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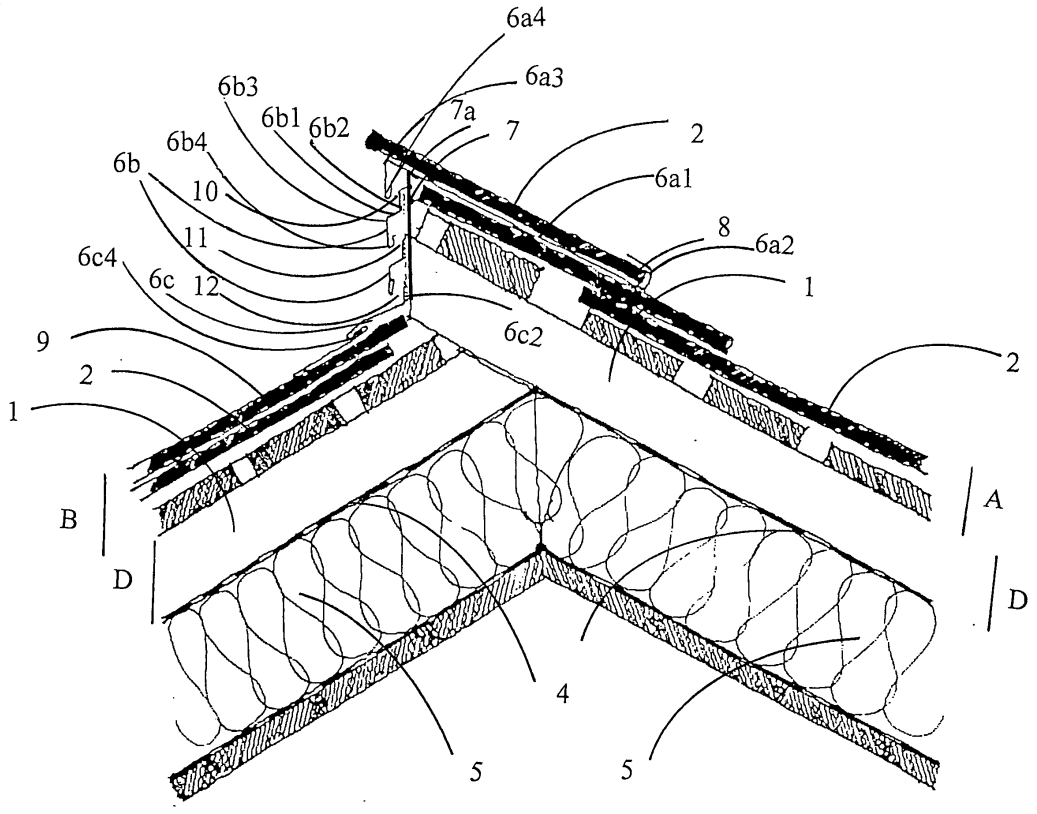
Remarks:
In accordance with the last part of Article 14 (2) EPC the applicant has filed a text with which it is intended to bring the translation into conformity with the original text of the application.

(54) Plastics or metal strips for ventilating roofs

(57) System of metal or plastics strips (6) for ventilating sloping roofs, characterized in that they are composed of three different types of strips (6a, 6b, 6c) joined together behind by a set of supporting brackets (7) which make it possible to form a set of slots (10, 11, 12) through which the atmospheric air can freely rise.



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Description

[0001] The present invention relates to system of metal or plastics strips for ventilating sloping roofs as descrived in Claim 1.

[0002] The roof of a building is one of the most complex and intricate parts of any structure. Recently, however, the simple protective action of a roof has been supplemented with other functions, so that it has become not only a substantial feature of the appearance of the whole building but also an essential factor in the safety, the soundproofing, and especially the thermal insulation of the building. It is this insulating function that has been the main subject of continuing intensive research in recent years. As is well known, this insulating function of the roof of any building is the focal point of the energy savings relating to the building and the associated economic considerations. The proper insulation of the roof prevents a building from unnecessarily dispersing a large proportion of the heat produced in the home into the external environment. To prevent this large heat loss, a considerable number of products and installation methods are now available on the market; these all tend to create a more or less airtight seal of the roof itself and also the whole area immediately below it. Although this insulation by sealing drastically reduces the loss of internal heat into the environment, it also prevents the physiologically essential air exchange in the roof and in the sub-roof area. The total or partial absence of ventilation in the whole upper area of the building inevitably promotes the accumulation and condensation of moisture in the structural voids of the roof and the sub-roof area, leading to the degeneration of the organic materials forming the structures and to water infiltration.

[0003] The present invention is intended to outline a novel solution to provide efficient roof insulation while simultaneously preventing the aforementioned accumulation of moisture below, or particularly within, the roof.

[0004] In the following the invention will be described in more detail by way of example and with reference to the accompanying drawing:

Fig. 1 is a side view of the invention

[0005] The essential principle of the present invention is the creation of a dry ventilated air chamber (1) between the upper part of the roof (A and B) and the underlying tar or fibre skin (4) which covers the thick layer of insulating material (5) positioned immediately below it. Within the said air chamber (1), air circulation is made possible by thin flat strips (6a, 6b, 6c) whose structure in the form of broken curves creates wide slots (10, 11, 12) allowing a substantial body of air from the outside to rise and enter the gap (1) between the two sloping surfaces (A and B) which are combined to form the roof. The said air circulation takes place without any associated passage of water, which, as is well known, is heavier than air and therefore cannot rise through the slots (10, 11, 12) which have been suitably created between the adjacent strips (6a, 6b, 6c). The selective and exclusive passage of air between the slots (10, 11, 12) is due to the specific profile formed by the single strips (6a, 6b, 6c) when they are placed regularly above each other to fill the whole space (D) separating the two sloping surfaces (A and B) which are combined to form the roof. These strips (6a, 6b, 6c) are made from aluminium or any other metal alloy or plastics, in such a way that they are rigid and strong enough to have a limited supporting action in addition to the aforesaid action of selectively blocking the space (D) between the levels of the two surfaces (A and B). The strips (6a, 6b, 6c) are of three different types. A first type, called (6a), is positioned above the others and is substantially a metal or plastics section, provided with a large upper edge (6a1) which is approximately as long as the tile (2) used in the roof to be constructed. The tile (2) is supported and fixed by screws or nails in its lower part on the upper face of the surface (6a1) of the said strip, and the remote end (6a2) of the said strip is wrapped around the lower edge (8) of the tile for a length of about two centimetres. The turned-over edge (6a2) of the strip (6a) is provided with a set of holes, each having a diameter of about two centimetres and positioned about five centimetres from each other, to allow the run-off of the rainwater collected by the tile (2) when precipitation occurs. The shape of the opposite end of the strip (6a) includes two acute angles (6a3 and 6a4) which cause it to be practically folded back on itself. The said upper strip (6a) is fastened to the underlying tile (2) by a number of nails or screws applied to the flat surface (6a1) and is fixed to the underlying strip (6b) by means of the supporting bracket (7) which in turn is fastened at its upper edge (7a) to the lower face of the surface (6a1) by a weld, by ordinary screws or by rivets which are suitably insulated to prevent water infiltration. A second type of strip (6b) fills the space (D) between the two oblique flat surfaces (A and B) which are combined to form the roof. As the number of type 6b strips stacked on each other increases, the underlying air chamber (1) becomes higher and more spacious. The number of strips 6b can range from one to eight, although there are preferably three strips, each of which is essentially composed of a metal or plastics section having an upper end (6b3 and 6b4) identical to that of the strip 6a, and a rear profile (6b1) only three centimetres in depth and rising vertically (6b2) by the same amount from the angle 6b3. The vertical portion (6b2) is formed to enable the flat rear part (6b2) of the strip 6b to be fixed to the vertical supporting bracket (7). The vertical supporting bracket (7) has a height equal to the distance (D) between the two oblique surfaces (A and B) which form the roof, a width of about five centimetres, and a thickness of about one centimetre. The said supporting brackets (7) are screwed, welded or riveted to the rear sides of the strips (6a, 6b, 6c) at a distance of about 60 centimetres from each other, but their spacing can vary from 20 to 90 centimetres from each other if necessary. The thickness of the strips (6) can vary from 0.5 to 1.5 centimetres, but

the optimal thickness is 0.62 centimetres. The total length of the strips (6a, 6b, 6c) varies from 0.5 to 6 metres, and the optimal length of each individual strip is therefore four metres. The third type of strip (6c), which is positioned under the other two (6a and 6b), is provided with a vertical part (6c2) about three centimetres high, the back of which is fixed to the bracket (7), and is provided with an angle (6c1) so that it extends frontally for about 10 centimetres before being folded on to itself at the point 6c4 in order to grip a sheet of lead which extends for about 10 centimetres on top of the first upper tile (9) of the lower inclined surface (B) of the roof. The aforesaid system of strips (6) creates protected spaces (10, 11, 12) through which the atmospheric air can rise freely, enabling the whole sub-roof area (1) to be ventilated continuously, thus preventing the formation of condensation both under the roof itself and within the air chamber (1) created. However, the heat in the building is held inside by the insulating material (5) which is positioned on the lower part of the air chamber (1). To prevent leaves, small animals or insects of various kinds from nesting in or infesting the ventilated void (1), a narrow-mesh net is provided for fitting on the rear of the brackets (7) to allow the passage of air only. The aforesaid invention is applicable to any sloping roof having a plurality of oblique surfaces with inclinations in the range from 15 to 70 degrees. However, the optimal angle is considered to be in the range from 18 to 25 degrees.

Claims

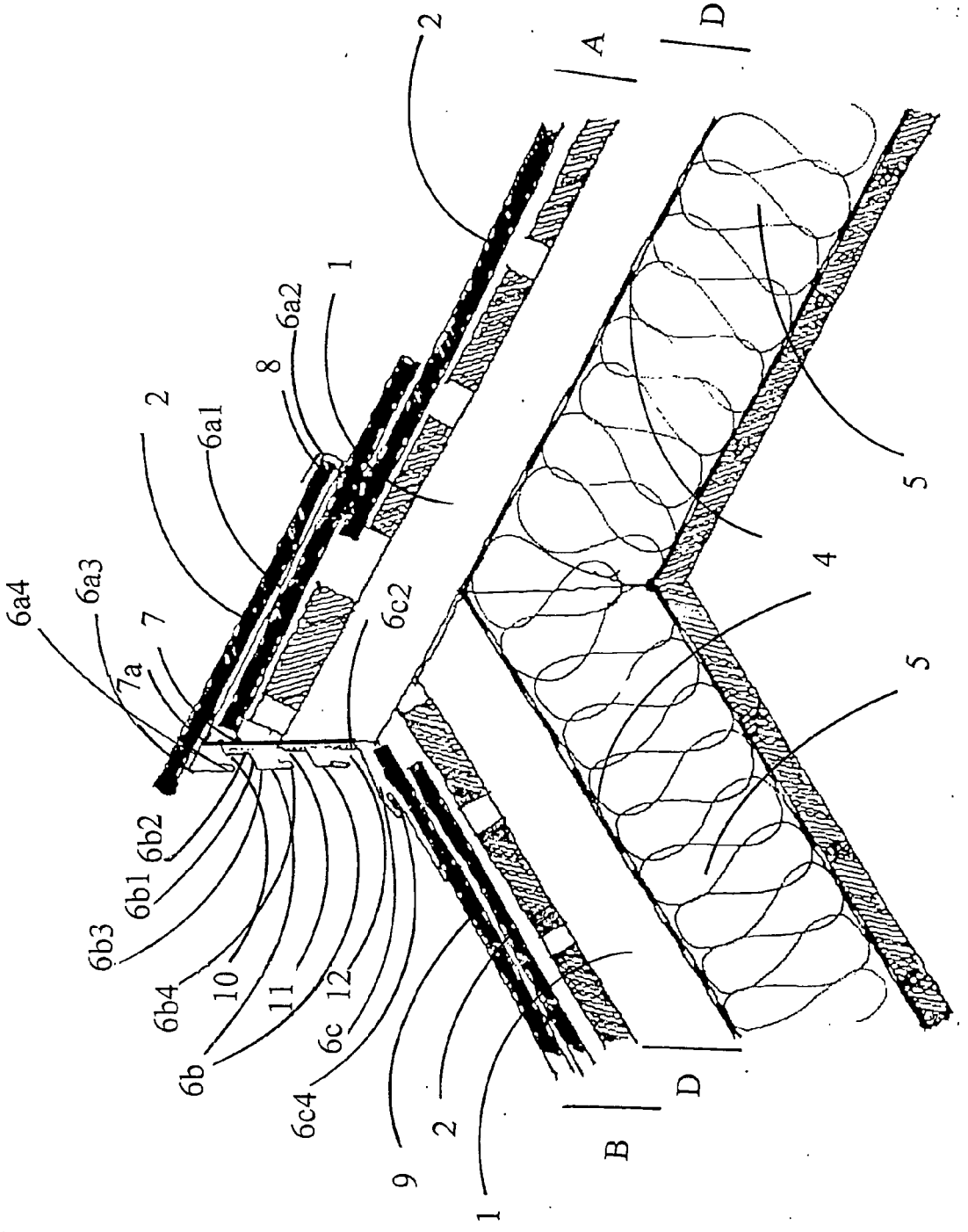
1. System of metal or plastics strips (6) for ventilating sloping roofs, **characterized in that** they are composed of three different types of strips (6a, 6b, 6c) joined together behind by a set of supporting brackets (7) which make it possible to form a set of slots (10, 11, 12) through which the atmospheric air can freely rise.

2. Metal or plastics strips according to Claim 1, in which the first type of the said strips (6a) is positioned above the other strips and is substantially a metal or plastics section, provided with a wide upper edge (6a1) whose length is approximately equal to that of the tile (2) of the roof to be constructed, the tile (2) is supported in its lower part on the upper face of the surface (6a1) of the said strip, and the remote end (6a2) of the said strip is wrapped around the lower edge (8) of the tile for a length of about two centimetres, the turned-over edge (6a2) of the strip (6a) is provided with a set of holes, each having a diameter of about two centimetres and positioned about five centimetres from each other, to allow the run-off of the rainwater collected by the tile (2), the shape of the opposite end of the strip (6a) includes two acute angles (6a3 and 6a4) which cause it to be practically folded back on itself, the said upper strip (6a) is fastened to the underlying tile (2) by a number of nails or screws applied to the flat surface (6a1) and is fixed to the underlying strip (6b) by means of a number of supporting brackets (7) which in turn are fastened at their upper edges (7a) to the lower face of the surface (6a1), the second type of the said plastics or metal strips (6b) is **characterized by** a profile having one end (6b3, 6b4) identical to that of the strip 6a3, 6a4 and a rear profile (6b1) having a depth of only three centimetres and extending vertically by the same distance (6b2) from the angle 6b3, the supporting brackets (7) are fixed to the said vertical surface, the third type of strip (6c) is positioned under the other two (6a and 6b), and is provided with a vertical part (6c2) about three centimetres high, the back of which is fixed to the bracket (7), and has an angle (6c1) so that it extends frontally for about 10 centimetres before being folded on to itself at the point 6c4 in order to grip a sheet of lead which extends for about 10 centimetres on top of the first upper tile (9) of the lower inclined surface (B) of the roof.

3. Metal or plastics strips according to any of the claims above, in which the number of strips of the second type (6b) can be in the range from 1 to 10.

4. Plastics strips according to any of the claims above, in which the connecting and supporting brackets (7) are positioned at distances of 20 to 90 centimetres from each other.

5. Plastics strips according to any of the claims above, in which a fine-mesh net is positioned on the inner side of the supporting brackets (7).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