UNITED STATES PATENT OFFICE.

CHARLES J. TINNERHOLM, OF BROOKLYN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE HAMMONASSETT SOLE LEATHER COMPANY, OF NEW YORK, N. Y.

IMPROVEMENT IN TANNING COMPOUNDS.

Specification forming part of Letters Patent No. **200,108**, dated February 5, 1878; application filed August 1, 1877.

To all whom it may concern:

Be it known that I, CHARLES J. TINNERHOLM, of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Tanning and Improving Leather, of which the following is a full, clear, and accurate description:

The nature and object of my invention is a new method or process of tanning and improving leather, which shall be speedy in its action, simple in operation, and inexpensive as to its cost.

The present process of tanning leather is long and tedious. The hides, after they have been deprived of their hair, are placed in tanks or vats filled with water and tan-bark, and allowed to remain there several days. The hides are then removed, and the tank or vat replenished with water and tan-bark. They are then placed again in the vat, and this operation is repeated many times, the whole process taking from three to four months. In subjecting the hides to this treatment, the water of the vats is kept at the high temperature of 100° Fahrenheit, and this temperature is kept uniform, as otherwise the leather will be spoiled. It is therefore necessary to employ a force of skilled workmen, and to have the vats watched with great care, which involves a large expense.

My invention does away with all these difficulties experienced in tanning leather by the present mode.

The hides are placed in my solution and are not removed until they are converted into leather. The time taken to convert the hides into leather is short, being only ten days in the case of sole-leather, and about two days in the case of leather other than sole-leather. No care is necessary to keep the solution at a high and uniform temperature. The materials of which my solution is made are not expensive and can readily be procured.

It will thus be seen that my invention is simple, labor-saving, and cheap. The leather produced by it also possesses qualities which leather made by the old process does not possess. All grease and all other matter harmful to the leather are entirely expelled, which is only partially the case in the leather manufactured by the present method now commonly in use.

The leather made by my new process is far more solid and durable. It can be readily known in the market by its color, which is light brown on the outside and somewhat darker brown on the inside.

The ingredients used in compounding my solution and the manner of making it are hereby given.

I prefer tanning fifty hides together, or, as is usual, the hides being cut in two, one hundred pieces in one vat. I prefer tanning this number together, as this is the usual number which, by the old process, are subjected to treatment at the same time in one vat, and the vats are adapted for tanning that number. The proportions in which the various ingredients are mixed I will therefore give with reference to tanning fifty hides or one hundred pieces. For tanning that number I use the following solution: I add one hundred and fifty pounds of Peruvian bark (cortex Chinæ rubræ) to two hundred and twenty-five gallons of boiling water, and boil for one hour. On cooling, the mixture should be of 35° of strength, measured on the barkometer or bark cylinder, Fahrenheit scale. If not, let it boil a little longer, until that degree of strength is obtained. I also boil for fifteen minutes one hundred and fifty pounds of catechu (gummi catechu) in two hundred and twenty-five gallons of boiling water. On cooling, the mixture should contain 35° of strength, measured on the barkometer or bark-cylinder, Fahrenheit scale. If not, let the mixture boil a little longer, until it obtains that degree of strength. I also dissolve thirty-seven and a half pounds of salt of tartar, (kali carbonicum purum,) together with thirty-seven and one-half pounds of oxide of zinc, (zincum oxidat album,) in seventy-five gallons of cold water. This mixture should contain 10° of strength, measured on the barkometer or bark-cylinder, Fahrenheit scale. I also dissolve seventy-five

pounds of Glauber's salt (natrum sulphuricum) in seventy-five gallons of cold water. This mixture should contain 15° of strength, measured on the barkometer or bark-cylinder, Fahrenheit scale. I also dissolve seventy-five pounds of alum (alumen)—($Al_2 K_2,4 SO_4 + 24 H_2O$)—in seventy-five gallons of cold water. This mixture should contain 15° of strength, measured on the barkometer or bark-cylinder, Fahrenheit scale.

Of course, a greater or less number of hides may be tanned at the same time, as desired, and then the relative proportions of the ingredients of the mixtures above described must be varied accordingly, the same relative proportions of the said ingredients to the water in which they are dissolved being preserved.

I take all these liquids, prepared in the manner above described, and place them together in a tank or vat, in which I also place the hides for tanning, from which the hair has been previously removed. I let these hides lie in the solution for ten days, in case I wish to tan sole-leather, and for two days in case of all other leather but sole-leather. After they have remained in the solution the requisite time, I take them out and hang them up to dry in buildings or places where the air can get to them readily, but where they shall not be exposed to the direct rays of the sun.

The hides will try in about three days, and are then fully converted into leather, from which all grease and all other matter harmful to leather has been entirely expelled, and are ready for use.

My invention is also useful in treating leather which has been tanned by the old process. By placing such leather in my solution and allowing it to remain there for one day, any grease which may remain in the leather is removed, and the leather is made of superior quality, gaining in weight and solidity, as my process removes all air from the pores of the leather and fills them up solid.

After one batch of hides or leather has been treated in the solution it will become depleted in strength; but it is not necessary to use an entirely new solution for tanning the next batch of hides, but by adding one-fourth in quantity of new solution to the old solution it will regain the requisite strength, and thus the original solution, with the addition of one-fourth in quantity of new solution, as each batch of hides is tanned, can be used a considerable length of time before it is necessary to entirely renew it.

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

The process of tanning and improving leather by treating the hides or leather for the respective times specified in a solution of Peruvian bark, catechu, Glauber's salt, salt of tartar, oxide of zinc, and alum, compounded in the proportions and of the strength specified, substantially as described.

In testimony whereof I have hereunto set my hand this 30th day of July, 1877.

CHARLES J. TINNERHOLM.

In presence of—

LOUIS W. FROST,
CHARLES G. COE.