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PATENT SPECIFICATION

L174992



DRAWINGS ATTACHED

L174.992

Inventor: LESLIE GERALD HAMMOND

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International Classification:—E 04 d 1/04

COMPLETE SPECIFICATION

Contoured Roofing Tile

5 We, ANCHOR BUILDING PRODUCTS LIMITED, a British Company of Broomhills Road, Leighton Buzzard, Bedfordshire, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 This invention relates to contoured roofing tiles. Contoured roofing tiles in which the shape of the tile includes a trough extending between the head and tail portions of the tile are finding increasing use in the building industry at the present time and the present invention is concerned with the provision of a generally improved tile of this nature which in particular has the advantage that it may be laid at a lower pitch than contoured tiles of existing construction.

20 According to the present invention, there is provided a contoured roof tile of cementitious material including a trough which extends between the head and tail portions of the tile on one face of the tile, being the upper face in use, a nib on both said portions on the opposite lower face and barrier means extending transversely across the trough at the head portion and at a position inset from the extremity of the tile at the head end to resist penetration of water between the adjacent surfaces of said head portion and the tail portion of a similar tile placed above, and in alignment with, the first mentioned tile in overlapping relationship, said barrier means being formed of one or more bars pressed into the material of the tile during manufacture.

40 According to another aspect of the invention, there is provided a method of manufacturing the above tile from cementitious material by extruding a cementitious mixture to form a continuous ribbon having a cross-sectional shape to include a longitudinal extending trough, from which ribbon tile forming lengths are severed, wherein one or more bars of said cementitious mixture are pressed onto

the ribbon to form a barrier means extending across the trough therein at a location longitudinally of the ribbon corresponding to a head portion of the tile forming length.

In order that the invention may be more fully understood, one embodiment of the invention will now be described by way of example, with reference to the accompanying drawings, in which,

55 Figure 1 shows the upper face of a contoured roofing tile in plan view in which the barrier means comprises a single elongate member.

60 Figure 2 shows an end elevational view of the tile shown in Figure 1,

Figure 3 shows an elevational view in section along the line X—X of the tile shown in Figure 1, and

65 Figure 4 shows the lower face of the tile shown in Figure 1 in plan view.

Referring to Figures 1 to 4, the tile is oblong in plan and is so contoured to include a trough 2 extending, on one face of the tile, from the head portion 3 to the tail portion 4. The trough 2 is defined by a flat base portion 5 of the tile and two side portions (6, 7) which diverge away from the base portion, one side portion 6 being flat and the other 7 curved. The flat side portion 6 terminates in an outwardly directed flange 8 extending parallel to the base portion but the upper surface of the flange 8 is stepped to form an upwardly projecting rib 9 along the edge of the tile on that side. The underside of this portion 6 is hollowed out to form a longitudinally extending recess. The curved side portion 7 curves away from the base 5 to an apex and then downwardly to the level of the flange 8 on the other side and the underside of the tile at this edge is stepped in a manner complementary to the stepped flange at the other tile edge. Thus this surface consists of a projecting, longitudinally extending, rib 10 at the edge of the tile adjacent which is a ledge 11 also extending longitudinally of the tile. It should be mentioned 90

[Price 4s. 6d.]

SPECIFICATION AMENDED - SEE ATTACHED SLIP

at this stage that tiles of the construction under consideration are laterally interlocking so that when placed side by side the edge of each tile on the curved side 7 engages the stepped flange 8 of the adjacent tile with the rib 9 on the adjacent tile seating on the ledge 11 on the first mentioned tile. Furthermore, when the tiles are laid in courses with the respective courses positioned at successively higher locations on a sloping roof surface, vertically adjacent tiles, which align with one another, overlap in the usual way with the base portion on the tail 4 of each tile seating in the trough 2 at the head 3 of the next lower tile. On their undersides, the tiles are provided with a nib 12 at the extreme head and tail ends, the nib 12 being primarily on the base portion 5 but extending also under the curved portion 7.

In order to resist the passage of water between the adjacent surfaces of two vertically adjacent tiles when they are placed in overlapping relationship, the tile is provided with a barrier 13 extending across the trough 2 adjacent one end which is the head end 3 of the tile in use, at a position inset from the extreme upper edge of the tile. This position is chosen so that with the requisite degree of overlap between vertically adjacent tiles, the barrier 13 lies above and behind the nib on the tail of the next upper tile and co-operates with this nib to form an enclosure.

It has been found that with only the nib 12 of each tile seating in the trough 2 of the next lower tile, as in known tiles, water can in certain weather conditions penetrate the gap between the overlapping surfaces of the respective tiles. However, the provision of a barrier 13 represents a substantial improvement in resisting the passage of water between these surfaces. As a result of this increased water resistance, tiles of the invention may be laid at a lower pitch than hitherto, which is an important consideration at the present time when many building designs involve a lower roof pitch than hitherto.

As an alternative, the above described single barrier may be replaced by two barrier portions extending from opposite sides respectively of the trough to overlap at the centre of the trough. Preferably the barrier portions are inclined slightly towards the tail of the tile in the direction away from the sides, which arrangement provides the added advantage of allowing any condensation water forming below the next upper tile adjacent each tile to escape but still at the same time providing a barrier against rain water being blown up underneath the next upper tile.

The tile is made of a sand and cement mixture and is conveniently manufactured using an extrusion operation. A continuous ribbon

having the required cross-sectional shape is extruded and tile forming lengths are severed from the ribbon. The barrier 13 is formed on each tile 1 by pressing a bar of the material from which the tile itself is being made into the trough 2 of the ribbon before the tile forming length is severed from the ribbon, the bar being pressed into the ribbon by about $\frac{1}{8}$ inch.

Co-pending application No. 22,692/68 (Serial No. 1,174,993) describes and claims apparatus for applying the barrier means to the tile described herein.

WHAT WE CLAIM IS:—

1. A contoured roof tile of cementitious material including a trough which extends between the head and tail portions of the tile on one face of the tile, being the upper face in use, a nib on both said portions on the opposite lower face and barrier means extending transversely across the trough on the head portion and at a position inset from the extremity of the tile at the head end, to resist penetration of water between the adjacent surfaces of said head portion and tail portion of a similar tile placed above, and in alignment with, the first mentioned tile in overlapping relationship said barrier means being formed of one or more bars pressed into the material of the tile during manufacture.

2. A contoured roof tile according to claim 1, in which said barrier means comprises a single elongate member.

3. A contoured roof tile according to claim 1, in which said barrier means comprises two elongate members extending in overlapping spaced relationship from opposite sides respectively of said trough.

4. A contoured roof tile according to claim 3, in which said elongate members extend from the sides of said trough towards the tail portion of the tile.

5. A contoured roof tile according to any preceding claim in which said tile is made of a sand and cement mixture.

6. A method of manufacturing a tile according to claim 5 by extruding a cementitious mixture to form a continuous ribbon having a cross-sectional shape to include a longitudinally extending trough, from which ribbon tile forming lengths are severed, wherein one or more bars of said cementitious mixture are pressed into the ribbon to form barrier means extending across the trough therein at a location longitudinally of the ribbon corresponding to a head portion of the tile forming length.

7. A contoured roof tile substantially as hereinbefore described with reference to the accompanying drawings.

8. A method of producing a contoured roof tile substantially as hereinbefore described with reference to the accompanying drawings.

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at this stage that tiles of the construction under consideration are laterally interlocking so that when placed side by side the edge of each tile on the curved side 7 engages the stepped flange 8 of the adjacent tile with the rib 9 on the adjacent tile seating on the ledge 11 on the first mentioned tile. Furthermore, when the tiles are laid in courses with the respective courses positioned at successively higher locations on a sloping roof surface, vertically adjacent tiles, which align with one another, overlap in the usual way with the base portion on the tail 4 of each tile seating in the trough 2 at the head 3 of the next lower tile. On their undersides, the tiles are provided with a nib 12 at the extreme head and tail ends, the nib 12 being primarily on the base portion 5 but extending also under the curved portion 7.

In order to resist the passage of water between the adjacent surfaces of two vertically adjacent tiles when they are placed in overlapping relationship, the tile is provided with a barrier 13 extending across the trough 2 adjacent one end which is the head end 3 of the tile in use, at a position inset from the extreme upper edge of the tile. This position is chosen so that with the requisite degree of overlap between vertically adjacent tiles, the barrier 13 lies above and behind the nib on the tail of the next upper tile and co-operates with this nib to form an enclosure.

It has been found that with only the nib 12 of each tile seating in the trough 2 of the next lower tile, as in known tiles, water can in certain weather conditions penetrate the gap between the overlapping surfaces of the respective tiles. However, the provision of a barrier 13 represents a substantial improvement in resisting the passage of water between these surfaces. As a result of this increased water resistance, tiles of the invention may be laid at a lower pitch than hitherto, which is an important consideration at the present time when many building designs involve a lower roof pitch than hitherto.

As an alternative, the above described single barrier may be replaced by two barrier portions extending from opposite sides respectively of the trough to overlap at the centre of the trough. Preferably the barrier portions are inclined slightly towards the tail of the tile in the direction away from the sides, which arrangement provides the added advantage of allowing any condensation water forming below the next upper tile adjacent each tile to escape but still at the same time providing a barrier against rain water being blown up underneath the next upper tile.

The tile is made of a sand and cement mixture and is conveniently manufactured using an extrusion operation. A continuous ribbon

having the required cross-sectional shape is extruded and tile forming lengths are severed from the ribbon. The barrier 13 is formed on each tile 1 by pressing a bar of the material from which the tile itself is being made into the trough 2 of the ribbon before the tile forming length is severed from the ribbon, the bar being pressed into the ribbon by about $\frac{1}{4}$ th inch.

(Co-pending application No. 22,692/68 (Serial No. 1,174,993) describes and claims apparatus for applying the barrier means to the tile described herein.

WHAT WE CLAIM IS:—

1. A contoured roof tile of cementitious material including a trough which extends between the head and tail portions of the tile on one face of the tile, being the upper face in use, a nib on both said portions on the opposite lower face and barrier means extending transversely across the trough on the head portion and at a position inset from the extremity of the tile at the head end, to resist penetration of water between the adjacent surfaces of said head portion and tail portion of a similar tile placed above, and in alignment with, the first mentioned tile in overlapping relationship said barrier means being formed of one or more bars pressed into the material of the tile during manufacture.

2. A contoured roof tile according to claim 1, in which said barrier means comprises a single elongate member.

3. A contoured roof tile according to claim 1, in which said barrier means comprises two elongate members extending in overlapping spaced relationship from opposite sides respectively of said trough.

4. A contoured roof tile according to claim 3, in which said elongate members extend from the sides of said trough towards the tail portion of the tile.

5. A contoured roof tile according to any preceding claim in which said tile is made of a sand and cement mixture.

6. A method of manufacturing a tile according to claim 5 by extruding a cementitious mixture to form a continuous ribbon having a cross-sectional shape to include a longitudinally extending trough, from which ribbon tile forming lengths are severed, wherein one or more bars of said cementitious mixture are pressed into the ribbon to form barrier means extending across the trough therein at a location longitudinally of the ribbon corresponding to a head portion of the tile forming length.

7. A contoured roof tile substantially as hereinbefore described with reference to the accompanying drawings.

8. A method of producing a contoured roof tile substantially as hereinbefore described with reference to the accompanying drawings.

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PATENTS ACT 1949

SPECIFICATION NO. 1,174,992

In accordance with the Decision of the Principal Examiner, acting for the
Comptroller-General, dated 6 January 1972 this Specification has been amended under
Section 14 in the following manner:-

Page 1, line 22, page 2, line 78, *after material insert* and made from an
extruded ribbon of cementitious mixture, said tile

Page 1, line 35, page 2, line 91, *after bars insert* of cementitious mixture

Page 1, line 36, page 2, line 92, *after manufacture insert* of the ribbon

Page 2, line 61, *delete* conveniently

THE PATENT OFFICE
14 MAR 1972

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