UNITED STATES PATENT OFFICE.

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DYEING AND TANNING SKINS.

SPECIFICATION forming part of Letters Patent No. 622,563, dated April 4, 1899.

Application filed July 6, 1898. Serial No. 685,277. (No specimens.)

To all whom it may concern:

Be it known that I, WALTER FURNELL SYKES, of New York city, State of New York, have invented a new and useful Improvement in Dyeing and Tanning Skins, which improvement is fully set forth in the following specification.

Ordinarily skins are not subjected to dyeing agents until they are tanned. I have found that untanned skins may be subjected to the action of certain coloring-matters and then to fixing agents, as hereinafter specified, with the result of both dyeing and tanning the skins.

The invention therefore consists in a process of treating skins for the purpose of both dyeing and tanning the same.

The coloring-matters which possess the property above referred to are sulfur derivatives or compounds, such as the coloring-matter derived by treating dioxybenzenes, paradiamines, or amidophenols with sulfur and caustic soda or those obtained by treating quinone, hydroquinone, toluquinone, or pyrocatechin with sulfur and ammonia. The group also embraces the analogous bodies known generically as "cachou de Laval," derived by treating certain organic substances with sulfur, caustic soda, and an organic acid, and embraces other sulfureted coloring-matters.

According to the ordinary procedure—as, for instance, to produce logwood-black—the skin, after being tanned according to one of the commercial and well-known mineral or acid tanning processes, is subjected to the several steps of broachening, immersing in logwood, plaiting, passing through logwood, (each skin to be handled several times,) passing through black-dye bath, again through logwood, fat-liquoring the skins, putting out, brushing glycerin on grained side, and after glycerin has been absorbed brushing neat's-foot oil on grained side, and finally drying.

One of the known processes of acid or mineral tanning consists, essentially, in immersing the skins in chromic acid and afterward reducing the chromic acid absorbed by the skin to chromic oxid, this being effected by the action of sulfurous-acid gas generated in a second bath composed of sulfite, bisulfite, or thiosulfite of soda, (or potash,) with a mineral acid as a decomposing agent. The chromic acid may, however, be reduced and rendered insoluble in other ways, (as is well known,) or the skin may be caused to take up a chromic-oxid salt direct. It will suffice, however, to describe my invention in connection with the first of the mineral-tanning processes above referred to, which is that best known and most widely practiced, and from this description it will be evident to persons skilled in the art of mineral tanning that the invention can be applied in connection with other processes of the same general character.

In carrying out my process I proceed or may proceed with the treatment of the skin precisely as in ordinary mineral tanning up to and including the operation of "slating." After this operation the skin is immersed in a bath of the desired one of the specified group of coloring-matters or combinations thereof. The strength of this solution will depend on the shade desired and on the volume of the dye-bath and other considerations, as well understood by practical dyers. If, for example, the coloring-matter be that known as "Vidal black" and if a full black color be desired, a two-per-cent. solution, or thereabout, would be proper. These coloring-matters produce all shades from a light-gray, drab, or slate color to a deep black (in the case of Vidal black) or a deep brown (in the case of thiocatechin or cachou de Laval.) The next step (after washing) consists in the immersion of the skin in a chromic bath, which fixes the color. Specifically this bath may be composed of chromic acid or of bichromate of potash and a mineral acid, or any one of the known baths used in mineral tanning. The strength of this bath and the period of immersion will be such as ordinarily employed in tanning a skin. If a chromic-acid bath has been employed, the next step will be the usual treatment in a reducing-bath—such as sulfite, bisulfite, or hyposulfite of soda, and an acid—whereby the chromic compound is rendered insoluble and the tannage of the skin completed.

The finishing operations are carried on in the manner commonly practiced.

By this invention there is effected a great

saving in time, labor, steam, and materials, as well as economy of space. Furthermore, it is found that dyeing with the group of colors specified previous to tanning brings the skins into a better condition for the latter operation than when the skins are subjected to the chromic bath immediately after slating. It is also found that a faster color is produced than by ordinary methods, the color not being affected by acids or alkalies and being less affected by sunlight and exposure tests. It is also found that in the finishing operation a saving is effected in that less glycerin and oil are required to impart suppleness to the skin. Moreover, the skin itself is stronger and more durable.

The above-mentioned colors work in combination with each other, producing a great variety of shades. They may also be employed as a mordant for other colors where "topping" is required. Fancy shades, which they will not produce alone or in combination, can be obtained by dyeing, as above described, and then topping with vegetable or anilin colors, with a corresponding economy in cost and a corresponding improvement in the quality of the leather.

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

1. The herein-described process of dyeing and tanning skins, by subjecting an untanned skin first to a solution of a sulfureted coloring-matter such as herein specified, and then to a bath containing a chromic compound, as set forth.

2. The herein-described process of dyeing and tanning skins, by subjecting an untanned skin first to a solution of a sulfureted coloring-matter such as herein specified, and then to mineral tanning agents, as set forth.

3. The herein-described process of dyeing and tanning skins, by subjecting an untanned skin first to a solution of a sulfureted coloring-matter such as herein specified, then to a bath containing chromic acid, and then to a reducing bath such as hyposulfite of soda and an acid, as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WALTER FURNELL SYKES.

Witnesses:
WM. M. HALL,
HENRY J. KENNEY.