



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
29.05.2013 Bulletin 2013/22

(51) Int Cl.:
A47K 13/26 (2006.01)

(21) Application number: **12007925.6**

(22) Date of filing: **24.11.2012**

(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

(72) Inventors:
• **Wang, Xiangji**
Xiamen (CN)
• **Chen, Anyuan**
Xiamen (CN)

(30) Priority: **25.11.2011 CN 201110383548**

(74) Representative: **Verscht, Thomas Kurt Albert**
Josephsburgstrasse 88 A
81673 München (DE)

(71) Applicant: **Li, Feiyu**
Haicang District, Xiamen, Fujian 361000 (CN)

(54) **A magnetic lock connection device of the cover plate and a quick assembly and disassembly method with the magnetic lock**

(57) The present invention is provided with a magnetic lock device of the cover plate compositing a plug member disposed in the cover plate of the toilet and a fixed base disposed in the base of the toilet, the plug member is disassembly or locked to the fixed base, the present invention further includes a driving member or movable member, which is movably coupled to the plug member, the driving member is fixed with a magnetic member; a driven member, placed inside the fixed base and movable inside the fixed base; when sliding to a lock

position, the driving member is plug into the plug member and locking the plug member to the fixed base with the effect of magnetic action; when the driving member is sliding to unlock position, the driven member is disposed with a first reposition spring, when the driving member is away from the lock position, the lock to the plug member is released; and a control mechanism disposed in the plug member has a limited portion to keep the driving member in the lock position or release the driving member from the lock position.

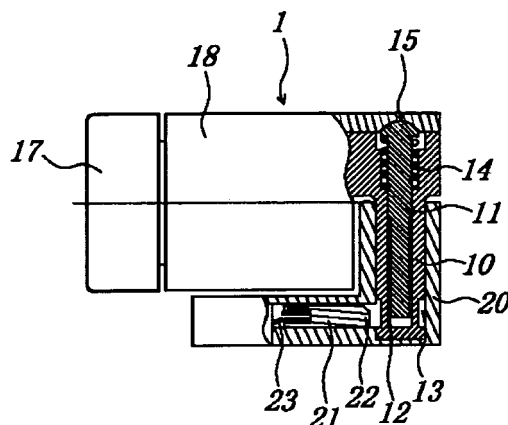


FIG .1

Description

Field of the invention

[0001] The present invention relates to a connection device of the cover plate and the body of the toilet and the corresponding method, especially to a connection device and a method applying with the magnetic lock.

Background of the invention

[0002] For quick assembly and disassembly of the cover plate and the base of the toilet purposes, there is quick assembly and disassembly device of the cover plate and the base of the toilet in the market. These devices are designed of mechanical principle by spring pressing the lock. These mechanical assembly and disassembly devices are easily worn out due to stress and collision, it is hard to assemble and disassemble with easily worn out. Basic in these problems, there is device connecting the cover plate to the base of toilet by magnetic attraction. For example, the Chinese patent CN10199857A is provided with a quick assembly and disassembly device of cover plate of toilet.

[0003] This kind of proposal is applied with magnetic force of the magnet itself to connect the cover plate to the base of the toilet, prevention huge mechanical friction and collision, the assembly is relative simple as well. But there are existing innate defects: as the weight of the cover plate is around 2Kg, it needs more magnetic force to make the cover plate attracted to the base of the toilet. Thus high mass of permanent magnetic material is needed. For the moment, the price of rare earth to make the permanent magnetic material is higher and higher, the cost of this kind design is high. In another hand, the cover plate is attracted by the magnetic force only, as the magnetic force of the permanent material always exists, it is easy to assemble the cover plate to the base of the toilet by difficult to disassemble it through overcoming the total magnetic force of the magnetic material. Thus it is inconvenient to assemble and disassemble and without human-basic.

Summary of the invention

[0004] To solve the above problem that the existing quick assembly and disassembly device is not convenient and human-based, the present invention is provided with a magnetic lock device of the cover plate of toilet and a quick assembly and disassembly method applied with the magnetic lock device. The technical proposal is as below:

A magnetic lock device of the cover plate compositing a plug member disposed in the cover plate of the toilet and a fixed base disposed in the base of the toilet, the plug member is disassembly or locked to the fixed base, the magnetic lock device of the cover

plate further includes:

A driving member, movably coupled to the plug member, the driving member is fixed with a magnetic member;

A driven member, placed inside the fixed base and movable inside the fixed base;

When the driving member is sliding to a lock position, the driven member is plug into the plug member and locked to the plug member to the fixed base with the effect of magnetic action; when the driving member is sliding to unlock position, the gravity the driven member pulled is disappear, the driving member is replaced and away from the plug member to release the lock to the plug member.

[0005] Furthermore, the magnetic lock device of the cover plate further includes a control mechanism, the control mechanism is placed on the plug member, the control mechanism can keep or release the driving member in the lock position.

[0006] Furthermore, the control mechanism is a boss on the driving member, the boss is placed on the cover plate, the driving member is pressed to the lock position when the cover plate or seat ring rotates.

[0007] Furthermore, the driven member is replaced by a first reposition spring.

[0008] Furthermore, the control mechanism includes a second reposition spring on the driving member, the limited portion is a boss or groove disposed on the seat ring of the cover plate of the toilet, the driving member is pressed to the lock position when the seat ring or the cover plate is laid flat, the driving member is repositioned away from the lock position by the second reposition spring when the seat ring is turned up.

[0009] Another technical proposal of the present invention is as below:

A magnetic lock device of the cover plate compositing a plug member in the cover plate of the toilet and a fixed base or connection rod in the base of the toilet, the plug member and the fixed base are disassembly connected further includes:

A driving member fixed with a magnet member;

A driven member, which can slide in the plug member;

When the plug member is plug to the fixed base or fixed rod, the fixed base is plug and locked to the plug member with the driving member drives the driven member sliding; the driven member is away from the lock position to release the lock to the plug member.

[0010] Furthermore, the driving member is placed in the plug member to retain the driven member in the lock position.

[0011] Furthermore, the reposition is realized by a

magnet in the plug member, the polarity of the magnet is like and direction opposite to that of the magnet in the driven member. Furthermore, the driven member includes a control button, the magnetic member is disposed inside the button, pressing the button by human operation makes the driven member away from the lock position.

[0012] Another technical proposal of the present invention is as below:

A magnetic lock device of the cover plate compositing a plug member in the cover plate of the toilet and a fixed base in the base of the toilet, the plug member and the fixed base are disassembly connected, the magnetic lock device of the cover plate further includes:

A driving member, sliding coupled to the plug member inside, the driving member is fixed with a magnetic member;

A driven member, placed inside the plug member, the driven member is plug into the fixed base with acted with the magnetic action of the magnetic member when the plug member is cooperated with the fixed base and the driving member is sliding to a lock position. Furthermore, the driven member is disposed with a first reposition spring, when the driving member is away from the lock position, the lock to the plug member is released. Furthermore, the present invention further includes a control mechanism placed in the plug member, the control mechanism is disposed with a limited portion to keep the driving member in the lock position or release the driving member from the lock position.

[0013] A connection method of the cover plate and the toilet body includes a plug member in the shaft of the cover plate of the toilet and a connection member in the base of the toilet, the plug member is disassembly connected or fixed to the fixed base; wherein further includes a driving member of magnetic, a driven member disposed in the plug member or the connection member, when the driving member is inserted to the connection member of the base of the toilet, the driving member and the driven member are linkage and moved to the lock position of the plug member, locking the plug member to the fixed base or the connection member. Furthermore, the driven member is magnetic, the driven member is controlled to the lock position with the magnetic attraction or repulsion of the driving member.

[0014] Furthermore, when the driving member is away from the plug position, the driven member is repositioned to release the lock of the plug member and the connection member. Furthermore, the driving member can be pushed manually, the driven member is away from the lock to the connection member.

[0015] Furthermore, the plug member is disposed with magnetic member, which is effected repulsion for the driving member, making the driven member retaining the

lock to the connection member.

[0016] From that point, the advantageous effects of the present invention are as below:

1. The driving member with magnet and the driven member attracted by the magnet are formed to the main component of the magnetic lock, realizing the separation of the magnetic control and mechanical fixation. It is not only applied with the easily assembly and disassembly of the magnetic control, but also with the high strength and reliable of the mechanical fixation.

2. With the separation of the magnetic control and mechanical fixation, the magnetic force is no longer the constraint of the mechanical strength, the cost of magnetic material is minimized.

3. With the boss and the groove disposed in the shaft of the seat ring, as the limited portion to control the driving member, it is greatly eased of the steps of assembly and disassembly of the cover plate, making the assembly and disassembly easy and labor saving.

4. It makes the driving member and the driven member integrated to the plug member, then the fixed base without driven member is applicable. It is applicable for fixed base with none magnetic lock, expanding the applicability.

5. The sliding direction of the driven member is horizontal, while that of the driving member is vertical; the sliding directions of the above two are perpendicular to each other. The motion directions are perpendicular without parallel component, maximizing the magnetic effect with well sensitive without interference.

Brief description of the drawings

[0017] The present invention is further described with the drawings and embodiment:

Fig.1 illustrates the side view with partial sectional view of the first embodiment of the present invention situated in unlock status;

Fig.2 illustrates the side view with partial sectional view of the fig.1 situated in lock status;

Fig.3 illustrates partial sectional view of the second embodiment of the present invention;

Fig.4 illustrates partial sectional view of the third embodiment of the present invention;

Fig.5 illustrates partial sectional view of the fourth embodiment of the present invention;

Fig.6 illustrates the connection device of the fifth embodiment;

Fig.7 illustrates the functional member of the fifth embodiment;

Fig.8 illustrates the connection of the base and the shaft of the cover plate in initial status of the fifth embodiment;

Fig.9 illustrates the connection of the base and the shaft of the cover plate in lock status of the fifth embodiment;

Fig. 10 illustrates the connection of the base and the shaft of the cover plate in release status of the fifth embodiment.

Detailed description of the embodiment

The first embodiment:

[0018] Refer to the fig.1, the side view with partial sectional view of the first embodiment of the present invention in unlock status; fig.2 is the side view with partial sectional view of the fig.1 in lock status. Combine the two figures to detailed describe.

[0019] The main structure of the cover plate 1 is the current integrity of the seat ring and cover plate, comprising a cover 17 and a seat ring 18; same here, the fixed base 20 is the necessary component fixed in the base of the toilet; generally, the cover plate 1 has a plug member 10 inserted to the hole of the fixed base 20, the plug member 10 is disassembly fixed. In this embodiment, the plug member 10 is a vertical rod faced up; similarly, the fixed base 20 has a hole coupled to the shape of the plug member 10.

[0020] The driving member 11 is sliding coupled to the plug member inside, the driving member 11 is rod shaped as well, the relative sliding direction of the driving member 11 and the plug member 10 is parallel to the direction the plug member 10 inserted to the fixed base 20; the bottom of the driving member 11 has a magnet 12. Refer to the fig.1 or fig.2, the driving member 11 is sliding vertically inside the plug member 10, when the driving member 11 reaches to the bottom of the plug member 10, the magnet 12 and the lock groove 13 are same positioned.

[0021] The driven member 21 is rod shaped as well, it is sliding and coupled to the fixed base 20 inside, when there is no force exerted to the driven member 21, the driven member 21 will retain on the left pulled by the first reposition spring 23 fixed to the driven member 21. When the plug member 10 is cooperated with the fixed base 20, the lock groove 13 of the plug member 10 reaches to the horizontal position of the driven member 21, basic in this, when the driving member 11 slides downward to the bottom, that is the position of the lock groove 13, the driven member 21 slides right with the attraction of the magnet 12, then the lock 22 of the driven member 21 inserts to the lock groove 13. If the driving member 11 keeps in the position, defining it the lock position, the driven member 21 will keep inserting in the lock groove 13, making the cover plate 1 locked to the fixed base 20, the cover plate 1 will not be set apart or disassembled.

[0022] Basic in this, when the driving member 11 slides upward to be away from the lock position, the distance between the magnet 12 and driven member 21 becomes large. The larger the distance is, the less the magnetic attraction is, finally the driven member 21 is set apart

from the lock groove 13 of the plug member 10 with the effect of the reposition spring 23 of the driven member 21, the lock to the plug member 10 is released, then the cover plate 1 can be easily pulled away from the fixed base 20.

[0023] For convenient usage and easily realized the two status, a boss 15 is disposed in the shaft of the seat ring in the position of the plug member to be coupled to the top of the driving member 11 as a limited portion to control the driving member 11. with the seat ring rotates along the direction the hollow arrow figured, the driving member 11 is pushed by the boss 15 to keep in the lock position when the seat ring is positioned and laid flat (as figured in the fig.2); when the seat ring is turned up, the driving member 11 is bounced and released the lock in the lock position by the second reposition spring 14(as figured in the fig.1), so the assembly and disassembly of the cover plate 1 is very convenient.

[0024] As seen in the first embodiment, firstly, the driving member 11 with magnet 12 and the driven member 21 attracted by the magnet are formed to the main component of the magnetic lock, realizing the separation of the magnetic control and mechanical fixation. It is not only applied with the easily assembly and disassembly of the magnetic control, but also with the high strength and reliable of the mechanical fixation. With the separation of the magnetic control and mechanical fixation, the magnetic force is no longer the constraint of the mechanical strength, the cost of magnetic material is minimized. The stress to overcome the first reposition spring 23 is the only thing required. In this embodiment, the magnet is permanent magnet, and the driven member 21 is ferromagnetism. According to the principle of the magnetic interaction, the material of the above two can be exchanged or it can be applied with different polarity attraction with each other to realize. There is one realization cited.

[0025] In this embodiment, the sliding direction of the driven member 21 is horizontal, while that of the driving member 11 is vertical; the sliding directions of the above two are perpendicular to each other. The motion directions are perpendicular without parallel component, maximizing the magnetic effect with well sensitive without interference. At the same time, with the boss 15 disposed in the shaft of the seat ring, as the limited portion to control the driving member 11, it is greatly eased of the steps of assembly and disassembly of the cover plate, making the assembly and disassembly easy and labor saving.

The second embodiment:

[0026] As figured in the fig.3, it is the partial sectional view of the second embodiment of the present invention. Compared to the first embodiment, it includes the same component of cover plate 17 and seat ring 18. the difference is that: the plug member 10 is inserted to the fixed base 20 in the horizontal direction, and the driven member 22 slides in the vertical direction at the same time; a

boss 15 is further disposed at the portion the shaft of the seat ring and the driving member 11 coupled, similar to the first embodiment, when the seat ring is laid flat, the boss 15 makes the driving member 11 moving left laterally and then the magnet 12 moves away from the driven member 21, making the driven member 21 pulled and sliding upward, the lock 22 moves away from the lock groove 13 and the cover plate is disassembled left to move away from the fixed base 20. Thus, the driving member 11 is positioned or unlocked to the lock position by the lying flat or vertical of the seat ring 18.

The third embodiment:

[0027] As figured in the fig.4, it is the partial sectional view of the third embodiment of the present invention. Compared to the first embodiment, the position and the locking direction of the driving member 11, the driven member 21 and the component are the same with that of the first embodiment. The difference is that: the control mechanism of the driving member 11 includes a pin 40 inside the plug member 10, a pin hole 19 in the driving member 11 and a handle 16 on the top of the driving member 11. As can be seen, the moving of the driving member 11 is independent controlled by the handle 16. Restrained by the cooperation of the pin hole 19 and the pin 40, it has two status of up and down corresponding to the unlock position and lock position of the driving member 11.

The fourth embodiment:

[0028] Refer to the fig.5; it is the partial sectional view of the fourth embodiment of the present invention. Compared to the first embodiment, the driving member 11 is sliding and coupled to the plug member 10 inside, the end of the driving member 11 is fixed with magnet 12; but the driven member 21 keeps situated inside the plug member 10, it is situated in the horizontal position the driving member 11 sliding to the bottom. The driven member is permanent magnetic material, the polarity of which is the same with that of the neighbor portion to the magnet 12, that is the repulsion status; when the driving member 11 slides to the lock position of the bottom, the magnet 12 repels to the driven member 21, making the driven member 21 moving left, the pin 22 inserts to the fixed base 20 to make the plug member 10 fixed vertically to the fixed base 20; in the same way, when the driving member 11 moves away from the lock position, the driven member 21 draws back to inner of the plug member 10, making it easier to get the plug member 10 from above the fixed base 20. it makes the driving member 11 and the driven member 21 integrated to the plug member 10, then the fixed base 20 without driven member 21 is applicable. It is applicable for fixed base with none magnetic lock, expanding the applicability.

The fifth embodiment:

[0029] Refer to the fig.6, fig.7, fig.8, fig.9 and fig.10. the rotation shaft of the cover plate and seat ring is consist of a damper 3, a plug member 4 and a button 5. the rotation shaft inserts to the sleeve behind the cover plate and the seat ring, the cover plate and the seat ring can rotate around the shaft, as figured in the fig.6.

[0030] Refer to the fig.7: the plug member 4 includes a follower, which is a movable block 4.1; the movable block has a sliding groove 4.11, making it moving along the plug member in a line. The end of the sliding groove is disposed with a lock catch 4.12, which can be connected to the button. The movable block 4.1 is linked to the button 5. The sliding block 4.1 moves to one side to couple to the groove hole of the connection lever of the base to control the plug member 4 locked or released the lock to the base 6. One side of the plug member 4 has a blind hole or a boss to couple to the damper, while the other side has a leading groove coupled to the button. The other side is disposed with a magnet 4.2, which is a driving part; a plug rod 4.3 is disposed to butted to the connection rod below the plug member 4.

[0031] The base 6 has a hollow connection rod 6.1, which is disposed with a ring groove 6.11. the end of the connection rod is disposed with an inclined chamfer 6.12.

[0032] One side of the button 5 relative to the plug member is disposed with a first catch 5.1 and a second catch 5.2, the first catch 5.1 is applied to lock catch to the movable block 3.1, while the second catch 5.2 is applied to temporary lock to the plug member 3. the central of the button is disposed with a magnet 4.2, the polarity of which is like with that of the magnet of the plug member 4, and the like polarity of the magnet 4.2 has opposite direction to the magnet of the plug member, that is to say, the two magnets are mutual repulsion. The magnet of the button is a follower relative to the plug member, while the plug member 4 is the driving part.

[0033] The working process is figured in the fig.8, fig.9 and fig.10.

[0034] The movable block 4.1 of the follower is linked to the button (the follower). With the repulsion of the magnetic force of the driving part (the magnet of the plug member), the movable block 4.1 moves right. When the cover plate is assembled to the base, with the push of the inclined chamfer 6.12 of the connection rod of the base, the movable block 4.1 moves left. When the cover plate is positioned, the movable block 4.1 moves right with the repulsion of the magnetic force of the driving part and insert to the ring groove 6.11 of the connection rod, the cover plate is locked. Press the button 5, drive the movable block 4.1 to move left and get away from the ring groove 6.11 of the connection rod, when the movable block 4.1 reaches to the preset position, the second catch 5.2 lock the plug member 4 to prevent the button 5 from reposition, the cover plate can draw away from the base. During the drawing, the second catch 5.2 of the button departs from the catch position along the ring groove of

the connection rod of the base; the button automatically repositions and drives the movable block back to the initial status.

[0035] The invention may be summarized as follows: The present invention is provided with a magnetic lock device of the cover plate compositing a plug member disposed in the cover plate of the toilet and a fixed base disposed in the base of the toilet, the plug member is disassembly or locked to the fixed base, the present invention further includes a driving member or movable member, which is movably coupled to the plug member, the driving member is fixed with a magnetic member; a driven member, placed inside the fixed base and movable inside the fixed base; when sliding to a lock position, the driving member is plug into the plug member and locking the plug member to the fixed base with the effect of magnetic action; when the driving member is sliding to unlock position, the driven member is disposed with a first reposition spring, when the driving member is away from the lock position, the lock to the plug member is released; and a control mechanism disposed in the plug member has a limited portion to keep the driving member in the lock position or release the driving member from the lock position.

[0036] According to one aspect thereof the present invention may be summarized as follows:

Item 1: A connection method of the cover plate and the toilet body includes a plug member in the shaft of the cover plate of the toilet and a connection member in the base of the toilet, the plug member is disassembly connected or fixed to the fixed base; wherein further includes a driving member of magnetic, a driven member disposed in the plug member or the connection member, when the driving member is inserted to the connection member of the base of the toilet, the driving member and the driven member are linkage and moved to the lock position of the plug member, locking the plug member to the fixed base or the connection member.

Item 2: A connection method of the cover plate and the body of the toilet according to item 1 above, wherein the driving member and the driven member are mechanically linked, when the driving member is pushed by man, the driven member is away from the lock to the connection member.

Item 3: A connection method of the cover plate and the body of the toilet according to item 1 and/or 2 above, wherein the plug member is disposed with magnetic member, which is effected repulsion for the driving member, making the driven member retaining the lock to the connection member.

[0037] Although the present invention has been described with reference to the preferred embodiments thereof for carrying out the patent for invention, it is apparent to those skilled in the art that a variety of modifications and changes may be made without departing

from the scope of the patent for invention which is intended to be defined by the appended claims.

5 Claims

1. A magnetic lock device of the cover plate compositing a plug member disposed in the cover plate of the toilet and a fixed base disposed in the base of the toilet, the plug member is disassembly or locked to the fixed base, wherein further includes:

A driving member, movably coupled to the plug member, the driving member is fixed with a magnetic member;

A driven member, placed inside the fixed base and movable inside the fixed base;

When the driving member is sliding to a lock position, the driven member is plug into the plug member and locked to the fixed base with the effect of magnetic action; when the driving member is sliding to unlock position, the gravity the driven member pulled is disappear, the driving member is replaced and away from the plug member to release the lock to the plug member.

2. A magnetic lock device of the cover plate according to the claim 1, wherein further includes a control mechanism, the control mechanism is placed on the plug member, the control mechanism can keep or release the driving member in the lock position.
3. A magnetic lock device of the cover plate according to the claim 2, wherein the control mechanism is a boss on the driving member, the boss is placed on the cover plate, the driving member is pressed to the lock position when the cover plate or seat ring rotates.
4. A magnetic lock device of the cover plate according to any one or more of claims 1 to 3, wherein the driven member is replaced by a first reposition spring.
5. A magnetic lock device of the cover plate according to the claim 2, wherein the control mechanism includes a second reposition spring on the driving member, the driving member is pressed to the lock position when the seat ring or the cover plate is laid flat, the driving member is repositioned away from the lock position by the second reposition spring when the seat ring is turned up.
6. A magnetic lock device of the cover plate according to any one or more of claims 1 to 5, wherein the plug member is plug to the fixed base from up to down, or wherein the plug member is plug to the fixed base from horizontal direction.

7. A magnetic lock device of the cover plate according to any one or more of claims 1 to 6, wherein the sliding direction of the driven member is vertical to that of the driving member.

8. A magnetic lock device of the cover plate compositing a plug member in the cover plate of the toilet and a fixed base or connection rod in the base of the toilet, the plug member and the fixed base or connection rod are disassembly connected, wherein further includes:

A driving member fixed with a magnet member;
A driven member, which can slide in the plug member;

When the plug member is plug to the fixed base or fixed rod, the fixed base is plug and locked to the plug member with the driving member drives the driven member sliding; the driven member is away from the lock position to release the lock to the plug member.

9. A magnetic lock device of the cover plate according to the claim 8, wherein the driving member is placed in the plug member to retain the driven member in the lock position.

10. A magnetic lock device of the cover plate according to claim 8 and/or 9, wherein the driven member includes the control button, the magnetic member is disposed inside the button, pressing the button by human operation makes the driven member away from the lock position.

11. A magnetic lock device of the cover plate according to the claim 10, wherein the driven member includes a movable block, which can move in the plug member, the movable block is linked to the button.

12. A magnetic lock device of the cover plate compositing a plug member in the cover plate of the toilet and a fixed base in the base of the toilet, the plug member and the fixed base are disassembly connected, wherein further includes:

A driving member, sliding coupled to the plug member inside, the driving member is fixed with a magnetic member;

A driven member, placed inside the plug member, the driven member is plug into the fixed base with acted with the magnetic action of the magnetic member when the plug member is cooperated with the fixed base and the driving member is sliding to a lock position.

13. A magnetic lock device of the cover plate according to the claim 12, wherein the driven member is disposed with a first reposition spring, when the driving

member is away from the lock position, the lock to the plug member is released.

14. A magnetic lock device of the cover plate according to claim 12 and/or 13, wherein further includes a control mechanism placed in the plug member, the control mechanism is disposed with a limited portion to keep the driving member in the lock position or release the driving member from the lock position.

15. A connection method of the cover plate and the toilet body includes a plug member in the shaft of the cover plate of the toilet and a connection member in the base of the toilet, the plug member is disassembly connected or fixed to the fixed base; wherein further includes a driving member of magnetic, a driven member disposed in the plug member or the connection member, when the driving member is inserted to the connection member of the base of the toilet, the driving member and the driven member are linkage and moved to the lock position of the plug member, locking the plug member to the fixed base or the connection member.

16. A connection method of the cover plate and the body of the toilet according to the claim 15, wherein the driven member is magnetic, the driven member is controlled to the lock position with the magnetic attraction or repulsion of the driving member.

17. A connection method of the cover plate and the body of the toilet according to claim 15 and/or 16, wherein when the driving member is away from the plug position, the driven member is repositioned to release the lock of the plug member and the connection member.

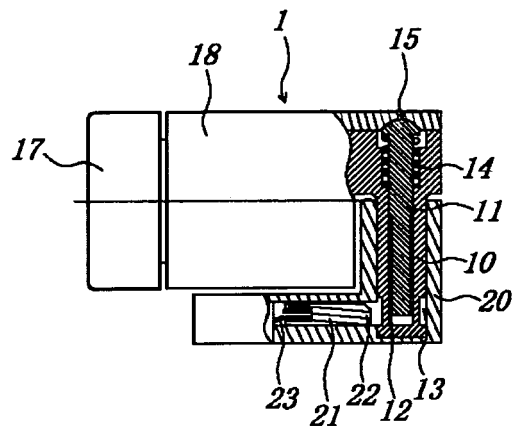


FIG. 1

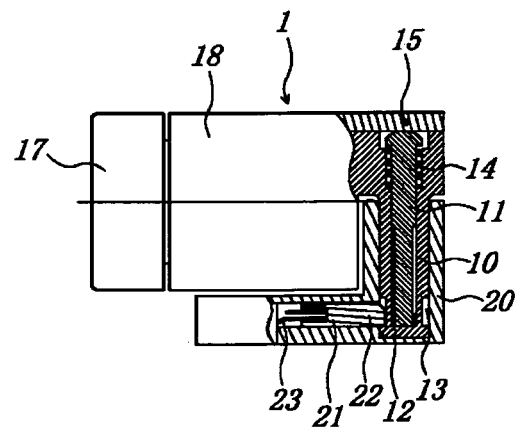


FIG. 2

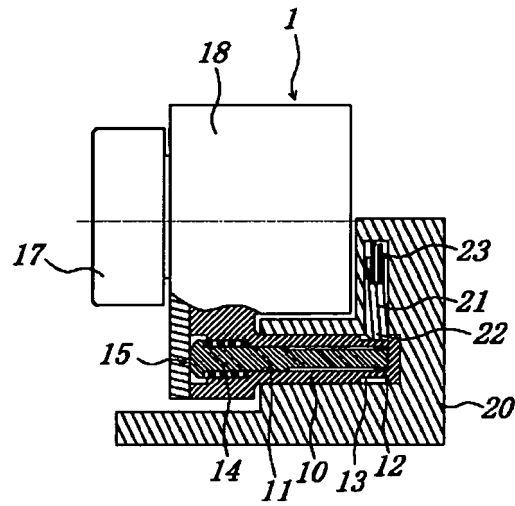


FIG.3

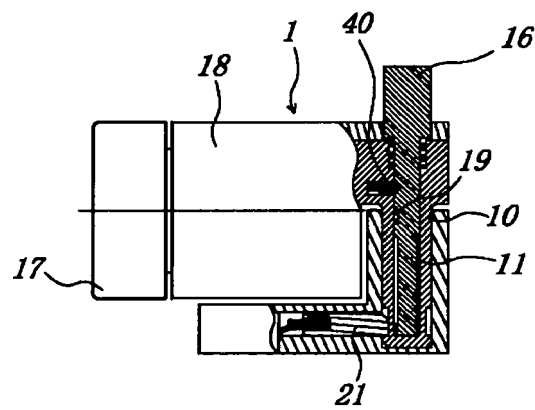


FIG.4

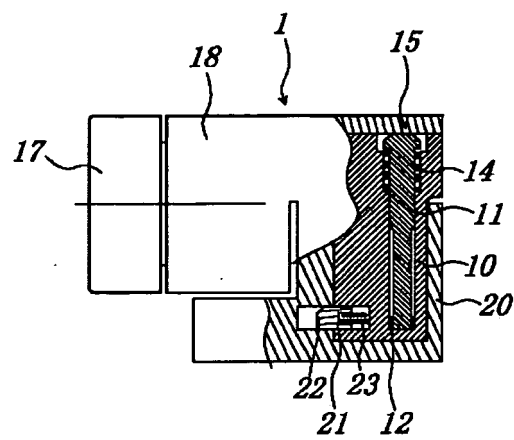


FIG.5

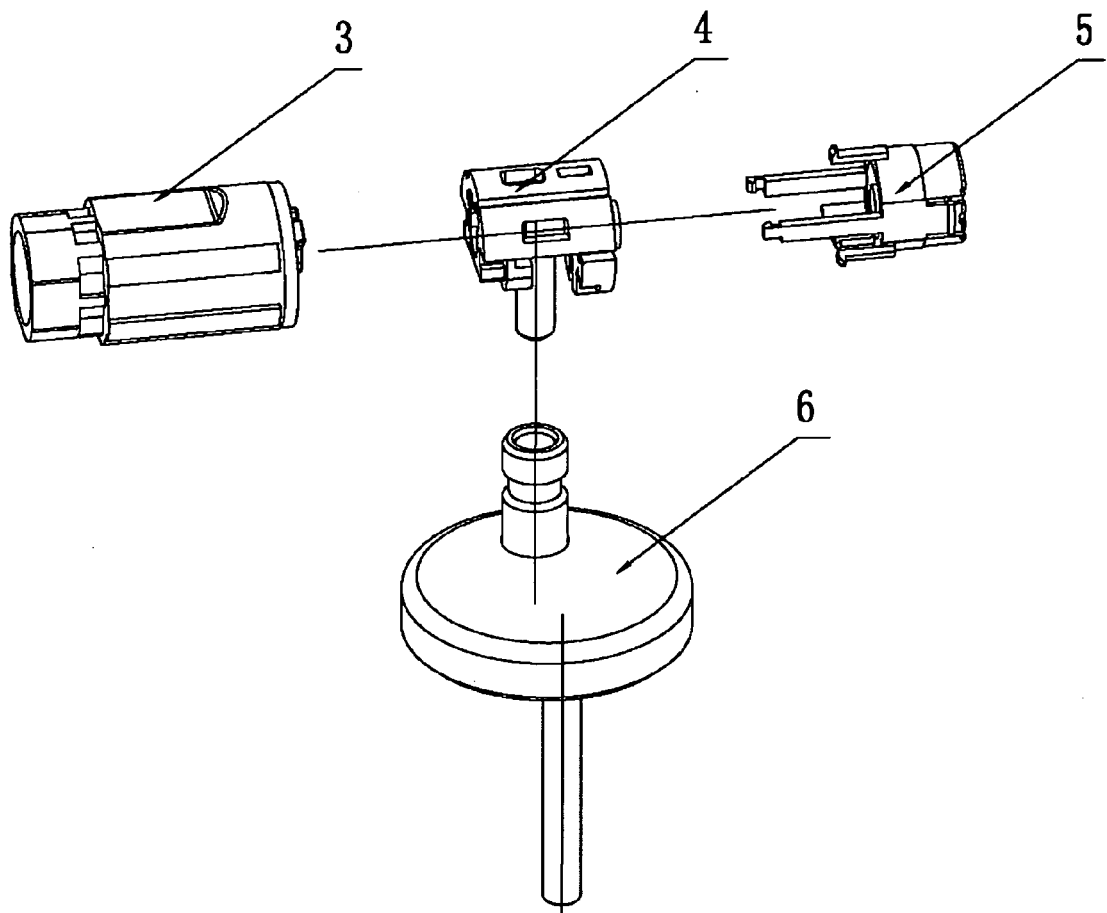


FIG.6

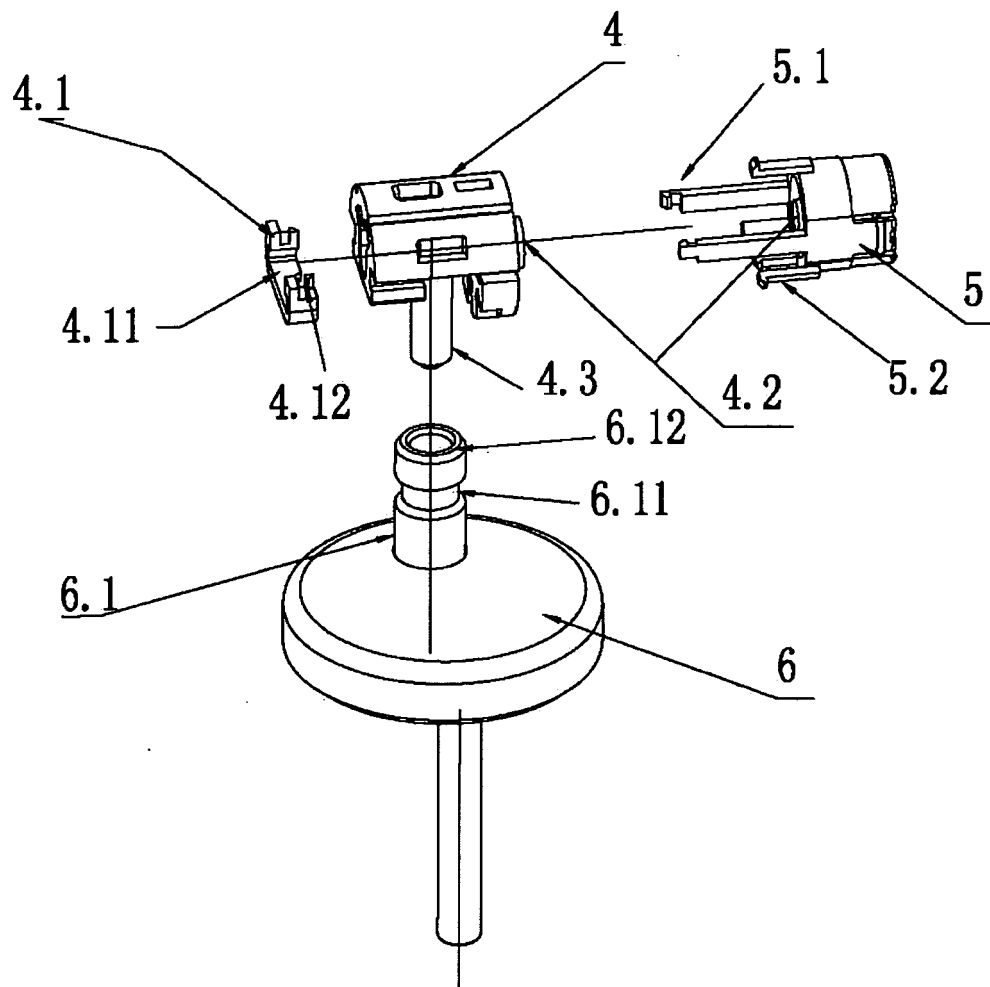


FIG.7

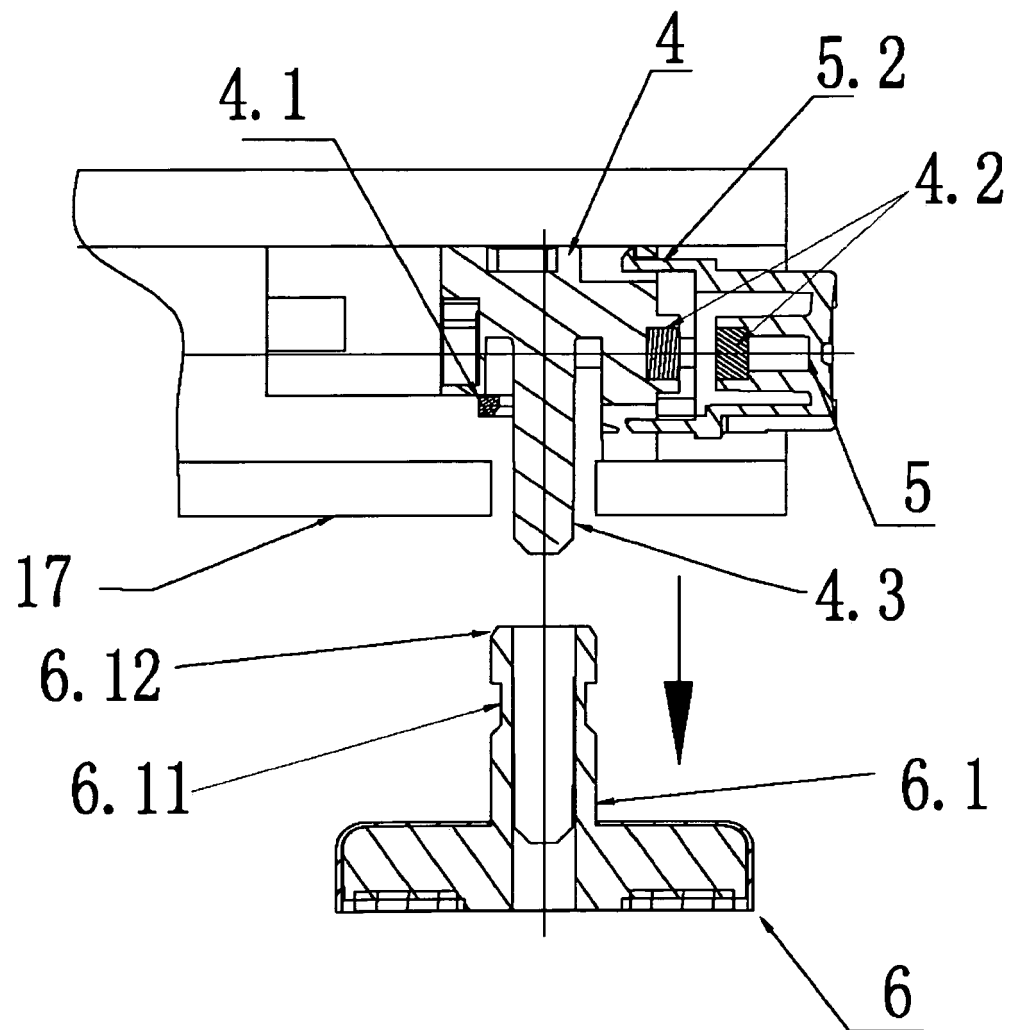


FIG.8

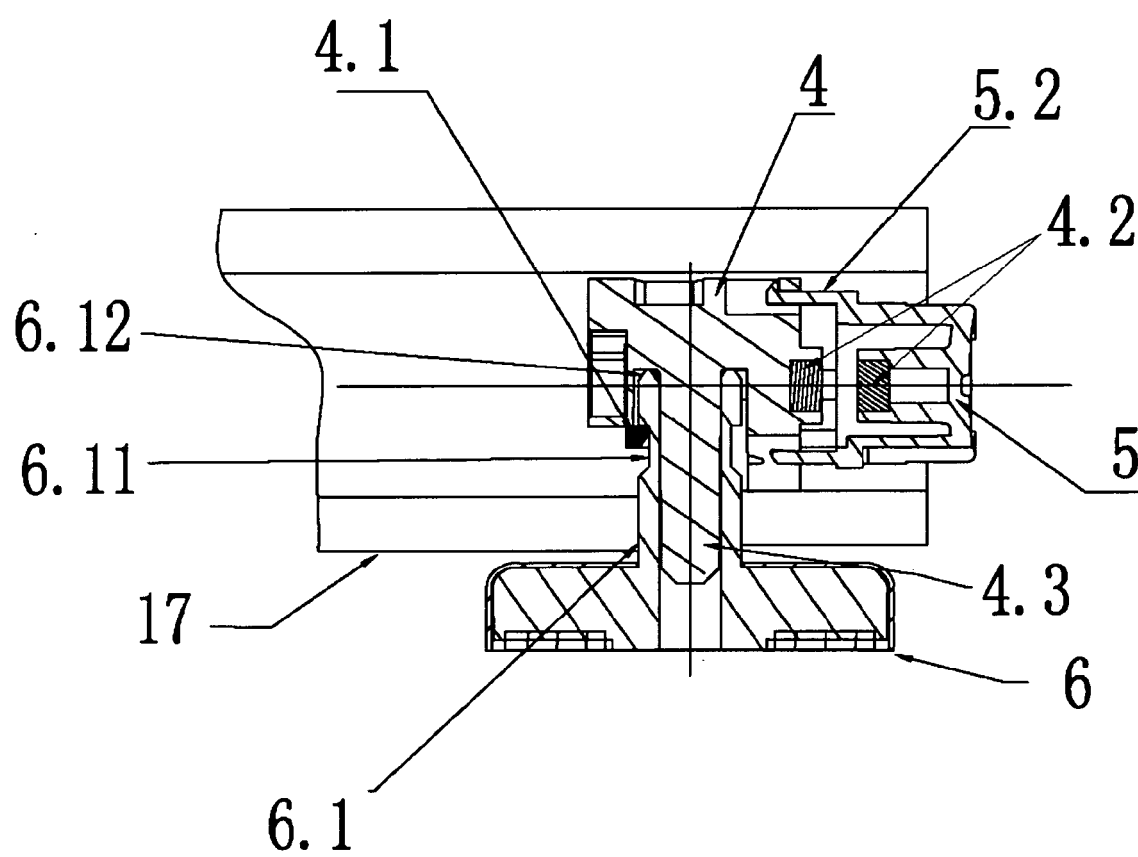


FIG.9

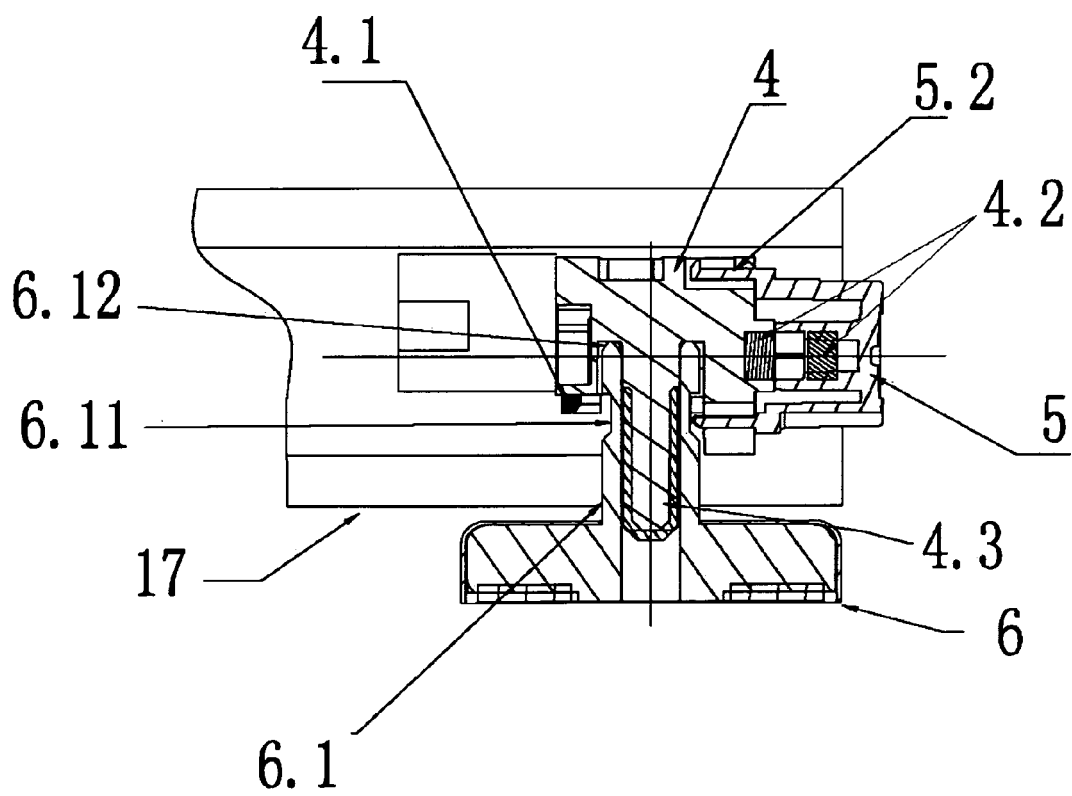


FIG.10

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- CN 101999857 A [0002]