Sept. 28, 1954 J. KAHN ET AL 2,690,069

METHOD FOR THE CONTINUOUS AND ACCELERATED PREDRYING OF TANNED LEATHER

Filed Nov. 14, 1951 2 Sheets-Sheet 1

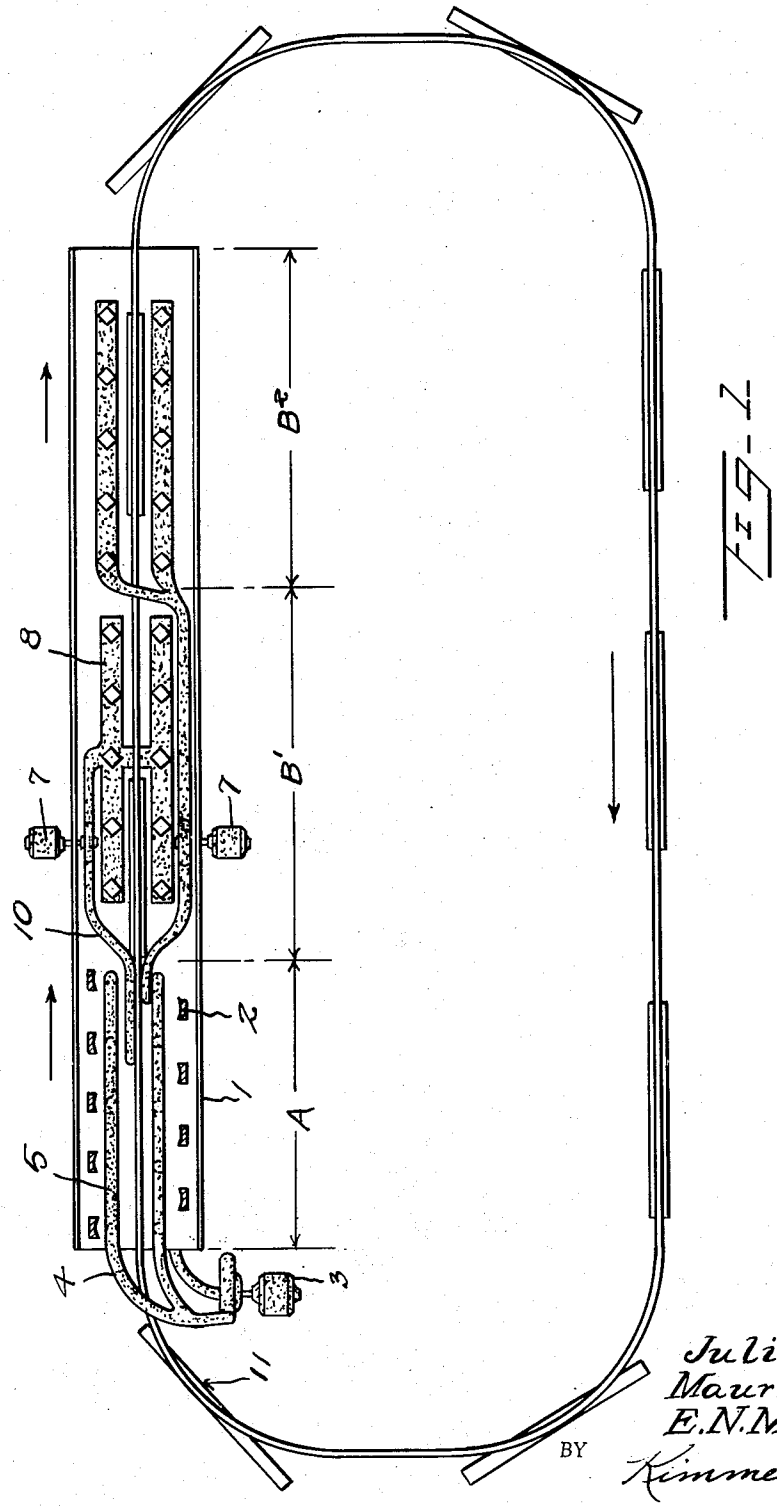


FIG. 1

INVENTORS
Julio Kahn
Mauricio Pier
E.N.MacKinney

BY Kimmel & Crowell
ATTORNEYS

Sept. 28, 1954 J. KAHN ET AL 2,690,069

METHOD FOR THE CONTINUOUS AND ACCELERATED PREDRYING OF TANNED LEATHER

Filed Nov. 14, 1951 2 Sheets-Sheet 2

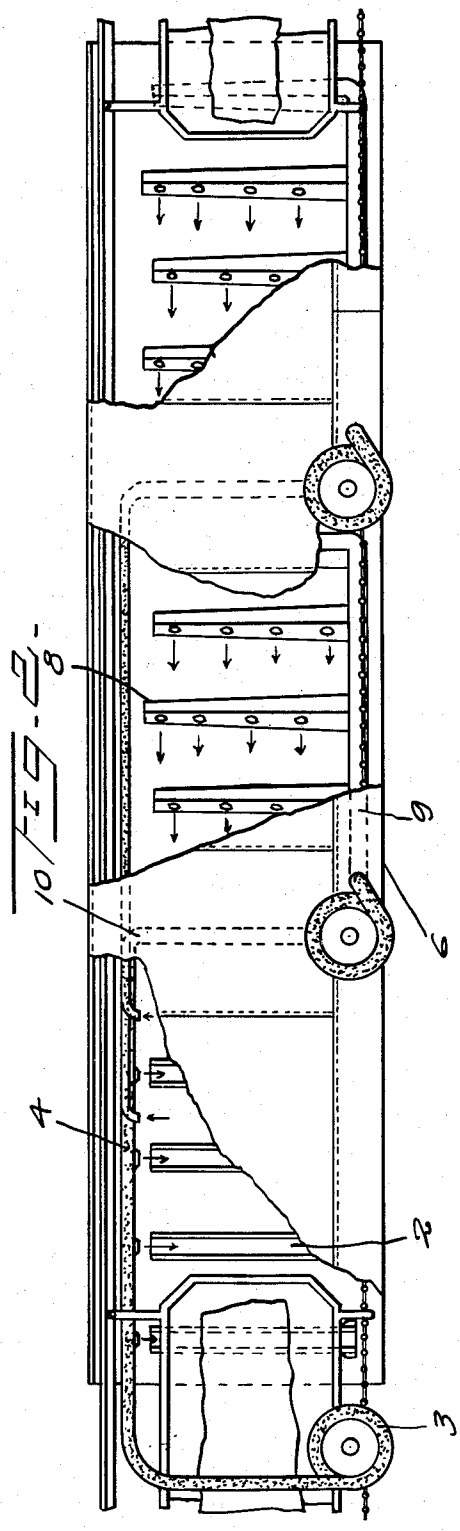


FIG. 2.

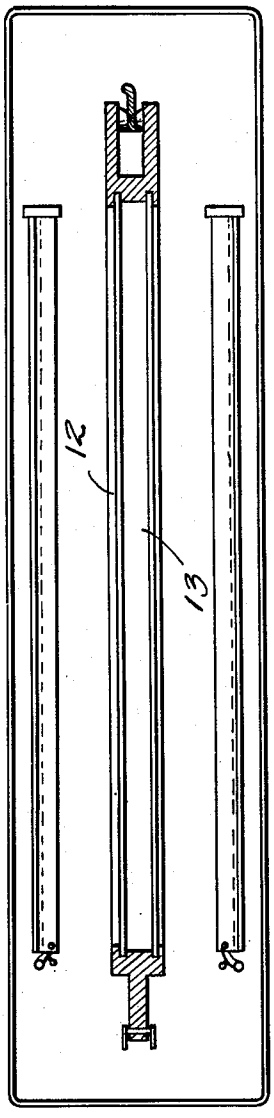


FIG. 3.

INVENTORS
Julio Kahn
Mauricio Pier
E. N. MacKinney

BY Kimmel & Crowell
ATTORNEYS

Patented Sept. 28, 1954 2,690,069

UNITED STATES PATENT OFFICE

2,690,069

METHOD FOR THE CONTINUOUS AND ACCELERATED PREDRYING OF TANNED LEATHER

Julio Kahn, Mauricio Pier, and Emilio N. MacKinney, Mexico City, Mexico

Application November 14, 1951, Serial No. 256,211

1 Claim. (Cl. 69—21)

1

This invention relates to a method of drying tanned leather skins or hides.

An object of this invention is to rapidly dry tanned leather skins or hides containing excess amounts of moisture, in a continuous process whereby the skins may be dried in a matter of minutes as contrasted to the usual time of several hours or longer.

A further object of this invention is to dry tanned leather hides or skins affixed to drying plates, with use of a less amount of pasting materials required for affixing the skins to the plates than is required in the usual air drying processes.

Another object of this invention is to remove excess amounts of moisture from tanned leather hides or skins in a continuous process of subjecting the skins while pasted on vertically disposed supporting plates, first to the sudden impact or shock of high heat in a partially closed chamber in which extremely hot air is circulated, while at the same time exposing the flesh side of the skin to a bombardment of infra-red radiations from a series of spaced gaseous fuel burners, these same burners providing the heat for heating the air in the chamber; next passing the mounted skin into a conditioning zone of heated moving air in another adjacent portion of said chamber of a lesser air temperature than said first section or portion of said chamber; and next passing the mounted skin into a third zone or section, or portion of said chamber for further conditioning, said last chamber also containing moving heated air but of a lesser temperature than said other portions of the chamber.

With the foregoing and other objects in view, the invention consists in the disclosure of the appended drawings and specifications and as more particularly set forth in the appended claim.

In the drawings:

Figure 1 is a schematic top plan view of the device showing in section the relative position of its components, at section A of accelerated predrying at very high temperatures, and at sections B1 and B2, of skin conditioning.

Figure 2 is a side elevation of the device illustrated in Figure 1, showing the relative position of the heating means and air ducts for the control of convection and skin conditioning.

Figure 3 is a top plan view of the skin supporting plates, showing in a partial section of the frame, the insulating air space.

This process for the accelerated predrying of tanned leather, comprises the ordered sequence of steps, first, subjecting the skins previously adhered by their grain side to flat heat conducting plates, to an atmosphere of very high temperatures, from 400 to 550 degrees F., in a confined space, which produces in the skins a thermic shock and a sudden raise in their temperature, by conduction in their intimate contact with the supporting plates, which temperature has been raised by the heated atmosphere, and by convection in the displacement of the over-heated air masses in the chamber. This convection heating is properly regulated in this first step of the process, by the forced circulation of air, from the top down, so that any excess of heat in the upper portion of the chamber is avoided, as well as any uneven distribution of heat. This step of the process also comprises the simultaneous application to the skins of infra-red radiations. These radiations are specifically used for deep predrying of the skins, and the more adequate distribution of the greasing materials.

2

The skins on the supporting plates in the accelerated predrying section A are subjected to temperatures varying from 400 to 550 degrees F., for a period of time of from two to five minutes, sufficient to obtain an adequate dehydration of the skins, setting of their area and distribution of the greasing materials.

The following step in the sequence of the process consists of conditioning the skins, by their passage through chambers adjacent to the accelerated predrying section A of the device, in which chambers, air at a temperature of from 200 to 300 degrees F. is circulated, so that this lower temperature of the conditioning section allows the skins to recover certain humidity and to gradually lower their temperature. It has been found that a conditioning time of from five to ten minutes is sufficient.

The product resulting from this process is characterized by being a skin of better appearance and better quality, as less amounts of gumming materials have been used, and a uniform predrying has been obtained.

The device for developing this method essentially comprises a chamber 1, opened at both ends, provided on its sides with heating means 2, such as combined gas burners and infra-red generators, and capable of raising the temperature of the chamber from 400 to 550 degrees F. The location of said burners 2 in the device is such that it allows the adequate distribution of the overheated air masses, for the better development of convection, which is controlled in this chamber 1, by forced circulation of the drying gases comprising air and products of combustion from

blower 3, through ducts 4 to outlets 5, so that this circulation of gases from the top chamber 1 down, avoids the accumulation of heat in the upper portions, and eliminates the possibilities of an uneven predrying of the skins.

The accelerated predrying of the skins takes place in section A of the device, and conditioning the skins takes place in sections B1 and B2, which comprise an adjacent chamber 6, which forms a continuation of chamber 1, and is provided in turn with blower means 7, ducts 8, and gas outlets 9, for the forced circulation of air in said chamber. Since gas temperature as circulated in the chamber 6 must be from 200 to 300 degrees F., as specified, preferably gas inlet 10 for blower 7 will be at the end of chamber 1 of section A.

Figure 2 clearly illustrates the relative position of the components in the device.

Partial predrying of the skins by conduction is provided in the device, by means of supporting plates 11, constituted in a modality of the invention as illustrated in Figure 3, by a pair of spaced plates 12, of heat conducting material, which form an air space 13 which is used as insulating means, avoiding an excessive predrying of the skins at their grain side.

Conveyance of the supporting plates 11 is accomplished by mounting said plates on an endless conveyer having one run extending longitudinally through the chambers, and which may be used in closed circuit, if a more repeated use of the plates is desired.

We do not mean to confine ourselves to the exact details of construction herein disclosed, but claim all variations falling within the purview of the appended claim.

What is claimed is:

The method of drying tanned leather skins containing moisture which comprises the steps of pasting a skin by its grain side to a movable plate, continuously conveying the mounted skin through a chamber area, subjecting the skin to a direct heat and the heat of a moving mass of heated air against its outer face while at the same time subjecting the pasted side of said skin through said plate to the heat only of said moving mass of air while in said first area, then directly conveying said mounted skin continuously through a second area and subjecting said skin and plate to a heated mass of moving air of a lesser temperature than in said first area, and then directly continuously conveying said mounted skin through a third area while subjecting said skin to a moving mass of heated air.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
2,102,667	Argabrite	Dec. 21, 1937
2,347,109	Hurxthal	Apr. 18, 1944
2,384,990	French	Sept. 18, 1945
2,391,195	Ross et al.	Dec. 18, 1945
2,438,226	Naumburg	Mar. 23, 1948

OTHER REFERENCES

Infra-Red in Industry, by W. S. Miskella (Copyright 1947). Published by the Miskella Infra-Red Company, East 73d and Grand Avenue, Cleveland 4, Ohio. Pages 30 and 39 and chart between pages 32 and 33 relied on.

Industrial Applications of Infra-Red, by J. D. Hall. Published 1947 by McGraw-Hill Book Company. Pages 13, 14, 15, 56, and 150 relied on.