

12

EUROPEAN PATENT APPLICATION

21 Application number: **89301568.5**

51 Int. Cl.4: **E 04 D 11/00**
E 04 F 15/10

22 Date of filing: **17.02.89**

30 Priority: **17.02.88 GB 8803640**

43 Date of publication of application:
23.08.89 Bulletin 89/34

84 Designated Contracting States:
AT BE CH DE ES FR GB GR IT LI LU NL SE

71 Applicant: **Harris, Andrew T.A.**
5 The Laffords
Southend Bradfield Reading, RG7 6JD (GB)

72 Inventor: **Harris, Andrew T.A.**
5 The Laffords
Southend Bradfield Reading, RG7 6JD (GB)

74 Representative: **Mercer, Christopher Paul et al**
Carpmaels & Ransford 43, Bloomsbury Square
London WC1A 2RA (GB)

54 **Roof walkway tile.**

57 A roof walkway tile (1) which is made from a rubber composition, which has a slip resistant pattern (11) on one of its major faces, and which has at each of its edges means (3, 5) for attaching the tile (1) to another similar tile.

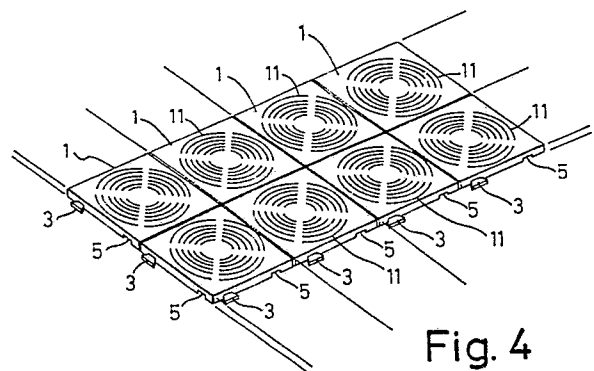


Fig. 4

Description

Roof Walkway Tile

The present invention relates to a roof walkway tile.

Many buildings, whether for domestic, industrial or office use, and in particular large buildings such as factories, office blocks or blocks of flats, have extensive roof areas which need to be regularly inspected. Moreover, in many cases, services such as air conditioning units, electrical switchgear, water tanks and lift machinery are located on the roof. These services are also likely to require regular inspection and servicing.

There is therefore a need for operatives to be able to walk across the roof. Clearly, it is necessary that this should be done without causing any damage to the roof. In general, however, merely walking on a roof is likely to cause damage to the roof, and may cause leaks to occur.

For instance, on a flat roof with an asphalt covering, walking on the roof may cause the roofing felt to creep or tear or the asphalt to be punctured, and this in turn could cause the occurrence of leaks in the roof. Where the roof comprises roofing felt, ceramic tiles or corrugated sheets of fibre reinforced materials, walking on the roof may cause the tiles or the sheets to fracture or move relative to one another, again leading to leaks.

In order to prevent the occurrence of damage to roofs by walking thereon it has been proposed that crawling ladders or walking boards should be used. However, such ladders or boards, which are generally wooden, tend to be very slippery, especially when wet, and can readily rot. They therefore need to be used with extreme care and need to be inspected regularly.

A further proposal has been to provide tiled walkways on the roof, using glass fibre-reinforced, or asbestos or the roof, using glass fibre-reinforced, or asbestos or concrete walkway tiles to form the walkways. However, such glass fibre-reinforced tiles are known to be heavy and difficult to cut (because of the glass fibre strands). Moreover, they create dust during laying. Asbestos and concrete tiles tend to attract moss, are environmentally unacceptable, and are slippery when wet, especially if moss is on them. Both types of tile are difficult to obtain in colours, very time consuming to lay, and require bitumen plant for laying, which can be a major safety hazard. Moreover, they are brittle and therefore, unless each tile is properly located on the roof, the tiles will crack during use, and the cracked pieces will provide a danger to users, who could easily trip up, and a danger to the roof, since the broken edges of the tiles can easily cause leaks in the roof. Moreover, even if the tiles are correctly located originally, they are likely to move relative to the roof and one another due to thermal effects. Such movement will once again make them susceptible to breakage by walking thereon.

It can therefore be seen that it would be advantageous to provide a means whereby an operative could walk safely on a roof without

endangering himself and without causing any damage to the roof.

According to a first aspect of the present invention, there is provided a roof walkway tile which is made from a rubber composition, which has a slip resistant pattern on one of its major faces, and which has at each of its edges means for attaching the tile to another similar tile.

The tile of the present invention may be made of any rubber composition which is able to withstand being walked on without significantly abrading. Many suitable rubber or plastics compositions are known in the art and it will at most be a matter of trial and error experimentation for a skilled person to select a suitable composition. The composition may contain reinforcement, fillers and any of the other conventional additives, such as antioxidants, stabilizers and pigments, which are generally used in the art. A particularly suitable composition is based on nitrile rubber.

Preferably, the tile of the present invention is square, although any other type of rectangular shape may be used. The tiles could alternatively, if desired, be hexagonal.

The slip resistant surface may comprise a raised pattern on the tile surface, for instance a series of concentric arcuate ridges, or may comprise a non-slip material, such as grit, embedded in the surface.

Preferably, the means for attaching one tile to another comprises a lug on one tile and a complementary recess on the other tile. Advantageously, each tile has one lug and one recess in each of its edges so that it is only necessary to make one sort of tile. However, if desired, the tiles could be provided in two sets, one set having lugs only on its edges and the other set having recesses only on its edges.

The shape of the lug should be such that it prevents as far as possible the lug from coming out of the recess and preferably will be tapered for ease of laying and to allow adhesive penetration into the joint area. For instance the lug may be trapezoidal in shape, having its longer parallel side as the outside face of the lug. Alternatively, the lug may comprise a circular or rectangular ear connected to the body of the tile by a relatively thick neck. Other shapes for the lugs will readily occur to those skilled in the art.

Alternatively, the means for attaching the tiles may comprise only recesses in the tiles and the tiles may be provided together with a set of straps having a lug on each end, the lug being adapted for location in the recess in a tile.

Other means for attaching the tiles to one another will readily occur to those skilled in the art.

Preferably, the other major face of the tile has in it a plurality of wells. This will reduce the weight of the tile and also increase its cushioned walking effect. Advantageously, there are no wells in the areas immediately around the corners of the tile to allow adhesion to the roof.

According to a second aspect of the present invention, there is provided a method for providing access on a roof comprising locating a plurality of roof walkway tiles according to the first aspect of the invention attached to one another in a predetermined pattern on a roof, thereby forming a roof walkway.

The present invention also provides, in a third aspect, a roof having thereon a walkway comprising a plurality of roof walkway tiles according to the first aspect of the present invention.

Alternatively, a flat roof balcony area of the materials previously used or of a solid concrete types of material may be covered completely with tile to provide a non-slip, decorative surface.

The walkway may be merely laid on the roof. However, preferably it is secured to the roof to prevent it being lifted by wind and to prevent as far as possible water from penetrating beneath the tiles. Where the roof is an asphalt roof, the tiles may be set into the asphalt while the asphalt is still adhesive. Alternatively the tiles may be adhered to the roof, whatever material the roof is made from. The presence in the preferred embodiment of the tile of areas at the corners with no wells therein ensures that a good bond can be formed between the tile and the roof.

A roof walkway made from tiles according to the invention has the advantages that while it is strong enough to support heavy loads, it is also flexible enough, especially in its preferred embodiments, to distribute the loads over the walkway and to accommodate movements of the roof without damaging the roof. Moreover, the walkway will be light, easy to install, and slip-resistant and will have an extended service life. It will also be compatible with any type of roof.

One embodiment of a roof walkway tile according to the present invention is now described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a plan view from below of the tile;

Figure 2 is a partial plan view from above of the tile of Figure 1;

Figure 3 is a sectional view along line 3-3 of Figure 1; and

Figure 4 is a perspective view of a plurality of such tiles forming a roof walking.

Referring now to the drawings, there is shown a generally square roof walkway tile 1 made of a nitrile rubber composition. The tile 1 is moulded from the composition using conventional processing techniques.

The tile 1 has at one end of each side a trapezoidal lug 3, the longer parallel side of which forms the outside face of the lug 3. At the opposite end of each edge is a recess 5 which is also trapezoidal in shape so that it is complementary to the lug 3. The lugs 3 and recesses 5 have a smaller depth than the thickness of the tile 1.

A plurality of blind wells 7 are formed in the lower surface of the tile 1 to reduce its weight and increase its flexibility. However, no wells are formed in the corner areas 9 of the lower surface.

The upper surface has formed on it a circular

pattern of arcuate upstanding rib 11 to provide a slip resistant finish.

It is envisaged that the tile 1 will in production have dimensions of 31.6 cm x 31.6 cm x 1.2 cm, (whereby 10 tiles cover one square meter) (although other sizes can be used without departing from the inventive concept described herein).

In use, the tile 1 can be used to form a roof walkway as shown in Figure 4. A plurality of tiles 1 are located on the roof in an arrangement wherein the lugs 3 at the edges of each tile engage in the complementary recesses 5 in the abutting edges of adjacent tiles whereby the tiles are locked together and can act as a monolithic structure.

The walkway may be formed merely by laying the structure on the roof. However, preferably the structure is adhered to the roof by applying adhesive to the lower surface of each tile 1, especially in the areas 9. The tiles can then be seated, either individually or as a structure, on or in the roof.

Where the roof is an asphalt roof, the adhesive may be used in addition to the use of the asphalt as an adhesive.

The properties of the tile of the present invention also makes it a highly desirable product for many other uses where a non-slip cushioned floor is required. Three examples of this are for a) outside walkways and landings, b) light duty industrial floor, and c) as a cushioning device placed between heavy machinery and the floor. Other applications where the properties of the tile will be beneficial to the environment can readily be envisaged by the skilled person.

It will be appreciated that the invention has been described above purely by way of illustration and that variations and modifications can be made by the skilled person without departing from the scope of the invention.

Claims

1. A roof walkway tile which is made from a rubber composition, which has a slip resistant surface on one of its major faces, and which has at each of its edges means for attaching the tile to another similar tile.

2. A tile according to claim 1 which is rectangular or hexagonal in shape.

3. A tile according to any preceding claim wherein the slip resistant surface comprises a raised pattern on the tile surface.

4. A tile according to any preceding claim wherein the means for attaching one tile to another similar tile comprises a lug on the tile and a complementary recess on the other tile.

5. A tile according to any preceding claim wherein the tile has one lug and one recess in each of its edges.

6. A tile according to claim 4 or claim 5 wherein the lug is tapered.

7. A tile according to claim 6 wherein the lug is trapezoidal in shape, having its longer parallel side as the outside face of the lug.

8. A tile according to any one of claims 1 or 2

wherein the means for attaching the tiles to each other comprises a set of straps having a lug on each end, the lug being adapted for location in a recess in a tile.

9. A tile according to any preceding claim wherein the other major face of the tile has in it

a plurality of wells.

10. A tile according to claim 9 wherein the areas immediately around the corners of the tile are substantially free from wells to allow adhesion of the tile to a roof or the like.

5

10

15

20

25

30

35

40

45

50

55

60

65

4

Fig. 3

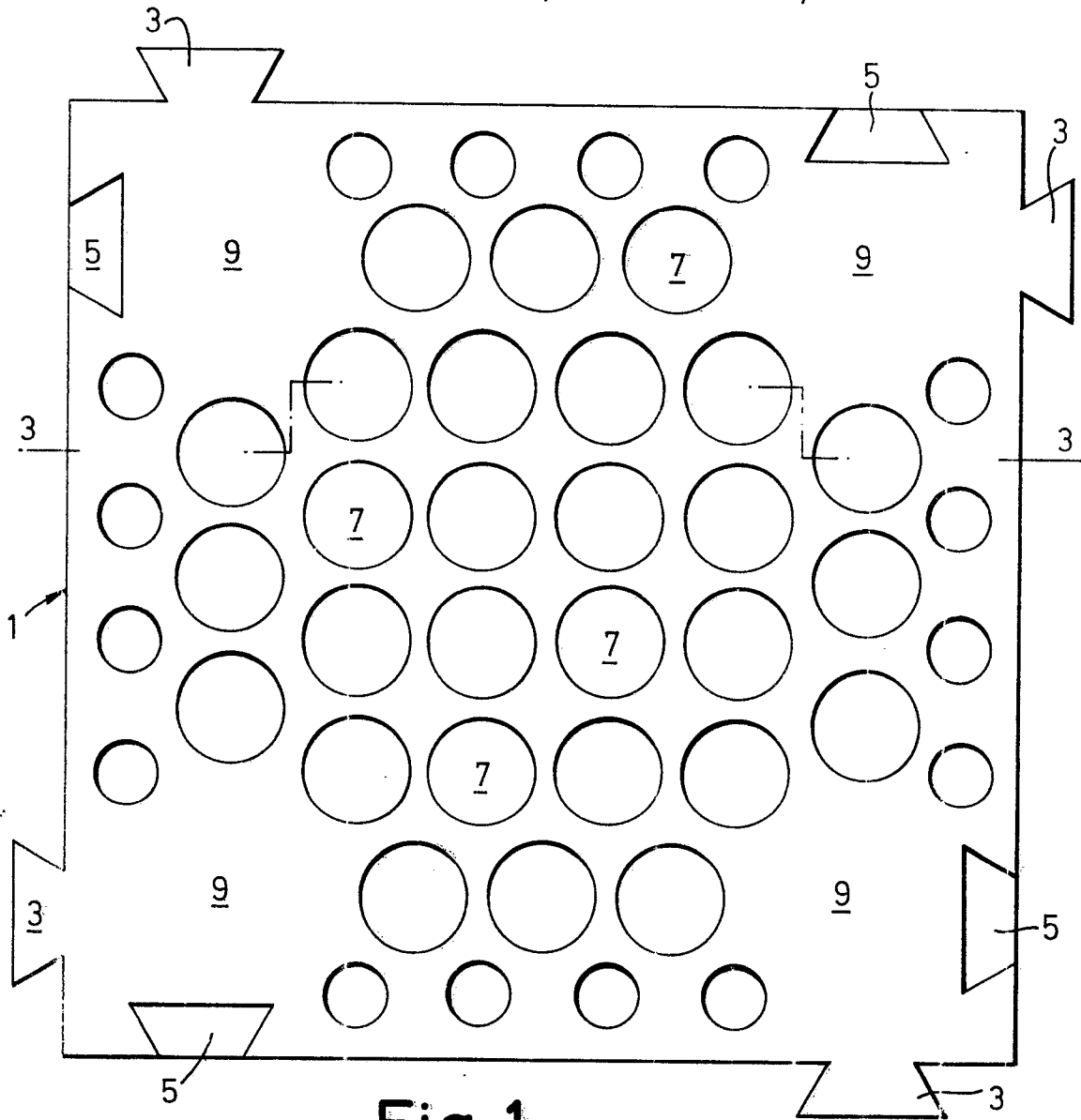
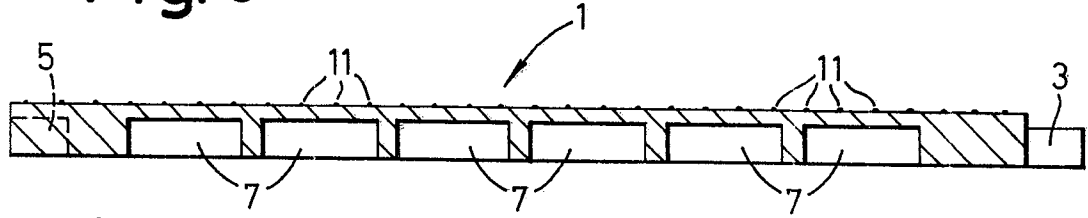


Fig. 1



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
Y	EP-A-0 239 042 (SAAR-GUMMIWERK GmbH) * Abstract; claims 1-3; figure 1; page 3, lines 10-31 *	1-9	E 04 D 11/00 E 04 F 15/10
Y	NL-A-8 600 334 (J.H. VAN DELZEN TE EEFDE) * Page 1, lines 1-3; page 2, lines 24-29; page 5, lines 18-21; figure 1 *	1-4,6,7	
Y	US-A-2 025 815 (W. HORRIDGE) * Figures 25,26; page 3, column 2, lines 32-40 *	1,4-7	
Y	US-A-3 452 959 (SADAO ISHIKAWA) * Column 2, lines 49-62; claim 1 *	1,2,8	
Y	FR-A-1 438 240 (J. BECKER et al.) * Figures 6,4; page 2, column 1, lines 35-39; page 3, column 1, lines 1-8 *	1,2,8,9	
A	BE-A- 557 844 (R. PIODI) * Claims 1-4; figure 5 *	1-4	TECHNICAL FIELDS SEARCHED (Int. Cl.4)
A	DE-A-2 705 151 (J. GAIL) * Figures 1,2 *	9,10	E 04 D E 04 F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 03-05-1989	Examiner KRIEKOUKIS S.
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons</p> <p>& : member of the same patent family, corresponding document</p>			