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Bezeichnung der Erfindung: Cooling device
Title of invention:
Titre de l'invention :

Klassifikation / Classification / Classement : F25B 47/00; F25B 49/00; F25D 21/00

ENTSCHEIDUNG / DECISION

vom / of / du 19 January 1988

Anmelder / Applicant / Demandeur : IE PE GE B.V.

Patentinhaber / Proprietor of the patent /
Titulaire du brevet :

Einsprechender / Opponent / Opposant :

Stichwort / Headword / Référence :

EPÜ / EPC / CBE Article 56

Kennwort / Keyword / Mot clé : Inventive step (no) - general concept obvious - specific solution known per se - surprising effect (no)

Leitsatz / Headnote / Sommaire

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number : T 123/86

D E C I S I O N
of the Technical Board of Appeal 3.2.1
of 19 January 1988

Appellant : IE PE GE B.V.
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Decision under appeal : Decision of Examining Division 074 of the European Patent Office dated 15 November 1985 refusing European patent application No. 81 201 388.6 pursuant to Article 97(1) EPC

Composition of the Board :

Chairman : P. Delbecque
Members : F. Gumbel
G. Paterson

Summary of Facts and Submissions

I. European patent application No. 82 201 388.6, filed on 18 December 1981 and published on 30 June 1982 under publication No. 0 055 005, was refused by a decision of the Examining Division dated 15 November 1985. The decision was based on Claims 1 and 2 filed on 12 August 1985 of which Claim 1 reads as follows:

"A cooling system having compressor means (4, 14), evaporator means (3) for cooling a space (2) and a lamella condensor (5) for circulating refrigerant in a closed path, air displacing means (6) for directing air normally in one direction over said lamella condensor (5) to abstract heat from refrigerant flowing therethrough, and thermostat means for controlling said compressor means (4, 14) in response to temperature variations in said space (2) being cooled, characterised by cycle means (12) for cyclically causing air to flow over said lamella condensor (5) in direction opposite said one direction independently of operation of said thermostat means (34) whereby cyclic flow of air in said opposite direction over said condensor (5) occurs even when cooling of said space (2) is continuously demanded over a long period of time."

II. The impugned decision cites the documents US-A-2 525 462, US-A-1 967 019 and DE-B-1 112 094 and comes to the conclusion that the subject-matter of Claim 1 lacks an inventive step in view of the prior art disclosed by these documents and that Claim 2 did not justify the presence of an inventive step either.

III. A notice of appeal against this decision was filed on 15 January 1986 and the appeal fee was paid on the same date. The Statement of Grounds was filed on 17 March 1986.

The Appellants argue in this statement that no-one in the field of art concerned has ever introduced a cyclic reversal of the fan motor and that, in particular, a skilled person could not find any teaching of a cyclic generator in the documents, cited in the impugned decision.

IV. In a communication dated 22 January 1987 the Appellants were informed that according to the preliminary view of the Rapporteur the subject-matter of Claim 1 does not involve an inventive step. The reasons therefore were also set out in detail in this communication, referring to the documents cited in the impugned decision and, in addition, to US-A-3 102 395.

V. During the oral proceedings of 19 January 1988, held on request of the Appellants in response to the official communication, the arguments set out in the Statement of Grounds, according to which the documents cited in the decision under appeal did not suggest the use of a cyclic generator, were confirmed by the Apellants. Relating to US-A-3 102 395 it was argued that this document discloses a cooling system which is basically different from the system of present Claim 1 in the sense that there is no reversal of the fan rotation and that the fan does not run during the idle periods of the refrigerator. Moreover, it was put forward that with this prior art system the foreign particles are not removed from the condensor by blowing but rather by heating a separate grill element, and that the removal of those particles is not totally independent of the position of any thermostat, since there is a second thermostat terminating the cleaning period and initiating the refrigeration period.

The Appellants requested that the decision under appeal be set aside and that a patent be granted on the basis of Claims 1 and 2 on file.

Reasons for the Decision

1. The appeal complies with Articles 106 to 108 and Rule 64 EPC and is admissible.

2. Concerning the formal admissibility of Claim 1 no objection is raised. Its subject-matter is covered by the disclosure of the application as filed and it clearly defines the matter for which protection is sought (Articles 123(2) and 84 EPC).

3. An examination of the citations revealed by the search report shows that none of them discloses a cooling system comprising all the features set out in Claim 1. Since this has never been alleged, no detailed substantiation of this matter is required. Concurrently with the impugned decision it is to be stated that the subject-matter of Claim 1 is novel.

4. Concerning the question whether the subject-matter of Claim 1 also involves an inventive step, the following is observed:

4.1 From the document US-A-2 525 462, which in the Board's view represents the closest prior art, there is known a cooling system which comprises all the features set out in the preamble of present Claim 1. According to this document it is further known to reverse the direction of the air stream across the condensor by reversing the fan rotation in order to remove dust, dirt or the like particles from the lamellae of the condensor and thus to restore its cooling

efficiency. The reversal of the fan rotation is responsive to the position (open or closed) of a thermostat switch in the sense that when the compressor is operating, the fan rotates in one direction and when the compressor is idle, the fan rotates in the opposite direction in order to remove dust and the like particles from the lamellae of the condensor.

4.2 A very similar cooling system is disclosed in US-A-1 967 019. There, the reversal of the fan rotation for removing foreign particles from the lamellae of the condensor is initiated dependent on the energization of the compressor. Every time the compressor is energized, the direction of rotation of the cooling fan is reversed. Although this is not explicitly disclosed in that document, it is apparent for the skilled person that the energization of the compressor may be controlled by an associated thermostat, as this is normally the case.

4.3 Since in the cooling systems according to both pre-mentioned documents the reversal of the fan rotation for cleaning the lamellae of the condensor is dependent on the position of a thermostat, it may occur in extreme conditions - for example when the cooling system works in an automat situated on the beach of a hot country, as set forth by the Appellant in the oral proceedings - that because of the high ambient temperatures permanent cooling is demanded and that therefore the thermostat will not give the signal for reversing the fan rotation at all or only in too long time intervals and thus the cleaning action cannot take place as necessary.

4.4 In order to overcome this technical problem arising with the previously discussed prior art cooling systems it is the object of the present application to provide a cooling system of the type specified in the preamble of Claim 1

wherein the reversal of the fan rotation is ensured in all occurring conditions independently of the position of the thermostat controlling the compressor.

4.5 According to the characterising part of Claim 1 this object is achieved by using a cycle means operating independently of the position of the thermostat for causing the reversal of the fan rotation. It is apparent that such a cycle means ensures the initiation of the cleaning action according to predetermined time intervals irrespective of the environmental conditions, i.e. even then when the thermostat demands cooling over a long period of time. Hence, the indication of function in lines 12 to 15 of Claim 1 does not add anything to the subject-matter of Claim 1 concerning the mechanical features of the cooling system.

4.6 In the Board's view the problem arising with the prior art cooling systems as stated under 4.3 above was encountered in practice and therefore did not need to be distinguished by the exercise of inventive considerations. Moreover, once having realised this problem it is self-evident for the practitioner to try to find a solution to it. Hence, the object as stated above is not based on an inventive activity.

4.7 Concerning the solution as claimed, it was, in the opinion of the Board, obvious to arrive at the general concept of making the reversal of the fan direction independent of the operation of the thermostat, since it was clearly to be seen that it was just this dependency on the thermostat position which rendered the known cooling systems ineffective in extreme conditions. Having arrived at this general concept and taking into consideration that the cooling system should, of course, work automatically (thus excluding manual operation), the skilled person would

necessarily come to the idea of using some kind of a cyclic generator, as claimed in present Claim 1, just by logical considerations, taking into account that cyclic generators such as timers, were well known in the art concerned, e.g. for controlling the defrosting of the evaporator, including its effects and advantages. There appears to be no other choice in practice.

4.8 Additionally, document DE-B-1 112 094 suggests to the skilled man that he should make use of cycle means for causing the reversal of the fan motor. This document teaches that the reversal of the polarity of the fan motor in a cooling system of the type under discussion should be actuated in regular time intervals (see column 1, lines 44 to 51), thus removing dust and dirt reliably from the condensor. As stated on column 3, lines 1 to 4, this should be done by automatically operating switch 4 associated to the fan motor in predetermined regular time intervals. In the Board's view this can only be interpreted by the skilled man concerned as comprising the use of a cycle means for causing the shifting of the switch. Hence, the opinion expressed by the Appellants during the oral proceedings, according to which in DE-B-1 112 094 there is no suggestion of a cycle means, is not supported by the facts. The Appellants failed to indicate which other means could be used to achieve the effect of changing the polarity of the fan motor automatically in regular and predetermined time intervals.

4.9 Finally, the skilled person gets an explicit recommendation to make use of a cycle means in order to initiate the cleaning of the condensor of a cooling system from US-A-3 102 395 (cf. Figure 6 and description, column 3, line 68 to column 4, line 39). It becomes clear from this document that timer motor or electrical chronometric device 49 effects the removal of foreign particles from the

condensor unit in a periodical manner, for example once a day, simultaneously with the defrosting of the evaporator and independently of the thermostat 46 controlling the operation of the compressor, thus ensuring the removal of those particles even in extreme conditions when cooling is demanded over a long period of time, as it is desired in the case of the present application. Hence, it would be obvious for somebody concerned with the problem underlying the present application and wishing to initiate the cleaning action independently of the thermostat position, to make use of this teaching with a cooling system according to the preamble of Claim 1 for achieving the same advantageous effect, which therefore could not be surprising to him.

Admittedly, there are differences concerning the design and the function of the cooling system and the means for cleaning the condensor between the subject-matter of Claim 1 and the refrigerating apparatus disclosed in US-A-3 102 395, as pointed out by the Appellants during the oral proceedings. Those differences mainly relate to the fact that there is no reversal of the fan rotation to accomplish the cleaning of the condensor by a blowing action but rather that this cleaning is effected by burning the foreign particles by means of an electrically heatable grill element attached to the front side of the condensor. Consequently, no reversal of the fan motor is needed for this purpose and the fan is idle during the cleaning period. However, these differences do not affect the general teaching mentioned above, according to which the cleaning action of the condensor shall be initiated independently of the thermostat for controlling the compressor by a cycle means (timer). The same applies to the fact that with this known system the defrosting period and in parallel thereto the cleaning period for the condensor is terminated by the activation of a second

thermostat 54 also causing the re-energization of the compressor and the cooling fan. Apparently, this has no influence on the initiation of the cleaning action and since burning of the particles will normally take less time than defrosting the evaporator, this has no bearing on the efficiency of the cleaning at all.

4.10 Summarising, the Board comes to the conclusion that the skilled man did not need the exercise of an inventive activity in order to arrive at the solution specified in Claim 1 and that therefore Claim 1 is not allowable for lack of an inventive step pursuant to Articles 52(1) and 56 EPC.

5. Since dependent claims can only be allowed if there is an allowable independent claim to which they are appended and since this precondition is not given in the present case, Claim 2 is not allowable either. Moreover, it is to be noted that the Board must decide on a request as a whole.

Apart from these formal reasons it is observed that Claim 2 does not add anything inventive to the subject-matter of Claim 1 for the reason set out in the Board's communication, having regard to US-A-3 102 395, which reason the Appellant did not comment upon.

Order

For these reasons, it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

F. Klein P. Delbecque