

# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN COMPOSITIONS FOR BLEACHING AND STUFFING LEATHER.

Specification forming part of Letters Patent No. 12,368, dated February 6, 1855.

*To all whom it may concern:*

Be it known that I, L. WOODBURY FISKE, of Louisville, Jefferson county, Kentucky, have invented a new and useful Improvement in Bleaching and Stuffing Leather; and I hereby declare that the following is a full, clear, and exact description of the nature, object, and modes of operating my said improvements, to wit:

The nature of my invention consists in an improved mode of bleaching and stuffing leather by using certain compounds made of ingredients, in proportions, and according to directions hereinafter to be described, in a manner to be specified.

The object of my improvement is, first, to save from twenty to eighty per cent. in the cost of materials for the finish; second, to save from one to three hundred per cent. on the time hitherto required in these processes; third, to increase the fairness, weight, and durability of the leather; fourth, to enhance the market value of each side or skin finished from sixty to one hundred per cent.; fifth, to enable ordinary workmen to effect results hitherto requiring the most expert workmen; sixth, to enable ordinary tanners easily and safely to produce fair leather of the best quality in the hottest summer weather.

Its operations consist in taking all sorts of hides and skins designed for finish, after tanning, and subjecting them, first, to shaving and scouring; second, to bleaching, warm or cold; third, to stuffing or finishing, according to the following-described methods, viz:

After tanning select the sides or skins for bleaching, and, if dry, dip them to prepare them for the head-knife. Apply the head-knife with as much skill as possible on the flesh side, as in the common "wax-finish." After this throw them into water and thoroughly scour them by "setting" on the flesh side with a stone and on the grain side with a slicker. Rinse them thoroughly with a brush to remove the bloom, and they are ready for the bleaching.

For warm-bleaching a set and bleach are used of the following compounds, viz:

The set is composed of four gallons of clean water at from 130° to 140° Fahrenheit to every four pounds of sulphuric acid of about the specific gravity from 1.823 to 1.847, or 65° to 66°

Baumé, one-half pound of dissolved alum, one-half pound of dissolved borax, and from three to five pounds of common salt.

The bleach is composed of four gallons of clean water at 140° Fahrenheit for every six pounds of sugar of lead and one-fourth pound of common chalk (pure) dissolved in dilute muriatic acid. This bleach and set may be prepared according to the following observations and directions: If the market demand a peculiar very pale and yellow color, to the ingredients of the bleach aforesaid must be added one pound of best starch.

To prepare the above-named ingredients for use the following is a convenient method, viz: Take four or six common pickle-jars holding about a gallon each. Pulverize the alum, borax, and sugar of lead separately. Put the quantities above given of each into separate jars. Fill the jars containing the alum and borax with hot water several hours before using. Fill the sugar of lead jar about twenty or thirty minutes before using. Pulverize the chalk in a mortar, put it into a jar with a pint of water, add, pouring in a small thin stream, half a tea-cupful (about four ounces) of muriatic acid, agitate the jar for a few minutes, and fill it with warm water. Every four dozen of bag-leather will require about two pounds of alum, two pounds of borax, and a proportionate quantity of the other ingredients, as above named. Care must be taken, when the ingredients are likely to be exhausted from the jars, to have them replenished in good time to be ready when required for use. This is especially necessary with the sugar of lead, which jar ought on that account, when used out of, to be refilled half-full of sugar of lead and filled up with hot water as soon as the first proportions have been taken from it. Care should be taken when the first tub of set is prepared to taste it, so as to be able to watch and preserve its acid strength by tasting it from time to time as the work goes on, and when this strength is observed to decrease to strengthen it up again by pouring in sulphuric acid. These general proportions observed will produce the best results with perfectly-tanned leather that has been well managed; but imperfections in tanning, cleansing, or scouring will require more or less strengthening up of the bleach and set



tubs, hereinafter named, thereby varying slightly and in a manner easily to be acquired by experience these proportions.

For cold-bleaching the following are the preparations, viz: Several hours before required for use dissolve in separate jars, as described for warm-bleaching, two pounds of alum, two pounds of borax, and, a half-hour before using, six pounds of pulverized sugar of lead. In a fourth jar put one pound of pure pulverized chalk and a pint of clean water. Pour in about a half tea-cupful (four ounces) of muriatic acid, agitate it for a few minutes, and pour in another pint of water. Have four stone or glazed earthenware crocks about twelve inches broad and four inches deep, numbered, for convenience of reference, 1, 2, 3, and 4, respectively, and for each a large clean scrubbing-brush that will readily go into it horizontally. In No. 1 prepare the set by filling it two-thirds full of clean, soft, cold water and pouring in for every two quarts of water about the half of a small tea-cupful of sulphuric acid. In No. 2 put half of the solutions of alum and borax above directed to be prepared, adding a pint of water. In No. 3, after stirring, pour from the solution of sugar of lead enough to fill the crock about two inches deep, so that the brush can be perfectly saturated by dipping in it. Into No. 4 put a pint of water and half of the chalk-mixture made as aforesaid.

Great care must be taken, after a few hides have been bleached, to strengthen up the solutions in the different crocks from the jars, which to that end must be kept duly replenished. This will be especially necessary with the sugar of lead, which is consumed much faster than the other ingredients.

The mode of operating in the warm-bleaching is as follows, viz: The shaving and scouring having been done, the bleach and set prepared as aforesaid, and three or four gallons of each compound put into a tub of convenient size and shape (which may be flaring and a little larger than a half-barrel) for handling a single skin at a time. A large tub containing from eighty to one hundred gallons of clean water is placed near them, the water, the bleach, and the set being all at about the temperature of 140° Fahrenheit. Take a single side or skin, immerse it in the hot water, plunging it up and down two or three times quickly, and withdraw it. Immerse it in the set-tub in the same manner. Take it out and immerse it in the bleach-tub and withdraw it in the same way. Continue to immerse thus alternately in the set and bleach until the color snits; then hang up and "sammy"—that is, partially dry—and the hide or skin will be ready for stuffing.

Care must be taken to preserve the set at about the temperature of 140° Fahrenheit, and when it falls much below that a bucket or porcelain-lined kettle full should be dipped out of the tub and heated with steam pipe or fire and poured back until the temperature is restored.

The bleach may be allowed about 130° Fahrenheit, but, if it falls much below that temperature, should be warmed up as directed for the set.

Great care should be taken in strengthening up the bleach and set to preserve the original strengths and proportions of the ingredients, and when from defects in the preliminary processes on the hides or bad management these proportions are lost the mixtures in the tubs should be renewed.

If the strengthening-up be properly attended to every five or six sides, from four to six dozen may easily be bleached without emptying the tubs.

In all the manipulations the skins should be carefully kept from touching anything that could soil or stain them.

After the last bleaching dip a different shade may be given by immersing the skin gently in clean cold water and hanging it out, as before said.

The operations of cold-bleaching are: Having the crocks containing the solutions prepared and numbered, with the brushes, as hereinbefore described, take the sides, after shaving, setting out, scouring, and rinsing, one at a time, and stretch them on the table with a fine copper "slicker" or stretching-iron, always taking care to smooth with the grain. After stretching take the brush saturated from crock No. 1 and apply it with a smooth even stroke over the surface of the skin. Then give the skin a light coat in the same manner from No. 4. Give next a coat from No. 2. Finish with a coat from No. 3. Hang up and sammy or partially dry, and it is ready for the finish.

Care must be taken to observe the directions heretofore given about strengthening up the mixture in the crocks.

The foregoing operations are for thoroughly prepared hides; but a little observation and experience will readily enable the workman to adapt them to the various qualities and imperfections of the skins, so as to produce a fine permanent color of any desired shade.

Having by either of these bleaching processes produced the requisite color, the next step is the stuffing and finishing.

The mode of preparing the stuffing for the flesh and oiling for the grain side of the skin is as follows, viz:

*For the stuffing of the flesh side.*—For every three gallons of common stuffing take one-fourth of a pound of finely-powdered alum, one-fourth of a pound of finely-powdered borax, one-fourth of a pound of finely-powdered sugar of lead, dissolve them in a quart of hot water, and allow the solution to cool. Mix this solution with one pound of superfine flour to the consistence of thin pudding. Dissolve a half-pound of gum-tragacanth in hot water to the consistence of thick mucilage. Put into it a table-spoonful of alcohol. Of this mixture take a half tea-cupful and mix well with the other ingredients above named.

*For the oiling of the grain side.*—For one



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quart of tanner's oil take one small tea-cupful of solution of alum, borax, and sugar of lead, made as above described, and mix them well together.

Having the stuffing and oiling thus prepared, the following is the mode of applying them: Set out or stretch smoothly with a copper slicker on the flesh side. Lay on an even coat of the stuffing prepared as aforesaid, stuffing the flanks and light places lightly. Fold and pile up in a clean place until a dozen skins are stuffed. Set these out on the grain side, moving the tool over the various parts of the side, always with the grain. Wet the surface with a fine sponge dipped in clean cold water with a light, even, straight motion. Oil lightly with a fine clean sponge dipped in the oiling prepared as aforesaid. Cut slits in the edges, hang up with strings carefully, to dry. When dried sufficiently apply the stuffing as before. Then pommel, cleansing off the stuffing from the tool on the side of the vessel, smoothing out any inequalities in the stuffing caused in setting out the grain side, and suspending. Be careful to have the corners of your stone and slicker round, smooth, and clean,

and not to stop the motion of the tool on the grain of the leather. When dry, trim, roll up, grain sides together, cover them with coarse cheap cloth or paper, and they are ready for the market.

Having thus explained the nature and object of my said improvement in bleaching and stuffing leather and the processes and operations thereof, so that persons skilled in the art of currying can well understand and perform the same, I now declare that I do not intend to claim the use of the ingredients therein named separately or in other combinations employed for the same or analogous purposes; but I claim—

The improved mode of bleaching and stuffing leather before described by using the bleaching and stuffing compounds, made of the ingredients, or their equivalents, in the proportions, and in the mode specified, substantially in the manner and for the purposes set forth.

L. WOODBURY FISKE.

Witnesses:

ALEX. DUVALL,

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