

UNITED STATES PATENT OFFICE.

JOHN ALEXANDER TANNER, OF BOSTON, MASSACHUSETTS; LOUIS L. GREEN ADMINISTRATOR OF SAID TANNER, DECEASED.

PROCESS OF MAKING SOLE-LEATHER.

983,005.

Specification of Letters Patent.

Patented Jan. 31, 1911.

No Drawing.

Application filed December 27, 1904. Serial No. 238,417. (Specimens.)

To all whom it may concern:

Be it known that I, JOHN A. TANNER, a citizen of the United States, residing in Dorchester district, Boston, in the county of Suffolk and State of Massachusetts, have invented a certain new and useful Improvement in Processes of Making Sole-Leather, of which the following is a specification.

My invention relates to a process of making sole leather, and has for its object to provide a new and improved process of this description. The hide from which the sole leather is to be made is first unhaired and then preferably immersed in a solution of sodium chlorid. It is allowed to remain in this solution for several hours, the length of time depending of course upon the characteristics of the hide used. The hide is taken from the sodium chlorid solution, and the surplus liquid allowed to drain off. The hide is then placed in a chromic acid solution. This solution is made in any desired manner, but preferably from chromic acid crystals and water in the proportion of two ounces of crystals to five gallons of water. The hide may be placed directly in this chromic acid solution without being treated with sodium chlorid if desired, but, as before stated, it is preferably previously immersed in the sodium chlorid solution. To the chromic acid solution made from the crystals a small amount of potassium chrome alum or sodium chrome alum may be added. The hide is preferably allowed to remain in the chromic acid solution until it is only partially impregnated, and the color shows about one-fourth through from the grain and flesh sides, leaving about one-half the thickness of the hide at the center uncolored. The hide is then removed and placed in a reducing solution such, for example, as a solution of thiosulfate of sodium, and is allowed to remain in this solution until the surface shows the dingy, greenish color. The hide is then removed before the central part is impregnated with the solution and the surplus material allowed to drain off. The hide is then placed in a tannic acid solution which may be the ordinary bark or extract solution, and of the ordinary strength of such solution, and the tanning finished the same as in any of the tanning processes where such tannic acid solution is used.

The sole leather turned out by this process

is firm and solid and does not become soft or rot on standing, and is very tough and not liable to be cracked by bending.

The time required to produce sole leather by this process is much shorter than in the processes now used, and requires only a few days. If the hide is allowed to remain in the solutions until thoroughly saturated unnecessary time is taken up, and the result secured is inferior as the leather is hard and brittle. When the hide is only partially impregnated with chromic acid and thiosulfate of sodium prior to inserting it in the tannic acid solution, such solution acts upon the other solutions, that is, the chromic acid and thiosulfate of sodium that have not united, and appears to drive them toward the center so that they run ahead of the tannic solution. At the same time the tannic solution follows the other solutions into the pores of the hide, and the interval between the impregnation with the other solutions and the action of the tannic solution is thus reduced to a minimum. The driving ahead of the other solutions also keeps the material porous so that the tannic solution may rapidly and easily impregnate the pores of the skin. The change of the skin from the chromic acid and thiosulfate of sodium solution to the tannic acid solution should not be delayed too long, for if it is the resulting leather will be hard and brittle. I may also add under ordinary conditions sodium chrome alum or sodium bichromate, etc., to the chromic acid solution, as I find that the presence of these materials benefits the action and tends to open up the pores and make the hide more spongy. The proportion of these parts may be varied, depending upon the conditions. I may, for example, add one or two ounces of the material to, say, five gallons of the solution.

I have described the preferred form of using the various solutions, as this method secures the best results. It is of course evident, however, that instead of immersing the hide in the separate solution the solutions may be combined in a proper manner, the chromic acid and the thiosulfate of sodium, for example, being placed in the same tank successively, that is, one solution being placed in the tank and permitted to act and then the other solution being placed in the same tank.

It is of course evident that the depth which the various solutions are permitted to penetrate before placing the hide in the tannic acid solution may be varied, and will depend
5 upon the result desired. I have found the following solution to give satisfactory results: A solution of sodium chlorid in the proportion of one pound of sodium chlorid to five gallons of water. The hide is im-
10 mersed in this solution and remains there about twenty-four hours, more or less; the hide is then immersed in a chromic acid solution made from chromic acid crystals and water in the proportion of two ounces of
15 crystals to five gallons of water. The hide preferably remains in the solution only such a length of time as to permit the solution to permeate part way through, leaving the central portion free from acid. The thio-
20 sulfate of sodium is then used, the proportions being two pounds of thiosulfate of sodium to ten gallons of water. The hide preferably remains in this solution until partly saturated, being removed before the
25 central part becomes impregnated. The hide is then immersed in the tanning solution. The length of time required for the material to be impregnated in the proper degree with the solution will, of course, depend upon

the material itself, and will vary as this 30 material varies.

I claim:

1. The process of tanning hides which consists in immersing the hide in a solution containing chromic acid and permitting it 35 to remain until it becomes partially saturated, then stopping the penetration of the chromic acid by removing the hide from such solution, then immersing the hide in a solution of thiosulfate of sodium, then re- 40 moving said hide and immersing it in a tannic acid solution.

2. The process of tanning hides which consists in immersing the hide in a solution containing chromic acid, then limiting the 45 penetration of said chromic acid so as to prevent the interior of the hide from becoming saturated, then immersing said hide in a solution containing a reducing agent, then limiting the penetration of said reducing 50 agent before the interior becomes saturated, then removing the hide and immersing it in a tannic acid solution.

JOHN ALEXANDER TANNER.

Witnesses:

JAMES EDWARD BAXTER,
PETER H. GARRITY.