UNITED STATES PATENT OFFICE.

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FINISHING FIBROUS OR ABSORBENT SURFACES.

SPECIFICATION forming part of Letters Patent No. 615,446, dated December 6, 1898.

Application filed July 12, 1898. Serial No. 685,759. (No specimens.)

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 city, in the State of New York, have invented certain new and useful Improvements in Finishing Fibrous or Absorbent Surfaces, of which the following is a specification.

My invention has reference to improvements in the art or process of producing a finish upon articles having a fibrous or other absorbent surface, the object being to provide a more durable finish than is produced by the ordinary processes of varnishing and with a great saving of labor, time, and expense, as will presently appear.

The invention also comprises the new article of manufacture resulting from the new process.

In the ordinary processes of varnishing articles having a fibrous, cellular, or other absorbent surface—such as articles of wood, paper, leather, cloth, &c.—the finishing properties of the first and sometimes the second and third layers of varnish are practically lost, since these varnishes sink into the absorbent surface to a considerable depth, filling the minute cavities between and within the fibers, cells, and other structural elements. In surfaces of a fibrous character this sinking of the varnish is ordinarily accompanied by a raising of the fiber, which gives to the surface a woolly or flocculent aspect. To avoid this, there are employed one or more heavy coats of fillers, or a number of successive coats of varnish are sacrificed for this purpose, or both, and after each coat the surface is ground down by sandpaper, emery-paper, or pumice-stone until, finally, a surface is obtained upon which the varnish or compound will "stand." I have heretofore recognized and have successfully avoided these difficulties by an improved process of varnishing, in which a pyroxylin varnish takes the place of the ordinary fundamental coat or coats of fillers or varnishes, or both, as set forth in several Letters Patent granted to me, and particularly in my Letters Patent No. 490,195, dated January 17, 1893, and Reissue No. 11,259, dated August 16, 1892. Pyroxylin varnish, however, is expensive and its use upon a commercial scale becomes for many purposes prohibitory.

I have discovered that aqueous solutions of casein compounds constitute a cheap and highly-useful substitute for pyroxylin varnish as a fundamental coat upon an absorbent surface. Like pyroxylin varnish, it does not impart to the surface a woolly or flocculent appearance. It does not raise the fiber of the wood or other fibrous bodies, and a coat of gloss-giving varnish or compound superposed upon the casein compound will stand as well or nearly as well as upon a pyroxylin varnish. In addition thereto the aqueous solutions of casein compounds behave for the purposes in view very much like solutions of pyroxylin in another important respect—namely, there may be added to them other and particularly gloss-giving substances, such as glue or dextrine, without impairing to a marked degree the valuable characteristics above set forth. I make use of this in some cases to heighten the gloss of the fundamental coat. My improved process is therefore practiced as follows: Upon the fibrous or other absorbent surface I apply one or more coats of an aqueous solution of casein compound, using for this purpose any of the casein compounds that are readily soluble in water or dissolving casein in water containing substances rendering casein soluble therein. Of the casein compounds that are directly soluble in ordinary water may be mentioned the compounds of casein with alkalies or alkaline earths or also compounds of casein with hydrochloric acid. On the other hand, casein may be directly dissolved in water containing alkalies or alkaline earths, or borax, and other substance. Ordinarily a single coat is quite sufficient, and, as above stated, a quantity of glue or dextrine or other like substance may be added to the solution. This fundamental coat is allowed to dry, and any desired number of coats of pyroxylin varnish or of any ordinary or preferred gloss-varnish or gloss-giving compound are then superimposed. Ordinarily one coat of pyroxylin varnish or of gloss varnish or compound will be found sufficient, since neither the pyroxylin nor the gloss compound is absorbed

when applied upon the casein compound ground.

When it is desired to give a finish to fibrous or other absorbent surfaces without imparting a gloss, but merely to produce a smooth uniform surface, it is only necessary to use a finishing coat which does not dry with a gloss, and it will be readily understood that the amount of gloss given to the article can be regulated in this way.

It will be understood that pyroxylin varnish or the gloss varnish or compound will or may be colored as in the ordinary process of varnishing.

When the process is applied to flexible fibrous material—such as paper, leather, cloth, &c.—it is of advantage and often necessary to mix with the casein-compound solution a substance that gives flexibility to the casein compound, and I have found that glycerin answers this purpose well. The quantity of glycerin may be varied within wide limits.

Articles can be finished in the manner described very cheaply and expeditiously, and the finish obtained is quite durable and has many of the characteristics of the finish obtained by the use of pyroxylin varnish as a foundation coat, described in my aforesaid Letters Patent.

Articles produced by this process have upon their surface a layer or layers of casein compound and superposed thereon a layer or layers of gloss-giving or finishing compound. They are thus distinguished from all other articles.

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

1. The method of finishing articles having absorbent surfaces, which consists in producing upon the same a coat or coats of an aqueous solution of casein or casein compound, and then superposing thereon a coat or coats of varnish, substantially as described.

2. The method of finishing articles having absorbent surfaces, which consists in producing upon the same a coat or coats of an aqueous solution of casein or casein compound, and then superposing thereon a coat or coats of pyroxylin varnish, substantially as described.

3. The method of finishing articles having absorbent surfaces, which consists in producing upon the same a coat or coats of an aqueous solution of casein or casein compound, then superposing thereon a coat or coats of pyroxylin varnish, and then superposing on the latter a coat or coats of gloss varnish or finishing compound, substantially as described.

4. As an improved manufacture, an article having an absorbent surface provided with a coat or coats of casein or casein compound, and a superposed coat or coats of varnish, substantially as described.

5. As an improved manufacture, an article having an absorbent surface provided with a coat or coats of casein or casein compound, and a superposed coat or coats of pyroxylin varnish, substantially as described.

6. As an improved manufacture, an article having an absorbent surface provided with a coat or coats of casein or casein compound, a superposed coat or coats of pyroxylin varnish, and a coat or coats of gloss varnish superposed on the 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.