

Nov. 3, 1936.

N. P. HARSHBERGER

2,059,520

BUILDING MATERIAL AND PROCESS OF MAKING THE SAME

Filed May 23, 1933

2 Sheets-Sheet 1

*Fig. 1.*



*Fig. 2.*

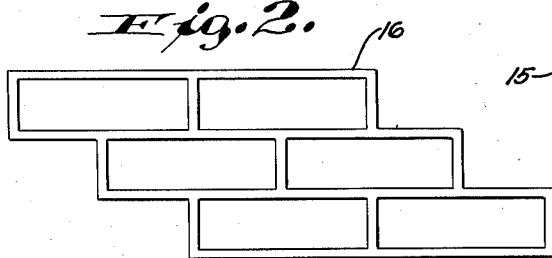


*Fig. 4.*

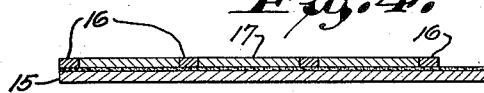


*Fig. 3.*

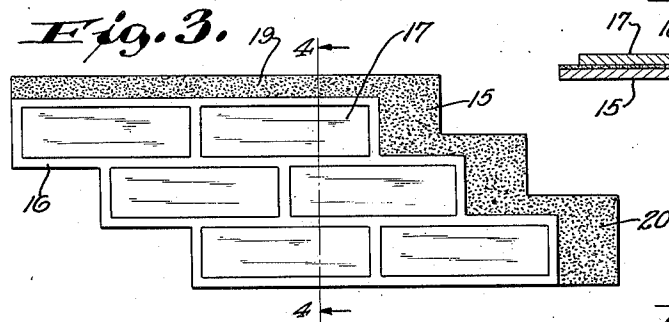


*Fig. 5.*

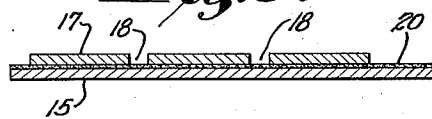


*Fig. 9.*

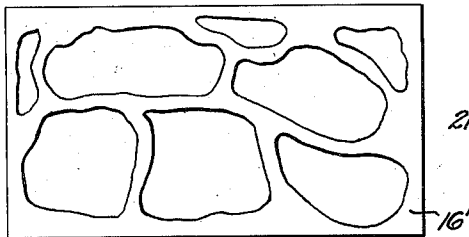


*Fig. 6.*

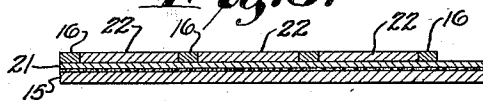


*Fig. 7.*



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2 Sheets-Sheet 2

*Fig. 8.*

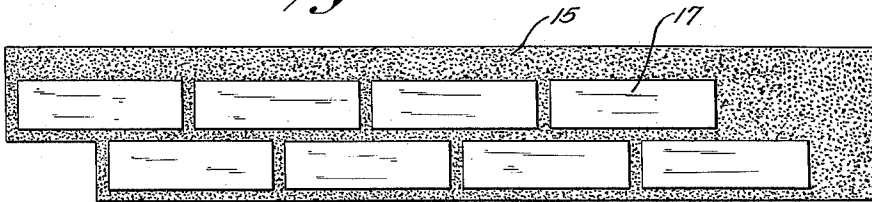


*Fig. 10.*

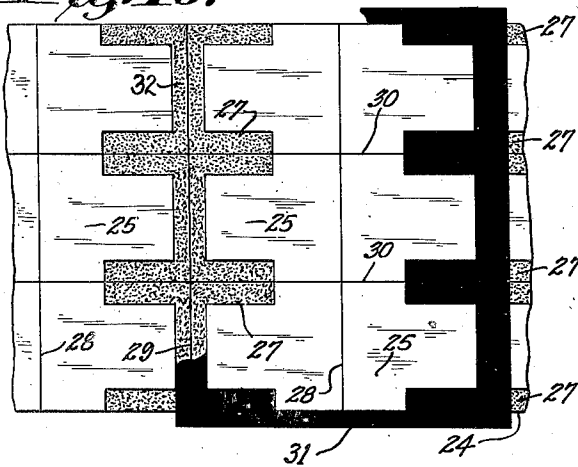


*Fig. 11.*

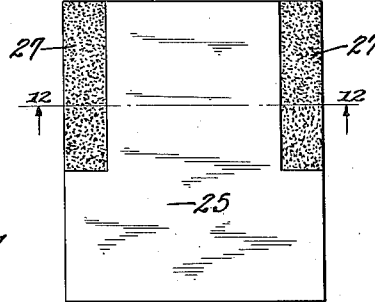


*Fig. 12.*

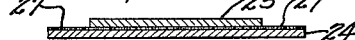


*Fig. 14.*

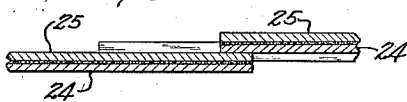
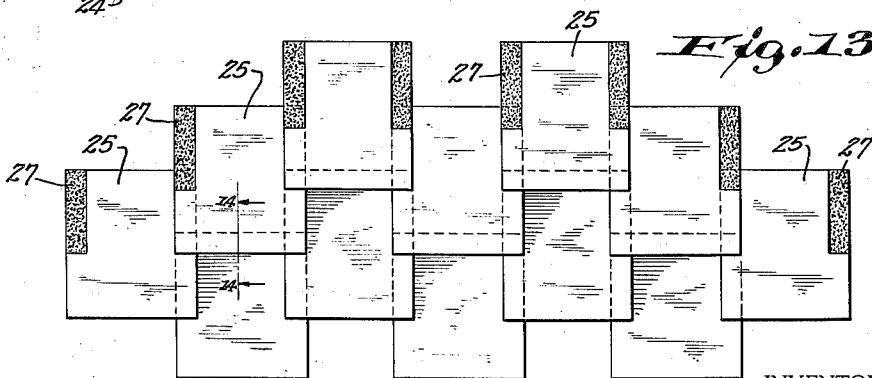


*Fig. 13.*



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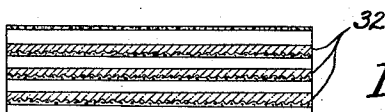
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*Fig. 15.*



## UNITED STATES PATENT OFFICE

2,059,520

BUILDING MATERIAL AND PROCESS OF  
MAKING THE SAME

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New York, N. Y., a corporation of Delaware

Application May 23, 1933, Serial No. 672,410

7 Claims. (Cl. 18—47)

This invention relates to improvements in building materials and processes of making the same.

In my copending application Serial No. 443,-  
603, filed April 11, 1930, there is disclosed a method of producing building material wherein a fibrous base having a coating of mineral particles or the like thereon, is provided with a surface layer of hydraulic cement to produce a substantially rigidified product which may be used effectively as roofing or siding. The present invention is a continuation-in-part as to common subject matter of said earlier application.

It is one of the objects of this invention to provide a method of producing building material which consists generally in placing a form or mold on a base, pouring within the form material which is to form a surface coating, and later withdrawing the form so that the base is exposed along desired lines to create a figured effect.

A further object of the invention is a method of producing building material which includes placing a form or mold, of rubber or other resilient material, on a base, pouring within the form material which is to form a surface coating, utilizing pressure to increase the density of the product and to aid in the bonding of the surface layer to the base, said pressure causing the resilient form to expand laterally, and said form springing back to normal shape when the pressure is removed to facilitate withdrawal of the form, and then withdrawing the form so that the base is exposed along desired lines to create a figured appearance.

A further object of the invention is building material having a base formed of weatherproofed material and having a coating of hydraulic cement affixed thereto, the said cement being omitted along desired lines to expose the weatherproofed base below, and to thereby create a figured effect.

Another object of the invention is to form floor and wall tiles in which a coating of hydraulic cement is applied to a flexible base and thereafter subjecting said coating to pressure to form rigidified elements with a resilient backing.

Still another object of the invention is to coat a moving web of material with a suitable substance, for instance, a hydraulic cement, and thereafter while the coating is still in a plastic condition to position a mask with respect to the coated surface and apply pressure to the mask, so as to cause the coating material on the web in the open parts of the mask to be raised above the remainder of the web.

A still further object of the invention is to provide building elements with a coating of hydraulic cement, then stack them between resilient separators, for instance, of rubber or other material,

said separators having a design or texture upon their faces and apply pressure to the stack to obtain elements having upon them the impressions of the separators.

A further object of the invention is to provide building material as above described in which the mineral surfacing of the base may be colored so as to definitely contrast with the color of the hydraulic cement.

With the above and other objects in view, the invention consists of the improved building material and process of making the same, and all its parts and combinations as set forth in the claims, and all equivalents thereof.

In the accompanying drawings in which the same reference numerals designate the same parts in all of the views:

Fig. 1 is a plan view showing a suitable base which is preferably a mineral surfaced saturated fabric such as is commonly used for composition roofing;

Fig. 2 is a plan view of a form or mold designed to be used on the section of base shown in Fig. 1;

Fig. 3 is a plan view showing the form or mold superimposed on the base and showing hydraulic cement or the like filling the spaces between the parts of the mold;

Fig. 4 is an enlarged sectional view taken on line 4—4 of Fig. 3;

Fig. 5 is a view similar to Fig. 4 showing the product after the mold has been removed;

Fig. 6 is a view similar to Fig. 4 showing a form of the invention wherein the base has been first covered with a layer of hydraulic cement or the like, and then with a second layer formed in the mold;

Fig. 7 is a view similar to Fig. 6 showing the mold removed;

Fig. 8 is a plan view of a building element of somewhat different shape from that disclosed in Fig. 3, but produced by the same method;

Fig. 9 is a plan view of a type of form or mold which may be employed to create a stone-like effect such as is desirable for siding;

Fig. 10 is a plan view showing the method of producing a form of building element wherein portions of the base are exposed, and wherein other portions are coated with hydraulic cement or the like;

Fig. 11 is a plan view on a larger scale showing a building element produced by a method similar to that illustrated by Fig. 10;

Fig. 12 is a sectional view taken on line 12—12 of Fig. 11;

Fig. 13 is a plan view showing a plurality of the elements of Fig. 11 in assembled relation to one another;

Fig. 14 is an enlarged sectional view taken on line 14—14 of Fig. 13;

Fig. 15 is a sectional view of a stack of elements with intermediate resilient separators having a special surface formation.

Referring more particularly to the drawings, a web of suitable composition building material is cut preferably to form individual elements of a desired shape. One of these elements is shown in Fig. 1 and is designated generally by the numeral 15. Said element preferably comprises a layer of waterproofed felt, wool, hair, asbestos, alone, in combination, or with other materials and which has upon at least one of its surfaces an adhesive coating, for instance, a high melting point asphalt or one of a resinous type in which a layer of mineral particles, for instance, crushed slate, crushed brick, porous slag, etc. of a desired color, has been embedded to any desired degree, preferably, only partially.

A form or mold 16, of suitable material, preferably of a resilient nature, for instance, rubber and of any desired shape and adapted to produce any desired configuration, is superimposed on the composite base 15. This may be as illustrated in Fig. 3 one which has been shaped to cooperate with the particular shape of the base to produce a brick-like effect thereon.

A suitable coating material 17, preferably a hydraulic cement, is conveyed to the mold by suitable means and it spreads on top of the base as shown in Fig. 3. The hydraulic cement may be of natural color, colored, or may be one mixed with an aggregate, for instance, it may be a mixture containing from 1 to 10 per cent of one or more of a resin emulsion and/or a rubber emulsion and/or an asphalt emulsion and/or it may be a mixture containing such substance, for instance, mineral fibres, asbestos fibres or hair. At any time after the mold has thus been prepared pressure is applied over the coating and mold. The pressure renders the surface layer more dense, causes it to penetrate the voids of the mineral particles, especially if they be of a porous character, effects a firm bonding to the base, and at the same time causes the walls of the mold, if of a resilient type, to expand laterally. When the pressure is removed the mold will resume its normal shape, and the cement having sufficient strength to hold its form, the mold will separate from the coating enabling it to be easily removed and leaving the product of the form shown in Fig. 5 with depressed definition lines 18 which expose the base below. If mineral particles which are black in color, have been used for surfacing the base, the effect will be that of a plurality of bricks laid with black mortar therebetween.

It is preferred in certain instances to omit the surface coating and in some instances the mineral surfacing along one or more edge portions of the product, as at 19 and 20. This makes it possible to have a substantially flush overlapping of adjacent elements in assembly.

In one form of the invention shown in Fig. 6, a base similar to that of Fig. 1 is utilized, but said base, before the mold is applied, has been coated with suitable material such as hydraulic cement, as at 21. The mold is then utilized in the same manner as described in connection with the form of the invention as shown in Fig. 3 to form a second layer of coating material such as hydraulic cement which is superimposed on the first layer, as at 22, at any time after the first coating 21 has been applied. When the mold is withdrawn, the product has the appearance shown in Fig. 7, there being depressed definition lines 23 formed

in the coating 22 which expose the coating 21. By having the coating 21 of one color, and the coating 22 of another color, a contrasting effect may be produced. Also a material of one type may be utilized for the first coating 21 and material of another type for the second coating 22, for instance, in the latter case one which may produce a relatively smooth and finished appearance.

It is to be understood that after making elements of the type such as illustrated in Figs. 5 and 7 I may fill in the depressions 18 or 23 with any of the materials heretofore mentioned or other suitable ones if desired, and to produce any desired color combination with the figured surface. The depressions may be filled flush with the figured surface or depressions of any desired degree may be left.

As hereinbefore mentioned, molds to produce any desired form may be utilized. They may be of a shape, as in Fig. 9, to produce stone-like effects or of a shape to produce the elements of Figs. 5 or 8. Also, they may be of a shape to produce individual floor or wall tiles with or without a border similar to 19 of Fig. 3 running around their periphery.

Further, the method may be advantageously employed in making a plurality of elements from a moving web or large sheet 24, for instance, in fabricating elements having depressions for use in assembly, as illustrated in Fig. 10, where a fragment of a web is shown comprising a composition base, having the major portion of its surface covered with a layer of coating material, for instance, a hydraulic cement, as at 25. In order to form the depressions 27 a suitable resilient form 31 preferably of rubber, is utilized. This may be, for instance, in the form of a closed frame as at 31 in which case the web is fed forward intermittently, and/or separate forms may be provided to be positioned in the depressions 27 or a series of these across the web may be connected together. In these instances the web may be passed over a platform where the coating material is provided and pressure is applied. In addition it is contemplated to utilize a continuous process by providing a continuous frame in the form of a stencil, feeding material into the stencil and applying pressure by passing the web and stencil between rollers. In any instance after the coating is applied the web may be cut along transverse lines 28, along other transverse lines 29 which divide the spaces 27 transversely, and along longitudinal lines 30 which divide the spaces longitudinally. By the method illustrated in Fig. 10 there will be an uncoated margin 32 at one end of each element. This may be avoided by using a proper type of form in which case the individual elements will appear as in Figs. 11 and 12 with a major portion of their surface coated and having the uncoated spaces 27 on opposite sides thereof.

A further process by which the coatings may be applied to the web is by having a form provided and filled with a coating material, then positioning the web with its front side facing downwardly above the mold. Thereafter pressure is applied from top or bottom and the material in the mold is thus embedded in the web and remains there when the web passes out of the form.

Elements of the type shown in Figs. 10 and 11 may be assembled as illustrated in Figs. 13 and 14 in wide spaced relation with the lower portion of one element seated in the uncoated spaces 27

of a pair of spaced apart elements below. The uncoated areas are valuable aids in aligning the elements properly and the coated portion has sufficient rigidity to prevent any sagging from taking place at its unsupported points.

The products formed in Figs. 3 and 8 will have considerable rigidity as the cement coating covers the majority of its surface. Also, when the coating is relatively thick, its omission along desired lines with the resulting exposure of the base below form very definite lines of demarcation to aid in producing figure effects. Furthermore, it is possible to produce a multitude of color arrangements by varying the color of the cement coating and the color of the mineral surfacing or the veneer coating thereon, used on the base. Also, these depressed areas have been made without affecting the weather resisting qualities of the product, the mineral coated base providing complete protection.

Other surface effects may be made for instance as illustrated in Fig. 15 by stacking a group of elements that have been coated with hydraulic cement between resilient separators 32 having a designed or a stippled surface as on crepe rubber and thereafter applying pressure to the stack. The stack of elements may be provided with an enclosing form when the pressure is applied to prevent the coating from oozing from between the layers. When the pressure is removed and the coating has fully set and hardened the surface of the coating will bear the impression of the separator.

When a tile product made by the described method is utilized for flooring no special foundation is required as the tiles are in themselves provided with a resilient base and also are not subject to cracking in handling.

An additional process I contemplate herein is to utilize a moving web or sheet of suitable material for instance, those herein mentioned and after applying to it a coating of any of the heretofore mentioned materials to position relative thereto a moving or stationary mask presenting any desired configurations and thereafter to apply pressure to said mask by rolls or otherwise while the coating is still in a plastic state to cause the coating material where the mask structure exists to be somewhat displaced to form sunken areas and where the open sections of the mask exist to create raised portions. By this method the desired configuration may be depressed or raised.

From a consideration of the foregoing description of my invention and processes relating thereto, it can be readily seen that I have produced new products by new and novel methods. It is evident that many changes may be made in the articles and processes of making same, it is therefore desired that the invention be construed including equivalents and as broadly as the claims taken in conjunction with the prior art, may allow.

I claim:

1. In a method of making composite building material and the like, the steps which comprise providing a base which is to form a part of the finished product, positioning a grid-like yieldable bottomless mold against a face of the base, supplying the mold with a plastic material, pressing the walls of the mold laterally against the

plastic material, and breaking lateral contact with the material by contracting the walls of the mold whereby removal of the mold is facilitated.

2. A method of producing building material and the like which comprises positioning a yieldable mold on a web which is to form a part of the finished product, moving said web and mold simultaneously, supplying the exposed portions of the web within the mold with a plastic material which is to form a surface layer, pressing the mold substantially at the same time the material therein is pressed so that the mold will be expanded, releasing the pressure to permit the mold to contract and removing the mold.

3. In a method of making formed material and the like, the steps which comprise charging material into a deformable mold, applying pressure to the material and applying pressure to the mold in the same direction to cause pressure against the material in a second direction by deformation of the mold, releasing the pressure and permitting the mold to break contact with the material.

4. In a method of making formed material and the like, the steps which comprise charging material into a deformable mold, applying pressure to the mold and material from the same direction whereby the mold is caused to expand to transmit pressure against the material in a second direction, releasing the pressure and permitting the mold portion so expanded to contract away from the shaped material.

5. In a method of making composite building material and the like, the steps which comprise providing a base which is to form a part of the finished product, positioning a yieldable bottomless mold against the base, charging the mold with material, applying pressure to the material and applying pressure to the mold in the same direction whereby to cause pressure against said material in a second direction by deformation of the yieldable mold, releasing the pressure and permitting the mold to break contact with the material.

6. In a method of making composite material and the like, the steps which comprise providing a base which is to form part of the finished product, positioning on the base a bottomless mold having a plurality of sections determined by an intermediate deformable wall of the mold, charging the mold sections with a compactable material, applying pressure to the material and applying pressure to the mold to cause pressure against the material in a second direction by deformation of at least the intermediate wall of the mold, releasing the pressure and permitting the mold to break contact with the material.

7. In a method of making composite sheet-like material, the steps which comprise providing a base of sheet material which is to form part of the finished product, positioning a sheet-like bottomless rubber mold against the base, charging the mold with a compactable material, applying pressure to the mold and material from the same direction whereby the mold is caused to deform to transmit pressure against the material in a second direction, releasing the pressure and permitting the mold to break contact with the material.

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