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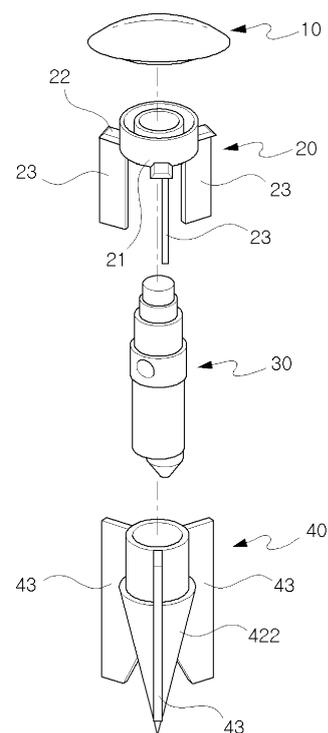
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(54) **POP-UP VALVE**

(57) A pop-up valve according to an embodiment of the present invention includes a head portion; and a foreign matter catching prevention device that is provided in a lower portion of the head portion, in which the foreign matter catching prevention device includes a body portion that is coupled to a bottom of the head portion; a protruding jaw that is formed radially in an outer circumference of the body portion and whose upper surface is in close contact with the head portion; and a first guide vane that extends downward from a bottom of the protruding jaw so as to be perpendicular to the protruding jaw and is located on one side of a second guide vane of a guide device which is coupled to an inside of a drain pipe.

FIG. 2



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Description**TECHNICAL FIELD**

[0001] The present invention relates to a pop-up valve for opening and closing a drain of a washbasin.

BACKGROUND ART

[0002] In general, a washbasin is a container that contains water for washing. The washbasin may have a structure attached to a wall or erected in the form of a stand. The washbasin is made of sanitary ware and is installed on the wall of a bathroom or toilet. A pop-up valve is mounted on the drain of the washbasin so as to block the drain of the washbasin to trap water or to open the drain to let the water out of the washbasin. The pop-up valve opens and closes a drain pipe through a pop-up operation. The pop-up operation of the pop-up valve is automatically performed by an elastic member such as a spring mounted inside the valve. A guide device for inducing the pop-up operation of the pop-up valve is provided inside the drain pipe for stable lifting of the pop-up valve. The guide device includes a guide vane that is radially formed. A pop-up rod of the pop-up valve moves performs a lifting operation in a state of being coupled to a coupling hole of the guide device.

[0003] However, the pop-up valve of related art is not provided with a foreign matter catching prevention device, and thus, foreign matters such as hair are caught on a guide vane of the guide device to cause the drain pipe to be frequently blocked.

[0004] As an example, Korean Utility Model Registration No. 20-0368843 discloses a "pop-up valve".

DISCLOSURE**Technical Problem**

[0005] In order to solve the above-described problem, an embodiment of the present invention is intended to provide a pop-up valve in which a first guide vane of a foreign matter catching prevention device is located on one side of a second guide vane of a guide device, and thereby, foreign matters such as hair discharged with water to a drain pipe flows down naturally along the first guide vane and the second guide vane without being caught by the second guide vane.

Technical Solution

[0006] In order to achieve the above-described object, a pop-up valve according to an embodiment of the present invention includes a head portion; and a foreign matter catching prevention device that is provided in a lower portion of the head portion, in which the foreign matter catching prevention device may include a body portion that is coupled to a bottom of the head portion; a

protruding jaw that is formed radially in an outer circumference of the body portion and whose upper surface is in close contact with the head portion; and a first guide vane that extends downward from a bottom of the protruding jaw so as to be perpendicular to the protruding jaw and is located on one side of a second guide vane of a guide device which is coupled to an inside of a drain pipe.

[0007] Further, the head portion may include a main body portion; and a sealing member that is coupled to a lower portion of the main body portion.

[0008] Further, the sealing member may be a packing.

[0009] Further, the guide device may include a guide main body that is provided with a coupling hole therein; and the second guide vane that is formed radially along an outer circumference of the guide main body, and a compartment space may be provided between the second guide vane and the second guide vane.

[0010] Further, the first guide vane and the second guide vane may be formed in the same number as each other.

[0011] Further, the first guide vane and the second guide vane may be at least three or more guide vanes, and two of the three or more first guide vanes may be located in the same compartment space.

[0012] Further, the foreign matter catching prevention device and the guide device may be connected by a pop-up rod.

[0013] Further, an upper portion of the pop-up rod may be connected to the head portion penetrating the foreign matter catching prevention device, and a lower portion may be inserted into the coupling hole of the guide main body.

[0014] Further, a lower part of the guide main body may be a cone whose vertex faces downward.

[0015] Further, a lower end of the second guide vane may be correspondingly coupled to a catching jaw of a lower portion of an inside of the drain pipe.

Advantageous Effects

[0016] According to a pop-up valve of the embodiment of the present invention, a first guide vane of a foreign matter catching prevention device is located on one side of a second guide vane of a guide device, and thereby, foreign matters such as hair discharged together with water to a drain pipe can flow down naturally along the first guide vane and the second guide vane without being caught by the second guide vane.

[0017] Further, since the first guide vane performs a lifting operation in a state of being touched to the second guide vane, the first guide vane can perform a stable lifting operation without departing from a movement line.

Description of the Drawings

[0018]

FIGS. 1 and 2 are views illustrating a detached state of a pop-up valve according to a preferred embodiment of the present invention.

FIG. 3 is a perspective view of a state in which a foreign matter catching prevention device and a guide device are combined, according to the preferred embodiment of the present invention.

FIG. 4 is a front view of the state in which the foreign matter catching prevention device and the guide device according to the preferred embodiment of the present invention.

FIG. 5 is a side view of the state in which the foreign matter catching prevention device and the guide device according to the preferred embodiment of the present invention.

FIG. 6 is a view illustrating a state in which the pop-up valve is installed in a drain pipe, according to the preferred embodiment of the present invention.

FIG. 7 is a side cross-sectional view illustrating the state in which the pop-up valve is installed in the drain pipe, according to the preferred embodiment of the present invention.

Sings List

[0019]

- 10: head portion
- 11: main body portion
- 12: sealing member
- 20: foreign matter catching prevention device
- 21: body portion
- 22: protruding jaw
- 23: first guide vane
- 30: pop-up rod
- 40: guide device
- 42: guide main body
- 43: second guide vane
- 44: compartment space
- 50: drain pipe
- 51: catching jaw
- 421: coupling hole
- 422: lower portion
- 431: lower end

Best Mode for Invention

[0020] Hereinafter, a preferred embodiment of the present invention will be described in detail with reference to the accompanying drawings. First of all, in adding reference numerals to the configuration elements of each drawing, it should be noted that the same configuration elements have the same reference numerals as much as possible even if illustrated in different drawings. Further, the following will describe the preferred embodiment of the present invention, but the technical idea of the present invention is not limited thereto and may be changed to be variously implemented by those skilled in

the art.

[0021] First, a configuration of a pop-up valve according to an embodiment of the present invention will be described.

5 [0022] As illustrated in FIGS. 1 to 3, the pop-up valve according to the embodiment of the present invention includes a head portion 10 for opening and closing a drain of a washbasin and a foreign matter catching prevention device 20 provided in a lower portion of the head portion 10.

10 [0023] The foreign matter catching prevention device 20 is coupled to the lower portion of the head portion 10. The foreign matter catching prevention device 20 includes a body portion 21, a protruding jaw 22 formed radially along an outer circumference of the body portion 21, and a first guide vane 23 extending downward from a bottom of the protruding jaw 22.

15 [0024] Specifically, the body portion 21 is coupled to a bottom of the head portion 10. The body portion 21 may have a shape of a cylinder. The center of the body portion 21 may be provided with a hole through which an upper portion of the pop-up rod 30 passes.

20 [0025] The protruding jaw 22 is formed radially on an outer circumference of the body portion 21. FIGS. 1 to 3 illustrate three protruding jaws 22, but the protruding jaws are not limited to this and may be three or more. For example, if there is a gap between the head portion 10 and the protruding jaw 22, a foreign matters such as hair may enter the gap, and thus, an upper surface of the protruding jaw 22 has to be designed to be in close contact with a bottom of the head portion 10 without being spaced apart from the head portion 10.

25 [0026] The first guide vane 23 extends downward from the bottom of the protruding jaw 22 so as to be perpendicular to the protruding jaw 22. The protruding jaw 22 has to be designed to be greater than a thickness of the first guide vane 23 so as to cover the first guide vane 23. The first guide vane 23 is located on one side of a second guide vane 43 of a guide device 40 coupled to an inside of the drain pipe 50.

30 [0027] The guide device 40 is a device that induces stable lifting operations of the foreign matter catching prevention device 20 and the pop-up rod 30. The guide device 40 includes a guide main body 42 and the second guide vane 43.

35 [0028] Specifically, the guide main body 42 is located inside the drain pipe 50. A lower portion 422 of the guide main body 42 may be a cone whose vertex faces downward. A coupling hole 421 is provided inside the guide main body 42. The coupling hole 421 is formed in the center of the guide body 42. A lower end portion of the pop-up rod 30 is coupled to the coupling hole 421. The coupling hole 421 induces a stable lifting operation of the pop-up rod 30.

40 [0029] The second guide vane 43 is formed radially along an outer circumference of the guide body 42. Since the second guide vane 43 is formed in a radial shape, a compartment space 44 is formed between the second

guide vane 43 and the second guide vane 43. A lower end 431 of the second guide vane 43 is located at a lower portion in the drain pipe 50. A catching jaw 51 to which the lower end 431 of the second guide vane 43 is correspondingly hooked to be coupled may be provided at a lower portion of an inner circumferential surface of the drain pipe 50.

[0030] The foreign matter catching prevention device 20 is connected to the guide device 40 by the pop-up rod 30. Specifically, an upper portion of the pop-up rod 30 is connected to the head portion 10 through the foreign matter catching prevention device 20. A lower portion of the pop-up rod 30 is inserted into the coupling hole 421 of the guide main body 42.

[0031] FIGS. 1 to 3 illustrate three second guide vanes 43, the present invention is not limited thereto, and the second guide vanes 43 may be configured by three or more guide vanes. The second guide vanes 43 have to be designed in the same number as the first guide vanes 23.

[0032] The first guide vanes 23 and the second guide vanes 43 are configured by at least three or more guide vanes. Two of three or more first guide vanes 23 perform a lifting operation in a state of being located in the same compartment space 44 and in a state of being touched to one side of the second guide vane 43.

[0033] As illustrated in FIGS. 4 and 5, the head portion 10 serves to open and close a drain of a washbasin and includes a main body portion 11 and a sealing member 12 coupled to a lower portion of the main body portion 11. The main body portion 11 is formed in a shape fitting with the drain of the washbasin. The main body portion 11 may be formed of metal. The sealing member 12 may be a rubber packing for maintaining airtightness.

[0034] An upper portion of the pop-up rod 30 is connected to the bottom of the head portion 10 passing through the center of the body portion 21 of the foreign matter catching prevention device 20. The upper portion of the pop-up rod 30 may be screwed to the head portion 10. The pop-up rod 30 is a device that lifts the head portion 10 by mounting an elastic member such as a spring therein. The pop-up rod 30 is a known technology and detailed description on a configuration will be omitted.

[0035] The following describes an operation of a pop-up valve according to the embodiment of the present invention.

[0036] The pop-up valve according to the embodiment of the present invention illustrated in FIG. 6 is coupled to the drain pipe 50 connected to the drain of the washbasin.

[0037] As illustrated in FIG. 7, the guide main body 42 of the guide device 40 is coupled to an inside of the drain pipe 50. The first guide vane 23 of the foreign matter catching prevention device 20 performs a lifting operation in a state of being touched to or being in contact with one side of the second guide vane 43 of the guide device 40 at a minute interval.

[0038] Since each of two of the three or more first guide vanes 23 performs a lifting operation along one side of

the second guide vanes 43 in a state of being located in the same compartment space 44, stable lifting of the first guide vane 23 is possible. Specifically, since the first guide vane 23 performs the lifting operation in a state in which the first guide vane 23 touches the second guide vane 43, the first guide vane 23 can perform the lifting operation without being twisted.

[0039] Since the second guide vane 43 serves to guide the lifting operation of the first guide vane 23, the first guide vane 23 can perform a stable lifting operation without departing from a movement line without a separate guide device.

[0040] Further, since the first guide vane 23 is located to overlap one side of the second guide vane 43, foreign matters such as hair discharged to the drain pipe 50 together with water through a washbasin drainage flows down naturally along the first guide vane 23 and the second guide vane 43, and thus, there is no fear of the foreign matter blocking the drain pipe 50. In addition, since the first guide vane 23 moves while performing the lifting operation, foreign matters such as hair can be discharged more smoothly along the drain pipe 50.

[0041] Further, since water discharged to the drain pipe 50 flows to the center of the drain pipe 50 along the lower portion 422 of the conical guide main body 42, the drainage can be made more smoothly.

[0042] Further, in the pop-up valve according to the embodiment of the present invention, the head portion 10 and the foreign matter catching prevention device 20 can be easily disassembled and assembled through the pop-up rod 30. Further, since there is no gap between the head portion 10 and the protruding jaw 22 because an upper surface of the protruding jaw 22 of the foreign matter catching prevention device 20 is in close contact with the sealing member 12 of the head portion 10, there is no fear of foreign matters being caught.

[0043] As described above, in a pop-up valve according to the embodiment of the present invention, a first guide vane of a foreign matter catching prevention device is located on one side of a second guide vane of a guide device, and thereby, foreign matters such as hair discharged together with water to a drain pipe can flow down naturally along the first guide vane and the second guide vane without being caught by the second guide vane.

Further, since the first guide vane performs a lifting operation in a state of being touched to the second guide vane, the first guide vane can perform a stable lifting operation without departing from a movement line.

[0044] The above description is merely illustrative of the technical idea of the present invention, and various modifications, changes, and substitutions may be made by those skilled in the art without departing from the essential characteristics of the present invention. Accordingly, the embodiments and the accompanying drawings disclosed in the present invention are not intended to limit the technical idea of the present invention but to describe the present invention, and the scope of the technical idea of the present invention is not limited by the embodiments

and the accompanying drawings. The protection scope of the present invention should be interpreted by the following claims, and all technical ideas within the scope equivalent thereto should be interpreted as being included in the scope of the present invention.

Claims

1. A pop-up valve comprising:
 - a head portion; and
 - a foreign matter catching prevention device that is provided in a lower portion of the head portion, wherein the foreign matter catching prevention device includes
 - a body portion that is coupled to a bottom of the head portion;
 - a protruding jaw that is formed radially in an outer circumference of the body portion and whose upper surface is in close contact with the head portion; and
 - a first guide vane that extends downward from a bottom of the protruding jaw so as to be perpendicular to the protruding jaw and is located on one side of a second guide vane of a guide device which is coupled to an inside of a drain pipe.
2. The pop-up valve of Claim 1, wherein the head portion includes
 - a main body portion; and
 - a sealing member that is coupled to a lower portion of the main body portion.
3. The pop-up valve of Claim 2, wherein the sealing member is a packing.
4. The pop-up valve of Claim 1, wherein the guide device includes
 - a guide main body that is provided with a coupling hole therein; and
 - the second guide vane that is formed radially along an outer circumference of the guide main body, and

wherein a compartment space is provided between the second guide vane and the second guide vane.
5. The pop-up valve of Claim 4, wherein the first guide vane and the second guide vane are formed in the same number as each other.
6. The pop-up valve of Claim 4, wherein the first guide vane and the second guide vane are at least three or more guide vanes, and two of the three or more first guide vanes are located in the same compartment space.
7. The pop-up valve of Claim 4, wherein the foreign matter catching prevention device and the guide device are connected by a pop-up rod.
8. The pop-up valve of Claim 7, wherein an upper portion of the pop-up rod is connected to the head portion penetrating the foreign matter catching prevention device, and a lower portion is inserted into the coupling hole of the guide main body.
9. The pop-up valve of Claim 4, wherein a lower part of the guide main body is a cone whose vertex faces downward.
10. The pop-up valve of Claim 4, wherein a lower end of the second guide vane is correspondingly coupled to a catching jaw of a lower portion of an inside of the drain pipe.

FIG. 1

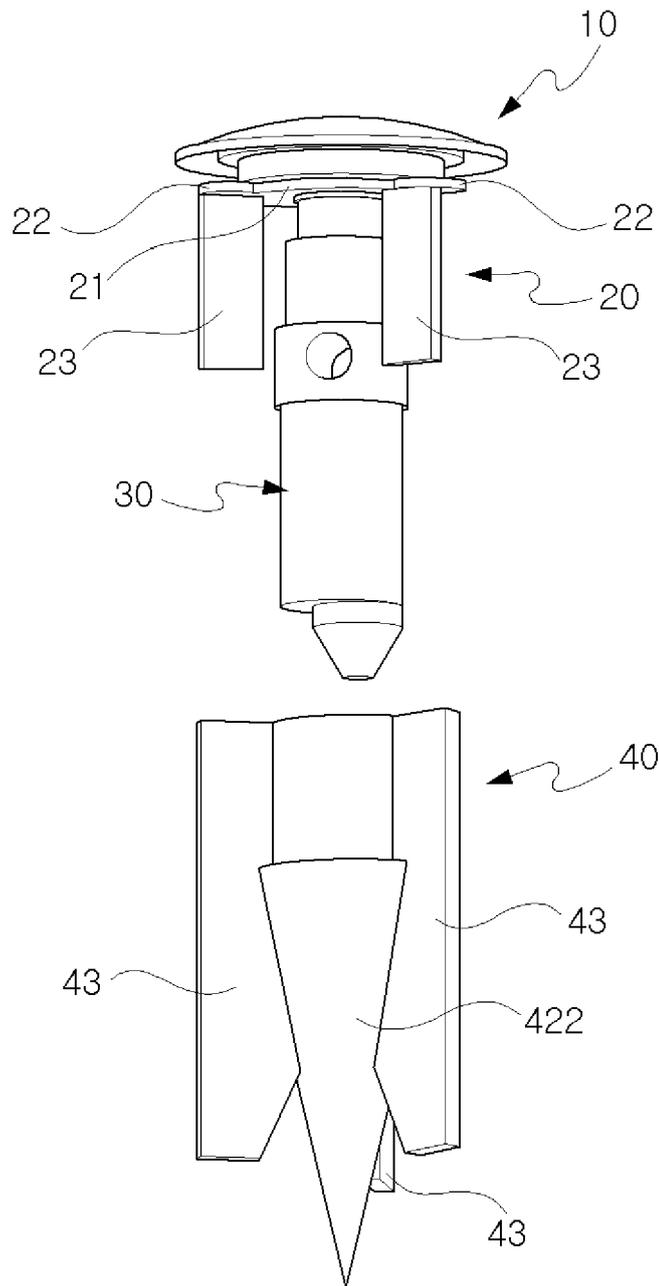


FIG. 2

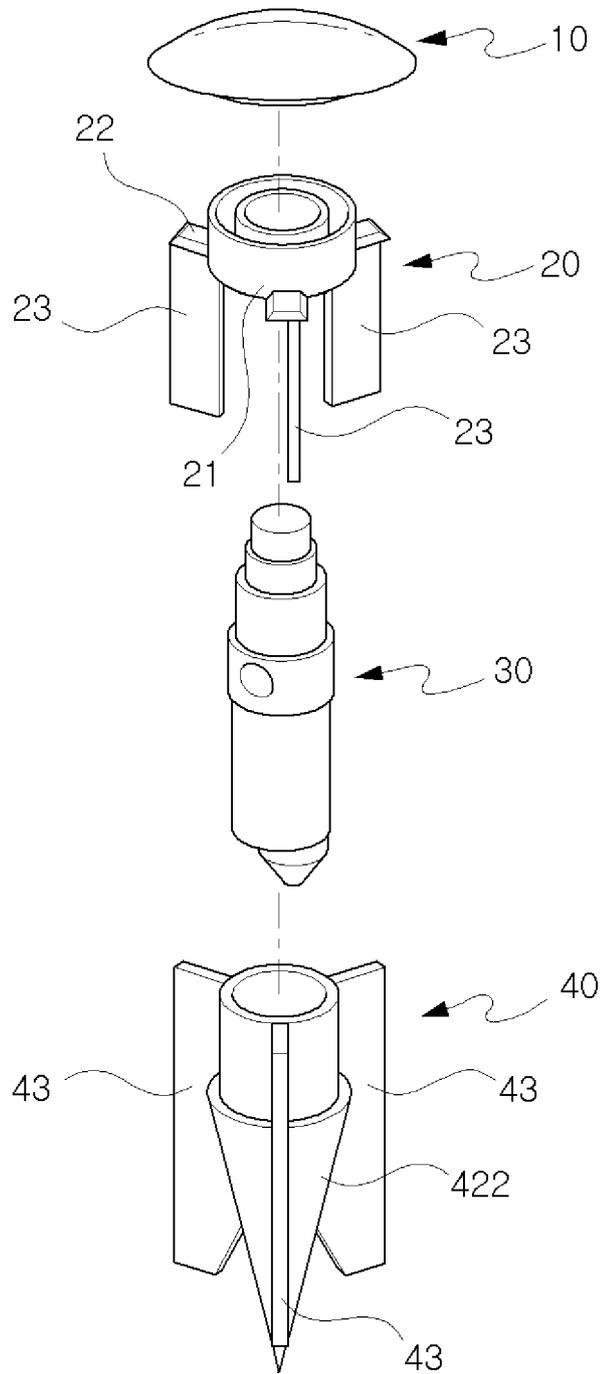


FIG. 3

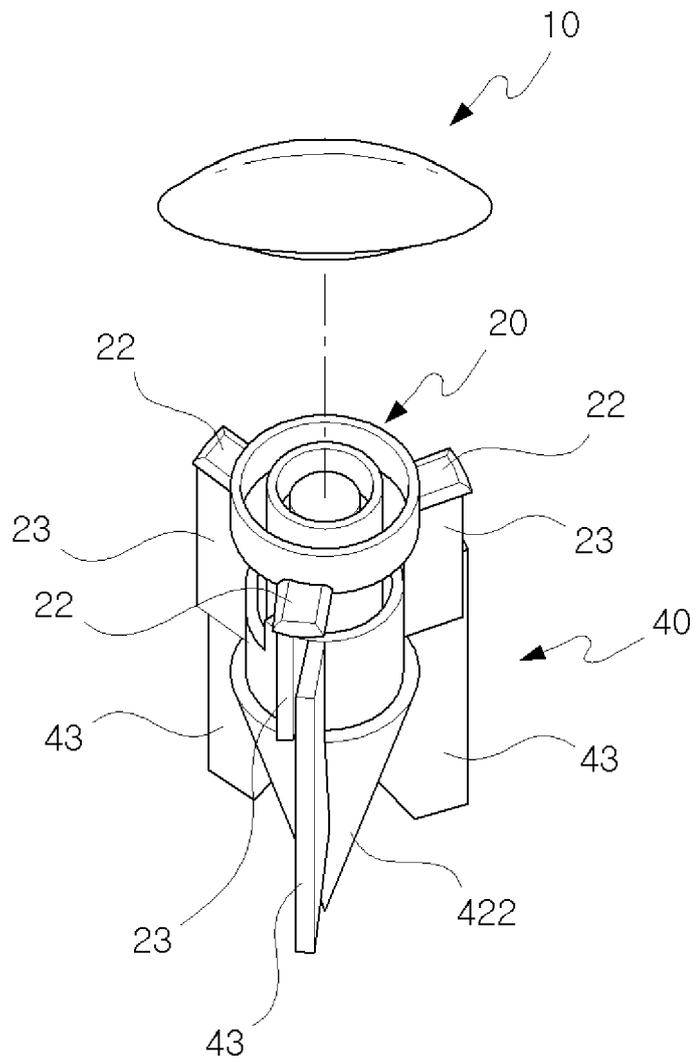


FIG. 4

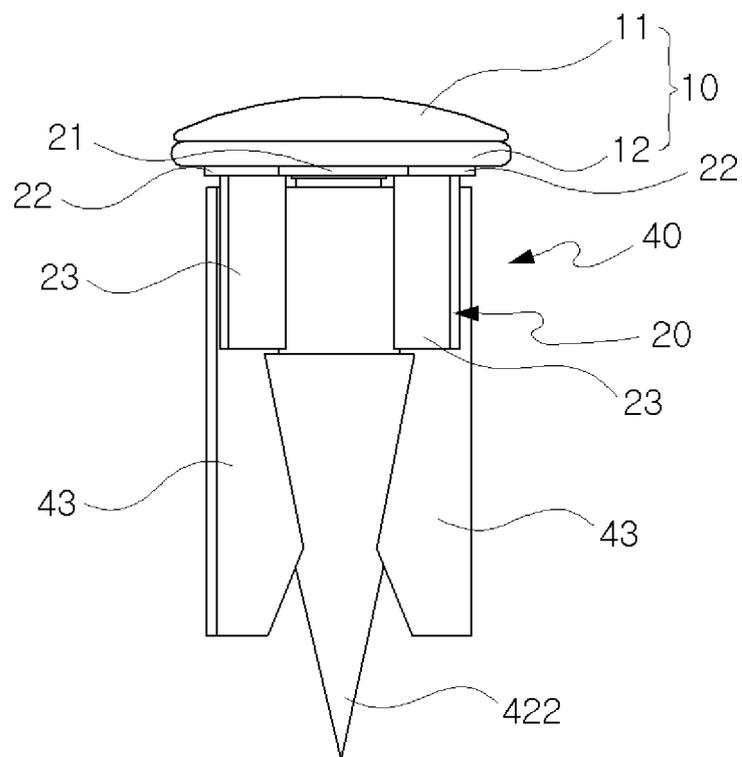


FIG. 5

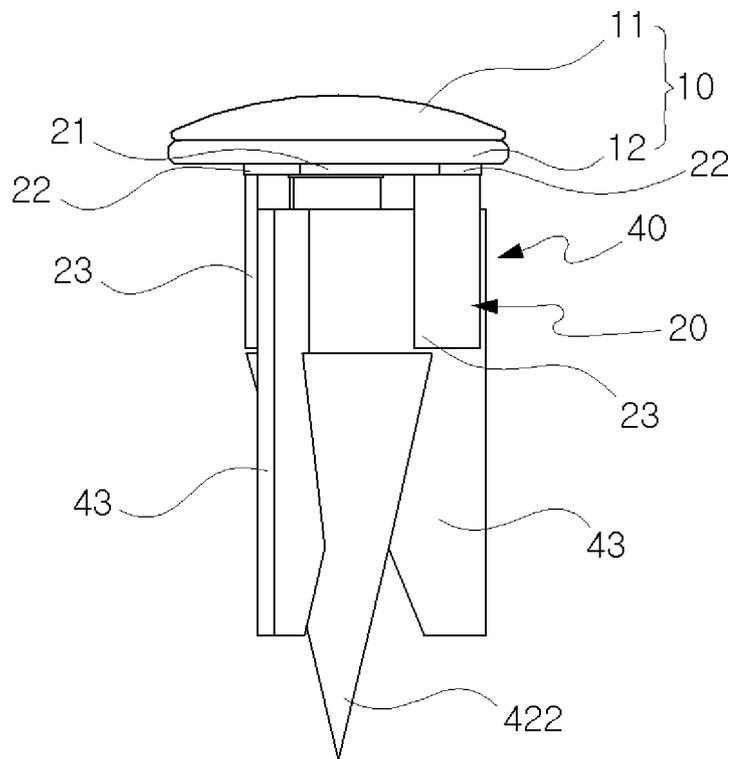


FIG. 6

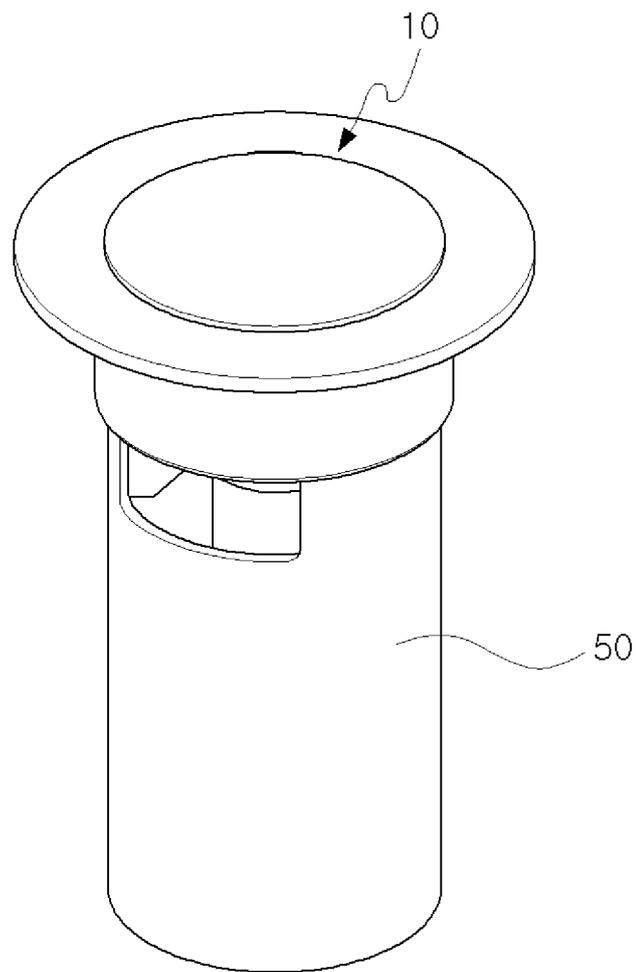
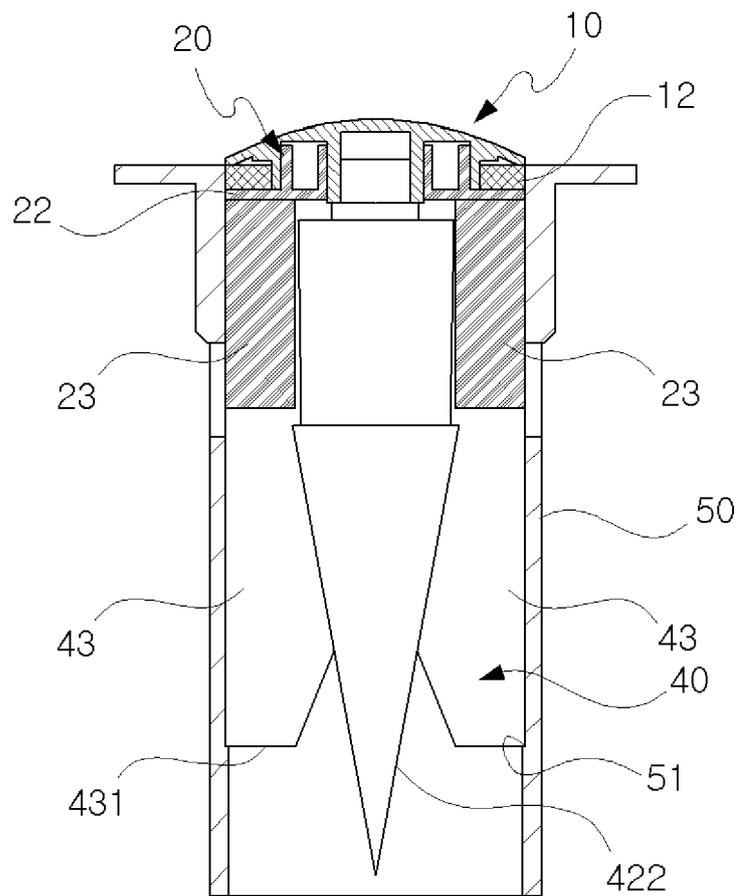


FIG. 7



INTERNATIONAL SEARCH REPORT

International application No.
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A. CLASSIFICATION OF SUBJECT MATTER <i>E03C 1/262(2006.01); 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 1/262; A47K 1/14; E03C 1/26; E03C 1/23; 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: pop-up valve, head part, device for preventing foreign materials from being jammed, second guide wing, protrusion		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	
	Relevant to claim No.	
Y	KR 20-0241062 Y1 (OH, Se-Young) 11 October 2001 See pages 2-3; claim 1; and figures 1-4.	1-10
Y	KR 20-0279912 Y1 (SONG, Woo-Bok) 02 July 2002 See page 2; claim 1; and figures 2-3, 5.	1-10
Y	KR 20-2013-0006710 U (SEO, Young Kil) 22 November 2013 See paragraphs [0016], [0026]; claim 1; and figure 3.	7-8
A	US 2011-0126347 A1 (QIAN et al.) 02 June 2011 See paragraphs [0034]-[0046]; and figures 1-4.	1-10
A	KR 10-2017-0011256 A (KIM, Chang-Hwan) 02 February 2017 See paragraphs [0023]-[0049]; and figures 3-4.	1-10
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
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Date of the actual completion of the international search	Date of mailing of the international search report	
16 MARCH 2018 (16.03.2018)	16 MARCH 2018 (16.03.2018)	
Name and mailing address of the ISA/KR  Korean Intellectual Property Office Government Complex Daejeon Building 4, 189, Cheongsa-ro, Seo-gu, Daejeon, 35208, Republic of Korea Facsimile No. +82-42-481-8578	Authorized officer Telephone No.	

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/KR2017/011646

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REFERENCES CITED IN THE DESCRIPTION

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