UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN THE PROCESS OF MANUFACTURING ARTIFICIAL LEATHER FROM WOOLEN OR VEGETABLE FABRIC.

Specification forming part of Letters Patent No. **187,611**, dated February 20, 1877; application filed July 10, 1876.

To all whom it may concern:

Be it known that I, AMBROSE G. FELL, of the city, county, and State of New York, have invented a new and useful Improvement in Artificial Leather; and that the following is a full, clear, and exact description of the same.

This invention is in the nature of an improvement in artificial leather; and the invention consists in the production of artificial leather from textile fabrics, felt, or paper, by treating such material with water, gelatinous matter, glycerine, protosalts, sulphuric acid, and nitric acid, in the manner hereinafter specified.

To produce my leather, I take for a foundation any suitable textile fabric, felt, or paper, and treat it with a compound consisting of the following elements, viz: Water, three (3) parts, by weight; glue, one (1) part, by weight; glycerine, forty (40) per cent. of the glue. A mixture of protosulphate of iron, nitric and sulphuric acids is also added in such proportion as to allow the salt of iron therein contained to represent about five (5) per cent. of the glue.

The relative proportions of the sulphate of iron, nitric acid, and sulphuric acid are such as to convert the protosalt into a persalt of iron, for the reasons hereinafter set forth, and no excess of acid must be used for this purpose. The proportions to be used are: Sixteen parts protosulphate of iron; sixteen parts of water; three parts of sulphuric acid; four parts of nitric acid—amount of a nitrate capable of yielding its acid.

The manner of proceeding is as follows: The glue is allowed to soak in its proportion of water until entirely softened. The glycerine is next added, and the mixture heated until entirely dissolved. Then add sufficient of the above iron compound to equal five (5) per cent. of the glue. When well mixed any desired coloring-matter is added to produce the desired tint.

The mixture is then ready for use, and may be applied either directly to the surface of the textile fabric, felt, or paper; or it may be coated on another surface and transferred to the desired backing material by pasting or cementing the same to the coating, and then removing both together.

I do not wish to confine myself to the use of glue in the above-described compound; but any form of gelatine may be employed. Neither do I confine myself to any of the above-mentioned proportions, for they must of necessity be varied to suit different purposes.

It is evident from the above that the described mixture of sulphate of iron and sulphuric and nitric acids is employed to produce a persulphate, and the reason a persalt is not at first used is, that the persalt acts immediately on the gelatine, rendering it insoluble, and it is therefore impossible to apply it in the manner stated; but by using the described mixture the persalt is gradually produced by chemical interchange of elements, thus allowing ample time for the utilization of the compound before its precipitation by the action of the iron salt.

It is obvious that any other preparation capable of yielding a persalt of iron would answer the purpose equally well, providing its action is sufficiently slow to admit of using the gelatine before its precipitation.

The maximum insolubility and hardness of this artificial leather is not arrived at in less than two or more weeks.

The material produced by this process is very durable, pliable, and leathery, so much so that when grained it can hardly be told from real leather.

It may be made with its surface either plain or ornamental.

If it should be desired to hasten the toughening and insoluble features of the material, the same can be accomplished by heat; but said heat should not exceed 350° Fahrenheit.

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

The process of manufacturing artificial leather which consists in spreading upon the surface of animal or vegetable fabric a mixture of gelatinous matter, glycerine, water, protosulphate of iron, sulphuric and nitric acids, substantially as described.

AMBROSE G. FELL.

Witnesses:
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