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(54) **LIFTER ROD STRUCURE AND METHOD OF INSTALLING THE SAME**

(57) A lifter rod structure includes: a paper tape (3), a lifter rod set (1), and two wall hanging sets (2). Wherein, the paper tape (3) is provided with two positioning holes (31) disposed at its two ends respectively. The lifter rod set (1) includes: a lifter rod (11) disposed upright, a shower seat (12) sleeved onto the lifter rod (11), and two column heads (13) disposed laterally on two ends of the lifter rod (11) respectively. The two wall hanging sets (2) are used to fix the lifter rod set (1), including: a base seat (21), a screw (22), and an inflatable tube (23). Wherein, a center of each positioning hole (31) at both ends of the paper tape (3) correspond to the column head (13) at each of the two ends of the lifter rod (11); while a fastening hole (15) is disposed on a rear end plate (14) of the column head (13) for fastening the base seat (21).

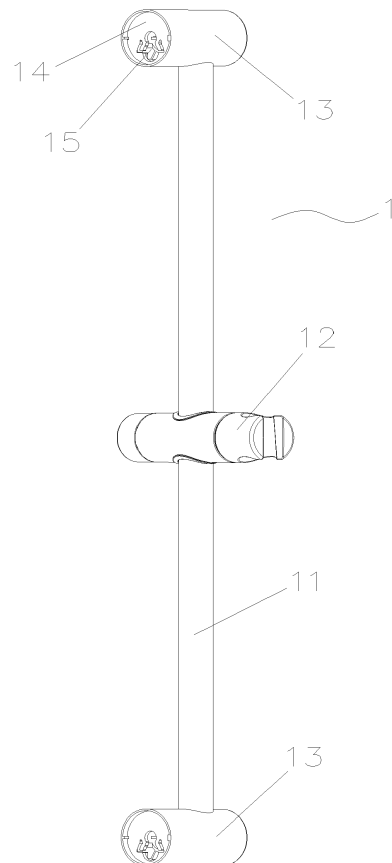


Fig. 1

EP 3 075 915 A1

Description

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates to a rod structure and method of installing the same, and in particular to a lifter rod structure and method of installing the same, utilized in bathing and sanitary sphere.

THE PRIOR ARTS

[0002] Presently on the market, the lifter rod is installed in the following approach. Firstly, a base seat is installed on a wall, then one end of the lifter rod is installed on the base seat; afterwards, another base seat is installed on the wall, then the other end of the lifter rod is installed on the other base seat, to finish installing the lifter rod. Such an approach of installation tends to be rather complicated, time consuming, and installation is liable to be not accurate and precise. In case large quantity of lifter rods are required to install, that could constitute quite a heavy load for the installation personnel.

[0003] Therefore, presently, the design of the lifter rod is not quite satisfactory, and it leaves much room for improvement.

SUMMARY OF THE INVENTION

[0004] In view of the problems and drawbacks of the prior art, the present invention provides a lifter rod structure, that is novel in construction, easy in installation, time saving, in achieving high installation efficiency.

[0005] In order to achieve the objective mentioned above, the present invention provides a lifter rod structure, comprising: a paper tape, a lifter rod set, and two wall hanging sets. Wherein, the paper tape is provided with two positioning holes disposed at its two ends respectively. The lifter rod set includes: a lifter rod disposed upright, a shower seat sleeved onto the lifter rod, and two column heads disposed laterally on two ends of the lifter rod respectively. The two wall hanging sets are used to fix the lifter rod set, including: a base seat, a screw, and an inflatable tube. Wherein, a center of each positioning hole at both ends of the paper tape correspond to the column head at each of the two ends of the lifter rod; while a fastening hole is disposed on a rear end plate of the column head for fastening the base seat.

[0006] In an aspect of the present invention, the fastening hole is a hardy hole formed by a small hole at a center of the column head, and a big hole crossing and connecting the small hole, an inner diameter of the big hole is no less than an outer diameter of a front end of the base seat, while an inner diameter of the small hole is less than the outer diameter of the front end of the base seat.

[0007] In another aspect of the present invention, an

elastic fastening pawl is disposed on the rear end plate of the column head, on both sides of a position where the big hole crossing and connecting the small hole, for fastening the base seat in the small hole.

[0008] In a further aspect of the present invention, the big hole is located on an upper side, on a lower side, on a right side, or on a left side of the small hole.

[0009] In yet another aspect of the present invention, a ring shape fastening slot is disposed in a middle portion of a side wall of the base seat matching the small hole in the center of the column head.

[0010] In an aspect of the present invention, the inflatable tube is disposed to penetrate through a central through hole of the base seat, while the screw is disposed to penetrate into the inflatable tube.

[0011] In another aspect of the present invention, the column head is of a cylindrical shape.

[0012] In a further aspect of the present invention, the base seat is of a pedestal shape.

[0013] In order to implement the lifter rod structure, the present invention provides a method of installing the lifter rod structure, comprising the following steps:

- (1) gluing a back side of a base seat onto a wall;
- (2) pressing a drill head of a drill onto a center of the base seat, to drill a hole on the wall;
- (3) fixing the base seat on the wall through using the inflatable tube and the screw;
- (4) placing one end of the paper tape onto the base seat through its positioning hole;
- (5) placing the other base seat through the other positioning hole at the other end of the paper tape, then gluing the base seat onto the wall;
- (6) removing the paper tape, and repeating steps (2) to (3) once; and
- (7) placing two column heads of a lifter rod set assembled in advance onto the two fixed base seat respectively, to perform fixing and installation.

[0014] Compared with the Prior Art, the present invention has the following advantages: through using the paper tape, the two base seat of the lifter rod structure is first fixed onto the wall, then the fastening holes are used to install and fix the column heads at both ends of the lifter rod set onto the base seats. As such, the installation of the lifter rod structure is realized in a new approach, in achieving novel construction, easy installation, and high installation efficiency.

[0015] Further scope of the applicability of the present invention will become apparent from the detailed descriptions given hereinafter. However, it should be understood that the detailed descriptions and specific examples, while indicating preferred embodiments of the present invention, are given by way of illustration only, since various changes and modifications within the spirit and scope of the present invention will become apparent to those skilled in the art from the detailed descriptions.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] The related drawings in connection with the detailed descriptions of the present invention to be made later are described briefly as follows, in which:

Fig. 1 is a schematic diagram of a lifter rod set according to an embodiment of the present invention; Fig. 2 is a schematic diagram of a paper tape according to an embodiment of the present invention; Fig. 3 is an exploded view of a wall hanging set according to an embodiment of the present invention; Fig. 4 is a schematic diagram showing a big hole is at a lower side of a small hole for a column head according to an embodiment of the present invention;

Fig. 5 is a schematic diagram showing a big hole is at an upper side of a small hole for a column head according to an embodiment of the present invention;

Fig. 6 is a schematic diagram showing a big hole is at a left side of a small hole for a column head according to an embodiment of the present invention; Fig. 7 is a schematic diagram showing a big hole is at a right side of a small hole for a column head according to an embodiment of the present invention; Fig. 8 is a schematic diagram of installation showing a paper tape and a fixed base seat according to an embodiment of the present invention;

Fig. 9 is a schematic diagram of installation showing a paper tape and a base seat has yet to be fixed according to an embodiment of the present invention;

Fig. 10 is a schematic diagram of installation showing a lifted rod set and a fixed base seat according to an embodiment of the present invention;

Fig. 11 is a cross section view of a lifter rod structure according to an embodiment of the present invention; and

Fig. 12 is a partial enlarged view of a lifter rod structure of Fig. 10 according to an embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0017] The purpose, construction, features, functions and advantages of the present invention can be appreciated and understood more thoroughly through the following detailed description with reference to the attached drawings.

[0018] Refer to Figs. 1 to 12 respectively for a schematic diagram of a lifter rod set according to an embodiment of the present invention; a schematic diagram of a paper tape according to an embodiment of the present invention; an exploded view of a wall hanging set according to an embodiment of the present invention; a schematic diagram showing a big hole is at a lower side of a

small hole for a column head according to an embodiment of the present invention; a schematic diagram showing a big hole is at an upper side of a small hole for a column head according to an embodiment of the present invention; a schematic diagram showing a big hole is at a left side of a small hole for a column head according to an embodiment of the present invention; a schematic diagram showing a big hole is at a right side of a small hole for a column head according to an embodiment of the present invention; a schematic diagram of installation showing a paper tape and a fixed base seat according to an embodiment of the present invention; a schematic diagram of installation showing a paper tape and a base seat has yet to be fixed according to an embodiment of the present invention; a schematic diagram of installation showing a lifted rod set and a fixed base seat according to an embodiment of the present invention; a cross section view of a lifter rod structure according to an embodiment of the present invention; and a partial enlarged view of a lifter rod structure of Fig. 10 according to an embodiment of the present invention.

[0019] As shown in Figs. 1 to 12, the present invention provides a lifter rod structure, comprising: a paper tape 3, a lifter rod set 1, and two wall hanging sets 2. Wherein, the paper tape 3 is provided with two positioning holes 31 disposed at its two ends respectively. The lifter rod set 1 includes: a lifter rod 11 disposed upright, a shower seat 12 sleeved onto the lifter rod 11, and two column heads 13 disposed laterally on two ends of the lifter rod 11 respectively. The two wall hanging sets 2 are used to fix the lifter rod set 1, including: a base seat 21, a screw 22, and an inflatable tube 23. Wherein, a center of each positioning hole 31 at both ends of the paper tape 3 correspond to the column head 13 at each of the two ends of the lifter rod 11; while a fastening hole 15 is disposed on a rear end plate 14 of the column head 13 for fastening the base seat 21.

[0020] In the present embodiment, as shown in Figs. 1 and 4, the fastening hole 15 is a hardy hole formed by a small hole 151 at a center of the column head 13, and a big hole 152 crossing and connecting the small hole 151, an inner diameter of the big hole 152 is no less than an outer diameter of a front end of the base seat 21, while an inner diameter of the small hole 151 is less than the outer diameter of the front end of the base seat 21. During installation, the base seat 21 is first put into the big hole 152, then it is slipped into the small hole 151, to realize fixing the base seat 21 and the lifter rod set 1. During detachment, the base seat 21 is first slipped from the small hole 151 to the big hole 152, then it is taken out from the big hole 152.

[0021] In the present embodiment, as shown in Fig. 4, an elastic fastening pawl 16 is disposed on the rear end plate 14 of the column head 13, on both sides of a position where the big hole 152 crossing and connecting the small hole 151, for fastening the base seat 21 securely in the small hole 151. As such, when the base seat 21 is pushed by force to move from the big hole 152 to the small hole

151, the elastic fastening pawl 16 is first pressed open, then it will return to its original position, so that the base seat 21 is not liable to be detached from the small hole 151.

[0022] In the present embodiment, as shown in Figs. 4 to 7, the big hole 152 can be located on an upper side, on a lower side, on a right side, or on a left side of the small hole 151. In case the big hole 152 is located on an upper side of the small hole 151, during installation, firstly, aligning accurately the big hole 152 of the lifter rod set 1 with the base seat 21, then pushing the lifter rod set 1 upward, so that the base seat 21 is fastened in the small hole 151. In case the big hole 152 is located on the lower side of the small hole 151, during installation, firstly, aligning accurately the big hole 152 of the lifter rod set 1 with the base seat 21, then pushing the lifter rod set 1 downward, so that the base seat 21 is fastened in the small hole 151. In case the big hole 152 is located on the left side of the small hole 151, during installation, firstly, aligning accurately the big hole 152 of the lifter rod set 1 with the base seat 21, then pushing the lifter rod set 1 to the right, so that the base seat 21 is fastened in the small hole 151. In case the big hole 152 is located on the right side of the small hole 151, during installation, firstly, aligning accurately the big hole 152 of the lifter rod set 1 with the base seat 21, then pushing the lifter rod set 1 to the left, so that the base seat 21 is fastened in the small hole 151.

[0023] In addition, in the present embodiment, the column head 13 is of a cylindrical shape, while the base seat 21 is of a pedestal shape, but the present invention is not limited to this. A ring shape fastening slot 211 is disposed in a middle portion of a side wall of the base seat 21 matching the small hole 151 at a center of the column head 13. A through hole is provided in the center of the base seat 21. Alternatively, the through hole can be drilled upon installation. The inflatable tube 23 is disposed to penetrate through a central through hole 212 of the base seat 21, and it passes a flange of the column head to position in the opening of the central through hole 212; while the screw 22 is disposed to penetrate into the inflatable tube 23.

[0024] Further, the present invention also provides a method for implementing a lifter rod structure, comprising the following steps:

- (1) gluing a back side of a base seat 21 onto a wall;
- (2) pressing a drill head of a drill onto a center of the base seat 21, to drill a hole on the wall;
- (3) fixing the base seat 21 on the wall through using the inflatable tube 23 and the screw 22;
- (4) placing one end of the paper tape 3 onto the base seat 21 through its positioning hole 31 (as shown in Fig. 8);
- (5) placing the other base seat 21 through the other positioning hole 31 at the other end of the paper tape 3, then gluing the base seat 21 onto the wall;
- (6) removing the paper tape 3, and repeating steps

(2) to (3) once; and

(7) placing two column heads 13 of a lifter rod set 1 assembled in advance onto the two fixed base seat 21 respectively, to perform fixing and installation (as shown in Figs. 10 to 11).

[0025] In the step (1) mentioned above, the back side of the base seat 21 can be provided with a double-sided tape; and during installation, the free side of the tape is torn away to facilitate easy installation.

[0026] In the step (2) mentioned above, the center of the base seat 21 can be provided with a through hole cut in advance, or the through hole can be drilled upon installation.

[0027] In the step (3) mentioned above, during installation, the inflatable tube 23 can be aligned with the central through hole 212 of the base seat 21, then the inflatable tube 23 is driven into central through hole 212 through using a tool. Afterwards, the screw 22 is aligned with the inflatable tube 23, and then a screw driver is used to drive the screw 22 tightly into the inflatable tube 23.

[0028] The above detailed description of the preferred embodiment is intended to describe more clearly the characteristics and spirit of the present invention. However, the preferred embodiments disclosed above are not intended to be any restrictions to the scope of the present invention. Conversely, its purpose is to include the various changes and equivalent arrangements which are within the scope of the appended claims.

Claims

1. A lifter rod structure, comprising:

a paper tape (3), having two positioning holes (31) provided at its two ends respectively;
a lifter rod set (1), including:

a lifter rod (11), and it is disposed upright;
a shower seat (12), sleeved onto the lifter rod (11);
two column heads (13), disposed laterally on two ends of the lifter rod (11) respectively;

two wall hanging sets (2), used to fix the lifter rod set (1), including: a base seat (21), a screw (22), and an inflatable tube (23);
wherein, a center of each positioning hole (31) at both ends of the paper tape (3) correspond to the column head (13) at each of the two ends of the lifter rod (11),
while a fastening hole (15) is disposed on a rear end plate of the column head (13) for fastening the base seat (21).

2. The lifter rod structure as claimed in claim 1, wherein the fastening hole (15) is a hardy hole formed by a small hole (151) at a center of the column head (13), and a big hole (152) crossing and connecting the small hole (151), an inner diameter of the big hole (152) is no less than an outer diameter of a front end of the base seat (21), while an inner diameter of the small hole (151) is less than the outer diameter of the front end of the base seat (21). 5
3. The lifter rod structure as claimed in claim 2, wherein an elastic fastening pawl (16) is disposed on the rear end plate (14) of the column head (13), on both sides of a position where the big hole (152) crossing and connecting the small hole (151), for fastening the base seat (21) in the small hole (151). 10 15
4. The lifter rod structure as claimed in claims 2 or 3, wherein the big hole (152) is located on an upper side, on a lower side, on a right side, or on a left side of the small hole (151). 20
5. The lifter rod structure as claimed in claims 2 or 3, wherein a ring shape fastening slot (211) is disposed in a middle portion of a side wall of the base seat (21) matching the small hole (151) in a center of the column head (13). 25
6. The lifter rod structure as claimed in claim 1, wherein the inflatable tube (23) is disposed to penetrate through a central through hole (212) of the base seat (21), while the screw (22) is disposed to penetrate into the inflatable tube (23). 30
7. The lifter rod structure as claimed in claim 1, wherein the column head (13) is of a cylindrical shape. 35
8. The lifter rod structure as claimed in claim 1, wherein the base seat (21) is of a pedestal shape. 40
9. A method for installing the lifter rod structure as claimed in claim 1, comprising following steps:
 - (1) gluing a back side of a base seat (21) onto a wall; 45
 - (2) pressing a drill head of a drill onto a center of the base seat (21), to drill a hole on the wall;
 - (3) fixing the base seat (21) on the wall through using the inflatable tube (23) and the screw (22);
 - (4) placing one end of the paper tape (3) onto the base seat (21) through its positioning hole (31); 50
 - (5) placing the other base seat (21) through the other positioning hole (31) at the other end of the paper tape (3), then gluing the base seat (21) onto the wall; 55
 - (6) removing the paper tape (3), and repeating steps (2) to (3) once; and

(7) placing two column heads (13) of a lifter rod set (1) assembled in advance onto the two fixed base seats (21) respectively, to perform installation and fixing.

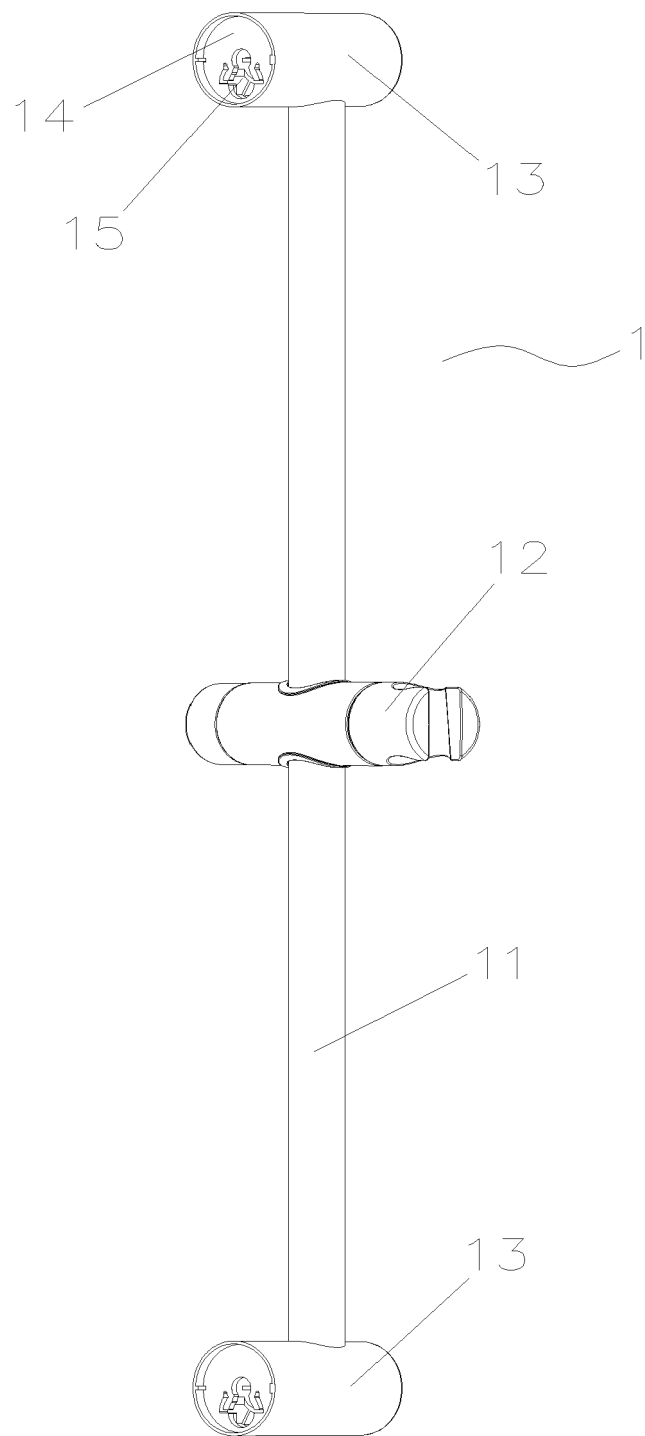


Fig. 1

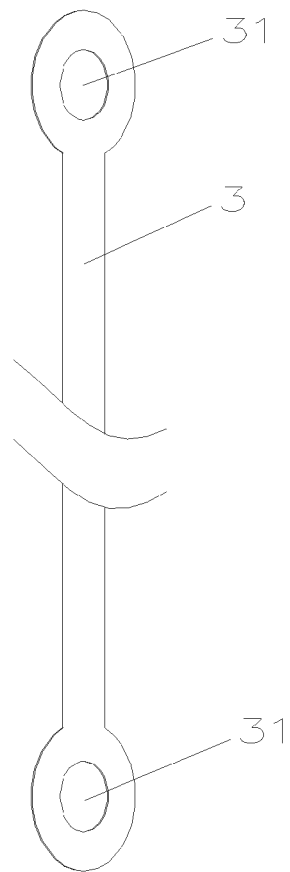


Fig. 2

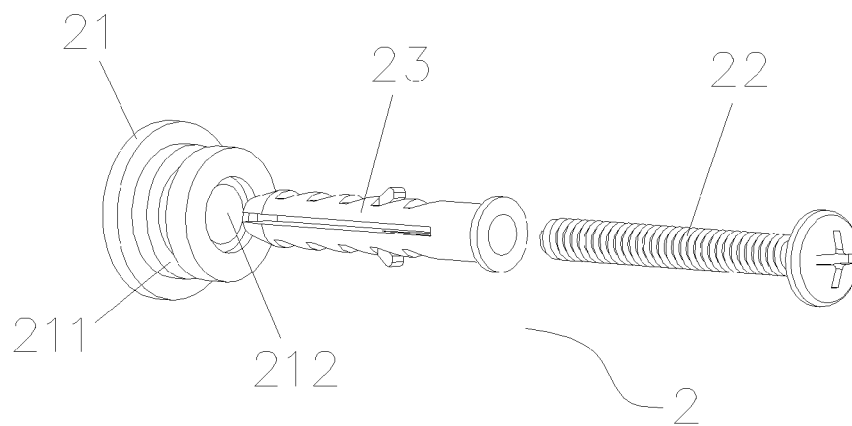


Fig. 3

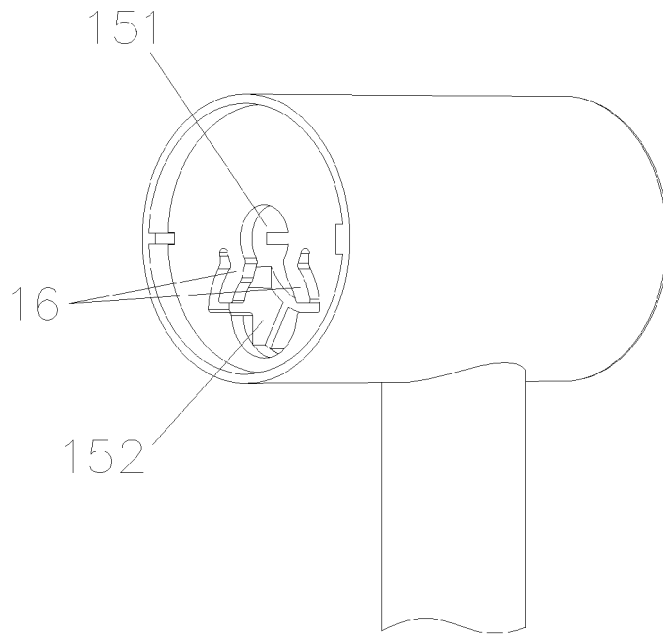


Fig. 4

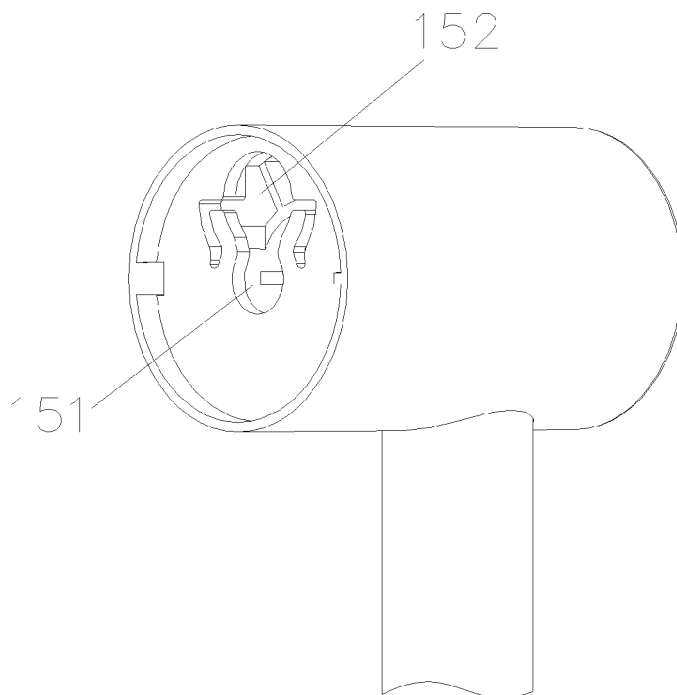


Fig. 5

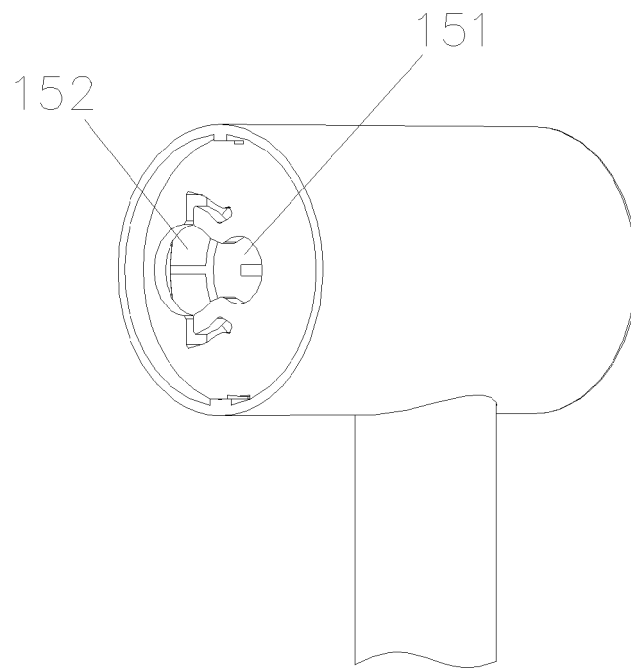


Fig. 6

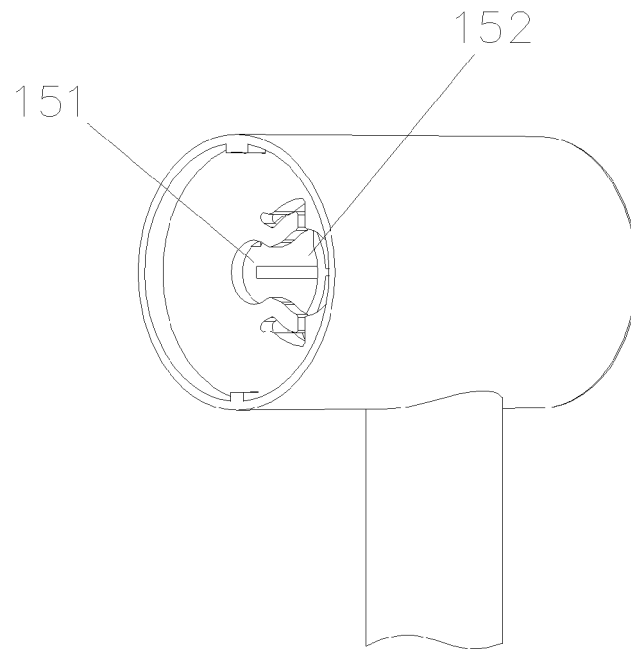


Fig. 7

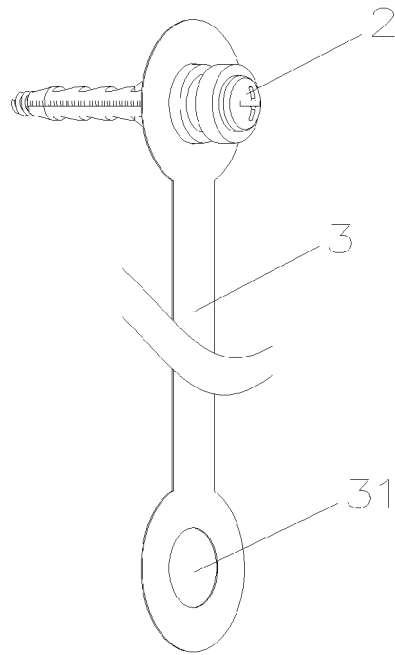


Fig. 8

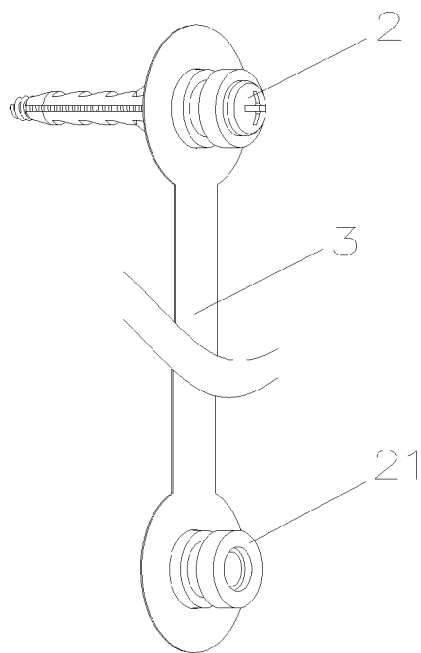


Fig. 9

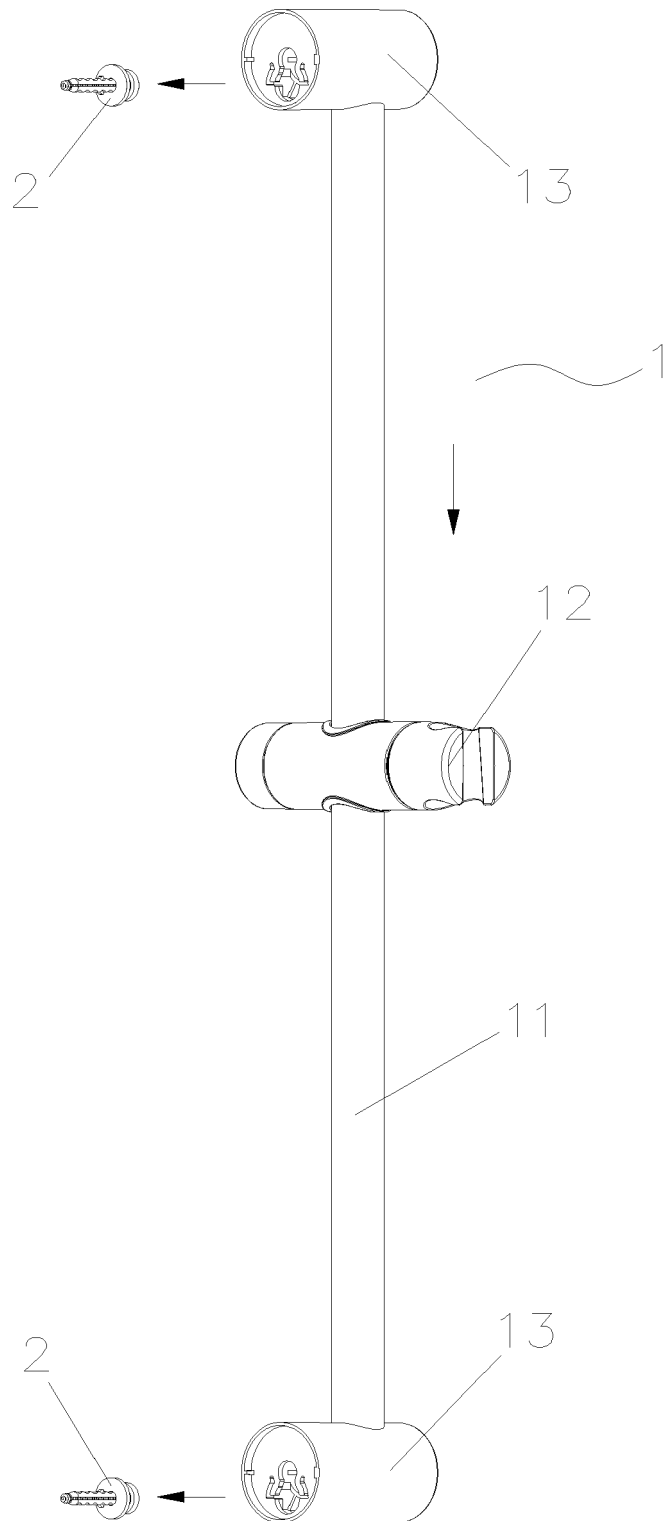


Fig. 10

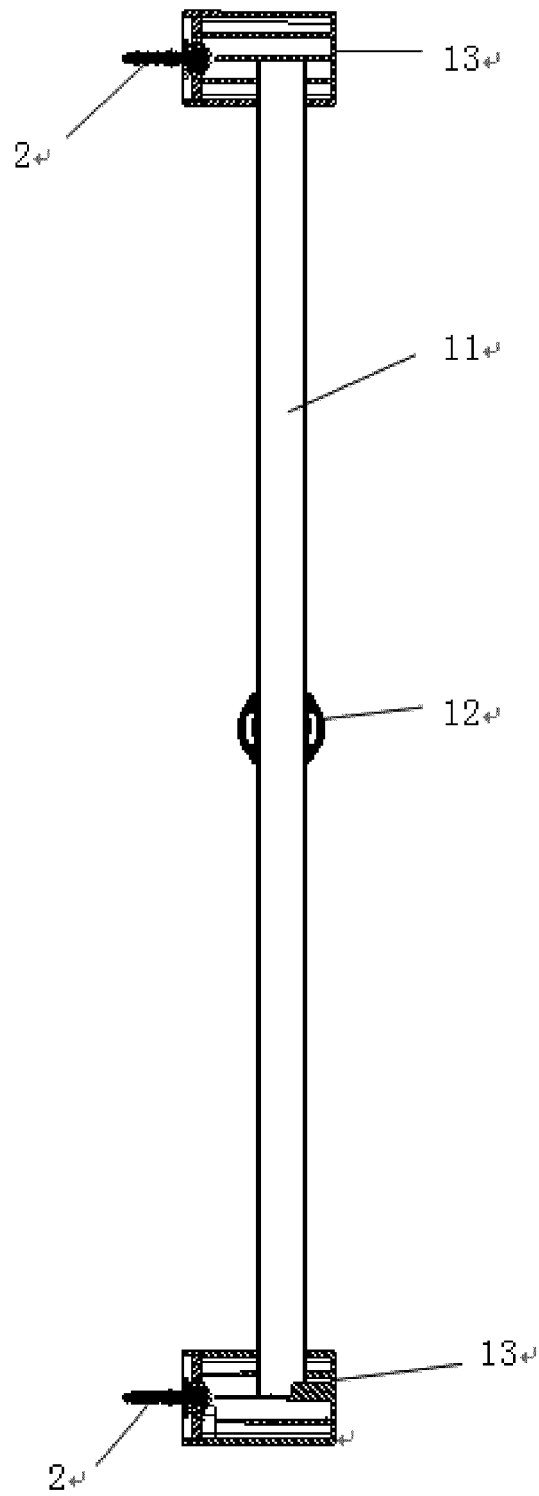


Fig. 11

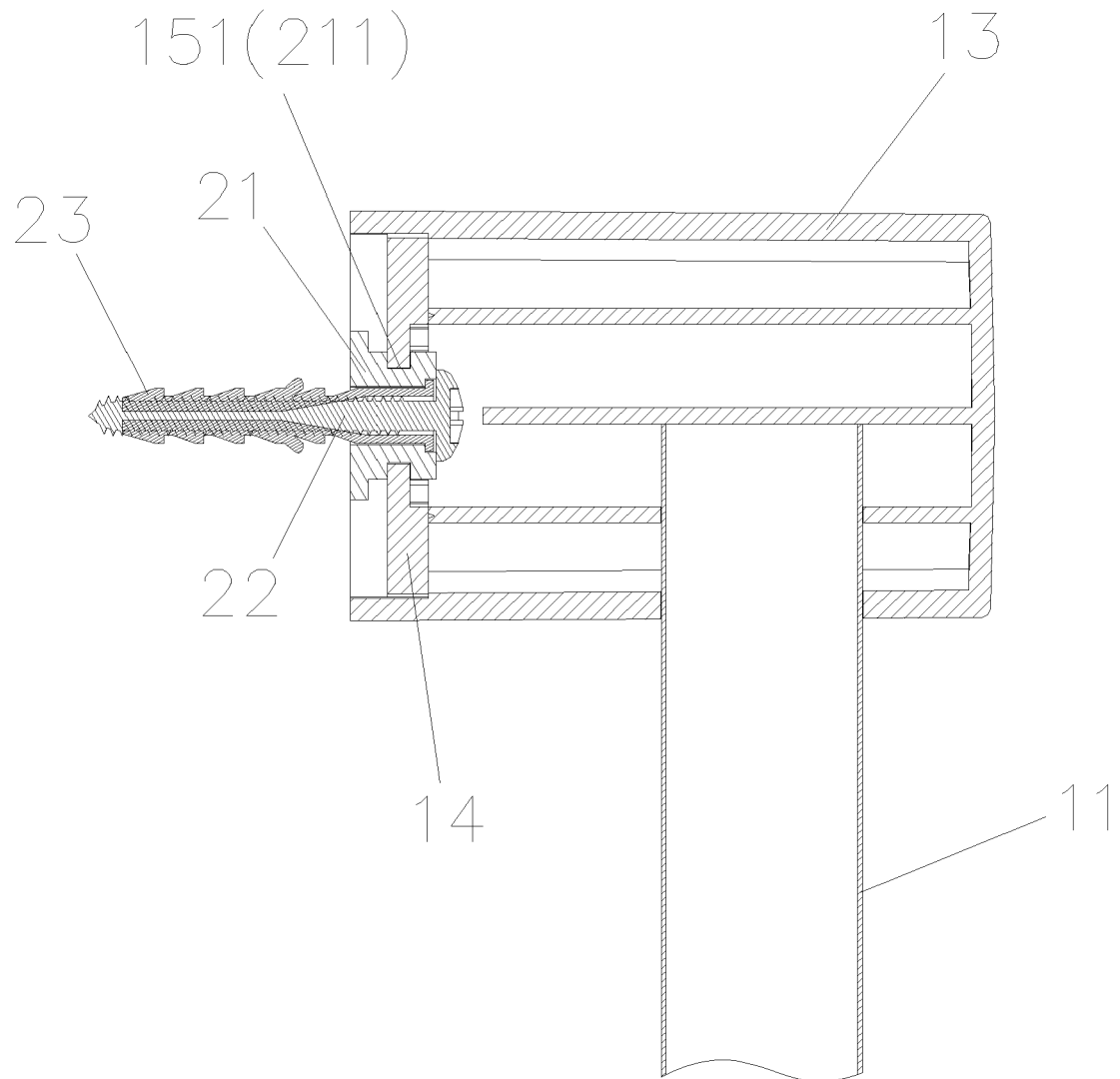


Fig. 12



EUROPEAN SEARCH REPORT

 Application Number
EP 16 16 1345

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 22 July 2016	Examiner Leher, Valentina
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EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 16 16 1345

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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