Jan. 30, 1934. G. SMOLAK ET AL 1,945,003

SURFACING OF RIGID SHINGLES AND THE LIKE

Filed March 26, 1931

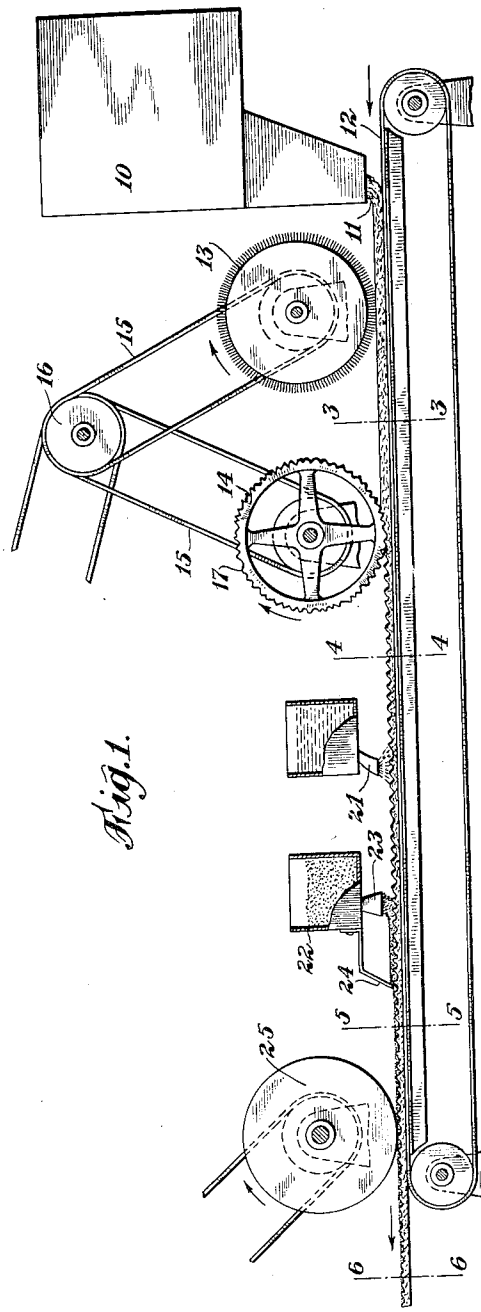

Fig. 1.

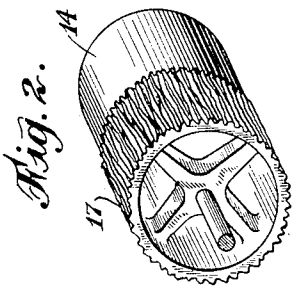

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

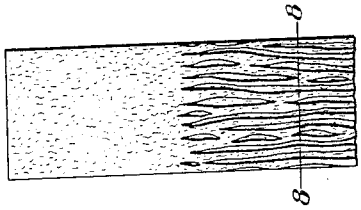

Fig. 7.

Fig. 8.

INVENTORS.
George Smolak.
Walter McQuade.
BY D. N. Halstead
ATTORNEY.

Patented Jan. 30, 1934 1,945,003

UNITED STATES PATENT OFFICE

1,945,003

SURFACING OF RIGID SHINGLES AND THE LIKE

George Smolak, Somerville, N. J., and Walter McQuade, Port Washington, N. Y., assignors to Johns-Manville Corporation, New York, N. Y., a corporation of New York

Application March 26, 1931. Serial No. 525,472

15 Claims. (Cl. 18—47.5)

The present invention relates to a method of surfacing materials which are plastic or readily deformable in one stage of their manufacture.

The invention is primarily concerned with the provision of ornamental contours in the surface of such materials while in the readily deformable state by impressing suitable depressions and prominences in the surface portion, and preserving these contours against substantial deformation during subsequent operations such as hardening and densifying of the material by the application of pressure, by filling the depressions with a readily removable filler material.

Rigid shingles prepared from a mixture of Portland cement and asbestos fibers in presses, or by machines of a type similar to that described in Norton U. S. Patent 979,548, dated 12/27/10 are illustrative of the products and materials to which our invention has been successfully applied, and the invention is specifically described hereafter with reference to such products.

In the accompanying drawing Fig. 1 illustrates diagrammatically an assembly of a suitable apparatus for the practice of our invention in the manufacture of shingles.

Fig. 2 is a perspective view of the rotary die provided with a molding surface adapted to impart a pattern of ornamental contours to the readily deformable mixture of Portland cement and asbestos fibers.

Figs. 3 to 6 inclusive are end views of segments of the sheet material as it travels along the conveyor and illustrate the condition of the sheet obtaining at the stages indicated by the lines 3—3, 4—4, etc., on Fig. 1.

Figs. 7 and 8 are plan and end views respectively of a shingle made in accordance with our invention.

In the device shown in Fig. 1, a hopper 10 is provided for feeding a mixture of a suitable hydraulic cementitious material such as Portland cement and a reinforcing fibrous material such as asbestos on to a continuously advancing conveyor 12. A picker roll 13 of a conventional type serves to brush off excess material and leaves the sheet 11 comprising the admixture of finely divided dry Portland cement and asbestos emerging therefrom of substantially uniform thickness as indicated in Fig. 3. The sheet at this stage is readily deformable. The sheet is next subjected to the action of the rotary die 14 provided with a molding surface 17 which impresses the desired pattern of ornamental contours on the sheet and at the same time slightly compresses the material. Die 14 shown in detail in Fig. 2 is specially adapted for the production of shingles such as illustrated in Fig. 7 wherein the ornamental contours are confined to the portion of the shingle exposed to view when laid as roofing. The pattern illustrated imparts to the shingle an irregular grooved surface simulating the weathered and antique effects obtained in old wooden shingles and timbers.

Die 14 and picker roll 13 are rotated by any conventional means such as belts 15 from pulley 16.

The sheet next passes under a water spray 21 of the usual type for applying sufficient water to the sheet to hydrate the cement, the water thus applied being quickly absorbed in the porous mass.

The sheet then passes under a vessel 22 containing a suitable filler material and provided with a hopper or sieve 23 for feeding the filler material into the depressions in the sheet formed by die 14. Various substances may be utilized for the filler material, the important requisite being that this material is of such a character as to prevent the impressed pattern being substantially deformed or destroyed during the subsequent compacting operation and is readily removed after its function of preventing deformation has been served. Water-soluble material such as fine grained ordinary salt is particularly suitable as it may be readily washed out of the final product. Readily liquefied material such as waxes and the like may be utilized as the filler and subsequently removed either by liquefaction or dissolved out by means of suitable solvents. When it is desired to strictly preserve the contours originally impressed, the filler material should be in finely divided condition as coarse particles such as rock salt tend to become deeply embedded in the plastic mass during the subsequent compacting operation and after removal leave their individual configurations on the mass, in the form of pitting. However, in some instances the effect given by the use of rock salt and the like is especially desirable.

The feed of the filler material from the hopper may be produced by vibrating the container 22 or by other conventional means. Apron 24 serves to level off the filler material.

The sheet with the surface thus treated next passes under a compression roll 25 which partially compacts the sheet to the degree indicated in Fig. 6. Compression roll 25 and die 14 are both arranged with their axes at a slight angle with respect to conveyor 12 so that sheet 11 is tapered in a transverse direction, the thick butt

portion coinciding with the ornamented surface.

The sheet is then severed into suitable sized segments, which are stacked in piles with a flat metal plate between adjacent segments and subjected to further compression in a hydraulic press until the material is finally compacted to the extent indicated in Fig. 8 which shows the compacted material after the filler has been removed. The compacted segments are permitted to stand until the cement is thoroughly hardened. These operations are not shown since they are conventional in the manufacture of shingles of the rigid asbestos type. The filler material is then removed by immersing the shingles in water or by any other suitable method as above indicated, depending upon the filler used. The segments thus treated are ordinarily the width of two shingles and are finally divided to produce individual shingles such as illustrated in Fig. 7.

If desired in the above procedure a suitable coloring pigment or grit may be applied to the surface of the sheet material at any suitable stage prior to the application of the filler material.

While our invention has been described with particular reference to the provision of ornamental contours in shingles known commercially as rigid asbestos shingles, the invention is applicable generally to the provision of ornamental contours to materials which are readily deformable at one stage of their manufacture and are subsequently subjected to treatment tending to deform any ornamental contours impressed during the plastic stage.

The term "plastic" is used herein as synonymous and co-extensive in meaning with the term "readily deformable" and does not imply that the material so characterized necessarily possesses a self-sustaining structure since the preferred material for the application of my invention is a dry mixture of Portland cement and asbestos and which mixture although readily deformable is not sufficient coherent to be self-sustaining.

The details that have been given are for the purpose of illustration, not restriction, and variations therefrom within the scope of the appended claims may be made without departing from the invention.

What we claim is:

1. A method of imparting a surface having ornamental contours to materials which are plastic or readily deformable in one stage of their manufacture and which are subsequently subjected to application of pressure, comprising treating the material while in the readily deformable stage to impart the desired prominences and depressions forming the ornamental contours in the surface thereof, filling the depressions with a removable filler material, applying pressure to the surface of the plastic material thus treated, and thereafter removing the filler material from the depressions to expose the ornamental contours.

2. A method of imparting a surface having ornamental contours to sheet material which is readily deformable or plastic at one stage of its manufacture which comprises passing an elongated sheet or strip of the material while in its plastic state into contact with a molding surface adapted to mold depressions and prominences forming the desired ornamental contours in the surface of the sheet, filling the depressions with a removable filler material, applying pressure to the surface of the plastic sheet thus treated, and thereafter removing the filler material to expose the ornamental contours.

3. A method of manufacturing shapes such as sheets, slabs, and the like having ornamental contours on the surface thereof and adapted for use as shingles and other purposes from hydraulic cementitious material, which comprises continuously passing an elongated strip or sheet of the cementitious material into contact with a molding surface adapted to mold depressions and prominences forming the desired ornamental contours in the surface of the sheet, continuously filling the depressions with a removable filler material, subjecting the surface thus treated to pressure to densify and strengthen the sheet, and thereafter removing the filler material to expose the ornamental contours.

4. A method of manufacturing flat shapes such as sheets, slabs, and the like having ornamental contours on the surface thereof and adapted for use as shingles and other purposes from hydraulic cementitious material, which comprises passing an elongated strip or sheet of the cementitious material into contact with a molding surface adapted to partially compress the sheet and simultaneously mold depressions and prominences forming the desired ornamental contours in the surface of the sheet, filling the depressions with a removable filler material, subjecting the surface thus treated to pressure to densify and strengthen the sheet, and thereafter removing the filler material to expose the ornamental contours.

5. A method of manufacturing flat shapes such as sheets, slabs, and the like having ornamental contours on the surface thereof and adapted for use as shingles and other purposes from hydraulic cementitious material, which comprises passing an elongated strip or sheet of dry finely divided cementitious material into contact with a molding surface adapted to mold depressions and prominences forming the desired ornamental contours in the surface of the sheet, spraying sufficient water to hydrate the cement upon the surface of the sheet, filling the depressions with a removable filler material, subjecting the surface thus treated to pressure to densify and strengthen the sheet, and thereafter removing the filler material to expose the ornamental contours.

6. A method of manufacturing rigid shingles which comprises passing a layer comprising a mixture of Portland cement and fibrous material into contact with a molding surface adapted to mold depressions and prominences forming the desired ornamental contours in the surface portion of the layer, filling the depressions with a removable filler material, subjecting the surface thus treated to pressure, cutting the compacted material into shingles and removing the filler material.

7. A method of imparting a surface having ornamental contours to materials which are plastic or readily deformable in one stage of their manufacture and which are subsequently densified by application of pressure, comprising treating the material while in the readily deformable stage to impart the desired prominences and depressions forming the ornamental contours in the surface thereof, filling the depressions with a water-soluble filler material, applying pressure to the surface of the plastic material thus treated to impart the requisite degree of density thereto, and thereafter removing the filler material by

washing with water from the depressions to expose the ornamental contours.

8. In the manufacture of preformed rigid units of structural material by a method including producing depressions in the surface of a deformable mass and subjecting the mass to a subsequent treatment adapted to deform unprotected irregularities of surface, the step which comprises filling the depressions with a readily removable granular filling material prior to the said subsequent treatment and removing the filling material after the subsequent treatment.

9. In the manufacture of preformed rigid units of structural material by a method including producing depressions in the surface of a deformable mass of Portland cement and asbestos fibers and subjecting the mass to a subsequent treatment adapted to deform unprotected irregularities of surface, the step which comprises filling the depressions with a readily removable granular filling material prior to the said subsequent treatment and removing the filling material after the subsequent treatment.

10. In the manufacture of preformed rigid units of structural material by a method including producing depressions in the surface of a deformable mass of Portland cement and asbestos fibers, the step which comprises producing the depressions in the said mass while the mass is dry.

11. The method of producing a rigid, durable shingle, provided in part with a pitted and irregularly contoured surface, resembling in appearance a weathered wooden shingle, by a process comprising forming a mixture of Portland cement and asbestos fibers into a sheet, pressing the said sheet to impart thereto an irregularly contoured surface, covering the said surface with a readily removable granular filling material, hardening the thus covered article and then removing the filling material, whereby the configuration of the filling material is imparted to the surface, with the production of pitting.

12. The method of producing a rigid, durable tapered shingle, provided in part with a pitted and irregularly contoured surface, resembling in appearance a weathered wooden shingle, by a process comprising forming a mixture of a hydraulic cementitious material and a reenforcing material into a sheet, pressing the said sheet to impart thereto an irregularly contoured surface, covering the said surface with a readily removable granular filling material, hardening the thus covered article and then removing the filling material, whereby the configuration of the filling material is imparted to the surface, with the production of pitting.

13. A method of imparting a surface having ornamental contours to materials which are plastic or readily deformable in one stage of their manufacture and which are subsequently densified by application of pressure, comprising treating the material while in the readily deformable stage to impart the desired prominences and depressions forming the ornamental contours in the surface thereof, filling the depressions with a liquefiable filler material, applying pressure to the surface of the plastic material thus treated to impart the requisite degree of density and strength thereto, and thereafter removing the filler material, by liquefaction of the filler material, from the depressions to expose the ornamental contours.

14. A method of imparting a surface having ornamental contours to materials which are plastic or readily deformable in one stage of their manufacture and which are subsequently densified by application of pressure, comprising treating the material while in the readily deformable stage to impart the desired prominences and depressions forming the ornamental contours in the surface thereof, filling the depressions with granulated salt, applying pressure to the surface of the plastic material thus treated to impart the requisite degree of density and strength thereto, and thereafter removing the filler material by washing with water to remove the salt from the depressions and expose the ornamental contours.

15. In the manufacture of preformed rigid units of structural material by a method including producing depressions in the surface of a deformable mass of Portland cement and asbestos or rag fibers, the steps comprising producing depressions in the said mass while in dry condition, then wetting the mass, and compressing and hardening the wet mass.

GEORGE SMOLAK.
WALTER McQUADE.