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54 Axial fan rotor for cooling the radiator of the cooling system of an internal combustion engine for motor vehicles.

57 An axial fan rotor (1) for cooling the radiator of the cooling system of an internal combustion engine for motor vehicles, including a hub (2) carrying a ring of radial blades (3) shaped so as to improve the efficiency and reduce the operating noise of the rotor.

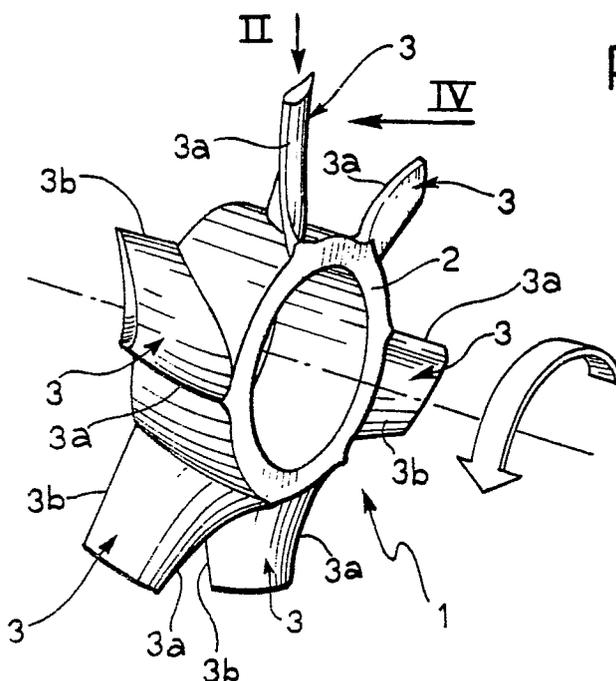


FIG. 1

EP 0 293 825 A1

Axial fan rotor for cooling the radiator of the cooling system of an internal combustion engine for motor vehicles.

The present invention relates in general to axial fans intended to be used for cooling the radiator of the cooling system of internal combustion engines for motor vehicles.

More particularly, the invention concerns an axial fan rotor of the type comprising a hub carrying a ring of radial blades.

The object of the present invention is to produce an axial fan rotor of the above-specified type, having a conformation which provides improved performance in terms of efficiency and quietness of operation.

According to the invention, this object is achieved by virtue of the fact that each blade has the following combination of characteristics:

- the leading edge is curved backwardly and has a hyperbolic profile when viewed both from the front and from the side;
- the trailing edge is straight, and
- the angle of keying is a hyperbolic function of the radial co-ordinate of the blade.

The invention will now be described in detail with reference to the appended drawings, provided purely by way of non-limiting example, in which:

Figure 1 is a schematic perspective view of an axial fan rotor according to the invention,

Figure 2 is a view taken on the arrow II of Figure 1, on an enlarged scale,

Figure 3 is a view taken on the arrow III of Figure 1, on an enlarged scale, and

Figure 4 is a view taken on the arrow IV of Figure 1, on an enlarged scale.

With reference to the drawings, an axial fan rotor for cooling the radiator of the cooling system of an internal combustion engine for motor vehicles is generally indicated 1.

The rotor 1, which is conveniently made in one piece from moulded plastics material, comprises a central hub 2 from which a circumferential ring of curved radial blades 3 extends. According to the invention, each blade 3 has a leading edge 3a which, as can clearly be seen in Figures 3 and 4, is curved backwardly and has a hyperbolic profile when viewed both from the side (Figure 3) and from the front (Figure 4). The trailing edge 3b of each blade 3 is straight.

Furthermore, the angle at which each blade is keyed to the hub 2 varies hyperbolically in dependence on the radial co-ordinate of the blade.

By virtue of the above-described conformation, the fan according to the invention enables a better performance and quieter operation to be achieved in use, compared with conventional rotors.

Claims

An axial fan rotor for cooling the radiator of the cooling system of an internal combustion engine for motor vehicles, including a hub carrying a ring of radial blades, characterised in that each blade (3) has the following combination of characteristics:

- the leading edge (3a) is curved backwardly and has a hyperbolic profile when viewed both from the front and from the side;
- the trailing edge (3b) is straight, and
- the angle of keying is a hyperbolic function of the radial co-ordinate of the blade (3).

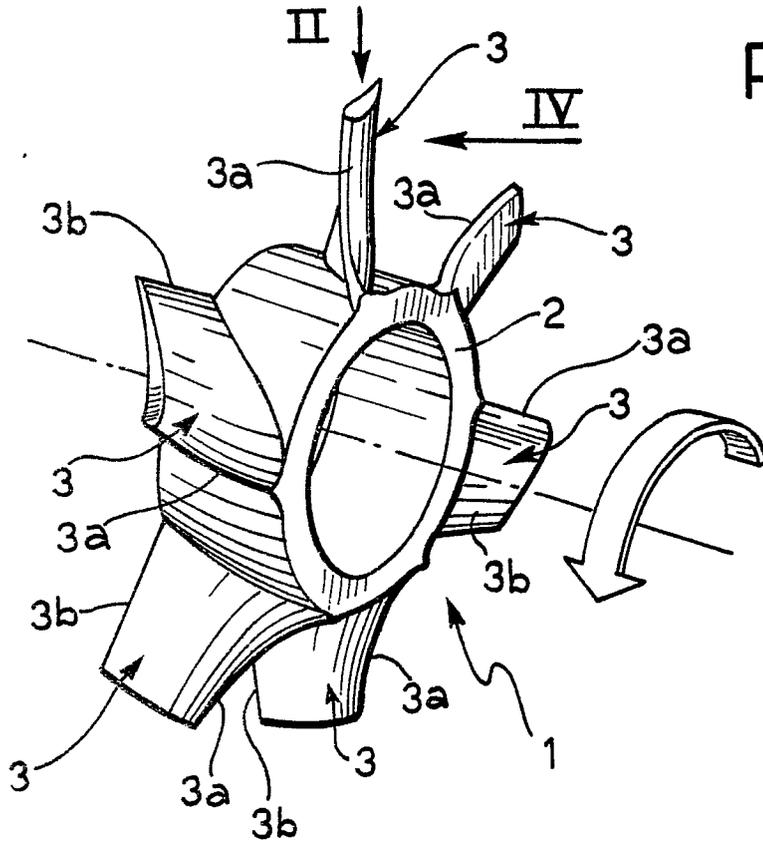


FIG. 1

FIG. 2

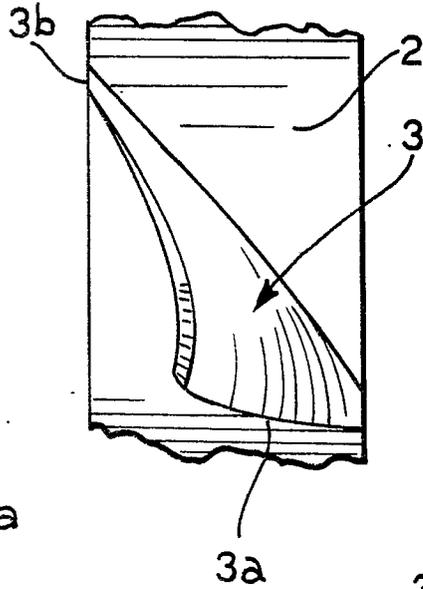


FIG. 3

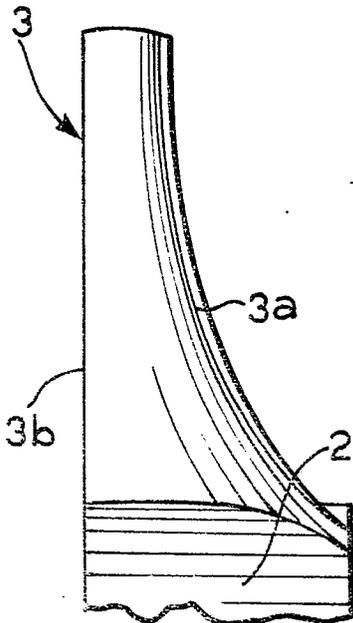
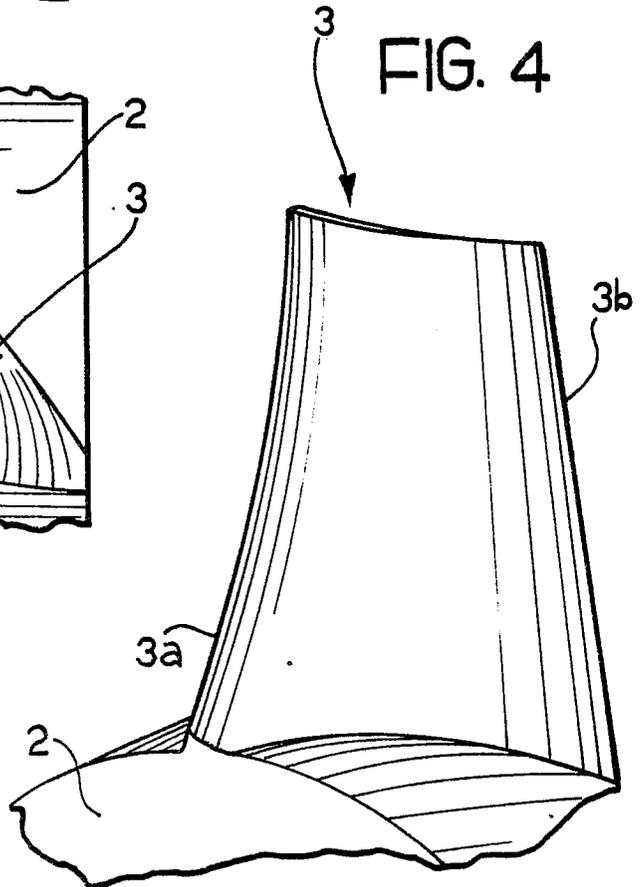


FIG. 4





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.4)
A	GB-A- 388 991 (DE MEY) * Page 2, lines 8-60,79-105; figures 1,3 *	1	F 04 D 29/38
A	DE-A-2 029 021 (GUSTAV RAU) * Claim 1 *	1	
A	US-A-2 390 879 (HAGEN)		
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			F 04 D 29/00 F 01 P F 01 D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 21-09-1988	Examiner KAPOULAS T.
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	