Jan. 12, 1943. A. F. DE VAULT 2,307,733

METHOD OF MAKING ASBESTOS CEMENT SHINGLES

Filed April 30, 1941

Fig. 1.

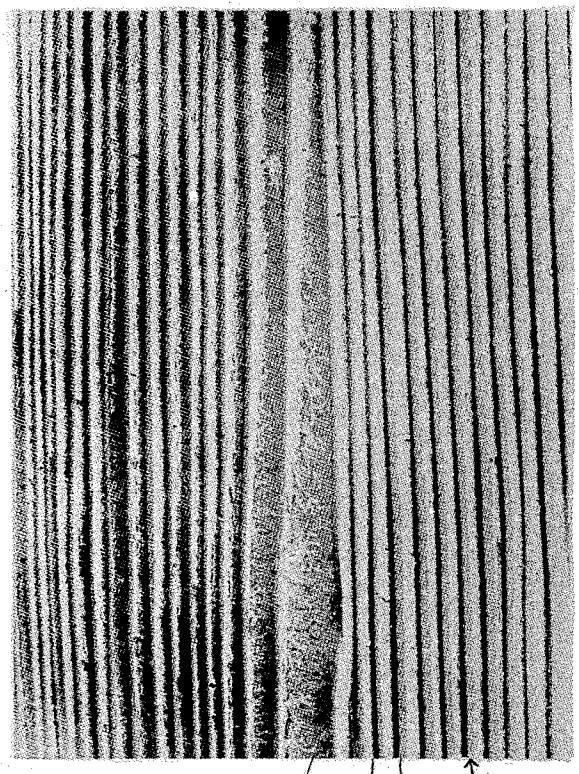
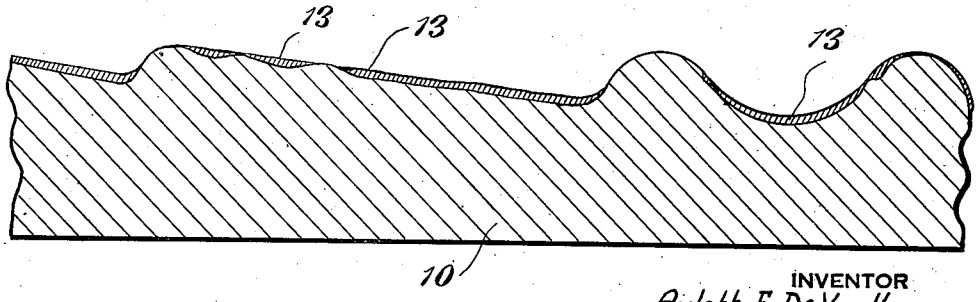


Fig. 2.



Fig. 3.



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asbestosclaims.law/library/22942/1

Patented Jan. 12, 1943 2,307,733

UNITED STATES PATENT OFFICE

2,307,733

METHOD OF MAKING ASBESTOS CEMENT SHINGLES

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Application April 30, 1941, Serial No. 391,025

5 Claims. (Cl. 18—61)

This invention relates to the art of making earthen or cement shingles and the like, and has for an object the provision of improvements in this art.

One of the objects of the invention is to produce a shingle in which the embossing or grain is clearly brought out by a two-tone effect and made fully perceptible even at a distance. Another object is to produce selected color effects with the emphasized grain effect. Another object is to produce grain and color effects which are as permanent in character as the material on which they are produced. And yet another object is to produce the desired effects in a simple and inexpensive manner.

The invention is particularly applicable to the manufacture of cement-asbestos shingles and will be described in this connection; but it is to be understood that it applies as well to siding, blocks and other articles made of the same materials, and also to articles made of other moldable materials in a similar way.

One application of the invention is illustrated in the accompanying drawing, wherein:

Fig. 1 is a surface view of a shingle made according to the invention;

Fig. 2 is an end view of the lower end of Fig. 1; and

Fig. 3 is an enlarged view of a section through the shingle.

A popular type of outer covering for buildings is a rock-like cement-asbestos shingle which is formed with a grain to imitate a weather-worn wood shingle. However, when such a shingle is made in the natural color of the material the effect of the graining is largely lost, particularly at a distance. When the shingle is made in colors the effect is still lost if, as is usual, the color pigment is uniform throughout the entire body or over the entire surface of the shingle.

According to the present invention, a distinctive coating is applied to the shingles and this is done in such a manner as to be discontinuous at the proper places to bring out the graining by contrast between the coated portions and the exposed uncoated portions. The coating material is present in the valleys but is largely absent on the crests; and on the gentler sloping portions it is irregular and of a somewhat rivuleted appearance. This enhances the weather worn appearance in a very realistic manner and is done with a minimum of coating material because only a thin surface layer of the material is used, the body of the shingle being left in its natural state without added color pigment. If the body is one color or shade the surface coating layer will be another color or shade.

Cement-asbestos shingles may be made, according to one common process, by forming a sheet from a slurry of asbestos fiber and cement on the cylinder of a machine by what is known as the "Hatschek" process. The details of this or other sheet-forming processes are unimportant here, it being only necessary to note that, as commonly practiced, there are produced limp sheets of any desired thickness and size, for example, about $\frac{5}{16}$" thick and about 25" x 25" in extent. These sheets remain in a limp condition resembling rolled out pie dough until the cement begins to harden, which is a matter of three or four hours. Since the surface begins to harden first, a skin is formed on each side and the interior attains a state of increased coherency sufficient to prevent pulling apart or splitting when the plates are separated after the pressing operation, next to be described.

Continuing with the common process for making grained shingles, the drying but still impressionable sheets, say after about three hours (the period varying considerably with atmospheric and other conditions), are placed in alternation between embossed plates of a plastic material such as Bakelite. The plates may be made of cloth and a plastic, of hard rubber, bronze, aluminum or other suitable materials. Preferably the grained plates are embossed on both sides and alternate with smooth metal plates between the sheets. The stack of plates and alternating sheets is placed in a press and subjected to a high pressure of say 2500 or 3000 lbs. per square inch. This presses out considerable water and causes the sheets to take the embossing or graining of the plates. The sheets are then removed from the plates and placed in stacks to cure or set for at least ten days in a moist condition. Certain manufacturers hasten the cure by placing them in steam chambers and in other ways known in the curing of cements. After curing and hardening, the sheets are cut into the exact sizes desired for finished shingles.

According to one known process, if colored shingles are desired, the color pigment is added to the entire amount of slurry from which the body of the shingles or the outer layer is formed. This produces a monotone over the entire surface and this single color alone does not bring out the graining, as desired.

According to the present invention, the sheets are formed from the basic material, asbestos-

cement slurry, on the cylinder and taken off as usual.

But instead of treating the sheets in the usual way, the process is altered to produce the two-tone embossed shingles desired. One method which has been found satisfactory is as follows.

Before the sheets are pressed to form the graining, they are coated with a material of another color or shade. They may, for example, be sprayed with a slurry of cement containing the desired color pigment. Or a dry film of pigmented cement may be applied which is moistened after application, as by the water left in the shingle or by a dampening for the purpose. Or a coating layer may be flowed on and the excess removed in a convenient manner as by an air blast. The coating produced is very thin and adheres to the sheets. Eventually it becomes integral with the sheets, particularly when of a like nature. The coating is applied just before the sheets are assembled with the embossed plates for pressing. If the coating is thus applied to partly cured sheets and is still damp when the graining is embossed on the sheets, the coating layer will be broken at the grain crests to expose the differently colored base material and thus bring the graining into relief. If the pigmented slurry is applied earlier and becomes drier, it will adhere to the base material uniformly throughout its entire surface and will not break up or be removed at places to expose the base material and bring the graining into relief, as desired. If the sheets are coated in the usual ways after the grain impressing operation, the effect is artificial like that of common painted surface coatings.

In the drawing, the cement-asbestos base is represented by the numeral 10, the grain crests by 11 and the valleys by the numeral 12. The coating is shown greatly exaggerated in thickness in Fig. 3 and is represented by the numeral 13. Principally, the coating is left in the valleys 12 and is largely absent on the crests 11. The gently sloping areas 14 are partly coated and partly exposed. They are mottled or rivuleted to have the appearance of seashore mud flats with streams as seen from an airplane.

Although the coating is very thin it will last for the life of the shingle because it is of like cement material or slurry and is bonded homogeneously in curing with the base material, and also because it is left principally in the depressions where it will not weather away. The crests, on the other hand, are largely free of the pigmented layer and this closely simulates the appearance of a weathered shingle because, in weathering, a wooden shingle has the fibers on the grain crests exposed as a furry felting of a color lighter than that of the unweathered valleys.

The effect may be produced by the application of the fresh coating layer to a body surface which has become tenuous, together with a suitable treatment to remove the still unhardened layer from the crests. When the effect is produced in the pressing operation, it may be due to the escape of water from the crests, that is, in the valleys of the mold, after the crests of the mold have firmly engaged the other portions of the layer. This theory is supported by the observation that as the molds press into the sheet to form the grain, there is a heavy outflow of water from the embossed faces. The crests, and particularly the gentler sloping surfaces near the crests, give the appearance of water flow having washed off part of the coating layer. In part too the effect may be due to a stretching of the tenuous base surface in changing from a plane surface to a grained surface. The length of the surface across the grain may be doubled in this change. The coating layer, being unhardened and not yet firmly attached to the base surface, will break and the base surface will stretch to form the exposed crests free of the coating layer.

While certain theories of the creation of the effect have been discussed, it is to be understood that the invention does not depend upon these or any other theories, it being sufficient to know that the procedure disclosed will produce the desired article. Moreover, this may not be the only procedure by which the new article may be produced. Therefore, the invention is not to be limited except by the prior art and the scope of the subjoined claims.

I claim:

1. The method of making two-tone grained asbestos-cement shingles and the like, which comprises, forming a limp wet sheet from asbestos-cement slurry, curing the sheet until it has attained appreciable cohesion and surface tenacity, applying to the surface of the sheet a pigmented cement slurry to form a very thin coating, and embossing the sheet while the coating is still damp to expose the crests of the embossed grains through the coating and leave the coating in the valleys.

2. The method of making a molded earthen article with a two-tone relief effect which comprises, forming a body of cement and fiber, applying a surface coating after the body has attained appreciable cohesion and surface tenacity, and embossing said body under high pressure while the coating is damp to expose the crests of the embossed surface and leave the coating in the valleys.

3. The method of making two-tone embossed molded earthen articles which comprises, forming a cement-bonded body, applying a thin pigmented cement surface coating after the body has attained appreciable cohesion and surface tenacity but while still soft, and embossing said body under high pressure while the coating is damp to squeeze out the water through the crests and expose the base material through the coating while leaving the coating in the valleys.

4. The method of making two-tone grained asbestos-cement shingles and the like which comprises applying an even coating of a pigmented cement slurry at a stage after the base sheet has attained appreciable cohesion and surface tenacity, forming grains on a surface of the sheet, and removing the coating on the crests of the grains at the tops and for a short distance down on the sides while the coating is still soft.

5. The method as set forth in claim 4 further characterized by the fact that the coating is removed from the crests of the grains in a pressing operation which causes water to flow out of the grained surface.

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