Oct. 10, 1967 L. J. O'DELL 3,346,411

METHOD OF FORMING AN ARTISTIC RELIEF

Filed Jan. 22, 1964

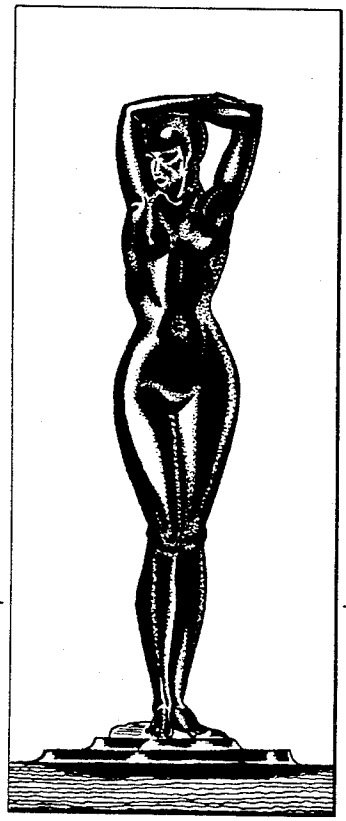


Fig. 1.

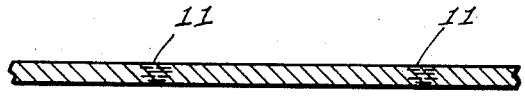


Fig. 2.



Fig. 3.



Fig. 4.

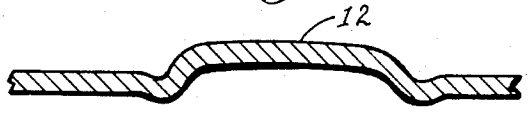


Fig. 5.

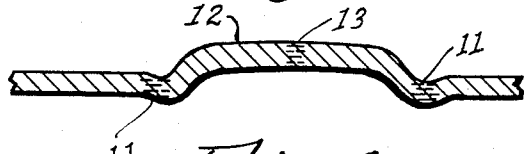


Fig. 6.



Fig. 7.

INVENTOR.
Leonard J. O'dell
BY
Harlan J. Harlan Jr.
ATTORNEY.

United States Patent Office 3,346,411
Patented Oct. 10, 1967

3,346,411

METHOD OF FORMING AN ARTISTIC RELIEF

Leonard J. O'Dell, Elma, N.Y.
(93 Eagen Drive, Lackawanna, N.Y. 14218)

Filed Jan. 22, 1964, Ser. No. 339,433
9 Claims. (Cl. 117—11)

The present invention relates in general to the artistic representation of figures, images, and the like. It is particularly concerned with a novel process for producing artistic representations of figures, images and the like in substantial relief.

It is an object of the present invention to provide a simple method or procedure for forming an artistic relief or raised representation of a flat picture, drawing, or the like.

Another object of the present invention is to create from a flat, two-dimensional subject a three-dimensional relief.

Another object of the present invention is to provide a method or procedure of the character described which may be used to produce an artistic relief or raised representation of a printed, or drawn picture on paper.

Another object of the invention is to provide a method of the character described which requires a minimum of apparatus.

A further object of the invention is to provide a method of the character described which can be utilized by persons without previous experience.

Still another object of the present invention is to provide a method or procedure of the character described which enhances the life-like effect of photographs and the like.

Other objects and advantages of the present invention will be apparent from the following description thereof taken in conjunction with the accompanying drawing in which:

FIGURE 1 is a drawing of a human female;

FIGURE 2 is a greatly enlarged sectional view taken on the line **2—2** of FIGURE 1; and

FIGURES 3–7, inclusive, are enlarged sectional views similar to FIGURE 2 and also taken on the line **2—2** of FIGURE 1, showing the changes in contour successively produced on the drawing during the carrying out of the present novel process.

The foregoing objects are achieved with a drawing such as that shown in FIGURE 1, for example, by shrinking a narrow border or perimetric zone around the drawn figure. The shrinking according to the invention is produced by coating or, in some cases, impregnating said narrow perimetric zone or border with a liquid which forms a film as it dries, the film shrinking as drying thereof continues.

Although other liquid shrinking agents may be used for application to the figure border, a simple starch solution has been found to be very satisfactory and effective in carrying out the process of the present invention. The preparation of a suitable starch solution, purely by way of example and without any intent that the specified procedure shall be considered limiting, is set forth below.

Example 1

A mixture of 10 grams of ordinary laundry starch is mixed thoroughly with 20 ml. of water to form a thick paste. The paste is then mixed with 350 ml. of water and heated, carefully to avoid scorching, to the boiling point. It is permitted to boil for 5 minutes. The resulting solution which has a thin, smooth consistency is allowed to cool and is then ready for use. If desired, a few drops of perfume may be mixed in to give an attractive odor. A small amount of a preservative such, for example, as benzoic

acid, thymol, or the like, may also be added to the solution to prevent or delay decomposition and/or the growth of molds and the like.

In the practice of the process of the invention the liquid shrinking agent is applied to a narrow border around the perimeter of the flat, two-dimensional figure that is to be brought into relief. The application may be accomplished by spraying but is usually more conveniently done by brushing. Preferably, a fine brush, such as an artist's brush, is used since there will be less likelihood of running the liquid from the border onto the drawing itself. Swabs or other types of applicators may, however, be used if desired.

The width of the border to which the liquid shrinking agents is applied is not overly critical. In general, with a drawing or the like covering an area of, for example, about 5 in.^{2} to about 25 in.^{2} the width of the border may range from about $\frac{1}{16}$ in. to about $\frac{3}{16}$ in. It should be understood, however, that the character and thickness of the paper bearing the picture as well as the size and shape of the picture and the amount of elevation or relief desired in the finished product will all affect the width of the border used around the drawing or the like.

The following example describes the carrying out of the present novel process with a drawing such as that shown in FIGURE 1 of the drawing.

Example 2

Taking a drawing, on thin drawing paper, of the figure approximately 10 inches high, a starch solution of the type produced in Example 1 is applied with an artist's brush around the perimeter of the figure and the base upon which the figure stands in a border about $\frac{1}{8}$ in. wide. A narrower border, about $\frac{1}{16}$ in. wide is placed around the perimeter of the opening formed between the head and neck of the figure and the raised left arm thereof.

The starch solution border on the drawing is then dried by heating the drawing in an oven at about 200° F. for about 5 minutes. The drawing is then allowed to cool in a dry place. On inspection it will be evident that a raising of the figure has taken place.

A second application of the starch solution is then made with the brush around the figure and base, and in the open area between the arm and head over the first application. The drawing is again heated at about 200° F. for about 5 minutes and allowed to cool. A considerably greater relief effect is noticeable upon inspection.

A third application of the starch solution is made in the same manner as described in the immediately preceding paragraph. In addition, a very thin line of the solution, preferably no more than $\frac{1}{16}$ in. wide, is applied by means of the brush along the inside of the thighs and legs, around the right side of the head, and in any other place where it is desired that the raised figure should not show a convexity. After drying with another heating and cooling cycle, the drawing may be mounted or otherwise displayed. The figure is definitely convex and to such an extent that with lighting at the proper angle shadows may be realistically cast by it.

In FIGURES 2, 4 and 6 of the drawing the shaded areas **11** define and designate the perimetric border to which the liquid shrinking agent is applied, such areas bounding the raised or convex area **12** seen in FIGURES 3–7, inclusive. The shaded area **13** in FIGURE 6 designates the area in which the additional line of liquid shrinking agent is applied to produce separation of the thighs and legs as shown by the depression **14** in FIGURE 7. It will be clear, that, as shown in the drawings, concavities substantially coextensive with the portions to which the shrinking agent was applied will be produced on the side of the paper to which the shrinking agent is

applied and corresponding convexities will be produced on the other side of the paper.

Although a specific example of the manner in which the invention of the present application is carried out has been given above, it is to be understood that the procedure there specified is not critical. As pointed out hereinbefore, other suitable liquid shrinking agents can be used. Among the useable ones are dilute solutions of animal glue, casein, gum arabic, and other similar materials. The number of cycles of application of liquid shrinking agent and drying is a matter of choice. In general, maximum relief will only be achieved by a plurality, usually three or four applications. In some cases, however, one or two applications will be enough, while in other cases many applications are desirable. It is, of course, evident that the person doing the work will use a number of cycles of application and drying suitable for the particular job.

The drying procedure set forth in Example 2 is also not critical. While heating in an oven is very convenient, it will be evident that heating over a hot plate or under a heat lamp will produce essentially the same results. The temperature employed may vary with the liquid shrinking agent used, the paper or other base involved, the size of the figure or drawing and other factors. In general, faster drying results from the use of higher temperatures. However, the temperature should not be raised enough to damage the paper or other base or the design or the like thereon. In general, the temperature used may vary from room temperature to about 220° F.

The time required for drying each application of the liquid shrinking agent will, as indicated above, vary with the temperature used. Other factors will also affect the time necessary for drawing. For example, a thick, absorbent, base will require more time than a thin relatively non-absorbent one. Also, of course, the nature of the liquid shrinking agent will make a difference.

With the novel process of the present invention, it is possible to produce raised or relief maps, figures, pictures, designs and the like from two-dimensional drawings, prints, photographs, and like images on substantially any type of paper.

As pointed out above, the present invention may be varied and modified to a considerable extent. It is, therefore, intended that it shall not be considered as restricted to the specific example given but that it shall be interpreted as broadly as permitted by the appended claims.

What is claimed is:

1. A method for producing an artistic relief of an image on paper which comprises applying only to a relatively narrow perimetric zone around said image on one side of said paper, a liquid shrinking agent whereby to outline said image with said liquid and thereafter drying said paper, said liquid shrinking agent being characterized by its forming a film on said paper upon drying which film tends to shrink as it dries thereby producing a convexity substantially coextensive with said perimetric zone on the other side of said paper.

2. A method as set forth in claim **1** in which the application of said liquid shrinking agent and said drying step are repeated.

3. A method as set forth in claim **2** in which said drying is accomplished by heating said paper.

4. A method as set forth in claim **3** in which said paper is heated to about 200° F.

5. A method as set forth in claim **1** in which said liquid shrinking agent is a solution of an amylaceous material.

6. A method as set forth in claim **5** in which said liquid shrinking agent is a starch solution.

7. A method as set forth in claim **2** in which the application of said liquid shrinking agent is more frequently repeated in some portions of said perimetric zone than in other portions thereof.

8. A method as set forth in claim **1** in which said liquid shrinking agent is also applied to selected portions of said image and thereafter said paper is dried.

9. A method for producing an artistic relief of an image on paper which comprises on one side of said paper only applying only to a relatively narrow perimetric zone around said image and to selected portions of said image a liquid shrinking agent and thereafter drying said paper, such application and drying being repeated, said agent being characterized by forming a film on said paper upon drying which film tends to shrink as it dries, whereby to form on the other side of said paper convexities substantially coextensive with said portions to which said agent was applied.

References Cited

UNITED STATES PATENTS

1,083,100	12/1913	Hurlburt.	
2,371,153	4/1945	Connelly	35—26
2,460,042	1/1949	Stafford	117—11
2,596,377	5/1952	Derman	117—11
2,656,634	10/1953	Varner	156—59
3,093,462	6/1963	Rapaport	117—25

JACOB H. STEINBERG, *Primary Examiner.*

ALEXANDER WYMAN, *Examiner.*