



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
14.11.2012 Bulletin 2012/46

(51) Int Cl.:
B65D 5/02 (2006.01) **B65D 5/50** (2006.01)
B65D 59/08 (2006.01) **B65D 81/02** (2006.01)
B65D 5/00 (2006.01)

(21) Application number: **12167122.6**

(22) Date of filing: **08.05.2012**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(72) Inventors:
• **Asikainen, Janne**
33101 Tampere (FI)
• **Jormanainen, Teemu**
33101 Tampere (FI)

(30) Priority: **09.05.2011 FI 20115441**

(74) Representative: **Arvela, Sakari Mikael**
Seppo Laine Oy
Itämerenkatu 3 B
00180 Helsinki (FI)

(71) Applicant: **Takon Kotelotehdas Oy**
33101 Tampere (FI)

(54) **Protective packaging for delicate articles**

(57) The packing base (1) according to the present invention creates a package for storing and protecting delicate articles while using the least possible amount of packing material. The packing base (1) comprises a group of consecutive bendably connected reception elements (10) equipped with recesses (14) receiving an article. The packing base (1) according to the invention can be arranged in a spread-open position, in which the packing base's (1) group of parallel reception elements

(10) is arranged to receive articles in the visible recesses (14), and in a closed position, in which the reception elements (10) are bent to protect the recesses (14), in order to form a closed package surrounded by the packing base (1). The reception elements (10) have a first side (11) and a second side (12), which sides (11, 12) are farther from each other at one end than at the other end, where they are joined by an end ridge (13), in which recesses (14) are arranged, in order to receive the said articles.

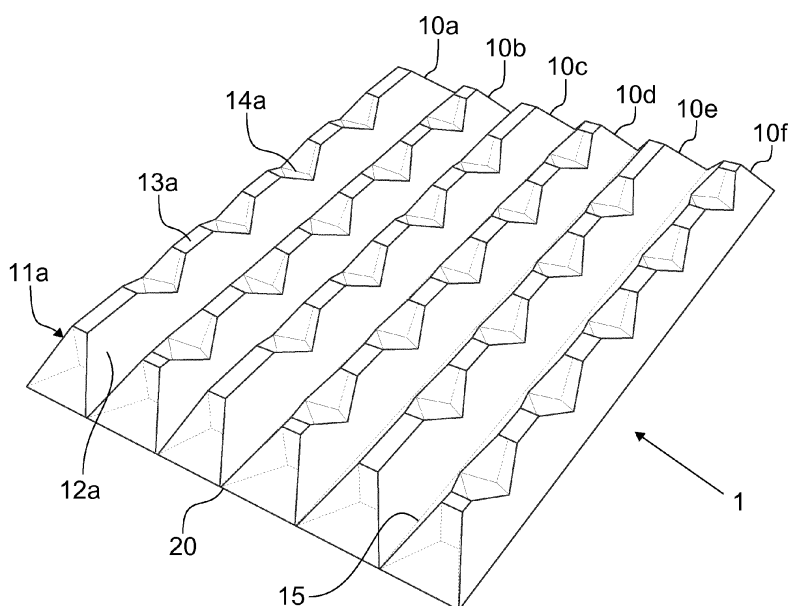


FIG. 1

Description

[0001] The present invention relates to a packing base. The invention particularly relates to a packing base according to the characterizing portion of claim 1 for receiving and storing delicate articles, such as confectionary.

[0002] Delicate articles, such as confectionary, incandescent lamps, etc., are usually packed on packing bases for transportation and storage. The packages are typically deeply recessed bases of a plastic mixture, which are equipped with pits to receive the articles. When storing delicate articles, a packing base by itself does not, however, provide sufficient protection. Thus, the packing bases are usually packed in a cardboard box, which protects the articles stored in the pits in the packing base. Thus, the packages, which comprise both the packing base and the protective cardboard box, use a considerable amount of material to store the articles, which is not particularly economical. In addition, the protective cardboard box requires a separate packing stage and apparatus when packing the articles.

[0003] The present invention is intended to create a package for the protective storage of delicate articles, using the least possible amount of packing material.

[0004] The aim of the invention is achieved by means of a new type of packing base, which comprises a group of consecutive reception elements combined by folding and equipped with recesses receiving the articles. The packing base according to the invention can be arranged in a spread-open position, in which the packing base's group of parallel reception elements is arranged to receive the articles in the visible recesses, and to be closed into a position, in which the reception elements are bent to protect the recesses surrounding the packing base, in order to form a closed package. The reception elements have a first side and a second side, which sides are farther from each other at one end than at the other end, where they are connected by an end ridge, in which recesses are arranged to receive the said articles.

[0005] More specifically, the packing base according to the invention is characterized by what is stated in the characterizing portion of Claim 1.

[0006] Considerable advantages are achieved with the aid of the invention. Because the packing base can be folded into a closed position, the packing base itself forms a package protecting delicate articles, so that a separate protective structure, such as a cardboard box, is not required. By means of the construction according to the invention, significant savings are achieved, thanks to the reduced need for packing material. In other words, using less packing material a sufficiently sturdy package is achieved for storing delicate articles.

[0007] In the following, embodiments of the invention are examined in greater detail with reference to the accompanying drawings, in which:

Figure 1 shows a perspective view of a spread-open package according to one embodiment,

Figure 2 shows a perspective view of the package of Figure 1 in the closed position,

Figure 3 shows a detailed view of one protrusion of the package according to Figure 1,

Figure 4 shows a detailed view of the protrusion of Figure 3, which is equipped with locking claws,

Figure 5 shows a top view of a blank for the manufacture of a package according to Figure 1, and

Figure 6 shows a perspective view of a package according to a second embodiment, in the closed position.

[0008] As can be seen from Figure 1, the packing base 1 according to one embodiment of the present invention comprises six consecutive combined reception elements 10a ... 10f equipped with recesses 14 receiving an article. In Figure 1, the packing base 1 is shown in the spread-open position, in which the reception elements 10a ... 10f are parallel to each other, in such a way that the recesses 14 for receiving delicate articles are visible. The shaping of the recesses 14 is dealt with in greater detail later. In the embodiment shown in Figure 1, the packing base 1 comprises a sheet-like base 20 and six parallel reception elements 10a ... 10f protruding from this. Thus, the base 20 has a first surface, from which the reception elements 10 are arranged to protrude, and a second surface forming the outer jacket of the package when the packing base 1 is in the closed position, which is also dealt with in greater detail later. The sheet-like base 20 is preferably a cardboard sheet, which is cut into a rectangular shape.

[0009] Each of the protruding reception elements 10a ... 10f comprises a first side 11 and a second side 12. The said sides 11, 12 are farther from each other at the base 20 end than at the free end, where they join to form an end ridge 13. The end ridge 13 is equipped with the said recesses 14 for receiving articles. The reception elements 10a ... 10f are linked in such a way that the end next to the base 20 of the second side 12 of the preceding reception element 10a is linked bendably to the corresponding end of the first side 11 of the following reception element 10b. In other words, the reception elements 10a ... 10f are formed on the base 20 in such a way that the packing base 1 can be bent at the joints between the reception elements 10a ... 10f.

[0010] The chain of reception elements is preferably manufactured from a separate sheet, which is shaped to form protruding ridges. The sheet to be shaped can be manufactured from, for example, card, or it can be deep-drawn from a thin polymer blank. The joint 15 between the reception elements 10a ... 10f is preferably creased or otherwise scored, in order to promote bending. Once the sheet has been shaped, it can be attached to the base 20, for example by gluing, particularly by hot, cold, or self-adhesive gluing. Alternatively, the sheet can be

attached to the base 20 by seaming. Other known attachment methods, such as ultrasound joints, are also possible.

[0011] The wedge-like reception elements 10 formed by bending on the base 20 permit the packing base 1 to be bent into a closed position. As can be seen from Figure 2, in the closed position the reception elements 10 of the packing base 1 are bent to protect the recesses 14. The closed position is created by bending the packing base 10 in such a way that the end next to the base 20, of the first side 11 of the first reception element 10a, is brought next to the corresponding-side end of the second side 12 of the last reception element 10f, so that the end ridges 13 point towards each other. The recesses 14 are then surrounded by the packing base 1, so that the packing base 1 forms a closed package, which can be locked into the closed position, for example, by taping or by fitting a sleeve, or a corresponding belt (not shown) preserving the closed shape, around the package. Alternatively, the first reception element 10a and last reception element 10f of the packing base 1 are equipped with locking shapes (not shown) connecting to each other, which connect to each other when the packing base 1 is bent into the closed position, when the package will remain closed. In the closed position, the outer jacket of the package is formed by the under surface of the base 20 of the packing base. Because the packing base 1 comprises, according to the embodiment shown in Figure 1, six parallel reception elements 10a ... 10f, the closed package has a hexagonal shape when viewed from the end. As is stated later, other cross-sectional shapes are also possible by altering the shape of the reception elements 10. In the closed position, the sides 11, 12 of the reception elements 10 support each other as a chain, so that the package becomes considerably sturdy.

[0012] Figure 3 shows in greater detail an end ridge 13 and a recess 14. The recess 14 is thus an opening formed in the end ridge 13, i.e. in the free end opposite to the base 20 of the wedge-like reception element 10, which is shaped to receive a corresponding delicate article, such as a piece of confectionary, or a small incandescent lamp. The recess 14 can be formed, for example, by stamping a groove open from the base, in the ridge 13. The recesses 14 can be formed alternatively by deep drawing, cutting, or perforation. Other ways too are possible.

[0013] According to the embodiment shown in Figure 4, locking claws 16, which extend over the recess 14 parallel to the end ridge in such a way that they lock in place the article (not shown) embedded in the recess 14, are arranged in the end ridge. Other forms of locking are also possible. As shown in Figure 5, the articles can be locked into the recesses 14, for example, by arranging a locking strip 17 on top of the end ridge 13. The locking strip 17 can be attached to the end ridge 13, for example, by gluing, in which case the articles remain pressed between the recess 14 and the locking strip 17. According to one further embodiment, the packing base 1 is

equipped with both locking claws 16 and locking strips 17.

[0014] Figure 5 shows, in addition, one way to locate the recesses 14 in the end ridges 13 of the reception elements 10. According to the embodiment depicted, the recesses of every second reception element 10 are mutually aligned and the recesses 14 of consecutive reception elements 10a, 10b are staggered relative to each other in the direction of the end ridge 13. The staggering between the consecutive reception elements 10a, 10b creates a situation, in which, in the closed position, the articles embedded in the recesses 14 are not in line with each other, so that no excessive compression acts on them. Indeed, the packing base 1 is preferably dimensioned in such a way that an article in a recess 14 of the previous reception element 10a is supported on the end ridge 13 of the next reception element 10b, when the packing base 1 is bent into the closed position (Figure 2). The depth of the recess 14 and the distance of the end ridge 13 from the base 20 are then dimensioned in such a way that, in the closed position, the distance from the bottom of the recess 14 of the previous reception element 10a of the packing base 1 to the end ridge 13 of the following reception element 10b corresponds to the dimension in the direction of the recess 14 of the article being stored.

[0015] Figure 5 further shows a blank for manufacturing a package according to Figure 1, in which blank six reception elements 10 are made. As stated, the desired number of parallel reception elements can be made in the packing base 1, which will dictate the shape of the package's cross-section in the closed position. According to one embodiment, the packing base 1 comprises eight reception elements 10, in which case the cross-section of the package will be an octagon (Figure 6). In practice, the packing base 1 preferably comprises from three to twelve reception elements, preferably six reception elements. The number of reception elements affects the angle between the sides 11, 12 (Figure 1), i.e. the opening angle of the wedge-like reception elements.

Table 1: Reference-number list.

number	part
1	package
10	protrusion
11	first side
12	second side
13	ridge
14	recess
15	fold
16	locking claw
17	locking strip
20	base

Claims

1. Packing base (1) for receiving and storing delicate articles, which:

- packing base (1) comprises a group of consecutive bendably combined reception elements (10) equipped with recesses (14) for receiving an article, and that

- the packing base (1) is configured to be arranged in a spread-open position, in which the packing base's (1) group of parallel reception elements (10) is arranged to receive the articles in the visible recesses (14), and in a closed position, in which the reception elements (10) are bent to protect the recesses (14), in order to form a closed package surrounded by the packing base (1),

characterized in that the reception elements (10) have a first side (11) and a second side (12), which sides (11, 12) are farther from each other at one end than at the other end, where they are joined by an end ridge (13), in which the recesses (14) are arranged in order to receive the said articles.

2. Packing base (1) according to claim 1, wherein the reception elements (10) are arranged consecutively in a first direction and a group of recesses (14) is arranged in each reception elements (10) in a second direction, which is essentially transverse to the first direction.

3. Packing base (1) according to claim 1 or 2, wherein the parallel reception elements (10) are linked as a chain, in such a way that the first end of the second side (12) of the previous reception element (10a) is linked bendably to the first end of the first side (11) of the following reception element, in such a way that the packing base (1) can be bent at the joints between the reception elements (10) into a closed position, in which case the joining of the first and last reception element (10) of the packing base (1) closes the packing base (1) in such a way that the joining of the sides (11, 12) of the parallel reception elements (10) closes the packing base (1) in such a way that the side (11, 12) of the parallel reception elements (10a, 10b) support each other and the recesses (14) remain inside the closed packing base (1).

4. Packing base (1) according to claim 1, wherein the packing base (1) comprises a sheet-like base (20), from the first surface of which reception elements (10) are arranged to protrude, in which case the second surface of the base (20) forms the outer jacket of the package when the packing base (1) is in the closed position.

5. Packing base (1) according to any of the above claims, wherein the recesses (14) of the consecutive reception elements (10a, 10b) are staggered relative to each other in the direction of the end ridge (13).

6. Packing base (1) according to claim 5, wherein the recesses (14) of every second reception element (10) are in line with each other.

7. Packing base (1) according to any of the above claims, wherein locking claws (16) are arranged in the end ridges (13), which claws extend parallel to the end ridge (13) over a recess (14), in such a way that they are arranged to lock in place an article embedded in the recess (14).

8. Packing base (1) according to any of the above claims, wherein a locking strip (17) is arranged on top of the end ridge (13), in order to lock articles between the recess (14) and the locking strip (17).

9. Packing base (1) according to any of the above claims, wherein the packing base (1) comprises six or eight parallel reception elements (10a ... 10f), in such a way that, when the closed package is viewed from the end, it has a hexagonal or octagonal shape, respectively.

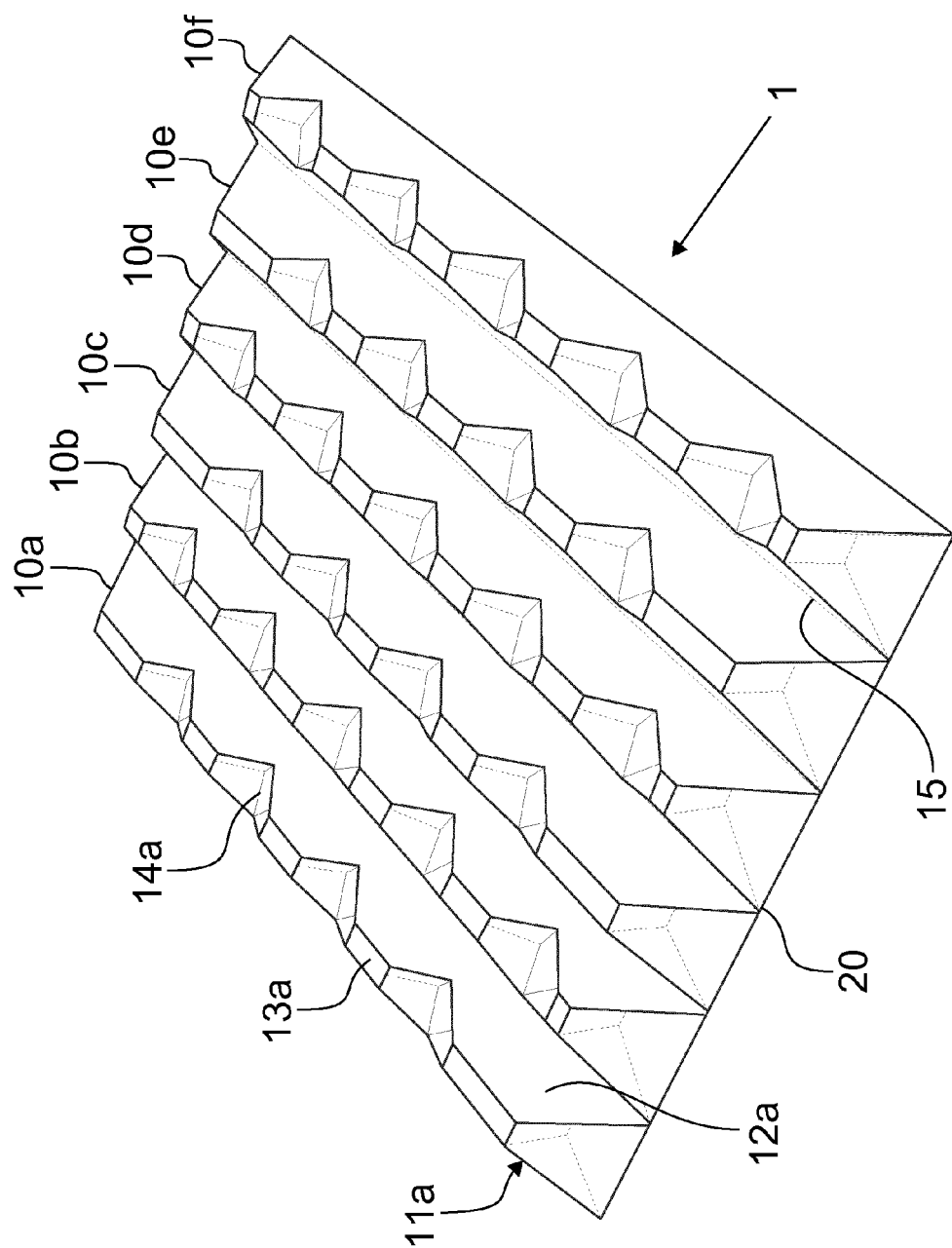


FIG. 1

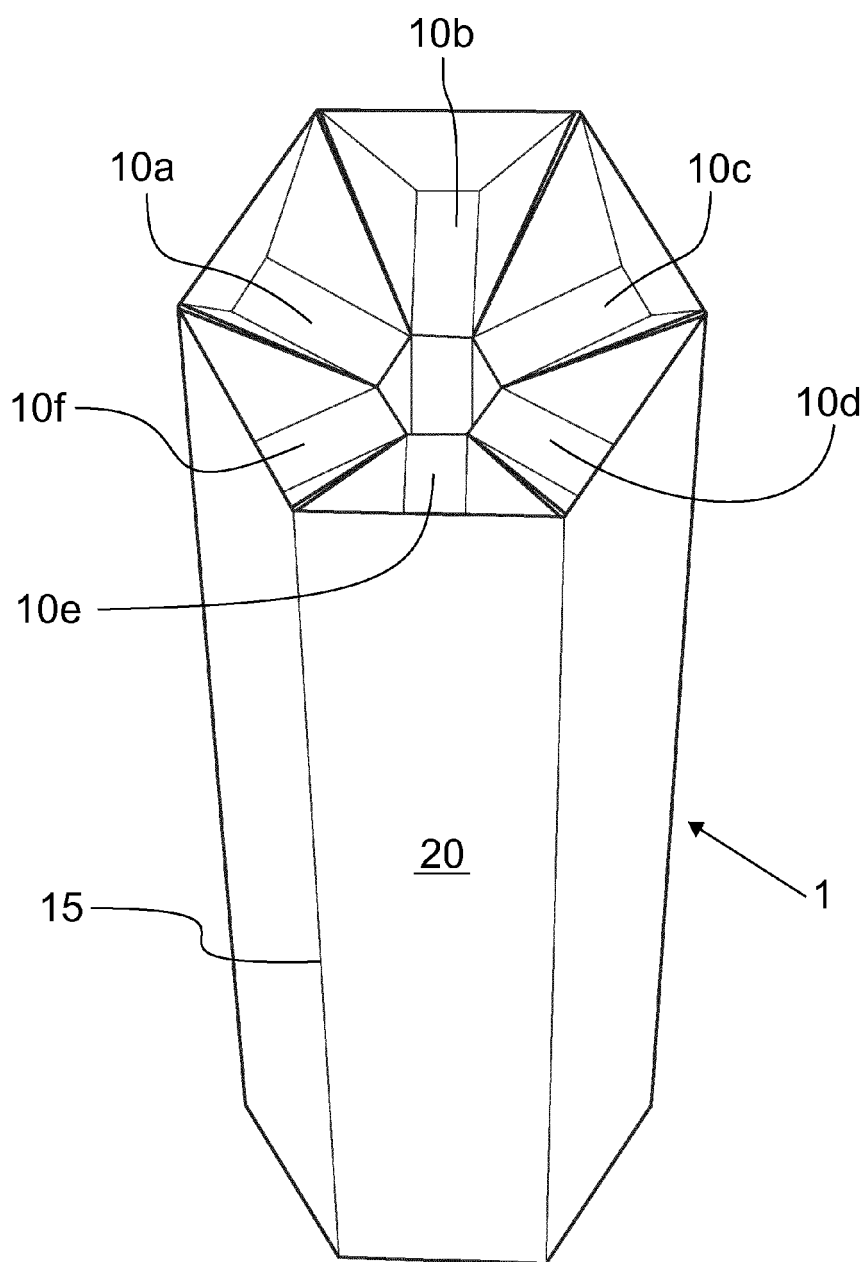
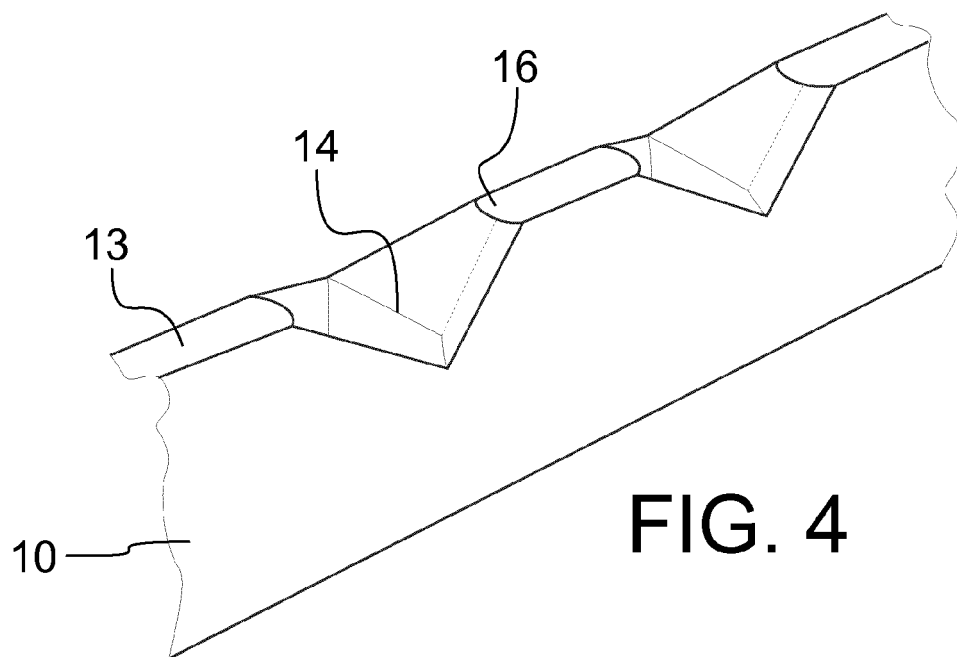
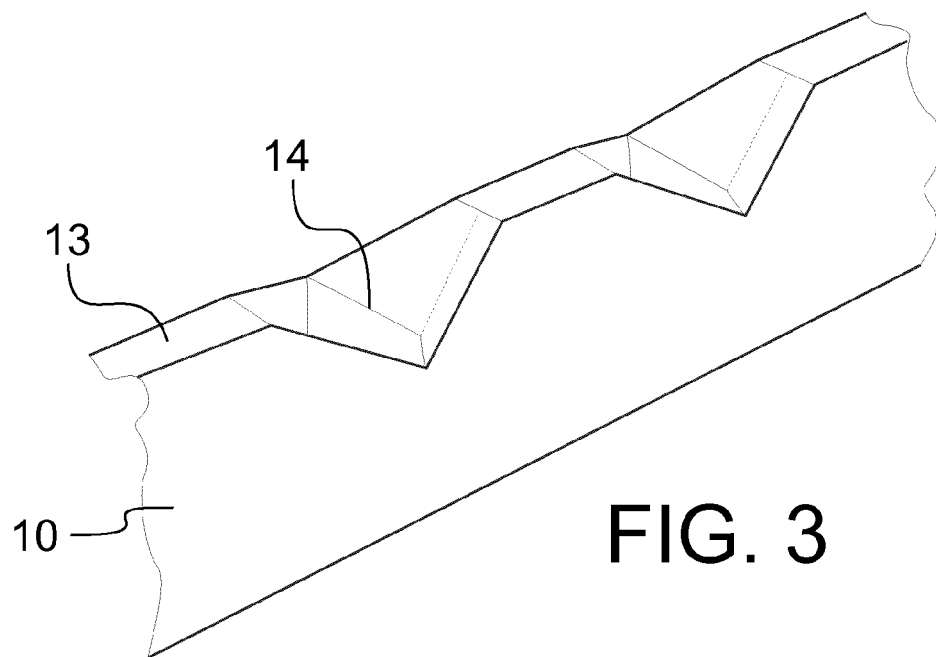


FIG. 2



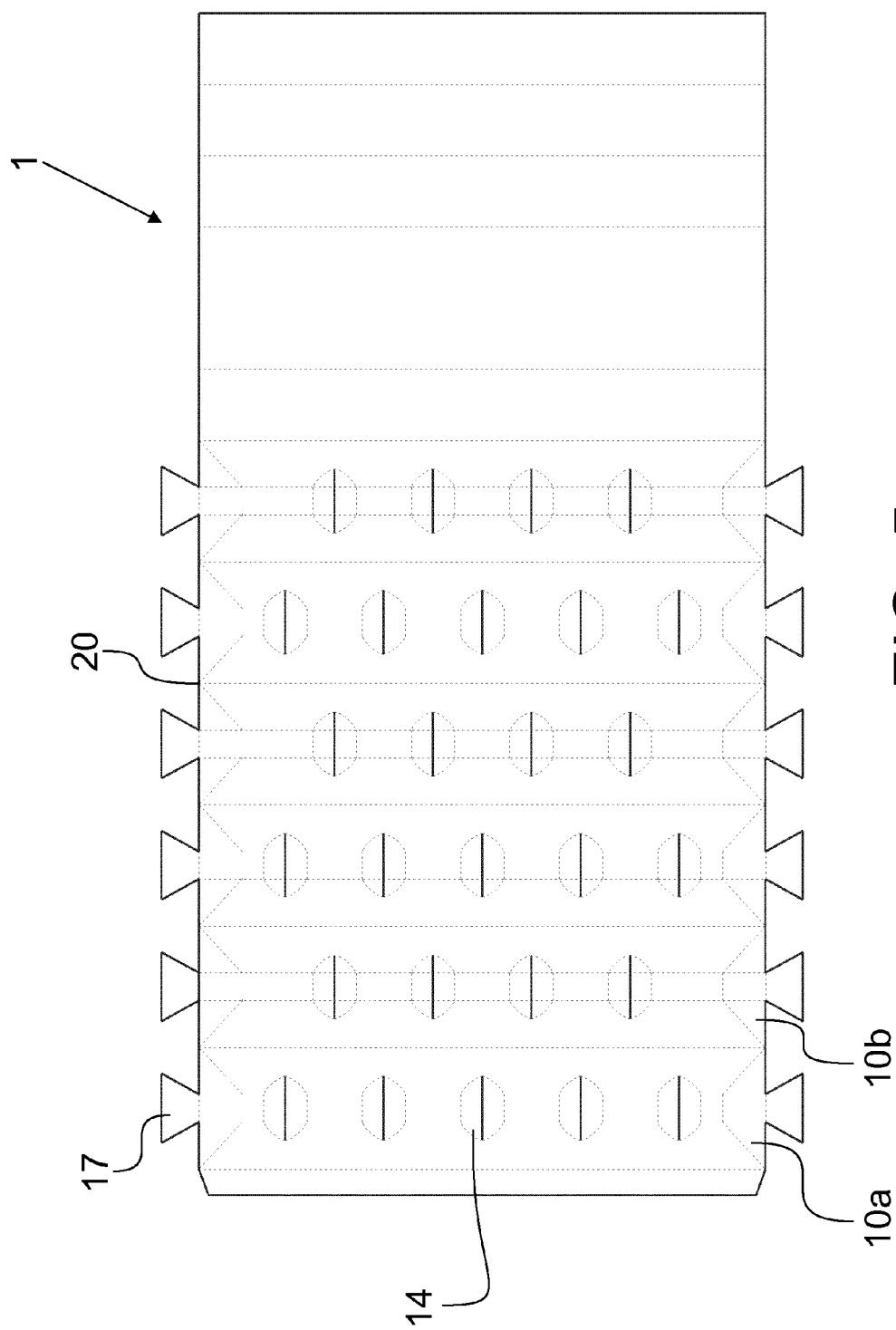


FIG. 5

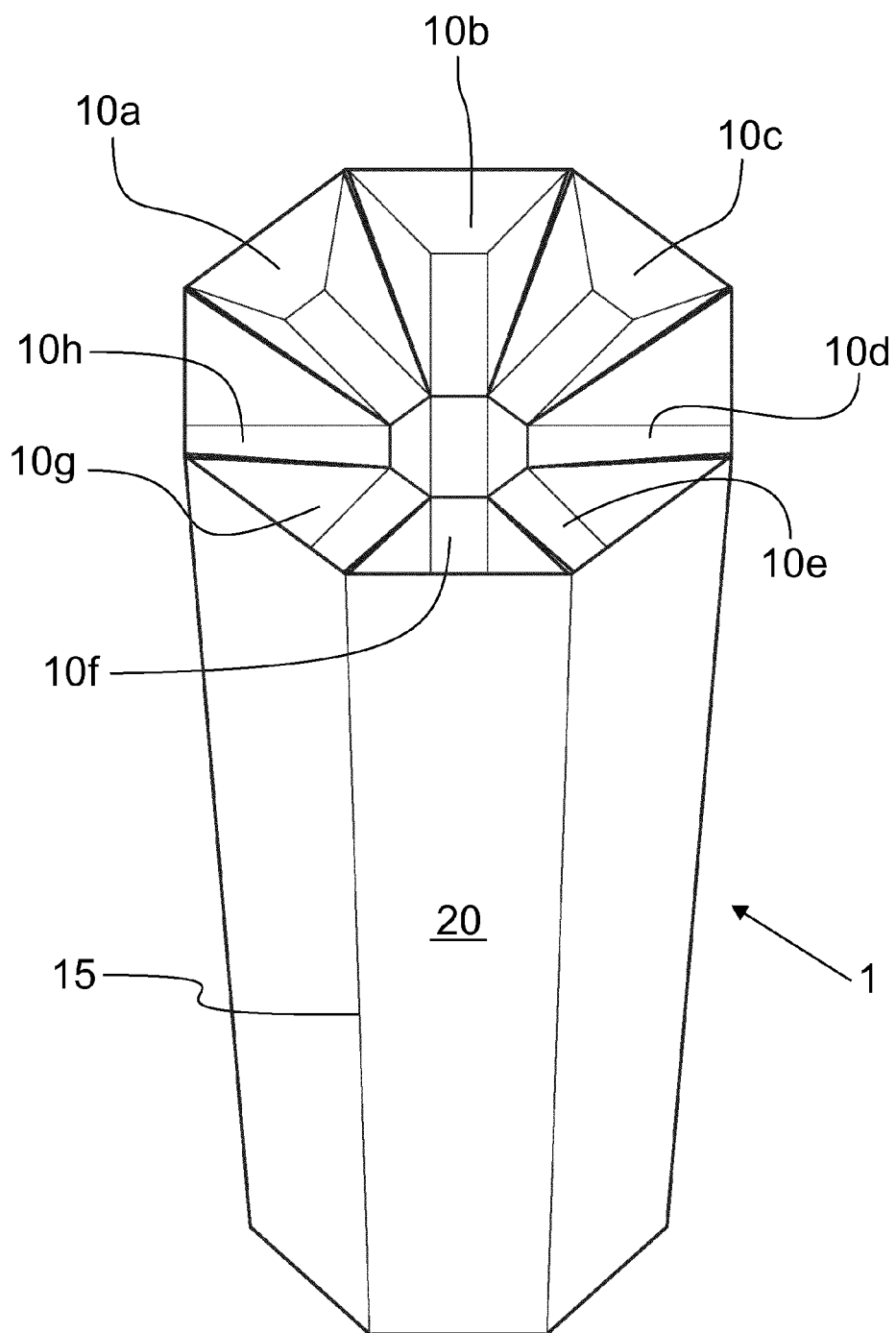


FIG. 6



EUROPEAN SEARCH REPORT

Application Number
EP 12 16 7122

DOCUMENTS CONSIDERED TO BE RELEVANT				
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)	
A	DE 86 02 038 U1 (SIDALM) 13 March 1986 (1986-03-13) * the whole document *	1-9	INV. B65D5/02 B65D5/50 B65D59/08 B65D81/02 B65D5/00	
A	US 3 955 744 A (CASUTT TONI) 11 May 1976 (1976-05-11) * the whole document *	1-9		
A	DE 200 04 695 U1 (VON DER WERTH JUSTUS [DE]) 3 August 2000 (2000-08-03) * the whole document *	1		
A	GB 1 308 014 A (PRALINENFABRIK NENDZA KG) 21 February 1973 (1973-02-21) * the whole document *	1		
A	US 1 171 083 A (BAILEY BENJAMIN F [US]) 8 February 1916 (1916-02-08) * the whole document *	1		
A	DE 20 2008 009001 U1 (PACKWELL GMBH & CO KG [DE]) 13 November 2008 (2008-11-13) * the whole document *	1		TECHNICAL FIELDS SEARCHED (IPC)
A	US 5 322 210 A (CHILA J PAUL [US] ET AL) 21 June 1994 (1994-06-21) * the whole document *	1		B65D
A	US 6 220 443 B1 (DAMASKOS STEVE [US]) 24 April 2001 (2001-04-24) * the whole document *	1		
A	WO 01/98179 A1 (GD SPA [IT]; POLLONI ROBERTO [IT]; COLO CHIARA [IT]; DRAGHETTI FIORENZ) 27 December 2001 (2001-12-27) * the whole document *	1		
The present search report has been drawn up for all claims				
Place of search Munich		Date of completion of the search 22 August 2012	Examiner Leijten, René	
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 12 16 7122

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.

22-08-2012

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 8602038 U1	13-03-1986	DE 8602038 U1	13-03-1986
		FR 2576880 A3	08-08-1986
		IT 210813 Z2	11-01-1989
US 3955744 A	11-05-1976	AR 204266 A1	10-12-1975
		AT 338691 B	12-09-1977
		AU 502404 B2	26-07-1979
		AU 7863275 A	02-09-1976
		BE 826290 A1	30-06-1975
		BG 27068 A3	15-08-1979
		CA 1020499 A1	08-11-1977
		CH 589549 A5	15-07-1977
		CS 194717 B2	31-12-1979
		DD 116183 A5	12-11-1975
		DE 2507843 A1	11-09-1975
		DK 91775 A	09-09-1975
		EG 11745 A	30-11-1977
		ES 435418 A1	01-12-1976
		FI 750641 A	09-09-1975
		FR 2263171 A1	03-10-1975
		GB 1479523 A	13-07-1977
		HK 12978 A	17-03-1978
		HU 172220 B	28-07-1978
		IE 42703 B1	08-10-1980
		IL 46713 A	31-10-1977
		IN 143817 A1	11-02-1978
		JP 991226 C	27-03-1980
		JP 50122394 A	25-09-1975
		JP 54024357 B	20-08-1979
		LU 71942 A1	20-08-1975
		NL 7502719 A	10-09-1975
		NO 750749 A	09-09-1975
		PH 11657 A	08-05-1978
		PL 94851 B1	30-09-1977
		RO 78271 A1	12-04-1982
		SE 409441 B	20-08-1979
		SE 7502587 A	09-09-1975
		SU 580820 A3	15-11-1977
		SU 621310 A3	25-08-1978
		TR 18594 A	22-04-1977
		US 3955744 A	11-05-1976
		YU 53575 A	28-02-1982
		ZA 7501235 A	28-01-1976
DE 20004695 U1	03-08-2000	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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

EP 12 16 7122

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.

22-08-2012

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 1308014 A	21-02-1973	BE 750355 A1	16-10-1970
		CH 499429 A	30-11-1970
		DE 6937155 U	08-01-1970
		FR 2060502 A5	18-06-1971
		GB 1308014 A	21-02-1973
		NL 7006431 A	25-03-1971

US 1171083 A	08-02-1916	NONE	

DE 202008009001 U1	13-11-2008	NONE	

US 5322210 A	21-06-1994	AU 6100794 A	29-08-1994
		US 5322210 A	21-06-1994
		WO 9418078 A1	18-08-1994

US 6220443 B1	24-04-2001	NONE	

WO 0198179 A1	27-12-2001	AT 341501 T	15-10-2006
		AU 6417801 A	02-01-2002
		CN 1437554 A	20-08-2003
		DE 60123607 T2	16-08-2007
		EP 1292514 A1	19-03-2003
		ES 2273844 T3	16-05-2007
		IT B020000367 A1	24-12-2001
		JP 2003535785 A	02-12-2003
		US 2003116612 A1	26-06-2003
		WO 0198179 A1	27-12-2001
