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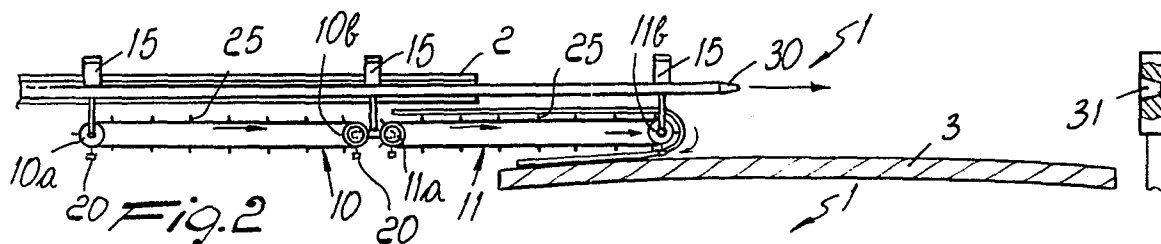
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54 **Apparatus for stretching leather on a drying surface.**

57 The apparatus (continuously operating) for stretching leather on a drying surface comprises a framework (1) which supports a pair of mutually aligned rotating belts (10,11). Guides (2) are associated with the framework (1) which allow the framework (1) to be arranged above a drying surface (3), and also to allow the framework (1) to be removed

from its arrangement above the drying surface (3). Motors drive the rotating belts (10,11) in prefixed directions and positioning means (20) are provided which bring the lower branches of the belts (10,11) into contact with a piece of leather arranged upon the drying surface (3).



APPARATUS FOR STRETCHING LEATHER ON A DRYING SURFACE

The present invention relates to an apparatus for stretching leather on a drying surface.

In known devices for drying leather after it has been tanned and died, frameworks of rather large dimensions support a first drying surface which has a second drying surface or a closure surface superimposed upon it.

The surfaces are heated to a predetermined temperature and a vacuum source is connected to the surfaces which considerably accelerates the drying time.

In such devices, it is necessary to correctly stretch the leather so as to avoid folds which might develop and become pressed between the drying surfaces, thereby creating a product of poor quality.

This stretching operation is currently done in a completely manual manner, by means of squeegees operated by workers in close proximity to the drying surface. The leather is stretched following a series of spatulations, generally stretching from the center to the periphery of the leather.

Such an operation creates known problems that derive principally from the fact that, in order to stretch the leather, the worker is required to work in uncomfortable and oppressive conditions that exist due to vapors emitted from the drying leather, and due to the confined space determined by the distance between the two drying surfaces.

Furthermore, it is very difficult to guarantee that the leather is stretched correctly and uniformly in all its directions.

In addition, the leather must be manually applied to the drying surface which is at a relatively high temperature, and such an application results in lost time for the drying procedure.

The aim of the present invention is therefore to eliminate the disadvantages described above by providing an apparatus for stretching leather on a drying surface which can operate continuously, and which automatically stretches the leather arranged on said drying surface without the necessity that the operator be in close proximity to said drying surface.

Within the scope of the above described aim, an important object of the invention is to provide a continuously operating apparatus for stretching leather on a drying surface that automatically applies the leather on said drying surface, thereby reducing the required time to dry the leather.

Another important object is to provide an apparatus, which as well as being able to execute an optimal stretching of the leather, also improves the drying of the leather by not requiring that the leather be subjected to a "put to the wind" stage,

that is the initial pressing stage that is used to eliminate a first quantity of water before stretching the leather with holding and drying machines.

Not least object is to provide an apparatus, which as well as being able to execute a correct and resolute stretching of the leather, also allows in practice to increase the yield of the leather manufactured, since the leather produced is stretched and dried optimally and therefore in good condition.

The above described aims and objects, as well as others which will become apparent hereinafter, are achieved by an apparatus for stretching leather on a drying surface, characterized in that it comprises a framework supporting a first belt and a second belt, said first and second belts being mutually aligned and rotating continuously, said framework being connected to guiding means which allow for the positioning of said framework above a drying surface and also allow for the removal of said framework from its position above said drying surface, motor means being furthermore provided for rotating said first and second belts in prefixed directions, positioning means being provided to bring the lower branches of said first and second belts into contact with leather to be dried.

Further characteristics and advantages of the invention will become apparent from the detailed description of a particular but not exclusive embodiment, illustrated only by way of a non-limitative example in the accompanying drawings, wherein:

figure 1 is a schematic view of the apparatus during the application of the leather onto the drying surface;

figure 2 is a schematic elevation view of the application phase of the leather;

figure 3 is a schematic elevation view of the stretching phase of the leather.

With reference to the above described drawings, the apparatus for continuously stretching leather on a drying surface, according to the invention, comprises a framework, generally indicated by the reference numeral 1, which is slidably mounted on guides 2, which may be fixed to a ground resting support structure or the like, or fixed to a wall or ceiling structure (either directly or through bracket-like arrangements) of the room or workshop housing the apparatus. Such an arrangement allows for the framework 1 to be positioned either above a drying surface, generally indicated by the reference numeral 3, or away from the drying surface 3, in a manner such that the framework 1 does not interfere with the drying surface 3. Obviously, any suitable motor means and transmission means can be provided to move the framework 1 with

respect to the drying surface 3, for example, a fluid-actuated piston having one end connected to the framework 1, and another end connected to an appropriate stationary member.

The framework 1 supports a first belt 10 and a second belt 11 that are mutually aligned with one another, and which are provided with respective drive rollers 10a,10b and 11a,11b. Said drive rollers are associated with motor means which cause the belts 10 and 11 to wind in prefixed directions, as will be described below.

The belts 10 and 11 are connected to the framework 1 by positioning means constituted by motors 15 connected to transmission means which allow the rollers 10a,10b and 11a,11b to move transversely along a direction perpendicular to the plane of the framework 1, so that the belts 10 and 11 can either be placed near to or away from the drying surface 3.

Position sensors 20 controlling actuation of the positioning means are furthermore provided for arranging the lower branches of the belts 10 and 11 in contact with the leather.

The belts 10 and 11 are furnished, on their outside facing surfaces, with fins 25. The fins 25 are arranged in a herringbone fashion and their purpose will be described below.

Additionally, the framework 1, at its extreme front region, is provided with a centering protrusion 30 which engages with a centering seat 31. The centering seat 31 is arranged outside the drying surface 3, opposite with respect to the positioning of the framework 1.

The centering protrusion 30 is inserted in the centering seat 31 when the framework 1 is arranged above the drying surface 3, thereby obtaining a precise positioning of the belts 10 and 11.

In practice, the functioning of the apparatus is as follows: in an initial stage, the framework 1 transversely moves so that it starts to arrange itself above the drying surface 3, with a distance between the framework 1 and the drying surface 3 being maintained.

In this stage, the belts 10 and 11 are made to rotate in the same direction so that the leather, which is arranged on the upper branches of the belts 10 and 11, is automatically loaded onto the drying surface 3, as is shown in figure 2.

When the leather is fully deposited onto the drying surface 3 and the entire framework 1 is arranged above the drying surface 3, the positioning means are actuated to transversely lower the rollers 10a,10b and 11a,11b which bring the lower branches of the belts 10 and 11 into contact with the leather to be stretched.

At this stage, the position sensors 20 cause the positioning means to individually adjust the position of the rollers 10a,10b and 11a,11b so that the belts

10 and 11 conform to the shape of the drying surface 3 which is usually slightly convex, as is shown in figure 3.

In this manner, the belts 10 and 11 are uniformly and smoothly arranged on the leather.

When the belts 10 and 11 come in contact with the leather, they are actuated in such a manner so that their lower branches move in opposite directions with respect to one another. In particular, the movement of each lower branch is from the center towards the outer region of the drying surface, as shown in figure 3.

The presence of the fins 25, arranged on the lower branches of the belts 10 and 11 so that the vertices of the fins point outwards from the center of drying surface 3, create a stretching action on the leather and such a stretching action simultaneously works lengthwise and widthwise from the center region to the outer region of the leather.

This stage is extremely important in how much it automatically stretches the leather, with the advantage that the leather is uniformly and simultaneously stretched at all points of its surface.

Furthermore, the stretching effected in this way permits the elimination of a greater quantity of water from the leather, and increases the surface area of leather obtained.

When the leather is sufficiently stretched upon the drying surface 3, the belts 10 and 11 are removed from the leather and the framework 1 transversely moves away from the drying surface 3. The closing of another drying surface upon the drying surface 3 can henceforth take place to perform the drying of the leather.

In addition to having provided an increased stretching of the leather, as well as a stretching operation which is better than that provided by manually operated squeegees, the apparatus also removes at the initial stage a significant amount of water from the leather, without the need for a precedent "putting to the wind" stage which is currently required in known operations, and such an initial removal of water allows to remove less water in the vacuum drying stage, therefore providing an optimal drying of the leather.

From the foregoing description it can be seen that the invention fully achieves the proposed aim and objects, and in particular it will be noted that an apparatus has been provided which, as well as automatically stretching the leather, also applies the leather to be dried during the manufacturing step of positioning the frame above the drying surface.

The invention thus conceived is susceptible to numerous modifications and variations, all of which are included in the scope of the inventive concept.

Furthermore, all of the details can be substituted with other technically equivalent elements.

In practice, the materials employed, as well as the dimensions and contingent shapes may be any according to requirements.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting affect on the scope of each element identified by way of example by such reference signs.

Claims

1. Apparatus for stretching leather on a drying surface, characterized in that it comprises a framework supporting a first belt and a second belt, said first and second belts being mutually aligned and rotating continuously, said framework being connected to guiding means which allow for the positioning of said framework above a drying surface and also allow for the removal of said framework from its position above said drying surface, motor means being furthermore provided for rotating said first and second belts in prefixed directions, positioning means being provided to bring the lower branches of said first and second belts into contact with leather to be dried.

2. Apparatus according to claim 1, characterized in that said first and second belts are provided on their surfaces with raised bands or protruding fins.

3. Apparatus according to claim 2, characterized in that said fins are arranged in an advancing herringbone manner.

4. Apparatus according to claims 2 and 3, characterized in that the herringbone arrangement of said fins on the lower branches of said belts is such that it points from the center to the outside of said leather.

5. Apparatus according to claim 1, characterized in that said positioning means include positioning sensors which detect the position of driving rollers which support said belts with respect to the drying surface, said positioning sensors piloting positioning motors for the translatory movement of said driving rollers along a direction substantially perpendicular to the plane of said framework.

6. Apparatus according to claim 1, characterized in that, when said first and second belts are in contact with the leather to be dried, said motor means cause said belts to rotate in opposite directions to one another, whereby the lower branches of said belts move from the center towards the periphery of the leather.

7. Apparatus according to claim 1, characterized in that said framework is provided with, at its

extreme frontal portion, a centering protrusion removably engageable, when said framework is positioned above said drying surface, with a centering seat arranged outside said drying surface at a region opposite to the side where said framework is introduced above said drying surface.

8. Apparatus according to claim 1 or 5, characterized in that said positioning means operate independently on any one of said support rollers.

