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(72) Inventor: **Tebby, Stephen Walker**
Leamington Spa, Warwickshire CV31 1JS (GB)

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(74) Representative: **Barnfather, Karl Jon, Dr. et al**
Withers & Rogers,
Goldings House,
2 Hays Lane
London SE1 2HW (GB)

(71) Applicant: **CONCENTRIC PUMPS LIMITED**
Birmingham B24 8HW (GB)

(54) **Improvements to rotary pumps**

(57) A coolant pump for an I.C. engine comprises a pump cavity housing an impeller (30) rotatable about an

axis (12), the impeller axis (12) being located coaxially with the rotational axis (12) of the crankshaft of the engine.

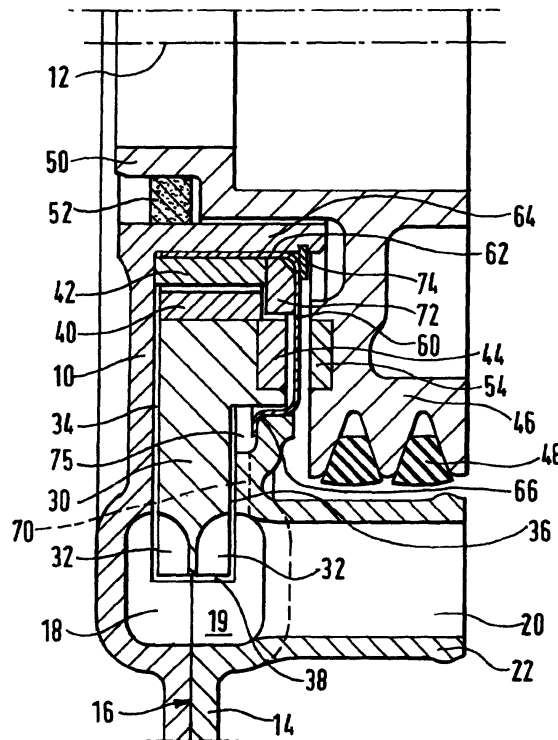


FIG. 3.



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 99 30 6909

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.7)
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X	US 5 382 833 A (WIRGES GERHARD O) 17 January 1995 (1995-01-17) * column 3, line 53 - column 5, line 19; figures *	1,14,15	
A	---	2-4	
X	US 5 159 901 A (CHONAN MITSUGI) 3 November 1992 (1992-11-03) * abstract; figures *	1	
A	---	2	
A	US 3 720 372 A (JACOBS J) 13 March 1973 (1973-03-13) * the whole document *	4,6-9	
A	EP 0 376 901 A (FIAT AUTO SPA) 4 July 1990 (1990-07-04) * abstract *	1,2	TECHNICAL FIELDS SEARCHED (Int.Cl.7)
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The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
MUNICH		10 July 2000	Salentiny, G
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)



The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: 1-4,6-10,12,14,15

Positioning of a coolant pump for an I.C. engine, the axis of the impeller of the pump being located coaxially with the rotational axis of the crankshaft of the engine.

2. Claims: 5-10,12,14

I.C. engine coolant pump using a regenerative impeller located in a discontinuous pump cavity.

3. Claims: 11,12,14

A pump bearing lubrication system for a magnetic coupling driven regenerative impeller coolant pump using a balance port extending between a generally peripherally extending pumping cavity and the radially inward zone within the pump.

4. Claims: 13,14

I.C. engine coolant pump body construction wherein the body which houses the cavity for the the pump impeller is partially formed by the timing case cover of the engine.

ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.

EP 99 30 6909

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82