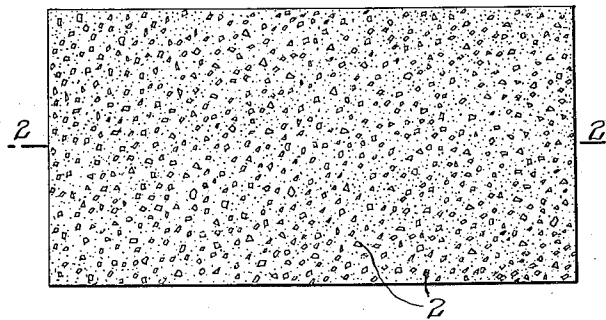


H. R. WARDELL.  
CEMENT SHINGLE.  
APPLICATION FILED APR. 28, 1917.

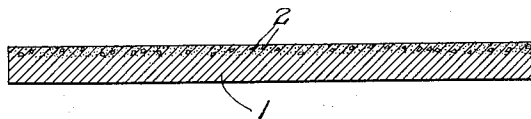
1,244,148.

Patented Oct. 23, 1917.

*Fig: 1.*



*Fig: 2.*



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Inventor  
Henry R. Wardell  
By his Attorney  
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# UNITED STATES PATENT OFFICE.

HENRY R. WARDELL, OF NEW YORK, N. Y., ASSIGNOR TO H. W. JOHNS-MANVILLE COMPANY, A CORPORATION OF NEW YORK.

## CEMENT SHINGLE.

1,244,148.

Specification of Letters Patent.

Patented Oct. 23, 1917.

Application filed April 28, 1917. Serial No. 165,294.

*To all whom it may concern:*

Be it known that I, HENRY R. WARDELL, a citizen of the United States of America, residing at New York city, borough of Manhattan, county and State of New York, have invented certain new and useful Improvements in Cement Shingles, of which the following is a specification.

My invention relates to the production of cement shingles, or to shingles formed of hydraulic cement and asbestos known as asbestos shingles, and is particularly designed to produce a shingle, or similar slab, which shall have a surface variegated in color, or of a dominant color different from that of the cement or other materials of which the body of the slab is formed, and which color shall be permanent and not removable by the action of water.

In certain aspects my invention constitutes an improvement on the fibrous sheets set out in U. S. Letters Patent to Charles L. Norton, numbered 979,547 and 979,548, granted December 27, 1910. The asbestos shingles or other articles made by the Norton process, or by any other process known to me, are extremely difficult to color permanently. Furthermore the color produced by known methods is usually a flat even shade, devoid of relief or variegation. If architects or owners object to the natural light gray color of such shingles it has been customary to treat them after manufacture with various coloring solutions, but when in use the rain gradually washes out the coloring matter entirely or so as to produce an unsightly streaked appearance. Many experiments have been made in the attempt to produce a coloring material which will permanently resist the effects of weather and the action of sunlight when applied to or incorporated in these asbestos shingles, but so far without entirely satisfactory results as far as I know. I have discovered that any desired coloring can be given to the surface of such shingles by embodying in said surface during the process of manufacture of the shingle any suitable granulated weather resistant materials such as crushed brick or colored slate which are practically insoluble in water and in which the colors are permanent. This invention lends itself most conveniently to the improvement of the product set out in the above mentioned Norton patents, as said coloring material can be

sprinkled upon the initially formed sheet of cementitious materials at or about the time the water of hydration is sprinkled on said sheet and before it passes through the final set of compacting pressure rolls. Said rolls will then, at the same operation, force the particles of granulated material into the body of cementitious material so that they become embedded or inlaid in the general cementitious body at and adjacent to the surface thereof so that their color shows on said surface and dominates it.

The best form of my invention at present known to me is illustrated in the accompanying sheet of drawings in which

Figure 1 is a plan view of a shingle and Fig. 2 is a cross section of the same on line 2—2 of Fig. 1, the sizes of the granular material being exaggerated for convenience of illustration in both figures of drawing.

Throughout the drawings like reference figures indicate like parts.

1, represents the body of the slab or shingle which is preferably formed of hydraulic or Portland cement and short asbestos fiber, the hydraulic cement composing the major portion of the compound. When the cement has set after the wet sheet has been subjected to high compression the shingle is formed as a dense stone-like body which will not absorb and hold ordinary coloring matter. 2, 2, represent granular particles of some mineral or other material having a distinctive color, and practically insoluble in water. This material may be prepared by crushing brick, or colored slate to granular form. It is then sprinkled onto the sheet 1, after the same has been formed but before the cement has set and before it has been subjected to its final pressing. The material 2, is then, by the final pressing of the sheet 1, embedded therein, each particle 2, being set in a matrix of the cement after the same has hardened. The cement matrix, as shown in Fig. 2 nearly surrounds each particle, allowing only the upper surface thereof, or a portion of said upper surface, to show, the surface of the cement body forming the matrix appearing around each particle, each particle of coloring matter being below the general plane of the upper surface of the shingle with a part of its upper surface tangent to said plane. Owing to the plastic condition of the cement when the shingle after deposition of the coloring particles is subjected to pressure the

above result follows no matter how large a quantity of the coloring particles is used, as a part of the cement is always squeezed up around each particle, but preferably I do not  
5 use an excess of the coloring particles.

This results in giving to the surface of the shingle treated a mottled appearance, on close inspection, in which the color of the granular material predominates, and at a  
10 distant view the color of the granular material dominates completely and gives its color to the surface treated. The mottling of the surface gives the shingles, and the roof covered by the shingles, a weathered effect  
15 which is considered desirable by many persons. The particles of granular coloring material cannot be washed out of their matrices and as they are insoluble in water the color persists and is as indestructible as the shingles themselves.  
20

Having described my invention, I claim:

1. As an article of manufacture a slab for use as a roof shingle or similar purpose composed mainly of hydraulic cement and having  
25 a sufficient number of granular particles of a material of some pronounced color and practically insoluble in water embedded in its surface to give thereto the characteristic color of said material, the said particles be-

ing below the general plane of the upper  
30 surface of the shingle but mostly tangent thereto.

2. An article of manufacture, a slab for use as a roof shingle or similar purpose composed of hydraulic cement and asbestos and  
35 having a sufficient number of granular particles of a mineral of some pronounced color and practically insoluble in water embedded in its surface to give thereto the characteristic color of said mineral, the said particles  
40 being below the general plane of the upper surface of the shingle but mostly tangent thereto.

3. As an article of manufacture a slab for use as a roof shingle or similar purpose composed mainly of hydraulic cement and having  
45 a sufficient number of granular particles of a material of some pronounced color and practically insoluble in water embedded in its surface to give thereto the characteristic  
50 color of said material, the particles of coloring material being separate one from another at portions of the slab surface whereby a weathered effect is produced on said surface.

HENRY R. WARDELL.

Witnesses:

ARTHUR J. ARIEL,  
A. C. HOYT.