Jan. 5, 1932. E. A. CHASE 1,840,226

METHOD OF PRODUCING A CONTOURED SURFACE ON STONE

Filed April 4, 1927

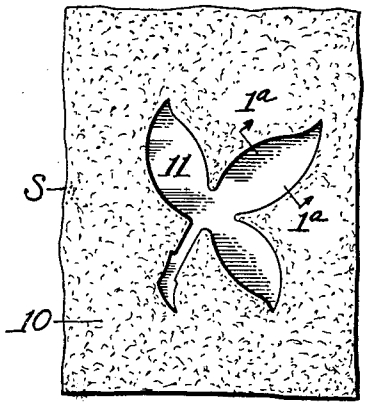


Fig. 1.

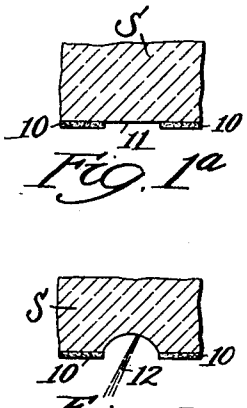


Fig. 1a

Fig. 2a

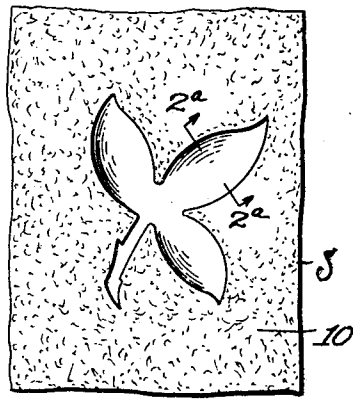


Fig. 2.

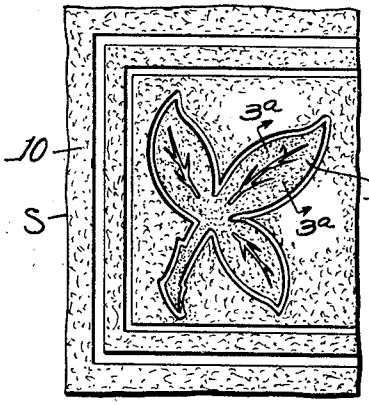


Fig. 3.

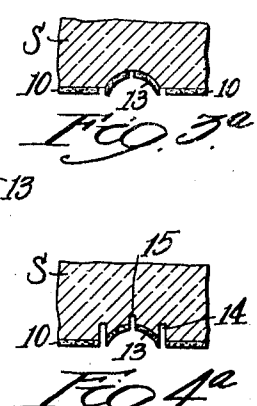


Fig. 3a

Fig. 4a

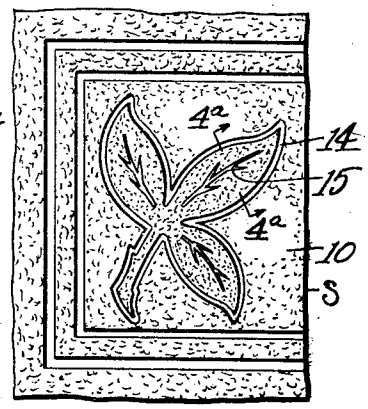


Fig. 4.

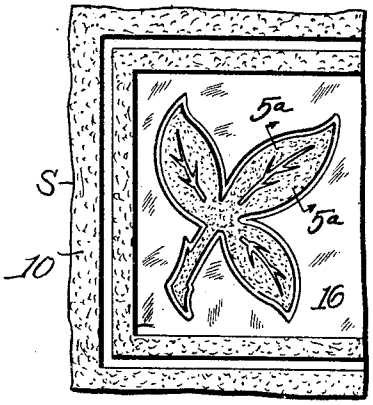


Fig. 5.

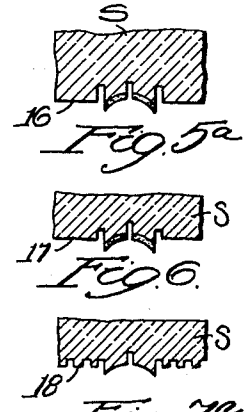


Fig. 5a

Fig. 6.

Fig. 7a

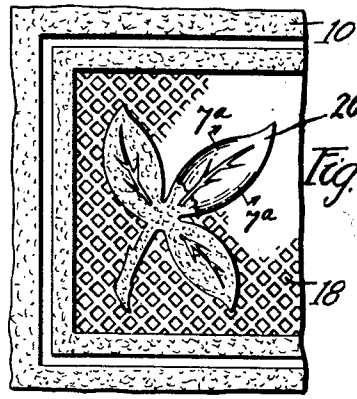


Fig. 7.

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UNITED STATES PATENT OFFICE

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METHOD OF PRODUCING A CONTOURED SURFACE ON STONE

Application filed April 4, 1927. Serial No. 180,800.

This invention relates to a method of producing an ornamental surface on a block of granite or other similar stone, in which the figure or design projects from a sunken background.

The general object of my invention is to provide a method by which such a design may be easily and quickly produced, while at the same time a contoured figure results, having a surface which contrasts sharply with the background and other adjacent portions of the stone.

With this general object in view an important feature of my invention relates to certain methods of production which enable me to produce a contoured figure without the use of hand cutting tools. A further feature relates to the use of certain materials in certain operations by which a strongly contrasted surface effect is achieved.

My invention further relates to certain associations of method steps, which will be hereinafter described and more particularly pointed out in the appended claims.

A preferred form of the invention is shown in the drawings in which

Fig. 1 is a plan view of a portion of a granite block and showing the first step of my improved process;

Figs. 2, 3, 4 and 5 are similar views showing successive steps in the process;

Figs. 1ª to 5ª inclusive are detail sectional views taken along the lines 1ª—1ª to 5ª—5ª respectively in Figs. 1 to 5;

Fig. 6 is a detail sectional view, showing a further step in my improved process;

Fig. 7 is a plan view showing the final step and the finished product; and

Fig. 7ª is a detail sectional view taken along the line 7ª—7ª in Fig. 7.

Referring to the drawings, I will now describe my improved method of producing a contoured and contrasting surface on a granite block or other similar stone.

I first provide a block of stone S having a finished or polished surface on one face thereof. I then apply a layer 10 of sand-resisting compound, such as a special glue, to the finished surface of the stone S and I cut out or stencil the design 11 from the layer 10, this step of the process being indicated in Figs. 1 and 1ª.

I then direct a very fine stream or blast of abrasive material 12 (Fig. 2ª) through a small nozzle against the exposed design 11 on the stone S, and by such application cut away the stone within the outlined design, giving the same a desired contour as indicated in Figs. 2 and 2ª.

In the preferred development of my invention, I use a crushed steel having fine angular grains as the abrasive material to form the stream or jet 12. This crushed steel cuts more rapidly than the usual sand blast and moreover produces a surface of a sharply contrasting color effect, the surface appearing much lighter than a surface produced by the use of sand. While I preferably use the crushed steel for the reasons above stated, very useful results may be attained by the use of sand or carborundum, and my invention is not limited to the use of a particular abrasive except as set forth in specific claims.

After the figure has been cut to a desired contour, I re-surface the figure with the sand-resisting compound and stencil the outline of the figure and such other portions as are to be cut deeply below the surface of the design. This step of the process is illustrated in Figs. 3 and 3ª, showing the outline of the figure and the veins of the leaves cut through the newly applied compound 13 on the face of the design.

I then apply a blast of sand or carborundum to the design, cutting the outline 14 and veins 15 to a substantial depth, as indicated in Figs. 4 and 4ª. The compound is then removed from the background of the design, as indicated at 16 in Figs. 5 and 5ª, and the sand blast is applied to cut the background to a substantial depth, as indicated at 17 in Fig. 6.

If a plain background is desired, this sand blasting operation will be continued until the background is at the full desired depth. If, however, a contrasting background is desired, a perforated metal screen of suitable design is next laid upon the face of the work in the path of the sand blast and the sand blast is then directed through the screen, pro-

ducing a diversified background as indicated at 18 in Figs. 7 and 7a.

The compound is then removed from the face of the design, as indicated at 20 in Fig. 7. The figure then stands out sharply from the background, and the contoured surface of the figure is particularly pleasing. When the crushed steel abrasive is used, the surface of the figure is also much lighter than the background, and the contrast is more effective.

It will be seen that I am able to produce a contoured figure entirely by the use of a blast of abrasive, thus greatly reducing the cost over the previous procedure involving the use of hand cutting tools. Also by using a specially adapted abrasive, I simultaneously provide the contoured figure with a sharply contrasting color effect. The steel abrasive may, if desired, be in the form of steel shot instead of crushed steel grains, the effect thereof being substantially the same except for a difference in cutting speed.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed otherwise than as set forth in the claims, but what I claim is:—

1. The method of ornamenting stone which consists in coating a finished stone surface with a layer of sand-resisting compound, with a figure of the design exposed therethrough, shaping the exposed figure by direct application of a stream of abrasive to said exposed figure to form a desired contour thereon, re-coating the contoured figure, removing the compound from the background portion of the surface, and sand-blasting the background to a desired depth while said contoured surface is protected by said compound.

2. The method of ornamenting stone which consists in coating a finished stone surface with a layer of sand-resisting compound, with a figure of the design exposed therethrough, shaping the exposed figure by direct application of a stream of steel abrasive to said exposed figure to form a desired contour of contrasting color effect thereon, re-coating the contoured figure, removing the compound from the background portion of the surface, and sand-blasting the background to a desired depth while said contoured surface is protected by said compound.

3. The method of ornamenting stone which consists in coating a finished stone surface with a layer of sand-resisting compound, removing the compound from a figure of the design, shaping the stencilled figure by applying a stream of abrasive to the exposed surface thereof to form a desired contour thereon, re-coating the contoured figure, stencilling the outlines of the design therein, sand blasting said outlines, removing the compound from the background portion of the surface, and sand-blasting the background to a desired depth.

4. The method of ornamenting stone which consists in coating a finished stone surface with a layer of sand-resisting compound, removing the compound from a figure of the design, shaping the stencilled figure by applying a stream of steel abrasive to the exposed surface thereof to form a desired contour thereon, re-coating the contoured figure, stencilling the outlines of the design therein, sand blasting said outlines, removing the compound from the background portion of the surface, and sand blasting the background to a desired depth.

5. The method of ornamenting stone which consists in coating a finished stone surface with a layer of sand-resisting compound, removing the compound from a figure of the design, shaping the stencilled figure by applying a stream of abrasive to the exposed surface thereof to form a desired contour thereon, re-coating the contoured figure, stencilling the outlines of the design therein, sand blasting said outlines, removing the compound from the background portion of the surface, sand blasting the background to a desired depth, applying a screen over the surface of said design, and sand blasting said background through said screen to its full depth.

6. The method of forming sand blast carving presenting a relief effect consisting in applying a coating to the surface of the stone, applying flowers or other configurations to the stone, cutting the outline of the flowers and removing the coating within the outline, sand blasting a sinkage in the exposed stone, recoating the sinkage, cutting out and removing a narrow portion around the outer edge of the flowers, sand blasting the sinkage in said narrow outline, removing the remaining coating and sand blasting the background.

7. The method of sand blast carving including coating a stone, removing the coating at the points where a sinkage is desired, sand blasting the stone at the place the coating has been removed, said sand blasting being continued until the sinkage has been formed of the proper depth and shape, recoating the sinkage, removing a narrow strip of coating adjacent the outer edge of said sinkage, sand blasting the stone exposed by removing said narrow strip, removing the remaining coating, and then sand blasting the background between said sinkage.

8. The method of sand blast carving including the coating of a piece of stone to be carved, removing the coating where the sinkage is to be produced, sand blasting the stone at the parts where the coating has been removed until the desired sinkage has been produced, recoating the sinkage, and then uncovering and sand blasting the stone around the sinkage, said uncovering and sand blast-

ing being done in two stages, the first being to uncover and sand blast a depression around the sinkage and the second being to uncover and sand blast the surface outside of and around said depression.

9. The method of sand blast carving including sand blasting a sinkage to secure a desired configuration, sand blasting a vertical wall around the outer edge of the sinkage, and finally sand blasting all of the background around the sinkage.

10. A sand blast carving formed integral throughout having a pitted background, and a design formed thereon in relief and having the face thereof formed with a sinkage of a contour to disclose the design, said face being pitted, the side walls of said design being substantially perpendicular to the background and said side walls extending to the background and substantially following the contour of said relief design.

11. A sand blast carving formed integral throughout having a pitted background, and a pitted design formed thereon in relief and having the face of the design formed with a sinkage of a contour to disclose the design, the side walls of said design being substantially perpendicular to the background, the perpendicular face of said side walls following the contour of said relief design.

In testimony whereof I have hereunto affixed my signature.

ELROY A. CHASE.