

UNITED STATES PATENT OFFICE

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PROCESS OF UNHAIRING HIDES OR SKINS

No Drawing.

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The invention relates to a process of unhairing hides or skins and more particularly to the use of amines and/or those compounds containing or yielding amino groups (whether primary, secondary, or tertiary) and regardless of their derivation or manufacture, when employed either alone or in admixture with alkaline solutions now employed for the removal of hair, fur or wool and for the proper conditioning of animal skin for tanning.

Among the objects of our invention is to complete the process of unhairing hides or skins during a lesser period of time than heretofore necessary and yet accomplish the completion of the unhairing process without creating or leaving any deleterious effect upon the hides or skins or upon the removed hair.

Another object resides in devising a process for unhairing and conditionings hides or skins which will create an economic saving in the manufacture of leather.

Other objects will be pointed out herein after in the description and claims.

Various processes are employed by manufacturers of leather for bringing about the removal of hair or wool from animal skins prior to tanning and, in general, when the skin is received by the tanner it is soaked in water or a dilute solution of some chemical; this process is termed "soaking". Soaking results in hydrating the skin and thus bringing it into a soft, pliable condition and partially swelling or distending it. Soaking also serves to remove most of the curing salt the skin contains (in the case of salted skins), to remove certain undesirable protein and protein-like bodies the skin contains, and to remove adhering blood, dirt and foreign substances. After properly soaking, the skin is placed in the unhairing solution. The unhairing solutions at present employed vary in composition. The solution most widely used is a saturated solution of calcium hydroxide containing excess undissolved calcium hydroxide so that the solution will remain saturated (or nearly so) with calcium hydroxide at all times, the calcium hydroxide absorbed by the skins—and thus removed from the

solution—being automatically replaced in the solution by the excess, undissolved calcium hydroxide present. For the purpose of hastening the action of the solution upon the skin, sulphides of sodium or of arsenic are often added to calcium hydroxide solution. Solutions of other alkalies, notably sodium hydroxide, are sometimes used in place of calcium hydroxide or may be added to it. In some cases the alkaline solutions described are substituted for by a mixture of sodium sulphide and calcium hydroxide, which mixture has the consistency of a paste and is "painted" or spread over the flesh side (opposite the hair side) of a skin and allowed to remain until the mixture has penetrated through the skin and so acted upon the skin and upon the hair or wool that the latter may be easily removed by mechanical means. There are other processes of unhairing, for example, that process known as "sweating", whereby skins are placed in a warm, humid room until the bacteria of the skin bring about its partial decomposition and consequent loosening of its hair. Another process consists in the treatment of the skin with certain enzymes, usually in conjunction with the action of alkalies.

Whichever of the known unhairing processes is used, the time required for the unhairing operation and the manipulation of the unhairing agencies varies with the condition of the skin and the character of leather to be produced. In all cases, however, it is the aim and desire of the tanner to bring about proper unhairing and proper skin condition as rapidly as possible. In achieving these results it is to the interest of the tanner that the amount of needed equipment be minimized, the labor cost of handling be lowered, the interest charges on money invested in skins be reduced and the total time required for manufacture be shortened.

As may be understood from the foregoing description, one practice for shortening the total time required for manufacture comprises reducing the expenditure of time required for the unhairing process. Oftentimes this is accomplished by the addition of sulphides of sodium or of arsenic to calcium

hydroxide solutions, but not without certain disadvantages. If sufficient sulphide is added to markedly hasten the process, undesirable effects in the skin are invariably attained with the result that the quality or quantity of the finished leather is reduced, and the hair (a valuable by-product) is often adversely affected.

We have found that the addition of certain chemical substances which are derived by the substitution of one or more of the hydrogen atoms of ammonia by other groups or radicles, to the lime, or other unhairing solution, has a very marked effect in reducing the amount of time required for the unhairing operation and no undesirable effects upon either skin or hair are produced.

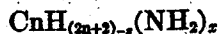
Our invention refers to and includes all compounds containing primary, secondary or tertiary amino groups and whether of alkyl or of aryl derivation.

We have found the primary amines known as ethyl amine and methyl amine to be most effective but the "di" and "tri" amines are also useful, as well as those compounds known as "amides," such as, for example, acetamide (CH_3CONH_2).

The amount of amine compound necessary to be added to the lime (or other) solution varies with the type of skin to be unhairing and with its chemical condition or composition. In the case of a well cured skin of a steer we have found that whereas one hundred and twenty hours' immersion of the skin in a bath of saturated lime solution, at twenty degrees centigrade, are required for proper unhairing and conditioning, this time may be reduced to from forty-eight to seventy-two hours if either ethyl or methyl amine is added to the lime solution, in the proportion of one pound of the amine to each one hundred pounds of lime solution. The necessary amount of other amine compounds varies with their chemical composition.

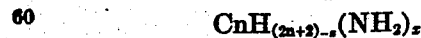
We claim:

1. The process of dehairing a cured skin of a steer which comprises subjecting it to the action of a bath containing saturated lime solution to which has been added about one percent of an amine of the composition



until the skin's hair may be readily removed.

2. The process of dehairing animal skin which comprises subjecting it to the action of a bath containing saturated lime solution to which has been added the proper amount of an amine of the composition



until the skin's hair may be readily removed.

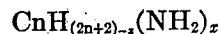
3. The process of dehairing an animal skin which comprises subjecting it to the action of a bath containing a solution of calcium-

hydroxide and primary alkyl amines until the skin's hair may be readily removed.

4. The process of dehairing an animal skin which comprises subjecting it to the action of a bath containing saturated lime solution to which has been added about one percent of methyl amine until the skin's hair may be readily removed.

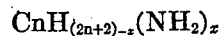
5. The process of dehairing animal skin consisting of submersing it in a bath containing lime solution and one element of the group comprising methyl amine, ethyl amine and a mixture of methyl amine and ethyl amine until the skin's hair may be readily removed.

6. The process of conditioning animal skin which comprises subjecting it to the action of a bath containing alkaline solution to which has been added an amine of the composition



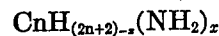
in such quantity as to produce a bath for conditioning the skin for tanning.

7. The process of conditioning animal skin which comprises subjecting it to the action of a bath containing lime solution to which has been added about one percent of an amine of the composition



until the skin is conditioned for tanning.

8. A bath for dehairing animal skin containing saturated lime solution to which has been added about one percent of an amine of the composition



9. A bath for dehairing animal skin containing saturated lime solution to which has been added about one per cent of methyl amine.

In testimony whereof we hereto affix our signatures.

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