

No. 713,118.

Patented Nov. 11, 1902.

N. LEIDGEN.
HIDE WORKING MACHINE.
(Application filed Mar. 22, 1902.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.

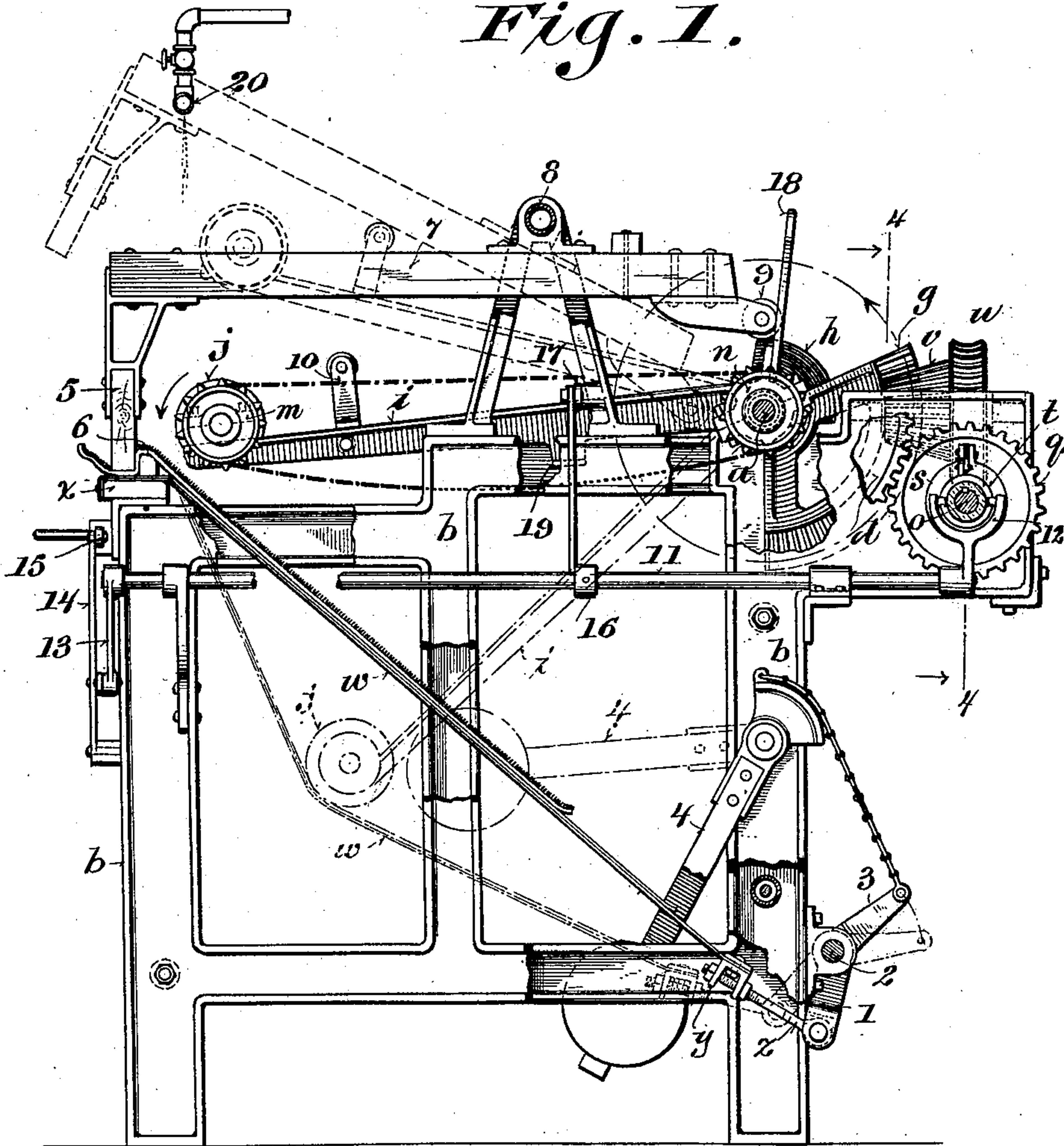
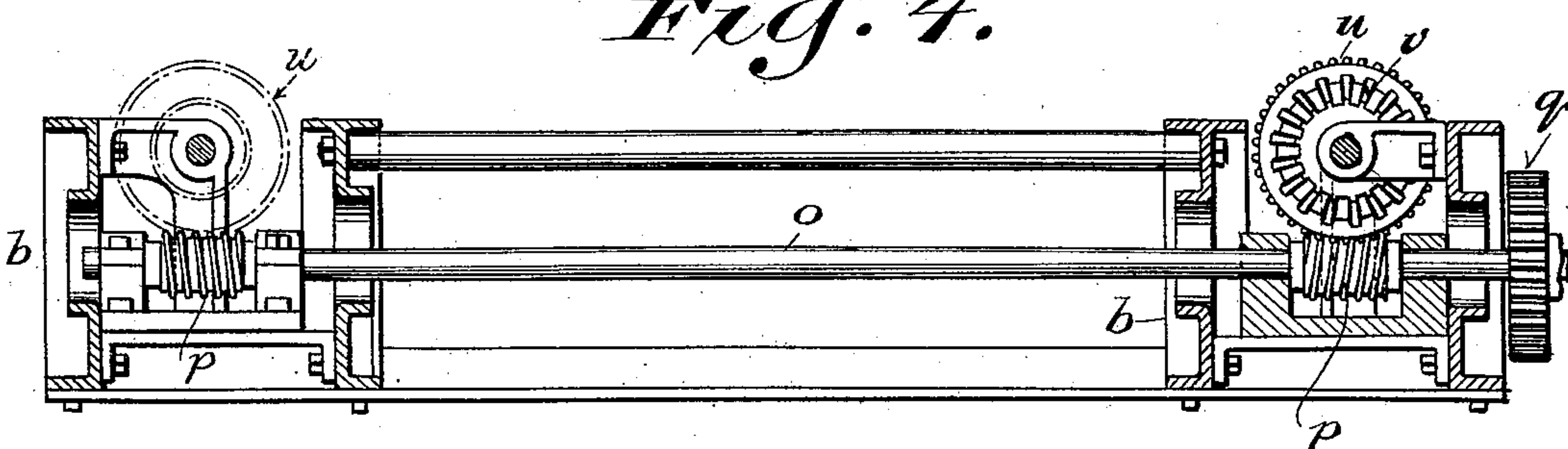


Fig. 4.



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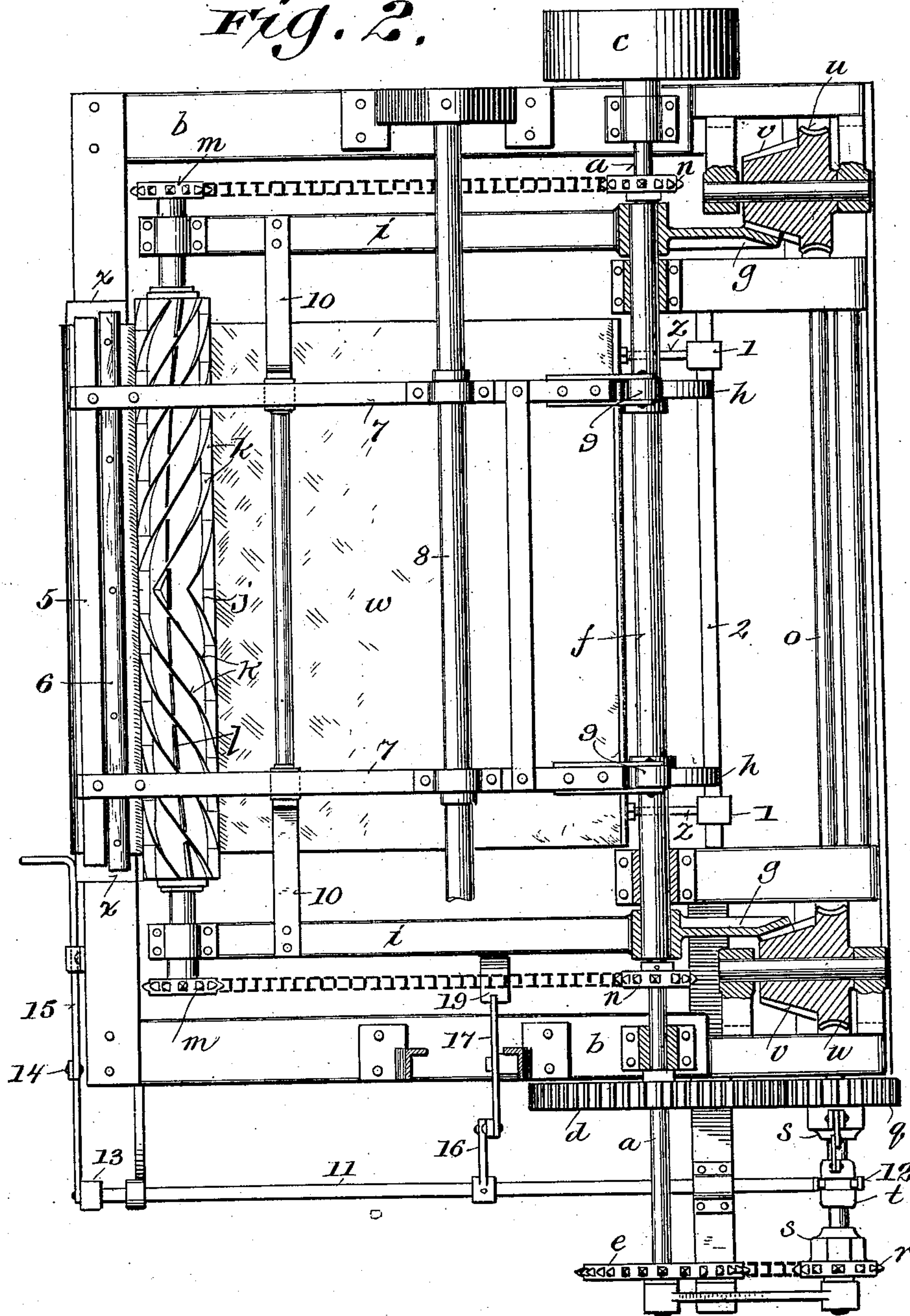
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3 Sheets—Sheet 2.

Fig. 2.



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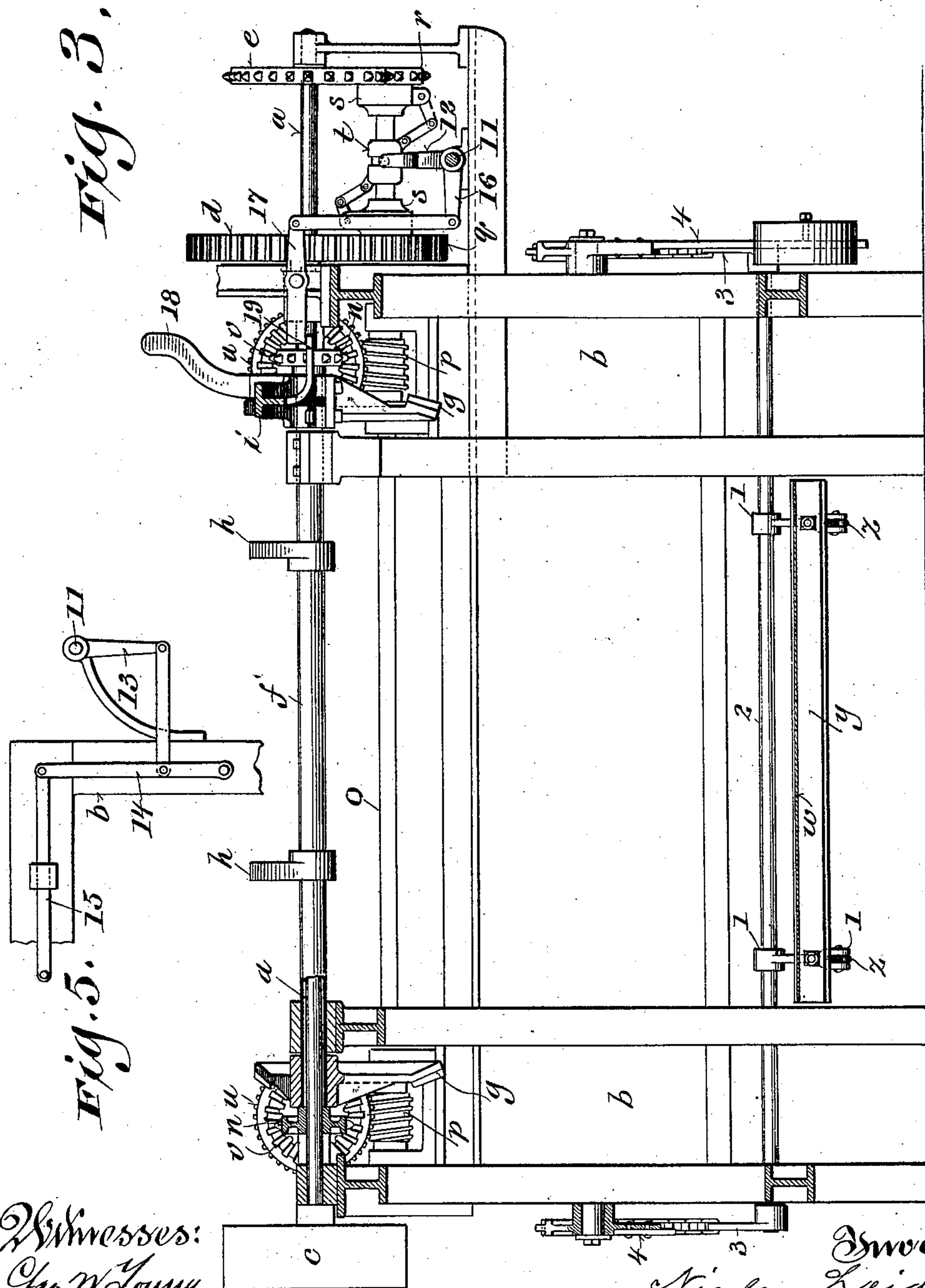
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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

NICOLAUS LEIDGEN, OF MILWAUKEE, WISCONSIN, ASSIGNOR OF ONE-HALF
TO EDWARD H. MUNKWITZ, OF MILWAUKEE, WISCONSIN.

HIDE-WORKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 713,118, dated November 11, 1902.

Application filed March 22, 1902. Serial No. 99,398. (No model.)

To all whom it may concern:

Be it known that I, NICOLAUS LEIDGEN, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Hide-Working Machines, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

This invention relates particularly to machines in which hides are subjected to the scraping, scouring, or rubbing action of rotary cylinders provided with blades or scrapers for removing hair, dirt, and other matter and for preparing the hides for leather. Its main objects are to subject both the thinner and thicker parts of the hides to uniform and effective action or treatment, to avoid cutting, breaking, or injuring the hides, and generally to improve the construction and operation of machines of the class and for the purposes above mentioned.

It consists in the construction and relative arrangement of certain parts and in combinations of parts hereinafter particularly described, and pointed out in the claims.

In the accompanying drawings like characters designate the same parts in the several figures.

Figure 1 is an end elevation of a machine embodying the invention, certain parts being broken away. Fig. 2 is a plan view of the machine, certain parts being broken away and other parts being shown in horizontal section. Fig. 3 is a front elevation and vertical cross-section of the machine, certain parts of which are omitted. Fig. 4 is a vertical section on the line 4-4, Fig. 1, showing a part of the gearing for moving the hide-working cylinder over the bolster; and Fig. 5 is a detail view of the connections at the front of the machine for operating the clutches which control the movement of the hide-working cylinder over the bolster.

In machines heretofore commonly used to do the class of work for which the machine herein shown and described is designed the hides from which hair, dirt, or other matter is to be removed are generally placed on a solid or inflexible bolster and moved back and forth therewith by the operator under a

cylinder provided with blades or scrapers. With such machines it has been found impossible or difficult to do the work effectively and completely without injuring the hides on account of variation or inequality in their thickness, the action of the cylinder blades or scrapers on the thicker parts of the hides being too harsh and the action on the thinner parts being too light. One of the main objects of this invention is to avoid the objections and difficulties above mentioned in the operation of this class of machines and to admit of successfully performing by machinery certain operations on hides which have heretofore had to be performed or completed by hand.

Referring to the accompanying drawings, *a* is a horizontal driving-shaft having suitable bearings in a frame *b*. It is provided at one end with a pulley *c* and at the other end with a gear *d* and a sprocket-wheel *e*.

f is a tube or sleeve through which the shaft *a* passes. It is supported and adapted to turn at or near its ends in suitable bearings on the frame *b*, and it is provided at its ends with segment bevel-gears *g* and at intermediate points with cams *h*. It is also provided at or near its ends with forwardly-extending arms *i*, in which a cylinder *j* is journaled parallel with the shaft *a*.

A cylinder of the kind shown and described in United States Letters Patent No. 663,097, dated December 4, 1900, having reversely-arranged helical spreading-blades *k* and longitudinally-arranged scraping-blades *l*, as shown in Fig. 2, is preferably employed; but any of the various forms of cylinders suitable for this class of work may be used. Upon the outer ends of the cylinder-journals are fixed sprocket-wheels *m*, which are connected by link belts with similar sprocket-wheels *n* on the shaft *a*. On the opposite side of the shaft *a* from the cylinder *j* a shaft *o* is supported in bearings on the frame *b*, parallel with said shaft *a*. This shaft is provided, as shown in Figs. 3 and 4, with worms *p*, a gear *q*, and a sprocket-wheel *r*. The gear *q*, which meshes with the gear *d*, and the sprocket-wheel *r*, which is connected by a link belt with the sprocket-wheel *e*, are loosely mounted on said shaft *o* and adapted to be engaged

therewith by suitable clutches *s*, which are connected by toggle-joints, as shown in Fig. 3, with a collar *t*, movable lengthwise on the shaft *o* between said clutches. When this collar is in its middle position, as shown in Figs. 2 and 3, both of the clutches will be unlocked and both the gear *q* and the sprocket-wheel *r* will be free to turn on the shaft *o*. A worm-gear *u* and a bevel-pinion *v*, formed or secured together and mounted on a short shaft transverse to the shaft *o*, mesh, respectively, with and connect the worm *p* and the segment-gear *g* at each end of the machine.

w is a flexible bolster arranged to support a hide spread thereon in position to be operated upon by the cylinder *j* and adapted to press all parts of the hide, whether thick or thin, with equal force against the blades or scrapers of said cylinder. This bolster may be made of one or more thicknesses of rubber belting or other suitable flexible or pliable material which will yield and conform to inequalities or variations in the thickness of the hide and hold the thinner and thicker portions thereof against the blades or scrapers of the cylinder with a substantially uniform pressure. The bolster is preferably arranged, as shown in Fig. 1, in an inclined position, so as to hold a hide in plain view of the operator and to carry off hair and dirt detached by the cylinder. It is attached at its upper edge to a cross-bar *x* on the upper front side of the frame *b* and at its lower edge to a parallel bar *y*, yieldingly connected with said frame, so as to allow the bolster, with a hide spread thereon, to conform to the cylinder as the latter is swung down and back over and against the hide and also to admit of increasing the tension on the bolster as the cylinder approaches its center. The bar *y* may be adjustably connected by eyebolts or links *z* with arms 1 on a rock-shaft 2, which is supported by bearings on the back of the frame parallel with the cylinder *j*. The shaft 2 is provided with arms 3, which have chain or other flexible connections with the sector-shaped ends of adjustably-weighted levers 4, as shown in Figs. 1 and 3. In place, however, of the bar *y* and its connections above described any other form of yielding support for stretching the bolster and applying the desired tension thereto may be employed.

5 is a clamping-bar for holding a hide to the cross-bar *x* or to a cleat 6, attached thereto, over the bolster, as shown in Figs. 1 and 2. This clamping-bar is attached to the front ends of arms 7, which are pivoted on a cross-shaft 8 and are provided at their rear ends in the paths of the cams *h* with rollers 9. The shaft 8 is supported at its ends parallel with and above the shaft *a* by standards rising from the sides of the frame *b*. The arms *i* are provided with upwardly and inwardly extending arms 10, carrying at their upper ends rollers which are arranged, when the cylinder *j* is elevated and the cams *h* are turned backward out of contact with the rollers 9, to en-

gage with the arms 7, raise the clamping-bar 5, and release the hide held thereby.

11 is a rock-shaft extending horizontally along one end of the machine and provided with an upwardly-extending forked arm 12, engaging a groove in the collar *t*. At its front end said shaft is provided with a downwardly-projecting arm 13, which is linked to a lever 14 on the front of frame *b*, as shown in Figs. 1 and 5. To the upper end of the lever 14 is pivoted a horizontal bar 15, movable endwise in a bearing on said frame and provided within convenient reach of the operator with a handle. Between the arms 12 and 13 the shaft 11 is also provided with an arm 16, extending horizontally toward the frame and connected by a link with the outer arm of a horizontally-disposed lever 17, the inner end of which extends into the path of arms or projections 18 and 19 on the adjacent cylinder-carrying arm *i*.

20 is a sprinkler-pipe arranged above the upper end of the bolster *w* and having a valve-controlled water-supply connection.

The machine hereinbefore described operates as follows: The cylinder *j* being raised to the upper limit of its movement and the clamping-bar 5 being held by the arms 10 in an elevated position, as indicated by dotted lines on Fig. 1, a hide is spread on the bolster *w* with the hair or grain side up. The cylinder *j* being rotated in the direction indicated by the arrow by power applied to pulley *c* on the shaft *a*, the operator moves the bar 15 outward or to the right, thereby shifting the collar *t* inward and clutching the gear *q* on the shaft *o*. The cylinder *j* is thereupon swung downward against the upper end of the bolster by the revolution of the shaft *o*, which is turned by the gears *d* and *q* and imparts the required movement to the bevel-gears *g* through the worms *p*, worm-gears *u*, and bevel-pinions *v*. As the rollers on the arms 10 clear the arms 7, leaving the clamping-bar resting upon the hide over the bar *x*, the cams *h* engage with the rollers 9 and force said clamping-bar tightly down upon the hide over the cross-bar *x*. As the cylinder passes over the hide the yielding flexible bolster upon which it is spread presses all parts of the hide with equal force against the blades of the cylinder, causing them to effectively scrape the hair and dirt or other matter from the thinner as well as the thicker portions of the hide and preventing too harsh action of the blades upon and consequent injury to the thicker portions. As the cylinder approaches the lower limit of its movement the arm 18 engages with the lever 17 and shifts the collar *t* into its middle position, thereby disengaging the clutch *s*, which locks the gear *q* on the shaft *o*, and arresting further downward movement of the cylinder. The operator now moves the bar 15 back to the left, thereby shifting the collar *t* outward and engaging the clutch *s*, which locks the sprocket-wheel *r* on the shaft *o*, which is now turned back-

ward or in a reverse direction by the sprocket-wheels *e* and *r* and the link belt connecting them, and through the connections hereinbefore described swings the arms *i*, with the cylinder *j*, upward. In case any hair, dirt, or other matter still remains to be removed from the hide the operator by shifting the bar 15, as above explained, causes the cylinder *j* to swing down and back again over the hide, and this operation is repeated as many times as may be necessary to accomplish the desired result. By proper manipulation of the bar 15, which controls the reversing-gearing, the cylinder *j* may be caused to swing back and forth any number of times through longer or shorter arcs over any part of the length of the bolster *w*, and the action of the cylinder may thus be confined to the corresponding part of a hide spread upon said bolster. As the hair, dirt, or other matter is loosened by the action of the cylinder-blades it is washed away over the lower end of the bolster by the water flowing from the sprinkler-pipe 20 upon the upper end of the bolster. That portion of the hide above the cylinder is thus kept clean, and being at all times in clear sight of the operator its condition may be noted and the operation of the cylinder thereon may be governed accordingly. When the work which the machine is intended to perform on the hide is completed, the cylinder *j* is swung upward, and as it approaches the limit of its movement in that direction the arm or projection 19, engaging with the lever 17, shifts the collar *t* back to its middle position, thereby arresting the further upward movement of said cylinder. The rollers carried by the arms 10, engaging with the arms 7, lift the clamping-bar 5 out of the way, thereby releasing the hide. The worms *p* and the worm-gears *u*, by means of which the cylinder *j* is swung back and forth over the bolster *w*, serve to lock and hold said cylinder in any position in which it may be arrested and obviate the necessity of providing a counterweight for holding said cylinder and its swinging frame, with the clamping device, in an elevated or any other desired position. The weighted arms 4 are so arranged that they will stand in a horizontal position, and the weights thereon will exert the greatest force to stretch the bolster *w* taut when the cylinder *j* is midway between the supported ends of the bolster, as indicated by dotted lines on Fig. 1. By means of this arrangement as the cylinder approaches the middle of the bolster and more easily flexes it away from its normal position the tension upon the bolster is increased, so that a hide spread thereon will be held with approximately uniform force against the blades of the cylinder *j* as it moves up and down over the bolster.

The flexible bolster and variable-tension device being among the most essential features of the machine herein shown and described may be employed to advantage in

machines differing in other respects from that herein shown and described for performing various operations upon hides, and I do not wish to be understood as limiting myself to their use in connection with any particular construction and arrangement of other parts, except in those claims which expressly include such limitations. For example, such a bolster may be movably mounted and employed with a hide-working cylinder that is stationarily mounted, or the bolster may be used in connection with a cylinder which is arranged to travel in a rectilinear instead of a curved path. In short, various changes in the construction and arrangement of parts may be made and various parts omitted or added within the spirit and intended scope of the invention.

I claim—

1. In a hide-working machine the combination of a rotary cylinder and a flexible bolster, one of which is movable with relation to the other, means for moving one with relation to the other transversely to the axis of the cylinder, means for rotating said cylinder and means for increasing the tension on the bolster as the middle of the bolster and the cylinder approach each other, substantially as described.

2. In a hide-working machine the combination of a rotary cylinder movable transversely to its axis, a flexible bolster yieldingly stretched in the path of said cylinder, and means for moving said cylinder lengthwise of the bolster, substantially as described.

3. In a hide-working machine the combination of a rotary cylinder movable transversely to its axis, a flexible bolster yieldingly stretched in the path of said cylinder, means for moving said cylinder lengthwise along said bolster, and means for increasing the tension on said bolster as the cylinder approaches the middle of the bolster, substantially as described.

4. In a hide-working machine the combination of a flexible bolster stretched in an inclined position, a rotary cylinder movable transversely to its axis lengthwise of said bolster, means for rotating said cylinder and means for moving it transversely to its axis along the bolster, substantially as described.

5. In a hide-working machine the combination of a flexible bolster stretched in an inclined position, a rotary cylinder movable transversely to its axis lengthwise of said bolster, a sprinkler arranged to deliver water to the upper end of the bolster, means for rotating said cylinder and means for moving it transversely to its axis along the bolster, substantially as described.

6. In a hide-working machine the combination of a swinging frame, a rotary hide-working cylinder mounted in said frame parallel with the axis about which it swings, a flexible bolster stretched in the path of said cylinder between supports which are parallel with the cylinder and one of which is capable

of yielding toward the other, means for rotating said cylinder and swinging it back and forth against and lengthwise of said bolster, and means for increasing the tension on the
5 bolster as the cylinder approaches the middle unsupported portion thereof, substantially as described.

7. In a hide-working machine the combination of a swinging frame, a rotary hide-working cylinder mounted in said frame parallel
10 with the axis about which it swings, a flexible bolster stretched in the path of said cylinder between supports which are parallel with the cylinder and one of which is capable
15 of yielding toward the other, means for rotating said cylinder and swinging it back and forth against and lengthwise of said bolster, and a weighted lever connected with the yielding bolster-support and arranged to approach a horizontal position as the cylinder
20 approaches the middle unsupported portion of the bolster, substantially as described.

8. In a hide-working machine the combination of a swinging frame, a rotary hide-working cylinder mounted in said frame parallel
25 with the axis about which it swings, a flexible bolster stretched in an inclined position below and in the path of said cylinder, and means for rotating said cylinder and swinging
30 it back and forth against and lengthwise of said bolster, substantially as described.

9. In a hide-working machine the combination of a swinging frame, a rotary hide-working cylinder mounted in said frame parallel
35 with the axis about which it swings, a flexible bolster stretched in an inclined position below and in the path of said cylinder, a sprinkler located over the upper end of said bolster, and means for rotating said cylinder
40 and swinging it back and forth against and lengthwise of said bolster, substantially as described.

10. In a hide-working machine the combination of a swinging frame, a rotary hide-working cylinder mounted in said frame parallel
45 with the axis about which it swings, a flexible bolster stretched in an inclined position below and in the path of said cylinder between supports which are parallel with the cylinder and one of which is capable of yielding
50 toward the other, means for clamping a hide to the upper end of the bolster, a sprinkler located over the upper end of the bolster, means for rotating said cylinder and swinging
55 it back and forth against and lengthwise of the bolster, and means for increasing the tension on the bolster as the cylinder approaches the center thereof, substantially as described.

60 11. In a hide-working machine the combination of a swinging frame, a rotary cylinder carried by said frame and provided with blades or scrapers for removing hair or other matter from hides, a flexible bolster adapted
65 to support a hide and hold the same with a yielding pressure against the blades or scrapers of said cylinder, and means for rotating

said cylinder and swinging it back and forth lengthwise of said bolster, substantially as described.

12. In a hide-working machine the combination of a rotary cylinder provided with blades or scrapers for removing hair or other matter from hides, a swinging frame carrying
70 said cylinder, a flexible bolster adapted to support a hide in position to be operated upon by said cylinder and attached at opposite ends parallel with said cylinder to supports one of which is capable of yielding toward the other,
75 and means for rotating said cylinder and swinging it back and forth lengthwise of the bolster, substantially as described.

13. In a hide-working machine the combination of a stationary frame, a swinging frame mounted thereon, a cylinder carried by said
80 swinging frame and provided with blades or scrapers for removing hair or other matter from hides, a flexible bolster attached at one end to the stationary frame parallel with said cylinder, and at the other end to a parallel
85 support yieldingly connected with the stationary frame, a clamping device for holding a hide in place on said bolster, and means for rotating said cylinder and swinging it back and forth over said bolster, substantially as
90 described.

14. In a hide-working machine the combination of a stationary frame, a driving-shaft supported horizontally in said frame, a sleeve
95 mounted on said driving-shaft and capable of turning independently thereof, a rotary cylinder carried parallel with said sleeve by arms fixed thereon, a flexible bolster supported by its opposite ends parallel with and
100 in the path of said cylinder, a clamping device for holding a hide to said bolster, and a cam on said sleeve for closing said clamp, substantially as described.

15. In a hide-working machine the combination of a driving-shaft, a frame adapted to
105 swing on an axis concentric with said driving-shaft, a rotary cylinder carried by said frame parallel with the driving-shaft and provided with blades or scrapers and with a sprocket-wheel which is connected by a link belt with
110 a sprocket-wheel on the driving-shaft, a yielding flexible bolster adapted to support a hide in the path of said cylinder, and means for swinging said cylinder-frame back and forth lengthwise of said bolster, substantially as
115 described.

16. In a hide-working machine the combination of a swinging frame, a rotary cylinder carried by said frame parallel with the axis
120 on which it swings and provided with blades or scrapers, a flexible bolster yieldingly supported in the path of said cylinder, a rocking frame arranged to swing on an axis parallel with that on which the roller-frame swings and provided with a cross-bar which is parallel
125 with its axis and adapted to clamp a hide to said bolster, and a cam mounted on the swinging cylinder-frame and adapted by engagement with said rocking frame to force
130

and hold the clamping-bar against the bolster when said cylinder is advanced over the bolster, said cylinder-frame being constructed and arranged to move the clamping-bar away
5 from the bolster when the cylinder is moved back to its starting-point, substantially as described.

17. In a hide-working machine the combination of a driving-shaft, a frame adapted to
10 swing on an axis concentric with said shaft and provided with bevel-gears, a rotary cylinder carried by said frame parallel with its axis and having an actuating connection with said shaft, a flexible bolster yieldingly supported in the path of said cylinder, a counter-shaft parallel with the driving-shaft provided with worms and having reversing-gear connections with said driving-shaft, and connected worm-gears and bevel-pinions mounted on shafts transverse to said driving and counter shafts and meshing respectively with the worms on said counter-shaft and with the bevel-gears on the swinging roller-frame, substantially as described.

25 18. In a hide-working machine the combination of a swinging frame, a rotary cylinder carried by said frame parallel with the axis on which it swings, an independently-rotating driving-shaft concentric with said axis, gear-

ing for connecting said driving-shaft and 30 swinging frame and moving the latter in either direction, means for manually connecting said gearing to swing said frame in either direction, and means for automatically disconnecting said gearing to stop said swinging 35 frame at the proper limit in each direction, substantially as described.

19. In a hide-working machine the combination of a swinging frame, a rotary cylinder carried by said frame parallel with the axis 40 on which it swings, an independently-rotating driving-shaft which is concentric with said axis and has a driving connection with said cylinder and reversing actuating connections with said swinging frame, a lever arranged to be shifted in opposite directions by the engagement therewith of parts of said swinging frame for throwing said reversing actuating connections out of gear at the limits of the movement of said swinging frame, 50 and a flexible bolster arranged in the path of said cylinder, substantially as described.

In witness whereof I hereto affix my signature in presence of two witnesses.

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Witnesses:

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ALICE E. GOSS.