

UNITED STATES PATENT OFFICE.

LOUIS STERN, OF NEWARK, NEW JERSEY.

PROCESS OF UNHAIRING HIDES AND SKINS.

1,019,854.

Specification of Letters Patent.

Patented Mar. 12, 1912.

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To all whom it may concern:

Be it known that I, LOUIS STERN, a citizen of the United States, residing at Newark, New Jersey, have invented a certain new and useful Improvement in the Process of Unhairing Hides and Skins, of which the following is a specification.

Hitherto in the process of unhairing hides, it has been customary to first submit the hide to some chemical process whereby the hair is loosened from the hide, and then remove the same by some mechanical means. The chemical process requires a considerable time, and results many times in a deterioration of the hide. Moreover, the hair, after having been removed, has largely lost its value as a by-product by reason of the action upon it of the various chemicals used in the process. By my new process the hair may be removed immediately without the lapse of any considerable time after removing the hide from the animal, and without the use of any chemical action upon the hide whatever. Moreover, the hair, after having been removed, becomes a useful and valuable by-product, and may be saved as such.

In carrying out my process, I take the hide or skin, and subject it to the action of liquid air or any suitable gas which may be reduced to a very low temperature in the vicinity of that of liquid air. The application of the liquid air or gas may be made in any of a variety of ways. However, I have obtained very excellent results by spraying the hair with the liquid air or immersing the hide into the liquid air. The temperature of the hair near its roots and hide is reduced to a degree in the vicinity of that of the liquid air itself, and I find that the hair near its roots, while at such a temperature, becomes very brittle, and it only requires the slightest agitation to remove the same from the hide. This agitation may be produced in any one of a variety of ways, as, for example, by directing a current of normal air near the roots of the hair, or by using an ordinary brush or steel instrument, or any scraping instrument which will readily brush, scrape, or remove the hair from the hide. In each of these methods of removing the hair, I find that it has a tendency to and does break off close down to the root of the hair, and thereby remove all trace of the same from the sur-

face of the hide, so that not even the stub ends of the hair are left protruding from the hide.

I have obtained very good results from using a fine spray of liquid air and working the same very close to the roots of the hair, the purpose being to render the hair brittle near its roots, so that it may readily break loose therefrom. In carrying out this last mentioned process, I use a flat spraying nozzle from which the liquid air emerges in a thin flat spray. It then becomes only necessary to commence at the edge of the hide and direct this spray against the roots, and it is found that the force of the spray itself is sufficient to break the hair away from the hide and make the same sufficiently smooth. The liquid air which is confined in a closed receptacle, by its tendency to resume its normal gaseous condition, generates an enormous pressure in itself. This pressure, it is only necessary to vent through the spraying nozzle. No extraneous pressure, therefore, is necessary to accomplish the required results. I find that as soon as the hair and hide have both resumed their normal temperatures, no deleterious action has taken place, and that both hair and hide are in perfect condition for future use. The hide may then be subjected to any of the common tanning processes, and the hair may be used for any purpose desired, as, for example, if it is suitable for felting purposes, it may be immediately used without further treatment.

I find that my process is equally applicable for the removal of fur or wool, or even feathers, from skins where such fur or wool or feathers are afterward to be used for felting, or for any other purpose. The application of artificial cold to the fur, either as a whole or at its point of connection with the skin itself, will render such fur sufficiently frangible to be readily broken away from the skin, and when the fur again resumes its normal temperature, I find that it has not in the least degree deteriorated, and the felting processes may be immediately applied to it; or, in case such fur is to be used for any other purpose, it is ready for such use. The same is true of wool and feathers, and after their removal by my process, and they have resumed their normal

temperatures, they are ready for further treatment or for use for any purpose whatever.

I find that my process is equally applicable for the removal of any fleshy fiber or substance which may adhere to the inner surface of the hide or skin, and in the broad claims which I have annexed to this specification I have claimed the process of removing any surface covering from the hide or skin by the application of artificial cold thereto.

In handling sheep pelts, it has been found that the outside or hair surface of the pelt is impregnated with an oil which is known to the trade as "suint". I have found by experiment that by the spraying of the surface of the sheep pelt from which the wool has been removed, this surface covering of suint will be solidified and drawn to the surface of the leather, where it appears as a kind of hoar-frost, and it may be brushed or shaken from the surface of the pelt and accumulated in quantities, and when it has resumed its normal temperature, it is found to be substantially pure suint. My process is therefore useful in removing not only the hair, fur, wool or feathers, but also useful in extracting or removing from the surface of sheep pelts this substance suint.

Believing myself to be the first and original inventor of the process of removing the surface covering of whatever character from hides or skins of various kinds, I desire to claim the process in the broadest terms, and do not wish to be considered as limiting my process solely to that of unhairing alone, but consider it useful in removing surface covering of any description from hides or skins.

While I have described more particularly the use of liquid air as a medium for reducing the temperature of the hair, fur, wool or feathers or the surface covering of oil or fleshy fiber, to such a degree as to make it brittle, and therefore easily removable from the surface of the hide, yet I do not wish to be considered as limiting my invention to the use of liquid air alone, for the invention resides not in the use of any particular gas liquefied or otherwise reduced to a very low temperature, but rather in the reduction of the temperature of the hair to a point where it becomes sufficiently brittle to be readily broken away from the hide by

any slight agitation. This temperature as I have described it may be produced in any of a variety of ways, and I find by experiment that liquid air and liquefied gases (namely, such gases as liquefy only at very low temperatures) form very convenient vehicles for carrying out my process. Any other means whereby the temperature of the hair may be reduced to such a point as to make it very frangible, I would consider as coming within the scope of my invention.

Having thus described my invention, what I desire to secure by Letters Patent of the United States is:

1. The process of unhairing hides and skins which consists in rendering the hair extremely frangible by means of artificial cold, and then removing the hair by slight agitation.

2. The process of unhairing hides and skins which consists of applying artificial cold to the roots of the hair whereby the hair is made extremely frangible, and then breaking the hair away from the hide or skin.

3. The process of unhairing hides and skins which consists in reducing the temperature of the hair upon the hide or skin by the application thereto of liquid air, and then removing such hair by means of agitation.

4. The process of unhairing hides and skins which consists in the application of liquefied gas to the hair at its roots, and thereafter breaking such hair away from the hide.

5. The process of removing any surface covering from hides or skins, which consists of reducing the temperature of such surface covering by means of the application of artificial cold, whereby such surface covering is rendered extremely frangible, and thereafter removing such surface covering from the hide or skin by means of agitation.

6. The method of removing hair or fur from hides or skins which consists of immersing the hides or skins in a liquefied gas and thereafter brushing or scraping the hair or fur from the hide or skin.

This specification signed and witnessed this 17th day of February 1904.

LOUIS STERN.

Witnesses:

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