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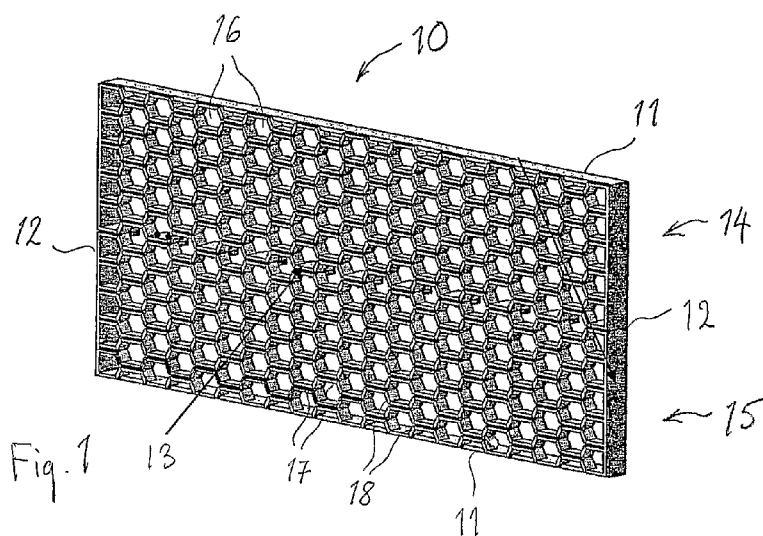
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(54) Title: GRILLE STRUCTURE FOR MOTOR VEHICLES



(57) Abstract: The invention relates to an injection moulded grille structure (10) for motor vehicles. The grille structure comprises ribs (17, 18; 23, 24) and openings (16; 22) arranged across said structure, for covering a ventilation opening in a vehicle. The grille structure (10) also comprises two or more grille panel segments (14, 15) coupled together via a plurality of fastening means (19, 20) arranged on meeting rib (17) surfaces.

Title:

Grille structure for motor vehicle

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TECHNICAL FIELD

The present invention relates to the field of an injection moulded grille structure for motor vehicles, with ribs and openings arranged across said structure, for covering a ventilation opening in a vehicle.

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BACKGROUND OF THE INVENTION

A grille structure is usually positioned in front of a cooling inlet in the front of a motor vehicle. One important function of the grille structure is to allow cooling air to flow into the engine compartment via the radiators of the engine cooling system. Another important function of the grille structure is to protect internal radiator structures from damage, for example caused by airborne debris. Thus, it is important for the grille structure to have small resistance to the air flow and also strength to withstand penetration.

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To save weight, grille structures for motor vehicles can be produced by injection-moulding a plastic material. However, it is very difficult to injection-mould large grille structures suitable for heavy vehicles. The plastic material needs to flow through narrow flow-paths for long distances, requiring very high injection pressure. Production of plastic grille structures in segments often leads to reduced airflow efficiency and to flawed aesthetic appearance.

SUMMARY OF THE INVENTION

An object of the invention is to enable production of large grille structures for heavy vehicles without the above described problems.

This object is achieved in accordance with the invention in that the grille structure comprises two or more grille panel segments coupled together via a plurality of fastening means arranged on meeting rib surfaces.

Advantageous illustrative embodiments of the invention emerge from the following dependent patent claims.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be described in greater detail below with reference to

Fig. 1, which shows a grille structure according to the invention in a perspective view,

Fig. 2, which in a broken view shows two grille segments with means for joining them together,

Fig. 3, which in a broken view shows the back side and joint between two grille segments according to Fig. 2 in larger scale,

Fig. 4, which in a broken view shows the front side of a grille segment, and

Fig. 5, which shows a variant of the front side grille mesh design.

DETAILED DESCRIPTION OF THE INVENTION

The present invention relates to grille panels for motor vehicles, in the preferred embodiment intended for heavy trucks.

Figure 1 shows a rectangular grille structure 10 with horizontal borders 11 and vertical borders 12. The grille structure is divided along the line 13 into two rectangular segments 14, 15. The grille structure has generally hexagonal openings 16 formed by horizontal ribs 17 and diagonal ribs 18. The hexagonal shape of the openings 16 are interrupted by the borders 11, 12.

As shown in Figs. 2 and 3, the two segments 14, 15 are joined along the line 13 by means of pins 19 integrated with one of the meeting rib surfaces. The pins are provided with a head portion and are arranged to lock into corresponding keyhole slots 20 integrated with the next meeting rib surface. The pins 19 and the keyhole slots 20 are adapted to interlock by pressing the two grille panel segments in a plane transverse to the plane of the finished grille structure. Thus, no extra means are needed to assemble the grille structure.

Fig. 4 shows the front side of the grille structure with a groove 21 moulded into each horizontal rib 17. The purpose of this groove is to mask the joint line between the two grille segments.

Fig. 5 shows an alternative grille mesh design with rectangular openings 22 arranged in a zigzag pattern by means of horizontal ribs 23 and vertical ribs 24. Also in this embodiment, a groove 21 is moulded into the front side of each horizontal rib 23 to mask the joint line between two grille segments.

The above described grille structure may be used as a radiator grille in the front of a vehicle, for example a

heavy truck or a construction vehicle, but it can also be used for covering a ventilation opening at the sides or at the rear end of such a vehicle.

- 5 The invention is not limited to the above described embodiments. Instead, several modifications are possible within the scope of the appending claims. For example, a grille structure may comprise more than two segments.

CLAIMS

1. Injection moulded grille structure (10) for motor vehicles, with ribs (17, 18; 23, 24) and openings (16; 22) arranged across said structure, for covering a ventilation opening in a vehicle,

c h a r a c t e r i z e d i n

that the grille structure (10) comprises two or more grille panel segments (14, 15) coupled together via a plurality of fastening means (19, 20) arranged on meeting rib (17) surfaces.

2. Grille structure according to claim 1,

c h a r a c t e r i z e d i n

that the fastening means comprise pins (19) integrated with one of the meeting rib (17) surfaces.

3. Grille structure according to claim 2,

c h a r a c t e r i z e d i n

that the fastening means comprise corresponding keyhole slots (20) integrated with the next meeting rib (17) surface.

4. Grille structure according to claim 3,

c h a r a c t e r i z e d i n

that the pins (19) of one grille panel segment are arranged to lock into the keyhole slots (20) of an adjoining grille panel segment.

5. Grille structure according to any one of claims 1-4,

c h a r a c t e r i z e d i n

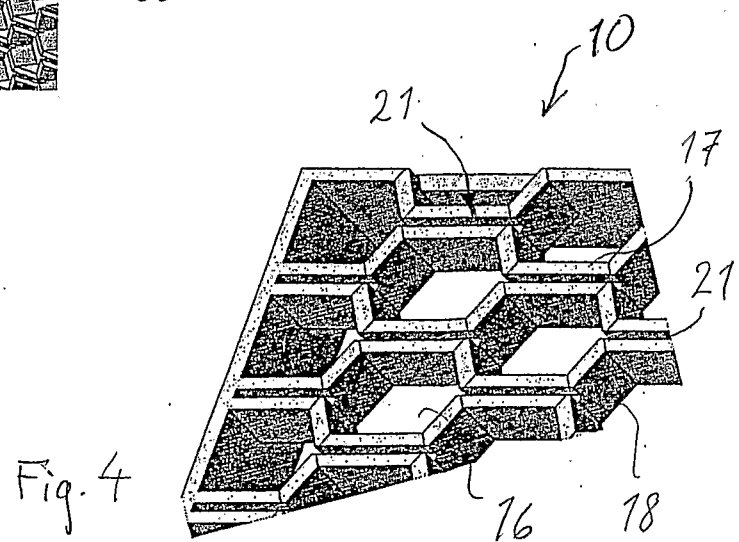
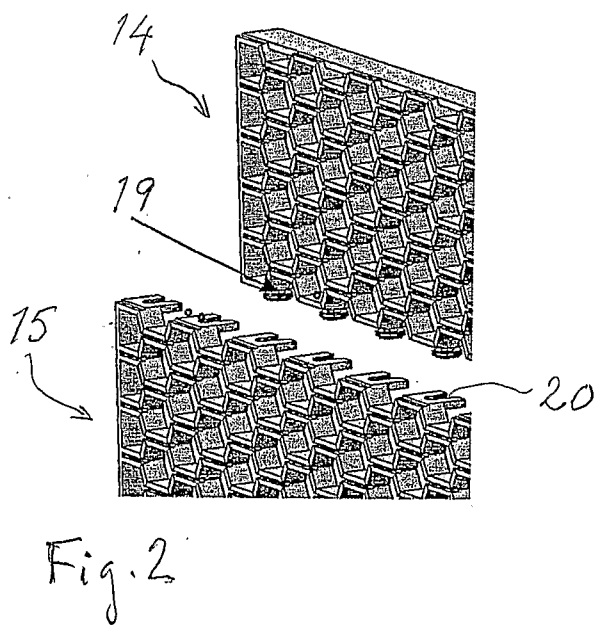
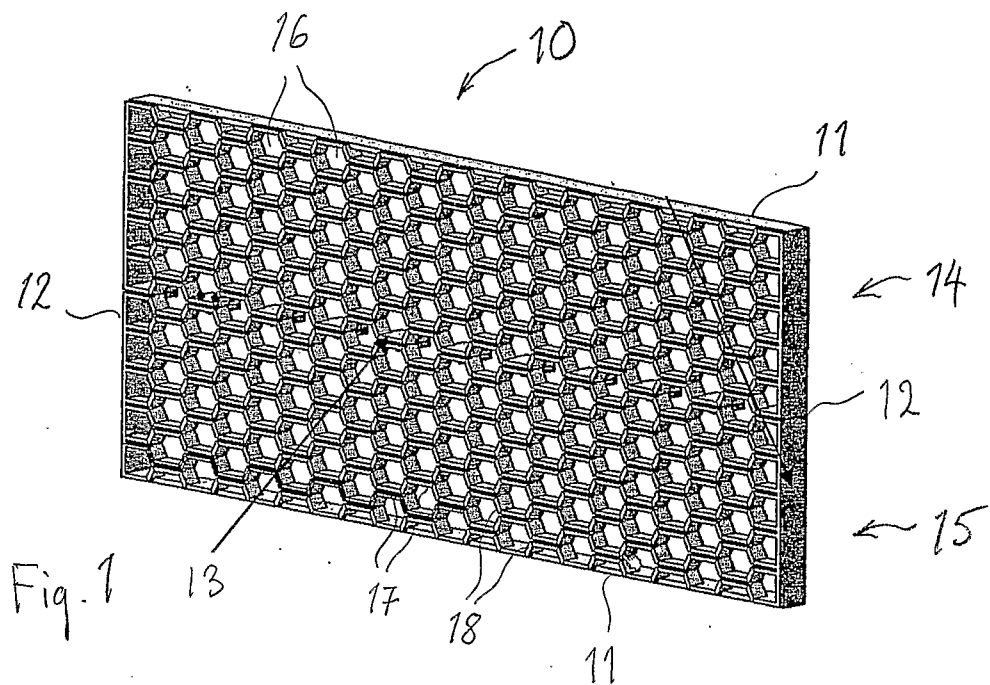
that each pin is provided with a head portion.

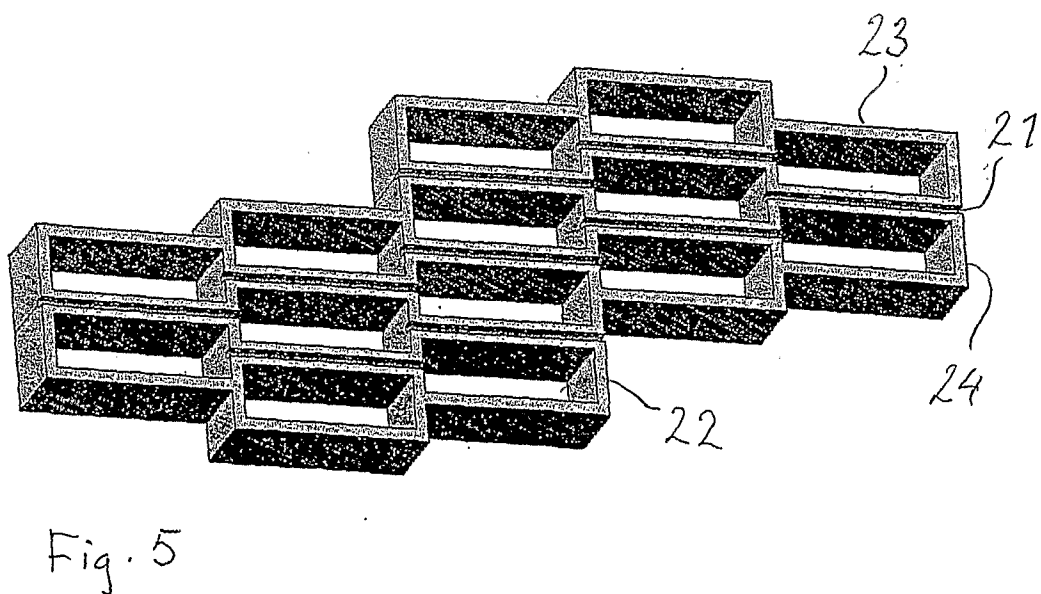
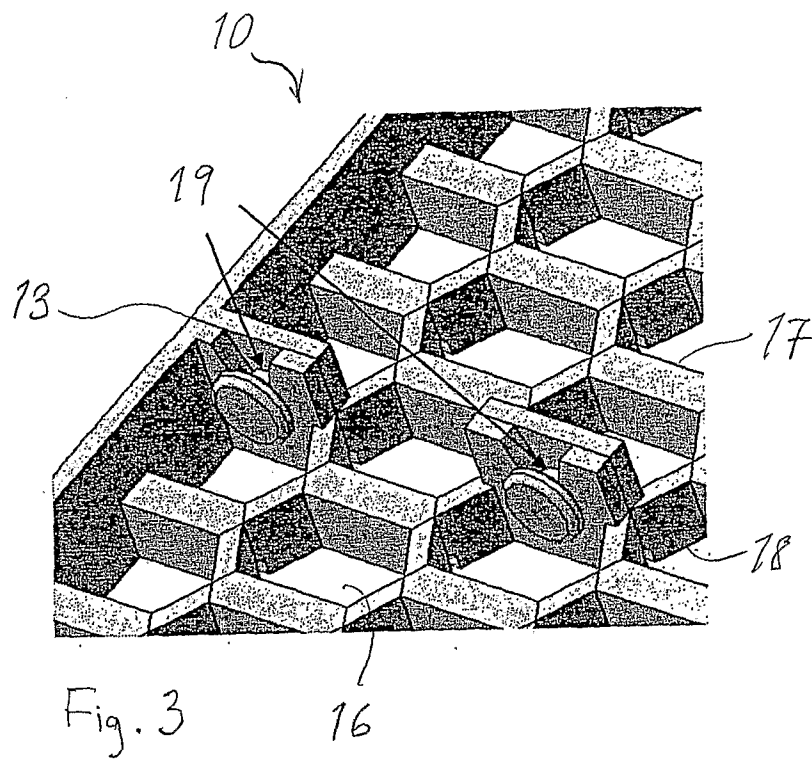
6. Grille structure according to any one of claims 1-5,
c h a r a c t e r i z e d i n
that the openings (16) are hexagonal with horizontal ribs
(17) and diagonal ribs (18).

7. Grille structure according to claim 6,
c h a r a c t e r i z e d i n
that a groove (21) is moulded into the front side of each
horizontal rib (17).

8. Grille structure according to any one of claims 1-5,
c h a r a c t e r i z e d i n
that the openings (22) are rectangular with horizontal
ribs (23) and vertical ribs (24).

9. Grille structure according to claim 8,
c h a r a c t e r i z e d i n
that a groove (21) is moulded into the front side of each
horizontal rib (23).





INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE2008/000368

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: B60R, B60K, B62D

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	US 2854104 A (A.R. MARCY, JR. ET AL), 30 Sept 1958 (30.09.1958)	1-9

A	GB 1137364 A (MICHAEL ROBIN HANCOCK), 18 December 1968 (18.12.1968)	1-9

A	FR 2903359 A1 (FAURECIA BLOC AVANT), 11 January 2008 (11.01.2008)	1-9

A	DE 4338365 A1 (SAAB SCANIA AB), 1 June 1994 (01.06.1994)	1-9

☐ 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 28 January 2009	Date of mailing of the international search report 28-01-2009
Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86	Authorized officer Hans Nordström / JA A Telephone No. +46 8 782 25 00

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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

01/11/2008

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US	2854104	A	30/09/1958	NONE		
GB	1137364	A	18/12/1968	NONE		
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