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(54) AN ARRANGEMENT FOR FIXING ROOF TILES
ADJACENT TO A VALLEY SHEET FLASHING

(71) I, FRANZ FELLNER, a German citizen, of Grundstrasse 57 8452 Hirschau, Germany do hereby declare the invention for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The invention relates to an arrangement for fixing roof tiles arranged in alignment to overlap a valley sheet flashing, by means of a member adapted to support the tiles and to be arranged upon the flashing and extending in the longitudinal direction of the valley.

Inclined roof surfaces having different directions of inclination meet each other to form inclined roof valleys. In such cases it is difficult to work with tiling inserts or with curved earthenware valley tiles, and such operations are only possible with certain types of roof tiles. Accordingly it is frequently the practice to use an open sheet flashing of galvanised metal, the edges of which are covered by the roof tiles of the two roof areas meeting at the valley. Because the sheet flashing runs at an angle to the roof battens, it is necessary so to position the edges of the roof tiles, which overlap the sheet flashing, that these edges are aligned parallel to the sheet flashing. In doing this it is inevitable that portions of roof tile must be used which cannot be suspended upon the roof battens. Nevertheless, in order to fix such tiles they have previously been secured more or less permanently to the flashing by means of mortar or have been connected by means of a wire to the next adjacent roof tile. Both of these methods are inconvenient because each portion of roof tile must be separately secured in place. The aligned orientation depends in the final result on the amount of care applied to the work. In addition to this the use of mortar is undesirable because this material is not compatible with the making of a connection to the sheet

flashing, and moreover obstructs the flow of water in the flashing.

In United States Patent Specification 3,264,790 there is disclosed a sheet metal flashing with an elongated lower member and an upper member which forms a closed roof to the valley and in which there are engaged roof plates secured in the usual manner. This profile cannot be installed in the case where roof tiles are used because these would block the slots provided for the flow of water.

The purpose of the present invention is to produce an arrangement for the fixing of roof tiles in alignment and overlapping a valley sheet flashing, whereby it is possible to achieve, without obstructing the flow of water, a permanent fixing of the aligned roof tiles, in particular those roof tiles which cannot be suspended upon the roof battens.

According to the invention we provide a structure, which when fixed to a sheet valley flashing serves to fix roof tiles which are positioned in alignment to overlap said sheet valley flashing, and comprises at least one grid extending in the longitudinal direction of said flashing, said grid having a portion, upstanding from the valley when the grid is in use, against which the aligned edges of roof tiles can be so abutted that the tiles are supported in the direction of the roof inclination.

The support grid is laid upon the valley sheet flashing and is fixed with respect thereto. The grid presents an abutment for the edges of the roof tiles overlapping the flashing. The grid can also serve as a template for the correct alignment of the roof tiles. It is advantageous, in particular when the inclination of the valley is small, that the sheet flashing can extend far underneath the roof tiles in order to increase the water-carrying cross-section of the flashing, without making more difficult the fixing of the roof tiles. It is furthermore of advantage

that the use of the support grid is attended by a substantial saving in labour during construction. Moreover should it become necessary to climb upon the valley flashing, 5 the support grid prevents any displacement of the roof tiles.

In a preferred construction according to the invention the support grid comprises a support branch, against which the roof tiles 10 abut, and a securing branch, whereby the grid rests upon the valley flashing. Preferably the support branch and the securing branch of the grid consists respectively of the loops of a wire. In particular the support branch of the grid is provided with a greater number of loops than is the securing branch of the grid, and the loops which are in the securing branch open concavely 15 towards the deepest part of the valley flashing. By this means water is able to flow over the sheet flashing underneath the roof tiles without damming up against the wire loops. According to a further preferred feature of the invention the securing branch of the 20 grid is situated at an angle of about 90° with respect to the support branch. The securing branch of the grid lies upon the sheet flashing.

In the case of valley flashings having a 30 sunk channel, the securing branch of the grid is so designed that it stands upwardly from the flashing and is bent over to lap the flashing so as to provide support for the roof tiles.

35 Preferably the support grid is fixed with respect to the flashing by means of wire hooks. These wire hooks may be hooked over the roof battens.

According to a further feature of the invention the support section of the grid extends over the roof tiles. In this case it 40 serves at the same time as a snow grid.

Further advantageous features of the invention will be evident from the following 45 description with reference to the drawings, in which:

Fig. 1 is a cross-section through a roof valley along the line I-I of Fig. 2;

Fig. 2 is a plan view in part section taken 50 upon the right hand side of the roof valley along the line II-II of Fig. 1;

Fig. 3 is a view of the roof valley with the support grid, taken in the direction of the arrow III of Fig. 1;

55 Fig. 4 is a perspective view of the support grid; and

Fig. 5 is a view corresponding to that of Fig. 1 showing a roof valley with a sunk channel sheet metal flashing.

60 A sheet flashing 1 of an inclined roof valley is secured to roof battens 2 at the left hand side and roof battens 3 at the right hand side. For improving the water flow the edges 4 of the sheet flashing 1 are rolled 65 over.

A left-hand support grid 5 and a right-hand support grid 6 rest upon the sheet flashing 1. These grids extend in the longitudinal direction of the valley flashing 1. The support grids 5 and 6 are secured with 70 respect to the flashing by means of wire hooks, which are hooked over the roof battens 2,3. In fig. 2 two hooks are shown at 7 and 8. Each support grid is secured by such wire hooks at least at the top and the 75 bottom of the grid. The roof battens 2, 3 are nailed to a valley rafter 9.

The support grids 5, 6 each comprise a support branch 10 and a securing branch 11. These branches are formed of U 80 shaped loops 12 and intervening reversely directed "U" shaped loops 13, 14. In this arrangement the loops 12 and the loops 13 lie in the plane of the support branch of the grid. The intervening opposite loops 14 85 lie in the plane of the securing branch of the grid. The loops and intervening opposing loops are formed by suitably bending a wire, preferably galvanised wire. The crests of the loops 12 and of the opposing loops 14 90 are stabilised in each case by continuous rectilinear rods 15, 16, which preferably consist of the same type of wire as that of which the remainder of the grid is made. The securing branch of the grid 11 is bent 95 at an angle of about 90° with respect to the support branch 10. The rod 16 is positioned at that side of the opposing loops 14 which is away from the flashing. By this arrangement and the fact that the opposing 100 loops 14 of the grid are open towards the deepest position of the valley flashing 1, the advantage is achieved that the securing branch of the support grid cannot cause the damming up of water in the region of the margins of the flashing. Water can only flow away to the centre of the valley flashing.

In fig. 2 there are schematically shown several roof tiles 17 to 24 forming a part 110 of the roof. The roof tiles 17 and 20 overlap each other, and the same applies to tiles 18, 21 and 23 as well as 19, 22 and 24. The roof tiles 18, 19, 21, 22 and 24 are, as usual, suspended on the roof battens 3 by means of 115 projections 25 from the underside of the tiles. The roof tiles 17, 20, 21 and 23 are so arranged that their edges are in alignment. These roof tiles have their edges directed along the support branch 10 of the 120 support grid 6; this support branch defines their position. The roof tiles 17, 20 and 23 overlap the sheet flashing 1 to such an extent that it is no longer possible for the projections of these tiles to engage behind the 125 roof battens; the projections of these roof tiles have therefore been removed. These particular tiles are only stabilised to prevent their downward displacement by the fact that they are supported upon the sup- 130

port branch 10 of the support grid 6. At the underside those roof tiles which abut upon the support grid are supported by the rolled edge 4 of the sheet flashing 1 and by the 5 rod 16.

The dimensioning of the radii of the loops and the intervening opposite loops is such that even small portions of roof tile, for example the roof tile portion 20, can still 10 be securely retained in position by the support grid 6. The relationship of the number of loops comprising the support branch 10 and the number of loops comprising the securing branch 11 is so 15 selected that the securing branch also affords a sufficient degree of stability to the support branch.

The height of the support branch 10 is 20 suitably 4 to 8 cm, according to the thickness of the tiles. In the case where the support grid is required to function simultaneously as a snow grid, then the height of the support branch is correspondingly greater. The width of the securing branch is about 25 10 cm in the example here considered.

Numerous further arrangements are possible also within the scope of the invention. For example it is possible to design the support grid to suit a valley flashing having a 30 sunk channel, such as is shown in fig. 5. The tile support branch 10 is then the same as that already described above. However, the securing branch 11 is bent upwardly and is curved around the base of the sheet 35 flashing. In this way it provides underneath support for the roof tiles in the marginal zone of the tiles nearest the support branch.

WHAT I CLAIM IS:

1. A structure, which when fixed to a 40 sheet valley flashing serves to fix roof tiles which are positioned in alignment to overlap said sheet valley flashing and comprises at least one grid extending in the longitudinal direction of the flashing, said grid having a portion, upstanding from the valley when the grid is in use, against which the aligned edges of roof tiles can be so abutted that the tiles are supported in the direction of the roof inclination.
- 45 2. A structure according to Claim 2, in which the support grid includes a securing portion whereby the grid is secured upon the valley flashing.

3. A structure according to Claims 1 and 2, in which the support portion and the 55 securing portion are formed by loops of a wire and the support portion contains a greater number of loops than are contained in the securing portion.

4. A structure according to Claim 3, 60 wherein the securing portion consists of loops which open concavely toward the deepest part of the valley flashing.

5. A structure according to Claim 3 or 4, in which the crests of each of the loops 65 of each of said portion are secured to a respective rectilinear rod.

6. A structure according to any of Claims 2 to 5, in which the securing portion is inclined at an angle of approximately 70 90° to the support branch.

7. A structure according to any of Claims 2 to 6, when used with a roof valley flashing having a sunken channel, in which the securing portion is mounted upon 75 the base of the valley flashing and is curved outwardly over said flashing so that it provides underneath support for the roof tiles.

8. A structure for fixing roof tiles substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

9. Roofing comprising roof tiles fixed by a structure according to any one of the preceding Claims.

10. Roofing according to Claim 9, 85 which includes two support grids, one for each of two series of roof tiles overlapping the two sides of the valley flashing.

11. Roofing according to Claim 9 or 10, 90 in which the support grid is fixed on the roof by means of hooks attached to roof battens.

12. Roofing according to one of Claims 9 to 11, in which the support portion ex- 95 tends above the top of the roof tiles.

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Fig. 1

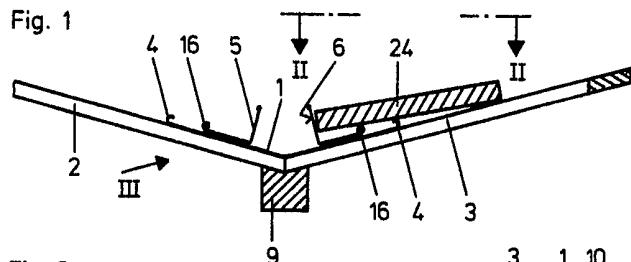


Fig. 2

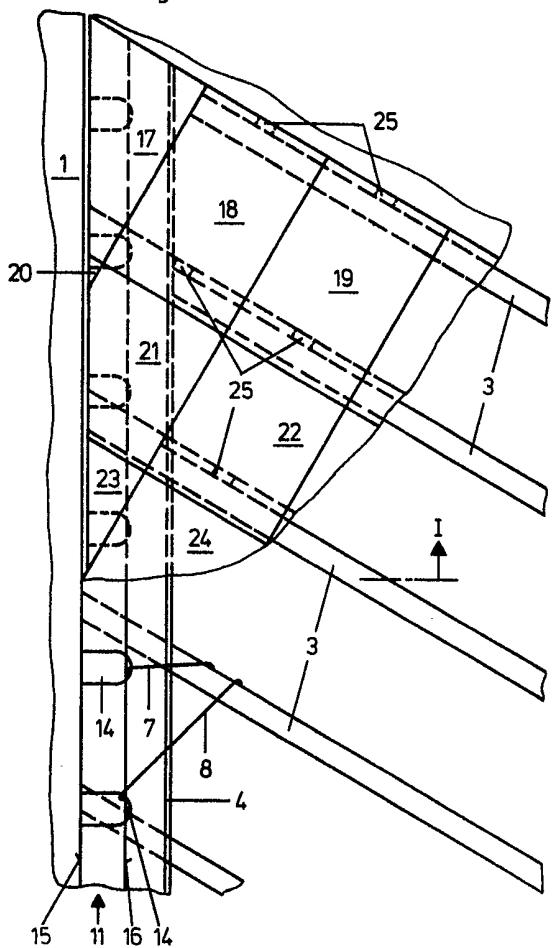


Fig. 3

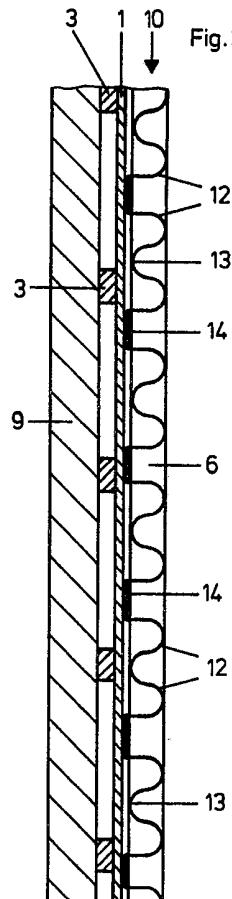


Fig. 4

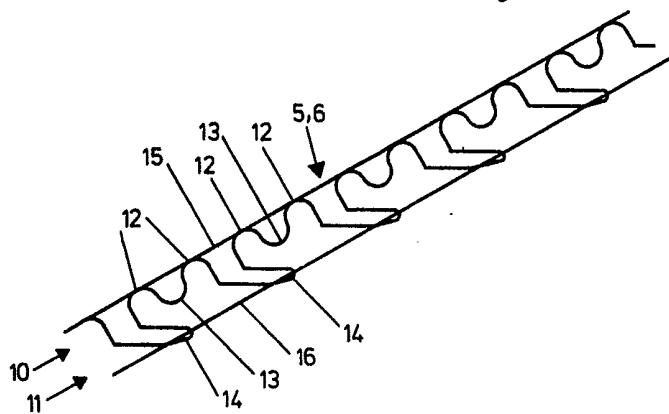


Fig. 5

