

UNITED STATES PATENT OFFICE.

SAMUEL K. FELTON, JR., OF PHILADELPHIA, PENNSYLVANIA.

TREATING HIDES OR SKINS.

No. 853,166.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, SAMUEL K. FELTON, Jr., a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Treating Hides or Skins; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

The object of my invention is to so conduct the process of unhairing hides or skins (including in this term the treatment preceding "puring" or "bating") that said process will be improved and shortened and the hides or skins will be in better condition than usual for the bating and subsequent treatments, and the finished leather will be tougher, stronger, and cleaner than leather produced from hides or skins otherwise treated.

My invention is applicable to the treatment of hides or skins of all descriptions, but more particularly of the class employed in the preparation of light leather for the uppers of boots and shoes and like uses; but for convenience I will hereinafter use the term "skin" to indicate the same.

In carrying out my invention, I first soak and "mill" the skins in the usual manner, and then for an ordinary pack of about 1,000 pounds of skins in the hair, I slake one hundred pounds of lime, and while the lime is still hot, I add thirty-five pounds of sulfid, preferably sulfid of sodium, and thoroughly stir the mixture, to which, after the same has cooled to about 105° F., I add water until it assumes the consistency of thin paste or cream. I now take each skin separately, fold it with the hair side in, and dip it into the above described compound; after which the skins are placed in a pile, one upon another, covered with burlap to retain the heat, and allowed to remain in this condition until the hair can be readily removed, usually about forty-eight hours.

When the preservation of the hair or fleece in good condition is not important, the application of the liming compound to the flesh side of the skin only, need not be adhered to.

After being unhaired the skins are washed in running water, either in drum or reel, at a temperature of about 80° F., for about fifteen minutes to remove excess of lime and sulfid compound adhering to the skins. The skins are then treated in a suitable receptacle, preferably a closed drum, to sulfid of sodium 40 per cent. of the weight of the skins in the hair. I divide this amount into three or more substantially equal portions, each portion being dissolved in 270 gallons of water, 90° F. Stock is placed in the drum, which is now allowed to revolve, and one of the portions of the above sulfid is added through the opening in the gudgeon. After an hour, stop the drum and replace tight heads with open, or slat, heads. Now allow the drum to revolve again, and introduce, through the gudgeon, a constant stream of water 80° F., for half an hour. Repeat two or more times the successive sulfid and washing steps.

After the final treatment with sulfid the skins are thoroughly washed in running water for about one hour or more, and then subjected to a solution of hyposulfite of soda or its equivalents sulfite or bisulfite of soda, or other salt that will evolve sulfur dioxide in the presence of a mineral acid in a closed drum, at a temperature of about 80° F., for one-half hour or more, the solution containing hyposulfite of soda to the amount of about five or eight per cent. of the weight of the skins in the hair.

After the hyposulfite treatment the skins are placed in a suitable receptacle, preferably a reel, and treated to lime, arsenic and water for from two to five days, depending upon the character of the stock, say, three bushels of lime, three pounds of red arsenic and 650 gallons of water 85° F. to 1,000 pounds of skins, after which they are removed, washed, fleshed, bated or otherwise treated as may be necessary to prepare them for tanning. The hyposulfite of soda treatment finds the stock thoroughly cleaned and opened up to its fullest extent; in fact it now consists of clean gelatinous fibers. Of course in this condition it is very sensitive to injury and disintegration. The hypo treatment corrects at once this tendency, firms the stock, renders it antiseptic and puts it in a condition to withstand, with a minimum of danger, the bacterial and fermentive bates which precedes the tanning. By the use however in

the claims of the words "a solution of a salt that will evolve sulfur dioxid in the presence of a mineral acid" it is distinctly to be understood that no mineral acid is to be used in connection with such salt in my process.

Before placing the skins in the bate it is necessary to remove some of the antiseptic, sulfur compounds with which the stock is impregnated. This I accomplish with lime and arsenic, as set forth, which desulfurizes the skins and puts them in good condition for bating. Stock treated as above in the bate is protected from injury, the fermentive and bacterial action is modified and mild. The stock becomes soft and well "brought down." The lime compounds, fine hairs and other extraneous matters work out freely leaving the stock thoroughly cleansed, of good weight and strength, and in perfect condition for tanning.

I have found that the proportions of materials which I have given, the temperatures prescribed, and the time of the various treatments noted, give the best results; but I do not wish to limit myself thereto, as all of these factors may be modified to a considerable extent without departing from the main purpose of my invention.

By hyposulfite of soda is meant sodium thiosulfate.

Having described my invention and set forth its merits, what I claim is:—

1. The within-described improvement in treating skins, which consists in subjecting them, after being limed and unhaired, to the alternate action of sulfid of sodium and washing, and then to a solution of a salt that will evolve sulfur dioxid in the presence of a mineral acid such as specified, substantially as described.

2. The within-described improvement in treating skins, which consists in subjecting them, after being limed and unhaired, to the alternate action of sulfid of sodium and washing, then to a solution of a salt that will evolve sulfur dioxid in the presence of a mineral acid such as specified, and then to a de-

sulfurizing treatment, substantially as described.

3. The within-described improvement in treating skins, which consists in applying to the flesh side of the skin a liming compound, then removing the hair, then subjecting the unhaired skin to the alternate action of sulfid of sodium and washing, and then to a solution of a salt that will evolve sulfur dioxid in the presence of a mineral acid such as specified, substantially as described.

4. The within-described improvement in treating skins, which consists in applying to the flesh side of the skin a liming compound, then removing the hair, then subjecting the unhaired skin to the alternate action of sulfid of sodium and washing, then to a solution of a salt that will evolve sulfur dioxid in the presence of a mineral acid such as specified, and then to a desulfurizing treatment, substantially as described.

5. The within-described improvement in treating skins, which consists in subjecting them to the action of lime and sulfid of sodium, and then after unhairing and washing, to the alternate action of sulfid of sodium and washing, and then to a solution of a salt that will evolve sulfur dioxid in the presence of a mineral acid such as specified, substantially as described.

6. The within-described improvement in treating skins, which consists in first applying to the flesh side of the same a compound of lime and sulfid of sodium, then removing the hair from the skin, then subjecting the unhaired skin to the alternate action of sulfid of sodium and washing, then to a solution of a salt that will evolve sulfur dioxid in the presence of a mineral acid such as specified, and finally to the action of a bath containing lime and arsenic, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

SAMUEL K. FELTON, JR.

Witnesses:

D. G. STUART,

WM. M. HANNAY.