

UNITED STATES PATENT OFFICE.

WILLIAM MAYNARD, OF SALEM, MASSACHUSETTS.

IMPROVEMENT IN PROCESSES FOR TREATING HIDES AND SKINS.

Specification forming part of Letters Patent No. 136,082, dated February 18, 1873.

To all whom it may concern:

Be it known that I, WILLIAM MAYNARD, formerly of Leominster, Herefordshire, England, but at present residing in Salem, in the county of Essex and State of Massachusetts, United States of America, have invented a new and useful Improved Process for Treating Hides and Skins, of which the following is a full, clear, and exact description:

This invention consists, first, in softening and plumping hides or skins, or pieces of the same, by subjecting them to the action of a sulphurous-acid gas in water; second, in liming hides or skins, or pieces of the same, by using lime in water, together with sulphurous acid, the two acting together upon the hide to decompose the sulphur of the hair-bulb, loosening the hair for being afterward depilated; third, in drenching or purging hides, or pieces of the same, after being limed in any suitable manner, by placing them in a bath of pure water impregnated with carbureted hydrogen or carbonic-acid gas; fourth, in tanning hides and skins, or pieces of the same, previously treated in any suitable manner, to be tanned by the use of sulphurous acid. The gases are admitted to the vats containing the hides and tanning material; the sulphurous acid is admitted from time to time to swell or plump the hides, and also prevent flattening; fifth, in currying tanned hides, skins, &c., or pieces of the same, by the use of muriatic or hydrochloric acid gas, in combination with soda or ammonia, forming a neutral salt.

In liming hides, skins, &c., or pieces of the same, by the use of lime in water, together with sulphurous acid, the lime seizes hold of the gelatine and oleaginous matter of the hide, producing a saponifying effect or soapy feeling to the hide, when introducing sulphurous acid, or the sulphur and hydrogen attack the hair-bulbs, decomposing the sulphur contained in them, loosening and releasing the hair preparatory to depilation.

Heretofore, liming hides has been done by the use of lime simply, or lime and sulphur, potash, soda, arsenic, &c., alone or in combination, the time employed being from twenty-four hours to twenty-four days, the quickest process under the old method being always attended by injury to the workman and the hide; whereas by my process hides are ren-

dered fit for depilation in from two hours to two days, at a less expense and without injury to any one or anything. The disgusting effluvia arising from the use of oxidate of ammonia, obtained from the dung of animals, is also under my process obviated.

In drenching hides, skins, &c., they are placed in water which is impregnated with carbureted hydrogen, the hydrogen combining with the hides and the carbon with the lime, the water being strongly agitated. Carbonic acid may be employed in lieu of carburetted hydrogen, and freed from lime after each operation.

In tanning and bleaching hides, or pieces of the same, with the use of sulphurous acid, the gases are admitted to vats containing tannin material at suitable stages of the process. In the primitive stages the sulphurous acid is used from time to time, for a month, to prevent flattening and to promote and preserve the plumpness. The action of the sulphurous-acid gas upon the hide is to soften its gelatine and fibers, and thus render it more sensitive to the action of the tannin, which effect it further increases, and so far, the sulphurous-acid gas combines with its affinities in the hide, which affinities are carbon, nitrogen, and sulphur, causing the more elective affinities of the tannic acid and its extractive with the hide. Heretofore, in the ordinary operation of tanning, water has simply been the medium additional to the tannin extract.

In currying hides the action of the muriatic or hydrochloric acid gas and soda or ammonia produces a partial decomposition of the fat used, causing it the more easily and homogeneously to unite and combine with the water, and the affinities of the artificial fat to unite with the gluten, gelatine, and fiber, both animal and vegetable, and with the extractive or coloring matter of the tanned hide; but such process will be the subject-matter for separate Letters Patent.

The hydrated sulphurous-acid gas employed is manufactured as follows: I first burn, in a retort or pot placed in an oven, a certain amount of sulphur, the fumes of which are conducted, by means of a tube, into a receptacle provided with such appliances as shall best bring the aforementioned fumes into direct contact with the water, whereby the sulphur-

ous acid combines with the water, which afterward runs off into such suitable vessels as may be considered best fitted for the purpose. This process and apparatus are made the subject-matter of separate Letters Patent. A further detailed description is therefore deemed unnecessary.

In the manufacture of the carbonic acid I employ a suitable vessel for generating such gas by means of sulphurous acid and chalk.

Having thus described my improved process of treating hides and skins, &c., I shall state my claims as follows:

1. The process of softening, plumping, and bleaching hides, or pieces of the same, skins,

&c., by the means of sulphurous-acid gas, substantially as described.

2. The process of liming hides or skins, &c., in the manner and by the means of the materials, substantially as described.

3. The process of drenching or purifying limed hides, skins, &c., substantially as described.

4. The process of tanning hides by using, in combination with the tannin extract, sulphurous-acid gas, substantially as described.

WM. MAYNARD.

Witnesses:

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