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TREATING LEATHERS AND THE LIKE

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This invention relates to the treatment of animal skins such as leather, hides, or pelts and the resulting product and relates more particularly to the methods for strengthening or reinforcing such skins and to the treated skins which are characterized by increased resistance to tearing, staining and to injury by abrasion or age deterioration.

Many types of furs, for example, chinchilla, broadtail, rabbit and cony have a very limited life for the reason that the hides are thin and have little tensile strength. Moreover, such furs deteriorate rapidly, becoming brittle as the natural oils dry out of the hides. Other types of skins may have thin spots which weaken them and limit their use to lower quality products than is justified by the rarity of the skins.

Also, nearly all skins become stiff when wetted and dried unless they are treated with materials which either render them excessively oily or inherently reduce their porosity. Loss of porosity or "breathability" of the skins is not desirable, particularly when they are worn in close contact with the body such as in the case of close fitting jackets or coats, shoes or gloves.

In accordance with the present invention, animal skins such as fur, hides and leather are treated with resinous materials, preferably of the types that have pliability and resiliency substantially the same as the skins, in such a way as to strengthen and improve the water and stain resistance of the skins without appreciably decreasing their porosity and pliability.

More particularly, the invention includes the treatment of cured animal skins with pliable rubbery resins, such as, for example, plasticized vinyl-chloride vinyl-acetate resins, vinyl-chloride-acrylate resins, vinyl-chloride-vinylidene chloride resins and rubbery polymers of unsaturated hydrocarbons, especially such resins as can be applied in solutions of organic solvents.

Resins of the type described above are applied to the flesh side of the skins in the form of solutions, in a molten state, as emulsions or as a film or sheet of such thinness that it can be absorbed into the fibers without forming a continuous coating which would destroy the natural porosity of the skin.

In applying such resins to animal skins it has been found that the skin has a tendency to filter out or retain the resin on its surface rather than permit it to penetrate into the skin and the present invention has to do with the treatment of such skins to cause the resins to penetrate into

and coat the fibers and line the pores without sealing the surface of the skin.

The resin may be used as an adhesive to affix to the flesh side of a skin a fabric backing for strengthening or reinforcing purposes and in a similar way a series of small skins may be secured to a common fabric backing to form a sheet similar to yard goods which may be cut to pattern and reassembled similarly to yard goods.

When it is desired to reinforce the skins by means of the resins only, a suitably plasticized vinyl resin may be dissolved in a solvent such as acetone, or a mixture of solvents such as acetone and diethylene glycol and sprayed with a suitable spray gun on the flesh side of the skins. The sprayed skin is then subjected to a blast of drying air directed through the skin so that the solution will penetrate and line the pores without closing them.

A suitable device for blowing air through the skin may consist of a perforated member over which the skin is stretched to open the pores thereof while a blast of air or other gas is forced through the skin. The pliability of the skin may be enhanced by pulling it back and forth over the perforated member to work the leather during evaporation of the solvent.

If an excessive amount of the resin has been applied to the skin, thereby reducing its porosity, the excess may be removed by treatment with a solvent. The resin may likewise be applied to the flesh side of the skin and a solvent such as acetone may be vaporized and forced through the skin from the flesh side to dissolve and carry the resin into the open side of the skin. A simple apparatus may include a kettle over which the skin is stretched and the acetone vaporized therein to cause the resin to penetrate the skin. The acetone vapors may be collected, condensed and reused in subsequent operations.

The resin may also be applied by spraying it in a molten condition on the flesh side of the skin. The coated skin is then worked and subjected to a heated air blast or solvent vapors in order to maintain the pores of the skin open. After impregnation has been completed, the skin is subjected to a cold air blast while continuing the working of the material. The action of the air or solvent vapor is to overcome the tendency of the resin to collect only on the surface of the skin and to force it into the skin while preventing the pores and other passageways from becoming clogged.

Resinous materials of the type described above may also be applied to skins by combining a small

proportion of the resin, about 1 part by weight with about 5 of a plasticizer, for example, triethylene glycol dihexoate or dioctoate and working this solution into the skin. Skins treated in this manner have greatly increased the resistance to deterioration by the action of sulphuric acid.

When it is desired to apply a fabric backing to the skin, the resinous material may be applied as described above, but in a somewhat greater quantity and the fabric backing applied before the resin has had opportunity to set. The fabric backing is pressed into firm engagement with the skin so that the resin is absorbed into both the fabric and the skin, but without penetrating deeply into either the skin or the fabric. The amount of resin used should be insufficient to form a continuous film between the skin and fabric as this would cause a loss of porosity of the laminated material. Preferably the laminated material is subjected to the air or solvent vapor blast as described above to prevent the porosity of the material from being lost.

Similar results are obtained by placing a thin sheet of vinyl resin between the skin and the fabric and bonding by heat and pressure. The resin is absorbed into the fabric and the skin without sealing the pores in the skin or the interstices in the fabric.

A typical example of a method of reinforcing fragile skins is as follows:

Rabbit skins are clipped for felt, leaving hair on the hide about $\frac{1}{4}$ " in length. The cured skins are trimmed and stitched together to form a continuous broad sheet. The flesh sides of the assembled skins are then sprayed with an acetone solution of a plasticized vinyl resin containing between about 15% and 25% of said vinyl resin and a backing of cloth such as thin gabardine or flannel is applied to the coated surface. The laminated construction is then pressed between flat plates and heated to between about 203° F. and 255° F. to bond the fabric to the skins and evaporate the solvent.

The above described process will leave ridges in the fabric backing at the seams forming the

skins which will make it necessary, in most instances, to provide an additional lining in a garment made therefrom. This ridged appearance can be avoided by connecting the edges of the skins by means of thin tapes instead of by seams and then bonding the fabric to the assembled skins, as described above. This type of construction has the advantage that garments made therefrom can be reversed so that the fur can be worn either on the inside or the outside of the garment, as may be desired.

The resinous material can, of course, be applied initially to the fabric and the fabric bonded to the leathers. Likewise, various suitable resin solvents and quantities of the resins can be used, depending upon the character of the skin undergoing treatment. Accordingly, the embodiments of the invention disclosed above should be considered as illustrative and not as limiting the scope of the following claims.

I claim:

1. A method of strengthening animal skins which comprises assembling a plurality of animal skins into a sheet, interposing a thin layer of a normally plastic and resilient thermoplastic resinous material between said sheet and a layer of porous fabric, subjecting the sheet, fabric and resinous material to heat and pressure to bond said fabric to said sheet of skins and passing a vaporized solvent for said resinous material under pressure through said skin and fabric to render the assembly porous.

2. A method of strengthening animal skins while retaining their pliability and porosity, which comprises applying to at least one surface of an animal skin a thin coating of a normally pliable thermoplastic resinous material, working said skin to cause said resinous material to penetrate the surface of said skin, and passing a vaporized solvent for said resinous material under pressure through said skin to prevent said resinous material from clogging the pores of the skin.

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