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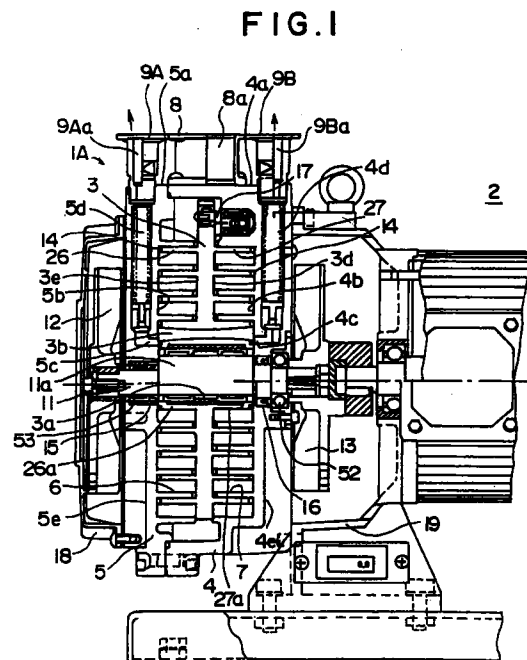
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(54) **Oil-free scroll vacuum pump**

(57) A double-lap oil-free scroll vacuum pump is disclosed, which comprises a revolving scroll 3 with revolving laps 26 and 27 provided on both sides of a disc, stationary scrolls provided on their surfaces 4b, 5b facing each surface 3d, 3e of said disc with stationary laps 6, 7 in engagement with the revolving laps 26, 27, said revolving laps 26, 27 being arranged in frictional contact with said surfaces 4b, 5b of the stationary scrolls, and a rotary drive shaft 11 penetrating the stationary and revolving scrolls and eccentrically fitted in the disc of the revolving scroll 3, wherein the rotational drive shaft 11 drives the revolving scroll 3 to cause discharge of compressed gas from a last compression chamber. A housing 19 is mounted on the outer sides of the stationary scrolls, and accommodates a drive source of the rotational drive shaft 11. Discharge passages 4d and 5d are provided for discharging compressed gas from the sides of the surfaces 3d and 3e of the revolving scroll 3. The discharge passages 4d and 5d extend outwardly from the housing 19.



EP 0 798 463 A3



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EUROPEAN SEARCH REPORT

Application Number
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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 Y	EP 0 687 815 A (ASUKA JAPAN) * column 10, line 48 - column 11, line 15; figure 10 * * column 2, line 27 - line 43 * ---	1,4 8	F04C18/02 F04C29/04 F04C29/08 F04C29/10
X	DE 37 21 611 A (ALCATEL HOCHVAKUUMTECHNIK) * the whole document * ---	2,3	
A	EP 0 578 890 A (COPELAND CORP.) * column 1 * * column 2, line 33 - line 56; figure 1 * ---	2,3	
A	EP 0 579 888 A (AGINFOR) * column 6, line 19 - line 33; figure 1 * ---	5,7	
A	DE 43 41 716 C (MANNESMANN) * column 2, line 58 - column 3, line 11; figure 3 * ---	5,7	
A	FR 1 121 079 A (PLANCHE) * page 1, left-hand column, line 19 - right-hand column, line 8 * * page 1, right-hand column, line 13 - page 2, left-hand column, line 24; figures 1,2 * ---	2	TECHNICAL FIELDS SEARCHED (Int.Cl.6) F04C F01C
E	EP 0 777 053 A (ANEST IWATA CORP.) * column 7, line 3 - column 8, line 35; figure 5 * * column 17, line 3 - line 12 * ---	1,4,5	
Y	EP 0 401 741 A (CIT ALCATEL) * column 1, line 33 - column 2, line 33 * * column 2, line 43 - column 4, line 10; figures * --- -/--	8	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 29 December 1997	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			

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EUROPEAN SEARCH REPORT

Application Number
EP 97 10 5399

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)
A	DE 41 29 897 A (KOTEREWA) * column 1, line 52 - column 3, line 14; figures * -----	8	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 29 December 1997	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			

EPO FORM 1503 03.92 (P04C01)



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Application Number

EP 97 10 5399

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

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:

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(in case of Lack of Unity)

- ☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



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EP 97 10 5399 - B -

LACK OF UNITY OF INVENTION

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

1. Claims 1-7 : Double-lap oil-free scroll vacuum pump with two cooling fans and ejector means at the exhaust.
2. Claim 8 : Two or more oil-free scroll vacuum pumps in series with control valves.