April 18, 1944. A. O. HURXTHAL 2,347,109

LEATHER DRIER

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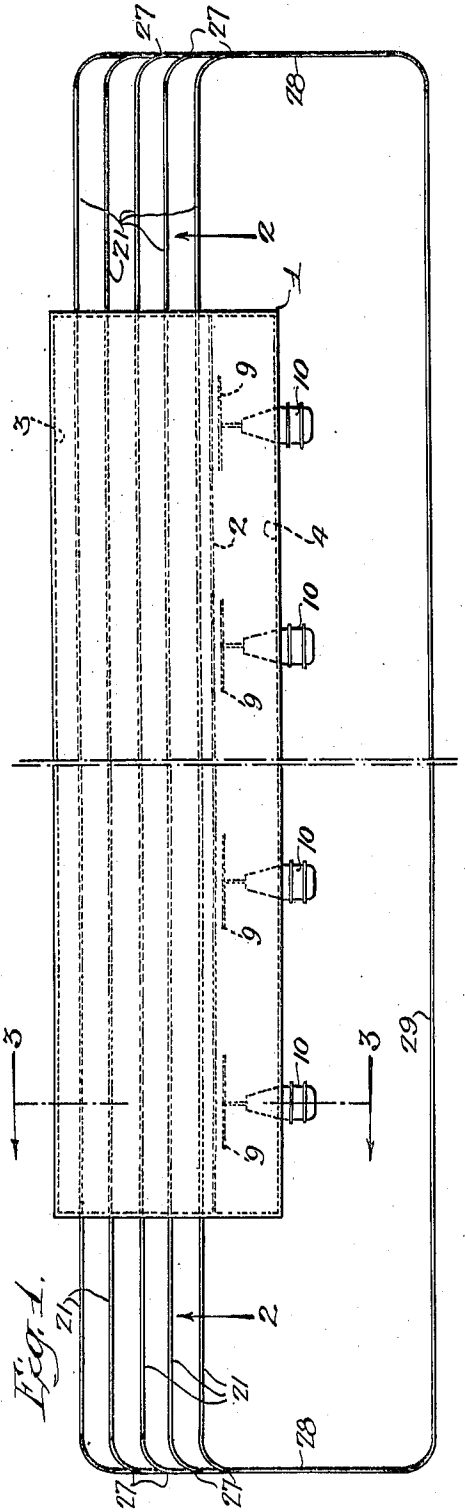


Fig. 1.

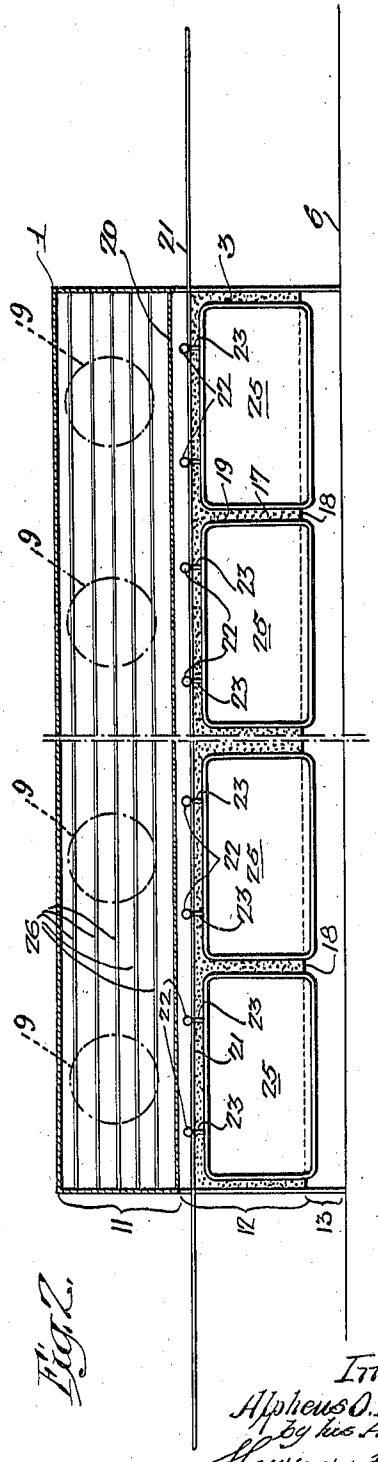


Fig. 2.

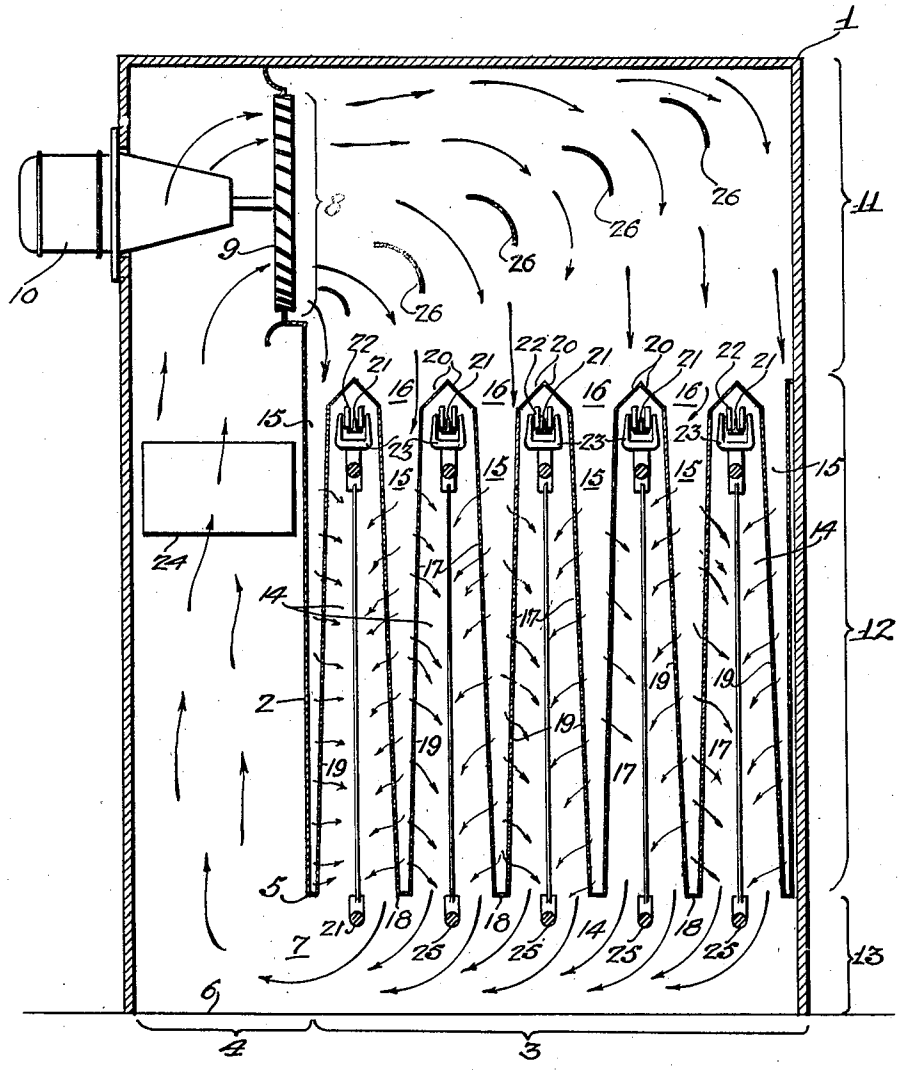
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Fig. 3.



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2,347,109

LEATHER DRIER

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Application January 30, 1942, Serial No. 428,943

3 Claims. (Cl. 34—158)

This invention relates to an apparatus for drying hides or other flat units of leather, etc., with the units mounted on frames hung from overhead trolleys or supported from below on suitable trucks; wherein the frames are of either a foraminous or an imperforate nature; and wherein the units are toggled, tacked, pasted or otherwise secured to the frames in a smooth, flat condition.

The object of the present invention is to provide a drier of the tunnel type for drying the units on the frames above noted; wherein the tunnel is divided into a plurality of narrow, parallel channels alternating with a plurality of air chambers respectively coextensive with the channels; and wherein side walls, common to both the channels and the chambers lying adjacent to each other, are each provided with a multiplicity of perforations extending over substantially the entire area thereof, to afford a like number of relatively spaced jets of air arranged to impinge against the materials on the frames when the frames are passed into or through the respective channels.

The advantages of the arrangement above described reside in the air jets, by impinging upon such a large number of relatively spaced areas of each unit simultaneously, collectively effecting rapid uniform drying of each unit as a whole, in a minimum amount of time; whereby the length of the tunnels, and consequently the amount of floor space required for a drier of any given hourly capacity, will be reduced to a minimum; and whereby the application of the units to the frames, the drying of the units on the frames, the stripping of dried units from the frames, and the preparation of the frames and the wet units for application to the frames, may be carried on as a continuous process, for which purpose the frame-carrying rails of the separate channels are all connected to a system of trackage including at least one section located outside the drier on which the frames are run, after the units thereon have been dried, to be stripped and serviced to receive other units preparatory to reentering the drier.

In the accompanying drawings:

Fig. 1 is a diagrammatic plan view of the drier;

Fig. 2 is a longitudinal sectional elevation taken on the line 2—2, Fig. 1; and

Fig. 3 is a transverse sectional elevation taken on the line 3—3, Fig. 1.

As shown in Figs. 1 and 3, the drier casing 1 is divided, by a longitudinal vertical partition 2 into a tunnel section 3 and a circulating section 4, with the bottom edge 5 of the partition 2 spaced above the floor 6, to provide a passageway 7 between the drying and circulating chambers at the lower part of the drier.

The partition 2, in the upper part of the dryer, is provided with a plurality of circular passages 8, 8, in each of which is rotatably mounted a high-speed air impeller, in the form of a disc fan 9.

Each fan 9 is driven by an individual motor 10 located outside the dryer casing 1, in the present instance, although any suitable means may be provided for the purpose.

The tunnel section 3 is divided into a top air distributing chamber 11, a drying chamber 12, and an air return chamber 13.

The drying chamber 12 is composed of a plurality of parallel longitudinal channels 14, 14, which alternate, transversely of the drier, with air chambers 15, 15, having relatively wide flaring mouths 16 at their upper ends communicating with the superposed air distributing chamber 11.

The side walls 17, 17 of the air chambers 15, 15 converge downwardly and are joined at their lower ends by horizontal walls 18, 18. These side walls 17, 17 are common to both the air chambers 15 and the drying channels 14, 14, and are perforated over substantially their entire areas, as indicated at 19, 19, to provide a multiplicity of nozzle-like openings through which relatively spaced jets of air are projected in opposite directions into each channel 14, from top to bottom and from end to end thereof.

The flaring mouths 16 of the air chambers 15 are formed by angularly arranged top walls 20, 20, under the peak of each is hung a rail 21 of inverted T cross section, for reception of wheels 22, 22 of the trolleys 23, 23 supporting the frames 25, 25 on which the skins, hides, or other leather units are mounted.

In the air circulating chamber 4 of the drier are the usual air conditioning elements 24, such as pipe coils, honeycomb radiators, etc., through which the air, returning from the bottom of the drying chamber 12, through the return chamber 13 and circulating chamber 4, passes to the distributing chamber 11, under impetus of the impellers 9.

In the distributing chamber 11 is a plurality of spaced longitudinally extending segmental air distributing veins 26, 26, by which the air traveling horizontally across the top distributing chamber 11 is divided and directed downwardly into the wide mouths 16 of the various channel-side air chambers 15.

The operation of the drier will be clear from the foregoing description of the structure. Cross-circulation of air is set up by the fans 9, which builds up a pressure of air in the side chambers 15. This air pressure passes from these chambers 15 as a multiplicity of spaced air jets distributed uniformly over each common side wall 17 to impinge against relatively small adjacent areas of the frames 25, and the leather units carried thereby, as the frames are passed into and through the channels 14, 14, either intermittently or continuously, as a train.

As shown in Fig. 1, the various rails 21, 21 in the channels 14, 14, respectively, are connected, by suitable monorail switches 27, 27 to cross end rails 28, 28, which, in turn, are connected to a single outside rail 29, along which stripping, preparing, and reloading of the frames 25, 25 are effected.

I claim:

1. A tunnel drier for leather and like units, formed with a plurality of longitudinally elongated vertical closed top channels in parallel side by side relation and a plurality of open top coextensive air chambers intermediate and laterally adjacent said channels in alternating relation thereto and with a distributing chamber above said alternating chambers and channels in constant direct communication with all of said open top chambers, said drier comprising perforated side walls common to immediately adjacent channels and chambers, top walls respectively closing said channels against direct communication with said distributing chamber, said top walls being connected to said perforated side walls and therewith defining said channels and chambers respectively, means for producing air pressure in said chambers to escape through the perforations in said common side walls into said channels as a multiplicity of air jets directed in opposite directions toward the central vertical planes of the respective channels, a series of flat expansive unit-supporting frames adapted to pass through said channels from end to end thereof substantially coincident with the central planes of the respective channels in intersecting relation to said oppositely directed air jets, and a supporting rail for said frames extending longitudinally throughout the length of each channel.

2. A tunnel drier for leather and like units, formed with a plurality of longitudinally elongated vertical closed top channels in parallel side by side relation and a plurality of open top, coextensive air chambers intermediate and laterally adjacent said channels in alternating relation thereto and with a distributing chamber above said alternating chambers and channels in constant direct communication with all of said open top chambers, said drier comprising perforated side walls common to immediately adjacent channels and chambers, top walls respectively closing said channels against direct communication with said distributing chamber, said top walls being connected to said perforated side walls and therewith defining said channels and chambers respectively, means for producing air pressure in said chambers to escape through the perforations in said common side walls into said channels as a multiplicity of air jets directed in opposite directions toward the central vertical planes of the respective channels, a series of flat expansive unit-supporting frames adapted to pass through said channels from end to end thereof substantially coincident with the central planes of the respective channels in intersecting relation to said oppositely directed air jets, supporting rails for said frames in the tops of said channels respectively and extending completely through the respective channels and connected to a pair of transversely extending rails beyond the opposite ends of the drier, and a rail connecting said transverse rails and located outside the drier.

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