



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
04.01.2017 Bulletin 2017/01

(51) Int Cl.:
A63B 5/11 (2006.01) A63B 17/02 (2006.01)

(21) Application number: **16150096.2**

(22) Date of filing: **04.01.2016**

(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

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(30) Priority: **29.06.2015 CN 201520450624 U**

(54) **CROSS CONNECTION OF A FRAME FOR A TRAMPOLINE**

(57) A cross connection of a frame includes a connector (1) with a first part (2) and a second part (3) connected to a top and a bottom thereof. The connector and the first and second parts form a unit which is composed of a first half and a second half divided along a plane passing through the central axis of the unit. Each of the first part and the second part of each of the first and second halves having a notch (21) and a protrusion (22) respectively on two sides thereof. The protrusions of the first and second halves are being engaged with the notches of the first and second halves when the first and second halves are connected to each other. A bolt or a pin extends through a connection hole (11) defined through the connector of each of the first and second halves. Tubes (4,5,6,7) are connected to four directions of the unit.

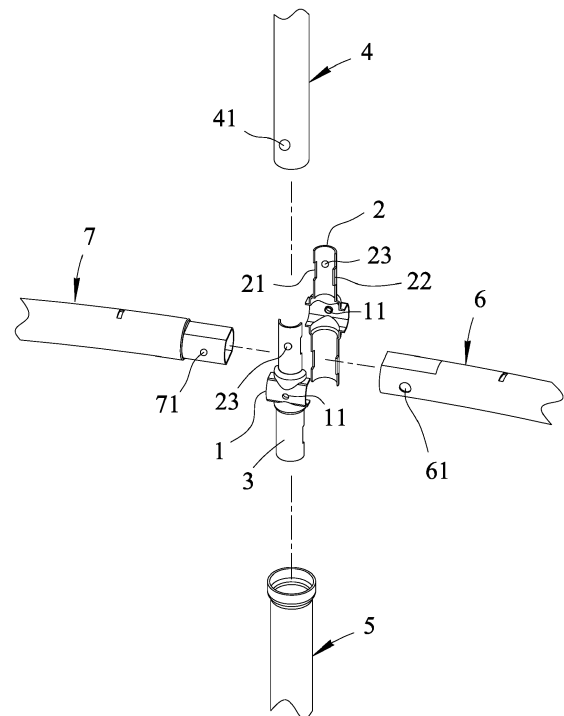


FIG.3

Description

BACKGROUND OF THE INVENTION

1. Fields of the invention

[0001] The present invention relates to a cross connection of a frame, and more particularly, to a cross connection of a frame without welding for a trampoline.

2. Descriptions of Related Art

[0002] The conventional trampoline generally comprises a frame and multiple legs, wherein a bounce is connected to the frame and the multiple legs are welded to the frame to support the bounce at a height. However, the frame and the legs cannot be disassembled and have to be replaced the whole unit when one of the portions is damaged. The latest connection way is to insert insertions into the legs, however, the insertions tend to shake during use of the trampoline. The legs swing back and forth, and the upright tubes move up and right, and the transverse tubes deform. Therefore, the trampoline is not stable and may be dangerous for the users.

[0003] The present invention intends to provide a cross connection of the frame of a trampoline to eliminate the shortcomings mentioned above.

SUMMARY OF THE INVENTION

[0004] The present invention relates to a cross connection of a frame, and comprises a connector, a first part, and a second part. The first part is perpendicularly connected to the top of the connector, and the second part is perpendicularly connected to the bottom of the connector. The first and second parts share a common axis. The connector, the first part and the second part are connected to form a unit which is composed of a first half and a second half divided along a plane passing through the central axis of the unit. The first part of the first half has a notch defined in the first side thereof, and a protrusion extending from the second side thereof. The first part of the second half has a notch defined in the second side thereof, and a protrusion extending from the first side thereof. The second part of the first half has a notch defined in the first side thereof, and a protrusion extending from the second side thereof. The second part of the second half has a notch defined in the second side thereof, and a protrusion extending from the first side thereof. The two respective protrusions and notches of the first half are engaged with the two respective notches and the protrusions of the second half when the first and second halves are connected to each other. A connection hole is defined through the connector of each of the first and second halves, and a connection member extends through the two respectively connection holes.

[0005] Preferably, the connection holes are threaded holes or through holes for being connected with a bolt or

a pin.

[0006] Preferably, a positioning hole is defined through a wall of the first part.

[0007] Preferably, the connector includes two flat surfaces axially formed on the outside thereof.

[0008] The primary object of the present invention is to provide a cross connection of a trampoline frame, wherein the connection does not need any welding process. The connection is secured and firm to prevent the legs from swing back and forth, to prevent the upright tubes from moving up and right, and to prevent the transverse tubes from being deformed. Therefore, the trampoline is stable and secured when being used.

[0009] The present invention will become more obvious from the following description when taken in connection with the accompanying drawings which show, for purposes of illustration only, a preferred embodiment in accordance with the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010]

Fig. 1 is a perspective view to show the frame with the cross connections of the present invention;

Fig. 2 is a perspective view to show the cross connection of the present invention wherein four tubes are connected to four directions of the cross connection of the present invention;

Fig. 3 is an exploded view of the cross connection of the present invention, and the four tubes are to be connected to four directions of the cross connection of the present invention, and

Fig. 4 shows the first and second halves of the cross connection of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0011] Referring to Figs. 1 to 4, the cross connection of the present invention comprises a connector 1, a first part 2, and a second part 3. The first part 2 is perpendicularly connected to the top of the connector 1, and the second part 3 is perpendicularly connected to the bottom of the connector 1. The first and second parts 2, 3 share a common axis. The connector 1, the first part 2 and the second part 3 are connected to form a unit which is composed of a first half and a second half divided along a plane passing through the central axis of the unit.

[0012] The first part 2 of the first half has a notch 21 defined in the first side thereof, and a protrusion 22 extending from the second side thereof. The first part 2 of the second half has a notch 21 defined in the second side thereof, and a protrusion 22 extending from the first side thereof.

[0013] The second part 3 of the first half has a notch defined in the first side thereof, and a protrusion extending from the second side thereof. The second part 3 of

the second half has a notch defined in the second side thereof, and a protrusion extending from the first side thereof. The two protrusions and the two notches of the first half are engaged with the two notches and the two protrusions of the second half when the first and second halves are connected to each other. A connection hole 11 is defined through the connector 1 of each of the first and second halves. A connection member extends through the two respectively connection holes 11.

[0014] Preferably, the connection holes 11 are threaded holes or through holes so as to be connected with a bolt or a pin. Preferably, a positioning hole 23 is defined through the wall of the first part 2. Preferably, the connector 1 includes two flat surfaces axially formed on the outside thereof.

[0015] As shown in Fig3, when assembling, a reception tube 6 of the frame is inserted into the connector 1, wherein the distal end of the reception tube 6 has two flat sides so that the reception tube 6 is connected to the connector 1 without rotating. The distal end of the reception tube 6 has a second hole 61 which is located in alignment with the connection hole 11. The distal end of an insertion tube 7 of the frame is inserted into the opening of the distal end of the reception tube 6. The distal end of an insertion tube 7 is shaped to be fitted into the distal end of the reception tube 6. The distal end of the insertion tube 7 has a third hole 71 which is located in alignment with the connection hole 11. The bolt or pin extends through the connection holes 11, the second hole 61, and the third hole 71. A nut is used to secure the bolt.

[0016] A first tube 4 is inserted into the first part 2, and a second tube 5 is inserted into the second part 3. The first tube 4 has a first hole 41, and the bolt or pin extends through the positioning hole 23 and the first hole 41 to secure the connection. The second part 3 is inserted into a second tube 5. The engagement of the notches 21 and the protrusions 22 prevents the second part 3 from moving up and down in the second tube 5.

[0017] The cross connection of the trampoline frame does not need any welding process and is easily assembled and dis-assembled. The frame is stable and firm.

[0018] While we have shown and described the embodiment in accordance with the present invention, it should be clear to those skilled in the art that further embodiments may be made without departing from the scope of the present invention.

Claims

1. A cross connection of a frame, comprising:

a connector (1), a first part (2), and a second part (3), the first part (2) perpendicularly connected to a top of the connector (1), the second part (3) perpendicularly connected to a bottom of the connector (1), the first and second parts (2, 3) sharing a common axis, the connector (1),

the first part (2) and the second part (3) connected to form a unit which is composed of a first half and a second half divided along a plane passing through a central axis of the unit, the first part (2) of the first half having a notch (21) defined in a first side thereof, and a protrusion (22) extending from a second side thereof, the first part (2) of the second half having a notch (21) defined in a second side thereof, and a protrusion (22) extending from a first side thereof, the second part (3) of the first half having a notch defined in a first side thereof, and a protrusion extending from a second side thereof, the second part (3) of the second half having a notch defined in a second side thereof, and a protrusion extending from a first side thereof, the two protrusions and the two notches of the first half being engaged with the two notches and the two protrusions of the second half when the first and second halves are connected to each other, a connection hole (11) defined through the connector (1) of each of the first and second halves, a connection member extending through the two respectively connection holes (11).

2. The cross connection of a frame as claimed in claim 1, wherein the connection holes (11) are threaded holes or through holes for being connected with a bolt or a pin.
3. The cross connection of a frame as claimed in claim 1, wherein a positioning hole (23) is defined through a wall of the first part (2).
4. The cross connection of a frame as claimed in claim 1, wherein the connector (1) includes two flat surfaces axially formed on an outside thereof.

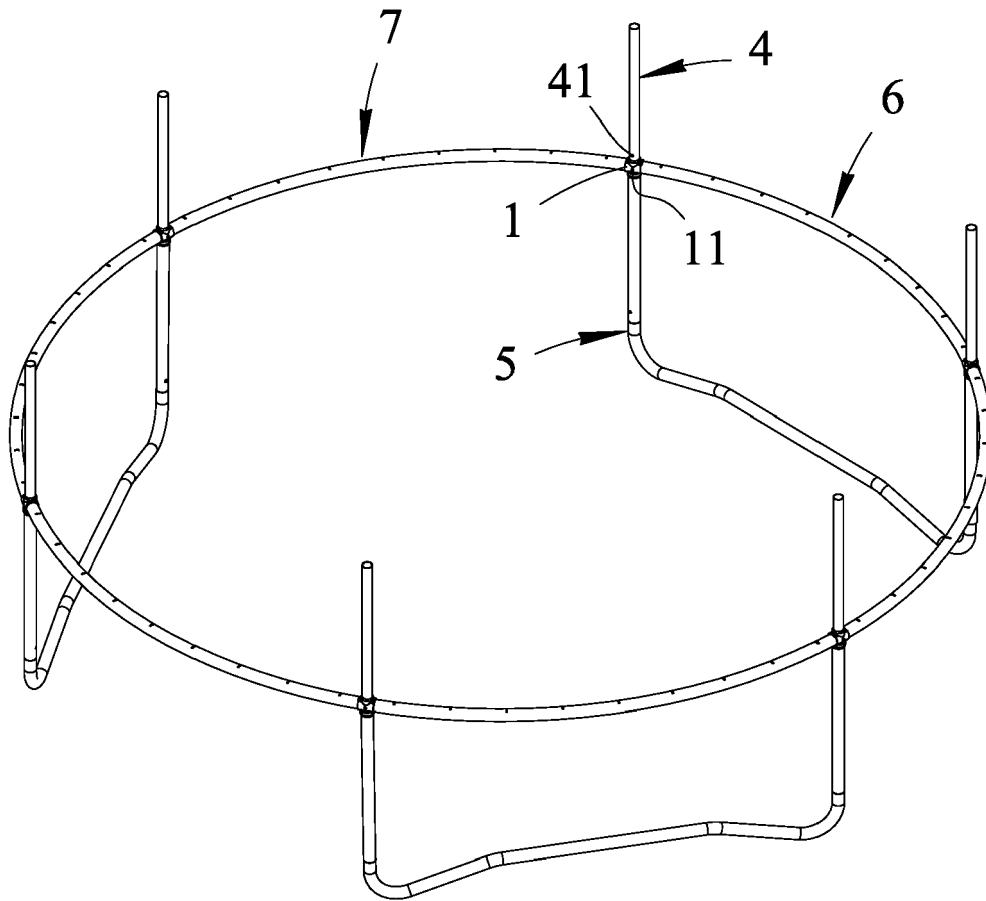


FIG.1

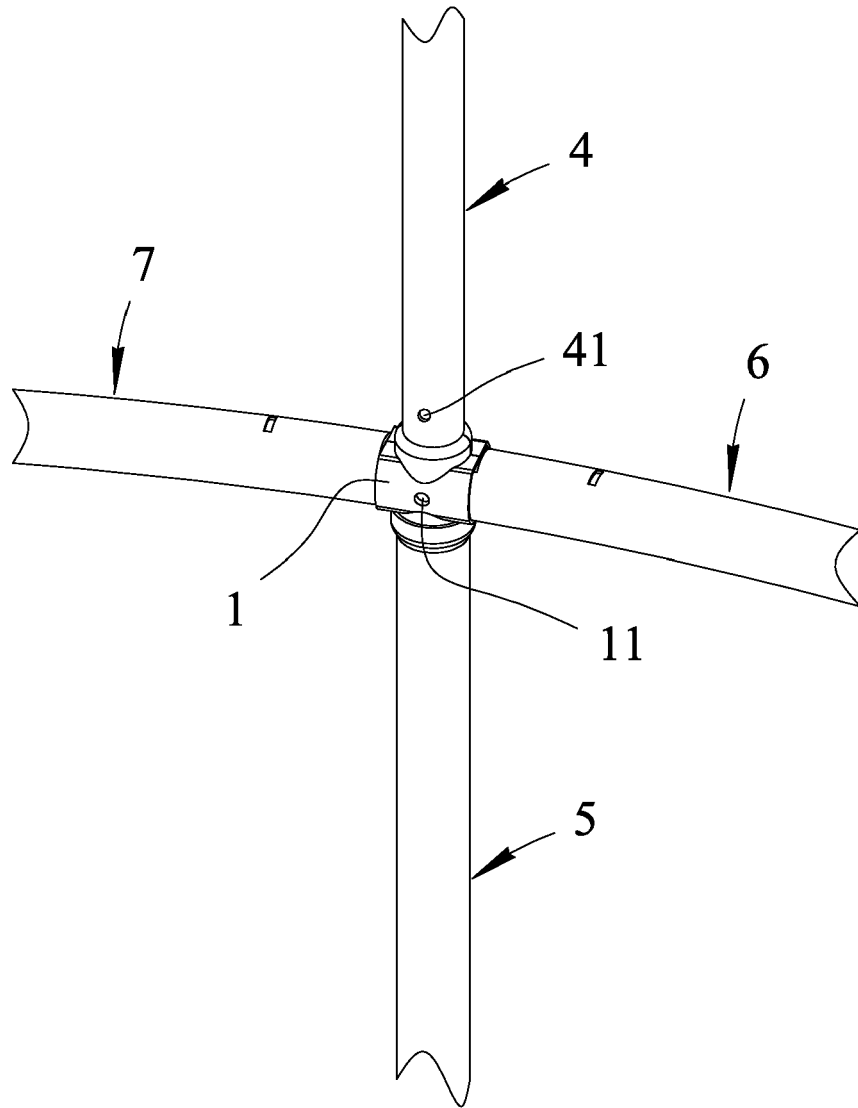


FIG.2

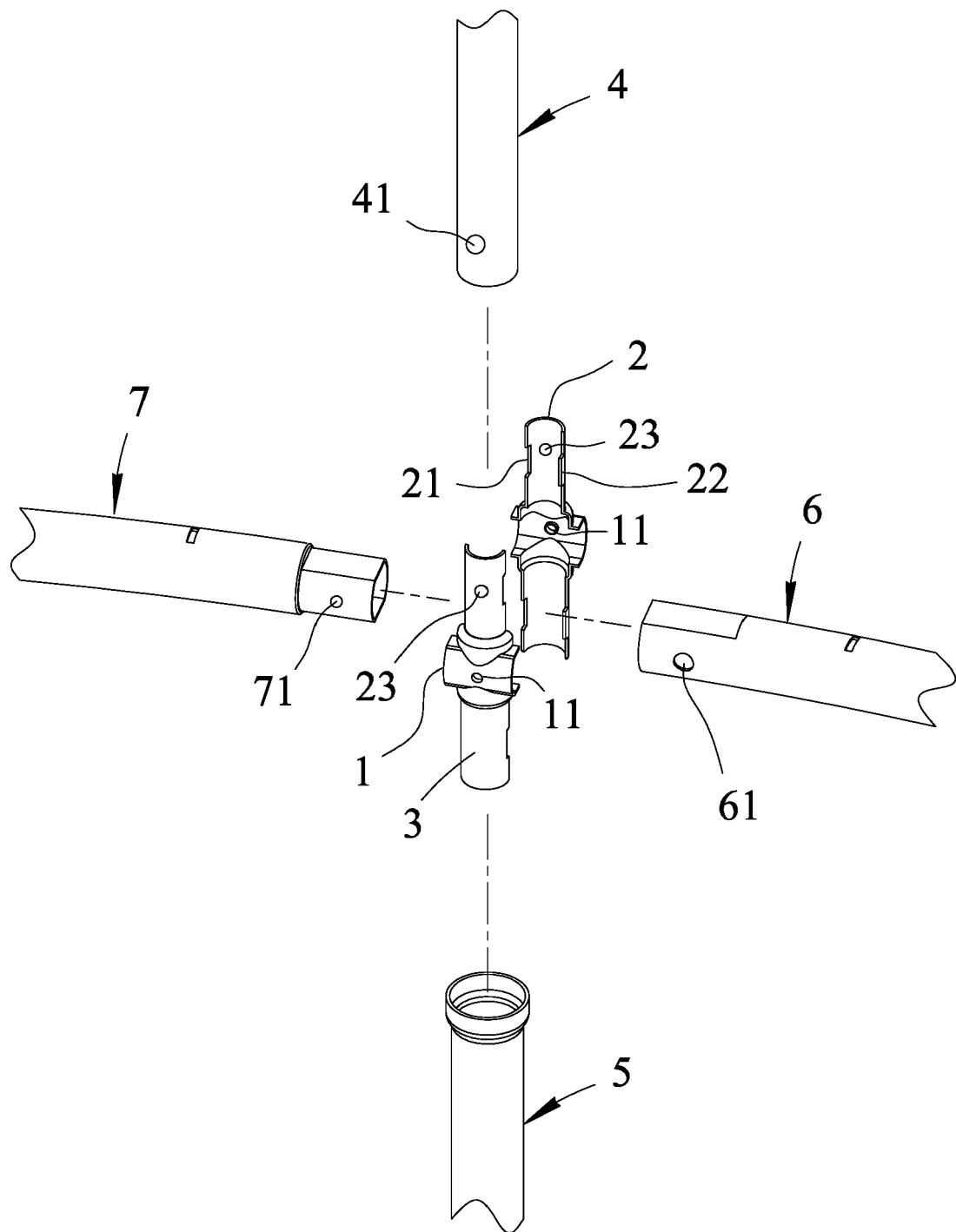
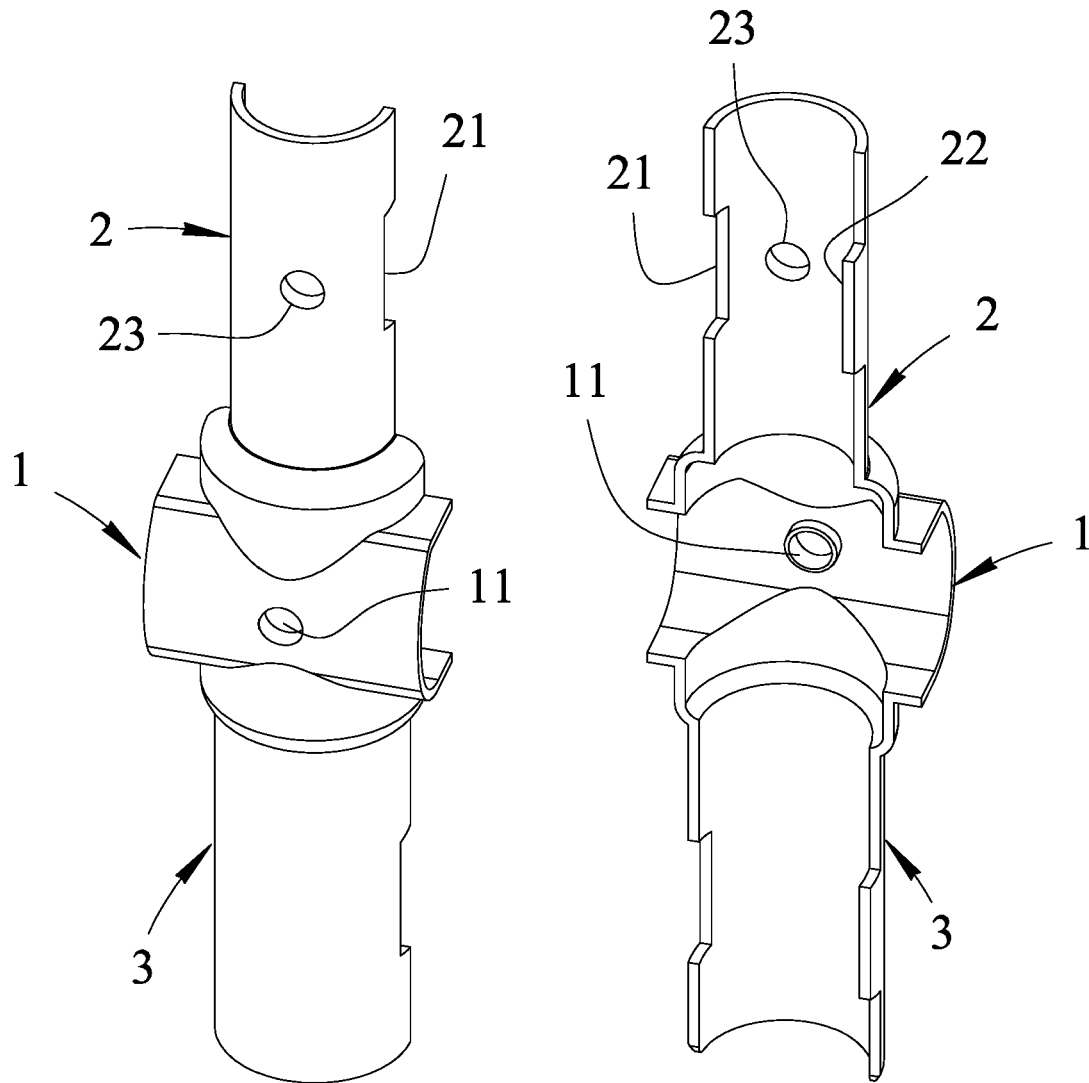


FIG.3





EUROPEAN SEARCH REPORT

Application Number
EP 16 15 0096

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A	* abstract; figures 1,2 * -----	4	
Y	CN 201 482 040 U (ZHENXIAN YU) 26 May 2010 (2010-05-26)	1-3	
A	* abstract; figures 12,13 * -----	4	
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	* abstract; figures 12,13 * -----		
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Y	CN 2 806 855 Y (ZHU GUOYI [CN]) 16 August 2006 (2006-08-16) * abstract; figures 2,4,6 *	1-4	
Y	US 2010/240496 A1 (CHEN SAMUEL [CN]) 23 September 2010 (2010-09-23) * claim 1; figures 3,8 * -----	1-4	TECHNICAL FIELDS SEARCHED (IPC) A63B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 15 June 2016	Examiner Murer, Michael
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 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 16 15 0096

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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15-06-2016

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