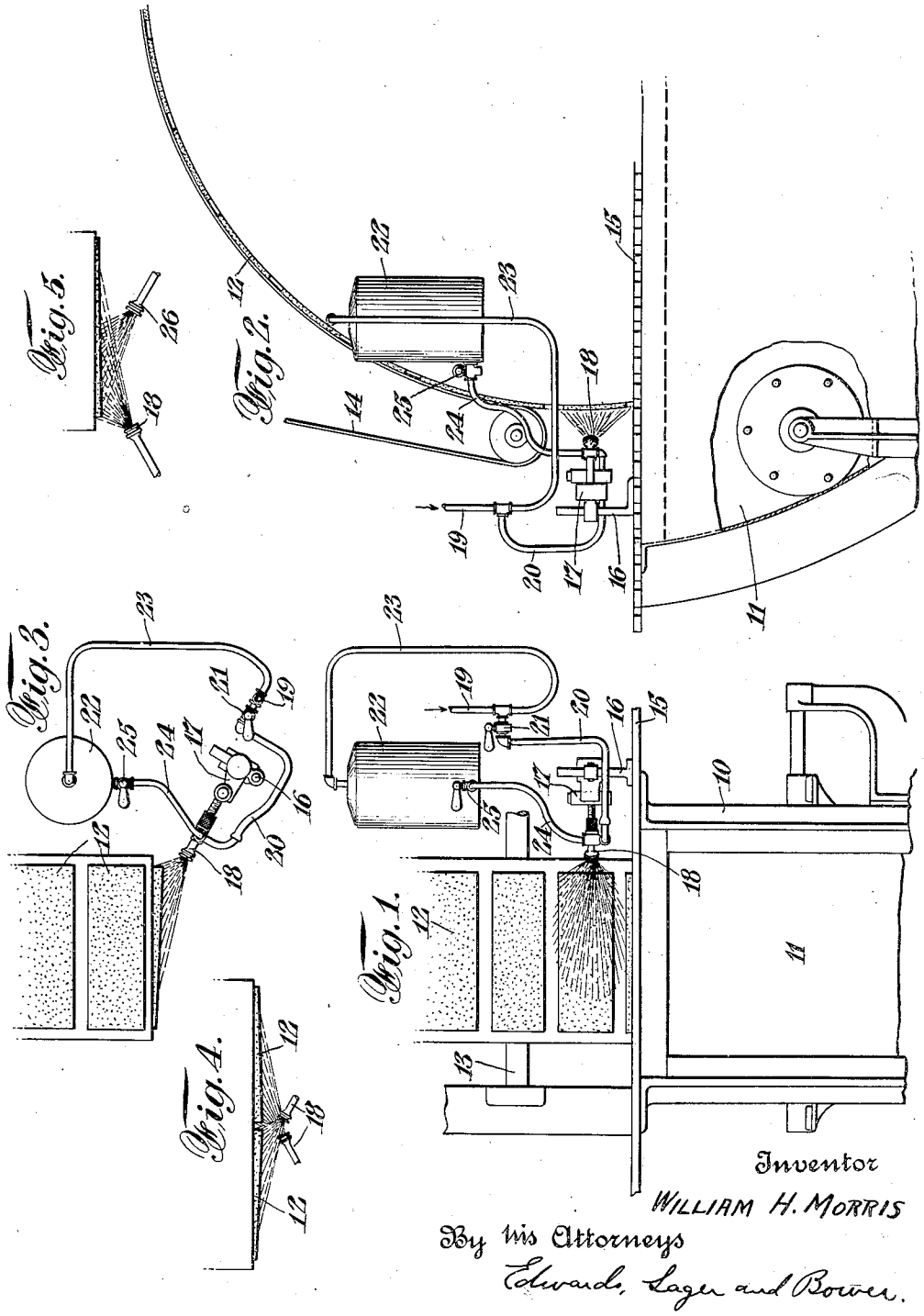
June 2, 1931. W. H. MORRIS 1,807,858

PROCESS FOR COLORING PLASTIC MATERIAL

Filed April 4, 1927



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Published by AsbestosClaims.Law
asbestosclaims.law/library/23458/1

Patented June 2, 1931

1,807,858

UNITED STATES PATENT OFFICE

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PROCESS FOR COLORING PLASTIC MATERIAL

Application filed April 4, 1927. Serial No. 180,678.

This invention relates to a method for coloring articles of plastic material and more particularly to the coloring of shingles of asbestos-fibre composition.

Roofing shingles have been commonly colored or coated by applying a coating such as paint to the upper exposed surface. The coating on the shingle surface thus applied, after being exposed to the weather for a short time, peels off, exposing the shingle and giving the roof an unsightly appearance.

The object of this invention is to overcome these objectionable features in the coloring or coating of shingles or plates of flat or tapered formation and to provide a method and apparatus for embedding the coloring material in the body of the shingle or plate within the upper exposed surface.

Further objects and advantages of the invention will be apparent by reference to the following specification and drawings, in which

Fig. 1 is an end view of a composition shingle machine embodying the apparatus for the coloring of the shingle.

Fig. 2 is a side elevation of the apparatus shown in Fig. 1.

Fig. 3 is a top plan view of the apparatus shown in Fig. 1.

Fig. 4 is a diagrammatic view showing the invention as applied to a double shingle machine, and

Fig. 5 is a diagrammatic view showing a modification of the spraying apparatus.

The composition for forming articles such as shingles to which this invention is particularly adapted consists generally of asbestos fibres, hydraulic cement, sand, preferably sharp white sand, and water, preferably warm. When suitably mixed this composition forms a jelly-like slurry consisting of small globules of colloidal cement and fibre. In order to obtain the best result the fibres must be forced into these small globules and this is accomplished to a certain extent not only by pressure applied to the formed article, but is initially obtained by the suction action in forming the article and an initial pressure applied during the suction action. I have found that this composition not only produces a strong, durable shingle at low cost but is also particularly adapted to be formed into the desired shingle automatically by depositing a wet mixture of slurry on a rotating drum.

In the embodiment of the invention shown in Figs. 1, 2 and 3, the frame structure 10 supports a slurry tank 11 in which is immersed the lower portion of the shingle-forming drum 12 which rotates on shaft 13. The periphery of the drum is provided with a series of parallel substantially rectangular chambers partitioned to form adjacent shingles. Communicating with each chamber is a vacuum means within the drum for exhausting the air in the chambers. As the drum rotates each chamber is subjected to the vacuum within the drum. The object of the vacuum is to permit the drum to pick up or have accumulated on its periphery over the chambers a substantially predetermined amount of slurry from the tank 11, as the drum rotates therein to form shingles. The depth and formation of the chambers controls the type of shingle to be formed as shown and described in the patent to Richard V. Mattison No. 1,623,631, dated April 5th, 1927.

In order to initially press the plastic shingles there is provided a belt 14 which engages an arcuate portion of the drum periphery.

Attached to the frame 10, adjacent to the platform 15 is a bracket 16 on which is adjustably mounted an air spray brush 17 having a nozzle 18 directed toward the shingles and at an angle thereto. The spray brush directs a stream of coloring material such as a pigment or a paint against the upper exposed surface of the shingles as the drum passes out from the slurry tank, the formed shingles being held to the drum periphery by the vacuum created within the drum. The continual rotation of the drum 12 removes the shingles from under the spray from the air brush and subjects them to an increased vacuum within the drum withdrawing the water from the shingles and at the same time drawing the coloring material below the surface and into the body of the shingles, creating a substantial thickness of coloring material. When the shingle is thereafter dried

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the coloring material is embedded in the body of the shingle and cannot peel off upon exposure to the weather.

The air brush 17 is supplied with compressed air through pipe connections 19 and 20, from a compressor not shown. A controlling valve 21 controls the air supply from the compressor. The coloring or coating material is contained in a tank 22 having a pipe connection 23 at the top providing compressed air to continually agitate the coloring material contained therein. At the bottom of the tank is a pipe connection 24 leading to the air brush 17 for supplying the coloring or coating material to the air brush. The supply of coloring or coating material is controlled by the valve 25. The tank 22 is mounted above the air brush so that the coloring or coating material flows to the air brush by gravity.

In the embodiment of the invention illustrated in Fig. 4 the air brush or brushes have nozzles 18 located one above the other and directed in opposite diagonal directions to the exposed shingle surface. In this arrangement of nozzles the greatest amount of coloring or coating material is supplied to the lower end or butt of the shingle where it is most desired and which is exposed to the weather when the shingles are laid upon a roof.

In the embodiment of the invention illustrated in Fig. 5 an auxiliary nozzle 26 is shown directed oppositely to the nozzle 18 and which sprays a contrasting coloring material directly into the spray from the nozzle 18, the effect being an intermixture of contrasting coloring materials giving the completed shingle a mottled or variegated appearance.

A shingle coated by the above described apparatus and process has the coloring material embedded therein within the upper surface and cannot peel off upon exposure to the weather as the coloring material is incorporated in the body of the shingle for a considerable depth, being drawn therein while the shingle is being manufactured.

While the invention has been illustrated and described more particularly with reference to the coloring of composition shingles made from plastic material, the invention is not confined thereto but is intended to cover the coloring of other plastic articles and for any other uses and modifications within the scope of the appended claims.

I claim:

1. The process of coloring articles of plastic material which consists of applying a tapering film of coloring material to one surface thereof while the article is in a plastic condition, thereafter drawing said film of coloring material into the body of said article by means of suction applied to the opposite surface of said article.

2. The process of coloring articles of plastic material which consists of spraying a tapering film of coloring material to one surface of the article while said article is in a plastic condition so that a greater amount of coloring material is applied to one end of the article than to the other, and drawing said coloring material into and below the surface of the article by means of suction applied to the opposite surface of the article.

3. The process of coloring shingles of plastic material which consists of spraying coloring material from a nozzle directed at an angle to the upper surface of the shingle so that the greatest quantity of coloring material is applied at the butt end of the shingle, and thereafter drawing the coloring material below the surface of the shingle by means of suction.

4. The process of coloring shingles of plastic material which consists of depositing a spray of contrasting coloring materials formed from a combination of differently colored sprays directed in opposite directions to the upper surface of the shingle while the shingle is in a plastic condition and thereafter drawing the coloring materials into the body of the shingle by means of suction applied to the under surface of the shingle to give said shingle a variegated appearance.

5. The process of coloring shingles of plastic material which consists of simultaneously spraying contrasting coloring materials in opposite directions to the upper surface of the shingle while the shingle is in a plastic condition and thereafter drawing the coloring materials into the body of the shingle by means of suction applied to the under surface of the shingle to give said shingle a variegated appearance.

6. The process of coloring shingles of plastic material which consists of spraying a coloring material from a nozzle directed at an angle to the upper surface of the shingle so that more coloring material is applied to the butt end of the shingle, spraying coloring material of another color from a second nozzle into the spray of coloring material from said first mentioned nozzle to give said shingle a variegated appearance, and thereafter drawing the coloring material below the surface of the shingle by means of suction.

7. The process of coloring shingles which consists of spraying a coloring material from a source of supply so directed as to apply the entire spray content to the receiving face of the shingle, but with the greater amount of the spray co-acting directly with the butt end portion of the shingle, the amount of spray gradually lessening as the opposite end portion of the shingle is neared and the thin-end proper being left free from the spraying material.

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