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(54) **FAUCET AND SHOWER DEVICE**

(57) The present disclosure discloses a tap assembly and a shower device. The tap assembly includes a tap housing (1) and a water channel body (2). The tap housing (1) includes a housing body (11) and a cover plate (12) which are separately provided. An accommodating cavity is formed inside the housing body (11). One side of the housing body (11) is provided with a mounting opening (111) communicated with the accommodating cavity. The cover plate (12) is configured to be mounted at the mounting opening (111) and connected with the housing body (11). A water channel is formed inside the water channel body (2). The water channel body (2) is provided with a water inlet port (211) and a water outlet port which are communicated with the water channel. The water channel body (2) is configured to be mounted in the accommodating cavity. After the water channel body (2) enters the accommodating cavity through the mounting opening (111), the cover plate (12) is fitted with and mounted to the housing body (11) to limit the water channel body (2) at a mounting position in the accommodating cavity.

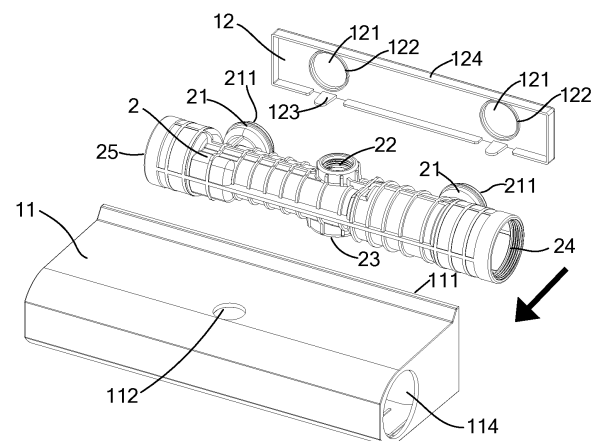


FIG. 1

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Description

TECHNICAL FIELD

[0001] The present disclosure relates to the technical field of bathroom products, in particular to a tap assembly, a faucet and a shower device.

BACKGROUND

[0002] Many faucets, such as a shower faucet, typically include a tap housing and a water channel body having a water channel and mounted within the tap housing. The tap housing can be made of metal, while the water channel body is usually made of plastic material. The water channel body made of plastic material is not only healthy and environmentally friendly, easy to form and manufacture, but also can be effective in heat insulation, preventing high-temperature hot water from transferring heat to the metal housing part.

[0003] At present, in order to fix the water channel body within the tap housing, the water channel body is fixed to the tap housing by fasteners such as bolts, or when the water channel assembly is mounted within the tap housing, an additional limiting component is disposed between the water channel assembly and the tap housing to fix the water channel assembly within the tap housing by means of the additional limiting component. However, these assembly methods have the problems of complicated assembly process and numerous parts, resulting in low production efficiency and high production cost.

SUMMARY

[0004] Embodiments of the present disclosure provide a tap assembly, a faucet and a shower device, so as to solve the problems of low production efficiency and high production cost caused by complicated assembly between the tap housing and the water channel body, numerous parts, many assembly processes and the like.

[0005] An embodiment of the present disclosure provides a tap assembly including a tap housing and a water channel body. The tap housing includes a housing body and a cover plate provided separately. An accommodating cavity is formed inside the housing body, and one side of the housing body is provided with a mounting opening communicated with the accommodating cavity. The cover plate is configured to be mounted at the mounting opening and connected with the housing body. A water channel is formed inside the water channel body, and the water channel body is provided with a water inlet port and a water outlet port communicated with the water channel, and the water channel body is configured to be mounted in the accommodating cavity. After the water channel body enters the accommodating cavity through the mounting opening, the cover plate is fitted with and mounted to the housing body to limit the water channel body at a mounting position in the accommodating cavity.

[0006] In an exemplary embodiment, the mounting opening and the water inlet port of the water channel body have the same orientation, and the cover plate is provided with a water inlet opening for corresponding to the water inlet port.

[0007] In an exemplary embodiment, a limiting protrusion is disposed on an inner side surface of the housing body, and the water channel body abuts against the limiting protrusion after entering the accommodating cavity to prevent the water channel body from continuing to move in an entry direction.

[0008] In an exemplary embodiment, the tap housing is provided with at least one opening, the water channel body is provided with an opening fitting structure extendable into the opening, and the tap housing limits the opening fitting structure through the opening.

[0009] In an exemplary embodiment, the at least one opening includes a water inlet opening provided on the cover plate and corresponding to the water inlet port, and the opening fitting structure includes a water inlet connecting head provided on the water channel body and having the water inlet port. When the cover plate is mounted to the tap housing, the water inlet connecting head extends into the water inlet opening, and the cover plate limits the water inlet connecting head in a circumferential direction through the water inlet opening.

[0010] In an exemplary embodiment, an inside of the cover plate facing the accommodating cavity is provided with a limiting part, and the limiting part is configured to limit the water inlet connecting head to restrict movement of the water inlet connecting head in a direction toward the outside of the mounting opening.

[0011] In an exemplary embodiment, the at least one opening includes a first end hole provided on the housing body, and the opening fitting structure includes a fitting end provided on the water channel body and extendable into the first end hole. The water channel body enters the accommodating cavity and abuts against the housing body and then moves towards the first end hole along a transverse direction, so that the fitting end can enter the first end hole. The transverse direction is a direction perpendicular to an entry direction of the water channel body into the accommodating cavity.

[0012] In an exemplary embodiment, the housing body is provided with a transverse limiting structure, and the water channel body enters the accommodating cavity and abuts against the housing body and then moves toward the transverse limiting structure along a transverse direction so as to be able to abut against the transverse limiting structure. The transverse direction is a direction perpendicular to an entry direction of the water channel body into the accommodating cavity.

[0013] In an exemplary embodiment, the cover plate is connected to the housing body in a clamping manner.

[0014] In an exemplary embodiment, the tap housing further includes a water outlet joint assembly configured to be connected with the water outlet port, the housing body is provided with a water outlet opening correspond-

ing to the water outlet port, and the water outlet joint assembly has a fitting and mounting part fitted with the water outlet opening in size.

[0015] In an exemplary embodiment, the housing body includes an upper sidewall positioned above the water inlet port and a lower sidewall positioned below the water inlet port, the upper sidewall is configured to be mounted against a wall, and the lower sidewall is configured such that an assembly opening is formed between the lower sidewall and the wall when the upper sidewall abuts against the wall.

[0016] An embodiment of the present disclosure also provides a faucet, which includes the tap assembly as described above.

[0017] An embodiment of the present disclosure also provides a shower device, which includes a faucet as described above and a shower assembly which can be fitted with and mounted to the faucet.

[0018] According to the technical schemes provided by the embodiments of the present disclosure, the water channel body is limited only by fitting itself with the tap housing, and no additional fixing components are adopted, for example, fasteners such as bolts are not adopted to fix the water channel body to the tap housing, or no additional limiting structures such as limiting rings are provided between the water channel body and the tap housing to fix the water channel body to the tap housing. The schemes provided by the embodiments of the present disclosure only need to enable the water channel body to enter the accommodating cavity of the housing body, and then fix the cover plate to the housing body to realize the limiting fixation of the water channel body in the tap housing, thus greatly reducing the number of assembled components, having the characteristics of simple assembly, few mounting procedures and the like, being beneficial to realizing the automatic production of tap products, and improving the production efficiency and saving the cost.

[0019] Additional features and advantages of the present disclosure will be set forth in the description which follows, and in part will become apparent from the description, or may be learned by practice of the present disclosure. The objects and other advantages of the present disclosure can be realized and obtained by the structures particularly indicated in the specification and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] The drawings are used for providing a further understanding of technical solutions of the present disclosure, and constitute a part of the specification. They are used together with embodiments of the present disclosure to explain the technical solutions of the present disclosure, and do not constitute a restriction on the technical solutions of the present disclosure.

FIG. 1 is a schematic diagram of a structure of a tap

assembly in a detached state according to an embodiment of the present disclosure;

FIG. 2 is a schematic diagram of a structure of a housing body according to an embodiment of the present disclosure;

FIG. 3 is a cross-sectional schematic diagram illustrating movement of the water channel body towards the accommodating cavity of the housing body in an embodiment;

FIG. 4 is a cross-sectional schematic diagram illustrating movement of the water channel body to the accommodating cavity and then transverse movement in an embodiment;

FIG. 5 is a cross-sectional schematic diagram illustrating the movement of the water channel body from the state shown in FIG. 4 until the first connecting port is inserted into the first end hole of the housing body;

FIG. 6 is a schematic diagram illustrating the structure after the cover plate is fixed to the housing body in an embodiment;

FIG. 7 is a cross-sectional schematic diagram of FIG. 6 viewed from another angle;

FIG. 8 is a schematic structural diagram of an upper water outlet joint assembly and a lower water outlet joint assembly being connected to a tap assembly according to an embodiment of the present disclosure;

FIG. 9 is a cross-sectional schematic structural diagram of FIG. 8;

FIG. 10 is a schematic diagram of a structure of a faucet in a detached state according to an embodiment of the present disclosure;

FIG. 11 is a schematic diagram of the faucet in a state before being mounted on the wall according to an embodiment of the present disclosure;

FIG. 12 is a schematic diagram showing the faucet shown in FIG. 11 in a state after being mounted on the wall;

FIG. 13 is a cross-sectional schematic structural diagram of FIG. 12;

FIG. 14 is a schematic diagram of the faucet in a state before being mounted on the wall according to another embodiment of the present disclosure; and

FIG. 15 is a schematic diagram showing the faucet shown in FIG. 14 in a state after being mounted on the wall.

Description of reference signs:

[0021] 1-tap housing; 11-housing body; 111-mounting opening; 112-upper water outlet opening; 113-lower water outlet opening; 114-first end hole; 115-second end hole; 116-limiting rib; 117-clamping groove; 118-upper sidewall; 119-lower sidewall; 120-end wall; 12-cover plate; 121-water inlet opening; 122-limiting part; 123-clamping part; 124-outer peripheral flange; 13-glass panel; 2-water channel body; 21-water inlet connecting head; 211-water inlet port; 212-positioning flange; 22-upper water outlet port; 23-lower water outlet port; 24-first connecting port; 25-second connecting port; 3-water inlet joint assembly; 4-upper water outlet joint assembly; 41-upper fitting and mounting part; 5-lower water outlet joint assembly; 51-lower fitting and mounting part; 6-switch assembly; 61-switch valve core; 62-first gland; 63-first decorative ring; 64-switch handle; 7-temperature control assembly; 71-water distribution valve core; 72-second gland; 73-second decorative ring; 74-temperature control handle; 8-bent joint; 9-wall; 10-decorative cover; 20-assembly opening.

DETAILED DESCRIPTION

[0022] In order to make the objectives, technical schemes and advantages of the present disclosure clearer, the embodiments of the present disclosure will be described in detail below in connection with the drawings. It should be noted that the embodiments in the present disclosure and the features in the embodiments may be arbitrarily combined with each other if there is no conflict.

[0023] An embodiment of the present disclosure provides a tap assembly, as shown in FIG. 1, including a tap housing 1 and a water channel body 2 mounted in the tap housing 1. The tap housing 1 may be a metal housing, which is easy to clean and improves aesthetics. The water channel body 2 may be made of a plastic material, which is healthy and environmentally friendly, easy to form and manufacture, and plays a role in heat insulation, avoiding heat transfer to the tap housing 1, thus having heat insulation and anti-scald effects.

[0024] The tap housing 1 includes a housing body 11 and a cover plate 12 provided separately. An accommodating cavity is formed inside the housing body 11, and one side of the housing body 11 is provided with a mounting opening 111 communicated with the accommodating cavity. The cover plate 12 is configured to be mounted at the mounting opening 111 and connected with the housing body 11. A water channel is formed inside the water channel body 2, and the water channel body 2 is provided with a water inlet port 211 and a water outlet port communicated with the water channel. The

water channel body 2 is configured to be mounted in the accommodating cavity.

[0025] After the water channel body 2 enters the accommodating cavity through the mounting opening 111, the cover plate 12 is fitted with and mounted to the housing body 11 to limit the water channel body 2 at a mounting position in the accommodating cavity.

[0026] As shown in FIG. 1, a back side (not shown in FIG. 1) of the housing body 11 has a mounting opening 111. The water channel body 2 can be moved along the arrow direction to the mounting opening 111, enter the accommodating cavity of the housing body 11 through the mounting opening 111 and reach the mounting position. Then, the cover plate 12 is mounted to the housing body 11 to realize the limiting of the water channel body 2 in the tap housing 1.

[0027] According to the technical schemes provided by the embodiments of the present disclosure, the water channel body 2 is limited only by fitting itself with the tap housing 1, and no additional fixing components are adopted, for example, fasteners such as bolts are not adopted to fix the water channel body to the tap housing, or no additional limiting structures such as limiting rings are provided between the water channel body and the tap housing to fix the water channel body to the tap housing. The embodiments of the present disclosure only need to enable the water channel body 2 to enter the accommodating cavity of the housing body 11, and then fix the cover plate 12 to the housing body 11 to realize the limiting fixation of the water channel body 2 in the tap housing 1. It greatly reduces the number of assembled components and has the characteristics of simple assembly, few mounting procedures and the like, which are beneficial to realizing the automatic production of tap products, improving the production efficiency and saving the cost.

[0028] In an embodiment, the housing body 11 is configured such that the mounting opening 111 and the water inlet port 211 of the water channel body 2 have the same orientation, and the cover plate 12 is provided with a water inlet opening 121 corresponding to the water inlet port 211. That is, when the tap assembly in this embodiment is used for a faucet, the cover plate 12 is located at the back side of the faucet having the water inlet port 211, and the cover plate 12 is disposed at the back side, so that the cover plate 12 can be shielded when the faucet is mounted on a wall or other structure, which is beneficial to improving the aesthetics of the faucet. The tap assembly provided by the embodiments of the present disclosure is suitable for the shower faucet of the bathroom.

[0029] It should be noted here that a positional relationship between the water channel body 2 and the tap housing 1 described in the present disclosure refers to a positional relationship between the water channel body 2 and the tap housing 1 when the water channel body 2 is mounted to the tap housing 1.

[0030] In an embodiment, as shown in FIG. 2, the inner side surface of the housing body 11 is provided with a

limiting protrusion, and the water channel body 2 abuts against the limiting protrusion after entering the accommodating cavity to restrict the water channel body 2 from continuing to move in an entry direction. The limiting protrusion may be a plurality of limiting ribs 116 provided on the inner side surface of the housing body 11, or other types of structures such as abutment blocks or the like.

[0031] In an embodiment, the tap housing 1 is provided with at least one opening, the water channel body 2 is provided with an opening fitting structure extendable into the opening. The tap housing 1 limits the opening fitting structure through the opening.

[0032] For example, in the embodiment shown in FIG. 1, the at least one opening includes a water inlet opening 121 provided on the cover plate 12 and corresponding to the water inlet port 211 of the water channel body 2, and the opening fitting structure includes a water inlet connecting head 21 provided on the water channel body 2 and having the water inlet port 211. When the cover plate 12 is mounted to the tap housing 1, the water inlet connecting head 21 extends into the water inlet opening 121, and the cover plate 12 limits the water inlet connecting head 21 in the circumferential direction through the water inlet opening 121. The circumferential limiting of the water inlet connecting head 21 by the water inlet opening 121 enables the limiting on the water channel body 2 in a plurality of directions substantially perpendicular to the entry direction entering the accommodating cavity.

[0033] Alternatively, a limiting part 122 is provided on a side of the cover plate 12 facing the accommodating cavity. The limiting part 122 is configured to limit the water inlet connecting head 21 so as to limit the movement of the water inlet connecting head 21 in a direction toward the outside of the mounting opening 111, thereby realizing the limiting on the water channel body 2 in this direction.

[0034] The limiting part 122 may be an annular limiting structure around the water inlet opening 121, and a positioning flange 212 is provided on the outer circumferential surface of the water inlet connecting head 21. After the cover plate 12 is mounted, the limiting part 122 is positioned outside the positioning flange 212 for limiting. FIG. 6 illustrates a state in which the water inlet connecting head 21 of the water channel body 2 extends into the water inlet opening 121 of the cover plate 12 and the limiting part 122 on the cover plate 12 is fitted with the positioning flange 212 on the outer circumferential surface of the water inlet connecting head 21 after the cover plate 12 is mounted to the housing body 11, thereby preventing the water inlet connecting head 21 from moving in the direction toward the outside of the mounting opening 111 by the limiting part 122.

[0035] It can be understood that, in order to prevent the water channel body 2 from moving in the direction toward the outside of the mounting opening 111, other parts of the cover plate 12 may be positioned against other positions on the water channel body 2, that is, it is not limited to the limiting on the water inlet connecting head 21.

[0036] In an embodiment, the at least one opening may include a first end hole 114 provided on the housing body 11, and the opening fitting structure includes a fitting end provided on the water channel body 2 and extendable into the first end hole 114. After the water channel body 2 enters the accommodating cavity and abuts against the housing body 11, the water channel body 2 moves towards the first end hole 114 along a transverse direction, so that the fitting end can enter the first end hole 114. The transverse direction is a direction perpendicular to the entry direction of the water channel body 2 into the accommodating cavity. In the embodiment shown in FIGS. 3-6, the fitting end of the water channel body 2 fitted with the first end hole 114 may be a first connecting port 24 of the water channel body 2 for connecting the switch assembly 6, or a second connecting port 25 for connecting the temperature control assembly 7, or another positioning port. After the water channel body 2 enters the accommodating cavity and abuts against the housing body 11, the water channel body 2 moves to the fitting end along the transverse direction and enters the first end hole 114. By fitting and positioning the fitting end with the first end hole 114, the water channel body 2 can be positioned in various directions perpendicular to the transverse direction. In this embodiment, the transverse direction is a left-right direction when viewed from the entry direction. In other embodiments, the transverse direction may be an up-down direction.

[0037] In an embodiment, the housing body 11 is provided with a transverse limiting structure. After the water channel body 2 enters the accommodating cavity and abuts against the housing body 11, the water channel body 2 moves towards the transverse limiting structure along the transverse direction and can abut against the transverse limiting structure. The transverse limiting structure limits the water channel body 2 to prevent it from continuing to move in the transverse direction. The transverse direction is a direction perpendicular to the entry direction along which the water channel body 2 enters the accommodating cavity.

[0038] The transverse limiting structure may be a circumferential edge of the housing body 11 around the first end hole 114, and an annular recessed structure is provided on the outer circumference of the end face of the fitting end of the water channel body 2 to form a step shape. Referring to the structure of the first connecting port 24 fitted with the first end hole 114 illustrated in FIG. 5, the annular recessed structure of the first connecting port 24 abuts against the circumferential edge of the first end hole 114 for limiting after the first connecting port 24 is inserted into the first end hole 114.

[0039] The water channel body 2 abuts against the housing body 11 in the entry direction along which the water channel body 2 enters the accommodating cavity, and then moves transversely until the fitting end is inserted into the first end hole 114. After the first end hole 114 limits the fitting end in the transverse direction, the water channel body 2 reaches the mounting position. At

this time, the water channel body 2 has the degree of freedom only in the transverse direction facing away from the first end hole 114. When the cover plate 12 is mounted to the mounting opening 111 of the housing body 11, the cover plate 12 can be fitted with the water channel body 2 at a predetermined fitting position, thereby realizing rapid mounting of the cover plate 12. For example, when the water channel body 2 is in the mounting position, the cover plate 12 is mounted at the mounting opening 111 so that the water inlet opening 121 is correctly aligned and fitted with the water inlet connecting head 21 on the water channel body 2 to facilitate rapid mounting of the cover plate 12 and complete positioning of the water channel body 2 through the cover plate 12.

[0040] Alternatively, the water channel body 2 may be limited in the transverse direction by directly using the housing wall of the housing body 11 as a transverse limiting structure without inserting the fitting end into the first end hole 114. Specifically, after the water channel body 2 moves into the accommodating cavity along the entry direction and then moves in the transverse direction perpendicular to the entry direction to abut against the transverse limiting structure, the water channel body 2 is in the mounting position. When the cover plate 12 is mounted, the cover plate 12 can also be correctly fitted with the water channel body 2, and the complete limiting of the water channel body 2 in the tap housing 1 can be realized through the mounting of the cover plate 12.

[0041] In an embodiment, the cover plate 12 is connected to the housing body 11 by clamping.

[0042] As shown in FIG. 7, the housing body 11 is provided with a clamping groove 117, and the cover plate 12 is provided with a clamping part 123 for fitting and clamping with the clamping groove 117. After the cover plate 12 is moved at the mounting opening 111 until the clamping part 123 enters the clamping groove 117, the cover plate 12 is fixed to the housing body 11. The cover plate 12 can support the housing body 11 and avoid deformation of the housing body 11. In another embodiment, the clamping groove may be provided on the cover plate 12, and the clamping part 123 may be provided on the housing body 11.

[0043] Alternatively, the outer periphery of the cover plate 12 may be provided with an outer peripheral flange 124 configured to be fitted with an inner wall surface of the housing body 11 surrounding the mounting opening 111. When mounting the cover plate 12, the outer peripheral flange 124 of the cover plate 12 moves along the inner wall surface of the housing body 11 until the clamping part 123 is clamped with the clamping groove 117. In this process, the outer peripheral flange 124 is fitted with the inner wall surface of the housing body 11 surrounding the mounting opening 111, which has a guiding effect and ensures that the cover plate 12 is not inclined. Moreover, the outer peripheral flange 124 can increase the contact area between the cover plate 12 and the inner wall surface, thus having a better supporting effect on the housing body 11.

[0044] The connection mode between the cover plate 12 and the housing body 11 is not limited, which may be a clamped or bolted connection mode.

[0045] The mounting process of the tap assembly is described below according to the embodiments shown in FIGS. 3-7.

[0046] As shown in FIG. 3 (in conjunction with FIG. 1), the water channel body 2 moves along the direction of an arrow toward the mounting opening 111 of the housing body 11 and into the accommodating cavity.

[0047] As shown in FIG. 4, after entering the accommodating cavity, the water channel body 2 abuts against the limiting ribs 116 of the housing body 11, and then moves in the transverse direction indicated by the arrow until the first connecting port 24 of the water channel body 2 extends into the first end hole 114 of the housing body 11, and the step-shaped mounting structure of the first connecting port 24 abuts against the circumferential edge of the housing body 11 surrounding the first end hole 114, thereby limiting the water channel body 2 in the transverse direction towards the first end hole 114 and in various directions perpendicular to the transverse direction. At this time, the water channel body 2 is in the mounting position.

[0048] As shown in FIGS. 6 and 7, after the cover plate 12 is moved along the inner wall surface of the housing body 11 surrounding the mounting opening 111 until the clamping part 123 is clamped into the clamping groove 117, the cover plate 12 is fixed to the housing body 11. The water inlet connecting head 21 of the water channel body 2 is inserted into the water inlet opening 121 of the cover plate 12, and the limiting part 122 on the cover plate 12 limits the positioning flange 212 on the water inlet connecting head 21, thereby realizing the mounting of the water channel body 2 in the tap housing 1 through the fitting between the cover plate 12 and the housing body 11.

[0049] In addition, in FIGS. 6 and 7, a water inlet joint assembly 3 is mounted on the water inlet connecting head 21. The water inlet joint assembly 3 may be mounted after the cover plate 12 is mounted to the housing body 11. Alternatively, in a case where the outer diameter of the water inlet joint assembly 3 is less than that of the water inlet opening 121, the water inlet joint assembly 3 may be mounted to the water inlet connecting head 21 and then the cover plate 12 is mounted.

[0050] As shown in FIGS. 8 and 9, after the water channel body 2 is mounted in the tap housing 1, an upper water outlet joint assembly 4 is mounted at the upper water outlet port 22 of the water channel body, and a lower water outlet joint assembly 5 is mounted at the lower water outlet port 23 of the water channel body.

[0051] It can be understood by those skilled in the art that, limiting and fixing of the water channel body 2 through the fitting between the housing body 11 and the cover plate 12 are not limited to the embodiments described above, other ways can be used to limit the water channel body 2. For example, a mounting opening

is provided on the upper side of the housing body 11, a water outlet opening is provided on the lower side of the housing body 11, and the water channel body 2 is provided with a downward water outlet connecting head. The water outlet connecting head is fitted with the water outlet opening provided at the bottom of the housing body 11 for positioning after the water channel body 2 enters the accommodating cavity from the mounting opening of the housing body 11. Alternatively, a port for positioning the water channel body 2 in a transverse direction perpendicular to the water inlet direction of the water channel body 2 is provided, so as to position the water channel body 2 in the transverse direction in the mounting position. In this way, the cover plate 12 is fitted with the housing body 11 when the cover plate 12 covers the mounting opening 111, to realize the mounting of the water channel body 2 in the tap housing 1.

[0052] In an embodiment, the faucet further includes a water inlet joint assembly 3 and a water outlet joint assembly, both of which are mounted by threads. Referring to FIGS. 6 and 7, the water inlet connecting head 21 having the water inlet port 211 of the water channel body 2 has internal threads, and the water inlet joint assembly 3 is connected to the water inlet port of the water channel body 2 by threads. Referring to FIGS. 8 and 9 (in conjunction with FIG. 1), the water channel body 2 has two water outlet ports, i.e., an upper water outlet port 22 located at the upper part of the water channel body 2 and a lower water outlet port 23 located at the lower part of the water channel body 2. The upper water outlet port 22 and the lower water outlet port 23 of the water channel body 2 also have internal threads respectively. The upper water outlet joint assembly 4 is connected to the upper water outlet port 22 by threads, and the lower water outlet joint assembly 5 is connected to the lower water outlet port 23 by threads.

[0053] The water inlet joint assembly 3 and the water outlet joint assemblies are generally connected to the water channel body 2 after the cover plate 12 is fixed to the housing body 11. Where possible, for example, in a case that the first connecting port 24 of the water channel body 2 is limited in the mounting position by the first end hole 114 in FIG. 5, each joint assembly can be aligned with the corresponding water inlet port or water outlet port, so the water inlet joint assembly 3 and/or the water outlet joint assemblies can also be connected to the water channel body 2 before the cover plate 12 is mounted.

[0054] In an embodiment, the tap assembly includes a water outlet joint assembly configured to be connected with the water outlet port of the water channel body 2. A water outlet opening corresponding to the water outlet port is provided on the housing body 11, and the water outlet joint assembly is provided with a fitting and mounting part fitted with the water outlet opening in size. When the water outlet joint assembly is mounted to the water outlet port, the fitting and mounting part is fitted with the water outlet opening of the housing body 11, so that the water outlet opening of the housing body 11 limits the

water outlet joint assembly.

[0055] For example, in the embodiment shown in FIGS. 8 and 9 (in conjunction with FIG. 1), the water channel body 2 is provided with an upper water outlet port 22 and a lower water outlet port 23. The housing body 11 has an upper water outlet opening 112 corresponding to the upper water outlet port 22 and a lower water outlet opening 113 corresponding to the lower water outlet port 23. The upper water outlet joint assembly 4 is connected to the upper water outlet port 22 through the upper water outlet opening 112, and the lower water outlet joint assembly 5 is connected to the lower water outlet port 23 through the lower water outlet opening 113. The upper water outlet joint assembly 4 has an upper fitting and mounting part 41. When the upper water outlet joint assembly 4 is connected to the upper water outlet port 22, the upper fitting and mounting part 41 is fitted with and mounted in the upper water outlet opening 112. The upper water outlet joint assembly 4 is positioned on the housing body 11 in the circumferential direction through the fitting between the upper fitting and mounting part 41 and the upper water outlet opening 112. Likewise, the lower water outlet joint assembly 5 has a lower fitting and mounting part 51. When the lower water outlet joint assembly 5 is connected to the lower water outlet port 23, the lower fitting and mounting part 51 is fitted with and mounted in the lower water outlet opening 113 of the housing body 11. The lower water outlet joint assembly 5 is positioned on the housing body 11 in the circumferential direction through the fitting between the lower fitting and mounting part 51 and the lower water outlet opening 113. Since the upper water outlet joint assembly 4 and the lower water outlet joint assembly 5 are positioned on the housing body 11 and connected to the water channel body 2, the water channel body 2 can be further securely positioned in the tap housing 1.

[0056] Further, in an embodiment, the housing body 11 includes an upper sidewall 118 positioned above the water inlet port 211, and a lower sidewall 119 positioned below the water inlet port 211. The upper sidewall 118 is configured to be mounted against a wall, and the lower sidewall 119 is configured such that an assembly opening 20 is formed between the lower sidewall 119 and the wall when the upper sidewall 118 abuts against the wall.

[0057] The housing body 11 also includes end walls 120 at both ends and connecting the upper sidewall 118 and the lower sidewall 119, respectively. The end walls 120 are also configured to extend and flush with the upper sidewall 118 so as to be mounted against the wall. The end walls 120 can shield the structure inside the housing body 11 from both ends.

[0058] FIGS. 11-13 schematically illustrate the mounting process of the faucet against the wall by adopting the housing body 11 according to an embodiment of the present disclosure. When the faucet is connected with a bent joint 8 on a wall 9, the upper sidewall 118 and the end walls 120 of the tap housing 1 abut against the wall 9, which can shield the connection structure between the

water inlet port 211 of the water channel body 2 and the bent joint 8 from above and both ends, while the assembly opening 20 is formed between the lower sidewall 119 and the wall 9. Through the lower assembly opening 20, it is convenient to disassemble and assemble the water inlet joint assembly 3 on the water inlet port 211 from and with the bent joint 8 on the wall 9, so as to facilitate maintenance and replacement of the faucet. When customers replace a new tap product, the faucet is disassembled through the assembly opening 20, and the bent joint 8 on the wall 9 is retained. The new tap product is reconnected to the retained bent joint 8 through the water inlet joint assembly to complete the rapid replacement of the new product.

[0059] According to another aspect of the present disclosure, a faucet is also provided, which includes the tap assembly as described above.

[0060] In an embodiment, the faucet further includes a switch assembly 6 and a temperature control assembly 7. The water channel body 2 is provided with a first connecting port 24 and a second connecting port 25. The first connecting port 24 and the second connecting port 25 can be respectively provided with connection threads. The tap housing 1 is provided with a first end hole 114 corresponding to the first connecting port 24 and a second end hole 115 corresponding to the second connecting port 25. Referring to FIGS. 10 and 13, the switch assembly 6 includes a switch valve core 61 and a switch handle 64. The switch valve core 61 is inserted into the first connecting port 24 of the water channel body 2 through the first end hole 114 of the tap housing, and the switch handle 64 is connected to the switch valve core 61 to control the switch valve core 61. The switch assembly 6 also includes a first gland 62 for locking the switch valve core 61 to the first connecting port 24. The first gland 62 can be connected to the first connecting port 24 by threads so as to lock the switch valve core 61 within the first connecting port 24. A first decorative ring 63 can also be provided between the first gland 62 and the switch handle 64. The temperature control assembly 7 includes a temperature control valve core 71 and a temperature control handle 74. The temperature control valve core 71 is inserted into the second connecting port 25 of the water channel body through the second end hole 115 of the tap housing, and the temperature control handle 74 is connected with the temperature control valve core 71 to control the temperature control valve core 71. The temperature control assembly 7 also includes a second gland 72 for locking the temperature control valve core 71 to the second connecting port 25. The second gland 72 can be connected to the second connecting port 25 by threads so as to lock the temperature control valve core 71 within the second connecting port 25. A second decorative ring 73 can also be provided between the second gland 72 and the temperature control handle 74. The temperature control assembly 7 controls the water inlet of the two water inlet ports 211 to adjust the temperature of the mixed water, and the switch assembly 6 controls the flow

rate and the switch of the water flow, which are common technical means for those skilled in the art, and their working principles will not be repeated here.

[0061] In addition, since the water channel body 2 and the tap housing 1 are easy to disassemble and assemble, the faucet provided by the embodiments of the present disclosure can be provided with different types of tap housings 1 fitted with the water channel body 2. Different tap housings 1 can be replaced according to different use requirements.

[0062] The faucet provided by the embodiments of the present disclosure is usually a shower faucet used in a bathroom.

[0063] As shown in FIGS. 11-13, the faucet has a tap housing mounted against a wall, the upper sidewall 118 and the end walls 120 of the tap housing are mounted against the wall 9. To facilitate the mounting of the faucet, an assembly opening 20 is formed between the lower sidewall 119 of the tap housing and the wall to mount the faucet through the assembly opening.

[0064] FIGS. 14-15 show that the faucet has a tap housing which is not mounted against the wall. Since the tap housing is not mounted against the wall, in order to avoid exposing the connection structure between the water inlet joint assembly and the bent joint 8 on the wall and affecting the aesthetics, a decorative cover 10 can be provided at the connection position. In addition, a glass panel 13 or a silicone panel lamp can be provided on the housing according to customer requirements to increase product characteristics.

[0065] According to a further aspect of the present disclosure, a shower device is also provided, which includes a faucet as described above and a shower assembly capable of being fitted and connected with the faucet.

[0066] In the description of the present disclosure, it should be noted that the orientation or position relationships indicated by the terms "upper", "lower", "one side", "the other side", "one end", "the other end", "side", "relative", "corners", "periphery", "square structure" and the like are based on the orientation or position relationships shown in the drawings, which are only for convenience of describing the present disclosure and simplifying the description, rather than indicating or implying that the structure referred has the specific orientation, or is constructed and operated in the specific orientation, and thus cannot be interpreted as a limitation on the present disclosure.

[0067] In the description of the embodiments of the present disclosure, unless otherwise explicitly specified and limited, the terms "connection", "direct connection", "indirect connection", "fixed connection", "mounting" and "assembly" should be understood in a broad sense. For example, they may be fixed connection, detachable connection or integrated connection; and the terms "mounting", "connection" and "fixed connection" may be direct connection, or indirect connection through an intermediary, or may be an internal communication between two

elements. For those of ordinary skills in the art, the specific meanings of the aforementioned terms in the present disclosure may be understood according to specific situation.

[0068] Although the disclosed implementations of the present disclosure are described above, the contents are embodiments adopted only for the convenience of understanding the present disclosure and are not intended to limit the present disclosure. Any person skilled in the art to which the present disclosure pertains may make any modifications and changes in the form and details of implementation, but the scope of patent protection of the present disclosure shall still be defined by the appended claims.

Claims

1. A tap assembly, comprising:

a tap housing (1) comprising a housing body (11) and a cover plate (12) provided separately, wherein an accommodating cavity is formed inside the housing body (11), and one side of the housing body (11) is provided with a mounting opening (111) communicated with the accommodating cavity, and the cover plate (12) is configured to be mounted at the mounting opening (111) and connected with the housing body (11);
a water channel body (2), wherein a water channel is formed inside the water channel body (2), and the water channel body (2) is provided with a water inlet port (211) and a water outlet port (22, 23) communicated with the water channel, and the water channel body (2) is configured to be mounted in the accommodating cavity;
wherein after the water channel body (2) enters the accommodating cavity through the mounting opening (111), the cover plate (12) is fitted with and mounted to the housing body (11) to limit the water channel body (2) at a mounting position in the accommodating cavity.

2. The tap assembly according to claim 1, wherein the mounting opening (111) and the water inlet port (211) of the water channel body (2) have the same orientation, and the cover plate (12) is provided with a water inlet opening (121) corresponding to the water inlet port (211).

3. The tap assembly according to claim 1, wherein a limiting protrusion is disposed on an inner side surface of the housing body (11), and the water channel body (2) abuts against the limiting protrusion after entering the accommodating cavity to prevent the water channel body (2) from continuing to move in an entry direction.

4. The tap assembly according to claim 1, wherein the tap housing (1) is provided with at least one opening, the water channel body (2) is provided with an opening fitting structure extendable into the opening, and the tap housing (1) limits the opening fitting structure through the opening.

5. The tap assembly according to claim 4, wherein the at least one opening comprises a water inlet opening (121) provided on the cover plate (12) and corresponding to the water inlet port (211), and the opening fitting structure comprises a water inlet connecting head (21) provided on the water channel body (2) and having the water inlet port (211); and when the cover plate (12) is mounted to the tap housing (1), the water inlet connecting head (21) extends into the water inlet opening (121), and the cover plate (12) limits the water inlet connecting head (21) in a circumferential direction through the water inlet opening (121).

6. The tap assembly according to claim 5, wherein an inside of the cover plate (12) facing the accommodating cavity is provided with a limiting part (122), and the limiting part (122) is configured to limit the water inlet connecting head (21) to restrict movement of the water inlet connecting head (21) in a direction toward the outside of the mounting opening (111).

7. The tap assembly according to claim 4, wherein the at least one opening comprises a first end hole (114) provided on the housing body (11), and the opening fitting structure comprises a fitting end provided on the water channel body (2) and extendable into the first end hole (114); wherein the water channel body (2) enters the accommodating cavity and abuts against the housing body (11) and then moves towards the first end hole (114) along a transverse direction, so that the fitting end can enter the first end hole (114), the transverse direction is a direction perpendicular to an entry direction of the water channel body (2) into the accommodating cavity.

8. The tap assembly according to claim 1, wherein the housing body (11) is provided with a transverse limiting structure, and the water channel body (2) enters the accommodating cavity and abuts against the housing body (11) and then moves toward the transverse limiting structure along a transverse direction to be able to abut against the transverse limiting structure, wherein the transverse direction is a direction perpendicular to an entry direction of the water channel body (2) into the accommodating cavity.

9. The tap assembly according to any one of claims 1-8, wherein the cover plate (12) is connected to the

housing body (11) in a clamping manner.

10. The tap assembly according to any one of claims 1-8, further comprising a water outlet joint assembly (4, 5) configured to be connected with the water outlet port (22, 23), wherein the housing body (11) is provided with a water outlet opening (112, 113) corresponding to the water outlet port (22, 23), and the water outlet joint assembly (4, 5) has a fitting and mounting part (41, 51) fitted with the water outlet opening (112, 113) in size. 5 10
11. The tap assembly according to any one of claims 1-8, wherein the housing body (11) comprises an upper sidewall (118) positioned above the water inlet port (211) and a lower sidewall (119) positioned below the water inlet port (211), the upper sidewall (118) is configured to be mounted against a wall (9), and the lower sidewall (119) is configured such that an assembly opening (20) is formed between the lower sidewall (119) and the wall (9) when the upper sidewall (118) abuts against the wall (9). 15 20
12. A faucet comprising the tap assembly according to any one of claims 1-11. 25
13. A shower device, comprising a faucet according to claim 12 and a shower assembly capable of fitting with and mounting to the faucet. 30

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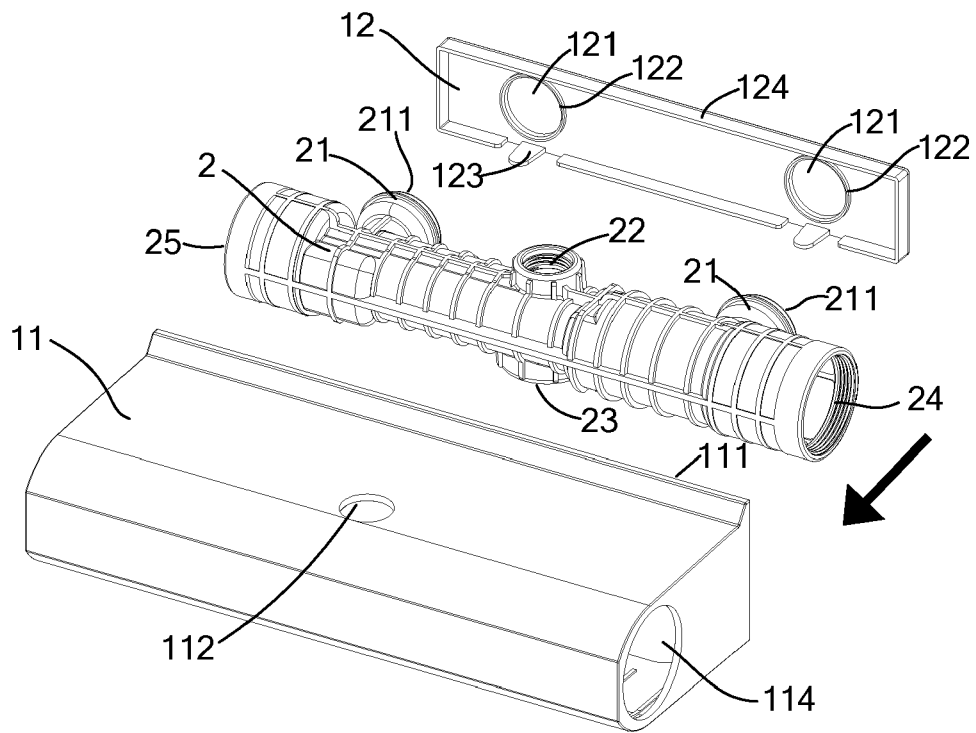


FIG. 1

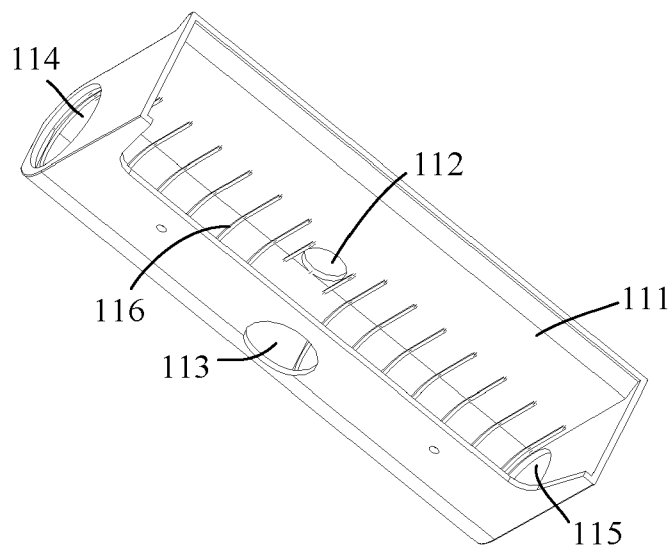


FIG. 2

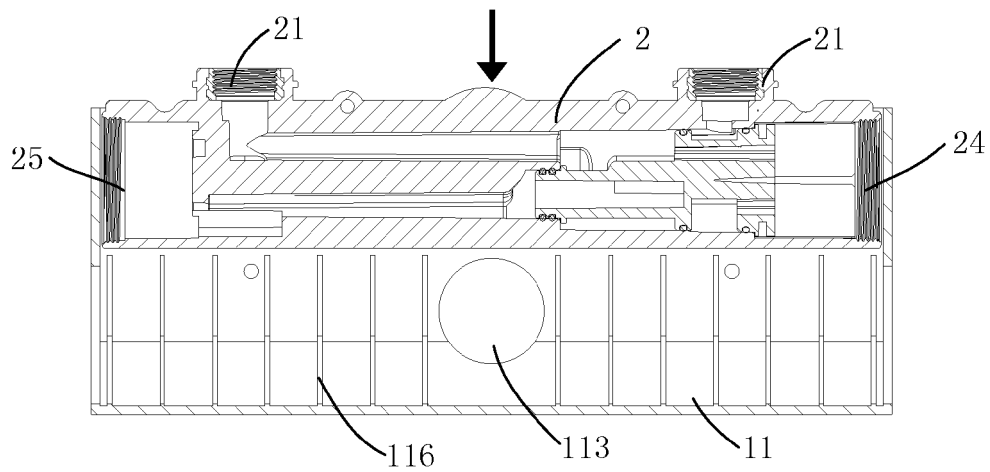


FIG. 3

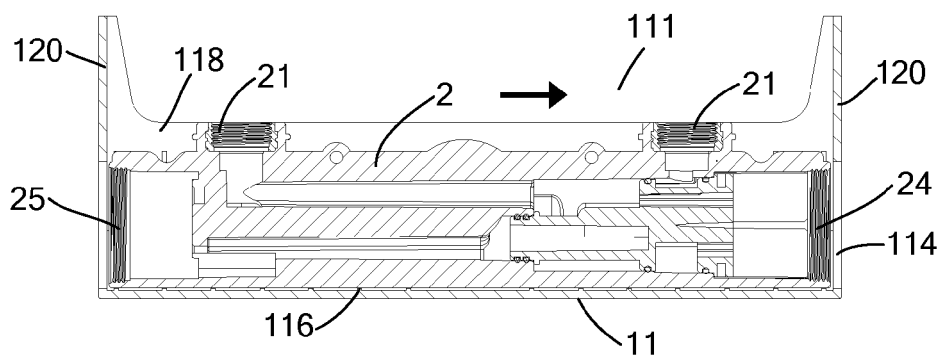


FIG. 4

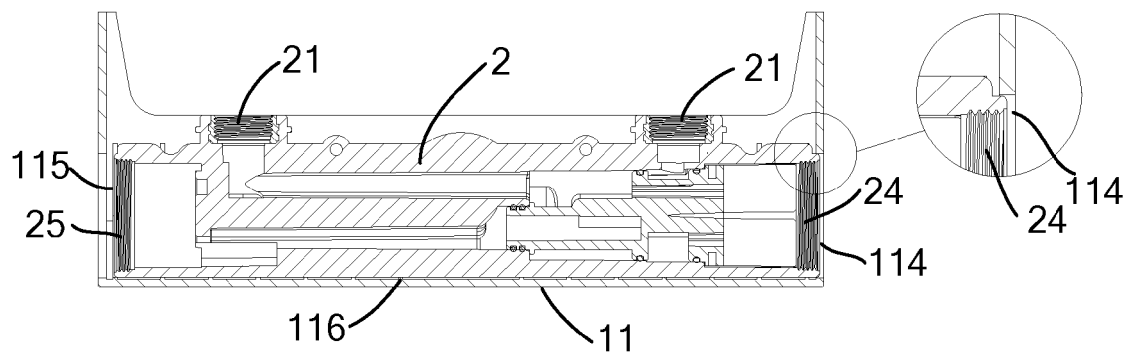


FIG. 5

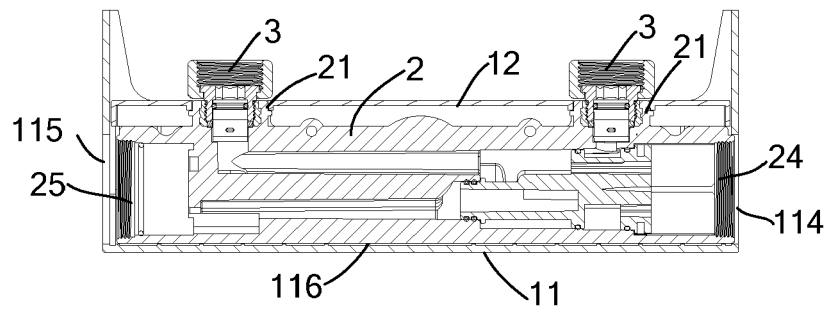


FIG. 6

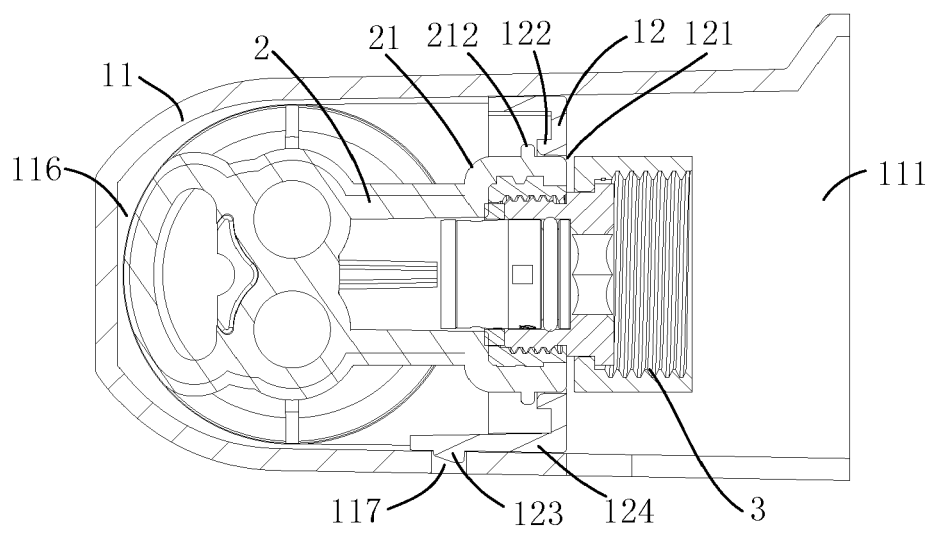


FIG. 7

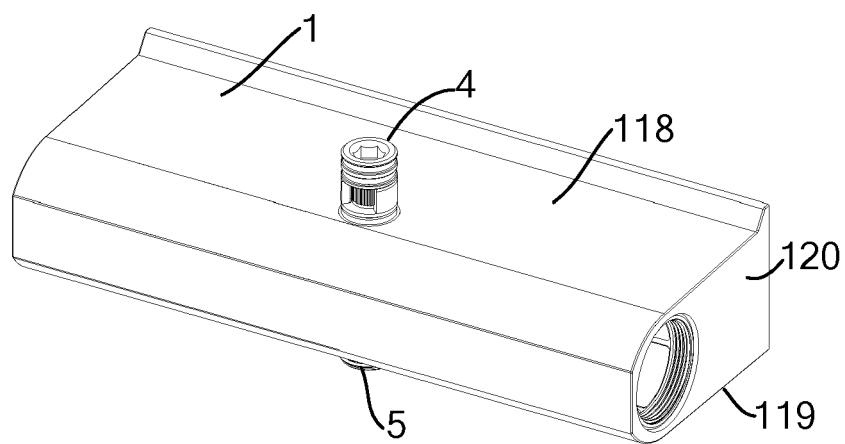


FIG. 8

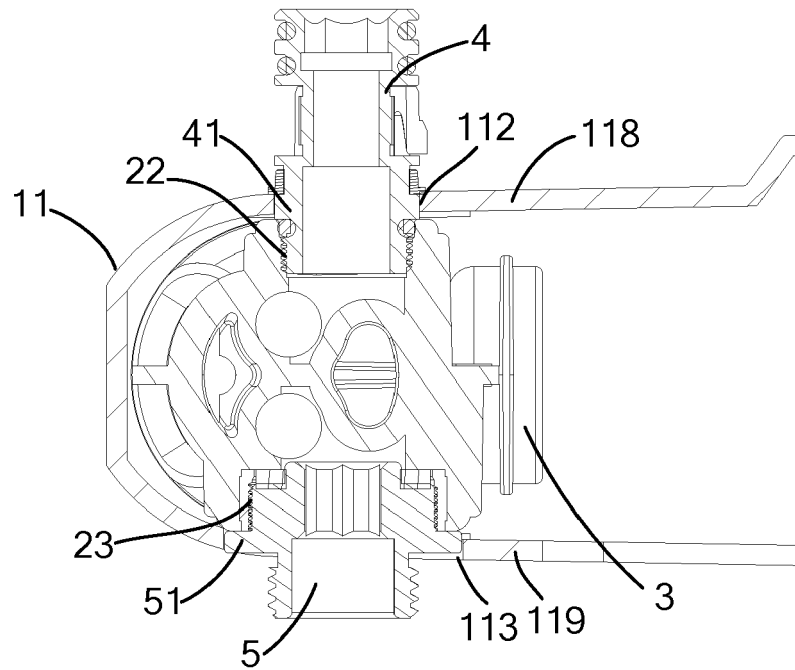


FIG. 9

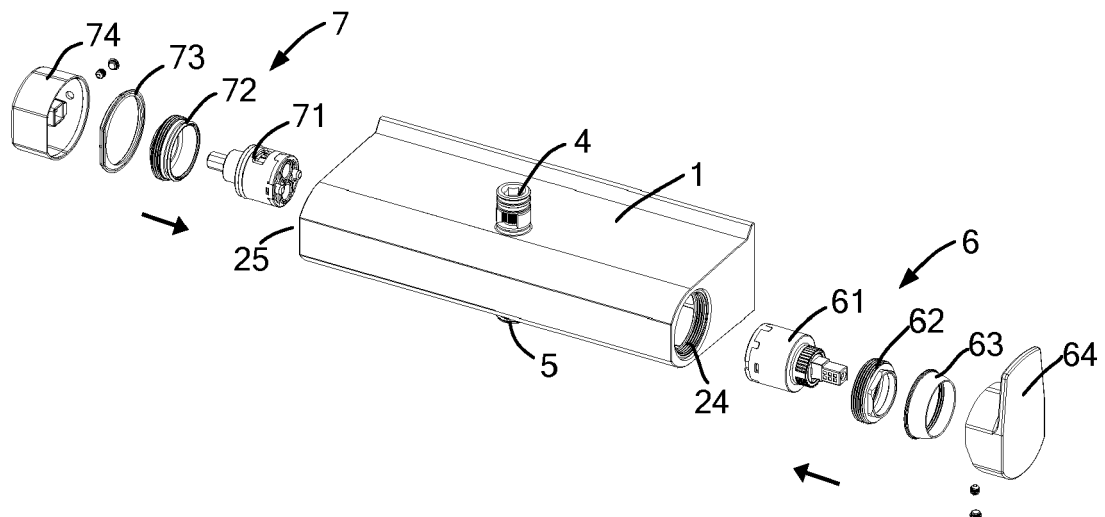


FIG. 10

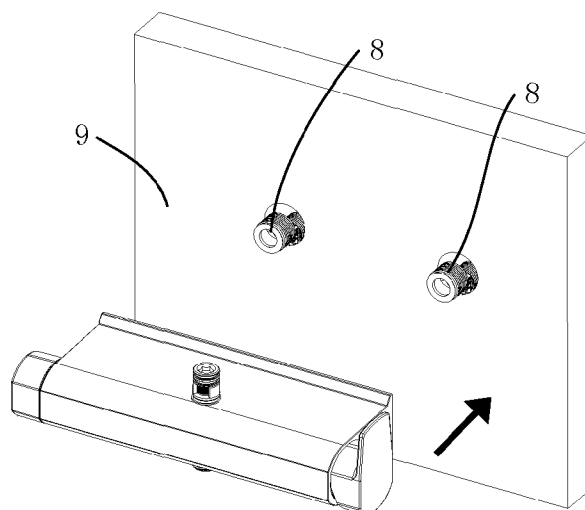


FIG. 11

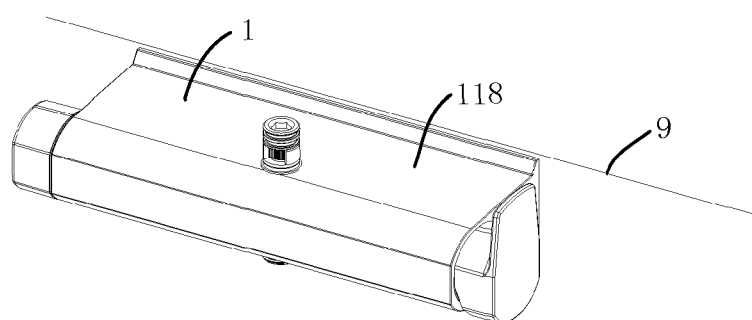


FIG. 12

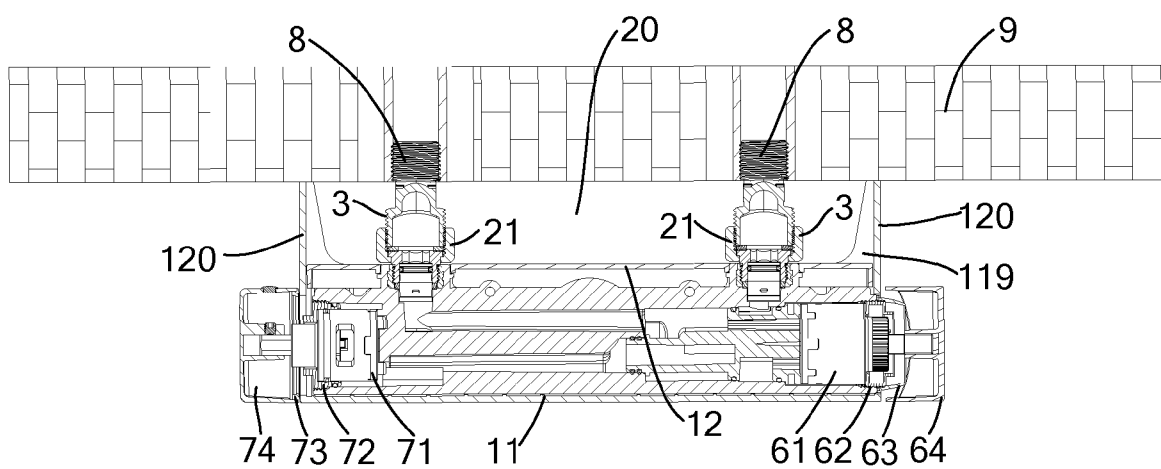


FIG. 13

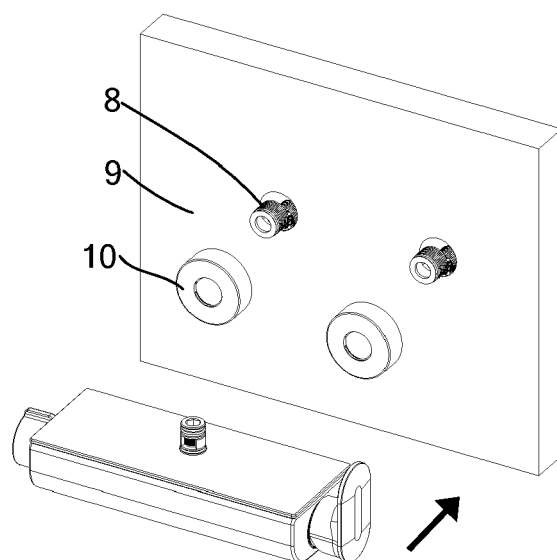


FIG. 14

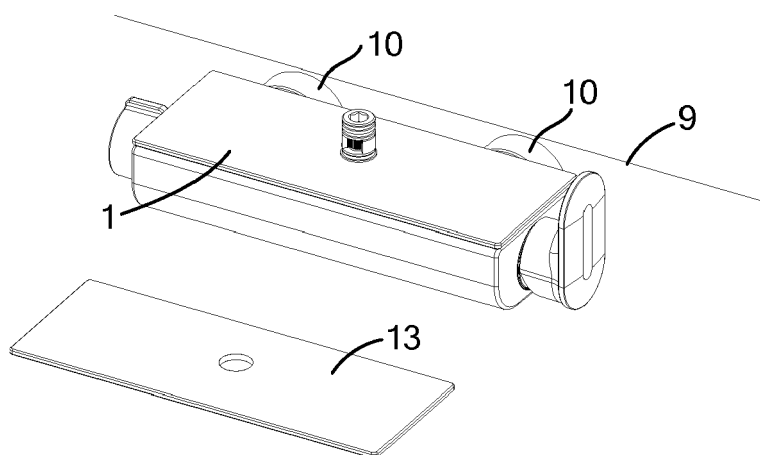


FIG. 15



EUROPEAN SEARCH REPORT

Application Number

EP 24 15 4363

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A	* paragraph [0031] - paragraph [0041]; figures 1-5 *	7	
X	EP 3 444 405 B1 (XIAMEN LOTA INT CO LTD [CN]; LOTA XIAMEN IND CO LTD [CN]) 7 October 2020 (2020-10-07) * paragraph [0022] - paragraph [0031]; figures 1-4 *	1-6, 10-13	
X	EP 3 913 152 A1 (FUJIAN XIHE SANITARY WARE TECH CO LTD [CN]) 24 November 2021 (2021-11-24) * paragraph [0015] - paragraph [0029]; figures 1-3 *	1,2,4, 10,12,13	
			TECHNICAL FIELDS SEARCHED (IPC)
			E03C
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
Munich		24 June 2024	Horst, Werner
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			
T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82