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(54) MOVABLE FRAME

(57) A movable holder is slidably arranged on a lifting rod for hanging a handheld showerhead and includes a pedestal (2), a driving assembly (3) and a showerhead base (1) connected to the pedestal (2). The pedestal is provided with a through hole (2A) for accommodating the lifting rod and an assembly groove (2B) for accommodating the driving assembly (3). The driving assembly (3) includes a moving member (31) and an elastic member (32). The moving member (31) moves obliquely along the assembly groove (2B) to be close to or away from the through hole (2A). The elastic member (32) is located between the moving member (31) and the pedestal (2) to drive the moving member (31) to have a tendency of moving towards the through hole (2A). The through hole (2A) is provided with a stopping rib (5) on an inner peripheral wall away from the moving member (31), and the stopping rib (5) extends along an axis of the through hole (2A). In the movable holder, a guide sleeve structure in a conventional movable holder is removed, so that the costs of components are lowered. Meanwhile, the production difficulty is lowered, and the assembly efficiency is improved, so that the actual production and assembly demands are satisfied.

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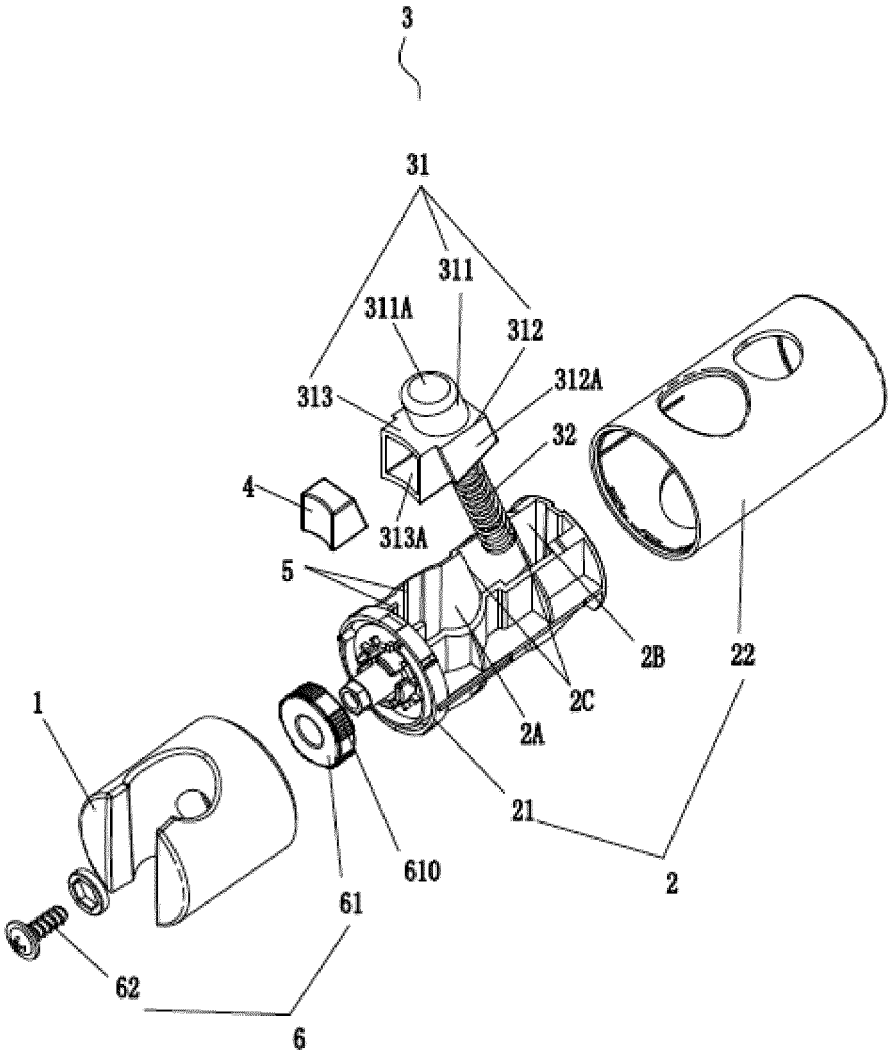
[Fig. 1]



Description

TECHNICAL FIELD

[0001] The present disclosure relates to the field of sanitary ware, and particularly relates to a movable holder which is located on a lifting rod for hanging a showerhead.

Description of Related Art

[0002] At present, a movable holder is usually assembled on a lifting rod, and a desired height of a handheld showerhead can be acquired by adjusting the position of the movable holder on the lifting rod.

[0003] A conventional movable holder is capable of lifting and lowering the handheld showerhead, but certain defects still exist:

(1) a guide sleeve is needed: the existing movable holder cooperates with a rod body member of the lifting rod to realize slide up and down, in order to prevent the rod body member from being scratched and bumped, it is needed to install the guide sleeve. However, the cost for assembling the guide sleeve is high and the guide sleeve is liable to fall off. Furthermore, the guide sleeve is made from a soft material, when being in the same position for a long time without adjustment, the guide sleeve will stick to the rod body, which makes it difficult to slide up and down;; Further, in the process of sliding up and down, the guide sleeve tightly sticks to the outer wall of the rod body of the lifting rod, which makes the slide unsmooth and problems that the lifting rod cannot lift or lower and the like occur frequently.

(2) The movable holder is complex in structure and quite difficult to assemble: as the guide sleeve needs to be installed from one end of the rod body first and then is sleeved with a pedestal, a rotation-stopping structure is required. Therefore, the existing movable holder is high in cost and low in assembly efficiency, and the phenomenon that the pedestal cannot be sleeved on the periphery of the guide sleeve occurs frequently.

[0004] In conclusion, the existing movable holder for the handheld showerhead to lift and lower needs to be further improved, so as to meet the production and assembly requirements.

SUMMARY

[0005] To overcome the above defects or problems in the BACKGROUD section, the objective of the present disclosure is to provide a movable holder which is simple structure and easy to install and implement. The guide sleeve structure required in a conventional movable holder is removed, so that the costs of components are lowered. Meanwhile, the difficulty of production is lowered, and the assembly efficiency is improved, so that the actual production and assembly demands are satisfied.

[0006] In order to achieve the above objective, the present disclosure adopts a technical solution as follows:

A movable holder slidably arranged on a lifting rod for hanging a handheld showerhead, the movable holder includes a pedestal, a driving assembly and a showerhead base connected to the pedestal;

The pedestal is provided with a through hole for the lifting rod to penetrate through and an assembly groove for accommodating the driving assembly;

The driving assembly comprises a moving member and an elastic member, wherein the moving member moves obliquely along the assembly groove to be close to or away from the through hole; and the elastic member is located between the moving member and the pedestal to drive the moving member to have a tendency of moving towards the through hole; and where the through hole is provided with a stopping rib on an inner peripheral wall away from the moving member, and the stopping rib extends along an axis of the through hole.

[0007] Further, there are at least two stopping ribs spaced apart along the radial direction of the through hole.

[0008] Further, a side wall of the moving member forms an inclined surface, the assembly groove extends obliquely from the bottom of the assembly groove to the through hole to form a guiding surface, and the inclined surface contacts the guiding surface.

[0009] Further, the moving member includes an operating portion, a connecting portion and an urging portion, the operating portion stretching out of the pedestal or being flushed with an outer shell of the pedestal, the connecting portion forming the inclined surface, and the urging portion being capable of stretching out of the through hole as the moving member moves.

[0010] Further, the movable holder further includes a rubber mat, where the urging portion is provided with a cavity, and the rubber mat is accommodated in the cavity and faces the through hole.

[0011] Further, the operating portion is internally formed a hole for accommodating the elastic member, and the pedestal is internally provided with a guide column, wherein one end of the elastic member is arranged in the hole and the other end thereof is sleeved on the guide column.

[0012] Further, the pedestal includes an inner frame and the outer shell, the inner frame being accommodated in the outer shell and being provided with the assembly groove and the through hole.

[0013] Further, the inner frame is assembled to the

showerhead base through a connecting structure; and the connecting structure comprises a positioning member and a locking member, wherein one end of the locking member successively penetrates through the showerhead base and the positioning member, and is in threaded connection with the inner frame, and the positioning member and the inner frame are in rotation-stopping fit.

[0014] Further, a periphery of the positioning member is evenly provided with several gear teeth, and the gear teeth cooperate with position-limiting teeth annularly arranged on an inner circumferential surface of the showerhead base.

[0015] It can be known from above description of the present disclosure, compared with the prior art, the present disclosure has the following beneficial effects:

[0016] The movable holder provided by the technical solution is simple in structure and easy to install and implement. Besides removing the guide sleeve of the conventional movable holder, it further guarantees positioning after the position is adjusted while preventing scratching the surface of the lifting rod by providing the structures such as the stopping rib. In addition, the movable holder further has the characteristic of lowering the production cost and the difficulty of the production process, with low cost, the movable holder is more competitive on the market, and the actual production and assembly requirements are met. Furthermore, several stopping ribs are provided to cooperate with and urge against the driving assembly, stability is guaranteed, and the positioning of the movable holder after being adjusted is also guaranteed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] To make the technical solutions provided in the embodiments of the disclosure more clearly illustrated, several accompanying drawings required by the embodiments for description are briefly introduced as follows. Obviously, the drawings in the following description are only some embodiments of the disclosure, and for a person having ordinary skill in the art, other drawings can be obtained based on these drawings without inventive effort.

FIG. 1 is a schematic exploded view of a structure of a movable holder of the present disclosure.

FIG. 2 is a section view of the movable holder of the present disclosure.

DETAILED DESCRIPTION

[0018] The technical solution in the embodiments of the present disclosure will be clearly and intactly described below in combination with the accompanying drawings in the embodiments of the present disclosure.

[0019] Referring to FIG. 1 and FIG. 2, FIG. 1 and FIG. 2 show a specific embodiment of a movable holder. The movable holder is configured to drive a showerhead base 1 to slide on a lifting rod (not shown in the drawings) of a shower, so as to adjust the height of a handheld showerhead on the showerhead base 1. The movable holder is slidably arranged on the lifting rod for hanging the showerhead.

[0020] The movable holder includes a pedestal 2, a driving assembly 3 and a showerhead base 1 for hanging the showerhead.

[0021] The pedestal 2 is provided with a through hole 2A for the lifting rod to pass through and an assembly groove 2B for assembling the driving assembly 3. It should be noted that for the convenience of production, the pedestal 2 is divided into an inner frame 21 and an outer shell 22, where the inner frame 21 is placed in the outer shell 22, and is provided with the assembly groove 2B and the through hole 2A. The assembly groove 2B is disposed in the inner frame 21 and configured to accommodate the driving assembly 3. It should be noted that the assembly groove 2B is provided with an opening communicating with the through hole 2A, and the forming direction of the opening is perpendicular to the axis of the through hole 2A.

[0022] The driving assembly 3 includes a moving member 31 and an elastic member 32.

[0023] The moving member 31 is accommodated in the assembly groove 2B and cooperates with the assembly groove 2B through inclined surfaces such that the moving member 31 is driven to displace obliquely while facing the through hole 2A and urge against the peripheral wall of the lifting rod. It should be noted that the moving member 31 includes an operating portion 311, a connecting portion 312 and an urging portion 313 that are informed integrally. The operating portion 311 is cylindrical, and a free end 311A thereof is exposed out of the pedestal 2 for a user to press. Of course, the free end 311A can further be flushed with the outer shell 22, and the user can press the free end 311A inwards with a finger. The other end of the moving member 31 is located in the pedestal 2 and urges against the elastic member 32. To guarantee that the elastic member 32 would not deviate in the moving process, the operating portion 311 is internally provided with a hole 311B for accommodating and guiding the elastic member 32. A surface of the pedestal 2 facing the hole 311B is provided with a guide column 23. One end of the elastic member 32 is placed in the hole 311B by urging against an inner bottom wall of the hole 311B and the other end thereof is sleeved on the guide column 23.

[0024] A side wall of the connecting portion 312 forms an inclined surface 312A, and the inclined surface 312A is fitted with a guiding surface 2C on the inner wall of the assembly groove 2B. The guiding surface 2C is formed by the inner wall of the assembly groove 2B obliquely extending towards the through hole 2A. As the inclined surface 312A and the guiding surface 2C move relatively, the connecting portion 312 moves back and forth relative to the through hole 2A.

[0025] The urging portion 313 moves along with the connecting portion 312 to urge against the periphery of the lifting rod. It should be noted that the urging portion 313 can either directly urge against the outer wall of the lifting rod or urge against the outer wall of the lifting rod by providing with other soft components. In the embodiment, the end of the urging portion 313 facing the lifting rod is internally provided with a cavity 313A. The cavity 313A is configured to accommodate a rubber mat 4. The rubber mat 4 thus moves along with the urging portion 313;

Two ends of the elastic member 32 act on the moving member 31 and the inner frame 21 respectively;

The through hole 2A is provided with a stopping rib 5 on an inner peripheral wall away from the moving member 31. The stopping rib 5 extends along the axial direction of the through hole 2A and cooperates with the moving member 31 to clamp the lifting rod. Several stopping ribs 5 can be arranged, and the stopping ribs 5 are spaced apart along the radial direction of the through hole 2A. In the embodiment, there are six stopping ribs 5, where two stopping ribs are facing the urging portion 313 and the rest four are arranged opposite in pairs and are arranged at angles of 90° relative to the urging portion 313.

[0026] The inner frame 21 is assembled to the showerhead base 1 through a connecting structure 6. The connecting structure 6 includes a positioning member 61 and a locking member 62. One end of the locking member 62 successively penetrates through the showerhead base 1 and the positioning member 61 and then is in threaded connection with the inner frame 21. The positioning member 61 and the inner frame 21 are in rotation-stopping fit. In addition, a periphery of the positioning member 61 is evenly provided with several gear teeth 610, and the gear teeth 610 cooperate with position-limiting teeth (not shown in the drawings) annularly arranged on an inner circumferential surface of the showerhead base 1, so as to limit rotation of the showerhead base 1 and enhance the user's sense of gear shifting during rotation.

[0027] During assembly, (1) one end of the elastic member 32 is sleeved on the guide column 23 in the inner frame 21; (2) the rubber mat 4 is placed in the cavity 313A of the urging portion 313 of the moving member 31; (3) the moving member 31 is placed in the assembly groove 2B, so that the elastic member 32 is accommodated in the hole 311B of the operating portion 311 and the inclined surface 312A of the connecting portion 312 contacts the guiding surface 2C; (4) the operating portion 311 is pressed, so that the elastic member 32 is compressed, the outer shell 22 is then sleeved on the peripheral wall of the inner frame 21; (5) the through hole 2A in the outer shell 22 is aligned with the through hole 2A of the inner frame 21, and the free end 311A of the operating portion 311 is exposed out of the outer shell 22; (6) the positioning member 61 is sleeved onto a protrusion at the end of the inner frame 21, and then the showerhead base 1 is sleeved onto the end portion of the inner frame 21 and is locked by the locking member 62; (7) the movable holder penetrates through the end of the lifting rod, so that the several stopping ribs 5 in the through hole 2A urge against the peripheral wall of the lifting rod. When the assembly is completed, under the action force of the elastic member 32, the moving member 31 has a tendency of moving obliquely towards the direction of the lifting rod and urges against the lifting rod through the rubber mat 4, so as to cooperate with the stopping ribs 5 to limit the position of the movable holder on the lifting rod.

[0028] During use, the user only needs to press the free end 311A of the operating portion 311 of the moving member 31 to adjust the movable holder according to the actually needed height. At the time, the moving member 31 moves obliquely downwards along the guiding surface 2C and compresses the elastic member 32. As the urging portion 313 moves obliquely downwards along the moving member 31, the rubber mat 4 accommodated in the cavity 313A is separated from the lifting rod, the movable holder thus is relieved and can slide up and down on the lifting rod. After being adjusted to a proper position, remove the loading force of the movable holder, the movable holder then can be fixed to the lifting rod again. At the time, under the action force of the elastic member 32, the moving member 31 moves towards the direction of the lifting rod, and the urging portion 313 moves obliquely upwards along the moving member 31, and the rubber mat 4 accommodated in the cavity 313A then urges against the lifting rod. The lifting rod being urged against by the several stopping ribs 5 and the rubber mat 4 is fixed to the position adjusted to.

[0029] The movable holder provided by the present disclosure is simple in structure and easy to install and implement. Besides removing the guide sleeve of the conventional movable holder, it further guarantees positioning after the position is adjusted while preventing scratching the surface of the lifting rod by providing the structures such as the stopping rib. In addition, the movable holder further has the characteristic of lowering the production cost and the difficulty of the production process, with low cost, the movable holder is more competitive on the market, and the actual production and assembly requirements are met. Furthermore, in the present disclosure, several stopping ribs are provided to cooperate with the driving assembly, stability is guaranteed, and the positioning of the movable holder after being adjusted is guaranteed.

[0030] The description on the description and embodiment are used for explaining the protection scope of the disclosure but does not constitute limitation to the protection scope of the disclosure. It is apparent that the described embodiment is a preferred embodiment of the disclosure and shall not be regarded as an exclusion of

other embodiments. On a basis of the embodiment in the disclosure, all other embodiments obtained by those skilled in the technical field without creative efforts fall into the scope of protection of the disclosure.

[0031] Unless otherwise defined in the claims and specification of the disclosure, the terms "first", "second", or "third" and so on are used to distinguish different objects, not used to describe a specific order.

[0032] Unless otherwise defined in the claims and specification of the disclosure, for location words, such as the use of the terms "center", "transverse", "perpendicular", "horizontal", "vertical", "top", "bottom", "inner", "outer", "upper", "lower", "front", "rear", "left", "right", "clockwise", "counterclockwise", and other indication orientations or positional relationships are based on the orientations and positional relationships shown in the drawings, are provided to facilitate the description of the disclosure and simplify the description, and are not intended to indicate or imply that the indicated device or element must have a specific orientation or be constructed and operated in a specific orientation.

[0033] In the claims and the description of the disclosure, unless otherwise explicitly defined, if the term "fixed connection" or "fixedly connected" is used, it should be understood in a broad sense, that is, any connection method without displacement relationship and relative rotation relationship between the two, that is, including non-removable fixed connection, removably fixed connection, connected as a whole, and fixed connection through other devices or components.

[0034] In the claims and specification of the disclosure, if the words "include", "have", and variations thereof are used, it is intended to indicate "include but not be limited to".

Claims

1. A movable holder slidably arranged on a lifting rod for hanging a handheld showerhead, wherein the movable holder comprises a pedestal (2), a driving assembly (3) and a showerhead base (1) connected to the pedestal (2);

   the pedestal (2) is provided with a through hole (2A) for the lifting rod to penetrate through and an assembly groove (2B) for accommodating the driving assembly (3);
   the driving assembly (3) comprises a moving member (31) and an elastic member (32), wherein the moving member (31) moves obliquely along the assembly groove (2B) to be close to or away from the through hole (2A); and the elastic member (32) is located between the moving member (31) and the pedestal (2) to drive the moving member (31) to have a tendency of moving towards the through hole (2A); and wherein the through hole (2A) is provided with a stopping rib (5) on an inner peripheral wall away from the moving member (31), and the stopping rib (5) extends along an axis of the through hole (2A).

2. The movable holder according to claim 1, wherein there are at least two stopping ribs (5) spaced apart along the radial direction of the through hole (2A).

3. The movable holder according to claim 1 or 2, wherein a side wall of the moving member (31) forms an inclined surface (312A), the assembly groove (2B) extends obliquely from the bottom of the assembly groove (2B) to the through hole (2A) to form a guiding surface (2C), and the inclined surface (312A) contacts the guiding surface (2C).

4. The movable holder according to claim 3, wherein the moving member (31) comprises an operating portion (311), a connecting portion (312) and an urging portion (313), the operating portion (311) stretching out of the pedestal (2) or being flushed with an outer shell (22) of the pedestal (2), the connecting portion (312) forming the inclined surface (312A), and the urging portion (313) being capable of stretching out of the through hole (2A) as the moving member (31) moves.

5. The movable holder according to claim 4, further comprising a rubber mat (4), wherein the urging portion (313) is provided with a cavity (313A), and the rubber mat (4) is accommodated in the cavity (313A) and faces the through hole (2A).

6. The movable holder according to claim 4, wherein the operating portion (311) is internally formed a hole (311B) for accommodating the elastic member (32), and the pedestal (2) is internally provided with a guide column (23), wherein one end of the elastic member (32) is arranged in the hole (311B) and the other end thereof is sleeved on the guide column (23).

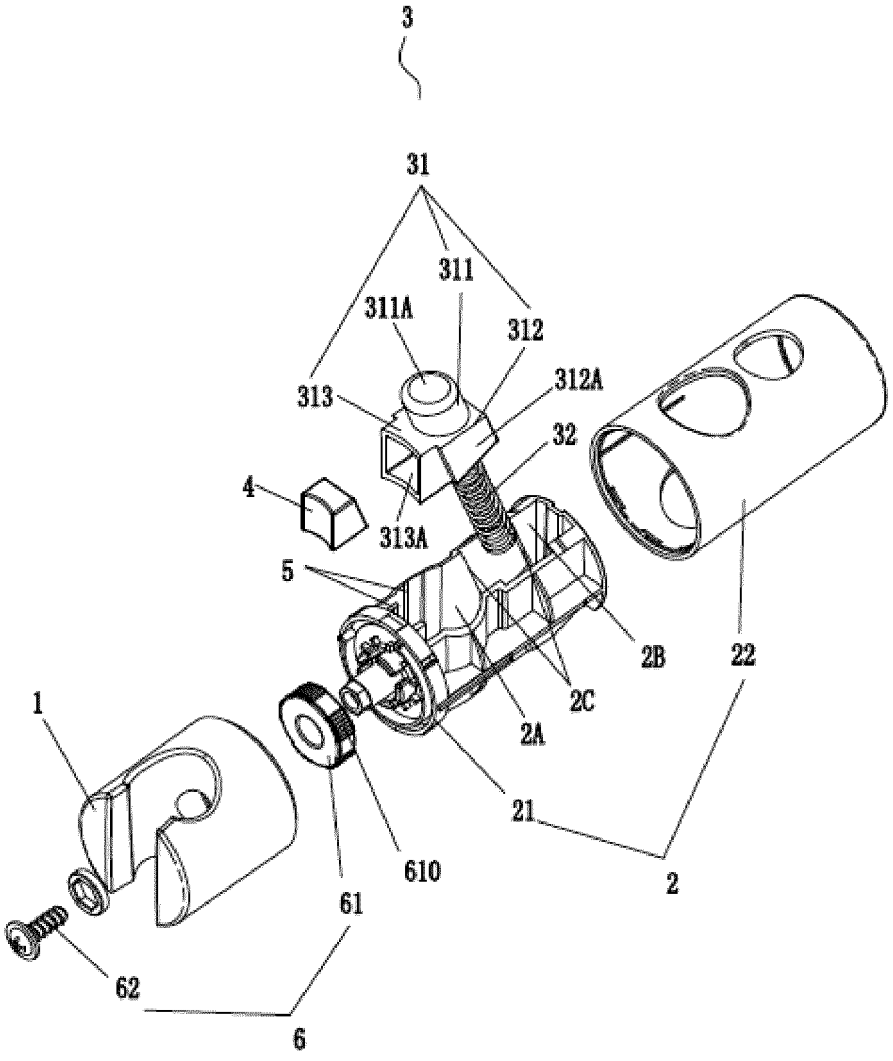
7. The movable holder according to claim 1, wherein the pedestal (2) comprises an inner frame (21) and the outer shell (22), the inner frame (21) being accommodated in the outer shell (22) and being provided with the assembly groove (2B) and the through hole (2A).

8. The movable holder according to claim 7, wherein the inner frame (21) is assembled to the showerhead base (1) through a connecting structure (6); and the connecting structure (6) comprises a positioning member (61) and a locking member (62), wherein one end of the locking member (62) successively penetrates through the showerhead base (1) and the positioning member (61), and is in threaded connec-

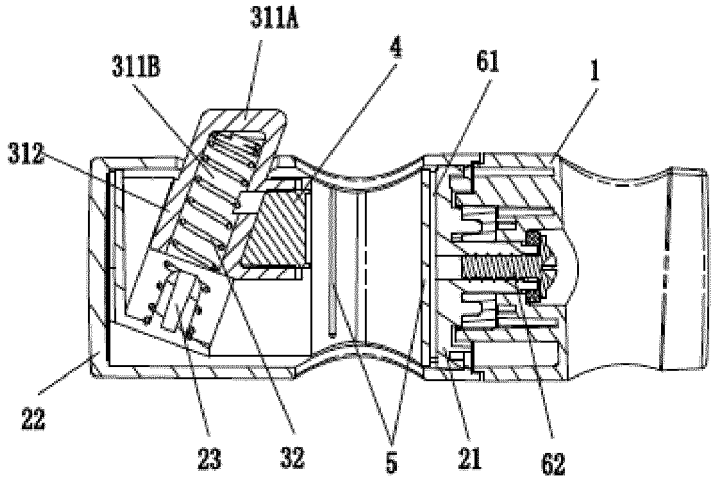
tion with the inner frame (21), and the positioning member (61) and the inner frame (21) are in rotation-stopping fit.

9. The movable holder according to claim 8, wherein a periphery of the positioning member (61) is evenly provided with several gear teeth (610), and the gear teeth (610) cooperate with position-limiting teeth annularly arranged on an inner circumferential surface of the showerhead base (1).

[Fig. 1]



[Fig. 2]



INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2020/095250

A. CLASSIFICATION OF SUBJECT MATTER

E03C 1/06(2006.01)i; B05B 15/68(2018.01)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)

E03C, B05B

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)

CNPAT, CNKI, EPODOC, WPI: 林孝发, 九牧, 花洒, 升降, 斜槽, 倾斜, 弹簧, 筋, 肋, 齿, shower?, head?, adjust+, position?, up, down, chute?, spring?, rib+, tooth, teeth

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	CN 207376720 U (XIAMEN MUJIA SANITARY WARE CO., LTD.) 18 May 2018 (2018-05-18) description, paragraphs 22-26, and figures 1-5	1-9
Y	CN 208545799 U (XIAMEN KEEKOE SANITARY WARE CO., LTD.) 26 February 2019 (2019-02-26) description, paragraphs 26-33, and figures 1-2	1-9
Y	CN 204927728 U (KAILIN SANITARY WARE SCIENCE & TECHNOLOGY (XIAMEN) CO., LTD.) 30 December 2015 (2015-12-30) description, paragraphs 21-27, and figures 1-6	8-9
A	CN 208944445 U (XIAMN XINHONGHUI TECHNOLOGY CO., LTD.) 07 June 2019 (2019-06-07) entire document	1-9
A	CN 204274264 U (WEITE (XIAMEN) SHOWER EQUIPMENT CO., LTD.) 22 April 2015 (2015-04-22) entire document	1-9
A	JP 2018021381 A (NAKA KOGYO K.K.) 08 February 2018 (2018-02-08) entire document	1-9

☑ 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
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"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)
"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
"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
"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
"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
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
14 January 2021	**25 February 2021**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088** **China** Facsimile No. **(86-10)62019451**	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2020/095250

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 2887456 Y (ZHOU, Huasong) 11 April 2007 (2007-04-11) entire document	1-9

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2020/095250

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 207376720 U	18 May 2018	None	
CN 208545799 U	26 February 2019	None	
CN 204927728 U	30 December 2015	None	
CN 208944445 U	07 June 2019	None	
CN 204274264 U	22 April 2015	None	
JP 2018021381 A	08 February 2018	JP 6664844 B2	13 March 2020
CN 2887456 Y	11 April 2007	None	

Form PCT/ISA/210 (patent family annex) (January 2015)