

UNITED STATES PATENT OFFICE.

JOSEPH W. SMITH, OF GIRARD, OHIO, ASSIGNOR TO CARRIE H. NEW, OF
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TAWING LEATHER.

SPECIFICATION forming part of Letters Patent No. 632,154, dated August 29, 1899.

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To all whom it may concern:

Be it known that I, JOSEPH W. SMITH, a citizen of the United States, and a resident of Girard, in the county of Trumbull, State of Ohio, have invented certain new and useful Improvements in Tawing Leather; and I do hereby 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.

The invention relates to what is now well known as the "chrome" method of tanning hides; and it consists in the process of tawing hereinafter described, the invention being particularly designed with the view of obtaining a waterproof leather.

The ingredients forming the composition employed in this process and the manner of compounding the liquor and treating the hides is substantially as follows: I dissolve twelve (12) pounds of chromic acid in about six (6) gallons of hydrochloric acid, the latter having a specific gravity of 1.146 and a hydrometer strength of 28.61. I also take fifty (50) pounds of crystallized chrome-alum and dissolve this separately in about twenty (20) gallons of water. I also dissolve in another vessel seventy-five (75) pounds of crystallized carbonate of soda in about ten (10) gallons of water. These solutions being obtained, I then add the soda slowly and carefully to the chrome-alum solution, meanwhile agitating the mixture slightly by stirring or otherwise. When the compound assumes a cloudy appearance and a fine, sparkling, silvery mist is seen rising to the top, I discontinue the addition of the soda solution and then add thereto sufficient water to make the whole amount to forty-four (44) gallons. The next step is to thoroughly mix this compound of chrome-alum and carbonate of soda with the dissolved chromic acid before described, preferably gently stirring or otherwise agitating the mixture all the while. I then allow this combined mixture to stand and settle for about twenty-four hours. The manner of using this improved liquor is as follows: I take ninety-eight and a half (98½) gallons of clean water and add thereto one and a half gallons of the combined liquor just described. This makes what I call a "one-and-a-half-per-cent. liq-

uor," and I heat this bath to a temperature of 80° Fahrenheit and maintain it at about that temperature throughout the tanning process, never raising it above 85°. The strength of bath is gradually increased during the treatment of the hides by adding more of the liquor at short intervals of time in one-half-gallon quantities until the bath has had four to five per cent. of the combined liquor added to it. The hides should be agitated while in the bath and the heat and strength of the mixture maintained throughout. An experienced tanner will have no difficulty in determining the proper duration for the immersion of the hides, but a good rule to work by is to watch the skins carefully, and when the thickest parts of the hides show a deep greenish-blue appearance all through to discontinue the treatment. When it has been seen that the hides are sufficiently tanned, they are removed from the bath and washed out and rinsed in clean water which has borax dissolved in it at about the proportion of one ounce of borax to twenty gallons of water. The skins are then ready to be finished in the usual way.

A characteristic feature of my improved process is that it is essentially a single-bath one, as the liquor may be used continuously by keeping up the strength of the bath in the manner described. A large saving is thereby effected in the mechanical manipulation of the hides and the bath.

The time the hides are allowed to remain in the liquor will vary considerably with the kind and quality of the same. Sheep-skins usually require about one hour and goat-skins about one and a half hours. Calf-skins are tanned in from two to four hours and heavy steer-hides in about ten hours.

Skins tanned according to this invention are adapted for a great variety of uses, and especially where waterproof stock is required, as the material is not deteriorated in any way by the treatment and is left soft, pliable, and strong and susceptible of taking a high polish.

Although the proportions of parts above explained are the best now known to me, I do not desire or intend to be limited thereto, but may vary the same within considerable limits

without departing from the spirit of the invention. Neither do I intend to limit myself to the use of the carbonate of soda, as any other alkaline compound having an alkaline
5 reaction may be used in its place.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The herein-described process of tawing
10 hides, the same consisting in subjecting them to a bath prepared from chrome-alum, chromic acid, hydrochloric acid, and an alkaline compound, in about the proportions specified.

2. The herein-described process of tawing
15 hides, the same consisting in subjecting them to a bath prepared from chrome-alum, chromic acid, hydrochloric acid, and carbonate of soda, in about the proportions specified.

3. The herein-described process of tawing
20 hides, the same consisting in subjecting them to a bath composed of the combination of about twelve (12) pounds of chromic acid dis-

solved in about six (6) gallons of hydrochloric acid with about fifty (50) pounds of chrome-alum dissolved in about twenty (20) gallons
25 of water, and about seventy-five (75) pounds of carbonate of soda dissolved in about ten (10) gallons of water.

4. The herein-described process of tawing
hides, the same consisting in preparing a solu-
30 tion of chromic acid and hydrochloric acid, dissolving separately chrome-alum and carbonate of soda, mixing the chrome-alum solution and the carbonate-of-soda solution to-
35 gether, combining this mixture with the solution of chromic and hydrochloric acids, and subjecting the hides to a bath of said liquor.

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

JOSEPH W. SMITH.

Witnesses:

DAVID F. GRIFFITH,
BAINE TIPPIE.