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(54) **Faucet discharging structure for forming a hollow water curtain**

(57) A discharging structure of a faucet with a closed hollow water curtain comprises: a faucet member (10), a discharging tube (11), extending forward, being disposed at the upper portion of the faucet member; an outlet (111), being disposed at the front end of the discharging

tube; and a retaining portion (12), being disposed inside the outlet so as to let flowing water around the outlet be along the edge of the retaining portion to vertically fall down for forming the closed hollow water curtain.

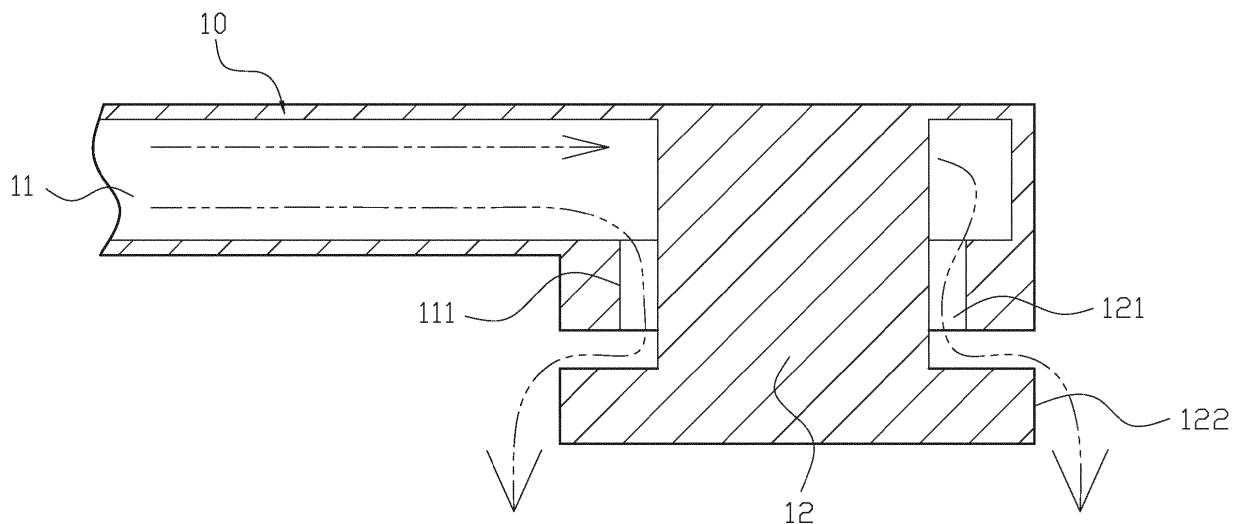


FIG 5

Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention generally relates to a discharging structure of a faucet with a closed hollow water curtain, more particularly to that water around an outlet is along the edge of a retaining portion, inside the outlet, to fall down vertically for forming the closed hollow water curtain in order to enlarge the area of flush for improving the flush efficiency and saving the amount of discharging water.

2. Description of the Prior Art

[0002] The type of discharging water of General faucet is solid cylindrical that flushes partial area, and user shall continuously move hands to wash hands or goods. It is definitely inconvenient. People skilled in the art thus develop an improved faucet structure with a larger flush area. The upper portion of the improved faucet structure connects with a discharging tube extending forward. The bottom surface of the end of the discharging tube has a U-type outlet. Therefore, water overflowing from the U-type outlet will form a half-open water curtain for saving the amount of flowing water and enlarging a flush area. However, the purposes of saving the amount of flowing water and enlarging a flush area are achieved, user may still move hands continuously, thus, the shortcoming of prior arts is still not solved. Hence, for figuring out the prior problem, a discharging structure of a faucet being able to form a closed hollow water curtain through an outlet in order to totally enlarge the area of flush and the efficiency of flush shall be an important issue for people skilled in the art.

[0003] As aforesaid, the inventor has achieved based on his plentiful experiences and developed the present invention.

SUMMARY OF THE INVENTION

[0004] The discharging water curtain of the outlet of prior faucet structure is half-open shape, and that will not completely wash hands, so user shall continuously move hands during washing. It is a disadvantage.

[0005] The present invention provides a discharging structure of a faucet with a closed hollow water curtain. The discharging structure comprises a faucet member, a discharging tube, extending forward, being disposed at the upper portion of the faucet member, an outlet being disposed at the front end of the discharging tube, a retaining portion being disposed inside the outlet so as to let flowing water around the outlet be along the edge of the retaining portion to vertically fall down for forming the closed hollow water curtain.

[0006] The present invention provides a discharging

structure of a faucet with a closed hollow water curtain. Water around the outlet is along the edge of the retaining portion, inside the outlet, to fall down vertically for forming the closed hollow water curtain. The water curtain may enlarge the area of flush for improving the flush efficiency and saving the amount of discharging water.

[0007] Other and further features, advantages, and benefits of the invention will become apparent in the following description taken in conjunction with the following drawings. It is to be understood that the foregoing general description and following detailed description are exemplary and explanatory but are not to be restrictive of the invention. The accompanying drawings are incorporated in and constitute a part of this application and, together with the description, serve to explain the principles of the invention in general terms. Like numerals refer to like parts throughout the disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] The objects, spirits, and advantages of the preferred embodiments of the present invention will be readily understood by the accompanying drawings and detailed descriptions, wherein:

Fig. 1 illustrates a schematic 3-D view of a first preferred embodiment of the present invention;

Fig. 2 illustrates a schematic partial sectional view of the first preferred embodiment of the present invention;

Figs. 3A, 3B, 3C, and 3D illustrate a schematic plain view of an annular slit of the present invention;

Fig. 4 illustrates a schematic 3-D view of a second preferred embodiment of the present invention;

Fig. 5 illustrates a schematic partial sectional view of the first preferred embodiment of the present invention;

Fig. 6 illustrates a schematic 3-D view of a third preferred embodiment of the present invention;

Fig. 7 illustrates a schematic 3-D exploded view of the third preferred embodiment of the present invention;

Fig. 8 illustrates a schematic partial sectional view of the third preferred embodiment of the present invention;

Fig. 9 illustrates a schematic 3-D view of a fourth preferred embodiment of the present invention;

Fig. 10 illustrates a schematic partial sectional view of the fourth preferred embodiment of the present

invention;

Fig. 11 illustrates a schematic 3-D view of a fifth preferred embodiment of the present invention; and

Fig. 12 illustrates a schematic partial sectional view of the fifth preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0009] Following preferred embodiments and figures will be described in detail so as to achieve aforesaid objects.

[0010] With references to Fig. 1, Fig. 2 and Figs. 3A, 3B, 3C, 3D which illustrate a first preferred embodiment of the present invention. A discharging structure of a faucet with a closed hollow water curtain includes: a faucet member 10, a discharging tube 11, extending forward, is disposed at the upper portion of the faucet member 10, an outlet 111 is disposed at the front end of the discharging tube 11, the shape of the outlet 111 is selected from the group consisted of: square, round, diamond, triangle, oval, and any other shapes, a retaining portion 12 is disposed inside the outlet 111, the retaining portion 12 extends downward to the edge of the discharging tube 11, the edge of the retaining portion 12 keeps a gap with the edge of the outlet 111, the shape of the edge of the retaining portion 12 is the same as the shape of the edge of the outlet 111, so that a corresponding annular slit 121 is formed between the retaining portion 12 and the outlet 111, the shape of the slit can be square, round, diamond, triangle, oval, or any other shapes, thus flowing water around the outlet 111 is along the edge of the retaining portion 12 to vertically fall down for forming the closed hollow water curtain.

[0011] With reference to Fig. 2 in conjunction with Fig. 1, in practice, due to the retaining portion 12 being disposed inside the outlet 111 of the faucet member 10 and a gap being between the edge of the outlet 111 and the edge of the retaining portion 12 to form the annular slit 121, the flowing water around the outlet 111 along the edge of the retaining portion 12 will vertically fall down for forming the closed hollow water curtain after the faucet member 10 connects with a water-supply end. The water curtain may enlarge the area of flush for improving the flush efficiency and saving the amount of discharging water.

[0012] With references to Fig. 4 and Fig. 5, which illustrate a second preferred embodiment of the present invention. The retaining portion 12 extends downward to be out the outlet 111, the peripheral of the portion, out the outlet 111, of the retaining portion 12 being disposed a flange 122, thus the flowing water around the outlet 111 will be along the flange 122 to vertically fall down, the diameter of the falling water is thus enlarged so as to improve the flush efficiency.

[0013] With references to Fig. 6, Fig. 7 and Fig. 8, which

illustrate a third preferred embodiment of the present invention. The discharging tube 11 and the retaining portion 12 of the faucet member 10 can be integrally produced, as shown from Fig. 1 to Fig. 5, otherwise both can be manufactured respectively and then assembled. The edge of the outlet 111 of the discharging tube 11 extends downward to form a connecting tube portion 112, the retaining portion 12 has a water-collection room 123 opened upward, the open of the water-collection room 123 connects with an assembling tube 124 so as to connect with a connecting tube portion 112 of the outlet 111, the bottom of the assembling tube 124 has at least one flowing hole 125 that connects with the water-collection room 123, the diameter of the falling water is thus enlarged so as to improve the flush efficiency.

[0014] With references to Fig. 9 and Fig. 10, which illustrate a fourth preferred embodiment of the present invention. A hollow hole 113 is above the outlet 111 of the discharging tube 11. The edge of the outlet 111 extends upward to dispose the retaining portion 12. While a water level is over the retaining portion 12, the water will be along the inner edge of the retaining portion 12 to fall down vertically for forming the closed hollow water curtain.

[0015] With references to Fig. 11 and Fig. 12, which illustrate a fifth preferred embodiment of the present invention. The edges of the outlet 111 and the hollow hole 113 extend to form two retaining portions 12 respectively, a gap is between the two retaining portions 12. While a water level is over the retaining portion 12 of the outlet 111, the water will be along the inner edge of the retaining portion 12 to fall down vertically for forming the closed hollow water curtain.

[0016] According to aforesaid preferred embodiments, the present invention has the following advantage that is described below. Water around the outlet 111 is along the edge of the retaining portion 12, inside the outlet 111, to fall down vertically for forming the closed hollow water curtain. The water curtain may enlarge the area of flush for improving the flush efficiency and saving the amount of discharging water.

[0017] Although the invention has been disclosed and illustrated with reference to particular embodiments, the principles involved are susceptible for use in numerous other embodiments that will be apparent to persons skilled in the art. This invention is, therefore, to be limited only as indicated by the scope of the appended claims

Claims

1. A discharging structure of a faucet with a closed hollow water curtain comprising:

a faucet member 10, a discharging tube 11, extending forward, being disposed at the upper portion of the faucet member 10, an outlet 111 being disposed at the front end of the discharg-

ing tube 11, a retaining portion 12 being disposed inside the outlet 111 so as to let flowing water around the outlet 111 be along the edge of the retaining portion 12 to vertically fall down for forming the closed hollow water curtain.

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2. The discharging structure of the faucet with the closed hollow water curtain according to claim 1, wherein the retaining portion 12 extends downward to the edge of the discharging tube 11, the edge of the retaining portion 12 keeping a gap with the edge of the outlet 111 so as to form an annular slit 121. 10
3. The discharging structure of the faucet with the closed hollow water curtain according to claim 2, wherein the shape of the edge of the retaining portion 12 is the same as the shape of the edge of the outlet 111. 15
4. The discharging structure of the faucet with the closed hollow water curtain according to claim 2, wherein the retaining portion 12 extends downward to be out the outlet 111, the peripheral of the portion, out the outlet 111, of the retaining portion 12 being disposed a flange 122. 20
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5. The discharging structure of the faucet with the closed hollow water curtain according to claim 1, wherein the edge of the outlet 111 of the discharging tube 11 extends downward to form a connecting tube portion 112, the retaining portion 12 having a water-collection room 123 opened upward, the open of the water-collection room 123 connecting with an assembling tube 124 so as to connect with a connecting tube portion 112 of the outlet 111, the bottom of the assembling tube 124 having at least one flowing hole 125 that connects with the water-collection room 123. 30
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6. The discharging structure of the faucet with the closed hollow water curtain according to claim 1, wherein a hollow hole 113 is above the outlet 111 of the discharging tube 11. 40
7. The discharging structure of the faucet with the closed hollow water curtain according to claim 1, wherein the retaining portion 12 is disposed by the upward extension of the edge of the outlet 111. 45
8. The discharging structure of the faucet with the closed hollow water curtain according to claim 6, wherein the edges of the outlet 111 and the hollow hole 113 extend to form two retaining portions 12 respectively, a gap being between the two retaining portions 12. 50
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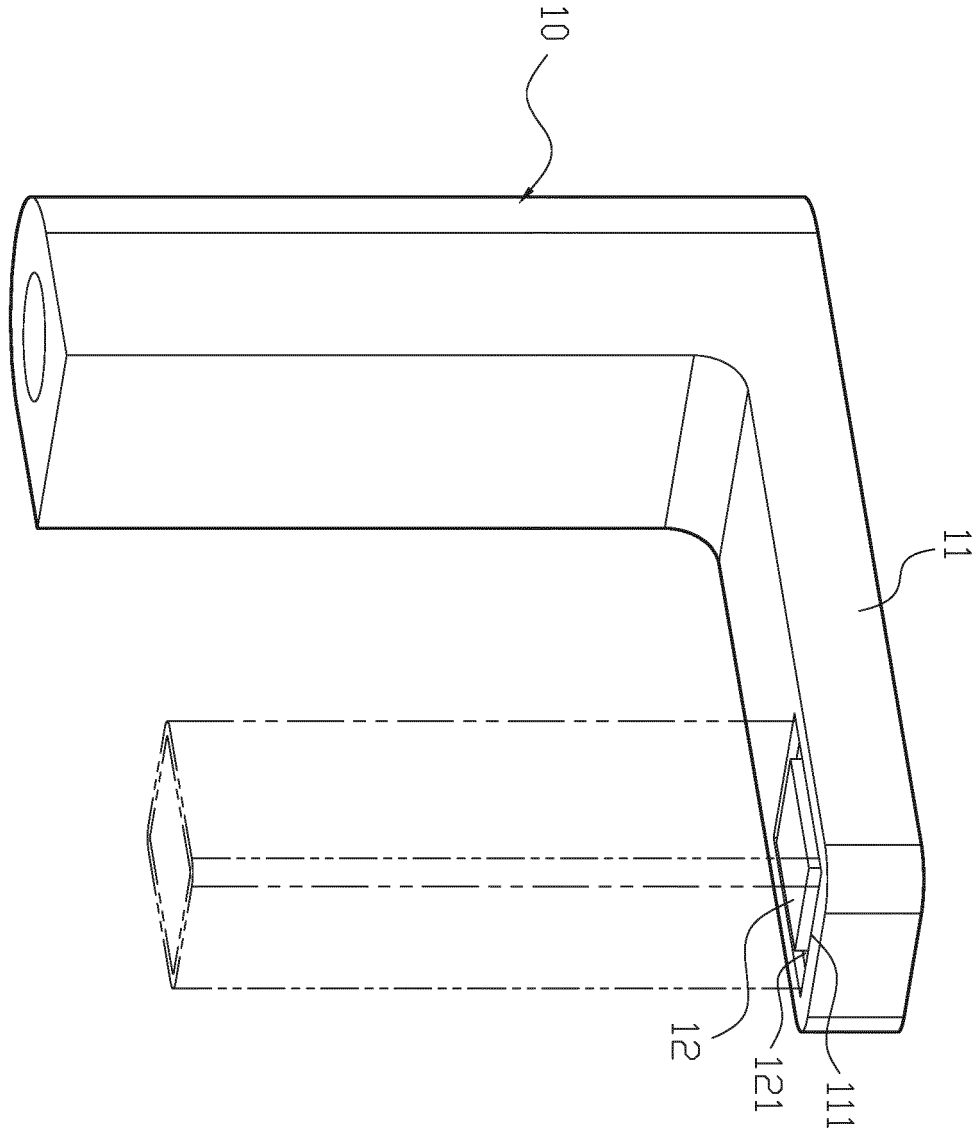


FIG 1

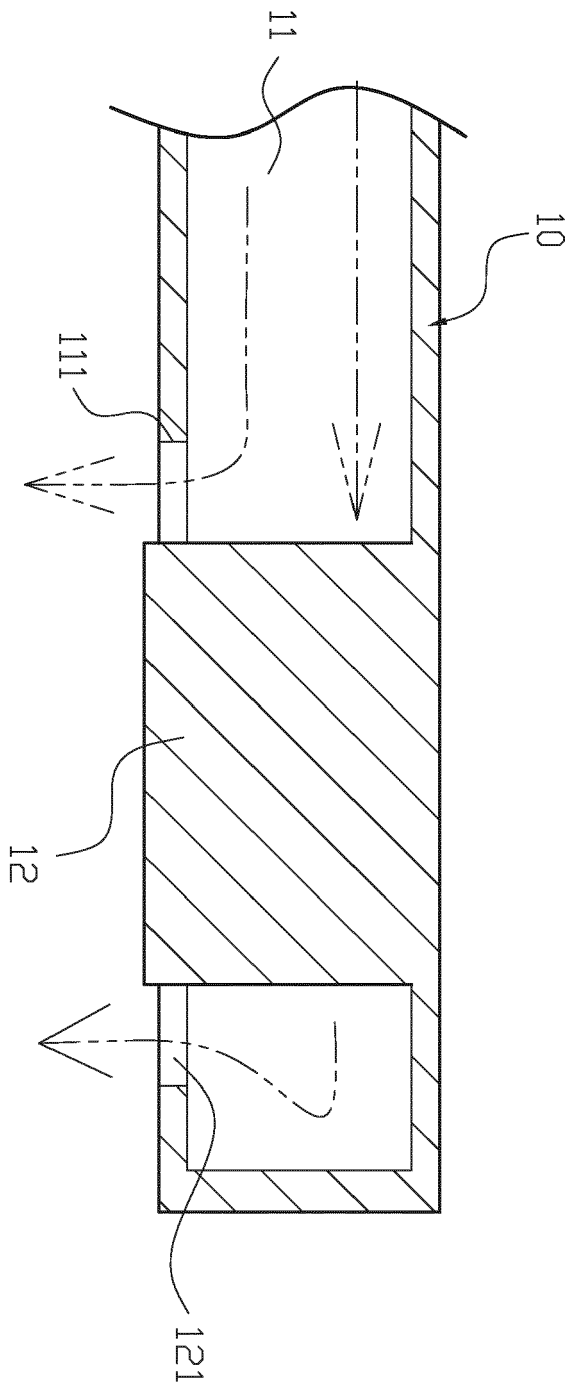


FIG 2

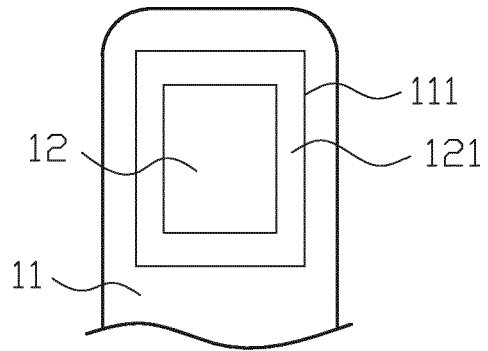


FIG 3A

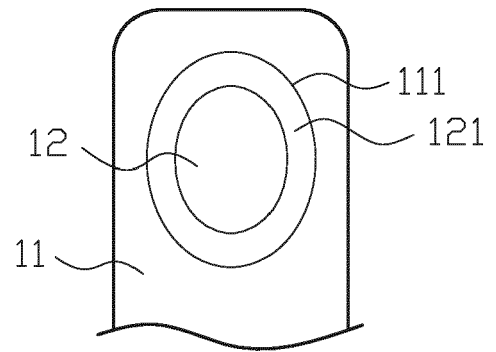


FIG 3B

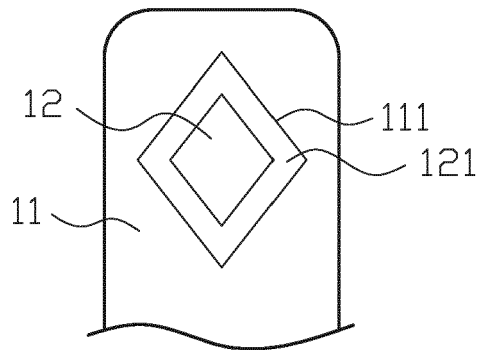


FIG 3C

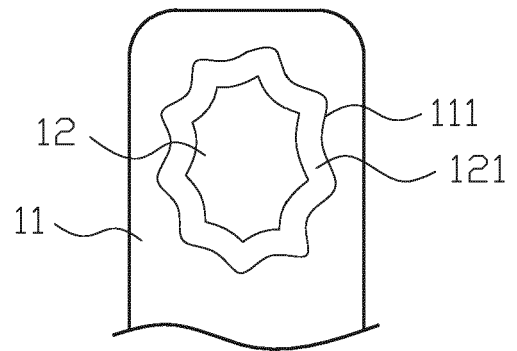
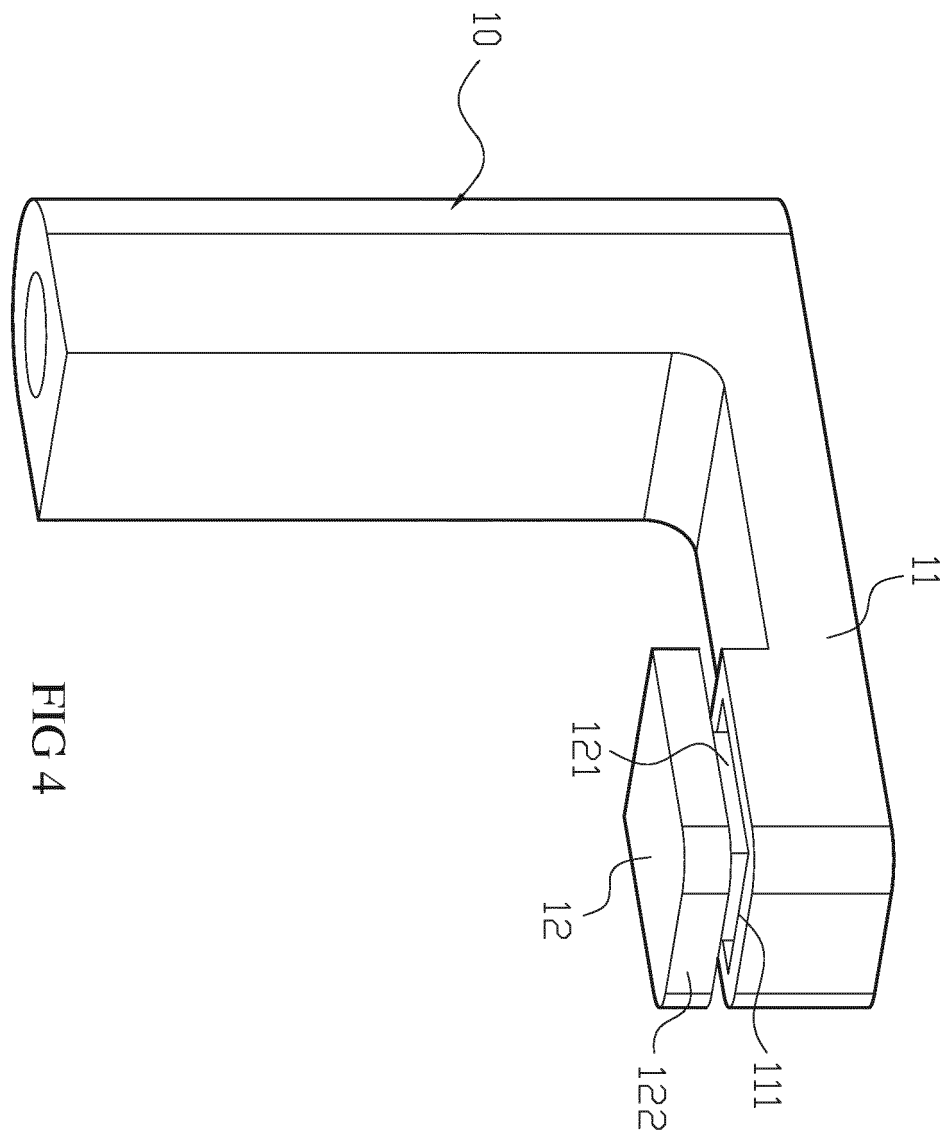


FIG 3D



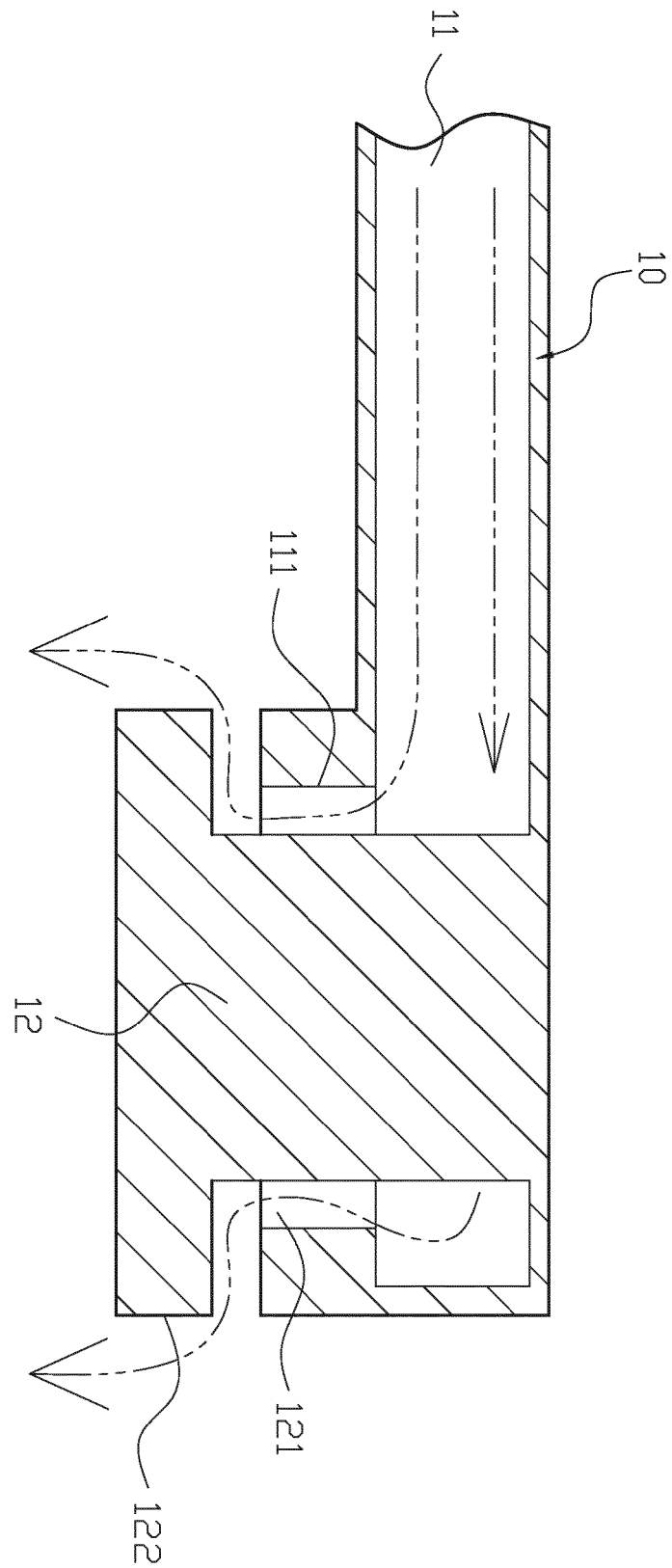


FIG 5

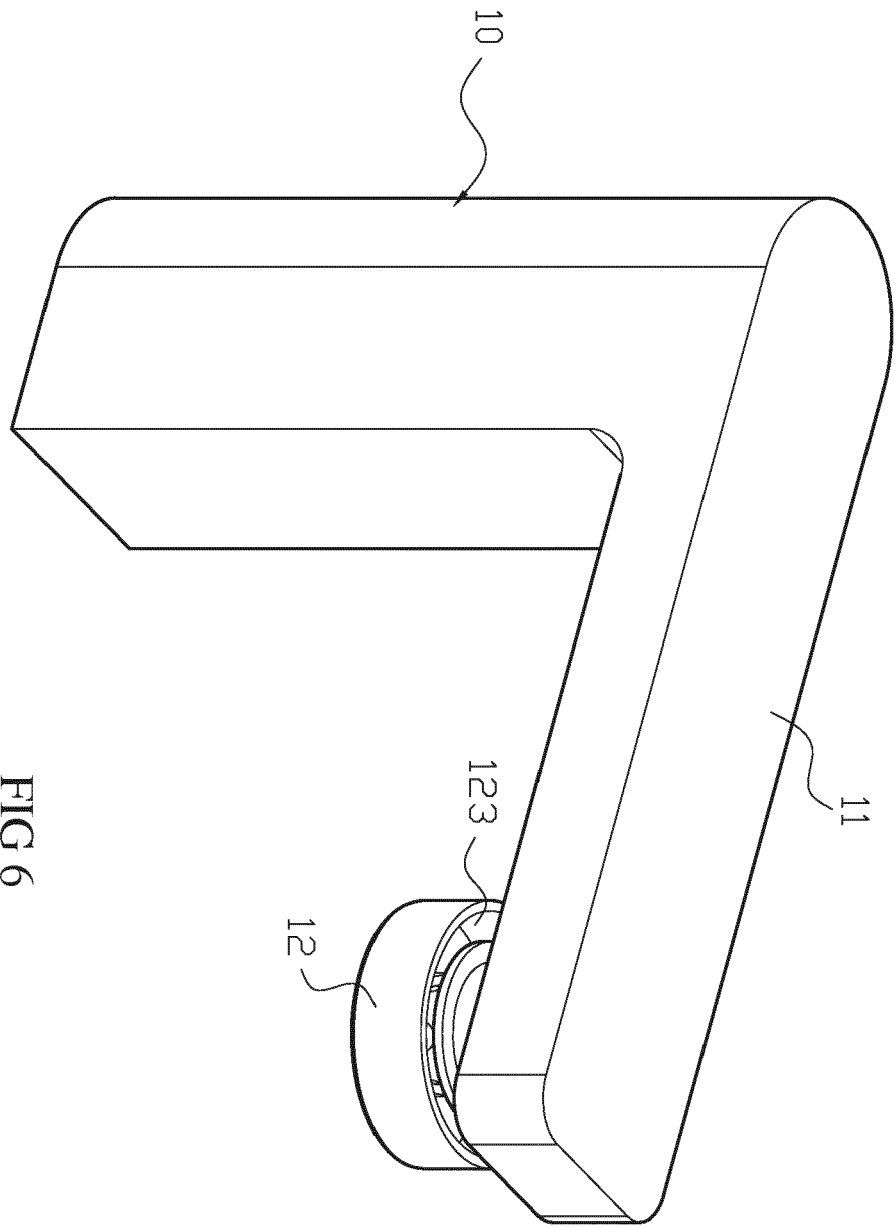
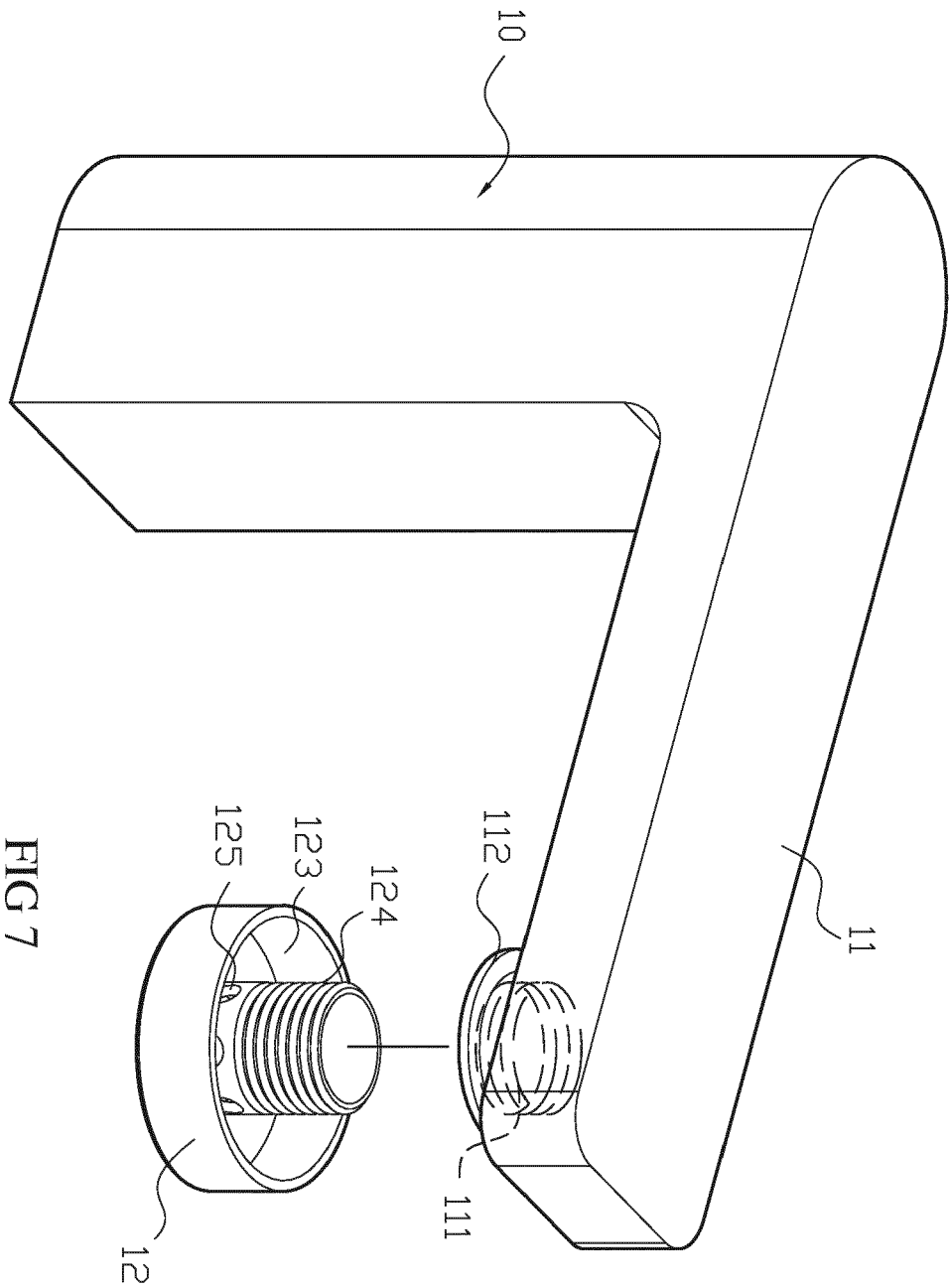


FIG 6



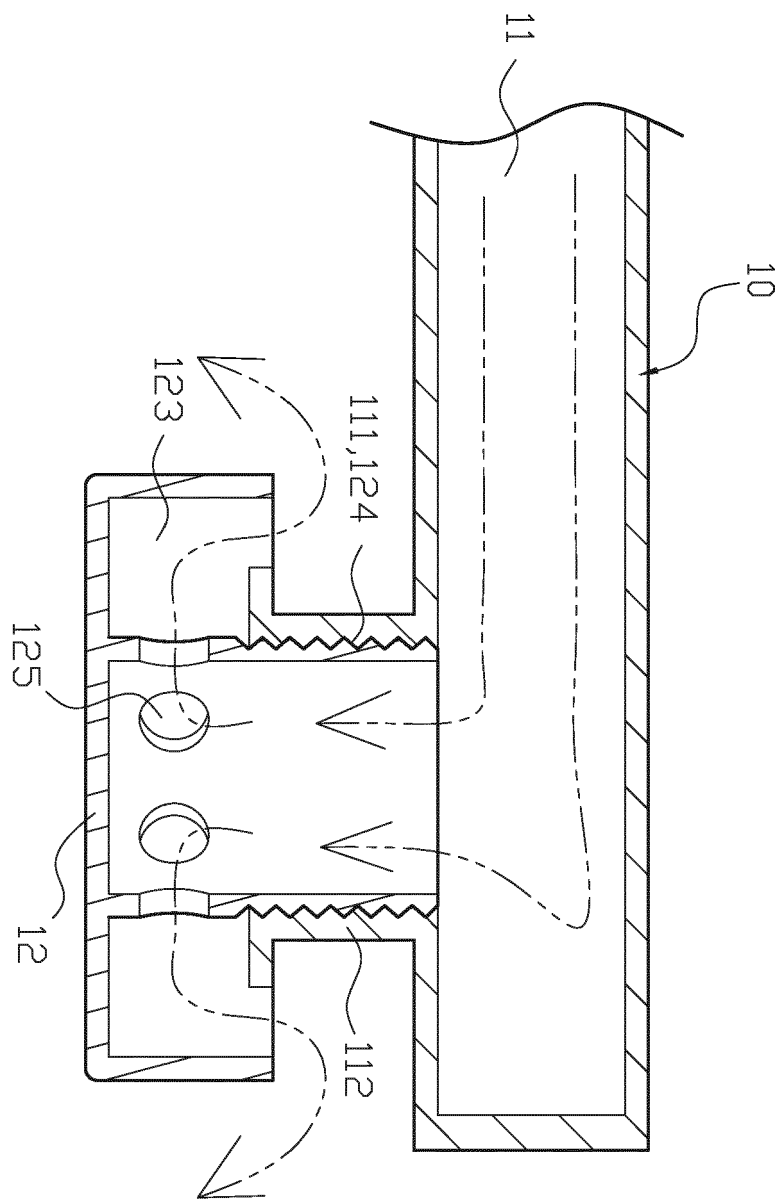


FIG 8

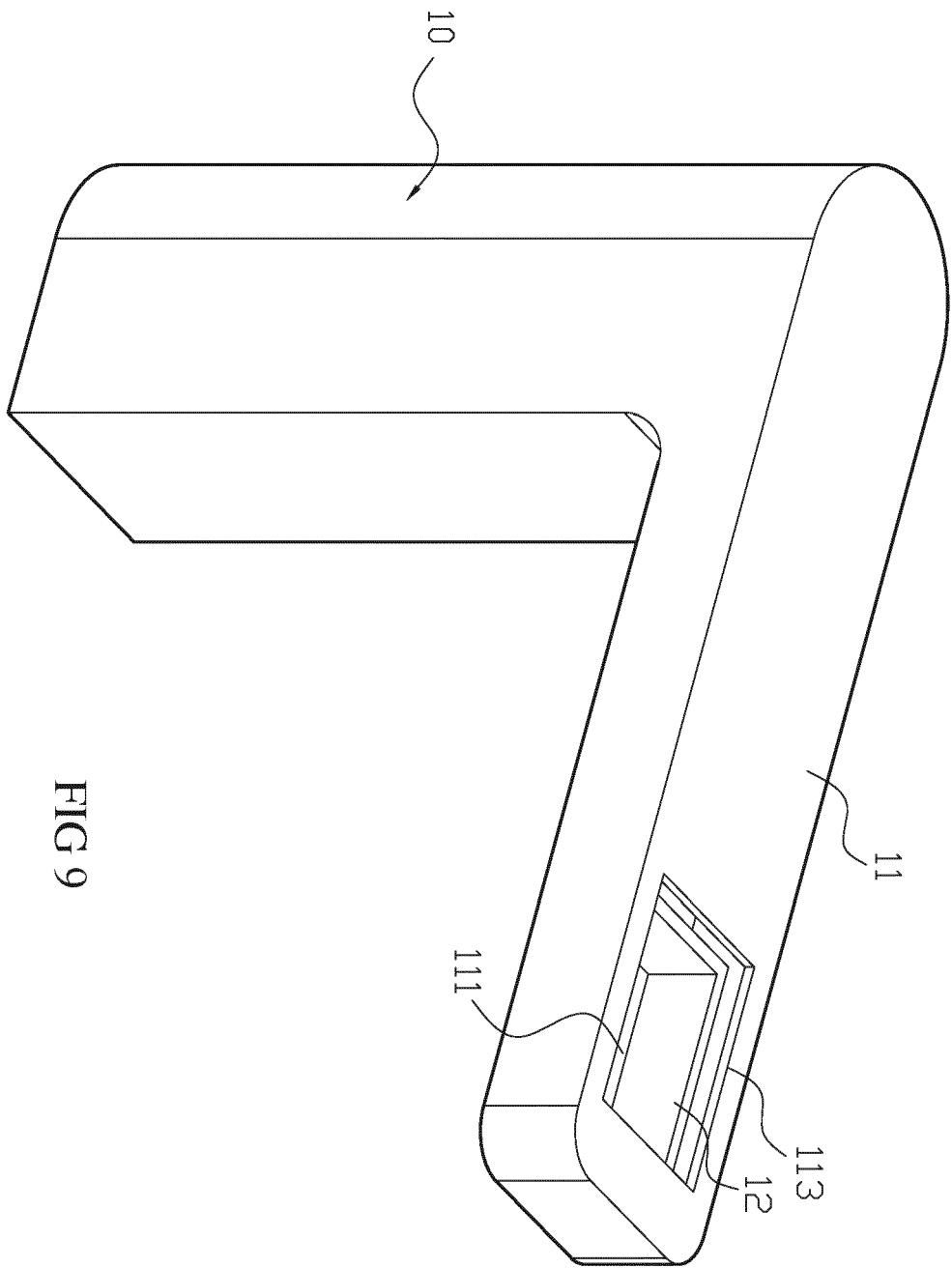


FIG 9

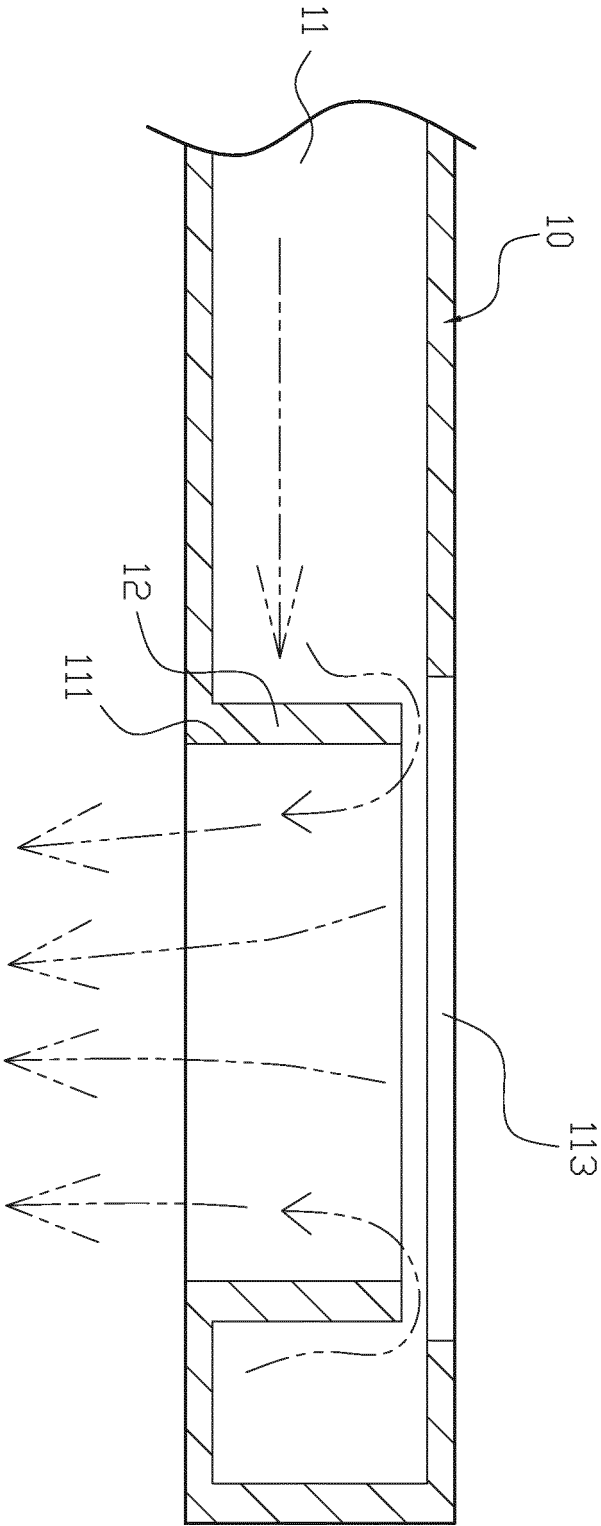


FIG 10

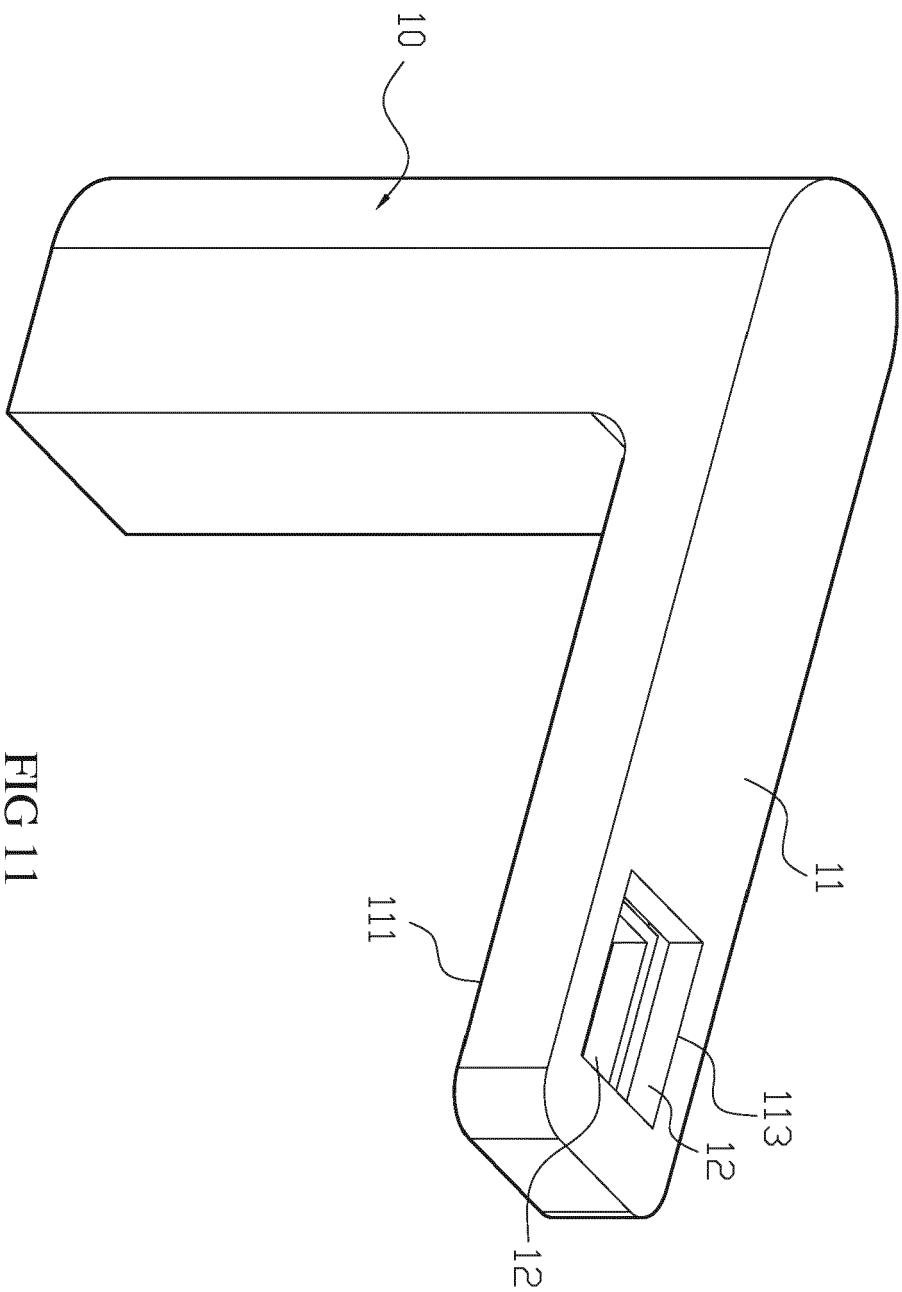


FIG 11

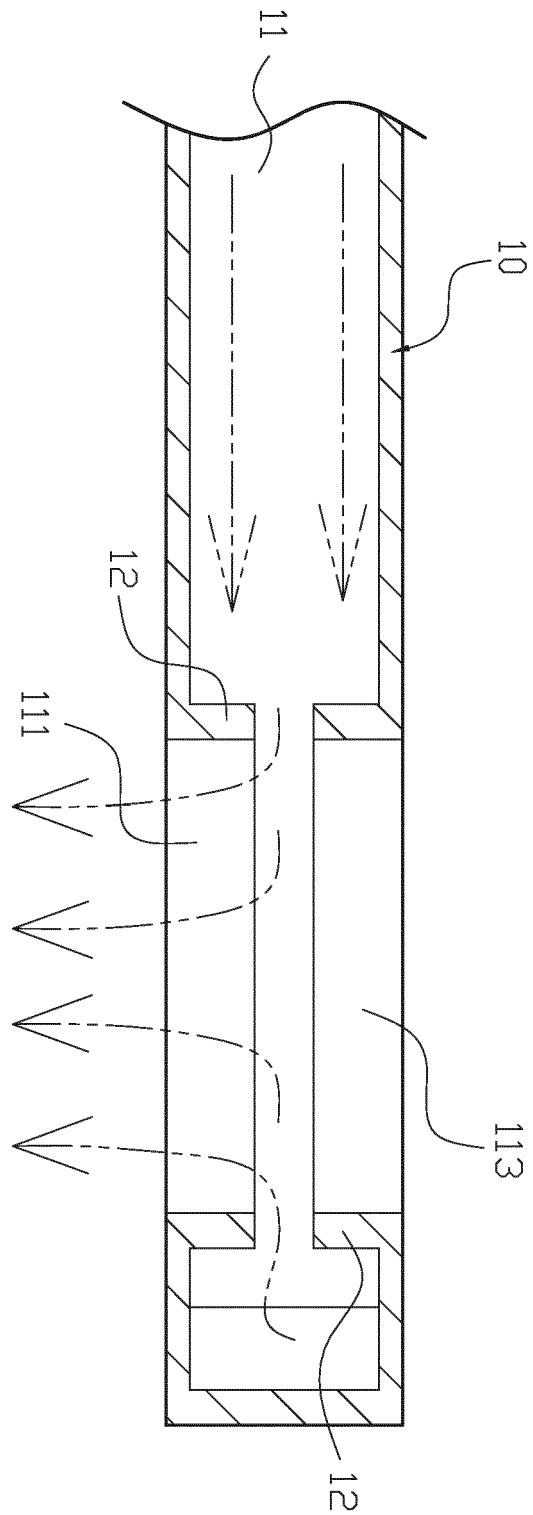


FIG 12



EUROPEAN SEARCH REPORT

Application Number
EP 12 19 3501

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Place of search Munich		Date of completion of the search 23 April 2013	Examiner Leher, Valentina
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			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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