(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 389 058 A1**

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **90200659.2**

(22) Date of filing: **21.03.90**

(51) Int. Cl.[5]: **E04D 13/14, E04D 1/36, E04D 13/16**

(30) Priority: **23.03.89 NL 8900720**

(43) Date of publication of application:
26.09.90 Bulletin 90/39

(84) Designated Contracting States:
BE DE FR GB LU NL

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(54) Flashing for closing openings present between a straight and a profiled portion of a roof.

(57) Flashing comprises an attachment portion (7) for attaching the flashing to the straight part of the roof, and comprising a flashing portion (8) being at least partly corrugated, the height of the corrugations (9) decreasing from the outer edge (10) of the flashing portion (8) positionable against the profiled roof part, in the direction to the attachment portion (7) and the flashing portion (8) being at least substantially free of thick parts and being made of supply depliable material, resulting in that the flashing portion (8) is supply, fan-like spreadable and yieldingly bendable due to pressure exerted by the profiled roof part, resulting in that the course of the outer edge (10) of the flashing portion (8) adjusts to the profiled roof part.

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Flashing for obstructing apertures between a straight and a profiled part of a roof.

The invention relates to a flashing for obstructing apertures remaining between a substantially straight and a profiled part of, for example, a sloping roof, comprising an attachment portion for attaching the flashing to the straight part of the roof, such as a part of the roof boarding near a lower edge thereof or near a skylight, a ridge or hip rafter, and also comprising a flashing designed to adjust supply to the profiled part of the roof, such as tiles.

The invention aims to obstruct the said apertures such as for example between tiles and a ridge or hip rafter or between tiles and a skylight or between the bottom row of tiles of a sloping roof and the roof construction, in order to prevent powder snow and/or rainwater from penetrating through these apertures. The invention aims to realize this object by a flashing, the embodiment of the invented flashing being simple and cheap to produce as well as to attach to the roof construction.

For this purpose the invented flashing is substantially characterized in that the flashing portion is at least partly corrugated, the height of the corrugations decreasing from the outer edge of the flashing portion positionable against the profiled roof part, in the direction to the attachment portion and the flashing portion at least being substantially free of thick parts and being made of supply depliable material, resulting in that the flashing portion is supply fan-like spreadable and yieldingly bendable due to pressure exerted by the profiled roof part, resulting in that the course of the outer edge of the flashing portion adjusts to the profiled roof part.

As the invented flashing portion is supply spreadable and yieldingly bendable and made as an integral product without constituent parts, the entire flashing is easy and cheap to manufacture, while the flashing portion yet, due to the fan-like supply spreading and yieldingly bending, adjusts supply to the profiled roof part without activities being necessary by which also costs are reduced.

In order to obtain an easily attachable and cheap flashing, the characteristics of the accompanying claims 2 to 5 inclusive individually or in combination are advantageously applicable to the invented flashing.

Moreover, the invention relates to a flashing of the above-indicated kind, the attachment portion being made to be attached to the roof construction under a ridge or via a ridge.

An easily attachable and cheap combination of a ridge tile and flashing is according to the invention characterized by pins or sleeves formed on the attachment portion to which the sleeves or pins formed on the ridge tile are attachable.

Other important variations of the invented flashing for ridges have been indicated in the accompanying claims 8 to 11 inclusive, individually or combined.

Furthermore, an embodiment of the invented flashing according to any of the accompanying claims 1 to 5 is moreover characterized in that the attachment portion is formed to be attached to the roof construction under the roof covering, such as tiles, near the lower edge of a sloping roof.

Variations of this flashing meant for attachment near the lower edge of a sloping roof construction can be constructed according to the characteristics of the accompanying claims 13 to 16 inclusive, individually or in combination.

Another variation of the invented flashing is characterized in that the flashing is made to link up to a skylight and the surrounding tiles.

The invention will be further elucidated in the following description of the examples of embodiment of the invented flashing as indicated in the accompanying drawings in which:

figure 1 is an end view of an embodiment of the invented flashing meant and applied to link up to the bottom row of tiles and attached to the roof boarding of a sloping roof indicated in vertical cross-section;

figure 2 is a bottom view in perspective of the embodiment of the flashing according to figure 1, the arrow I indicating the direction in which the end view shown in figure 1 is seen;

figure 3 is a view on the corrugated part of the flashing seen in the direction of arrow III in figure 2;

figure 4 is a cross-section of an embodiment of the invented flashing and a ridge tile adapted to this embodiment;

figure 5 is a view in perspective of the flashing, ridge tiles and tiles, arrow IV indicating the direction in which the cross-section shown in figure 4 is seen;

figure 6 is a view on the flashing and a cross-section of the ridge tile seen in the direction of the arrow VI in figure 4;

figure 7 is a view as in figure 1, the tile, however, being left out and the flashing being provided with rib means;

figure 8 is a cross-section along the line VIII-VIII in figure 7;

figure 9 is a cross-section along the line IX-IX in figure 7.

First the main embodiment as shown in figures 1, 2 and 3 of the invented flashing will be discussed. Figure 1 shows a vertical cross-section of

the lower edge of a roof boarding 1 of a sloping roof. On that in itself known roof boarding a gutter bracket batten 4 is fixed, shown in cross-section in figure 1, the gutter bracket batten having mounted onto it the in itself known brackets 2, of which in figure 1 only one bracket is drawn, for carrying an in itself known gutter 3 of which in figure 1 only the right part is shown in vertical cross-section.

On the gutter bracket batten 4 an embodiment of the invented flashing 5 as shown in figure 1 is mounted by means of nails, wood screws or other in themselves known attachment means 6. The flashing 5 comprises according to the end view in figure 1 and the bottom view in figure 2 an attachment portion 7 and a flashing portion 8 which are preferably made as an integral product of plastic.

The attachment portion 7 of the flashing 5 is as shown in figures 1 and 2, provided with attachment surfaces 13, a passage being provided between each pair of adjacent attachment surfaces 13, the bottom 14 of this passage being at a lower level than the attachment surfaces 13, which is in accordance with figure 1. As a result the attachment surfaces 13 are positioned in figure 1 flat against the gutter bracket batten 4, whereas the bottoms 14 are lying at a distance from the gutter bracket batten 4, resulting in that between each bottom 14 and the gutter bracket batten a passage is present along which ventilation along the dotted lines in figure 1 is possible, from the outside air to the space between the tiles 11 and the roof boarding 1, or in opposite direction. Furthermore, the wall parts 15 between the bottoms 14 and the attachment surfaces 13 make the attachment portion 7 stiffer, which is desirable. Moreover, every gutter bracket 2 can extend through a relevant passage between the gutter bracket batten 4 and the involved bottom 14. As a result the necessity for passages in the gutter bracket batten 4 for gutter brackets 2 is avoided and the gutter brackets can simply be mounted on the gutter bracket batten.

The flashing portion 8 is made of sheet like, thin plastic, the height of the corrugations 9 decreasing from the outer edge 10 of the flashing portion in the direction to the attachment portion 7 of the flashing. The flashing portion 8 is preferably free from thickenings. Due to the corrugated shape, the flashing portion 8 is supply fan-like spreadable in a direction perpendicular to the corrugations 9. The corrugations are increasingly depliable towards edge 10, so that fan-like spreading of the flashing portion 8 occurs with the highest possible degree of spreading at the edge 10 of the flashing portion.

In figure 1 dotted-dashed lines indicate the flashing portion 8 of the flashing in its position free of external infuences. Furthermore, in figure 1 a tile 11 partly in side-view and partly in cross-section is shown, the tile bearing on the bottom 14 of the attachment portion 7 of the flashing. The tile 11 is profiled in a corrugated or in another way as is common usage with tiles, in the plane perpendicular to its length and therefore perpendicular to the plane of figure 1. Due to the transverse profile and the weight of the tile, the flashing portion 8 is not only bent as indicated schematically in figure 1 from the position indicated by dotted-dashed lines to the right with regard to the attachement portion 7 fixed on the gutter bracket batten 4, but the edge of the flashing portion also substantially adjusts to the transverse profile of the tile 11. This adjustment is possible because of the corrugated shape of flashing portion 8, as the corrugations 9 enable fan-like spreading.

When free of the tile 11, the corrugation tops of the flashing portion 8 are positioned on a straight line 18 shown in figure 3 by the transverse profile of the tile, but the corrugation tops are brought into a position on a line which substantially follows that profile, resulting in that the corrugation tops are not only no longer positioned on a straight line 18, but are also spaced at larger intervals due to the fan-like spreading. This fan-like spreading is the result of no other influences than the weight and the transverse profile of the tile, which is only possible because of the supple adjustability of the material the flashing portion is made of. This supple adjustability is a result of the slight thickness and the nature of that material, such as PVC-foil, in combination with the corrugations 9.

Moreover, the flanks of the corrugations 9 cause a yieldingly urging of the flashing portion 8 against the tile 11, resulting in that the flashing portion is urged by the tile from its not influenced position, shown by dotted and dashed lines in figure 1 , into the position bent to the right in figure 1, yet at the same time the flashing portion resists the pressure of the tile in so far that the corrugation tops are urged at least substantially against the tile, even adapting to the transverse profile of the tile.

The invented corrugations 9 in the flashing portion 8 therefore in the first place produce a fan-like spreadability and in the second place produce yielding pressure as it were in the direction of pivoting back to the position of the flashing portion not being influenced by a tile. It is observed, however, that in figure 2 for sake of simplicity only a small part of the corrugations 9 is depicted, but in reality the flashing portion 8 is provided with corrugations 9 over its entire length.

The object of the invented flashing, which is to obstruct the apertures between gutter bracket batten 4 and the tile 11, is realized by the flashing portion 8, resulting in that no powder snow can penetrate into the space between the tiles 11 and the roof boarding 1.

A deepened part 16 is preferably present in

every attachment surface 13, through which an attachment means 6, such as a nail or a screw is insertable for fixing the flashing onto the batten 4.

In figure 2 only a part of flashing 5 is depicted, as the remaining part is embodied similar to the depicted part. The not depicted left end is embodied complementary to the right end with at least one attachment surface 13, so that the right end of the depicted flashing can be put over the left end of a non-depicted flashing positioned to the right of the depicted flashing, in order to position a series of flashings linking up to eachother along the entire length of the lower edge of a sloping roof.

In a special embodiment as shown in figure 2, the attachment portion 7 of the flashing 5 links up to a skirt 12 which is insertable into gutter 3 as shown in figure 1. This construction prevents spurting water, rain or powder snow from contacting the roof boarding 1 and the batten 4, with at the same time continued capability of ventilation along the dotted line in figure 1, therefore passing behind the skirt 12 and/or the gutter 3 and via the apertures between the gutter bracket batten 4 and the bottoms 14 of the flashing portion 7.

The skirt 12 and its connection to the attachment portion 7 are preferably stiffened by rib means 17. The rib means 17 also serve to keep the skirt 12 spaced from the right vertical wall of the gutter 3 for the purpose of ventilation along the dotted line in figure 1. The flashing portion 8, the attachment portion 7, the skirt 12 and the rib means 17 are preferably made of plastic as an integral product.

Another main embodiment of the invention concerns the application of the invented flashing portion in a ridge shown in figures 4, 5 and 6. Figure 4 shows a vertical cross-section of the top of a roof sloping to the left and the right, having a left and right roof board 21 which link up to a ridge board 22, e.g. a rafter of which the cross-section is shown by figure 4. On the roof board tile battens 24 are mounted for carrying tiles 31. Roof board, ridge board and tile battens are in itself known.

The invented flashing 25 comprises according to figure 4 a flashing portion 28 and an attachment portion 27, which are preferably made of plastic as an integral product. The attachment portion 27 is preferably attached or attachable to a ridge tile 23, but the attachment portion can also be embodied in such a way that it is attachable to the ridge board 22 or to a means mounted thereon. In the latter case the embodiment of the invented flashing may comprise a centrally situated, to the ridge board 22 attachable attachment portion with on the left and right a flashing portion. This embodiment can easily be deduced from figure 4 and is therefore not depicted.

The ridge tile 23 is in figure 4 shown in cross-section and in figure 6 in longitudinal cross-section, while figure 5 shows in perspective a number of ridge tiles linked up to eachother. The ridge tile 23 is according to figures 4 and 6 provided with rib means 32 (according to figure 6 a number of six rib means) having recesses which are substantially shaped complementary to the shape of the attachment portion 27 of the flashing 25, so that the attachment portion 27 is insertable into the recesses of the rib means 32, resulting in that the position of the flashing 25 in relation to the ridge tile 23 is fixed. Moreover, the ridge tile is provided with sleeve like parts 33, in which pin like parts 34 of the attachment portion 27 are insertable, resulting in that the attachment portion is then attached to the ridge tile.

Furthermore, as shown in figure 4, the ridge tile 23 is provided with a first shaped gate 35 and a second shaped gate 36 shown in figure 6. Herein, the first shaped gate 35 is in a ridge tile which is positioned to the right of the ridge tile shown in figure 6, said first shaped gate being mountable above the second shaped gate 36 of the ridge tile shown in figure 6. As a result, as shown in figure 4, two adjacent ridge tiles are fixable to the ridge board 22 by one and the same attachment means 26, such as a nail or a wood screw, resulting in that the ridge tiles link up to eachother rainwater and powder snow proof.

To the right in figure 4 the flashing 25 attached to the ridge tile 23 is indicated with the flashing portion 28 in a position free of influences from outside. To the left in figure 4, the flashing portion 28 is indicated bearing against a tile 31, resulting in that the flashing portion seals against the tile as the flashing portion is embodied and functions in the same way as the flashing portion 8 shown in the figures 1, 2, and 3, so that for brevity's sake the extensive discussion of the flashing portion 8 is referred to. In addition, it is only observed that the flashing portion 8 urges as shown in figure 1 against the bottom of tile 11, while in figures 4 and 5 the flashing portion 28 urges upon a tile 31. Figure 4 shows this tile 31 partly in a longitudinal view and partly in a cross-section, whereby it appears from figure 5 that this tile in the plane perpendicularly to the length of the tile, therefore perpendicular to the plane of figure 1, is profiled in a corrugated or in another way, such as is general use with tiles.

The flashing portion 28 shown in figures 4 and 6 is, as is the case with the flashing portion 8 shown in figures 2 and 3, exclusively made of sheet-like, thin plastic and is corrugated, the height of the corrugations 29 decreasing from the outer edge 30 of the flashing portion in the direction of the attachment portion 27, so the outer edge 30 can be corrugated as shown in figure 3.

Just as with the flashing portion 8 shown in figure 1, the corrugations 29 shown in figure 6 result in a supple fan-like spreadability of the flashing portion 28 and in a yieldingly urging of the flashing portion upon the tile 31 because the flashing portion wants to pivote back as it were to its free position indicated on the right in figure 4. It is however observed that in figure 6 for simplicity's sake only a small number of corrugations 29 have been depicted, but that in reality the flashing portion 28 is provided with corrugations 29 along its entire length.

The ridge tile 23 is preferably provided with partitions 40 which together with flanges 37 and 38 on the attachment portion 27 of the flashing form a labyrinth-like passage so that ventilation air can pass along the dotted line indicated in figure 1 for ventilation between the space underneath the tiles 31 and the open air, while at the same time penetration of rainwater and/or powder snow is resisted by the flashing portion 28 and by the combination of the partitions 40 with the flanges 37 and 38.

A variation of the flashing 25 shown in figure 4 can be provided with a thin bridge part 39 between the flashing portion 28 and the attachment portion 27, the bridge part functioning as a hinge, with the result that during transport the right flashing portion in figure 4 can be held pivoted to the left in a horizontal position in order to ensure that the ridge tile 23 with both flashings 25 takes up less space. Naturally, the left flashing portion 28 is then pivoted to the right.

For a hip rafter, which is a sloping transition between two intersecting, sloping parts of a roof, flashings can be applied with a shape and function as follows in principle from the embodiment shown in figures 4, 5 and 6 and the corresponding description. In connection, ridge tiles can be applied with a shape and function as follows in principle from figures 4, 5 and 6 and the accompanying description. In that case the tiles do not enclose a right angle with the ridge tile as according to figure 5, but a sharp angle, as the row ridge tiles in that case slopes downward. After the extensive description of the embodiment shown in figures 4, 5 and 6, a description of the hip rafter is superfluous, for the flashing portion in this case as well urges sealingly against the tiles as the flashing portion is provided with the invented corrugations and therefore is supply, fan-like spreadable and urges yieldingly bended against the tiles, while the attachment portion, be it via or not via a roof ridge tile, is attached to the roof construction.

The principle of the invented flashing can also be applied to a flashing for sealing the transition between the frame of a skylight and the surrounding roof covering. The flashing then also links up to the tiles as the flashing portion is provided with the invented corrugations and therefore is supply fan-like spreadable and urges yieldingly bended against tiles, with the result that no powder snow, rainwater and/or birds can penetrate till underneath the tiles. Therefore a description of the flashing designed for this application is superfluous after the extensive description with the drawings.

The flashing portion 8 is preferably made of very thin, supple material, the flashing being provided with rib means 45, 46, which, according to figure 7 extend from the attachment portion 7 till on the flashing portion 8. Figure 7 corresponds substantially to figure 1, so for clearness sake the tile 11 has been left out and as a result the flashing portion 8, unlike in figure 1, is not bended by a tile. The rib means 45, 46 are made integrally with the rest of the flashing, of supple material according to figure 7, whereby the foot portion 46 of the rib means is formed integrally with and links up to the other side of the bottom 14 indicated in figure 2 of the attachment portion 7 as appears from figures 7 and 9, while the arm portion 45 of the rib means extends along and links as integrally formed up to a corrugation top 9, which is at the other side of the flashing portion 8 shown in figure 2. Preferably a number as large as possible of the corrugations 9 present in the flashing portion 8 is each provided with a rib means 45, 46 as shown in figure 8.

The rib means 45, 46 is integrally made of such supple material and is so thin that the transition between the parts 45 and 46 yields resiliently when a tile 11 (vide figure 1) urges on the flashing portion 8, resulting in that the flashing portion 8 along its edge 10 supply adjusts to the shape of tile 11. In order to have the edge 10 bear as much as possible against a tile 11, the arm portion 45 of each rib means ends at a distance of edge 10 of the flashing portion 8, as indicated by a dotted line in figure 7.

Because of the rib means 45, 46, the flashing portion 8 can be embodied so thin that the edge 10 supply adjusts to the form of a tile 11 shown in figure 1, the rib means urging the flashing portion 8 with such a force aginst tile 11, that the edge 10 of the flashing portion 8 indeed adjusts to the shape of the tile 11.

Moreover, the rib means 45, 46 provide a solid connection between the flashing portion 8 and the attachment portion 7 of the invented flashing.

Claims

1. Flashing for obstructing apertures remaining between a substantially straight part and a profiled part of, for example, a sloping roof, comprising an attachment portion by which the flashing is attachable to the straight roof part, such as a part of the

roof boarding near the lower edge therof or near a skylight, a ridge or a hip rafter and furthermore comprising a flashing portion designed to adjust supply to the profiled part of the roof, such as tiles, CHARACTERIZED IN THAT the flashing portion is at least partly corrugated, the height of the corrugations decreasing from the outer edge of the flashing portion positionable against the profiled roof part, in the direction to the attachment portion and the flashing portion being at least substantially free from thick parts and being made of supply, depliable material, resulting in that the flashing portion is supply fan-like spreadable and yieldingly bendable due to pressure exerted by the profiled roof part, so that the course of the outer edge of the flashing portion adjusts to the profiled roof portion.

2. Flashing according to claim 1, CHARACTERIZED IN THAT the flashing portion is made as an integral product of plastic.

3. Flashing according to claim 2, CHARACTERIZED IN THAT the entire flashing is made as an integral product of plastic.

4. Flashing according to any of the preceding claims, CHARACTERIZED IN THAT the attachment portion is provided with and/or formed with stiffening profiles.

5. Flashing according to any of the preceding claims, CHARACTERIZED IN THAT the one and the other hand of the flashing are formed mutually complementary, so that the flashings can be linked in a continuous series.

6. Flashing according to any of the preceding claims, CHARACTERIZED IN THAT the attachment portion is formed to be attached to the roof construction under a ridge or via a ridge.

7. Flashing according to claim 6, CHARACTERIZED BY pins or sleeves formed onto the attachment portion, whereon sleeves or pins are attachable on the ridge tile.

8. Flashing according to claim 6 or 7, CHARACTERIZED IN THAT the ridge and/or attachment portion are provided with substantially vertical partitions which together form a labyrinth-like passage for ventilation air exclusively.

9. Flashing according to any of the claims 6 to 8, CHARACTERIZED BY a thin bridge part functioning as a hinge between the flashing portion and the attachment portion, the attachment portion being preferably attached to a ridge tile, and the flashing portion during transport being folded in the direction of the ridge tile along the bridge portion.

10. Flashing according to any of the claims 6 to 9, CHARACTERIZED IN THAT the flashing and optionally the corresponding ridge tile are made for use at a hip raft, that is for forming the sloping transition between two intersecting sloping parts of a roof.

11. Flashing according to claim 6, CHARACTERIZED BY , seen in cross-section of the flashing, an attachment portion to be attached centrally to a roof-turret and having a left and right flashing portion.

12. Flashing according to any of the claims 1 to 5, CHARACTERIZED IN THAT the attachment portion is formed to be attached to the roof construction under the roof covering, such as tiles, near the lower edge of a sloping roof.

13. Flashing according to claim 12, CHARACTERIZED IN THAT the end of the attachment portion facing away from the flashing portion links up to a skirt integrally formed with the rest of the flashing, that skirt being possibly insertable in a gutter.

14. Flashing according to claim 12 or 13, CHARACTERIZED BY stiffening rib means extending over the attachment portion and the skirt, causing the skirt itself to be stiff and moreover causing the skirt to link up stiffly to the attachment portion.

15. Flashing according to claim 14, CAHARACTERIZED IN THAT the stiffening rib means are integrally formed with the rest of the flashing of plastic.

16. Flashing according to any of the claims 11 to 15 in connection with claim 4, CHARACTERIZED IN THAT the stiffening profiles of the attachment portion are arrangeable against the roof construction in such a way that between the roof construction and the attachement portion ventilation passages remain between the stiffening profiles, and possible supporting brackets for, for example, a gutter may extend through those passages.

17. Flashing according to any of the preceding claims, CHARACTERIZED IN THAT the flashing is shaped to form a link between a skylight and the surrounding tiles.

18. Flashing according to any of the preceding claims, CHARACTERIZED IN THAT rib means (45, 46) are integrally formed with the rest of the flashing, wherein the foot portion (46) of each rib means is integrally formed with an attachment portion (7) of the flashing and the arm portion (45) of each rib means is integrally formed with the flashing portion (8) of the flashing.

19. Flashing according to claim 18, CHARACTERIZED IN THAT the arm portion (45) of each rib means is integrally formed in the top of concerned one of the corrugations (9) in the flashing portion (8).

20. Flashing according to claim 19, CHARACTERIZED IN THAT in the flashing portion (8) as many corrugations (9) as possible are provided with an arm portion (45) integrally formed with a rib means having a foot portion (46) in line with the arm portion (45).

21. Flashing according to any of the claims 18, 19 or 20, CHARACTERIZED IN THAT the arm

portion (45) of each rib means ends at such a distance from the free edge (10) of the flashing portion (8) of the flashing, that that edge (10) can bear entirely against a tile (11).

FIG. 1

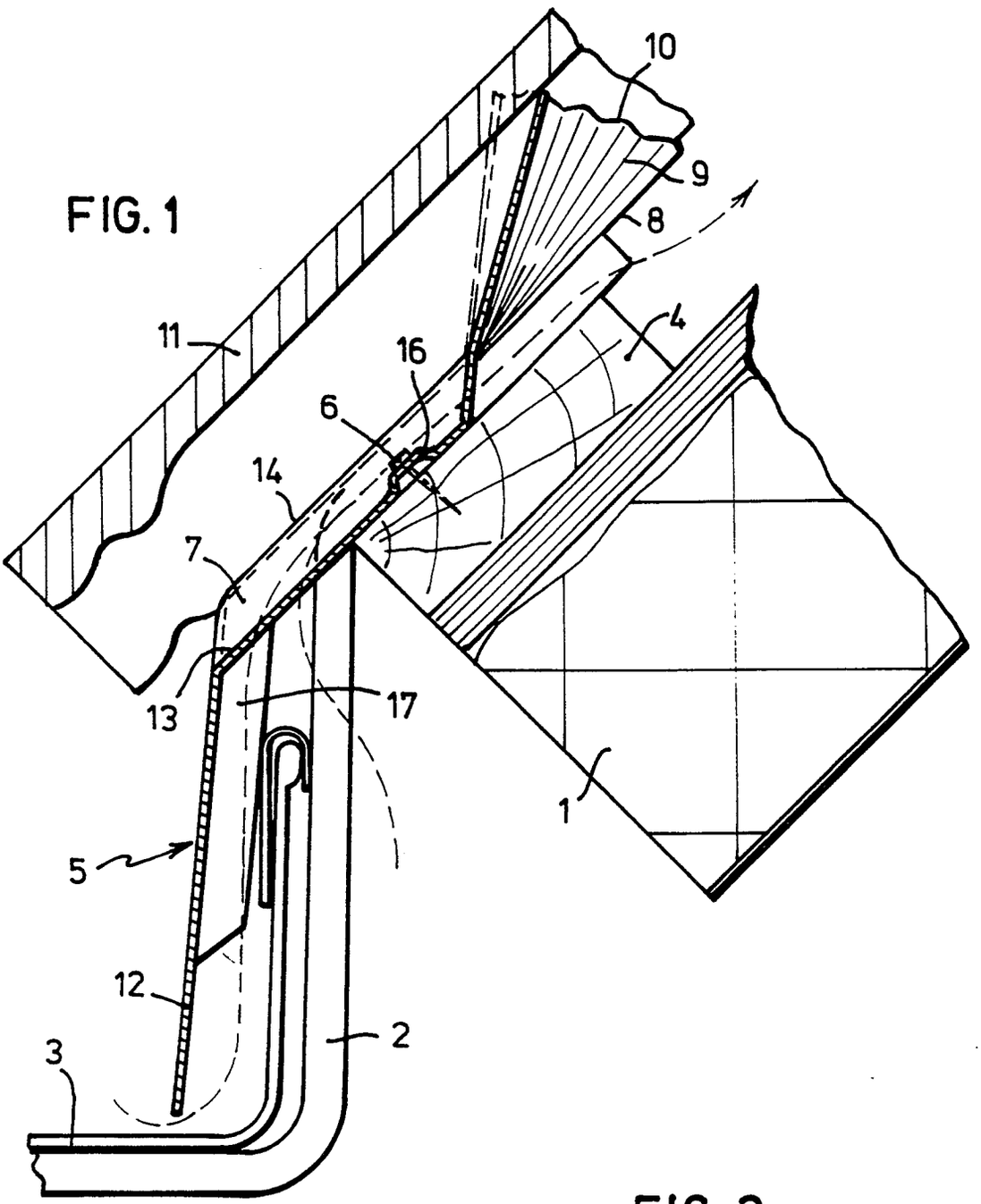
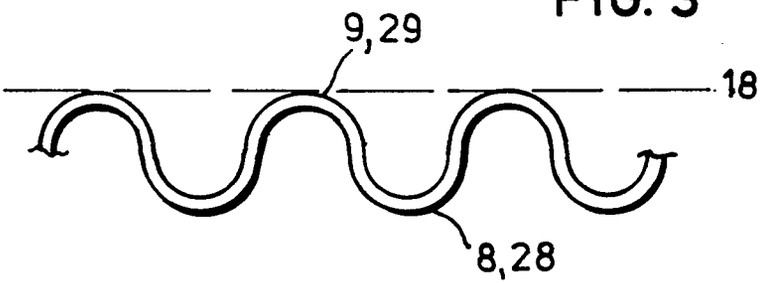


FIG. 3



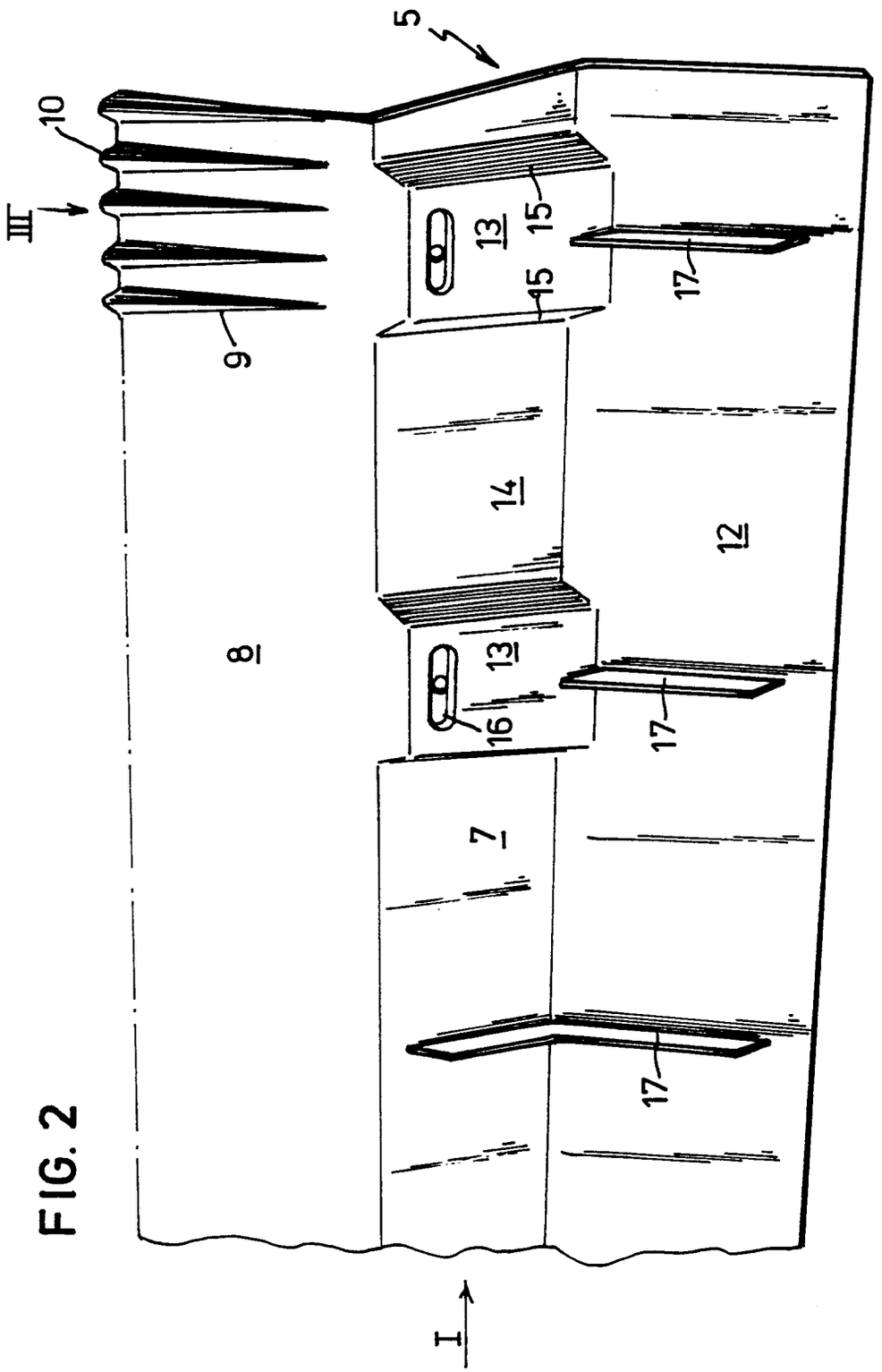


FIG. 2

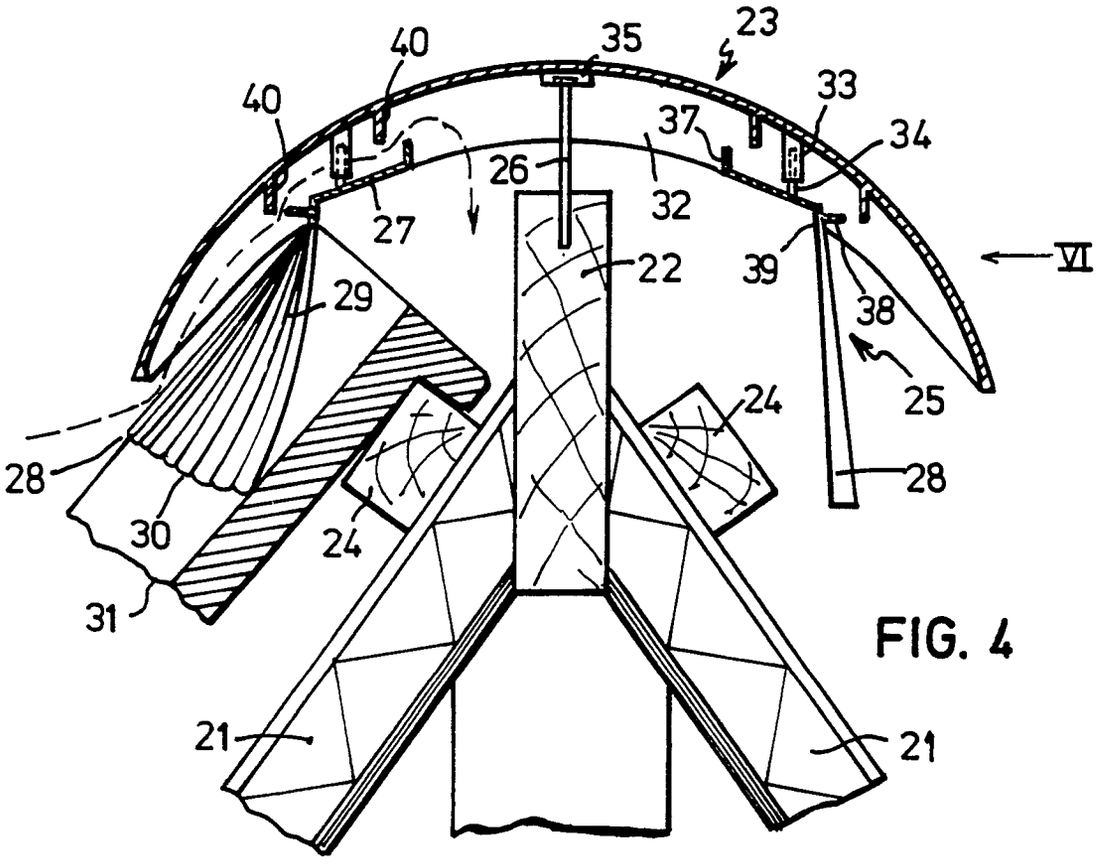

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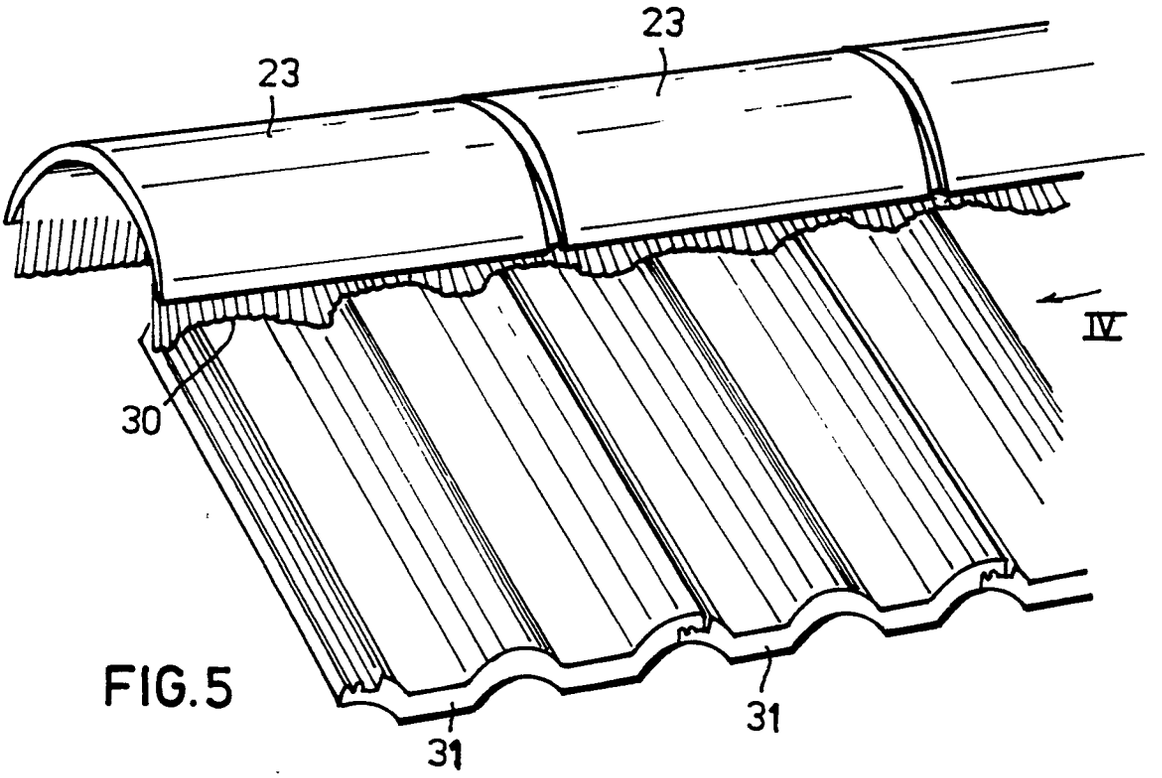
FIG. 4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IV
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FIG.5

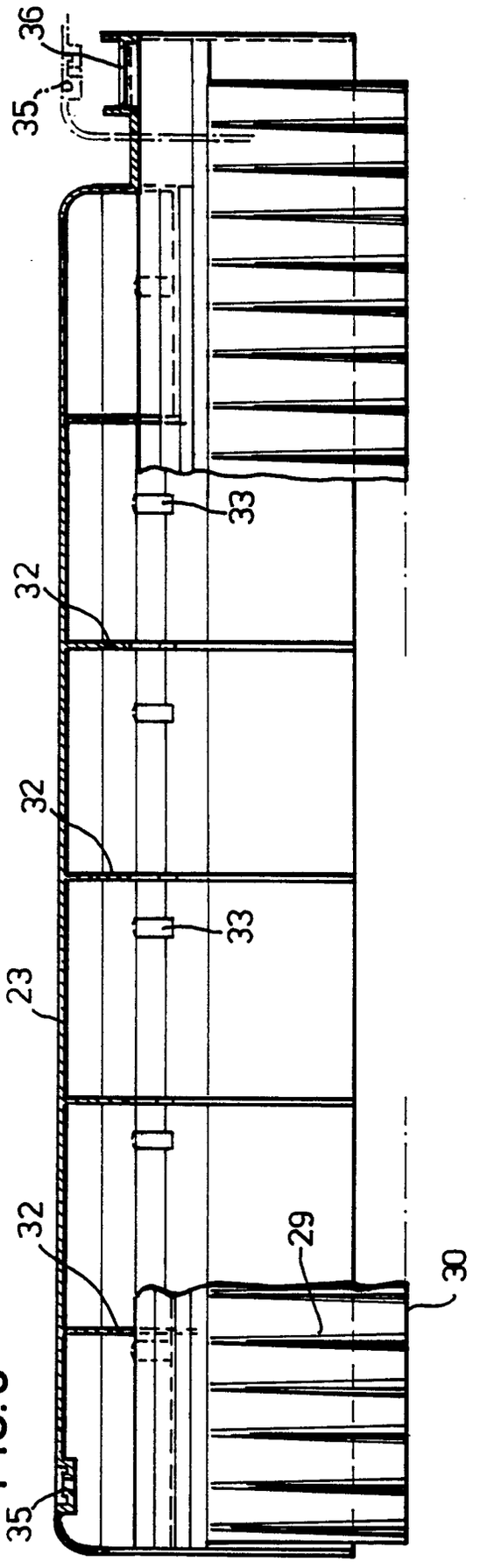
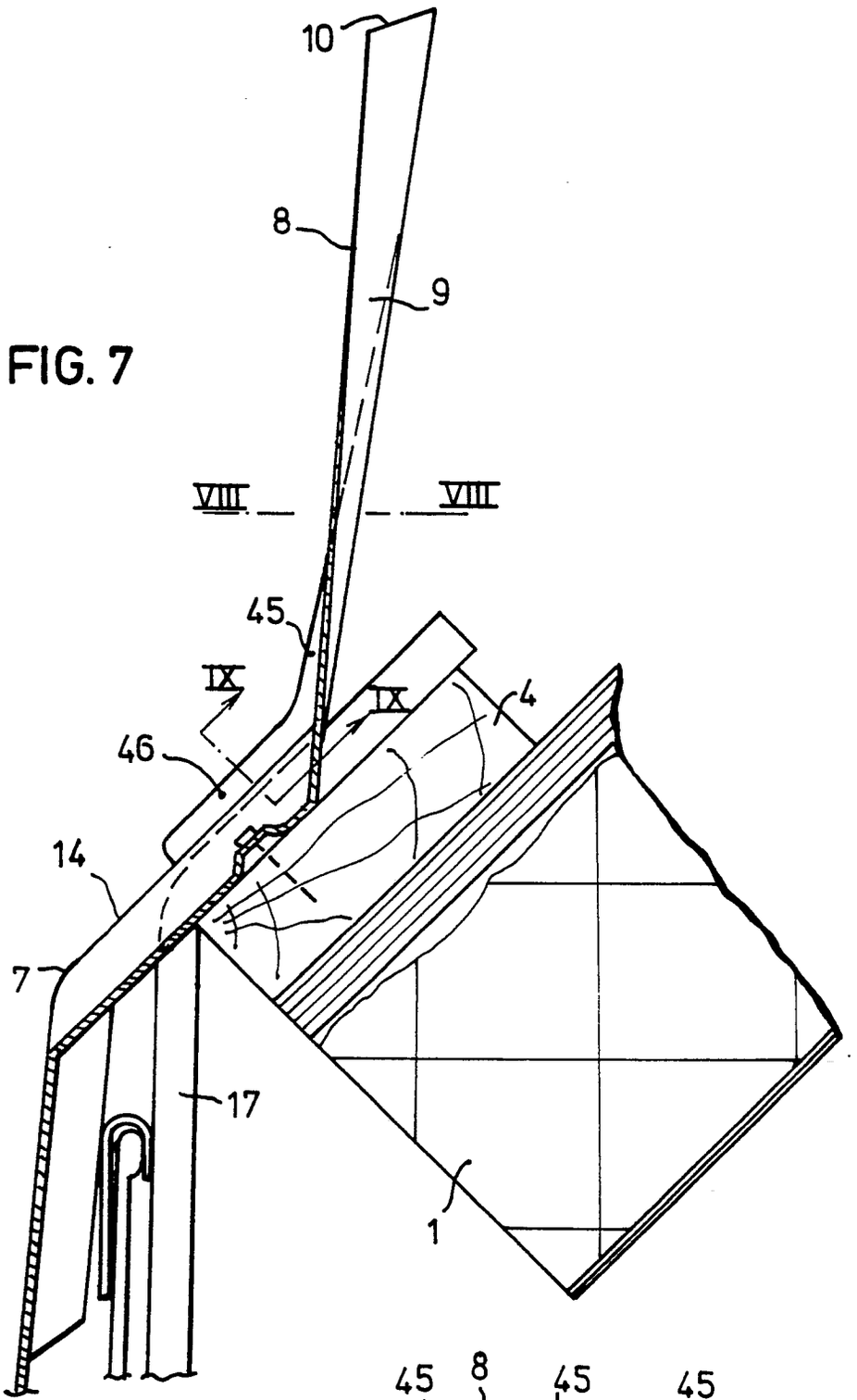


FIG.6

FIG. 7



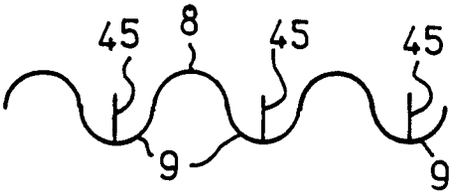


FIG. 8

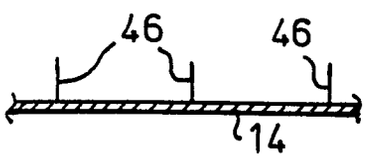


FIG. 9

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 90 20 0659

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.5)
Y	EP-A-0 117 391 (BRAAS) * Page 2, lines 11-33; page 3, lines 20-27; page 4, lines 24-33; page 5, lines 1-6; page 6, lines 13-23; page 7, lines 8-19,28-33; page 8, lines 1-8; figures 1-6 *	1,2,3,6,11,12	E 04 D 13/14 E 04 D 13/16
A		8	
Y	GB-A-2 088 924 (TIMLOC) * page 2, lines 100-128; figure 2 *	1,2,3,6,11,12	
A	EP-A-0 203 670 (REDLAND BREDERO) * Column 3, lines 22-26,44-49; claim 1; figures 1-3 *	1-5,12-15,18	
A	FR-A-1 511 832 (RAMME) * Page 5, column 2, paragraph 2; figure 14 *	1,6,7	
A	EP-A-0 120 653 (SHILLABEER) * Page 2, lines 25-28; page 3, lines 1-13; figures 1-3 *	1,2,3,9	TECHNICAL FIELDS SEARCHED (Int. Cl.5) E 04 D
A	EP-A-0 204 368 (REDLAND BREDERO) * Column 3, lines 43-57; column 4, lines 1-6; figure 2 *	1,12,16	
A	EP-A-0 277 497 (VEREINIGTE ALUMINIUM-WERKE) * Column 3, lines 7-26; figures 1,2 *	1,17	
A	EP-A-0 084 909 (REDLAND ROOF TILES) * Figures 1-4 *	18,19	
A	NL-A-7 613 216 (BRAAS)		

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	07-06-1990	HENDRICKX X.

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