

UNITED STATES PATENT OFFICE.

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IMPROVED PROCESS FOR TANNING.

Specification forming part of Letters Patent No. 50,936, dated November 14, 1865.

To all whom it may concern:

Be it known that we, JOHN J. JOHNSON, of Kalamazoo, in the county of Kalamazoo and State of Michigan, and E. J. MURRAY, of Wyoming, in the county of Wyoming and State of New York, have invented a new and useful Improvement in the Process of Tanning; and we do hereby declare that the following is a full and exact description thereof.

The first process to which a hide is subjected preparatory to tanning is that of soaking. For this purpose we prepare a liquid mixture which is composed of two quarts of oatmeal (or, as a substitute therefor, one-fourth pound of starch) and one ounce sal-soda added to ten gallons of cold soft water. For hides that have not been salted we add one-half pint of common salt. Green hides require to remain in this mixture from ten to twelve hours, according to thickness, while dry hides require a much longer time, usually from two to six days, until they have become thoroughly soaked. When it is desired, the time for this process may be reduced one-half by the addition of two ounces of commercial sulphuric acid to the preceding mixture. The acid also has the effect to set the hair or fur on damaged hides or skins. We then break the hides in the usual manner in a wheel or on a fleshing-beam, after which, when it is desired to remove the hair or wool, we immerse them in a liquid compound composed of eight quarts each of slaked lime and hard-wood ashes mixed with ten gallons of cold soft water. They should remain in this compound till the hair or wool slips off easily, which usually requires from two to six days. After the hair or wool is removed the hides are fleshed in the ordinary manner.

It is now necessary to remove the alkali which the hides have absorbed in the process of unhairing before submitting them to the action of the ooze or tanning process. This is accomplished by what is technically termed "bating," for which we prepare a bate compounded of one peck of oatmeal (or, as its equivalent, one-fourth pound of starch) and one-fourth pound of commercial sulphuric acid mixed with ten gallons of soft water, preferably lukewarm, though it may be used cold. It is desirable to prepare the bate a day or two before it is intended to be used, in order to al-

low it time to ferment. The hides should remain in this bate, often airing and handling them, until they become reduced to their natural thickness and as soft as when green, usually requiring from two to six days, according to the nature and thickness of the hide. They should then be rinsed in soft water, and at least once thoroughly worked over the fleshing-beam. Thick hides will require to be rinsed and worked a second time, when they are ready for tanning. The ooze for this purpose is prepared as follows: Into ten gallons of warm soft water (not hot enough to scald) stir one peck of oatmeal, (or, as an equivalent, one pound of starch,) and let it stand in a warm room till fermentation takes place. Then add to the foregoing five pounds each of borax, saltpeter, and common salt, and three pounds of commercial sulphuric acid, well stirring the whole mixture. The hides are then placed in the ooze and handled in the usual manner, the oftener the better, the lightest hides becoming sufficiently tanned in from four to twelve hours, while calf-skins require a longer period, usually about forty-eight hours. The ooze properly prepared has a sour, pungent taste, sharper than the keenest vinegar, but not sufficiently strong to cauterize the tongue or injure the hands while handling the hides. If, while the hides are in the ooze, it should become much reduced in strength below this test or standard, it should be strengthened in the following manner: Remove the hides from the tub or vat, and then strain the ooze to remove the meal, which is now worthless, and add to the old liquor oatmeal, salt, acid, and saltpeter, as before.

Hides heavier than calf-skins are first handled in the same ooze as that before described for lighter hides for from four to ten days, after which they are put in a second ooze prepared as follows: To forty gallons soft water one-half bushel fermented oatmeal or three-fourths pound of starch, ten pounds *Terra japonica* or two bushels of common sumach ground, and composed of the bolls or balls, leaves, and stems of the same year's growth, gathered when ripe and before frost, (or the same may be boiled in soft water and the decoction used,) one-fourth pound alum, one pound of salt, and two ounces saltpeter. In this second ooze the hides are well handled for twenty-four

hours, when one pint of corncob-ashes should be slowly added and thoroughly stirred into the mixture, where the hides should be allowed to remain four days. We then make another addition of one-half pound alum, five pounds of *japonica* (or one bushel of sumach prepared as before stated) to the ooze, in which the hides should then be aired and handled until they are properly tanned. The more frequently handled the sooner and more perfectly will the process be completed.

After the hides are tanned they should be rinsed in soft water, and then washed in a suds or mixture of ten gallons soft water luke-warm, one ounce borax, one ounce sal-soda, and one gill of soft soap, and the suds then beamed or "slicked" out, when they are hung up to half-dry. They are then finished and prepared for market in the ordinary manner.

In preparing the foregoing mixtures it is not absolutely essential that the proportions of the ingredients be strictly as stated, but it is sufficient if they are substantially the same.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The successive compositions of ingredients used in the liquors for soaking, removing the hair or wool, (when required,) bating, and the tanning-oozes, in the proportions and manner substantially as herein specified, to compose one complete tanning process.

2. Specifically, the use of oatmeal, or its equivalent of starch, in the compositions and proportions of ingredients, substantially as herein set forth.

In witness whereof we have hereunto signed our names in the presence of two subscribing witnesses.

JOHN JAY JOHNSON.

E. J. MURRAY.

Witnesses for Jno. J. Johnson:

M. J. SMILEY,

OTIS H. FREEMAN.

Witnesses for E. J. Murray:

JAY HYATT,

ALBERT HAIGHT.