



PATENT SPECIFICATION

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DRAWINGS ATTACHED.

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COMPLETE SPECIFICATION.

Improvements in or relating to Tiled Roofs.

We, REDLAND TILES LIMITED, a British Company, of Redland House, Castle Gate, Reigate, Surrey and GEORGE HAROLD CARTER, a British Subject, of Redland Tiles Limited, Redland House, Castle Gate, Reigate, Surrey, 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:—

The invention relates to tiled roofs and particularly to roofs in which the roofing tiles in each row are disposed side-by-side without overlapping each other.

The invention provides a roof having a plurality of laterally extending rows of tiles, the tails of the tiles in each row overlapping the heads of the tiles in the next lower row, which heads are each provided on their upper surfaces with at least one transversely extending upstanding ridge, each of said tiles abutting but not overlapping the adjacent tiles in the same row, in which there are gutters which underlie the join between adjacent tiles in a row which gutters each comprise a channel section of substantially the same length as each tile having a substantially plane bottom wall and a portion of the bottom wall of the channel section extending over the ridges of the tiles of the said next lower row, and at least one flange projecting from the underside of said portion of said bottom wall and extending at right angles to the lengthwise dimension of the gutter towards the tiles of the said next lower row.

Preferably each gutter has a further, locating, flange projecting downward beyond the bottom surface of the said bottom wall.

In a preferred form, each tile has extending along each of its side edges abutting the adjacent tiles a rebate such that two rebates in a pair of adjacent tiles together form a

channel opening on the underside of the tiles which opening has a height and width sufficient to enable the channel wholly to accommodate at least the channel section portion of the gutter. Preferably the rebates and the gutter terminate short of the tail of the tile.

The channel section of each gutter may be closed at the upper end by a flange which projects above the channel section and abuts the head end of at least one of the two tiles which the gutter underlies.

The upper face of each tile may have at its head end at least two transverse upstanding ridges extending across the upper face of the tile, each gutter overlapping said ridges on the tile in the next lower row and the overlapping portion of the gutter having on its bottom surface at least one flange projecting towards but stopping short of the upper face of that tile, said flange being staggered relative to the upstanding ridges. Preferably the bottom surface of each gutter is spaced above at least one of said ridges.

Specific constructions of gutter embodying the invention, for underlying the join between roofing tiles will now be described by way of example and with reference to the accompanying drawings in which:—

Figure 1 is a sectional view on the line 1—1 of Figure 2, i.e. looking across the slope of a tiled roof, and showing tiles in full side view and sectional side view;

Figure 2 is a view in the direction of the arrow A of Figure 1;

Figure 3 shows a perspective view of a gutter;

Figure 4 shows a cross-sectional view on the plane 4—4 of Figure 3;

Figure 5 is a sectional view on the line 5—5 of Figure 6, i.e. looking across the slope of a tiled roof, and showing tiles in

full side view and sectional side view, and employing modified gutters;

Figure 6 is a view in the direction of the arrow A of Figure 5;

5 Figure 7 shows a perspective view of another form of gutter;

Figure 8 shows a cross-sectional view on the plane 8—8 of Figure 7;

Figure 9 shows a plan view of a single tile;

10 Figure 10 is an underneath plan of the tile of Figure 9;

Figures 11 and 12 are fragmentary sectional views on the lines D—D and E—E in Figure 10;

15 Figure 13 is a fragmentary sectional view on the line F—F in Figure 9;

Figure 14 is a fragmentary view in the direction of the arrow G in Figure 9;

20 Figures 15 and 16 are respectively a side view and an end view in the direction of the arrows H and J in Figure 9;

Figures 17 and 18 are sectional side views on the planes A—A and C—C respectively in Figure 10;

25 Figure 19 is a sectional end view on the line B—B of Figure 10;

Figure 20 is an end view in the direction of arrow K in Figure 10, and

30 Figure 21 is a side elevation of another form of gutter.

Referring to Figures 1 to 4, the tiles 10 are identical castings made from concrete and are disposed in rows extending across the slope of the roof, the heads of the tiles in each row being overlapped by the tails of the tiles in the next higher row. The tiles in each row are respectively aligned along the slope of the roof with the tiles in the two next adjacent rows. Battens 11 are nailed to the rafters 12 of the roof at intervals in the usual manner, and each tile 10 has projecting from its undersurface two nibs 13 spaced apart transversely of the tile and these nibs rest against one of the battens 11 to locate the tile.

45 The upper face of each tile is smooth except for a pair of spaced parallel ridges 14, 15 which extend across the head of the tile, the ridge 15 nearer the head of the tile being slightly less tall than the other ridge 14.

50 On its undersurface each tile has a bottom flange 16 and a parallel spaced ridge 27 extending across the tail end of the tile, and two large recesses 28 formed in the central part to reduce the weight of the tile. Flange 16 is reduced in height over a short length 16a at each end. Ridge 27 is less tall than bottom flange 16, and the latter rests on the head portion of the tile beneath to space ridge 27 from the tile beneath thus to form a barrier to upward capillary flow of water under the tail of the tile. Along each of its side edges, each tile has a rebate 17 extending from the bottom flange 16 to the upper edge of the tile and, where each tile abuts a neighbouring

tile the two rebates 17 together form an inverted channel opening to the undersurface of the tiles. The channel extends from the head end of the tile and terminates a short distance from the tail end of the tile at the bottom flange 16. A small downwardly extending rib 18 is formed along each extreme lateral edge of each tile and projects a small distance into this channel.

70 A gutter 19 is disposed in the channel so formed by each laterally adjoining pair of tiles 10. The gutter is shown in more detail in Figures 3 and 4 and will be seen to comprise a channel section portion 20 having at its upper end a transversely extending wall 21 which projects upwards beyond the sides of the portion 20 and which rests against the head ends of the two tiles. The upper end portion of the gutter rests on the batten which supports the two tiles, and a locating flange 22 having a strengthening web 23 projects from the bottom surface of the channel section portion in a position such that the flange is disposed close to the lower side of the batten. Two spaced transversely extending ribs 24, 25 project from the bottom face of the channel-section portion near its lower end. The lower end portion of the gutter rests on the taller ridge 14 on the head of the tile in the row beneath. In consequence the bottom of the channel-section portion is spaced above the smaller ridge 15. The two ribs 24, 25 on the bottom surface of the portion 20 stop short of the upper face of the tile beneath. The bottom wall of the channel section portion 20 has a centrally formed upwardly curved part forming a low dividing wall 26 between the co-planar sides of the channel-section portion. The reduced height of the portions 16a of the bottom flanges 16 of the tiles are just opposite the lower end of the gutter so that water flowing down the gutter can escape under this flange.

Thus any water falling through the join 110 between two tiles is collected by the gutter beneath the join and, at the bottom end of the gutter can flow under the flange 16 and down over the next lower row of tiles and/or into the aligned next lower gutter. The transverse wall 21 of the gutter forms a barrier to wind-blown rain, and the spaced ribs 24, 25 and ridges 14, 15 together form a local barrier to capillary flow under the tail of the tiles. The gutter is located lengthwise by the engagement of transverse wall 21 and flange 22 with the heads of the tiles and the batten respectively, and is located laterally by the side ribs 18 of the tiles as can be seen in Figure 2.

125 The gutter in this instance is an injection moulding made from polyvinyl chloride, but could be made from metal or, with suitable design modifications, from ceramics or

concrete or fibre-reinforced (e.g. glass fibre reinforced) thermosetting resins.

The design of the tile allows a degree of tolerance in the relative positions of inter-engaging tiles both laterally and lengthwise. Figure 2 shows laterally neighbouring tiles both abutting and with maximum clearance between them, the normal gap being approximately half of the maximum. The longitudinal overlap between the left-hand and middle tiles in Figure 1 is a minimum and that between the middle and right-hand tiles is a maximum.

Figures 5 to 20 show a slightly modified gutter 19 and give a fuller illustration of the tiles 10. Like components are provided with the same reference numerals as in the example shown in Figures 1 to 4. The modification is that the bottom wall of the channel section portion 20 of the gutter 19 is plane, the dividing wall 26 being omitted.

Figure 21 illustrates a further modification of the gutter 19 in which the strengthening web 23 extends along a greater length of the gutter.

The invention is not restricted to the details of the foregoing examples. For instance, the transverse wall 21 may be omitted if not required. The number of parallel ridges across the head and tail of the tile may be altered in some designs, i.e. there may be one or more such ribs.

WHAT WE CLAIM IS:—

1. A roof having a plurality of laterally extending rows of tiles, the tails of the tiles in each row overlapping the heads of the tiles in the next lower row, which heads are each provided on their upper surfaces with at least one transversely extending upstanding ridge, each of said tiles abutting but not overlapping the adjacent tiles in the same row, in which there are gutters which underlie the join between adjacent tiles in a row which gutters each comprise a channel section of substantially the same length as each tile having a substantially plane bottom wall and a portion of the bottom wall of the channel section extending over the ridges of the tiles of the said next lower row, and at least one flange projecting from the underside of said portion of said bottom wall and extending at right angles to the lengthwise dimension

of the gutter towards the tiles of the said next lower row.

2. A roof as claimed in claim 1, wherein each gutter has a further, locating, flange projecting downward beyond the bottom surface of the said bottom wall.

3. A roof as claimed in claim 1 or claim 2, in which each tile has extending along each of its side edges abutting the adjacent tiles a rebate such that two rebates in a pair of adjacent tiles together form a channel opening on the underside of the tiles which opening has a height and width sufficient to enable the channel wholly to accommodate at least the channel section portion of the gutter.

4. A roof as claimed in claim 3, in which the rebates and the gutter terminate short of the tail of the tile.

5. A roof as claimed in any of claims 1 to 4, in which the channel section of each gutter is closed at the upper end by a flange which projects above the channel section and abuts the head end of at least one of the two tiles which the gutter underlies.

6. A roof as claimed in any of claims 1 to 5, wherein the upper face of each tile has at its head end at least two transverse upstanding ridges extending across the upper face of the tile, each gutter overlaps said ridges on the tile in the next lower row and the overlapping portion of the gutter has on its bottom surface at least one flange projecting towards but stopping short of the upper face of that tile, said flange being staggered relative to the upstanding ridges.

7. A roof as claimed in claim 6, in which the bottom surface of each gutter is spaced above at least one of said ridges.

8. A tiled roof substantially as hereinbefore described with reference to, and illustrated in, Figures 1 to 4 of the accompanying drawings.

9. A tiled roof substantially as hereinbefore described with reference to, and illustrated in, Figures 5 to 20 of the accompanying drawings.

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of the gutter towards the tiles of the said next lower row.

2. A roof as claimed in claim 1, wherein each gutter has a further, locating, flange projecting downward beyond the bottom surface of the said bottom wall.

3. A roof as claimed in claim 1 or claim 2, in which each tile has extending along each of its side edges abutting the adjacent tiles a rebate such that two rebates in a pair of adjacent tiles together form a channel opening on the underside of the tiles which opening has a height and width sufficient to enable the channel wholly to accommodate at least the channel section portion of the gutter.

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