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(54) DEVICE FOR JOINING FLOOR TILES AND INSTALLATION METHOD THEREOF

(57) A device for joining floor tiles. The joining device comprises at least one joint unit (1). The joint unit (1) comprises an L-shaped frame (11) and a floor tile fixing plate (12). The L-shaped frame (11) is provided with block members (111) on upper surfaces of two vertical and horizontal arm portions thereof. The block members (111) are disposed to be intersected with each other. The L-shaped frame is provided with inner engaging slots (112) and outer engaging slots (113) at an inner side and outer side respectively on upper surfaces of the block members (111). The inner engaging slots (112) are engaged with inner engaging hooks (121) disposed on two adjacent edges at a bottom side of the floor tile fixing plate (12). The outer engaging slots (113) are engaged with outer engaging hooks on one edge at the bottom side of the floor tile fixing plate (12) of the adjacent joint unit (1). Also provided is an installation method of floor tiles.

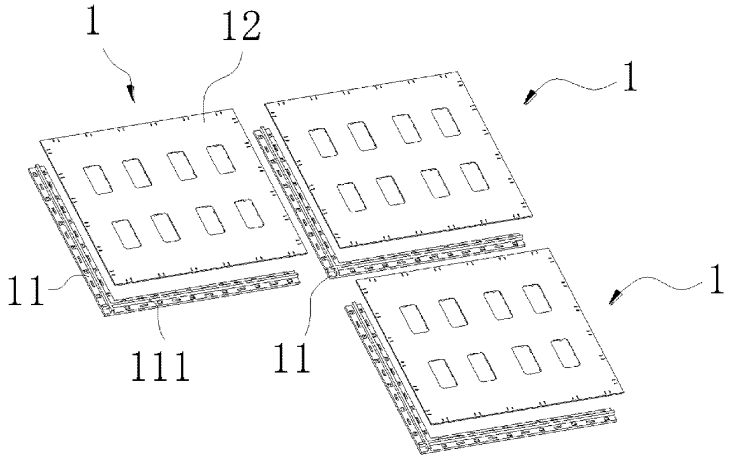

FIG.1

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Description

BACKGROUND OF THE INVENTION

[0001] The present invention relates to the field of floor tiles, and more specifically relates to a device for joining floor tiles and an installation method thereof.

[0002] To facilitate quick assembly and disassembly of floor tiles, the prior art provides a floor tile unit formed by integrally adhering a floor tile supporting rack with a floor tile. A plurality of floor tile units are joined together via buckling edges provided along the peripheries of each of the floor tile supporting rack. According to this method of joining the floor tiles, adhesives will easily flow to the buckling edges along the peripheries of the floor tile supporting rack when adhesives are applied to an upper surface of the floor tile supporting rack since upper and lower buckling edges are integrally provided with the floor tile supporting rack. As such, subsequent installation may be affected. Besides, due to the heavy weight of the floor tiles, high transport costs plus significant wastes of manpower and resources will be resulted when they are transported and sold after being adhered with the floor tile supporting racks.

BRIEF SUMMARY OF THE INVENTION

[0003] The present invention provides a device for joining floor tiles, which facilitates application of adhesives on an upper surface of a floor tile fixing plate and which is itself easy to be assembled for use.

[0004] The device for joining floor tiles according to the present invention also facilitates installation of the floor tiles and effectively reduces manufacturing and transport costs.

[0005] A device for joining floor tiles comprises at least one joint unit; each joint unit comprises an L-shaped frame and a floor tile fixing plate; an upper surface of a straight vertical arm of the L-shaped frame and an upper surface of a straight horizontal arm of the L-shaped frame are each provided with a block member; the block member of the straight vertical arm and the block member of the straight horizontal arm are configured to be intersected with each other; inner engaging slots are provided on an upper surface of the L-shaped frame at an inner side of each block member; outer engaging slots are provided on an upper surface of the L-shaped frame at an outer side of each block member; the inner engaging slots engage with inner engaging hooks disposed on a bottom surface of a corresponding floor tile fixing plate along two adjacent peripheral edges of the corresponding floor tile fixing plate; the outer engaging slots engage with outer engaging hooks provided on a bottom surface along a peripheral edge of each of two other floor tile fixing plates of corresponding two other adjacent joint units.

[0006] Optionally, the inner engaging hooks and the outer engaging hooks have identical structures and are evenly distributed on the bottom surface of each floor tile fixing plate along four peripheral edges thereof.

[0007] Optionally, each of said inner engaging hooks has a left hook and a right hook spaced apart and symmetrically arranged.

[0008] Optionally, a positioning slot is provided between every two adjacent inner engaging slots; each positioning slot matches with a corresponding positioning block also provided between every two adjacent inner engaging hooks.

[0009] Optionally, the block member has a height greater than a thickness of the floor tile fixing plate but smaller than a thickness of a floor tile.

[0010] Optionally, an upper surface of the floor tile fixing plate is applied with an adhesive layer for fixing the floor tile.

[0011] Optionally, the upper surface of the floor tile fixing plate is opened with anti-shrinking through holes through the floor tile fixing plate; a bottom surface of the floor tile fixing plate is provided with supporting rods extending downwardly.

[0012] An installation method of floor tiles using the device as described above, comprising the following steps:

joining an L-shaped frame and a floor tile fixing plate to form a joint unit; more than one of such joint unit are formed; assembling all the joint units on a level ground;

removing a release paper on an upper surface of an adhesive layer of each floor tile fixing plate;

after the device is assembled, placing each of the floor tiles into a corresponding rectangular opening enclosed by block members; adhering each of the floor tiles with the corresponding floor tile fixing plate removed of the release paper; and

filling in gaps between adjacent floor tiles by using seam filling adhesives.

[0013] Optionally, the adhesive layer of the floor tile fixing plate is a layer of self-adhesive material.

[0014] Optionally, in each row of L-shaped frames disposed on the level ground, one end of a corresponding L-shaped frame is joined with a vertical arm of another adjacent L-shaped frame.

[0015] According to the device for joining floor tiles and an installation method thereof disclosed in the present invention, floor tiles are adhered to the floor tile fixing plates of the joint units after the device comprising the joint units is assembled. Gaps between adjacent floor tiles are then filled up by using seam filling adhesives. The present invention has the advantages of easy transport, easy assembly and disassembly, easy and convenient use as well as significant reduction of manufacturing and transport costs.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016]

FIG. 1 is an exploded view showing a structure of the device for joining floor tiles according to the present invention.

FIG. 2 is a front view of the device for joining floor tiles according to the present invention.

FIG. 3 is a perspective view of a bottom surface of one of the floor tile fixing plates shown in FIG. 2.

FIG. 4 is a partially enlarged portion of FIG. 3.

FIG. 5 is a perspective view of the L-shaped frame shown in FIG. 2.

DETAILED DESCRIPTION OF THE INVENTION

[0017] The technical proposal of the present invention will be further explained below via an embodiment and with reference to the drawings.

[0018] As shown in FIG. 1 to FIG. 5, a device for joining floor tiles comprises at least one joint unit 1; each joint unit 1 comprises an L-shaped frame 11 and a floor tile fixing plate 12; an upper surface of a straight vertical arm of the L-shaped frame 11 and an upper surface of a straight horizontal arm of the L-shaped frame 11 are each provided with a block member 111; the block member of the straight vertical arm and the block member of the straight horizontal arm are configured to be intersected with each other; inner engaging slots 112 are provided on an upper surface of the L-shaped frame 11 at an inner side of each block member 111; outer engaging slots 113 are provided on an upper surface of the L-shaped frame 11 at an outer side of each block member 111; the inner engaging slots 112 engage with inner engaging hooks 121 disposed on a bottom surface of a corresponding floor tile fixing plate 12 along two adjacent peripheral edges of the corresponding floor tile fixing plate 12; the outer engaging slots 113 engage with outer engaging hooks provided on a bottom surface along a peripheral edge of each of two other floor tile fixing plates of corresponding two other adjacent joint units 1.

[0019] Optionally, as shown in FIG. 3, the inner engaging hooks 121 and the outer engaging hooks have identical structures and are evenly distributed on the bottom surface of each of the floor tile fixing plate 12 along four peripheral edges thereof. Optionally, the inner engaging slots 112 and the outer engaging slots 113 on each of the L-shaped frame 11 also have identical structures, and match with the inner engaging hooks 121 and the outer engaging hooks respectively.

[0020] Optionally, as shown in FIG. 4, the inner engaging hooks 121 and the outer engaging hooks having identical structures are each having a left hook 1211 and a right hook 1212 horizontally spaced apart and symmetrically arranged. Such a hook design can effectively increase the stability of connection between two adjacent joint units 1, and facilitate easy assembly and disassembly.

[0021] Optionally, a positioning slot 114 is provided between every two adjacent inner engaging slots 112; each positioning slot 114 matches with a corresponding positioning block 122 also provided between every two adjacent inner engaging hooks 121. Such a design facilitates mutual accurate positioning between the hooks and slots, thereby allowing quick assembly between each floor tile fixing plate 12 with its respective L-shaped frame 11, and preventing the safety risk of wrong assembly of the joint unit due to mechanical failure of the hooks.

[0022] Optionally, the block member 111 has a height greater than a thickness of the floor tile fixing plate 12 but smaller than a thickness of a floor tile. An upper surface of the floor tile fixing plate 12 is applied with an adhesive layer for fixing the floor tile. Optionally, the adhesive layer is a layer of self-adhesive material; an upper surface of the layer of self-adhesive material is covered by a release paper; during use, the release paper can be conveniently removed to adhere the floor tile.

[0023] Optionally, as shown in FIG. 3 and FIG. 4, the upper surface of the floor tile fixing plate 12 is opened with anti-shrinking through holes 123 through the floor tile fixing plate; a bottom surface of the floor tile fixing plate 12 is provided with supporting rods 124 extending downwardly. The anti-shrinking through holes 123 can on one hand reduce the weight of the floor tile fixing plate, and on the other hand prevent product defectiveness caused by deformation of the floor tile fixing plate as a result of overly concentrated injection stress. The supporting rods 124 are used for facilitating adjustment of the entire device on a same horizontal level; during use, the supporting rods 124 may be cut away so that the floor surface can remain smooth after the floor tiles are joined together; also, the supporting rods 124 allow spaces to be left between the floor tile fixing plate 12 and the ground so as to somehow achieve ventilation and damp-proof effects.

[0024] The device described above effectively solves the problem of defective joining between adjacent floor tile fixing plates due to overflown adhesives beyond the peripheries of the upper surface of the floor tile fixing plate when the adhesives are applied to the upper surface, thereby significantly easing the joining between the joint units.

[0025] An installation method of floor tiles using the device as described above, comprising the following steps:

joining an L-shaped frame 11 and a floor tile fixing plate 12 to form a joint unit 1; at least one said joint unit 1 is formed;

assembling said at least one said joint unit 1 on a level ground; as mentioned, each joint unit 1 comprises the L-shaped frame 11 and the floor tile fixing plate 12; an upper surface of a straight vertical arm of the L-shaped frame 11 and an upper surface of a straight horizontal arm of the L-shaped frame 11 are each provided with a block member 111; the block member of the straight vertical arm and the block member of the straight horizontal arm are configured to be intersected with each other; inner engaging

slots 112 are provided on an upper surface of the L-shaped frame 11 at an inner side of each block member 111; outer engaging slots 113 are provided on an upper surface of the L-shaped frame 11 at an outer side of each block member 111; the inner engaging slots 112 engage with inner engaging hooks 121 disposed on a bottom surface of a corresponding floor tile fixing plate 12 along two adjacent peripheral edges of the corresponding floor tile fixing plate 12; the outer engaging slots 113 engage with outer engaging hooks provided on a bottom surface along a peripheral edge of each of two other floor tile fixing plates of corresponding two other adjacent joint units 1;

removing a release paper on an upper surface of an adhesive layer of each floor tile fixing plate; for easier installation, after the release paper is removed from the upper surface of the adhesive layer of one floor tile fixing plate, a floor tile has to be adhered to the adhesive layer immediately;

after the device is assembled, placing each of the floor tiles into a corresponding rectangular opening enclosed by block members; adhering each of the floor tiles with the corresponding floor tile fixing plate removed of the release paper; after all the floor tiles are adhered, each of the floor tiles is surrounded by the corresponding rectangular opening formed by the block members; the block members facilitate the floor tiles to be positioned and allow gaps to exist between adjacent floor tiles so as to facilitate subsequent sealing procedure between the adjacent floor tiles.

[0026] Fill in the gaps between the adjacent floor tiles by using seam filling adhesives to effectively seal the gaps between the adjacent floor tiles so that dust and waste water cannot pass through the gaps.

[0027] Optionally, for easier adhesion with the floor tiles, the adhesive layer of the floor tile fixing plate 12 is a layer of self-adhesive material or is a similar kind of solid adhesive layer, ready to be used at any time.

[0028] Optionally, as shown in FIG. 1 and FIG. 2, in each row of L-shaped frames 11 disposed on the level ground, one end of a corresponding L-shaped frame 11 is joined with a straight vertical arm of another adjacent L-shaped frame 11. Optionally, in each column of L-shaped frames 11, a tail of a straight vertical arm of a L-shaped frame is joined with a head of a straight vertical arm of another adjacent L-shaped frame, and the two straight vertical arms of the adjacent L-shaped frames are disposed on a same straight line.

[0029] According to the above operating procedures, the device can be sold and transported independently. The floor tiles are only adhered to the device during installation. Therefore, the present invention is useful and cost-saving in that the high transport cost for the integral pieces of floor tiles adhered to their corresponding floor tile supporting racks is saved.

[0030] The technical concept of the present invention is described above by using an embodiment. The above description is intended only to explain the concept of the present invention, and it shall not be understood in any sense to be limiting with respect to the scope of protection of the present invention.

Industrial applicability

[0031] A device for joining floor tiles and an installation method thereof are disclosed. The device can be sold and transported independently. Therefore, the high transport cost for the integral pieces of floor tiles adhered to their corresponding floor tile supporting racks is saved.

Claims

1. A device for joining floor tiles, comprising at least one joint unit; each joint unit comprises an L-shaped frame and a floor tile fixing plate; an upper surface of a straight vertical arm of the L-shaped frame and an upper surface of a straight horizontal arm of the L-shaped frame are each provided with a block member; the block member of the straight vertical arm and the block member of the straight horizontal arm are configured to be intersected with each other; inner engaging slots are provided on an upper surface of the L-shaped frame at an inner side of each block member; outer engaging slots are provided on an upper surface of the L-shaped frame at an outer side of each block member; the inner engaging slots engage with inner engaging hooks disposed on a bottom surface of a corresponding floor tile fixing plate along two adjacent peripheral edges of the corresponding floor tile fixing plate; the outer engaging slots engage with outer engaging hooks provided on a bottom surface along a peripheral edge of each of two other floor tile fixing plates of corresponding two other adjacent joint units.

2. The device of claim 1, wherein the inner engaging hooks and the outer engaging hooks have identical structures and are evenly distributed on the bottom surface of each floor tile fixing plate along four peripheral edges thereof.

3. The device of claim 2, wherein each of the inner engaging hooks has a left hook and a right hook spaced apart and symmetrically arranged.

4. The device of claim 3, wherein a positioning slot is provided between every two adjacent inner engaging slots; each positioning slot matches with a corresponding positioning block also provided between every two adjacent inner engaging hooks.

5. The device of claim 1, wherein the block member

has a height greater than a thickness of the floor tile fixing plate but smaller than a thickness of a floor tile.

6. The device of claim 1, wherein an upper surface of the floor tile fixing plate is applied with an adhesive layer for fixing a floor tile.

7. The device of claim 1, wherein an upper surface of the floor tile fixing plate is opened with anti-shrinking through holes through the floor tile fixing plate; a bottom surface of the floor tile fixing plate is provided with supporting rods extending downwardly.

8. An installation method of floor tiles using the device of any one of claims 1 to 7 , comprising the following steps:

joining the L-shaped frame and the floor tile fixing plate to form the joint unit;
more than one of said joint unit is formed; assembling all the joint units on a level ground;
removing a release paper on an upper surface of an adhesive layer of each floor tile fixing plate;
after the device is assembled, placing each of the floor tiles into a corresponding rectangular opening enclosed by the block members; adhering each of the floor tiles with a corresponding floor tile fixing plate removed of the release paper; and
filling in gaps between adjacent floor tiles by using seam filling adhesives.

9. The installation method of claim 8, wherein the adhesive layer of the floor tile fixing plate is a layer of self-adhesive material.

10. The installation method of claim 8, wherein in each row of L-shaped frames disposed on the level ground, one end of a corresponding L-shaped frame is joined with a vertical straight arm of another adjacent L-shaped frame.

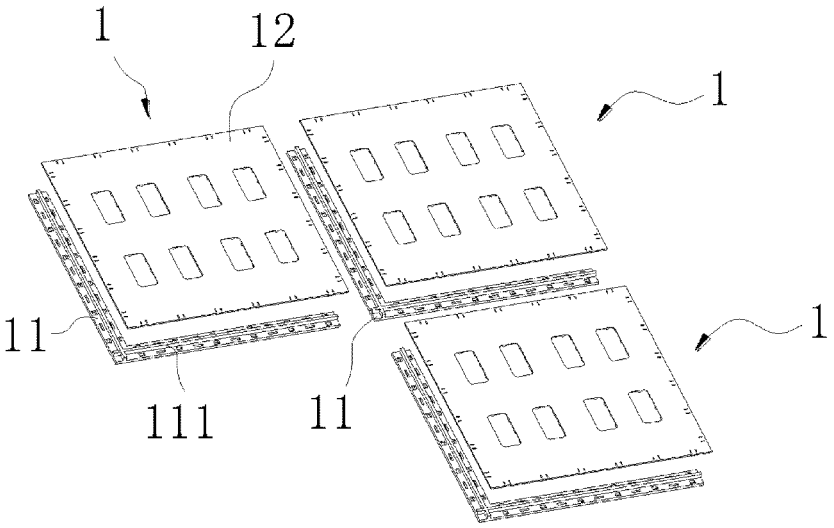

FIG.1

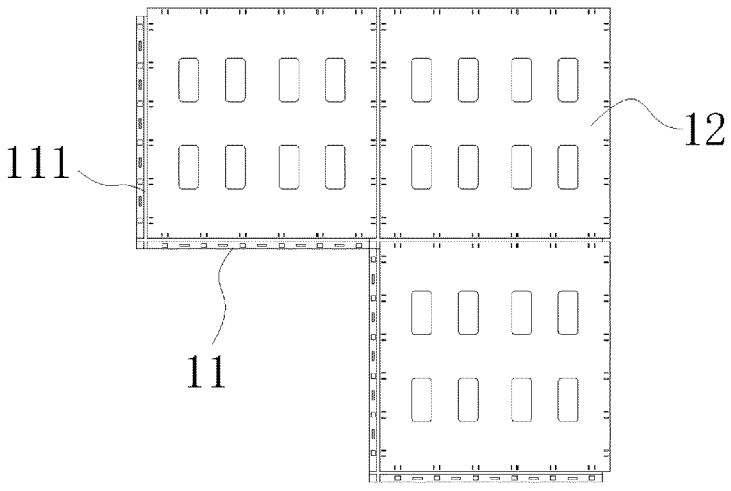

FIG.2

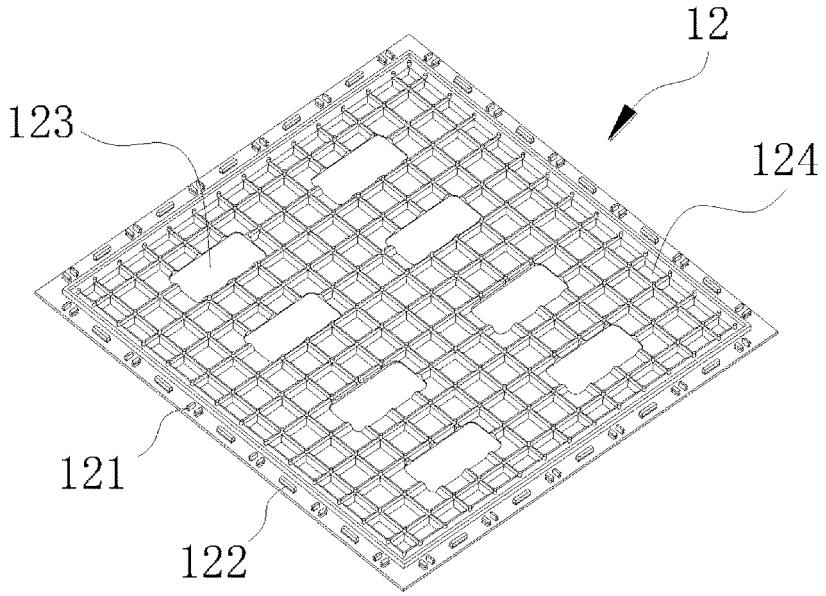

FIG.3

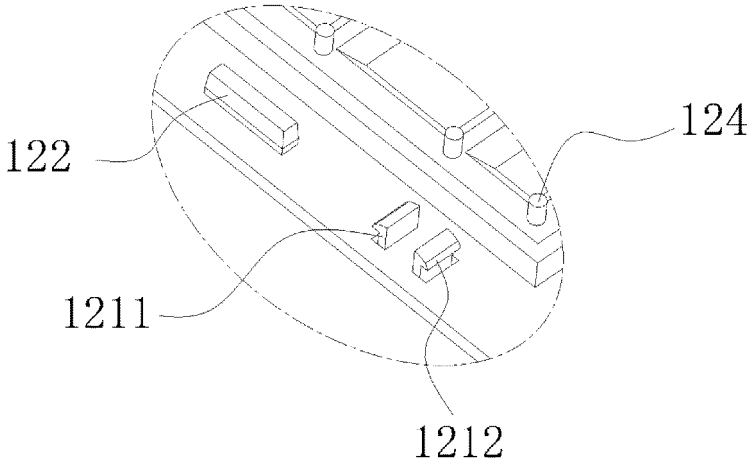

FIG.4

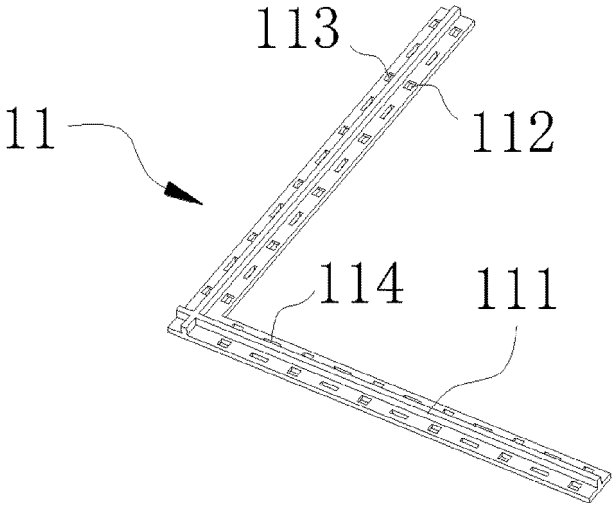

FIG.5

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2016/097936

A. CLASSIFICATION OF SUBJECT MATTER

E04F 15/02 (2006.01) i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

E04F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPODOC, WPI, CNPAT, CNKI: brick, embossment; floor, tile, splice, raise, groove

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 105133816 A (CAI, Yongshi), 09 December 2015 (09.12.2015), claims 1-10	1-10
PX	CN 205046800 U (CAI, Yongshi), 24 February 2016 (24.02.2016), description, paragraphs [0019]-[0033], and figures 1-5	1-10
X	CN 101297090 A (HANDY TILING HOLDING B.V.), 29 October 2008 (29.10.2008), description, page 6, line 1 to page 11, line 28, and figures 1-11	1-10
A	CN 203924585 U (CAI, Yimin), 05 November 2014 (05.11.2014), the whole document	1-10
A	EP 2082104 A2 (PERGO EUROP AB), 29 July 2009 (29.07.2009), the whole document	1-10

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
26 November 2016 (26.11.2016)	**14 December 2016 (14.12.2016)**
Name and mailing address of the ISA/CN: State Intellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088, China Facsimile No.: (86-10) 62019451	Authorized officer **WANG, Ying** Telephone No.: (86-10) **62084886**

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2016/097936

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
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CN 205046800 U	24 February 2016	None	
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Form PCT/ISA/210 (patent family annex) (July 2009)