

No. 828,588.

PATENTED AUG. 14, 1906.

A. E. & R. F. WHITNEY.
MACHINE FOR UNHAIRING AND WORKING HIDES.

APPLICATION FILED NOV. 14, 1904.

3 SHEETS—SHEET 1.

Fig. 2.

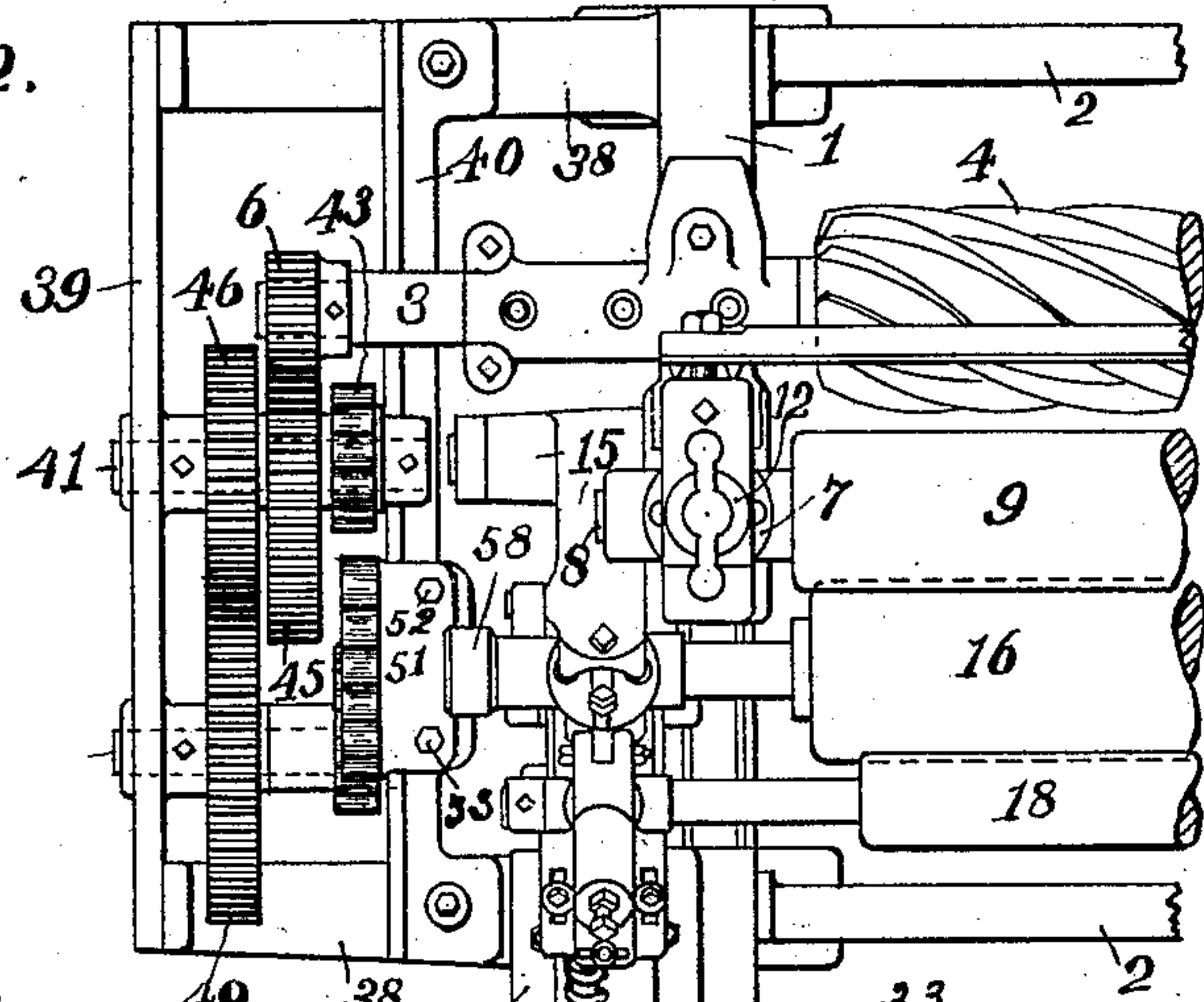


Fig. 1.

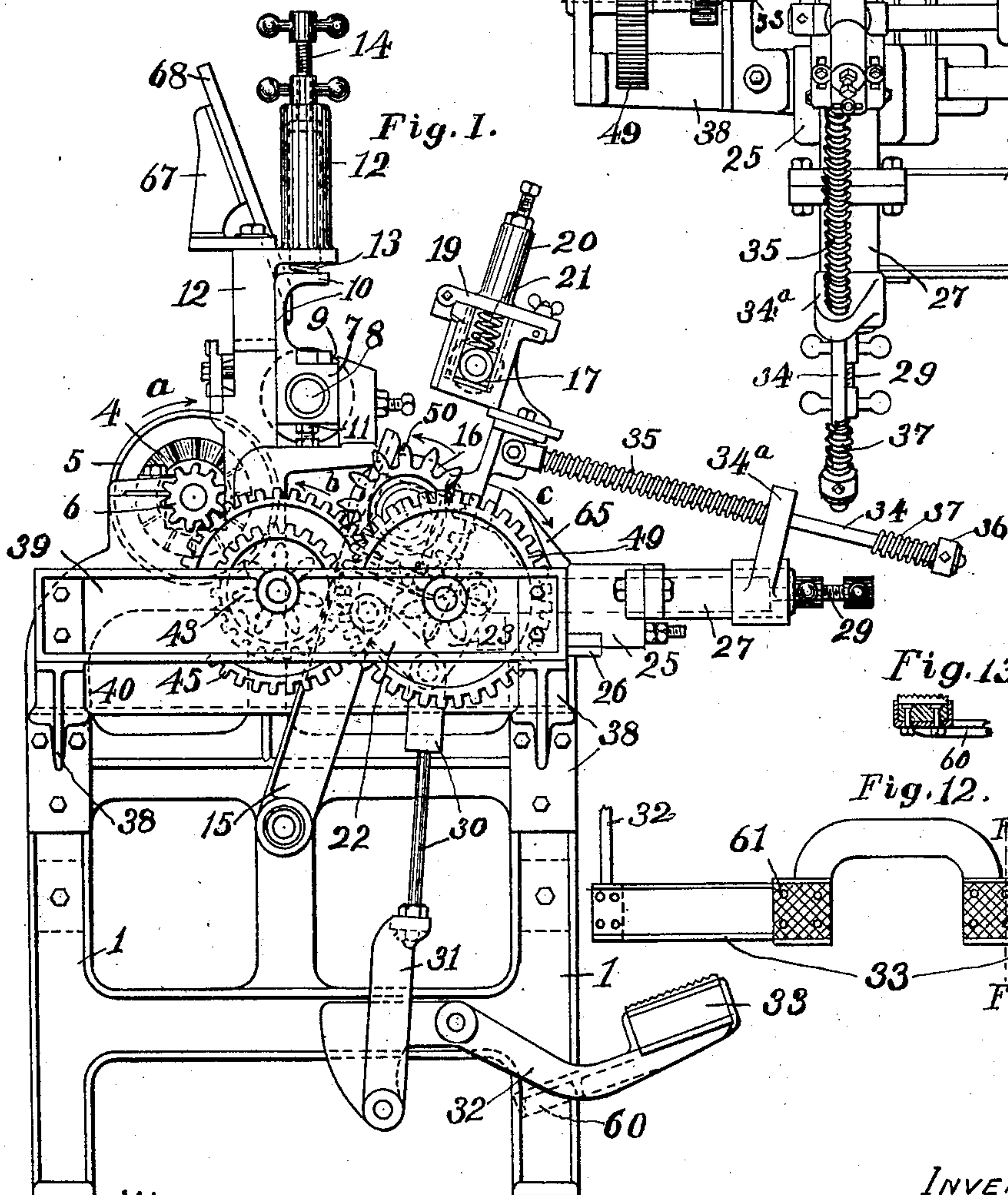
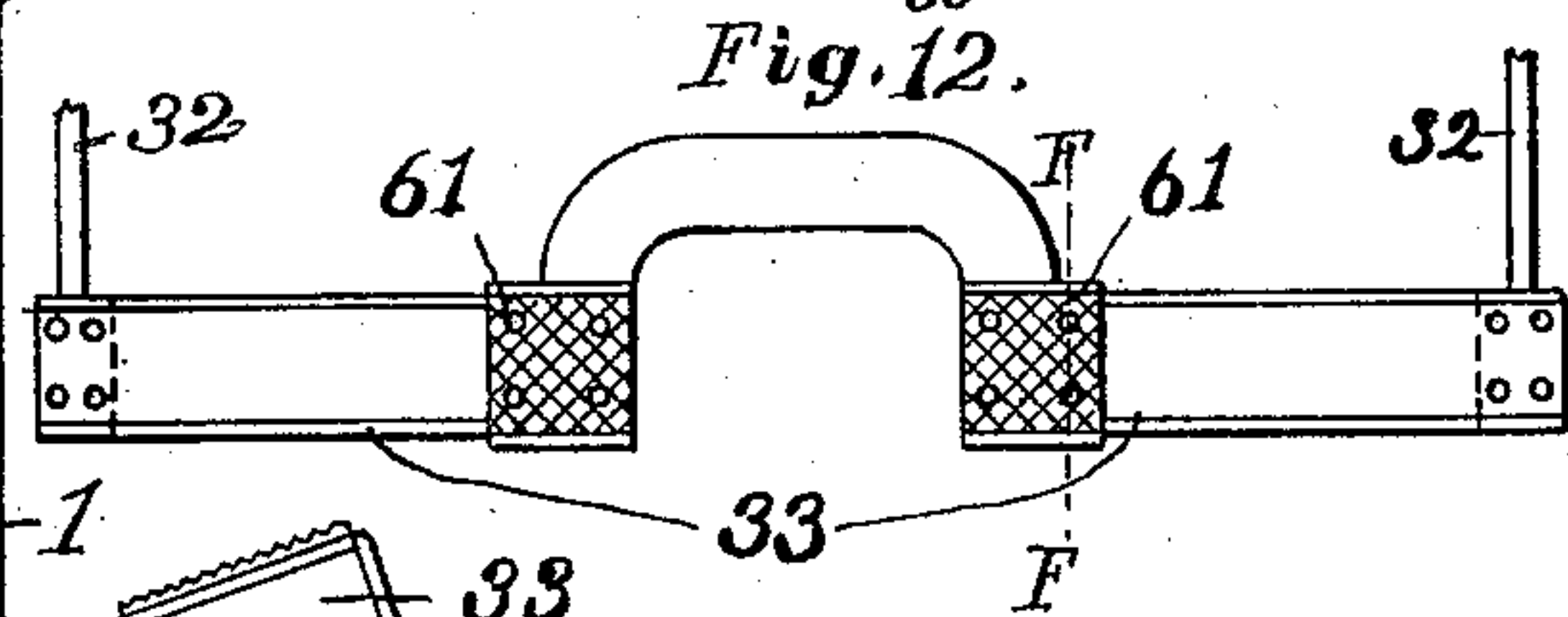


Fig. 13.



Fig. 12.



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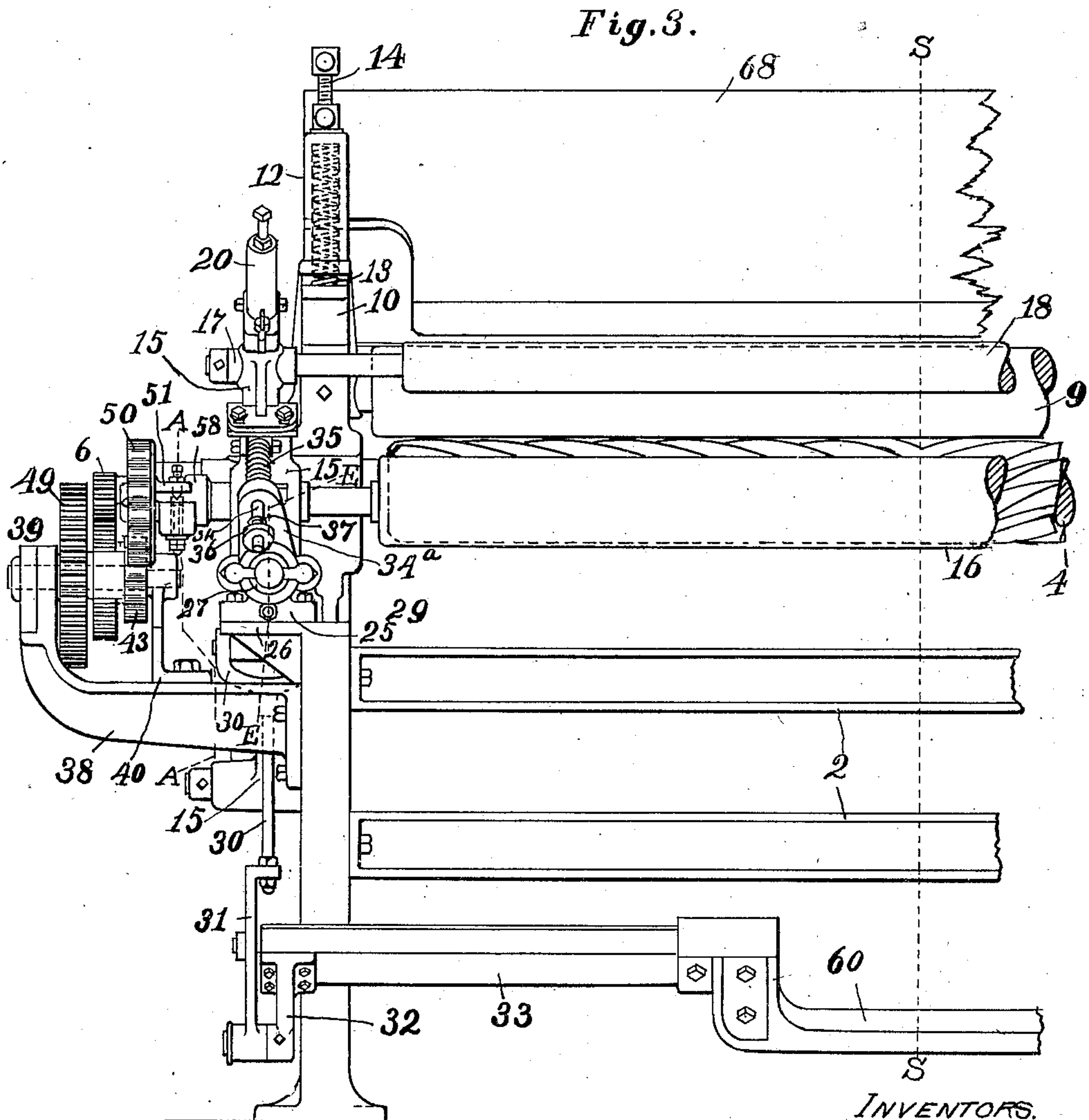
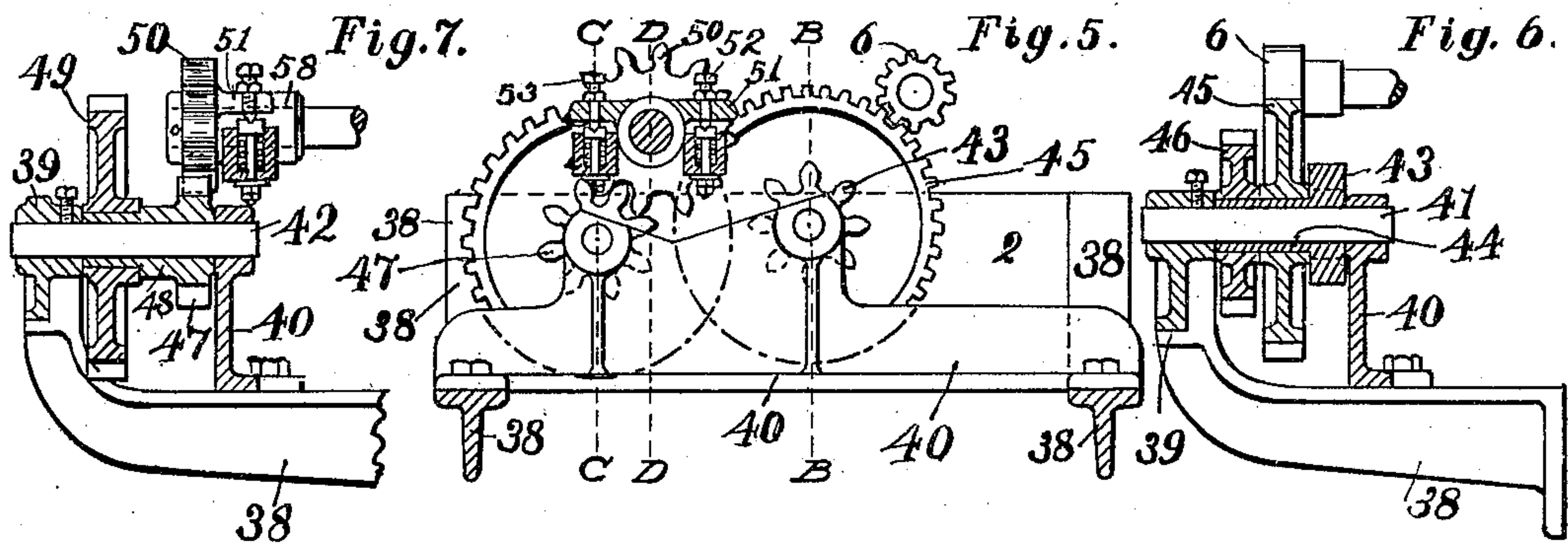
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3 SHEETS—SHEET 2.



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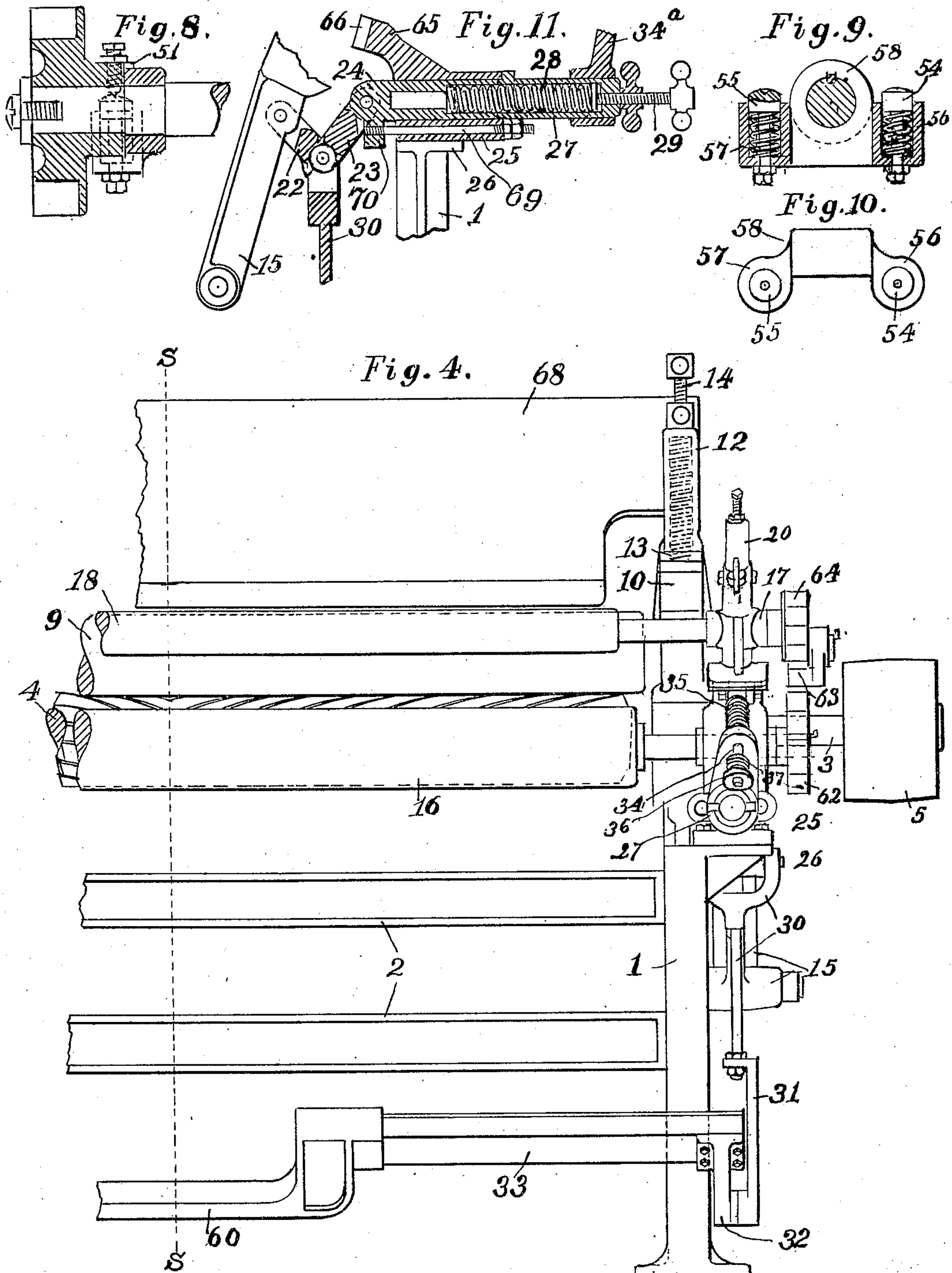
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

ARTHUR E. WHITNEY AND ROBERT F. WHITNEY, OF WINCHESTER,
MASSACHUSETTS.

MACHINE FOR UNHAIRING AND WORKING HIDES.

No. 828,588.

Specification of Letters Patent.

Patented Aug. 14, 1906.

Application filed November 14, 1904. Serial No. 232,610.

To all whom it may concern:

Be it known that we, ARTHUR E. WHITNEY and ROBERT F. WHITNEY, residents of Winchester, in the county of Middlesex and State of Massachusetts, have invented jointly new and useful Improvements in Machines for Unhairing and Working Hides, of which the following, taken in connection with the accompanying drawings, is a specification.

Our invention relates to machines for unhairing and working hides; and it consists in certain novel features of construction, arrangement, and combination of parts, which will be readily understood by reference to the description of the accompanying drawings, and to the claims hereto appended and in which our invention is clearly pointed out.

Figure 1 of the drawings is an elevation of the left end of a machine embodying our invention. Fig. 2 is a plan of the left-hand portion thereof. Figs. 3 and 4 taken together represent a front elevation thereof, the dotted lines S S indicating the center of the machine. Fig. 5 is a section on line A A on Figs. 2 and 3 looking toward the left of said figures. Fig. 6 is a vertical section on line B B on Fig. 5 looking toward the right of said figure. Fig. 7 is a similar section on line C C looking in the same direction. Fig. 8 is a section through the bed-roll gear, illustrating its yielding attachment to the shaft of said roll, said section being on line D D on Fig. 5 drawn to an enlarged scale. Fig. 9 is a sectional elevation of the two-armed hub carried by the bed-roll and showing the yielding contact-bolts which arrest and limit the motion of said bed-roll gear about said shaft. Fig. 10 is a plan of the same. Fig. 11 is a partial section on line E E on Fig. 3. Fig. 12 is a plan of the treadle-board drawn to a reduced scale. Fig. 13 is a section of the same on line F F on Fig. 12 looking toward the left of said figure.

In the drawings, 1 1 represent the main end frames, which are reversed counterparts of each other and are connected together by the tie-girths 2 in a well-known manner. In suitable bearings in said frames is mounted the shaft 3, having mounted thereon between said frames the working cylinder 4, having formed upon or secured to its periphery two sets or series of operating-blades arranged spirally thereon in opposite directions from

the center of its length in a well-known manner and having secured to its right-hand end outside of its bearing in the frame the driving-pulley 5 and upon its other end the pinion 6, as shown in Figs. 1, 2, 3, 5, and 6. In suitable housings in said frames are mounted the boxes 7 in bearings in which the journals 8 of the roll 9 have their bearings, said boxes being each provided with an upward extension 10, having a shape resembling the letter L inverted, and each of said boxes may be slightly adjusted vertically by means of a set-screw 11, set in the bottom of its housing, said set-screw serving also as a stop to limit the downward movement of said box. The frame 1 also has an upward extension 12, provided at its upper end with a forwardly-projecting portion in which is formed a cylindrical housing to receive a spring 13, the lower end of which rests upon the upper surface of the extension 10 of the box 7 and serves to press said box into contact with the set-screw 11, its tension being regulated by the screw 14 in an obvious manner.

To the outside of each frame 1 is pivoted by its lower end a lever 15, in bearings in which is mounted the bed-roll 16, having a surface of rubber and arranged to be intermittently moved into and out of contact with the feed-roll 9 and the working cylinder 4 to properly present the hide resting thereon to the action of said roll and cylinder. In boxes 17, mounted in housings formed in said levers near their upper ends, is mounted the roll 18, which when said lever 15 is moved about its pivot toward the rear serves in cooperation with the bed-roll 16 to partially wrap the hide around the feed-roll 9, thereby increasing the contact of the hide therewith and insuring a more effective feeding thereof.

Each housing in which the boxes 17 are mounted is provided with a hinged cover 19, formed in one piece with the upwardly-projecting tubular hub 20, in which is inclosed a spring 21, resting upon said box, with suitable means for regulating its tension.

Each lever 15 has pivoted thereto one end of a toggle-link 22, the other end of which is pivoted to the toggle-link 23, the opposite end of which is in turn pivoted to a plunger 24, fitted to and movable endwise in a cylindrical bearing in the stand 25, bolted to the outwardly-projecting shelf or bracket 26 on the

frame 1, said stand having secured to its outer end a detachable extension 27, in which is fitted a heavy helical spring 28, the tension of which may be regulated by means of the set-screw 29, all as shown in Fig. 11. The pivot-pin which connects the two toggle-links has mounted thereon the forked upper end of a treadle connection composed of the two parts 30 and 31, connected together, so that its length may be adjusted as may be desired.

Each frame 1 has pivoted to its outside a treadle-lever 32, the front ends of said levers being connected by a treadle-board 33 of novel construction, to be more fully described hereinafter, and the rear ends of said treadle-levers are weighted to partially counterbalance said treadle-board and are pivoted to the lower ends of the parts 31 of the toggle connections, as shown in Fig. 1.

Each of the levers 15 has pivoted thereto near its upper end a rod 34, which has a bearing in and is movable endwise through a fixed arm 34^a, secured upon or formed in one piece with the tubular extension 27, is provided with a shoulder near its inner end, has mounted thereon between said shoulder and said arm a spring 35, and between said arm and the collar 36, secured to the end of said rod, a spring 37 is mounted, having a length about equal to one-half the distance between said arm and collar when the lever 15 is in the position shown in the drawings.

A pair of brackets 38 38 are secured to the outer face of the frame 1 at the left end of the machine and have secured thereto the two connecting-plates 39 and 40, in bearings in which are secured in fixed or non-revoluble positions the two spindles 41 and 42. On the spindle 41 is mounted so as to be freely revoluble thereon the long-toothed pinion 43, provided with a sleeve-like hub 44, on which is firmly secured so as to be revoluble therewith the spur gear-wheels 45 and 46. On the spindle 42 is mounted so as to be freely revoluble thereon the long-toothed pinion 47, provided with a sleeve-like hub 48, on which is firmly secured so as to be revoluble therewith the spur gear-wheel 49, which is engaged and has motion imparted thereto by the gear-wheel 46.

The pinion 6 engages the gear-wheel 45 and imparts motion to the whole train of gearing.

The left-hand end of the shaft of the bed-roll has loosely mounted thereon the long-toothed gear-wheel 50, arranged to alternately engage the pinions 43 and 47, according to the position of the lever 15, whereby said bed-roll may be alternately revolved in opposite directions and at different speeds at the will of the operator. The inner face of said gear-wheel 50 has formed thereon the flat diametrical flange 51, in which are set two conically-pointed screws 52 and 53, the points of which engage conical detents in the

heads of the bolts 54 and 55, set in bosses 56 and 57, respectively, which are formed in one piece with the hub 58, firmly secured upon the said bed-roll shaft, so as to revolve therewith, said bolts being surrounded by coiled springs which tend to press said bolts into contact with the conical points of the screws 52 and 53, respectively, and yet permit said bolts to yield to facilitate the engagement of the teeth of the gear 50 with the teeth of either pinion 43 or 47 and avoid a shock and possible injury to the parts when being transferred from one to the other of said pinions.

The front end of each treadle-lever 32 has secured thereto one end of a section of a treadle-board 33 of wood, which sections extend toward each other and are firmly secured at their adjacent ends to the U-shaped metal section 60 by suitable bolts, thereby forming a rearward offset in said treadle-board to enable the operator to stand nearer the front of the machine and in direct line with the main body of said treadle-board, the inner ends of said wooden sections being covered by the serrated metal plates 61, all as shown in Figs. 12 and 13.

The bed-roll 16, the feed-roll 9, and the upper roll 18 have secured to their right-hand ends the long-toothed gear-wheels 62, 63, and 64, respectively, which when the treadle is depressed and the levers 15 are thereby moved into their rearmost positions engage with each other, so as to impart positive rotations to said feed-rolls, substantially as shown and described in Letters Patent No. 509,503, granted to Arthur E. Whitney November 28, 1893.

The stands 25 are each provided with an upwardly and rearwardly projecting arm 65, to the rear end of which is secured a buffer-block 66, to serve as a stop to limit the movements of the levers 15 toward the front and minimize the shock of such movement.

The upper end of each frame extension 12 has secured thereto a stand 67, to the inclined front face of which is secured the fender-board 68, which serves to prevent the hide being accidentally thrown over to the rear of the feed-roll 9 when placing it in the machine in proper position to be operated upon.

The operation of our invention is as follows: The several parts of the machine being in the several positions shown in the drawings and it being desired to unhair one or more hides, the operator throws one end of a hide over the roll 18, allows it to descend at the rear of the bed-roll 16 and between it and the feed-roll 9 until the center of the length of said hide has passed somewhat below the center of said bed-roll, and power being applied to the pulley 5 to revolve the working cylinder 4 in the direction indicated by the arrow *a* on Fig. 1 the gears 43, 45, and 46 are revolved in the direction indicated by the arrow *b*, and the gears 47 and 49 and the bed-

roll are revolved in the direction indicated by the arrow *c* on said Fig. 1, thereby feeding the hide into the machine to the desired point, when the operator places his foot upon and depresses the treadle-board, thereby moving the levers 15, with the bed-roll and the upper feed-roll 18, toward the rear and wrapping the hide partially around the feed-roll 9 and forcing it into contact with the working cylinder 4, and at the same time by the transfer of the gear 50 from engagement with the pinion 47 to engagement with the pinion 43 the rotations of the rolls 9, 16, and 18 are reversed, and the hide is fed upward against the action of the working cylinder 4, the edges of the blades of which are moving in the reverse direction to that of the movement of the hide until the hide is withdrawn from the machine, when the operator removes his foot from the treadle-board, when by the action of gravity upon the weighted rear ends of the treadle-levers 32, assisted by the reaction of the springs 37, the levers 15, with the rolls 16 and 18, are moved toward the front into the position shown in the drawings, and their rotations are again reversed. The hide is then turned end for end and again thrown over the roll 18, is fed into the machine as before until the center of its length is slightly below the center of the bed-roll 16, when the operator again depresses the treadle-board, the rolls 16 and 18 are again moved to the rear. The rotations of the rolls 9, 16, and 18 are again reversed and the hide is again fed upward and out of the machine. This train of gearing, through which rotary motion in opposite directions is imparted to the bed and feed-rolls from the working or bladed cylinder, which always revolves in the same direction, in combination with the levers or radius-arms 15, carrying the bed-roll 16 and the upper feed-roll 18, is a great advantage, in that the rotation of said rolls in one direction assists the operator in placing the hide in position to commence the operation of unhairing, and when moving in the opposite direction the hide is firmly held in the grip of said rolls and is thereby positively fed upward and out of the machine, and this reversal of motion is accomplished by the depression and release of the treadle-board. The box 7, provided with the extension 10, in combination with the spring 13 and its housing carried by the extension 12 of the frame 1, is also of importance in our invention as a practical and effective means of rendering the feed-roll vertically yielding.

The rearward movement of the plunger 24, caused by the reaction of the spring 28, is limited and may be regulated by the rod 69, fitted to and movable endwise in a bearing in the stand 25 and screwed into the lug 70, formed upon and projecting downward from the under side of said plunger and pro-

vided at its front end with suitable adjusting and check nuts, as shown in Figs. 3 and 11.

What we claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a hide-working machine, the combination, with a helically-bladed working cylinder constructed and arranged to be revolved always in the same direction, of a pinion carried by the shaft of said cylinder; a long and pointed toothed pinion and two spur gear-wheels arranged side by side and revoluble in unison about the same axis, one of said spur-gears being engaged by said working-cylinder pinion; a second long and pointed toothed pinion and a spur gear-wheel carried by and revoluble with said second long-toothed pinion and engaging with and having motion imparted thereto by one of the spur gear-wheels carried by the first-mentioned long-toothed pinion; a bed-roll mounted in movable bearings; a long and pointed toothed gear carried by the shaft of said bed-roll in position to be alternately engaged with said two long-toothed pinions; and means for moving said bed-roll into and out of contact with said working cylinder.

2. In a hide-working machine, the combination of a helically-bladed working cylinder; means for revolving said cylinder always in the same direction; a pinion 6 carried by the shaft of said cylinder; the two spindles 41 and 42 mounted in fixed positions in fixed bearings parallel with each other; the pinion 43 and gears 45 and 46 firmly secured together so as to be freely revoluble in unison about said spindle 41 said gear 45 being engaged by said pinion 6; the pinion 47 provided with the sleeve-like hub 48 and mounted upon and freely revoluble about the spindle 42; the gear-wheel 49 secured to and revoluble with said pinion 47, and arranged to be engaged by the gear 46; a pair of levers 15 pivoted to fixed portions of the machine; a bed-roll mounted in suitable bearings in said levers; a long and pointed toothed gear 50 mounted on the shaft of said bed-roll in position to engage either pinion 43 or 47; a treadle mechanism; and two pairs of toggle-links; and means for connecting each of said toggles to said treadle.

3. In a hide-working machine, the combination, with a helically-bladed working cylinder constructed and arranged to be revolved always in the same direction, of a bed-roll mounted in movable bearings and adapted to be intermittently moved toward and from said working cylinder; a pair of levers carrying said bed-roll; means for moving said levers about their pivots; a rod pivoted to each of said levers and provided near its pivotal end with a shoulder and with a collar at its other end and fitted to and movable endwise in a fixed bearing between said shoulder and collar; a helical spring surrounding said rod between said shoulder and bearing; and

a second helical spring surrounding said rod between said bearing and collar, as and for the purposes described.

4. In an unhairing or hide-working machine, the combination of a helically-bladed cylinder mounted in fixed bearings and revoluble always in the same direction; a pinion carried by the shaft of said cylinder; the gears 43, 45, 46, 47 and 49, arranged relative to, and coöperating with each other and said pinion as set forth; the bed-roll 16 mounted in movable bearings; means for moving said bed-roll toward and from said bladed cylinder; the hub 58 having formed in one piece therewith, the two chambered bosses 56 and 57 firmly secured on the shaft of said bed-roll; the bolts 54 and 55 set in said bosses; springs surrounding said bolts beneath their heads; adjustable stop-nuts on said bolts to limit their upward movement; and the gear 50 loosely mounted upon the shaft of said bed-roll and provided with the laterally-projecting flange 51, constructed and arranged to alternately engage the heads of the bolts 54 and 55, as and for the purposes described.

5. In a hide-working machine, the combination of a helically-bladed cylinder mounted in fixed bearings and revoluble always in

the same direction; a pinion carried by the shaft of said cylinder; the gears 43, 45, 46, 47 and 49, arranged relative to, and coöperating with each other and with said pinion, as set forth; the bed-roll 16 mounted in movable bearings; means for moving said bed-roll toward and from said bladed cylinder; the hub 58 having formed integral therewith the two chambered bosses 56 and 57 firmly secured on the shaft of said bed-roll; the bolts 54 and 55 set in said bosses and each provided with a conical recess in the top of its head; springs surrounding said bolts beneath their heads; the gear-wheel 50 mounted loosely upon the shaft of said bed-roll and provided with the laterally-projecting diametrical flange 51; and the conically-pointed set-screws 52 and 53 set in said flange in positions to alternately engage said conical recesses, as and for the purposes set forth.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, on this 9th day of November, A. D. 1904.

ARTHUR E. WHITNEY.
ROBERT F. WHITNEY.

Witnesses:

N. C. LOMBARD,
WM. E. KINGSTON.