Aug. 16, 1949. E. A. WAGNER 2,479,440

PROCESS OF DRYING HIDES, SKINS, AND LEATHER

Filed June 26, 1947

Fig. 1.

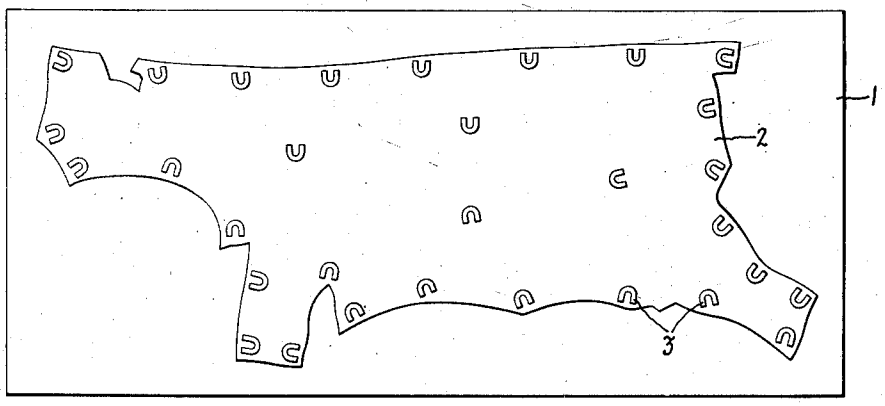


Fig. 2.

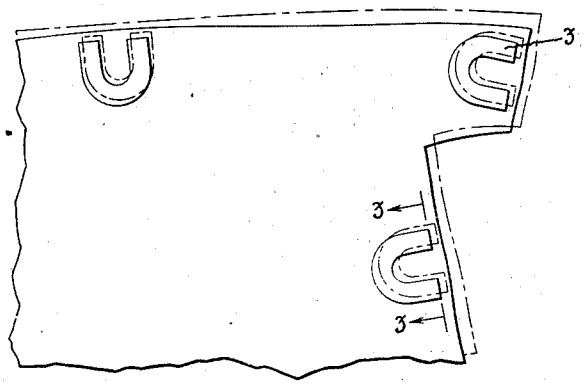
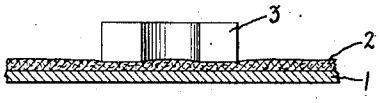


Fig. 3.



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PROCESS OF DRYING HIDES, SKINS, AND LEATHER

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1 Claim. (Cl. 69—21)

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The present invention relates to the art of drying hides, skins and leather. It is generally concerned with the complete drying operations employed during the processing of hides in the manufacture of leather. While not limited thereto, the invention will be particularly described with reference to the complete drying step which follows the fatliquoring of the tanned hide and by which the goods is prepared for finishing operations.

In certain stages during the processing of hides, it is desirable to dry the processed or partially processed material in such a manner that the water is completely removed from the hide under such conditions that the goods will dry flat or smooth and shrinkage will be held to a minimum. For example, in the drying of the tanned goods which have been subjected to a fatliquoring treatment the wet material is drained and subsequently dried under controlled temperature and humidity conditions. At the present time three principal methods are employed for stretching the wet goods. In one method the wet material is stretched smoothly over a flat board and attached thereto by tacks driven along the edge of the hide. These boards are then stacked vertically and subjected to circulating conditioned air. In the second method, known as the toggle method, the wet hides or skins are stretched over perforated metal frames and attached thereto by means of metal clamps. In the third method, known as the pasting method, which has in some cases supplanted both the toggle and tack methods, the wet hides are stretched over and pasted onto "pasting boards" of glass or stainless steel after which the boards with the hides attached are subjected to drying under controlled temperature and humidity conditions.

As moisture is removed during the drying processes, employing tacks or toggles, the stretched hide or leather tends to shrink and pull against the securing means. Because of the fact that the leather can shrink to a greater extent between the points at which it is fixedly secured to the support, the edge portions of the hides, skins or leather are unevenly stressed and strained and frequently torn at or adjacent the points at which they are secured to the support. As a result the unevenly stressed or punctured edges of the dried product must be trimmed off and discarded or sold as low quality leather.

In the case of the pasting method, it is necessary to remove the paste from leather and frame after drying. This involves washing of the frame and leather or in some cases sanding of the surface of the leather to obtain a thorough removal of all of the paste and adhesive used.

One object of the present invention is to provide a new and improved method of drying wet hides, the term "wet hides" as used herein and in the appended claim being intended to cover both raw and dressed wet hides and skins i. e., the wet skins or hides in any stage during the conversion thereof to leather as well as the drying of the leather product following any after-treatment which comprises the wetting or soaking of the goods with liquid or water-containing compositions.

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Another object of the invention is to provide a new and improved method of drying wet hides, skins and leather with minimum damage of the edge portions of hide.

Additional objects will become apparent from the following description of the invention taken in connection with the accompanying drawing in which

Fig. 1 shows one type of arrangement for drying wet hides in accordance with the present invention;

Fig. 2 is an enlarged view of a portion of Fig. 1; and

Fig. 3 is an enlarged sectional view taken along the lines 3—3 of Fig. 2.

In accordance with the present invention there is provided a combination of the support and holding means for use in drying wet hides comprising a supporting member having a surface of a readily magnetizable material, such for example as rolled steel and holding means comprising a plurality of permanent magnets adapted to hold the wet hide or skin onto the supporting means with sufficient force that, during drying, the hide will be permitted to dry in a uniform manner. If desired, a protective coating, such as a vitreous enamel or suitable metal plating, may be applied to the hide supporting means or to the magnets or to both to prevent rust.

In the modification of the invention shown in the accompanying drawings, a support for the hide is indicated in Fig. 1 by the numeral 1, this support comprising a sheet of stainless steel of a size sufficient to accommodate the cow hide 2. The wet hide is placed on the sheet of magnetizable material 1 and is smoothed out, employing the usual technique, after which a plurality of permanent magnets 3 are arranged along the edge or in other portions of the hide or skin where they are strongly held by magnetic attraction. If desired, additional magnets may be placed at various points over the surface of the hide. Due to the attraction of the magnets, the hide is sufficiently secured to the base 1 that the assembly can be readily transported to a drying room and arranged in a position for obtaining maximum rate of drying of the hide. The hide will remain sufficiently secured until removed.

In the drawing, the magnets are shown as being of a horseshoe shape and as being positioned flat on the surface of the hide, this position being preferred in that magnets of such shape will be

less easily dislodged during handling of vertically positioned boards when lying flat than when positioned perpendicular to the board with their pole faces in full contact with the surface of the goods.

In combination with the support, the magnets provide a uniform tensioning means for the hide. The magnets are preferably of such a strength that during the drying process they will prevent undesirable wrinkling or warping shrinkage. However, by varying the strength of magnets used, shrinkage may be controlled to any desired degree.

The changes taking place during the drying process when the hide is secured to a magnetizable sheet material by means of a plurality of magnets of a strength to permit limited shrinkage is illustrated in Fig. 2, which is an enlarged view of the upper right corner of the arrangement shown in Fig. 1. In Fig. 2, the edge of the wet hide as originally smoothed out on the board is represented by dotted lines. The magnets 3 used to secure the hide may originally be arranged for example in the dotted line positions. As shrinkage takes place during the drying of the hide, there is a constant pull on each of the magnets directed primarily towards the center of the hide and those portions of the hide which do not underlie a magnet may tend to bow inwardly. By employing magnets so selected as to permit some shrinkage of the hide at all points including those areas in line with the magnets, it is possible to control the variations in the stresses or strains set up along the edge of the hide. If desired, the magnets may be strong enough to exert a clamping effect sufficient to provide uniform tensioning and to hold the hide in its original wet position, the stresses and strains caused by shrinkage of the clamped hide during drying are avoided. Generally, the magnets employed should be of sufficient number and strength that the amount of movement thereof during drying is roughly that corresponding to a shrinkage of the hide averaging from 0–5 percent, preferably from 0–3 percent. When the magnets are so selected and arranged as to permit some shrinkage the edge of the hide and the magnets may assume the full line positions shown in Fig. 2 after the drying step has been completed with the movement thereof during drying being generally towards the center of the hide, it being understood that the magnets and the portions of the hide underlying the faces thereof move together relative to the base plate 1. It will be obvious that the total movement, if any, of a particular magnet will depend on the forces set up in the adjacent portions of the hide during drying. When these forces exceed the holding power of the magnet involved, the magnet will give and move allowing shrinkage of the hide until the forces are again less than the holding power of the magnet. By using magnets all of substantially the same strength, the hide will on the whole be subjected to a uniform tensioning during the entire drying process. When the magnets are of a strength permitting shrinkage, the magnets overlying or in line with those parts of the hide subjected to the greatest degree of shrinkage stress will of course move the greatest distance usually towards the center of the hide, during the drying process.

By the use of magnets in place of tacks or clamps there is obtained a dried hide or leather which is not only free of the perforations resulting from the use of tacks, but which is also more

free of the strained or unevenly strained conditions along the edge portions. As a result, little, if any, of the edges of the hide need be trimmed away and discarded as scrap or low value product. By the use of magnets instead of paste as a means of securing the leather to the drying surface, subsequent washing of the boards and the dried goods to remove the paste is eliminated.

The magnets may be composed of any suitable material having high coercive force and a great stability of magnetic moment. Suitable magnets are those composed of any of the permanent magnet alloys of iron, nickel, aluminum disclosed in Howe Patent 2,192,744. The magnets may also be of any suitable form, as for example, in the form of bars, disks, or U-shaped. A U-shaped magnet such as that shown in the drawing is particularly useful in that it may be more easily grasped both for the purpose of placing the magnet on the wet hide and for the purpose of removing it from the dry hide. The base 1 which serves as a keeper or armature for the magnets should preferably be provided with a smooth surface so that the dried hide will have a smooth finish.

The present invention lends itself particularly to use in connection with any of the modern leather drying equipment employing drying boards adapted to be passed through a drying oven. Employing a board of suitable magnetizable material and having a smooth surface, the wet hide is applied to the surface of the board, smoothed out along one edge and secured to the board by means of a row of magnets placed along this edge. Thereafter the unsecured portion of the hide is worked or smoothed to stretch the hide and cause it to lie flat and smooth against the surface of the board, the remaining magnets along the outer edge of the hide as well as additional magnets spaced over the area thereof being applied in order as the pockets and wrinkles are worked out of the hide during the smoothing and stretching operations. At least some of the magnets shown in Fig. 1 other than those arranged along the edges of the hide are preferably placed over the thicker and heavier portions of the hide.

While the invention has been described and illustrated in its application to the drying of a wet cow hide, it obviously is not limited thereto but can be used, for example, in the drying of the hide or skin of any animal or reptile or in the drying of selected portions or splits of such hides and skins during the processing thereof in the manufacture of leather or leather-like products.

What I claim as new and desire to secure by Letters Patent of the United States is:

The process of drying hides which comprises placing the wet hide on a magnetizable sheet member, arranging a plurality of permanent magnets along the edges of said hide and in the central portions of said hide for securing said hide to said member, said magnets being of sufficient strength and number as to permit a shrinkage of the hide during drying of from 0–5 percent.

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