

Description

[0001] The present invention relates to a spacing means and in particular to a spacing means for a building component.

[0002] Where features of a building dictate that brickwork must extend over an opening such as a window, door, or any such opening, a lintel is often used. While structurally the lintel solves the issue of carrying the weight of the masonry directly above the opening, masonry supports are often utilised which allow attachment of masonry on one or both sides, namely fascia or soffit of the lintel so that a consistent appearance with the adjacent masonry can be achieved.

[0003] Masonry supports are typically in the form of metallic brackets and bracket spanning components. As a result of the rigid metallic construction, masonry supports are typically restricted with respect to the width of cavity which can be accommodated thereby. Spacers are employed to pack out the rear of masonry support brackets, increasing the space between the surface and the brackets attachable thereto, and therefore adjusting the size of the cavity created. However, the surface of the structural support to which the bracket or other intermediate fixing members are to be attached to are often not perfectly plumb or level, vertically. This means that if a spacer with a uniform thickness along the length and width of the spacer is used, the off level plane is transferred through the spacer into the masonry support bracket and on to the masonry façade support by the masonry support.

[0004] In addition, the typically metallic masonry support provides a cold bridge capable of transferring cold from the exterior into the cavity and beyond, resulting in a lower overall building thermal efficiency. With an ever increasing interest in limiting the energy consumption of modern buildings, the contribution made by cold bridging elements such as masonry support brackets is significant.

[0005] It is an object of the present invention to obviate or mitigate the problem of providing a spacing means for a building component so as to overcome the problem of support surfaces of support structures which are off the level or plumb and to provide a solution for the requirement of masonry support facades to be installed off the level or plumb prior to loading the masonry support.

[0006] Accordingly, the present invention provides a spacing means for insertion between a support surface of a structural support member and a mutually opposing support surface of a mounting means of a building component mountable on the support surface of the structural support member, the spacing means having compensation means for setting a non-parallel planar relationship between the support surface of the structural support member and the mutually opposing support surface of the mounting means of the building component.

[0007] Advantageously, where the planar surface of the structural support member for supporting the mount-

ing means of the building component is not plumb, one or more spacing means with compensation means can be utilised to compensate for the non-level surface of the structural support member. Alternatively, where the planar surface of the structural support member supporting the building component thereon is plumb, one or more spacing means with compensation means can be utilised to set at least part of the building component off the level or plumb in an unloaded condition. As an example of where this initial off level or plumb mounting may be useful, brick slips are often attached to the underside/soffit of a masonry support member for aesthetic continuity. The brick slip support is subsequently loaded with brick and this downward load of the bricks will cause a slight flex on the masonry support altering the angle of inclination of the soffit portion of the masonry support. If the soffit is initially set to be inclined upwardly at approximately the same angle of flex caused by downward moment of the bricks, the soffit will appear level in the loaded condition.

[0008] Advantageously, the compensating means of the spacing means compensates for off plumb or off level support surfaces where the off plumb/off level support surface has to be converted to a level surface for at least part of the building component. Alternatively, the compensating means provides the technical functionality for producing an off plum or off level façade surface for the building component when the building component is mounted on a plumb/level support surface of the structural support component.

[0009] Preferably, the compensation means for setting a non-parallel planar relationship between the support surface of the structural support member and the mutually opposing support surface of the mounting means of the building component can be adapted to set a range of inclined angles from 1 to 4 degrees, most preferably 1.5 degrees.

[0010] Ideally, the building component is mounted to the support surface of the structural support member by intermediate mounting means.

[0011] Preferably, the intermediate mounting means are separable from the building component.

[0012] Ideally, the mutually opposing support surface is the surface of the intermediate mounting means normally mounted on the structural support member.

[0013] Preferably, the intermediate mounting means is a bracket.

[0014] Preferably, the building component is a masonry support.

[0015] Ideally, the masonry support is a welded masonry support, a brick slip support, a loose bracket and shelf or any such masonry support wherein a bracket or similar intermediate mounting means is utilized to support a masonry component.

[0016] Ideally, the spacing means is similar in dimension to the surface of the mounting means typically contactable with the structural support member.

[0017] Preferably, the spacing means is a generally

quadrangular spacing means having two longitudinal edges joined by two lateral edges.

[0018] Preferably, the spacing means has a non-uniform thickness along the body of the spacing means.

[0019] Ideally, the spacing means has a reducing thickness between two opposite ends of the spacing means.

[0020] Preferably, the spacing means has a reducing thickness along its longitudinal or lateral length.

[0021] Ideally, the rate of the reducing thickness is constant along the length or between the ends of the spacing means.

[0022] Ideally, the spacing means has a reducing thickness from an upper end to a lower end or vice versa in use.

[0023] Ideally, the spacing means has a wedge shape.

[0024] Preferably, the spacing means tapers from a thick end to a thin end.

[0025] Ideally, the rate of the taper is constant along the length or between the ends of the spacing means.

[0026] Ideally, the thick end has a thickness in a range of between 4-8 mm and the thin end has a thickness in the range of between 1-4 mm.

[0027] Preferably, the length of the spacing means is in the range of between 100 mm and 300 mm, most preferably 150 mm and 250 mm.

[0028] Ideally, the width of the spacing means is a range of between 20 -50 mm.

[0029] Ideally, the surface of the spacing means is uneven. Advantageously, this reduces slippage between the shim and components which are in contact with these uneven surfaces.

[0030] Preferably, the surface of the spacing means is ribbed.

[0031] Ideally, the surface of the spacing means which is uneven is the two main planar surfaces which will be in contact with the surface of the structural support member and the mutually opposing surface of the building component or with an adjacent spacing means.

[0032] Ideally, the spacing means comprising means for suspending the spacing means in a pre-determined orientation from a portion of the building component or a fixture thereof.

[0033] Ideally, the suspension means having at least one suspending portion for suspending the spacing means from the building component or a fixture thereof and movement restriction means depending downwardly from the suspension portion on both sides of the suspension portion so as to be locatable around both sides of the portion of the building component or mounting means thereof.

[0034] Preferably, means for suspending the spacing means comprises an aperture within the body of the spacing means.

[0035] Alternatively, the means for suspending the spacing means being formed for only partially enclosing a portion of the building component or mounting means thereof.

[0036] Ideally, the means for suspending the spacing

means in a pre-determined orientation comprises an elongate slot extending longitudinally from and through one end of the spacing means proximal to the other end of the spacing means.

5 **[0037]** Ideally, the means for suspending the spacing means in a pre-determined orientation comprises an elongate slot extending longitudinally from and through one longitudinal end of the spacing means proximal to the other longitudinal end of the spacing means.

10 **[0038]** Preferably, the elongate slot has means for reducing the width of the elongate slot gap.

[0039] Ideally, the means for reducing the width of the elongate slot gap are provided on one both sides of the slot.

15 **[0040]** Preferably, the means for reducing the width of the elongate slot gap is one or more nibs protruding into the space of the slot.

[0041] Ideally, the nibs are provided on mutually opposing locations of the slot.

20 **[0042]** Advantageously, the means for reducing the width of the gap of the elongate slot provide two functions. In the event that the spacing means is accidentally knocked and caused to rotate through 180 degrees it will catch on the width reducing means preventing the spacing means from falling off the support/mounting member. The spacers are often being installed at a height and so this prevent the spacers falling from a height and having to be retrieved or worse causing a health hazard as a falling object. Secondly, the width reducing means provide two upright mounting positions for the spacing means upside down from each other.

30 **[0043]** Ideally, the width reducing means reduces the width of the gap of the slot to cause an interference fit between the width reducing means and the generally horizontal support member such as a bolt along which the spacing means is generally sliding into position. The width reducing means causing sufficient resistance to the travel of the bolt or other support member so as to prevent the spacing means being capable of moving past the bolt under its own weight. However, an operator can readily overcome the interference fit by manually applying pressure to push the spacing means onto or to pull the spacing means off the bolt.

35 **[0044]** Preferably, the spacing means is a plate.

40 **[0045]** Preferably, the spacing means is a shim or packer.

[0046] Ideally, the spacing means has an opening for receiving the portion of or fixture of the building component.

50 **[0047]** Furthermore, the spacing means comprising means for suspending the spacing means in a pre-determined orientation from a portion of the building component or a fixture thereof, the suspension means having at least one suspending portion for suspending the spacing means from the building component or a fixture thereof and movement restriction means depending downwardly from the suspension portion on both sides of the suspension portion so as to be locatable around both

sides of the portion of the building component or fixture thereof, the portion of the building component or fixture thereof being at least partially enclosable by the movement restriction means.

[0048] Advantageously, the movement restriction means prevents the spacer means sliding laterally off the portion of the building component or fixture thereof in the event of the spacing means receiving unintended contact during installation.

[0049] Preferably, the suspension means is a hook.

[0050] Ideally, the suspension means being configured so that the spacing means is only removable from the building component by at least upward movement of the spacing means.

[0051] Preferably, the suspension means being configured so that the spacing means is only removable from the building component by a combination of upward movement and lateral movement of the spacing means.

[0052] Ideally, the suspension means being configured so that the center of gravity of the spacing means must be raised above the suspension portion for the spacing means to be removed from the building component as a result of rotation.

[0053] Preferably, the spacing means is a plate.

[0054] The invention will now be described with reference to the accompanying drawings which show by way of example only two embodiments of a spacing arrangement in accordance with the invention. In the drawings:

Figure 1 is a perspective view of the spacer;

Figure 2 is a side view of the spacer;

Figure 3 is an elevation view of the spacer;

Figure 4 is an elevation view of a second embodiment of a spacer;

Figure 5 is a side view of the second embodiment of spacer;

[0055] Referring to the drawings and initially to Figures 1 to 3, there is shown a spacer indicated generally by the reference numeral 1 for insertion between a support surface of a structural support member being a vertical wall and a mutually opposing support surface of a mounting bracket of a building component mountable on the support surface of the structural support member. The spacer 1 having a compensation arrangement 2 for setting a non-parallel planar relationship between the support surface of the structural support member and the mutually opposing support surface of the mounting bracket of the building component.

[0056] Advantageously, where the planar surface of the structural support member for supporting the mounting arrangement of the building component is not plumb, one or more spacers 1 with compensation arrangements 2 can be utilised to compensate for the non-level surface of the structural support member. Alternatively, where the planar surface of the structural support member supporting the building component thereon is plumb, one or more spacers 1 with compensation arrangements 2 can

be utilised to set at least part of the building component off the level in an unloaded condition. As an example of where this initial off level mounting may be useful, brick slips are often attached to the underside/soffit of a masonry support member for aesthetic continuity. The brick slip support member is subsequently loaded with brick and this downward load of the bricks will cause a slight flex on the masonry support member altering the angle of inclination of the soffit portion of the masonry support member. If the soffit is initially set to be inclined upwardly at approximately the same angle of flex caused by downward moment of the bricks, the soffit will appear level in the loaded condition.

[0057] Advantageously, the compensating arrangement 2 of the spacer 1 compensates for off plumb or off level support surfaces where the off plumb/level support surface has to be converted to a level surface for at least part of the building component. Alternatively, the compensating arrangement 2 provides the technical functionality for producing an off plum or off level façade surface for the building component when the building component is mounted on a plumb/level support surface of the structural support component.

[0058] The building component is mounted to the support surface of the structural support member by intermediate mounting members provided by wall mounting brackets and a nut and bolt and washer assembly. The intermediate mounting members have a planar surface formed for sitting flush with the planar surface of the wall or now with this invention with the planar surface of the spacer 1. The intermediate mounting members are separable from the building component. The mutually opposing support surface is the surface of the mounting bracket normally mounted on the structural support member. The building component is a masonry support. The masonry support is a welded masonry support, a brick slip support, a bracket and shelf or any such masonry support wherein a bracket or similar intermediate mounting arrangement is utilized to support a masonry component.

[0059] The main planar surfaces 18 of spacer 1 have similar length and width dimensions to the surface 14 of the mounting bracket typically mounted with the structural support member. The spacer 1 is a generally quadrangular body having two longitudinal edges 19 joined by two lateral edges 21, 22. The spacer 1 has a non-uniform thickness along the body of the spacer 1. The spacer 1 has a reducing thickness between two opposite ends 21, 22 thereof. The spacer 1 has a reducing thickness along its longitudinal length. The rate of the reducing thickness is constant along the length or between the ends of the spacer 1. When mounted as illustrated in Figures 3, the spacer 1 has a reducing thickness from an upper end to a lower end or vice versa in use.

[0060] The spacer 1 has a wedge shape. The spacer 1 tapers from a thick end 22 to a thin end 21. The rate of the taper is constant along the length or between the ends 21, 22 of the spacer 1. The thick end 22 has a

thickness in a range of between 5-7 mm and the thin end 21 has a thickness in the range of between 1-3 mm. The length of the spacer is in the range of between 150 and 250 mm. The width of the spacer 1 is a range of between 20 -50 mm. The surface 18 of the spacer 1 is uneven. Advantageously, this reduces slippage between the spacer/shim 1 and components which are in contact with these uneven surfaces 18. The surfaces 18 of the spacer illustrated are ribbed. The ribbed surfaces 18 allow for greater grip between the spacer 1 and the surface contactable with the ribbed surface 18. The ribs extend transverse the spacer generally perpendicular to the longitudinal axis of the spacer. The surfaces 18 of the spacer 1 which are uneven is the two main planar surfaces 18 which will be in contact with the surface 12 of the structural support member 13 and the mutually opposing surface 14 of the mounting bracket 5 of the building component 15 or with an adjacent spacer 1.

[0061] The spacer 1 is manufactured from a material capable of resisting compressive loading. The loads acting on the building component can be in the range of 6 to 16 kn/m. The spacer material is a material capable of reducing thermal bridging. The spacer material is a material is also capable of preventing bi-metallic corrosion and/or galvanic corrosion. The spacer material is preferably nylon. The spacers are moulded to allow accuracy of the taper angle and to ensure reproducibility of a consistent taper angle.

[0062] The spacer is designed to transfer the load between the support structure and the building component and/or bracket thereof evenly along the length of the building component and/or bracket. The spacer is rotatable through 180 degrees to allow for the spacer to work upside down. This allows the spacer to compensate for a surface with various types of surface inclines off plumb such as where the surface is inclined forward from the vertical or where the surface is inclined backwards from the vertical.

[0063] The spacer 1 illustrated in Figures 1 to 3 has an aperture 31 for suspending the spacer in a pre-determined orientation from a portion of the building component 15 or a fixture 3 thereof.

[0064] The suspension aperture 31 has a suspending portion 32 for suspending the spacer 1 from the building component 15 or a fixture 3 thereof and a movement restriction arrangement being the sides of the aperture 31 depending downwardly from the suspension portion 32 in use. The aperture 31 allows the spacer 1 to be turned upside down to allow the taper to work in both directions.

[0065] In Figure 4 and 5 of the drawings, there is shown a second embodiment of a spacer for a masonry support indicated generally by the reference numeral 41. The arrangement for suspending the spacer in a pre-determined orientation comprises an elongate slot 42 extending longitudinally from and through one lateral end 43 of the spacer proximal to the other lateral end 44 of the spacer 41. The elongate slot 42 has an arrangement 45

for reducing the width of the elongate slot. The arrangement 45 for reducing the width of the elongate slot 42 are provided on both sides of the slot 42. The arrangement 45 for reducing the width of the elongate slot 42 is two ribs 45 protruding into the space of the slot 42 provided on mutually opposing locations of the slot 42. The slot 42 extends along the length of the spacer 41 to allow for the vertical movement of the shim to suit the slope in the support structure.

[0066] Advantageously, the arrangement 45 for reducing the width of the gap of the elongate slot 42 provides two functions. In the event that the spacer 41 is accidentally knocked and caused to rotate through 180 degrees it will catch on the width reducing arrangement 45 preventing the spacer from falling off the support/mounting member. The spacers 41 are often being installed at a height and so this prevent the spacers 41 falling from a height and having to be retrieved or worse causing a health hazard as a falling object. Secondly, the width reducing arrangement 45 provide two upright mounting positions for the spacer 41 upside down from each other. The width reducing arrangement 45 reduces the width of the gap of the slot 42 to cause an interference fit between the width reducing arrangement 45 and the generally horizontal support member such as a bolt along which the spacer is generally sliding into position. The width reducing arrangement 45 causing sufficient resistance to the travel of the bolt or other support member so as to prevent the spacer being capable of moving past the bolt under its own weight. However, an operator can readily overcome the interference fit by manually applying pressure to push the spacer onto or to pull the spacing means off the bolt.

[0067] In relation to the detailed description of the different embodiments of the invention, it will be understood that one or more technical features of one embodiment can be used in combination with one or more technical features of any other embodiment where the transferred use of the one or more technical features would be immediately apparent to a person of ordinary skill in the art to carry out a similar function in a similar way on the other embodiment.

[0068] In the preceding discussion of the invention, unless stated to the contrary, the disclosure of alternative values for the upper or lower limit of the permitted range of a parameter, coupled with an indication that one of the said values is more highly preferred than the other, is to be construed as an implied statement that each intermediate value of said parameter, lying between the more preferred and the less preferred of said alternatives, is itself preferred to said less preferred value and also to each value lying between said less preferred value and said intermediate value.

[0069] The features disclosed in the foregoing description or the following drawings, expressed in their specific forms or in terms of a means for performing a disclosed function, or a method or a process of attaining the disclosed result, as appropriate, may separately, or in any

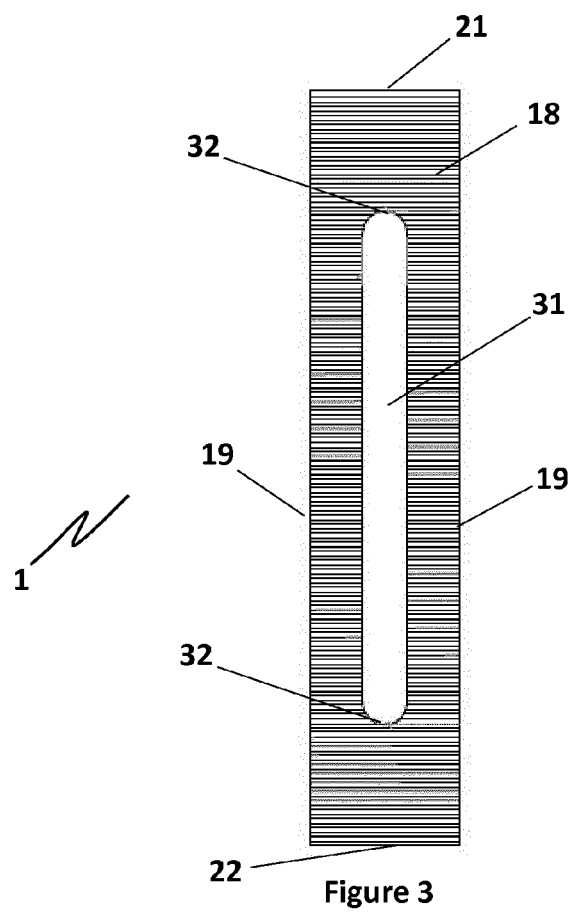
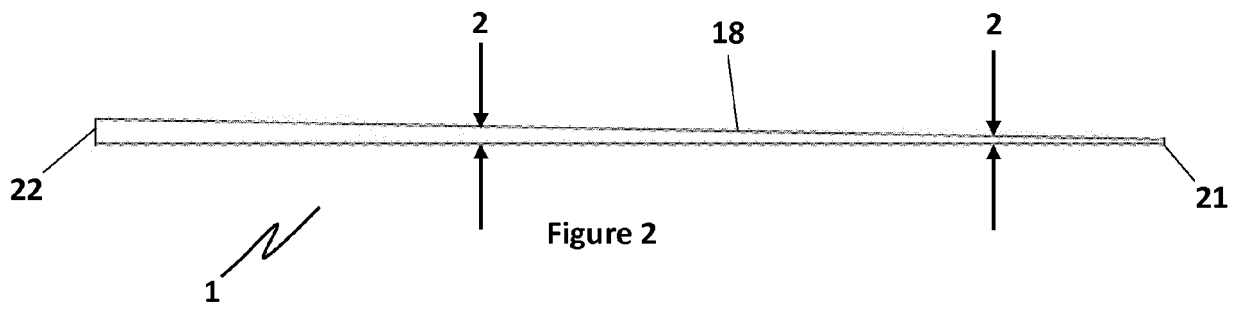
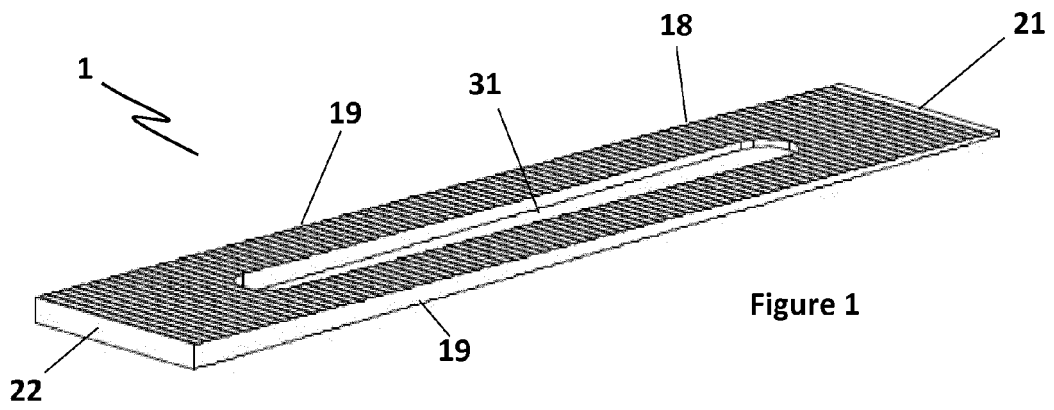
combination of such features be utilised for realising the invention in diverse forms thereof as defined in the appended claims.

Claims

1. A spacing means for insertion between a support surface of a structural support member and a mutually opposing support surface of a mounting means of a building component mountable on the support surface of the structural support member, the spacing means having compensation means for setting a non-parallel planar relationship between the support surface of the structural support member and the mutually opposing support surface of the mounting means of the building component.
2. A spacing means as claimed in claim 1, wherein the compensation means for setting a non-parallel planar relationship between the support surface of the structural support member and the mutually opposing support surface of the mounting means of the building component can be adapted to set a range of inclined angles from 1 to 4 degrees, most preferably 1.5 degrees.
3. A spacing means as claimed in claim 1 or claim 2, wherein the spacing means is similar in dimension to the surface of the mounting means typically contactable with the structural support member.
4. A spacing means as claimed in any one of the preceding claims, wherein the spacing means is a generally quadrangular spacing means having two longitudinal edges joined by two lateral edges.
5. A spacing means as claimed in any one of the preceding claims, wherein the spacing means has a non-uniform thickness along a body of the spacing means.
6. A spacing means as claimed in any one of the preceding claims, wherein the spacing means has a reducing thickness between two opposite ends of the spacing means.
7. A spacing means as claimed in any one of the preceding claims, wherein the spacing means has a reducing thickness along its longitudinal or lateral length.
8. A spacing means as claimed in any one of the preceding claims, wherein the spacing means has a wedge shape.
9. A spacing means as claimed in any one of the preceding claims, wherein the spacing means tapers

from a thick end to a thin end, the rate of the taper being constant along the length or between the ends of the spacing means.

10. A spacing means as claimed in any one of the preceding claims, wherein the surface of the spacing means is uneven, the surface of the spacing means which is uneven is the two main planar surfaces which are contactable with the surface of the structural support member and the mutually opposing surface of the building component or with an adjacent spacing means.
11. A spacing means as claimed in any one of the preceding claims, wherein the spacing means comprising means for suspending the spacing means in a pre-determined orientation from a portion of the building component or a fixture thereof.
12. A spacing means as claimed in claim 11, wherein the suspension means having at least one suspending portion for suspending the spacing means from the building component or a fixture thereof and movement restriction means depending downwardly from the suspension portion on both sides of the suspension portion so as to be locatable around both sides of the portion of the building component or mounting means thereof.
13. A spacing means as claimed in claim 11 or claim 12, wherein the means for suspending the spacing means comprises an aperture within the body of the spacing means.
14. A spacing means as claimed in any one of claims 11 to 13, wherein the means for suspending the spacing means in a pre-determined orientation comprises an elongate slot extending longitudinally from and through one end of the spacing means proximal to the other end of the spacing means.
15. A spacing means as claimed in claim 14, wherein the elongate slot has means for reducing the width of the elongate slot gap.



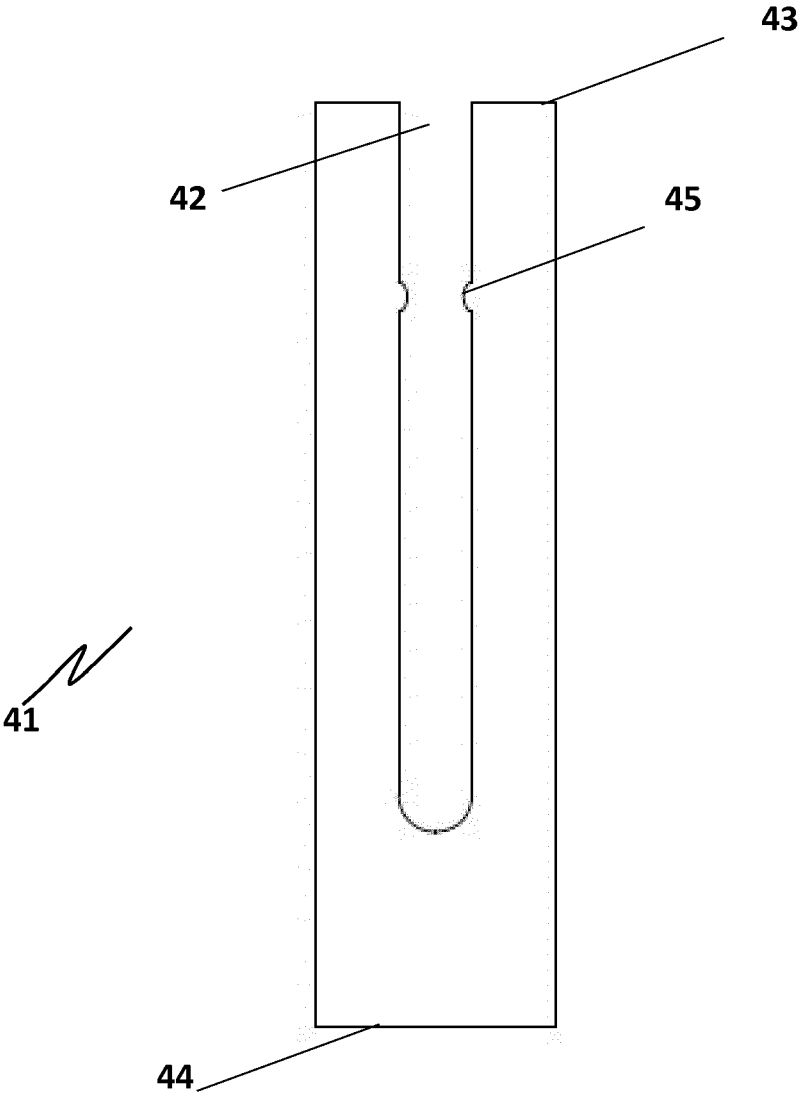


Figure 4

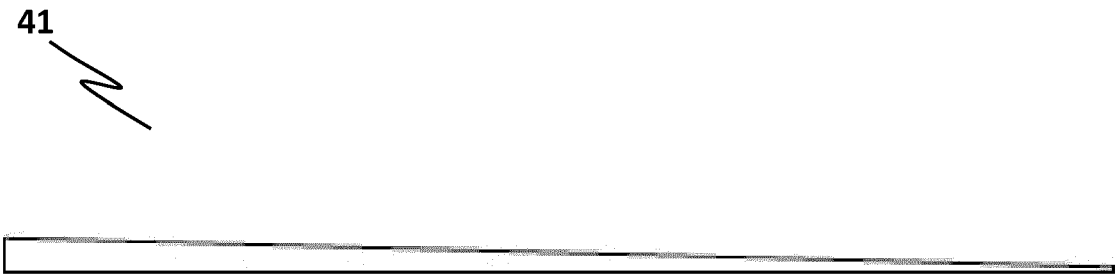


Figure 5



EUROPEAN SEARCH REPORT

Application Number
EP 16 15 9055

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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X	FR 2 625 244 A1 (BONNIVARD GUY [FR]) 30 June 1989 (1989-06-30) * page 6, line 32 - page 7, line 25; figures 1-3 *	1-15	
X	FR 2 846 362 A1 (GOETTGENS HENRI [FR]) 30 April 2004 (2004-04-30) * page 4, line 27 - page 5, line 26; figure 1 *	1-15	
X	EP 0 719 953 A2 (RATHSACK WOLFGANG [DE]) 3 July 1996 (1996-07-03) * column 1, line 56 - page 3, line 7; figures 1-8 *	1-15	
X	EP 0 171 545 A1 (NIEMANN HANS DIETER) 19 February 1986 (1986-02-19) * page 5, line 18 - page 9, line 11; figures 1, 2 *	1-15	TECHNICAL FIELDS SEARCHED (IPC) E06B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 1 July 2016	Examiner Couprie, Brice
CATEGORY OF CITED DOCUMENTS 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		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 & : member of the same patent family, corresponding document	

EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 16 15 9055

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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01-07-2016

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