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(54) **Panel and frame for a sectional door, sectional door and profile**

(57) Panel (4) for a sectional door (1), and this panel (4) has a front (5), a back (9) and sides (7), whereby a side (7), in the order from the back (9) to the front (5), has a first part (12) that makes an included angle (α) of a maximum of 90° with the back (9), has a second part (13) that makes a smaller included angle than the first part (12) with the back (9) or is parallel to it, and has a third part (14) that makes an included angle (β) with the front that is at least 90° and which makes an angle with the second part (13) that is at least 90°, whereby the first, second and third part (12,13,14) extend in a vertical direction.

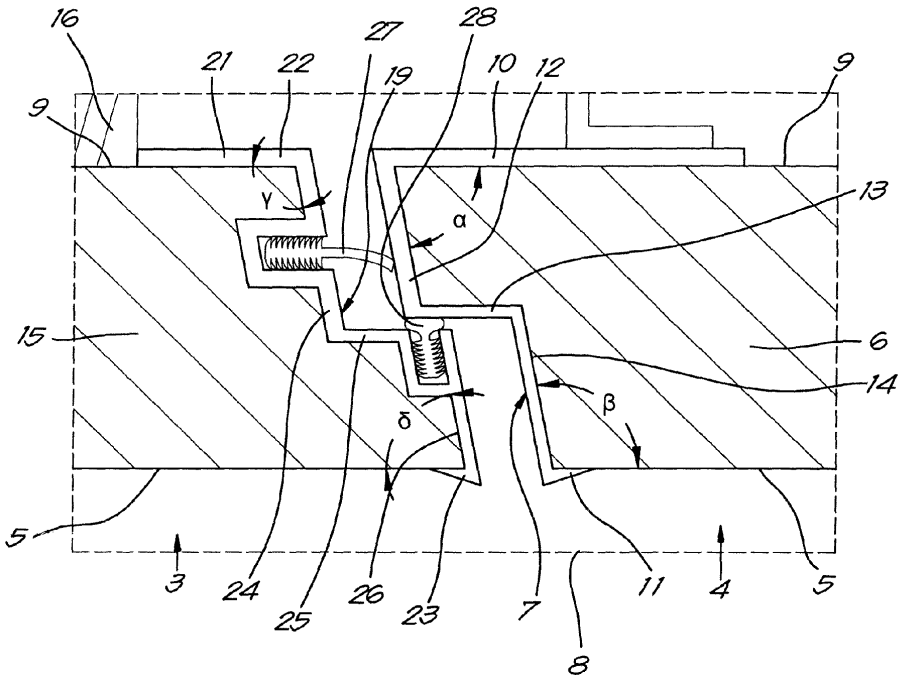

Fig.3

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Description

[0001] The present invention relates to a panel and a frame for a sectional door, a sectional door, and a profile.

[0002] More specifically the invention concerns sectional doors, i.e. doors with a number of horizontal panels that can be pulled upwards to open the door and which can then be let down again or pushed down to close the door.

[0003] Such sectional doors generally consist of a frame that is placed in or behind a wall and in which the panels fit when the door is closed.

[0004] Such sectional doors are generally designed and/or installed such that if the panels are opened from a closed position, they are pulled upwards, but also move somewhat in the direction towards the inside of the door, i.e. in the direction of the space that is closed off by the door. This can be achieved, for example, by making the plane, in which the panels are located when the sectional door is closed, slope slightly inwards.

[0005] The closing of such a door occurs in the reverse, whereby during the largest part of the closing movement the panels move with relatively little friction and in the last phase of closing are somewhat pushed outwards against a seal provided to this end.

[0006] It goes without saying that the sectional door must hereby satisfy preconditions relating to sound insulation and thermal insulation, such that a good seal is necessary. A conventional sectional door with very good insulating properties is described in EP 2426309, for example.

[0007] The disadvantage of such known doors is that an embodiment in which the outer surface of the frame and the panels are in the same plane when the door is closed is not possible, because the seal would then be insufficient, while it is architecturally desirable to be able to form a completely flat facade with a sectional door.

[0008] The purpose of the present invention is to provide a solution to the aforementioned and other disadvantages, by providing a panel for a sectional door, whereby the panel has a front, a back and two sides, whereby at least one of the sides, in the order from the back to the front, has a first part that makes an included angle of a maximum of 90° with the back, has a second part that makes a smaller included angle than the first part with the back or is parallel to it, and has a third part that makes an included angle with the front that is at least 90° and which makes an included angle with the second part that is at least 90°, whereby the first, second and third part extend in a vertical direction.

[0009] The front of the panel is hereby the side which, with a closed sectional door, is oriented towards the outside. The back is hereby the side that is oriented towards the inside.

[0010] The back is also the side on which the components of the door are located, such as hinges, motor and guide rails, that are necessary to enable a movement of the panels.

[0011] Such a panel, together with a complementary frame, enables a sectional door to be made in which the surface of the frame and the panels are in the same plane.

[0012] Thanks to the second part in particular, good thermal and sound insulation is possible because this second part, during a closing movement, is pushed against a seal with some pressure so that the seal can function well.

[0013] In a preferred embodiment both sides have such a first part, second part and third part, so that the advantage can be obtained on both sides.

[0014] Preferably the first part, second part and third part are straight, viewed in a horizontal cross-section.

[0015] Preferably the first part and the third part are also parallel to one another.

[0016] In a further preferred embodiment the second part is parallel to the back or it makes an included angle with the back that is less than 10°.

[0017] In this way a seal at the location of the second part is pressed to the maximum.

[0018] In another further preferred embodiment the first part and/or the third part make an included angle with the back that is between 75° and 89°.

[0019] This has the advantage over a conventional side that is at an angle of 90° to the back, that when using a sidelong seal, which acts on the first and/or third part, the panel is pressed well against this seal, so that a better seal is obtained.

[0020] In a further preferred embodiment the panel has a top, which, in the order from the back to the front, has a first part that makes an included angle of a maximum of 90° with the back, has a second part that makes a smaller included angle than the first part with the back or is parallel to it, and has a third part that makes an included angle with the front that is at least 90° and which makes an included angle with the second part that is at least 90°, whereby the first, second and third part extend in the horizontal direction.

[0021] In this way, analogous to the sides, a construction is obtained at the top in which the surface of the panels and the frame are in the same plane and which can nevertheless be well sealed.

[0022] In another further preferred embodiment the panel comprises a panel body on which an open profile is affixed on the sides and/or top that have such a first part, second part and third part, whereby the first part, second part and third part are formed by the profile.

[0023] This is a practical way to make such a panel, whereby, when the shape of the vertical cross-section of the top is the same as the shape of the horizontal cross-section of the sides, only one type of profile is needed to be able to make both the top and the sides.

[0024] The invention also concerns a frame for a sectional door, and this frame has a front and a back and a top and two sides that are intended to fit to one or more panels of the sectional door, whereby at least one of the sides and/or the top, in the order from the back to the front, has a first part that makes an included angle of at

least 90° with the back, has a second part that makes a larger included angle with the back or is parallel to it, and has a third part that makes an included angle with the front that is a maximum of 90° and that makes an included angle with the second part that is at least 90°, whereby the first, second and third part extend in the direction in which the side concerned or top extends.

[0025] Such a frame complementary to the panels described above is necessary to fully realise the advantages of the invention.

[0026] Preferably the frame has one or more of the following characteristics:

- the second part fits to the first part and the third part fits to the second part,
- the first part fits to the back and the third part fits to the front,
- both sides have such a first, second and third part,
- the first part, second part and third part are straight in a horizontal cross-section when it is a side, and in a vertical cross-section when it is the top,
- the second part is parallel to the back or makes an included angle with the back that is greater than 170° and/or
- the first part and the third part make an included angle with the back that is between 91° and 105°.

[0027] In a further preferred embodiment of the frame the first part is provided with a first seal and the second part is provided with a second seal.

[0028] In this way a good seal of a sectional door that is formed from such a frame is obtained.

[0029] In another further preferred embodiment the sides and/or top that have such a first part, second part and third part are formed by an open profile that has such a first part, second part and third part, which is a practical method for making such a frame.

[0030] The invention further concerns an open profile for forming a side and/or top of a panel as described above and/or a side and/or top of a frame as described above.

[0031] An open profile means a profile that has an opening along which it can be slid over another component, and this in contrast to a box profile or tubular profile for example, which is a closed profile.

[0032] The invention further concerns a sectional door that comprises a frame according to the invention and at least one panel according to the invention, whereby the shape of the top of the frame is complementary to the shape of the top of the top panel, and whereby the shape of the sides of the frame is complementary to the shape of the sides of the panel or the panels.

[0033] With the intention of better showing the characteristics of the invention, a preferred embodiment of a sectional door according to the invention is described hereinafter by way of an example, without any limiting nature, with reference to the accompanying drawings, wherein:

Figure 1 schematically shows an outside view of an installed sectional door according to the invention, in a closed position;

Figure 2 shows a cross-section according to the line II-II when the sectional door is closed; and

Figure 3 shows the part of figure 2 indicated by F3 on a larger scale.

[0034] The sectional door 1 of figures 1 to 3 primarily consists of a frame 3 installed in a wall 2 and a number of panels 4, in this case four, placed above one another and connected to one another. Figure 1 shows the outside of the door, which is also called the front 5, both of the frame 3 and the panels 4.

[0035] As is particularly clear from figures 2 and 3, the panels are formed from hollow panel bodies 6 filled with foam, which are closed off at their ends, which form the sides 7 of the panels 4, by means of a panel profile 8. This panel profile 8 is straight and extends in the direction of the sides 7, thus vertically in this example.

[0036] The panel profile 8 is an open profile, i.e. it is open on one side so that it can easily be placed over a panel body 6.

[0037] The shape of the panel profile 8 hereby defines the shape of the sides 7 of the panels 4.

[0038] At the back 9 of a panel 4, i.e. the side oriented towards the inside, the panel profile 8 has a rear part 10 that is straight and is affixed on the panel body 6 and which runs parallel to the back 9 of the panel 4. On the front 5 the panel profile 8 is provided with a lip 11, which drops around the front 5 of the panel body 6.

[0039] At the side 7 of the panel 4, between the rear part 10 and the lip 11, the panel 4 has a form in three parts. These are, successively from the rear part 10 to the lip 11, a first part 12 that makes an included angle α of 83° with the back 9 of the panel 4, a second part 13 that is parallel to the front 5 and back 9 of the panel 4 and a third part 14 that is parallel to the first part 12 and which thereby makes an included angle β of 97° with the front.

[0040] The frame 3 is partly, in any case on its front 5, thus the side oriented towards the outside, manufactured from frame parts 15 that match the panel bodies 6, which however are of course much narrower than the panel bodies 6 and which are immovably mounted.

[0041] In this way the entire sectional door 1 presents a homogeneous visual image. The fact that the front 5 of the panels 4 and the frame 3 are placed in the same plane V, and are also placed in the same plane as the outside of the wall 2, contributes to this.

[0042] A supporting post 16 with a guide rail 17 is mounted behind the frame parts 15. On the back 9 a wheel 18 is mounted on the panels 4 that is held in the guide rail 17, so that the guide rail 17 can guide movements of the panels 4, such as when opening or closing the sectional door 1.

[0043] To form the sides 19 and top 20 of the frame 3, they are provided with a frame profile 21, that is also open.

[0044] The frame profile 21 has a rear part 22 that is straight and is fastened to the back 9 of the frame parts 15. On the front 5 the frame profile 21 is provided with a lip 23, that drops around the front 5 of the frame 3.

[0045] The side 19 of the frame 3, between the rear part 19 and the lip 23, has a form in three parts. They are successively, viewed from the rear part 22 to the lip 23, a first part 24 that makes an included angle γ of 97° with the back of the frame, a second part 25 that is parallel to the front 5 and back 9 of the frame 3 and a third part 26 that is parallel to the first part 24 and which thereby makes an included angle δ of 83° with the front.

[0046] The sides 19 of the frame 3 are thereby primarily complementary to the shape of the sides 7 of the panels 4.

[0047] The first part 24 of the side 19 of the frame 3 is provided with a first seal 27, which, in a closed position of the sectional door, is pressed against the first part 12 of the sides 7 of the panels 4. The second part 25 of the side 19 of the frame is provided with a second seal 28, which, in a closed position of the sectional door 1, is pressed against the second part 13 of the sides 7 of the panels 4.

[0048] Both seals 27, 28 are fastened in a groove provided to this end in the part 24, 25 concerned of the frame profile 21.

[0049] The top of the top panel 4 is provided with the same panel profile 8 as the sides 7 of the panels 4. The top 20 of the frame 3, i.e. the edge of the frame 3 that is oriented downwards and towards the top of the top panel 4, is provided with the same frame profile 21 as the sides 19 of the frame 3.

[0050] In this way the same effect is obtained at the top of the frame 2 as at the sides 19.

[0051] Because the front 5 of the panels 4 have smaller dimensions than at their back 9, the sectional door 1 can easily be opened by a primarily upward but also partially backward movement of the panels 4, whereby panels 4 come away from the seals 27, 28 and can be closed again by a reverse movement.

[0052] The present invention is by no means limited to the embodiments described as an example and shown in the drawings, but a panel, frame and sectional door according to the invention can be realised in all kinds of forms and dimensions, without departing from the scope of the invention.

Claims

1. Panel (4) for a sectional door (1), whereby the panel (4) has a front (5), a back (9) and two sides (7), **characterised in that** at least one of the sides (7), in the order from the back (9) to the front (5), has a first part (12) that makes an included angle (α) of a maximum of 90° with the back (9), has a second part (13) that makes a smaller included angle than the first part (12) with the back (9) or is parallel to it, and has a third part (14) that makes an included angle (β) with the front that is at least 90° and which makes an included angle with the second part (13) that is at least 90°, whereby the first, second and third part (12,13,14) extend in a vertical direction.

2. Panel according to claim 1, **characterised in that** the sectional door is a sectional door that is provided with panels coupled together that can be moved by means of guide wheels in a complementary guide rail, whereby the panel is provided with such guide wheels.

3. Panel according to claim 1 or 2, **characterised in that** the second part (13) fits to the first part (12) and the third part (14) fits to the second part (13), whereby the transition between the second and the third part is closer to the middle of the panel than the transition between the first part and the second part.

4. Panel according to any one of the previous claims, **characterised in that** the first part (12) fits to the back (9) and the third part (14) fits to the front (5).

5. Panel according to any one of the previous claims, **characterised in that** the second part (13) is parallel to the back (9) or makes an included angle with the back (9) that is less than 10°.

6. Panel according to any one of the previous claims, **characterised in that** the first part (12) and/or the third part (14) makes or make an included angle (α) with the back (9) that is between 75° and 89°.

7. Panel according to any one of the previous claims, **characterised in that** the panel (4) has a top, whereby the shape of the vertical cross-section is the same as the shape of the horizontal cross-section of the sides (7).

8. Panel according to any one of the previous claims, **characterised in that** it comprises a panel body (6) on which an open profile (8) is affixed to the sides (7) and/or top that have such a first part (12), second part (13) and third part (14), whereby the first part (12), second part (13) and third part (14) are formed by the profile (8).

9. Frame (3) for a sectional door (1), that has a front (5) and a back (9) and a top (20) and two sides (19) that are intended to fit to one or more panels (4) of the sectional door (1), **characterised in that** at least one of the sides (19) and/or the top (20), in the order from the back (9) to the front (5), has a first part (24) that makes an included angle (γ) of at least 90° with the back (9), has a second part (25) that makes a larger included angle with the back (9) or is parallel to it, and has a third part (26) that makes an included angle (δ) with the front (5) that is a maximum of 90°

and that makes an included angle with the second part (25) that is at least 90°, whereby the first, second and third part (24,25,26) extend in the direction in which the side (19) concerned or top (20) extends.

10. Frame according to claim 9, **characterised in that** the second part (25) fits to the first part (24) and the third part (26) fits to the second part (25), that the first part (24) fits to the back (9) and the third part (26) fits to the front (5), that both sides (19) have such a first part (24), second part (25) and third part (26), and that the first part (24), second part (25) and third part (26) are straight in a horizontal cross-section when it is a side (19) and in a vertical cross-section when it is the top (20).

11. Frame according to claim 9 or 10, **characterised, in that** the second part (25) is parallel to the back (9) or makes an included angle with the back (9) that is larger than 170° and that the first part (24) and the third part (26) make an included angle (γ) with the back (9) that is between 91° and 105°.

12. Frame according to any one of the claims 9 to 11, **characterised in that** the frame (3) is provided with a first seal (27) on the first part (24) of the side and a second seal (28) on the second part (25) of the side (19).

13. Frame according to any one of the claims 9 to 12, **characterised in that** the sides (19) and/or top (20), that have such a first part (24), second part (25) and third part (26), are formed by an open profile (21) that has such a first part (24), second part (25) and third part (26).

14. Open profile (8,21) to form a side (7) and/or top of a panel (4) according to claim 8 and/or a side (19) and/or top (20) of a frame (3) according to claim 13.

15. Sectional door (1) that comprises a frame (3) according to any one of the claims 9 to 13 and at least one panel (4) according to any one of the claims 1 to 8, whereby the shape of the top (20) of the frame (3) is complementary to the shape of the top of the top panel (4), and whereby the shape of the sides (19) of the frame (3) is complementary to the shape of the sides (7) of the panel or the panels (4).

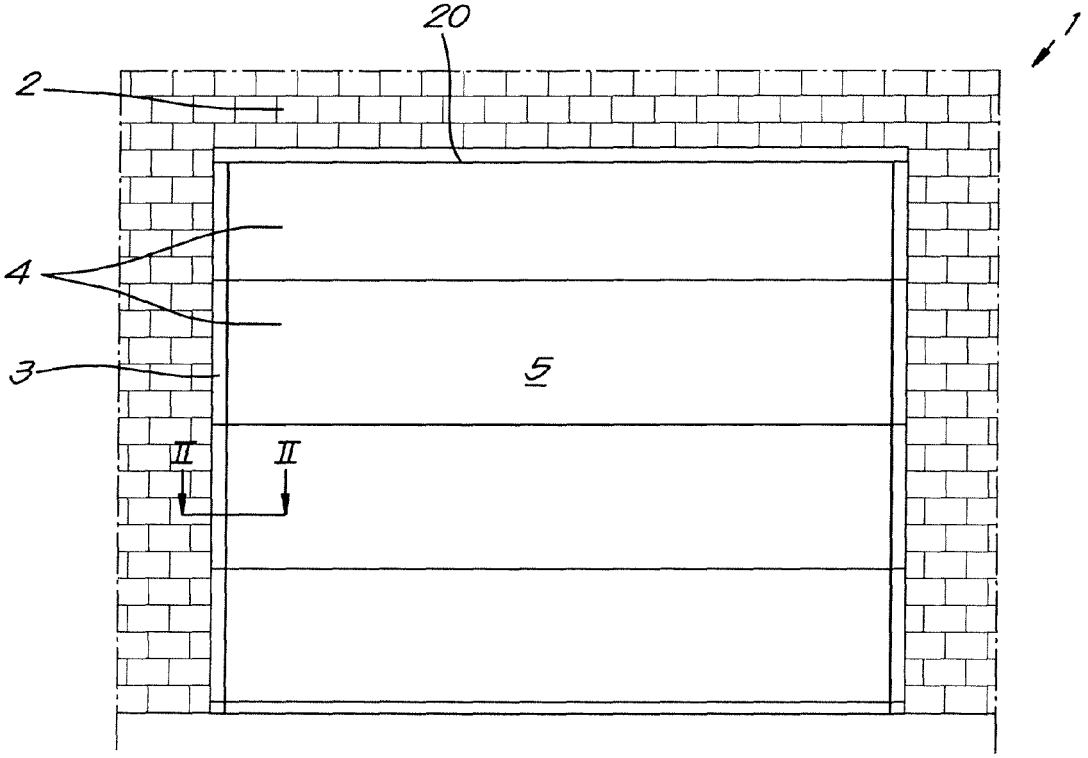

Fig. 1

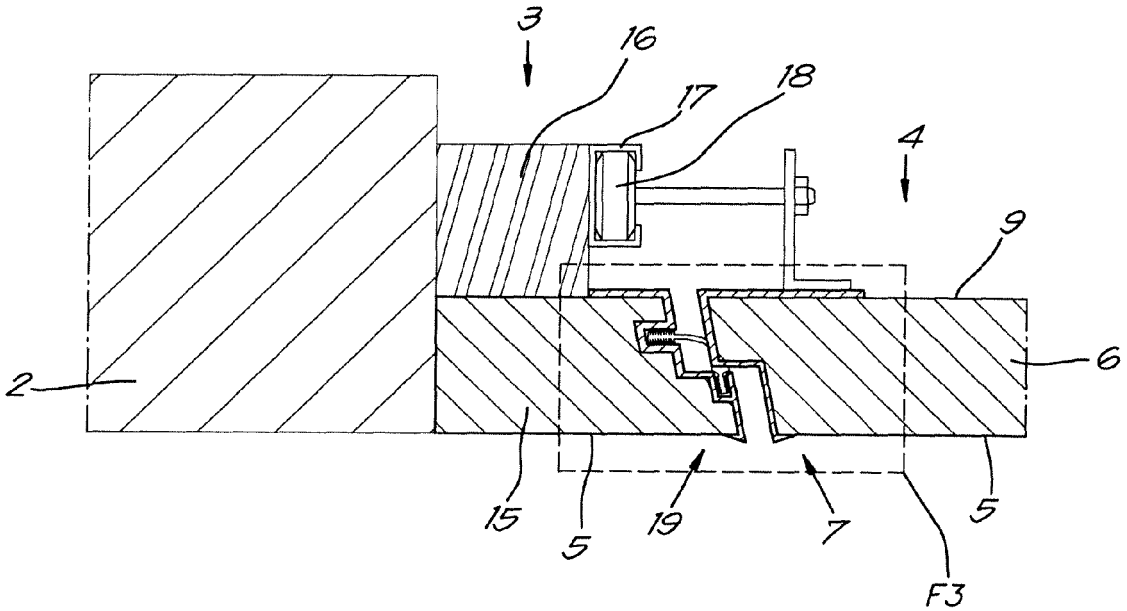

Fig. 2

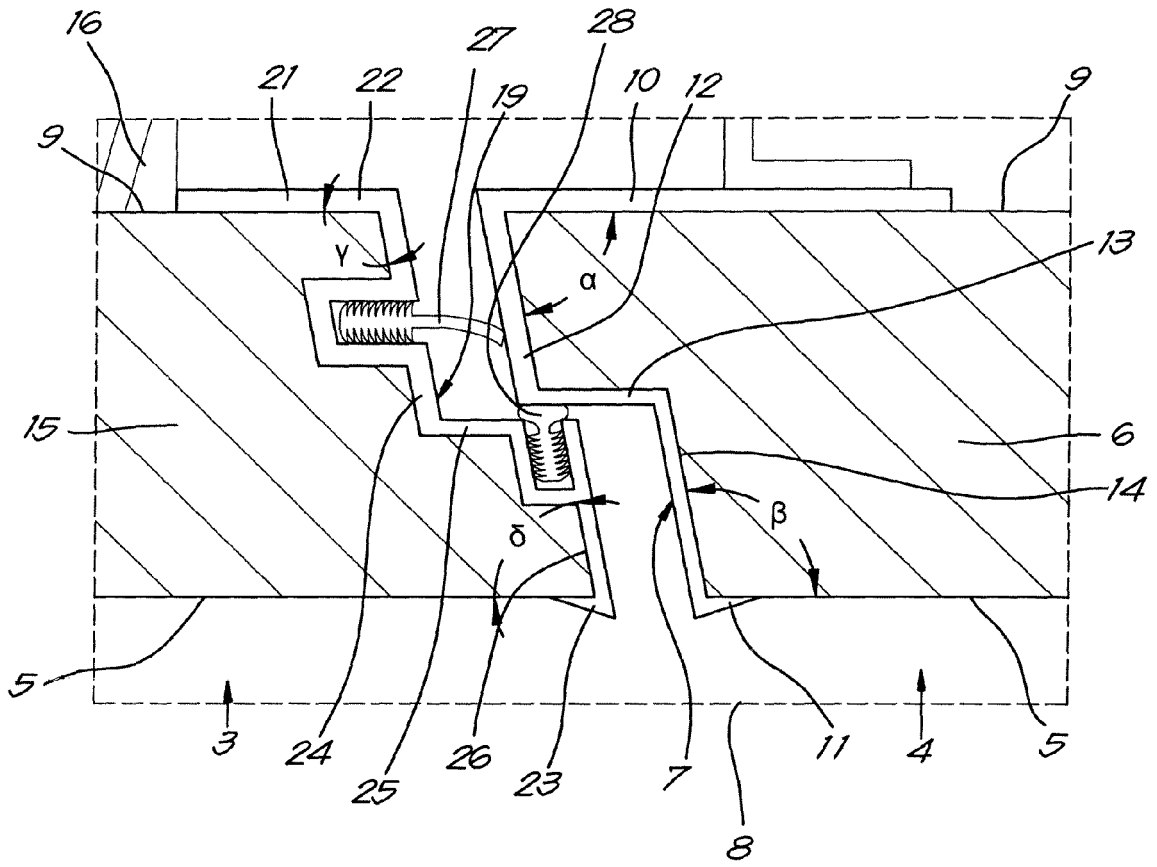

Fig.3

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EUROPEAN SEARCH REPORT

Application Number
EP 13 00 5779

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 A	US 3 980 123 A (VAGO LOUIS N) 14 September 1976 (1976-09-14) * figures 1,4,5,10-13 *	1-6,8-14 15	INV. E06B3/48 E06B9/58
X	US 3 525 661 A (JACKSON ROBERT GLOVER) 25 August 1970 (1970-08-25) * figures 1-10 *	1-7	
X	EP 0 235 330 A1 (HEINEMANN W GMBH & CO KG [DE]) 9 September 1987 (1987-09-09) * column 5, line 28 - line 38; figure 3 *	14	

TECHNICAL FIELDS SEARCHED (IPC)
E06B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	27 February 2014	Jülich, Saskia

CATEGORY OF CITED DOCUMENTS

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27-02-2014

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 3980123 A	14-09-1976	NONE	
US 3525661 A	25-08-1970	BE 683105 A	01-12-1966
		GB 1052736 A	27-02-2014
		NL 6607193 A	29-12-1966
		NO 119700 B	22-06-1970
		US 3525661 A	25-08-1970
EP 0235330 A1	09-09-1987	AT 49168 T	15-01-1990
		DE 3667949 D1	08-02-1990
		EP 0235330 A1	09-09-1987

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 2426309 A **[0006]**