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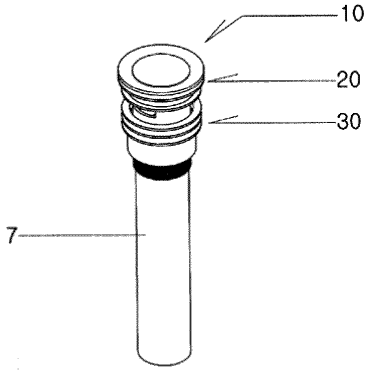
(54) **POPUP INSTALLATION STRUCTURE FOR A SINK AND INSTALLATION METHOD**

(57) The present invention relates to a popup installation structure for a sink and to an installation method. The popup installation structure installed in a sink is configured such that an upper protrusion that tightly contacts a drain hole of the sink is formed on a top of the structure, drainpipes are arranged at both left and right sides of an intermediate portion of the structure such that each drain pipe is opened in a transverse direction and has a drain space in communication with an overflow passage formed from a bottom surface of the sink, and a sewer pipe is arranged in a lower portion of the structure such that the sewer pipe is coupled to a drain trap arranged below the basin. The sink popup installation structure comprises: a tight contact member having a tight contact portion to be tightly fitted to a lower end of the stopper protrusion, the tight contact portion having a diameter corresponding to that of the stopper protrusion, an extended portion extending from a bottom surface of the tight contact portion into a diameter corresponding to the drain hole, and a corrugation formed at an outer surface of a lower end of the extended portion so as to prevent water leakage; and a sealing member fitted to a lower portion of the drainpipe, having a diameter corresponding to that of the drainpipe and having a plurality of corrugations at an outer surface thereof. The sink popup installation structure is forcedly fitted to the drain hole at the state where the tight contact member is tightly fitted to the lower end of the stopper protrusion and the sealing member is fitted to the lower portion of the drainpipe.

[Fig. 10]



EP 2 816 161 A1

Description

Technical Field

[0001] The present invention relates to an installation structure of a popup device for a sink and a method of installing the same. The installation structure of a popup device for a sink, installed in the sink and having a latch jaw close contacting with a drain hole formed in the sink in an upper end portion and having a drainpipe having a drain space portion laterally bored at each of both sides of the left side and the right side of an intermediate portion and that communicates with an overflow passage installed at a bottom surface of the sink and in which a sewer pipe fastened to a drain trap installed in a lower portion of the sink is coupled in a lower portion includes: a close contact member including a close contact portion inserted and coupled to close contact with the lower end of the latch jaw and formed in a diameter corresponding to the latch jaw, an extension portion extended to a diameter corresponding to a drain hole from a bottom surface of the close contact portion, and corrugations for blocking water leakage at an outer circumferential surface of the lower end of the extension portion; and a sealing member inserted and coupled to a lower portion of the drainpipe and formed in a diameter corresponding to the drainpipe and having a plurality of corrugations at an outer circumferential surface, wherein the close contact member is inserted and coupled to close contact with the lower end of the latch jaw, and in a state in which the sealing member is inserted and coupled to a lower portion of the drainpipe, the sealing member is forcedly inserted into the drain hole.

Background Art

[0002] In general, in a sink installed in a bathroom or a toilet, a sink 1' that can receive and use a predetermined amount of water, a water supply device that supplies water to the sink, and a drain device that stores water at the sink or that discharges the stored water are installed, and a user stores a predetermined amount of water at the sink, uses the water for washing a face, and discharges the water through the drain device after using the water.

[0003] As described above, a common drain device used in the sink stores water at the sink or discharges the stored water to a drainpipe while being opened and closed, and in the common drain device, a drain body that forms a drain in a state penetrated in a lower portion of the sink and a pressing opening and closing device installed at the inside of the drain body and that opens and closes the drain while vertically moving are installed, and in such a drain device, an automatic popup device that operates with a pressing button method or a passive popup device that operates with a lever method is commonly installed and used.

[0004] The drain body has a drain in a vertically standing cylinder-shaped pipe shape, and at an outer circumferential surface of an upper end portion, a latch jaw is protruded, and the drain body fastened to vertically penetrate to a lower portion of a sink is stably latched and fastened, and in a lower portion of the drain body, a common fixing nut and drainpipe are coupled with a screw fastening method, and at each of lateral both sides of an intermediate portion of the drain body, drain holes are bored, and the drain hole communicates with an overflow passage installed in a bottom portion of the sink, and water overflowed through an overflow hole bored in an upper portion of the sink is discharged to the outside through a drainpipe while being injected into the drain hole via the overflow passage.

[0005] As an example of such a popup device, Korean Registered Utility Model No. 20-0441759 discloses a popup device in which a drain stopper is conveniently opened and closed and that thus provides convenience to a user.

[0006] The popup device has a merit that can easily open and close a stopper through a pressing opening closing device, but uses a method of fastening a drainpipe and a drain trap through a fixing nut, and such a coupling method has a problem that a construction work is complicated and replacement and repair works are difficult.

[0007] For example, when installing the popup device in a sink, space between a wall in which the sink is installed and the drainpipe is narrow and thus a tool for tightening a fixing nut cannot enter into the space and thus the popup device is first coupled to the sink and installs the sink in the wall.

[0008] Recently, in order to prevent exposure of a drain trap located in a lower portion of the sink and to enhance an interior decoration effect, a construction of various shapes has been installed.

[0009] However, when the popup device is blocked by hairs or foreign substances or when it is necessary to replace the popup device due to damage of a product, in order to release the fixing nut, when first disassembling the construction, there is a problem that the popup device can be replaced or repaired and that the disassembled construction is damaged, and thus there is a problem that a worker is exposed to a safety accident, and even in a sink in which such a construction is not installed, it is difficult to insert a tool for releasing the fixing nut due to small space, and thus there is a problem that it is necessary to request a support to a repairman.

Detailed Description of Invention

Technical Problem

[0010] When installing an automatic popup device having a pressing opening and closing device in a sink, it is difficult to perform a work that fixes or releases a fixing nut that fixes a popup device and a drain trap and thus the present invention has been made to solve a problem that a construction, replacement, foreign material remov-

al, or washing work is difficult.

Technical Solution

[0011] In accordance with an aspect of the present invention, an installation structure of a popup device for a sink, installed in the sink and having a latch jaw close contacting with a drain hole formed in the sink in an upper end portion and having a drainpipe having a drain space portion laterally bored at each of both sides of the left side and the right side of an intermediate portion and that communicates with an overflow passage installed at a bottom surface of the sink and in which a sewer pipe fastened to a drain trap installed in a lower portion of the sink is coupled in a lower portion includes: a close contact member including a close contact portion inserted and coupled to close contact with the lower end of the latch jaw and formed in a diameter corresponding to the latch jaw, an extension portion extended to a diameter corresponding to a drain hole from a bottom surface of the close contact portion, and corrugations for blocking water leakage at an outer circumferential surface of the lower end of the extension portion; and a sealing member inserted and coupled to a lower portion of the drainpipe and formed in a diameter corresponding to the drainpipe and having a plurality of corrugations at an outer circumferential surface, wherein the close contact member is inserted and coupled to close contact with the lower end of the latch jaw, and in a state in which the sealing member is inserted and coupled to a lower portion of the drainpipe, the sealing member is forcedly inserted into the drain hole.

[0012] Preferably, the close contact member and the sealing member are integrally formed together with a connection portion disposed therebetween.

[0013] Preferably, in the connection portion, a drain groove is formed at a location corresponding to communicate with the drain space portion.

[0014] In accordance with another aspect of the present invention, a method of installing a popup device for a sink, installed in the sink and having a latch jaw close contacting with a drain hole formed in the sink in an upper end portion and having a drainpipe having a drain space portion laterally bored at each of both sides of the left side and the right side of an intermediate portion and that communicates with an overflow passage installed at a bottom surface of the sink and in which a sewer pipe fastened to a drain trap installed in a lower portion of the sink is coupled in a lower portion includes: coupling the sewer pipe and the drain trap installed in a lower portion of the sink; locating the sewer pipe within the sink by pulling the sewer pipe to penetrate the drain hole formed in the sink; inserting and coupling a close contact member including a close contact portion formed in a diameter corresponding to the latch jaw, an extension portion extended to a diameter corresponding to the drain hole from a bottom surface of the close contact portion, and corrugations for blocking water leakage at an outer circumferential surface of the lower end of the extension portion to the lower end of the latch jaw; inserting and coupling a sealing member formed in a diameter corresponding to the drainpipe and having a plurality of corrugations at an outer circumferential surface to a lower portion of the drainpipe; and coupling the drainpipe and the sewer pipe and forcedly inserting the coupled drainpipe and sewer pipe into the drain hole.

Advantageous effects

[0015] In the present invention having the foregoing configuration, a construction work can be easily performed by a hand without a separate tool, and a construction time can be shortened, and when performing a replacement work or a repair work due to a failure or water leakage, the work can be easily performed.

[0016] Further, in the present invention, because coupling and separation of a popup device, packing, and a sewer pipe are easily performed, a replacement work of each element can be easily performed, and particularly, even if a construction is installed in the sink, it is unnecessary to disassemble the construction.

[0017] Further, an existing work for replacing a drain trap installed in a lower portion of the sink can be easily performed.

[0018] Further, by inserting and coupling packing according to the present invention to a conventionally installed automatic popup device, a replacement or repair work can be simply performed.

[0019] Further, in a conventional automatic popup device, a fixing nut for fixing a popup device and a drain trap is unnecessary, and in order to insert and couple the fixing nut, a screw thread formed at an outer circumferential surface of a drainpipe is unnecessary and thus a processing cost can be reduced.

Brief Description of Drawings

[0020]

FIGS. 1 to 3 are perspective views illustrating a conventional popup device;

FIGS. 4 and 5 are exploded views illustrating a popup device according to an exemplary embodiment of the present invention;

FIG. 6 is a perspective view illustrating a close contact member according to an exemplary embodiment of the present invention;

FIGS. 7 to 9 are perspective views illustrating a sealing member according to an exemplary embodiment of the present invention; and

FIGS. 10 to 12 are perspective views illustrating a popup device according to an exemplary embodiment of the present invention.

Best modes for carrying out the invention

[0021] Hereinafter, exemplary embodiments of the present invention will be described based on the most appropriate exemplary embodiments for understanding technical characteristics of the present invention, and technical characteristics of the present invention are not limited by the following exemplary embodiments and the present invention may be embodied, as described in the exemplary embodiments. Therefore, the present invention may be variously modified within the scope of the present invention through the following exemplary embodiments, and such a modified exemplary embodiment belongs within the scope of the present invention. For a better understanding of the following exemplary embodiments, in symbols described in the accompanying drawings, related elements of constituent elements that perform the same operation in each exemplary embodiment are represented with the same or related reference numeral.

[0022] For a better understanding of characteristics of the present invention, hereinafter, a popup device for a sink according to an exemplary embodiment of the present invention will be described in detail.

[0023] The present invention relates to an installation structure of a popup device for a sink and a method of installing the same. The installation structure of a popup device 10 for a sink, installed in a sink 1 and having a latch jaw 13 close contacting with a drain hole 2 formed in the sink in an upper end portion and having a drainpipe 11 having a drain space portion 14 laterally bored at each of both sides of the left side and the right side of an intermediate portion and that communicates with an overflow passage 4 installed at a bottom surface of the sink and in which a sewer pipe 7 fastened to a drain trap 8 installed in a lower portion of the sink is coupled in a lower portion includes: a close contact member 20 including a close contact portion 21 inserted and coupled to close contact with the lower end of the latch jaw 13 and formed in a diameter corresponding to the latch jaw, an extension portion 22 extended to a diameter corresponding to a drain hole from a bottom surface of the close contact portion, and corrugations 23 for blocking water leakage at an outer circumferential surface of the lower end of the extension portion; and a sealing member 30 inserted and coupled to a lower portion of the drainpipe 11 and formed in a diameter corresponding to the drainpipe and having a plurality of corrugations 31 at an outer circumferential surface, wherein the close contact member 20 is inserted and coupled to close contact with the lower end of the latch jaw 13, and in a state in which the sealing member 30 is inserted and coupled to a lower portion of the drainpipe 11, the sealing member is forcedly inserted into the drain hole 2.

[0024] The popup device 10 is formed with a drainpipe 11 having a stopper 12 for opening or closing the drain hole 2 formed in the sink 1 and a sewer pipe 7 screw-coupled to the drainpipe.

[0025] In the drainpipe 11, a pressing opening and closing device 15 screw-coupled to the stopper 12 is installed within the drainpipe 11, and in an upper end portion thereof, the latch jaw 13 is formed, and at each of lateral both sides of an intermediate portion thereof, a laterally bored drain space portion 14 is formed, and at an inner circumferential surface of a lower portion thereof, a screw thread (not shown) for screw-coupling to a sewer pipe is formed.

[0026] The drain space portion 14 communicates with the overflow passage 4 installed in a bottom portion of the sink, and the sewer pipe 7 is fastened to a drain trap (not shown) installed in a lower portion of the sink.

[0027] One side of the drain trap is fastened to the sewer pipe and the other side thereof is installed to penetrate a bottom surface, and the drain trap has a corrugated pipe that can adjust a length to correspond to a spot situation and is generally a drain trap to be used at a spot.

[0028] As the pressing opening and closing device 15 moves upward or downward a stopper screw-coupled to an upper portion through a pressing operation, the pressing opening and closing device 15 performs a function of opening and closing the drain hole formed in the sink, and an automatic popup device of the pressing opening and closing device is already well known and thus a detailed description of a well-known configuration and operating method will be omitted.

[0029] A close contact member according to an example embodiment of the present invention will be described with reference to FIG. 6.

[0030] The close contact member 20 is inserted and coupled to close contact with the lower end of the latch jaw 13, and when the popup device 10 is inserted into the drain hole 2, the close contact member 20 blocks the drain hole to perform a function of preventing water from being leaked between the latch jaw and the drain hole.

[0031] The close contact member 20 includes a close contact portion 21 inserted and coupled to close contact with the lower end of the latch jaw and having a diameter corresponding to the latch jaw, an extension portion 22 extended in a diameter corresponding to a drain hole from the bottom of the close contact portion, and corrugations 23 for blocking water leakage at an outer circumferential surface of the lower end of the extension portion.

[0032] Further, when the close contact member 20 is inserted and coupled to the drainpipe, in order not to block a drain space portion formed in the drainpipe, it is preferable that a length of the extension portion is formed to correspond thereto.

[0033] The corrugations 23 formed in the close contact member performs a function of blocking the inside of the drain hole so as to prevent leaked water from dropping to a gap between the latch jaw 13 and the drain hole 2, and in order to insert the corrugations 23 into the drain hole, it is preferable that the corrugations are formed in a diameter smaller than that of the close contact portion.

[0034] The sealing member 30 is formed in a diameter corresponding to the drainpipe 11, is inserted and cou-

pled to the drainpipe, and is coupled to locate at a lower portion of the drain space portion 14, and in a state in which the sewer pipe 7 and the drainpipe 11 are coupled, in order to easily forcedly insert the sealing member 30 into the drain hole or to easily take out the sealing member 30 from the drain hole, a plurality of corrugations 31 are formed at an outer circumferential surface.

[0035] Referring to FIGS. 2 and 3, conventionally, in order to securely fix a popup device 10' to the sink, a separate fixing nut 5' is necessary, and a tool for fastening the fixing nut 5' is necessary, but in the present invention, a plurality of corrugations formed in a sealing member securely fix a drainpipe within the drain hole and thus there is a merit that a worker can perform a construction work without a separate tool or flange, and a processing work that forms a screw thread at an outer circumferential surface of a drainpipe 12' so as to insert a fixing nut may be omitted.

[0036] In order to easily insert the close contact member 20 and the sealing member 30 into the drainpipe or in order to easily separate the close contact member 20 and the sealing member 30 from the drainpipe, the close contact member 20 and the sealing member 30 may be made of a material such as rubber or silicon having excellent elasticity, and a material of the close contact member and the sealing member is not limited to the above materials.

[0037] Referring to FIGS. 8 and 9, the close contact member 20 and the sealing member 30 according to an exemplary embodiment of the present invention are integrally formed together with a connection portion 40 disposed therebetween, and when the close contact member 20 and the sealing member 30 are integrally formed together with the connection portion 40, it is preferable that a drain groove 41 is formed at a location corresponding to the drain space portion 14.

[0038] In general, water filled in the sink is injected into the drain space portion 14 by moving along the overflow passage 4, and when the drain groove 41 is not formed in the connection portion, water, having passed through the drain hole is not discharged to the drain space portion and is stagnated at the overflow passage and thus a phenomenon that bad smell occurs and that water flows backward may occur.

[0039] Hereinafter, a method of installing a popup device for a sink according to an exemplary embodiment of the present invention having the foregoing configuration will be described.

[0040] A drain trap (not shown) and the sewer pipe 7 installed in a lower portion of the sink 1 are coupled, and by pulling the sewer pipe coupled to the drain trap so as to penetrate the drain hole formed in the sink, the sewer pipe is located within the sink.

[0041] Hereinafter, the close contact member 20 and the sealing member 30 are inserted and coupled to the drainpipe 11.

[0042] The close contact member 20 is inserted and coupled to close contact with the lower end of the latch jaw 13, and in order not to block the drain space portion 14, the sealing member 30 is inserted and coupled to a lower portion of the drain space portion 14.

[0043] In this case, the close contact member 20 includes a close contact portion 21 formed in a diameter corresponding to the latch jaw 13, an extension portion 22 extended to a diameter corresponding to the drain hole from a bottom surface of the close contact portion, and corrugations 23 for blocking water leakage at an outer circumferential surface of the lower end of the extension portion.

[0044] Further, the sealing member 30 is formed in a diameter corresponding to the drainpipe 11 and has a plurality of corrugations 31 at an outer circumferential surface thereof.

[0045] After the drainpipe 11 and the sewer pipe 7 are screw-coupled, when the drainpipe 11 and the sewer pipe 7 are forcedly inserted into the drain hole 2, the sewer pipe 7 penetrates the drain hole 2 and goes out to the outside of the sink, and the drainpipe 11 is smoothly inserted into the drain hole by the plurality of corrugations 31, and while the close contact member is housed in the drain hole, a construction work of the popup device is complete.

Claims

1. An installation structure of a popup device for a sink, installed in the sink and having a latch jaw close contacting with a drain hole formed in the sink in an upper end portion and having a drainpipe having a drain space portion laterally bored at each of both sides of the left side and the right side of an intermediate portion and that communicates with an overflow passage installed at a bottom surface of the sink and in which a sewer pipe fastened to a drain trap installed in a lower portion of the sink is coupled in a lower portion, the installation structure comprising:

a close contact member comprising a close contact portion inserted and coupled to close contact with the lower end of the latch jaw and formed in a diameter corresponding to the latch jaw, an extension portion extended to a diameter corresponding to a drain hole from a bottom surface of the close contact portion, and corrugations for blocking water leakage at an outer circumferential surface of the lower end of the extension portion; and

a sealing member inserted and coupled to a lower portion of the drainpipe and formed in a diameter corresponding to the drainpipe and having a plurality of corrugations at an outer circumferential surface,

wherein the close contact member is inserted and coupled to close contact with the lower end of the latch jaw, and in a state in which the seal-

ing member is inserted and coupled to a lower portion of the drainpipe, the sealing member is forcedly inserted into the drain hole.

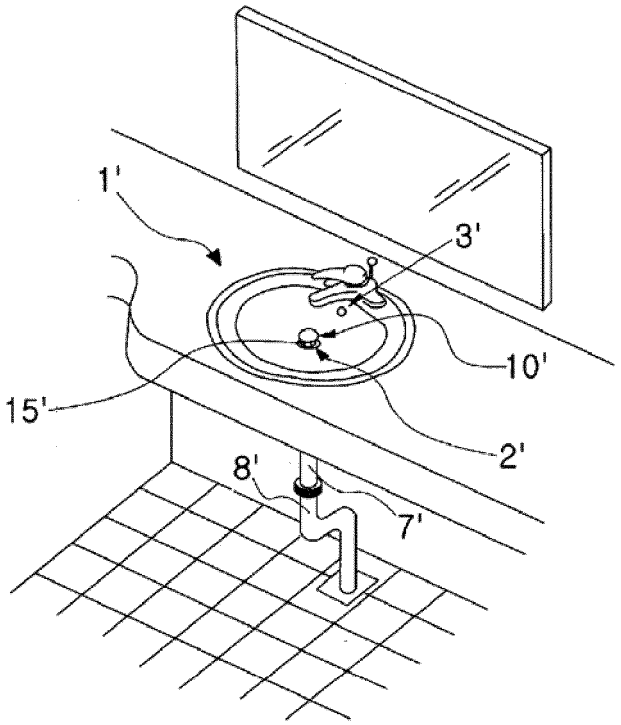
2. The installation structure of claim 1, wherein the close contact member and the sealing member are integrally formed together with a connection portion disposed therebetween.

3. The installation structure of claim 2, wherein in the connection portion, a drain groove is formed at a location corresponding to communicate with the drain space portion.

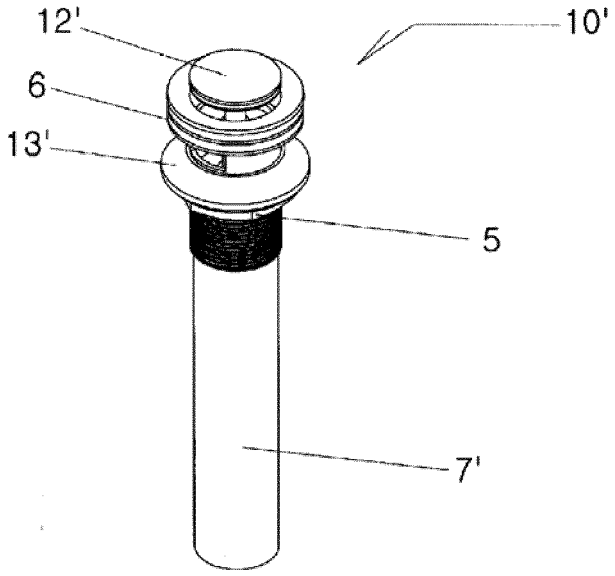
4. A method of installing a popup device for a sink, installed in the sink and having a latch jaw close contacting with a drain hole formed in the sink in an upper end portion and having a drainpipe having a drain space portion laterally bored at each of both sides of the left side and the right side of an intermediate portion and that communicates with an overflow passage installed at a bottom surface of the sink and in which a sewer pipe fastened to a drain trap installed in a lower portion of the sink is coupled in a lower portion, the method comprising:

coupling the sewer pipe and the drain trap installed in a lower portion of the sink;
locating the sewer pipe within the sink by pulling the sewer pipe to penetrate the drain hole formed in the sink;
inserting and coupling a close contact member comprising a close contact portion formed in a diameter corresponding to the latch jaw, an extension portion extended to a diameter corresponding to the drain hole from a bottom surface of the close contact portion, and corrugations for blocking water leakage at an outer circumferential surface of the lower end of the extension portion to the lower end of the latch jaw;
inserting and coupling a sealing member formed in a diameter corresponding to the drainpipe and having a plurality of corrugations at an outer circumferential surface to a lower portion of the drainpipe; and
coupling the drainpipe and the sewer pipe and forcedly inserting the coupled drainpipe and sewer pipe into the drain hole.

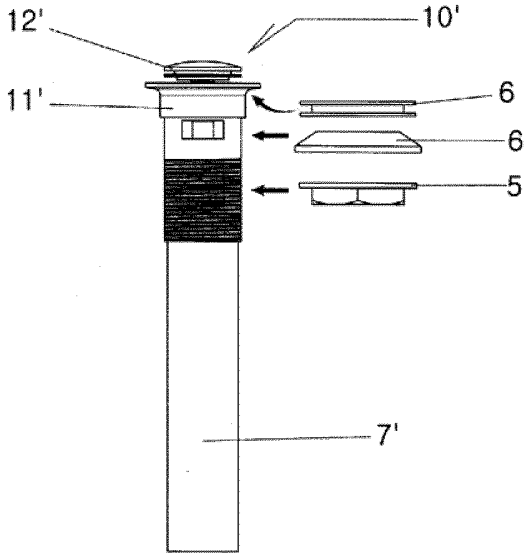
[Fig. 1]



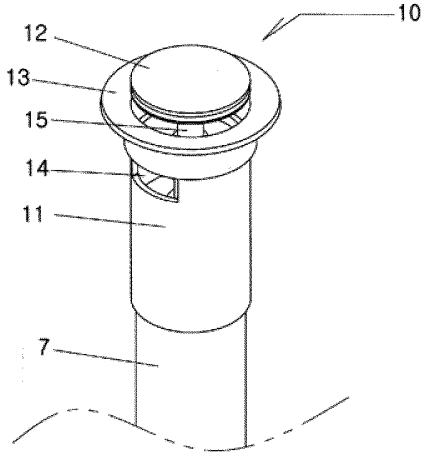
[Fig. 2]



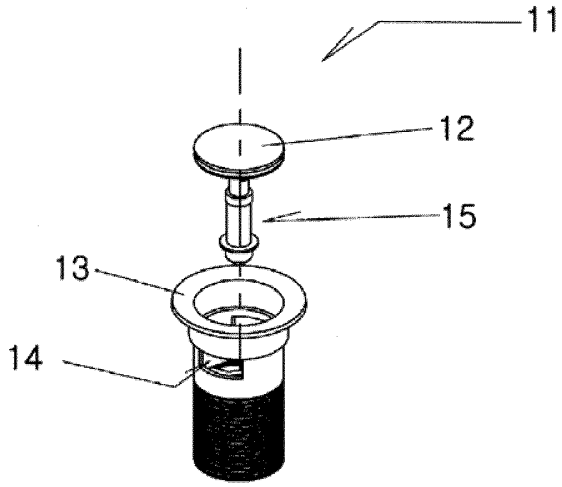
[Fig. 3]



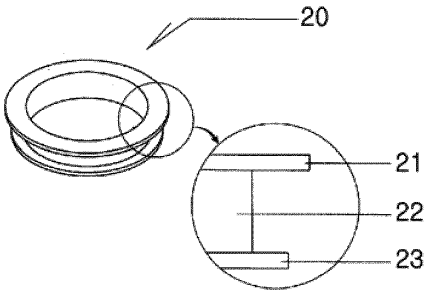
[Fig. 4]



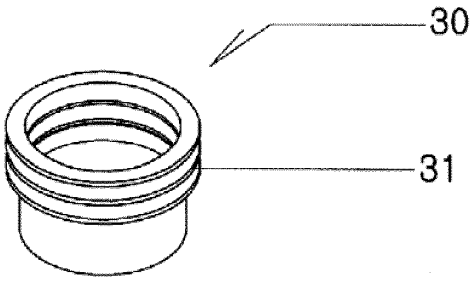
[Fig. 5]



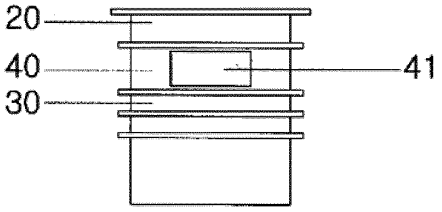
[Fig. 6]



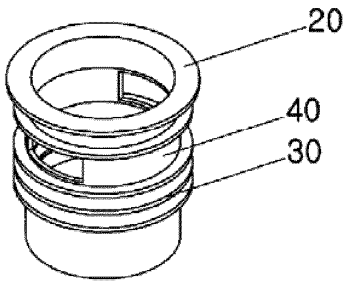
[Fig. 7]



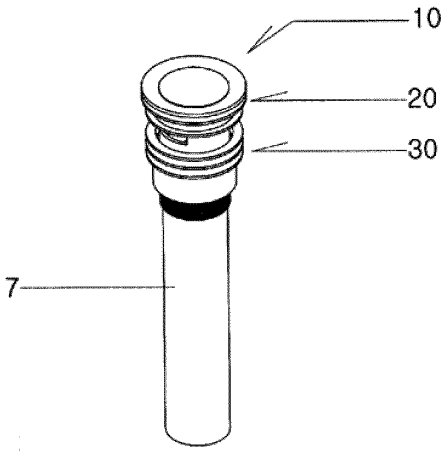
[Fig. 8]



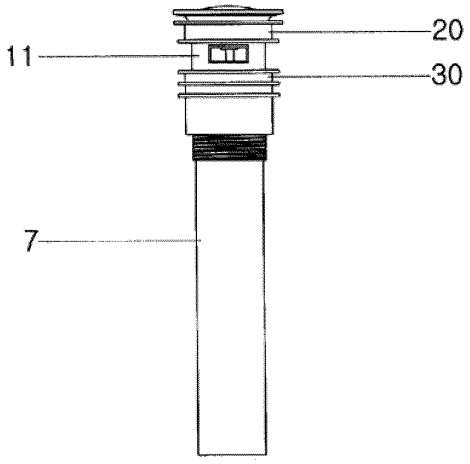
[Fig. 9]



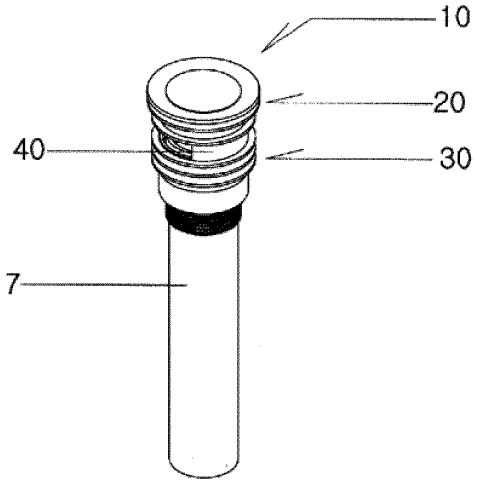
[Fig. 10]



[Fig. 11]



[Fig. 12]



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2013/000734

A. CLASSIFICATION OF SUBJECT MATTER

E03C 1/23(2006.01)i, E03C 1/22(2006.01)i, A47K 1/14(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)

E03C 1/23; A47K 1/14; E03C 1/22

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean Utility models and applications for Utility models: IPC as above
Japanese Utility models and applications for Utility models: IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS (KIPO internal) & Keywords: washbowl, drain hole, drain trap, sewage line, popup device, adhesion unit, adhesive member, sealing member,

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KR 20-2010-0010923 U (HER, Yong) 05 November 2010 Claims 1-3 and figures 1-6	1-4
A	EP 1696080 A1 (MCALPINE & COMPANY LIMITED) 30 August 2006 Claims 1-19 and figures 1-9	1-4
A	KR 20-0437279 Y1 (WATOS COREA CO., LTD.) 21 November 2007 Claims 1-3 and figures 1-9	1-4
A	US 2008-0178382 A1 (PINETTE, Thomas C. et al.) 31 July 2008 Claims 1-20 and figures 1-28	1-4

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

* Special categories of cited documents:
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"O" document referring to an oral disclosure, use, exhibition or other means
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09 APRIL 2013 (09.04.2013)	**10 APRIL 2013 (10.04.2013)**
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Information on patent family members

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