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(54) **Cavity wall spacer, building structure and method**

(57) A cavity wall spacer, a building structure and method are disclosed. The cavity wall spacer determines a separation of building elements of two leaves of a wall during construction. The cavity wall spacer comprises: a support body; and a plurality of spaced projections upstanding from the support body and operable to extend across a cavity between the two leaves, each projection having a recessed channel operable to inhibit transfer of moisture from one end of each projection to another. The recessed channel or groove helps to prevent the passage of moisture along the length of the projection which provides an efficient way of preventing moisture travelling between the two leaves of the wall. Also, a recessed channel reduces the amount of moisture which drips into the cavity since the moisture is more likely to track back along the surface of the projection. Additionally, providing a recessed channel ensures no external obstruction on the projections which helps to achieve a significantly improved stacking density. Furthermore, the projections are less prone to any damage since there are no external protrusions.

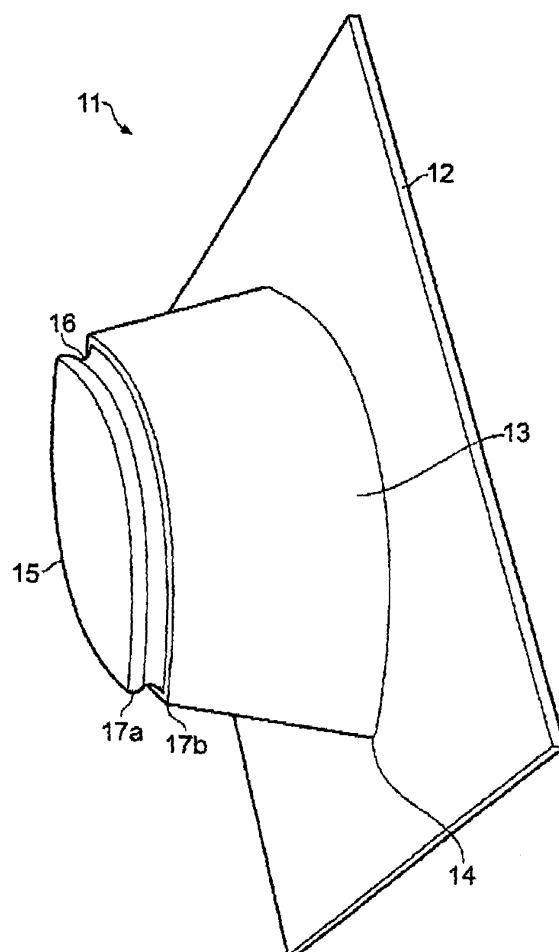


FIG. 1

Description

FIELD OF THE INVENTION

[0001] The present invention relates to a cavity wall spacer, a building structure and method.

BACKGROUND OF THE INVENTION

[0002] Many modern buildings for habitation are now constructed using cavity walls. Cavity walls are generally more effective for improving thermal insulation and inhibiting of moisture penetration compared to solid walls. Cavity walls consist of two walls or "leaves" of masonry separated by a cavity or gap. Typically, the walls are 100mm thick, separated by a 50mm gap. The walls may be constructed from bricks, concrete blocks, hollow clay bricks, timber framing, natural stone, or a combination of these materials. The exterior wall or leaf is usually constructed from bricks. The exterior leaf and the interior leaf are tied together at spaced intervals with wall ties spanning the cavity.

[0003] For a cavity wall to effectively work as a moisture barrier, the cavity or gap should not be bridged in any way. GB 2 388 614 describes a cavity wall spacer which inhibits the transfer of moisture from the exterior leaf to the interior leaf.

[0004] It is desired to provide an improved cavity wall spacer.

SUMMARY OF THE INVENTION

[0005] According to a first aspect of the present invention there is provided a cavity wall spacer for determining a separation of building elements of two leaves of a wall during construction, the cavity wall spacer comprising: a support body; and a plurality of spaced projections upstanding from the support body and operable to extend across a cavity between the two leaves, each projection having a recessed channel operable to inhibit transfer of moisture from one end of each projection to another.

[0006] The first aspect recognises that a problem with the existing cavity wall spacers is that they either have no moisture barrier rib, in which case more moisture than may be desirable can track along the length of the projection from the external leaf to the internal leaf, or they have a moisture barrier rib and this causes moisture to gather and then drip into the cavity in the vicinity of the moisture barrier rib. Also, a problem with arrangements having moisture barrier ribs is that when the sheets of cavity wall spacers are stacked for storage or transport the packing density of the sheets is low since the barrier rib prevents close stacking of the sheets. Furthermore, these barrier ribs can become damaged.

[0007] Accordingly, the first aspect provides at least one projection, and more typically a plurality of projections, each having a recessed channel. The recessed channel or groove helps to prevent the passage of mois-

ture along the length of the projection which provides an efficient way of preventing moisture travelling between the two leaves of the wall. Also, a recessed channel reduces the amount of moisture which drips into the cavity since the moisture is more likely to track back along the surface of the projection. Additionally, providing a recessed channel ensures no external obstruction on the projections which helps to achieve a significantly improved stacking density. Furthermore, the projections are less prone to any damage since there are no external protrusions.

[0008] In one embodiment, the recessed channel is operable to cause moisture flowing from one end of the projection to another to collect therein. Accordingly, the recessed channel provides a depression or gully into which any moisture travelling along the length of the projection may accumulate.

[0009] In one embodiment, the recessed channel is operable to cause the moisture collected therein to gather at a moisture-release point. Hence, the channel acts as a conduit along which the accumulated moisture may flow to a moisture-release point. It will be appreciated that in practice small droplets will accumulate in the recessed channel which will combine into larger droplets which, once a sufficient mass has been achieved, will overcome surface tension and will flow along the recessed channel under gravity to the underside of the recessed channel when installed in the cavity. The underside of the channel when installed in the cavity may provide two moisture-release points, one at each side of the recessed channel.

[0010] In one embodiment, each projection is tapered towards its distal end and the recessed channel is operable to direct moisture gathered at the moisture-release point towards that projection's proximal end. Hence, in a tapered arrangement, any moisture gathered at the moisture-release point (which is typically on the underside of the projection when installed in the cavity) will be likely to travel under gravity back along the outer surface of the projection back towards the support body rather than drip into the cavity itself.

[0011] In one embodiment, the recessed channel is located between proximal and distal ends of the projection.

[0012] In one embodiment, the recessed channel is located towards the distal end of the projection.

[0013] In one embodiment, the recessed channel is located in a distal face of the projection. Hence, rather than be located along the length of the projection, the recessed channel may be formed in the tip of the projection.

[0014] In one embodiment, the recessed channel extends at least partly circumferentially about the projection.

[0015] In one embodiment, the recessed channel extends entirely circumferentially about the projection.

[0016] In one embodiment, each projection has two converging lateral walls.

[0017] In one embodiment, each projection has a lenticular cross-section.

[0018] In one embodiment, each projection is hollow. It will be appreciated that providing a hollow projection increases the stacking density.

[0019] In one embodiment, the support body and the projections are integrally formed.

[0020] In one embodiment, each projection extends transversely of the support body.

[0021] In one embodiment, each projection extends from a face of the support body.

[0022] According to a second aspect of the present invention there is provided a building structure incorporating one or more cavity wall spacers according to the first aspect in a cavity wall of the building structure.

[0023] In one embodiment, the cavity wall spacers are located at spaced intervals in the cavity wall of the building structure

[0024] According to a third aspect of the present invention there is provided a method of erecting a building having a cavity wall of two or more leaves comprising the steps of: erecting part of one leaf of the cavity wall of the building; securing to the erected part of the one leaf of the cavity wall a cavity wall spacer according to the first aspect, and erecting at least part of another leaf of the cavity wall of the building in a position spaced from the one leaf by a distance determined by the cavity wall spacer.

[0025] In one embodiment, the spacer device is orientated in the cavity wall of the building so that the support body of the cavity wall spacer is against an inner face of an exterior leaf of the cavity wall and the plurality of projections of the support body extends toward an interior leaf of the cavity wall of the building.

[0026] In one embodiment, the cavity wall spacer is orientated so that distal ends of the plurality of projections abut an inner face of the interior leaf of the cavity wall of the building.

[0027] According to a fourth aspect there is provided a cavity wall spacer substantially as hereinbefore described with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0028] Embodiments of the present invention will now be described with reference to the accompanying drawings in which:

Figure 1 is a perspective view of a cavity wall spacer according to one embodiment,

Figure 2 is a side view of the cavity wall spacer of Figure 1;

Figure 3 is a sectional view of a cavity wall of a building incorporating the spacer device of Figure 1;

Figure 4 is a sectional view showing the stacking arrangement of a number of sheets of spacer devices of Figure 1;

Figure 5 is a perspective view of a sheet cavity wall

spacers of Figure 1;

Figure 6 is a perspective view of a cavity wall spacer of a further embodiment;

Figure 7 shows further views of the cavity wall spacer of Figure 6; and

Figure 8 is a perspective view of a sheet cavity wall spacers of Figure 6.

DESCRIPTION OF THE EMBODIMENTS

[0029] Referring to Figure 1, there is shown a cavity wall spacer, generally 11, according to one embodiment. The cavity wall spacer 11 is integrally formed by vacuum moulding and has a support body 12 with a plurality of projections 13 extending transversely from the plane of the support body 12. Although Figure 1 shows just one projection 13, this is just one portion of the support body 12 which is a laminar sheet having overall dimensions of 1200mm by 450mm and a depth of 50mm with a plurality of these projections 13 extending therefrom as shown in more detail in Figure 5. The support body 12 and the projections 13 of the spacer device 11 are made from a plastics material which is high-density polyethylene (HDPE) having a thickness of around 2mm. The plurality of projections 13 are longitudinal and have a proximal end 14 located adjacent to an inner face of the support body 12 and a distal end 15 located away from the support body 12. Each of the projections 13 are spaced away from each other typically by a distance of 260mm between centres horizontally and 125mm between centres vertically. The projections 13 have a lenticular shape. A recessed channel or groove is formed as an indentation or depression in the surface of the projection 13. In this arrangement, the recessed channel 16 extends entirely circumferentially about the projection 13. The spacer device 11 is primarily for use in a cavity wall of a building structure to prevent or at least inhibit water or moisture from penetrating the building.

[0030] Referring to Figure 2, there is shown a sectional view of the spacer device 11 having the support body 12 and the plurality of projections 13. The recessed channel 16 is spaced towards the distal face 15 of the projection 13.

[0031] Referring to Figure 3, the cavity wall spacer 11 is incorporated in a cavity 17 of a cavity wall 18 of a building structure (again, just a portion of the complete sheet is shown). The cavity wall 18 has an exterior wall 19 and an interior wall 20 and may optionally include a layer 21 of an insulating material on an inner face of the interior wall 20. Alternatively, the insulation layer 21 may be separate from the cavity wall spacer 11, and the cavity wall spacer 11 may retain the separate insulation layer 21 in place against the inner face of the interior wall 20. The exterior and interior walls 19, 20 are constructed from bricks, although they may also be constructed from concrete blocks, hollow clay bricks, timber framing or natural stone. The spacer device 11 is located in the cavity 17 of the cavity wall 18.

[0032] The support body 12 of the spacer 11 lies against an inner face of the exterior wall 19 with the plurality of projections 13 extending toward the inner face of the interior wall 20. The recessed channels 16 are located towards the distal end of the projection 13 in the region near the inner face of the interior wall and function as a "water bar" to prevent or hinder the penetration of water or moisture into the interior wall 20 of the building. Any water which enters the cavity 17 flows along the outer surface of the projections 13 to the recessed channel 16 whereupon further water penetration into the cavity 17 is prevented. The recessed channel 16 causes water droplets to form and, when a sufficiently sized droplet has formed, it is guided within, the conduit formed by the recessed channel around the exterior of the projection 13 to two moisture-release points 17a, 17b which are located on either side of the recessed channel 16 at the lower intersection of the two arcs forming the lenticular cross-section of the projection 13. From here, the water droplet will either drip downwardly from the projections 13 to the ground surface where weep holes (not shown) may be provided in the exterior wall to drain the water from the cavity 17. Alternatively, the water droplet will track back along the external surface of the projection 13 towards the exterior wall 19. Eventually, the water droplet will then gather on the ground surface in the vicinity of the weep holes in the exterior wall 19.

[0033] The projections 13 have a lenticular shape having upper and lower ridges defined by the region where the converging arcs intersect. The side walls of the projections are steeply angled relative to the axis of the projection 13 which causes the water droplets to travel down the walls to the lower ridge.

[0034] As shown in Figure 5, the laminar support body 12 will typically have dimensions of 1200mm by 450mm and the projections 13 are spaced across a face of the support body 12 and formed into three rows and five columns.

[0035] A plurality of the spacer devices is typically installed in a cavity wall of a building in a plurality of rows and columns. Typically, wall ties (not shown) are located in the cavity 17 at regular spaced intervals. The substantially horizontal spacing between adjacent wall ties is usually about 900mm and the substantially vertical spacing between adjacent wall ties is usually about 450mm. These measurements correspond approximately to the dimensions of the spacer device so that it may be positioned in a cavity wall between spaced wall ties.

[0036] Each spacer device may be connected to another spacer device in the cavity wall using H-shaped connection elements (not shown) having two longitudinal parallel walls joined together at a middle region thereof by an integral longitudinal member so as to define U-shaped channels, each of which can receive a part of the support body of adjacent spacer devices. In this way, one spacer device can be connected to another spacer device to create a sufficiently stable structure of spacer devices in the cavity wall.

[0037] Referring now to Figure 4, there is shown a plurality of spacer devices stacked upon each other. As can be seen, a high packing density can be achieved since the absence of any external protrusions enables the spacer devices to readily slide over each other and stack in close formation.

[0038] Referring to Figure 6, there is illustrated a spacer device, generally 11' according to a further embodiment. Once again, the spacer device 11' is integrally formed by vacuum moulding and has a support body 12' with a plurality of projections 13' extending transversely from the plane of the support body 12'. The support body 12' is a laminar sheet. The support body 12' and the projections 13' of the spacer device 11' are made from a plastics material. The plurality of projections 13' are longitudinal and have a proximal end 14' located adjacent to the support body 12' and a distal end 15' spaced away from the support body. The projection 13' have a generally lenticular shape.

[0039] A recessed channel 16' is formed in the distal end 15'. The recessed channel 16' extends entirely circumferentially around distal end 15'. The recessed channel 16' functions in a similar way to the arrangement shown in Figures 1 to 3 and acts to divert moisture within the cavity 17 away from the inner wall 20.

[0040] As shown in Figure 8, the laminar support body 12' will typically have dimensions of 1200mm by 450mm and the projections 13' are spaced across a face of the support body 12' and formed into three rows and five columns.

[0041] Hence, it can be seen that the cavity wall spacers 11, 11' both inhibit the transfer of moisture from the external wall to the internal wall. Also, the recessed channel 16, 16' reduces the amount of moisture which drips into the cavity since the moisture is more likely to track back along the surface of the projection. Additionally, a high staking density of the cavity wall spacers 11, 11' can be achieved since there are no external protrusions which would otherwise prevent the exterior of the spacer device 13, 13' from closely mating with the interior of a further cavity wall spacer stacked thereon. Furthermore, by avoiding any external protrusions the risk of damage to the cavity wall spacers 11, 11' is reduced.

[0042] Although particular embodiments have been described herein it will be apparent that the invention is not limited thereto and that many modifications and additions may be made within the scope of the invention as defined in the claims. For example, various combinations of features from the following dependent claims could be made with features of the independent claims without departing from the scope of the present invention.

Claims

1. A cavity wall spacer for determining a separation of building elements of two leaves of a wall during construction, said cavity wall spacer comprising:

- a support body; and
a plurality of spaced projections upstanding from said support body and operable to extend across a cavity between said two leaves, each projection having a recessed channel operable to inhibit transfer of moisture from one end of each projection to another.
2. The cavity wall spacer of claim 1, wherein said recessed channel is operable to cause moisture flowing from one end of said projection to another to collect therein.
 3. The cavity wall spacer of claim 2, wherein said recessed channel is operable to cause said moisture collected therein to gather at a moisture-release point.
 4. The cavity wall spacer of claim 3, wherein each projection is tapered towards its distal end and said recessed channel is operable to direct moisture gathered at said moisture-release point towards that projection's proximal end.
 5. The cavity wall spacer of any preceding claim, wherein said recessed channel is located between proximal and distal ends of said projection.
 6. The cavity wall spacer of claim 5, wherein said recessed channel is located towards said distal end of said projection.
 7. The cavity wall spacer of any preceding claim, wherein said recessed channel is located in a distal face of said projection.
 8. The cavity wall spacer of any preceding claim, wherein said recessed channel extends at least partly circumferentially about said projection.
 9. The cavity wall spacer of any preceding claim, wherein said recessed channel extends entirely circumferentially about said projection.
 10. The cavity wall spacer of any preceding claim, wherein each projection has two converging lateral walls.
 11. The cavity wall spacer of any preceding claim, wherein each projection has a lenticular cross-section.
 12. The cavity wall spacer of any preceding claim, wherein each projection is hollow.
 13. The cavity wall spacer of any preceding claim, wherein said support body and said projections are integrally formed.
 14. The cavity wall spacer of any preceding claim, wherein each projection extends transversely of said support body.
 15. The cavity wall spacer of any preceding claim, wherein each projection extends from a face of said support body.
 16. A building structure incorporating one or more cavity wall spacers according to any preceding claim in a cavity wall of said building structure.
 17. The building structure of claim 16, wherein said cavity wall spacers are located at spaced intervals in said cavity wall of said building structure.
 18. A method of erecting a building having a cavity wall of two or more leaves comprising the steps of:
 - erecting part of one leaf of said cavity wall of said building;
 - securing to said erected part of said one leaf of said cavity wall a cavity wall spacer according to any of Claims 1 to 15, and
 - erecting at least part of another leaf of said cavity wall of said building in a position spaced from said one leaf by a distance determined by said cavity wall spacer.
 19. The method of claim 18, wherein said spacer device is orientated in said cavity wall of said building so that said support body of said cavity wall spacer is against an inner face of an exterior leaf of said cavity wall and said plurality of projections of said support body extend toward an interior leaf of said cavity wall of said building.
 20. The method of claim 19, wherein said cavity wall spacer is orientated so that distal ends of said plurality of projections abut an inner face of said interior leaf of said cavity wall of said building.

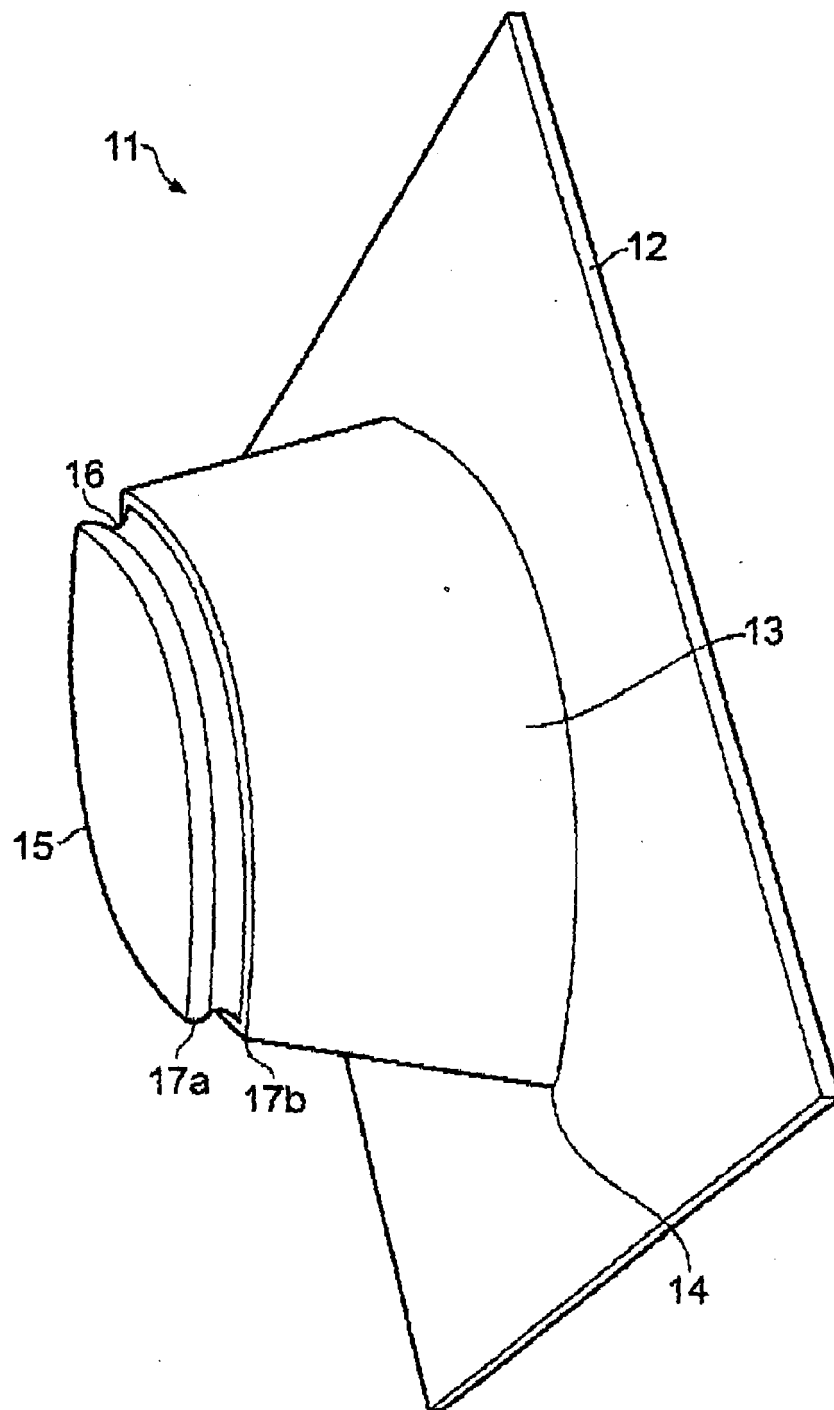


FIG. 1

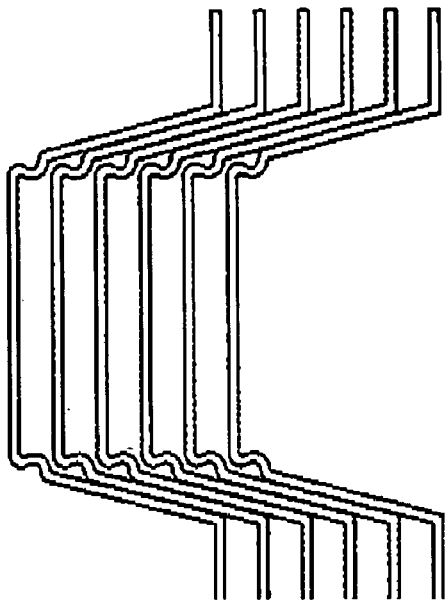


FIG. 4

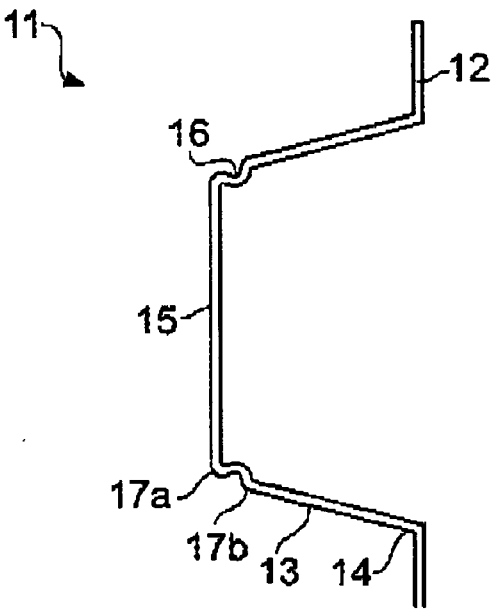


FIG. 2

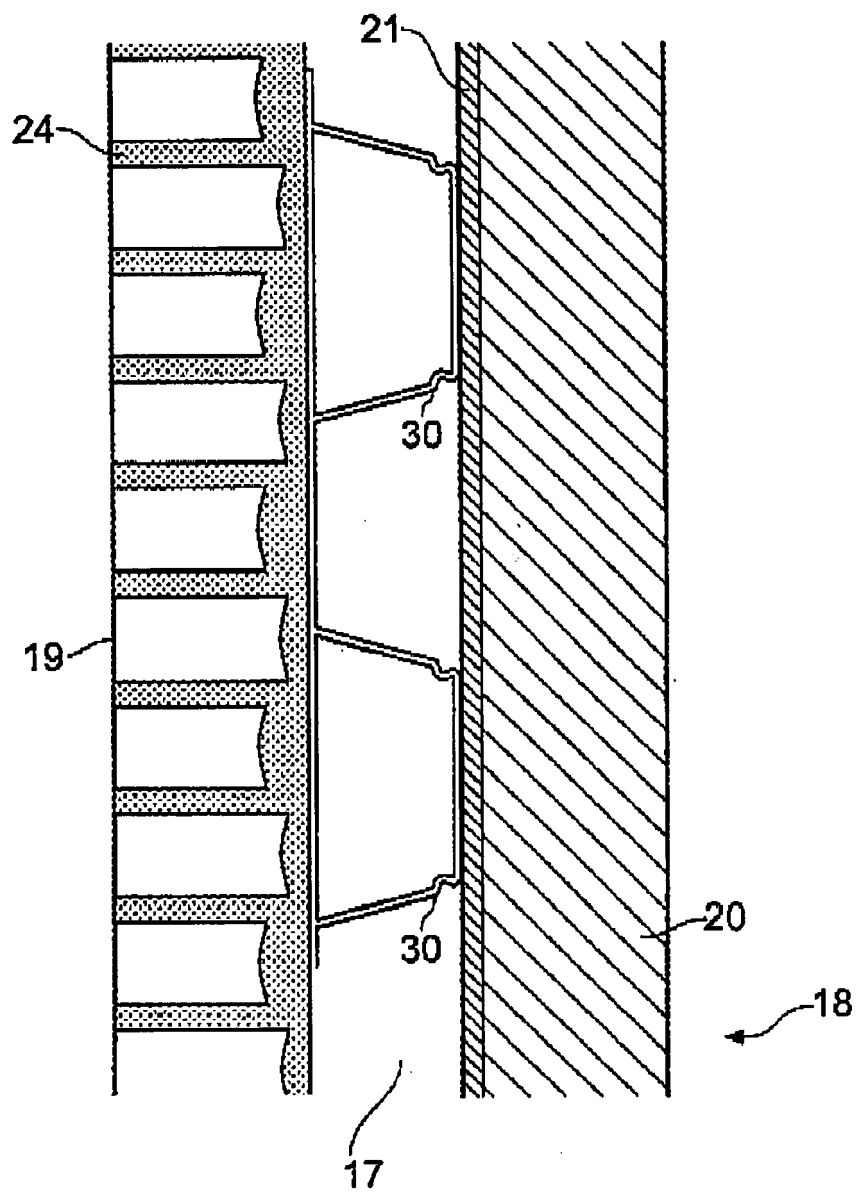


FIG. 3

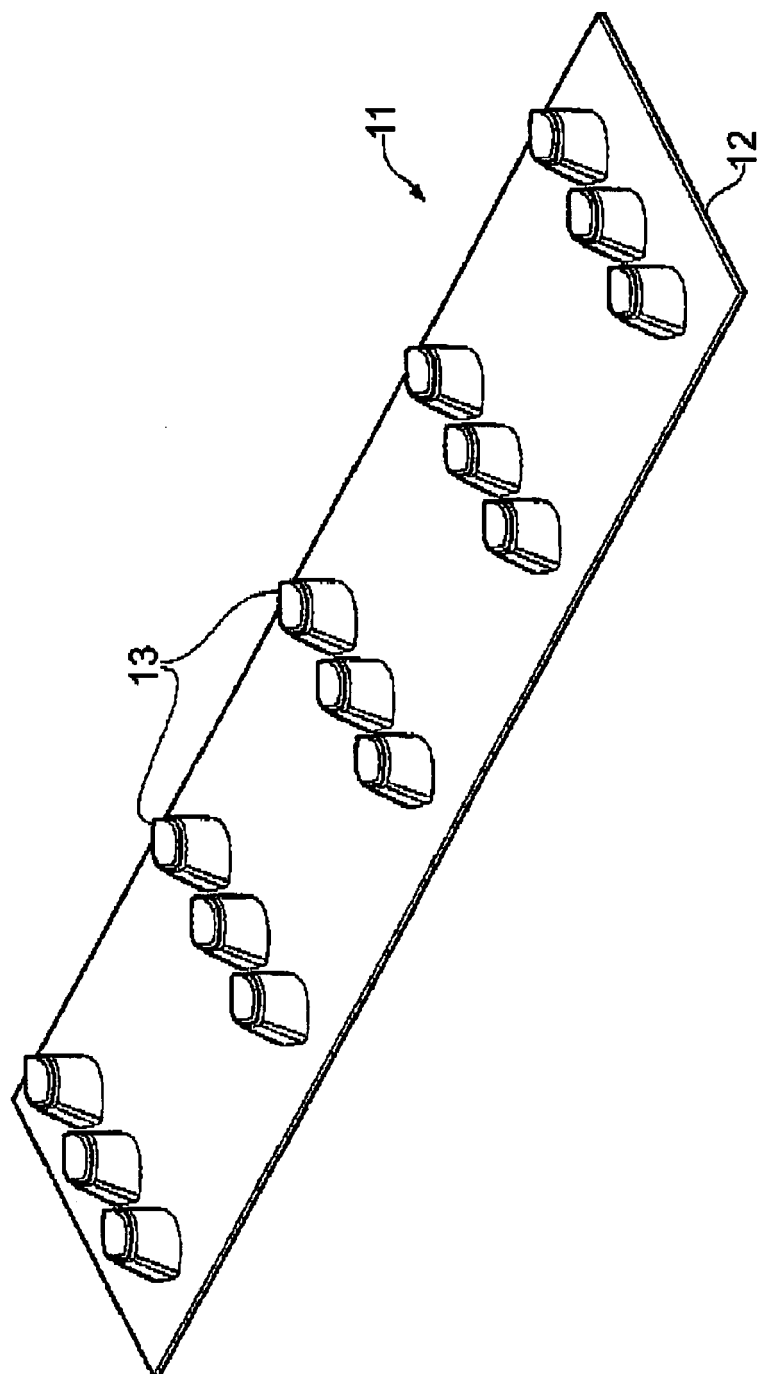


FIG. 5

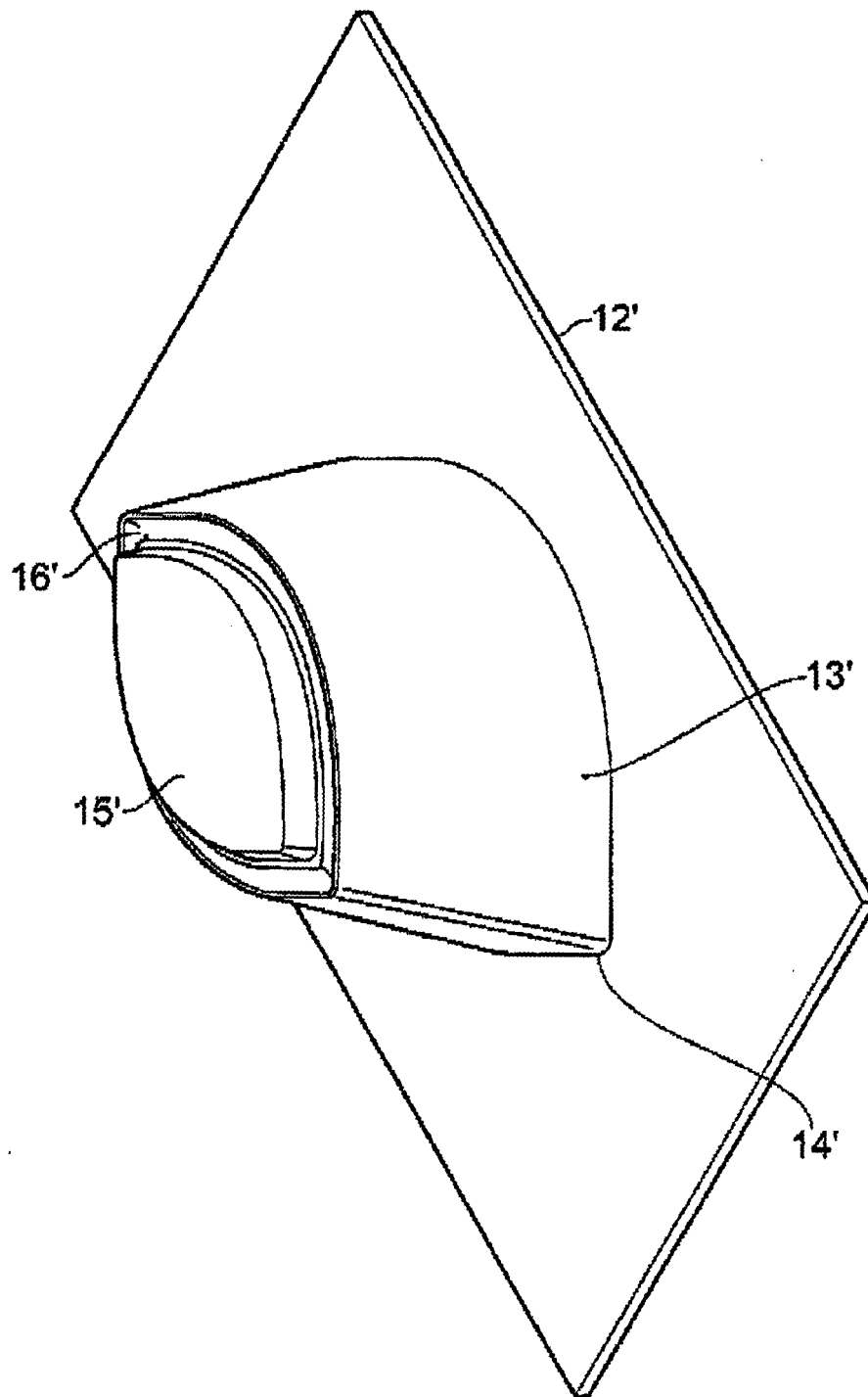


FIG. 6

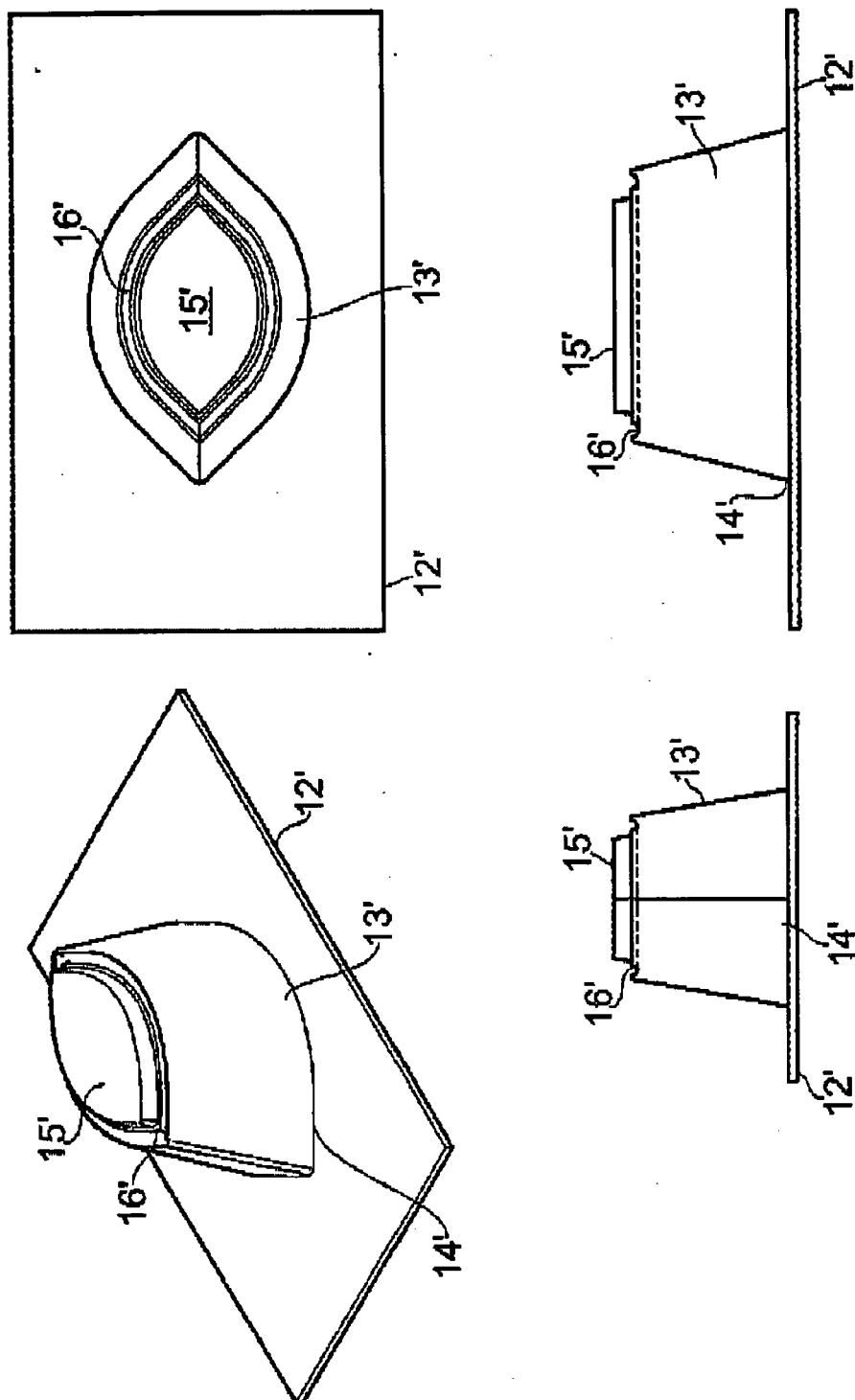


FIG. 7

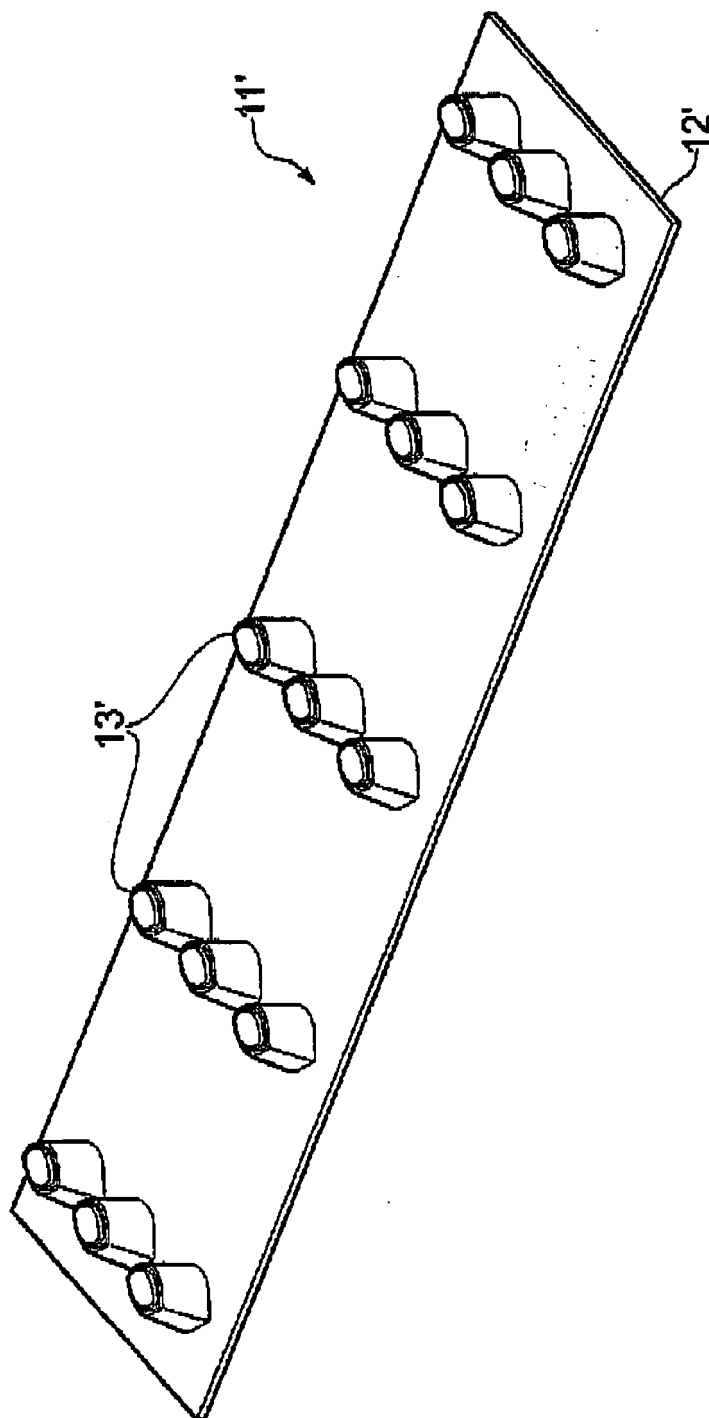


FIG. 8



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 07 25 3268

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 0 628 678 A (UBBINK NEDERLAND BV [NL]) 14 December 1994 (1994-12-14) * column 3, line 20 - column 4, line 45; figures 1-3 *	1-15	INV. E04B1/76 E04B1/70
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D,A	GB 2 388 614 A (AYERS CHARLES WILLIAM JACK [GB]; SURECAV LTD [GB]) 19 November 2003 (2003-11-19) * page 14, line 20 - page 15, line 6; figure 9 *	1-20	
			TECHNICAL FIELDS SEARCHED (IPC)
			E04B E04F E02D
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 23 January 2008	Examiner Porwoll, Hubert
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 07 25 3268

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EP 0628678	A	14-12-1994	NONE	
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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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