

UNITED STATES PATENT OFFICE.

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ORNAMENTING SURFACES.

SPECIFICATION forming part of Letters Patent No. 631,295, dated August 22, 1899.

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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 Ornamenting Surfaces, of which the following is a specification.

My invention has reference to improvements in the process of producing ornamental surfaces in imitation of marble, malachite, jasper, and other like ornamental stones or in imitation of costly woods, antique ivory, or other materials having a variegated appearance. The process is carried out by means of pyroxylin varnishes; and the invention has two objects in view—first, the production upon any solid substance—such as paper, leather, cloth, wood, metal, plaster-of-paris, or any other solid substance—of a surface having the appearance of ornamental stones, woods, &c., and, second, the production of an independent film or sheet of the same character capable of being used independently or as veneering for wood, metal, or other articles.

Prior to this invention I have ornamented surfaces with varnishes by covering the surface of any article with superimposed layers of varnishes of such consistency that they would still flow spontaneously and then placing or moving the article in such fashion that by the spontaneous flow of the varnishes lines of variegated forms and shades were produced. The process thus briefly indicated I have described and claimed in Letters Patent No. 506,394, granted to me on October 10, 1893, and while this process yielded excellent results the effect produced was entirely dependent upon the placing or moving of the article in such position or positions as to permit the two or more varnishes to flow toward the lower levels. In all cases in the practice of that old process it was necessary to produce currents of the varnishes, and from the fact that the currents of the different varnishes would ordinarily have different speeds they would be prevented from mixing to any considerable extent, and this would result in the ornamental appearance of the article.

My present invention is based upon a phe-

nomenon which I observed and the utilization of which enables me to produce far superior ornamental effects than those produced by the practice of the invention set forth in my aforesaid Letters Patent. The phenomenon which I observed was this: When a layer of "pyroxylin varnish," by which term I mean to include all solutions containing pyroxylin, is produced upon the horizontal surface of a solid body, and if without allowing this layer of pyroxylin varnish to dry another layer of pyroxylin varnish is imposed, then the whole surface gradually assumes a mottled aspect, which shows that the upper surface layer of varnish has broken up and lost its continuity and that through these breaks the lower layer of varnish has protruded. When the whole varnish coating is now allowed to dry, the surface of the article is permanently ornamented, the ornamentation being of a peculiarly pleasing character; but the design upon the surface can be greatly variegated and the ornamental effect greatly heightened by inclining or moving the article in various ways, so as to allow the vast number of differently-shaped streaks, spots, or islets to form currents which interfere with each other in a great variety of ways, and thus change the spontaneously produced mottled designs into linear designs.

I have found that the spontaneous breaking up of the upper layer of varnish only takes place when it is superimposed upon the lower layer while the latter is still in a fluid condition.

It will now be evident that I can produce an ornamental surface in a great variety of ways, but that all these ways have this in common: that there is first produced upon the surface of a solid body, or upon a portion of the surface of a solid body, a layer of pyroxylin varnish, and that upon this layer, while it is still in a fluid condition, another layer of pyroxylin varnish is superimposed. The moving of the body or the placing of it in different positions while the varnishes are still in a fluid condition may or may not be resorted to.

My improved process of producing an ornamental surface will now be readily under-

stood, and it can be easily followed by supposing that such ornamentation is to be produced, for example, upon a sheet of paper. In this case the paper may be placed upon a table and an approximately uniform coating of pyroxylin varnish is applied, and in doing so the table-top may be fixed in any position and particularly it may be fixed in a horizontal position.

By the term "pyroxylin varnish" I mean to cover any varnish containing pyroxylin. Thus, for instance, a varnish containing in solution, in addition to pyroxylin, camphor or its equivalents or essential oils or non-drying oils, or also any of the gums or resins which are habitually used for varnishes, is still a pyroxylin varnish. This fundamental layer of varnish may or may not be colored, according to the ultimate result desired; but if it is colored then the surface of the paper should first have received a preparatory coat of colorless pyroxylin varnish which when dried will cause the colored varnish to adhere well. In some instances this preparatory coat may also be colored. Immediately upon the application of the fundamental layer of pyroxylin varnish, and while it is still in a fluid condition, there is applied upon it a layer of colored pyroxylin varnish. During this process it will be observed that within a short time after the application of the second layer of varnish the latter loses its continuity, breaks up into variously-distributed and variously-shaped patches, between which the substance of the fundamental layer of pyroxylin varnish protrudes, thus forming spontaneously ornamental designs. In order to vary and heighten the ornamental effect, the table-top may be slowly inclined in one or a number of ways, or it may be rotated and at the same time variously inclined immediately or very soon after the application of the top layer of colored varnish. When this is done, each spot, patch, or islet which has spontaneously formed or which is in the process of spontaneous formation flows, each with its own particular speed, toward the lower levels of the paper, each of these currents interfering, more or less, with the other proximate currents and forming innumerable devious lines of continuously-varying width, each blending more or less with the next adjacent lines.

In this process it is unimportant in what manner the two varnishes are being superimposed one upon the other, and neither of them need be applied over the whole surface. Thus in the case of the sheet of paper which I have assumed in the foregoing description as a specimen one of the varnishes may be applied to some portion or portions of the sheet and the other varnish to other portions of the surface, and the table may then be variously inclined or moved, so as to cause one of the varnishes to flow over the other, and vice versa.

As soon as this occurs the spontaneous breaking up of the upper layer or layers takes place and the particular variegated ornamentation due to the superposition of one pyroxylin varnish upon another while the latter is still in a fluid condition is now further variegated by the particularities of these adjacent portions at which such superposition does not occur.

The difference between the mode of formation of the ornamental design in accordance with the present invention and the mode of formation of designs when the practice set forth in my aforesaid Letters Patent is followed will now be apparent. In accordance with the old process where the varnishes used are not pyroxylin varnishes and where therefore the superimposed layer of varnish does not spontaneously break up into a multitude of patches, spots, or holes no design at all is obtained unless there are differences of level between different points of the surface, so that the varnishes may flow toward the lower points. When thus flowing, the whole mass of each varnish layer is running as a coherent entity; but the portions which find a steeper grade flow faster than the others, and thus the different varnishes are forced to break up into more or less marked lines. In accordance with the present process, however, an ornamental design is obtained without difference of level; but if such difference of level is provided then each patch constitutes a separate center of motion, each following its path of least resistance, and thus a far greater variety of lines or veins is produced.

In the practice of my improved process the fundamental layer of pyroxylin varnish may be colorless or may be colored; but the superimposed layer of pyroxylin varnish must in most cases be colored in order to produce well-marked ornamental designs. It will also be apparent that I am not confined to the use of two layers of varnish, since it is quite practicable to use three or more superimposed layers of variously-colored varnishes all applied in rapid succession and while the lower layers are still in a fluid condition. According to the choice of colors the ornamental designs produced will be imitations of different ornamental stones, woods, &c.

When the ornamentation is to be produced upon flexible material—such as paper, leather, or textile fabrics—it is of advantage and often indispensable to mix a sufficient quantity of oil, such as linseed-oil or castor-oil, with the varnishes in order to prevent the breaking of the ornamental coat. This is particularly useful in the case of the manufacture of wall-papers or so-called "marbleized" papers used in bookbinding, for which purposes the process here described is specially adapted.

After the varnishes have thoroughly dried the surface may be given a higher gloss in any of the well-known ways, as by burnishing or

buffing or by the application of any of the well-known gloss varnishes, as is well understood by those skilled in the art.

It will be understood that while one mode of applying the varnish has been described a number of other modes may be practiced for coating the whole or portions of the surface of an article with superimposed layers of pyroxylin varnishes.

My invention comprises, as hereinbefore stated, the production of independent ornamental films or sheets, which, if so desired, may be made flexible by the use of oils, as above set forth. When such an independent sheet or film is to be made, it is advisable to incorporate camphor or its equivalent with the varnish, the object of same being to give the sheets produced therefrom the property of softening when heated, which allows of their being shaped to any desired form, as well as embossed and worked in the arts in a great variety of ways. In this case the process followed is precisely the same as has been described for the production of an adhering film of ornamentation except that a base of glass, metal, or other substance from which the film can be removed after it has dried is used. I thus obtain an ornamental film composed of partly-interwoven strata of differently-colored pyroxylin varnishes which are sufficiently flexible to prevent cracking or breaking when manipulated with ordinary care and which, if so desired, can be applied like ordinary veneering to curved or even angular surfaces or can be used independently for a great variety of purposes.

While this process has been described as being carried out by means of pyroxylin varnishes for all the layers, I have found by experiment that similar results are produced if pyroxylin varnish is used in conjunction with another varnish. I have also found that pyroxylin varnish can be applied first and the other varnish over it, or vice versa, but that in order to produce the peculiar characteristic effects, as well as to have the coating dry in a smooth film, at least one of the varnishes must be pyroxylin varnish. Any ordinary varnish will answer in conjunction with pyroxylin if it is of such character that it will not precipitate the pyroxylin so rapidly as to prevent its flowing.

I prefer to use varnishes that do not dry very rapidly. Instead of what is usually known as a varnish I can use any solution or emulsion of a color with a vehicle. As specimens of such vehicles I would mention alcohol, acetone, (and other ketones,) amyl acetate, and mixtures of these among themselves as well as with other liquids, such as benzene, turpentine, and oils.

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

1. The process of ornamenting articles

which consists in coating the same with superimposed layers of varnishes of different colors, one of which varnishes at least is a pyroxylin varnish, and the under layer of which is still fluid when the upper layer is applied, substantially as described.

2. The process of ornamenting articles which consists in coating the same with superimposed layers of varnishes of different colors, one of which varnishes at least is a pyroxylin varnish, and the under layer of which is still fluid when the upper layer is applied, and then placing or moving the article so as to cause the varnishes to flow in one or several directions, substantially as described.

3. The process of ornamenting articles, which consists in applying upon the same pyroxylin varnish and, while the latter is still in a fluid condition, superposing thereon a colored varnish or varnishes, substantially as described.

4. The process of ornamenting articles, which consists in applying upon the same pyroxylin varnish and, while the latter is still in a fluid condition, superposing thereon a colored varnish or varnishes, and then placing or moving the article so as to cause the varnishes to flow in one or several directions, substantially as described.

5. The process of ornamenting articles, which consists in applying upon the same colored pyroxylin varnish and while the latter is still in a fluid condition, superposing thereon a colored varnish or varnishes, substantially as described.

6. The process of ornamenting articles, which consists in applying upon the same colored pyroxylin varnish and while the latter is still in a fluid condition, superposing thereon a colored varnish or varnishes, and then placing or moving the article so as to cause the varnishes to flow in one or several directions, substantially as described.

7. The process of ornamenting articles, which consists in applying upon the same pyroxylin varnish and, while the latter is still in a fluid condition, superposing thereon a colored pyroxylin varnish or varnishes, substantially as described.

8. The process of ornamenting articles, which consists in applying upon the same pyroxylin varnish and, while the latter is still in a fluid condition, superposing thereon a colored pyroxylin varnish or varnishes, and then placing or moving the article so as to cause the varnishes to flow in one or several directions, substantially as described.

9. The process of ornamenting articles, which consists in applying upon the same colored pyroxylin varnish and, while the latter is still in a fluid condition, superposing thereon differently-colored pyroxylin varnish or varnishes, substantially as described.

10. The process of ornamenting articles, which consists in applying upon the same col-

ored pyroxylin varnish and, while the latter is still in a fluid condition, superposing thereon differently-colored pyroxylin varnish or varnishes, and then placing or moving the article
5 so as to cause the varnishes to flow in one or several directions, substantially as described.

11. As an article of manufacture, an ornamental film composed of interwoven strata of differently-colored dried varnishes, one of

which at least, is a pyroxylin varnish, substantially as described.

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

BYRON B. GOLDSMITH.

Witnesses:

KATHARINE E. FINN,
WM. WEHLE.