The present invention discloses a basin mounting structure comprising a basin body (1), a set tube (2) disposed on the basin body (1), a coupling connector detachably connected to the set tube (2), and a positioning device for restricting the vertical movement of the coupling connector relative to the set tube (2). By disposing the set tube (2) on the basin body (1) and providing the coupling connector detachably connected to the set tube (2), when a faucet (4) will be mounted on the basin body (1), it is only necessary to place the coupling connector connected to the faucet (4) and/or a hose (5) into the set tube (2) and to position the coupling connector, and when the faucet (4) need to be detached, it is only necessary to make the positioning device to be free from restriction.
Description

Technical Field

[0001] The present invention relates to the technical field of a sink or basin, and specifically to a mounting structure for mounting a water faucet on the basin.

Background Art

[0002] As is well known, when a water faucet is mounted on or detached from a basin, it is necessary to operate in a narrow space below the basin. This results in significant inconvenience. In order to solve the above problem, a faucet outlet tube assembly that is easy to mount and detach was described in the specification of Chinese invention patent application No. 00103736.6. However, as one can see from the description of the specification and the drawings, the faucet outlet tube assembly that is allegedly easy to mount and detach is mounted in a tedious way and generally needs to be operated by skilled technicians. So it cannot solve the problem of the inconvenience of mounting or detaching of the faucet on the basin.

Summary of The Invention

[0003] To solve the above problem, an object of the present invention is to provide a basin mounting structure which makes it very convenient to mount or detach the faucet therefrom.

[0004] The technical solution utilized to solve the above problem by the present invention is as follows: a basin mounting structure comprises a basin body, characterized in that, it further comprises a set tube disposed on the basin body, a coupling connector detachably connected to the set tube, and a positioning device for restricting the vertical movement of the coupling connector relative to the set tube.

[0005] According to one aspect of the present invention, the coupling connector connects to a faucet with a hose as a water path passageway, the set tube with a polygonal cross section extends downward from the upper platform to the bottom of the basin body, and the set tube is flush with the upper platform of the basin body at an opening in the upper end thereof. The coupling connector is a connecting pipe adapted to the set tube with the upper end connected with the faucet and the lower end extending beyond the set tube and connected with the hose.

[0006] In one embodiment, the positioning device includes an annular portion of magnetic material provided on the periphery of the opening in the upper end of the set tube and an edge portion of magnetic material extending radially outward from the upper end of the connecting pipe.

[0007] In another embodiment, the positioning device includes a fastening ring I snap fitting with the upper end of the connecting pipe and a fastening ring II extending upward from the opening in the upper end of the set tube, wherein, the fastening ring II has a larger projection area than the set tube, and the fastening ring I is screwed to the fastening ring II.

[0008] The fastening ring I snap fits with the connecting pipe in such a way that the connecting pipe has a flange extending radially outward from the upper end thereof and that the fastening ring I has a protrusion extending radially inward from the upper end thereof, the flange having a diameter smaller than the outer diameter of the fastening ring II and greater than the inner diameter of the protuberance.

[0009] According to another aspect of the present invention, the coupling connector does not participate in the water path, but rather the hose is directly connected to the faucet. The set tube extends downward from the upper platform of the basin body to the bottom of the basin body. The coupling connector is a connecting sleeve adapted to the set tube with an upper end connected with the faucet and the hose extends through the connecting sleeve to be connected with the faucet.

[0010] In one embodiment, the positioning device includes a circular female/concave hole disposed in the upper platform on the opening of the upper end of the set tube, a flange extending radially outward from the upper end of the connecting sleeve, and a nut screwed to the lower end of the connecting sleeve. The set tube has a polygonal cross section. The flange snaps into the concave hole and the upper end face of the nut abuts against the lower end face of the connecting sleeve.

[0011] In another embodiment, the positioning device includes a threaded hole provided in a side wall of the set tube, an abutment screw threaded into the threaded hole and thus abutting against an outside wall of the connecting sleeve on the tail end thereof, and a lip extending radially outward from the upper end of the connecting sleeve. The set tube has a circular cross section.

[0012] According to another aspect, the coupling connector is integrally formed with the faucet. The set tube extends downward from the upper platform of the basin body to the bottom of the basin body. The coupling connector is an elongated pipe adapted to the set tube which is formed by extending downward from a faucet outlet tube body on the lower portion of the faucet. The elongated pipe is connected with the hose on the lower end thereof.

[0013] The positioning device includes a threaded hole provided in a side wall of the set tube, and an abutment screw threaded into the threaded hole and thus abutting against an outside wall of the elongated pipe on the tail end thereof. The set tube has a circular cross section.

[0014] The present invention has an advantage over the prior art in that, by disposing the set tube on the basin body and providing the coupling connector detachably connected to the set tube, when a faucet is mounted on the basin, it is only necessary to place the coupling connector connected to the faucet and/or a flexible hose into the set tube and to position the coupling connector without the use of any tools, and when the faucet has to be
In the following, the present invention is described in further detail in conjunction with the drawings.

**Detailed Description of The Preferred Embodiments**

**Embodiment 1**

As shown in Figure 1, a basin mounting structure comprises a basin body 1, a hollow set tube 2 extending downward from an upper plat 11 of the basin body 1 to the bottom of the basin body 1, and a connecting pipe 3 detachably connected to the set tube 2. The set tube 2 has a polygonal cross section and is flush with the upper plat 11 of the basin body 1 at an opening in the upper end thereof. The set tube 2 is annularly provided with a reinforcement wall 21 on the outside wall of the set tube 2 and the reinforcement wall 21 is connected to the basin body 1 for the stable position of the set tube 2. The connecting pipe 3 matches the set tube 2 in shape. The connecting pipe 3 has an edge portion 31 of magnetic material extending radially outward at its upper end with an internal thread in the inside wall for connection with a faucet 4, and the connecting pipe 3 has a pipe joint 32, with a decreased diameter, extending vertically downward at its lower end, which is provided with an external thread thereon for connection with a hose 5 connected to an outlet tube.

**Embodiment 2**

As shown in Figure 4, this embodiment differs from the first embodiment above in that, instead of the edge portion 31 and the annular portion 12, a tightening nut 6 is utilized to restrict the connecting pipe 3 in the vertical direction. The tightening nut 6 has an outer diameter greater than the inner diameter of the set tube 2 and is connected to the upper portion of the pipe joint 32. 

**Brief Description of The Drawings**

- Figure 1 is a schematic exploded view of Embodiment 1 according to the present invention;
- Figure 2 is a schematic view, showing partially assembled embodiment in Figure 1;
- Figure 3 is a schematic view, showing assembled embodiment in Figure 1;
- Figure 4 is a schematic exploded view of Embodiment 2 according to the present invention;
- Figure 5 is a schematic view, showing partially assembled embodiment in Figure 4;
- Figure 6 is a schematic view, showing partially assembled embodiment in Figure 4;
- Figure 7 is a schematic view, showing assembled embodiment in Figure 4;
- Figure 8 is a schematic exploded view of Embodiment 3 according to the present invention;
- Figure 9 is a schematic view, showing partially assembled embodiment in Figure 8;
- Figure 10 is a schematic view, showing assembled embodiment in Figure 8;
- Figure 11 is a schematic exploded view of Embodiment 4 according to the present invention;
- Figure 12 is a schematic view, showing partially assembled embodiment in Figure 11;
- Figure 13 is a schematic view, showing assembled embodiment in Figure 11;
- Figure 14 is a schematic exploded view of Embodiment 5 according to the present invention;
- Figure 15 is a schematic view, showing partially assembled embodiment in Figure 14;
- Figure 16 is a schematic view, showing assembled embodiment in Figure 14;
- Figure 17 is a schematic exploded view of Embodiment 6 according to the present invention;
- Figure 18 is a schematic view, showing partially assembled embodiment in Figure 17;
- Figure 19 is a schematic view, showing assembled embodiment in Figure 17.

When it is required to detach, it is only necessary to apply a force (that is greater than the magnetic force) by hand to remove the faucet 4, the connecting pipe 3 has an edge portion 31 of magnetic material extending radially outward at its upper end with an internal thread in the inside wall for connection with a faucet 4, and the connecting pipe 3 has a pipe joint 32, with a decreased diameter, extending vertically downward at its lower end, which is provided with an external thread thereon for connection with a hose 5 connected to an outlet tube.

When it is required to detach, it is only necessary to slightly apply a force (that is greater than the magnetic force) by hand to remove the faucet 4, the connecting pipe 3, and the hose 5 connected together from the set tube 2.

As shown in Figure 4, this embodiment differs from the first embodiment above in that, instead of the edge portion 31 and the annular portion 12, a tightening nut 6 is utilized to restrict the connecting pipe 3 in the vertical direction. The tightening nut 6 has an outer diameter greater than the inner diameter of the set tube 2 and is connected to the upper portion of the pipe joint 32.
In assembly, as shown in Figure 5, the upper end of the connecting pipe 3 is firstly screwed to the faucet 4. Then, as shown in Figure 6, the connecting pipe 3 runs into the set tube 2 from up to down so that the pipe joint 32 extends beyond the set tube 2. Thereafter, as shown in Figure 7, the tightening nut 6 is tightened over the upper portion of the pipe joint 32 and the hose 5 is fastened over the lower portion of the pipe joint 32 by the nut 51. In this way, the assembly is accomplished. The upper end face of the tightening nut 6 abuts against the lower end face of the set tube 2 and the lower end face of a faucet tube body 41 on the lower portion of the faucet 4 abuts against the upper platform 11 (the faucet tube body 41 has a diameter greater than the diameter of the set tube 2) so that the vertical position of the connecting pipe 3 is restricted so as to prevent it from vertically moving relative to the set tube 2. In addition, both the set tube 2 and the connecting pipe 3 are polygonal, which restricts the rotation of the connecting pipe 3. Thus, the connecting pipe 3 is properly positioned so that the faucet 4 is secured on the basin body 1 and water can flow through the hose 5 and the connecting pipe 3 to the faucet 4.

When it is required to detach, it is only necessary to loosen the nut 52 by hand to remove the faucet 4, and the connecting pipe 3 from the set tube 2.

Embodiment 3

As shown in Figure 8, this embodiment differs from the first embodiment above in that, instead of the edge portion 31 and the annular portion 12, a fastening ring I 7 and a fastening ring II 22 are utilized to restrict the connecting pipe 3 in the vertical direction. The fastening ring II 22 is formed by extending upward from the opening in the upper end of the set tube on the upper platform 11 and has a larger projection area than the set tube 2. The fastening ring II has an external thread. The fastening ring I 7 is used for mating with the fastening ring II 22 and the pipe joint 32 runs into the set tube 2 from up to down so that the flange 33 abuts against the upper platform 11 (the faucet tube body 41 has a diameter greater than the diameter of the set tube 2) so that the vertical position of the connecting pipe 3 is restricted so as to prevent it from vertically moving relative to the set tube 2. In addition, both the set tube 2 and the connecting pipe 3 are polygonal, which restricts the rotation of the connecting pipe 3. Thus, the connecting pipe 3 is accomplished to position so that the faucet 4 is secured on the basin body 1 and water can flow through the hose 5 and the connecting pipe 3 to the faucet 4.

When it is required to detach, it is only necessary to loose the fastening ring I 7 by hand and to remove the faucet 4, the connecting pipe 3, and the hose 5 from the set tube 2.

Embodiment 4

As shown in Figure 11, a basin mounting structure comprises a basin body 1, a hollow set tube 2 extending downward from an upper platform 11 of the basin body 1 to the bottom of the basin body 1, and a connecting sleeve 3 detachably connected to the set tube 2. The set tube 2 has a polygonal cross section, is annularly provided with a reinforcement wall 21 on the outside wall of the set tube 1 and is connected to the basin body 1 for the stable position of the set tube 2. The upper platform 11 of the basin body 1 is provided with a circular concave hole 23 at an opening in the upper end of the set tube 2. The connecting sleeve 3 matches the set tube 2 in shape. The connecting sleeve 3 has a flange 34 extending radially outward at its upper end with an internal thread in the inside wall for connection with a faucet 4. The flange 34 is adapted to the concave hole 23 in size and may become stick in the concave hole 23. The flange 34 is provided with an external thread at its lower end for connecting with the nut 52. In this embodiment, two hoses 5 are directly connected with a faucet 4 with two bores and respectively connected to different outlet tubes.

In assembly, as shown in Figure 12, the upper end of the connecting pipe 3 is firstly screwed to the faucet 4, and then, as shown in Figure 13, the hoses 5 and the connecting sleeve 3 successively run into the set tube 2 from up to down so that the flange 34 becomes stick in the concave hole 23 and the external thread at the lower end of the connecting sleeve 3 extends beyond the set tube 2. The nut 52 is tightened over the external thread at the lower end of the connecting sleeve 3 for the upper end face of the nut 52 abutting against the lower end face of the connecting sleeve 3 so that the connecting sleeve 3 cannot move vertically relative to the set tube 2. In addition, both the set tube 2 and the connecting sleeve 3 are polygonal, which restricts the rotation of the connecting sleeve 3. In this way, the connecting sleeve 3 is positioned properly so that the faucet 4 is secured on the basin body 1 and water can flow through the hoses 5 to the faucet 4. Further, since the set tube 2 has some depth, the faucet 4 connected there-to has some stability.

When it is required to detach, it is only necessary to lose the nut 52 by hand to remove the faucet 4,
the connecting sleeve 3', and the hoses 5 connected together from the set tube 2.

Embodiment 5

[0030] As shown in Figure 14, a basin mounting structure comprises a basin body 1, a hollow set tube 2 extending downward from an upper platform 11 of the basin body 1 to the bottom of the basin body 1, and a connecting sleeve 3' detachably connected to the set tube 2. The set tube 2 has a polygonal cross section, is provided with a threaded hole 24 in its side wall and an abutment screw 25 mating with the threaded hole 24. An opening in the upper end of the set tube is flush with the upper platform 11 of the basin body 1. The connecting sleeve 3' matches the set tube 2 in shape. The connecting sleeve 3' has a lip 35 extending radially outward at its upper end with an internal thread in the inside wall for connecting with a faucet 4. In this embodiment, two hoses 5 are directly connected with a faucet 4 with two bores and respectively connected to different outlet tubes.

[0031] In assembly, as shown in Figure 15, the upper end of the connecting sleeve 3' is firstly screwed to the faucet 4, and then, as shown in Figure 16, the hoses 5 and the connecting sleeve 3' successively run into the set tube 2 from up to down so that the lip 35 catches on a portion of the upper platform 11 around the opening in the upper end of the set tube 2 and the lower end of the connecting sleeve 3' is flush with the lower end of the set tube 2. Then, the abutment screw 25 is tightening into the thread hole 24 for its tail end abutting against the outside wall of the connecting sleeve 3' so that the connecting sleeve 3' can neither move vertically relative to the set tube 2, nor rotate relative to the set tube 2. In this way, the elongated pipe 3" is accomplished to position so that the faucet 4 is secured on the basin body 1 and water can flow through the hose 5 to the faucet 4. Further, since the set tube 2 has some depth, the faucet 4 connected thereto has some stability.

[0032] When it is required to detach, it is only necessary to loose the abutment screw 25 by hand to remove the faucet 4, the elongated pipe 3", and the hose 5 connected together from the set tube 2.

Embodiment 6

[0033] As shown in Figure 17, this embodiment differs from the fifth embodiment above in that, instead of the connecting sleeve 3', an elongated pipe 3" integrally formed with the faucet 4 is utilized, which is formed by extending downward from a faucet tube body 41 on the lower portion of the faucet 4. The elongated pipe 3" has a diameter smaller than the faucet tube body 41 and provided with an elongated pipe joint 36 at its lower end having an external thread for connecting with a hose 5. The hose 5 shown in Figure 17 is one hose. Alternatively, two hoses 5 can be used in which case the faucet 4 accordingly has two bores.

[0034] In assembly, as shown in Figure 18, the upper end of the elongated pipe 3" is firstly screwed to the hose 5, and then, as shown in Figure 19, the hose 5 and the elongated pipe 3" successively run into the set tube 2 from up to down so that the faucet tube body 41 catches on a portion of the upper platform 11 around the opening in the upper end of the set tube 2 and the elongated pipe joint 36 at the lower end of the elongated pipe 3" extends beyond the set tube 2. Then, the abutment screw 25 is tightening into the thread hole 24 for its tail end abutting against the outside wall of the elongated pipe 3" so that the elongated pipe 3" can neither move vertically relative to the set tube 2, nor rotate relative to the set tube 2. In this way, the elongated pipe 3" is accomplished to position so that the faucet 4 is secured on the basin body 1 and water can flow through the hose 5 to the faucet 4. Further, since the set tube 2 has some depth, the faucet 4 connected thereto has some stability.

[0035] When it is required to detach, it is only necessary to loose the abutment screw 25 by hand to remove the faucet 4, the elongated pipe 3", and the hose 5 connected together from the set tube 2.

[0036] The above description is only intended to illustrate the preferred embodiments of the present invention. It is noted for a person skilled in the art that various variations and modifications, without deviating from the inventive concept, should be considered to fall within the protection scope of the present invention.

Claims

1. A basin mounting structure comprises a basin body (1), characterized in that, it further comprises a set tube (2) disposed on the basin body (1), a coupling connector detachably connected to the set tube (2), and a positioning device for restricting vertical movement of the coupling connector relative to the set tube (2).

2. The basin mounting structure according to claim 1, characterized in that, the set tube (2) with a polygonal cross section extends downward from an upper platform (11) to the bottom of the basin body (1), and the set tube (2) is flush with the upper platform (11) of the basin body (1) at an opening in the upper end thereof, the coupling connector is a connecting pipe (3) adapted to the set tube (2) with an upper end being connected with a faucet (4) and a lower end extending beyond the set tube (2) and connected with a hose (5).

3. The basin mounting structure according to claim 2, characterized in that, the positioning device includes an annular portion (12) of magnetic material provided on a periphery of an opening in the upper end of the set tube (2) and an edge portion (31) of magnetic material extending radially outward from
4. The basin mounting structure according to claim 2, \textbf{characterized in that}, the positioning device includes a fastening ring I (7) snap fitting with the upper end of the connecting pipe (3) and a fastening ring II (22) extending upward from the opening in the upper end of the set tube (2), wherein, the fastening ring II (22) has a larger projection area than the set tube (2), and the fastening ring I (7) is screwed to the fastening ring II (22).

5. The basin mounting structure according to claim 4, \textbf{characterized in that}, the connecting pipe (3) has a flange (33) extending radially outward from the upper end thereof and the fastening ring I (7) has a protrusion (71) extending radially inward from the upper end thereof, the flange (33) having a diameter smaller than an outer diameter of the fastening ring II (22) and greater than an inner diameter of the protrusion (71).

6. The basin mounting structure according to claim 1, \textbf{characterized in that}, the set tube (2) extends downward from an upper platform (11) of the basin body (1) to the bottom of the basin body (1), the coupling connector is a connecting sleeve (3') adapted to the set tube (2) with an upper end being connected with a faucet (4), and a hose (5) extends through the connecting sleeve (3') to be connected with the faucet (4).

7. The basin mounting structure according to claim 6, \textbf{characterized in that}, the positioning device includes a circular concave hole (23) disposed in the upper platform (11) on an opening of the upper end of the set tube (2), a flange (34) extending radially outward from the upper end of the connecting sleeve (3'), and a nut (52) screwed to the lower end of the connecting sleeve (3'), wherein, the set tube (2) has a polygonal cross section, the flange snaps into the concave hole (23), and the upper end face of the nut (52) abuts against the lower end face of the connecting sleeve (3').

8. The basin mounting structure according to claim 6, \textbf{characterized in that}, the positioning device includes a threaded hole (24) provided in a side wall of the set tube (2), an abutment screw (25) threaded into the threaded hole (24) and thus abutting against an outside wall of the connecting sleeve (3') on the tail end thereof, and a lip (35) extending radially outward from the upper end of the connecting sleeve (3'), wherein, the set tube (2) has a circular cross section.

9. The basin mounting structure according to claim 1, \textbf{characterized in that}, the set tube (2) extends downward from an upper platform (11) of the basin body (1) to the bottom of the basin body (1), the coupling connector is an elongated pipe (3") adapted to the set tube (2) which is formed by extending downward from a faucet tube body (41) on the lower portion of the faucet (4), and the elongated pipe (3") is connected with a hose (5) on the lower end thereof.

10. The basin mounting structure according to claim 9, \textbf{characterized in that}, the positioning device includes a threaded hole (24) provided in a side wall of the set tube (2), and an abutment screw (25) threaded into the threaded hole (24) and thus abutting against an outside wall of the elongated pipe (3") on the tail end thereof, wherein, the set tube (2) has a circular cross section.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

E03C 1/04 (2006.01) i

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: E03C 1/1; F16K 99/1; F16K 11/1; A47J 47/1; F16L 21/1; F16K 51/1

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)

EPDOOC: WPI, CNKI, CNPAI: dish washing, magnetic, flexible pipe, screw, basin, sink, lavatory, kitchen, cookroom, faucet, bibcock, water, tap, cock, magneti++, magnet, hose, flex+, tube, pipe, conduit, thread, screw, nut, bolt

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<td>US 6360774 B1 (IDEAL STANDARD GMBH et al.), 26 March 2002 (26.03.2002), description, column 3, line 60 to column 5, line 50, and figures 1-2</td>
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“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

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“K” document member of the same patent family

Further documents are listed in the continuation of Box C. See patent family annex.

Date of the actual completion of the international search
16 May 2013 (16.05.2013)

Date of mailing of the international search report
27 June 2013 (27.06.2013)

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REFERENCES CITED IN THE DESCRIPTION

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