

PATENT SPECIFICATION

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(54) ROOF DRAINAGE FUNNEL

(71) I, KLAUS GOBEL, a citizen of the Federal Republic of Germany, of 55 Trier-Irsch, Am Forst., Federal Republic of 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:—

This invention relates to a roof drainage funnel, for receiving water from a roof, particularly a flat roof and leading it through the roof to a drain pipe, a body of the funnel being moulded from polyurethane foam and having at its upper end a thin sheet of plastics material suitable for bonding or sealing with the roof covering and having an aperture in register with the funnel mouth and a seat for a grating or gravel trap.

In a known funnel there is difficulty in sealingly connecting the funnel to the roof covering.

To overcome this difficulty it is known to provide the funnel with the sheet of plastics material which is bonded or welded to the roof covering adjacent the funnel opening, the sheet being connected to the body of the funnel by special fastening means. This construction entails production difficulties.

It is also known to adhere such a plastics sheet to a flange at the top of the funnel body. Since, however, the body and the sheet have different co-efficients of expansion differences in temperature, as occur on a roof, frequently lead to displacement or misalignment of the edge of the sheet and also cracking of the body so that additional clamping or screw connections are usually used in order to connect the funnel body and the sheet securely to each other.

An object of the invention is to provide an improved roof drain.

The invention provides a roof drainage funnel, for receiving water from a roof, particularly a flat roof, and conducting it through the roof to a drain pipe, having a

body formed from polyurethane foam and having an upper flange providing a seat for a grating or gravel trap, a sheet of plastics material, suitable for bonding or sealing with roofing material, and having an aperture in register with a mouth of the body being attached to the flange by the periphery of said aperture having been disposed in contact with the foam forming the flange during moulding thereof.

Advantageously retaining means for the grating or gravel trap is in the form of elements projecting into the funnel aperture, below the plane of the plastics sheet. These elements can be arranged on a retaining ring attached to the periphery of the body during foaming thereof.

The invention also provides a method of producing a roof drainage funnel of the invention, wherein the body is produced in a mould at a temperature between 120°C and 160°C, preferably 140°C and at between 4 and 6 atmospheres pressure, preferably 4.5 atmospheres.

The invention will be described further by way of example with reference to the accompanying drawings, in which:—

Fig. 1 is a section through a preferred embodiment of roof drainage funnel of the invention in position on a roof; and

Fig. 2 is a section through a roof having two roof drainage funnels of the invention, one connecting above and the other below an insulating layer, the construction being used when a roof is subject to high temperatures.

A first preferred embodiment of roof drainage funnel of this invention has a hollow body 1 which leads to a drain pipe 2 below it. The drain is made from polyurethane foam and has hard steam-tight outer layers 1a and a heat-insulating core 1b, which are moulded in one operation. The body 1 has at its inlet aperture 3 an outwardly-directed annular flange 4. A sheet 6 of plastics material suitable for seal-

ing or bonding with flat roofing material and having an aperture in register with the funnel mouth is provided. The periphery of the aperture is engaged in an annular recess 5 in the flange 4.

The sheet 6 consists of elastic vinyl acetate ethylene polymer material, which is attached to the body, during production thereof, by placing it in a mould and causing 10 the polyurethane foam to form in contact with the said periphery of the aperture.

Around the periphery of the inlet aperture 3 adjacent a seat for a grating 8 or gravel trap 9, are formed inwardly projecting 15 elements 7, which serve to retain the grating 8 or gravel trap 9. The grating 8 or gravel trap 9 can be inserted and fastened in bayonet catch manner.

The elements 7 project from a retaining ring 10, which is also a pre-formed component placed in the mould and attached to the body during foaming thereof.

As fig. 2 shows when a roof has an insulating layer laid over roofing material, 25 two drainage funnels can be used. A second of these, denoted by numeral 11, is sealed relative to the lower drainage funnel by a ring 13 and a lip seal 14.

The moulding of the polyurethane foam takes place at about 140°C i.e. between 120°C and 160°C, and at a pressure from 4 to 6 atm, preferably 4.5 atm. The bond between 30 the polyurethane foam in the flange and the vinyl acetate ethylene sheet material is very strong and durable. Further thermal expansion has little effect on the strength and water-sealing properties of the bond.

WHAT WE CLAIM IS:—

40 1. A roof drainage funnel, for receiving water from a roof, particularly a flat roof, and conducting it through the roof to a drain pipe having a body formed from polyurethane foam and having an upper flange, 45 providing a seat for a grating or graveltrap,

a sheet of plastics material, suitable for bonding or sealing with roofing material, and having an aperture in register with a mouth of the body being attached to the flange by the periphery of said aperture 50 having been disposed in contact with the foam forming the flange during moulding thereof.

2. A roof drainage funnel as claimed in claim 1, wherein the seat comprises retaining 55 elements projecting into the interior of the body aperture beneath the plane of said sheet of plastics material.

3. A roof drainage funnel as claimed in claim 2, wherein the retaining elements are 60 mounted on a retaining ring incorporated in the body during moulding thereof.

4. A roof drainage funnel substantially as hereinbefore described with reference to and as illustrated in the accompanying 65 drawings.

5. A method of producing a roof drainage funnel, as claimed in claim 1, wherein the body is produced in a mould at a temperature between 120°C and 160°C, preferably 70 140°C and at between 4 and 6 atmospheres pressure, preferably 4.5 atmospheres.

6. A method as claimed in claim 5, wherein the sheet of plastics material, is of vinyl acetate ethylene material. 75

7. A method of producing a roof drainage funnel substantially as hereinbefore described.

8. A roof drainage funnel made by the method of claim 5, 6, or 7. 80

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