June 9, 1936. M. STONE 2,043,309

METALLIC PRINTING PROCESS

Filed Dec. 31, 1934 2 Sheets-Sheet 1

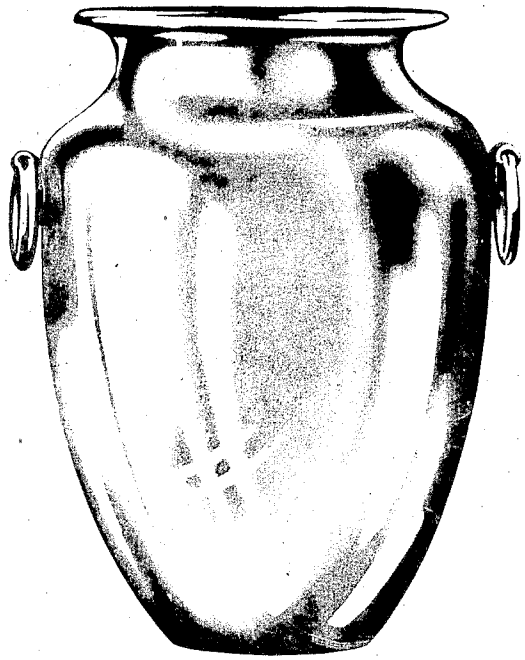


FIG. 2.

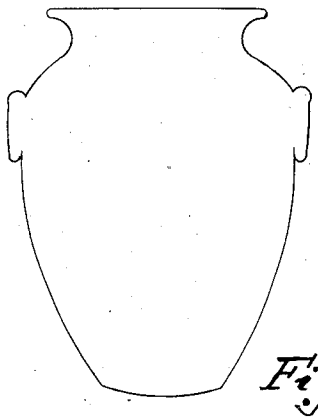


Fig. 1

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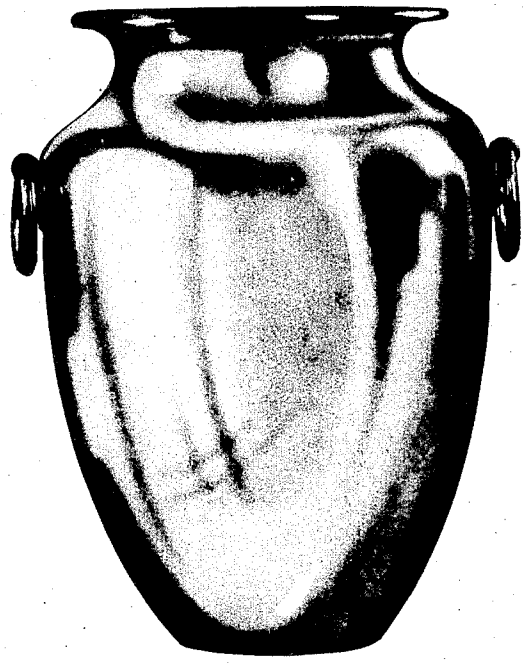


FIG. 3.

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Patented June 9, 1936

2,043,309

UNITED STATES PATENT OFFICE

2,043,309

METALLIC PRINTING PROCESS

Melvin Stone, New York, N. Y.

Application December 31, 1934, Serial No. 760,039

18 Claims. (Cl. 41—26)

This invention relates to printing processes, and more particularly to a process for reproducing the likeness of metallic objects on paper for the purposes of illustration.

Objects of my invention are, the realistic third-dimensional reproduction of metallic objects on paper which will simulate the color and the lustre as well as contour and detail of the object reproduced; to provide such a reproduction which will not smear or smudge; a process which is simple and inexpensive in its nature, which adapts existing materials; and which does not require specially made paper in its application.

The art of printing has advanced to the point where metallic printing inks are manufactured which will enable a printer to reproduce in silhouette the outline of a metallic object. Some degree of simulation has been obtained by printing on such a silhouette in black some detail of the object. Such reproductions are, however, lacking in perspective and realism, and have not been widely used except for decorative purposes.

These and various other objects and advantages will be readily understood from the following description and drawings, but it will be noted that modifications might be made without departing from the spirit of the invention or the scope of the annexed claims.

Figure 1 illustrates an outline of an object, the area within to be covered by the metallic ink in forming the base coat. Figure 2 is an example of the half-tone surprinted thereon, retouched by the poster style. Figure 3 is a halftone of the same object combining two styles of retouching.

In my process, I provide a base coat which is substantially a silhouette of the object.

Various standard shades of metallic lining powders or inks are blended to obtain the nearest possible match to the metallic article to be reproduced. The metallic lining powders are preferably mixed in the proper proportions with regular metallic ink varnish or similar liquids to which have been added a sufficient amount of cobalt or other types of dryer to enable the resulting ink to dry quickly when printed on suitable paper, preferably a coated stock. These amounts are best regulated by actual tests on the paper to be used, as it has been found that the same grade of paper, but manufactured, stored or printed under different conditions, will effect the drying.

One set of two plates are used in my process. One is a copper or zinc plate which prints a silhouette of the object within the outline shown in Figure 1 with a uniform coat of the metallic ink manufactured as previously explained. This print shall be termed hereafter as the metallic tint block. The other plate is a half-tone which is prepared as hereinafter described and illustrated in Figures 2 and 3. The article is first photographed, preferably a glossy print ready for retouching with the outline sharp and clear, and all detail in the print.

If the article has large plain surfaces with no engraving or filigree work over all, the photograph should be retouched by a suitable method, preferably the so-called poster style of air-brush retouching (see Figure 2). If engraving or filigree work is present, the photograph should be retouched in detail by the customary method to bring out the engraving or filigree work in sharp relief. If a combination of filigree work and large plain areas are present, a combination of both types of retouching may be used illustrated by Figure 3.

Where just the poster style of retouching has been used, approximately a #110 screen highlight, silhouette half-tone has given the best results. Where detailed retouching has been used to bring out the detail due to filigree work or engraving, or a combination of both types of retouching has been used, approximately a #120 screen silhouette half-tone is preferred. While the best results are obtained by using the sizes of screens outlined above, variations may be made in either direction without changing the process. It is recommended that a change of 10 in the number be the limit. In each case, the half-tone should be etched as deeply as possible on a copper plate.

The tint-block, previously mentioned, must register exactly with the half-tone thus described.

A separate and additional ink is now prepared for exclusive use with the half-tone. This is a colored printing ink, preferably with a varnish base, and which has been prepared to dry thoroughly when surprinted on the metallic tint-block. Great care must be taken to see that this half-tone overprint dries completely so that it will not smear or rub off. Again suitable amounts of cobalt or other types of dryer are added in quantities which can only be determined by actual test due to varying atmospheric conditions in the press room. This ink should not have any lustre or gloss when printed. Its color is all important. It should be the nearest possible match to the metallic tint-block previously explained. This may be accomplished by breaking up the color of the metallic tint-block into its original primary components. An ink is then prepared from the original components producing the general color tones of the original metal. Simpler

methods may be devised to check the match, and if necessary a purely visual determination may be used to produce satisfactory results.

An unusual visual reproduction of the metallic object is created when the half-tone is surprinted with the colored ink directly on the metallic tint block.

The metallic tint-block forms an outline in silhouette of the metallic object and represents a plane of metallic gleam and lustre which furnishes the highlights. The surprinted half-tone registering with the tint-block and using the non-metallic ink lacking in lustre and gloss, but of the same color as the tint-block, as determined by any of the methods previously explained, subdues the metallic gleam and lustre where there is shadow and creates the desired third-dimensional illusion.

The half-tone comprises a series of printed dots, the diameter of which is a function of the intensity of the shade on the object photographed. Between the dots, the metallic tint-block shines through, giving the lustreless ink a metallic gleam even in the shaded portions.

The printed paper is then preferably subjected to a final step by passing it through the calender stack. This treatment burnishes the metallic undertone (tint-block) throughout, wherever exposed and not surprinted by the half-tone. This additional step helps to blend or fuse the surprinted half-tone to the metallic tint-block, so that the shadows become softer and more gradual.

The resultant printed reproduction is one of unusual visual beauty providing a realistic third dimensional effect hitherto unobtained.

I have accordingly described my invention, but I desire it understood that it is not confined to the particular form shown and described, the same being merely illustrative, and that the invention may be carried out in other ways without departing from the spirit of my invention, and therefore I claim broadly the right to employ all equivalent instrumentalities coming within the scope of the appended claims and by means of which objects of my invention are obtained and new results accomplished, as it is obvious that the particular embodiments herein shown and described are only some of the many that can be employed to attain these objects and accomplish these results.

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

1. A printing process for reproducing the likeness of metallic objects on paper, comprising printing a silhouette of the object in a uniform metallic lustre, and surprinting thereon a half-tone using a lustreless substance, of the same color as the silhouette.

2. A printing process for reproducing the likeness of metallic objects on paper, comprising printing a silhouette of the object in a uniform metallic lustre, and surprinting thereon a half-tone, using a lustreless substance, of the same color as the silhouette, and thereafter passing the printed paper through a calender stack for fusing the two prints together.

3. A printing process for reproducing the likeness of metallic objects on paper, comprising printing a silhouette of the object in a metallic ink with a uniform metallic lustre, and surprinting thereon a half-tone, using a lustreless substance, of the same color as the silhouette.

4. A printing process for reproducing the likeness of metallic objects on paper, comprising printing a silhouette of the object in a metallic lining powder with a uniform metallic lustre, and surprinting thereon a half-tone, using a lustreless substance, of the same color as the silhouette.

5. A printing process for reproducing the likeness of metallic objects on paper, comprising printing a silhouette of the object in a metallic ink with a uniform metallic lustre, and surprinting thereon a half-tone, using a lustreless non-metallic substance, of the same color as the silhouette.

6. A printing process for reproducing the likeness of metallic objects on paper, comprising printing a silhouette of the object in a metallic lining powder with a uniform metallic lustre, and surprinting thereon a half-tone, using a lustreless non-metallic substance, of the same color as the silhouette.

7. A printing process for reproducing the likeness of metallic objects possessing uniformly configurated surfaces, on paper, comprising printing a silhouette of the object in a uniform metallic lustre, and surprinting thereon a #110 to #130 screen half-tone, using a lustreless substance, of the same color as the silhouette.

8. A printing process for reproducing the likeness of metallic objects possessing uniformly configurated surfaces, on paper, comprising printing a silhouette of the object in a uniform metallic lustre, and surprinting thereon a #100 to #120 screen, highlight, silhouette half-tone, using a lustreless substance, of the same color as the silhouette.

9. A printing process for reproducing the likeness of metallic objects possessing configurated surfaces, on paper, comprising printing a silhouette of the object in a uniform metallic lustre, and surprinting thereon a #110 to #130 screen highlight, silhouette half-tone, using a lustreless substance, of the same color as the silhouette.

10. A printing process for reproducing the likeness of metallic objects possessing uniformly configurated surfaces, on paper, comprising printing a silhouette of the object in a uniform metallic lustre, and surprinting thereon a #110 to #130 screen half-tone, using a lustreless substance, of the same color as the silhouette, and thereafter passing the printed paper through a calender stack for fusing the two prints together.

11. A printing process for reproducing the likeness of metallic objects possessing uniformly configurated surfaces, on paper, comprising printing a silhouette of the object in a uniform metallic lustre, and surprinting thereon a #100 to #120 screen, highlight, silhouette half-tone, using a lustreless substance, of the same color as the silhouette, and thereafter passing the printed paper through a calender stack for fusing the two prints together.

12. A printing process for reproducing the likeness of metallic objects possessing configurated surfaces, on paper, comprising printing a silhouette of the object in a uniform metallic lustre, and surprinting thereon a #110 to #130 screen, highlight, silhouette half-tone, using a lustreless substance, of the same color as the silhouette, and thereafter passing the printed paper through a calender stack for fusing the two prints together.

13. A printing process for reproducing the likeness of metallic objects possessing uniformly configurated surfaces, on paper, comprising printing a silhouette of the object in metallic ink with a uniform metallic lustre, and surprinting thereon a #110 to #130 screen half-tone, using non-metallic lustreless ink, of the same color as the silhouette.

14. A printing process for reproducing the likeness of metallic objects possessing uniformly configurated surfaces, on paper, comprising printing a silhouette of the object in metallic ink with a uniform metallic lustre, and surprinting thereon a #110 to #120 screen, highlight, silhouette half-tone, using non-metallic lustreless ink, of the same color as the silhouette.

15. A printing process for reproducing the likeness of metallic objects possessing configurated surfaces, on paper, comprising printing a silhouette of the object in metallic ink with a uniform metallic lustre, and surprinting thereon a #100 to #130 screen, highlight, silhouette half-tone, using non-metallic lustreless ink, of the same color as the silhouette.

16. A printing process for reproducing the likeness of metallic objects on paper, comprising printing a silhouette of the object in metallic ink with a uniform lustre, adapted to dry quickly, and surprinting thereon a half-tone using a lustreless non-metallic ink, of the same color as the silhouette.

17. A printing process for reproducing the likeness of metallic objects on paper, comprising printing a silhouette of the object in metallic ink with a uniform lustre, adapted to dry quickly, and surprinting thereon a half-tone using a lustreless non-metallic ink capable of drying on metallic ink, of the same color as the silhouette.

18. A printing process for reproducing the likeness of metallic objects on paper, comprising printing a silhouette of the object in a metallic ink on coated paper, and surprinting thereon a half-tone, using a non-metallic lustreless ink of the same color as the silhouette.

MELVIN STONE.