

UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN TANNING.

Specification forming part of Letters Patent No. 27,259, dated February 21, 1860.

To all whom it may concern:

Be it known that I, CHARLES L. ROBINSON, of Waukesha, in the county of Waukesha and State of Wisconsin, have invented a new and useful Improvement in Tanning Skins and Hides of all Descriptions; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention consists in the employment, in combination with a liquor of terra-japonica which has been purified with sulphuric acid, of carbonate, sulphate, or calcined magnesia and sulphate of potassa, as and for the purposes hereinafter specified.

To enable others skilled in the arts to make and use my invention, I will describe it as clearly and briefly as possible.

I first make up my terra-japonica tanning-liquor, which I call "No. 1," as follows: I put about one hundred and twelve (112) gallons of water into a suitable kettle heated over a fire, and add fifteen (15) pounds of common terra-japonica to it, and while the heat in the fire is continued I stir up the liquor until it (the terra-japonica) is dissolved. I also add to this three (3) ounces of common sulphuric acid very cautiously, and stir the liquor rapidly. It is dangerous to pour in strong sulphuric acid into hot water. Therefore it should either be poured in when the water is cold, or otherwise it should be greatly diluted. This combines with impurities in the catechu and precipitates them. I now bring this liquor to the boiling-point and skim off all the froth which rises to the surface. I then pour out this liquor into a large tank or wooden vessel to cool. During this period of cooling a considerable amount of sediment falls to the bottom. This consist of insoluble impurities which not only retard the tanning process, but injure the quality of the leather if retained in the tanning-vats. These impurities consist of lime, albumen, gummy and resinous matter, and sometimes starch, which is employed for the purpose of adulteration, and they frequently amount to from thirty to forty per cent. of the solid parts of the terra-japonica. The lime and the resin tend to render the color of leather very dark, and they also make it very brittle. In precipitating them with sulphuric acid I use such a quantity of the latter as will not sensibly affect the

tannin, while it removes the injurious substances. I now rack off the clear liquor from the cooling-tank into a vat, (leaving the sediment behind,) and use it as follows:

For upper-leather.—I add to the quantity of racked-off liquor No. 1 described about one-fourth of an ounce of dissolved carbonate or calcined magnesia and about the sixteenth of an ounce of sulphate of potassa, and then add as much water as will reduce liquor No. 1 to one-half its strength, which will be about a sufficient quantity for ten good-sized hides. The whole is now stirred up and forms the tanning-liquor No. 2. The hides are now entered in this liquor and are moved frequently the first two days, so as to allow the substances in the liquor to act uniformly and at the same time prevent the hides becoming spotted on those places where they come in contact with one another.

Fresh clear liquor No. 1 must always be kept prepared and at hand to keep up and increase the strength of the vat-liquor No. 2, in which the hides are being tanned. About thirty-five gallons of it are added every second day at the early stage of the process, and one ounce of sulphate of magnesia. The hides are lifted out to put in the fresh liquor. I will state here that the quantity of magnesia sulphate added will depend upon the amount of "plumping" which the hides require. The practical tanner will judge of this by inspection. Greater quantities of fresh liquor are added toward the end of the process, so as to increase the strength of liquor No. 2. The same practice is pursued in this respect as in tanning with oak and hemlock liquors. When the hides are perfectly tanned they are lifted out of the liquor and afterward treated exactly like hides tanned by common processes. It requires from two to four weeks to tan cowhides for upper-leather, as described, and when the operation is effected perfectly the tanner can judge by examining the hides.

This method of tanning is suitable for all upper-leather, for calf, sheep, and other skins, with the hair removed, or with the fur retained. Furs tanned in this manner are free from the attacks of moths and insects. In tanning calf, goat, sheep, and other skins and furs it is preferable to employ a liquor somewhat weaker

than No. 2; but otherwise the process is exactly the same. The length of time for effecting complete tanning of any skin depends much on its size and thickness; but it is only by the usual method of inspection that a tanner can judge when the skin is completely tanned. About one hundred skins or fifty calf-skins may be tanned in the same quantity of liquor as that for the ten hides already described.

Harness and sole leather.—Such leather is made harder and more firm than upper-leather; but the liquor for cow and ox hides to make it is made up exactly like No. 2 described, and the process conducted in the same manner, with the exception that two ounces of sulphate of potassa are employed or added to the first liquor which the hide receives. This salt renders the sole-leather hard and firm. If a large quantity were used for upper-leather, it would make it too hard. In tanning sole-leather the same method of operating is pursued as for upper-leather, the liquors being made stronger toward the end of the process. It takes from four to eight weeks to tan harness-leather, and from six weeks to three months to tan sole-leather by my improved liquors. Furs and sheep-skins may be tanned in from ten to fourteen days. The sulphuric acid acts the part of an alterant, as well as a purifier of the catechu, as the colors produced in the hides and skins tanned by my process are a beautiful dark cream.

My improvement does not quicken the process of tanning materially from the old method, although it is somewhat quicker, but it makes far superior leather to that which has hitherto been produced. By removing the resin, the

lime, and other impurities from terra-japonica, as described, the leather which I produce is free from all brittleness, is more flexible, stronger, and durable than common bark-tanned or other catechu-tanned leather.

So far as I am able to judge the magnesian salts seem to have the effect of keeping the pores of the skins open to permit the tannin to enter and combine with the gelatine in the interior of the skin. The potassa salt appears to possess the quality of compacting the fiber and rendering the leather firm.

In making up new vats old liquors are used in place of water when these can be obtained. In tanning with terra-japonica the operations are more cleanly, simple, and less laborious than in tanning with bark, and besides the business may be conducted, whenever water can be obtained, altogether independent of our hemlock and oak forests, which are rapidly disappearing.

I am aware that sulphuric acid has been used in tanning, but not in the manner nor for the same purpose as it is used by me.

What I claim as my invention, and desire to secure by Letters Patent, is—

The employment, as and for the purpose herein specified, in combination with the purified terra-japonica liquor herein described, of carbonate, sulphate, or calcined magnesia and sulphate of potassa in about the proportions herein set forth.

CHS. L. ROBINSON.

Witnesses:

W. TUSCH,
R. BOEKLEN.