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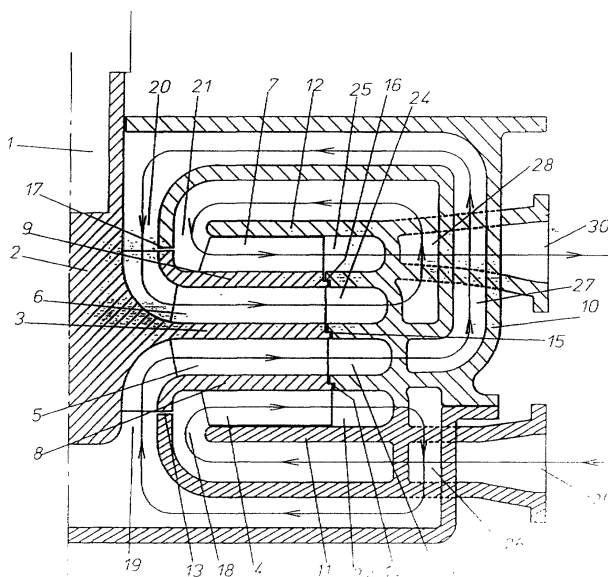
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(54) **High-pressure centrifugal pump**

(57) The invention concerns a pump or a compressor of centrifugal type for obtaining a high pressure.

The device according to the invention comprises an impeller having a circular disc (3) which is provided with radially directed vanes (5) and (6) on each side which

constitute two pressure steps. The vanes are provided with cover discs (8) and (9) respectively, which on their outwardly directed sides have radially directed vanes (4) and (7) respectively, which form another two pressure steps.



FIG

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EUROPEAN SEARCH REPORT

Application Number
EP 00 85 0140

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.C1.7)
X	CH 93 071 A (FRAME WILLIAM JOHNSTON ;SPENCER & CO LIMITED (GB)) 16 February 1922 (1922-02-16) * page 2, column 2, line 7 - line 24; figures 4-6 *	1, 3, 4	F04D1/06 F04D17/12 F04D29/22
Y	---	2	
Y	CH 252 609 A (SULZER AG) 15 January 1948 (1948-01-15) * page 3, line 42 - line 47; figure 2 *	2	
A	---		
A	US 3 102 680 A (FOGLEMAN JR GUS A ET AL) 3 September 1963 (1963-09-03) * the whole document *	1, 5	
A	---		
A	DE 21 15 330 A (DEMAG AG) 19 October 1972 (1972-10-19) * page 5, line 7 - line 21; figure 3 *	1, 3, 4	
A	---		
A	DE 155 337 C (GEORG SPRINGER) * the whole document *	1, 3	
A	---		
A	DE 345 856 C (BBC BROWN BOVERI & CIE) 17 December 1921 (1921-12-17) -----		
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 8 Apr11 2002	Examiner Teerling, J
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	

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

EP 00 85 0140

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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08-04-2002

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
CH 93071	A	16-02-1922	NONE	
CH 252609	A	15-01-1948	NONE	
US 3102680	A	03-09-1963	NONE	
DE 2115330	A	19-10-1972	DE 2115330 A1	19-10-1972
DE 155337	C		NONE	
DE 345856	C	17-12-1921	NONE	

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82