June 26, 1956 B. L. RASKIN ET AL 2,752,275

SURFACE FINISHED MASONRY CONSTRUCTION UNIT

Filed Sept. 5, 1952

Fig 1.

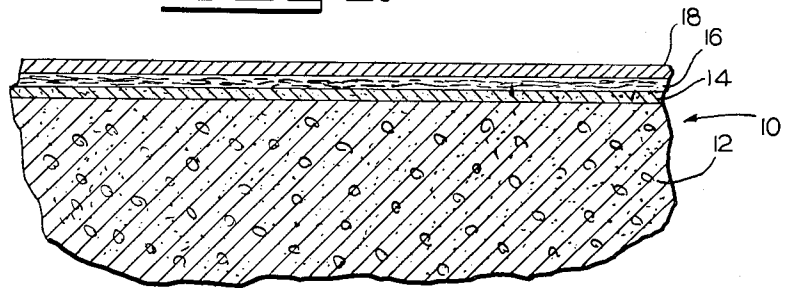
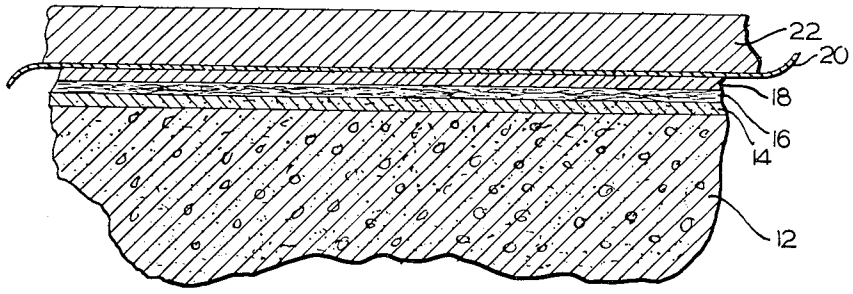


Fig 2.



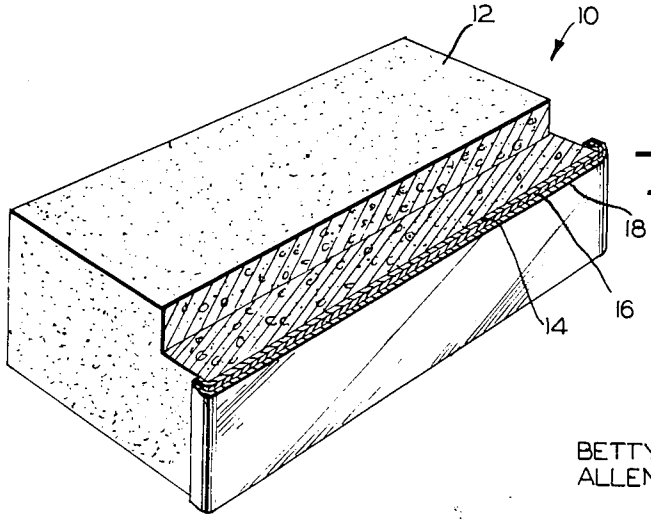


Fig 3.

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SURFACE FINISHED MASONRY CONSTRUCTION UNIT

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10 Claims. (Cl. 154—45.9)

The present invention relates to a masonry construction unit having a decorative and protective finish on at least one surface thereof.

One of the objects of the present invention is to provide a decorative surface finish on a masonry construction unit, which finish is abrasive resistant, waterproof, chemically resistant and of high impact strength.

It is a further object of this invention to provide a method for applying the aforesaid surface to a variety of masonry construction units of varying shapes and compositions, which method eliminates the necessity of using a mold, which has heretofore been considered essential in producing bricks or structural articles of this type.

The product of this invention comprises a masonry construction unit having on at least one surface thereof an initial coating comprising a polyester resin and a filler therefor, a fibrous mat bonded to the initial coating, and a finish coating on the outer surface of the fibrous mat comprising a polyester resin. If desired, the outer finish coating may be pigmented to produce any desired color. In addition, a filler may be employed in the outer surface coating in order to produce a sand finish, or if desired, the polyester resin may be used alone to produce a surface possessing a smooth, uninterrupted sheen, which, when pigmented, simulates the appearance of the ordinary bathroom tiling.

In the drawings forming part of this application, Figure 1 is an enlarged fragmentary sectional view of a masonry construction unit having a surface coating applied thereto in accordance with this invention;

Figure 2 is an enlarged fragmentary sectional view similar to Figure 1, but including an illustration of a method employed in accordance with the present invention for obtaining a smooth outer surface; and

Figure 3 is a perspective view of a finished product in accordance with this invention partially broken away to show the manner in which the surface coating of this invention may overlap the corners of the masonry units, if desired.

As shown particularly in Figures 1 and 3 of the drawings, the finished structural material 10 of this invention comprises a masonry construction unit 12, having on at least one surface thereof an initial coating 14 comprising a polyester resin and a filler therefor, a fibrous mat 16 bonded to the initial coating 14, and a finish coating 18 on the outer surface of the fibrous mat 16. The finished surface 18, as explained more fully hereinafter, comprises a polyester resin, and may include a filler and/or pigments.

Examples of the various masonry construction units which may be used in accordance with this invention include cinder, slag, cement or concrete blocks, a variety of clay bricks, and unglazed tiles. It has been found that generally an economically suitable surface finish may not be applied directly to these masonry building units because of their high degree of surface roughness. Utilization of, for example, a polyester resin which is subsequently cured, would require a large amount of the resin in order to obtain a smooth surface. This is not

only economically unfeasible, but the resultant product possesses low impact strength and therefore is easily damaged.

In order to avoid the difficulties encountered in applying a finish coating directly to a masonry unit, it has been found desirable to utilize an initial coating which comprises a polyester resin and a filler therefor. This coating serves the purpose of improving the contour and uniformity of the original surface of the masonry construction unit and is at the same time economically feasible.

For example, a mixture containing 20% of a polyester resin, a small amount of catalyst, and 80% sand, has been found to produce a satisfactory coating. Preferably, such mixtures should contain a minimum of 10% resin, since as a rule, a lesser amount in this coating does not provide a good bond to the surface of the masonry unit. From a theoretical viewpoint, the amount of resin which is to be used with the filler is dependent on the nature of the filler and its particle size. With spherical particles of uniform particle size, it has been found desirable to use at least 16% resin. With a filler of variable particle size, less than 16%, for example, 10% may be adequate. There is no upper limit to the amount of resin to be employed except for the economical consideration.

Of the various polyester resins suitable for use in this invention, both in the initial coating, as described above and in the finish coating, as described hereinafter, it has been found that in general, any of the unsaturated polyester resins may be employed. These resins may be conveniently prepared by reacting a polyhydroxy alcohol, such as diethylene glycol, ethylene glycol, propylene glycol and the like, or admixtures thereof, with unsaturated dicarboxylic acids, such as maleic, fumaric, phthalic and the like, and admixtures thereof. These resins may be modified with mono-hydroxy alcohols and mono-basic acids, or the resultant resin may be cut with copolymerizable materials, such as styrene and the unsaturated phthalic esters, such as diallyl phthalate and the like. In addition, polyester resins such as Pittsburgh Plate Glass Company's product known under the trade name "Selectron" and Rohm and Haas Company's product known under the trade name "Paraplex P" have proved highly satisfactory for this invention.

These polyester-type resins normally require a catalyst to effect a cure and become hard. Among these catalysts may be mentioned the organic peroxides, such as benzoyl peroxide, and the 60% methyl ethyl ketone peroxide in 40% dimethyl phthalate product known under the trade name "Lupersol DDM." In addition, an accelerator such as cobalt naphthanate or stannous chloride is sometimes desirable. Other catalysts and accelerators known to the art which effect satisfactory cures at a temperature range from room temperature to temperatures of several hundred degrees may be employed. Generally, it has been found that a curing temperature for the polyester resin in excess of 280° F. is seldom necessary.

Of the various filler materials for polyester resin compositions to be employed in the initial coating, there may be mentioned various siliceous materials, such as sand, ceramic frits, and certain clays such as diatomaceous earth. Ordinary glass sands varying in fineness from 25 mesh to 1,000 mesh, suitably graded and mixed, have proved to be an excellent filler.

Examples of the various fibrous mat materials bonded to the initial coating for producing a smooth finished surface of high impact strength include a variety of materials such as glass fiber mats, asbestos fiber mats, woven glass cloth, rock wool mats, cotton, wool, straw, shredded rags, and paper mats. The term "fibrous mat" includes within its scope mats composed of fibers either disposed at random and adhered together by a suitable adhesive, or fibers woven together. These mats function in the

finished product to afford a high impact strength, and in addition, act as economically feasible filler material to afford a smooth surface upon which a finish coating may be applied. Without the benefit of the mat, the finished surface would be of lower impact strength, i. e., relatively brittle, and unable to withstand the usual handling during construction.

A particularly effective fibrous mat for use in accordance with this invention is the glass mat product of the Owens-Corning Fiberglas Company, in which the fibers are disposed at random and adhered together by a suitable adhesive. These mats are relatively light, weighing from about one ounce to three ounces per square foot.

The finished surface coating applied to the outer surface of the fibrous mat in accordance with this invention is a polyester-type resin, and any of those resins described above in connection with the initial coating are satisfactory. In addition, the same type catalyst and accelerators are preferably used. Besides forming the finished surface, this coating normally penetrates the underlying fibrous mat and acts as a further bonding agent between the mat and the initial coating.

For the purpose of providing a smooth finished coating of tile-like appearance, and possessing high sheen, the polyester resin should be used alone or in combination with a very fine filler material, such as glass sands, varying in fineness from 100 to 250 mesh. Where a filler is employed in the finish coating, the resin content is preferably at least 25%.

The finish coating may also include, if desired, a pigment for producing a color in the finished product. Various inorganic and organic pigments for use with polyester resins are well known in the art. Suitable extenders such as calcium carbonate, finely divided silicas and other compatible inorganic materials may also be included.

In accordance with the method of the present invention, it is preferable to eliminate the surface moisture content of the masonry building unit by preheating, as for example, by the use of an infra-red lamp.

After elimination of moisture, the initial coating is applied by means, for example, of a blade or trowel. After the initial coating has dried sufficiently, or while it is in a more or less tacky state, a layer of fibrous mat material is applied thereover. Upon the surface of this mat there is then applied the finish coating as described above.

While the latter coating is still somewhat tacky, a sheet of cellophane, glass, or some other type of sheet or film which is relatively impervious to the passage of air, is then applied. The purpose of this film or sheet is to assure the production of a glazed or glossy finish. After the application of the same, a contact pressure is utilized. This contact pressure may be supplied, for example, by a heavy metal plate, which is placed on the film or sheet. In Figure 2 of the drawings, a cellophane sheet is illustrated at **20**, and a heavy metal plate at **22**.

Thereafter, the masonry unit as prepared above is baked in an oven at a temperature of, for example, 250° to 265° F., until a satisfactory cure has been obtained.

If a glazed or glossy finish is not desired in the final product, the use of the film or sheet and contact pressure may be omitted. Thus, for example, if it were desirable to produce a finish simulating a rough sand finish effect, a filler material of the proper particle size to yield a desired effect would be employed, and in this case, it would be preferable to omit the use of the film or sheet and the contact pressure.

In the foregoing method, the coating materials may flow slightly over the side walls of the brick. If this is not desired, the bricks may be suitably trimmed by the use, for example, of a knife edge. If, on the other hand, it is desirable to encompass a portion of the side walls of the masonry construction unit with the finish coating, this may be done by employing a mat larger than the surface area of one face of the unit to be coated and allowing it to overlap the corners thereof. The resultant product will be as illustrated in Figure 3 of the drawings.

After completion of baking, the sheet or film, if used, is peeled off, and the resultant surface possesses abrasion resistance, chemical resistance, waterproof properties, high impact strength, and a highly ornamental and desirable appearance.

The foregoing description of this invention is for the purpose of illustration only, and is not limiting to the scope of the invention which is set forth in the claims, wherein we claim:

1. A masonry construction unit in the form of a member of the group consisting of cinder, slag, cement and concrete blocks, clay bricks and unglazed tiles having on at least one surface thereof an initial coating comprising a polyester resin and a filler therefor, a fibrous mat material bonded to said initial coating, and a finish coating on the outer surface of said fibrous material, said finish coating comprising a polyester resin.

2. A masonry construction unit in the form of a member of the group consisting of cinder, slag, cement and concrete blocks, clay bricks and unglazed tiles as set forth in claim 1 wherein said finish coating includes a filler having a particle size of from 100 to 250 mesh.

3. A masonry construction unit in the form of a member of the group consisting of cinder, slag, cement and concrete blocks, clay bricks and unglazed tiles having on at least one surface thereof an initial coating comprising a polyester resin and a filler therefor, a fibrous mat material bonded to said initial coating, and a finish coating on the outer surface of said fibrous material, said finish coating comprising at least 25% by weight of polyester resin, and a filler having a particle size of from 100 to 250 mesh.

4. A masonry construction unit in the form of a member of the group consisting of cinder, slag, cement and concrete blocks, clay bricks and unglazed tiles having on at least one surface thereof an initial coating comprising at least 10% by weight of a polyester resin and a filler therefor, a fibrous mat material bonded to said initial coating, and a finish coating on the outer surface of said fibrous material, said finish coating comprising a polyester resin.

5. A masonry construction unit in the form of a member of the group consisting of cinder, slag, cement and concrete blocks, clay bricks and unglazed tiles having on at least one surface thereof an initial coating comprising at least 10% by weight of a polyester resin and a filler of a particle size of from 25 to 1000 mesh, a fibrous mat material bonded to said initial coating, and a finish coating on the outer surface of said fibrous material, said finish coating comprising a polyester resin.

6. A masonry construction unit in the form of a member of the group consisting of cinder, slag, cement and concrete blocks, clay bricks and unglazed tiles having on at least one surface thereof an initial coating comprising a polyester resin and a filler therefor, a glass fiber mat bonded to said initial coating, and a finish coating on the outer surface of said fibrous material, said finish coating comprising a polyester resin.

7. A masonry construction unit in the form of a member of the group consisting of cinder, slag, cement and concrete blocks, clay bricks and unglazed tiles having on at least one surface thereof and on at least a portion of one additional surface adjoining said first surface an initial coating comprising a polyester resin and a filler therefor, a fibrous mat material bonded to said initial coating, and a finish coating on the outer surface of said fibrous material, said finish coating comprising a polyester resin.

8. A masonry construction unit in the form of a member of the group consisting of cinder, slag, cement and concrete blocks, clay bricks and unglazed tiles having on at least one surface thereof an initial coating comprising a polyester resin and a filler therefor, a fibrous

mat material bonded to said initial coating, and a finish coating on the outer surface of said fibrous material, said finish coating comprising a polyester resin and a filler, the particle size of said filler being selected to produce a desired sand finish effect.

9. A masonry construction unit in the form of a member of the group consisting of cinder, slag, cement and concrete blocks, clay bricks and unglazed tiles having on at least one surface thereof an initial coating comprising a polyester resin and a filler therefor, a fibrous mat material bonded to said initial coating, and a finish coating on the outer surface of said fibrous material, said finish coating comprising a pigmented polyester resin.

10. A masonry construction unit according to claim 1 wherein said fibrous mat material is larger than the surface area of one face of the unit and overlaps the corners thereof thereby encompassing a portion of the side walls of the unit with the finish coating.

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