

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 0 849 440 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
24.06.1998 Bulletin 1998/26

(51) Int. Cl.⁶: **F01M 11/00**

(21) Application number: **97120325.2**

(22) Date of filing: **20.11.1997**

(84) Designated Contracting States:
**AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC
NL PT SE**
Designated Extension States:
AL LT LV MK RO SI

(72) Inventor: **Sobrero, Remo**
10144 Torino (IT)

(74) Representative:
Di Francesco, Gianni et al
Ing. Barzanò & Zanardo Milano S.p.A.
Corso Vittorio Emanuele II, 61
10128 Torino (IT)

(30) Priority: **17.12.1996 IT TO961033**

(71) Applicant: **FIAT AUTO S.p.A.**
10135 Torino (IT)

(54) Lubrication oil suction duct for an internal-combustion engine

(57) A lubrication oil suction duct from an internal combustion engine sump, wherein the suction pump of said oil is placed on the engine block with the suction opening (8) oriented toward the upper portion of the

sump (2), said duct comprising a first (8) and a second portion (9), the first portion (8) whereof is integrally obtained with said oil sump (2).

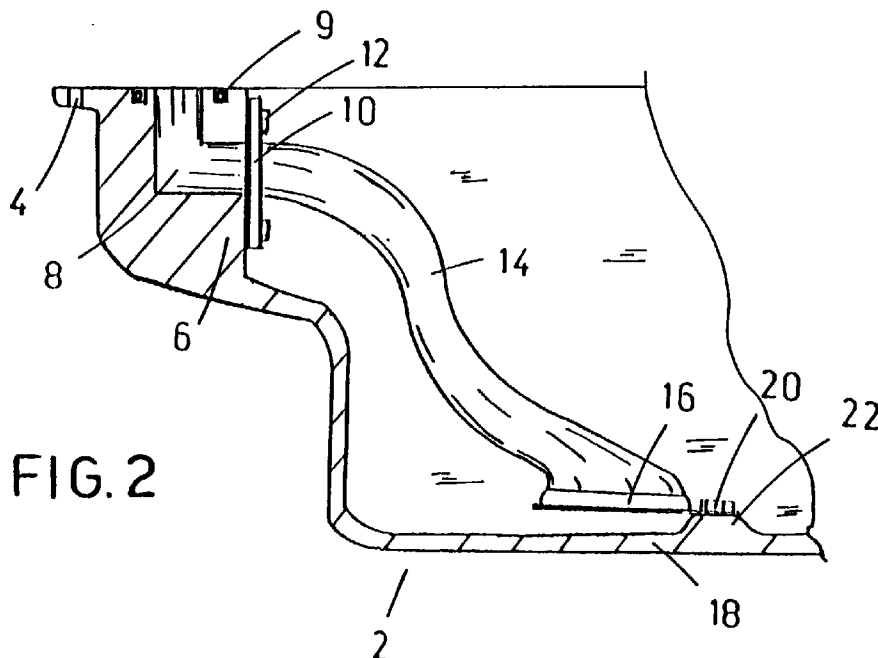


FIG. 2

EP 0 849 440 A1

Description

The present invention relates to a sump lubrication oil suction duct of an internal-combustion engine, provided with forced lubrication.

In the known types of engine, the circulation of the lubrication oil is assured by means of a pump attached to the engine block, said pump has a connection conduit with suction means positioned in the sump lower part, almost in contact with its bottom.

Such an arrangement of the suction duct has some inconveniences, for example the movement limitations of the pump provided with said suction means during assembly and during maintenance when sump removal is needed. A further inconvenience is due to the break-away incidents of the duct with suction means due to vibrations or to faulty fixing during assembly.

Further the distance of the suction means from the sump bottom is determined by a plurality of components with wide tolerances in the assembly dimensions.

The object of the present invention is to realise an oil suction duct that overcomes said inconveniences.

Such an object is obtained, according to the present invention, through an oil suction duct with the characteristics of the first claim.

Further characteristics and advantages will be understood through the following description, provided as a non restrictive example, with reference to the attached drawings, wherein :

_ Figure 1 is a partial plan view of an internal combustion engine oil sump, provided with a portion of the suction duct in accordance with the invention, and

- Figure 2 is a partial lateral sectional view of an oil sump provided with a suction duct in accordance with the invention.

Referring to the Figures, numeral 2 indicates an oil sump of an internal combustion engine (not shown), connected by blocking means 4 to said engine block. Said sump 2, obtained through sand casting, comprises on its side wall, an internal projection 6 wherein an oil duct 8 is obtained. Said duct, defining the first portion of the complete oil suction duct, has an L shaped axial section, and has a first end outlet near the sump upper part, in correspondence with the oil pump suction opening placed on the lower part of the engine block (not shown), so as to be therein connected during the sump assembly to the engine block. The sealing of said connection is secured by a gasket 9 positioned around duct 8 outlet. The other end of the first portion of duct 8 forms substantially a 90° angle with the first end, and has an outlet inside the sump, underneath the upper edge resting on the engine block lower portion. The second portion 14 of said suction duct, properly shaped to follow the sump contour, is connected thereto by means of a flange 10 held by means of gripping bolts 12, and said

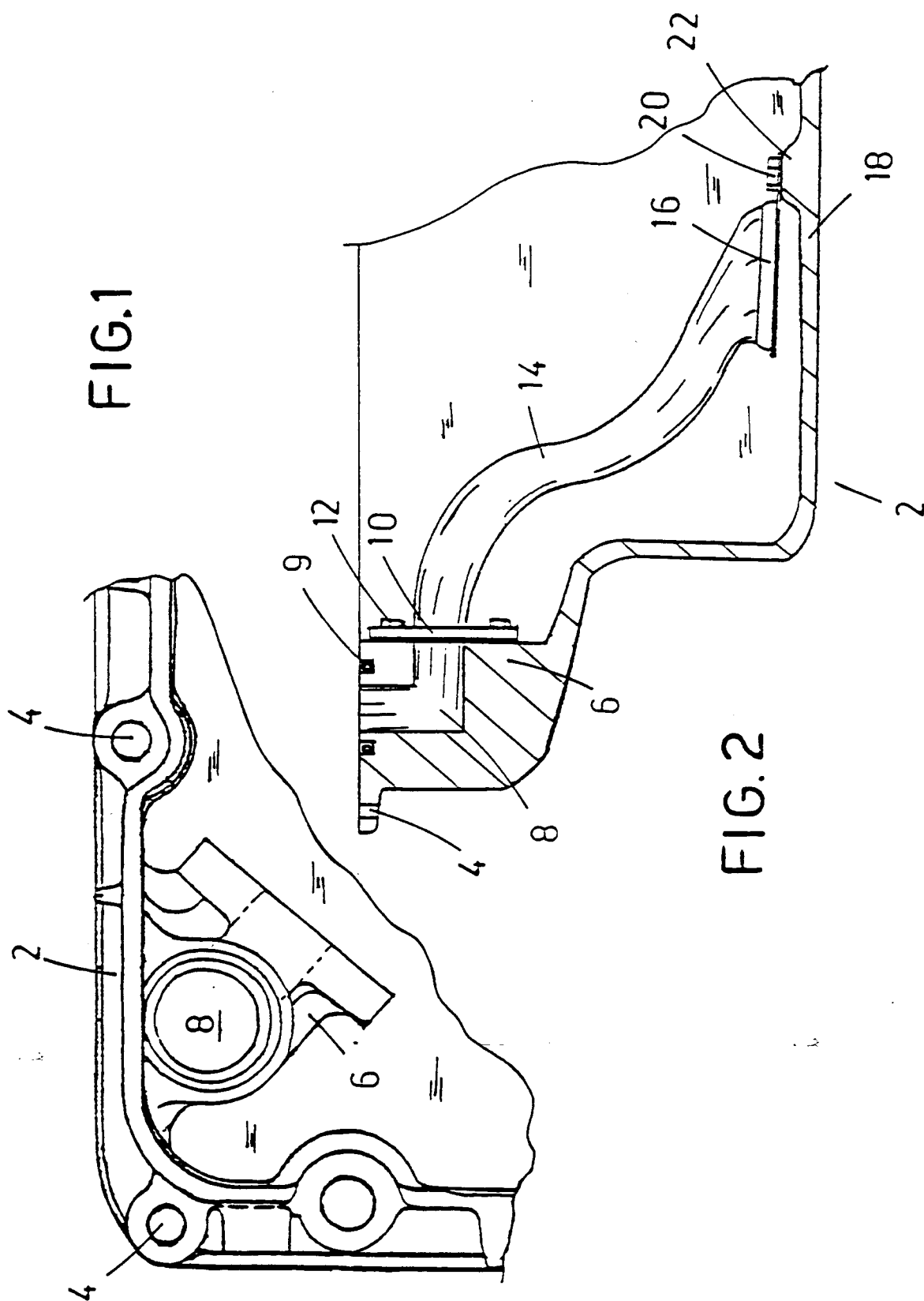
second portion ends with suction means 16 attached to the sump 2 bottom 18 through a nut 20 screwed on a projection 22.

In this way we obtain a suction duct for the engine oil which, besides said advantages, enhances the engine assembly since it reduces and simplifies the necessary operations. Further the distance between the suction means and the sump bottom is exclusively determined by the coupling of the suction means 16 with projection 22. The invention allows a better handling of the oil pumps and a more rational positioning of the duct hardly influencing the suction system total weight.

It is understood that modifications, known to the experts in this field, might be introduced in the various components without departing from the spirit and the scope of the present invention.

Claims

1. A lubrication oil suction duct from an internal combustion engine sump, wherein the suction pump of said oil is placed on the engine block with the suction opening oriented toward the sump (2) upper portion, characterised in that said duct comprises a first (8) and a second (9) portion, the first portion whereof is integrally obtained with said oil sump (2).
2. A suction duct according to claim 1, characterised in that the suction duct second portion (14) comprises a stand alone duct connected to said first portion (8) of the duct within the sump and ending with suction means attached to said sump (2) bottom.
3. A suction duct according to claim 1, characterised in that one end of said portion (8) of duct not connected to the second portion (14) is connected with the pump when the sump is attached to said engine block.
4. A suction duct according to claim 1, characterised in that said first portion of duct (8) comprises two orthogonal ducts jointed together and in that it is obtained in a side wall projection of sump (2).
5. A suction duct according to claim 1, characterised in that two ends of the first portion of duct (8) have outlets on two faces of projection (6) positioned substantially at a 90° angle.
6. A suction duct according to claim 1, characterised in that the duct first portion (8) end, connected with the pump, is surrounded by a seal gasket (9).





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 97 12 0325

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)
X	DE 89 11 897 U (FIAT AUTO S P A) * page 2, line 10 - page 3, line 31; figure *	1,3,4,6	F01M11/00
A	US 4 615 314 A (BAUGH JAMES D) * column 4, line 10 - column 7, line 60; figures *	1-6	
A	US 4 479 463 A (CURLEY LAURENCE D ET AL) * column 1, line 48 - column 2, line 45; figures *	1-6	
A	DE 42 42 513 A (OPEL ADAM AG) * figures *	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			F01M
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 19 February 1998	Examiner Mouton, J
CATEGORY OF CITED DOCUMENTS		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	
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			

EPO FORM 1503 03/82 (P04C01)