

Jan. 27, 1942.

C. E. FRICK

2,270,944

STENCIL

Filed May 1, 1939

Fig. 1

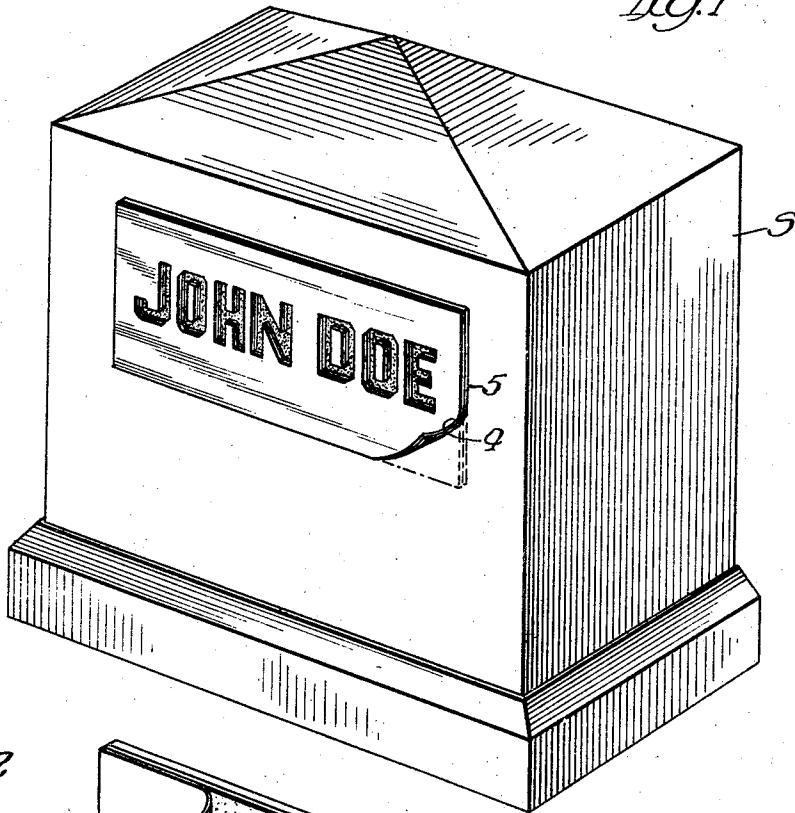


Fig. 2

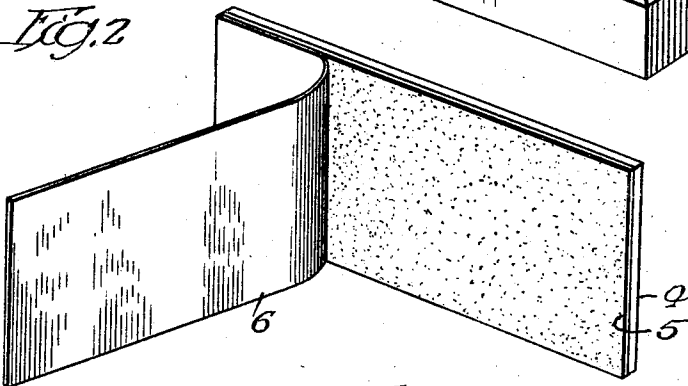
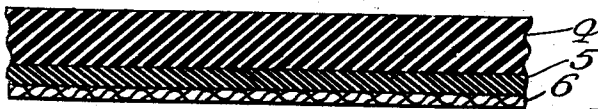


Fig. 3



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UNITED STATES PATENT OFFICE

2,270,944

STENCIL

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Application May 1, 1939, Serial No. 271,104

8 Claims. (Cl. 41—39)

In general the present invention relates to stencils for use in cutting letters, symbols or designs on monument forming stones or other stonework by way of sand blasting. More particularly the invention relates to that type of stencil which comprises a sand resistant sheet including vulcanized rubber and a material for toughening and rendering inelastic the vulcanized rubber, and also comprises a coating of adhesive on the back face of the sheet for securing the stencil in place, is adapted after application to the surface to be cut to have the desired letters, symbols or designs marked on the front face thereof and then cut out or removed by a knife or like implement, and serves when sand or other abrasive material is blasted against it in connection with cutting of the surface to control the sand so that it encounters only the portions of the surface behind the cut-outs and hence cuts by its abrasive action the desired letters, symbols or designs in the surface.

The primary object of the present invention is to provide a stencil of this type which is an improvement upon and has certain advantages over that disclosed in United States Letters Patent No. 2,162,332, granted to me June 13, 1939, by reason of the fact that the sand resistant sheet includes shellac instead of glue as the material for rendering tough and inelastic the vulcanized rubber, and hence has an extremely uniform texture throughout, and an exceptionally smooth or highly calendered outer face as well as no weak spots or blisters.

The invention further comprehends as one of its objects the provision of a sand blasting stencil which may be produced with greater facility than the stencil of the aforementioned application and is generally an improvement in the art.

Other objects of the invention and the various advantages and characteristics of the present stencil will be apparent from a consideration of the following detailed description.

The invention consists in the several novel features which are hereinafter set forth and are more particularly defined by claims at the conclusion hereof.

In the drawing which accompanies and forms a part of this specification or disclosure and in which like numerals of reference denote corresponding parts throughout the several views:

Figure 1 is a perspective of a monument forming stone having applied to the front face thereof in readiness for a sand blasting operation, a stencil embodying the invention;

Figure 2 is a perspective showing the stencil after a partial stripping or peeling of the usual holland sheet which serves as a protector and separator for the adhesive coating; and

Figure 3 is an enlarged section of the stencil.

The stencil which is shown in the drawing constitutes the preferred embodiment of the invention. It is shown or illustrated in connection with a monument-forming stone S and serves, as hereinafter described to control blast of sand or other abrasive material in connection with the cutting or formation of letters, symbols, or designs on the stone. As shown in Figure 3, the stencil embodies as the parts or elements thereof a sheet 4, a coating 5 on the back face of the sheet 4, and a protective sheet 6 of holland for the coating 5. The coating 5, as hereinafter described, is formed of pressure sensitive rubber base adhesive and is adapted, after removal of the holland sheet 6 to secure the sheet 4 in place on the stone S. The sheet 4 is formed of sand resistant material and is adapted when the stencil is in place on the stone to have the desired letters, symbols, or designs marked thereon and then cut out or removed from it by a knife or similar sharp implement. When a sand blast is directed against the stencil during use of the latter, the sheet 4 serves to control the sand so that it encounters only the portions of the surface of the stone behind the cut outs and hence cuts by its abrasive action the desired letters, symbols or designs in the stone.

The sheet 4 includes as its main constituents, vulcanized rubber and an admixture of shellac. It is preferably made of the following ingredients in substantially the proportions or amounts specified:

Ingredients	Pounds	Ounces
Smoked rubber sheets (hard tough plantation type rubber).....	100	0
Whiting.....	200	0
Lithopone.....	5	0
Shellac.....	100	0
Sulphur.....	3	0
Accelerator (tetramethylthiuram disulphide).....	1	4
Zinc oxide.....	5	0

In connection with fabrication of the stencil the aforementioned ingredients are placed on a mill of the heated roll type and are milled or mixed together until they are in the form of a plastic mass. The shellac is introduced on the mill in flake form and while on the mill becomes extremely plastic. Because of the properties and characteristics of shellac it disperses extremely

readily in the rubber. At the end of the mixing operation the mixed mass while in plastic form is calendered on or otherwise spread over a holland sheet (not shown). Preferably the mass is spread over the sheet so that it has a thickness throughout of approximately .040 inch. The whitening content of the sheet forming material or mass acts as a stiffener and also a filler. The lithopone serves as a filler and in addition makes the finished sheet light in color. The sulphur constitutes the vulcanizing agent for the rubber and the tetramethylthiuram disulphide operates as an accelerator for the vulcanizing agent. The zinc oxide content of the mass or material serves to activate the accelerator and in addition tends to harden or toughen the shellac. The shellac operates to toughen the mass as a whole and also to harden and reduce the elasticity of the rubber. Because the shellac disperses readily in the rubber the plastic mass as well as the calendered sheet is uniform in texture throughout. Furthermore, the mass is free from air holes which would, during the calendering operation, result in blisters on the various surfaces of the sheet. By employing an admixture of shellac the finished sheet is more inelastic than it would be if glue were employed instead of shellac. Because shellac has a pronounced affinity for sulphur and when combined with sulphur has a high degree of toughness the finished sheet has greater sand or wear resisting properties than the sheet of the aforementioned Patent No. 2,162,332. By employing shellac instead of glue as the material or medium for toughening or rendering inelastic the rubber, it is unnecessary to use a softener such as petrolatum as one of the ingredients.

After calendering or spreading the milled mass onto the aforementioned sheet of holland, the sheet together with the mass is placed in an oven or other heating apparatus for a period of eighteen hours and subjected to a temperature of approximately 200° F. This operation serves to vulcanize the rubber content of the mass and results in formation of the sheet 4. Because the latter is composed of vulcanized rubber and an admixture of shellac, it is not only extremely tough and durable but also sand resistant and substantially inelastic. Instead of using equal parts of rubber and shellac in the sheet 4, the rubber shellac content of the sheet may be changed by employing 40 to 60 parts of rubber and 60 to 40 parts shellac. In other words, in the aforementioned formula for the mass from which the sheet 4 is made from 80 to 120 pounds of rubber may be used, and from 120 to 80 pounds of shellac may be used. The filler (whiting) may be dispensed with in some cases or reduced to an amount equal to either the rubber or shellac content of the mass. Instead of using whiting as the filler for the sheet 4 barytes, clay, or starch may be used.

The adhesive coating 5 is applied to the exposed face of the sand resistant sheet 4 by way of a calendering or spreading operation after the vulcanizing step. It is essentially permanently tacky and preferably is formed of the following ingredients in substantially the proportions specified:

Ingredients	Pounds	Ounces
Milled white crepe rubber.....	38	0
Zinc oxide.....	12	0
Burgundy pitch.....	18	12
Oregon balsam.....	1	8

The Burgundy pitch content of the adhesive serves as a softener and makes the adhesive extremely tacky. The Oregon balsam due to the fact that it is non-volatile makes the adhesive permanently tacky. After application of the adhesive coating 5 to the sand resistant sheet 4, the sheet 6 of holland is applied to the exposed face of the coating. This sheet 6 corresponds in size to the coating 5 and serves to prevent the latter from adhering to objects prior to use of the stencil. During or after application of the holland sheet 6 to the pressure sensitive rubber base adhesive 5 the holland sheet on the sand resistant sheet 4 is removed. The latter sheet on which the sand resistant sheet 4 is formed serves as a backing for the sheet forming material and also to permit the plastic mass or material to be readily handled at the conclusion of the vulcanizing operation. By reason of the fact that the coating 5 is in the form of a permanently tacky pressure sensitive rubber base adhesive the stencil may be readily applied to the work, that is, the surface to be cut, without a preliminary wetting or moistening operation and also permits the stencil to be readily removed after the sand blasting step. In addition it serves as a cushion type backing for the sand resistant sheet 4 and by absorbing the shock or impact of the sand as it impinges against the sheet 4 increases materially the lasting properties of the sheet. Another feature or advantage of employing a coating of pressure sensitive adhesive resides in the fact that the sheet 4 is firmly held in place against the work during the sand blasting operation.

In using the stencil in connection with sand blasting to form letters on the stone S the holland sheet 6 is first stripped or peeled from the coating 5 of pressure sensitive rubber base adhesive. Thereafter the stencil is pressed against the surface to be cut or lettered in order to bring the coating 5 into adhesively connected relation with the latter. Thereafter the letters to be cut in the stone S are penciled or otherwise marked on the front face of the sheet 4 and are cut out or removed by a sharp knife or like tool. At the conclusion of this operation sand is blasted against the sheet 4. During the sand blasting operation the sheet controls the sand so that it encounters only the portions of the surface of the stone S behind the cut outs and hence cuts by its abrasive action the desired letters in the surface. By reason of the fact that the sheet 4 is formed of a composition of vulcanized rubber and shellac it resists any abrasive or wearing effect of the sand and hence the portions thereof which remain after the letter cutting operation protect the contiguous portions of the surface of the stone from abrasion by the sand. After the sand blasting operation the stencil is stripped or peeled from the cut surface.

The herein described stencil due to the material of which the sand resistant sheet 4 is formed, is characterized by the fact that it is exceptionally durable and long lasting. In addition it is characterized by the fact that it is adapted to make extremely sharply defined letters and may be quickly and readily placed in its operative position. Due to the fact that the toughening material for the vulcanized rubber is shellac which during fabrication of the sheet 4 disperses readily in the rubber the front face of the sheet is extremely smooth and hence may be readily marked with a pencil or other marking means.

The invention is not to be understood as restricted to the details set forth, since these may be modified within the scope of the appended claims, without departing from the spirit and scope of the invention.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent is:

1. As a new article of manufacture, a stencil designed for use in cutting letters, symbols or designs on a surface by way of an abrasive blast, and comprising an abrasive resistant sheet adapted to be placed against the surface and upon proper shaping thereof to control the blast so that it forms or cuts the desired letters, symbols or designs on said surface and including tough vulcanized rubber and an admixture of shellac in the proportion of between 40 to 60 parts by weight of rubber and 60 to 40 parts by weight of shellac, and an adhesive coating on the back face of the sheet for holding the sheet in adhesively connected relation with said surface.
2. As a new article of manufacture, a stencil designed for use in cutting letters, symbols, or designs on a surface by way of sand blasting and comprising a sand resisting sheet adapted to be placed against the surface and upon proper shaping thereof to control the blast so that it forms or cuts the desired letters, symbols or designs on said surface and including tough vulcanized rubber and an admixture of substantially an equal amount by weight of shellac whereby the sheet is rendered substantially inelastic, and an adhesive coating on the back face of the sheet for holding the sheet in adhesively connected relation with said surface.
3. As a new article of manufacture, a stencil designed for use in cutting letters, symbols, or designs on a surface by way of sand blasting and comprising a sand resisting sheet adapted to be placed against the surface and upon proper shaping thereof to control the blast so that it forms or cuts the desired letters, symbols or designs on said surface and including tough vulcanized rubber and an admixture of substantially an equal amount by weight of shellac whereby the sheet is rendered substantially inelastic, and a coating of permanently tacky pressure sensitive adhesive applied to and covering substantially completely the back of the sheet and adapted to hold the sheet in adhesively connected relation with said surface.
4. As a new article of manufacture, a stencil designed for use in cutting letters, symbols or designs on a surface by way of sand blasting and comprising a sand resistant sheet adapted to be placed against the surface and upon proper shaping thereof to control the blast so that it forms or cuts the desired letters, symbols or designs on said surface and including tough vulcanized rubber, an admixture of substantially an equal amount by weight of shellac whereby the sheet is rendered substantially inelastic and a filler in greater amount than either the rubber

or the shellac, and an adhesive coating applied to and covering the back face of the sheet and adapted to hold the sheet in adhesively connected relation with said surface.

5. As a new article of manufacture, a stencil designed for use in cutting letters, symbols, or designs on a surface by way of sand blasting and comprising a sand resistant sheet adapted to be placed against the surface and upon proper shaping thereof to control the blast so that it forms or cuts the desired letters, symbols or designs on said surface and including tough vulcanized rubber and an admixture of substantially an equal amount of shellac, and a filler in an amount by weight substantially equal to the combined amounts of the rubber and shellac, and an adhesive coating applied to and covering the back face of the sheet and adapted to hold the sheet in adhesively connected relation with said surface.
6. As a new article of manufacture, a stencil adapted for use in cutting letters, symbols or designs on a surface by way of sand blasting and comprising a sand resistant sheet adapted to be placed against the surface and upon proper shaping thereof to control the blast so that it forms or cuts the desired letters, symbols or designs on said surface and including tough vulcanized rubber and an admixture of substantially an equal amount by weight of shellac and a small quantity of lithopone, and an adhesive coating on the back face of the sheet for holding the sheet in adhesively connected relation with said surface.
7. As a new article of manufacture, a stencil adapted for use in cutting letters, symbols or designs on a surface by way of sand blasting and comprising a sand resistant sheet adapted to be placed against the surface and upon proper shaping thereof to control the blast so that it forms or cuts the desired letters, symbols or designs on said surface and including tough vulcanized rubber and an admixture of substantially an equal amount by weight of shellac and small quantities of lithopone and zinc oxide, and an adhesive coating on the back face of the sheet for holding the sheet in adhesively connected relation with said surface.
8. As a new article of manufacture, a stencil adapted for use in cutting letters, symbols or designs on a surface by way of sand blasting and comprising a sand resistant sheet adapted to be placed against the surface and upon proper shaping thereof to control the blast so that it forms or cuts the desired letters, symbols or designs on said surface and embodying substantially 25% by weight of tough vulcanized rubber, substantially 25% by weight of shellac, substantially 50% by weight of a filler and small quantities of zinc oxide and lithopone, and an adhesive coating on the back face of the sheet for holding the sheet in adhesively connected relation with said surface.

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