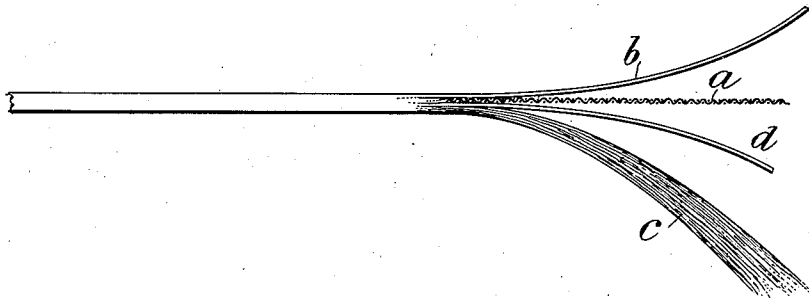


G. C. L. FOREL.
ARTIFICIAL LEATHER.
APPLICATION FILED SEPT. 10, 1910.

1,056,898.

Patented Mar. 25, 1913.



WITNESSES:

Rene A. Guine
William F. Martinez

INVENTOR :

Georges Charles Leon Forel

By Attorneys,

Fraser & Neave

UNITED STATES PATENT OFFICE.

GEORGES CHARLES LÉON FOREL, OF LYON, FRANCE.

ARTIFICIAL LEATHER.

1,056,898.

Specification of Letters Patent.

Patented Mar. 25, 1913.

Application filed September 10, 1910. Serial No. 581,445.

To all whom it may concern:

Be it known that I, GEORGES C. L. FOREL, a citizen of the Republic of France, residing in Lyon, Rhone, France, have invented certain new and useful Improvements in Artificial Leather, of which the following is a specification.

The invention has for its object to manufacture an improved artificial leather as hereinafter explained.

Large numbers of artificial leathers of some value have already been patented and manufactured, some containing simple fabrics (such, for example, as pegamoid, loreid, and pluviosine), or superposed fabrics united together by means of adhesive materials (such, for example, as pantasote), while others consist of vegetable, or animal fibers felted, or made into fleece, with adhesive materials (such, for example, as Karle leather and vulcan leather). Artificial leathers have also been made of laminated pastes. These products, however, have various serious imperfections, for instance they may be wanting in thickness, or durability, as is the case with artificial leathers consisting of fabrics, or may be wanting in flexibility, as is the case with artificial leathers made of fibers with adhesive material, or because the surface, grain, or "bloom", is not sufficiently durable, or adherent, the reasons for these imperfections being inherent to the modes of manufacture.

According to the present invention artificial leather is obtained which is flexible whatever may be its thickness and which presents a surface, grain, or "bloom", which is very durable and adherent, forming, as it does, an integral part of the artificial leather.

The manufacture of artificial leather according to this invention is carried out as follows:—The first step is the preparation of the fabric: Any suitable fabric is coated with a varnish of the desired color intended to impart to the finished product a surface having, or which can be treated to have, the appearance of leather. The fluidity, or viscosity, of this varnish should be in accordance with the texture of the fabric, or the distance apart of the threads of which it is made, so that the varnish penetrates sufficiently between the threads, but does not

pass entirely through the thickness of the fabric, but only through, say, about half the thickness of the fabric. When the fabric is of an open texture, it may be subjected first to a light preliminary dressing so as to partially fill the spaces between the threads and prevent the varnish forming the surface from passing through the fabric. If desired the coating with the varnish for forming the surface resembling leather may be completed by one application, or by two, or more, applications, provided that all the interstices, or spaces, of the fabric are stopped so that, in the subsequent operation of incorporation, by means of adhesive material, of fibers with the fabric, the said adhesive material cannot penetrate entirely through the fabric covered with varnish, but only through, say, about half the thickness of the fabric.

The next step is the intimate union of the fabric covered with its surfacing varnish with textile fibers by means of suitable adhesive material. The fabric, having been prepared as hereinbefore described, is conducted to a strong calender with steel rolls so that the side of the fabric to which the varnish has been applied is next one of the rolls, the untreated side being outermost. To the other roll of the calender a sheet, or layer, of textile fibers (which I will refer to as the fleece) is fed by means of an endless band, or any other suitable conveyer. The fabric and the fleece will thus meet between the two rolls of the calender, the distance apart and pressure of the rolls being adjusted as required. Adhesive material (the fluidity, or viscosity, of which will be in accordance with the nature of the fabric and fleece under treatment) is supplied between the fabric and the fleece, this supply of adhesive material being effected in such manner that it is carried through the rolls with, and is powerfully compressed between, the fleece and fabric so that the adhesive penetrates the fleece and partly through the fabric and the whole is formed into a homogeneous mass. The adhesive material can be applied directly by hand between the fabric and fleece entering between the calender roll, or it may be applied to the fabric by means of a suitable supplying device and scraper, or doctor, mounted on the machine

in such a position that the adhesive material is supplied to the fabric a little before it comes in contact with the fleece.

After drying in the air, the couching of the varnish surface on the fabric side is completed, if this had not been completely done before the rolling operation, and the product is grained, or ornamented in any desired way, which may be done by embossing, or other suitable, or usual, process which will impart to the surface the appearance of natural leather.

It is possible by this combination of processes to produce artificial leathers of many various kinds as regards thickness, resistance, flexibility, and other qualities by choosing, according to requirements, the most suitable fabric, fibers and adhesive. Any suitable fabrics can be used of a length and width in accordance with the dimensions of the product required. For the fleece, any animal, or vegetable, fibers can be used, these being previously carded, or cleaned, so as to free them from impurities. The fleece is supplied to the calender in layers of a depth in accordance with the thickness of the product to be obtained. The adhesive employed will vary according to the purpose for which the product is to be used, and may contain, for example, caoutchouc, gutta-percha, balata, resins, gums, gelatin, or the like, admixed, or not, with other matter. For the varnish to form the surface resembling leather in appearance, any suitable coloring matters, either mineral, or organic, may be combined with collodion, linseed-oil, gelatin, caoutchouc, or the like, in the manner usually followed in the manufacture of varnishes for artificial leather.

The process is represented diagrammatically in exaggerated form in the accompanying drawing, *a* indicating the sheet of fabric having its interstices filled with a suitable filler such as varnish, *b* the coating of gummy material, *c* the mass of fibers, and *d* the adhesive by which the fibers are united together and to the fabric *a*.

What I claim is:—

1. A process of making artificial leather, wherein a sheet of textile fabric is coated upon one side with a coating of varnish, the fluidity of which is proportioned to the mesh of the fabric, so as to fill the meshes thereof without passing through the fabric, the other side of said fabric being uncoated with said varnish, and a mass of loose fibers united to said other side of said fabric by an adhesive.

2. A process of making artificial leather, wherein a sheet of textile fabric is coated upon one side with a coating of varnish, the fluidity of which is proportioned to the mesh of the fabric, so as to fill the meshes thereof without passing through the fabric, and the other side of said fabric being un-

coated with said varnish, subsequent coatings of surfacing material applied to said coated side, and a mass of loose fibers united to said other side of said fabric by an adhesive.

3. A process of making artificial leather, wherein a sheet of textile fabric is treated with a filler for filling the meshes of said fabric, coated on one side with a varnish which passes but partially through said fabric, the other side of said fabric being uncoated with said varnish, and a mass of loose fibers united to said other side of said fabric by an adhesive.

4. A process of making artificial leather, wherein a sheet of textile fabric is coated upon one side with a coating of varnish, the fluidity of which is proportioned to the mesh of the fabric, so as to fill the meshes thereof without passing through the fabric, and the other side of said fabric being uncoated with said varnish, and a mass of loose fibers united to said other side of said fabric by an adhesive, under pressure.

5. A process of making artificial leather, wherein a sheet of textile fabric is coated upon one side with a gummy solution, the fluidity of which is proportioned to the mesh of the fabric so as to fill the meshes thereof without passing through the fabric, and the other side of said fabric being uncoated with said varnish, subsequent coatings of gummy surfacing material applied to said coated side, and a mass of loose fibers united to said other side of said fabric by an adhesive, under pressure.

6. An artificial leather comprising a sheet of textile fabric having upon one side thereof a coating of water-impervious material which passes but partially through said fabric, the other side of said fabric being uncoated with said water impervious material, and a compressed adherent mass of fibers on the other side of said fabric, said product being flexible and coherent.

7. An artificial leather comprising a sheet of textile fabric having upon one side thereof a coating of gummy material which passes but partially through said fabric, the other side of said fabric being uncoated with said gummy material, and a compressed adherent mass of fibers on the other side of said fabric, said product being flexible and coherent.

8. An artificial leather comprising a sheet of textile fabric having upon one side thereof a coating of gummy material which passes but partially through said fabric, the other side of said fabric being uncoated with said gummy material, and other coatings of gummy material upon said coated side, and a compressed adherent mass of fibers on the other side of said fabric, said product being flexible and coherent.

9. A process of making artificial leather, wherein a sheet of textile fabric is coated

upon one side with a coating of shellac, the fluidity of which is proportioned to the mesh of the fabric, so as to fill the meshes thereof without passing through the fabric, the
5 other side of said fabric being uncoated with said varnish, and a mass of loose fibers united to the other side of said fabric by an interposed liquid adhesive.

In witness whereof, I have hereunto signed my name in the presence of two sub- 10 scribing witnesses.

GEORGES CHARLES LÉON FOREL.

Witnesses:

GEORGES GERARD LEVY,
MARIN VACHON.