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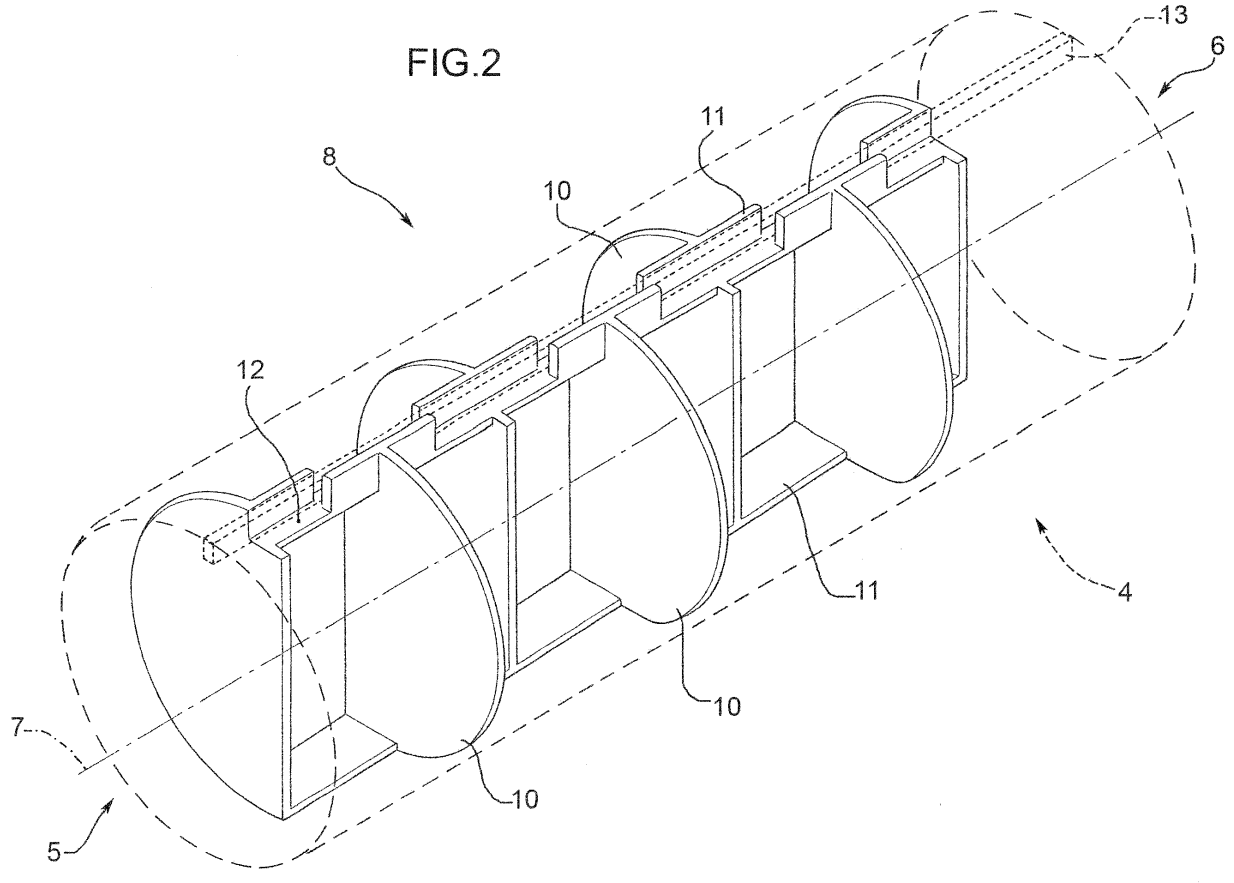
(54) Overflow duct for a washing machine

(57) An overflow duct (4) for a washing machine (1); the overflow duct (4) connecting the inside of the washing machine (1) to the outside of the washing machine (1), and having two opposite openings (5, 6), and a noise trap device (8) housed inside the overflow duct (4) and forming a labyrinth path (9) extending between the two openings (5, 6) of the overflow duct (4).

FIG.2



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Description

TECHNICAL FIELD

[0001] The present invention relates to an overflow duct for a washing machine.

BACKGROUND ART

[0002] To comply with regulations governing water mains connection of electrical appliances to prevent backsiphoning, a commercial washing machine usually has at least one overflow duct, of a given cross section, connecting the detergent dispenser or wash assembly to the outside, and which, in the event of a malfunction of the washing machine resulting in water leakage from the detergent dispenser or wash assembly, drains the water off to the outside to prevent backflow (backsiphoning) of detergent-containing water or similar to the water mains.

[0003] In other words, the overflow duct connects the inside of the washing machine directly to the outside. As a result, however, the noise generated inside the washing machine is also transmitted to the outside along the overflow duct, thus increasing the noise level of the washing machine.

DISCLOSURE OF THE INVENTION

[0004] It is an object of the present invention to provide an overflow duct for a washing machine, designed to eliminate the aforementioned drawbacks, and which, in particular, is cheap and easy to implement.

[0005] According to the present invention, there is provided an overflow duct for a washing machine, as claimed in the accompanying Claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] A non-limiting embodiment of the present invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows a schematic view of a washing machine featuring an overflow duct in accordance with the present invention;
Figure 2 shows a schematic view in perspective of an overflow duct of the Figure 1 washing machine;
Figure 3 shows a front view of a noise trap device located along the Figure 2 overflow duct; and
Figure 4 shows a plan view of the noise trap device located along the Figure 2 overflow duct.

PREFERRED EMBODIMENTS OF THE INVENTION

[0007] Number 1 in Figure 1 indicates as a whole a laundry washing machine comprising a detergent dispenser 2; and a cylindrical wash assembly 3 comprising a revolving drum (defining a wash tub) which rotates about a horizontal rotation axis (in alternative embodiments not shown, the rotation axis may be tilted or vertical), and front access to which is closed by a hinged door.

[0008] Washing machine 1 also comprises an overflow duct 4 connecting the inside of washing machine 1 to the outside, and having two opposite openings 5 and 6. As shown more clearly in Figure 2, an inner opening 5 faces inwards of washing machine 1, and an outer opening 6 outwards of washing machine 1.

[0009] As shown in Figures 2 and 3, overflow duct 4 has a circular cross section and a longitudinal axis 7, and comprises a noise trap device 8 housed inside overflow duct 4 and forming a labyrinth path 9 (shown in Figure 4) extending between openings 5 and 6 of overflow duct 4.

[0010] In a preferred embodiment, noise trap device 8 comprises a number of flat plates 10 arranged inside, and perpendicular to longitudinal axis 7 of, overflow duct 4. Each plate 10 is the same circular shape as the cross section of overflow duct 4, and is smaller than, and over half the size of, the cross section of overflow duct 4.

[0011] Plates 10 are located on alternate opposite sides of overflow duct 4 to define a "zigzag" labyrinth path 9. That is, as shown clearly in Figure 4, one plate 10 is located on the left side of overflow duct 4, while the preceding plate 10 and following plate 10 are located on the right side of overflow duct 4 (in a different embodiment, the plates may be located on the top and bottom, as opposed to the right and left, sides of overflow duct 4). More specifically, as shown in Figure 3, each plate 10 has a portion overlapping the preceding plate 10 and following plate 10, and of a width ranging between 0.05 and 0.3 (preferably 0.07-0.15) times the diameter of overflow duct 4. It is important to point out that the overlapping portions should be wide enough to form an effective noise barrier, but not so wide as to impede water flow along overflow duct 4.

[0012] In a preferred embodiment, noise trap device 8 comprises two supporting bars 11 parallel to longitudinal axis 7 of overflow duct 4 and connected rigidly to each plate 10. Preferably, a top supporting bar 11 defines a longitudinal slit 12 running parallel to longitudinal axis 7 of overflow duct 4; and overflow duct 4 comprises a longitudinal rib 13, which engages longitudinal slit 12 of overflow duct 4 to immobilize noise trap device 8 inside overflow duct 4, in particular (but non only) when transporting washing machine 1.

[0013] Overflow duct 4 as described above has numerous advantages, by being cheap and easy to produce, by having substantially the same performance as a corresponding standard overflow duct, and by greatly reducing noise transmission to the outside of washing machine 1.

Claims

1. An overflow duct (4) for a washing machine (1); the overflow duct (4) connecting the inside of the washing machine (1) to the outside of the washing machine (1), and having two opposite openings (5, 6);

   the overflow duct (4) being **characterized by** comprising a noise trap device (8) housed inside the overflow duct (4) and forming a labyrinth path (9) extending between the two openings (5, 6) of the overflow duct (4).

2. An overflow duct (4) as claimed in Claim 1, wherein the noise trap device (8) comprises a number of plates (10) arranged inside the overflow duct (4).

3. An overflow duct (4) as claimed in Claim 2, wherein the plates (10) are flat and are perpendicular to a longitudinal axis (7) of the overflow duct (4).

4. An overflow duct (4) as claimed in Claim 2 or 3, wherein each plate (10) is the same shape as the cross section of the overflow duct (4), is smaller than the cross section of the overflow duct (4), and is over half the size of the cross section of the overflow duct (4).

5. An overflow duct (4) as claimed in Claim 4, wherein each plate (10) is located on one side of the overflow duct (4), while the preceding plate (10) and the following plate (10) are located on the opposite side of the overflow duct (4), so as to define a "zigzag" labyrinth path (9).

6. An overflow duct (4) as claimed in Claim 5, wherein each plate (10) has a portion overlapping the preceding plate (10) and the following plate (10), and of a width ranging between 0.05 and 0.3 times the diameter of the overflow duct (4).

7. An overflow duct (4) as claimed in Claim 5, wherein each plate (10) has a portion overlapping the preceding plate (10) and the following plate (10), and of a width ranging between 0.07 and 0.15 times the diameter of the overflow duct (4).

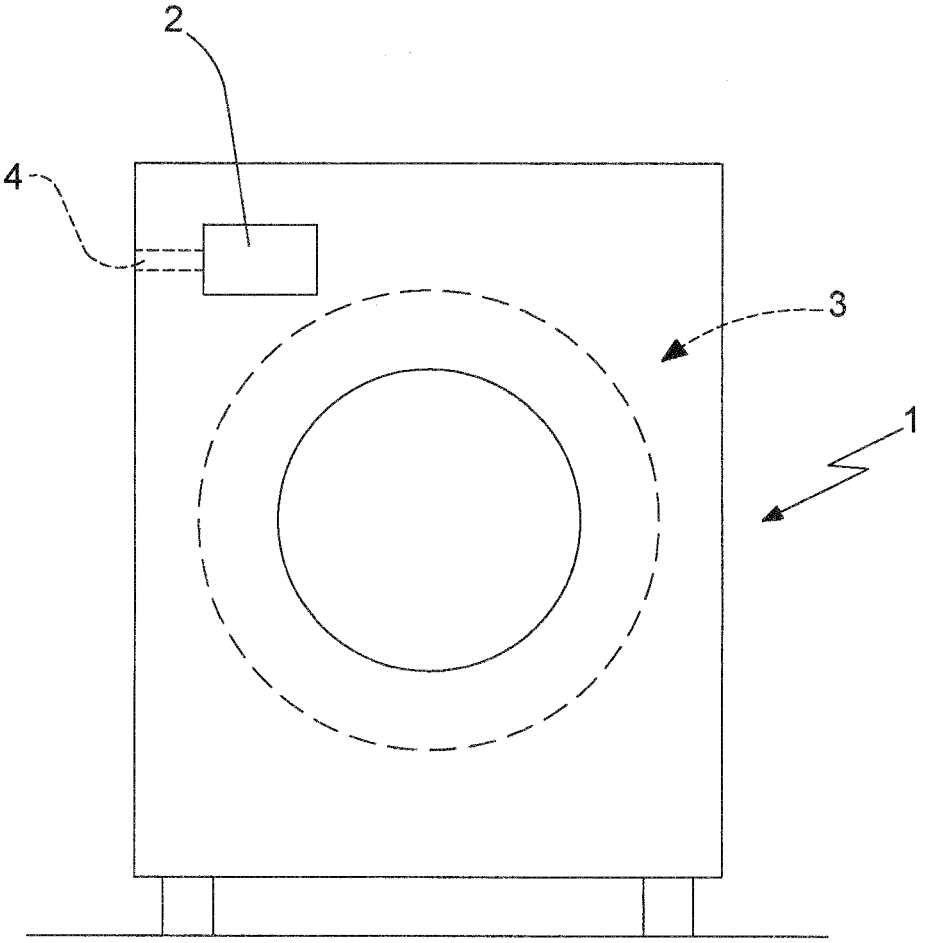
8. An overflow duct (4) as claimed in any one of Claims 2 to 7, wherein the noise trap device (8) comprises at least one supporting bar (11) parallel to a longitudinal axis (7) of the overflow duct (4) and connected rigidly to each plate (10).

9. An overflow duct (4) as claimed in Claim 8, wherein the noise trap device (8) comprises two supporting bars (11) located on opposite sides of the overflow duct (4).

10. An overflow duct (4) as claimed in Claim 8 or 9, wherein at least one supporting bar (11) defines a longitudinal slit (12) running parallel to the longitudinal axis (7) of the overflow duct (4).

11. An overflow duct (4) as claimed in Claim 10, and comprising a longitudinal rib (13) engaging the longitudinal slit (12) of the overflow duct (4).

FIG.1



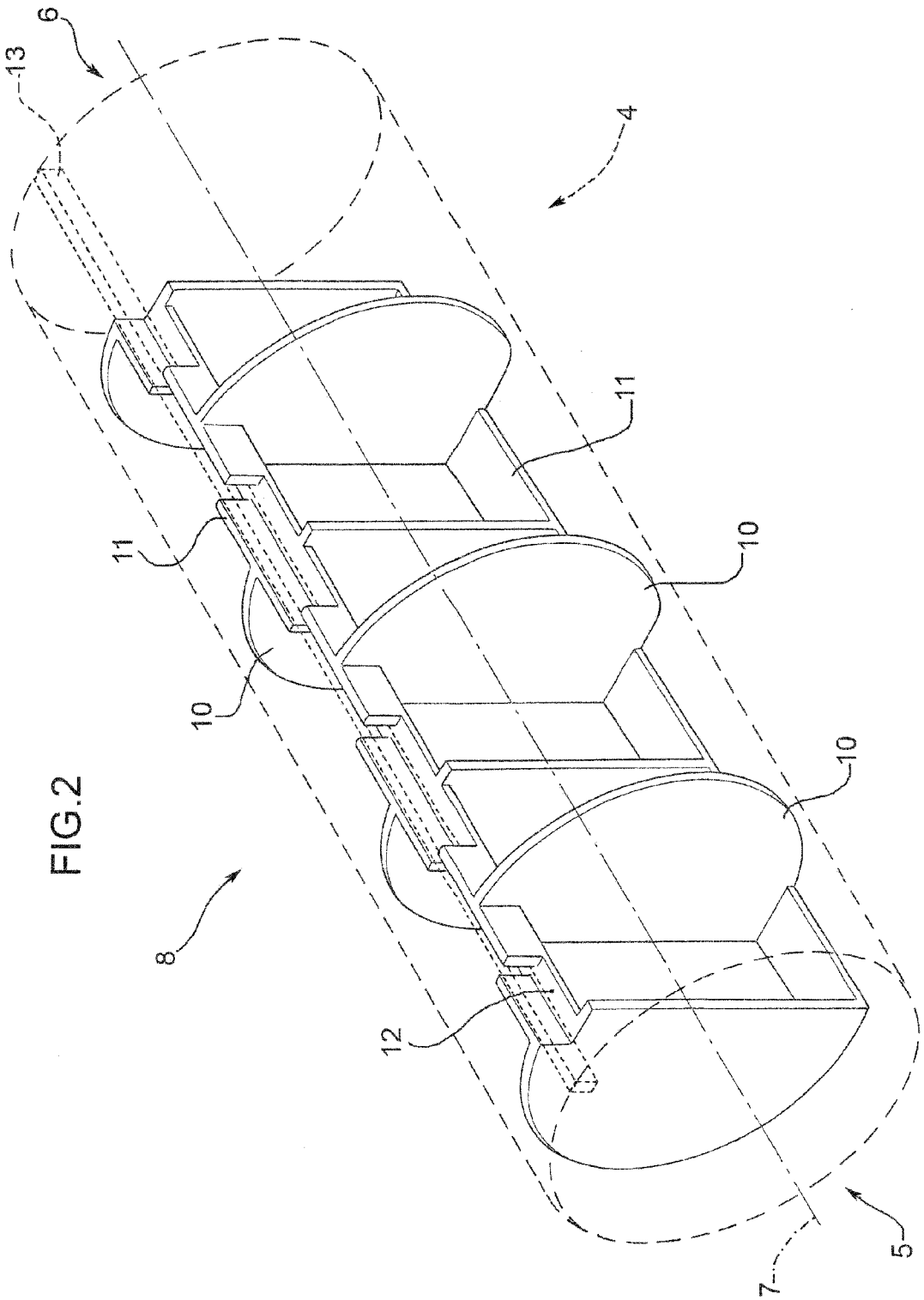


FIG.2

FIG.3

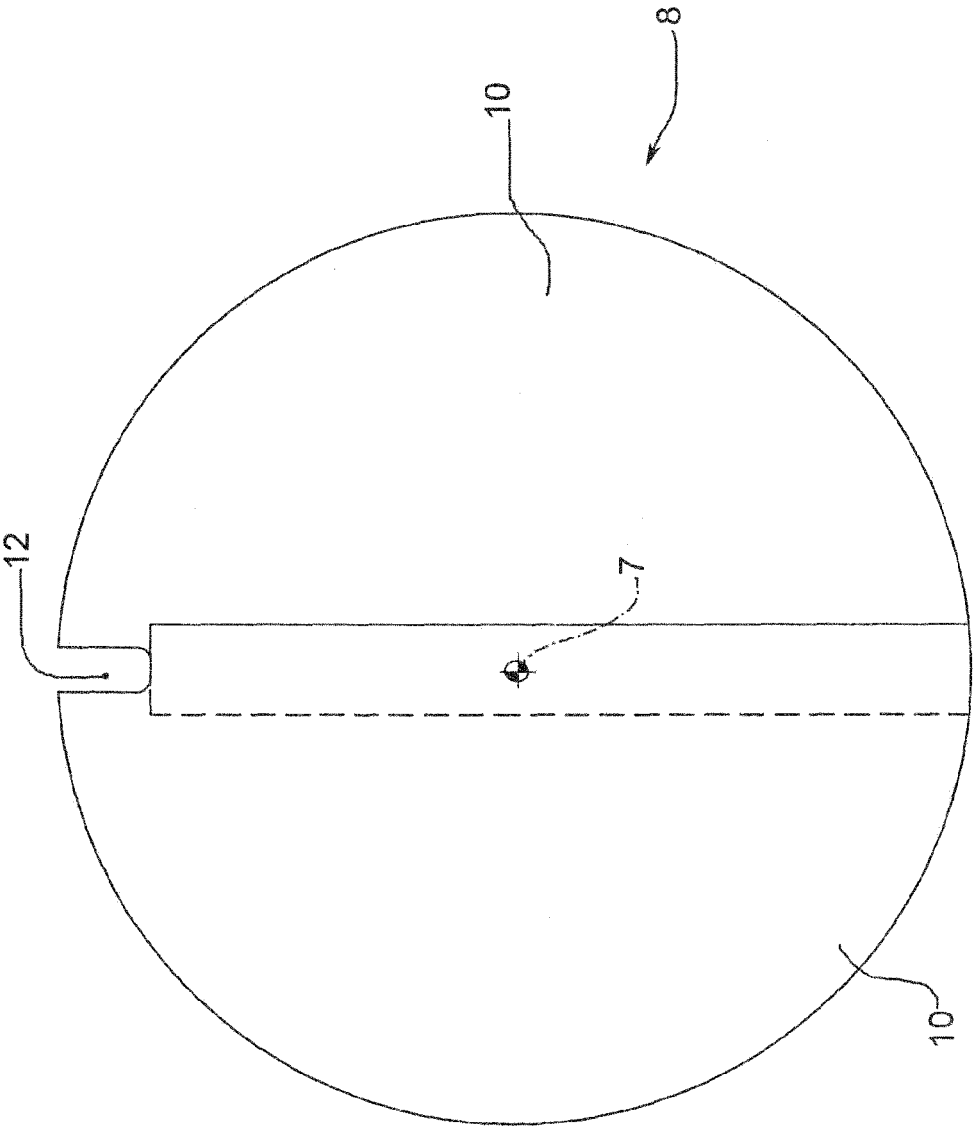
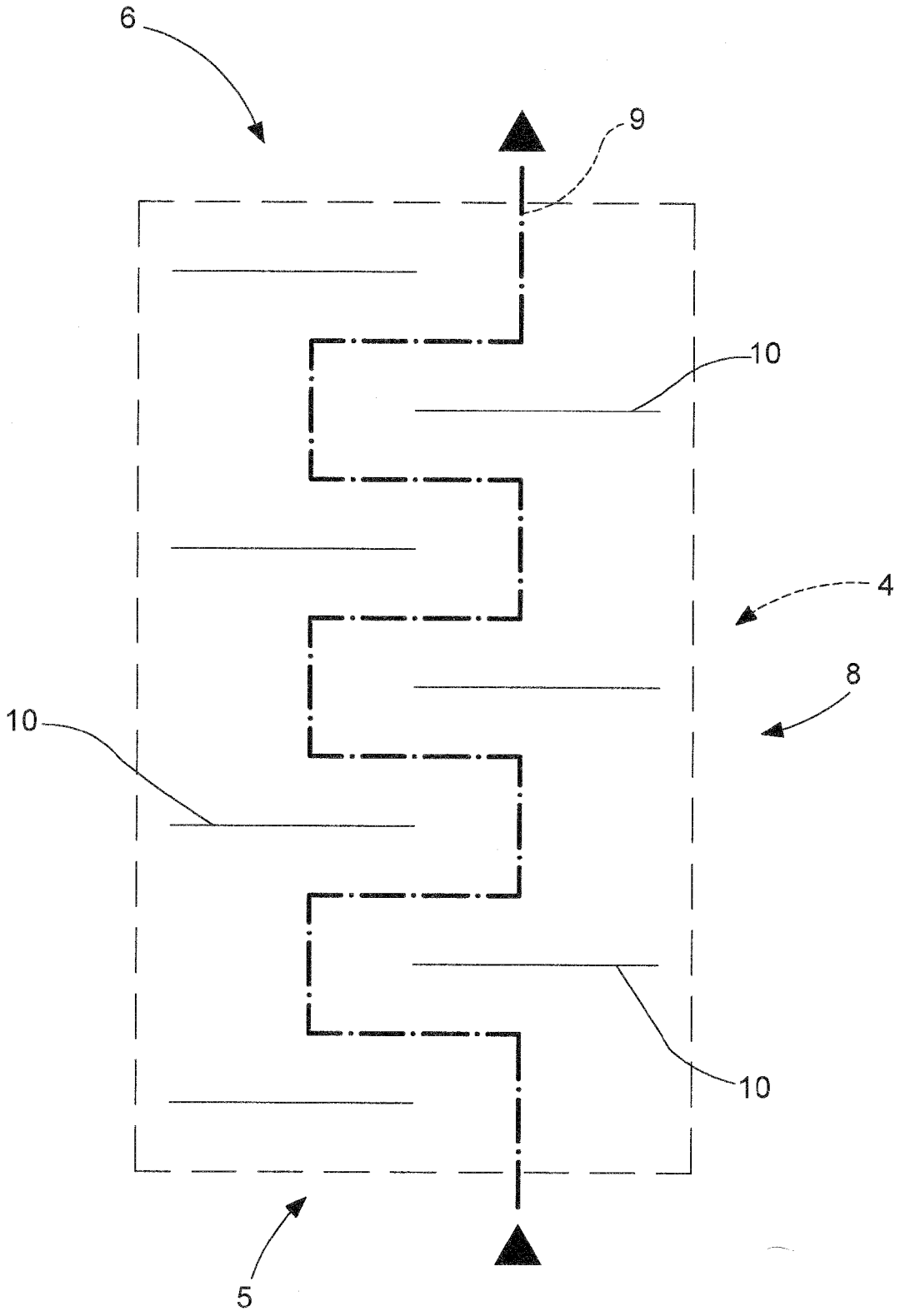


FIG.4



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EUROPEAN SEARCH REPORT

Application Number
EP 08 15 0244

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	WO 2005/118939 A (LG ELECTRONICS INC [KR]; LEE DONG BEOM [KR]; KIM JONG SEOG [KR]; SHIKA) 15 December 2005 (2005-12-15) page 7, line 8 - page 8, line 1; claims, figure 4	1-11	INV. D06F39/08
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TECHNICAL FIELDS SEARCHED (IPC)

D06F
A47L

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	21 July 2008	Clivio, Eugenio

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 08 15 0244

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
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21-07-2008

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