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(54) Method for assembling a reinforcement onto the faceplate of a refrigerator, freezer or the like

(57) A method for assembling a metal reinforcement member (6, 6a) onto a specific profiled sheet metal part (1, 1a), known as a faceplate, of a refrigerator, freezer or a similar appliance, to enable a hinge for the appliance door to be securely connected, assembly being achieved by mutual snap-engagement between first means (14, 14a, Z, 26) and second means (11, 11a, 11b, 28) provided one in the metal reinforcement member (6, 6a, 6b, 24) and the other in the faceplate (1, 1a, 1b, 21) (Figure 1).

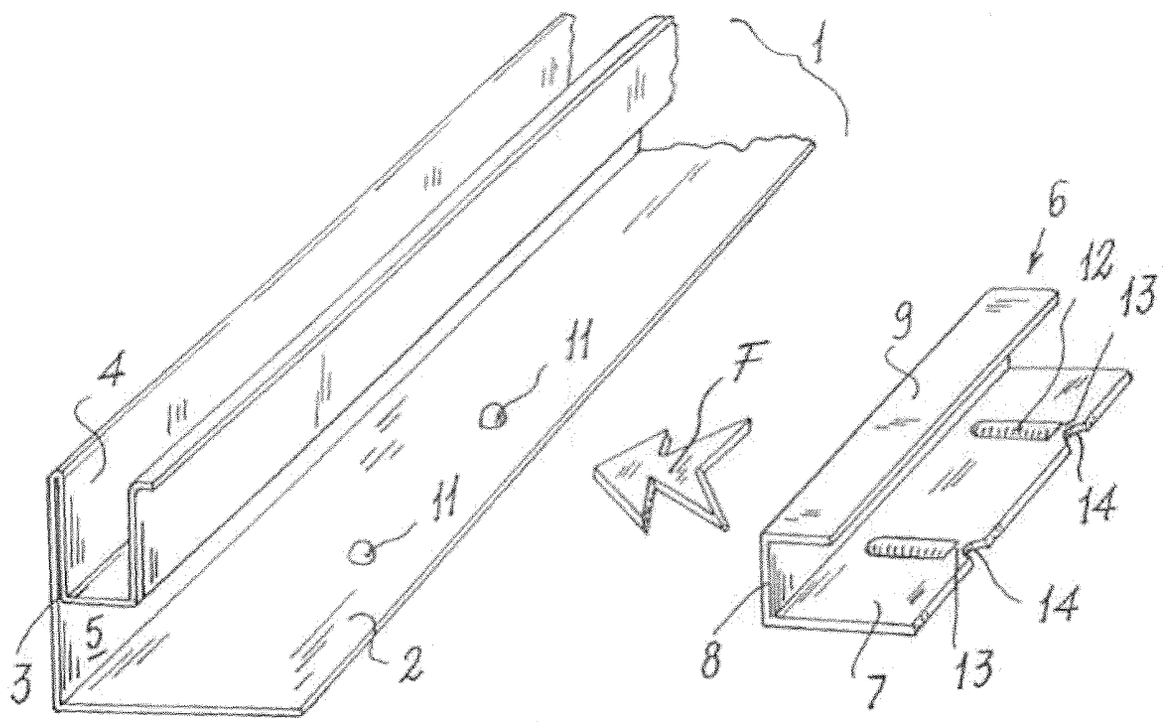

FIG. 1

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Description

[0001] The present invention relates to a method for assembling a metal reinforcement member onto a specific profiled sheet metal part, known as a faceplate, of a refrigerator, freezer or similar appliances, to enable a hinge for the appliance door to be securely connected.

[0002] Said appliances are provided with at least one door hinged to the appliance casing by hinges which are fixed to the casing at the relative faceplate or faceplates. Considering the high stresses to which the hinges are subjected (they have to withstand the weight both of the door and of the door contents), a reinforcement consisting of a profiled piece of sheet metal of adequate thickness must be fixed to the faceplate.

[0003] The fixing method generally used is to position the reinforcement at a dedicated point on the faceplate, attach it temporarily to this latter, spot weld the reinforcement and faceplate together, then remove the temporary attachment.

[0004] This method works well in terms of the result, but represents a costly step (in terms of time, equipment, labour, etc.) within the entire production cycle.

[0005] An object of the present invention is therefore to make assembly of the reinforcement and faceplate easier, quicker and cheaper, without using welding (of which the intrinsic drawbacks are well known) and without the need to temporarily attach the two components together in the required position.

[0006] This and further objects which will be apparent from the ensuing detailed description are attained by an assembly method in accordance with the technical teachings of the accompanying claims.

[0007] The invention will be more apparent from the following detailed description, provided by way of non-limiting example, of preferred embodiments thereof illustrated in the accompanying drawings, in which:

Figure 1 is a perspective view, before being assembled together, of a faceplate (partly reproduced) and the reinforcement to be associated with it;

Figure 2 is a perspective view of the assembled faceplate and reinforcement;

Figure 3 is a section through the assembly means on termination of assembly;

Figure 4 is a perspective view of the faceplate and reinforcement during assembly, but provided with a variant of the assembly means;

Figure 5 is a section (similar to Figure 3) of the variant of the assembly means on termination of assembly;

Figure 6 is a perspective view of the faceplate and reinforcement during assembly, but provided with a further variant of the assembly means;

Figure 7 is a perspective view of the assembled faceplate and reinforcement of Figure 6;

Figure 8 is a perspective view of a different version of the faceplate and reinforcement before their assembly.

[0008] With initial reference to Figures 1, 2, 3, the reference numeral 1 indicates a faceplate formed from a sheet metal profile bar having a base side 2, a front side 3 at 90° to the base side, and a channel part 4 to the side of the front side 3 and involving only a fraction (the upper fraction) of the front side 3 to hence obtain in the faceplate a longitudinal groove 5 within which the reinforcement 6, of substantially the same height, is to be located.

[0009] The reinforcement 6 is formed from a piece of U-shaped robust sheet metal having a base side 7, a front side 8 at 90° to the base side, and a right-angled third side 9 having a width less than that of the base side 7. Holes 10 are provided in the front side for fixing a conventional hinge, not shown, by screws.

[0010] According to the invention, the two components (faceplate and reinforcement) are provided with means for snap-fitting them together, making the use of spot welding, with all its contingent disadvantages and drawbacks, superfluous.

[0011] Specifically, with regard to the embodiment of Figures 1, 2 and 3, two bosses 11 are formed on the base side 2 of the faceplate 1 by pressing in predetermined positions and at a predetermined distance apart, while on the base side 7 of the reinforcement 6 two outwardly projecting rectilinear parallel groove-type guides (see Figure 3) indicated by 12 are formed, again by pressing, in predetermined positions and at a distance apart equal to that of the bosses 11, followed, aligned therewith, by a notch or recess 14 after a connection piece 13.

[0012] For assembly, which can be easily automated, the reinforcement 6 is rested with its base side 7 on the base side 2 of the faceplate, precisely such that each boss 11 of this latter penetrates into a guide 12 in the reinforcement. The reinforcement is then thrust totally in the direction of the arrow F to cause the bosses, by virtue of the intrinsic elasticity of the sheet metal, to pass beyond the connection pieces 13 where they snap into the notches or recesses 14, to settle therein. Stable and precise assembly of the parts is hence achieved, such as to bring the walls 8 and 3 of the two components into mutual contact, as can be seen in Figure 2, with the reinforcement hence engaging in the groove 5 of the faceplate.

[0013] A first variant is shown in Figures 4 and 5.

[0014] In these figures, parts equal or corresponding to those already described are indicated by the same reference numerals associated with the letter "a". In practice, the covered guides 12 are replaced by long holes 12a.

[0015] Figure 4 shows the step in which the bosses 11 a are still within the guides, i.e. in this case within the long holes 12a.

[0016] The invention also evidently includes solutions in which the bosses 11, 11a are formed in the lower side

7, 7a of the reinforcement 6, with the guides 12, 12a and corresponding notches or recesses 14, 14a being formed in the base wall 2, 2a of the faceplate 1, 1a.

[0017] Two further variants are shown in Figures 6, 7 and in Figure 8 respectively.

[0018] In Figures 6, 7, equal or corresponding parts are indicated by the same reference numerals associated with the letter "b". The variant of these figures can be used for faceplates of different dimensions and for right or left handed mounting. The faceplate 1b presents on its base side 2b two circular bosses 11 b (similar to the version of Figures 1, 2, 3) and a rectilinear boss 20 (similar to the guide 12 of Figure 3, which however is provided on the lower flange of the reinforcement), while the reinforcement 6b presents a pair of spaced-apart rectilinear parallel slots 21 in its lower flange 7b. Figure 7 shows the assembly of the reinforcement 6b to the faceplate 1b, in which the bosses 11b snap-engage into a side Z of the reinforcement to retain it against the wall 3b of the faceplate, while the rectilinear boss 20 prevents transverse movements and acts as a guide during assembly. Notches similar to the notches 14 (Figure 1) can be provided in the side Z where the bosses 11 b engage.

[0019] Figure 8 shows a different faceplate, indicated by 21, having a channel-shaped part 22 along parallel opposing sides. The faceplate 24, which in this case is of U-shape, is mounted in the interspace defined between the ends 23 of the channel-shaped parts. Two holes 26 are provided in the flanges 25 of the U to be snap-engaged by corresponding bosses 28, emerging from (formed in) the ends 23. Holes 29 are provided for mounting the hinges.

Claims

1. A method for assembling a metal reinforcement member (6, 6a) onto a specific profiled sheet metal part (1, 1a), known as a faceplate, of a refrigerator, freezer or a similar appliance, to enable a hinge for the appliance door to be securely connected, **characterised in that** assembly is achieved by mutual snap-engagement between first means (14, 14a, Z, 26) and second means (11, 11a, 11b, 28) provided one in the metal reinforcement member (6, 6a, 6b, 24) and the other in the faceplate (1, 1a, 1b, 21).

2. A method as claimed in claim 1, wherein the first means (14, 14a) are represented by recesses and the second means (11, 11a) by projections arranged to settle into said recesses.

3. A method as claimed in the preceding claims, wherein the recesses (14, 14a) are associated with rectilinear guides (12, 12a) for the projections (11, 11 a).

4. A method as claimed in the preceding claims, wherein the recesses (14, 14a) are separated from the associated rectilinear guides (12, 12a) and are aligned with said guides.

5. A method as claimed in the preceding claims, wherein the recesses (14, 14a) and the associated rectilinear guides (12, 12a) are provided in a side (7, 7a) of the faceplate, the projections being provided on a side (2, 2a) of the faceplate (1, 1a), this latter side acting as a support for the reinforcement (6, 6a).

6. A method as claimed in the preceding claims, wherein the rectilinear guides (12, 12a) are depressions or long holes.

7. A method as claimed in claim 1, wherein the first means (Z) are represented by a free edge of a side (7b) of the reinforcement (6b), said reinforcement presenting at least one open ended slot (21) arranged to cooperate with a rectilinear boss (20) present on a side (2b) of the faceplate, said second means (11 b) being provided on said side (2b).

8. A method as claimed in claim 1, wherein the first means (26) are represented by holes present in parallel opposing sides (25) of the reinforcement (24), the second means (28) being represented by corresponding bosses (28) provided on the facing ends (23) of channel-shaped parts (22) present in the faceplate (21).

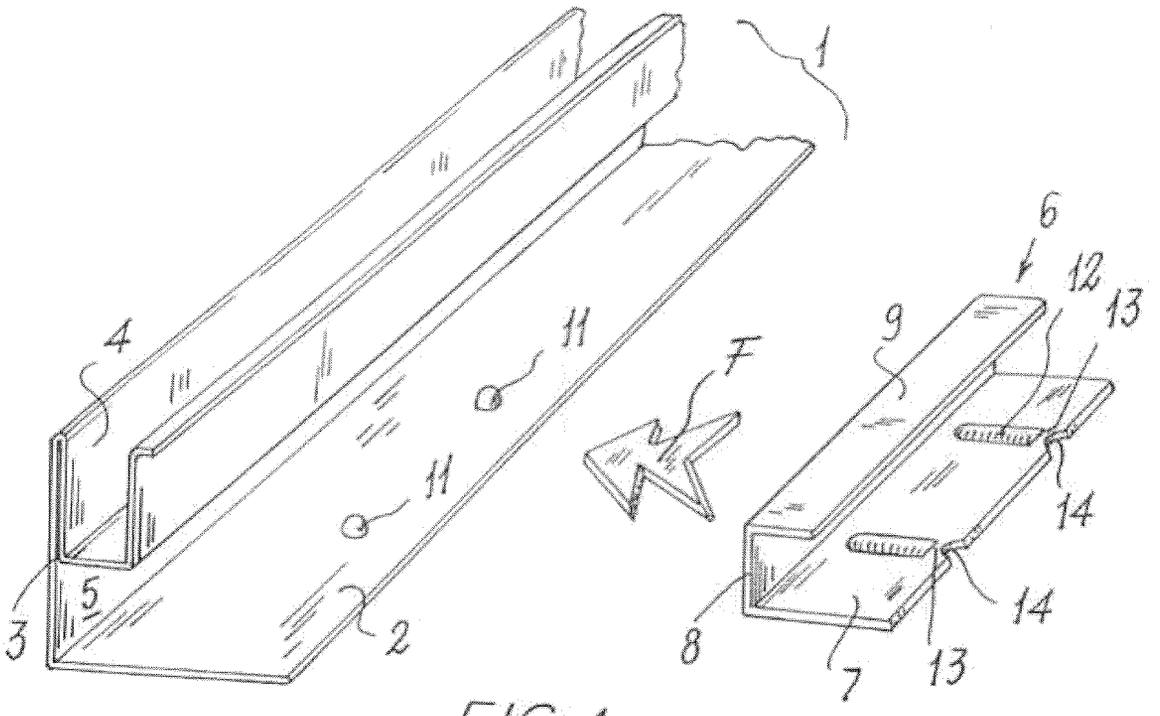

FIG. 1

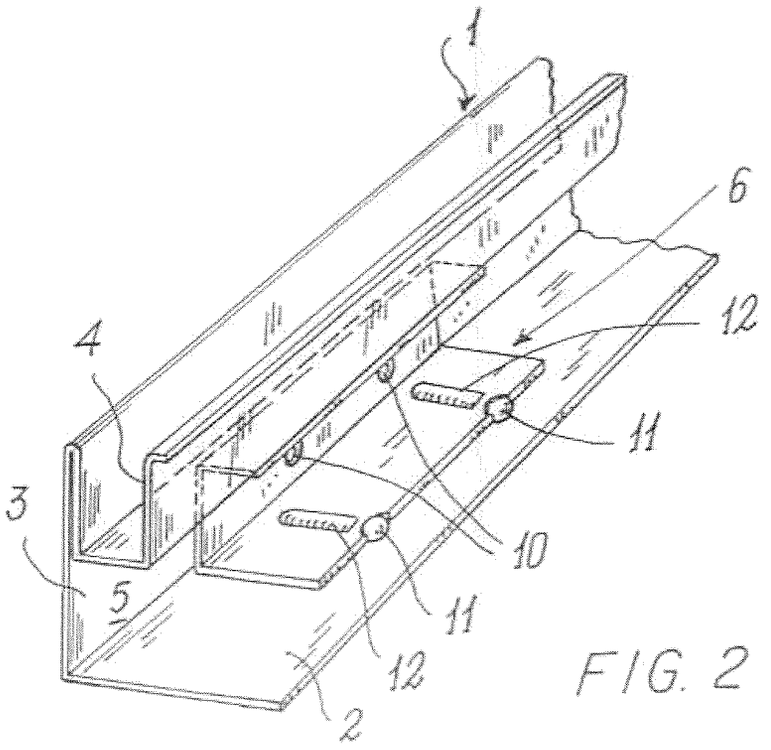

FIG. 2

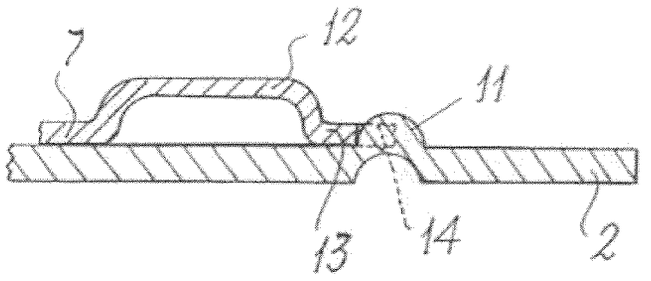

FIG. 3

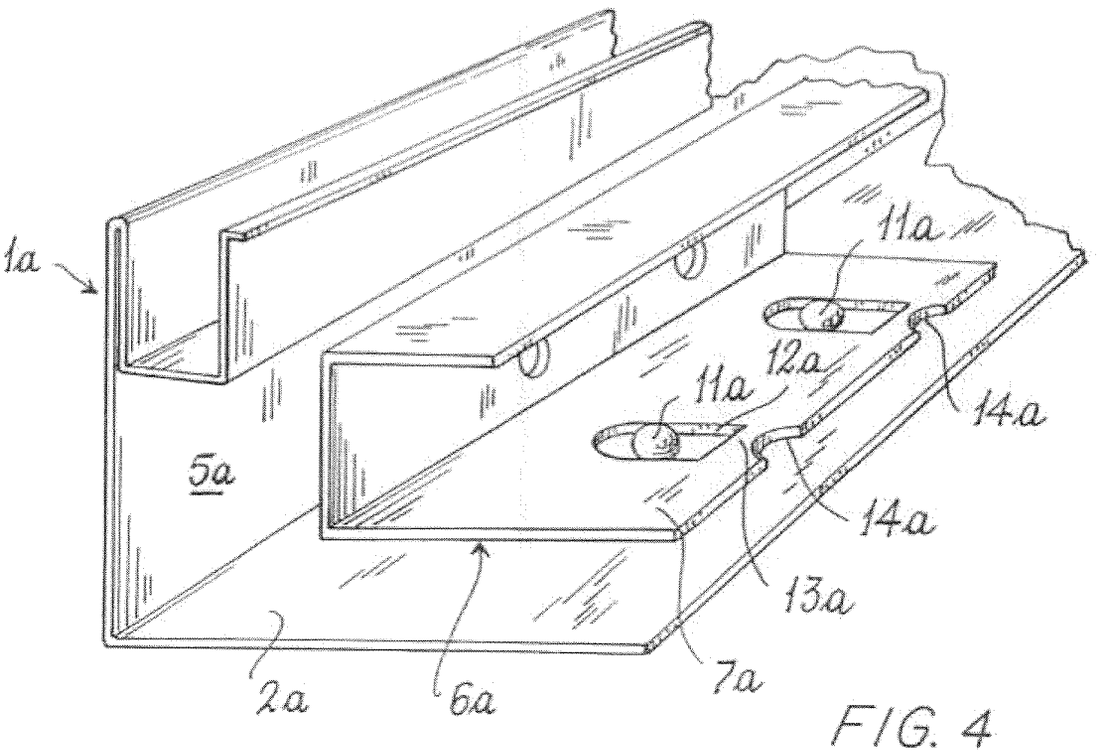

FIG. 4

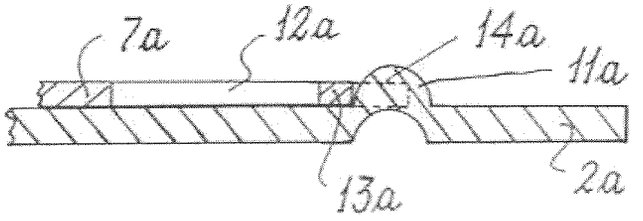

FIG. 5

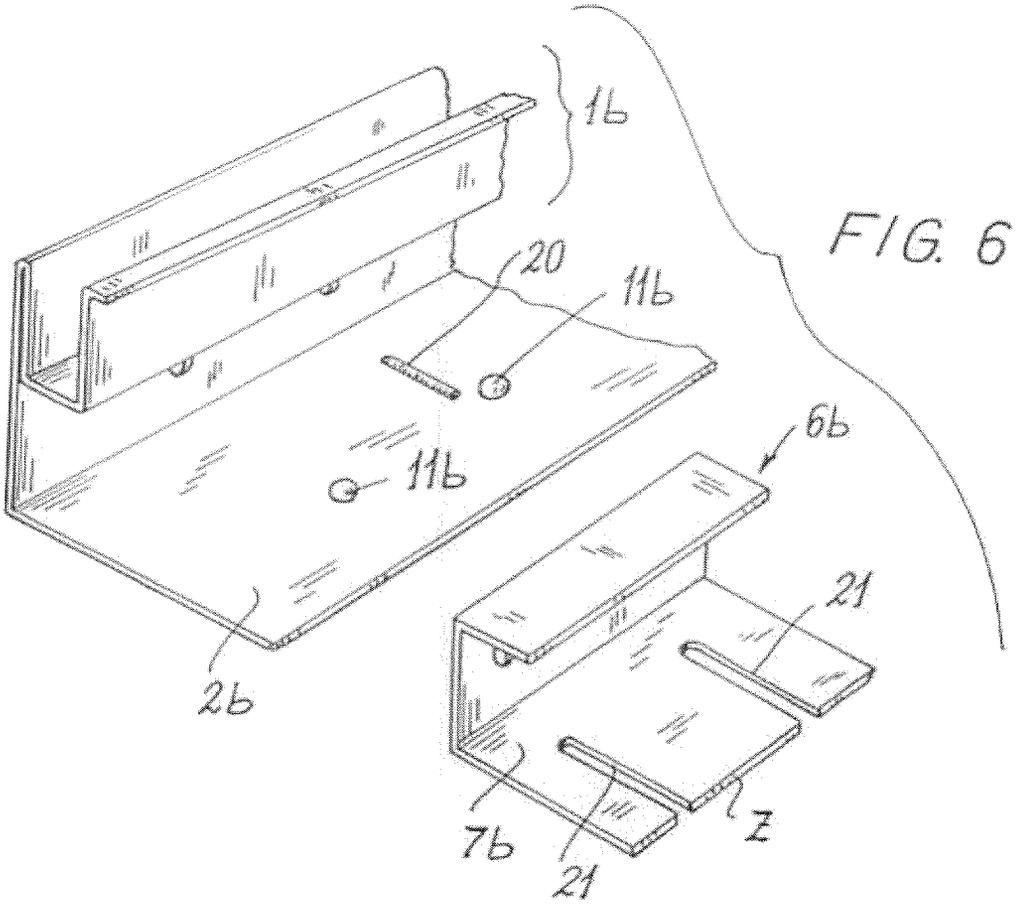

FIG. 6

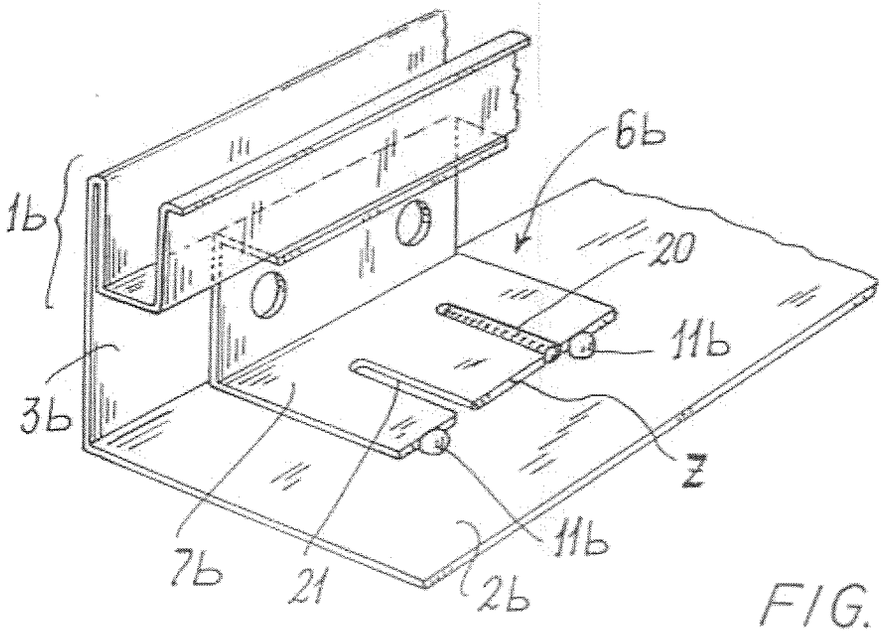

FIG. 7

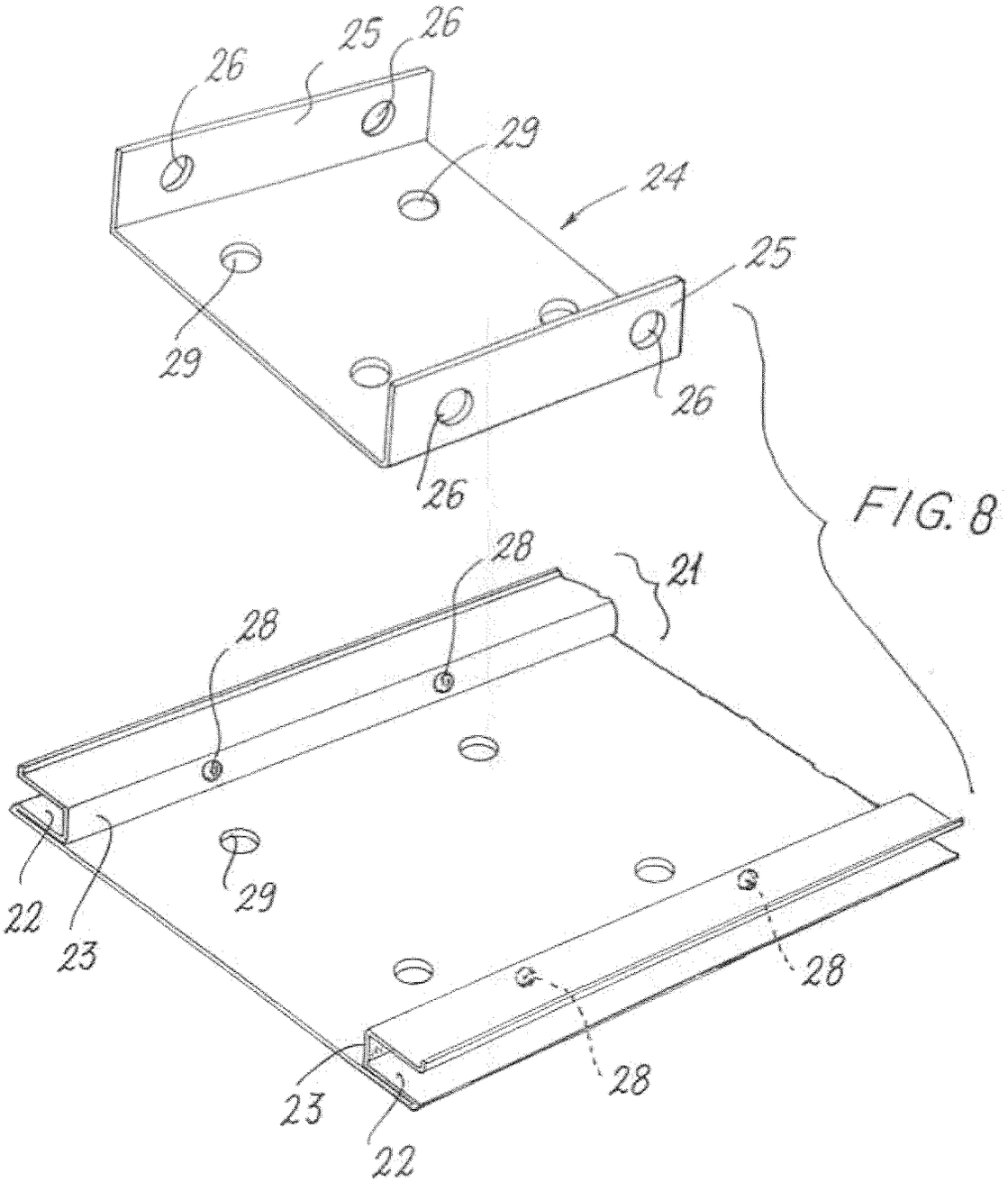

FIG. 8

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EUROPEAN SEARCH REPORT

Application Number
EP 05 10 0220

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.7)
X	US 4 170 391 A (BOTTGER, BERNARD J) 9 October 1979 (1979-10-09) * column 2, line 24 - column 3, line 48; figures 2,5 *	1,2	F25D23/02 F25D23/06
X	WO 02/099346 A (BSH BOSCH UND SIEMENS HAUSGERAETE GMBH; LAIBLE, KARL-FRIEDRICH) 12 December 2002 (2002-12-12) * page 4, line 13 - page 5, line 28; figure 4 *	1,2	
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TECHNICAL FIELDS SEARCHED (Int.Cl.7)

F25D
E05D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	9 May 2005	Zanotti, L

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09-05-2005

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