

(19)



(11)

EP 3 217 142 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
13.09.2017 Bulletin 2017/37

(51) Int Cl.:
F42B 4/24 (2006.01)
F42B 4/20 (2006.01)
F42B 4/22 (2006.01)

(21) Application number: **16174669.8**

(22) Date of filing: **15.06.2016**

(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
 Designated Validation States:
MA MD

(72) Inventors:
 • **LI, Gang**
Liling Hunan (CN)
 • **LI, Yi**
Liling Hunan (CN)

(74) Representative: **Jeannet, Olivier et al**
LLR Lyon
26 Quai Claude Bernard
69007 Lyon (FR)

(30) Priority: **10.03.2016 CN 201620183085 U**

(71) Applicant: **Chili Fireworks Co., Ltd.**
Liling Hunan (CN)

(54) PYRO-CUBE FIREWORKS

(57) A Pyro-Cube fireworks includes a plurality of fireworks units (10). Each of the fireworks units (10) includes a fuse (11), a plurality of fireworks launching tubes (12), at least one male tube (13), and at least one female tube (14). The fuse (11) connects with the female tube (14). The male tube (13) and the female tube (14) are configured in a rim of the fireworks units (10). The fuse (11) connects all fireworks launching tubes (12) with the male tube (13) from the female tube (14). The female tube (14)

of one fireworks unit engages with the male tube (13) of another fireworks unit to connect the fuse (11) of the female tube (14) with the fuse (11) of the male tube (13) of adjacent fireworks unit. Only the fuse (11) on the female tube (14) of the first fireworks unit has to be ignited, and all fireworks units (10) are ignited in a sequence corresponding to the connecting sequence of the fuses (11). The igniting operation of the fireworks is simple and safe.

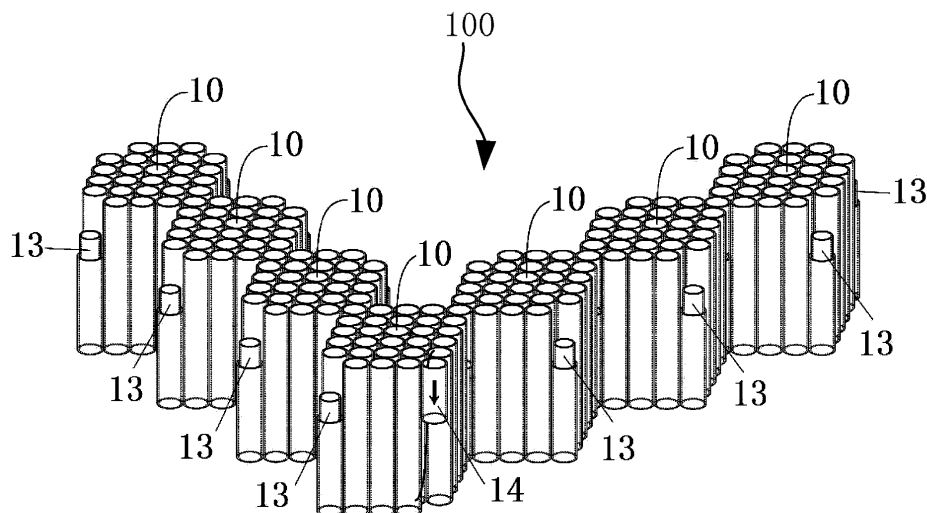


FIG. 1a

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Description

BACKGROUND

1. Technical Field

[0001] The present disclosure generally relates to a fireworks field, and especially relates to a Pyro-Cube fireworks.

Description of Related Art

[0002] Fireworks have been indispensable items for festivals, and have owned unique charm all the time. Currently, single fireworks unit may not satisfy users' entertainment demands, and thus new method to ignite plurality of fireworks, such as connecting the fireworks with quick leads and plastic connector, has been developed. Nevertheless, such method may be complicated and unsafety.

SUMMARY

[0003] The disclosure relates to a Pyro-Cube fireworks having diverse entertainment effects and simple operations.

[0004] In one aspect, a Pyro-Cube fireworks includes: a plurality of fireworks units, each of the fireworks units includes a fuse, a plurality of fireworks launching tubes, at least one male tube, and at least one female tube, the fuse connects with the female tube, the male tube and the female tube are configured in a rim of the fireworks units, the fuse connects all fireworks launching tubes and the male tube from the female tube, wherein the female tube of one fireworks unit engages with the male tube of another fireworks unit to connect the fuse of the female tube with the fuse of the male tube of adjacent fireworks unit.

[0005] Wherein the female tube includes a hollow first paper tube, the first paper tube includes a first nozzle arranged in a bottom of the first paper tube, the male tube includes a second paper tube and a spurt protruding from a top of the second paper tube, the spurt is received within the first paper tube via the first nozzle to connect the female tube with the male tube.

[0006] Wherein each of the fireworks launching tubes includes a third paper tube, the third paper tube includes a third nozzle arranged on a top of the third paper tube, bottoms of the second paper tube and the third paper tube are on the same plane, and tops of the first paper tube and the third nozzle are on the same plane.

[0007] The present disclosure provides the advantages as below.

[0008] First, the fuses of the fireworks units are connected in accordance with the connection between the male tube and the female tube. Only the fuse on the female tube of the first fireworks unit has to be ignited, and all fireworks units are ignited in a sequence correspond-

ing to the connecting sequence of the fuses. The igniting operation of the fireworks is simple and safe.

[0009] Second, the shapes of the fireworks units are different, and thus the igniting effects of the fireworks units are different. With such configuration, the igniting effects may be more vivid.

[0010] Third, the fireworks unit includes at least one male tube and at least one female tube. The combinations of the fireworks units may be configured to include the fireworks of different shapes in accordance with users demand. In this way, the igniting effects of the Pyro-Cube fireworks may be diverse so as to obtain more vivid user experience.

[0011] Fourth, the male tube is stepped-cylinder-shaped, and the female tube is cylinder-shaped. The connection between the adjacent fireworks units is stable, and the operations are simple.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012]

FIG. 1a is a schematic view of the Pyro-Cube fireworks in accordance with a first embodiment.

FIG. 1b is a schematic view of the Pyro-Cube fireworks in accordance with a second embodiment.

FIG. 1c is a schematic view showing the assembly of the two fireworks units in accordance with one embodiment.

FIG. 2a is a three dimensional view of the fireworks unit in accordance with a first embodiment.

FIG. 2b is a three dimensional view of the fireworks unit in accordance with a second embodiment.

FIG. 2c is a three dimensional view of the fireworks unit in accordance with a third embodiment.

FIG. 3 is a top view of the fireworks unit in accordance with one embodiment.

DETAILED DESCRIPTION

[0013] The disclosure is illustrated by way of example and not by way of limitation in the figures of the accompanying drawings, in which like reference numerals indicate similar elements.

[0014] Referring to FIGS. 1a, 2a and 3, the Pyro-Cube fireworks 100 includes a plurality of fireworks units 10. Each of the fireworks units 10 includes a fuse 11, a plurality of fireworks launching tubes 12, at least one male tube 13, and at least one female tube 14. The fuse 11 connects with the female tube 14. The male tube 13 and the female tube 14 are configured in a rim of the fireworks units 10. The fuse 11 connects all fireworks launching tubes 12 and the male tube 13 from the female tube 14.

[0015] Referring to FIG. 1c, during operations, the female tube 14 of one of the fireworks unit 10 engages with the male tube 13 of another fireworks unit 10 so as to connect the fuse 11 of one of the female tube 14 with the fuse 11 of the male tube 13 of another fireworks unit 10.

In this way, the fireworks units 10 may be connected.

[0016] Referring to FIGS. 1a-1c and 2a-2c, in an example, each of the fireworks units 10 may include twenty-one fireworks launching tubes 12, three male tubes 13, and one female tube 14. During the operations, one of the fireworks units 10 may connect to the other one, two, or three fireworks units 10. That is, the fireworks units 10 may be configured to connect with others in a variety of ways so as to obtain diverse entertainment effects. At the same time, the cross sections of each of the fireworks units 10 may be square, prism, or circular. That is, the shapes of the fireworks units 10 may be different such that the fireworks 100 may own diverse entertainment effects.

[0017] Referring to FIGS. 2a-2c, the female tube 14 includes a hollow first paper tube 142. The first paper tube 142 includes a first nozzle 140 arranged in a bottom of the first paper tube 142. That is, the female tube 14 is cylinder-shaped. The male tube 13 includes a second paper tube 132 and a spurt 134. The spurt 134 protrudes from a top of the second paper tube 132. That is, the spurt 134 is stepped-cylinder-shaped. The spurt 134 is received within the first paper tube 142 via the first nozzle 140 to connect the female tube 14 with the male tube 13.

[0018] As the male tube 13 is stepped-cylinder-shaped, and the female tube 14 is cylinder-shaped, the connection between the adjacent fireworks units 10 is stable, and the operations are simple.

[0019] Each of the fireworks launching tubes 12 includes a third paper tube 122. The third paper tube 122 includes a third nozzle 120 arranged on a top of the third paper tube 122. Bottoms of the second paper tube 132 and the third paper tube 122 are on the same plane. The tops of the first paper tube 142 and the third nozzle 120 are on the same plane. In this way, the bottoms and the tops of the fireworks 100 assembled by the plurality of fireworks units 10 align with each other, which contributes to the transportation and the storage of the fireworks 100.

[0020] During the operations of the fireworks 100, the fuses 11 of the fireworks units 10 are connected by the connection between the male tube 13 and the female tube 14. When the fireworks 100 is ignited, only the fuse 11 on the female tube 14 of the first fireworks unit 10 has to be ignited. Afterward, the fireworks units 10 are ignited in a sequence corresponding to the connecting sequence of the fuses 11. The igniting operation of the fireworks 100 is simple and safe. Furthermore, the fireworks unit 10 includes at least one male tube 13 and at least one female tube 14. That is, the combinations between the fireworks units 10 may be configured in accordance with user demand. In this way, the fireworks 100 having a plurality of shapes is configured to obtain more vivid effects.

[0021] Although the features and elements of the present disclosure are described as embodiments in particular combinations, each feature or element can be used alone or in other various combinations within the principles of the present disclosure to the full extent in-

dictated by the broad general meaning of the terms in which the appended claims are expressed.

5 Claims

1. A Pyro-Cube fireworks, comprising:

a plurality of fireworks units (10), each of the fireworks units (10) comprises a fuse (11), a plurality of fireworks launching tubes (12), at least one male tube (13), and at least one female tube (14), wherein the fuse (11) connects with the female tube (14), the male tube (13) and the female tube (14) are configured in a rim of the fireworks units (10), and the fuse (11) connects all fireworks launching tubes (12) and the male tube (13) from the female tube (14), wherein the female tube (14) of one fireworks unit engages with the male tube (13) of another fireworks unit to connect the fuse (11) of the female tube (14) with the fuse (11) of the male tube (13) of adjacent fireworks unit.

2. The Pyro-Cube fireworks as claimed in claim 1, wherein the female tube (14) comprises a hollow first paper tube (142), the first paper tube (142) comprises a first nozzle (140) arranged in a bottom of the first paper tube (142), the male tube (13) comprises a second paper tube (132) and a spurt (134) protruding from a top of the second paper tube (132), wherein the spurt (134) is received within the first paper tube (142) via the first nozzle to connect the female tube (14) with the male tube (13).

3. The Pyro-Cube fireworks as claimed in claim 2, wherein each of the fireworks launching tubes (12) comprises a third paper tube (122), the third paper tube (122) comprises a third nozzle (120) arranged on a top of the third paper tube (122), bottoms of the second paper tube (132) and the third paper tube (122) are on the same plane, and tops of the first paper tube (142) and the third nozzle (120) are on the same plane.

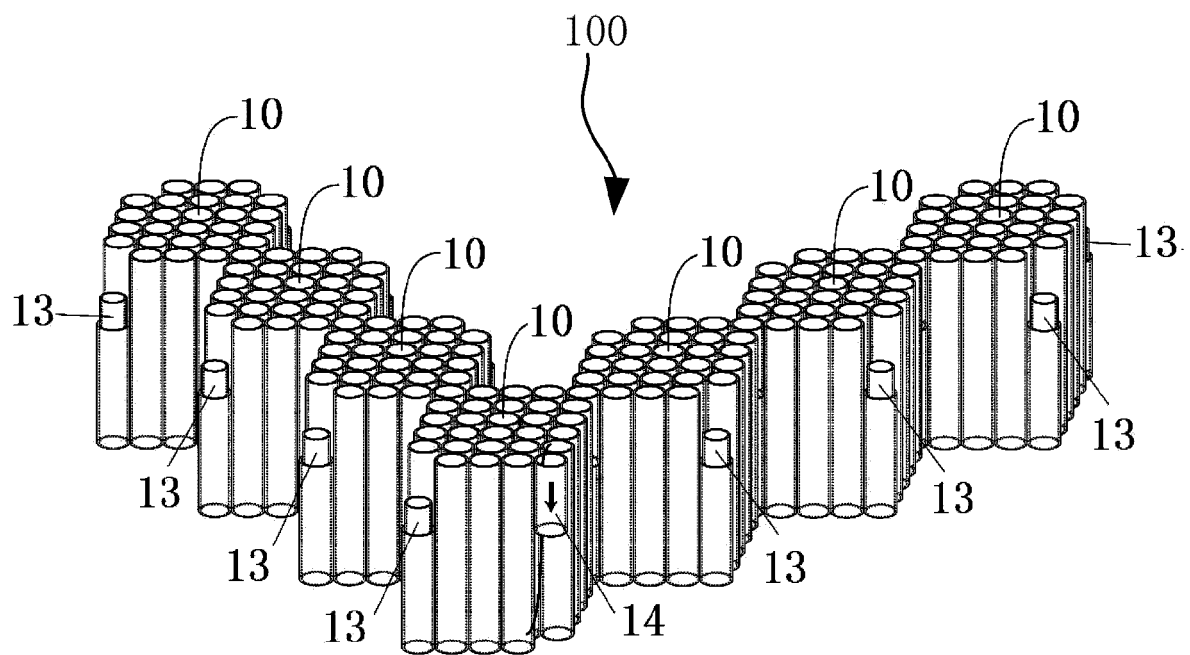


FIG. 1a

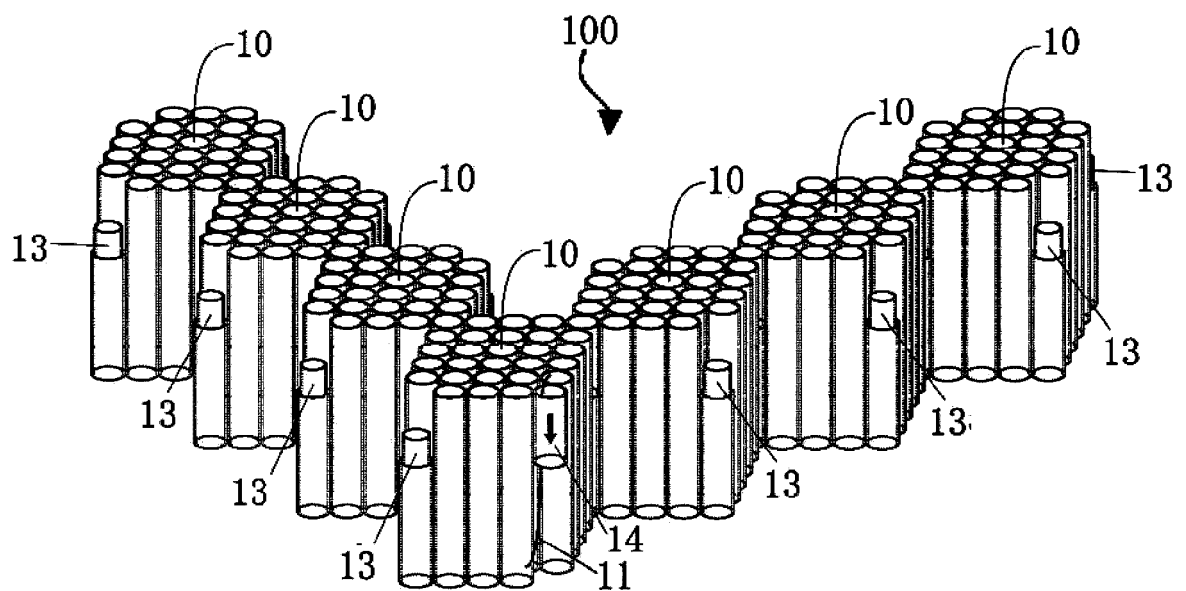


FIG. 1b

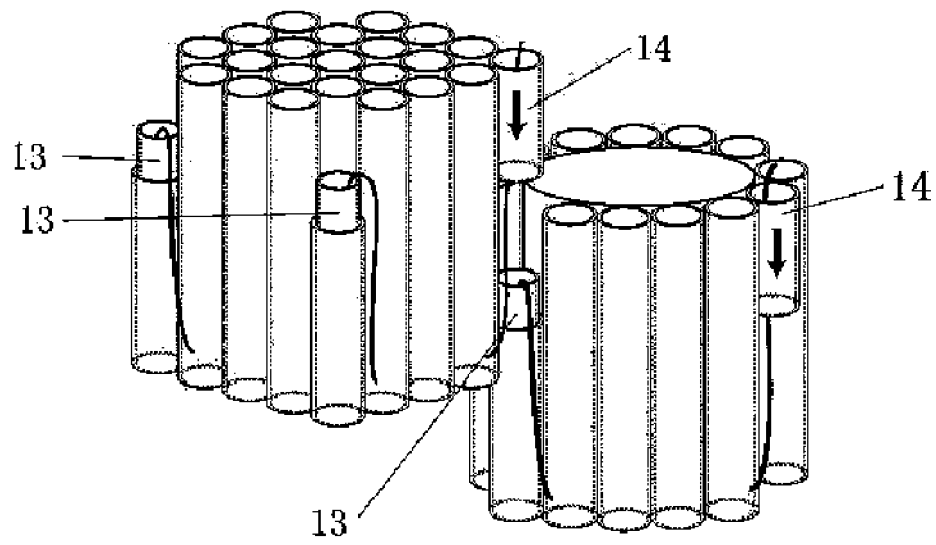


FIG. 1c

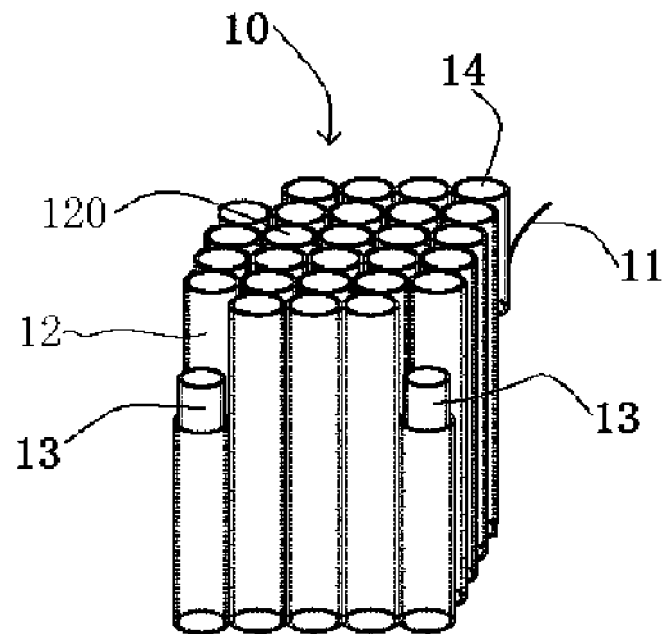


FIG. 2a

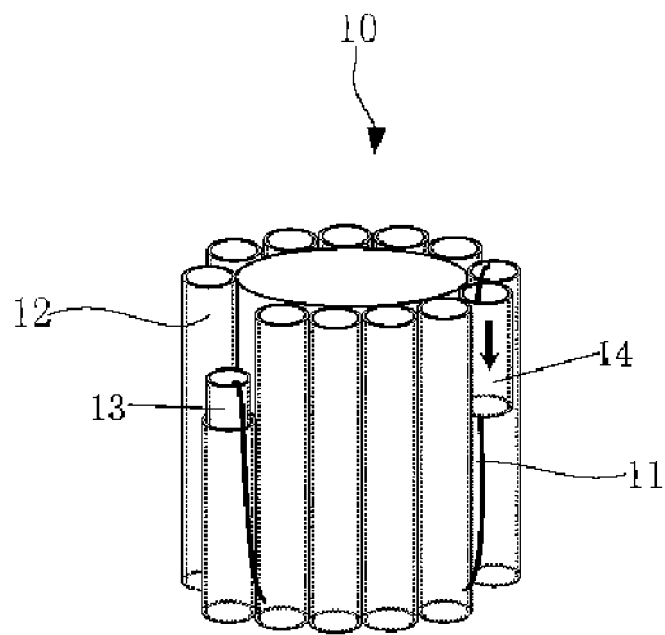


FIG. 2b

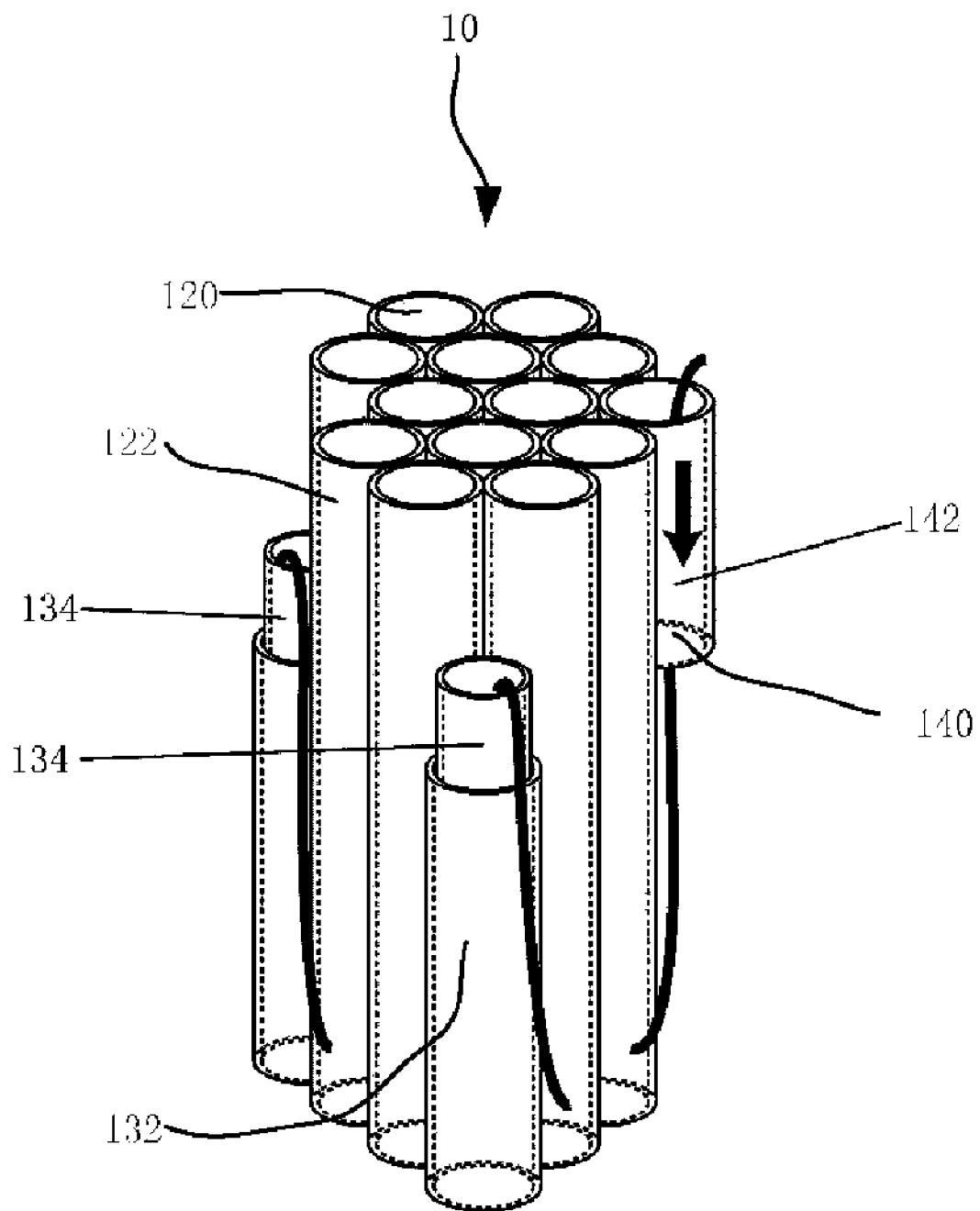


FIG. 2c

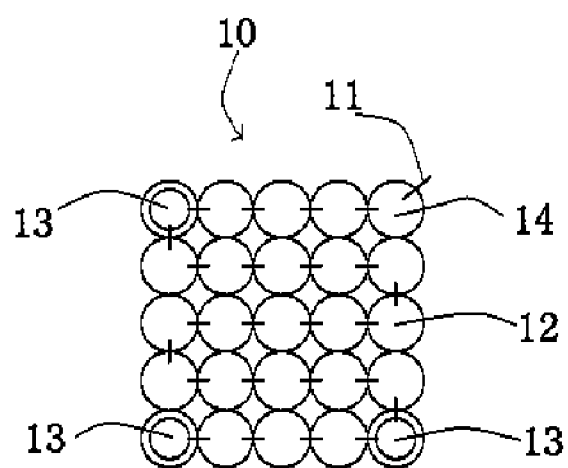


FIG. 3



EUROPEAN SEARCH REPORT

 Application Number
 EP 16 17 4669

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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	ES 2 180 379 A1 (GARCIA GAMON FERNANDO [ES]; GARCIA GAMON MANUEL) 1 February 2003 (2003-02-01) * column 4, line 8 - line 37; figures 1-3 *	1	INV. F42B4/24 F42B4/22 F42B4/20
X	ES 2 527 512 A1 (FAUBEL BARRACHINA JOSE MIGUEL [ES]) 26 January 2015 (2015-01-26) * page 4, line 40 - line 44; figures 1,2 *	1	
X	ES 292 675 U (GARCIA GAMON FERNANDO [ES]; GARCIA GAMON MANUEL) 16 June 1986 (1986-06-16) * page 5, line 23 - page 6, line 2; figures 1-3 *	1	
A	CN 204 177 291 U (LIU HAIYAN) 25 February 2015 (2015-02-25) * figures 6,7 *	1,3	
			TECHNICAL FIELDS SEARCHED (IPC)
			F42B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 3 July 2017	Examiner Giesen, Maarten
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			

EPO FORM 1503 03.02 (P04C01)

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

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5 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
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03-07-2017

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
ES 2180379	A1	01-02-2003	NONE
ES 2527512	A1	26-01-2015	NONE
ES 292675	U	16-06-1986	NONE
CN 204177291	U	25-02-2015	NONE

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