



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 1 577 230 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:

21.09.2005 Bulletin 2005/38

(51) Int Cl.7: **B65D 85/20, B65D 71/00**

(21) Application number: **05075595.8**

(22) Date of filing: **11.03.2005**

(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 MC NL PL PT RO SE SI SK TR**

Designated Extension States:

AL BA HR LV MK YU

(72) Inventor: **Catellani, Giacomo**

16147 Genova (IT)

(74) Representative: **Coppo, Alessandro et al**

Ing. Barzanò & Zanardo Milano S.p.A.,

Via Borgonuovo, 10

20121 Milano (IT)

(30) Priority: **16.03.2004 IT MI20040491**

(71) Applicant: **Industrie Settala S.p.A.**

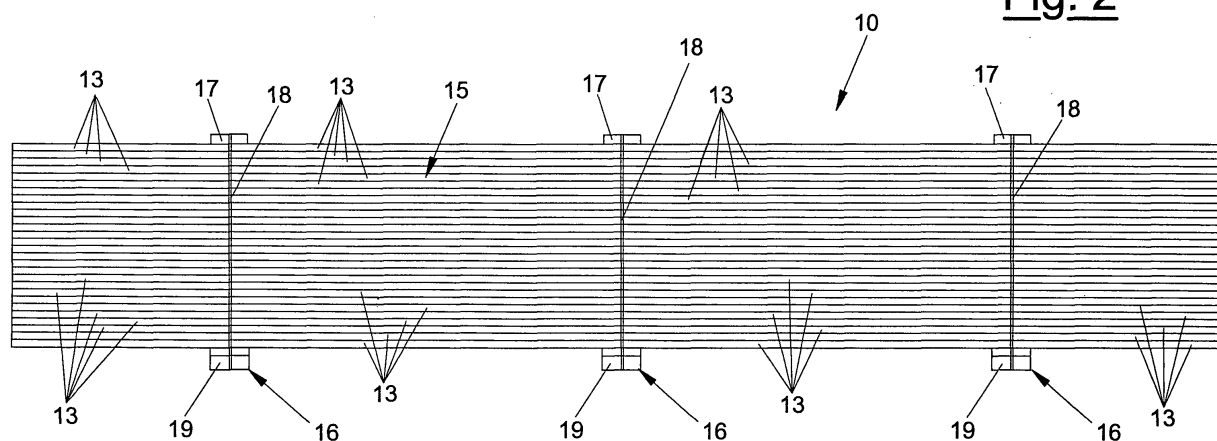
20158 Milan (IT)

(54) Self-supporting palletizing system and method for tube bundles

(57) A self-supporting and stackable palletizing system or pallet (10) of bundles of tubes, in particular tubes (13) for industrial, electrical, electronic and electro-technical applications comprises a series of tubes (13) packed in self-supporting bundles (12) having a polygonal section and neatly arranged to form a package (15)

of tube bundles (12) positioned on a series of supporting beams (16), the pallet (10) also comprising a series of simple beams (17) each situated above the package (15) in correspondence with each supporting beam (16), and flexible means (18) suitable for binding the beams (16, 17) and the package (15) and compressing them to form the pallet (10).

Fig. 2



EP 1 577 230 A1

Description

[0001] The present invention relates to a palletizing system or pallet of bundles of tubes and the relative formation method.

[0002] More specifically, the invention relates to a palletizing system or pallet of bundles of tubes for industrial, electric, electronic and electro-technical applications, comprising a series of tubes packed in bundles and the relative formation method.

[0003] Palletizing systems of materials have long been used for allowing the packaging and storage of pallets by stacking and at the same time for simplifying their transportation.

[0004] Rigid tubes for the protection of wiring are known in the field of industrial applications in general, and in particular in the field of electrical, electronic and electro-technical applications. Said tubes are cut into a standard size, for example 3 metres, packed in bundles comprising various units of tubes and subsequently placed in wooden frames fixed with nails or clips.

[0005] A pallet according to the known art is, for example, produced with tubes inserted in three substantially equidistant frames; the tubes are finally bound by means of a metallic strap.

[0006] A palletizing system or pallet according to the known art is illustrated in figure 1, after its opening.

[0007] Figure 1 indicates the bundles 2 of tubes 3 produced by wrapping the tubes with a plastic film 4, the bundles 2 are stacked to form a package 5 and are inserted in frames 6 made up of wooden boards 7 joined by means of nails or metallic clips 8.

[0008] The package is secured by binding with a metallic strap 9.

[0009] As can be seen in figure 1, the frames must be literally split open to be able to use the tubes. This operation not only creates risks for the operator himself, but also causes the inevitable dispersal of wood splinters, nails and metallic strap which are difficult to recover and can cause damage and wounds when there is a lack of personal protective means or, in any case, safety problems with respect to the staff and clients.

[0010] Another disadvantage of the known system described above is that it produces significant volumes of packaging material which cannot be re-used.

[0011] The main objective of the present invention is consequently to overcome the above drawbacks of the known art by providing a palletizing system or pallet which is simple to produce, does not envisage the use of nails and metallic strap and which allows the components to be re-used.

[0012] Another objective of the present invention is to provide a pallet which has a high sturdiness and resistance for optimizing the moving, transportation and storage logistics of the pallets of tubes.

[0013] Also included in the objectives of the present invention, is the production of a pallet having a high resistance to transportation and stacking conditions so as

not to cause deformation or twisting in the single tubes.

[0014] The palletizing system according to the invention advantageously avoids the presence of protruding nails, clips or metallic strap when opening the pallets.

[0015] These and other objectives according to the present invention are achieved by the self-supporting palletizing system or pallet of bundles of tubes according to what is specified in claim 1.

[0016] A method for the production of a self-supporting palletizing system of tubes according to the present invention is the object of claim 10.

[0017] Further characteristics of the invention form the object of the dependent claims.

[0018] The self-supporting and stackable palletizing system or pallet of bundles of tubes, in particular tubes for industrial, electrical, electronic and electro-technical applications according to the invention, comprises a series of tubes packed in self-supporting bundles with a polygonal section neatly arranged to form a package of tube bundles positioned on a series of supporting beams, the palletizing system also comprising a series of simple beams each situated above the package in correspondence with each supporting beam, and flexible means suitable for binding the beams and the package and compressing it.

[0019] The characteristics and advantages of a self-supporting palletizing system or pallet of bundles of tubes, in particular tubes for industrial, electrical, electronic and electro-technical applications, according to the present invention, will appear more evident from the following illustrative and nonlimiting description, referring to the enclosed schematic drawings, in which:

figure 1 is a perspective view of various pallets according to the known art;

figure 2 is a schematic side view of the palletizing system according to the invention;

figure 3 is a schematic view of the end of the system of figure 2;

figure 4 is a schematic view of the end of a bundle of tubes of the package of figure 3;

figures 5 and 6 are schematic perspective views of details of the system of figure 2;

figure 7 is a perspective view of a detail of the palletizing system according to a different embodiment thereof.

[0020] With reference to figures 2 to 6, these illustrate a palletizing system or pallet 10 of bundles 12 of tubes, in particular tubes 13 for industrial, electrical, electronic and electro-technical applications.

[0021] The system according to the embodiment of the invention therefore comprises a series of tubes 13 packed in bundles 12 with a polygonal section by wrapping with a plastic film 14.

[0022] The bundles 12 thus formed are suitably and neatly arranged to form a self-supporting package 15 of bundles of tubes, having an overall substantially square

section, positioned on a series of supporting beams 16.

[0023] The palletizing system or pallet 10 also comprises a series of simple beams 17 each positioned above the package 15 in correspondence with each supporting beam 16.

[0024] The system is completed by closure with flexible means 18 destined for binding the package by wrapping the beams 16, 17 and the package 15, so that these flexible means 18 compress the package 15, laterally.

[0025] Said flexible means 18 consist of a strap, preferably made of a plastic material, which, thanks to its elastic properties, allows a greater traction in the closing phase of the bundles 12 of tubes 13, without, however, causing the deformation of the tubes 13 but allowing a firmer binding of the beams 16, 17 and package 15, thus allowing a structurally securer and sturdier pallet 10 to be obtained.

[0026] This firmer binding is also obtained thanks to the fact that the bundles 12 of tubes 13 are produced in suitable polygonal forms in relation to their diameter, by means of specific industrial equipment, and are arranged and suitably oriented so as to form a self-supporting package.

[0027] In this way, the tubes are not deformed as the self-supporting package 15 and beams allow a better distribution of the traction of the strap giving the finished pallet greater strength.

[0028] The supporting beams 16 are equipped with a prop 19 situated below each of their ends, to favour the moving and stacking of the pallets 10.

[0029] The supporting beams 16 and also the simple beams 17 are generally produced with a shorter length than the width of the package 15 so that they do not protrude, to prevent the stacking of the pallets 10 from being too cumbersome as well as difficult and unstable, in particular when the pallets have different heights.

[0030] It should be remembered, in fact, that the dimensions of the pallets are calculated, for obvious logistic reasons, bearing in mind the useful loading width and height of the transport vehicles in order to maximize the number of tubes which can be transported per volume unit, in order to reduce transport costs.

[0031] With reference to figure 7, it is possible, however, to produce supporting beams 16 with dimensions greater than the width of the package 15, i.e. protruding with respect to its head section, in this case, there is a groove 20 at both outer ends of the supporting beams and props 19 for housing the strap 18 so that this can still exert its compressing function of the package 15 and pallet 10 in general.

[0032] The supporting beams, simple beams and props are suitably made of wood, other economically and technologically valid materials, however, can also be advantageously used in view of the possibility of recovering and re-using them for the production of new pallets 10.

[0033] A palletizing method of tubes, in particular tubes 13 for industrial, electrical, electronic and electro-

technical applications comprises the following phases:

- a) preparing a series of bundles 12 of tubes 13 by binding with a plastic film 14, each bundle having a polygonal form;
- b) suitably arranging said bundles 12 of tubes 13 on a series of supporting beams 16 so as to form a package 15 with a substantially square section;
- c) placing a simple beam 17 above the package 15 in correspondence with each supporting beam 16;
- d) winding and firmly binding a suitable length of strap 18 around each pair of simple beam 17, supporting beam 16, with the package 15 of tube bundles in-between so that said flexible means 18 laterally compress the package 15.

Claims

1. A self-supporting and stackable palletizing system (10) of bundles of tubes, in particular tubes (13) for industrial, electrical, electronic and electro-technical applications **characterized in that** it comprises a series of tubes (13) packed in self-supporting bundles (12) having a polygonal section and neatly arranged to form a package (15) of tube bundles (12) positioned on a series of supporting beams (16), the pallet (10) also comprising a series of simple beams (17) each situated above the package (15) in correspondence with each supporting beam (16), and flexible means (18) suitable for binding the beams (16, 17) and the package (15) and compressing them to form the pallet (10).
2. The palletizing system according to claim 1, wherein said flexible means (18) consist of a strap, preferably made of a plastic material.
3. The palletizing system according to claim 2, wherein said bundles (12) of tubes (13) are produced with a polygonal form and bound by means of plastic film (14).
4. The palletizing system according to claim 2, wherein said supporting beams have a prop (19) situated below each of their ends.
5. The palletizing system according to claim 1, wherein said supporting beams (16) are produced with a shorter length than the width of the package (15) so as not to protrude therefrom.
6. The palletizing system according to claim 1, wherein said supporting beams (16) are produced with a greater length than the width of the package (15).
7. The palletizing system according to claim 6, wherein said supporting beams (16) and said props (19)

have a groove (20) at both outer ends to house the strap (18) so that this can in any case compress the package (15).

8. The palletizing system according to claim 1, where- 5
in said supporting beams (16) and said props (19)
and/or simple beams (17) are made of wood.
9. The palletizing system according to claim 1, where- 10
in said supporting beams (16) and said props (19)
and/or simple beams (17) are made of plastic.
10. A method for the production of a palletizing system
of tubes (13) according to any of the previous 15
claims, **characterized in that** it comprises the fol-
lowing phases:
 - a) preparing a series of bundles (12) of tubes 20
(13) by binding with a plastic film (14), each
bundle having a polygonal form;
 - b) suitably arranging said bundles (12) of tubes
(13) on a series of supporting beams (16) so as
to form a package (15) with a substantially
square section;
 - c) placing a simple beam (17) above the pack- 25
age (15) in correspondence with each support-
ing beam (16);
 - d) winding and firmly binding a suitable length
of strap (18) around each pair of simple beam 30
(17), supporting beam (16), with the package
(15) of tube bundles in-between, so that said
flexible means (18) laterally compress the
package (15).

35

40

45

50

55

Fig. 1

Prior Art

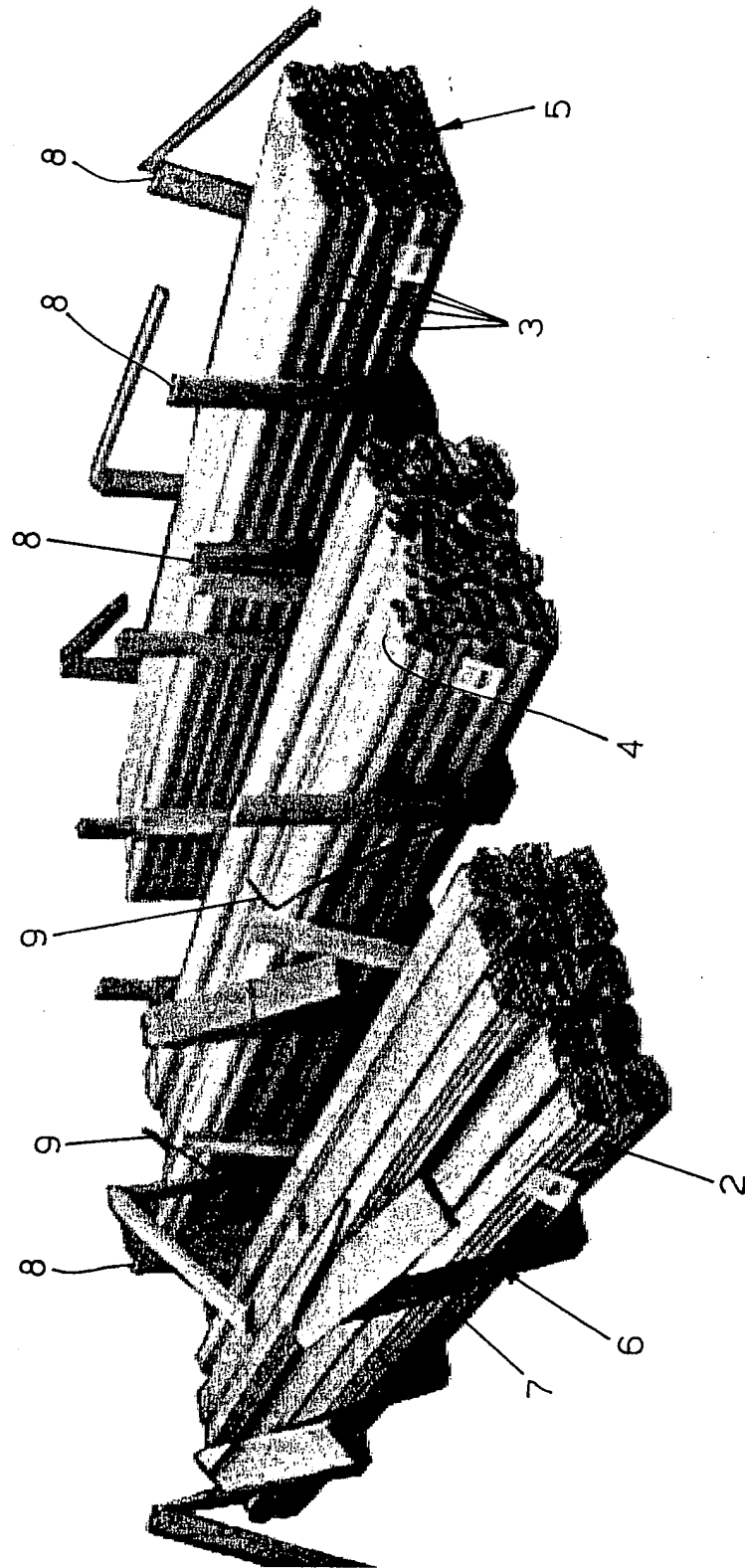


Fig. 2

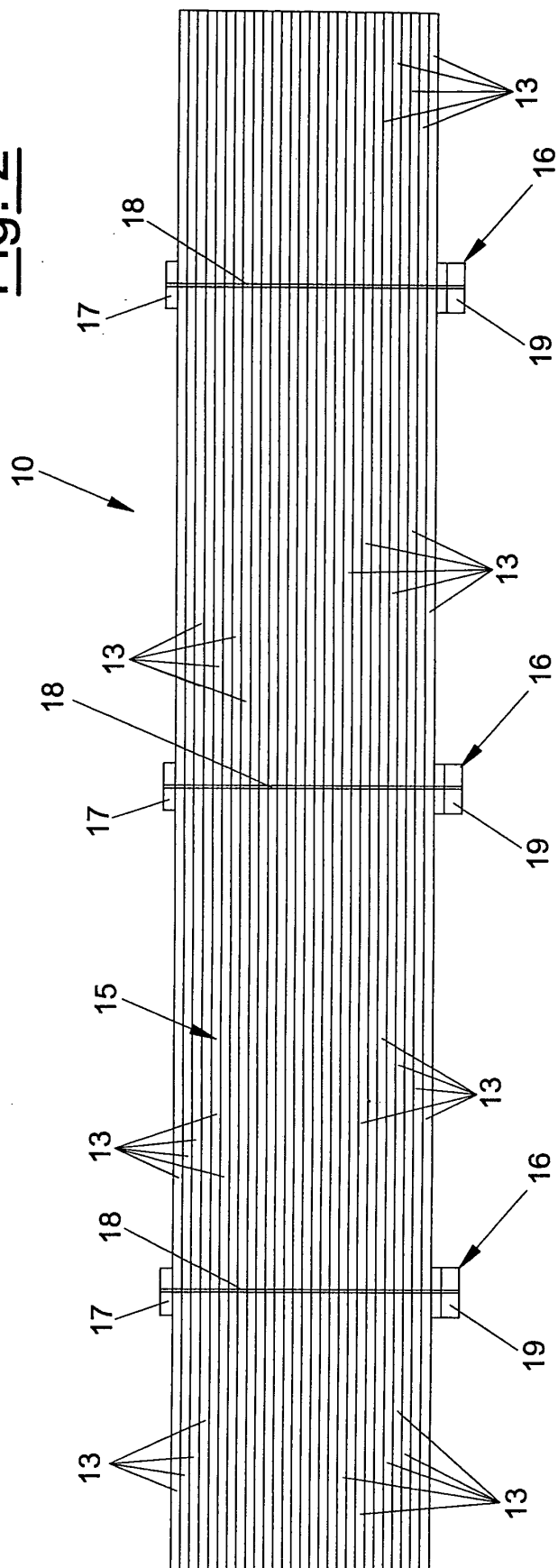


Fig. 3

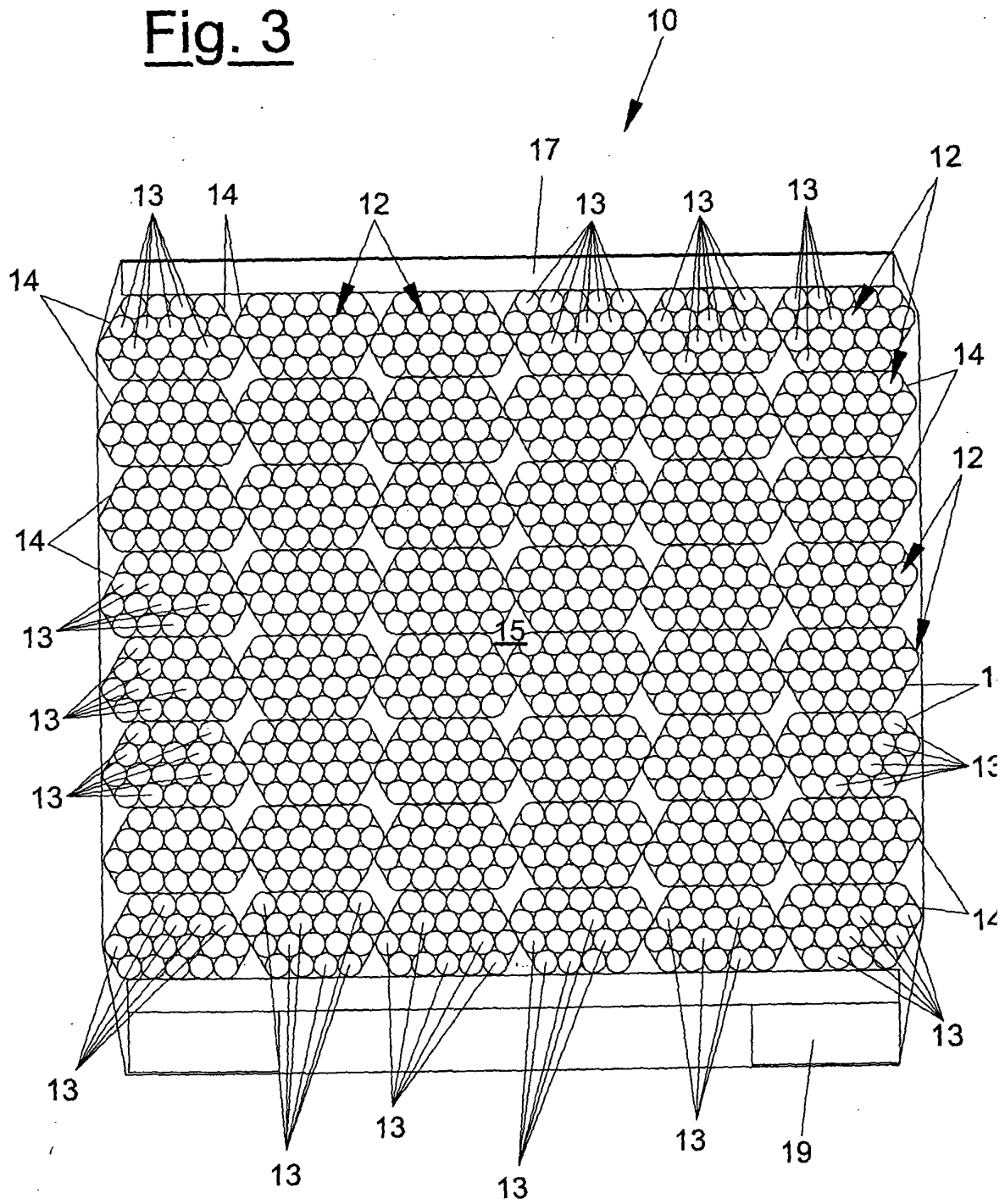


Fig. 5

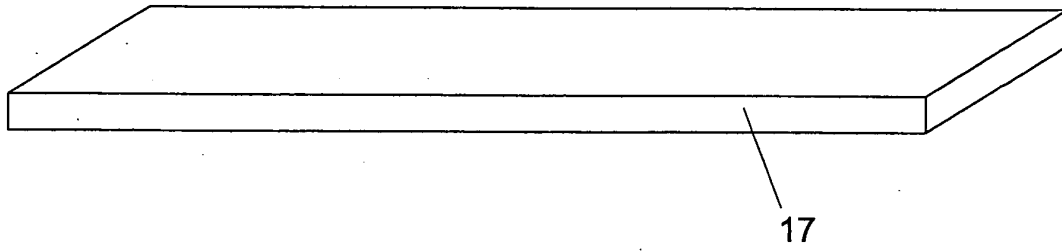


Fig. 6

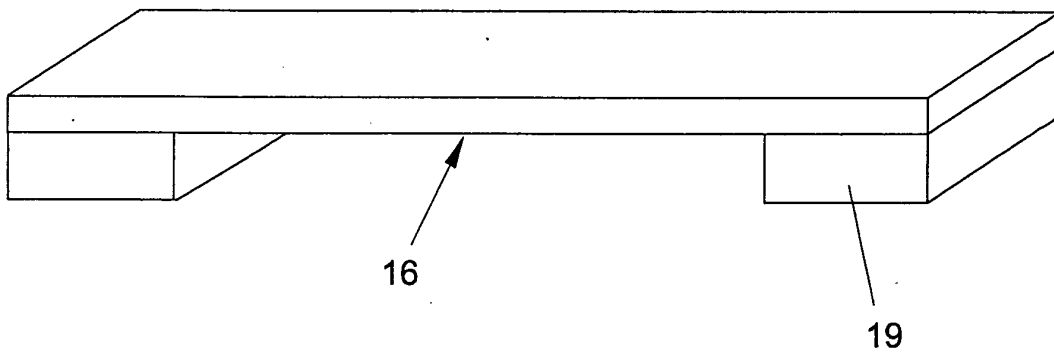


Fig. 4

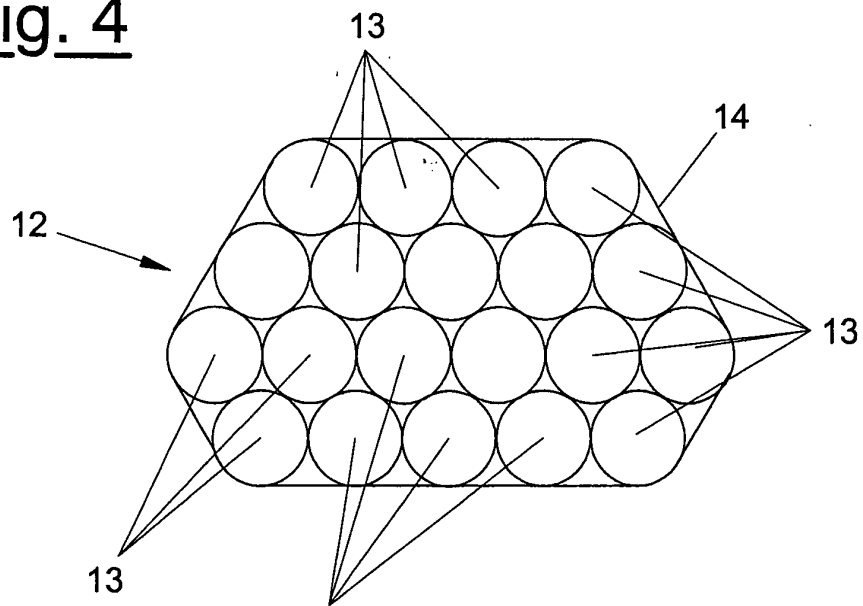
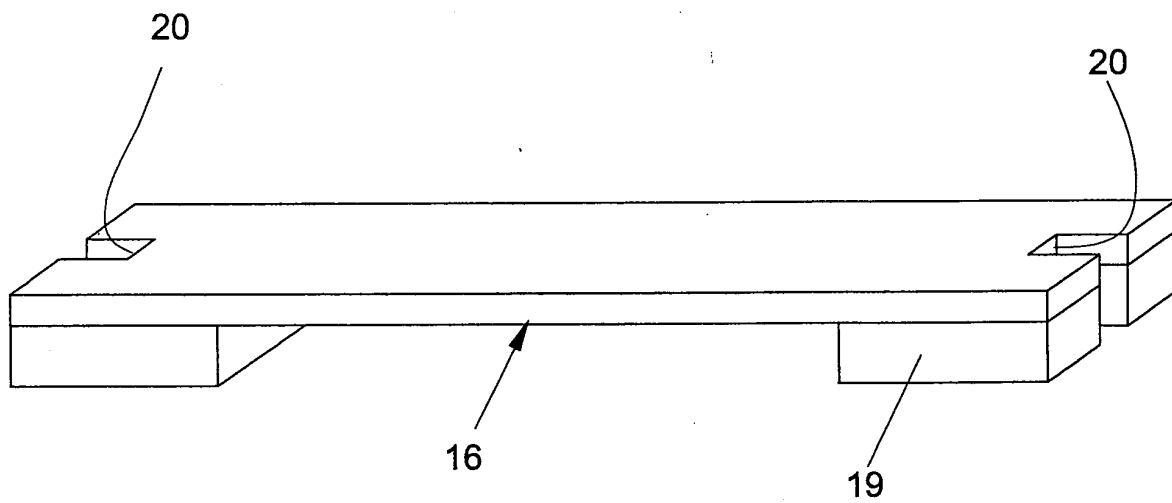


Fig. 7





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 05 07 5595

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)
Y	EP 0 574 970 A (ALUMIX S.P.A) 22 December 1993 (1993-12-22) * column 2, line 21 - line 44; figure 1 * -----	1	B65D85/20 B65D71/00
Y	FR 1 460 399 A (FIRMA DEUTSCHE STEINZEUG- UND KUNSTSTOFFWARENFABRIK FUER KANALISATION) 17 June 1966 (1966-06-17) * page 2, last paragraph - page 3, paragraph 1; figure 1 * -----	1	
A	GB 764 627 A (WHEELING STEEL CORPORATION) 28 December 1956 (1956-12-28) * page 3, line 47 - line 50; figure 1 * -----	1	
A	DE 100 62 038 C1 (PFLEIDERER DAEMMSTOFFTECHNIK INTERNATIONAL GMBH & CO. KG) 8 May 2002 (2002-05-08) * column 7, paragraph 45; figures 1,3c * -----	1	
A	US 4 565 289 A (LESUEUR ET AL) 21 January 1986 (1986-01-21) * column 1, line 65 - column 2, line 30; figures 1,2 * -----	1	TECHNICAL FIELDS SEARCHED (Int.Cl.7) B65D
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 9 May 2005	Examiner Derrien, Y
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 (P4/C01)

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

EP 05 07 5595

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.

09-05-2005

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0574970	A	22-12-1993	IT 1254973 B EP 0574970 A2	11-10-1995 22-12-1993
FR 1460399	A	17-06-1966	NONE	
GB 764627	A	28-12-1956	NONE	
DE 10062038	C1	08-05-2002	NONE	
US 4565289	A	21-01-1986	FR 2555964 A1 BR 8406118 A DE 3443829 A1 IT 1179844 B MX 161956 A	07-06-1985 24-09-1985 13-06-1985 16-09-1987 08-03-1991