

# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN ARTIFICIAL LEATHER.

Specification forming part of Letters Patent No. 21,721, dated October 5, 1858.

*To all whom it may concern:*

Be it known that I, WILLIAM KEMBLE HALL, of West Hoboken, in the county of Hudson and State of New Jersey, at present residing in London, have invented a new and useful composition of matter which may be used as a substitute for leather; and I hereby declare that the following is a full and exact description of the mode and manner by which it may be manufactured.

The nature of my invention consists in combining the chemical constituents of leather, procurable at a comparatively cheap rate, to form a substance resembling leather and applicable to the manufacture of boots and shoes, harness, trunks, and other purposes for which leather is generally used. The gelatine and fatty matters of the skin or hide are represented or replaced by glue and grease, and the tannic acid and mucilaginous matters of the tanned leather by catechu or terra-japonica. To accomplish their combination with water as the cheapest possible solvent, the fatty portion of the composition is used in the modified condition of soap, which occasions its solubility in water. Resinous soap in the stage of partial manufacture in which it possesses a ropy, tenacious character is preferable. Where the artificial leather should possess stiffness and rigidity, the most common and crudely prepared glue may be used; but if flexibility is desired care should be taken that the gelatinous matter of which the glue is composed has not been subjected to the undue heat indicated by a dark-brown color approximating to black. Where the glue may be specially prepared the gelatinous solution should not be boiled down to the density requisite for solid glue, thus preserving the vitality of the gelatine, which might otherwise be sacrificed in obtaining merely a cement. Care must be taken that the solution of catechu does not come in contact with iron, as the tannic acid

would be decomposed and resolved into a black dye, and when it is completed it should be allowed to settle, that it may be easily separated from the earthy and other impurities with which in a commercial state it is usually somewhat contaminated. The solution of soap, glue, and catechu should be made separately in warm water, and after combination should be subjected for a few minutes to a gentle simmering heat not exceeding 200°. It should have the proportions of about one pound of soap, one pound of catechu, and one quarter of a pound of glue in a gallon of water, and these proportions may be modified, as previously suggested, to suit the purpose designed. With this "solution of leather," as it may be termed, I impregnate a suitably woven or felted fabric, which is subsequently passed through a solution of alum or other similar reagent, by which the entire material and its respective component parts are rendered insoluble in water. There is therefore no destructive action exercised by water or dampness upon this material, although no expensive oils or compositions of india-rubber are used in its manufacture. The fabric known as "undressed mole-skin," which is a cheap, strong twilled manufacture with a napped surface, is peculiarly applicable to this purpose.

The surface of the artificial leather may be dressed with the ordinary dubbin used by curriers, or may be enameled in black or colors in the manner practiced with genuine leather.

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

The combination of the chemical constituents of leather or their equivalents, substantially as hereinbefore described, for the purpose of forming a substitute for leather.

WILLIAM KEMBLE HALL.

Witnesses:

ROBT. C. GIST,  
J. B. WHEELOCK.