

GRID FOR PRODUCING A PATTERN ON A SURFACE

5 This invention relates to an apparatus and method for imprinting a surface with a design similar to bricks or stones and mortar.

Various apparatuses and methods have been devised to
10 simulate the appearance of bricks and mortar or stones and mortar on horizontal or vertical surfaces such as drive-ways, floors or walls. Typically a paint or concrete mixture is applied in a thin coat on the surface with contrasting colors used for the bricks or stones and the
15 mortar. The method commonly used is to apply a coating having the desired color of the mortar on the surface. Masking tape is then placed over this coating in a grid-like pattern to simulate the mortar. A second coating is then applied over the surface in the desired color of brick
20 or stone. Finally the masking tape is removed, leaving lines of "mortar" between the "bricks" or "stones". However this method is labour intensive because of the considerable amount of work in laying out the pattern of masking tape and the requirement to apply two separate
25 coatings to the surface.

Various products and methods have been developed in the past to simulate the appearance of brick or stone on other surfaces. One example is United States Patent No.
30 4,379,187 to Seman. This discloses a method of simulating mortar lines on a brick wall using a preformed, grid-like structure. The grid is removed after the brick-like material is applied.

35 United States Patent No. 4,239,820 discloses a method of creating a simulated stone surface or the like. A pattern is partially die cut and has an adhesive on one side. United States Patent No. 5,186,983 to Brown shows a process for decorating a hard surface. A template with holes is
40 used. However, the "mortar" is first applied by means of coloured paint.

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The art described above has one thing in common. All of the art relies on removing a peelable layer along the lines of "mortar" to expose a layer having a distinct color and appearance compared to the "brick". This generally requires the application of two separate coatings to the surface thus increasing the amount of work and time involved. Furthermore, the appearance of the "mortar" is not always true to life because the effect is limited to the preexisting surface or coating exposed when a peelable layer is removed.

SUMMARY OF THE INVENTION

It is therefore an object of the invention to provide an improved apparatus and method for producing a brick and mortar or stone and mortar appearance on a surface which is less labour intensive and time consuming compared to prior art methods and apparatuses.

It is also an object of the invention to provide an improved apparatus and method of this type which requires the application of only a single liquid coating to the surface.

It is a further object of the invention to provide an improved apparatus and method of this type which provides a more convincing brick and mortar or stone and mortar appearance on the surface.

It is still a further object of the invention to provide an improved apparatus and method of this type which produces a simulated brick and mortar or stone and mortar surface which is durable and long lasting.

In accordance with these objects, there is provided a grid for producing a pattern on a surface. The grid includes elongated members connected together at intersections and extending about a plurality of open area to form a mesh-like structure. Each elongated member has a top, a bottom

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- and a thickness extending between the top and the bottom. Connecting members may be provided which are connected to the elongated members at the intersections. Each of the connecting members extends outwardly from at least one
- 5 elongated member. Each connecting member has a top, a bottom and a thickness less than the thickness of said one elongated member. The bottoms of the connecting members and the elongated members are flush with each other.
- 10 According to another aspect of the invention, there is provided a method for producing a grid-like pattern on a surface. The method includes placing on the surface a grid which includes a plurality of elongated members connected together at intersections and extending about a plurality
- 15 of open areas. The grid has a top with a removable layer thereon. A liquid coating is spread over the surface in the open areas between the elongated members of the grid. The liquid coating is allowed to set. The removable layer is then removed from the grid, exposing the elongated
- 20 members.

Compared to prior art apparatuses and methods, the invention provides significant advantages. The appearance of mortar is achieved by applying a grid which is left in

25 place instead of being removed as in the prior art. Thus the surface of the mortar can have a more convincing shape and texture than can be achieved simply by exposing the preexisting surface or an earlier applied liquid coating. Furthermore, the time to do the job can be appreciably

30 reduced since only a single liquid coating is necessary (although a sealing coat may be applied if desired).

BRIEF DESCRIPTION OF THE DRAWINGS

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Fig. 1 is a top plan of a grid for producing a pattern on a surface according to an embodiment of the invention;

Fig. 2 is an enlarged, fragmentary isometric view thereof;

Fig. 3 is a view similar to Fig. 2 showing a grid after a liquid coating has been applied therebetween; and

5 Fig. 4 is a sectional view taken along line 4-4 of Fig. 2.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Fig. 1 shows a grid 10 for producing a pattern on a surface. The grid includes a plurality of first elongated members 12 which extend in parallel relationship along the length of the grid. The first members 12 are interconnected by a plurality of second members 14 which are parallel to each other and extend perpendicularly between adjacent members 12. The members 14 are staggered so that open areas 16 between the members 12 and 14 are rectangular and form a brick-like pattern with the members 12 and 14 mimicking lines of mortar between. It should be understood however that other patterns of brick, stone or the like could be simulated by the grid as well by using other configurations of elongated members including curved elongated members instead of the straight members illustrated in Fig. 1. Elongated members 12, 14 form a mesh-like structure with the open areas 16 therebetween.

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With reference to Figs. 2 and 4, each of the elongated members 12 and 14 has a top 18, a bottom 20 and a thickness 22 extending therebetween as seen in Fig. 4. Elongated members 12, 14 are preferably 0.35 to 0.64 cm. in thickness. However, this is not critical.

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The elongated members 12 and 14 may be connected together by a plurality of intersections 24. A plurality of connecting members 26 and 28 may be positioned at each intersection 24. The connecting members 26 are semi-circular while the members 28 are quarter-circular. However they may be other shapes as well.

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Two members 28 and one member 26 form a disc-like flange at each complete intersection. Inner edges 27 and 37 of the members 26 and 28 are connected to at least one elongated member while edges 36 and 38 are convexly curved. The members 26 and 28 have bottoms 30 and 32 respectively which are flush with the bottoms 20 of the members 12 and 14 as seen in Fig. 4. However, the connecting members 26 and 28 have a thickness 34 substantially less than the thickness 22 of the members 12 and 14. In the illustrated embodiment the thickness 34 of the connecting members 26 and 28 is one half the thickness 22 of the elongated members 12 and 14.

In one embodiment the outer edges 36 and 38 of the connecting members are tapered as seen in Fig. 4, which helps to hide the outer edges of the connecting members when the grid is used as described. The preferred material for the grid is concrete with a polymer additive. This provides compatibility with the liquid coating applied in the areas 16 as described below. The coating applied in areas 16 and the grid therefore have similar properties such as thermal expansion to ensure a durable long life for the finished surface. The grid can be made from a mixture of silica sand, cement powder and polymer with added fibres and/or other improved wear materials.

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The function of connecting members 26, 28 is to strengthen the corners of grid 10 where elongated members 12, 14 intersect and to provide a narrow bearing flange against which the concrete acts to maintain grid 10 securely in place on surface 50. As discussed further below, connecting members 26, 28 also act as a surface for manually securing grid 10 to the underlying surface 50 with fasteners 52 (Figure 2). In alternative embodiments of the invention, connecting members 26, 28, or similar narrow flanges extending into open areas 16, could be located anywhere along the length of elongated members 12, 14 and not necessarily at intersections 24. In a further alternative embodiment, connecting members 26, 28 could be omitted entirely and the edges of elongated members 12, 14 could be

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outwardly inclined to act as bearing surfaces against which the weight of the concrete could act to maintain grid 10 in position. These alternative embodiments would be suitable if grid 10 is constructed from a material not requiring reinforcement at intersections 24 in order to confer sufficient structural strength.

As seen in Fig. 4, each of the elongated members 12 and 14 has a transversely concave top 40 which initially is covered by a removable layer 42. The removable layer 42 could consist of various materials including wax (such as candle wax or bees wax), molded plastic (such as polyethylene or polypropylene), or peel-off tape. Removable layer 42 may also consist of suitable water-soluble coatings.

Removable layer 42 may be formed in a first mold having a concave bottom and a grid-like shape. The removable layer 42 is then removed from the first mold, inverted and placed in a second grid shaped mold having a flat bottom. The polymer enhanced concrete, or other material forming the permanent portion of grid 10, is poured on top of the curved surface of removable layer 42 and is allowed to set within the second mold. The grid is then removed from the second mold so that removable layer 42 faces upwards as shown in Fig. 2.

Alternatively, after removable layer 42 is formed in the first mold, an adhesive may be applied to its curved surface. A thin layer of fibre may then be applied to the curved surface such as by blowing fibre particles onto the adhesive coating. The removable layer is then dipped in a tray of cementitious material such as polymer enhanced concrete which is allowed to set to form grid members 12, 14. This step could be performed on site or at the factory. The layer of fibre provides a surface for the cementitious material to bond to and also provides grid 10 with enhanced structural strength and wearability.

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In the alternative embodiment described above the application of fibre to removable layer 42 prior to dipping is optional. Layer 42 could be dipped directly into cementitious material of an appropriate consistency, either
5 once or multiple times. After the dipping step, removable layer 42 may be set on a flat sheet of material to allow the cementitious material to set to the desired shape.

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Method

In use, the grid 10 is applied over a surface 50 where a brick-like or stone-like pattern is desired. The grid could be secured to the surface by an adhesive, such as
15 some of the prior art grids, but no such adhesive is used in this example. This allows the grid to be moved about and positioned adjacent other similar such grids to achieve the desired effect. Once the grid is in the proper place, it is secured by fasteners 52 shown in Fig. 2. Various
20 types of fasteners could be used, such as screws, nails or staples, but in this example lead or plastic plugs are preferred.

A concrete drill is used to drill through the connecting
25 members 26 or 28 and into the surface to a depth of approximately 1 cm. The lead or plastic plugs are then inserted through the connecting members and hammered into place there. It should be noted that these plugs are only required on low spots or dips in the surface. They hold
30 the grid against the surface despite irregularities therein. If the surface is perfectly flat and generally horizontal then the grid may be held in place only by the liquid coating as described below. On the other hand, an adhesive or fasteners are essential when a vertical sur-
35 face, such as a wall, is to be coated.

Alternatively, the existing surface may first be prepped with a thin layer of the polymer concrete before applying the grid. This may be applied with a squeegee, doing a

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small portion at a time. The grid is applied while the coating is still damp, thus avoiding voids or air pockets under the grid. The coating acts as an adhesive so fasteners are not required. The remaining liquid coating is applied after the grid is positioned. The coating goes over the connecting members 26, 28 and dries there permanently, thus further securing the grid in place.

Once the grid is in place a liquid coating 60, as shown in Fig. 3 is applied to the areas 16 between the elongated members 12 and 14. Such liquid coatings are known and commercially available and are made of concrete with a polymer additive and a colouring agent added thereto. A typical formulation is 1 part portland cement, 2 parts silica sand, 1 part polymer, 2 parts water and colouring as required. The polymer in this example is available from Concrete Solutions, 6160 Fairmount Avenue, P.O. Box 600526, San Diego, CA 92160 although other polymers may be substituted. The coating can be smoothed flush with the tops of the members 12 and 14 using a suitable tool such as a squeegee.

After the coating has been applied, it is allowed to set to produce a waterproof surface. The next step is to remove layer 42 from the tops of the members 12 and 14. If removable layer 42 comprises wax or a water-soluble coating, layer 42 could be removed by pressure-washing to reveal elongated members 12, 14. Alternatively, if layer 42 comprises molded plastic or tape, layer 42 could be manually peeled off. The removal of layer 42 exposes the concave tops 40 of the members 12 and 14 which yields a mortar-like appearance (Figure 3). The members 12 and 14 typically have a suitable contrasting color compared to the coating 60, thus giving a brick-like or stone-like appearance when the process is completed. The mortar-like appearance of the members 12 and 14 is enhanced by their concave tops 40, an effect not achieved by prior art devices and methods.

Alternatives and Variations

The grid may be made of other materials besides the polymer
5 enhanced concrete. Epoxy has been found suitable, for
example G-2 epoxy available from Industrial Formulators of
Canada, Ltd., 3824 William Street, Burnaby, Canada V5C 3H9.
A fill of glass fibre and silica sand is mixed with the
liquid epoxy and poured cold into a mold. Another option
10 is plastic materials, such as injected molded plastic.

It would be understood by someone skilled in the art that
many of the details provided above are by way of example
only and are not intended to limit the scope of the inven-
15 tion which is to be interpreted by reference to the fol-
lowing claims.

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WHAT IS CLAIMED:

1. A grid for producing a pattern on a surface, the grid
5 comprising:

10 elongated members connected at intersections and
extending about a plurality of open areas to form a
mesh-like structure, each said elongated member having
a top, a bottom and a thickness extending between the
top and the bottom thereof; and

15 connecting members connected to the elongated members
at said intersections, each said connecting member
extending outwardly from at least one elongated
member, each said connecting member having a top, a
bottom and a thickness extending between the top and
20 the bottom of said each connecting member which is
less than the thickness of said one elongated member,
the bottoms of the connecting members and of the
elongated members being flush with each other.

2. A grid as claimed in claim 1, wherein the connecting
25 members have inner edges connected to the elongated
members and outer edges distal therefrom, the outer
edges being convexly curved.

3. A grid as claimed in claim 2, wherein the connecting
members are tapered towards the outer edges thereof.

- 30 4. A grid as claimed in claim 1, wherein the elongated
members have transversely concave tops.

- 35 5. A grid as claimed in claim 1, wherein the grid is of
concrete.

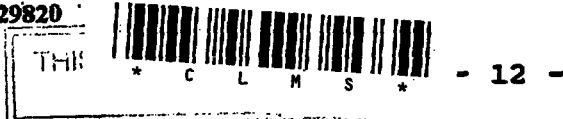
6. A grid as claimed in claim 1, wherein the grid is of
concrete with a polymer additive.

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7. A grid as claimed in claim 1, including a plurality of first elongated members and second elongated members, the first elongated members being perpendicular to the second elongated members and being connected thereto at said intersections.
8. A grid as claimed in claim 7, wherein there is a plurality of connecting members at each said intersection, forming a disc-like flange.
9. A grid as claimed in claim 8, wherein there are three said connecting members at each said intersection, one said connecting member being semi-circular and two said connecting members being quarter-circular.
10. A grid as claimed in claim 1, wherein the elongated members are 0.35 to 0.64 cm. thick.
11. A grid as claimed in claim 1, wherein there is a removable layer on the tops of the elongated members.
12. A grid as claimed in claim 11, wherein the removable layer is a wax.
13. A grid as claimed in claim 12, wherein the elongated members and the connecting members have an adhesive on the bottoms thereof.
14. A grid as claimed in claim 1, wherein the connecting members are approximately half the thickness of the elongated members.
15. A method of producing a grid-like pattern on a surface, comprising:
- placing on the surface a grid which includes a plurality of elongated members connected together at intersections and extending about a plurality of open





areas, said grid having a top with a removable layer thereon;

5 spreading a liquid coating over the surface in the open areas between the elongated members of the grid;

allowing the liquid coating to set; and

10 removing the removable layer from the grid, exposing the elongated members thereof.

15 16. A method as claimed in claim 15, wherein the elongated members and the liquid coating have contrasting colors.

20 17. A method as claimed in claim 15, wherein the grid has connecting members extending outwardly from the intersections of the elongated members, said connecting members and elongated members having bottoms which are flush, the connecting members being thinner than the elongated members, the liquid coating being applied over the connecting members.

25 18. A method as claimed in claim 17, wherein the grid is secured to the surface by fasteners extending through the connecting members.

30 19. A method as claimed in claim 15, wherein the removable layer is removed by pressure washing after the liquid coating is set.

35 20. A method as claimed in claim 15, wherein a layer of the liquid coating is applied to the surface before placing the grid and more coating is applied after the grid is placed.

21. A grid for producing a pattern on a surface, said grid comprising:





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(a) a plurality of elongated members connected at intersections and extending about a plurality of open areas to form a mesh-like structure, each of said elongated members having a cylindrically concave top surface, a bottom surface and a thickness extending between said top and bottom surfaces; and

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(b) a removable layer on said concave top surface.

22. The grid as defined in claim 21, wherein said removable layer comprises a removable wax coating.

15 23. The grid as defined in claim 21, wherein said removable layer comprises peelable tape.

24. The grid as defined in claim 21, wherein said removable layer comprises a plastic coating.

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25. The grid as defined in claim 21, wherein said grid further comprises support means extending from said elongated members into said open areas, at least part of said support means having a thickness less than said elongated member thickness.

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26. The grid as defined in claim 25, wherein said support means comprises a plurality of flanges connected to said elongated members for fastening said grid to said surface.

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27. The grid as defined in claim 26, wherein said flanges are located at the intersections between said elongated members.

35 28. A grid for producing a pattern on a surface, said grid comprising:

(a) a plurality of elongated members connected at intersections and extending about a plurality



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of open areas to form a mesh-like structure, each of said elongated members having a top surface, a bottom surface and a thickness extending between said top and bottom surfaces; and

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(b) support means extending from said elongated members into said open areas, at least part of said support means having a thickness less than said elongated member thickness.

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29. The grid as defined in claim 28, further comprising a removable layer on said elongate member top surface.

15 30. The grid as defined in claim 29, wherein said removable layer comprises a removable wax coating.

31. The grid as defined in claim 29, wherein said removable layer comprises peelable tape.

20 32. The grid as defined in claim 29, wherein said removable layer comprises a plastic coating.

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