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S. W. CHAFFEE ET AL

1,973,522

ROOFING

Filed June 14, 1930

FIG. 1

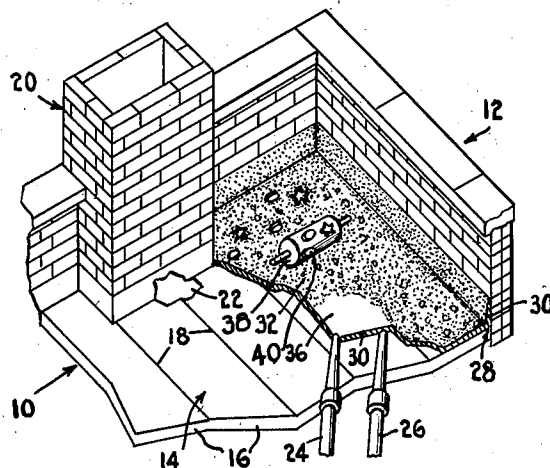


FIG. 2

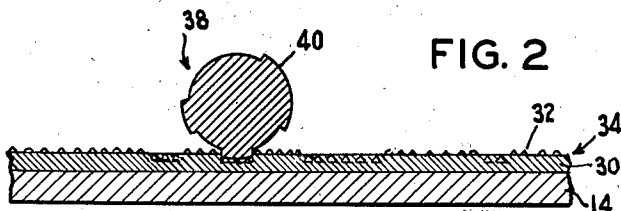


FIG. 3

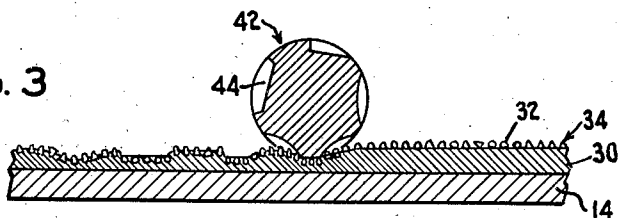


FIG. 4

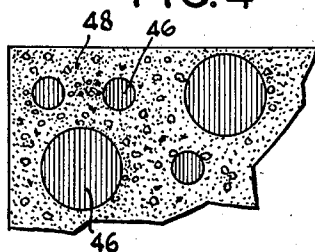


FIG. 5

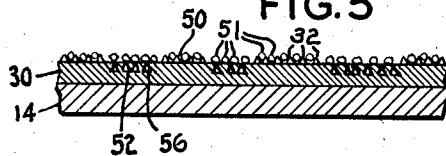
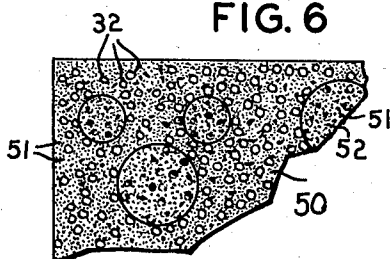


FIG. 6



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1,973,522

ROOFING

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Application June 14, 1930, Serial No. 461,258

7 Claims. (Cl. 108-6)

This invention relates to the art of waterproofing the surfaces of roof structures and has for an object the provision of a new type of roofing or siding structure involving a novel method of applying ornamental designs thereto.

The invention is an improvement on the process set forth in the application of Ralph P. Muller, Serial No. 423,885, filed January 27, 1930.

In relation to the invention herein, the invention in that application dealt with the construction of a water-proof roof structure by the application of a waterproofing substance, in liquid or plastic state, to a moisture-pervious roof surface; materials such as emulsified asphaltum were indicated for that purpose. The liquid or plastic substance, for the purposes of the invention, was pneumatic, so that its transportation from a source of supply to the roof surface to be coated, could be effected through a conduit without the necessity of handling such material at the roof level in the customary manner of mopping-on. The substance, under pressure, is impelled, preferably in the form of a spray, at the surface to be coated and thereby is uniformly distributed over the roof surface. In like manner, and either simultaneously with, or at a timed interval after, the application of the liquid or plastic substance, grit particles are conveyed by a pneumatic stream for application to the coating surface and, by effect of the transporting stream, are driven into the mastic base formed by the applied substance and become embedded therein.

It is an object of the invention to produce, as a substantially unitary formation, a roof surface having a substantially continuous coating of a moisture-impervious compound to form a coating which may be characterized as similar in effect to monolithic construction. This moisture-impervious coating may, while the moisture-impervious coating still remains substantially plastic, then be covered with one or more coatings of grit particles, and then, while the condition of plasticity still continues, designs may be produced in the coated roof structure. One such instance of design formation involves imbedding the particles at predetermined areas.

Other objects of this invention will hereinafter be set forth, or will be apparent from the description and the drawing, in which is illustrated a selection from different methods of carrying out the invention.

The invention, however, is not intended to be restricted to any particular construction or arrangement of parts, or to any particular appli-

cation thereof, or to any specific manner of use, or to any particular method of operation, or to any of the various details or steps thereof, herein shown and/or described, as the same may be modified in various particulars or be applied in many varied relations without departing from the spirit and scope of the claimed invention, the selected methods herein illustrated and described merely being some of various possible exemplifications of the invention.

On the drawing, in which the same reference characters refer to the same parts throughout, and in which are disclosed such selected exemplifications:

Fig. 1 is a view in perspective, illustrating generally a method of applying the moisture-impervious coating and the grit particles, together with a method for delineating a design upon the surface after such application;

Fig. 2 is a view, in vertical cross-section, illustrating one method of delineating a design;

Fig. 3 is a view, similar to Fig. 2, illustrating another method of delineating a design;

Fig. 4 is a plan view of a portion of the roof surface prepared in accordance with the invention herein, illustrating its appearance after a design has been delineated, as, for instance, by the method illustrated in Fig. 2;

Fig. 5 is a view, similar to Fig. 2, illustrating a roof structure produced in accordance with another method herein set forth; and

Fig. 6 is a plan view of a portion of a roof structure prepared in accordance with the invention herein, as, for instance, by the method illustrated by Fig. 5.

The invention consists in stamping or impressing designs on the roof surface which has been waterproofed and surfaced by the application of the waterproofing film of emulsified asphaltum or like bituminous or hydrocarbon material and of the granular surfacing, in accordance with the invention set out in the aforesaid Muller application. This is preferably accomplished by a roller provided with suitable raised portions which, when pressed into the surface on which the design is desired to be applied, embed the surfacing material in the mastic coating and indent the lines of the desired design into the coated surface. This delineates the desired design in lines or areas which are exposed in the color of the basic waterproofing material. Instead of rollers with raised portions, we contemplate using rollers with depressed portions, or with cut-out portions, and, if desired, a stamp

may be used for applying the desired design in the coating.

The application of the design is preferably made immediately after the surfacing material is applied and before the mastic coating has had an opportunity to set. In this manner, the impressions may be easily applied and the surface will thereafter set so as to preserve the design outline which thus results from forcing the surfacing into the water-proof mastic material. In this manner the surfacing material loses its identifying color throughout the impressed design and the whole surface becomes delineated in a design outlined in the same color as that of the basic material.

If desired, the roofing surface may be now sprayed with a grit of contrasting texture or color, that is, contrasting with the texture or color of that originally applied. This grit thus is forced into the areas indented by the design-impressing device so that a covering surface of pleasing and ornamental appearance is obtained.

The design may, if desired, be impressed before any surfacing material at all has been applied, and a subsequent spraying of one color of grit may be utilized to give a surface having an ornamental design impressed thereon which is covered uniformly by an adhering layer of the desired color of grit.

If desired, a colored design may be applied to the surface covering in a slightly modified manner. This consists in forming a surface in precisely the same manner as that described in the above-mentioned Muller application, spreading a layer of different colored grit thereover and then impressing the design by means of the design-impressing apparatus desired. In this manner the first grit is completely embedded in the mastic and the second mentioned grit is partially embedded in the coating so that a contrasting effect is obtained along the lines or areas delineated by the impressing apparatus.

When a second application of colored grit is made, the lines of demarcation are delineated not only in color but also in relief, as the depressed portions are clearly discernible and accentuate the design in creating a shadow effect.

We contemplate using colored asphalt as a base, thus enabling a color contrast to be created without the necessity of using different colored granular material.

Instead of impressing a design, we contemplate achieving a similar result by spraying the grit through stencils, thus obtaining a wide variety of designs and, if colored asphalt or colored water-proofing material along with colored grit is used, a variety of colored designs is also obtained.

On the drawing there are illustrated certain exemplifications of the invention. For such illustration only, particular reference is made to a roof construction 10, here shown as having a boundary wall 12. Roof surface 14, as here shown, is formed from boards 16, between which crevices or grooves 18 will then appear. For illustrative purposes, at a chimney 20, a broken portion 22 has been designated, such broken portion to be repaired in accordance with certain features of this invention, and also as described and claimed in the application of Ralph P. Muller, hereinbefore referred to.

In making a roof construction of the type here described, material such as an asphalt emulsion is first sprayed upon the surface to be protected; following closely after the application of the

emulsion, grit particles may be sprayed upon the surface coating of emulsion.

On the drawing, nozzles 24 and 26 are intended to illustrate, respectively, a nozzle for spraying the asphalt emulsion, and a nozzle for spraying the grit particles. As shown, the emulsion is sprayed so as to coat over the roof surface defined by board 16, which coating may even be extended to seal crevices 28 at the junction of roof surface 14 with boundary wall 12 and chimney 20. Base coating 30, for this purpose, may be extended up the side of the boundary wall a sufficient distance to assure a proper seal between roof surface and boundary wall.

Following immediately upon the application of coating 30, or at a sufficient interval so that the emulsion coating will still be plastic and of sufficient fluidity to receive the sprayed particles, permit them to become imbedded to a slight degree in the coating, and become bonded to the coating, nozzle 26 is made effective. Grit particles 32, thus sprayed, define their layer 34. In the exemplification shown on the drawing, the two spraying operations are carried on substantially simultaneously. In such case, a section 36 of coating 30 will be clear of particles for a predetermined interval to permit some hardening of the coating before the particles fall upon it.

When broken portion 22 will be reached—and such portion is generally nothing more than a frayed or worn section of the timbers or of the roofing material previously applied, in the case of repairs to a roof previously constructed, or other defects in the material—the coating composition may be made effective to fill up that broken portion completely, sealing also, as it does, crevices 18 and 28, and other similar defects in the ordinary roof surface.

Furthermore, as the two nozzles move along the roof surface, there may be brought into operation a design-forming member, such as a roller 38, as shown in Fig. 2. By reason of certain raised portions 40 on the surface of the roller, it will cause the delineation of a design in the coated surface. These raised portions cause the grit particles, against which they come into play, to sink into the still plastic water-impervious coating, and thus to permit to appear, as a part of the design, not the grit particles, but the base coating itself. This operation of delineating the design may be carried on simultaneously with the coating of the surface, as shown in Fig. 1. It may be delayed somewhat after the grit and emulsion coatings have been applied, so long as the coating on the roof surface still remains plastic at the time the roller or similar design-forming means comes into action.

Figs. 2, 3, and 5 demonstrate a number of different exemplifications of methods by which the invention may be effectuated, although, of course, they do not completely encompass all the possible variations. In Fig. 2, roller 38, having portions of its surface raised, has been shown; in Fig. 3, an embossing roller 42 is illustrated. In the latter case, cavities 44, defined in the roll surface, receive grit particles 32 and some of coating 30, which, being forced upwardly as the roller moves over the surface, produce the delineation of the desired design. A design, thus determined, will appear on the roof somewhat as in Fig. 4, with hills and valleys imprinted therein, the grit particles being imbedded in the base coating at areas 46, and being left substantially unaffected at areas 48, in the positions they assumed on their initial impact when sprayed.

In Fig. 5, after the imbedding step has been carried out so that distinct areas 50 in relief are defined, a stream of grit particles 51 was sprayed upon the coated surface. The velocity of the particles was controlled so that most all came to rest in the grooved or depressed areas 52, while those striking upon areas 50, which are in substantial relief, moved along further until they reached such a depression as defined by areas 52. In this manner, a surface is produced, in appearance somewhat as shown in Fig. 6. In such case, particles 56 are imbedded so deeply that they do not effect the design; at areas 50, both sets of particles of the two layers appear and add to the design effect.

A somewhat similar result may be obtained by spraying, in succession, two distinct layers of particles, each of a different coloring, and then going over them with a single design-forming imbedding device, such as one of the rollers here described. Thus, only portions of the bottommost particle layer will be completely imbedded. In this manner, there will be left apparent at the surface, in unaffected areas, both grit particle layers, while, in others, the bottommost layer will have disappeared.

Many other changes could be effected in the particular apparatus here exemplified, and in the method of operation set forth, and in specific details thereof, without substantially departing from the invention intended to be defined in the claims, the specific description being merely clearly to demonstrate practical methods for carrying out the spirit of the invention.

Having thus described our invention we claim:

1. The process of producing, as a single continuous unit, an ornamental roof surface upon the outer exposed surface of the completely assembled roof structure of a building, wherein the exposed surface of the roof structure is initially moisture-pervious, which includes the steps of: spraying uniformly over the moisture-pervious surface, substantially throughout its extent, a coating of waterproofing liquid compound; immediately thereafter and while the waterproofing liquid compound still remains plastic spraying upon, and substantially all over the waterproofing liquid compound coating, a plurality of distinctly differently colored coatings of grit particles; and then producing designs in the coated surface by imbedding the particle layers within the waterproofing liquid compound coating at limited and distinctly defined areas.

2. The process of producing, as a single continuous unit, an ornamental roof surface upon the outer exposed surface of the completely assembled roof structure of a building, wherein the exposed surface of the roof structure is initially moisture-pervious, which includes the steps of: spraying uniformly over the moisture-pervious surface, substantially throughout its extent, a coating of waterproofing liquid compound; spraying upon, and substantially all over the waterproofing liquid compound coating, while it still remains plastic, a coating of grit particles; then producing designs in the coated surface by imbedding the particle layers within the waterproofing liquid compound coating at limited and distinctly defined areas; and then spraying other grit particles over the coating.

3. The process of producing, as a single continuous unit, an ornamental roof surface upon the outer exposed surface of the completely assembled roof structure of a building, wherein the exposed surface of the roof structure is in-

itally moisture-pervious, and after the moisture-pervious surface has been made moisture-impervious by the application of a coating of waterproofing liquid compound to the moisture-pervious surface, which includes the steps of: depositing upon the waterproofing liquid compound coating while it still remains plastic a plurality of distinctly differently colored coatings of grit particles extending substantially all over the waterproofing liquid compound coating, and then producing designs in the coated surface by imbedding the particle layers within the waterproofing liquid compound coating only at limited and distinctly defined areas of the coated surface.

4. The process of producing, as a single continuous unit, an ornamental roof surface upon the outer exposed surface of the completely assembled roof structure of a building, wherein the exposed surface of the roof structure is initially moisture-pervious, which includes the steps of: spraying uniformly over the moisture-pervious surface, substantially throughout its extent, a coating of waterproofing liquid compound; depositing upon the waterproofing liquid compound coating, substantially immediately after the application of that coating, and while it is still in the plastic state, an uniform coating of grit particles extending substantially all over the waterproofing liquid compound coating; and then producing embossed designs at distinctly defined areas in the layer by bearing with an embossing roller upon limited and distinctly defined areas of the coated surface to imbed the particles within the waterproofing liquid compound coating only at the areas to which pressure is applied and to effect a rise above the existing level of the level of the coated surface immediately around such impressed areas.

5. The process of producing, as a single continuous unit, an ornamental roof surface upon the outer exposed surface of the completely assembled roof structure of a building, wherein the exposed surface of the roof structure has inherent moisture-pervious characteristics, which includes the steps of: spraying uniformly upon the exposed moisture-pervious surface, substantially throughout its extent, a coating of waterproofing liquid compound to form an unitary moisture-impervious layer for the surface; immediately thereafter spraying upon the waterproofing liquid compound coating while it remains plastic, a coating of grit particles extending substantially all over the liquid compound coating; and then bringing pressure to bear upon limited and definitely defined areas of the coated surface to imbed the particles within the waterproofing liquid compound coating only at the areas subjected to pressure.

6. The process of producing, as a single continuous unit, an ornamental roof surface upon the outer exposed surface of the completely assembled roof structure of a building, after the exposed moisture-pervious surface has been made moisture-impervious by the application of a coating of waterproofing liquid compound, which includes the steps of: spraying upon the waterproofing liquid compound coating while it still remains plastic a coating of grit particles extending substantially all over the coating, and then bringing pressure to bear upon limited and definitely defined areas of the coated surface to imbed the particles within the coating only at the areas subjected to pressure.

7. The process of producing, as a single con-

tinuous unit, an ornamental roof surface upon the outer exposed surface of the completely as- sembled roof structure of a building, wherein the exposed surface of the roof structure is mois- 5 ture-pervious by inherent characteristics of its construction, which includes the steps of: spray- ing substantially uniformly over the surface a coating of a colored waterproofing liquid com- pound, depositing upon and substantially uni- 10	formly all over the liquid compound coating while it remains plastic a coating of grit par- ticles colored to contrast with the liquid com- pound coating, and then concealing the particles at distinctly defined areas by pressing the par- ticles into imbedded relation within the liquid compound coating only at defined areas. STEWART W. CHAFFEE. RALPH P. MULLER.	80
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