July 29, 1969 E. HEIDEMANN ET AL 3,457,742

TANNING MACHINE

Filed Aug. 19, 1968

Fig. 1

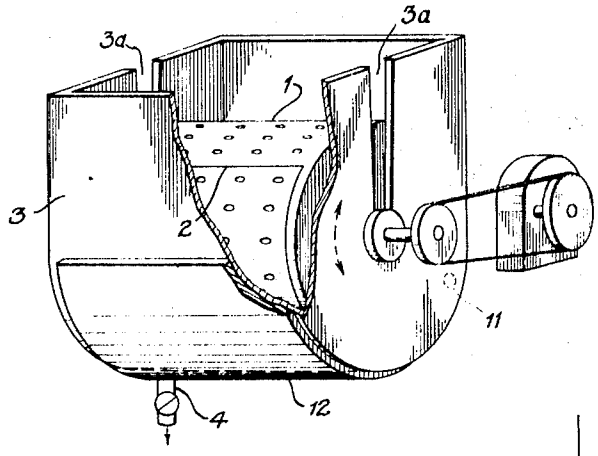
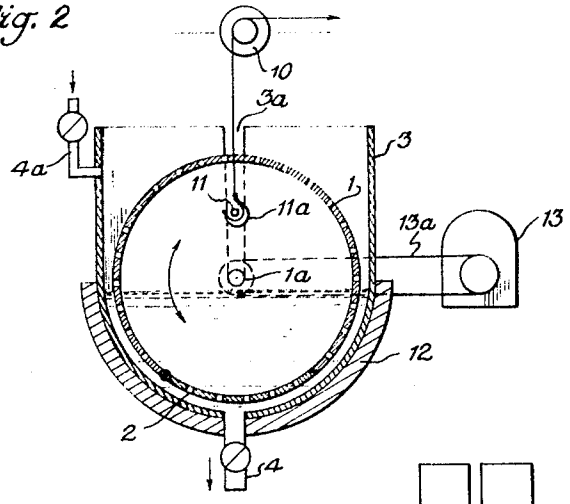


Fig. 2



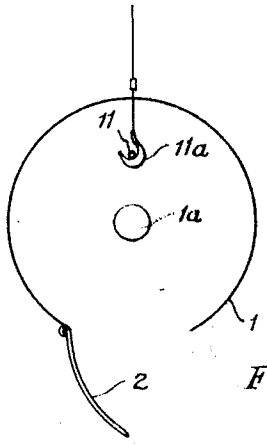


Fig. 2a

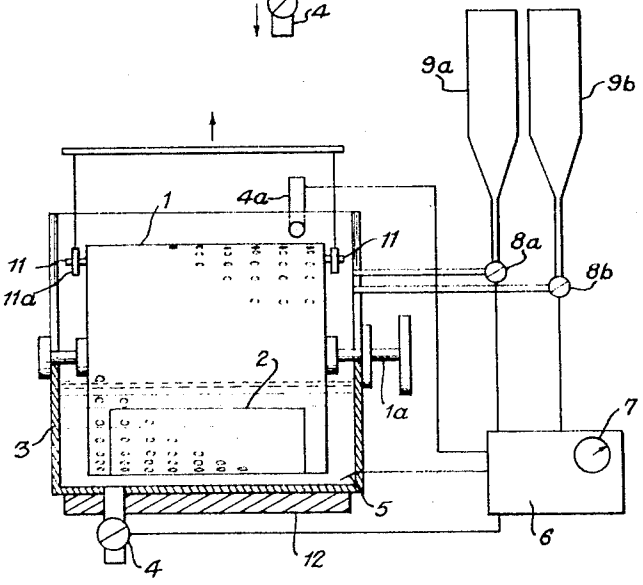


Fig. 3

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TANNING MACHINE

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Continuation-in-part of application Ser. No. 615,243, Feb. 10, 1967. This application Aug. 19, 1968, Ser. No. 753,658

Int. Cl. C14c *15/00*

U.S. Cl. 69—30 2 Claims

ABSTRACT OF THE DISCLOSURE

The machine is composed of a tank in which a perforated drum is rotatably mounted for holding skins or furs. The drum can be lifted from the tank. Tanning fluids in the tank are monitored by pH meter controlled means as the drum is rotated during the cleaning and tanning of the skins or furs.

This application is a continuation-in-part of our copending application Ser. No. 615,243, filed Feb. 10, 1967 for "Tanning Machine," and now abandoned.

This invention relates to a machine for the tanning of skins and furs. Heretofore, it was customary to soak the skins and furs being tanned in stone crocks or wooden barrels to chemically remove the hair and then to remove the dehaired skins and furs and put them in other vessels where they are neutralized chemically. Finally, the skins and furs are put into appropriate tanning solutions to complete the tanning.

It has heretofore been suggested that these successive process steps can be performed in a single rotating closed vessed which holds the skins and furs and into which the individual chemicals are introduced at appropriate times. The skins and furs are then removed during the rotation of the vessel by means of Archimedes' screws, after which the next chemical solution is introduced. However, so many difficulties occur during this operation that the apparatus has not proved practical.

It is the object of this invention to produce an improved apparatus in which the heretofore experienced difficulties are overcome by means of relatively simple and constructive techniques.

This invention provides an apparatus for tanning skins and furs which is composed of a perforated drum for holding the furs which is rotatably mounted on a horizontal axis in a tank containing the tanning fluids. The bottom of the drum has the same contour as the bottom of the tank with very little space therebetween. The drum is so mounted that it can be moved parallel to its axis while being lifted upwardly out through the top of the tank. Also, pH meter means are used for determining the pH of the tanning fluids, preferably adjacent the body of the tank.

The pH meter means is preferably coupled with an apparatus for controlling the supply of either acid or basic substances to the tank for maintaining the pH of the tanning fluids at a predetermined value.

Preferably the bottom of the tank is concentric with the drum.

The means by which the objects of the invention are obtained are described more fully with reference to the accompanying schematic drawings in which:

FIGURE 1 is a perspective view of the tanning machine;

FIGURE 2 is a vertical cross-sectional view through the machine;

FIGURE 2*a* is a diagrammatic view showing the manner of lifting the drum from the machine; and

FIGURE 3 is a longitudinal cross-sectional view of the machine.

The machine is composed of a perforated drum **1** having a door **2**. The drum is mounted in the tank **3** by means of an axle **1***a* which is journalled on the bottoms of open top ended slots **3***a* in the side walls of the tank. The bottom of the tank is concentric with the drum with a slight space of approximately 5 centimeters between the drum and the bottom of the tank. A drain valve **4** is positioned at the lowest point of the bottom of tank **3**. Fresh fluid is supplied through pipe and valve **4***a*. Also, in the lower portion of the tank, a pH electrode **5** is inserted through the wall of the tank and which is connected to the pH meter **6** which continuously measures the pH of the tanning fluid in the tank and shows the same on the indicator **7**. The pH meter is connected to control valve means so that, when the measured pH value of the tanning fluid deviates from a preselected value, a valve **8***a* and/or **8***b* is opened so that either an acid substance in container **9***a* or a basic substance in container **9***b* is supplied through pipes to the fluid in the tank **3** until the preselected pH is again reached. The control valve means also operates drain **4** and pipe **4***a*.

Drum **1** is mounted in the tank **3** so that it can be removed from the tank by a lifting means **10**, such as a crane, a winch or a chain hoist. For this purpose, the ends of the drum have studs **11** which are engageable by hooks **11***a*, as shown in FIGURES 2 and 3. As shown in FIGURE 2*a*, studs **11** are positioned diametrically opposite door **2**. Thus when drum **1** is lifted by hooks **11***a* from tank **3**, the drum turns so that door **2** is lowermost. In this position, when door **2** is opened, the skins will fall out of the drum, or be easily pulled therefrom.

The bottom of tank **3** is enclosed in a steam jacket **12** for heating the tanning fluid. An electric motor **13** is connected by a belt **13***a* to the drum **1** for slowly rotating the drum at a speed of, for example, 2 to 15 r.p.m.

In operation, after the raw skins have been cleaned of meat, they are placed into drum **1** and then door **2** is closed. Tank **3** is then filled with water and the skins are washed and cleaned by rotating the drum. The water is then drained through valve **4** and then a fresh liquid chemical is introduced into the tank through pipe **4***a* for removing the hair. After the hair has been dissolved, the liquid is drained and, if need be, an alkaline soltuion is introduced through pipe **14** for the so-called tanning. This solution is then removed and the skins rinsed with clean water. The skins are then neutralized by adding acids and tanned in this liquid.

The bare skins, after the removing of the last liquid and in the case of chrome tanning, are then pickled in a new acid liquid. The chrome tanning then follows in the same liquid or a new liquid by introducing the chromium salt into the top of the tank either in solution or solid form.

In the case of vegetable tanning, after pickling a vegetable tanning solution is introduced as a new liquid at certain intervals into the tank.

This invention has the following special advantages.

The tanning machine of this invention is suitable for an automatic tanning process because the continuous measuring of the pH concentration and temperature of the fluids is made possible by conventional pH measuring means connected to the tank. Also, without further material expense, the liquids and pulverized tanning matter or pickling material can be introduced into the tank through controls and suitable valves positioned on the top of the machine.

The contents in the tank can be heated or cooled with the temperature being adjusted by simple controls which actuate steam valves or alternately the vessel can be

electrically heated. Another advantage is in that the drum can be easily removed from the tank for the purpose of emptying the drum and also for the removal of half-finished skins.

The tanning machine of this invention can be completely filled with skins as contrasted to previously known machines which can only be filled up to their hollow axle. The greater than atmospheric pressure arising during the closing of the hollow axles can never arise in the machine of this invention.

The tanning machine of this invention is preferably constructed of fine steel, plated metal or synthetic material which, as contrasted to wooden vessels, has the advantage that the pickling solution residues or alkalines can be neutralized much more quickly and with less neutralizing liquid.

Having now described the means by which the objects of the invention are obtained,

We claim:

1. An automatic machine for tanning skins and furs comprising a stationary tank having a curved bottom and an open top, a perforated drum in said tank, slot means in said tank extending upward from the center line of said drum to the upper edge of said tank, axle means secured to said drum and journaled in said slot means for rotatably holding said drum slightly spaced from said tank, motor means connected to said axle means for rotating said drum, a door in said drum, stud means on the ends of said drum diametrically opposite said door for lifting said drum from said tank by way of said slot means and turning said tank to replace said door lowermost, pH meter and control means connected to the lower portion of said tank for continuously monitoring and adjusting the pH of the fluid in said tank, heating jacket means joined to said tank for heating the fluids in said tank, supply means for supplying fresh fluid to said tank, and drain means for draining used fluid from said tank.

2. A machine as in claim **1**, further comprising valve means connecting said supply means and said drain means to said pH meter and control means for automatically monitoring and controlling the fluid in said tank.

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