Feb. 1, 1938. R. H. KAVANAUGH 2,106,981

STENCIL FOR USE IN SANDBLASTING

Filed March 20, 1936

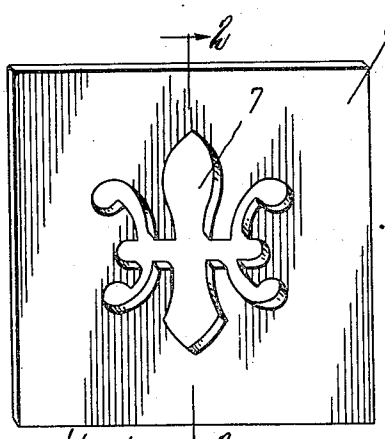


Fig. 1.

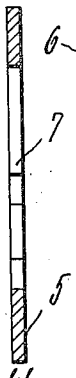


Fig. 2.

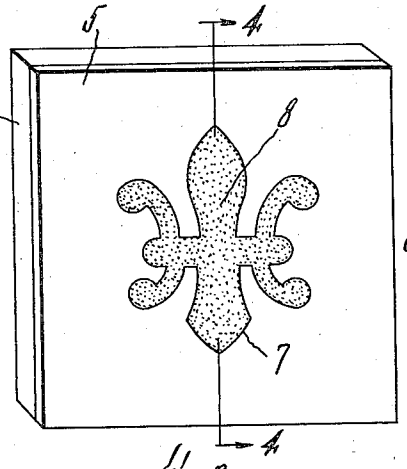


Fig. 3.

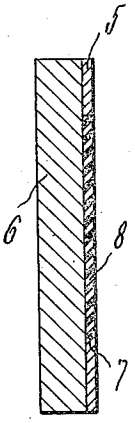


Fig. 4.

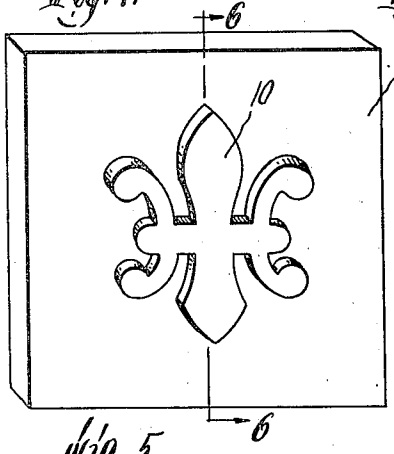


Fig. 5.

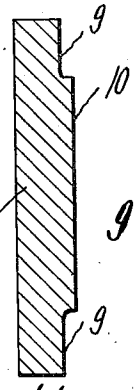


Fig. 6.

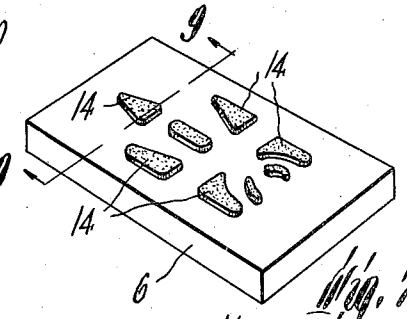


Fig. 7.

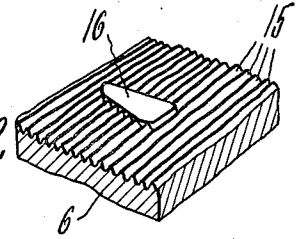


Fig. 8.

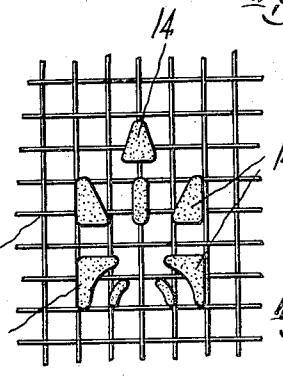


Fig. 11.

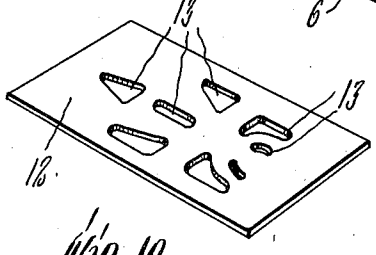


Fig. 10.

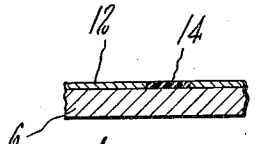


Fig. 9.

Inventor
Robert H. Kavanaugh
by Wright, Brown, Quinby & Clay
Attys.

Patented Feb. 1, 1938 2,106,981

UNITED STATES PATENT OFFICE

2,106,981

STENCIL FOR USE IN SANDBLASTING

Robert H. Kavanaugh, Brewer, Maine

Application March 20, 1936, Serial No. 69,851

3 Claims. (Cl. 41—39)

The object of this invention is to improve the production of designs on the surfaces of bodies of stone, wood, metal, encaustic tiling, leather, or of any other material the nature of which is such that its surface may be abraded by the well known action of a sand blast. The invention comprises a stencil made of strands covered with sand blast resistant material and carrying a mask or masks of sand blast resistant material.

The stencil may be provided with a single aperture constituting the design, and receiving only one mask, or with a plurality of apertures collectively constituting the design and receiving a corresponding number of masks.

Of the accompanying drawing forming a part of this specification,—

Figure 1 is a perspective view of a stencil formed to be applied to a body surface and having a single aperture shaped to characterize a design;

Figure 2 is a section on line 2—2 of Figure 1;

Figure 3 is a perspective view showing the stencil of Figure 1 secured to the surface of a body to be ornamented, and a sand blast resistant mask inserted in the stencil aperture;

Figure 4 is a section on line 4—4 of Figure 3;

Figure 5 shows the body in perspective and a relief ornament thereon formed by a sand blast, the stencil and the mask shown by Figures 3 and 4 being removed;

Figure 6 is a section on line 6—6 of Figure 5;

Figure 7 is a perspective view of a portion of a body prepared for ornamentation in accordance with one embodiment of the invention;

Figure 8 shows a part of the body portion shown by Figure 7 after the application of the sand blast and after the removal of the protecting masks;

Figure 9 is a section on line 9—9, Figure 7, showing the stencil used in the embodiment of the invention shown by Figure 7;

Figure 10 shows the stencil in perspective;

Figure 11 shows a portion of a lace-like stencil and design-modifying masks applied thereto by the stencil, shown by Figure 10, the latter being omitted from this figure.

The same reference characters indicate the same parts in all of the figures.

Referring to the embodiment of the invention shown by Figures 1 to 6, inclusive, I provide a stencil 5 which may be of any suitable material, and is adapted to be applied to a surface of a body 6 to be ornamented. The stencil 5 is provided with an aperture 7 formed to characterize a design to be imparted by a sand blast to the body 6. In this instance only one aperture is shown, but it is obvious that a plurality of orifices may be provided collectively characterizing the design as hereinafter described.

The stencil 5 is used by charging it with a plastic mixture constituting a mask 8 which is resistant to a sand blast, the preferred nature of the mixture being hereinafter described. The mask, filling the aperture 7, is shaped by the outlines of the aperture. It has cohesive and adhesive properties enabling it to adhere to the surface of the body 6 sufficiently to permit the stencil to be removed from the body and leave the mask in a predetermined position thereon. The mask material should be applied in the stencil 5 after the stencil is applied to the body.

A sand blast is directed against the body and mask after the plastic resistant is dry, and after the removal of the stencil 5 and is caused to cut away portions of the body not protected by the mask, and thus form a depressed surface 9 (Fig. 6), outside the mask, a design 10 in relief being left on the body portion protected by the mask.

Figure 10 shows a stencil 12 having a plurality of apertures 13 collectively characterizing a design to be applied to a body by a sand blast. The stencil 12 is used in the same way as previously described, by filling its apertures with plastic sand blast resisting material. After drying or setting of such material and removal of the stencil, masks 14 are left on the surface of the article to be ornamented in the predetermined positions thereon shown by Figure 7.

The plastic compositions which I have found most satisfactory for the masks herein described consist mainly of rubber latex, but preferably include one or another, or a number, of different modifiers to give them sufficient body and desirable qualities of consistency, plasticity, adhesiveness, etc. One example of such composition consists of approximately sixty per cent. of latex, preferably that known to the trade as "seventy per cent. latex compound" and forty per cent. powdered material such at whiting or starch, (by measure). A small quantity of liquid glue is sometimes desirable to increase adhesion when applied to very smooth and non-porous surfaces, such as glass for instance. When glue is employed, the proportions by measure may be latex fifty-five per cent., powdered material thirty-five per cent. and liquid glue ten per cent. While the glue somewhat hardens the mixture after drying, the hardening is not objectionable. Another suitable modifier is mucilage, or its equivalent, such as gum arabic, which may be used instead of glue and with or without a content of powdered material in the latex. I have found that when a

small quantity of gum arabic is added to seventy per cent. latex compound it cooperates with the latex in forming a heavy plastic mixture without the addition of whiting or other powdered material. The gum arabic gives body to the latex and increased adhesion, and enables the mixture to be readily washed from the stencil. Alternatively powdered casein may be used in the proportions of one part to each ten parts of the latex content, or thereabout. I have also found that formaldehyde mixed with latex, either the seventy per cent. compound referred to or preparations containing a smaller proportion of solids, modifies the latex by giving it body enough to be used through a stencil as described. A very small content of formaldehyde, in the order of one half teaspoonful to four fluid ounces of latex, (i. e., one per cent., more or less) is sufficient. If desired, a minor quantity of whiting or other suitable soft powdered material may be used with any of the above named latex preparations, or equivalent preparations.

I do not limit myself to the described mask compositions, and may vary the same in any way suitable to produce a composition which has the qualities and capabilities hereinbefore mentioned; or use any other plastic substances than latex or a latex composition, provided the substance has like or equivalent properties; but I claim originality of invention in them and their substantial equivalents.

Referring to Figures 7 to 11 inclusive, it will be seen that I apply to the surface to be ornamented protecting masks or patches 14, preferably composed of a composition such as those previously described, or a substance having properties like those described, and formed to collectively characterize a design to be imparted to said surface by a sand blast. Other portions of the body are left bare and unprotected. When the body is of wood and a sand blast is applied, the unprotected portions of the body are worn away in such manner as to form grooves 15 parallel with the grain of the wood as shown by Figure 8. The portions protected by the masks 14 form smooth surface areas 16 which may be substantially flush with the ridges between the grooves 15, and retain the color and finish of the material of the body.

The stencil by which such masks are applied to the body may be of any suitable sheet material, as rubber or other soft pliable material, and is provided with openings 13 formed and arranged to impart the desired design-producing form to the masks 14, as may be seen by comparing Figure 10 with Figure 7. The plastic composition is sufficiently adhesive to cause the masks to adhere to the surface of the body with sufficient tenacity to permit the lifting of the stencil 12 from the body and the masks, the latter remaining on the body as shown by Figure 7. The sand blast is applied to produce the design, and finally the masks are removed from the now ornamented surface.

If desired, the molding stencil may be of the type described by my Patent No. 1,954,672, dated April 10, 1934; i. e., a reticulated lace-like structure; which, however, need not be resistant to sand blast, although it may be. The lace-like stencil 20 may be stiffened, as by impregnation with varnish, shellac, glue or other suitable impregnant, to maintain its shape so that it may serve as a matrix or mold, and it may be adhered by a non-drying cement to the surface to be ornamented while the mask-forming plastic is pressed through its meshes. When such a stencil has been removed, the plastic masks dried, and a sand blast driven against the surface worked upon, the lace design is cut and sunk into the surface.

The design of the lace stencil may be modified by the addition to it of continuous areas or masks 14, as shown in Figure 11, made of originally plastic material in which strands of the stencil are embedded. The mask material here used may be any of the compositions or substances previously described, and when dry is permanently united to the strands and substantially flush on both sides with the stencil. These masks may be molded by a matrix stencil in the manner previously described, before being joined to the lace-like stencil. Such a modified stencil may be used directly on the surface to be ornamented under the sand blast, or as a matrix for the molding of patches to cause cutting of the design in reverse.

The inner side of each of the described stencils 5, 11 and 12 may be coated with a suitable adhesive, preferably non-drying, to assist in holding it when the mask mixture is being applied to the stencil.

Each of the stencils, 5 and 12, may be made of material such as paper, rubber, metal or a suitable composition. The stencil may be rigid as when made of metal, or flexible as when made of paper. The stencil whether flexible or rigid may be provided with a backing layer of soft flexible rubber or other soft flexible material which when placed on a somewhat rough surfaced body 6 will conform to irregularities of the body surface without leaving crevices into which the plastic mask material would be liable to work under the stencil.

Since stencils and masks or cover pads conforming with this invention may be applied to surfaces which have previously been coated with a thin film for protection of the mask-covered surface and to facilitate removal of the mask, I wish to make it understood that statements in this specification and in the following claims, to the effect that masks are applied to the surface to be ornamented, are not intended to exclude the use of an undercoat or film with such masks and the like. Hence the term "surface" and similar words or expressions used herein are to be construed as including, not only the bare surface of the body to be ornamented, but also any such surface bearing a film or coating of any material suitable for an undercoat beneath an outer layer of sand blast-resistant material. Within this meaning such a coating is considered as an element of the surface.

I claim:

1. A lace stencil impregnated with sand blast resistant material and having one or more masks of sand blast resistant material united to its structure over a limited area of such structure.

2. A stencil for use in surface ornamentation by sand blasting comprising a reticulated core of threads or filaments covered by a casing of sand blast resistant material, and masks of sand blast resistant material united to the filaments of such stencil over limited areas thereof.

3. A stencil for use in sand blasting comprising a reticulated fabric made of strands covered with sand blast resistant substance, and having a patch of sand blast resistant material in which certain of said strands are embedded.

ROBERT H. KAVANAUGH.