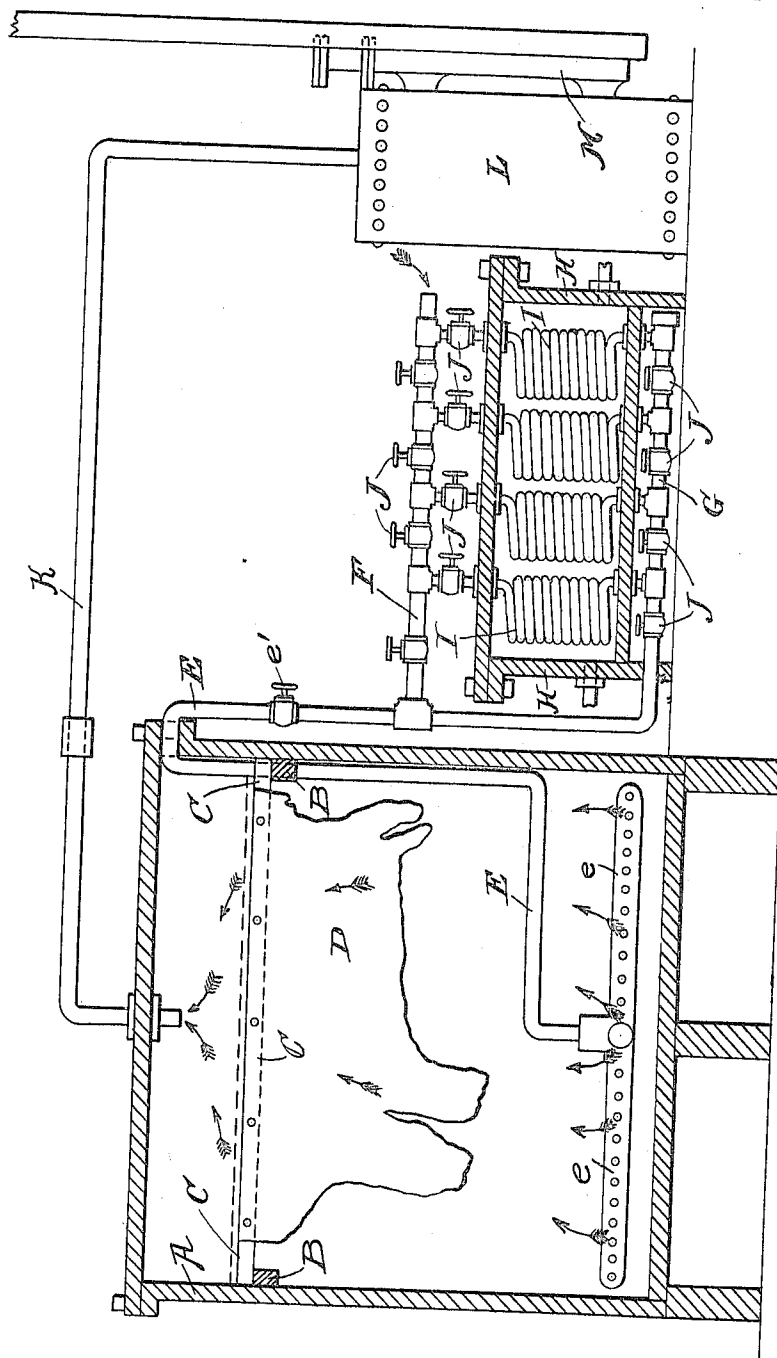


A. FAY.
 APPARATUS FOR TREATING, DEHAIRING, SWELLING, AND TANNING HIDES.
 APPLICATION FILED SEPT. 15, 1909.

971,126.

Patented Sept. 27, 1910.



WITNESSES:

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ALPHEUS FAY, OF LOUISVILLE, KENTUCKY, ASSIGNOR OF FOUR-FIFTHS TO GEORGE F. SEISER AND ONE-FIFTH TO WILLIAM J. COGLE, BOTH OF LOUISVILLE, KENTUCKY.

APPARATUS FOR TREATING, DEHAIRING, SWELLING, AND TANNING HIDES.

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Specification of Letters Patent. Patented Sept. 27, 1910.

Application filed September 15, 1909. Serial No. 517,947.

To all whom it may concern:

Be it known that I, ALPHEUS FAY, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented a certain new and useful Apparatus for Treating, Dehairing, Swelling, and Tanning Hides, of which the following is a specification.

The object of my invention is to provide a new and useful apparatus for treating, dehairing, cleaning, swelling and removing the elements of rancidity, odors and smells from skins and hides, and then introducing tanning elements into the fibers of the hides under partial vacuum, and then reducing the tanning elements and the hides until they are in a substantially inactive stage by reversing the pressure in the tanks on the skins or hides, and my invention consists in the combination and arrangement of parts hereinafter described and claimed. This apparatus is adapted to tanning sheep skins and hog skins as well as other hides and skins.

The drawing is a sectional elevation of apparatus embodying my invention.

A closed tank A is provided with side rests B upon which the strips C carrying the hides D are supported. Passing into the tank A is a pipe E provided with a perforated cross head *e* by means of which air at a temperature different from the temperature of the liquor but preferably at a temperature above the temperature of the liquor may be admitted and distributed near the bottom of tank A. Pipe E connects with branch pipes F and G passing above and below a steam chest H containing coils I connected with branch pipes F and G. Stop cocks J are provided for directing air entering pipe F through one or more of the coils I, and a stop cock *e'* is provided for regulating the passage of air through pipe E. A suction pipe K also enters tank A through the top and terminates just below the top so as to be capable of withdrawing air from above the liquor in the tank. The pipe K leads to a tank L, which is equipped with an exhaust pump M adapted to withdraw air therefrom.

The apparatus is primarily designed for use in dehairing and swelling the hides and skins so I will describe in detail its use in this connection. In using the apparatus for

this purpose, the tank A is partially filled with enough water to submerge the hides when suspended from rests B. For thirty-six hides about eighteen hundred gallons of water will be found sufficient. To this is added about four bushels of unslaked lime and the lime allowed to slake and the liquor cool off. Then the hides or skins to be dehaired or swelled are submerged in the liquor by suspending them from strips C supported on rests B. Then the top of tank A is secured in position to close the tank and pipe K coupled up with tank L and air pump M, which are operated to exhaust the air from above the liquor in tank A. As air is withdrawn from tank A through pipe K, outside air will be forced into the bottom of the tank through pipe E and cross head *e*, and rise and bubble up through the liquor, keeping the liquor thoroughly stirred up. By adjusting stop cock *e'* the entry of the air may be limited, thus causing a partial vacuum in tank A. Under the influence of this vacuum the hides or skins will be swelled or distended to facilitate access of the liquor to the hair follicles and the entry of the liquor to the interior of the hides. In this manner the removal of the hair and the introduction of liquor to the interior of the hides or skins will be greatly facilitated. If desired the cooling of the original liquor may be hastened by passing air through it.

To further facilitate the process, the air entering through pipe E may be passed through one or more coils I to heat it to a temperature of about 90 degrees Fahrenheit. The apparatus may also be used to advantage for introducing other liquors or tanning substances into the hides or skins. After the hides or skins have been treated, dehaired, swelled, cleaned and freed from the elements of rancidity, odors and smells, the hides or skins are then tanned as hereinafter described.

In carrying out my process for tanning one hundred pounds of hides, we employ for the first chemical solution six pounds of bichromate of potash or soda, four pounds of alum, four to six pounds of common salt, twelve ounces of sulfuric acid, twelve ounces hydrochloric acid and sixty gallons of water. The hides are placed in a chemical solution and air at a temperature different from the temperature of the solution, passed through

under the influence of a partial vacuum from four to six hours. The air at a temperature different from the temperature of the liquor causes the chromic acid to thoroughly impregnate the hides quickly. This will ordinarily take from six to nine hours, depending upon the weight and thickness of the hides. The hides are then removed from the solution and given a bath of hot air until about three fourths of the moisture therein has evaporated. When in this state the hides are spread out and painted on both sides with a solution of glucose and packed in piles for from two to four hours to allow the glucose to soak in and become uniformly distributed throughout the hides. The solution may contain from fifteen to fifty per cent. of glucose dissolved in water. For the production of a suitable sole-leather we make up a chemical solution as follows:—One hundred pounds of stearic acid, twelve and one half pounds of carnauba-wax, six and one-fourth pounds of vaseline, six pounds of tallow, six and one fourth pounds of beeswax. This grease solution is reduced to a liquid and kept in a temperature between 85 degrees and 90 degrees centigrade by passing hot air through it, and the hides are suspended in this solution until the grease has thoroughly penetrated the thickest parts of the hides. This will be found to take only a short time, thirty minutes being all that is necessary. For harness leather the proportion of vaseline in the solution must be increased to make the leather as soft as wanted, say eighteen pounds of vaseline instead of six and one quarter pounds and eighteen pounds of tallow instead of six pounds, as above stated. To obtain the best results the glucose should be kept at about fifty degrees centigrade.

If my process is properly carried out, leathers can be produced from green hides in from ten to fifteen days.

Applicant desires to state that to produce an apparatus for treating, dehairing, swelling, cleaning and removing the elements of rancidity, odors, and smells from hides or

skins and then introducing tanning elements into the fibers of the hides under a partial vacuum and then reducing the tanning elements and the hides until they are in a substantially inactive state, by reversing the pressure in the tanks on the liquor and hides is broadly novel and that he is entitled to protection by a United States patent covering his apparatus.

While I have illustrated and described my invention so that any one skilled in the art can carry it into use, I do not wish to be limited to the exact construction set forth, but

What I claim as new and desire to protect by Letters Patent is:

1. In apparatus for treating hides, the combination of a closed vessel adapted to receive the hides and liquor for treating them; means for exhausting air from said vessel; and means for admitting a limited quantity of heated air at a temperature above the temperature of the liquor to said vessel below the surface of the liquor, substantially as specified.

2. In apparatus for treating hides, the combination of closed tank A; means for suspending hides therein; inlet pipe E and perforated cross head *e*; branch pipes F and G; steam chest H containing coils I connected with pipes F and G; stop cocks J for regulating the flow through coils L; and exhaust pipe K connected with pump M, substantially as specified.

3. In apparatus for treating hides, the combination of closed tank A; means for suspending hides therein; inlet pipe E and perforated cross head *e*; stop cock *e'* for regulating the entry of air through pipe E; branch pipes F and G; steam chest H containing coils L connected with pipes F and G; stop cocks J for regulating the flow through coils I; and exhaust pipe K connected with pump M, substantially as specified.

ALPHEUS FAY.

Witnesses:

RAY MANN,

SUSIE MULLONEY.