

UNITED STATES PATENT OFFICE.

WILLIAM ZAHN, OF NEWARK, NEW JERSEY.

TAWING HIDES OR SKINS.

SPECIFICATION forming part of Letters Patent No. 504,012, dated August 29, 1893.

Application filed October 13, 1892. Serial No. 448,759. (No specimens.)

To all whom it may concern:

Be it known that I, WILLIAM ZAHN, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Tawing Hides and Skins; 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.

My invention has reference to a new process in the art of tawing skins or hides for the purpose of making kid or other leather, and the process consists essentially in the treatment of the skins or hides with certain novel chemical compositions to the action of which the skins or hides are exposed, whereby the leather is rendered water-proof, soft and flexible, and by the employment of which much time and labor are saved.

It is well known that chromic oxide salts have been used in the art of tawing skins or hides in order to convert them into leather, which salts however, always had the result of producing a hard and an undesirable product. I have found by careful experiments, that chromic oxide salts used in combination with a zinc salt and a sulphide of an alkali or any other alkali, produced quite a different result. I have practically demonstrated that the hides or skins thus treated will produce a marketable leather having all the good qualities required of leather, such as durability, softness, and elasticity and the leather is also made perfectly waterproof. During the process of tawing the skins or hides, the chemical reaction which takes place when the sulphide of an alkali is added to the chromic oxide salt and the zinc salt is, that the chromic oxide is partly precipitated as hydroxide and the zinc salt as sulphide, which precipitates are taken up by the skins or hides and firmly unite with the fiber of the same. For one hundred pounds of well prepared hides or skins are necessary, fifty pounds of chrome alum, forty-eight pounds of zinc sulphate, ten pounds of sodium chloride and ten pounds of potassium sulphide. The temperature of the bath or baths is maintained at a uniform temperature of say about 85° Fahrenheit.

I will now describe the method of proced-

ure of tawing the hides or skins, the following being a description of the baths that may be used and the mode of treating the skins in these baths: To the bath or baths just described in the above for the tawing purpose, the required quantities of chrome alum, zinc sulphate, and sodium chloride, are dissolved in hot water and to the solution thus selected is then added enough water to cover the skins or hides which are then placed in the bath and the sulphide of potassium which has been previously dissolved in as little water as possible, is now added. The skins or hides remain in this solution or bath until they appear to be well soaked, which takes about eight hours, more or less, according to the thickness of the skin to be tawed. I have found it advantageous to place the hides or skins first into a weak (one-half per cent.) solution of crystallized chromic acid during half an hour or one hour, according to their thickness, and then place them into either of the above mentioned metallic salts baths, which act best when made gradually more and more concentrated. The chromic acid by penetrating the skins or hides better enables the tissues to take up the metallic salts, that are precipitated by the potassium sulphide.

The metallic salts bath may be divided into three, which may be of the following concentration:

Chrome alum.

- I. Bath one per cent. one hundred cubic centimeters water and one gram salt.
- II. Bath 1.5 per cent. one hundred cubic centimeters water and 1.5 grams salt.
- III. Bath two per cent. one hundred cubic centimeters water and two grams salt.

Zinc sulphate.

- I. Bath one per cent. one hundred cubic centimeters water and one gram salt.
- II. Bath one per cent. one hundred cubic centimeters water and one gram salt.
- III. Bath two per cent. one hundred cubic centimeters water and two grams salt.

Sodium chloride.

- I. Bath 0.1 per cent. one hundred cubic centimeters water and 0.1 gram salt.

- II. Bath 0.15 per cent. one hundred cubic centimeters water and 0.15 gram salt.
- III. Bath 0.2 per cent. one hundred cubic centimeters water and 0.2 gram salt.

5 *Potassium sulphide.*

- I. Bath 0.1 per cent. one hundred cubic centimeters water and 0.1 gram salt.
- II. Bath 0.15 per cent. one hundred cubic centimeters water and 0.15 gram salt.
- 10 III. Bath 0.2 per cent. one hundred cubic centimeters water and 0.2 gram salt.

All baths take about eight hours.

15 The liquor in which the skins are placed, may be analyzed after the removal of the skins and brought to the proper concentration required, when the baths can be used for the treatment of a second batch of skins or hides to be tanned.

20 By my novel process of tanning hides or skins, leather results which is waterproof, elastic and strong. The duration of the process is a very short one and can be used for skins and hides of every description.

25 In some instances, the exact proportions of the several ingredients employed in my process of tanning hides or skins may be varied, without departing from the scope of my present invention.

Of course, I am aware that some of the 30 substances, named herein above, have been used in tanning skins or hides, but they never before have been combined in such compositions as mentioned in the preceding description of my new process of tanning skins or 35 hides.

Having thus described my invention, what I claim is—

1. In the art of tawing skins or hides, the herein described process, which consists in 40 treating the same with a bath comprising therein a composition consisting of chromic oxide salts and a zinc salt, and adding a sulphide of an alkali, for the purposes set forth.

2. In the art of tawing skins or hides, the 45 herein above mentioned composition consisting of chrome alum, zinc sulphate, chloride of sodium and sulphide of potassium, substantially as set forth.

In testimony that I claim the invention set 50 forth above I have hereunto set my hand this 5th day of October, 1892.

WILLIAM ZAHN.

Witnesses:

FREDK. C. FRAENTZEL,
WM. H. CAMFIELD, Jr.