Patented Aug. 4, 1936 2,050,118

UNITED STATES PATENT OFFICE

2,050,118

METHOD OF TREATING WOOD SURFACES FOR PHOTOGRAPHIC REPRODUCTION THEREOF

Lawrence J. Pearson, Wyncote, Pa., assignor to Philco Radio & Television Corporation, Philadelphia, Pa., a corporation of Delaware

No Drawing. Application April 4, 1936, Serial No. 72,836

5 Claims. (Cl. 41—41)

This invention relates to a novel method of treating wooden objects, such as wood panels, preparatory to photographing such objects to obtain a print suitable for use in known copying processes, such as the well-known photo-lithograph process. As is well known, an object or surface may be photographed by means of a photographic negative plate, and the image thus obtained may be copied on a sensitized metal or stone surface to form a positive reproduction of the image on that surface. If desired, several different positive plates may be formed, each having thereon only that part of the image corresponding to a certain color or colors in the original image. By printing with different colors applied to the several plates, a colored image of the original object may be obtained on a transfer paper, and this image may be transferred to another object to give such object a desired appearance or finish. The image may be transferred to the surfaces of various objects, such as objects made of wood, asbestos, metal, pottery, china, or the like. In this manner, a large number of objects may be given a desired appearance. For example, articles of furniture may be subjected to the transfer process to give them a desired appearance.

By the present invention, a wooden object or surface may be treated in a manner to bring out or emphasize certain desirable characteristics to prepare the wooden object or surface for photographing, the object being to improve the reproduction obtainable by the transfer process above mentioned. More specifically, the invention provides a suitable method of treatment for a wood surface by means of which the grain and other characteristics of the wood surface may be reproduced more clearly and by which a photograph suitable for transfer purposes may be obtained. Various types of wood may be treated by the method, it being understood that the invention is intended for treatment of any wood which may be suitable. It has been found, for example, that the invention is applicable to different types of walnut, including American, African, Oriental, and Claro or California, cut in any of the following ways:—burl, butt, crotch, quarter slice, rotary slice and half round. It has been found also that the invention is applicable to mahogany, sapeli, oak, holly and red wood, cut in any suitable manner. In general, the invention is best adapted to treatment of any wood of relatively coarse grain structure suitable for the transfer process.

The invention comprises essentially the following steps, viz., treating the wood with a substance capable of etching the grain and freeing the pores of sap or other matter, bleaching the wood thus treated, coating the bleached wood with a colorless impermeable substance, and finally applying a colored filler to fill the pores and grain depressions and to establish a contrast between the filled pores and the remainder of the wood surface. These successive steps will now be described in detail with reference to a preferred embodiment of the invention.

As stated above, the first step in the process is the treatment of the wooden object or surface with a substance capable of freeing the grain depressions and pores of sap and other matter. This step prepares the wood for the subsequent steps of the process. I have found that a caustic solution is well adapted for this purpose. Preferably, a 10% (by weight) aqueous solution of sodium hydroxide (NaOH) is employed, although the strength of the solution may vary in a range from approximately 8% to approximately 12%. In general, if the strength of the solution is less than 8%, the desired cleansing action is not efficiently performed, while, on the other hand, if the strength of the solution is greater than 12%, the solution is so strong that it tends to burn or carbonize the wood, which, of course, is undesirable. It will be understood that any alkali solution having a strength equivalent to that above mentioned may be used.

Following the treatment with the cleansing solution, the wood is washed in cold water until it is substantially free of the solution and it is then allowed to dry. For best results, the wood should be thoroughly dried before it is treated further.

The next step in the process is the bleaching step. The purpose of this treatment is to lighten the color of the wood so that a strong contrast may be established between the wood and the filler which is subsequently applied to the cleansed pores of the wood structure. By providing this strong contrast, the wood is rendered more suitable for the photographic and transfer processes, as above mentioned. Any bleaching agent capable of bleaching the wood may be employed in this treatment, but I prefer to use a strong aqueous solution of hydrogen peroxide (H_2O_2). Preferably, a 30% solution of hydrogen peroxide is employed and is allowed to remain on the surface of the wood for approximately four or five minutes. The peroxide solution is then removed and the wood is allowed to dry almost completely, after which it is treated with a strong aqueous solution of ammonia (NH_4OH) which serves to

enhance and further the bleaching process. By means of this treatment with hydrogen peroxide and ammonia solutions, the wood is bleached until nearly all of its color is removed. If desired, successive applications of the bleaching solutions may be employed to bleach the wood to any desired degree, or further treatment with ammonia solution may suffice.

The wood should then be completely dried and should be sanded and brushed to smooth the surface and prepare it for the finishing steps. A wire brush or like implement may be used to brush the surface of the wood after sanding.

The next step in the process is the application of a substantially colorless coating which is impermeable or incompatible with respect to a wood filler and which serves to prevent the wood from absorbing or taking up the filler to be applied later. In this manner, only the pores and grain depressions of the wood are filled with the filler in the final step. Preferably, a light coat of bleached white shellac may be employed to coat the bleached wood. The coating may be applied in any suitable manner, for example, by means of a brush, by spraying, or in any other conventional manner. The shellac preferably comprises a solution containing approximately 10% gum in an ethyl alcohol solvent. It will be understood, of course, that any unpigmented colorless finishing material, such as gloss lacquer or other shellac substitutes, may be used in this treatment, provided the maximum solid content is not much greater than 10%.

The final step of the process is the application of a suitable wood filler which, because of the previous coating treatment, serves only to fill the pores and grain depressions of the wood and does not color the wood surface to any material extent. For this purpose, any suitable wood filler may be employed provided the color of the filler is suitable for the later photographic process. An example of a suitable filler is as follows, the amounts of the constituent materials being indicated in percentages by weight:

	Percent
Powdered gypsum	21
Crystalline silex 300 mesh	35
Magnesium silicate	14
Lead oxide	.7
Pigmented coloring matter	11.3
8% raw sienna	
3.3% burnt sienna	
Filler vehicle	18

This filler has a reddish brown color which is suitable for the photographic process employed in the transfer or reproduction. The filler vehicle may comprise china wood oil, gloss oil varnish, and a drier. The filler may be conveniently dissolved in V. M. P. (Varnish Makers and Painters) naphtha using approximately 12 lbs. of filler per gallon of naphtha. The wood may be given one coat of filler and allowed to dry. It may then be sanded and given a second coat and then allowed to dry. Following the second coat, the wood may again be lightly sanded.

When completed, the surface of the wood is characterized in that the high lights or hard portion of the wood will have a very light color due to the bleaching process, whereas the grain of the wood, which has been cleaned out and filled with a colored filler, will appear in strong contrast. The general surface of the wood will appear more or less dull and will not be light-reflecting to any great extent. As will be understood, this lack of a shiny finish in combination with the strong contrast between the grain of the wood and the hard portions of the wood are of material assistance in obtaining a photograph of the panel which will clearly show up or indicate the grain structure.

While certain preferred substances have been indicated above, the invention is not thus limited but comprises essentially the four steps as described regardless of the specific materials used in any of the steps. Various changes and modifications are possible without departing from the scope of the invention, provided the essential steps are adhered to.

I claim:

1. A method of treating wood, which comprises treating the wood with a substance capable of freeing the pores and grain depressions of sap or other matter, bleaching the wood thus treated, coating the wood with a substantially colorless filler-impermeable substance, and applying a colored filler to the coated wood so as to fill only the pores and grain depressions of the wood, whereby photographic reproduction of the appearance of the grain of the wood is facilitated.

2. A method of treating wood, which comprises treating the wood with a caustic solution of desired strength to etch the grain of the wood and free the pores thereof of sap or other matter, bleaching the wood thus treated, coating the wood with a substantially colorless filler-impermeable substance, and applying a colored filler to the coated wood so as to fill only the pores and grain depressions of the wood, whereby photographic reproduction of the appearance of the grain of the wood is facilitated.

3. A method of treating wood, which comprises treating the wood with a caustic solution of desired strength to etch the grain of the wood and free the pores thereof of sap or other matter, washing and drying the wood to remove said solution, bleaching the wood thus treated, coating the wood with a substantially colorless filler-impermeable substance, and applying a colored filler to the coated wood so as to fill only the pores and grain depressions of the wood, whereby photographic reproduction of the appearance of the grain of the wood is facilitated.

4. A method of treating wood, which comprises treating the wood with an 8% to 12% solution of sodium hydroxide to etch the grain of the wood and free the pores thereof of sap or other matter, bleaching the wood thus treated, coating the wood with a substantially colorless filler-impermeable substance, and applying a colored filler to the coated wood so as to fill only the pores and grain depressions of the wood, whereby photographic reproduction of the appearance of the grain of the wood is facilitated.

5. A method of treating wood, which comprises treating the wood with a 10% solution of sodium hydroxide to etch the grain of the wood and free the pores thereof of sap or other matter, bleaching the wood with a 30% solution of hydrogen peroxide, coating the wood with a substantially colorless filler-impermeable substance, and applying a colored filler to the coated wood so as to fill only the pores and grain depressions of the wood, whereby photographic reproduction of the appearance of the grain of the wood is facilitated.

LAWRENCE J. PEARSON.