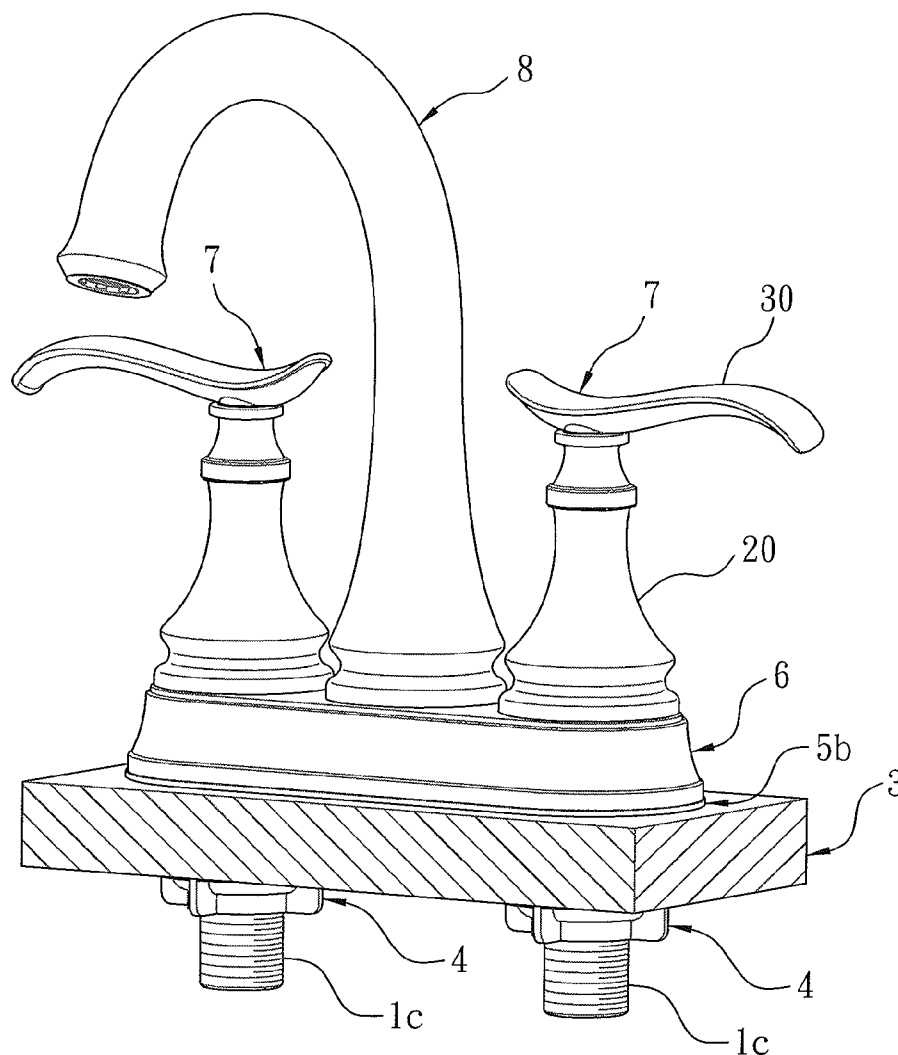




US 20160138253A1

(19) **United States**(12) **Patent Application Publication****Yang et al.**(10) **Pub. No.: US 2016/0138253 A1**(43) **Pub. Date: May 19, 2016**(54) **QUICK ASSEMBLY STRUCTURE OF FAUCET
HANDLE BASE**(52) **U.S. Cl.**
CPC **E03C 1/0412** (2013.01); **E03C 2001/026**
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Chang, Taichung City (TW)**(21) Appl. No.: **14/546,028**(22) Filed: **Nov. 18, 2014****Publication Classification**(51) **Int. Cl.**
E03C 1/04 (2006.01)(57) **ABSTRACT**

A quick assembly structure of a faucet handle base, which is fixed in each of at least one valve assembly, each valve assembly is mounted in each inlet valve seat of a body and includes a valve core, an angle limiting holder, and an affixing nut. Each of at least one screwing member includes inner threads and outer threads. Each of at least one handle mount includes: a housing having an orifice and a receiving chamber with a threaded connecting section; a handle bar having an operating portion and a first extension; a connector having a second extension and a coupling portion. The second extension is inserted to and connected with the orifice to further join with the first extension; the coupling portion is fitted with each valve core, hence each valve core is driven by the coupling portion, and the coupling portion is stopped by the angle limiting holder.



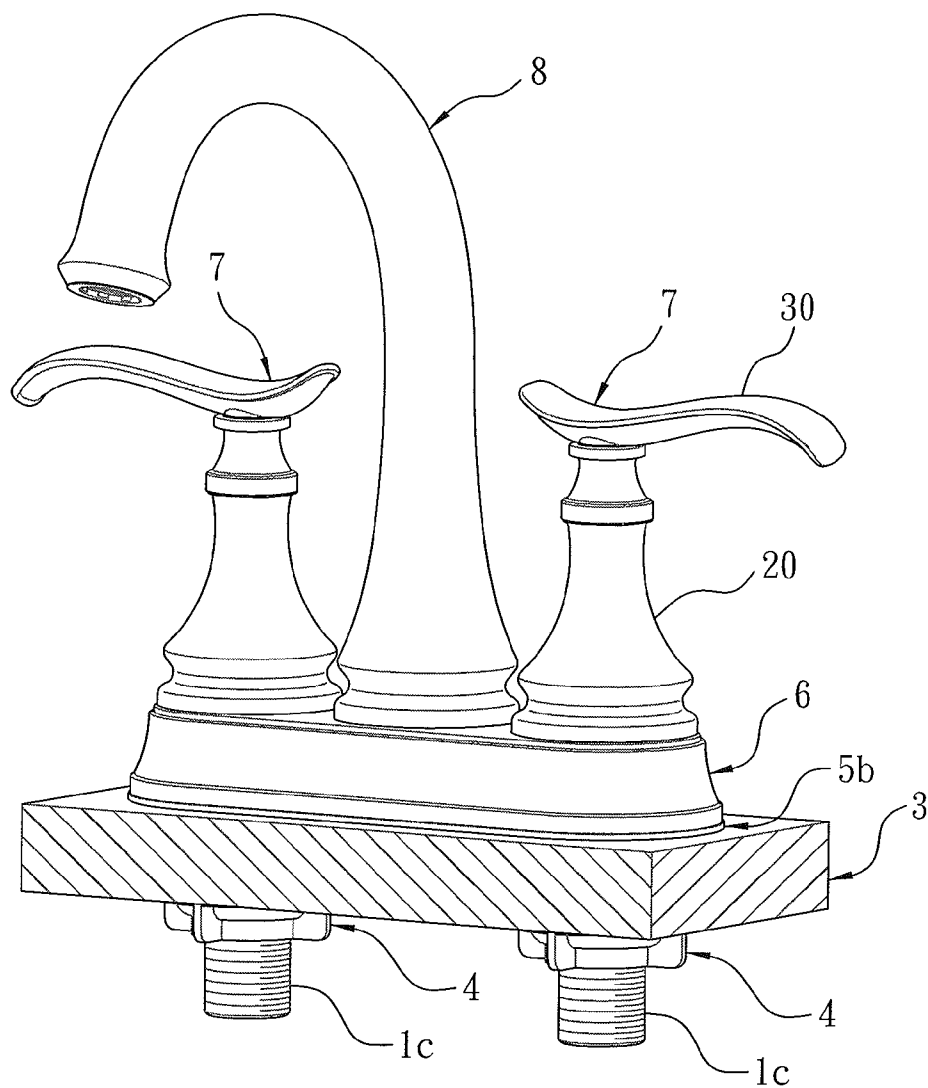


FIG. 1

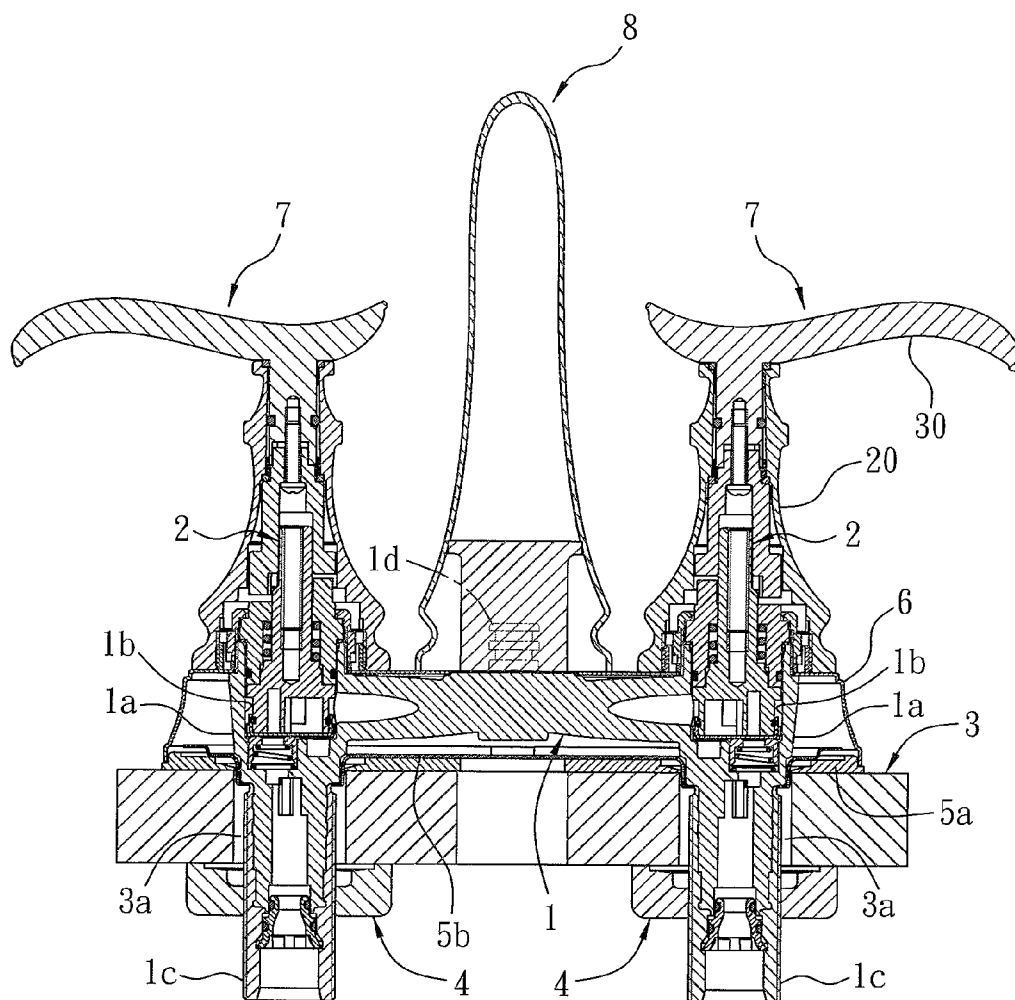


FIG. 2

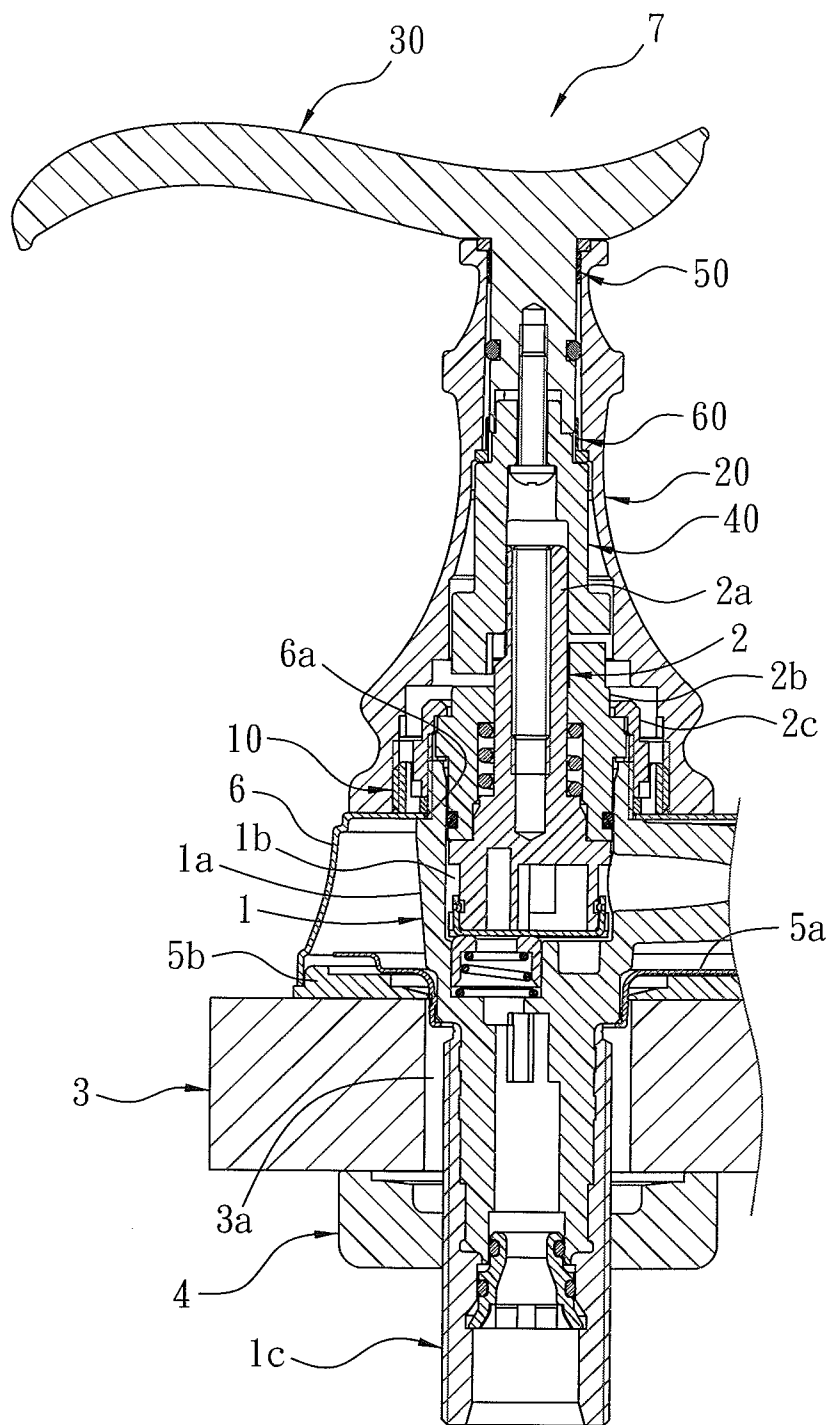


FIG. 3

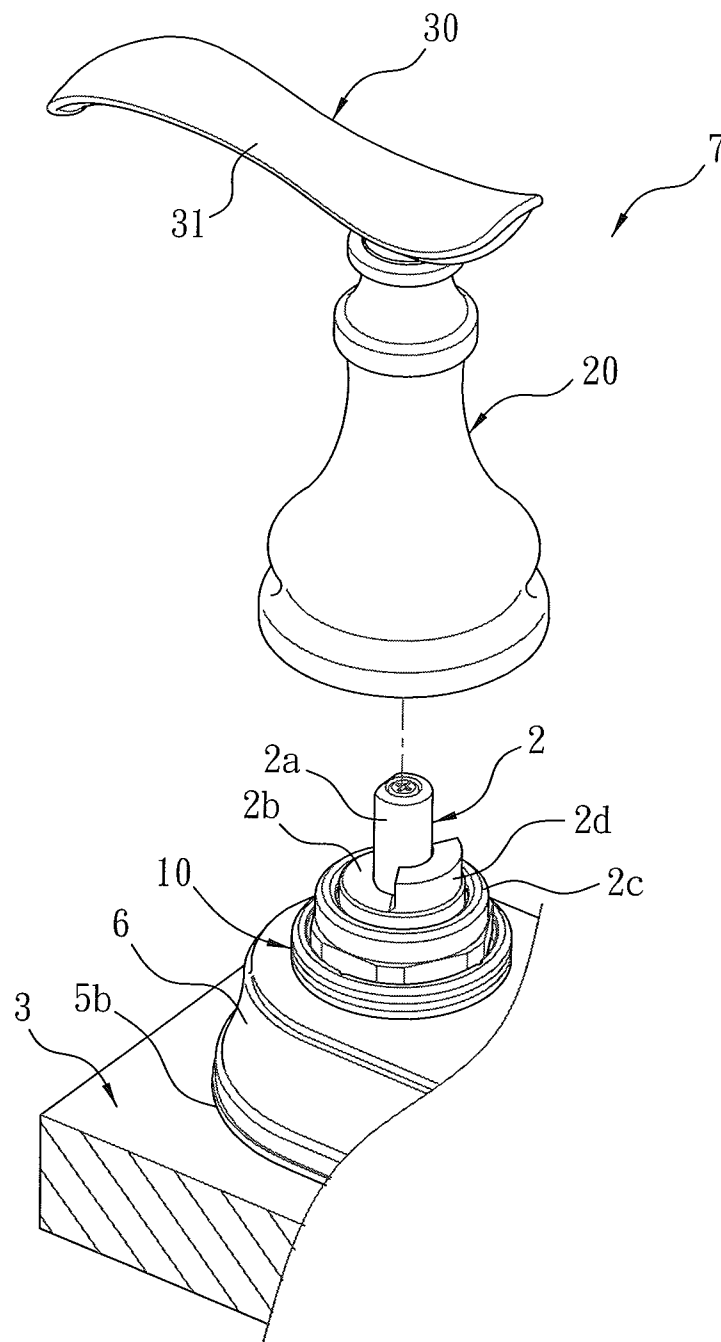


FIG. 4

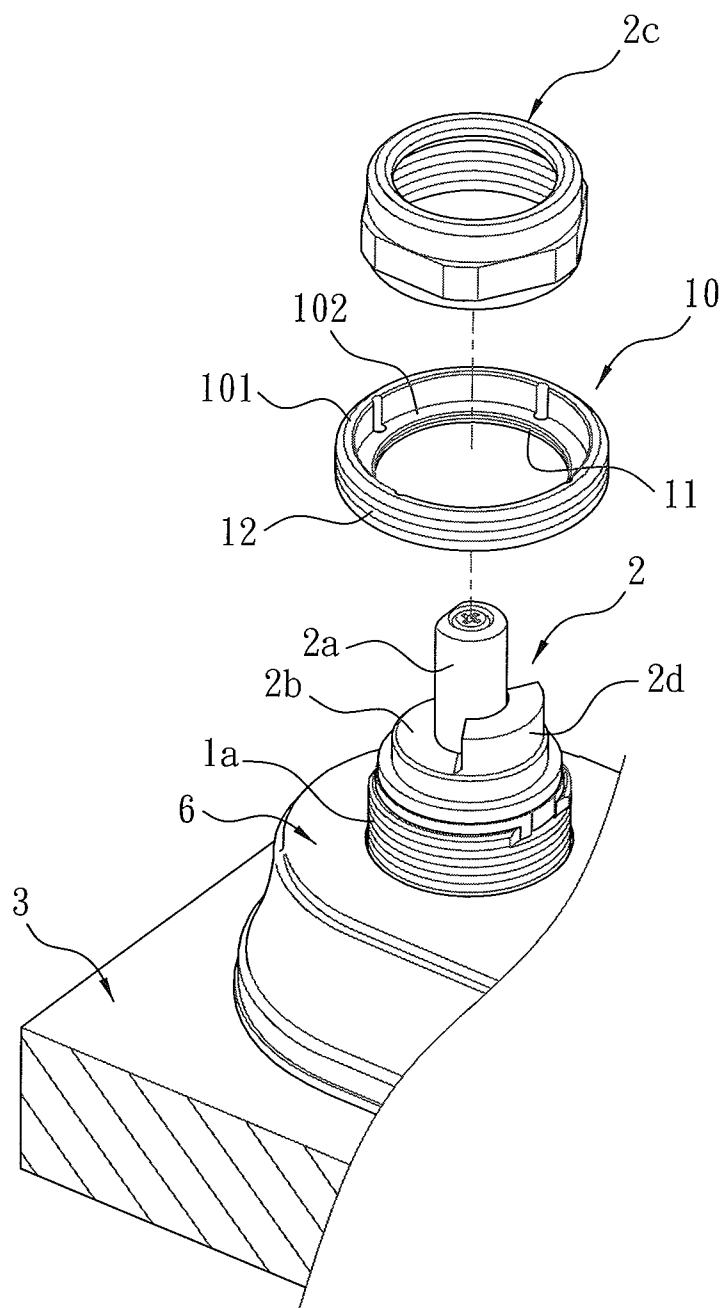


FIG. 5

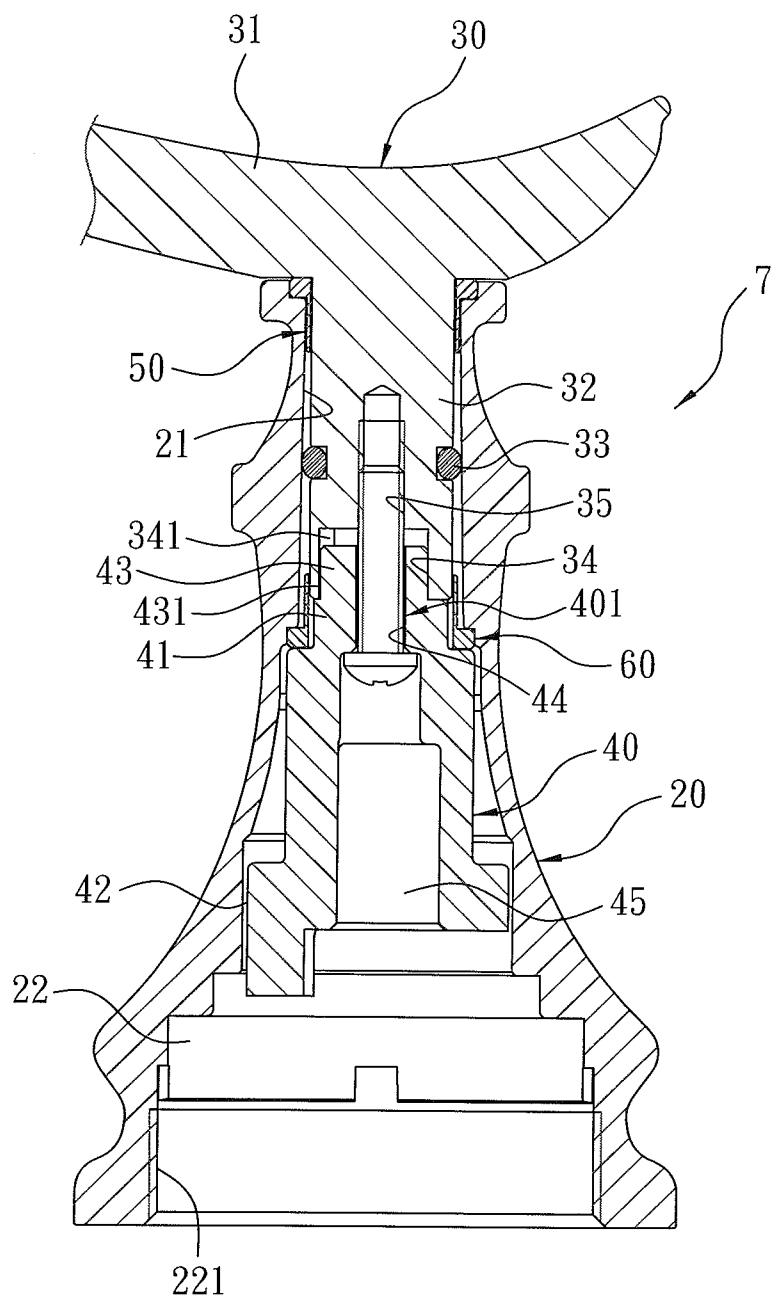


FIG. 6

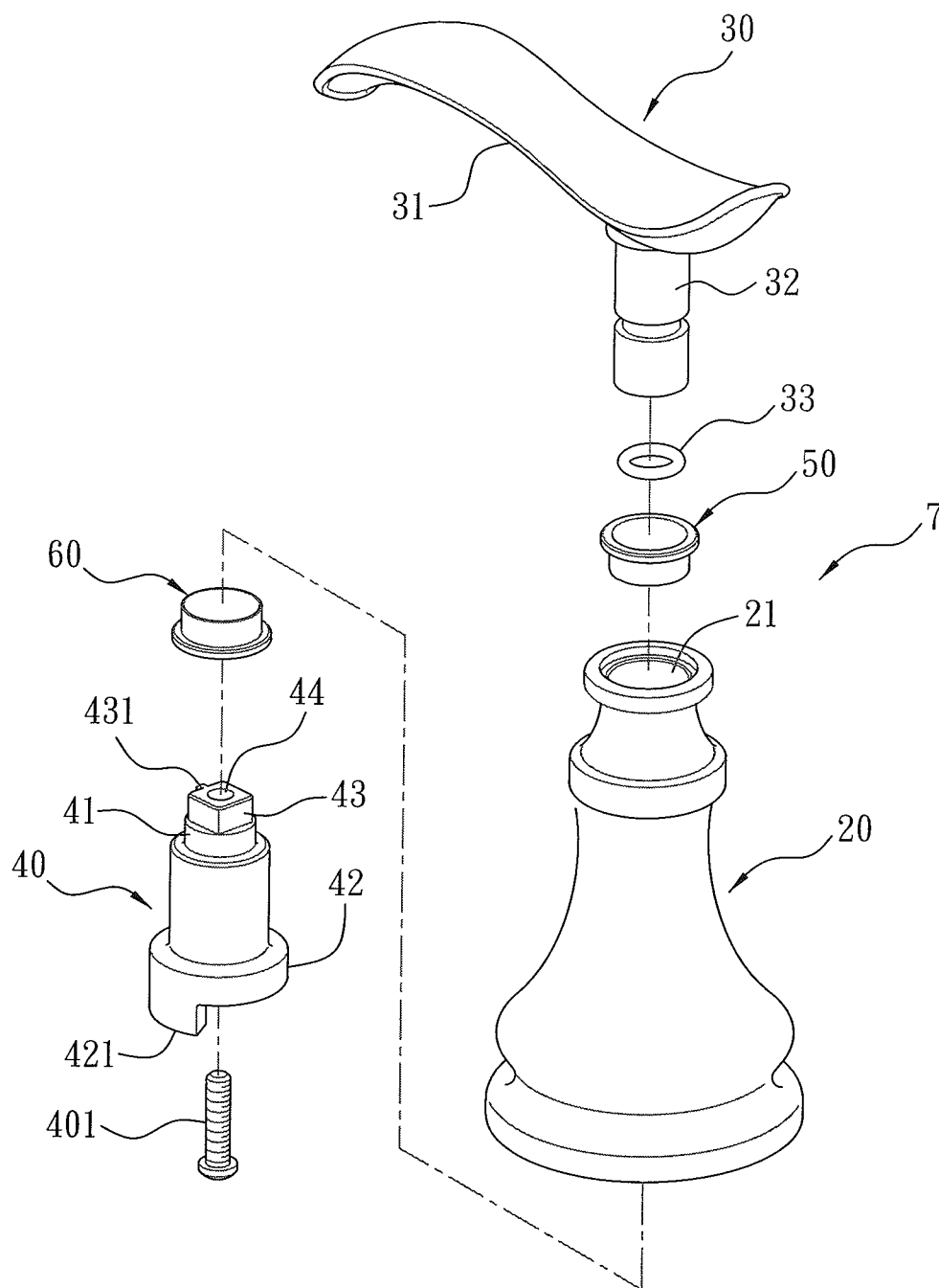


FIG. 7

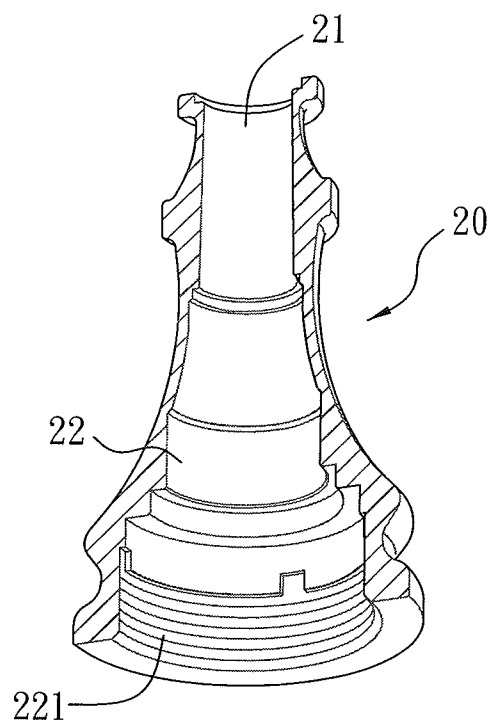


FIG. 8

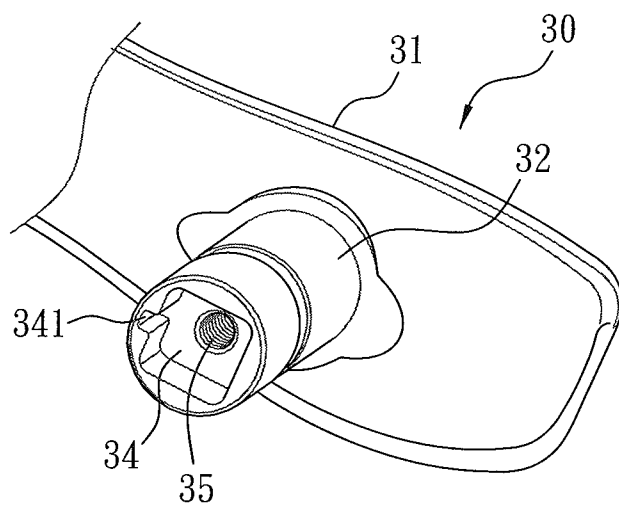


FIG. 9

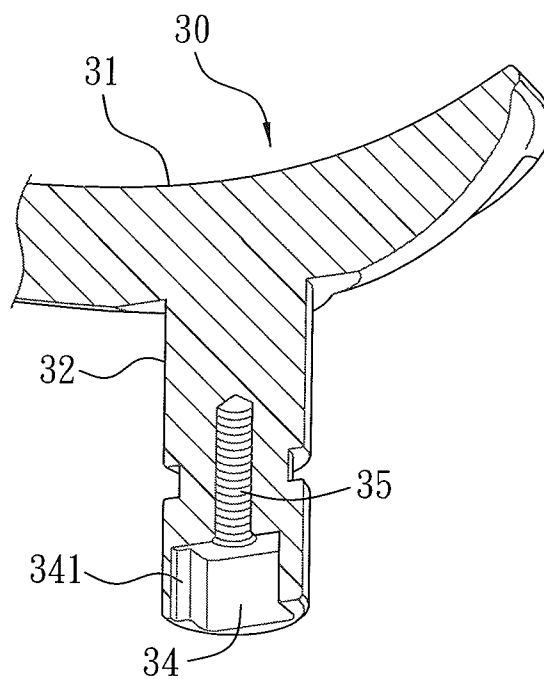


FIG. 10

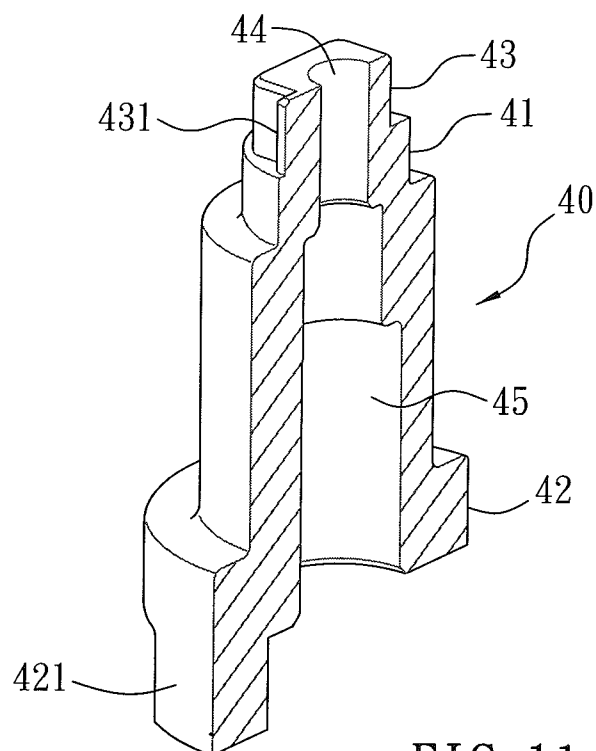


FIG. 11

QUICK ASSEMBLY STRUCTURE OF FAUCET HANDLE BASE

FIELD OF THE INVENTION

[0001] The present invention relates to a faucet handle base of a faucet, and more particularly to a quick assembly structure of the faucet handle base.

BACKGROUND OF THE INVENTION

[0002] A conventional faucet, such as a two-handle faucet, contains a body, a decorative cover, an outlet member, two valve assemblies, and two handle mounts. The body is formed in a H shape and includes two inlet seats disposed on two sides thereof, at least one outlet connector mounted on a middle section thereof, a cold-water support and a hot-water support extending outwardly from a bottom end thereof and screwing with two screwing elements via a basin, thus fixing the body on the basin. The decorative cover is covered on the basin so that the body is hidden between the decorative cover and the basin, and the body includes two first orifices defined on the two sides thereof and a second orifice formed on a middle section thereof opposite to the two inlet seats and the outlet connector. The outlet member is joined with the outlet connector of the body and flows water therefrom. The two valve assemblies are fixed on the inlet seats of the body. The two handle mounts are disposed on and rotate the two valve assemblies, thus controlling a water supply.

[0003] A conventional quick assembly structure of the faucet handle base is disclosed in TW Utility Model No. M271998 and M472141 and contains a handle mount through which a screw is inserted to screw and contact with a valve assembly, such that the handle mount is fixed on the valve assembly. However, the handle mount has a hole drilled thereon to cause poor appearance even though a plug is inserted into the hole.

[0004] In addition, in operation, a plug and the screw are unscrewed by a tool to remove the handle mount. The screw is inserted through the handle mount and the valve assembly by ways of the tool, and the plug is retained into the hole, thus causing troublesome operation by using the tool. To insert the plug into the hole smoothly, it is made of plastic material. But the handle mount is made of metal material to have inconsistent appearance. Furthermore, water will leak from the hole to rust the screw.

[0005] The present invention has arisen to mitigate and/or obviate the afore-described disadvantages.

SUMMARY OF THE INVENTION

[0006] One aspect of the present invention is to provide a quick assembly structure of a faucet handle base which is capable of manually assembling and disassembling the faucet handle base quickly.

[0007] Another aspect of the present invention is to provide a quick assembly structure of a faucet handle base which obtains esthetics appearance and waterproof purpose of the faucet handle base.

[0008] To obtain the above aspect(s), a quick assembly structure of a faucet handle base provided by the present invention which is fixed in each of at least one valve assembly; each valve assembly is mounted in each of at least one inlet valve seat of a body and includes a valve core, an angle limiting holder fitted with the valve core, and an affixing nut

screwed on each inlet valve seat to lock the angle limiting holder and the valve core in each inlet valve seat.

[0009] Each of at least one screwing member includes inner threads and outer threads, wherein the inner threads screw with each inlet valve seat of the body so that each screwing member is defined between the affixing nut and each inlet valve seat.

[0010] Each of at least one handle mount includes:

[0011] a housing formed in a bell shape and having an orifice defined therein and a receiving chamber formed below and communicating with the orifice; the receiving chamber having a threaded connecting section arranged on an inner wall thereof to screw with or unscrew from each screwing member;

[0012] a handle bar having an operating portion and a first extension one piece extending downwardly from the operating portion; the first extension being inserted into and coupled with the orifice of the housing;

[0013] a connector having a second extension formed on an upper side thereof and a coupling portion arranged on a lower side thereof; the second extension being inserted to and connected with the orifice of the housing to further join with the first extension; the coupling portion being fitted with the valve core, such that the valve core is driven by the coupling portion, and the coupling portion is stopped by the angle limiting holder, thus limiting a rotation of the valve core with in an angular range.

[0014] The quick assembly structure of the faucet handle base further contains: each of at least one upper sleeve mounted between a top end of the orifice of the housing and the first extension of the handle bar; each of at least one lower sleeve fixed between a bottom end of the orifice of the housing and the second extension of the connector; wherein the housing is rotated on the first extension of the handle bar and the second extension of the connector by ways of each upper sleeve and each lower sleeve.

[0015] Preferably, the first extension of the handle bar also has a recess being non-circular and defined on a bottom end thereof, and the second extension of the connector has a retaining block being non-circular and extending outwardly from a top end thereof to retain with the recess.

[0016] Preferably, the coupling portion of the connector has a defining protrusion; and the angle limiting holder has a shoulder formed thereon, such that when the connector rotates with the handle bar, it is stopped by the shoulder of the angle limiting holder, thus limiting a rotation of the connector; the recess of the handle bar has a fixing notch defined therein; and the retaining block of the connector has a rib extending outwardly around an outer wall thereof to retain with the fixing notch, such that the operating portion of the handle bar is aligned with the retaining block of the connector.

[0017] Preferably, the recess of the handle bar further has a first aperture formed on a central position thereof; the second extension of the connector also has a second aperture defined thereon; such that a locking bolt is inserted through the second aperture to screw with the first aperture, and the first extension of the handle bar is connected with the second extension of the connector.

[0018] Preferably, the coupling portion of the connector has a non-circular trough defined therein, communicating with the second aperture, and fitted with the valve core.

[0019] Preferably, each screwing member also includes an annular fence and a lip horizontally extending around a bot-

tom end of an inner wall thereof; and the annular fence has the outer threads formed around an outer wall thereof; the lip has the inner threads arranged around an inner wall thereof

[0020] Preferably, a decorative cover is covered on the body; the lip of each screwing member is defined between the affixing nut and the decorative cover.

[0021] It is to be noted that each valve assembly and each handle mount are assembled completely, before fixing the faucet handle base in the two-handle faucet, so each handle mount is aligned and retained with each valve assembly easily, and the housing is screwed with each screwing member quickly, thus fixing each handle mount and each valve assembly easily. As desiring to replace or maintain the faucet handle base, the housing is rotated counterclockwise to manually remove each handle mount and each valve assembly easily and quickly. In other words, the handle mount of the conventional quick assembly structure has the hole drilled thereon so that the tool is inserted into the hole to rotate the screw, thus damaging an appearance of the handle mount.

[0022] Accordingly, the hole drilled on each handle mount of the present invention is eliminated to avoid water leakage from each handle mount.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] FIG. 1 is a perspective view showing the assembly of a faucet according to a preferred embodiment of the present invention.

[0024] FIG. 2 is a cross sectional view showing the assembly of a faucet according to the preferred embodiment of the present invention.

[0025] FIG. 3 is a cross sectional view showing the assembly of a handle mount of the faucet according to the preferred embodiment of the present invention.

[0026] FIG. 4 is a perspective view showing the exploded components of a partial valve assembly of a quick assembly structure of a faucet handle base according to the preferred embodiment of the present invention.

[0027] FIG. 5 is another perspective view showing the exploded components of a partial valve assembly of the quick assembly structure of the faucet handle base according to the preferred embodiment of the present invention.

[0028] FIG. 6 is another cross sectional view showing the assembly of the handle mount of the quick assembly structure of the faucet handle base according to the preferred embodiment of the present invention.

[0029] FIG. 7 is a perspective view showing the exploded components of the handle mount of the quick assembly structure of the faucet handle base according to the preferred embodiment of the present invention.

[0030] FIG. 8 is a cross-sectional perspective view showing the assembly of a housing of the quick assembly structure of the faucet handle base according to the preferred embodiment of the present invention.

[0031] FIG. 9 is a perspective view showing a part of a handle bar of the quick assembly structure of the faucet handle base according to the preferred embodiment of the present invention.

[0032] FIG. 10 is a cross-sectional perspective view showing a part of the handle bar of the quick assembly structure of the faucet handle base according to the preferred embodiment of the present invention.

[0033] FIG. 11 is a cross-sectional perspective view showing the assembly of a connector of the quick assembly struc-

ture of the faucet handle base according to the preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0034] With reference to FIGS. 1-3, a quick assembly structure of a faucet handle base according to a preferred embodiment of the present invention is fixed in a two-handle faucet which includes a body 1 in a H shape, the body 1 includes two inlet valve seats 1a disposed on two sides of a top end thereof, two accommodating cavities 1b defined in the two inlet valve seats 1a, two valve assemblies 2 mounted on the two accommodating cavities 1b, and two inlet supports 1c extending downwardly from a bottom end thereof, inserted through two first through holes 3a of a basin 3, and engaged with two fasteners 4. A positioning plate 5a and a bottom plate 5b are fitted on the two inlet valve seats 1a, wherein the bottom plate 5b abuts against the basin 3. A decorative cover 6 is covered on the body 1 and includes a bottom end contacting with the bottom plate 5b, and the two valve assemblies 2 upwardly extend out of two second through holes 6a on two sides of the decorative cover 6. Two handle mounts 7 are fixed on the two valves assemblies 2 and rotate two valve cores 2a of the two valve assemblies 2 to turn on/off cold water supply and hot water supply from the two inlet supports 1c via at least one outlet connector 1d. In this embodiment, one outlet connector 1d is provided to insert through the decorative cover 6 so as to connect with an outlet member 8. Since above-mentioned components are a well-known art, further remarks are omitted. Each valve assembly 2 also includes an angle limiting holder 2b fitted with each valve core 2a and includes an affixing nut 2c screwed on each inlet valve seat 1a of the body 1 to lock the angle limiting holder 2b and each valve core 2a in each inlet valve seat 1a. Due to above-described structure is a well-known prior art, further remarks are omitted.

[0035] Referring to FIGS. 3 to 5, the quick assembly structure of the faucet handle base of the present invention comprises: two screwing members 10, each including inner threads 11 and outer threads 12, wherein the inner threads 11 screw with each inlet valve seat 1a of the body 1 so that each screwing member 10 is defined between the affixing nut 2c and each inlet valve seat 1a. In detail, each screwing member 10 is defined between the affixing nut 2c and a top end of the decorative cover 6.

[0036] Preferably, each screwing member 10 also includes an annular fence 101 and a lip 102 horizontally extending around a bottom end of an inner wall thereof; and the annular fence 101 has the outer threads 12 formed around an outer wall thereof; the lip 102 has the inner threads 11 arranged around an inner wall thereof, such that the affixing nut 2c is fixed on the top end of the decorative cover 6 by using the lip 102.

[0037] As shown in FIGS. 6 and 7, each handle mount 7 includes a housing 20 formed in a bell shape as illustrated in FIG. 8, and the housing 20 has an orifice 21 defined therein and a receiving chamber 22 formed below and communicating with the orifice 21; the receiving chamber 22 has a threaded connecting section 221 arranged on an inner wall thereof to screw with or unscrew from each screwing member 10.

[0038] As illustrated in FIGS. 9 and 10, each of at least one handle bar 30 includes an operating portion 31 and a first extension 32 one piece extending downwardly from the oper-

ating portion 31; the first extension 32 is inserted into and coupled with the orifice 21 of the housing 20, as shown in FIG. 6.

[0039] With reference to FIG. 11, each of at least one connector 40 includes a second extension 41 formed on an upper side thereof and a coupling portion 42 arranged on a lower side thereof; the second extension 41 is inserted to and connected with the orifice 21 of the housing 20 to further join with the first extension 32; the coupling portion 42 is fitted with each valve core 2a, such that each valve core 2a is driven by the coupling portion 42, and the coupling portion 42 is stopped by the angle limiting holder 2b, as shown in FIG. 5, thus limiting a rotation of each valve core 2a with in an angular angle, such as between an opening position and a closing position.

[0040] Each of at least one upper sleeve 50, as illustrated in FIG. 6, is mounted between a top end of the orifice 21 of the housing 20 and the first extension 32 of each handle bar 30.

[0041] Each of at least one lower sleeve 60, as shown in FIG. 6, is fixed between a bottom end of the orifice 21 of the housing 20 and the second extension 41 of each connector 40; the housing 20 is rotated smoothly on the first extension 32 of each handle bar 30 and the second extension 41 of each connector 40 by ways of each upper sleeve 50 and each lower sleeve 60.

[0042] Preferably, the first extension 32 of each handle bar 30 has a closing ring 33 fitted on an outer wall thereof and contacting with an inner wall of the housing 20, as shown in FIG. 6, thus obtaining water stopping effect.

[0043] With reference to FIGS. 6, 7, and 9, the first extension 32 of each handle bar 30 also has a recess 34 being non-circular and defined on a bottom end thereof, and the second extension 41 of each connector 40 has a retaining block 43 being non-circular and extending outwardly from a top end thereof to retain with the recess 34; wherein the recess 34 of each handle bar 30 is formed in a quadrangle shape.

[0044] The recess 34 of each handle bar 30 further has a first aperture 35 formed on a central position thereof, and the second extension 41 of each connector 40 also has a second aperture 44 defined thereon, such that a locking bolt 401 is inserted through the second aperture 44 to screw with the first aperture 35, and the first extension 32 of each handle bar 30 is connected with the second extension 41 of each connector 40.

[0045] It is to be noted that the coupling portion 42 is stopped by the angle limiting holder 2b to limit the rotation of each valve core 2a between the opening position and the closing position. Referring to FIG. 7, the coupling portion 42 of each connector 40 has a defining protrusion 421 extending outwardly from a bottom end thereof, and the angle limiting holder 2b has a shoulder 2d formed thereon, as shown in FIG. 5, such that when each connector 40 rotates with each handle bar 30, it is stopped by the shoulder 2d of the angle limiting holder 2b, thus limiting a rotation of each connector 40.

[0046] As shown in FIG. 9, the recess 34 of each handle bar 30 has a fixing notch 341 defined therein, and the retaining block 43 of each connector 40 has a rib 431 extending outwardly around an outer wall thereof to retain with the fixing notch 341, as illustrated in FIGS. 6 and 7, such that the operating portion 31 of each handle bar 30 is aligned with the retaining block 43 of each connector 40 accurately.

[0047] To drive each valve core 2a to rotate by ways of each connector 40, the coupling portion 42 of each connector 40 has a non-circular trough 45 defined therein, communicating

with the second aperture 44, and fitted with each valve core 2a, as shown in FIGS. 3, 5 and 11; wherein the trough 45 is formed in a D shape.

[0048] With reference to FIG. 4, each valve assembly 2 and each handle mount 7 are connected together beforehand. Referring further to FIG. 5, after the angle limiting holder 2b is fitted with each valve core 2a, each screwing member 10 is screwed with the top end of the decorative cover 6, and then the affixing nut 2c is screwed with each inlet valve seat 1a of the body 1, such that the lip 102 of the threaded screwing member 10 is defined between the affixing nut 2c and the decorative cover 6, thus assembling each valve assembly 2 completely. In addition, each valve core 2a is rotated to the closing position beforehand.

[0049] As shown in FIG. 6, the upper sleeve 50 is mounted on the top end of the orifice 21, the lower sleeve 60 is disposed on the bottom end of the orifice 21, the first extension 32 of each handle bar 30 is inserted into the upper sleeve 50 via the top end of the orifice 21, and the second extension 41 of each connector 40 is inserted into lower sleeve 60 via the bottom end of the orifice 21, thereafter the locking bolt 401 is inserted through the second aperture 44 of each connector 40 to screw with the first aperture 35 of the first extension 32, and the first extension 32 of each handle bar 30 is connected with the second extension 41 of each connector 40, thereby assembling each handle mount 7 completely.

[0050] In operation, the trough 45 of each connector 40 is aligned and retained with each valve core 2a, and the housing 20 is rotated clockwise so that the threaded connecting section 221 of the receiving chamber 22 screws with the outer threads 12 of each screwing member 10, and the housing 20 presses the top end of the decorative cover 6, thus fixing each handle mount 7 as illustrated in FIG. 3. On the contrary, when the housing 20 is rotated counterclockwise, each handle mount 7 is removed from each valve assembly 2.

[0051] It is to be noted that each valve assembly 2 and each handle mount 7 are assembled completely, before fixing the faucet handle base in the two-handle faucet, so each handle mount 7 is aligned and retained with each valve assembly 2 easily, and the housing 20 is screwed with each screwing member 10 quickly, thus fixing each handle mount 7 and each valve assembly 2 easily. As desiring to replace or maintain the faucet handle base, the housing 20 is rotated counterclockwise to manually remove each handle mount 7 and each valve assembly 2 easily and quickly. In other words, the handle mount of the conventional quick assembly structure has the hole drilled thereon so that the tool is inserted into the hole to rotate the screw, thus damaging an appearance of the handle mount.

[0052] Accordingly, the hole drilled on each handle mount of the present invention is eliminated to avoid water leakage from each handle mount.

[0053] While the preferred embodiments of the invention have been set forth for the purpose of disclosure, modifications of the disclosed embodiments of the invention as well as other embodiments thereof may occur to those skilled in the art. The scope of the claims should not be limited by the preferred embodiments set forth in the examples, but should be given the broadest interpretation consistent with the description as a whole.

What is claimed is:

1. A quick assembly structure of a faucet handle base, which is fixed in each of at least one valve assembly; each valve assembly being mounted in each of at least one inlet

valve seat of a body and including a valve core, an angle limiting holder fitted with the valve core, and an affixing nut screwed on each inlet valve seat to lock the angle limiting holder and the valve core in each inlet valve seat; characterized in that:

at least one screwing member, each including inner threads and outer threads, wherein the inner threads screw with each inlet valve seat of the body so that each screwing member is defined between the affixing nut and each inlet valve seat;

at least one handle mount, each including:

a housing formed in a bell shape and having an orifice defined therein and a receiving chamber formed below and communicating with the orifice; the receiving chamber having a threaded connecting section arranged on an inner wall thereof to screw with or unscrew from each screwing member;

a handle bar having an operating portion and a first extension one piece extending downwardly from the operating portion; the first extension being inserted into and coupled with the orifice of the housing;

a connector having a second extension formed on an upper side thereof and a coupling portion arranged on a lower side thereof; the second extension being inserted to and connected with the orifice of the housing to further join with the first extension; the coupling portion being fitted with the valve core, such that the valve core is driven by the coupling portion, and the coupling portion is stopped by the angle limiting holder, thus limiting a rotation of the valve core with in an angular range.

2. The quick assembly structure of the faucet handle base as claimed in claim 1 further comprising each of at least one upper sleeve mounted between a top end of the orifice of the housing and the first extension of the handle bar; each of at least one lower sleeve fixed between a bottom end of the orifice of the housing and the second extension of the connector; wherein the housing is rotated on the first extension of the handle bar and the second extension of the connector by ways of each upper sleeve and each lower sleeve.

3. The quick assembly structure of the faucet handle base as claimed in claim 1, wherein the first extension of the handle bar has a closing ring fitted on an outer wall thereof and contacting with an inner wall of the housing.

4. The quick assembly structure of the faucet handle base as claimed in claim 1, wherein the first extension of the handle bar also has a recess being non-circular and defined on a

bottom end thereof, and the second extension of the connector has a retaining block being non-circular and extending outwardly from a top end thereof to retain with the recess.

5. The quick assembly structure of the faucet handle base as claimed in claim 4, wherein the coupling portion of the connector has a defining protrusion; and the angle limiting holder has a shoulder formed thereon, such that when the connector rotates with the handle bar, it is stopped by the shoulder of the angle limiting holder, thus limiting a rotation of the connector; the recess of the handle bar has a fixing notch defined therein; and the retaining block of the connector has a rib extending outwardly around an outer wall thereof to retain with the fixing notch, such that the operating portion of the handle bar is aligned with the retaining block of the connector.

6. The quick assembly structure of the faucet handle base as claimed in claim 4, wherein the recess of the handle bar further has a first aperture formed on a central position thereof; the second extension of the connector also has a second aperture defined thereon; such that a locking bolt is inserted through the second aperture to screw with the first aperture, and the first extension of the handle bar is connected with the second extension of the connector.

7. The quick assembly structure of the faucet handle base as claimed in claim 4, wherein the recess of the handle bar is formed in a quadrangle shape.

8. The quick assembly structure of the faucet handle base as claimed in claim 6, wherein the coupling portion of the connector has a non-circular trough defined therein, communicating with the second aperture, and fitted with the valve core.

9. The quick assembly structure of the faucet handle base as claimed in claim 8, wherein the non-circular trough is formed in a D shape.

10. The quick assembly structure of the faucet handle base as claimed in claim 1, wherein each screwing member also includes an annular fence and a lip horizontally extending around a bottom end of an inner wall thereof; and the annular fence has the outer threads formed around an outer wall thereof; the lip has the inner threads arranged around an inner wall thereof.

11. The quick assembly structure of the faucet handle base as claimed in claim 10, wherein a decorative cover is covered on the body; the lip of each screwing member is defined between the affixing nut and the decorative cover.

* * * * *