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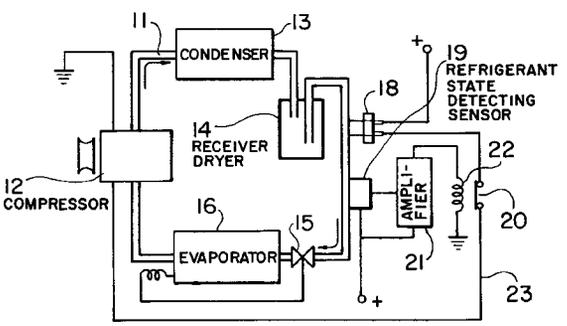
(54) Detecting system for detecting an insufficient amount of refrigerant in a cooling apparatus and compressor control system incorporating same.

(57) A detecting system is provided for detecting an insufficient amount of refrigerant in a cooling apparatus having a refrigerant circuit (11) which includes a compressor (12), a condenser (13) and an evaporator (16). The system has a refrigerant state detecting sensor (19, 30) provided in a high-pressure side path of the refrigerant circuit (11) for detecting an insufficient amount of refrigerant in the circuit (11) by sensing a mixing state of refrigerant in a liquid phase and refrigerant in a vapor phase. The detecting system is incorporated into a compressor control system having a compressor deactivating circuit coupled to the refrigerant state detecting sensor (19, 30) for deactivating the compressor (12) in response to a signal provided by the refrigerant state detecting sensor (19, 30). The refrigerant state detecting sensor (19, 30) determines that an insufficient amount of refrigerant exists at an early stage by detecting the mixing state of refrigerant. Since the compressor (12) is stopped at an earlier stage than in conventional systems, undesirable drive of the compressor (12) and damage to the compressor (12) can be prevented.

FIG. 1



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EUROPEAN SEARCH REPORT

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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.5)
X	US-A-4 167 858 (KOJIMA ET AL.) * column 2, line 38 - column 8, line 2; figures * ---	1-6, 9-14, 17-21,24	F25B49/02 F25B41/00
A		22	
A	US-A-3 412 570 (PRUETT SR.) * column 1, line 48 - column 3, line 12; figures * ---	1-3,6, 9-11,14, 17-19, 22,24	
A	US-A-4 328 682 (VANA) * column 2, line 42 - column 6, line 11; figures * -----	1-3,6, 9-11,14, 17-19, 22,24	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5) F25B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	16 JULY 1992	BROMAN B.T.

CATEGORY OF CITED DOCUMENTS

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