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(54) Title: AIR DELIVERY NOZZLE

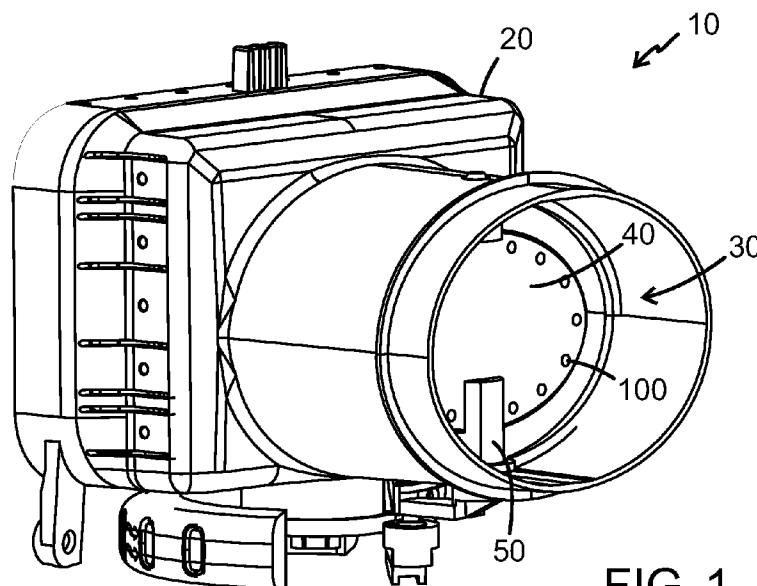


FIG. 1

(57) Abstract: The invention relates to an air delivery nozzle 10 for a ventilation installation, particularly in a vehicle. The air delivery nozzle comprises a nozzle housing 20 in which an airflow duct 30 which has a constricting element 40 situated in its outlet region is arranged. The constricting element 40 in a blocking state has a planar surface facing against the direction of flow and occupies in that state a large central portion of the cross-sectional area of the air flow duct 30, leaving a passage in the form of a substantially circular gap round the periphery of the constricting element 40.

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Air delivery nozzle

TECHNICAL FIELD

The present invention relates to an air delivery nozzle for a ventilation
5 installation, particularly in a vehicle. More specifically, the invention relates to an air
delivery nozzle with a nozzle housing in which an air flow duct which has a
constricting element situated in its outlet region is arranged.

BACKGROUND

Known air delivery nozzles for ventilation installations are exemplified by EP
10 1359035 A, which describes a device with a nozzle housing and a nozzle outlet
element which is movable on the latter. A constricting element with the same radius
as the nozzle outlet element and covering the whole outlet is fastened to the nozzle
outlet element. When the nozzle outlet element is pushed forwards in the air flow
direction, the result between the constricting element and the nozzle housing is a
15 radial gap diverting the air flow radially to prevent a direct air flow which might be
found inconvenient.

The structure described is relatively complicated with several movable parts
and is difficult to adapt to existing ventilation systems. The radial diversion of the air
flow also contributes to the device occupying more space.

20 An object of the present invention is therefore to propose an air delivery nozzle
of simple configuration which provides a diffuse air flow to the interior of a vehicle.

SUMMARY OF THE INVENTION

The present invention is therefore characterised by an air delivery nozzle as
above in which the constricting element in a closed state has a planar surface facing
25 against the direction of flow, which constricting element in that state occupies a large
central portion of the cross-sectional area of the air flow duct, leaving a passage
running through a substantially circular gap round the periphery of the constricting
element.

This configuration of the air delivery nozzle causes turbulence when the air
30 flow comes up against, and is caused to flow past, the constricting element via the
gap between the inside wall of the air flow duct and the periphery of the constricting
element.

In an advantageous embodiment of the invention, the constricting element is arranged for rotation in the air flow duct by a spindle supported in the nozzle housing and can be set by regulating means to a closed state or an open state.

5 In another advantageous embodiment of the invention, the planar surface of the constricting element is circular or oval.

In a further advantageous embodiment of the invention, adjustable sets of vertical and horizontal dampers are arranged downstream of the constricting element and can respectively guide to right or left and upwards or downwards the diversion of the air flow from the passage running past the constricting element.

10 BRIEF DESCRIPTION OF THE DRAWINGS

The invention is described below in more detail in the form of a non-limitative embodiment example illustrated by the attached drawings, in which:

Fig. 1 depicts a perspective view as seen from behind an embodiment of the air delivery nozzle according to the present invention.

15 Fig. 2 depicts a perspective view as seen from in front of the same embodiment of the air delivery nozzle according to the present invention.

Fig. 3 depicts a view from behind the same embodiment of the air delivery nozzle according to the present invention.

20 Fig. 4 depicts a view from in front of the same embodiment of the air delivery nozzle according to the present invention.

DETAILED DESCRIPTION OF EMBODIMENT EXAMPLE

Figs. 1-4 depict an air delivery nozzle 10 in various views. The air delivery nozzle 10 comprises a nozzle housing 20 in which an oval air flow duct 30 is arranged. Referring in particular to Figs. 1 and 3, the air flow duct 30 has in its outlet region a constricting element 40 with a planar or substantially planar oval surface facing against the direction of flow, which surface occupies a large portion of the cross-sectional area of the air flow duct 30 and is situated centrally in the cross-section of the air flow duct 30. A passage in the form of a circular gap is thus formed between the periphery of the constricting element 40 and the inside wall of the air flow duct 30. The constricting element 40 might also be circular or rectangular or of some other shape, but preferably corresponding in shape to the cross-sectional area of the air flow duct. The constricting element 40 is arranged for rotation in the air flow duct 30 by a vertical spindle 50 which is supported in the nozzle housing 20 and which can be acted upon by a first regulating means (not depicted) from outside the nozzle

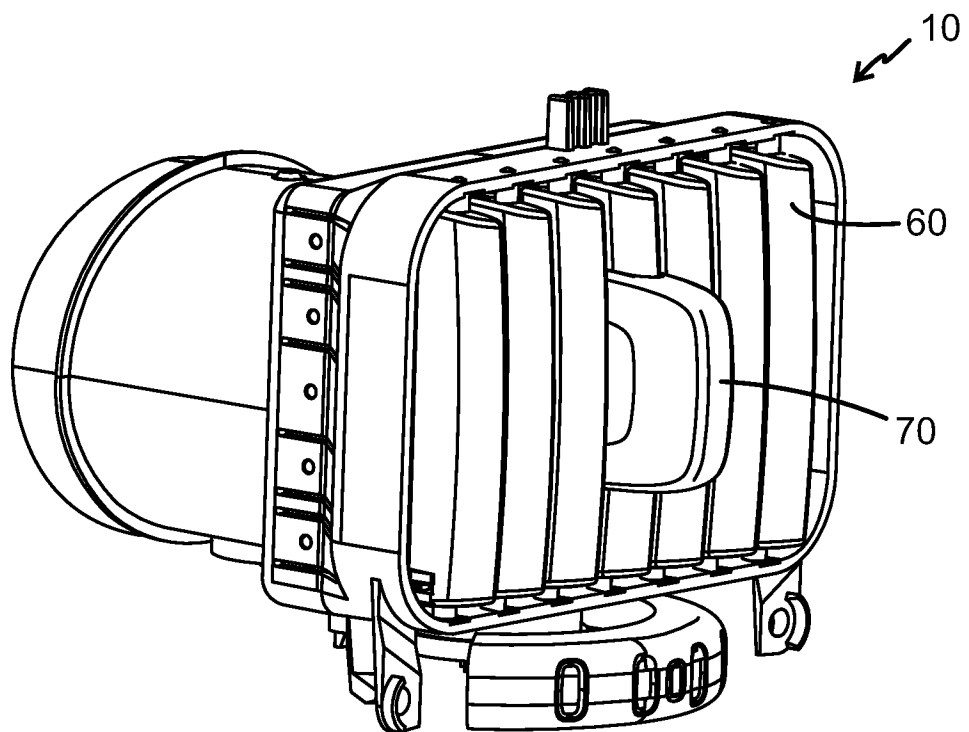
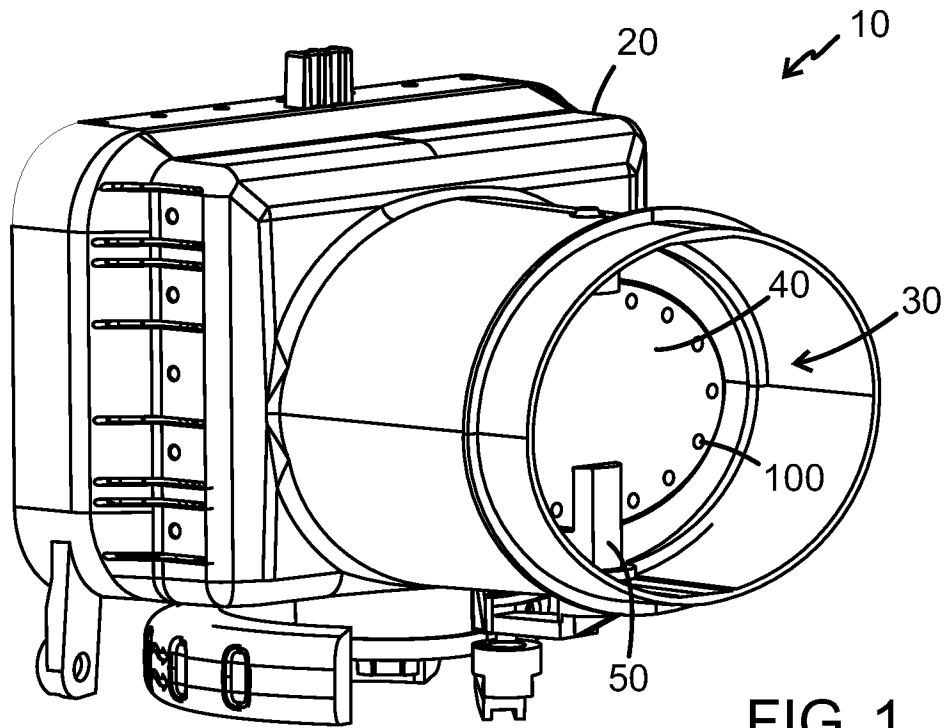
housing. This spindle 50 interrupts the aforesaid circular gap. By operation of the regulating means the position of the constricting element 40 can be varied between a closed state (with the planar surface of the constricting element perpendicular to the direction of flow of the air flow duct 30) and an open state (with the planar surface of the constricting element parallel with the direction of flow of the air flow duct 30).

Figs. 2 and 4 depict a plurality of vertical outer dampers 60 downstream of the constricting element 40 which are vertically rotatable jointly by operation of a second regulating means 70 arranged on the outside of the nozzle housing 20. By action of the regulating means 70 the vertical dampers 60 can be tilted to right or left and hence divert the air flow to right or left. In the same way, Fig. 4 depicts a plurality of horizontal dampers 80 upstream of the vertical dampers 60. These horizontal dampers 80 are horizontally rotatable jointly by operation of the second regulating means 70. This second regulating device 70 is arranged for sliding on one of the vertical dampers 60 and is connected to the horizontal dampers 80 in such a way that the horizontal dampers 80 are tilted upwards or downwards and the air flow is thus diverted upwards or downwards. The device with vertical and horizontal dampers is currently used in many ventilation installations in vehicles of various kinds. It has been found that it can very well be combined with a constricting element according to the present invention described above. The constricting element 40 may be made of suitable material, e.g. a plastic material. Holes running through it in the direction of flow may be arranged along its periphery.

CLAIMS

1. An air delivery nozzle (10) for a ventilation installation, particularly in a vehicle, with a nozzle housing (20) in which an air flow duct (30) which has a constricting element (40) in its outlet region is arranged, **characterised** in that the
- 5 constricting element (40) in a closed state has a substantially planar surface facing against the direction of flow and that the constricting element (40) in that state occupies a large central portion of the cross-sectional area of the air flow duct (30), leaving a passage in the form of a substantially circular gap round the periphery of the constricting element (40).
- 10 2. An air delivery nozzle according to claim 1, in which the constricting element (40) is arranged for rotation in the air flow duct (30) by a spindle (50) supported in the nozzle housing (20) and can be set by regulating means in a closed state or an open state.
3. An air delivery nozzle according to claim 1 or 2, in which the planar surface
- 15 of the constricting element (40) is circular or oval.
4. An air delivery nozzle according to any one of claims 1-3, in which adjustable sets of vertical and horizontal dampers (60; 80) are arranged downstream of the constricting element (40) and respectively guide to right or left and upwards or
- 20 downwards the diversion of the air flow from the passage running past the constricting element (40).

1/2



2/2

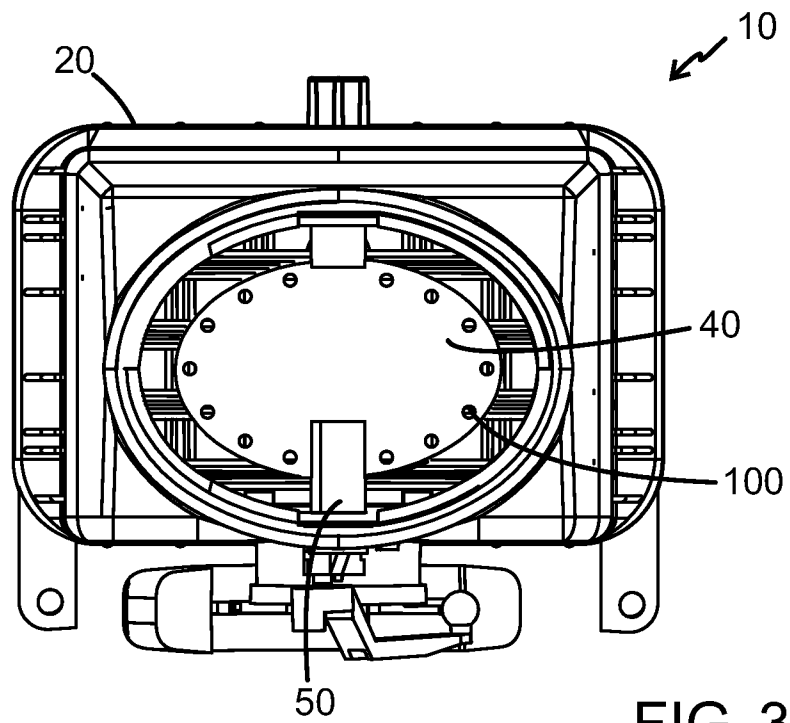


FIG. 3

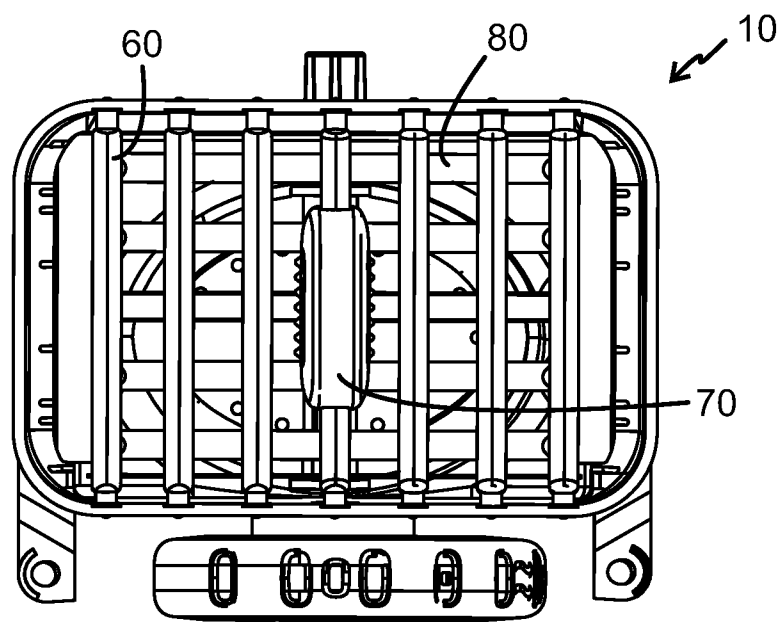


FIG. 4

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE2008/050729

A. CLASSIFICATION OF SUBJECT MATTER

IPC: see extra sheet

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)

IPC: B60H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL, WPI DATA, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1359035 A2 (DAIMLERCHRYSLER AG), 5 November 2003 (05.11.2003) --	1-4
A	DE 10232422 A1 (VALEO KLIMASYSTEME GMBH), 29 January 2004 (29.01.2004) --	1-4
A	DE 10244280 A1 (VOLKSWAGEN AG), 1 April 2004 (01.04.2004) --	1-4
A	WO 2005047033 A2 (BEHR GMBH & CO. KG), 26 May 2005 (26.05.2005) -- -----	1-4

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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Date of the actual completion of the international search

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Paper copies can be ordered at a cost of 50 SEK per copy from PRV InterPat (telephone number 08-782 28 85).

Cited literature, if any, will be enclosed in paper form.

INTERNATIONAL SEARCH REPORT

Information on patent family members

28/06/2008

International application No.

PCT/SE2008/050729

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DE	10244280	A1	01/04/2004	NONE
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