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(54) **Bi-directional axial-flow blower.**

(57) A bi-directional axial-flow blower which requires no complex mechanism such as a rotor-reversing mechanism and employs a proper shape of rotor to enables air-blowing operation with high efficiency and low noise both in the forward and reverse directions. The bi-directional axial-flow blower (1) for selectively sending a wind either in forward direction (A) or in a reverse direction (B), comprises a cylindrical casing (3), a forwardly-rotating impeller (8) and a reversely-rotating impeller (9) having airfoil blade rotors (8a, 9a) with camber, and a forward drive motor (6) for driving the forwardly-rotating impeller (8) and a reverse drive motor (7) for driving the reversely-rotating impeller (9), in which the forwardly-rotating impeller (8) is operated whereas the reversely-rotating impeller (9) is made free to rotate when the blower (1) is in the forward wind mode, and the reversely-rotating impeller (9) is operated and the forwardly-rotating impeller (8) is made free to rotate in the reverse wind mode.

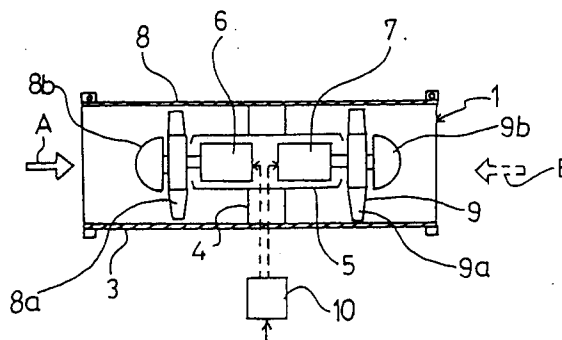


Fig. 1



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EUROPEAN SEARCH REPORT

Application Number

EP 91 11 1960

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.5)
A	BE-A- 484 254 (AKESTER) * Page 2, line 27 - page 5, line 21; figures 1-4 * ---	3,5	F 04 D 19/00 F 04 D 25/08
Y	DE-C-3 938 975 (WSP INGENIEURGESELLSCHAFT) * Column 3, lines 20-29; column 4, lines 34-40; figures 1,2 * ---	1	
Y	WO-A-8 000 475 (WOODS OF COLCHESTER) * Claim 1; figure 2 * ---	1	
X	DE-C- 431 682 (SIEMENS) * The whole document * ---	2	
Y	FR-A-2 531 501 (OLIVIER) * Page 1, lines 1-10; page 2, line 33 - page 4, line 18; figures 1-6 * ---	3	
Y	DE-C- 72 180 (RUDOLF) * The whole document * ---	3	
A	US-A-2 555 576 (CRIQUI) * Column 2, line 48 - column 3, line 10; figure 1 * ---	4	
A	US-A-3 089 637 (BELL) * Column 2, lines 39-54; figures 1,4 * ---	4	
A	US-A-1 932 231 (SCHMIDT) * Column 2, lines 3-17; figure 1 * -----	5	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 29-01-1992	Examiner TEERLING J.H.
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	



CLAIMS INCURRING FEES

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

- ☐ All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the claims fees 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 claims:
- ☐ 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 requirement of unity of invention and relates to several inventions or groups of inventions, namely:

See sheet -B-

- ☒ 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 has 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:



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. Claim 1 : Bi-directional axial-flow blower comprising two impellers and two motors; the motors do not run simultaneously.
2. Claim 2 : Bi-directional axial-flow blower comprising two impellers, one motor and two clutches; the impellers do not run simultaneously.
3. Claims 3-5 : Bi-directional axial-flow blower comprising one impeller, one motor and selecting means for rotating the casing.