

# UNITED STATES PATENT OFFICE.

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PROCESS OF MAKING ENAMELED SHEETS OF FIBROUS MATERIAL.

SPECIFICATION forming part of Letters Patent No. 661,263, dated November 6, 1900.

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*To all whom it may concern:*

Be it known that I, BYRON B. GOLDSMITH, a citizen of the United States, and a resident of New York, in the county and State of New York, have invented certain new and useful Improvements in Processes of Making Enam-  
5 eled Sheets of Fibrous Material, of which the following is a specification.

My invention has reference to a new proc-  
10 ess of making enameled sheets of fibrous material, and particularly patent-leather, the object of the invention being to simplify the process and at the same time to obtain an article that is free of the defects of patent-  
15 leather made by any of the old processes in common use or that have been suggested.

In accordance with the process by which most of the patent-leather in the market is produced the leather receives first a filler com-  
20 posed of an emulsion of lampblack and linseed-oil. This is applied in a series of coats, each being allowed to dry in heated chambers and is then worked down and smoothed with pumice-stone. The linseed-oil, which with the  
25 lampblack makes the emulsion or thin paste that is applied to the leather, is ordinarily boiled with a quantity of Prussian blue mixed with it. After a sufficient number of layers of the filler have been applied, dried, and ground  
30 down with pumice-stone one or several coats of the ordinary patent-leather varnish is applied. This varnish consists, ordinarily, of linseed-oil boiled with Prussian blue. The patent-leather thus produced is rather stiff  
35 and inflexible, its surface is brittle, and cracks when the leather is bent repeatedly, as in ordinary use, especially in cold weather, and, moreover, the materials which constitute the enamel do not tenaciously unite with the  
40 leather and frequently peel off.

It has been suggested to simplify and improve the process of making patent-leather by cementing to leather splits thin sheets of zylonite; but this in practice turned out to be  
45 a failure on account of the difficulty of cementing sheets of zylonite to the leather owing to the unavoidable buckling of the zylonite, particularly when the cement is applied which is to unite it with the leather and which  
50 must be a partial solvent of zylonite, also on account of even more serious defects in the

finished article than in the ordinary patent-leather.

By my improved process both the difficul-  
ties in the making of the article and the de- 55  
fects of the article itself are avoided, as will presently appear.

My improved process consists in applying upon the surface of the leather a coat or a number of coats of pyroxylin varnish contain- 60  
ing a quantity of oil or other substance which imparts the flexibility desired and after a sufficiently heavy layer has been formed ap-  
plying a coat or coats of pyroxylin varnish, which may or may not contain oil or other 65  
substance imparting flexibility to the varnish upon a polished surface, such as glass or metal, and then cementing the varnished leather upon the varnished glass or metal or other pol-  
ished surface, and, finally, when all is suffi- 70  
ciently dry peeling the leather with all the varnished layers from the polished surface.

By a pyroxylin varnish or solution I mean all solutions containing such a quantity of pyroxylin as to give a flexible film when de- 75  
posited.

I have found that for some purposes it is of advantage to have the layer or layers of var-  
nish next to the polished surface, and which will be the exposed surface of the finished 80  
leather, contain little or no oil or other substance imparting flexibility to the varnish which will increase its hardness when so de-  
sired.

It will be seen at once that the process can 85  
be varied in many ways without departing from the principle of the invention. For in-  
stance, instead of applying all the layers except one upon the leather and the last layer upon the polished surface the process 90  
may be reversed by applying all the layers except one upon the polished surface and only one layer upon the leather and uniting them as before or generally any desired num-  
ber of layers of the varnishes may be applied 95  
upon the leather and the remaining layers upon the polished surface and the two sets united as before, or the process may be still further varied by applying all the layers upon the leather and while the last one is still fluid 100  
pressing it upon the polished surface and al-  
lowing it to dry, or reversing the order by ap-



plying all the layers upon the polished surface and while the last one is still fluid laying the leather on it and combining both by pressure.

5 It will be understood that in this process in order that the patent-leather may have the desired color pigments are mixed with one or more of the varnishes.

10 In practicing the process the following order of procedure may be observed: A polished surface of glass or metal is slightly greased with paraffin or other fatty substance, which is then thoroughly rubbed off. There will always remain an exceedingly thin film  
15 of fat upon the polished surface. Upon this glass or metal base a colorless pyroxylin varnish (which may, if desired, contain a small quantity of oil, such as castor or olive oil) or similar substance is applied either by pouring  
20 the varnish over it or by applying it with a brush. If the latter is done, more than one coat may be applied. Upon this coat of colorless pyroxylin varnish there are applied in succession a coat of colored pyroxylin varnish  
25 and a coat of clear pyroxylin varnish. When this coat of varnish has dried, there is applied either upon the varnished leather or upon the varnished glass or metal base a coat of pyroxylin varnish that is designed to  
30 serve as a cement between the two, and before this coat has dried—that is to say, while it is still in a plastic condition—the varnished leather is applied upon the varnished glass, and the two are firmly pressed together, preferably  
35 by rollers, so that all air-bubbles are expelled. When the varnish cement has become sufficiently dry, the leather, with all the varnish layers applied directly to it and to the glass, is peeled off, and the article may  
40 then be considered as finished.

The amount of oil or other substance which is used with the pyroxylin varnishes may be varied within wide limits according to the flexibility desired, and each individual coat  
45 may contain a quantity of oil different from that contained in the adjacent coats.

From the above description the practicable modifications of the process will be readily understood without further explanation. If  
50 it is desired to produce a patent-leather the outer surface of which is like that of the patent-leather made heretofore, which may be desirable for some purposes, it is only necessary to apply upon the article finished as described a coat of ordinary patent-leather varnish  
55 which may be exceedingly thin. In this case it is not necessary that the surface of the pyroxylin coat should have the same high degree of polish as is necessary when no ordinary patent-leather varnish is applied, as  
60 the patent-leather varnish gives most of the gloss and the surface under it need only be smooth.

Patent-leather thus produced is exceedingly  
65 flexible, and its surface, while sufficiently hard to prevent disfigurement by or-

dinary use, shows none of the brittleness that is found in ordinary patent-leathers.

It is obvious that the described process may be applied with equal advantage to textile  
70 fabrics and all sorts of sheets of fibrous material and that the product then obtained will be a pseudo patent-leather or enamel cloth, which is an important article of trade. In such cases, however, it will be necessary to  
75 use a number of coats, so that the coats first applied may fill up the interstices of the textile fabric and present a proper surface for the application of the final coat, which carries the polish. In conclusion I may say that  
80 the order in which the coats of pyroxylin are applied between the base and the polished surface is immaterial—that is to say, it is immaterial whether I apply all the coats to the base and press the last coat against the polished  
85 surface or whether I apply all the coats against the polished surface and then press the last coat against the base or whether I apply some of the coats to the base and some to the polished surface and then unite the  
90 two.

Having now fully described my invention, I claim and desire to secure by Letters Patent—

1. The process of enameling sheets of fibrous  
95 material of the kind described which consists in depositing on the fibrous base or on a polished surface, or on both, one or more coats of a solution containing pyroxylin, and pressing the base and polished surface together  
100 before the coat or coats are dry, to produce a flexible coating having a patent-leather-like surface, substantially as described.

2. The process of enameling sheets of fibrous  
105 material of the kind described which consists in depositing on the fibrous base, or on a polished surface, or on both, one or more coats of a solution containing pyroxylin, pressing the parts together before the coats are dry and then peeling the coated base from the  
110 polished surface, whereby the treated side of the base receives a flexible, patent-leather-like surface, substantially as described.

3. The process of enameling sheets of fibrous  
115 material of the kind described which consists in depositing on the fibrous base or on a smooth surface, or on both, one or more coats from a solution containing pyroxylin, pressing the base and polished surface together before the coats are dry, peeling the coated base from  
120 the smooth surface, and then applying a coat of ordinary patent-leather varnish, substantially as described.

4. The process of enameling sheets of fibrous  
125 material of the kind described which consists in depositing on the fibrous base or on a polished surface, or on both, one or more coats from a solution containing pyroxylin, some or all of which coats contain a substance to render the same flexible, and pressing the  
130 base and polished surface together before the coats are dry, whereby the treated side of the



base receives a flexible, patent-leather-like surface, substantially as described.

5 5. The process of enameling sheets of fibrous material of the kind described which consists in depositing on the base, or on a polished surface, or on both, one or more coats of a solution containing pyroxylin and oil, and pressing the base and polished surface together before the coats are dry, whereby the  
10 treated side of the base receives a flexible patent-leather-like surface, substantially as described.

15 6. The process of enameling sheets of fibrous material of the kind described which consists in depositing on the fibrous base or on a polished surface, or on both, one or more coats

from a solution containing pyroxylin and a substance to render the coats flexible, pressing the base and polished surface together before the coats are dry, and then peeling the  
20 coated base from the polished surface, whereby the treated side of the base receives a flexible patent-leather-like surface, substantially as described.

In testimony whereof I have signed my  
25 name to this specification in the presence of two subscribing witnesses.

BYRON B. GOLDSMITH.

Witnesses:

ADOLPH STEIN,  
BARBARA C. DINGWALL.