure 1 is an elevation of the left end of a machine embodying my invention. Fig. 2 is a top plan view of the left end of the machine. Fig. 3 is an elevation of the right end of the machine. Fig. 4 is an elevation of the front of the machine. Fig. 5 is a section on the line 5 5, Fig. 4. Figs. 6, 7, 8, and 9 are detailed views of the clutch. Figs. 10, 11, 12, and 13 are detail views of certain gearing. Fig. 14 is a vertical central section of the clutch enlarged.

Similar characters refer to similar parts throughout the several drawings.

The main frame of the machine consists of the side frames 1, connected by the tie-girths 2. In suitable bearings in the frame is journaled the shaft 3, on which is mounted the work-roll 4, to which are secured the operating-blades 5. The upper feed-rolls 6 and 7 are mounted, respectively, on shafts 8 and 9, journaled in boxes 10 and 11, arranged in slotted portions of the frame and vertically yielding against the springs 12 and 13, adjustably arranged in the housings 14 and 15. The boxes 10 are vertically adjustable by means of jack-screws 10^a. The bed-roll 16 is mounted on the shaft 17, journaled in suitable bearings 18 in the free ends of the radius-arms 19, which are pivoted to the frame at 20. The lower feed-roll 21 is mounted on the shaft 22, journaled in suitable bearings in the free ends of the radius-arms 19. The radius-arms 19 are moved about their axes by the toggles 23, comprising the links 24, pivoted to said radius-arms at 25, and the links 26, pivoted to the curved rocker-arms 27 at 28, which rocker-arms are pivoted to the frame at 29. Pivoted to the rocker-arms 27 at 30 are the rods 31, which extend downwardly through the lugs 32 on the frame and upon

whose lower ends are screwed the nuts 33, which limit the upward movement of the rods and check-nuts 33^a. These rods 31 are furnished with adjustable hand-nuts 34, between which and lugs 32 are arranged the springs 35, adapted to be compressed by the downward movement of said rods and to react to raise them. Mounted in the frame is the shaft 36, which has fixed to its outer ends the levers 37, which encircle the rods 31 between and engaging the lugs 32 and the nuts 33. Rigidly fixed to the shaft 36 is the treadle 38, by depressing which the operator lowers said rods 31. The downward movement of the treadle 36 is limited as desired by the gage or adjustable set-screws 37^a in the ears 37^b of the levers 37. The toggle-joints 39 are operated by the longitudinally-adjustable arms (or links) 40, pivoted thereto and to the crank-pins 41, carried by the cranks 42 42^a, fixed to the shaft 43, mounted in bearings in the frame. A pair of brackets 44 are secured to the outer face of the frame at the left end of the machine, and secured thereto are two connecting-plates 45 and 46, in which are secured the two studs 47 and 48 and mounted the revoluble shaft 49.

The driving mechanism comprises the following pulleys and gears. The work-roll shaft 3 has fixed to its right end the pulley 50, belted by a belt 51 to a counter-shaft. (Not shown.) The pulley 50^a is fixed to the shaft 49. The feed-roll shaft 8 has fixed to its right end the gear 52. The feed-roll shaft 9 has revolubly mounted on its right end the gear 53, with the dog-tooth 53^b, adapted to engage the dog 53^a, keyed to said shaft 9. The feed-roll shaft 22 has fixed to its right end the gears 54 and 54^a. The bed-roll shaft 17 has fixed to its right end the gears 55 and 56 and to its left end the gear 57. The gear 58 is mounted on the upper end of the right radius-arm on the stud 59. On the sleeve 60, revolubly mounted on the stud 47, are fixed the gears 61, (integral with said sleeve,) 62, and 63. Revolubly mounted on the stud 48 is the gear 64 and the sprocket 65, made integral therewith, and the gear 66, affixed thereto, Fig. 5. On the shaft 43, at the left end, is mounted the gear 67, made integral with the crank 42^a.

On the left side of the frame, on the stud 68, supported by the bracket 69 and by the frame, is mounted a clutch for which I have

filed an application for Letters Patent of the United States, said application being filed July 22, 1905, Serial No. 270,757. This clutch is described as follows: On the stud 68 is revolvably mounted the driving-gear (sprocket) 70, to which is fixed the driving clutch member 71, which is in the form of a crown-wheel, with broad cogs 72 and narrow spaces 73 between the cogs, and which is furnished with the guiding-lugs 74. On said stud 68 is also revolvably mounted the hub 76, to which is fixed the driven clutch member 75 and the gear 77. These parts are confined on stud 68 by collars 68^a and set-screws 68^b. The driven clutch member 75 comprises a disk with an annular flange 78, the disk and flange each having a portion 79 80 cut away and said disk being furnished on its inner face with a perforated lug 81, through and in sliding contact with which extends the rod 82, and on which rests the inner end of the spring 83, whose outer end rests against the nut 84, adjustably screwed upon said rod and held in place by the jam-nut 85. The outer end of the rod 82 engages a socket 82^a in the dog 88. Near the outer edge of the disk are the perforated lugs 86, in which is fixed the axial shaft 87, on which is revolvably mounted the dog 88, with its hub 89 and arm 90, said arm being shaped substantially as shown; with its inner end 90^a adapted to fit loosely in the cut-out portion 80 of the flange 78, with its outer end 90^b in the form of a tooth, adapted to enter and engage the slots 73 in the driving member 71 and with its extreme outer end 90^c reduced and adapted to pass inside and engage the guiding-lugs 74 on the driving member 71. The upward movement of the dog is limited by the lug 89^a coming into contact with the flat portion of the driven member 75. Such upward movement may be limited by any suitable lugs or stops or other means properly arranged. On the stud 91 is fulcrumed the lever 92, carrying the weight 93. The roller 94 is mounted on the axial shaft 94^a, set in said lever and held in place by the screws 94^b.

The operation of the clutch is as follows: The sprocket 70, being driven by the chain 95, rotates the driving clutch member 71, while the driven clutch member 75, with the dog shown in the position in Fig. 1, remains at rest, the roller 94 resting upon the upper side of the dog and, assisted by the weight 93, depressing it against the pressure of the spring 83. The guiding-lugs 74 on the clutch member 71 during the rotation of said clutch member are carried over the extreme outer end 90^c of the dog 88, as shown in dotted lines in Fig. 14. When the lever 92 is raised by power applied to the chain 98, the spring 83 raises the dog 88, bringing its tooth 90^b against the inner side of one of the rotating cogs 72, which passes over said tooth in sliding contact therewith, bringing one of the ro-

tating slots 73 opposite, when said tooth 90^b springs into said slot 73, locking the two clutch members together and imparting motion to the gear 77. If when the lever 92 is raised the extreme outer end 90^c of the dog is below one of the guiding-lugs 74, it will come into contact therewith and remain stationary while said lug passes, when it will jump across into contact with the next cog and engage the next slot, as just described. The purpose of these guiding-lugs is to prevent the dog when released by raising the lever from jumping suddenly into or just missing one of the slots, and thereby jarring and straining the machinery and wearing out the clutch. When the clutch members are locked together in rotation, the roller 94 will be in rolling contact with the flange of the driven clutch member and if not held by the chain 98 will after one revolution of the clutch fall into the position shown in Fig. 1 or in dotted lines, Fig. 14, thus releasing the driven member of the clutch. The chain 98 is adapted to be raised or lowered by the treadle 103 or any other suitable mechanism. It is obvious that the members of the clutch will remain in engagement so long as the lever 92 is held by the chain 98 in the position shown in Fig. 14, and it is also obvious that when the lever 92 is released the roller 94 will break the engagement automatically at the completion of one revolution by depressing the dog 88, as explained. The cogs 72 are preferably made with enlarged forward driving ends 72^a to provide an enlarged surface against which the tooth 90^b of the driven member may strike, and thus insure an efficient engagement of these two parts. The sprocket 70 is driven by the chain 95, which runs over the idler 96, fixed to the slide-binder 97, fixed to plate 46, and thence to sprocket 65, by which it is driven. The lever 92 is raised by chain 98, which runs over the pulley 99, mounted on the standard 100, fixed to stud 20, thence over pulley 101, mounted on the frame, and over pulley 102, mounted on the tie-girth, to treadle 103, revolvably mounted on shaft 43. The spring 53^c encircles the shoulder 53^{b'} on the dog 53^b, with one end 53^{c'} engaging the dog-tooth 53^a on the gear 53 and the other end 53^d engaging the hole 53^{d'} in the dog 53^b.

While the clutch is no part of this invention, its action should be described. The operator depresses the treadle 103, thereby raising the lever 92 and releasing the dog 88, which springs into the cut-out portion 73 of the driving member 71, thereby locking the two members together. The operator then removes his foot from the treadle, and the roller 94 continues in rolling contact with the flange of the driven member and reaching the dog 88 automatically depresses it, thus releasing the driven clutch member. The gears 67 and 77 are so arranged and are of

such relative sizes that the engagement and the release of the clutch members occur either when the radius-arms are in the position shown in Fig. 1 or in that shown in Fig. 3. By keeping his foot on the treadle 103 the operator maintains the engagement of the clutch members, and in that case the radial arms move back and forth regularly and without interruption.

The operation is as follows: The work-roll 4 is driven by the pulley 50. The shaft 49 and gear 49^a, fixed thereto, are driven by the pulley 50^a. Gear 49^a engages gear 62 on stud 47 and drives gears 61 62 63, mounted on said stud. Gear 61 engages and drives gear 57 on the left end of bed-roll shaft 17 when in the position shown in Fig. 3. Gear 63 engages gear 66 and drives gear 66, sprocket 65, and gear 64. Sprocket 65 engages chain 95 and drives chain 95, sprocket 70, and driving clutch member 71. Gear 77 on the driven clutch member 75 engages gear 57 and drives it with crank 42^a. Gear 55 on the right end of bed-roll shaft engages and drives gear 58 on stud 59. Gear 56 on right end of bed-roll shaft engages and drives gear 53 on feed-roll shaft when in the position shown in Fig. 3. Gear 58 engages and drives gear 54^a on feed-roll shaft 22 and gear 54 on said shaft engages and drives gear 52 on feed-roll shaft 8 when in the position shown in Fig. 3. Power being applied to pulleys 50 and 50^a, rotating them as indicated by the arrows, and the rolls being in the position shown in Fig. 1, it is obvious that the work-roll 4 will be rotating in the same direction as the pulleys, the bed-roll 16 and feed-roll 21 and driving clutch member 71 will be rotating in the opposite direction, while the feed-rolls 6 and 7 and driven clutch member 75 will remain stationary. The operator places a hide over the bed-roll 16 and feed-roll 21, and these feed the hide inwardly and its end drops between the bed-roll and the work-roll. The operator depresses the treadle 103, thereby raising the lever 92, and the clutch members engage each other and raise the bed-roll to the position shown in Fig. 3, when the clutch members become automatically disengaged, as above explained, leaving the hide between and in contact with the various rolls, it being held firmly between the feed-rolls 21 and 6 and 7 and between the bed-roll and the work-roll. As above explained, the bed-roll now reverses its motion, carrying the hide back and out of the machine, in which operation the feed-rolls are made to assist by the gearing already described, the bed-roll 16 and feed-roll 21 then moving in the same direction as that of the work-roll and the feed-rolls 6 and 8 moving in the opposite direction. This operation continues till the clutch automatically acts and separates the rolls.

The springs 35, arranged on the rods 31 as described, enable the bed-roll to automatic-

ally move to and from the work-roll as different thicknesses of hide or any inequalities in the thickness pass between the rolls. In addition to this automatic arrangement I provide a treadle 38, which I call a "relief-treadle," by depressing which the operator may at any time and as desired separate the bed-roll and work-roll and also the feed-rolls to allow thick portions of the hide to pass between the rolls or may regulate the pressure when small or narrow portions of the hides—such as shanks, heads, &c.—are passing through the rolls, so as to prevent too great pressure at such times. This combination of automatic springs and relief-treadle for separation of the rolls is an important feature of my invention. The treadle 38 is arranged below treadle 103 and between it and the operator for convenience. Another important feature of my invention is the gear 53, with the dog 53^b and spring 53^c arranged on the feed-roll shaft 9, by which arrangement the gear 56 on the bed-roll shaft 17 is enabled to engage said gear 53 gently and fully and without a sudden and injurious collision of the gears, the spring 53^c acting as a cushion while this engagement is being made. The spring 53^c before engagement of the gears holds the dog-tooth 53^a and dog 53^b a certain distance apart. Weights, the well-known equivalents of springs, might be substituted for springs 35 by a slight modification of the arrangement of the several parts.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a hide-working machine a frame, a work-roll mounted on said frame, a pair of radius-arms pivoted to said frame, a bed-roll mounted in the free ends of said radius-arms, a pair of rocker-arms pivoted to said frame, a pair of toggles pivoted to said radius-arms and to said rocker-arms, means for operating said toggles, a pair of rods having their upper ends pivoted to said rocker-arms and their lower ends extending through and in loose engagement with lugs on said frame, springs arranged on said rods above said lugs and adapted to be compressed by their downward movement and to react to raise them, a shaft mounted on said frame and adapted to engage the lower ends of said rods and to lower said rods thereby moving said bed-roll away from said work-roll, when said toggles are straightened, and compressing said springs, and a treadle fixed to said shaft; substantially as described.

2. In a hide-working machine a frame, a work-roll mounted on said frame, a pair of radius-arms pivoted to said frame, a bed-roll mounted in the free ends of said radius-arms, means for moving said radius-arms about their axes in either direction, independent means for moving said radius-arms about their axes in one direction, springs arranged

to be compressed by this last movement and to react to move said radius-arms in the opposite direction; substantially as described.

3. In a hide-working machine a frame, a
5 work-roll mounted on said frame, a bed-roll mounted on said frame movable toward and away from said work-roll, means for moving said bed-roll toward and away from said
10 work-roll, independent means for moving said bed-roll away from said work-roll, springs

arranged to be compressed by this last movement and to react to move said bed-roll in the opposite direction; substantially as described.

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

ROBERT F. WHITNEY.

Witnesses:

RALPH W. FOSTER,
ELSIE M. COOLEGE.