

# UNITED STATES PATENT OFFICE.

HENRY CHURCHILL, OF ROCHESTER, NEW YORK, ASSIGNOR OF ONE-HALF  
TO WILLIAM A. HUBBARD, OF SAME PLACE.

## PROCESS OF TANNING.

SPECIFICATION forming part of Letters Patent No. 459,993, dated September 22, 1891.

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*To all whom it may concern:*

Be it known that I, HENRY CHURCHILL, of Rochester, in the county of Monroe and State of New York, have invented certain new and  
5 useful Improvements in Processes of Tanning; and I do hereby declare the following to be such a full, clear, and exact description of the same as will enable those skilled in the art to which it appertains to practice it.

10 My present invention has for its objects to provide an improved process of tanning, whereby the leather produced will be flexible, strong, and durable, and while on account of the first and last of these qualities, especially  
15 adapted for use in the manufacture of soles, particularly for ladies' shoes, it is as well adapted for other uses as for harness, belting, and analogous purposes. These results leave the natural fiber of the hide flexible and  
20 strong, and while said fiber is sufficiently tanned to preserve it and render it tough it is not made too hard and brittle so as to be liable to crack. Further, by the use of the process calf and goat skins can be treated and a better  
25 quality of leather produced than by the old processes.

In carrying out my invention the hides are first limed, unhaired, bated, and prepared for tanning in any of the well-known ways, and  
30 are then immersed in a mixture composed of six pounds of hard soap, one-half gallon of neat's-foot oil, and seventy-two gallons of water, in which they are allowed to remain for from twenty-four to forty-eight hours, de-  
35 pending somewhat upon the character of the hides being treated. When the hides have been sufficiently soaked as above, they are removed from the mixture and their surfaces cleansed of the soap, as by rinsing them in  
40 clear water, after which they are immersed in a second mixture composed, preferably, of the following ingredients in about seventy-two gallons of water: chloride of sodium, (salt,) ten pounds; sulphuric acid, one pound; Sicily  
45 sumac or quercitron bark, fifty pounds; alum, twenty pounds, and Glauber's salt, ten pounds.

Instead of using fifty pounds of the sumac or bark above specified, I sometimes employ  
50 forty pounds of terra-japonica or equivalent material as rich in tannin with equally good

results, and I therefore regard these as equivalent materials and proportions.

This mixture should be strengthened from time to time, as the hides absorb its strength until they are sufficiently tanned, which will  
55 be with ordinary heavy hides in from two to four weeks and for light hides considerably less, the proper time being readily apparent to one skilled in the art, and the hides should of course be properly handled in the mixture. 60

After the removal of the hides from the tanning solution the surface of those designed for the soles of boots and shoes should be scoured to secure a smooth grain, and after  
65 partial drying or in a sammied state have its surface reset and be oiled moderately with neat's-foot oil and then dried, when the leather will be found to be exceedingly tough and much more flexible than when tanned by the  
70 ordinary processes, which latter using tan-bark alone render the fiber stiff and hardened, while by my process the natural flexibility of the hide is retained and yet it is thoroughly tanned and preserved, the tannin giving the solidity required. 75

In treating calf-skins I first tan them as described, then rinse them in a mixture of soap and water, and afterward apply a light coat of oil and dry them. After being thus dried  
80 they may be dampened with a mixture of soap and oil and sufficient water to form a thin mixture, then are skived, and after being packed down for a time the skins should be milled, being moistened with the same soap-  
85 and-oil mixture, and when taken from the mill be set out, stuffed, oiled, and finished in the usual manner.

In treating light skins—such as goat and sheep—which are to be left white, the tannin must be left out of the second solution, and  
90 after being placed in the first or soap mixture, as stated without the tannin, should be rinsed in the soap and dried, then dampened and milled, then dried, and worked according to the use for which they are designed. Even  
95 in the treatment of these skins where it is desirable to have a tan surface they may be dipped for a few minutes in the solution containing tannin until the proper color is obtained, or they may, if desired, be treated in 100

any other way to produce this tan or other colored surface.

5 In the above formula I have given what I regard as the best proportions of the ingredients; but a slight variation from these will not materially alter the result; also, the time necessary for the hides to remain in the solutions will, as stated, depend upon their character somewhat.

10 I claim as my invention—

1. The herein-described process of treating hides, consisting in first subjecting them to the action of a mixture of soap, fatty oil, and water, and then with a solution of chloride of

sodium, sulphuric acid, alum, and Glauber's salt, substantially as described. 15

2. The herein-described process of tanning hides, consisting in first subjecting them to the action of a solution in water of soap and fatty oil, and then to the action of a solution in 20 water of chloride of sodium, sulphuric acid, tannin, as sumac or terra-japonica, alum, and Glauber's salt, substantially as described.

HENRY CHURCHILL.

Witnesses:

FRED F. CHURCH,  
WM. A. HUBBARD.