



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
03.09.2008 Bulletin 2008/36

(51) Int Cl.:
G09F 7/16 (2006.01) G09F 13/04 (2006.01)

(21) Application number: **07015757.3**

(22) Date of filing: **10.08.2007**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK RS

(30) Priority: **01.03.2007 IT MI20070403**

(71) Applicant: **Soleneon Service S.r.l.**
23843 Dolzago (Lecco) (IT)

(72) Inventor: **Plebani, Roberto**
23844 Sirone (Lecco) (IT)

(74) Representative: **Lecce, Giovanni**
Ufficio Internazionale Calciati S.r.l.
Via Fratelli Ruffini, 9
20123 Milano (IT)

(54) **Device for connecting plate-shaped elements along surfaces angularly oriented relative to each other**

(57) A device for connecting plated-shaped elements along surfaces angularly oriented relative to each other, especially for connecting elements arranged orthogonally to each other and forming box-shaped bodies (20) with which identification luminous or non luminous signs are made, comprises a front shaped plate (10), made of translucent or opaque material, and a side band (12-12'), made of metal or other suitable material, shaped correspondingly to the outer profile, as well as to the inner one of any emptied parts, of said front plate (10) for globally

and three-dimensionally depicting alphabetical letters, numbers, symbols and logotypes; the zone corresponding to the profile of one of the fronts of the side band (12-12') at least partly presents an irregular pattern or provided with through openings and is received in a continuous or discontinuous slot (14), obtained along or in the proximity of the edge (10') or (10'') of the plate (10), wherein it is stabilised by adhesives (22). Said adhesives also form a continuous or discontinuous kerb (24), along the inner surface of said side band (12-12'), adjacent the slot (14).

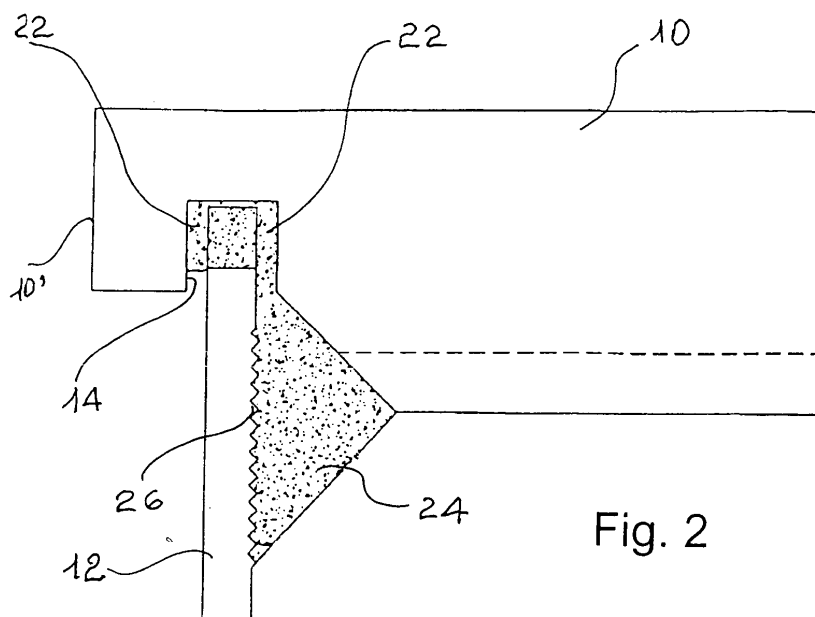


Fig. 2

Description

[0001] The present invention relates to a device for connecting plate-shaped elements along surfaces angularly oriented relative to each other.

[0002] More in particular, the present invention relates to a device for connecting elements arranged according to a perpendicular direction relative to each other and forming the box-shaped bodies used to make identification luminous or non luminous signs of commercial activities and of promotional or advertising messages.

[0003] As known, the identification signs of the type mentioned are increasingly widespread and characterise commercial or service activities such as shops of various types, supermarkets, banks, public offices, etc.

[0004] Such signs are typically composed of box-shaped bodies, each corresponding to an alphabetical letter, a number or distinctive sign such as a logotype.

[0005] The box-shaped bodies, which sometimes incorporate direct or indirect lighting means, traditionally comprise a front portion or front plate made of plastic material such as Plexiglas or methacrylate, and a side shaped band, of suitable height, made of thin sheet, generally aluminium. The two parts that define an alphabetical letter, a number or a symbol developed three-dimensionally, are constrained to each other according to an orthogonal direction; the side band is arranged, starting from one of the fronts thereof, in a continuous recess obtained along the back front of the front plate made of plastic material, in slightly retracted position relative to the external edge. The continuous recess of said plate has limited depth and suitable width for receiving the edge of the side band; the constraint between the two components, that is, between plate and side band, is obtained by adhesive substances that are distributed both inside and outside said side band. The need of putting the adhesive both outside and inside is determined by two factors: the precise connection thereof and the sealing of the exposed front of the box-shaped body, away from possible water and dirt infiltrations.

[0006] However, this traditional solution for the connection of the above components to each other has considerable drawbacks.

[0007] In the first place, the amount of adhesives needed is considerable and the production costs and times for carrying out the connection between the components are therefore high.

[0008] Since it is a connection of smooth surfaces, obtained along a limited zone of the same, the connection can sometimes be little effective, especially due to accidental shocks the box-shaped bodies are subject to during the installation or maintenance operations.

[0009] A further drawback of the known solution in question relates to the presence of a continuous adhesive kerb outside the box-shaped body, which gives rise to an undesired alteration of the aesthetic linearity of the body itself.

[0010] In an attempt to obviate the drawbacks men-

tioned above, an imprinting along the edge of the side band has been envisaged to be made, intended for inserting into the recess of the plastic material plate. This solution has improved the seal between the two elements but in any case it has not allowed avoiding the distribution of the adhesive outside the side band.

[0011] The object of the present invention is to obviate the drawbacks mentioned hereinabove.

[0012] More in particular, the object of the present invention is to provide a device for connecting plate-shaped elements along surfaces angularly oriented relative to each other, especially suitable for connecting elements arranged orthogonally to each other and forming the box-shaped bodies with which identification signs are made, suitable for connecting in a suitable and safe over time manner said elements with adhesives distributed only inside them or in any case in a position not visible to the exterior, thus used in a very limited manner.

[0013] A further object of the invention is to provide a device as defined above which, against the connection of said elements with adhesives distributed only inside thereof, should allow ensuring in any case the perfect sealing of the box-shaped bodies thus realised.

[0014] Another object of the invention is to provide a device as defined above which should allow making box-shaped bodies for signs free from imperfections caused by the distribution of adhesives along the exposed front.

[0015] A further object of the invention is to provide the users with a device for connecting plate-shaped elements suitable for ensuring high level of resistance and reliability over time, also such as to be easily and inexpensively constructed.

[0016] These and other objects are achieved by the device for connecting plate-shaped elements of the present invention which comprises a front shaped plate made of translucent or opaque material, and a side band, made of metal or other suitable material, shaped correspondingly to the outer profile, as well as to the inner one in the presence of any emptied parts, of said front plate for globally and three-dimensionally depicting alphabetical letters, numbers, symbols and logotypes and which is characterised in that the zone corresponding to the profile of one of the fronts of the side band at least partly presents an irregular pattern or provided with through openings and is received in a continuous or discontinuous slot, obtained along or in the proximity of the edge of the plate, wherein it is stabilised by adhesives that also form a continuous or discontinuous kerb, along the inner surface of said side band, adjacent said slot.

[0017] The construction and functional features of the device for connecting plate-shaped elements of the present invention will be better shown in the following detailed description, wherein reference is made to the annexed drawing tables showing a preferred and non-limiting embodiment thereof, wherein:

figure 1 shows a schematic perspective top view of a box-shaped body defining an alphabetical letter,

to highlight the profile or connecting line thereof between front plate and side band according to the device of the present invention;

figure 2 shows a schematic view of a longitudinal partial section of the same box-shaped body;

figure 3 shows a schematic front view of an enlarged portion of the side band of the same box-shaped body wherein the components are connected to each other by the device of the present invention;

figures 4, 5 and 6 show schematic partial and dissected views of as many alternative examples of box-shaped bodies, to highlight the connection between front and side part thereof.

[0018] With reference to the above-mentioned figures, the device of the present invention for the connection of plate-shaped elements, in particular of elements arranged orthogonal to each other that form the box-shaped bodies of identification signs, is made on the components of said box-shaped bodies that comprise a front plate 10 made of translucent or opaque plastic material and a side band 12, preferably made of metal and with small thickness.

[0019] The front plate 10 is variously shaped for reproducing, for example in capital types, alphabetical letters, or numbers, symbols or logotypes of any shape and size. The side band 12, in parallel, is shaped for following the profile of the front plate 10, to which it is connected for forming box-shaped bodies three-dimensionally reproducing the above letters, numbers, symbols or logotypes.

[0020] An example of box-shaped body of this type is globally indicated with 20 at figure 1, which by way of an example shows a capital letter "R" in a perspective top view and from the back front, without bottom for easier understanding of the features of the device of the invention.

[0021] The front plate 10, typically made of translucent material such as Plexiglas or the like, is provided with a slot 14 which extends by the entire perimeter of the perimeter of the plate itself with continuous or discontinuous pattern. Said slot 14, in the embodiment at figure 2, is obtained by way of an example on the inner front of the front plate 10 in slightly retracted position relative to the edge, indicated with 10' of the plate itself. The slot 14 presents a greater width than the thickness of the side metal band 12 and variable depth depending on the overall dimension of the box-shaped bodies 20. By way of an indicative and non critical example, the thickness of said side band 12 is generally comprised between 0.5 and 1.5 mm.

[0022] The front plate 10, which in the example of figure 1 and 2 has a planar development, can be thermo-formed and present, as shown at figures 4 and 5, an edge 10" substantially bent at 90° in the direction of the side band, indicated with 12'; in the embodiment of figure 5, said side band 12' is shaped along the coupling profile with edge 10" and defines a substantially "S" shaped pattern. In detail, the end of the side band 12' is first bent,

approximately at 90°, inwards, that is, in the direction of the median axis of the front plate 10 and then, it is further bent upwards, parallel to the edge 10". In this way the side band 12 is substantially aligned with the edge 10".

A solution of this type, with side band 12' provided with end bending, can of course also relate to the embodiment that envisages the front plate 10 with planar development, that is, without bent edge, as schematised at figure 6.

[0023] A bottom 16 is generally connected to the side band 12 or 12', opposite the front plate, constrained in a known manner, for example by screws, to the band itself.

[0024] The end of the side band 12 intended for inserting in the slot 14, of which of course also the front plate with bent edge 10" is provided, is advantageously provided with an irregular profile, for example with contiguous portions shaped as dovetail as schematised at figure 3; said portions, indicated with 18, are projecting and intended for inserting into the slots 14 and are alternating with mirror recesses or shaped cavities 18'.

[0025] During the assembly of the box-shaped body 10, which causes the steady connection of the side band 12 or 12' to the front plate 10 or 10', a predetermined amount of adhesive 22 is arranged into the slot 14 and the side band itself is then inserted into the slot itself along the part provided with projecting portions 18 alternating to the recesses 18'. Considering that the thickness of the side band 12 or 12' is considerably lower than the width of the slot 14, the adhesive 22 distributes in a substantially spontaneous manner along the two sides of the slot itself, as schematised at figure 2. At the same time of this operation or immediately after, further adhesive is distributed along the wall or inner surface of the side band 12 or 12' and adjacent the slot 14 to form a kerb 24 schematised by a dotted line at figure 1, and at figure 6; said kerb can be continuous or discontinuous, that is, limited to points or zones of the inner perimeter defined by the combination of the side band 12 or 12' and of the front plate 10. Also the profile of the side band 12 or 12' provided with the projecting portions 18 alternating to the recesses 18' can be continuous or discontinuous.

[0026] In order to favour better gripping and a more effective seal of the adhesive distributed along the inner surface of the side band 12 or 12', in the zone adjacent the slot 14, it is advantageously envisaged that a surface roughness is obtained in advance along said inner surface, for example obtained by knurling or glazing; the surface roughness preferably concerns a limited height zone of the inner front of the side band 12 or 12' and is schematised with 26 at figures 2 and 3.

[0027] As can be noticed from the above, the advantages achieved by the invention are clear.

[0028] The device for connecting plate-shaped elements of the present invention allows connecting in effective and lasting manner the side band 12 or 12' to the front plate 10 of box-shaped bodies 20 ensuring the seal and a finish that shows no imperfections on the exterior. The arrangement along an end of the side band 12 or

12', of an irregular profile, or formed by full and empty zones is particularly advantageous, so that the adhesive 22 arranges also crosswise the recesses 18' alternating to the projecting portions 18. Moreover it is to be envisaged that to the same purpose, the irregular profile of the side band 12 or 12' is replaced, even if only partially, by micro-perforated portions or with close openings of any shape and dimension.

[0029] The provision of forming, adjacent the slot(s) 14 and on the inner front of the side band 12 or 12', a continuous or discontinuous kerb made of adhesive material, along a surface roughness zone 26 of the band itself is further advantageous.

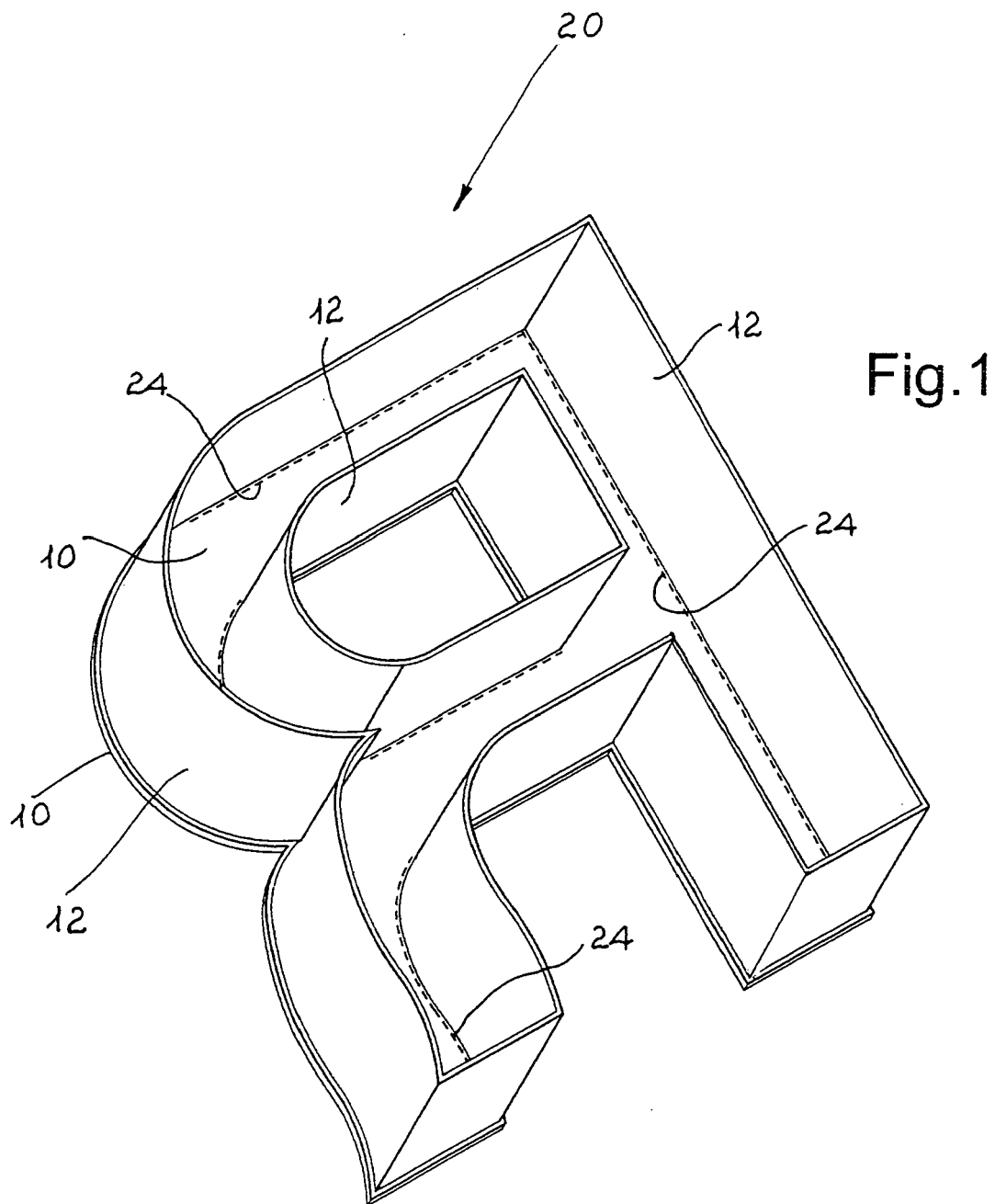
[0030] Even if the invention has been described hereinbefore with particular reference to an embodiment of which made by way of a non-limiting example, several changes and variations will appear clear to a man skilled in the art in the light of the description above. The present invention therefore is intended to include all the changes and variations thereof falling within the spirit and the scope of protection of the following claims.

Claims

1. A device for connecting plated-shaped elements along surfaces angularly oriented relative to each other, especially for connecting elements arranged orthogonally to each other and forming box-shaped bodies (20) with which identification luminous or non luminous signs are made, comprising a front shaped plate (10), made of translucent or opaque material, and a side band (12-12'), made of metal or other suitable material, shaped correspondingly to the profile of said front plate (10) for globally and three-dimensionally depicting alphabetical letters, numbers, symbols and logotypes, **characterised in that** the zone corresponding to the outer profile, as well as to the inner one of any emptied parts, of one of the fronts of the side band (12-12') at least partly presents an irregular pattern or provided with through openings and is received in a continuous or discontinuous slot (14), obtained along or in the proximity to the edge (10') or (10'') of the plate (10), wherein it is stabilised by adhesives (22), which also form a continuous or discontinuous kerb (24), along the inner surface of said side band (12) or (12') adjacent the slot (14).
2. The connecting device according to claim 1, **characterised in that** the inner surface of the side band (12) or (12') is provided with surface roughness (26) obtained along the portion covered by the kerb (24) of adhesive material.
3. The connecting device according to the previous claims, **characterised in that** the irregular pattern of the zone corresponding to the profile of one of the

fronts of the side band (12) or (12') is defined by projecting dovetail portions (18) alternating to mirror recesses (18').

4. The connecting device according to one or more of the previous claims, **characterised in that** the front plate is provided with an edge (10'') substantially bent at 90° in the direction of the side band (12) or (12') and said latter, along the connecting profile with said edge, defines an "S" pattern for aligning with the edge itself.
5. The connecting device according to one or more of the previous claims, **characterised in that** the continuous or discontinuous slot (14) of the front plate (10) has a considerably greater width than the thickness of the side band (12-12') which is comprised between 0.5 and 1.5 mm.



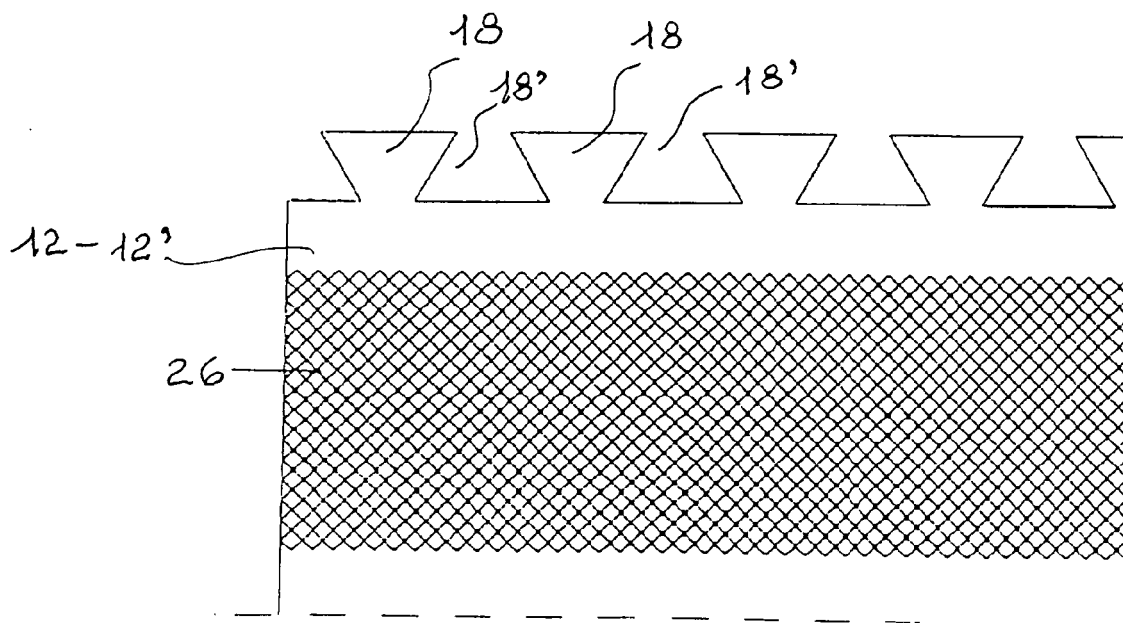
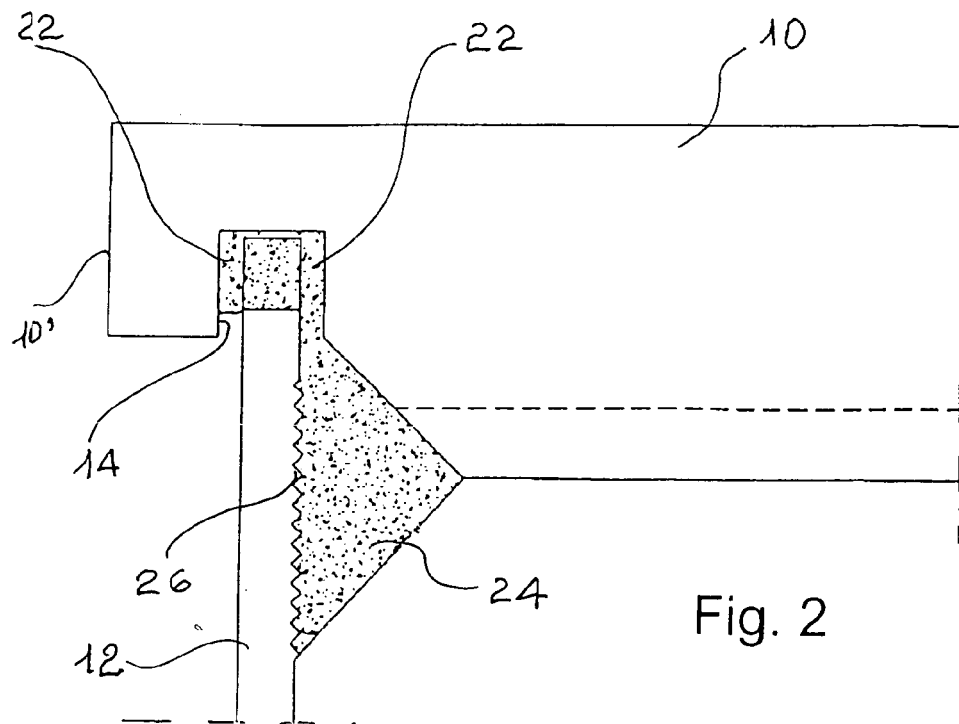


Fig.4

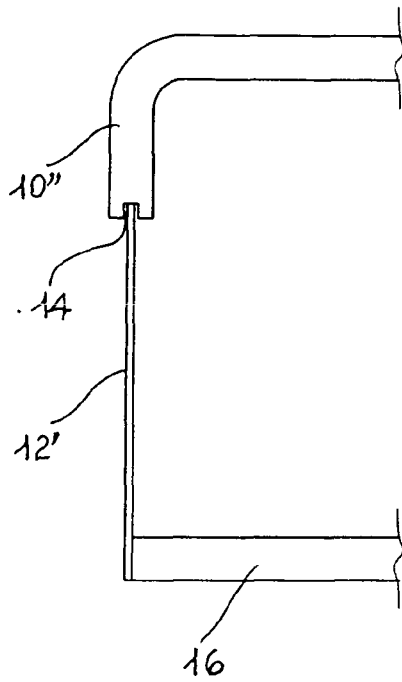


Fig.5

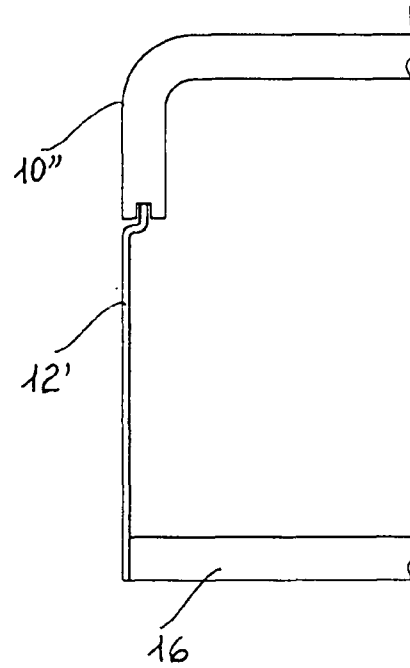
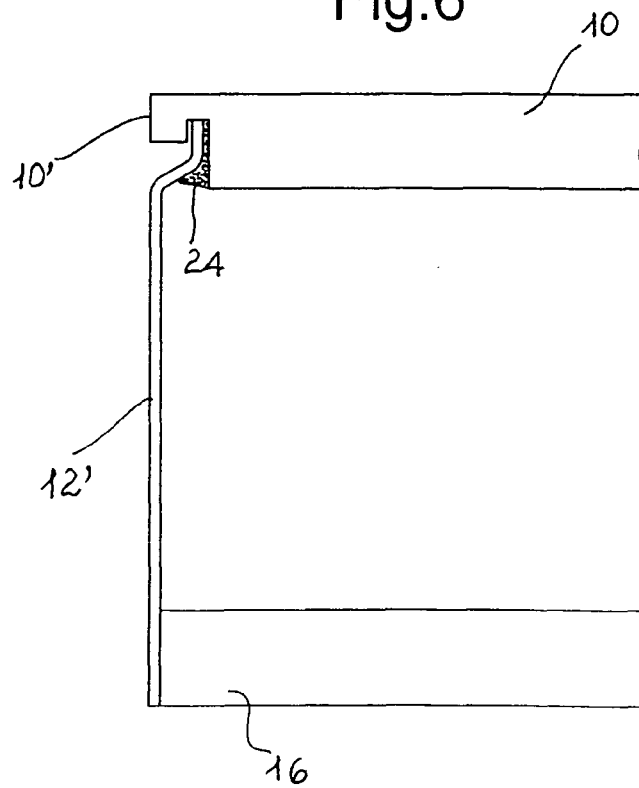


Fig.6





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 07 01 5757

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	CH 689 086 A5 (PLEBANI ROBERTO [IT]) 15 September 1998 (1998-09-15)	1	INV. G09F7/16 G09F13/04
A	* column 1, line 55 - column 2, line 33 * * figures 1-7 *	2-5	

A	US 4 392 317 A (BOOTHMAN EDWIN F [CA]) 12 July 1983 (1983-07-12)	1-5	
	* figures 1-5 * * column 2, line 17 - line 58 *		

A	DE 100 55 438 A1 (MATTHES MICHAEL [DE]) 6 June 2002 (2002-06-06)	1-5	
	* abstract * * figures 3-6 *		

The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			G09F
Place of search		Date of completion of the search	Examiner
Munich		24 June 2008	Pierron, Christophe
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			

1

EPO FORM 1503 03.82 (P04C01)

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

EP 07 01 5757

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

24-06-2008

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
CH 689086	A5	15-09-1998	IT	1272454 B	23-06-1997
US 4392317	A	12-07-1983	CA	1110061 A1	06-10-1981
DE 10055438	A1	06-06-2002	NONE		