United States Patent Office.

CHARLES F. PANKNIN, OF CHARLESTON, SOUTH CAROLINA.

Letters Patent No. 109,656, dated November 29, 1870; antedated November 26, 1870.

IMPROVEMENT IN COMPOUNDS FOR BATING HIDES AND SKINS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, CHARLES F. PANKNIN, of the city and county of Charleston, in the State of South Carolina, have invented a new and improved Liquid or Solution for Bating Hides and Skins; and I do hereby declare that the following is a full, clear, and exact description of the manner of compounding and using the same.

I employ a solution composed of, say three-fourths (¾) of a pound of carbolic acid, six (6) pounds of muriate of ammonia, (sal ammoniac,) and six (6) pounds of alum, dissolved in one hundred and fifty gallons of water.

These proportions may be varied without departing from the principle of my invention.

I explain the action of this bate on hides or skins which have been depilated by lime as follows:

The lime remaining in the skin or hide after all mechanical means have been employed (such as repeated washing, rinsing, scraping, and soaking, &c.,) for its removal, does not amount to a large percentage, still there is sufficient lime left to form, with the tannin, an insoluble compound, which retards the progress of tanning by closing the pores and preventing the tan liquid from penetrating the interior of the hides or skins, aside from which leather containing this tannate of lime is often harsh and brittle.

When hides or skins are immersed in this liquid (after being freed from the lime by mechanical means) for twenty-four hours or longer, all the remaining lime is entirely removed, and the pores of the hides or skins are opened so as to make them absorb the tan more rapidly and thoroughly, and will therefore make a plumper and softer leather.

The chemical action is as follows:

Hides or skins containing a small percentage of lime, when brought into contact with the solution above named, produce a chemical reaction. The muriate of ammonia is decomposed in the presence of lime, forming chloride of calcium, which is soluble in water, and ammonia is liberated, which unites with a portion of the sulphuric acid contained in the alum, forming sulphate of ammonia and alumina. If alum were not present the ammonia would give to the bate an alkaline reaction, which would be unfavorable to a proper swelling. The reaction of this bate is, however, uniformly acid, without containing any free acid.

The advantages of the carbolic acid in the bate are to prevent any tendency to putrefaction or fermentation, and at the same time begin the operation of tanning by coagulating and loosening the albumen from the elastic fiber, and it also makes the fibers tougher.

Another advantage in the use of carbolic acid is the prevention of an undue swelling of the fibers, which would injuriously affect the quality of the leather produced.

The general advantages of the improved bate are:

First, the economy in the cost of material.

Second, the swelling of the hides and skins, and the removal of the lime at the same time.

Third, the more rapid tanning of the hides and skins.

Fourth, the fibers of the hides and skins are not impaired by any free acid.

Fifth, hides and skins which have been treated with my bate, after they have been colored in the vat with a weak tan liquor, will bear a stronger tan solution afterward without detriment.

Sixth, the leather produced is much more pliable, tougher, and plumped up.

Seventh, the carbolic acid retained by the hides and skins will cause a saving of tannin in the vats, as it has the property of retarding the conversion of tannin into gallic acid.

When the hides and skins have been depilated without the use of lime, I prefer to employ the solution without the muriate of ammonia, or with only a very small quantity of muriate of ammonia, as this salt is only added for the removal of the lime.

The hides and skins should be worked in the improved bate precisely as in any other. And in regard to the length of time each hide or skin is to remain in the bate, this will depend on the thickness and other conditions of the same. Practical tanners will know when the hides are bated sufficiently; and in order to make the bate penetrate uniformly they are usually worked on the beam once or twice during the bating.

Having described my invention,

I claim as new and desire to secure by Letters Patent—

A bate to be used in the treatment of hides and skins, composed of carbolic acid, muriate of ammonia, and alum dissolved in water, in about the proportions specified.

CHARLES F. PANKNIN.

Witnesses:

G. W. DINGLE,

C. W. STILES.