

UNITED STATES PATENT OFFICE.

JEHU BRAINERD, OF CLEVELAND, OHIO.

IMPROVEMENT IN PROCESSES OF COLORING SKINS AND LEATHER.

Specification forming part of Letters Patent No. **33,331**, dated September 24, 1861.

To all whom it may concern:

Be it known that I, JEHU BRAINERD, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented new and useful improvements in coloring or dyeing skins black and various shades of a lighter hue; and I do hereby declare that the following is a full and complete description of the ingredients used and the manipulations thereof.

The nature of my improvement relates to the use of the protochloride of iron in solution as a basis of a color for skins that have been previously subjected to the action of tannin, the advantages and benefits whereof are hereinafter stated.

The skins to be colored should first be subjected to the action of a solution of tannin until this acid has combined to a greater or less extent with the gelatine of the skin, and thus receive the characteristic color communicated to skins by a common solution of tannin, or the skins may be thoroughly tanned. In either case they are ready for the next step in the process. I now prepare an iron liquor by dissolving metallic iron in pure hydrochloric acid of the shops at a temperature of about 80° Fahrenheit, until all effervescence ceases, leaving metallic iron in excess. In this process the hydrochloric acid is decomposed, setting the hydrogen thereof free, and forming by the union of the chlorine and iron the protochloride of that metal. I now take a fluid ounce of this saturated solution of iron and dilute it with about six gallons of pure soft water and immerse the skins (prepared as above) therein for a period of about four or five minutes, keeping them in constant motion; or the dilute iron liquor, prepared as above, may be applied to the grain of the skin with a brush. From this iron-liquor bath the skins should be immediately transferred to a bath of clean water and thoroughly washed, in order to free them from any hydrochloric acid that may have been formed by the decomposition of the protochloride of iron by this latter element entering into a new combination with the tannin; or they may be subjected to the action of a bath made slightly alkaline with ammonia to neutralize any free acid formed as above.

The strength of the iron-liquor, as above stated, will be sufficient to make a full jet-black color, but exposure to the air may be necessary to produce the finest tone. A day or two, however, of such exposure will be sufficient.

A weaker iron-liquor than that before named will give a correspondingly lighter shade of color.

Skins that have been thoroughly tanned may by immersion in this iron-liquor be colored through their entire thickness.

If it is desirable to color only the surface of the skin, it should be set out upon the table while wet and the iron-liquor applied, as hereinbefore stated, by means of a brush.

The manipulations in this process may be varied as follows without essentially changing the nature of the invention. The skins to be colored may be first subjected to the action of the protochloride of iron, and subsequently to the action of tannin; but this method is less economical than the former as regards the tannin.

The advantages of the herein-described mode of coloring skins may be stated as follows:

First. The expense in material, time, and labor is less than that of any other preparation of iron.

Second. The color is more permanent and beautiful.

Third. The texture and strength of the skin is not injured thereby.

In the use of other soluble salts of iron for this purpose the integrity of the skin is to a greater or less extent destroyed. This is especially true as regards the use of the proto-sulphate of iron, (copperas.) The minutest quantity of free sulphuric acid exerts its destructive influence upon the fibrinated gelatine of the skin. The same is true of the nitrate and other soluble salts of iron, but to a less degree.

The acetate of iron, which is frequently used, is also prejudicial, having a hardening and decomposing tendency. Acetic acid, being a solvent of gelatine, and at the same time being potent to break up the chemical union between the gelatine and tannin, (in leather,)

renders tanned skins, or partially - tanned skins, hard and brittle.

This improvement embraces a general freedom from all the objections above enumerated.

What I claim as my improvement, and desire to secure by Letters Patent, is—

The herein-described use of the protochloride of iron, in combination with tannin, substantially as and for the purpose specified.

JEHU BRAINERD.

Witnesses:

EDM. F. BROWN,

T. T. EVERETT.