Jan. 19, 1960 P. R. THOMPSON ET AL 2,921,381

PROCESS AND APPARATUS FOR DRYING TANNED LEATHER

Original Filed Oct. 17, 1952 2 Sheets-Sheet 1

FIG. 5.

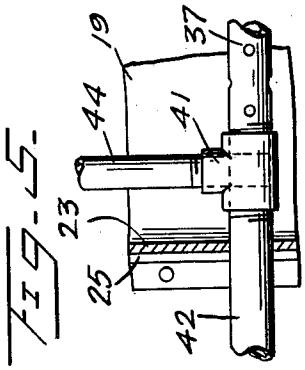


FIG. 1.

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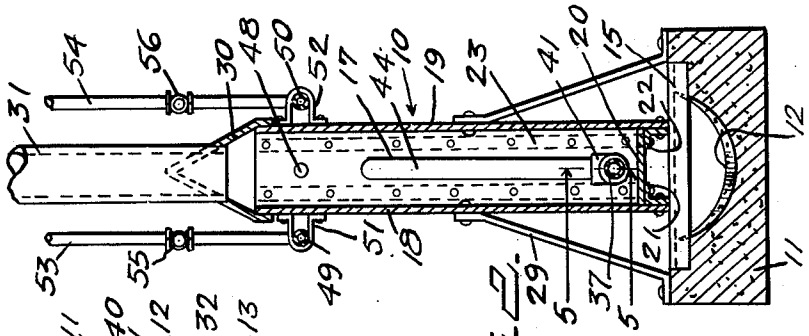


FIG. 2.

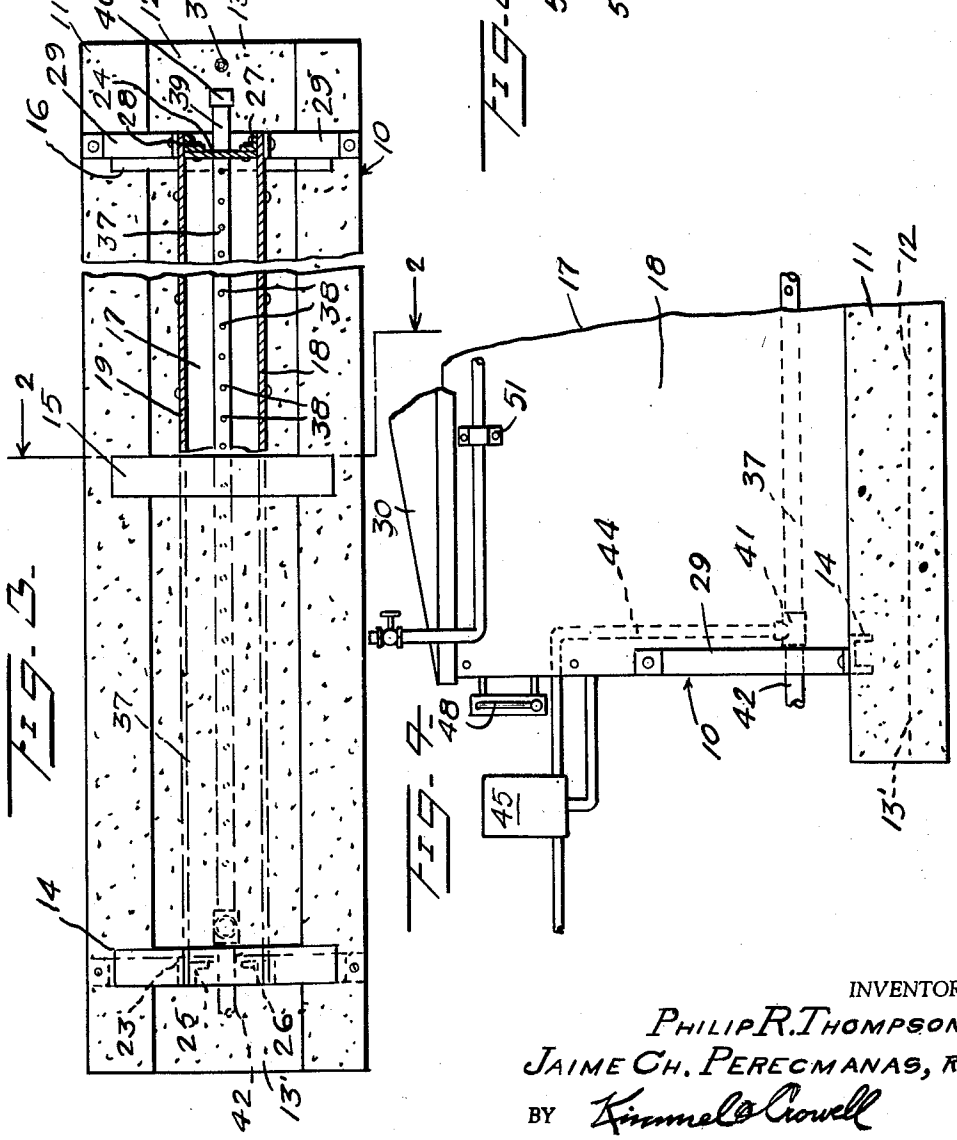


FIG. 3.

FIG. 4.

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PROCESS AND APPARATUS FOR DRYING TANNED LEATHER

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Continuation of application Serial No. 337,134, February 16, 1953, which is a continuation of application Serial No. 315,354, October 17, 1952. This application February 5, 1957, Serial No. 638,276

2 Claims. (Cl. 34—48)

The present invention relates to processes and apparatus for drying tanned leather skins, and more particularly to such apparatus and processes practiced thereon wherein the leather is placed in direct contact with a heated plate.

The present application is a continuation of our copending application for Process and Apparatus for Drying Tanned Leather, filed February 16, 1953, bearing Serial No. 337,134, now abandoned which was a continuation of our application for Process and Apparatus for Drying Tanned Skins, filed October 17, 1952, and assigned Serial No. 315,354, now abandoned.

In the drying of tanned leather skins following the tanning operation, the conventional practice has been to paste the leather on drying plates and conveying the plates through a drying chamber wherein the leather was dried by means of a heated drying medium. Conventionally the leather was pasted on the plates which were then positioned transversely of the drying chamber in closely spaced relationship with one another and were then conveyed through the drying chamber where the leather was dried by convection currents of heated air. Completion of this process requires approximately four to six hours, and it is obvious that once the leather has been pasted onto a plate and placed in the drying chamber, the plate can not be removed therefrom until it has passed entirely through the chamber. Obviously, such a process does not permit individual control of the drying time for the leather on separate plates. Additionally, a drier of this type is relatively expensive and economically unsuited to small tannery operations drying a limited number of skins at one time.

The primary object of the present invention is to provide a novel leather drier particularly suited to the processing of limited quantities of leather either continuously or intermittently without loss of efficiency.

Another object of the invention is to provide a novel leather drying mechanism and process of using same which materially reduces the drying time required for each piece of leather while simultaneously permitting direct control of the drying operation under visual inspection.

A further object of the invention is to provide a novel leather drying apparatus in which the leather is heated through the plate with the moisture being dissipated outwardly away from the plate.

A still further object of the invention is to provide a leather drying apparatus in which the occurrence of wrinkles and folds in the pasted leather is materially reduced, thus improving the quality of the leather.

Another object of the invention is to provide a leather drying apparatus and process of using same in which the adhesion of the skins to the plate sets more rapidly because of the heated plate surface causing the grain side of the leather to be drawn tightly against the drying plate prior to drying of the leather thereby providing

a smoother grain and preventing the occurrence of wrinkles after the leather is secured to the plate.

A further object of the invention is to provide a leather drying apparatus and process which is inexpensive to manufacture, simple to use, and which will efficiently dry leather skins on a limited production basis.

Other objects and advantages will become apparent in the following specification when considered in the light of the attached drawings, in which:

Figure 1 is a perspective view of the invention.

Figure 2 is a vertical transverse cross-section taken along the lines 2—2 of Figure 1 and Figure 3, looking in the direction of the arrows.

Figure 3 is a horizontal cross-section taken along the line 3—3 of Figure 1, looking in the direction of the arrows.

Figure 4 is a fragmentary side elevation of the invention.

Figure 5 is an enlarged fragmentary vertical cross-section taken along the line 5—5 of Figure 2, looking in the direction of the arrows.

Referring now to the drawings in detail wherein like reference characters indicate like parts throughout the several figures, the reference numeral 10 indicates generally a leather drying apparatus constructed in accordance with the invention.

The leather drier 10 includes a generally rectangular base block 11 which is substantially elongated and provided with a longitudinally extending drain channel 12 which slopes upwardly from the outlet end 13 thereof to the opposite end 13' thereof to readily discharge liquid therefrom. The block 11 is provided with a plurality of transverse horizontally extending channel support bars 14, 15 and 16 each bridging the channel 12 and arranged with their upper surfaces flush with the upper surface of the block 11.

A relatively thin rectangular tank 17 is supported on the transverse bars 14, 15 and 16, and comprises a pair of spaced parallel side walls 18 and 19 extending upwardly from the support bars 14, 15 and 16. A bottom wall 20 extends between the lower end portions of the side walls 18 and 19 resting on a pair of spaced parallel longitudinally extending angle iron frame members 21 and 22 secured to the lower end portion of the side walls 18 and 19 and to the bottom wall 20 by any suitable means.

A pair of spaced parallel upright end walls 23 and 24 extend between tthe opposite side edges of the side walls 18 and 19 in engagement with a pair of spaced parallel upright angle iron frame members 25, 26 and 27, 28, respectively, secured to the side walls 18 and 19 and the end walls 23 and 24 by any suitable means.

A plurality of upwardly and inwardly extending braces 29 have their lower ends fixedly secured to the top surface of the block 11 and their upper ends fixedly secured to the tank 17 at the opposite ends thereof to brace the tank 17 with relation to the base 11.

A hooded cover 30 is arranged in overlying relation to the top of the tank 17 and is provided with a vent pipe 31 extending upwardly therefrom to the atmosphere. An exhaust pump may be positioned in the vent pipe 31 to assist in exhausting gaseous material from the hood 30.

An overflow pipe 32 extends through the upper portion of the end wall 24 and has its lower end terminating within the drain channel 12 to provide an escape for fluid from the tank 17 at a predetermined level.

A liquid level indicator 33 is connected to the tank 17 through the end wall 24 by means of pipe fittings 34 and 35 so that the depth of fluid within the tank 17 may be readily apparent. A drain valve 36 is connected to the pipe fitting 35 at the lower end of the sight glass

33 to permit excess fluid to be drained from the tank 17, as desired.

A pipe 37 is positioned adjacent the lower portion of the tank 17 extending from one end thereof to the other and is provided with a plurality of perforations 38 for reasons to be assigned. The pipe 37 has an imperforate portion 39 at one end thereof extending through the end wall 24 to support the pipe 37 in spaced relation to the bottom wall 20 of the tank 17.

A cap 40 closes the terminal end of the portion 39 of the pipe 37. The opposite end portion of the pipe 37 is secured to one leg of a pipe T 41. An imperforate section of pipe 42 is connected to the T 41 in axial alignment with the pipe 37 and extends through the end wall 23, as best illustrated in Figure 5. The pipe 42 is connected to a source of water under pressure so that the tank 17 can be filled by supplying water therethrough.

A pipe 44 extends upwardly from the T 41 and out through the end wall 23 into a conventional thermostatic valve member 45. A pipe 46 extends from a source of steam under pressure (not shown) to the thermostatic valve 45 and is connected therethrough to the pipe 44. A pipe 47 extends from the thermostatic valve 45 through the end wall 23 serving as means to connect the sensing portions of the thermostatic valve 45 to the tank 17. A thermometer 48 is supported on the end wall 23 and is arranged to register the temperature of the fluid within the tank 17.

A pair of perforated pipes 49 and 50 are arranged in spaced horizontal relation to the upper ends of the side walls 18 and 19, respectively, and secured thereto by brackets 51 and 52, respectively. Supply pipes 53 and 54 are connected, respectively, to the perforated pipes 49 and 50 through valves 55 and 56, respectively.

The side walls 18 and 19 of the tank 17 are provided with an outer surface suitable for drying leather thereon. The drying faces of the side walls 18 and 19 are preferably formed of enamel steel but may also be formed of stainless steel, glass, or any other heat conducting material having a smooth surface.

The tank 17 is filled with liquid supplied through the imperforate section 42, the T 41, and the perforate pipe 37 until the desired level of liquid is obtained therein. The water in the tank 17 is heated by bubbling steam therethrough which has been introduced through the perforate section of pipe 37 under the control of the thermostatic valve 45 to regulate the temperature of the water in the tank 17.

The leather drying faces of the side walls 18 and 19 are heated by the hot water contained in the tank 17. Obviously, by proper setting of the thermostatic valve 45 and occasional reference to the thermometer 48, the temperature of the drying surfaces of the side walls 18 and 19 may be accurately controlled. The temperature of the side walls 18 and 19 of the tank 17 will vary in the range of 110° F. to 200° F. depending on the type of leather being dried.

As an example, when drying a vegetable tanned leather the temperature will be set somewhere between 110° F. and 140° F., and when drying chrome tanned leather the temperature will be set somewhere between 114° F. and 200° F.

In utilizing the leather drier 10 in accordance with the present invention to dry wet leather, paste is applied to the grain side of the leather and the leather is spread apart and adhered to the heated drying surfaces of the side walls 18 and 19. In pasting the leather on the heated drying surfaces of the side walls 18 and 19, the leather is smoothed out in continuous contact with the drying surface by means of a tool in the usual manner.

The drying surfaces of the side walls 18 and 19 are heated to the desired temperature according to the type of leather being dried thereon prior to positioning the leather thereon and the heated side walls 18 and 19 dry

the paste rapidly thereby assisting in securing the leather to the drying plates. The leather is dried by means of conventional heat from the side walls 18 and 19 directly to the leather, and after the desired degree of dryness has been obtained, the leather is removed from the side walls 18 and 19 leaving the paste on the outer surface of the side walls 18 and 19.

The aforesaid drying process takes approximately 8 to 10 minutes for light weight leather, and approximately 10 to 20 minutes for heavier leather, with the operator being able to observe the condition of the leather at all times and remove it from the drier 10 when the proper residual moisture content has been reached.

Vegetable tanned leathers will adhere to the side walls 18 and 19 without the use of paste, and this step is eliminated for such leathers.

The pipes 49 and 50 ar used to spray the outer surfaces of the side walls 18 and 19 to remove the paste remaining thereon after the leather has been dried.

From the foregoing it will be observed that the present invention provides a novel leather drier 10 particularly adapted for processing small quantities of leather which may be dried intermittently without loss in efficiency of the process and apparatus. The present invention also greatly reduces the drying time of a piece of leather since the drying has been more efficiently regulated. The present invention also provides a novel leather drier 10 which permits close observation and control of the leather during the drying operation, thus reducing the normal occurrence of wrinkles and folds in the leather. In addition, it has been found that when using the process and apparatus of the present invention, the paste which secured the leather to the side walls 18 and 19 remains on the side walls 18 and 19 when the leather is stripped therefrom with no paste being left on the leather, thus, the present invention eliminates the necessity of cleaning the leather atfer it has been dried.

Having thus described the preferred embodiment of the invention, it should be understood that numerous structural modifications and adaptations, as well as minor changes in the process, may be resorted to without departing from the scope of the appended claims.

What is claimed is:

1. Apparatus for drying tanned leather comprising, a base having an elongated drainage trough therein, a narrow elongated closed tank containing a heat transfer liquid mounted on said base in vertical longitudinal relation to said trough, the sides of said trough extending outwardly beyond the sides of said tank, a pair of drying plates of high heat conductivity constituting opposite side walls of said tank, said plates having their inner surfaces in contact with said heat transfer liquid and having a smooth outer surface upon which the wet leather to be dried is adhered, heating means for the transfer liquid including a perforated steam pipe in the tank adjacent the bottom thereof to heat the heat transfer liquid by bubbling steam therethrough, a thermostatic valve controlling the passage of steam entering said perforated pipe said valve being actuatable according to the temperature of the liquid in said tank to control the amount of steam entering the tank to maintain the temperature of the liquid between predetermined limits, an overflow pipe in said tank communicating with said trough for maintaining the liquid level in said tank, and a hood covering said tank, and an exhaust vent in said hood.

2. The structure of claim 1 wherein the wet leather to be dried is pasted to said plates and wherein pipes are provided extending longitudinally along the tops of said plates, said last mentioned pipes being connected to a source of fluid, and having perforations therein for removing the paste from said plates after removal of said hides.

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