Feb. 3, 1931. J. W. LEDEBOER 1,790,822

COLORED SHEET MATERIAL

Filed Dec. 8, 1928 3 Sheets-Sheet 1

Fig. 1.

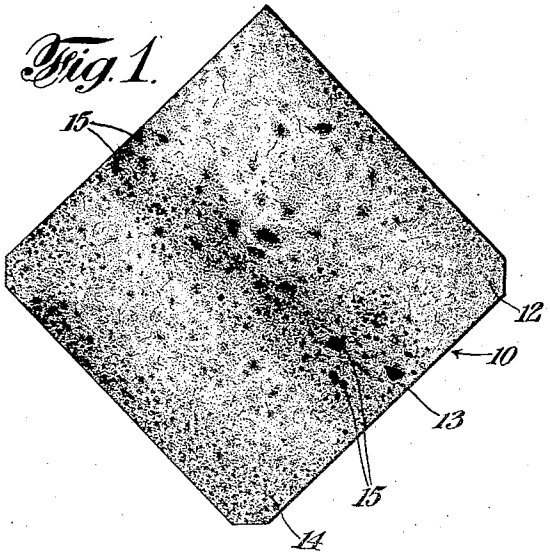


Fig. 2.

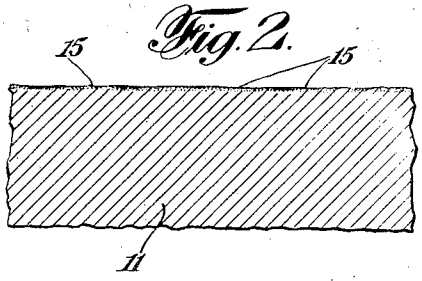


Fig. 3.

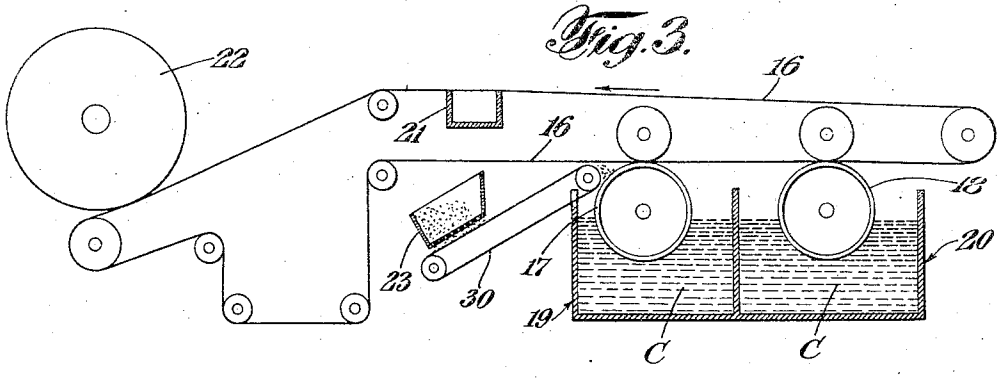
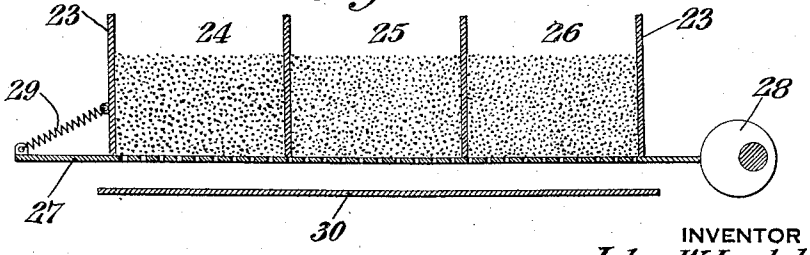


Fig. 4.



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Fig. 5.

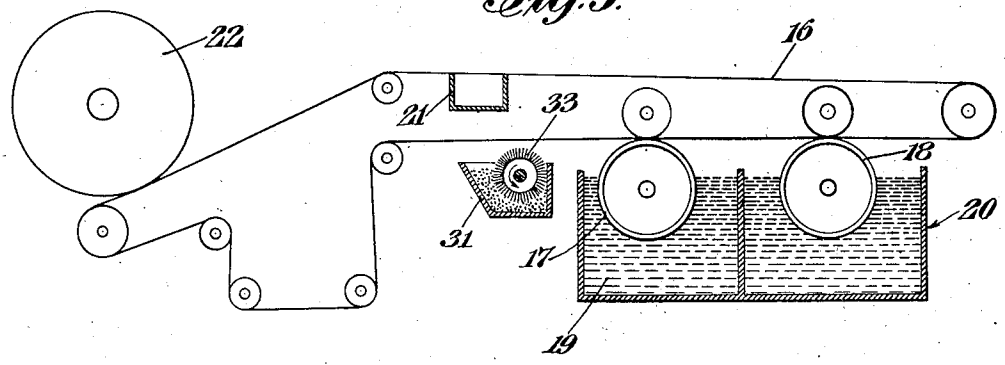


Fig. 6.

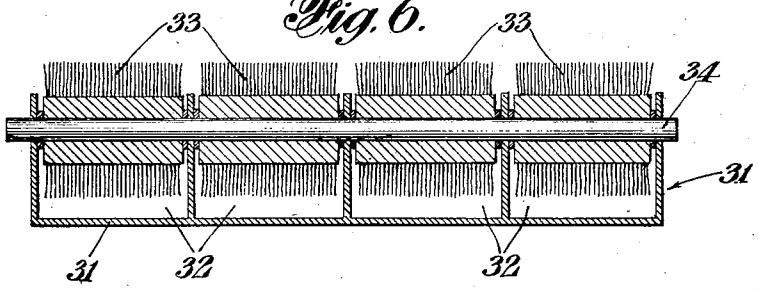
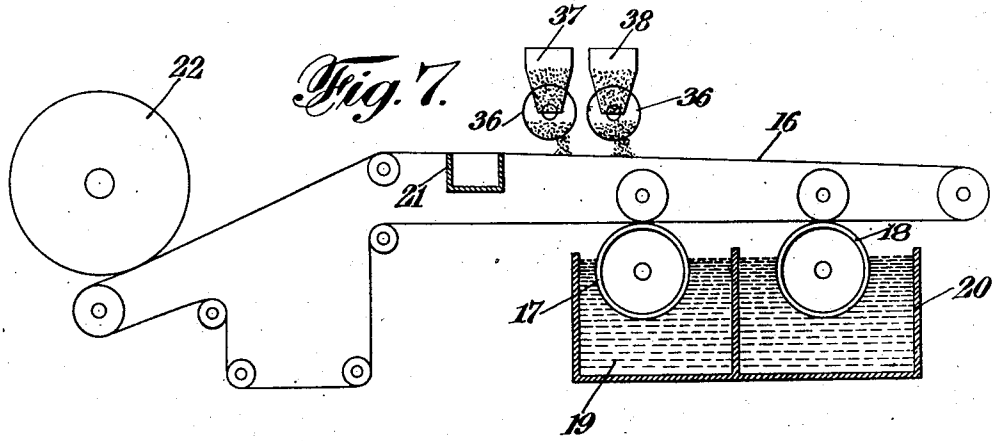


Fig. 7.



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Fig. 8.

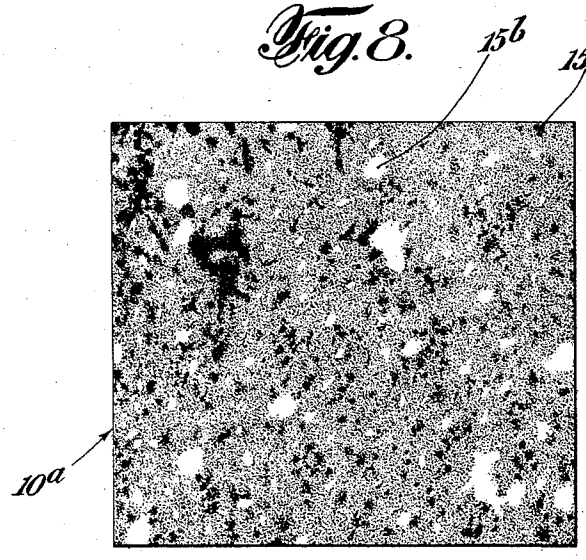
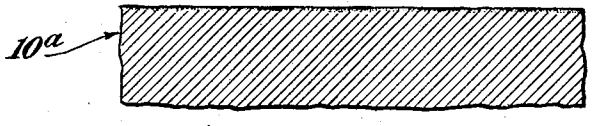


Fig. 9.



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UNITED STATES PATENT OFFICE

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COLORED SHEET MATERIAL

Application filed December 8, 1928. Serial No. 324,644.

This invention relates to cement and fibre composition sheet materials such as shingles, building slabs and the like.

The object of the invention is to provide such a sheet having an ornamental coloring comprising irregular spots or blotches of color extending across the sheet in variable streaks. Preferably the coloring is confined to the surface of the sheet, the colored spots or blotches being formed by sprinkling a fine powder in small masses directly on the sheet of asbestos cement material in its wet plastic condition. The coloring is then pressed so that it adheres to the sheet surface.

This gives a very unique and pleasing appearance to the surface of the sheet, the coloring being broken up into a multitude of differently shaded areas but combining together to form a streak of definite color characteristic. At a distance this coloring looks like a spotted haze with specks and blotches of all sizes mingling together to give blending color effects of great depth and attractiveness.

A further object of this invention is to provide an improved method of producing a variably colored cement and fibre composition sheet material.

Further objects and advantages of the invention will subsequently appear.

The invention will be described in detail in connection with the accompanying drawings, in which

Fig. 1 illustrates a roofing shingle cut from a slab of sheet material and embodying one form of the invention.

Fig. 2 is a sectional view of a portion of the shingle shown in Fig. 1 drawn on a relatively large scale.

Fig. 3 is a diagrammatic view illustrating the process of this invention.

Fig. 4 is a longitudinal sectional view of the distributing apparatus for the coloring materials used in conjunction with the process illustrated in Fig. 3.

Fig. 5 is a diagrammatic view illustrating a modified process.

Fig. 6 is a longitudinal sectional view of the distributing brushes used in conjunction with the process illustrated in Fig. 5.

Fig. 7 is a diagrammatic view illustrating a further modified process.

Fig. 8 is a face view of another slab or shingle illustrative of the invention, and

Fig. 9 is a transverse section of Fig. 8 drawn on a relatively large scale.

The composition sheet material of this invention comprises a body of hydraulic cement and fibrous material having a variably colored blotched and streaked surface. The cement and fibres are mixed together with water and worked into the desired consistency and thereafter formed into sheets with powdered variable coloring materials in blotched and streaked formation on the surface. The coloring materials are so applied to the surface that they are confined to the surface only and are not spread through the composition.

The coloring materials such as, for example, red or black oxides of iron or chromium green oxide and the like or a mixture of these materials with pulverized asbestos fibre or Portland cement or other suitable pulverized material, all of which are in a powdered state, may be directly deposited in streaked formation on the roll which picks up the cement fibre composition to form it into sheets, or thrown on to the forming belt or deposited directly on a completed outside layer of sheet material before the cementitious material sets.

Referring to the drawings, the shingle 10 of Figs. 1 and 2 comprises a body portion 11 of cement and fibre composition and is provided with a plurality of variable overlapping streaks of coloring material 12, 13 and 14 running from edge to edge. These variable overlapping streaks 12, 13 and 14 may be of the same color, alternating contrasting colors, or any desired combination of colors. These streaks are composed of blotches, spots or specks 15 of varying size and configuration which lie in the general plane of one surface of the sheet or shingle, as clearly shown in Fig. 2.

In the apparatus shown in Figs. 3 and 4, one means is illustrated for carrying out the process of manufacturing the colored sheet material of this invention. The belt 16 has its lower surface contacting with drums

17 and 18 which rotate under suitable motive power in vats 19 and 20 which may contain a composition of cement and fibre mixed with water and designated as C. When the cement and fibre composition C is of the proper consistency these drums 17 and 18 as they rotate will raise and deposit films or layers of the composition material on the under surface of the belt 16 which carries the films or layers over the suction box 21 around to the rotary collecting cylinder 22 upon which the layers of composite material are wound or built up by successive rotations into the desired thickness. The material thus built up in laminations on the cylinder 22 is cut and stripped from the cylinder and thereafter pressed into a flat sheet or slab. As thus far described, the process is not new.

To color a surface of the sheet material in accordance with the invention, a distributor box 23 is provided having a number of compartments 24, 25 and 26 for the various contrasting colored or coloring materials, the bottom of the box consisting of a vibrating or shiftable screen 27 moved back and forth by a power operated cam 28 in cooperation with an opposing spring 29. The colored materials are distributed in streaks upon an intermittently operated endless belt 30 power actuated and running beneath the shiftable screen 27 which deposits the coloring material in a dry state upon the surface of the last or face film or layer of composition material C picked up by the drums 17 and 18. The belt 16 passes over the suction box 21 which firmly applies or securely locks the blotches of coloring material to the body 11 of the sheet material due to the atmospheric pressure upon the thin film or layer directly over the suction box.

Figs. 5 and 6 disclose another apparatus for applying the coloring materials to the composition sheet material and which comprises a distributor box 31 located beneath the belt 16, forward of the drum 17. The distributor box 31 is divided into a number of compartments 32 for the various contrasting coloring materials and in each compartment is an intermittently rotated circular brush 33. All of the brushes are mounted on a single power shaft 34 passing through the compartments so that they all rotate together. These brushes 33 throw the minute particles of finely divided or powdered coloring materials upwardly against the under side of the belt 16 to which they adhere and as the belt passes over the drums 17 and 18 the coloring material adheres to the surface of the first film or layer deposited by the drums upon the belt 16.

Fig. 7 discloses another apparatus for applying variable contrasting streaks of coloring material. This apparatus deposits the coloring material in blotched streaks on the opposite side of the sheet material from the apparatus previously described. This apparatus provides for a number of intermittently rotated and apertured distributing drums 36 supplied with the various coloring materials from the supply hoppers 37 and 38. These distributing drums 36 are operated to apply the coloring materials to the first or face film or layer picked up by the drums 17 and 18 which is deposited by the belt 16 on the collecting cylinder 22 with the colored face surface against the face of the collecting cylinder 22. The desired thickness of the shingle or slab is thereafter built up by the addition of further film or layers of material picked up by the drums 17 and 18.

In some instances it may be desired to wave the streaks of coloring materials as they are deposited upon the sheet material and to accomplish this the several coloring distributing devices shown in Figs. 3, 5 and 7 may be mounted to move bodily back and forth across the belt 16, thus distributing the coloring materials in waving lines along the sheet.

In all three of the apparatus it will be understood that the color applying devices are intermittently operated so that the color is applied to the face of one layer or lamination only of each complete sheet. The sheets, when removed from the roll 22, may be suitably cut or divided into shingles, slabs and the like.

In Figs. 8 and 9 there is illustrated another shingle or slab 10*a* colored or ornamented in accordance with my invention but differing somewhat in characteristics or in the manner in which coloring material is applied from the shingle shown in Fig. 1. As has been stated, the coloring in the Fig. 1 form is applied more or less in well-defined streaks, each streak being caused or formed by a single color and preferably the streaks being of different colors. In the Figs. 8, 9 showing, the ornamental effect is obtained by applying blotches or splotches of two different colors which intermingle or overlap as illustrated. These colors are preferably of contrasting but harmonizing shades, the general result being highly pleasing. In the form shown, for example, the splotches or coloring indicated at 15*a* and which constitute by far the larger number giving the general complexion of the surface of the shingle or slab are black in color, whereas the comparatively few and scattered blotches 15*b* are of a green shade. These blotches or splotches 15*b* are generally of a large size and well defined in outline and are preferably applied subsequent to the application of the spots or blotches 15*a*. The two examples given are merely illustrative of the wide variety of ornamental effects obtainable by following the principles of my invention.

It is further to be noted that when the coloring material is applied to the layer or

lamination of the slab or shingle material, the layer is in a wet, sticky, colloidal condition and the process is such that when the coloring material is applied as described it becomes more or less incorporated with the shingle material itself, becoming, in effect, a part of said shingle material.

It will be understood from these examples of the ornamental effect resulting from the employment of my invention that while it possesses certain defined characteristics the variety or diversification both in respect to hue and to variegation is endless.

I have found in practice that when the coloring matter is applied in a pulverized or finely divided state in accordance with my invention to the surface of the material to be ornamented, it will so adhere as to be substantially weather-proof, by which is meant that it will withstand attacks of the elements, and particularly rain and snow, without becoming detached or deteriorating in hue.

While this invention is illustrated and described more particularly as applied to a sheet material for use as roofing, shingles and the like, the invention is not confined thereto but is intended to cover any other uses or modifications within the scope of the appended claims.

I claim:

1. A cement and fibre composition sheet material provided with a plurality of variably overlapping streaks of coloring materials on the surface thereof, said streaks of coloring materials being composed of powdery coloring matter of different hues and cement, said streaks being constituted by irregular powdery blotches of variable intensity and irregularly distributed.

2. The process of making colored cement fibre composition sheet material comprising working up cement, fibrous material, water and contrasting coloring materials to produce a wet composition with the contrasting coloring materials confined on the surface of the composition in a plurality of irregular contrasting colored streaks, variably overlapping and composed of powdery blotches of variable intensity, the coloring materials being applied in the form of dry powders composed of coloring matter of different hues mixed with powdered cement and scattered over the surface of the cement and fibre composition while said composition is plastic, the coloring materials being thereafter incorporated into the surface of the composition under pressure.

3. A sheet material comprising in its composition fibres and a binder and having a coloring material scattered over and incorporated in its surface in powdery blotches, said coloring material comprising a mixture of finely powdered coloring matter and a binder of substantially the same composition as the binder for the fibers.

4. A sheet material comprising in its composition asbestos fibres and cement and having a coloring material incorporated in its surface, said coloring material comprising a mixture of finely powdered coloring matter, asbestos and cement, the coloring material being scattered over the surface of the sheet material while plastic in spots of varying density and size.

5. A sheet material comprising in its composition fibres and cement and having a coloring material incorporated in its surface, said coloring material comprising individual mixtures of different hues of finely powdered coloring matter and a binder mixed with each hue, said coloring material being distributed in powdery blotches of different hues over the surface of the sheet material while plastic, said blotches varying in size and density.

6. The process of making colored cement fibre composition sheet materials, comprising working up the cement and fibrous material with water into a plastic surfaced condition and applying coloring materials in dry form mixed with a powdered binder to the surface of the composition while it is in a more or less plastic condition, the coloring materials being irregularly scattered in the form of blotched streaks and then incorporated with the face of the composition under pressure.

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