

(No Model.)

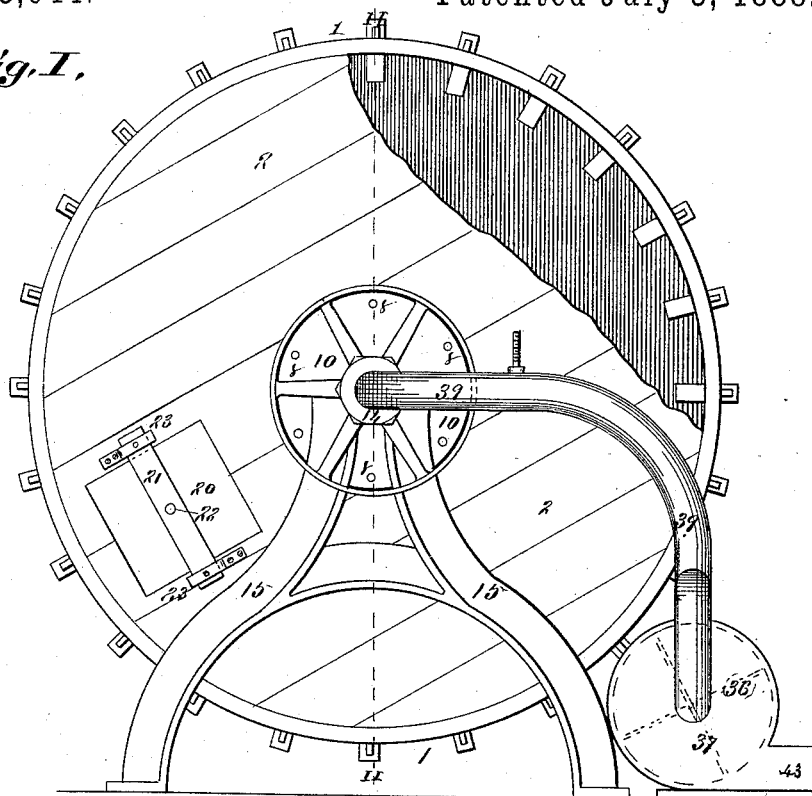
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APPARATUS FOR THE MANUFACTURE OF LEATHER.

No. 385,644.

Patented July 3, 1888.

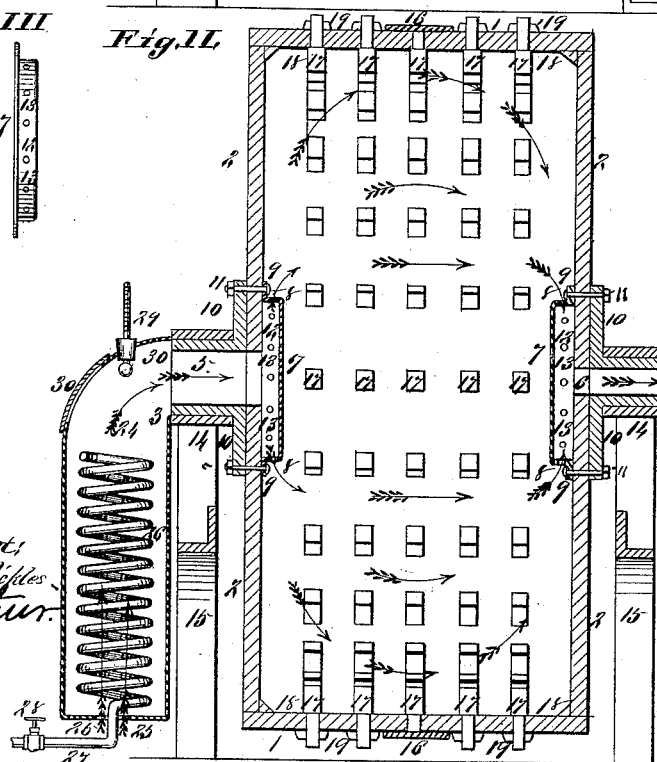
*Fig. I,*



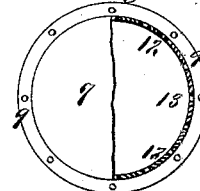
*Fig. III*



*Fig. II*



*Fig. IV,*



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## APPARATUS FOR THE MANUFACTURE OF LEATHER.

SPECIFICATION forming part of Letters Patent No. 385,644, dated July 3, 1888.

Application filed January 26, 1888. Serial No. 262,006. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM SCHWEICKHARDT, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in an Apparatus for the Manufacture of Leather, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figure I is an end elevation of the apparatus, showing the exhaust-tube in its passage from the operating-barrel to the rotary-fan chamber. Fig. II is a vertical section taken on line II II, Fig. I, showing the interior of the barrel or cylinder in which the hides are operated on. It also shows the steam-coil heater, the perforated flanged disks through which the air has ingress and egress into and from the barrel. It also shows the exhaust-tube and rotary fan that generates the exhaust. Fig. III is an end or edge view of one of the disks with perforated flanged edges which cap the tubular trunnions that allow free passage for the air into and from the barrel; and Fig. IV is a front view of one of the same aerating-disks, with part broken away to show the interior of the disk-chamber.

This invention relates to devices for the manufacture of leather and hastening, by forced aeration, the stuffing of the same; and the invention consists in features of novelty, hereinafter fully described, and pointed out in the claims.

Referring to the drawings, in which like figures of reference indicate like parts in all the views, 1 represents the periphery, and 2 the ends, of the barrel or cylinder in which the hides are aerated. This cylinder may be made of wood, sheet metal, or any other suitable material. The cylinder at the end through which the air has ingress is supported by a large tubular trunnion, 3, and at the other end through which the air has egress by a smaller tubular trunnion, 4. Both trunnions are preferably of cast-iron. The tube 5 through the trunnion 3 is preferably twice the diameter of the one 6 through the other trunnion.

7 represents two perforate flanged disks that form caps over the tube-openings in the trunnions, and they and said trunnions are firmly secured to the ends or heads of the cylinder

by screw-bolts 8, that pass through the angle-flange 9 of the disk, the end of the cylinder, and the circumferential flange 10 of the trunnions, and are firmly secured in their seats by nuts 11. The peripheral flange 12 of said disks have perforations 13, through which the air not only freely passes, but, in consequence of the radiating position of the perforations and the centrifugal force thus engendered, the air is both driven to and the exhaust drawn from the periphery of the cylinder-chamber.

The trunnions of the cylinder have their bearings in the journal-boxes 14, that are supported on and secured to the frames 15. The cylinder turning on its trunnions in said bearings has thus a free rotary movement under the operation of the drive-belt 16, which is operated by any suitable power and works around the middle periphery of the cylinder, which is thus constituted its own pulley, that transmits the power from a steam-engine, water-wheel, or any other suitable power used for the purpose. When disconnecting from said power to stop the rotation of the cylinder, the belt may be cast from said drive-pulley or the union otherwise disconnected, as it is evident that the belt cannot be cast from the cylinder unless, indeed, it were first cast from the drive-pulley or detached.

17 represents studs that project internally from the inner periphery of the cylinder, and which have stems 18 of a somewhat smaller diameter, so that the enlarged diameter of the studs provide shoulders that sit against the inner periphery of the cylinder. The stems are inserted in their perforate seats that pass through the drum of the cylinder, and in which they are firmly secured by the keys 19, with the exception of one row of said studs around the middle of the drum-periphery of the stems, which do not project, as the drive-belt occupies the space. The stems of said row may be wedged or otherwise fastened in their seats by any suitable means.

20 represents a door or shutter in one or, if preferred, both ends of the cylinder, to close the opening or openings through which the skins are inserted for stuffing and aeration. A bar, 21, is secured to the center of the door by the pivot bolt 22, and when the door is in its closed position the bar is swung round into engagement with the hooks 23, that are screwed

or bolted on the end or ends of the cylinder on each side of the door.

24 represents a hot-air chamber, in which the air, which has ingress through perforations or a perforate aperture, 25, through the floor of said chamber, is heated by a steam coil-pipe, 26, which is supplied by the pipe 27, that has connection with any suitable steam-generator, and the steam-supply from which and consequent heat in the chamber is regulated by the stop-cock 28.

A thermometer, 29, whose bulb descends through the dome into the hot-air chamber, registers the heat thereof. A door or shutter, 30, closes an opening near the top of the hot-air chamber, to the surrounding casing of which it may be secured by any suitable means. When the atmosphere is sufficiently warm not to require the services of the heating-coil, said door is opened to let the air in direct on its way to the cylinder through the tube 5 of the trunnion 3.

The trunnion 4, on the other end of the cylinder, has an extension beyond the journal-box, in which it has its bearings, and carries on said extension a tight drive pulley, 31, and loose pulley or wheel, 32. A drive-belt, 33, connects said drive-pulley with the tight pulley 34 on the shaft 35, and when the cylinder is rotating drives the shaft 35 and the paddles of the rotary fan 36 in the fan-drum 37. A loose pulley or wheel, 38, alongside the tight pulley 34 on said shaft, in conjunction with the loose pulley 32 on the extension of the trunnion 4, provides a seat for the drive-belt 33 when it is cast from the adjoining tight pulleys at times that it is desired to disconnect the power from the rotary fan.

39 represents a suction exhaust-tube whose flanged end 40 is loosely held by the union-joint 41 to the end of the tubular trunnion 4, the union screwing on the end of said trunnion and turning with it, while the exhaust-tube remains stationary and is held by its peripheral flange within the trunnion. The exhaust-tube branches out immediately above the fan-drum into bifurcated ends 42, that deliver the exhaust to the fan from both sides of the drum. 43 is the spout that discharges from the rotary fan, and 44 a thermometer whose bulb enters the exhaust-tube and registers the temperature therein.

The various parts of the apparatus may be constructed of any suitable material.

The operation in the preparation of the hides and aeration thereof in the machine is as follows: The skins are soaked a few days in cold water, and are then put in lime-water until the hair is loosened, then scraped and cleansed and put in fresh water until they become perfectly soft and clean. They are then partly dried. The skins are then placed on a table and well greased with a mixture made of tallow, horse-grease, butter, starch-flour, and fish-oil. They are then put in a barrel or cylinder, the studs 17 in which prevent the hides from congregating together and work in the

stuffing as the cylinder is rotated by the drive-belt 16. At the same time steam is turned on into the steam-coil pipe 26 by turning the stop-cock 28, so as to heat the hot-air chamber 24, that supplies the heated air through the large tubular trunnion 3 into the barrel or stuffing-cylinder. The hot air as it enters said cylinder passes through perforations located around the peripheral flange of the disk 7, that caps the inner end of the tubular trunnion 3, and in consequence of the radial direction thus given to the inspiration of the heated air and the centrifugal force engendered by the rapid rotation of the cylinder and said disk the air is forcibly injected and driven among and into the hides and skins. At the same time the exhaust that is actuated by the rotary suction-fan 36 through the exhaust-pipe 39 and perforate disk 7, that caps the inner end of the tubular trunnion by the interradianal direction thus given to the expiration of the ammonia-gas-laden air through the perforations of said disk, provides a powerful suction exhaust from all parts of the cylinder, that secures a powerful current throughout the whole apparatus *via* the hot-air chamber, the stuffing-cylinder, exhaust-tube, and rotary fan. The hides are by this quick aeration rapidly denuded of the ammonia and other gases that are required to be expelled, and at the same time they are rapidly stuffed by the ingredients with which the hides have been dressed, as stated, under the pressure of the aerated current and the kneading of the studs that project inwardly from the periphery of the cylinder.

The skins or hides may, if preferred, be put through the process of greasing and stuffing two, three, or more times, according to their condition; but even the heaviest hides for belt-leather will generally be found to be thoroughly cured after the third operation. The work is effected without the use of tan, drugs, alum, or other ingredients that are generally used.

By my device, as described above, the thickest belt-leather is manufactured in from thirty-six to forty hours. Skins that have been partly tanned can also be advantageously finished by this device.

I have shown and described the exhaust-tube as bifurcated at its lower end adjacent to the drum of the rotary fan and as entering said drum at both sides; but I do not confine myself to said arrangement of the foot of the exhaust-tube, for it may be single instead of bifurcated at its lower end and enter the drum on one side only.

I claim as my invention —

1. The combination, with the supports and driving-belt, of a rotary cylinder provided with inwardly-projecting lugs, tubular trunnions on which said cylinder works, and a fan having communication with the interior of the cylinder through one of said trunnions, substantially as described.

2. The combination, with the supports, of a

rotary cylinder, tubular trunnions on which the cylinder works, a hot-air chamber having a steam-coil located therein, and a fan, said hot-air chamber and fan having direct communication with the interior of the cylinder through the said tubular trunnions, substantially as described.

3. The combination, with a rotary cylinder and the tubular trunnions, of disks secured to the sides of the cylinder opposite the inner ends of the trunnions, said disks having perforations in their peripheries, substantially as described.

4. The combination, with the supports, of a rotary cylinder, the kneading-studs secured thereto, the tubular trunnions, the disks having perforations in their peripheries, the ex-

haust-pipe, the fan connected therewith, and the hot-air chamber having a steam-coil therein, substantially as described.

5. The combination of the rotating cylinder, the tubular trunnions on which it works, the hot-air chamber and its steam-heating coil, the thermometer 29, the perforated flanged disks, the kneading-studs, the suction exhaust-pipe, the thermometer 44, the rotary fan, and the driving-belt working on the periphery of the cylinder, whereby the said cylinder and fan are rotated, substantially as described.

WILLIAM SCHWEICKHARDT.

In presence of—

JOS. WAHLE,

EDWD. S. KNIGHT.