

UNITED STATES PATENT OFFICE

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UNHAIRING PROCESS

David Walker Jayne, Jr., Old Greenwich, Conn.,
 assignor to American Cyanamid Company, New
 York, N. Y., a corporation of Maine

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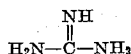
7 Claims. (Cl. 149-2)

This invention relates to the unhairing of hides and skins, which is a preliminary step in their conversion into leather. More specifically, the invention relates to a new class of unhairing accelerators for use in conjunction with aqueous dispersions of alkaline hydrolyzing agents which have previously been used for unhairing purposes.

The conventional method of unhairing hides and skins is to immerse them in a bath containing lime, sodium hydroxide or other alkaline hydrolyzing agents, or in the case of sheepskins, to subject them to the action of these agents in the form of an aqueous paste. It has been known for many years that the addition to these baths of small amounts of water-soluble inorganic sulfides such as arsenic sulfide, sodium sulfide and the like will speed up the unhairing action, and accordingly these substances are known as unhairing accelerators.

More recent developments in the field of unhairing accelerators have suggested the replacement of the inorganic sulfides by organic compounds which might be expected to have a milder action on the hair and skin. One of the first of these was the discovery of McLaughlin, based upon the examination of mellow limes, that certain of the lower aliphatic amines such as dimethylamine would accelerate hair slippage when added to lime suspensions. This was followed by the work of Turley and Windus, who showed that aliphatic mercaptans or mercaptides would operate as unhairing accelerators, but that organic sulfides and thiophenols are inactive for this purpose.

I have now discovered that the sulfides of guanidine and alkyl or aryl substituted guanidines are excellent unhairing accelerators when used in unhairing baths or dispersions containing an alkaline hydrolyzing agent such as lime or caustic soda. Guanidine is a strong organic base having the formula



One or both of the hydrogen atoms of its amino groups can readily be substituted by alkyl or aryl hydrocarbon groups such as methyl, ethyl, propyl, phenyl and the like, and I have discovered that the sulfides of these hydrocarbon substituted guanidines are also good unhairing accelerators. Accordingly, it is understood that the term "a guanidine" as used in the appended claims is intended to cover both guanidine itself and alkyl and aryl substituted guanidines.

Although it is possible to prepare the guanidine sulfides as pure chemical compounds, and to add them to the lime liquors or other alkaline unhairing baths in this form, I have also found that good results are obtained by forming the guanidine sulfide (or, more accurately, the sulphydrate) in the unhairing liquors themselves. This is readily accomplished by adding such guanidine salts as guanidine carbonate, guanidine sulfate and the like together with water-soluble inorganic sulfides such as sodium sulfide, ammonium sulfide, calcium sulfide and the like. It will thus be seen that the invention in its broader aspects includes any process in which hides and skins are contacted with an alkaline unhairing composition containing a guanidine sulfide or sulphydrate, whether this compound is prepared separately or formed in situ.

The invention will be illustrated by the following examples to which, however, it is not limited.

Example 1

250 lbs. of soaked and trimmed goatskins were entered into a bath containing 10% of hydrated lime and 1.2% of guanidine sulfide based on the weight of the skins. The skins were agitated in the bath for 15 minutes in the morning and 2 minutes in the evening of each day, and the bath temperature was maintained at 86° F.

After 24 hours the long hair was quite loose and the skins were almost ready to be unhaird. After 48 hours the skins unhaird easily on the unhairing machine.

Example 2

3 packs of soaked and trimmed Persian goatskins weighing 250 lbs. each were unhaird in baths having the following composition based on the weight of the skins.

Bath No. 1	Bath No. 2	Bath No. 3
10% hydrated lime .75% guanidine carbonate .75% calcium sulfide 1% soda ash	10% hydrated lime .6% guanidine carbonate .6% calcium sulfide 1% soda ash	10% hydrated lime 1% guanidine carbonate .75% calcium sulfide 1% soda ash

The temperatures of the baths were set at 84° F. and the skins were entered and agitated for 20 minutes in the morning and 3 minutes at night on the first working day. After 24 hours a definite loosening of the skins of all three packs could be noted with very little difference between them.

On the second working day the skins were agitated in the bath for 3 minutes in the morning and 3 minutes at night. At the end of 48

hours the best results were obtained in Bath No. 3; Bath No. 1 was next while Bath No. 2 had some skins on which hair was still tight. Since the skins were flaccid, $\frac{1}{2}\%$ of soda ash was added to each bath and the skins were left until the third working day.

After 72 hours, the skins were well plumped by the added alkali but the hair was quite loose. The formula of Bath No. 3 was best, and the skins from this bath were easily unhaird on the unhairing machine. Bath No. 1 was next, while Bath No. 2 contained several skins on which some of the hair was still tight.

The present application claims specifically a method of unhairing of hides and skins in which a guanidine sulfide is formed in the unhairing bath by double decomposition between guanidine salts and inorganic sulfides including calcium sulfide. However I do not claim broadly unhairing processes in which calcium sulfide is employed in conjunction with any organic base, as this forms the subject matter of the copending application of Joseph G. Niedercorn, Serial No. 244,935 filed concurrently herewith.

What I claim is:

1. A method of unhairing hides and skins which comprises contacting them with an unhairing composition comprising an alkaline hydrolyzing agent and a guanidine sulfide.

2. A method of unhairing hides and skins which comprises immersing them in an aqueous dispersion of an alkaline hydrolyzing agent containing

as an unhairing accelerator a guanidine sulfide in solution.

3. A method of unhairing hides and skins which comprises immersing them in an aqueous dispersion of an alkaline hydrolyzing agent to which has been added a salt of a guanidine together with an inorganic sulfide capable of reacting therewith to produce a guanidine sulfide in solution.

4. A method of unhairing hides and skins which comprises immersing them in an aqueous dispersion of an alkaline hydrolyzing agent to which has been added a salt of a guanidine together with calcium sulfide.

5. A method of unhairing hides and skins which comprises immersing them in an aqueous dispersion of an alkaline hydrolyzing agent to which has been added a salt of a guanidine together with calcium sulfide in amounts of 60% to 100% of the guanidine salt.

6. A method of unhairing hides and skins which comprises immersing them in an aqueous dispersion of an alkaline hydrolyzing agent to which has been added guanidine sulfate and an inorganic sulfide capable of reacting therewith to produce guanidine sulfide in solution.

7. A method of unhairing hides and skins which comprises immersing them in an aqueous dispersion of an alkaline hydrolyzing agent to which has been added guanidine sulfate and calcium sulfide.

DAVID WALKER JAYNE, JR.