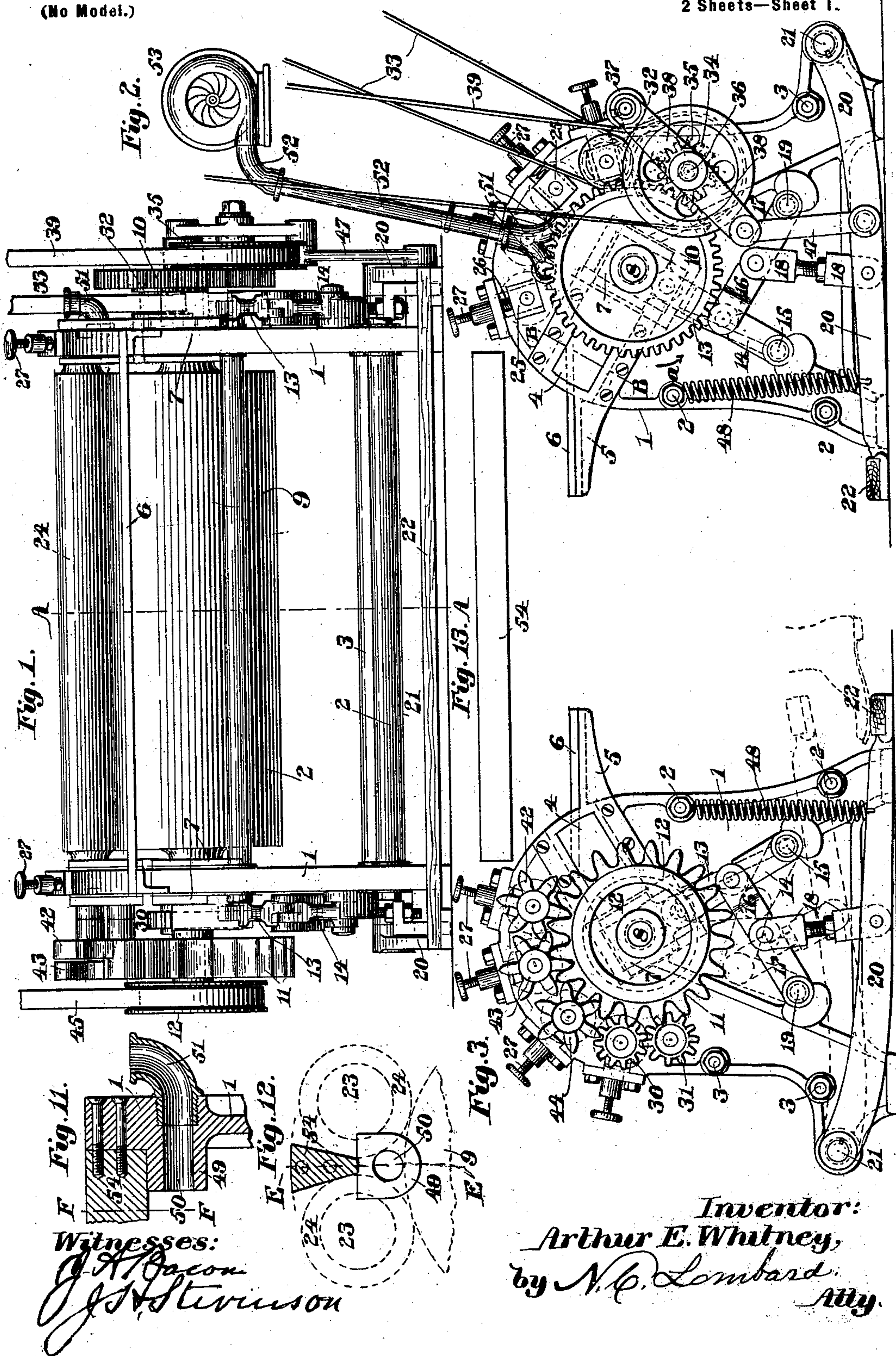


**A. E. WHITNEY.
LEATHER WRINGING MACHINE.**

(Application filed Sept. 4, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:

J. H. Bacon
J. H. Stevenson

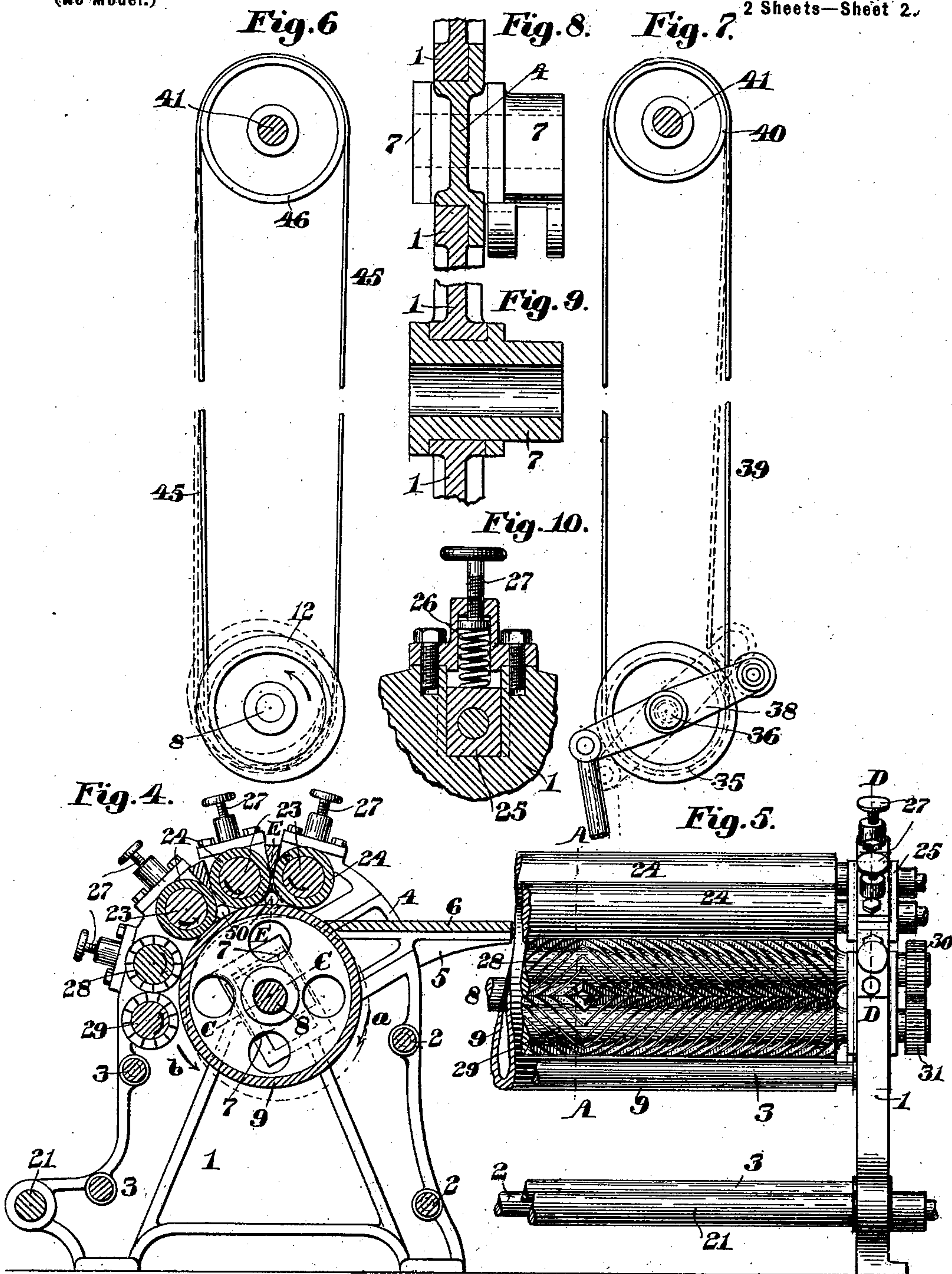
Inventor:
Arthur E. Whitney,
by *N. C. Lombard*
Atty.

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UNITED STATES PATENT OFFICE.

ARTHUR E. WHITNEY, OF WINCHESTER, MASSACHUSETTS.

LEATHER-WRINGING MACHINE.

SPECIFICATION forming part of Letters Patent No. 689,605, dated December 24, 1901.

Application filed September 4, 1901. Serial No. 74,273. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR E. WHITNEY, of Winchester, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Leather-Wringing Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to leather-wringing machines; 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 my invention is clearly pointed out.

Figure 1 of the drawings is a front elevation of a machine embodying my invention. Fig. 2 is an end elevation looking toward the left of Fig. 1. Fig. 3 is an elevation of the opposite end. Fig. 4 is a vertical transverse section on line A A on Figs. 1 and 5. Fig. 5 is a partial elevation of the rear side of the same with the bulk of the operating mechanism on the outside of the frame omitted. Fig. 6 is an elevation of the belt and pulleys for driving the leather-supporting drum when the side of leather is being introduced into the machine. Fig. 7 is a similar view of the belt and pulleys for driving said drum in the opposite direction when under pressure for the purpose of removing the water from the saturated side of leather. Fig. 8 is a partial section on line B B on Fig. 2 looking obliquely downward toward the right of said figure. Fig. 9 is a partial section on line C C on Fig. 4 looking obliquely downward toward the right of said figure. Fig. 10 is a partial section on line D D on Fig. 5. Fig. 11 is a partial section of the upper portion of the right-hand frame 1 on line E E on Figs. 4 and 12. Fig. 12 is a section on line F F on Fig. 11 looking toward the right of said figure, and Fig. 13 is an elevation of a separator-bar located between the upper portions of the pressure-rolls. Figs. 8, 9, 10, 11, and 12 are drawn to an enlarged scale.

In the drawings, 1 1 are the end frames of the machine, connected together by the tie-girths 2 and 3, as shown. Each frame 1 has formed in the front edge thereof a slot extending obliquely downward past the center

of said frame and having its inner end expanded in the direction of its width, as indicated in dotted lines in Fig. 2 and partially in full lines in Fig. 4, the upper or outer and narrower portion of which is filled with the removable plate 4, each of said plates being provided with the horizontally-projecting arm 5, upon which is secured the leather-supporting table 6, as shown. Between the inner end of the plate 4 and the inner end of the slot formed in the frame 1 is mounted a box 7, having a width in the direction of its movement considerably less than the width of the expanded portion of the slot in said frame, so as to be movable in a direction at a right angle to the length of said plate 4 or at an angle of about thirty degrees to a perpendicular, as shown. In bearings in said boxes 7 is mounted the shaft 8, which has mounted thereon between the frames 1 1 the supporting-drum 9, said shaft 8 having firmly secured thereon at one end the spur gear-wheel 10 and upon the other end the broad-faced gear-wheel 11 and the pulley 12.

The boxes 7 extend outward beyond the frames 1 and have pivoted thereto one end of a toggle-link 13, the opposite end of which is pivoted to the toggle-link 14, the opposite end of which is in turn pivoted to the frame 1 at 15.

The pin which connects the toggle-links 13 and 14 also passes through one end of a toggle-link 16, the opposite end of which is pivoted to one end of the toggle-link 17 and to one end of the operating-link 18, said link 17 being pivoted at 19 to the frame 1 and the lower end of the link 18 being pivoted to the treadle-lever 20, as shown.

The treadle-levers 20 are firmly secured upon the outer ends of the rocker-shaft 21 at the rear of the machine and extend to the front of the machine and have their front ends connected together by the treadle foot-board 22.

Three pressure-rolls, each comprising a metal center 23 and a covering-sleeve 24 of rubber or other elastic material, are mounted in movable boxes 25, fitted to suitable housings in the upper edges of the frames 1 1, said boxes being pressed inward by spring 26, the tensions of which are controlled by the screw 27, all as shown in Figs. 1, 2, 3, 4,

and 10. These pressure-rolls rest upon the periphery of the supporting-drum 9 when said drum is in the position shown in full lines in Fig. 4, which is its position when the treadle-board is depressed by the operator's foot into the position shown in full lines in the drawings.

At the rear of the drum 9 are mounted in suitable bearings two knife-cylinders 28 and 29, each provided with a series of rounded-edged blades arranged helically in opposite directions from the center toward each end thereof, said bladed cylinders being so arranged relative to the drum 9 and to each other that the blades in the upper cylinder will contact with said drum when in its raised position, while the blades of the lower cylinder are slightly removed from contact with said drum when in said raised position and the blades in one cylinder will be opposite the centers of the spaces between the blades of the other cylinder, as shown in Figs. 4 and 5. The upper knife-cylinder 28 has secured upon one end of its shaft the spur gear-wheel 30, the teeth of which engage the teeth of the spur gear-wheel 31, firmly secured on the shaft of the knife-cylinder 29, as shown in Fig. 3, and the opposite end of the shaft of cylinder 28 has secured thereon the pulley 32, by means of which and the belt 33, leading to a suitable pulley on an overhead shaft, said knife-cylinders are revolved at a high rate of speed in opposite directions.

The teeth of the gear-wheel 10 engage with and are acted upon by the teeth of the pinion 34, secured to and revoluble with the pulley 35, both mounted upon and revoluble about the stud 36, set in the right-hand frame 1, when the binder-pulley 37, carried by the lever 38, acts upon the belt 39, leading from the pulley 40 on an overhead shaft 41, to press it into firm contact with said pulley 35, thereby causing the drum 9 to be revolved about its axis in the direction indicated by the arrows *a* on Figs. 2 and 4.

The three pressure-rolls have pinions 42, 43, and 44 secured thereon, which engage the teeth of the gear-wheel 11, the pinions 42 and 44 revolving in the same vertical plane, but in a different plane to that in which the pinion 43 revolves.

The drum 9 is revolved in the direction indicated by the arrow *b* on Fig. 4 by the belt 45, leading from the pulley 46 on an overhead shaft 41, when the treadle-lever toggles and said drum are in the positions indicated by dotted lines in Figs. 3 and 4.

The inner or lower end of the lever 38 has pivoted thereto the upper end of the link 47, the other end of which is pivoted to the right-hand treadle-lever 20, as shown in Fig. 2.

Each of the treadle-levers 20 has connected thereto one end of a spiral spring 48, the upper end of which is connected to the projecting end of the upper front tie-rod 2 or any other suitable fixed portion of the machine.

The inner face of the right-hand frame 1

has formed thereon two inwardly-projecting bosses 49, one of which is shown in Figs. 11 and 12, the inner faces of each of which abut against the outer portions of the ends of two of the pressure-rolls, and each boss has formed through its center a circular hole 50, (shown in Figs. 4, 11, and 12,) which extends through the frame 1 and has connected to its outer end a pipe 51, which communicates with the pipe 52, communicating with the discharge of the blower 53, as shown in Figs. 2, 11, and 12. The blower may be placed in any convenient position and be driven by any suitable operating mechanism.

The operation of my invention is as follows: The treadle-levers and footboard being in the position indicated by dotted lines in Fig. 3, the binder-pulley will also be in the position shown in full lines in Fig. 7 and the drum 9 will be in the position indicated by dotted lines in Fig. 4, and if the overhead shaft 41 be set in motion the drum 9 will be revolved in the direction indicated by the arrow *b* on Fig. 4 through the action of the belt 45 upon the pulley 12, fixed upon the shaft of said drum, and if the wet side of leather be placed upon the table 6 with one end in contact with the drum 9 the leather will be fed into the machine by the rotation of said drum in the direction indicated by the arrow *b* on Fig. 4 till the greater portion of the length of the side of leather has passed beneath the front pressure-roll, but not necessarily in contact therewith, the operator maintaining a grip upon the end of the side of leather to prevent it being entirely carried over the drum 9, and at the proper time he places his foot upon the footboard and depresses the treadle-levers into the position shown in full lines, which results in the toggles being straightened and the drum 9 being moved upward, releasing the pulley 12 from active contact with the belt 45, and the motion of said drum in the direction indicated by the arrow *b* is arrested. The gear 11 is intended to be in engagement with the gears 42, 43, and 44 at all times, but their pitch-circles are separated; but it will be seen that the depression of the drum 9 is less than the length of the teeth on the gears 11, 42, 43, and 44; but the rolls 24 do not express any water while the side of leather is being fed into the machine, but only when it is being fed out after the drum 9 has been raised by the operator placing his foot upon the treadle-board and depressing it to subject the leather to pressure between said drum and the rolls 24. A continuation of the upward movement of the drum 9 brings it in contact with the pressure-rolls and the upper bladed cylinder 28, and the binder-pulley 37, acting upon the belt 39, causes said belt to engage the pulley 35 and revolve it so as to move the drum 9 about its axis in the direction indicated by the arrow *a* on Fig. 4, and the pressure-rolls 24 through the action of the gear 11 upon the pinions 42 and 43 are all revolved in the same direction and in unison with the

drum 9. The upper helically-bladed cylinder 28 is driven by the belt 33 at a high rate of speed in a direction opposite to the motion of the pressure-rolls 24 and in opposition to the movement of the side of leather as it is being drawn out of the machine under pressure. The spaces between the upper portions of the pressure-rolls 24 are filled by the beveled bars 54, firmly secured to the frames 11 in such a position as to form with the drum 9 when raised and the sides of the pressure-rolls triangular passages open at the left-hand end and communicating through the holes 50 and pipes 51 and 52 with the blower 53. By virtue of this arrangement when the drum 9 with the saturated side of leather thereon is raised into firm contact with the pressure-rolls 24 and revolved the water is pressed out of the leather by the action of each pressure-roll, that pressed out by the rear pressure-roll being carried to the rear by the spiral blades of the cylinder 28 and that pressed out by the other two rolls flowing into said triangular passages and is forced therefrom and discharged from the left end of the drum 9 by the current of air forced through said passage by the pump 53. When the side of leather has been entirely removed from between the drum 9 and the pressure-rolls, the operator removes his foot from the treadle, turns the side of leather end for end, and again inserts it in the machine as before, and then places his foot upon the treadle and depresses it and the leather is again fed out of the machine under pressure, as before. When the leather is fed into the machine, it passes between the bladed cylinders 28 and 29, the helical blades thereof aiding in the feeding in of the leather and at the same time spreading it laterally, which latter action is continued when the motions of the drum 9 and the pressure-rolls are reversed and the leather is being fed out of the machine, the action of said blades upon the saturated side of leather serving by bending the same alternately in opposite direction to squeeze out of said leather a considerable portion of the water contained therein. The bladed cylinders 28 and 29 are revolved in opposite directions, and the leather when being fed into the machine is carried out between said cylinders till about one-half the side of leather has passed between them, when the drum is raised and its motion reversed to feed the leather out of the machine under pressure, when said cylinders act upon opposite sides of said leather to spread it laterally and to squeeze out a portion of the water.

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

1. In a leather-wringing machine, the combination of a yielding pressure-roll; a pair of helically-bladed cylinders geared together to revolve in opposite directions, and arranged with the blades in one cylinder opposite the spaces between the blades in the other cylinder; a leather-supporting drum mounted in

bearings in movable boxes; gearing connecting said drum and pressure-roll to cause their peripheral surfaces to rotate in unison; means for intermittently moving said drum toward and from said pressure-roll and bladed cylinders; and means for intermittently revolving said drum in opposite directions.

2. In a leather-wringing machine, the combination of a leather-supporting drum; a yielding pressure-roll and a helically-bladed cylinder both arranged to contact with said drum when said drum is in its raised position; means for intermittently raising and lowering said drum; and means for revolving said drum in one direction when in its depressed position, and in the opposite direction when in its raised position.

3. In a leather-wringing machine, the combination of a leather-supporting drum; a plurality of yielding pressure-rolls cooperating therewith to press the water out of the leather in a plurality of places; means for intermittently raising and lowering said drum; and means for intermittently revolving said drum in opposite directions.

4. In a leather-wringing machine, the combination of a leather-supporting drum; a plurality of spring-pressed rolls arranged to bear against said drum, or the leather thereon, when said drum is in its raised position; a pair of bladed cylinders geared together to revolve in opposite directions, and arranged and adapted to act upon opposite sides of the side of leather to spread the same; means for intermittently raising and lowering said drum; and means for intermittently revolving said drum in opposite directions.

5. In a leather-wringing machine, the combination of a leather-supporting drum; mechanism for intermittently revolving said drum in opposite directions; means for raising and lowering said drum; a plurality of yielding pressure-rolls having elastic peripheral surfaces and constructed and arranged to bear upon the periphery of said drum when said drum is in its raised position; and a pair of bladed cylinders geared together to revolve in opposite directions, the blades in said cylinders being arranged helically in opposite directions from the center of their lengths, and with the blades in one cylinder opposite the spaces between the blades in the other cylinder.

6. In a leather-wringing machine the combination with yielding pressure-rolls and helically-bladed cylinders; of a leather-supporting drum mounted in movable boxes, and arranged to be moved into and out of contact with the peripheries of said pressure-rolls and the blades of one of said spirally-bladed cylinders; the toggles 13, 14 connected at one end to the movable drum-boxes, and at the other end to a fixed part of the machine; the toggles 16, 17 connected at one end to the center of the toggles 13, 14, and at their other ends to a fixed part of the machine; the links 18, 18; the levers 20, 20; the springs 48, 48;

and the footboard 22, all constructed, arranged, and operating substantially as described.

7. In a leather-wringing machine, the combination of a leather-supporting drum; a plurality of pressure-rolls constructed, and arranged to bear upon the periphery of said drum, or a side of leather placed thereon; a stop-bar arranged between the upper portions of two of said pressure-rolls that are in near proximity to each other, said drum, rolls and bar being so arranged relative to each other as to form a nearly-triangular passage between them, open at one end; a pipe communicating with the opposite end of said passage; and means for forcing air through said pipe and triangular passage to force any water that may accumulate therein out of the open end of said passage.

8. In a leather-wringing machine, the combination of a leather-supporting drum constructed and arranged to be raised or depressed at the will of the operator; a pulley mounted upon one end of the shaft of said drum; a belt depending from an overhead shaft and constructed and arranged to engage said pulley and revolve said drum in one direction when said drum is in its depressed position; a gear-wheel also secured

upon the shaft of said drum; a pinion arranged to engage said gear-wheel; a pulley secured to and revoluble with said pinion; a belt pendent from an overhead operating-pulley in position to partially surround the pulley connected to said pinion, but without engaging it when said drum is depressed; toggle mechanisms connected to the shaft of said drum; a treadle mechanism connected to and adapted to operate said toggles to raise and depress said drum; a binder-pulley; and a mechanism connecting said binder-pulley to the treadle mechanism, all so constructed and arranged as to cause said binder-pulley to press the belt, which partially surrounds the pulley connected to said pinion into engagement therewith when said drum is in its raised position and cause said drum to revolve in the reverse direction to that in which it is revolved by the first-named belt when said drum is depressed.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 28th day of August, A. D. 1901.

ARTHUR E. WHITNEY.

Witnesses:

N. C. LOMBARD,
C. W. COREY.