UNITED STATES PATENT OFFICE.

JOHN HARRINGTON, OF RYDE, ISLE OF WIGHT, ENGLAND.

IMPROVEMENT IN THE MANUFACTURE OF ARTIFICIAL LEATHER.

Specification forming part of Letters Patent No. **168,485**, dated October 5, 1875; application filed January 20, 1873.

To all whom it may concern:

Be it known that I, JOHN HARRINGTON, of Ryde, Isle of Wight, England, gentleman, have invented certain Improvements in the Production of Artificial or Imitation Leather, of which the following is a specification:

For this purpose I first take a skin of morocco or other description of leather, and take a cast impression of it in any suitable material, such as shellac or compounds thereof, mounted upon a strong metal or other plate. When using shellac as the material in which to produce the mold, I take, by preference, a cast-iron plate having a planed surface, and provided around its edge with a metal rim, standing up above the surface thereof; but this rim may be dispensed with. I then cover the plate with shellac, and heat it until the shellac covers the entire surface of the plate equally, and flush with the rim thereof, and while the shellac is still soft the leather to be copied is placed in close contact therewith, and pressed firmly upon the shellac. When the shellac is cold the skin is stripped off, and the mold is ready for use.

Having obtained a negative mold of the leather or skin, I then take strong long-fibered paper of the desired thickness, and stain or dye it any desired color, as a ground-color. I then color the surface thereof to the tint required for the imitation leather to be produced, after which I glaze the paper by passing it between polished metal plates or rollers. I then waterproof it by brushing over the surface thereof, by preference, a weak solution of shellac, either in methylated spirit or in water, as is well understood. Other descriptions of varnish may, however, be employed for this purpose. The strength I prefer to use of the shellac solution is, about one pound of shellac to the gallon of spirit or water.

In order to give a greater degree of pliability to the paper than it would otherwise possess, I apply glycerine thereto as follows: In cases where the paper is dyed or stained by immersion I mix the glycerine with the dye or stain in the proportion of about ten fluid-ounces of glycerine to a gallon of the dye or solution.

In cases where paper is stained or dyed otherwise than by immersion, I work the glycerine into the paper by brushing or otherwise applying the glycerine to the surfaces thereof; or I immerse the paper in a solution of glycerine and water, in the proportion of about two parts of glycerine to one part of water.

After the paper is prepared as above described I place a dry sheet thereof on the mold, and then, by preference, by the aid of flat hydraulic pressure, force the paper into the mold, after which the paper is removed from the mold, having a perfect resemblance on its surface to the skin or leather it is desired to imitate. India-rubber cloth or other yielding material is interposed between the pressing-surface and the paper on the mold.

If desired, more than one thickness of paper may be used in the preparation of the imitation leather, in which case I proceed either as above described or as follows: I take a sheet of paper of the color required, and lay it either damp or dry upon the mold, and pass it under rolling or flat pressure, so as to force the paper into the mold. A second sheet of paper, with gum, dextrine, starch, paste, or other suitable cement applied to its surface, is put down upon the former embossed sheet, and it also is passed under pressure, and so on, according to the thickness required, whether two, three, four, or more sheets are necessary. This being decided, the whole combination is lifted from the mold and dried, after which it may be colored upon its surface with any suitable oil or water color; or it may be bronzed or gilt, and when dry, if it is an imitation hard-grained morocco, the tips or top of the grain may be burnished, polished, or varnished, which will render the imitation perfect.

The imitation leather thus produced is rendered water-proof by brushing over each surface thereof the before-mentioned solution of shellac or other varnish.

I am aware that molds for casting plastic substances have heretofore been made of a compound of glue and wax, glue and sugar, gelatine, and also of vulcanized rubber. I therefore lay no claim to the use of either of those materials.

The objection to the use of rubber is, that it would be quickly destroyed by the molding of material containing anything of an oily na-

ture. Perfect fac-simile impressions of the leather could not be obtained. It will not permit of so much use as will molds formed of shellac. Molds formed of compositions of glue, wax, sugar, or gelatine are readily dissolvable in water, and thus would be quickly destroyed if used for molding wet paper.

By constructing my mold of shellac I am enabled to produce an inexpensive article, which will not be affected by the application of wet paper. A perfect copy of the leather to be imitated is obtained, owing to the impression being made while the shellac is in a liquid state; and the mold setting quite hard and firm, with all the peculiar designs or grain of the leather clearly marked thereon, enables impressions being taken therefrom which will always be quite clear and distinct. By reason of the hard nature of the mold thus formed, and the peculiar characteristics of the material, the molds will last a long time, pressure or fluids not having any injurious effect thereon.

I am aware that molds for use in producing fac-simile impressions of types have heretofore been constructed of compounds of shellac, tar, and sand, and of shellac, plumbago, asphaltum, and gutta-percha. I, however, find that by constructing the mold of pure shellac great advantage is obtained over those containing other materials. In the first place the mold is much more easily constructed, not requiring the mixings or grindings of materials necessary in previous efforts. Less care and labor are required in its construction, thus enabling my mold to be made at less cost than are those cited. Moreover, should my mold become broken or damaged, it can easily be remelted, and made up into another mold for further use without any loss of material. This cannot be done in the case of molds composed of compounds of shellac, tar, sand, &c., as when broken they cannot be again used, but are entirely destroyed.

Having thus described the nature of my said invention, and the mode in which I carry the same into effect, I would have it understood that what I claim is—

1. A mold made of shellac, as and for the purpose described.

2. The combined process herein described of manufacturing artificial leather by first taking strong-fibered paper, staining or dyeing the body thereof, and applying glycerine to render it pliable, then coloring the surface, glazing, and then varnishing or waterproofing, and finally placing this paper on the mold, and transferring the impression thereon by pressure, all substantially as herein specified.

J. HARRINGTON.

Witnesses:

FREDK. HARRIS,

B. J. B. MILLS.