Oct. 8, 1935. R. D. GRAY 2,016,600

METHOD OF COLORING STONE

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Fig. 1.

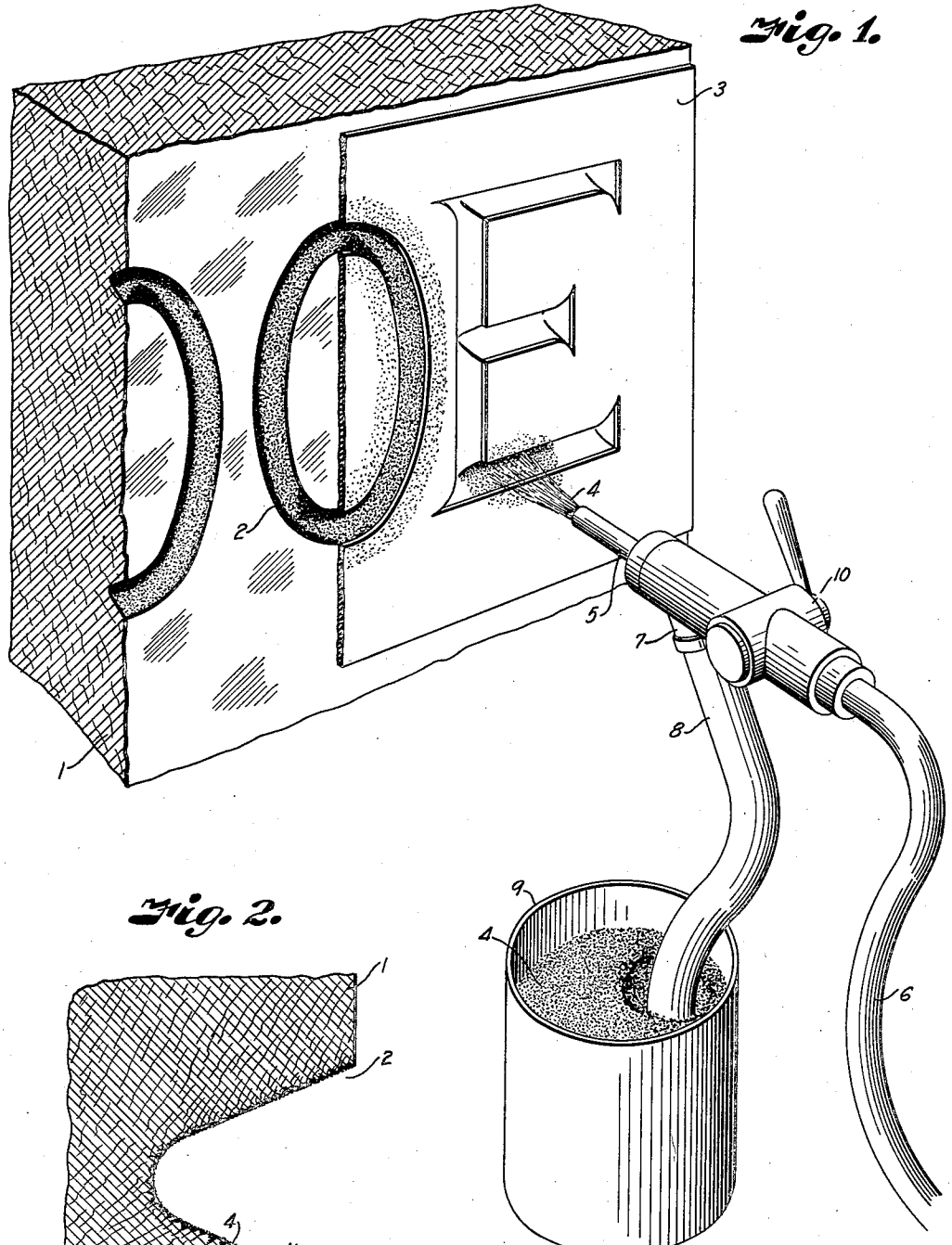


Fig. 2.

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METHOD OF COLORING STONE

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12 Claims. (Cl. 41—39)

My invention relates to a process for coloring lettering or ornamentation in monuments, corner stones and building decorations formed of stone, marble or the like and has for its principal object to apply the coloring matter so that it is permanently embedded in the stone.

In carrying out my invention I employ an improved method of applying the coloring matter as illustrated in the accompanying drawing, wherein:

Fig. 1 is a perspective view of a portion of a monument showing the method and apparatus for applying the coloring matter to the lettering.

Fig. 2 is an enlarged detail sectional view a portion of one of the letters illustrating the the coloring matter compacted into the surface of the lettering.

Referring more in detail to the drawing:

1 designates a portion of a stone monument in which letters 2 have been cut to form an inscription, as by any customary practice.

Owing to the fact that such letters are cut from the monument material, they have the same color characteristics as that of the monument itself. Consequently the letters are dull and relatively indistinct so that it is difficult to read them at a distance. It has therefore been desirable to change the color characteristics of the lettering or the background thereof, but the ordinary coloring materials have not proved satisfactory since it is difficult to obtain a bond of the coloring matter with the stone, or the coloring matter is absorbed by the pores and becomes indistinct after a short period, or the coloring matter spreads, due to capillary attraction of the pores, thereby producing a ragged and blurred outline for the lettering.

As above pointed out it is the purpose of the present invention to provide a coloring matter and a process of application wherein the lettering is distinct, the outlines sharp and well defined, and wherein the coloring is permanently embedded in the material in which the letters are formed.

In carrying out my invention I have found that if the coloring matter is of the proper hardness and yet possesses sufficient plasticity, it may be permanently driven into the pores of the stone or the like under the influence of a propelling force such as is afforded by a blast of compressed air. If the coloring matter is of too soft a nature it will not cut its way into the stone, and if it is too hard, it will rebound therefrom in the same manner of an ordinary sand blast used when cutting the letters.

Likewise the material must not be affected by capillary attraction of the pores or the coloring matter tends to spread after it has been applied so that the outlines tend to become irregular and the color diminishes in intensity.

I have found that a most suitable coloring matter is carbon or granular carbonaceous matter such as ordinary semianthracite coal in granular form as it has sufficient fixed carbon to give a lustrous jet black color and possesses sufficient hardness that it may be driven into the surface and pores of stone or the like. At the same time it possesses sufficient hydrocarbons to give the required plasticity to retain the granules embedded in the stone.

Anthracite coal which has been reduced to granular form may be used but it does not give as intense a color for the reason that it is harder and more difficult to get the granules to embed in the surface of the material being colored.

Bituminous coals might be used but they do not have the intense black color that is most desirable.

In carrying out my invention the letters are preferably cut by sand blast process through a stencil consisting of a plastic coating 3 spread over the face of the stone and having the lettering cut therethrough, as in customary practice. A sand blast is then employed to cut the lettering to the required depth in the monument.

The coloring material 4, preferably semi-anthracite, is then blown through the stencil by a suitable apparatus which includes a nozzle 5 having a hose 6 connected with a source of compressed air supply. The nozzle also has a branch connection 7 for a hose 8 leading to a receptacle 9 containing the coloring matter. For convenience the nozzle is provided with a suitable valve 10 by which the blast of air may be controlled by the operator.

In using the apparatus the coal is pulverized or ordinary semianthracite slack is placed in the receptacle and the hose 8 is inserted therein so that when the valve 10 is opened, the air rushing through the nozzle will syphon the granules of coal therefrom to be delivered with the air blast discharged from the nozzle as shown.

The spray from the nozzle is directed against the walls of the letters and the granules of coal particles are driven by the force of the air stream into the walls of the letters to become permanently embedded therein. As above described, the granules have sufficient hardness to penetrate the stone under the force of the air blast but

they also have sufficient plasticity to embed firmly therein, as indicated at 11, Fig. 2.

Inscriptions for monuments and the like when colored in accordance with my invention have a jet black brilliancy that is of lasting nature, impervious to moisture and the elements, and substantially impervious to acids.

What I claim and desire to secure by Letters Patent is:

1. The method of forming colored lettering on stone consisting of cutting the lettering into the stone and applying granular carbonaceous material to the lettering with sufficient force to embed the granules into the surface of the lettering.

2. The method of forming colored lettering on stone consisting of applying a stencil to the surface of the stone and applying granular, carbonaceous material through the stencil with sufficient force to embed the granules into the stone.

3. The method of forming colored lettering on stone consisting of applying a stenciling material over the stone, forming letters in the stencil, applying a sand blast through the stencil lettering to cut the letters into the stone, and applying a blast of granular coloring matter through the stencil with sufficient force to embed the granules of coloring matter into the surface of the letters.

4. The method of forming colored lettering on stone consisting of applying a stenciling material over the stone, forming letters in the stencil, applying a sand blast through the stencil to cut the letters into the stone, and applying a blast of granular anthracite coal through the stencil with sufficient force to embed the granules of coal into the surface of the letters.

5. The method of forming colored lettering on stone consisting of applying a stenciling material over the stone, forming letters in the stencil, applying a sand blast through the stencil to cut the letters into the stone, and applying a blast of granulated carbonaceous coloring matter through the stencil with sufficient force to embed the granules of coloring matter into the surface of the letters.

6. The method of forming colored ornamentation on stone consisting of cutting the ornamentation in the stone, and applying granular carbonaceous material to the ornamentation with sufficient force to imbed the granules into the surface of the ornamentation.

7. The method of forming colored ornamentation on stone consisting of applying a stencil to the surface of the stone, and applying granular carbonaceous material through the stencil with sufficient force to imbed the granules into the stone.

8. The method of forming colored ornamentation on stone consisting of applying a stencilling material over the stone, cutting the shape of the ornamentation in the stencilling material to expose the stone, applying a sand blast through the cutting of the stencilling material to cut the ornamentation into the stone, and applying a blast of granular coloring matter through the cutting of the stencil with sufficient force to imbed the granules of coloring matter into the surface of the ornamentation.

9. The method of forming colored ornamentation on stone consisting of applying a stencil material over the stone, marking the ornamentation on the stencilling material, cutting the stencilling material on the marking to expose the surface of the stone, applying a sand blast to the exposed surface of the stone to cut the ornamentation on the stone, and applying a blast of granulated carbonaceous coloring matter through the stencil with sufficient force to imbed the granules of coloring matter into the surface of the cutting forming the ornamentation.

10. An improvement in stone decorating which consists in forming a design in the surface of the stone and then driving coal dust into the surface of the design.

11. A process of decorating stone, marble or the like, which consists in depositing a dry coloring matter on controlled areas of the stone and embedding it in the stone by means of compressed air producing a clear cut vivid contrast between the treated areas and the surrounding area.

12. A process of decorating granite, stone or the like, which consists in first cutting out decorations in the stone by means of a sand blast, and then forcing a powdered coloring substance into the cut out portion of the stone by means of compressed air thereby embedding the pigment in the stone.

ROBERT D. GRAY.