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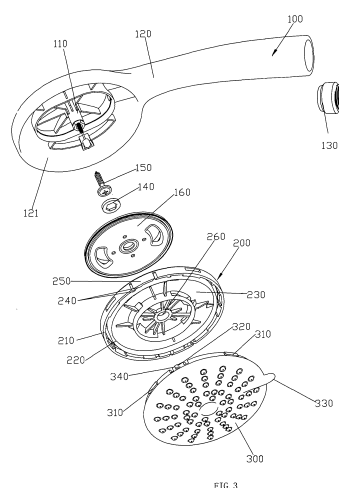
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(54) **SHOWERHEAD WITH DETACHABLE TOP COVER**

(57) Disclosed is a showerhead with a detachable top cover. The showerhead comprises a main body unit (100) with a water outlet channel (700) able to communicate with the water supply, a rotatable water divider (200) installed and connected inside the main body unit (100), and a top cover (300). The water divider (200) is provided with an outer ring (210) and the outer ring (210) has an inner rotating face (213). The inner rotating face (213) is provided with an assembling/disassembling groove (214). The assembling/disassembling groove (214) comprises an in/out groove (211) running through to the outer end face of the outer ring (210) and a transverse groove (212) extending transversely from the inner port of the in/out groove (211). From an outer rotating face (301) of the top cover (300) protrude protruding seats (310). The protruding seats (310) and the assembling/disassembling groove (214) are adapted to one another such that the protruding seats (310) can enter the transverse groove (212) via the in/out groove (211) and such that the protruding seats (310) can enter the in/out groove (211) from the transverse groove (212) to disengage the assembling/disassembling groove (214). A snap-fitting structure (500) is provided between the outer ring (210) of the water divider (200) and the top cover (300) and is able to limit the relative rotation and is able

to be assembled and disassembled. The water divider (200) and the top cover (300) are mounted together in a sealed manner and form multiple water outlet chambers (600) corresponding to multiple water outlet functions. The relative rotation of the water divider (200) and the main body unit (100) switches which of the multiple water outlet chambers (600) are in communication with the water inlet channel.



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Description

Field of the invention

[0001] The present invention relates to a shower head, especially to a shower head with a detachable top cover.

Background of the invention

[0002] Existing shower head usually comprises a main body unit, a water diversion body rotatably disposed inside the main body unit and a top cover rotatably assembled to the main body unit, the water diversion body and the top cover are relatively fixed, so that the top cover, when rotating, drives the water diversion body to rotate with respect to the main body unit, the water diversion body rotates with respect to the main body unit so as to switch the waterways. The top cover is secured to the main body unit by screws, in other case, the top cover is locked to the main body unit by a non-detachable way, so that the existing technology has below disadvantage: it needs special tools to assemble and disassemble the top cover, resulting in inconvenient.

Summary of the invention

[0003] The present invention is provided with a shower head with a detachable top cover, which overcomes the disadvantage of the existing shower head.

[0004] The technical proposal of the present invention to solve the technical problems is as below:

A shower head with a detachable top cover, comprising a main body unit (100) with an inlet waterway (700) connected to a water resource, a water diversion body (200) rotatably assembled inside the main body unit (100) and a top cover (300); the water diversion body (200) is disposed with an outer ring (210), the outer ring (210) is disposed with an internal revolution surface (213), the internal revolution surface (213) is disposed with an assembly groove (214), the assembly groove (214) comprises an in-out groove (211) leading to the external end face of the outer ring (210) and a lateral groove (212) laterally extending from the internal port of the in-out groove (211), the top cover (300) is disposed with an external revolution surface (301), the external revolution surface (301) is protruded with a projection base (310), the projection base (310) is coupled to the assembly groove (214), so that the projection base (310) is available to pass through the in-out groove (211) into the lateral groove (212), so that the projection base (310) is available to separate from the assembly groove (214) from the lateral groove (212) into the in-out groove (211); a detachable lock catch component (500) is disposed between the outer ring (210) of the water diversion body (200) and the top cover (300) to limit

the relative rotation therebetween;

the water diversion body (200) and the top cover (300) are assembled together in sealing way and form a plurality of outlet cavities (600) corresponding to different outlet functions, the water diversion body (200) and the main body unit (100) relatively rotate so that the plurality of outlet cavities (600) are switched to connect to the inlet waterway (700).

[0005] In another preferred embodiment, the internal revolution surface (213) of the outer ring (210) is protruded with at least a pair of projects (240), a lock groove (241) is formed between the two projects (240); the outside of the top cover is protruded with a lock base (320), the lock base (320) and the lock groove (241) cooperate to form the detachable lock catch component (500).

[0006] In another preferred embodiment, the outer ring (210) is disposed with at least a pair of first breaches (251), the part of the outer ring (210) between the pair of first breaches (251) forms a first floating piece (250); one project (2401) is disposed in the first floating piece (250) near to the internal side of the first breach (251), the other project (2402) is disposed in the remaining part of the outer ring (210) near to the internal side of the first breach (251).

[0007] In another preferred embodiment, the water diversion body (200) is further disposed with an inner ring (220) and a water diversion component (230), the outer ring (210) and the inner ring (220) are concentrically disposed with internal and are concentrically fixed outside the water diversion component (230), the outer ring (210) and the inner ring (220) extend out of the water diversion component (230) axially.

[0008] In another preferred embodiment, the water diversion component (230) is disposed with a plurality of diversion water holes (231) respectively connected to the outlet cavities, the diversion water holes (231) are corresponding to the inlet waterway (700).

[0009] In another preferred embodiment, the top cover (300) is disposed with an outer wall (303), the outer wall (303) is coupled to a clearance between the outer ring (210) and the inner ring (220).

[0010] In another preferred embodiment, the main body unit (100) is disposed with a middle shaft (110), the water diversion body (200) is disposed with a throughout hole (260), the throughout hole (260) is coupled to rotatably sleeve on the middle shaft (110) in sealing way.

[0011] In another preferred embodiment, the main body unit (100) comprises with a main body (120), the main body (120) is disposed with a concave cavity (121), the water diversion body (200) is rotatably assembled inside the concave cavity (121).

[0012] In another preferred embodiment, the top cover (300) is disposed with an outer wall (303), the projection base (310) is disposed outside the outer wall (303); the outer wall (303) is disposed with two second breaches (305), a second floating piece (340) is formed between the two second breaches (305), the lock base (320) is

disposed in the second floating piece (340).

[0013] In another preferred embodiment, the internal revolution surface (213) of the outer ring (210) is concaved with a lock groove (241); the outside of the top cover (300) is disposed with a lock base (320), the lock base (320) and the lock groove (241) cooperate to form the detachable lock catch component (500).

[0014] In another preferred embodiment, the top cover (300) is disposed with an outer wall (303), the projection base (310) is disposed outside the outer wall (303); the outer wall (303) is disposed with two second breaches (305), a second floating piece (340) is formed between the two second breaches (305), the lock base (320) is disposed in the second floating piece (340).

[0015] In another preferred embodiment, the internal revolution surface (213) of the outer ring (210) is concaved with a lock groove (241); the outside of the top cover (300) is protruded with an elastic clamp spring (400), the elastic clamp spring (400) and the lock groove (241) cooperate to form the detachable lock catch component (500).

[0016] In another preferred embodiment, the top cover (300) is disposed with an outer wall (303), the outer wall (303) is disposed with two second breaches (305), a second floating piece (340) is formed between the two second breaches (305), the second floating piece (340) is disposed with a T-shape groove (342), the elastic clamp spring (400) is disposed inside the T-shape groove (342), the lock end (410) thereof extends out of the T-shape groove.

[0017] A shower head with a detachable top cover, comprising a main body unit (100) with an inlet waterway (700) connected to a water resource, a fixed base (800) connected to the main body unit (100) and a top cover (300), wherein:

the fixed base (800) is disposed with an outer ring (210), the outer ring (210) is disposed with an internal revolution surface (213), the internal revolution surface (213) is disposed with an assembly groove (214), the assembly groove (214) comprises an in-out groove (211) leading to the external end face of the outer ring (210) and a lateral groove (212) laterally extending from the internal port of the in-out groove (211), the top cover (300) is disposed with an external revolution surface (301), the external revolution surface (301) is protruded with a projection base (310), the projection base (310) is coupled to the assembly groove (214), so that the projection base (310) is available to pass through the in-out groove (211) into the lateral groove (212), so that the projection base (310) is available to separate from the assembly groove (214) from the lateral groove (212) into the in-out groove (211); a detachable lock catch component (500) is disposed between the outer ring (210) of the fixed base (800) and the top cover (300) to limit the relative rotation therebetween;

the fixed base (800) and the top cover (300) are assembled together in sealing way and form an outlet cavity (600).

[0018] In another preferred embodiment, the internal revolution surface (213) of the outer ring (210) is disposed with a lock groove (241), the projection base (310) and the lock groove (241) cooperate to form the detachable lock groove component (500).

[0019] Compared to the existing technology, the technical proposal of the present invention has advantages as below:

1. The present invention with waterways switch function is convenient to assemble and disassemble, a user can assemble or disassemble it without any special tools on his own, besides, it is convenient for easier cleaning and changing.
2. The lock groove and the lock base cooperate to form a lock catch component, it is simple structural and is easy to assemble and disassemble.
3. The outer ring is disposed with a first floating piece, the project is disposed in the first floating piece, the elasticity is strong enough; the outer wall is disposed with a second floating piece, the lock base is disposed in the second floating piece, the elasticity is strong enough.
4. With the outer ring and the inner ring, the present invention is convenient to assemble and disassemble, the top cover and the water diversion body are assembled with high strength.

Brief description of the drawings

[0020] The present invention will be further described with the drawings and the embodiment.

Fig.1 illustrates a schematic diagram of a shower head of a first embodiment of the present invention. Fig.2 illustrates a first schematic and exploded diagram of the shower head of the first embodiment of the present invention.

Fig.3 illustrates a second schematic and exploded diagram of the shower head of the first embodiment of the present invention.

Fig.4 illustrates a first schematic diagram of a water diversion body of the first embodiment of the present invention.

Fig. 5 illustrates a second schematic diagram of the water diversion body of the first embodiment of the present invention.

Fig.6 illustrates a schematic diagram of a top cover of the first embodiment of the present invention.

Fig.7 illustrates a sectional view of B-B section of the first embodiment of the present invention.

Fig.8 illustrates a sectional view of C-C section of the first embodiment of the present invention.

Fig.9 illustrates a sectional view of A-A section of the

first embodiment of the present invention.

Fig. 10 illustrates a left view of the shower head of the first embodiment of the present invention.

Fig. 11 illustrates a sectional view of D-D section of fig. 10, when the shower head is locked and assembled.

Fig. 12 illustrates a sectional view of D-D section of fig. 10, when the shower head is disassembled.

Fig. 13 illustrates the structure of a lock catch of a second embodiment of the present invention.

Fig. 14 illustrates the structure of a lock catch of a third embodiment of the present invention.

Fig. 15 illustrates a schematic and exploded diagram of a fourth embodiment of the present invention.

Fig. 16 illustrates a sectional view of B-B section of the fourth embodiment of the present invention.

Fig. 17 illustrates a sectional view of A-A section of the fourth embodiment of the present invention.

Detailed description of the embodiments

[0021] The first embodiment: please refer to figs 1-12, a shower head with a detachable top cover comprises a main body unit 100 with an inlet waterway 700 connected to the water resource, a water diversion body 200 rotatably disposed inside the main body unit 100 and a top cover 300.

[0022] The main body unit 100 comprises a main body 120, which is comprises a head portion and a handle portion of one step shaping, the bottom surface of the head portion is concaved with a cavity 121, one end of the inlet waterway 700 is disposed at the end of the handle portion, and is connected to a water resource pipe by a joint 130, the other end is connected to the cavity 121. The center of the bottom of the cavity 121 is disposed with a middle shaft 110. To ensure the sealing performance, a fixed base 160 is fixed inside the cavity 121, the fixed base 160 and the water diversion body 200 cooperate and form a close cavity connected to the inlet waterway 700, and the water diversion body 200 and the fixed base 160 are rotatably assembled together in a sealing way.

[0023] The water diversion body 200 is rotatably assembled inside the cavity 121 of the main body unit 100. in this embodiment, the water diversion body 200 is disposed with a throughout hole 260, which is coupled to rotatably sleeve on the middle shaft 100 in sealing way, with a spacer 140 and a screw 150, the water diversion body 200 is rotatably assembled inside the cavity 121 of the main body unit 100. This embodiment is applied with spacer and screw, but not limited to this, as needed, other structures, like ring groove and projection lock, are available. In this embodiment, the water diversion body 200 comprises a water diversion component 230 and an outer ring 210 fixed outside the water diversion component 230, the outer ring 210 is disposed with a protruding portion out protruding out of the water diversion component 230 axially, the protruding portion of the outer ring 210

is disposed with an internal revolution surface 213, the internal revolution surface is disposed with an assembly groove 214, the assembly groove 214 comprises an in-out groove 211 connected to the external end face of the outer ring 210 and a lateral groove 212 extending laterally from the internal port of the in-out groove 211, the assembly groove 214 is L shaped. Preferred, the water diversion component 230 is further disposed with an inner ring 220, the outer ring 210 and the inner ring 220 are spaced arranged concentrically and fixed outside the water diversion component 230, the outer ring 210 and the inner ring 220 are axially extending out of the water diversion component 230, an annular space is formed between the inner ring 220 and the outer ring 210.

[0024] The top cover 300 comprises a cover piece and an outer wall 303 fixed outside the cover piece, the outer wall 303 is disposed with an extending portion extending out of the cover piece, the external revolution surface 301 of the extending portion is protruded with a projection base 310, the projection base 310 is coupled to the assembly groove 214, so that the projection base 310 is available to pass through the in-out groove into the lateral groove, so that the projection base 310 is available to separate from the assembly groove 214 from the lateral groove to the in-out groove. The outer wall is coupled to a clearance between the outer ring 210 and the inner ring 220. Preferred, the top cover 300 is disposed with a shifting button 330.

[0025] In addition, a detachable lock catch component 500 is disposed between the outer ring 210 of the water diversion body 200 and the top cover 300 to limit the relative rotation therebetween, so that the projection base 310 is kept in the lateral groove when it is entered to the lateral groove from the in-out groove, thus the water diversion body 200 is fixed to the top cover 300 in sealing way, after the lock catch component 500 is released, rotating the top cover 300 so that the project base 310 can enter to the in-out groove from the lateral groove, then separate from the assembly groove 214 through the in-out groove.

[0026] In this embodiment, the internal revolution surface of the outer ring 210 is protruded with at least a pair of projects 240, a lock groove 241 is formed between the two projects 240; the outside of the top cover 300 is protruded with a lock base 320, the lock base 320 and the lock groove 241 cooperate to form the detachable lock catch component 500. In this embodiment, the outer ring 210 is disposed with at least a pair of first breaches 251, the part of the outer ring 210 between the pair of first breaches 251 forms a first floating piece 250; one project 2401 is disposed in the first floating piece 250 near to the internal side of the first breach 251, the other project 2402 is disposed in the remaining part of the outer ring 210 near to the internal side of the first breach 251.

[0027] In this embodiment, as the project is disposed in the first floating piece 250, the first floating piece 250 is elastic, thus making a lock catch component 500 with strong elasticity between the lock groove 241 and the

lock base 320. But as needed, it can be designed without the first floating piece, but applied with a self deformation of a lock groove and a lock base to realize a lock catch. Preferred, the top cover 300 is disposed with an outer wall 303, the projection base is disposed outside the outer wall; the outer wall is disposed with two second breaches 305, a second floating piece 340 is formed between the two second breaches 305, the lock base 320 is disposed in the second floating piece 340.

[0028] The water diversion body 200 and the top cover 300 are assembled together in sealing way and form a plurality of outlet cavities 600 corresponding to a plurality of outlet functions, the water diversion body 200 and the main body unit 100 relatively rotate so that the plurality of outlet cavities 600 are switched to connect to the inlet waterway 700. In this embodiment, the switching is applied with such structure: the water diversion component 230 is disposed with a plurality of diversion holes connected to the outlet cavity, the diversion water holes are corresponding to the inlet waterway, when the water diversion component 230 and the top cover 300 rotate with respect to the main body unit 100, the diversion water holes are switched to connect to the inlet waterway, the switching can be applied with existing technology, so that it is not further described here, but not limited to this kind of switching, other rotation switching methods are available.

[0029] As needed, it is preferred to disposed guiding in the projection base or project of the top cover for convenience to assemble and disassemble, please refer to fig. 10 and fig. 11, the lock base 320 is disposed between two projects, the lock base 320 is dis-rotatable in the limit of the two projects 240, the lock catch component 500 is in lock, so that the projection base is kept in the end of the lateral groove and the top cover and the water diversion body are fixed together in sealing way. To disassemble, please refer to fig. 10 and fig. 12, turn in clockwise direction, the lock base 320 works on one project 240 to make it deformed, so that the lock base 320 separates from the two projects, resulting in the lock catch component 500 released, so that the projection base is available inside the in-out groove, and it can separate from the assembly groove through the in-out groove. The lock base 320 and the lock groove 241 cooperate to form the detachable lock catch component.

[0030] In this embodiment, the outer ring 210 is disposed with at least a pair of first breaches 251, the part of the outer ring 210 between the pair of first breaches 251 forms a first floating piece 250, one project 240 is disposed in the internal side of the first floating piece 250, the other side is disposed in the remaining part 252 of the outer ring 210 corresponding to the first breaches 251.

[0031] The second embodiment, as figured in fig. 12, the difference of this embodiment from the first embodiment is the lock catch component 500. in the second embodiment, the internal revolution surface 213 of the outer ring 210 is concaved with a lock groove 241; the outside of the top cover 300 is disposed with a lock base

320, the lock base 320 and the lock groove 241 cooperate to form the detachable lock catch component 500.

[0032] The top cover 300 is disposed with an outer wall 303, the projection base 310 is disposed outside the outer wall 303; the outer wall 303 is disposed with two second breaches 305, a second floating piece 340 is formed between the two second breaches 305, the lock base 320 is disposed in the second floating piece 340 (as figured in fig. 2).

[0033] The third embodiment, as figured in fig. 13, the difference of this embodiment from the first embodiment is the lock catch component 500. in the shower head of the third embodiment, the internal revolution surface 213 of the outer ring 210 is concaved with a lock groove 241; the outside of the top cover 300 is protruded with an elastic clamp spring 400, the elastic clamp spring 400 and the lock groove 241 cooperate to form the detachable lock catch component 500.

[0034] The top cover 300 is disposed with an outer wall 303, the outer wall 303 is disposed with two second breaches 305, a second floating piece 340 is formed between the two second breaches 305, the second floating piece 340 is disposed with a T-shape groove 342, the elastic clamp spring 400 is disposed inside the T-shape groove 342, the lock end 410 thereof extends out of the T-shape groove.

[0035] The fourth embodiment, as figured in figs 14-16, the difference of this embodiment from the first embodiment is that, in this embodiment, the shower head has single outlet function, it comprises a main body unit 100 with an inlet waterway 700 connected to a water resource, a fixed base 800 and a top cover 300, the fixed base 800 is fixed inside the main body unit 100 by screws 150, a sealing ring 900 is disposed between the fixed base 800 and the main body unit 100.

[0036] The fixed base 800 is disposed with an outer ring 210, the outer ring 210 is disposed with an internal revolution surface 213, the internal revolution surface 213 is disposed with an assembly groove 214, the assembly groove 214 comprises an in-out groove 211 leading to the external end face of the outer ring 210 and a lateral groove 212 laterally extending from the internal port of the in-out groove 211, the top cover 300 is disposed with an external revolution surface 301, the external revolution surface 301 is protruded with a projection base 310, the projection base 310 is coupled to the assembly groove 214, so that the projection base 310 is available to pass through the in-out groove 211 into the lateral groove 212, so that the projection base 310 is available to separate from the assembly groove 214 from the lateral groove 212 into the in-out groove 211 (refer to fig. 4 and fig. 5);

[0037] A detachable lock catch component 500 is disposed between the outer ring 210 of the fixed base 800 and the top cover 300 to limit the relative rotation therebetween;

the fixed base 800 and the top cover 300 are assembled together in sealing way and form an outlet cavity 600.

[0038] The internal revolution surface 213 of the outer ring 210 is disposed with a lock groove 241, the projection base 310 and the lock groove 241 cooperate to form the detachable lock groove component 500.

[0039] This embodiment can be applied with a lock catch component like the second embodiment or the third embodiment.

[0040] 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.

Industrial applicability

[0041] The present invention is provided with a shower head with a detachable top cover, a detachable lock catch component is disposed between the outer wall of the water diversion body (or a fixed base) and the top cover to limit the relative rotation thereof, the top cover of the shower head is convenient to assemble and disassemble, it is convenient to use, thus having a well industrial applicability.

Claims

1. A shower head with a detachable top cover, comprising a main body unit (100) with an inlet waterway (700) connected to a water resource, a water diversion body (200) rotatably assembled inside the main body unit (100) and a top cover (300), wherein:

the water diversion body (200) is disposed with an outer ring (210), the outer ring (210) is disposed with an internal revolution surface (213), the internal revolution surface (213) is disposed with an assembly groove (214), the assembly groove (214) comprises an in-out groove (211) leading to the external end face of the outer ring (210) and a lateral groove (212) laterally extending from the internal port of the in-out groove (211), the top cover (300) is disposed with an external revolution surface (301), the external revolution surface (301) is protruded with a projection base (310), the projection base (310) is coupled to the assembly groove (214), so that the projection base (310) is available to pass through the in-out groove (211) into the lateral groove (212), so that the projection base (310) is available to separate from the assembly groove (214) from the lateral groove (212) into the in-out groove (211);
a detachable lock catch component (500) is disposed between the outer ring (210) of the water diversion body (200) and the top cover (300) to

limit the relative rotation therebetween;
the water diversion body (200) and the top cover (300) are assembled together in sealing way and form a plurality of outlet cavities (600) corresponding to different outlet functions, the water diversion body (200) and the main body unit (100) relatively rotate so that the plurality of outlet cavities (600) are switched to connect to the inlet waterway (700).

2. The shower head with a detachable top cover according to claim 1, wherein the internal revolution surface (213) of the outer ring (210) is protruded with at least a pair of projects (240), a lock groove (241) is formed between the two projects (240); the outside of the top cover is protruded with a lock base (320), the lock base (320) and the lock groove (241) cooperate to form the detachable lock catch component (500).
3. The shower head with a detachable top cover according to claim 2, wherein the outer ring (210) is disposed with at least a pair of first breaches (251), the part of the outer ring (210) between the pair of first breaches (251) forms a first floating piece (250); one project (2401) is disposed in the first floating piece (250) near to the internal side of the first breach (251), the other project (2402) is disposed in the remaining part of the outer ring (210) near to the internal side of the first breach (251).
4. The shower head with a detachable top cover according to claim 1, claim 2 or claim 3, wherein the water diversion body (200) is further disposed with an inner ring (220) and a water diversion component (230), the outer ring (210) and the inner ring (220) are concentrically disposed with internal and are concentrically fixed outside the water diversion component (230), the outer ring (210) and the inner ring (220) extend out of the water diversion component (230) axially.
5. The shower head with a detachable top cover according to claim 4, wherein the water diversion component (230) is disposed with a plurality of diversion water holes (231) respectively connected to the outlet cavities, the diversion water holes (231) are corresponding to the inlet waterway (700).
6. The shower head with a detachable top cover according to claim 4, wherein the top cover (300) is disposed with an outer wall (303), the outer wall (303) is coupled to a clearance between the outer ring (210) and the inner ring (220).
7. The shower head with a detachable top cover according to claim 1, claim 2 or claim 3, wherein the main body unit (100) is disposed with a middle shaft

(110), the water diversion body (200) is disposed with a throughout hole (260), the throughout hole (260) is coupled to rotatably sleeve on the middle shaft (110) in sealing way.

8. The shower head with a detachable top cover according to claim 1, claim 2 or claim 3, wherein the main body unit (100) comprises with a main body (120), the main body (120) is disposed with a concave cavity (121), the water diversion body (200) is rotatably assembled inside the concave cavity (121). 5
9. The shower head with a detachable top cover according to claim 2 or claim 3, wherein the top cover (300) is disposed with an outer wall (303), the projection base (310) is disposed outside the outer wall (303); the outer wall (303) is disposed with two second breaches (305), a second floating piece (340) is formed between the two second breaches (305), the lock base (320) is disposed in the second floating piece (340). 10
10. The shower head with a detachable top cover according to claim 1, wherein the internal revolution surface (213) of the outer ring (210) is concaved with a lock groove (241); the outside of the top cover (300) is disposed with a lock base (320), the lock base (320) and the lock groove (241) cooperate to form the detachable lock catch component (500). 15
11. The shower head with a detachable top cover according to claim 10, wherein the top cover (300) is disposed with an outer wall (303), the projection base (310) is disposed outside the outer wall (303); the outer wall (303) is disposed with two second breaches (305), a second floating piece (340) is formed between the two second breaches (305), the lock base (320) is disposed in the second floating piece (340). 20
12. The shower head with a detachable top cover according to claim 1, wherein the internal revolution surface (213) of the outer ring (210) is concaved with a lock groove (241); the outside of the top cover (300) is protruded with an elastic clamp spring (400), the elastic clamp spring (400) and the lock groove (241) cooperate to form the detachable lock catch component (500). 25
13. The shower head with a detachable top cover according to claim 12, wherein the top cover (300) is disposed with an outer wall (303), the outer wall (303) is disposed with two second breaches (305), a second floating piece (340) is formed between the two second breaches (305), the second floating piece (340) is disposed with a T-shape groove (342), the elastic clamp spring (400) is disposed inside the T-shape groove (342), the lock end (410) thereof ex-

tends out of the T-shape groove.

14. A shower head with a detachable top cover, comprising a main body unit (100) with an inlet waterway (700) connected to a water resource, a fixed base (800) connected to the main body unit (100) and a top cover (300), wherein: 30

the fixed base (800) is disposed with an outer ring (210), the outer ring (210) is disposed with an internal revolution surface (213), the internal revolution surface (213) is disposed with an assembly groove (214), the assembly groove (214) comprises an in-out groove (211) leading to the external end face of the outer ring (210) and a lateral groove (212) laterally extending from the internal port of the in-out groove (211), the top cover (300) is disposed with an external revolution surface (301), the external revolution surface (301) is protruded with a projection base (310), the projection base (310) is coupled to the assembly groove (214), so that the projection base (310) is available to pass through the in-out groove (211) into the lateral groove (212), so that the projection base (310) is available to separate from the assembly groove (214) from the lateral groove (212) into the in-out groove (211);

a detachable lock catch component (500) is disposed between the outer ring (210) of the fixed base (800) and the top cover (300) to limit the relative rotation therebetween;

the fixed base (800) and the top cover (300) are assembled together in sealing way and form an outlet cavity (600). 35

15. The shower head with a detachable top cove according to claim 14, wherein the internal revolution surface (213) of the outer ring (210) is disposed with a lock groove (241), the projection base (310) and the lock groove (241) cooperate to form the detachable lock groove component (500). 40

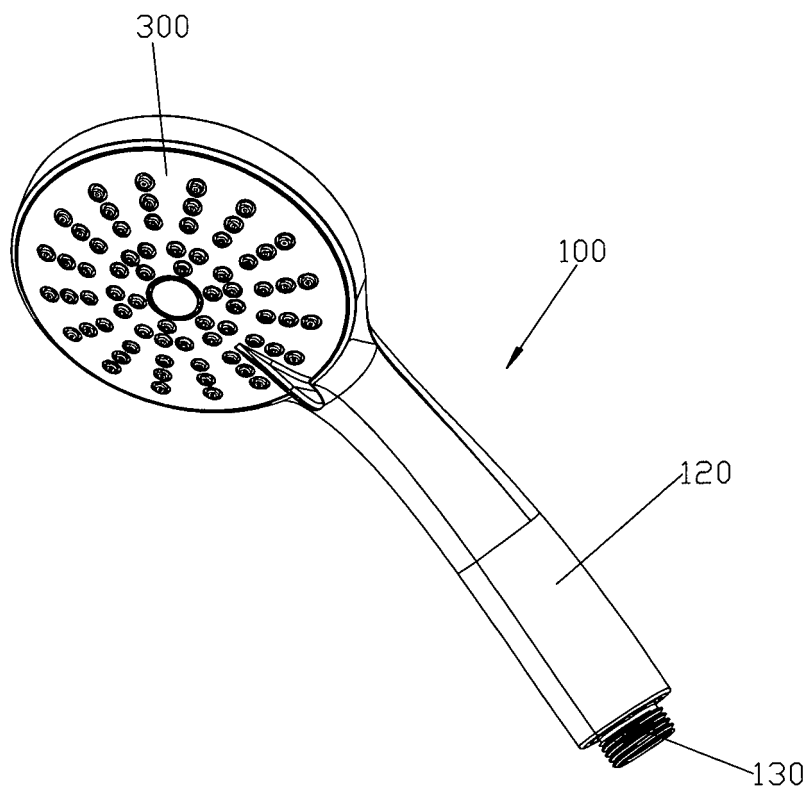


FIG. 1

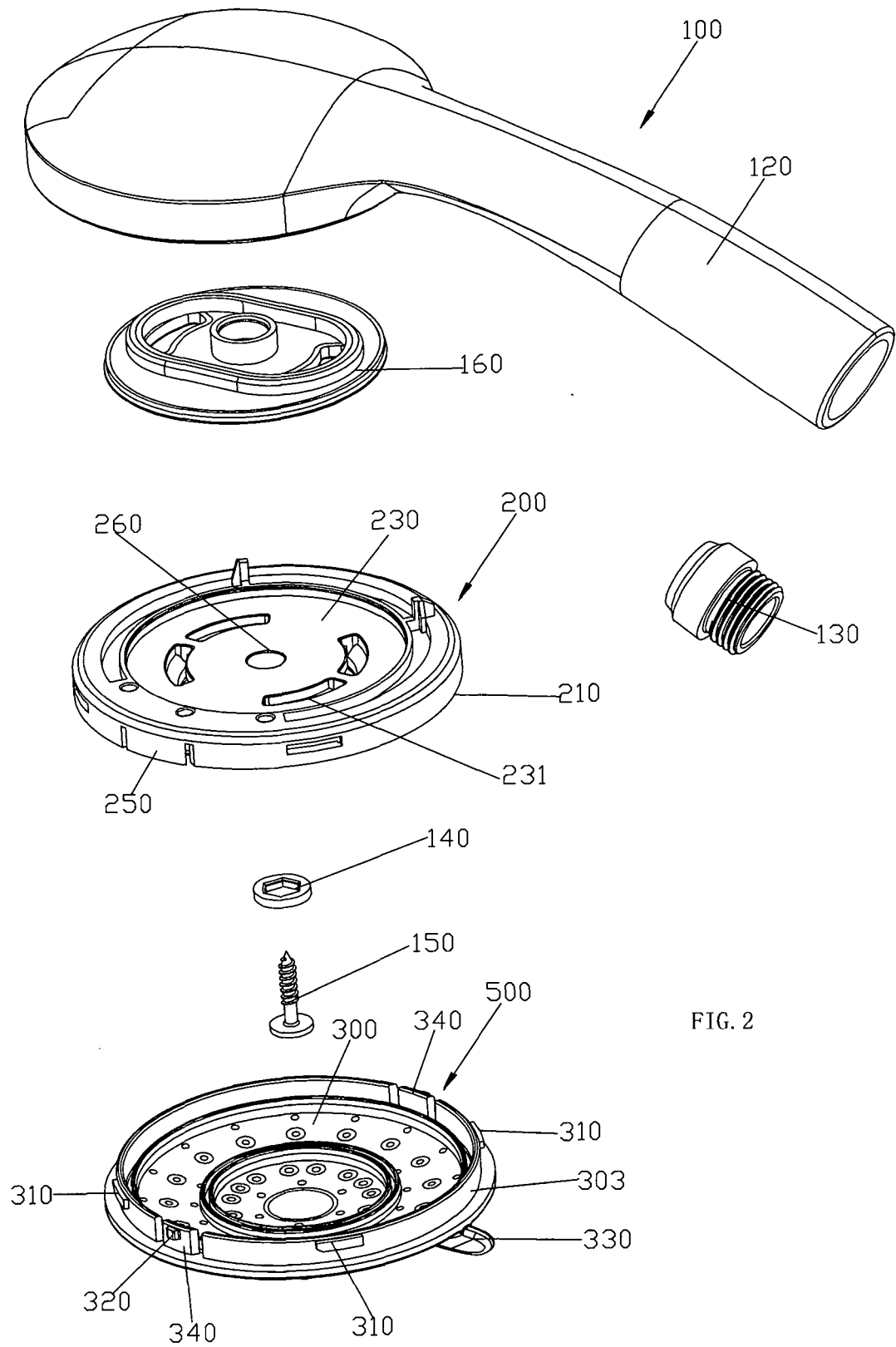


FIG. 2

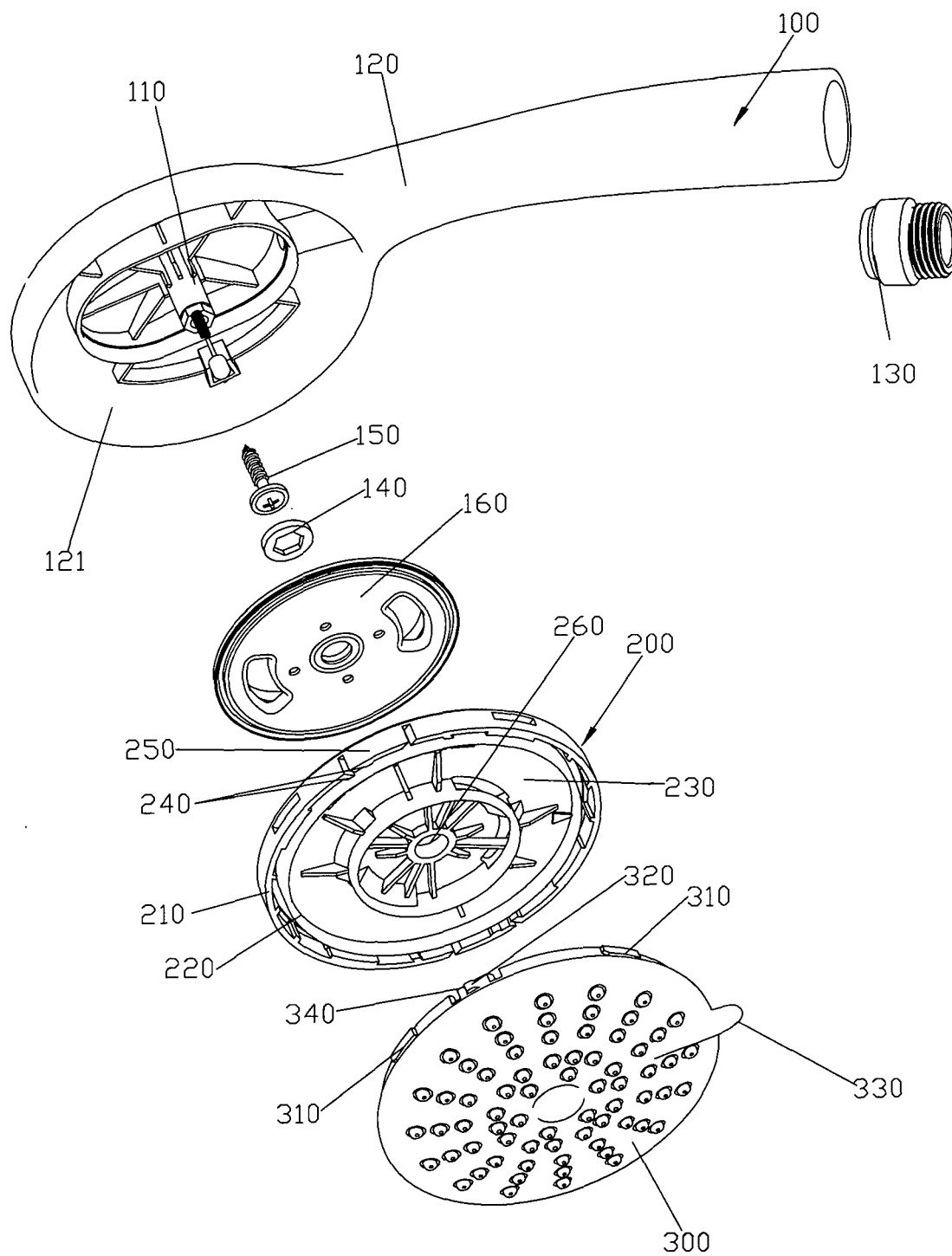
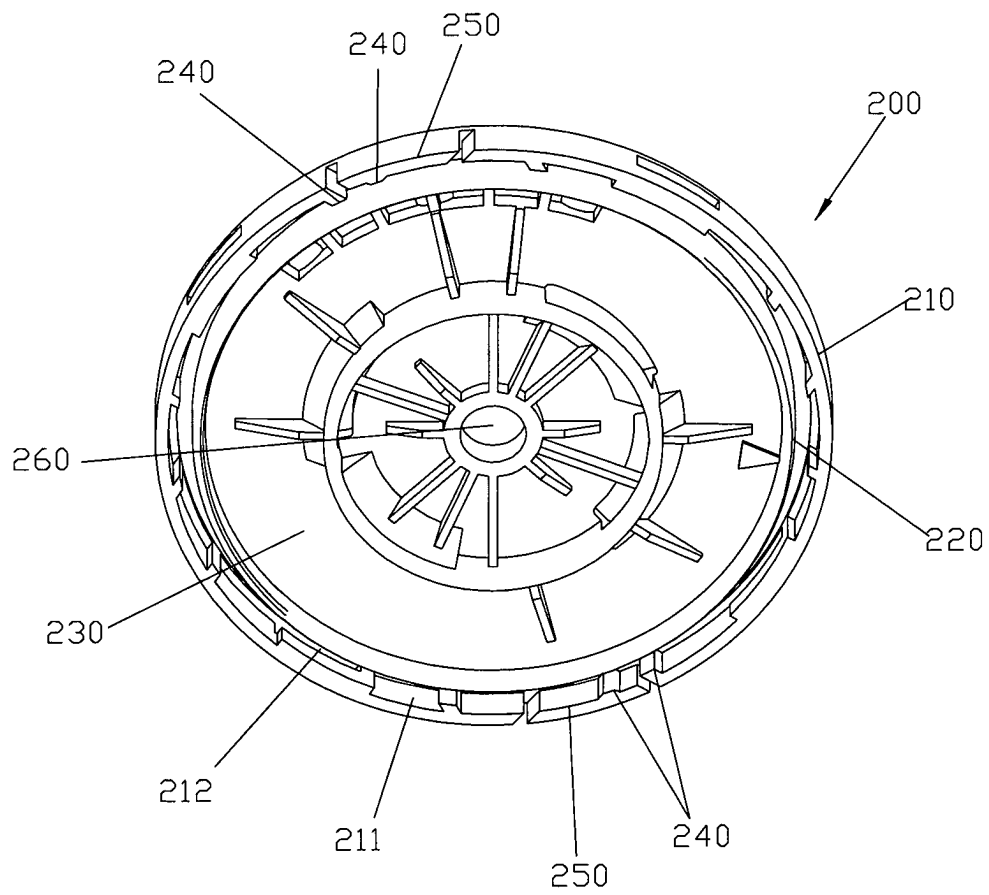
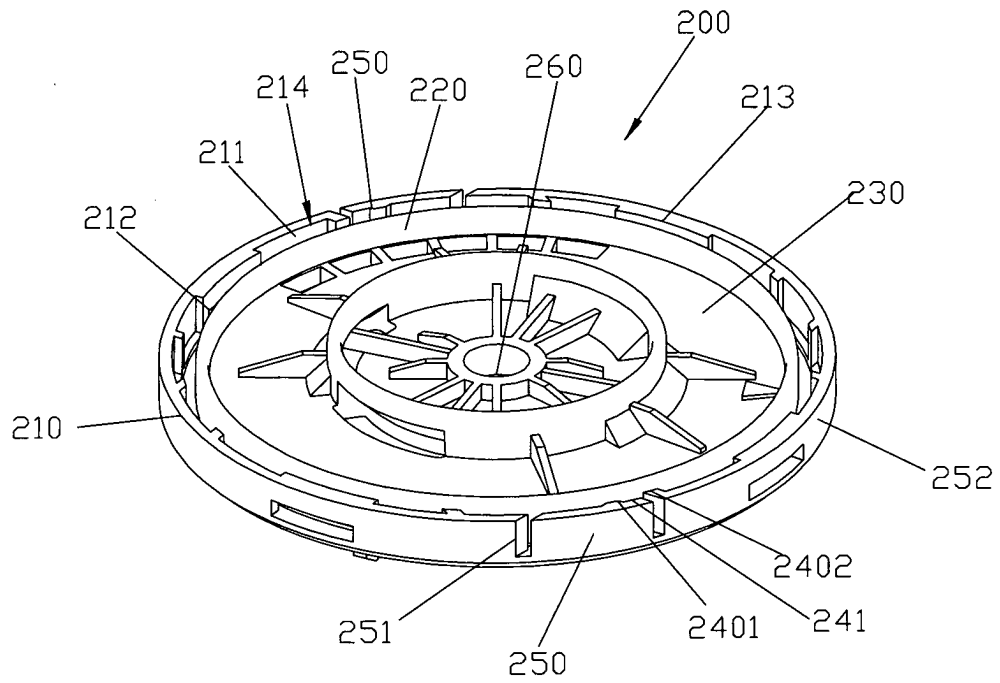


FIG. 3



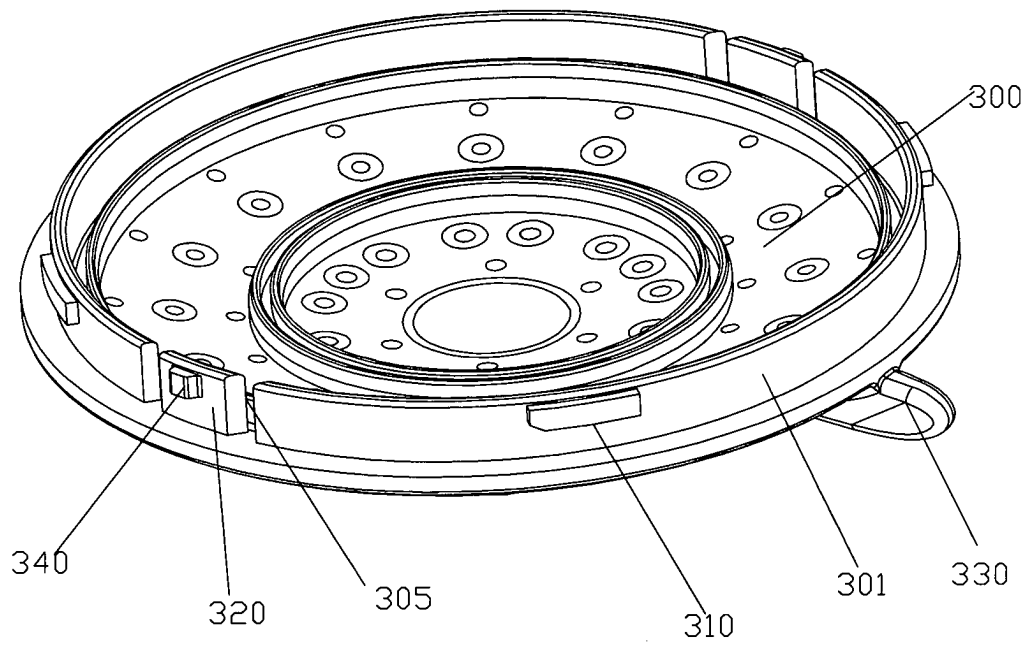
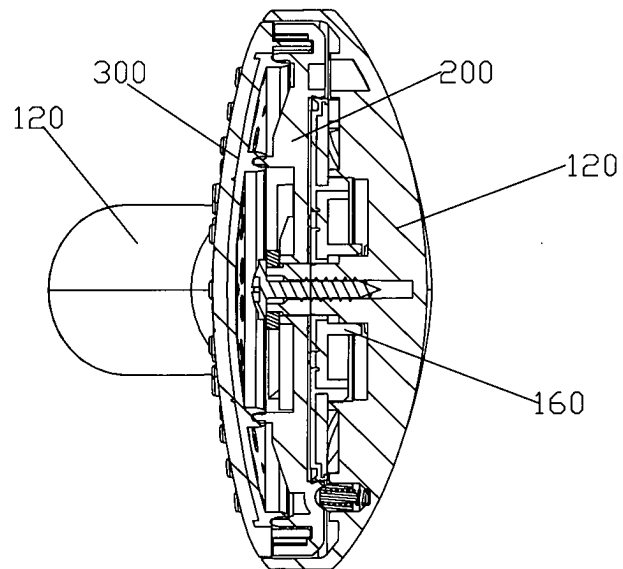
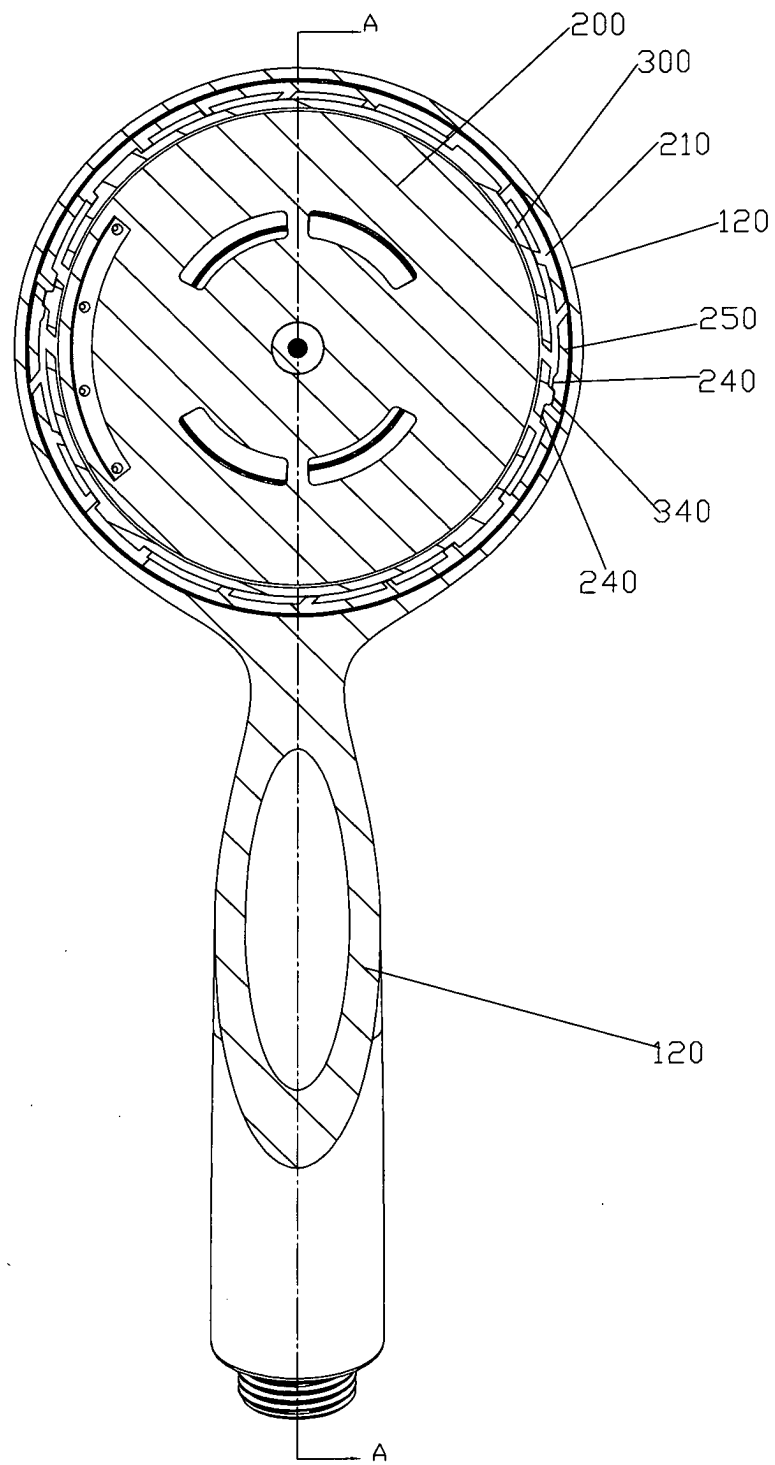


FIG. 6



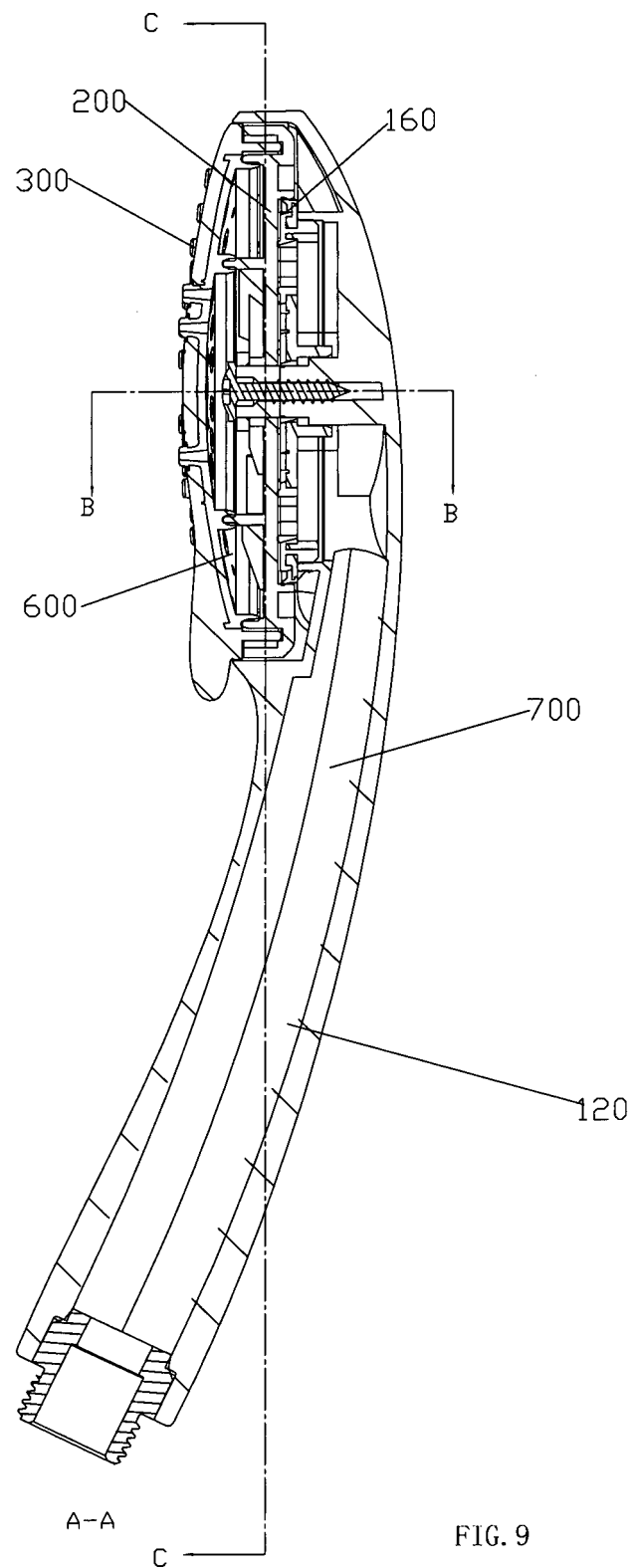
B-B

FIG. 7



C-C

FIG. 8



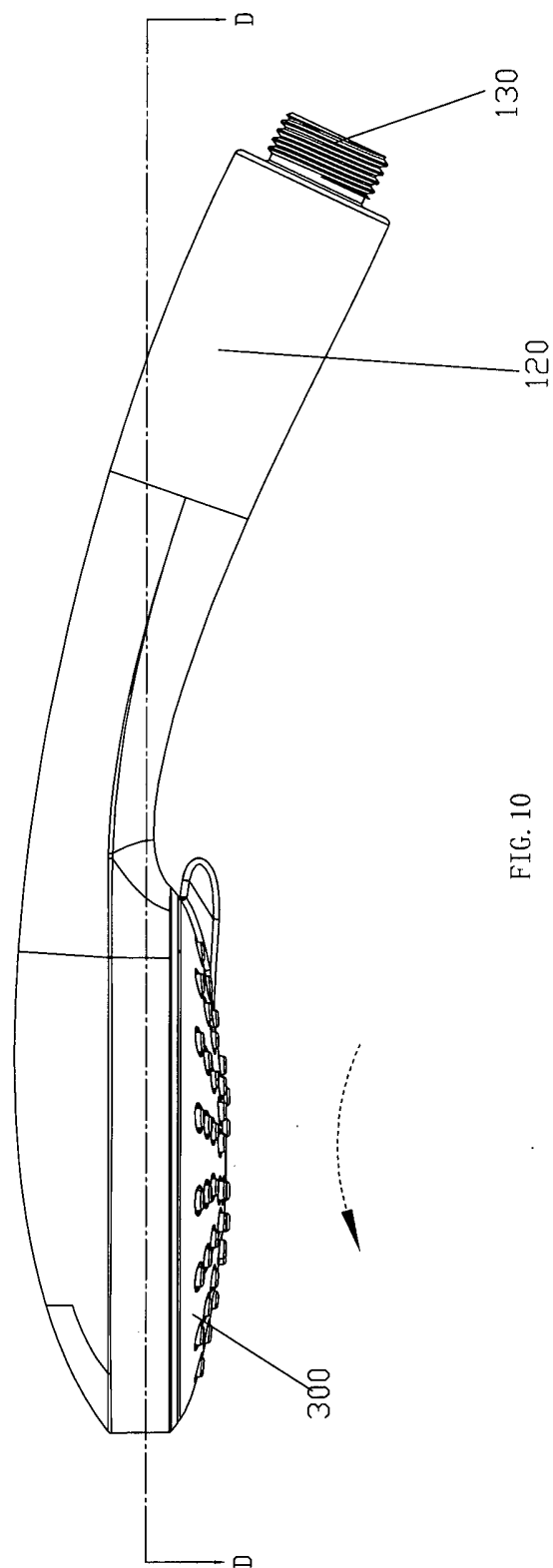


FIG. 10

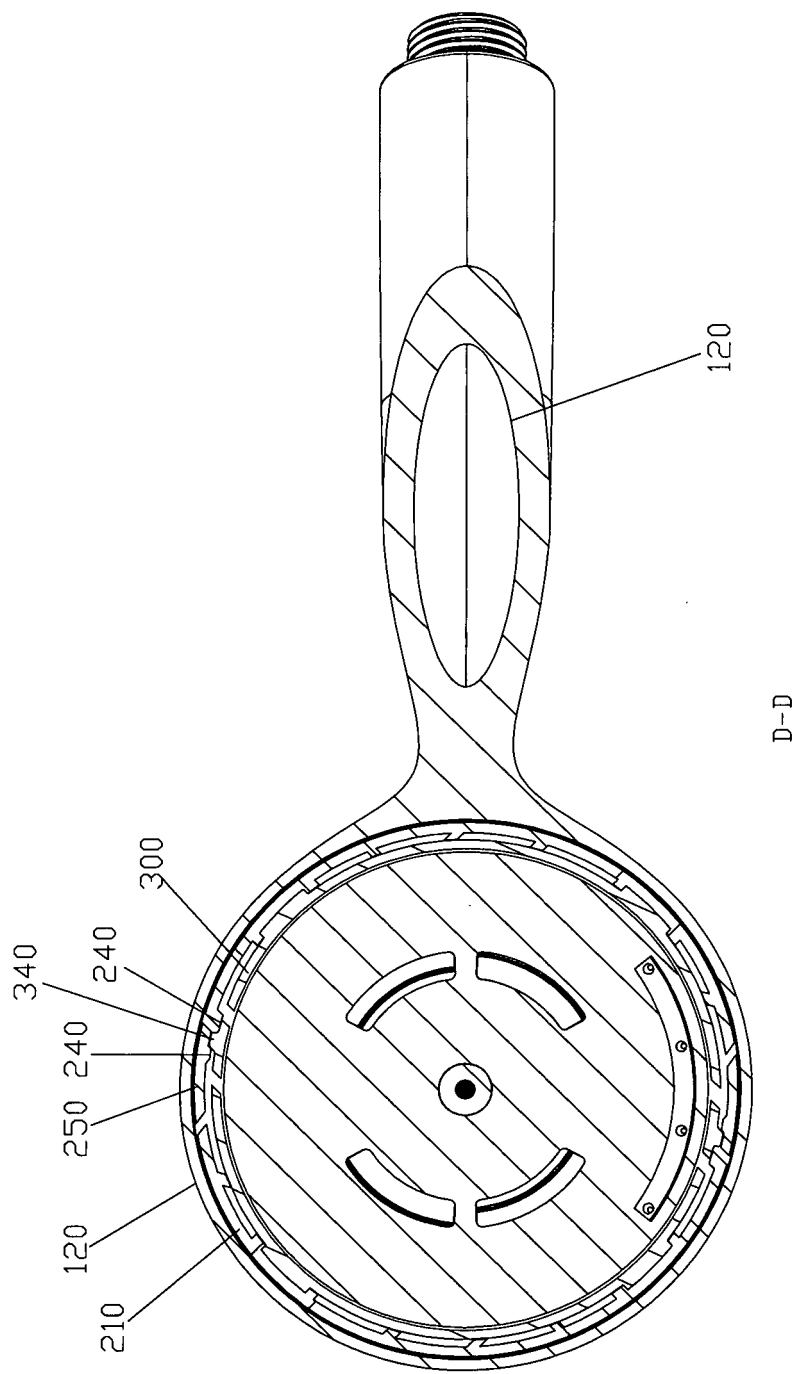


FIG. 11

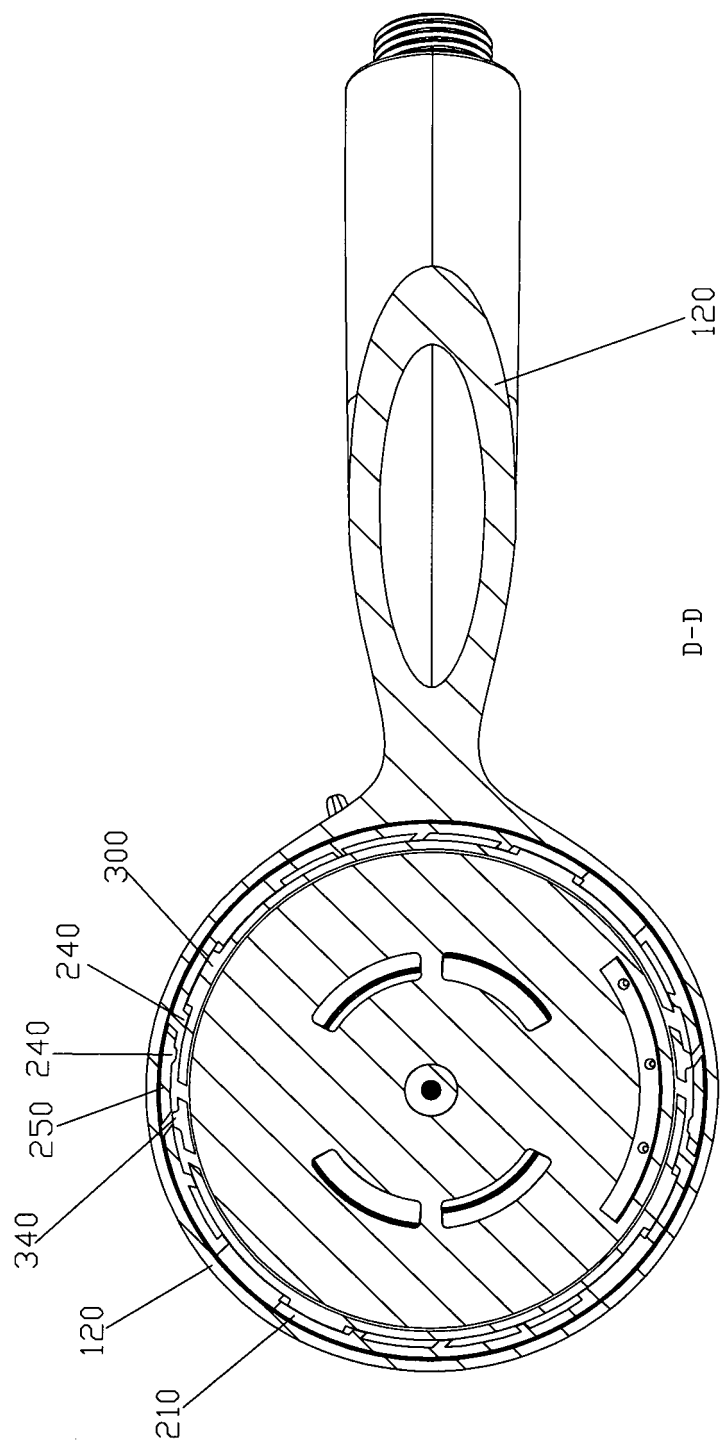


FIG. 12

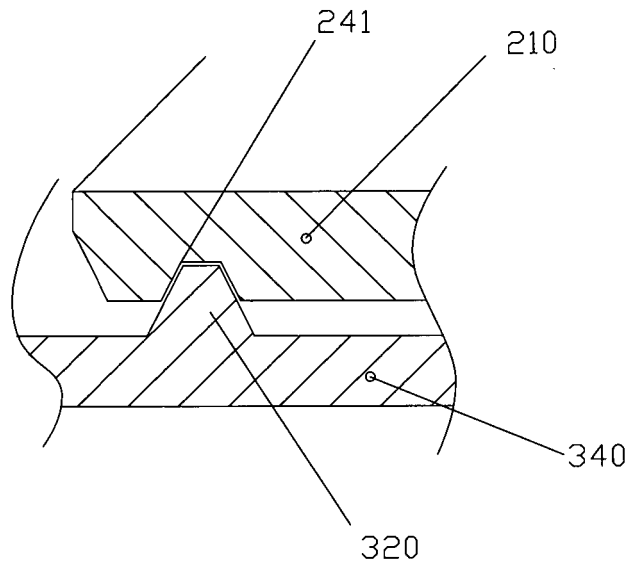


FIG. 13

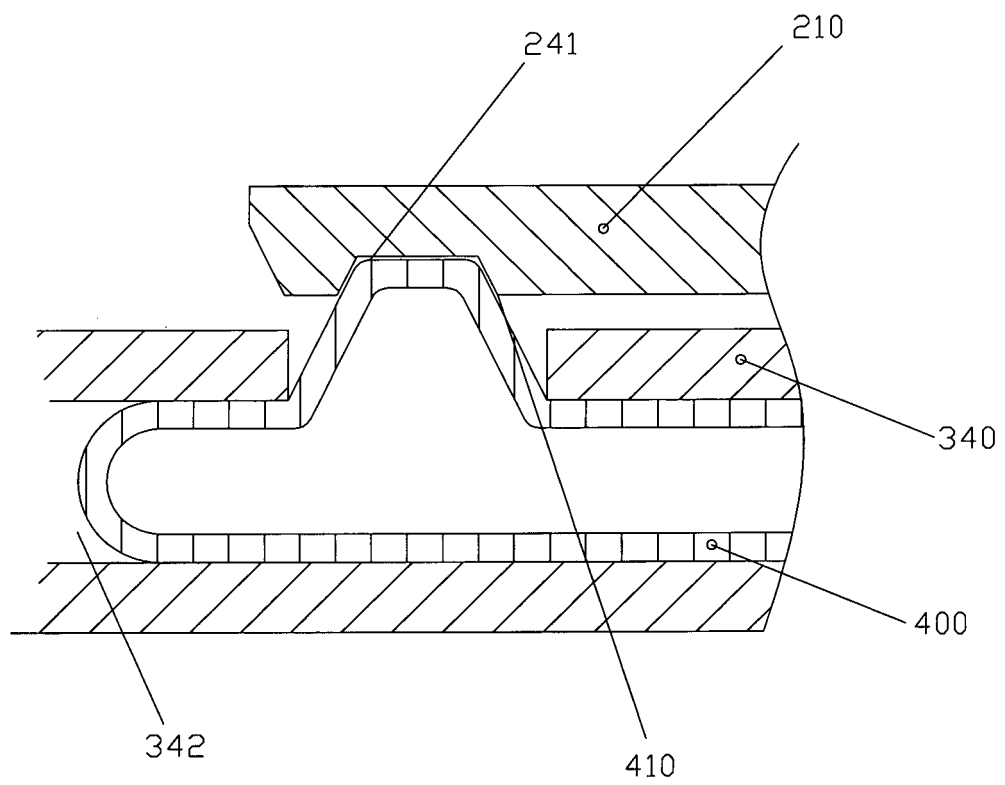


FIG. 14

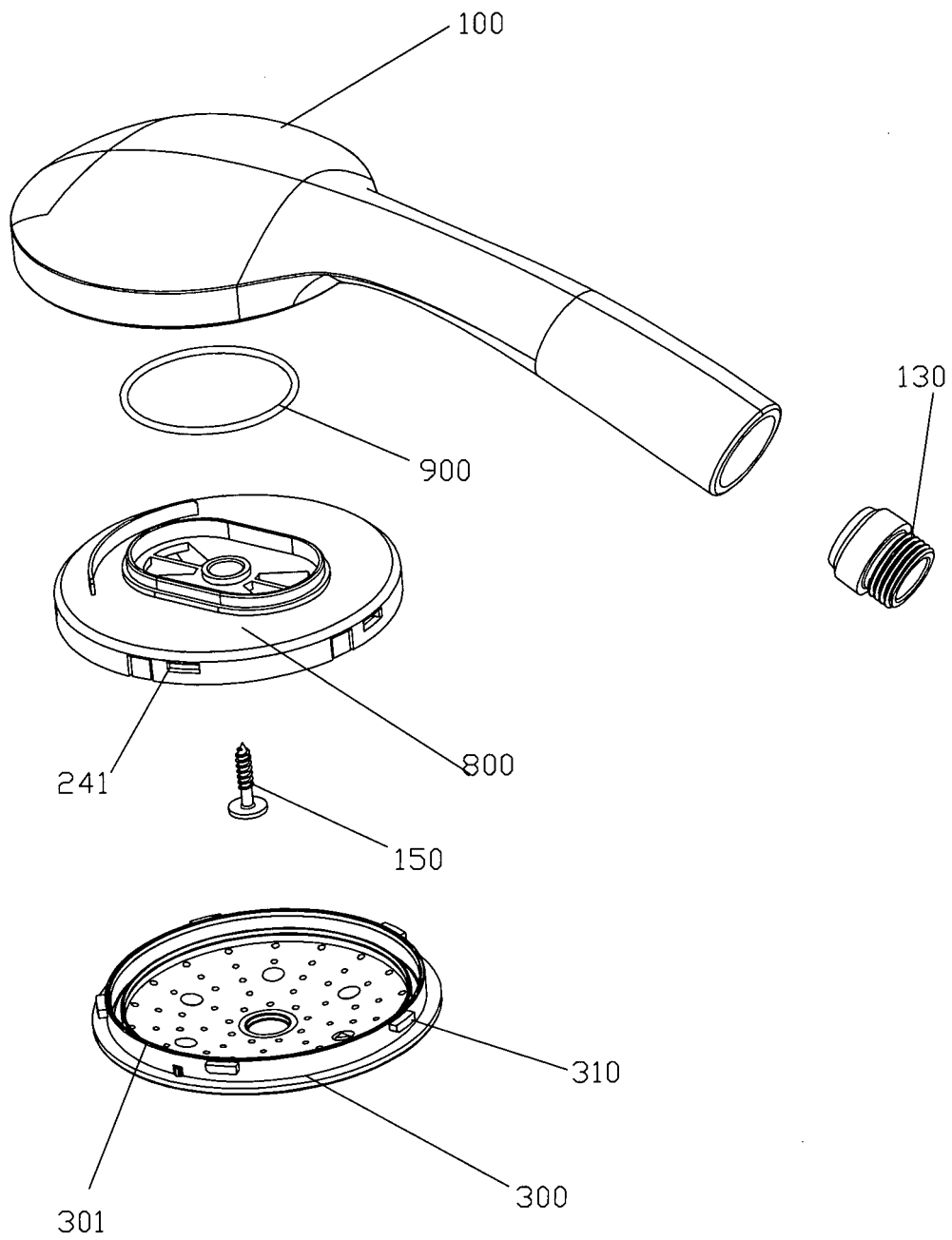


FIG. 15

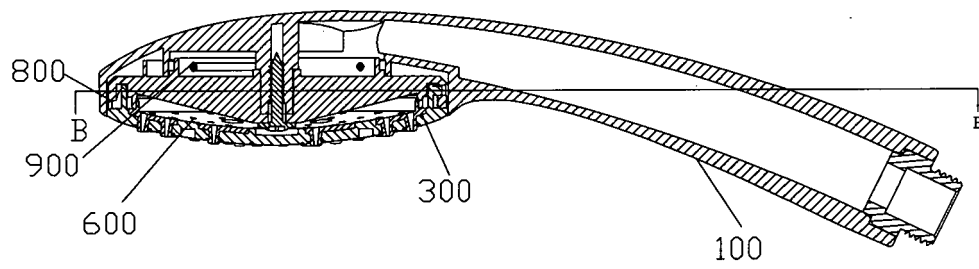


FIG. 16

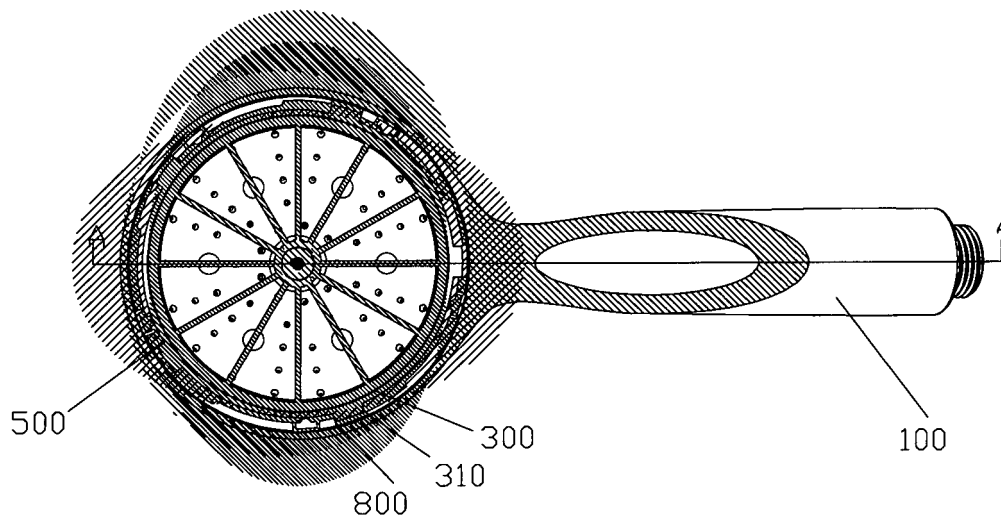


FIG. 17

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2013/071447

A. CLASSIFICATION OF SUBJECT MATTER

See the extra sheet

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)

IPC: 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, VEN: shower, detach, dismount, disassemble, demount, cover, cap, groove, slot, rotate, spin

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	CN 202516711 U (XIAMEN SOLEX TECHNOLOGY CO., LTD. <i>et al.</i>) 07 November 2012 (07.11.2012) see the description, paragraphs [0035]-[0044], figures 1-12	1-15
P,X	CN 102527556 A (XIAMEN SOLEX TECHNOLOGY CO., LTD. <i>et al.</i>) 04 July 2012 (04.07.2012) see the description, paragraphs [0046]-[0063], figures 1-18	1-15
A	CN 2552605 Y (LIN, Xiabin) 28 May 2003 (28.05.2003) see the description, the preferred embodiment, figures 1-6	1-15
A	CN 201168657 Y (ZHOU, Hanqin) 24 December 2008 (24.12.2008) see the whole document	1-15
A	CN 102527528 A (XIAMEN SOLEX TECHNOLOGY CO., LTD. <i>et al.</i>) 04 July 2012 (04.07.2012) see the whole document	1-15
A	US 2009200400 A1 (LIN, Wenyi) 13 August 2009 (13.08.2009) see the whole document	1-15

☐ Further documents are listed in the continuation of Box C.

☒ 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
"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
"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	

Date of the actual completion of the international search
25 April 2013 (25.04.2013)

Date of mailing of the international search report
16 May 2013 (16.05.2013)

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Authorized officer
LI, Hui
Telephone No. (86-10) 62085246

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

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2013/071447

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN 202516711 U	07.11.2012	None	
CN 102527556 A	04.07.2012	None	
CN 2552605 Y	28.05.2003	None	
CN 201168657 Y	24.12.2008	None	
CN 102527528 A	04.07.2012	WO 2012089139 A1	05.07.2012
US 2009200400 A1	13.08.2009	US 7766260 B2	03.08.2010

Form PCT/ISA /210 (patent family annex) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2013/071447

Continuation of: the second sheet A. CLASSIFICATION OF SUBJECT MATTER
B05B 1/16 (2006.01) i
B05B 1/18 (2006.01) i
B05B 1/12 (2006.01) i