Feb. 9, 1932. E. P. EVERETT 1,844,647

ROOFING TILE AND METHOD OF MAKING

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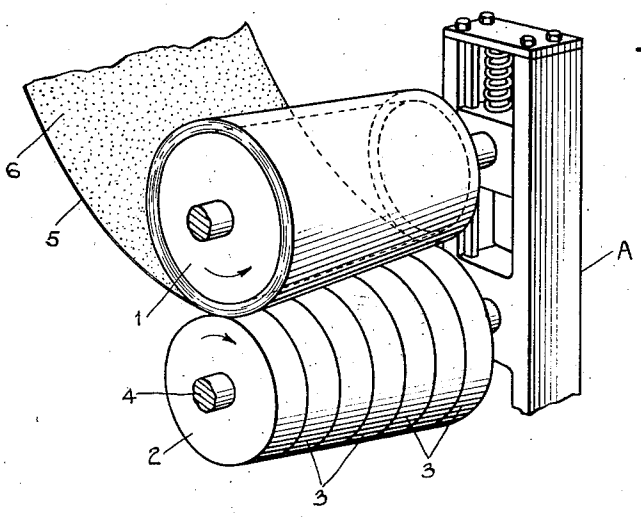


Fig. 1.

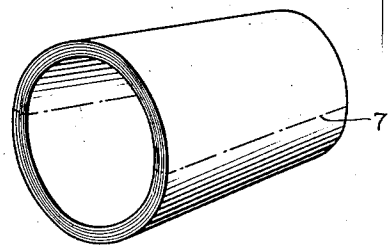


Fig. 2.

Fig. 3.

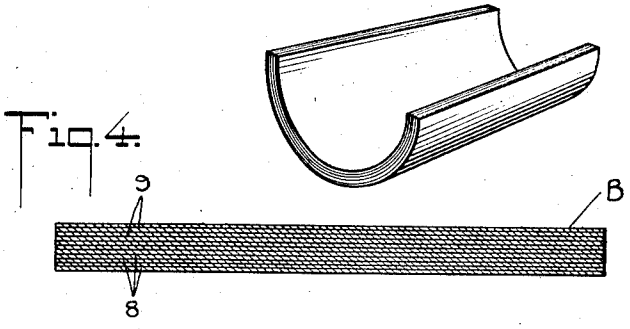


Fig. 4.

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UNITED STATES PATENT OFFICE

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ROOFING TILE AND METHOD OF MAKING

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This invention relates to certain novel and useful improvements in roofing tiles, and has particular application to a tile of this class formed from sheets of fibrous material united throughout their surfaces by a suitable waterproof adhesive to provide a laminated waterproof and weatherproof structure.

In the present instance it is my purpose to provide a laminated roofing tile of fibrous material which may be made up in imitation of various well known styles of roofing tiles, such as Spanish, which may be colored in any desired shade, and this will embody the desired features of strength, durability and efficiency.

Still a further object of my invention is to provide a fibrous tile which is both waterproof and fireproof and is of such light weight that the cost of shipping and transportation is reduced to a minimum.

Still a further object of my invention is the provision of a tile of this class which may be manufactured and marketed in large quantities at a relatively low cost, and which will embody all of the advantages of the ordinary tile formed from cement, terra cotta or similar plastics, without the disadvantages of the latter, such as heavy weight and liability to breakage.

With the above recited objects and others of a similar nature in view, my invention consists in the construction, combination and arrangement of parts set forth in and falling within the scope of the appended claims.

In the accompanying drawings

Fig. 1 is a perspective view illustrating conventionally a rolling machine, including a mandrel upon which the fibre sheet from which the tile is made is rolled;

Fig. 2 is a perspective view of a tapered laminated cylinder as removed from the mandrel and from which cylinder tiles are adapted to be formed;

Fig. 3 is a perspective view of a finished tile formed by splitting the cylinder shown in Fig. 2;

Fig. 4 is a cross-sectional view of a flat laminated fibrous tile blank which may be built up and then pressed in a suitable mold to form a tile such as shown in Fig. 3.

In the manufacture of my improved roofing tile I preferably provide a suitable roller machine which is merely conventionally illustrated in Fig. 1, and is indicated as an entirety by the letter A. The machine embraces a suitable mandrel 1 embodying a tapered cylindrical roll of any suitable construction cooperating with the forming roll 2 which is also of tapered cylindrical form and comprises a plurality of disk-like sections 3 mounted in face to face contact upon the shaft 4. As will be seen by reference to Fig. 1, the mandrel and the forming roll are oppositely disposed; that is, the smaller end of the mandrel roll is disposed at the larger end of the forming roll. Upon the mandrel I tightly wind a sheet or sheets 5, of suitable fibrous material, preferably paper, which is more or less absorbent, and one or both sides of which fibrous sheet or sheets has or have been previously coated with a suitable waterproof adhesive, indicated at 6, such as silicate of soda, a sulphur adhesive, or the like. The coating of the face or faces of the sheets with the adhesive may be accomplished with any well known form of coating or gluing machine just prior to the wrapping or rolling of the sheet or sheets upon the mandrel 1.

The sheet or sheets 5 are rolled or wrapped on the mandrel to form a tapered hollow cylinder of any suitable thickness, and during the wrapping or rolling operation, the plies, layers or laminations of the paper are firmly pressed together through the pressure of the forming roll 2. When the tube or cylinder of the desired thickness has been formed, the mandrel may be removed from the bearings and the now laminated fibrous tube or cylinder removed therefrom. It will be understood that the machine shown in Fig. 1 is merely a conventional illustration and that any suitable roller mechanism for making the fibrous tube while permitting a ready removal of the same from the mandrel thereof may be used.

When the tapered tube or laminated fibrous cylinder has been removed from the mandrel it will appear substantially as illustrated in Fig. 2, and where a quick drying of water-

proof adhesive, such as silicate of soda adhesive, is used in cementing or gluing the laminations together under pressure of the machine, it will dry very rapidly and the tapered tube or cylinder is now ready to be made into the tiles.

This is accomplished by halving or splitting the tube shown in Fig. 2, longitudinally along the line 7, for example, to form two tapered semi-cylindrical sections, such as shown in Fig. 3, and which indicates the complete tile. Preferably the tiles are subsequently coated with a suitable waterproof coating or wax, shellac, synthetic resin varnish, or the like, and may be painted or dyed any suitable color. For example, the pigment forming the coloring matter may be incorporated in the final waterproof coating, or may, if desired, be incorporated in the adhesive bath from which the adhesive which is used to cement the plies or laminations together is supplied.

In Fig. 4 I have shown a blank from which a slightly modified form of the tile may be made.

In this instance, the blank, indicated as an entirety by the letter B, is formed of layers or plies 8 of suitable absorbent material, such as long fibre chip board, yoshino paper, blotter board, or the like, cemented together by a suitable adhesive, such as silicate of soda, at their contacting faces, as shown at 9. This laminated sheet B may be placed in a suitable mold and pressure applied to mold a tile of the desired form, for example, of the shape shown in Fig. 3. After the molding operation the tile may be dried and then subsequently painted or coated with a waterproof coating of wax, shellac, synthetic resin varnish, or the like.

However, for the purpose of my invention, both from the standpoint of economy and strength, and to avoid the liability of distortion or warping, I prefer to roll the sheets upon the mandrel as heretofore described, and then split the resultant tube.

The tile constructed as herein described is waterproof, weatherproof and fireproof, and, owing to its extreme lightness and the inexpensiveness in cost of production, it is particularly adapted for use in roofing frame and stucco buildings, particularly those which do not require heavy and expensive framing.

While I have herein shown and described a certain preferred embodiment of my invention, I wish it to be understood that I do not limit myself to all the precise details of construction set forth by way of illustration, as modification and variation may be made without departing from the spirit of the invention or exceeding the scope of the appended claims.

What I claim is:

1. A trough-like roofing tile comprising a plurality of laminations of fibrous material adhesively secured together, each of said laminations being in the shape of a segment of a hollow open ended body of circular cross section, and the successive laminations each being peripherally longer than the next succeeding inner lamination by an amount equivalent to the difference in their radii, whereby the laminated fibrous roofing tile permanently retains its initial arched configuration.

2. A tapered trough-like roofing tile comprising a plurality of laminations of fibrous material adhesively secured together, each of said laminations being in the shape of a segment of a hollow open ended tapered body, and the successive laminations each being peripherally longer than the next succeeding inner lamination, whereby the laminated fibrous roofing tile permanently retains its initial trough-like configuration.

3. A tapered trough-like roofing tile comprising a plurality of laminations of fibrous material adhesively secured together, each of said laminations being in the shape of a segment of a hollow frustum of a cone, and the successive laminations each being peripherally longer than the next succeeding inner lamination by an amount equivalent to the difference in their radii, whereby the laminated fibrous roofing tile permanently retains its initial arched configuration.

4. A tapered trough-like roofing tile comprising a plurality of laminations of fibrous material adhesively secured together, each of said laminations being in the shape of half of a hollow frustum of a cone, and the successive laminations each being peripherally longer than the next succeeding inner lamination by an amount equivalent to the difference in their radii, whereby the laminated fibrous roofing tile permanently retains its initial arched configuration.

5. The method of manufacturing a hollow laminated fibrous roofing tile, which includes adhesively coating a sheet of fibrous material, continuously rolling the sheet around a mandrel in a plurality of layers while compressing the layers between the mandrel and a plurality of cooperating pressure rollers, removing the resulting hollow laminated fibrous blank, and cutting the same along longitudinal elements thereof in order to form a plurality of trough-like roofing tiles.

6. The method of manufacturing a hollow laminated fibrous roofing tile, which includes adhesively coating a sheet of fibrous material, continuously rolling the sheet around a tapered mandrel in a plurality of layers while compressing the layers between the mandrel and a plurality of cooperating pressure rollers, removing the resulting tapered hollow laminated fibrous blank, and cutting the same along longitudinal elements thereof in order to form a plurality of tapered trough-like roofing tiles.

7. The method of manufacturing a hollow laminated fibrous roofing tile, which includes adhesively coating a sheet of fibrous material, continuously rolling the sheet around a frusto-conically shaped mandrel in a plurality of layers while compressing the layers between the mandrel and a plurality of cooperating pressure rollers, removing the resulting hollow laminated frusto-conically shaped fibrous blank, and cutting the same along elements thereof in order to form a plurality of tapered trough-like roofing tiles.

8. The method of manufacturing a hollow laminated fibrous roofing tile, which includes adhesively coating a sheet of fibrous material, continuously rolling the sheet around a frusto-conically shaped mandrel in a plurality of layers while compressing the layers between the mandrel and a plurality of cooperating pressure rollers, removing the resulting hollow laminated frusto-conically shaped fibrous blank, and cutting the same along diametrically opposed elements thereof in order to form two tapered trough-like roofing tiles.

Signed at New York city, in the county of New York and State of New York this 26th day of November, A. D. 1928.

ERNEST P. EVERETT.