

# UNITED STATES PATENT OFFICE.

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## DEPILATORY.

SPECIFICATION forming part of Letters Patent No. 599,812, dated March 1, 1898.

Application filed February 20, 1897. Serial No. 624,466. (No specimens.)

*To all whom it may concern:*

Be it known that I, ALBERT H. STONE, a citizen of the United States, residing at the city of New York, in the county of New York and State of New York, have invented a new and useful Depilatory, of which the following is a specification.

In treating skins and hides for the removal of the wool and hair and in preparation for tanning it is necessary to use only such agents and processes as will produce perfect leather and good wool or hair and as will operate uniformly under varying conditions of heat and cold and of the weather.

Very many substances are known to possess depilating properties. Sulfid of sodium possesses these properties in such a marked degree that many attempts have been made to use it either with or without an admixture of other ingredients. Such admixtures were not true chemical combinations, and at best resembled solutions or emulsions. However, sulfid of sodium of sufficient strength to remove hair and wool tends to destroy the structure of the skins and also to heat and rot them, particularly in summer or in a warm room or factory. Moreover, the mixtures or solutions referred to give rise to the formation of scurf or scud, which sticks or gums and dries on the wool or hair, making it sticky or lumpy, and thus unfitting it for carding and spinning.

I have discovered that certain known depilatory and other materials of peculiar chemical composition, hereinafter more fully set forth, when at least in part chemically combined by heat eliminate the disadvantageous features of sulfid of sodium, greatly increase its depilatory power, and constitute a depilatory having a semisolid or viscous consistency adapted to produce perfect skins and wool or hair, and also a true grease contradistinguished from a hard scud. This grease readily melts during the drying operation and imparts weight and softness to the wool or hair and lubricates it, so that it ranks with comparatively high grades, being almost identical with sheared or sweated wool. At the same time the skin or hide is perfect and the operation is sure and free from danger of loss by destruction of the hides or skins or wool or hair.

My improved depilatory consists of sixty parts of so-called "hydrated sulfid of sodium"—that is, sulfid of sodium containing polysulfids of sodium—fifteen parts of calcium oxid, ten parts of chlorid of sodium, five parts of barium oxid, five parts of pure sulfur, and five parts of powdered charcoal, more or less. Sulfid of sodium containing polysulfids may be obtained from sulfur and sulfid of sodium by the application of heat or boiling, or the hot liquor or "hydrated sulfid of sodium," as it is commonly called, obtained from black ash in the manufacture of sulfid of sodium and prior to the usual evaporation or dehydration contains such polysulfids and may be used. The last two ingredients may be omitted, and in such case substantially fifteen parts of chlorid of sodium and substantially ten parts of barium oxid are employed, although the best mode known to me of carrying my invention into effect is to use sulfur and charcoal along with the other ingredients. To these ingredients in a subdivided state and in substantially the proportions specified is added hot sulfid of sodium containing polysulfids in solution, and the mixture is subjected to a considerable degree of heat—for example, 200° Fahrenheit, more or less—with the result that chemical combination takes place. As a result the excess of sulfur of the polysulfids of the hot sodium-sulfid liquor combines with unslaked lime or barium oxid, or both, thus causing the polysulfid of sodium to give up its excess of sulfur to the calcium or barium, forming barium sulfid or calcium sulfid without lessening the amount of normal sulfid of sodium present. The proportions mentioned, as well as those that should be employed, are calculated to cause the mass to undergo chemical union under the action of heat and to harden quickly into a viscous or pasty substance of somewhat the consistency of asphalt. The hardening of this mass prevents any chemical change which might occur if the material were in a moist condition prior to its intended use. The proper consistency may be attained by evaporation.

From the foregoing description it is apparent that the application of heat results in chemical combination of some of the ingredients. Whether or not others of them enter into the combination I am not advised and



cannot state. However, the occurrence of chemical combination is evident from the foregoing description and from the action of the ingredients, which when brought together in the manner described give every evidence of the presence of chemical combination. The ingredients, chemically combined and hardened as described, may be readily transported and preserved or stored for use. For the latter purpose they are thinned with water, whereupon the calcium sulfid is decomposed into calcium sulfo-hydrate and calcium oxyhydrate. The latter ultimately and after the depilatory has done its work becomes calcium hydroxid or slaked lime.

In applying the thinned depilatory I spread it on the skins flesh side up and then fold the flesh side in and allow them to remain for a few hours—for example, overnight—until the depilatory has taken effect. I then treat them in the usual manner—for example, by beaming—for the removal of the hair or wool and for the accomplishment of the ordinary steps in their preparation. The calcium sulfo-hydrate above referred to is a strong depilatory and assists in the attainment of the desired result. During the treatment of the hides the sulfid of barium is decomposed in a manner substantially the same as has been described in reference to the sulfid of calcium, and thus performs a similar function. The presence of the sulfo-hydrates augments the depilating properties, and the other ingredients beneficially operate upon the hides or skins for the removal of the hair or wool. For example, the too corrosive action of sulfid of sodium is prevented, and the charcoal, when present, gives body to the thinned preparation and prevents it from running from the hides. At the same time it is antiseptic.

My improved depilatory requires comparatively little bulk of fluid to operate as a carrying body, is very adhesive to a hide or skin, and possesses very marked penetrating and depilating properties. In it the too corrosive action of sulfid of sodium is obviated, and it operates successfully and satisfactorily under

the varying conditions of weather, such as heat, dampness, and the like. It is antiseptic and non-poisonous and has no injurious, corrosive, or destructive action on the hide or skin. On the contrary, it leaves it perfect in every cell and fiber, thus enabling the tanner to make perfect leather as to weight, strength, quality, and fineness of grain. The scurf adheres to the wool or hair in the form of grease, which during the drying operation melts and lubricates the wool, thus rendering it soft and of high quality. The fact that my improved depilatory is a comparatively solid mass, in which desired chemical combination has taken place and undesired chemical combination is prevented, renders it easy of transportation and preservation and not likely to be wasted, as would be the case in use of crystalline substances. Moreover, since it has undergone chemical combination and is readily thinned with water it cannot be applied in a more or less undissolved state, as would be the case if it were crystalline and used without special care.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

The improved depilatory consisting of calcium oxid, chlorid of sodium, barium oxid, sulfid of sodium containing polysulfids of sodium, sulfur and charcoal, in substantially the proportions set forth, the barium and calcium being converted into sulfids and the polysulfid of sodium being reduced to normal sulfid of sodium by chemical combination due to heat, and the whole constituting a comparatively hard substance adapted to be thinned by water for the production of sulfo-hydrates and to give rise to scurf which lubricates the hair or wool, substantially as described.

In testimony whereof I have hereunto signed my name.

ALBERT H. STONE.

In presence of—

A. HENBACH,  
E. L. ADAMS.