

UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN TANNING-LIQUIDS.

Specification forming part of Letters Patent No. **18,030**, dated August 18, 1857.

To all whom it may concern:

Be it known that I, LEO LOUIS AIMÉ ELIE DE LA PEYROUSE, of Paris, France, have invented a new and useful Method or System of Tanning Leather; and I do by the description hereunto appended fully set forth and ascertain my said invention and the mode of using the same.

For many years much labor and learning as well as a great amount of money has been sacrificed by the practical tanner and learned chemists to arrive at such results as reduce the time employed to convert a skin or hide into leather.

It may be proper here to state that to manufacture heavy leather, for example, it takes by the best ordinary modes thirty months, which of course requires much room and a considerable capital, together with large experience and knowledge in the manufacture, and commercial combinations where the investment extends over so long a period as three years before realizing any profits therefrom.

To lessen the time of the tanning operation, render the expenses of the manufacture as light as possible, produce a fine leather of good quality, and having the weight required, were the objects to be attained in all the improvements attempted.

In 1791, Seguin called the manufacturers' attention to the discoveries which promised the most brilliant success. After him many scientific investigators and practical manufacturers published the results of their labors, but their plans were soon abandoned for the reason that the leather which they produced had two important defects. It was inferior in quality and lighter in weight than leather produced by the ordinary method. Hence the well-known saying among tanners that "to tan well much time and a great deal of tan is required." The use of a decoction of tan at first very weak and then gradually increased in strength has been practiced in England on a large scale, so the experiments with the use of heat, of acids, salts, of the peroxide of iron, of endosmose, &c., resulted only in ruining many manufacturers who were experimenting therewith, so that not one of these plans are now in use. As long as tan alone was used, no matter in what way, there was no advantageous result over the old plans.

The skin or hide is composed of gelatine, nitrine, and albumen, and its structure may be classed into the following layers: the cuticle or epidermis, the *rete mucosum*, and the *corium*. The outer coating or epidermis does not combine with tannin, while the *corium* is readily combined with it. My purpose has been to obtain some tanning material that would readily combine with the different parts of the hide so as to convert the whole into leather. The epidermis, not being acted on by the tan beneficially, serves only to hinder the tan from penetrating the skin and extends the time of tanning and reduces the weight of the leather. I have devised a method of overcoming all the difficulties heretofore encountered by a new mode of treatment by seeking for such materials as will readily act on the epidermis as well as upon the *corium* and convert all the various portions of the skin into perfect leather. Tan acts on the elements composing the *corium*, and the metallic or earthy chlorides unite themselves with the constituents of the epidermis, forming in both cases insoluble and imputrescible combinations. The chlorides of gold, silver, platinum, &c., cannot be used on account of the expense; but the chlorides of albumen, zinc, tin, antimony, lead, &c., can be employed, the neutral mixture of sulphate of aluminum or caustic alum with an equal quantity of sea-salt, the mixture of sulphate of zinc, tin, or lead with the same proportion of sea-salt, or compound chlorides of zinc or tin with chloride of sodium, potassium, or ammonium may be used, but not to so great advantage as the chlorides above named.

I will here describe the use of the chloride of tin, which will serve as an example for all the others.

The chloride of tin I use particularly in the tan-vats. When the skins are taken out of the work-shops where they are manipulated they are handled for about twenty-four hours in a solution of tan which has before been used, to which is added the required proportion of tan. Immediately after this some chloride of tin is added, and repeat it as often as you add tan, the quantity of the chloride of tin to be in proportion to that of the tan, which is to be augmented as the tanning progresses.

The mode of procedure is to put the chloride in after the skins are taken out. The liquid is

then stirred and the skins are put back. The chloride of tin can be put in a day before or after each addition of tan. It is used in a state of solution of the strength of 35° of the areometer of Baumé.

The following are the proper quantities used for a completion of the process: For twelve calf-skins, small, four pints chloride; for twelve calf-skins, ordinary, eight pints chloride; for twelve calf-skins, large, from thirteen to nineteen pints chloride; for twelve hides, light, from twenty-three to thirty-one pints chloride; for twelve hides, ordinary, from fifty to sixty-three pints chloride; for twelve hides, heavy, from one hundred to one hundred and twenty pints chloride. These quantities are to be added in five or six portions, the first to be hardly one-twentieth part of the whole; but this may be varied without changing the principle. In all cases the addition of the chloride of tin must be completed before the skins are put in the pit. By tasting the liquid you can determine what quantity of tin or other ingredient it contains, by which, and also by the

looks of the skins, it can be determined if a larger quantity of the chloride of tin should be added or not.

From numerous trials I have determined that with all kinds of skins I have by the above method lessened the time of the tanning process and the expense, and that the leather is improved in quality and weight.

Having thus fully described my new and useful process of tanning, what I claim therein as new, and for which I desire to secure Letters Patent, is—

Combining with the tanning solution or liquor the chloride of tin, or its equivalent, substantially in the manner and for the purposes set forth, in which the skins are handled, as herein made known.

In witness whereof I have hereunto set my hand and affixed my seal this 31st day of December, A. D. 1856.

LEO DE LA PEYROUSE. [L. S.]

Witnesses:

LÉON KRAFF,

ALEX. JOURNANES, Jr.