

UNITED STATES PATENT OFFICE.

ROBERT W. GRIFFITH, OF NEW YORK, N. Y.

PROCESS FOR THE TREATMENT OF CHROME-TANNED LEATHER.

996,080.

Specification of Letters Patent. Patented June 27, 1911.

No Drawing.

Application filed October 16, 1909. Serial No. 522,945.

To all whom it may concern:

Be it known that I, ROBERT W. GRIFFITH, a subject of the United Kingdom of Great Britain and Ireland, now residing in New York, in the county of New York and State of New York, have invented a certain new and useful Process for the Treatment of Chrome-Tanned Leather, whereof the following is a specification.

My process relates to the treatment of hides or skins after the tanning thereof by the use of chromium compounds whether the actual tanning operation is wholly carried out by the use of such compounds, or by the use of the same in conjunction with a vegetable material, or other tanning agent. All of these methods I will comprehensively refer to as "chrome-tanning."

A peculiar characteristic of chrome-tanned hides or skins is that if the leather is permitted to dry out, before it has been fat-liquored, it cannot be brought back to a wet condition proper for fat-liquoring, or other subsequent treatment. In consequence of this fact, hides or skins, after chrome-tanning, must be kept in the wet state until they have been dyed, (where dyeing is to be employed), and fat-liquored.

A common method of procedure in chrome-tanning is to take the skins on coming out from the tanning bath, and allow them to lie in pile for an interval, in order to permit the chromium compound to become, to some extent, "fixed" on the fiber, since, if the operations of washing and fat-liquoring take place too soon after the actual tanning operation, a substantial portion of the valuable ingredients which otherwise would become associated with the fiber, would be washed out, with the result that the leather will be impaired, and will have the appearance of being under-tanned.

In the case of leather tanned by ordinary vegetable processes, or by the use of alum, (and without the employment of chromium compounds), the drying, or "crusting," of the goods, before fat-liquoring, is both permissible and advantageous because after a comparatively long interval the leather can be again "wet back," and restored to proper condition for fat-liquoring and subsequent treatment, and because it has been found that such drying out, or "crusting" of the leather has an important effect upon its quality, probably because it permits time for

the fixation of the tanning agent upon the fiber.

The object of my invention is to so treat hides or skins, which have been tanned either wholly or in part by the use of chromium compounds, as to permit the leather to be dried out, or "crusted," and to remain in that condition for an indefinite period, without impairing the ability of the leather to be subsequently "wet back" and returned to the proper condition for dyeing, fat-liquoring and further treatment. To this end I proceed as follows:—The chrome-tanned hides or skins, are taken out of the tan bath and may conveniently be allowed to lie in a wet condition for a moderate time, preferably over night, and are then shaved, if desired, but, while still wet, are immersed in a bath containing lactic acid.

The preferred constitution of the bath and time of immersion are as follows:—I employ a bath consisting of a solution of commercial lactic acid in the proportion of three per cent. (3%) of the wet weight of the leather after shaving, or draining, said commercial lactic acid being standardized at twenty-two per cent. (22%) lactic acid. The bath should contain sufficient cold or tepid water to properly diffuse the acid, so that it will come into thorough and intimate contact with the leather. I prefer to conduct this treatment by the use of a revolving drum, in which case I have found that good results may be obtained by running the leather in the bath for about ten minutes. The time of the treatment and percentage of lactic acid, however, may be varied, as experience with any particular kind of hides or skins may indicate to be desirable. The treated leather is then taken out and allowed to drain, when it can be hung up on hooks to dry out completely. It may then be stored away until required, and can be "wet back," with water at any time, and the operations of dyeing and fat-liquoring proceeded with.

While I have specified the above process as the preferred one, it must be understood that I do not limit my invention thereto, since the essential feature is the subjection of the skin to the action of lactic acid after the chrome-tanning process proper, and the lactic acid may be present, either as free acid, initially added to the bath, or as acid developed in the bath itself by the use of a material capable of evolving it, or in the

form of a lactate, provided the base of the lactate is of a character which does not injuriously affect the leather.

The class of available lactates comprises those whose bases, when disengaged during the reactions that occur, are substantially soluble in the bath, since the deposit, within the leather, of particles of an insoluble base, would impair its homogeneity, and tend to produce localized differences of susceptibility to subsequent treatment. Hence in my claim hereinafter made, when I refer to the treatment with lactic acid, I mean to comprehend its employment as free acid initially added, or subsequently developed, or as lactic acid in combination with a base, or bases, which, when disengaged, are substantially soluble in the bath.

Among the advantages attainable by the use of my invention, are the following:— The period of absorption and fixation of the chromium compound is prolonged, because the leather may lie in the "crust", or dried condition, for an indefinite period. Heretofore, in order to attain such fixation the chrome-tanned leather has been allowed to lie in pile for a time, but was required to be kept in a wet condition in order to be properly susceptible to the subsequent operations of dyeing and fat-liquoring. Hence for economic reasons, the period available for fixation was unduly short.

When in the dry state, or "crust", rendered commercially possible by my process, the leather can be sorted into grades much more readily than when it is wet, and, moreover, the hides or skins which are suitable for the manufacture of colored or black leather respectively, can be much more conveniently ascertained than when the selection must be made while the leather is still wet from the tan bath.

The wet leather treated by my process can be tacked out on boards to dry, so that

a greater measurement can be obtained than is possible under existing methods of handling chrome-tanned leather.

While the advantages of my process are made available to the highest extent, when the leather is dried, or "crusted", after the lactic acid treatment, I do not limit my claim to a method in which actual drying is employed, since the treatment is useful even in cases where the operations of fat-liquoring, &c., follow the same, without drying.

I am aware that lactic acid has been employed as an adjunct under certain circumstances in the treatment of hides preparatory to tanning, for instance, as a substitute for "puers", or "bate", in the removal of residual lime after the un-hairing process, and I do not broadly claim its use in connection with the general process of tanning.

My invention is based upon the discovery of the peculiar and specific effect of lactic acid upon chrome-tanned leather, and its capacity to produce a condition which, so far as I am aware, cannot be obtained by any other known re-agent, and the lack of which has heretofore been a serious economic difficulty in chrome-tanning processes generally.

Having thus described my invention, I claim:—

The hereinbefore described process for the treatment of chrome-tanned leather, which consists in subjecting the leather, after the tanning process is completed and while still in a wet or moist condition, to the action of lactic acid, substantially as set forth.

In testimony whereof, I have hereunto signed my name, at Philadelphia, Pennsylvania, this fourteenth day of October 1909.

ROBERT W. GRIFFITH.

Witnesses:

JAMES H. BELL,
E. L. FULLERTON.