(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 463 446 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
13.06.2012 Bulletin 2012/24

(51) Int Cl.:
E03C 1/23 *(2006.01)*

(21) Application number: **11155458.0**

(22) Date of filing: **22.02.2011**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(30) Priority: **10.12.2010 TW 099143128**

(71) Applicant: **Shower Kaokang EnterpriseCo., Ltd.**
Changhua City, Changhua County (TW)

(72) Inventor: **Chen, Chao Chi**
Changhua City, Changhua County (TW)

(74) Representative: **Beck & Rössig**
European Patent Attorneys
Cuvilliésstrasse 14
81679 München (DE)

(54) **Wash basin drain structure**

(57) A wash basin drain structure includes a tightening assembly (10), a control rod assembly (20), a drain pipe (30), and a plug (40). A threaded top ring (12) of the fastening assembly (10) relative to a threaded annular seat (14) is screwed reversely to push an anti-leakage washer (33) of the drain pipe (30) upward, so that the threaded top ring (12) and a washer (11) are against the bottom of the wash basin and resilient portions (131) of the resilient ring (13) engages with a non-slip portion (35) of the drain pipe (30). When a threaded fixing member (212A) in a threaded hole (212) of a fixing seat (21) of the control rod assembly (20) is screwed inward, the end of the threaded fixing member (212A) will hold against the body of the drain pipe (30) and pull an inner pipe portion (211) of the fixing seat (21) to seal and engage with an insertion hole (34) of the drain pipe (30). A magnetic end head (220) of a link rod (22) of the control rod assembly (20) is attracted to connect with a magnetic portion (410) of a plug body (41) of the plug (40) to act as a lever. The present invention can be assembled with ease.

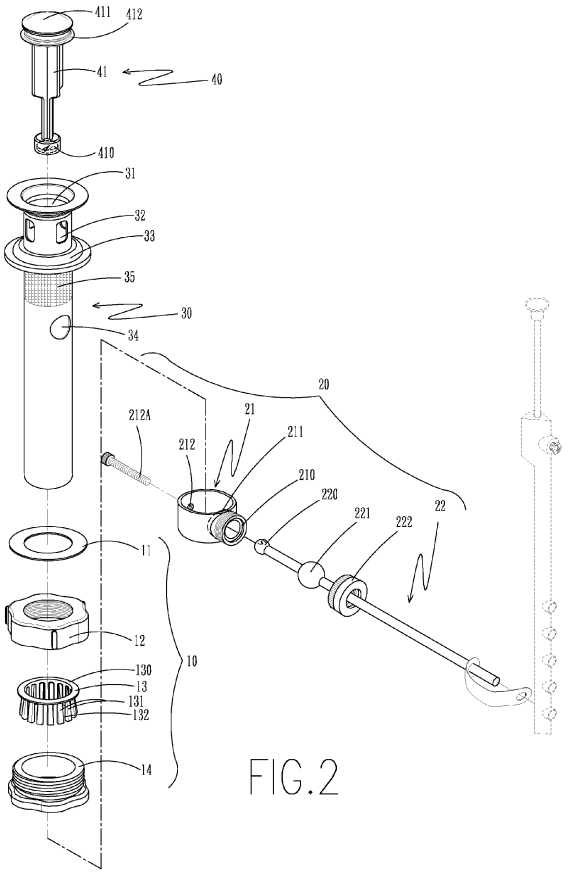


FIG.2

EP 2 463 446 A1

Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates to a wash basin drain structure.

2. Description of the Prior Art

[0002] As shown in Fig. 6, a conventional drain structure comprises a drain pipe 50, a lock ring 60, a plug 70, and a control assembly 80. The drain pipe 50 comprises a pipe connector 51 at one side thereof. The pipe connector 51 has a bushing 510 therein. The drain pipe 50 further comprises a gasket 52 on the body of the drain pipe 50 and a hexagon tightening nut 53 under the gasket 52. The plug 70 comprises a plug cover 71 at one end hereof, a stop ring 710 under the plug cover 71, and a through hole 72 at another end of the plug 70. The control assembly 80 comprises an action rod 81. The action rod 81 has a ball shaft 810 and a screw nut 82 at an inner end of the action rod 81. The drain pipe 50 is inserted out of the drain hole of the wash basin from bottom to top, and then locked by the lock ring 60. The gasket 52 of the drain pipe 50 is attached under the drain hole of the wash basin and tightened by the hexagon tightening nut 53 under the gasket 52, such that the wash basin and the drain pipe 52 are tightly connected to prevent water from leakage. The plug 70 is inserted in the drain pipe 50. The end of the action rod 81 of the control assembly 80 is inserted through the pipe connector 51 of the drain pipe 50, and the ball shaft 810 of the action rod 81 is slid in the pipe connector 51 and blocked by the bushing 510 of the pipe connector 51. The screw nut 82 of the action rod 81 is screwed to the pipe connector 51, so that the control assembly 80 acts like a lever with the ball shaft 810 as the fulcrum. When the action rod 81 is pulled upward to link the plug 70 to move downward, the stop ring 710 under the plug cover 71 of the plug 70 is to cover the opening of the drain pipe 50. When the action rod 81 is pressed downward to link the plug 70 to move upward, the water in the wash basin is discharged through the opening of the drain pipe 50. However, the conventional drain structure has some shortcomings:

1. Inconvenient to use: When the drain pipe is coupled to the wash basin, the drain pipe is inserted out of the drain hole of the wash basin from bottom to top and then locked by the lock ring from the top. The gasket of the drain pipe is attached under the drain hole of the wash basin and tightened by the hexagon tightening nut under the gasket. The end of the action rod of the control assembly must be aimed at the insertion hole of the plug, which is not easy for connection. It is inconvenient to use.

2. Difficult connection: When the drain pipe is coupled to the wash basin, the drain pipe is inserted out of the drain hole of the wash basin from bottom to top and then locked by the lock ring from the top. The gasket of the drain pipe is attached under the drain hole of the wash basin and tightened by the hexagon tightening nut under the gasket. The connection and assembly is complicated and difficult.

[0003] Accordingly, the inventor of the present invention has devoted himself based on his many years of practical experiences to provide these problems.

SUMMARY OF THE INVENTION

[0004] The primary object of the present invention is to provide a wash basin drain structure which overcome the aforementioned shortcomings and in particular is convenient in use and can be assembled easily.

[0005] This technical problem is solved by a drain structure as indicated in the claims.

[0006] The drain structure comprises a tightening assembly, a control rod assembly, a drain pipe and a plug. The tightening assembly comprises a washer, a threaded top ring, a resilient ring and a threaded annular seat. The control rod assembly comprises a fixing seat and a link rod. The fixing seat comprises an outer pipe portion and an inner pipe portion. The link rod comprises a magnetic end head. The magnetic end head of the link rod is inserted through the outer pipe portion. The link rod is movably connected to the outer pipe portion of the fixing seat. The drain pipe comprises a top hole portion and a side hole portion. An anti-leakage washer, an insertion hole and a non-slip portion are provided below the side hole portion. The drain pipe has a body inserting through the washer, the threaded top ring, the resilient ring and the threaded annular seat of the fastening assembly. The resilient ring is elastically engaged on the non-slip portion of the drain pipe. The fixing seat of the control rod assembly is fitted on the drain pipe. The inner pipe portion of the fixing seat corresponds to the insertion hole of the drain pipe. The magnetic end head of the link rod of the control rod assembly is inserted through the insertion hole. The plug comprises a plug body, a magnetic portion at one end of the plug body, a plug portion at another end of the plug body, and a plug washer below the plug portion. The plug body is inserted in the top hole portion of the drain pipe. The plug portion and the plug washer of the plug body are used to plug an open end of the top hole portion of the drain pipe. The magnetic portion of the plug body is used to attract the magnetic end head of the link rod in the insertion hole of the drain pipe.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007]

Fig. 1 is a perspective view of the present invention;

Fig. 2 is an exploded view of the present invention;

Fig. 3 is a cross-sectional view of the present invention;

Fig. 4 is a schematic view showing the wash basin drain structure of the present invention coupled to a wash basin;

Fig. 5 is a schematic view to show the control rod assembly linking the plug; and

Fig. 6 is an exploded view of the prior art.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0008] Embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawings.

[0009] As shown in Fig. 1 to Fig. 3, a wash basin drain structure according to a preferred embodiment of the present invention comprises a tightening assembly 10, a control rod assembly 20, a drain pipe 30, and a plug 40.

[0010] The tightening assembly 10 comprises a washer 11, a threaded top ring 12, a resilient ring 13 and a threaded annular seat 14. The resilient ring 13 comprises a ring portion 130, a plurality of resilient portions 131 and a plurality of limit grooves 132 below the ring portion 130.

[0011] The control rod assembly 20 comprises a fixing seat 21 and a link rod 22. The fixing seat 21 comprises an outer pipe portion 210, an inner pipe portion 211, and a threaded hole 212. The threaded hole 212 is provided with a threaded fixing member 212A. The link rod 22 comprises a magnetic end head 220, a movable ball portion 221, and a lock ring 222. The magnetic end head 220 of the link rod 22 is inserted through the outer pipe portion 210. The movable ball portion 221 of the link rod 22 is engaged in the outer pipe portion 210 of the fixing seat 21. The lock ring 222 of the link rod 22 is threadedly connected to the outer pipe portion 210 of the fixing seat 21.

[0012] The drain pipe 30 comprises a top hole portion 31 and a side hole portion 32. An anti-leakage washer 33, an insertion hole 34 and a non-slip portion 35 are provided below the side hole portion 32. The non-slip portion 35 is an embossing portion on the drain pipe 30. The drain pipe 30 has a body inserting through the washer 11, the threaded top ring 12, the resilient ring 13 and the threaded annular seat 14 of the fastening assembly 10. The resilient portions 131 and the limit grooves 132 below the ring portion 130 of the resilient ring 13 are elastically engaged on the non-slip portion 35 of the drain pipe 30. The fixing seat 21 of the control rod assembly 20 is fitted on the drain pipe 30. The inner pipe portion 211 of the fixing seat 21 corresponds to the insertion hole 34 of the drain pipe 30. When the threaded fixing member 212A in the threaded hole 212 of the fixing seat 21 is screwed inward, the end of the threaded fixing member 212A will hold against the body of the drain pipe 30 and pull the inner pipe portion 211 of the fixing seat 21 to seal and engage with the insertion hole 34 of the drain pipe 30. The magnetic end head 220 of the link rod 22 of the control rod assembly 20 is inserted through the insertion hole 34.

[0013] The plug 40 comprises a plug body 41, a magnetic portion 410 at one end of the plug body 41, a plug portion 411 at another end of the plug body 41, and a plug washer 412 below the plug portion 411. The plug body 41 is inserted in the top hole portion 31 of the drain pipe 30. The plug portion 411 and the plug washer 412 of the plug body 41 are used to plug an open end of the top hole portion 31 of the drain pipe 30. The magnetic portion 410 of the plug body 41 is used to attract the magnetic end head 220 of the link rod 22 in the insertion hole 34 of the drain pipe 30. Thus, the wash basin drain structure is completed.

[0014] Fig. 4 is a schematic view showing the wash basin drain structure of the present invention coupled to a wash basin. Fig. 5 is a schematic view to show the control rod assembly linking the plug. The threaded top ring 12, the resilient ring 13 and the threaded annular seat 14 of the fastening assembly 10 are first assembled, and then fitted on the body of the drain body 30 with the washer 11. The resilient ring 13 is located between the threaded top ring 12 and the threaded annular seat 14. The fixing ring 21 of the control rod assembly 20 is fitted on the body of the drain pipe 30. The inner pipe 211 of the fixing seat 21 corresponds to the insertion hole 34 of the drain pipe 30. When the threaded fixing member 212A in the threaded hole 212 of the fixing seat 21 is screwed inward, the end of the threaded fixing member 212A will hold against the body of the drain pipe 30 and pull the inner pipe portion 211 of the fixing seat 21 to tightly engage with the insertion hole 34 of the drain pipe 30. The magnetic end head 220 of the link rod 22 of the control rod assembly 20 is inserted into the insertion hole 34 of the drain pipe 30 through the outer pipe portion 210 of the fixing seat 21, such that the magnetic end head 220 of the link rod 22 is attracted to connect with the magnetic portion 410 of the plug body 41 of the plug 40. The movable ball portion 221 of the link rod 22 is engaged in the outer pipe portion 210 of the fixing seat 21. The lock ring 222 of the link rod 22 is threadedly connected to the outer pipe portion 210 of the fixing seat 21. The end provided with the magnetic portion 410 of the plug body 41 of the plug 40 is inserted in the top hole portion 31 of the drain pipe 30. The plug washer 412 at the plug portion 411 of the plug body 41 is used to plug an open end of the top hole portion 31 of the drain pipe 30. The drain pipe 30 is inserted in the drain hole of the wash basin. The threaded top ring 12 of the fastening assembly 10 relative to the threaded annular seat 14 is screwed reversely to push the anti-leakage washer 33 of the drain pipe 30 upward, so that the washer 11 and the threaded top ring 12 are against the bottom of the wash basin and the resilient

portions 131 of the resilient ring 13 engages with the non-slip portion 35 of the drain pipe 30. The link rod 22 of the control rod assembly 20 links the plug body 40 to act as a lever. The present invention provides a simple assembly, without the need to aim at the holes. It is not necessary to process the threads of the body of the drain pipe 30, so the body of the drain pipe 30 is thin to save the material and the cost. The present invention can be used conveniently and assembled easily.

[0015] The present invention has the following advantages:

1. Convenient to use: When the drain pipe is coupled to the wash basin, the drain pipe can be inserted in the drain hole of the wash basin from top to the bottom. The threaded top ring of the fastening assembly relative to the threaded annular seat is screwed reversely to push the anti-leakage washer of the drain pipe upward, so that the washer and the threaded top ring are against the bottom of the wash basin and the resilient portions of the resilient ring engages with the non-slip portion of the drain pipe. The drain pipe and wash basin can be assembled quickly and simply. It is very convenient to use the present invention.

2. Simply assembly: The drain pipe is inserted from the top of the drain hole of the wash basin, and the fastening assembly is used to connect the drain pipe and the wash basin. The threaded fixing member in the threaded hole is only required to secure the fixing seat of the control rod assembly on the body of the drain body. The magnetic end head of the link rod is inserted in the insertion hole of the drain pipe through the insertion hole of the fixing seat to connect with the magnetic portion of the plug body of the plug, simplifying the assembly.

[0016] Although particular embodiments of the present invention have been described in detail for purposes of illustration, various modifications and enhancements may be made without departing from the spirit and scope of the present invention. Accordingly, the present invention is not to be limited except as by the appended claims.

Claims

1. A wash basin drain structure, comprising:

a tightening assembly (10), the tightening assembly (10) comprising a washer (11), a threaded top ring (12), a resilient ring (13) and a threaded annular seat (14);
a control rod assembly (20), the control rod assembly (20) comprising a fixing seat (21) and a link rod (22), the fixing seat (21) comprising an outer pipe portion (210) and an inner pipe portion (211), the link rod (22) comprising a magnetic end head (220), the magnetic end head (220) of the link rod (22) being inserted through the outer pipe portion (210), the link rod (22) being movably connected to the outer pipe portion (210) of the fixing seat (21);
a drain pipe (30), the drain pipe (30) comprising a top hole portion (31) and a side hole portion (32), an anti-leakage washer (33), an insertion hole (34) and a non-slip portion (35) being provided below the side hole portion (32), the drain pipe (30) having a body inserting through the washer (11), the threaded top ring (12), the resilient ring (13) and the threaded annular seat (14) of the fastening assembly (10) which are assembled, the resilient ring (13) being elastically engaged on the non-slip portion (35) of the drain pipe (30), the fixing seat (21) of the control rod assembly (20) being fitted on the drain pipe (30), the inner pipe portion (211) of the fixing seat (21) corresponding to the insertion hole (34) of the drain pipe (30), the magnetic end head (220) of the link rod (22) of the control rod assembly (20) being inserted through the insertion hole (34); and
a plug (40), the plug (40) comprising a plug body (41), a magnetic portion (410) at one end of the plug body (41), a plug portion (411) at another end of the plug body (41), and a plug washer (412) below the plug portion (411), the plug body (41) being inserted in the top hole portion (31) of the drain pipe (30), the plug portion (411) and the plug washer (412) of the plug body (41) being used to plug an open end of the top hole portion (31) of the drain pipe (30), the magnetic portion (410) of the plug body (41) being used to attract the magnetic end head (220) of the link rod (22) in the insertion hole (34) of the drain pipe (30).

2. The wash basin drain structure as claimed in claim 1, wherein the resilient ring (13) comprises a ring portion (130), a plurality of resilient portions (131) and a plurality of limit grooves (132) below the ring portion (130), the ring portion (130) of the resilient ring (13) is fitted on the body of the drain pipe (30), and the resilient portions (131) and the limit grooves (132) of the resilient ring (13) are elastically engaged with the non-slip portion (35) of the drain pipe (30).

3. The wash basin drain structure as claimed in claim 1 or 2, wherein the fixing seat (21) comprises a threaded hole (212), the threaded hole (212) is provided with a threaded fixing member (212A), when the threaded fixing member (212A) in the threaded hole (212) of the fixing seat (21) is screwed inward, the threaded fixing member (212A) has an end to hold against the body of the drain pipe (30) and pulls the inner pipe portion (211) of the fixing seat (21) to

tightly engage with the insertion hole (34) of the drain pipe (30).

4. The wash basin drain structure as claimed in one of claims 1 to 3, wherein the link rod (22) comprises a movable ball portion (221) and a lock ring (222), the movable ball portion (221) of the link rod (22) is engaged in the outer pipe portion (210) of the fixing seat (21), and the lock ring (222) of the link rod (22) is locked to the outer pipe portion (210) of the fixing seat (21).

5. The wash basin drain structure as claimed in one of claims 1 to 4, wherein the non-slip portion (35) of the drain pipe (30) is an embossing portion on the drain pipe (30).

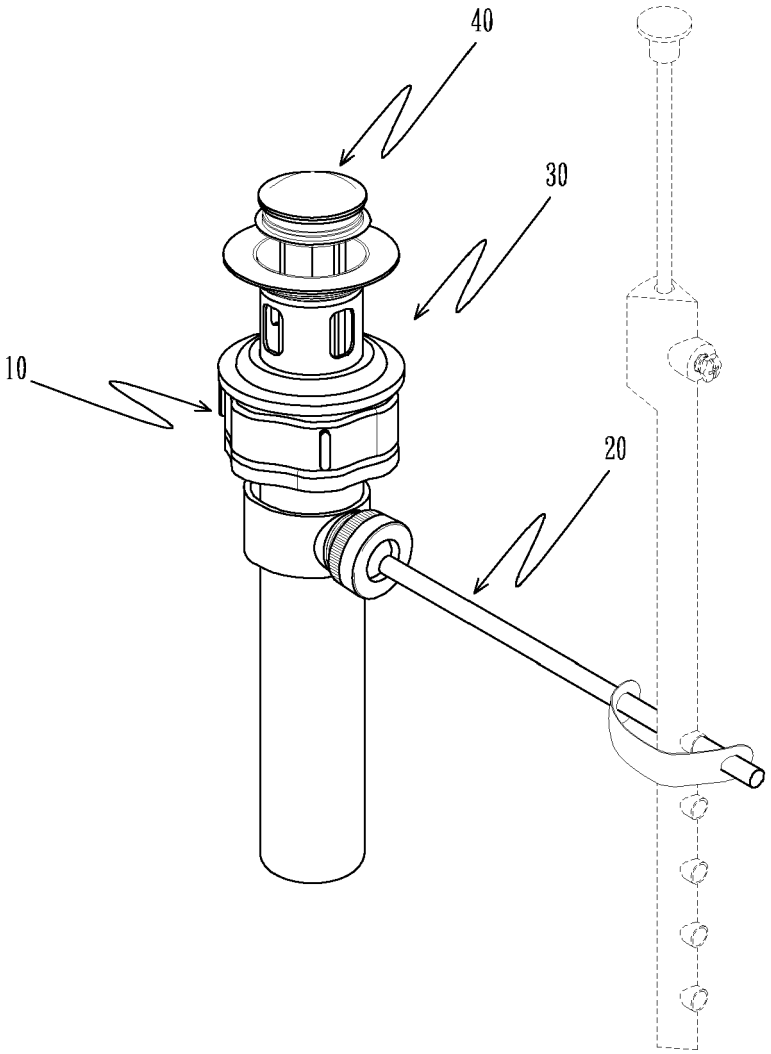


FIG.1

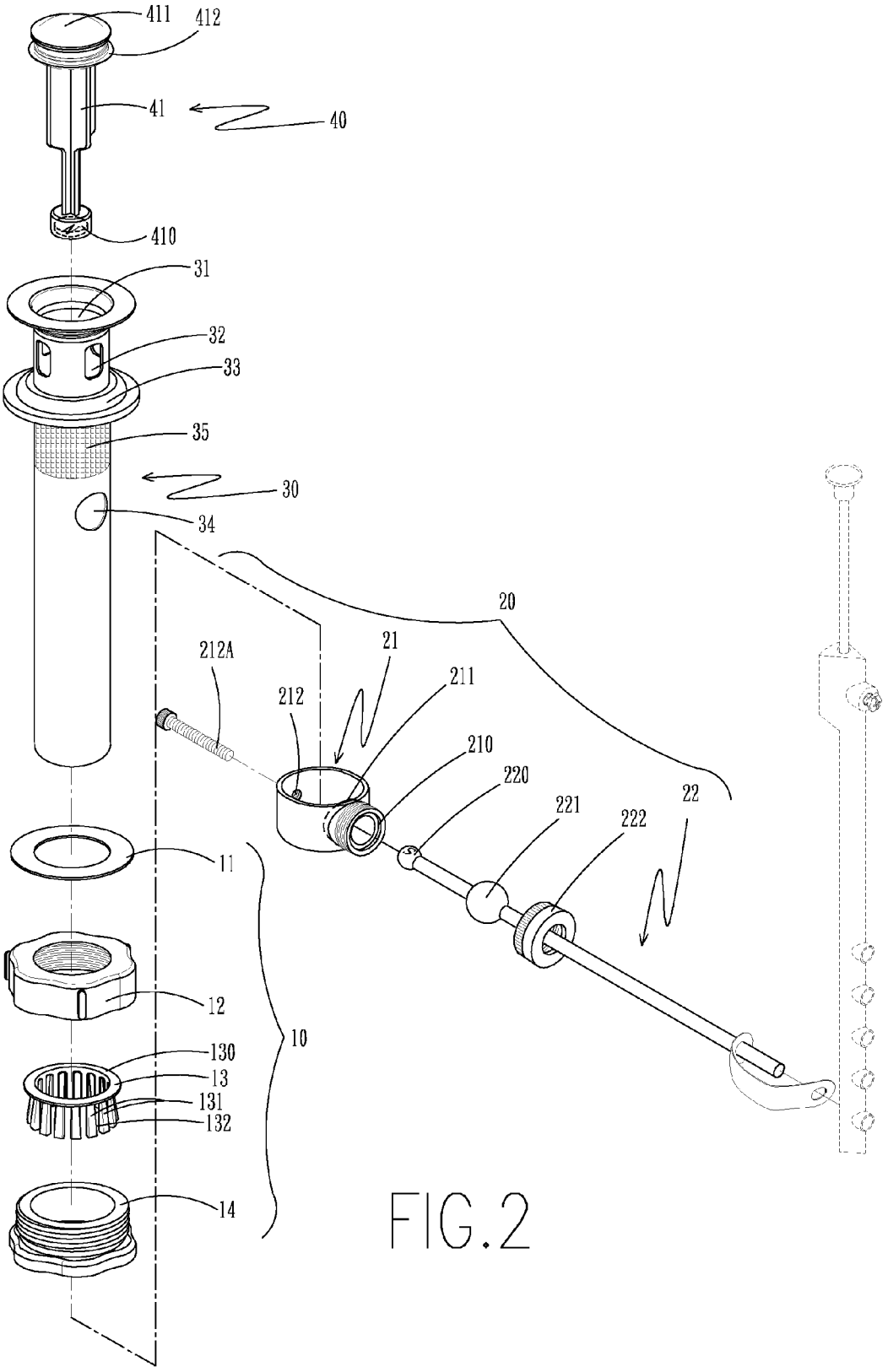

411
412
41
40
410
31
32
33
35
30
34
20
212A
21
211
212
210
220
221
222
22
11
12
10
130
13
131
132
14

FIG.2

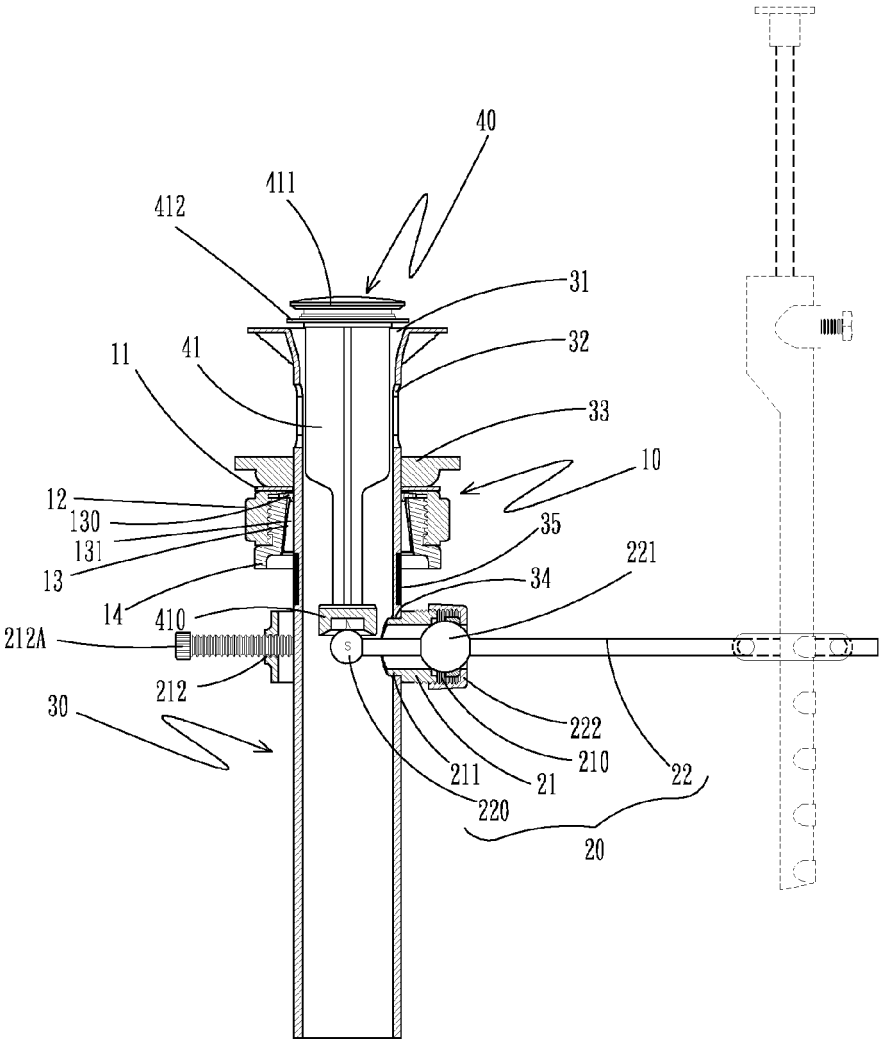

40
411
412
31
32
11
41
33
10
12
130
131
13
14
35
34
221
410
212A
212
30
222
210
211
21
22
220
20

FIG.3

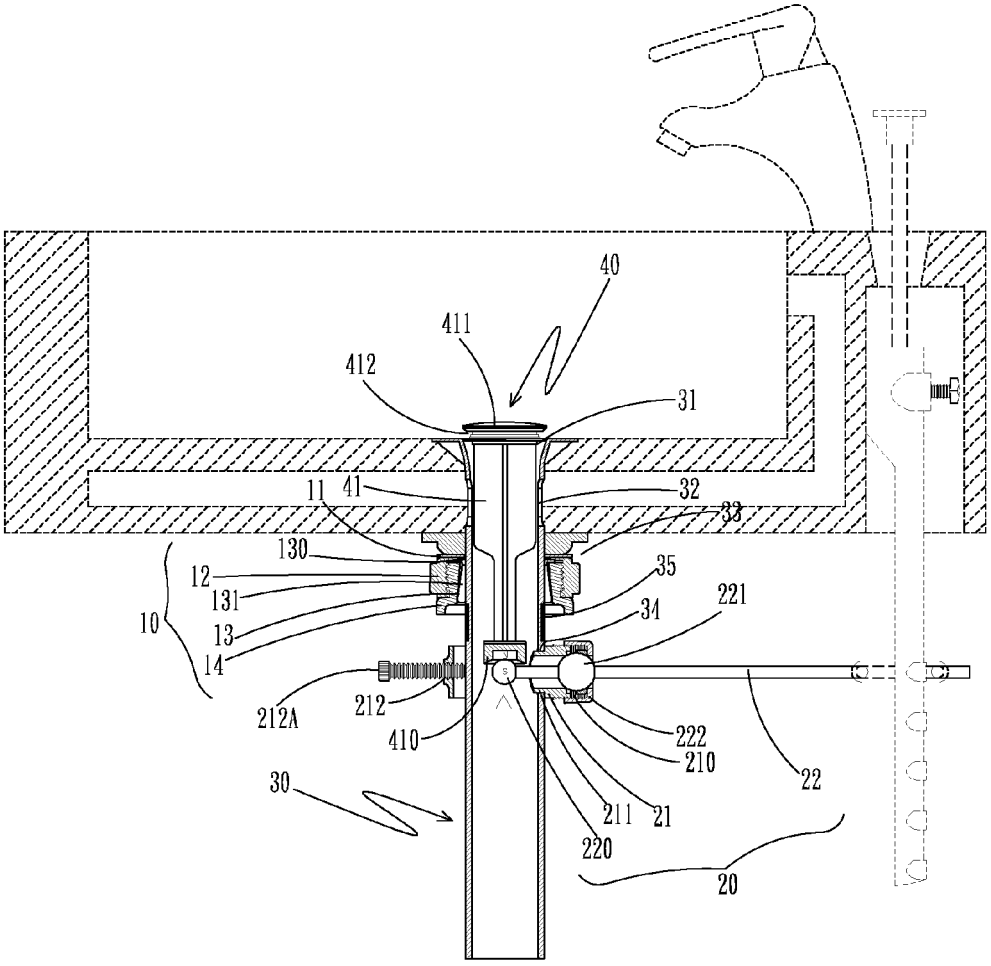

40
411
412
31
11
41
32
33
130
12
131
13
14
10
35
34
221
212A
212
410
222
210
22
30
211
21
220
20

FIG.4

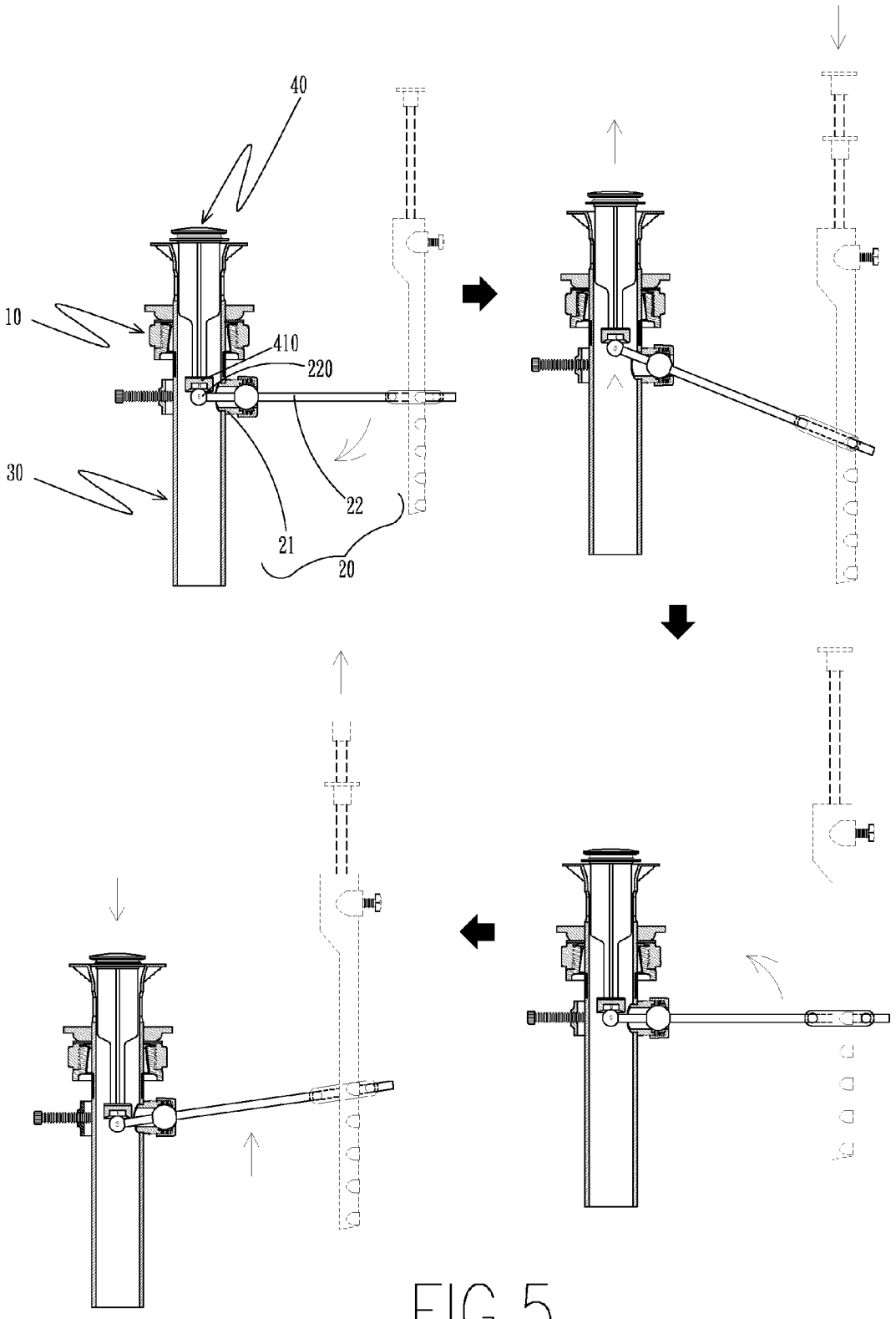
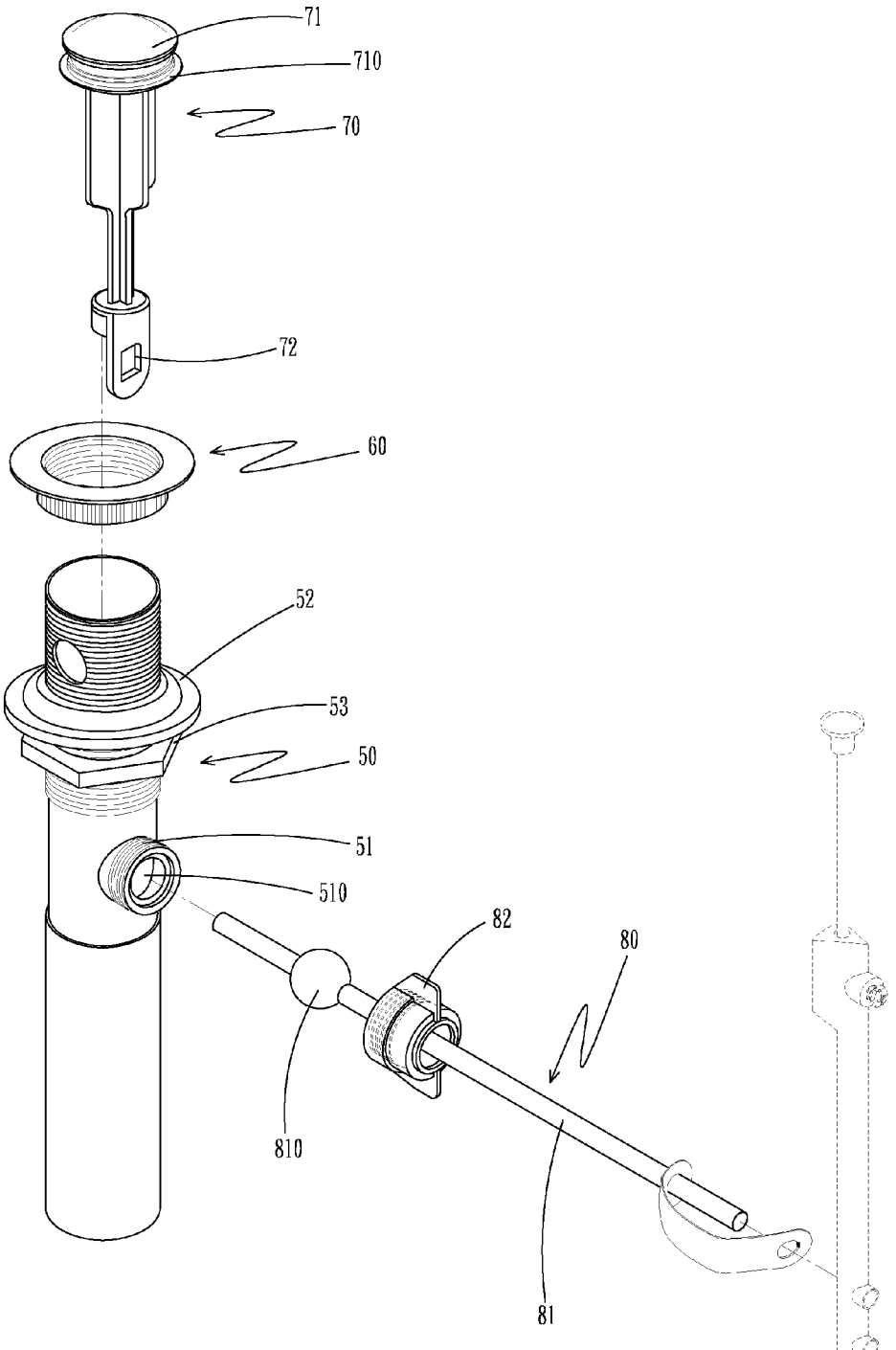


FIG.5



PRIOR ART
FIG.6

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 11 15 5458

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
E	WO 2011/094725 A1 (PF WATERWORKS LP [US]; BECK HAROLD KENT [US]; AHUJA SANJAY [US]) 4 August 2011 (2011-08-04) * paragraphs [0035], [0052]; figures 1,10 *	1,4,5	INV. E03C1/23
A	US 2010/154114 A1 (VAN ZEELAND ANTHONY J [US] ET AL) 24 June 2010 (2010-06-24) * figures 4,5,6,10 *	1,4,5	
A	WO 2005/068732 A1 (CHANG CHOONG-SAM [KR]) 28 July 2005 (2005-07-28) * figures 2-6 *	1,4	
			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	15 March 2012	Isailovski, Marko

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

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 11 15 5458

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

15-03-2012

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2011094725 A1	04-08-2011	US 2011185494 A1 WO 2011094725 A1	04-08-2011 04-08-2011
US 2010154114 A1	24-06-2010	NONE	
WO 2005068732 A1	28-07-2005	NONE	

EPO FORM P0459

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