Nov. 1, 1932. C. C. GUTHRIE 1,885,345

METHOD OF PROTECTING SURFACES

Filed June 22, 1931

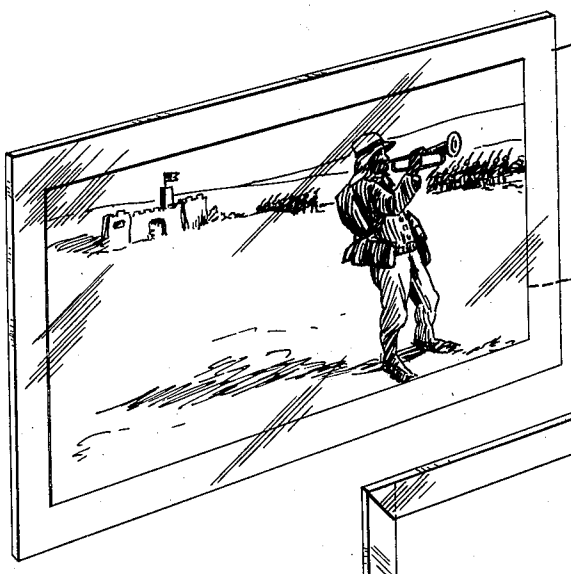


Fig. 1.

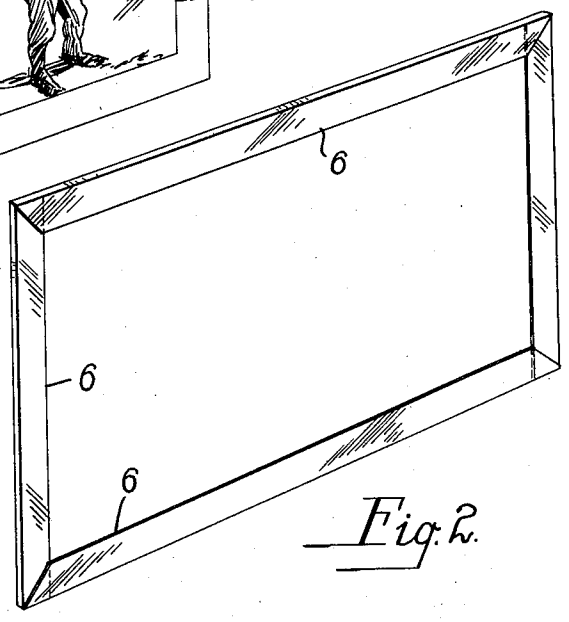


Fig. 2.

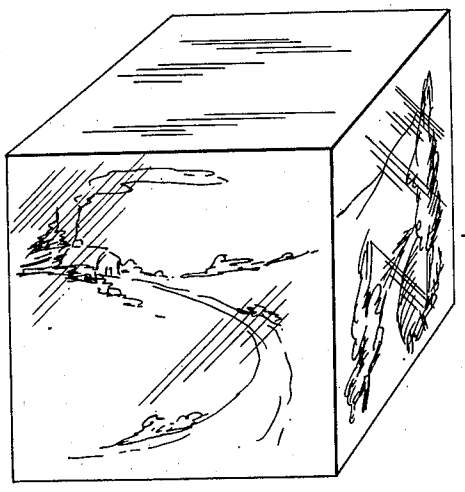


Fig. 3.

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UNITED STATES PATENT OFFICE

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METHOD OF PROTECTING SURFACES

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This invention relates to means for and a method of protecting a surface or surfaces of articles, such as prints, drawings, charts, models, etc.

An object of the invention is to produce an improved and inexpensive means for protecting an article whereby the appearance of the articles protected is enhanced, or at least is not detrimentally effected.

A further object is to produce an improved, but inexpensive method of protecting articles, wherein the article or a surface or surfaces thereof is covered by a transparent protective sheet, which closely fits the surface of the article and produces the effect of a glass protective surface.

These and other objects which will be made more apparent throughout the further description of the invention are attained by means of apparatus herein illustrated and the procedure herein described.

In the drawing forming a part hereof, Figure 1 is a diagrammatic illustration of a print protected in accordance with my invention; Fig. 2 is a rear view of the print shown in Fig. 1; and Fig. 3 is a diagrammatic view illustrating a still further application of my invention.

There are a great many instances where it is desirable to protect articles, such as prints, charts, drawings, works of art, etc., but at the same time to avoid destroying their usefulness or their beauty by the use of the protective material. My present invention contemplates employing transparent material in the form of sheets, such, for example, as cellophane sheets, which is so applied to the article to be protected that it lies smoothly over and rests lightly against the surface or surfaces to be protected and in such a way as to obtain the maximum optical effects associated with transparency.

In accomplishing this, the thin sheet of protective material is placed over the surface or surfaces to be protected and is secured in place, with relation to such surface or surfaces by employing some adhesive material, such, for example, as moisture-proof cement, for permanently securing its edges in place in such a way as to hold the sheet in place. The protective material is then treated with a suitable re-agent for the purpose of causing it to shrink so that it snugly fits the surface or surfaces protected and so that all wrinkles and other irregularities in the surface of the protected sheet are removed.

In the present embodiment of my invention the shrinking operation is accomplished by moistening the intermediate portion of the protective sheet and then allowing it to dry so as to occasion the desired shrinkage. After the protective sheet has acquired the desired contour by the shrinking operation the entire protective sheet may be rendered moisture-proof by the application of a suitable re-agent, such as transparent lacquer or varnish. In this way the surface to be protected is, in effect, enclosed within a sealed compartment, but at the same time is visible.

In Figs. 1 and 2 of the drawing I have illustrated my invention as applied to the protection of a print, such, for example, as a photographic print, or the like. It may here be said that the ordinary photographic print is not, in and of itself, sufficiently rigid to contribute to a full realization of the advantages inherent in my invention. For this reason I first mount the print 4 on a suitable backing, such, for example, as a cardboard backing 5, and in this way provide sufficient rigidity to prevent distortion of the print under such strains as may be encountered by reason of the above mentioned shrinking operation. A sheet of thin transparent material, such as cellophane, is then placed over the surface to be protected with its surface in as close and smooth contact therewith as the characteristics of the sheet permit. The edges 6 of the sheet are then folded over the edges of the print or of the backing therefor, and are secured thereto by means of an adhesive material applied only to the folded over edges as shown in Fig. 2. In this way the sheet is permanently secured to the print or its mounting and in such relation that the sheet lies flat across the surface of the print and as nearly in contact with all parts of that surface as the character of the sheet will permit. It will, therefore, be apparent that while the protec-

tive sheet is rigidly held in place with relation to the surface to be protected, it is in no sense secured to that surface, and the surface is not marred or otherwise detrimentally effected by the mounting of the protective sheet.

It is, of course, apparent that the width of the folded portions of the sheet may be varied, but it is desirable to provide sufficient width to ensure proper attachment of the sheet to the article. I have found that when cellophane is employed and the surface to be covered is approximately 6″ by 8″, the cellophane sheet should be of sufficient size to provide folded edges 6 about ½″ in width. I have discovered that no matter how carefully the protective sheet may be spread and smoothed over the surface to be protected, that it is impossible to prevent some wrinkles or other irregularities in the sheet, which affect and detract from the appearance of the protected article. To remedy this condition I have found that, where a cellophane sheet is employed by, moistening the unsecured portion, i. e., the intermediate portion of the sheet, and then permitting the sheet to dry slowly, I can eliminate wrinkles and other objectionable irregularities in the surface of the sheet. That is to say, in the example given in connection with Figs. 1 and 2, wherein the edges 6 of the sheet are secured to the cardboard mounting, the portion of the sheet lying in contact with the surface to be protected, is moistened throughout its entire extent. This moistening operation first causes the sheet to stretch or grow and produces many irregularities and wrinkles in the unsecured portion of the sheet. If, however, the sheet is allowed to dry slowly in a quiescent or slightly agitated atmosphere, or even a warmed atmosphere, it will, in drying, shrink and as a result will be stretched more or less taut across the surface to be protected, the shrinking operation removing all wrinkles and irregularities and, in the case of a flat surface, causing the sheet to, in effect, assume the contour of the flat surface and lie snugly against it.

I have also found that where the first shrinking operation does not remove all wrinkles and irregularities from the protected sheet, the wrinkled or irregular portions of the sheet may be again moistened, preferably along the wrinkle or irregularity, but in such a way as to extend the moistening effect somewhat beyond the portion of the sheet actually wrinkled. This moistening operation will again occasion an apparent growth of the moistened portion of the sheet and will accentuate the wrinkle or irregularity or even produce additional wrinkles or irregularities. If, however, the sheet is allowed to dry under conditions above outlined, the wrinkles and irregularities will eventually all be removed and the desired result will be produced.

In Fig. 3 I have illustrated an article where it is desired to protect, but at the same time expose to view, several surfaces of the article. That is to say, the article illustrated may be conceived to be a cube, ornamented or otherwise embellished on its lateral surfaces. Under such conditions the sheet of protective material is so placed on the cube, that it lies adjacent to each lateral surface. It is then secured in place thereon by the cementing operation above described in which the edges only of the protective material are treated with the cement, or adhesive material. The free portion of the sheet is then treated with the re-agent for occasioning the shrinkage, or in the example given above, the free portion of the sheet is moistened more or less uniformly and then permitted to dry slowly. This moistening operation may be accomplished by exposing the sheet to a fine water spray, a dense water vapor, such as low temperature steam, or by merely moistening the surface with a wet sponge or cloth. Care should be taken to so apply the sponge or cloth that the moistened surface is not stretched mechanically, although a defect caused by an unnecessary pulling of the sheet may be cured by one or more applications of moisture to the stretched or wrinkled portion of the sheet.

It will also be apparent that Fig. 3 may represent an article such, for example, as a lamp shade in which it is desired to protect the embellished surfaces. Under such conditions the sheet is placed over the surfaces as previously described and then may be secured to the shade by gluing or cementing its edges to the inside surface of the shade around the top and the bottom thereof, although it is desirable to mechanically secure all edges of the sheet to the article to be protected. The shrinking operation will pull the sheet taut over the corners of the article and over the surfaces to be protected with the result that the sheet will give maximum revelation of the protected surfaces or objects and the effect will be that the surfaces are covered by sheet glass or by a smooth polished glass coating.

It will, of course, be apparent that my invention provides a means for and method of protecting various articles, such as photographs, ancient documents, diagrams, charts, directions for mechanics and technicians and even recipes for cooks, since it may be employed without entailing much expense and will maintain the article protected in a hermetically sealed envelope without in any way detracting from the usefulness or beauty of the article.

It will also be apparent that the glued or cemented edges of the strip may be covered

by a decorative strip, or in any other way where the glued edges may detract from the appearance of the article. For example, I have found it desirable in protecting photographic prints to mount them first on a cardboard of sufficient rigidity to resist strains encountered during the shrinking operation. The surface of the print is then protected as above described, and the protected print may then be mounted on a decorative cardboard for the purpose of improving its appearance and also for the purpose of covering the glued edges of the protective sheet.

It will also be apparent that the procedure above outlined is well adapted for protecting any convex surface, since with such a surface the cellophane sheet may be so applied that the shrinking operation will cause it to lie snugly against the convex surface and therefore produce the appearance of a surface covered by a sheet of glass having substantially the contour of the protected surface. It will also be apparent that the procedure may be adopted in connection with frames for pictures and similar articles. With a frame the protective sheet is spread smoothly across the rear portion of the frame so that it overlies the aperture of the frame. Its edges are then secured by the cementing procedure to such portions of the frame as are not visible from the front and in such a way as to place the sheet in the desired plane with relation to the front of the frame. The unattached or intermediate portions of the sheet are then moistened, as above described and permitted to dry, with the result that the sheet, in shrinking, produces the effect of a taut diaphragm extending across the open portion or aperture of the frame. With this arrangement the frame is, in effect, provided with a permanently secured transparent protective sheet and the print or picture to be framed is, of course, located behind the sheet in the framing operation.

I have found that commercial cellophane sheets are well adapted as the protective material and when employed produce highly attractive results.

While I have described what I now consider to be the preferred embodiment of my invention it will be apparent to those skilled in the art that various changes, additions, and omissions may be made therein without departing from the spirit and scope of the invention as set forth by the appended claims.

What I claim is:

1. A method of protecting a surface or surfaces of an article, which consists in covering such surface or surfaces with a sheet of transparent protective material, permanently securing the edges of the protective sheet, with relation to the article so that the intermediate portion of the sheet lies substantially in contact with such surface or surfaces, and then treating the exposed surface of the unsecured portion of the sheet to cause such portion to shrink.

2. A method of protecting a surface of a print or the like, which consists in covering the surface of the print with a thin sheet of cellophane of greater size than the print, permanently securing the edges of said sheet to the rear face of the print, moistening the exposed surface of the unsecured portion of the sheet, and then allowing the same to dry.

3. A method of protecting a surface of an article, which consists in covering the surface to be protected with a thin sheet of dehydrated cellophane, permanently securing the edges of the sheet to the article, at points beyond the confines of the surface, or such portion thereof to be protected, by cementing such edges to the article, then moistening the exposed surface of the intermediate portion of the sheet, permitting such portion to dry and again moistening wrinkled portions of the exposed surface of the unsecured portion of said sheet.

4. A method of protecting a surface of an article, which consists in securing the edges of a sheet of flexible transparent material to the article so that the intermediate portions of the sheet are unattached, treating the exposed surfaces of such intermediate portions to cause them to shrink in all directions, and then treating the fully shrunk sheet with a protective coating.

5. A method of protecting a surface of an article, which consists in covering such surface with a sheet of cellophane, securing edges of such sheet to such article, but beyond the confines of the surface to be protected, then treating the exposed surface of the unsecured portions of the sheet to cause it to shrink in all directions.

6. The method of protecting the surface of a print or the like which consists in covering the surface of the print with a sheet of cellophane of such size that the edges thereof project beyond the sides of the print, folding the edges of the sheet over the sides of the print, permanently securing the folded edges to the rear face of the print, moistening the exposed surface of the unsecured portion of the sheet, drying slowly such unsecured portion of the sheet to cause it to assume the contour of the surface of the print, and then treating the exposed surface of the unsecured portion of the sheet with a protective coating.

7. A method of protecting a surface of an article, which consists in covering the surface to be protected with a thin sheet of dehydrated cellophane, permanently securing the edges of the sheet to the article, at points beyond the confines of the surface, or such portion thereof to be protected, by cementing such edges to the article, then moistening the exposed surface of the intermediate portion of the sheet, permitting such portion

to dry and again moistening wrinkled portions of the exposed surface of the unsecured portion of said sheet, and then treating the exposed surface of the unsecured portion of the sheet with a protective coating.

In testimony whereof, I have hereunto subscribed my name this 19th day of June, 1931.

CHARLES C. GUTHRIE.