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(54) **ANTI-JAMMING GUIDED ROLLER WHEEL**

(57) The present invention discloses an anti-sticking pulley device, which comprises a pulley mounting block; a first pulley and a second pulley, being mounted on two sides of the pulley mounting block; a first guide groove, being disposed around the outer circumference of the first pulley, wherein the first pulley can slide on a first guide rail; and a second guide groove, being disposed

around the outer circumference of the second pulley, wherein the second pulley can slide on a second guide rail; wherein the width of the first guide groove is wider than the width of the second guide groove. The anti-sticking pulley device can prevent the pulleys from being stuck with a simple structure.

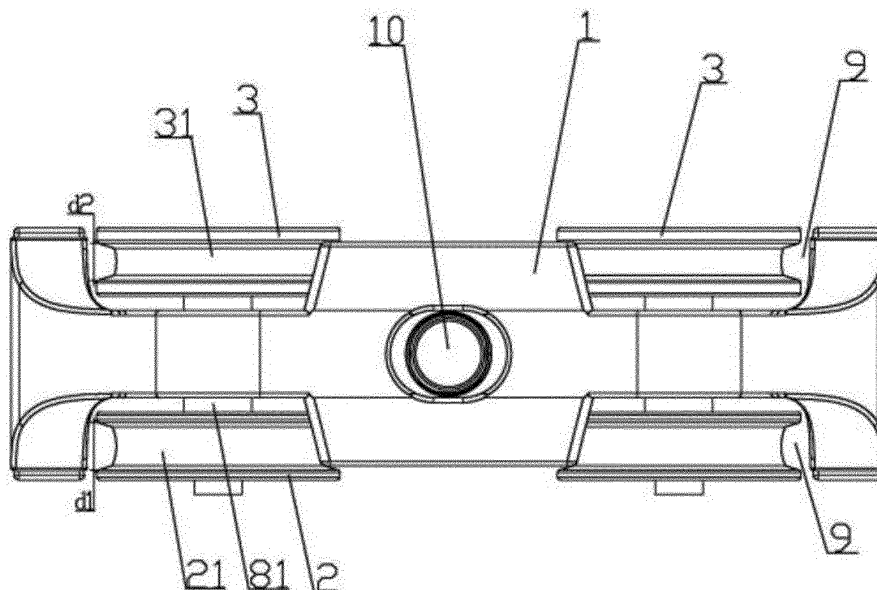


FIG. 2

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to a pulley device with anti-sticking function.

BACKGROUND OF THE INVENTION

[0002] A pulley device is widely used on sliding door leaf such as in shower rooms or in closet doors of the state of art to assist the door leaf to be opened by sliding. In some cases, the weight of the door leaf is large. In order to prevent door leaf shaking, balance pulley devices are employed to assist a door leaf to slide smoothly, that is, the pulleys are arranged on both sides, and the pulleys on both sides slide on two parallel guide rails. In the prior art, the pulleys have the same size and symmetrical shape, which are arranged symmetrically. In order to prevent the sway, the pulleys clamp on the guide rails for sliding. Due to the long-term bearing of door leaf or the like, some bending deformation will inevitably occur to the guide rails. Once the guide rails shape, the distance between the two guide rails will be widened or narrowed. However, the distance between the two sides of pulleys will not change, so the pulleys will be stuck, preventing a smooth sliding of the door.

SUMMARY OF THE INVENTION

[0003] In order to overcome the deficiencies in the prior art, the present invention intends to provide an anti-sticking pulley device with a simple structure.

[0004] In order to solve the above problems, the present invention adopts the following technical solutions:

[0005] An anti-sticking pulley device comprises a pulley mounting block; a first pulley and a second pulley, being mounted on two sides of the pulley mounting block; a first guide groove, being disposed around the outer circumference of the first pulley, wherein the first pulley can slide on a first guide rail; and a second guide groove, being disposed around the outer circumference of the second pulley, wherein the second pulley can slide on a second guide rail; wherein the width of the first guide groove is wider than the width of the second guide groove.

[0006] According to the present invention, the width of the first guide groove is wider than the width of the second guide groove by 3-15 mm.

[0007] According to the present invention, the pulley mounting block is provided with an upper mounting cover and a lower mounting cover which is mounted under the upper mounting cover; the upper mounting cover and the lower mounting cover are mounted to form a circle cavity; balls are arranged in circle cavity; a rotating shaft is arranged on the balls; the two ends of the rotating shaft are inserted into the first pulley and the second pulley re-

spectively.

[0008] According to the present invention, each of the two side walls of the pulley mounting block is provided with a receiving groove for receiving the first pulley and the second pulley.

[0009] According to the present invention, a central mounting hole is provided in a middle portion of the pulley mounting block; two groups of the first pulley and the second pulley are provided, which are respectively placed on both sides of the central mounting hole.

[0010] The utility model has the following advantages: since the first guide groove is wider than the width of the second guide groove, in other words, the width of the two guiding grooves is different, the second guide groove can match the size of the second guide rail, and the width of the first guide groove is larger than the width of the first guide rail, so that a certain adjusting space is kept. When the guide frame of the guide rail is shaped, the second pulley does not move, while the first pulley is adjusted automatically in the width direction of the first guide groove to prevent the two pulleys from being stuck. The two ends of the rotating shaft are inserted into the pulleys, and then the upper cover and the lower cover are assembled to complete the installation. The structure is simple, and the installation is convenient. The two side walls of the pulley mounting block are provided with a receiving groove for receiving the first pulley and the second pulley, so as to achieve a hidden effect and a beautiful appearance.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011]

FIG. 1 is a perspective view of the anti-sticking pulley device according to the present invention;
 FIG. 2 is a top view of the anti-sticking pulley device according to the present invention;
 FIG. 3 is an exploded view of the anti-sticking pulley device according to the present invention;
 FIG. 4 is a schematic diagram of the anti-sticking pulley device in using state according to the present invention;

DETAILED DESCRIPTION OF ILLUSTRATED EMBODIMENTS

[0012] The present invention will be further described in detail below with reference to the accompanying drawings and specific embodiments.

[0013] As shown in FIG. 1 to FIG. 4, an anti-sticking pulley device comprises a pulley mounting block 1; and further comprises a first pulley 2 and a second pulley 3, being mounted on two sides of the pulley mounting block 1. The pulley mounting block 1 is sandwiched by the first pulley 2 and the second pulley 3. The pulley mounting block 1 is provided with a receiving groove 9 for receiving the first pulley 2 and the second pulley 3. A central mount-

ing hole 10 is provided in a middle portion of the pulley mounting block 1. Two groups of the first pulley 2 and the second pulley 3 are provided, which are respectively placed on both sides of the central mounting hole 10. Two groups of pulleys are symmetrically disposed with the central mounting hole 10 as a symmetrical center. The anti-sticking pulley device further comprises a first guide groove 21, being disposed around the outer circumference of the first pulley 2, wherein the first pulley 2 can slide on a first guide rail 4; and a second guide groove 31, being disposed around the outer circumference of the second pulley 3, wherein the second pulley 3 can slide on a second guide rail 5; wherein the width of the first guide groove 21 is wider than the width of the second guide groove 31. The width of the first guide groove 21 is represented by d1, and the width of the second guide groove 31 is represented by d2. The width of the first guide rail 4 and the second guide rail 5 are the same, and the width of the second guide rail 5 fits the width of the second guide groove 31. Hence, the second guide groove 31 is substantially unable to sway on the second guiding rail 5; and the width of the first guide groove 21 is significantly wider than that of the first guiding rail 4, so that a certain adjusting space is kept for the first guide groove 21 to sway on the first guide rail 4. When the guide frame of the guide rail is shaped, that is, the distance between the first guide rail 4 and the second guiding rail 5 is changed, while the first guide groove 21 is adjusted automatically in the width direction of the first guide rail 4 to prevent the two pulleys from being stuck.

[0014] The pulley mounting block 1 is provided with an upper mounting cover 6 and a lower mounting cover 7 which is mounted under the upper mounting cover 6; the upper mounting cover 6 and the lower mounting cover 7 are mounted to form a circle cavity 67; balls 8 are arranged in circle cavity 67; a rotating shaft 81 is arranged on the balls 8; the two ends of the rotating shaft 81 are inserted into the first pulley 2 and the second pulley 3 respectively, which is simple and convenient to install.

Claims

1. An anti-sticking pulley device, comprising:

a pulley mounting block (1);
 a first pulley (2) and a second pulley (3), being mounted on two sides of the pulley mounting block (1);
 a first guide groove (21), being disposed around the outer circumference of the first pulley (2), wherein the first pulley (2) can slide on a first guide rail (4); and
 a second guide groove (31), being disposed around the outer circumference of the second pulley (3), wherein the second pulley (3) can slide on a second guide rail (5);
 wherein the width of the first guide groove (21)

is wider than the width of the second guide groove (31).

2. An anti-sticking pulley device as claimed in claim 1, wherein the width of the first guide groove (21) is wider than the width of the second guide groove (31) by 3-15 mm.
3. An anti-sticking pulley device as claimed in claim 1, wherein the pulley mounting block (1) is provided with an upper mounting cover (6) and a lower mounting cover (7) which is mounted under the upper mounting cover (6); the upper mounting cover (6) and the lower mounting cover (7) are mounted to form a circle cavity (67); balls (8) are arranged in the circle cavity (67); a rotating shaft (81) is arranged on the balls (8); the two ends of the rotating shaft (81) are inserted into the first pulley (2) and the second pulley (3) respectively.
4. An anti-sticking pulley device as claimed in claim 1, wherein each of the two side walls of the pulley mounting block (1) is provided with a receiving groove (9) for receiving the first pulley (2) and the second pulley (3).
5. An anti-sticking pulley device as claimed in any one of claims 1-4, wherein a central mounting hole (10) is provided in a middle portion of the pulley mounting block (1); two groups of the first pulley (2) and the second pulley (3) are provided, which are respectively placed on both sides of the central mounting hole (10).

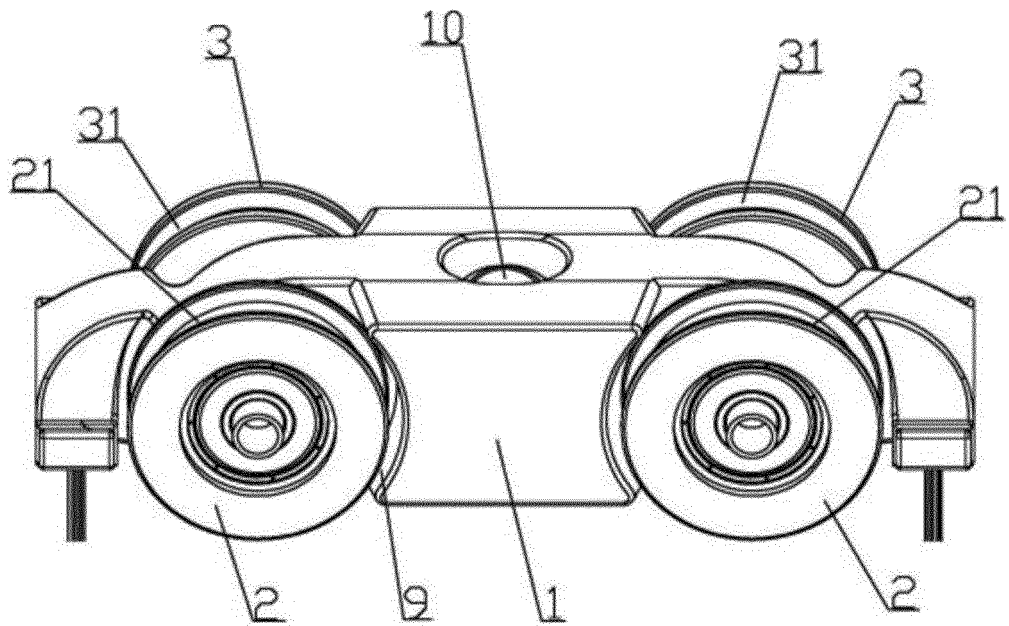


FIG. 1

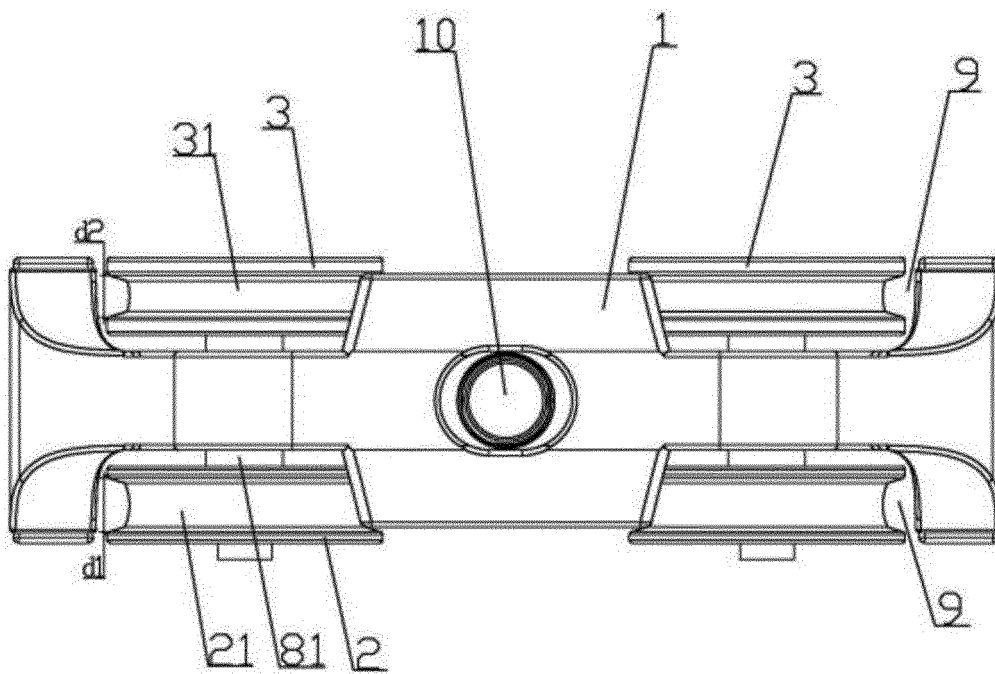


FIG. 2

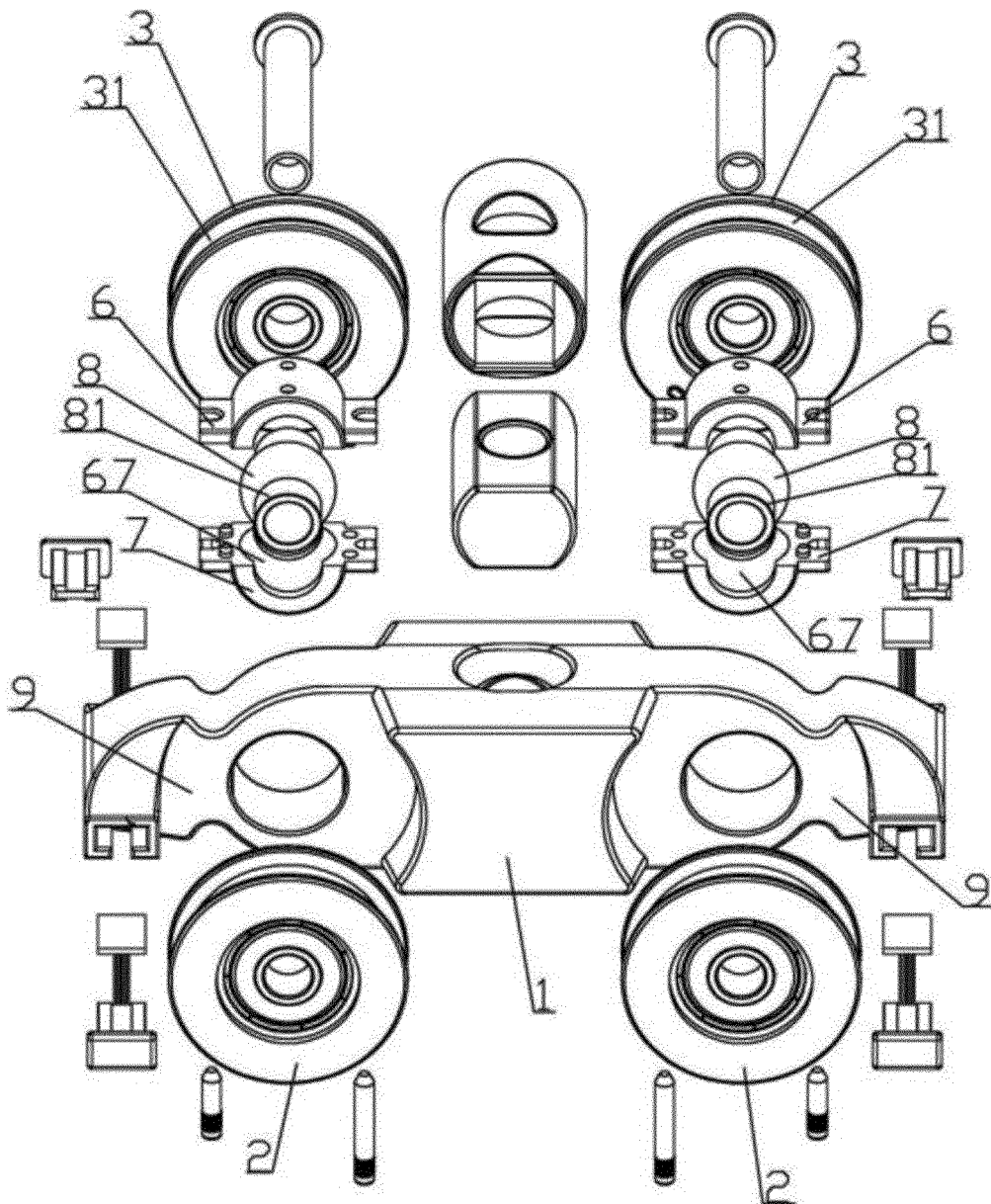


FIG. 3

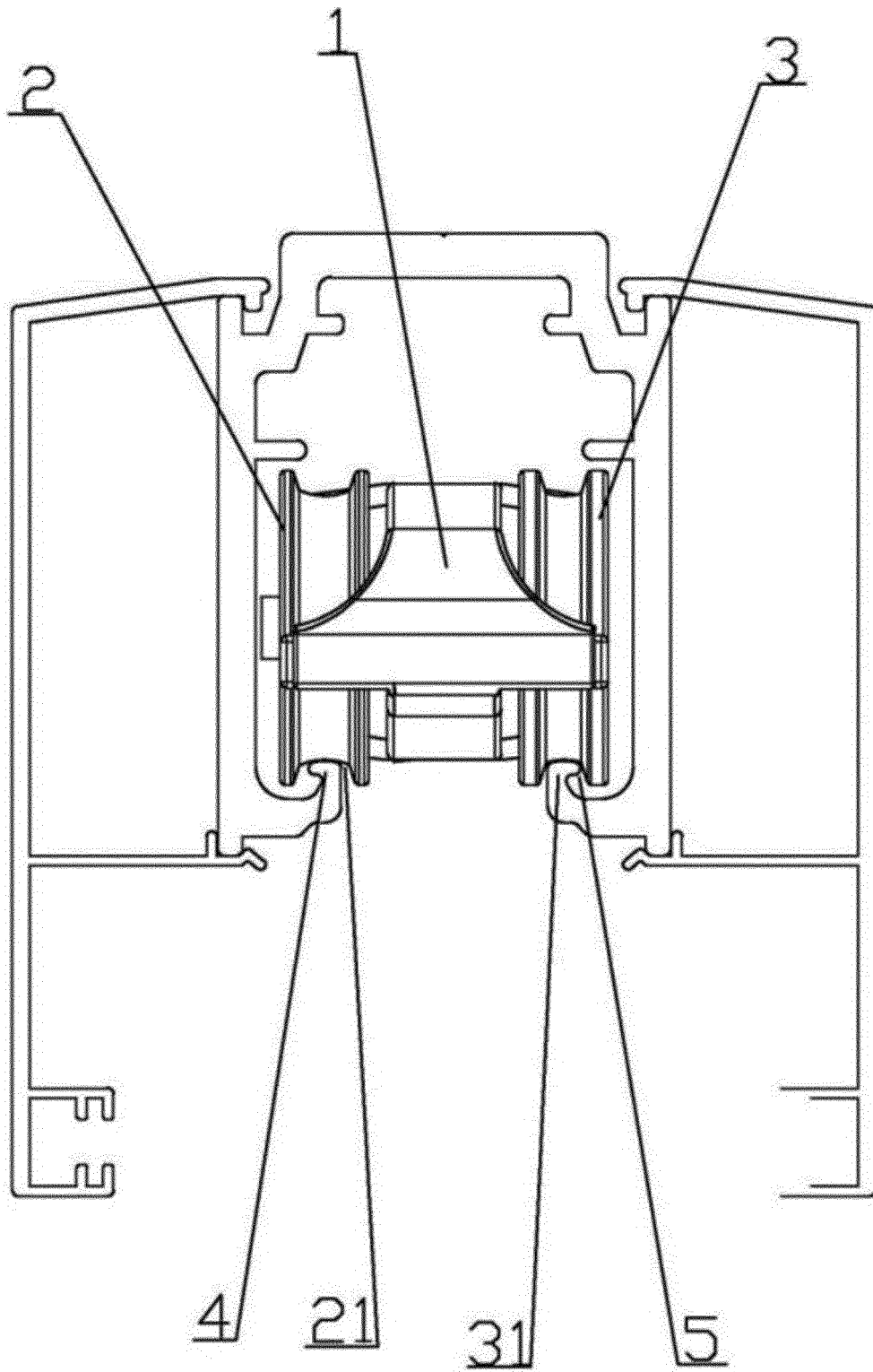


FIG. 4

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2017/098651

5	A. CLASSIFICATION OF SUBJECT MATTER	
	E05D 13/00 (2006.01) i; E05D 15/06 (2006.01) i According to International Patent Classification (IPC) or to both national classification and IPC	
10	B. FIELDS SEARCHED	
	Minimum documentation searched (classification system followed by classification symbols) E05D	
15	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) CNABS, CNTXT, VEN, CNKI: 轮, 轴, 卡, 滑轮, 转轮, 槽, 滑, 轨, 宽度, wheel, shaft, two, twin, double, clip, groove, trough, slide, rail, width	
20	C. DOCUMENTS CONSIDERED TO BE RELEVANT	
	Category*	Citation of document, with indication, where appropriate, of the relevant passages
25	PX	CN 206016515 U (XU, Jiangde), 15 March 2017 (15.03.2017), claims 1-5
	A	CN 205063635 U (XU, Jiangde), 02 March 2016 (02.03.2016) description, particular embodiments, and figure 1
	A	CN 104033060 A (XU, Jiangde), 10 September 2014 (10.09.2014), entire document
30	A	US 2010101150 A1 (HUANG, S.C.), 29 April 2010 (29.04.2010), entire document
35	<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.	
	* Special categories of cited documents:	“T” later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
40	“A” document defining the general state of the art which is not considered to be of particular relevance	“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
	“E” earlier application or patent but published on or after the international filing date	“Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
45	“L” document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	“&” document member of the same patent family
	“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	
50	Date of the actual completion of the international search 21 November 2017	Date of mailing of the international search report 28 November 2017
55	Name and mailing address of the ISA 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 LI, Xiaoxiao Telephone No. (86-10) 4653

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
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Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN 206016515 U	15 March 2017	None	
CN 205063635 U	02 March 2016	None	
CN 104033060 A	10 September 2014	CN 104033060 B	29 June 2016
US 2010101150 A1	29 April 2010	None	