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TREATMENT OF PELTS

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The present invention relates to the treatment of pelts and more particularly to a process and agent for improving pelts to be used as furs.

One of the objects of the present invention is to provide a new and improved process and agent for treating pelts generally, but especially sheepskins or lambskins, whereby the characteristics of the fur fibers or filaments are improved.

Another object is the provision of a process of the character described for the production, from long haired sheepskins or lambskins or from the partly sheared products of this kind generally designated as "shearlings," of a simulated fur, the hair or wool of which is substantially permanently converted.

A further object is to provide a fur conversion agent whereby inexpensive furs such as shearlings may be converted into a simulated fine fur such as beaver, which process renders the normally kinky hair or wool fibers of the shearling relatively straight, lustrous, and also resistant to spotting effects if the treated pelt is sprinkled or otherwise wetted with water.

Other objects will be apparent as the invention is hereinafter more particularly described.

The foregoing objects may be accomplished in accordance with the present invention by taking advantage of certain heretofore unappreciated and unexpected properties of nitric acid. The invention is based upon the discovery that nitric acid, in addition to producing the well known yellow color characteristic of the xanthoprotein reaction, also endows the keratinaceous filaments of the pelts with water resisting properties so that such filaments after having been given their final form, either straight or curly, will retain such form even though they subsequently come into contact with water, as for example, if exposed to the weather such as rain or snow or accidental wetting.

In accordance with the present invention therefore, the pelts are treated in any suitable manner with a dilute solution of nitric acid. This solution may also contain other ingredients such as other acids, both organic as well as inorganic for example, sulfuric acid, acetic acid, and the like, and which may also contain water-miscible organic liquids such as alcohols, ketones, and the like. The use of a mixture of nitrates and mineral acids, capable of yielding nitric acid, is within the scope of the present invention.

One of the primary purposes of carrying out the process of the present invention is to convert relatively inexpensive pelts, such for example as the skins of sheep or lambs, so as to convert them into fur-like products which, when properly dyed, can be used in place of the more expensive natural fine furs which they are dyed to imitate. For instance, by the practice of the present invention, it becomes possible to convert a sheep or lambskin into a product resembling sheared beaver, seal, nutria, or similar furs. The process is relatively simple, inexpensive, and can be carried out by means of the machinery now widely in use in the fur and sheepskin dressing industries. The process also involves the otherwise well known steps of brushing or combing the fur, coupled with either simultaneous or sequential hot ironing, which steps may be accomplished on so-called "electrifying" machines which comprise rotating cylinders provided on their peripheries with alternate areas consisting of either smooth, fluted or corrugated heated ironing members interspersed with brushing or combing members. In some of the machines commonly used the ironing members are interspersed with so-called wire-card clothing which has sufficiently stiff metallic (iron or brass) bristles which serve to comb or brush the hair; in other machines the areas between the ironing members consisting of rather rigid spikes or comb teeth. These areas, however, have been termed by those familiar with the art of fur treating both as combs and brushes and the present invention is not to be limited by the choice of the word brushing or combing. Furthermore, the ironing may be accomplished either in such electrifying machines or by hand, using for this purpose either a smooth iron, a corrugated iron, a fluted iron, or any of the many irons now known which combines brushing or combing elements with ironing elements, and in order to avoid the necessity of circumlocution, this mechanical treatment of the fur or pelt will hereinafter be referred to as "mechanical finishing by heat" or by the term "electrification" or "electrifying."

In carrying out the present invention, a suitable pelt has applied thereto on the fur side as by dipping, brushing, spraying or other method of application, a dilute solution of nitric acid, whereafter the thus treated pelt or skin may be allowed to dry, although this is not essential, whereafter it is passed through a so-called electrifying machine where it is subjected to the action of the hot ironing members thereof as well as to the brushing or combing elements commonly found on such machines. If desired, the pelt or skin can be first submitted to electrification in electrifying machines of the type hereinabove men-

tioned, whereafter it is treated with the nitric acid, dried, and again electrified.

For certain types of furs, skins or pelts, it has been found that a slight further improvement can be produced by preceding the nitric acid treatment by a reduction process in which the pelt, fur or skin is treated with a reducing agent which has some action on the sulfide bonds of the keratinaceous filaments. The term reduction therefore is used in a somewhat broader sense than it is commonly used in chemical parlance, because some of the materials employed are not ordinarily spoken of as "reducing agents." Thus, the furs, skins or pelts, or more particularly the filaments thereof, may be treated with solutions of any of the following substances alone, or in combination, or in sequence, to-wit: potassium hydroxide, stannous chloride, sulfur dioxide, sodium sulfide, or the like. After such treatment the furs may be dried and milled in sawdust, and then subjected to the nitric acid treatment.

Purely as a matter of exemplification and without in any way wishing to limit the invention to the particular example shown, there will now be described the treatment of a lamb shearling for the purpose of converting it into an imitation beaver fur. The suitable clipped and tanned or dressed lamb shearling is first combed so as to straighten out the hair and to render the same suitable for the proper reception of the treating solution. This tends to straighten the hair temporarily so that the solution used can more readily have access to the fibers at least for a portion of their length, as for many purposes it is not necessary to treat the filaments all the way down to the surface of the skin from which they grow. Thus, the electrified skin has applied thereto a solution consisting of a mixture of 62.5 milliliters of nitric acid sp. gr. 1.42 and 937.5 milliliters of denatured alcohol. This solution can be conveniently swabbed onto the hairs by means of a soft large sponge or it may be sprayed thereon, or the fur may be dipped into such solution to a depth sufficient to wet the hairs at least for a portion of their length. The thus treated shearling is then hung up to dry whereby the denatured alcohol and most of the water in the nitric acid will evaporate, the nitric acid thus gradually becoming more concentrated, whereby it will gradually partially nitrate the hair or wool, that is to say, the keratinaceous filaments. After drying, the shearling thus treated is passed at a temperature of about 140 to 180° centigrade through a commercial type of electrifying machine provided with rotating cylinders which have on their peripheries alternate heated areas for ironing the hair interspersed with brushing or combing elements of the type hereinabove mentioned.

The shearlings thus treated will thereby be provided with straight, lustrous yellow colored keratinaceous filaments which on subsequent wetting will not revert to the kinky appearance of the wool as it appears on the natural shearling. The shearlings thus treated may, if desired, be dyed by means well known in the art with any suitable coloring material or dyestuff so as to impart to them the appearance of nutria, beaver, seal, and the like, according to the desire of the manufacturer.

The artificial or imitation beaver, seal or nutria products thus produced are characterized by their fine appearance, their luster and silkiness, and they are particularly resistant to that form of wetting which the articles are likely to encounter when worn in the form of fur garments. In other words, they are resistant to what the trade calls "water-spotting," which term is well established in this art.

The process of the present invention may be further modified by the preliminary reduction already mentioned. One way of accomplishing this is to treat the pelts with a dilute solution of any of the chemicals hereinabove mentioned, followed by drying and milling in sawdust. A suitable solution, for example, is one containing 0.85% of potassium hydroxide in denatured alcohol. A suitable quantity of such solution, calculated for an average lamb shearling, is about 215 milliliters per skin, which latter has an average area of about from six to eight square feet.

It has already been proposed in the past to treat furs or pelts with various acids such as acetic acid, formic acid, hydrochloric acid, sulfuric acid, and the like, and the literature has also noted the well known xanthoprotein reaction which occurs whenever nitric acid contacts the protein. However, it has not been known that this reaction could be successfully applied in connection with the straightening of kinky hair on a pelt so as to convert it into a product which, after straightening, would be water-spot resistant in the sense in which this term is used in the present application and in the art into which the present invention falls.

It has been found by actual analysis that the nitric acid does more than color the filaments because the hair clipped from a shearling treated in accordance with the present invention was found to contain in addition to the organic nitrogen 0.74% of nitrate nitrogen. This indicates therefore that there is a partial nitration of the keratinaceous filaments.

Saving for himself such modifications as lie within the skill of those familiar with the art into which this invention falls, applicant claims:

1. Lamb or sheepskins having straightened partially nitrated hair thereon.

2. Lamb or sheepskins having straightened hair thereon containing thereto-imparted nitrate nitrogen.

3. Process of improving lambskins or sheepskins which comprises applying to the hair side thereof an alcoholic solution of nitric acid, drying, and "electrifying" the thus treated hair.

4. Process of producing a relatively waterproof straight-fibered lamb or sheep shearling which comprises partially nitrating the hair thereon and mechanically finishing the shearling by heat.

5. Process of improving sheepskins or lambskins which comprises treating the filaments thereof with a solution of nitric acid, and brushing and ironing the thus treated filaments while hot.

6. Process of improving sheepskins or lambskins which comprises treating the filaments thereof with a reducing agent, and thereafter partially nitrating the filaments and finally mechanically finishing the skins by brushing and ironing the filament side thereof while hot.

7. Process of producing a pelt having relatively waterproof straightened hair thereon from a pelt having kinky hair, which comprises partially nitrating said kinky hair, and mechanically finishing the thus treated pelt by heat, whereby said kinky hair becomes straightened.

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