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(54) Detergent dispensing device

(57) The invention relates to a detergent dispensing apparatus, including at least one detergent dispensing chamber for receiving, in measured doses, pulverulent or liquid detergent or fabric softener, which can be flushed-out by means of water introduced via a flushing opening in the detergent dispensing chamber extending to the washing container, wherein the flushing opening is disposed in the base of the detergent dispensing chamber, and the water is suppliable via an inlet pipe, and wherein a valve cap of a valve arrangement is displaceable to a limited extent on the inlet pipe, which cap closes the flushing opening in a lower initial position due to its inherent weight and is raisable by means of the supplied water into an upper operative position which exposes the flushing opening. Because of a new disposition and configuration for the detergent dispensing chamber, the inlet pipe and the valve cap, the flushing opening can be totally exposed in the operative position.

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Description

The invention relates to a detergent dispensing device including at least one detergent dispensing chamber for receiving, in measured doses, powder or liquid detergent or fabric conditioner, which can be flushed out by means of water introduced via a flushing opening in the detergent dispensing chamber extending to the washing container, in which the flushing opening is arranged in the base of the detergent dispensing chamber and in which the water can be supplied via an inlet pipe and in which a valve cap of a valve arrangement can be displaced to a limited extent on the inlet pipe, said cap closing the flushing opening in a lower initial position on the basis of its own inherent weight and being raisable by means of the supplied water into an upper operative position, which exposes the flushing opening.

A detergent dispensing device of this type is known from DE-OS 14 60 889. Here the inlet pipe projects from below through the flushing opening into the detergent dispensing chamber and the closing-flap is closed over the end of the inlet pipe at least in such a way that the water emerging from the inlet pipe raises the closing-flap in the first place and secondly can pass the closing-flap for the rinsing action to a sufficient degree.

This valve arrangement is always a compromise between reliable operation of the valve and adequate rinsing effect in the detergent dispensing chamber. In addition, in the operative position of the detergent dispensing device, the flushing opening is not entirely free, since the inlet pipe or its mounting covers a part of the cross section of the flushing opening.

The object of the invention is to improve a detergent dispensing device of the type mentioned at the beginning in such a way that the valve arrangement works reliably and completely uncovers the flushing opening in its operative position.

This object is achieved in that the inlet pipe is directed vertically into the detergent dispensing chamber from above and ends at a spacing from the flushing opening, in that the end of the inlet pipe is blanked off with a reversing device which has a greater diameter than the diameter of the inlet pipe and that the valve cap is designed as a hollow body which is stepped in diameter and which accommodates, with the stepped sections, the diameters of the flushing opening, the reversing device and the inlet pipe.

In this arrangement and development of the inlet pipe and the valve cap, the valve cap is raised by reversing the direction of flow of the supplied water at the end of the inlet pipe, so that the entire flushing opening is exposed. The inlet pipe remains thus at a distance above the flushing opening of the detergent dispensing chamber and no longer hinders the flushing operation.

According to the development, the reversing device is designed as a separate part from the inlet pipe, said part being connectable, after pushing up the valve cap on to the inlet pipe, to the latter, thus simplifying the assembly of the detergent dispensing device.

The construction of the detergent dispensing device is simplified according to a further development by attaching the inlet pipe to a lid covering the detergent dispensing chamber and going into a channel of the lid and by introducing the water to the channel via a free air gap.

In a further development, the detergent dispensing chamber is surrounded by a shell which is provided, beneath the flushing opening of the detergent dispensing chamber, with a draining opening and with the water inlet of the detergent dispensing chamber facing away from a feeder opening for the detergent or fabric conditioner discharging into the detergent dispensing chamber.

Flushing out the detergent or fabric conditioner from the detergent dispensing chamber is improved in that the upward-opening channel of the lid is provided with side openings and that the lid has lid-jets outwith the channel. With the help of these lid-jets, the entire wall region of the detergent dispensing chamber can be rinsed and cleaned.

The detergent dispensing device is used with advantage in a washing machine which can be loaded from above and closed with a closing-flap. In this situation then, the closing-flap is hinged on the side facing the water supply and the detergent dispensing device is connectable or connected to the lid and the detergent dispensing chamber with the closing-flap.

The invention is described in greater detail with the aid of the embodiment given by way of example and represented in the drawings, which show:

Fig. 1 a vertical section through the upper region of a washing machine which can be loaded from above and which has a detergent dispensing device according to the invention,

Fig. 2 a partial plan view of the detergent dispensing device and

Fig. 3 an enlarged section of the vertical section according to Fig. 1 with the function of the valve cap.

As is shown in Fig. 1, a detergent dispensing device, according to the invention, is arranged on the underside of the closing-flap 11 of a washing machine which can be filled from above, said device being tilted upwards around the fulcrum 20 when being tilted up.

The detergent dispensing device has a detergent dispensing chamber 1 with a large flushing opening 2. This detergent dispensing chamber 1 is covered by a lid 4. As can be seen in Fig. 2, an upwardly open channel 6 is formed in the lid 4, said channel being closed by the closing-flap 11. In the region of the hinge, the channel 6 widens and is open. The water is not introduced via a

hose 8 and an angled jet 7 directly but instead via a free airway 7a, in order to stop backflow. On the lid 4, an inlet pipe 3 is formed, which extends from the channel 6 and is aligned vertically in the closed position of the closing-flap 11 and stops at a distance from the flushing opening 2 of the detergent dispensing chamber 1. The end of the inlet pipe 3 is closed with a reversing device 3a, which causes a reversal of the direction of flow of the water which is running out, as can be seen clearly in Fig. 3. In addition, the reversing device 3a is designed preferably as a separate part from the inlet pipe 3, which, only after pushing up the valve cap 5 onto the inlet pipe 3, becomes connected to the latter. The reversing device 3a has a larger diameter than the inlet pipe 3. The valve cap 5 is designed as a hollow body stepped in diameter the sections of which are matched to the diameters of the flushing opening 2, the reversing device 3a and the inlet pipe 3.

If the water is fed into the inlet pipe 3, then said water flows out via the openings in the horizontal region of the reversing device 3a, the direction of flow being reversed. The valve cap 5, which has kept the flushing opening 2 closed with the lower open front-side, is then raised and adopts the operative position depicted by 5a in Fig. 3, so that the flushing opening is completely exposed. The operative position of the valve cap 5a is established by touching the lid 4.

As Fig. 2 shows, the channel is provided with side openings 6a, so that the introduced water is also directed to the regions of the lid 4 outwith the channel 6. The entire wall regions of the detergent dispensing chamber 1 are sprayed with water via lid-jets 12. This offers a good rinsing and cleaning effect. This effect can be improved further by turning the angled jet 7.

When the water supply stops, the valve cap 5 falls back again, because of its inherent weight, into the exit position, closing the flushing opening. Since the pressure head, which builds up in the valve arrangement, is slowly reduced, there is a delay in the valve cap 5 returning to the closed position. This is of advantage, since the water which is left from the detergent dispensing chamber and valve arrangement can drain completely. Between the valve cap 5 and the reversing device 3a there can be some clearance, assuring the draining of the remaining water out of the valve arrangement. The inlet pipe 3 and the valve cap 5 can be provided with small openings also above the maximum filling level.

The detergent dispensing chamber 1 is surrounded by an extractable shell 13, which is provided beneath the flushing opening 2 with a draining opening 10. Facing away from the fulcrum 20 of the closing-flap 11, the shell 13 bears a filling opening 9, which discharges into the detergent dispensing chamber 1 and serves to supply detergent and fabric conditioner. When the closing-flap 11 is tilted upwards, filling can be achieved.

In Fig. 1, a washing drum is designated by 16 and a washing container by 15, said container encompassing a receiving space for the detergent dispensing device via a collar 14 and ensuring that detergent or fabric conditioner, which emerges and is flushed out of the shell 13, is supplied to the washing container. The detergent dispensing device can of course also be used in a washing machine, which is loaded from the front and closed by means of a door.

Claims

1. Detergent dispensing device including at least one detergent dispensing chamber for receiving, in measured doses, powder or liquid detergent or fabric conditioner, which can be flushed out by means of water introduced via a flushing opening in the detergent dispensing chamber extending to the washing container, in which the flushing opening is arranged in the base of the detergent dispensing chamber and in which the water can be supplied via an inlet pipe and in which a valve cap of a valve arrangement can be displaced to a limited extent on the inlet pipe, said cap closing the flushing opening in a lower initial position on the basis of its own inherent weight and being raisable by means of the supplied water into an upper operative position, which exposes the flushing opening,
   characterised in that

   the inlet pipe (3) is introduced vertically into the detergent dispensing chamber (1) from above and stops at a distance from the flushing opening (2),
   in that the end of the inlet pipe (3) is closed off by a reversing device (3a), which has a greater diameter than the diameter of the inlet pipe and in that the valve cap (5) is designed as a hollow body with a stepped diameter, said hollow body accommodating, with stepped parts, the diameters of the flushing opening (2), the reversing device (3a) and the inlet pipe (3).

2. Detergent dispensing device according to Claim 1 characterised in that,

   the reversing device (3a) is designed as a separate part from the inlet pipe (3), said part being connectable, after pushing up of the valve (5) on to the inlet pipe, to the latter.

3. Detergent dispensing device according to Claim 1 or 2, characterised in that,

   the inlet pipe(3) is attached to a lid covering the detergent dispensing chamber (1) and extends into a channel (6) of the lid, and
   in that the water can be introduced into the channel (6) via a free air-gap.

4. Detergent dispensing device according to one of the Claims 1 to 3, characterised in that,

the detergent dispensing chamber (1) is surrounded by a shell (13), which is provided, beneath the flushing opening (2) of the detergent dispensing chamber (1), with a draining opening (10) and with the water inlet of the detergent dispensing chamber (1) facing away from a feeder opening (9) for the detergent or fabric conditioner discharging into the detergent dispensing chamber(1).

5. Detergent dispensing device according to Claims 3 or 4,
characterised in that,

the upward-opening channel (6) of the lid is provided with side openings, and
in that the lid (4) has lid-jets (12) outwith the channel (6).

6. Detergent dispensing device according to Claims 1 to 5 characterised in that,

it is arranged on the underside of a closing-flap (11) of a washing machine which can be loaded from above.

7. Detergent dispensing device according to claim 6 characterised in that,

the closing-flap (11) is hinged on the side facing the water supply, and
in that the detergent dispensing device is connectable or connected to the lid (4) and the detergent dispensing chamber with the closing-flap (11).

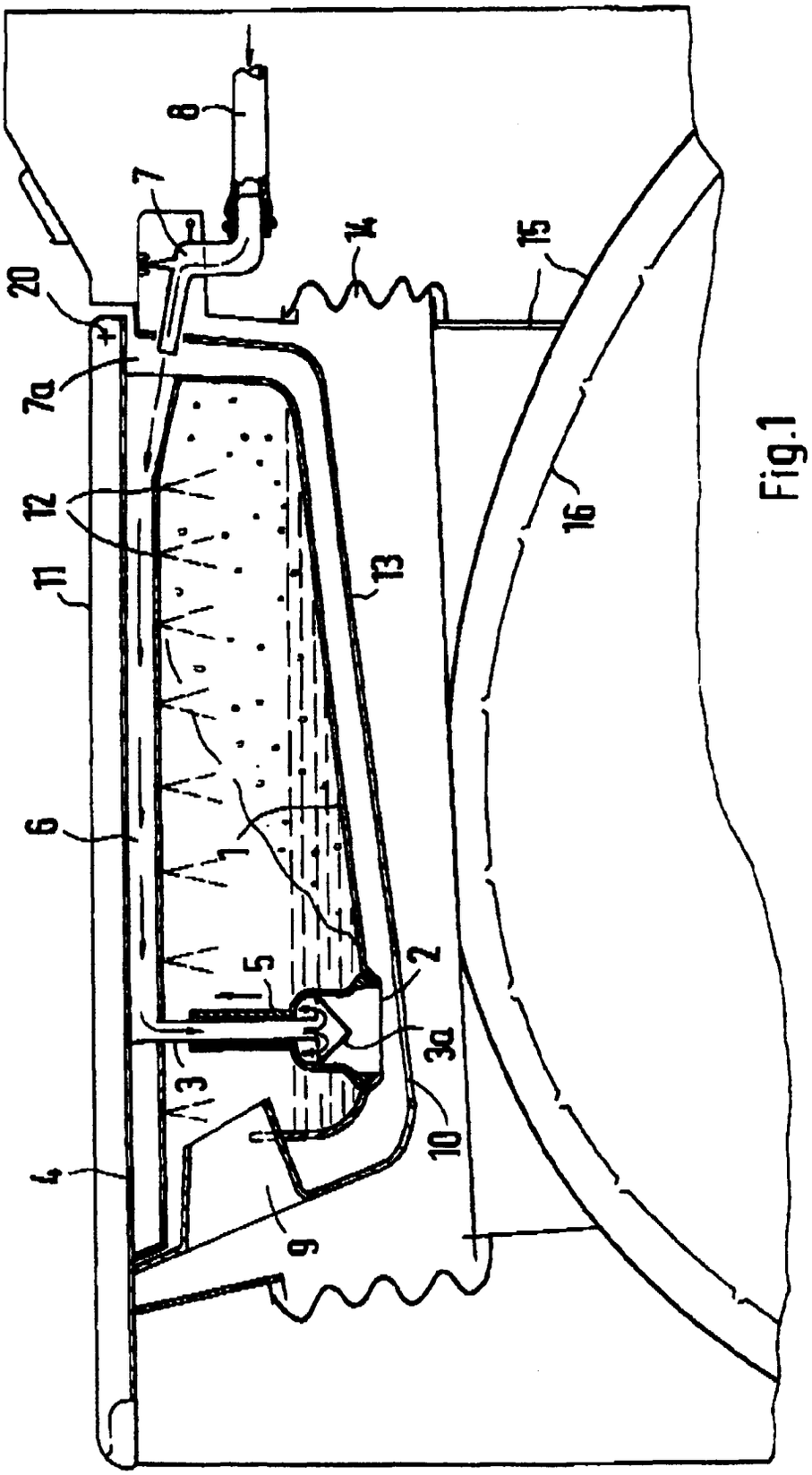

Fig.1

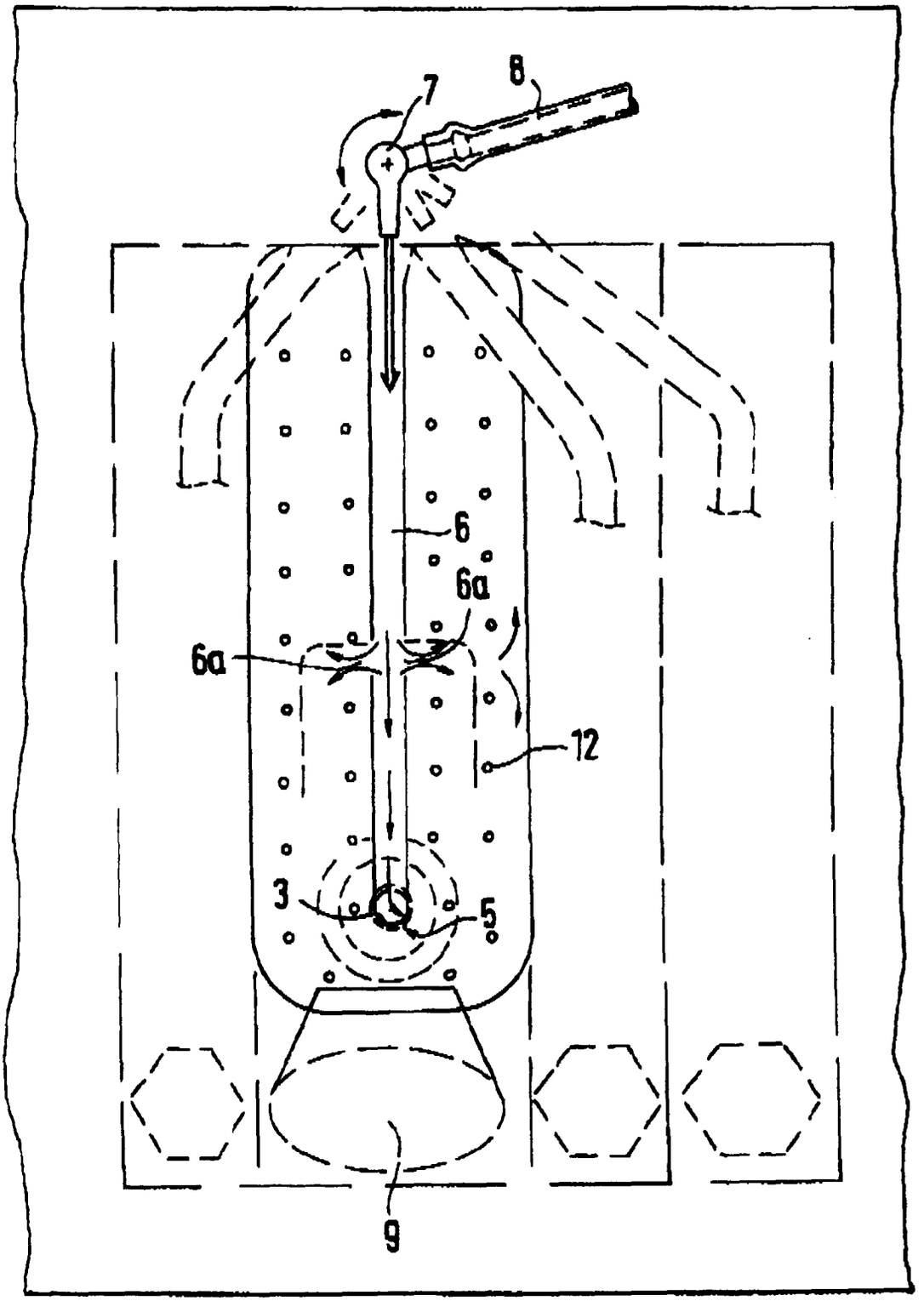

Fig.2

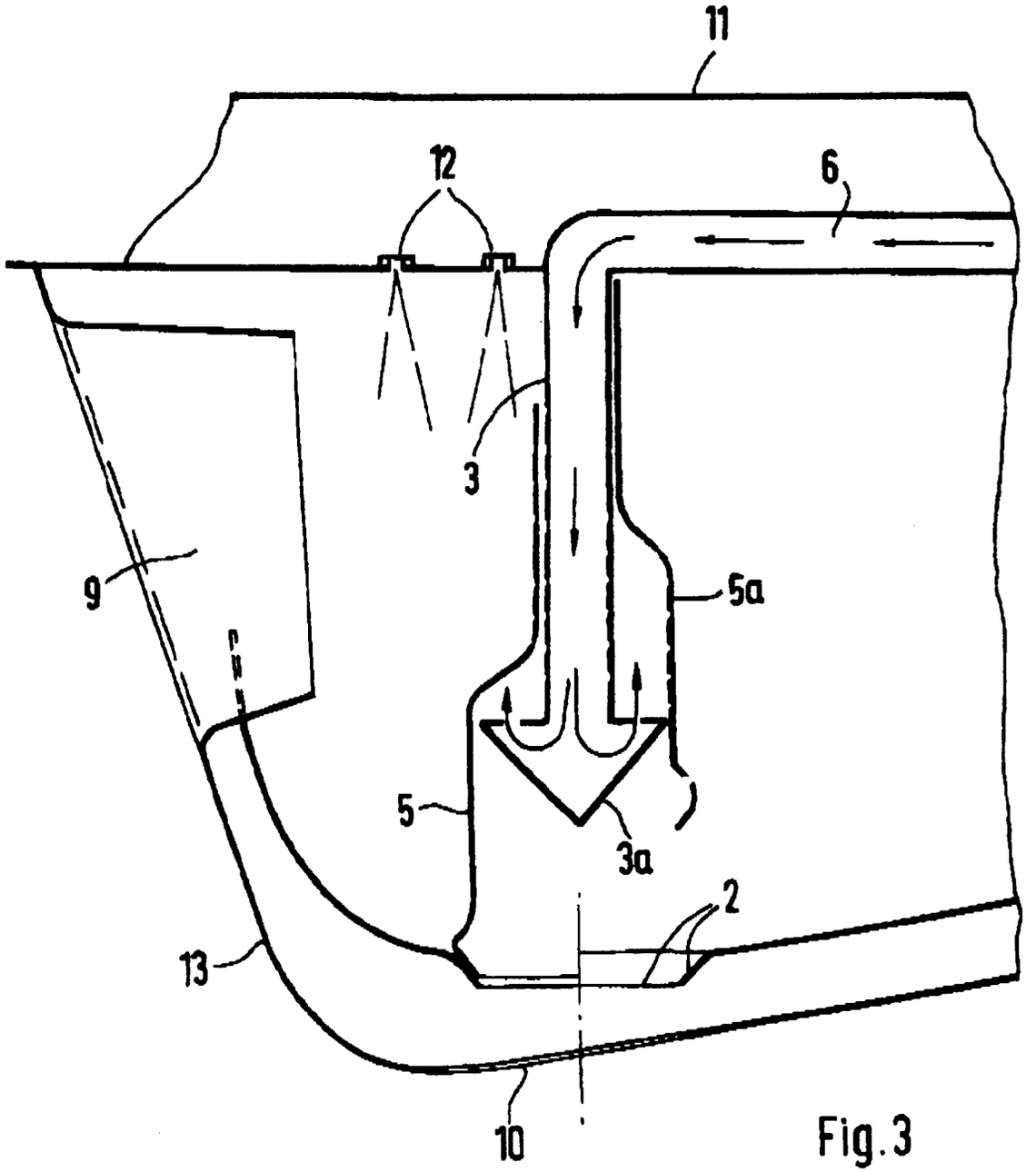

Fig.3

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EUROPEAN SEARCH REPORT

Application Number
EP 98 10 9299

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A,D	DE 14 60 889 A (CONSTRUCTA-WERKE) 24 April 1969 * the whole document *	1	D06F39/02
A	EP 0 169 604 A (PHILIPS ELECTRONIC ASSOCIATED ;PHILIPS NV (NL)) 29 January 1986 * figure 2 *	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

D06F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	15 October 1998	Norman, P

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
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