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D E C I S I O N
of 14 September 1999

Case Number: T 0554/96 - 3.2.3

Application Number: 88830404.5

Publication Number: 0341370

IPC: F24F 1/02

Language of the proceedings: EN

Title of invention:

Apparatus for conditioning the air in a room

Patentee:

Miralfin S.r.l.

Opponent:

Kabushiki Kaisha Toshiba
Hans Einhell AG

Headword:

-

Relevant legal provisions:

EPC Art. 56, 84, 102(3)

Keyword:

"Inventive step - no (main request)"

"Claims - clarity, support by description - no (auxiliary request)"

Decisions cited:

T 0248/85

Catchword:

-



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Boards of Appeal

Chambres de recours

Case Number: T 0554/96 - 3.2.3

D E C I S I O N
of the Technical Board of Appeal 3.2.3
of 14 September 1999

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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 21 May 1996
revoking European patent No. 0 341 370 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: C. T. Wilson

Members: H. Andrä

M. K. S. Aúz Castro

Summary of Facts and Submissions

I. European patent application No. 88 830 404.5, filed on 6 October 1988 and published on 15 November 1989 under publication No. 0 341 370, was granted on 22 December 1993.

II. The patent was opposed by the Respondents 1 and 2 (Opponents 1 and 2) on the grounds of lack of novelty and/or inventive step and because the patent did not disclose the invention in a manner sufficiently clear and complete for it to be carried out by the skilled person.

In support of their requests, the Respondents referred inter alia to the following documents:

(D2) JP-U-52-17969 and English translation (D2-T)

(D4) JP-U-56-70739 and English translation (D4-T)

III. The patent was revoked by a decision dated 21 May 1996 because of lack of novelty of the subject-matter of Claims 1 to 3 and lack of inventive step of the subject-matter of Claims 4 and 5.

IV. The Appellant (Patentee) filed an appeal against the decision on 20 June 1996 having paid the appeal fee on 17 June 1996. The Statement of Grounds of Appeal was filed on 7 September 1996.

V. With the letter dated 2 July 1997 the Respondent 1 withdrew its opposition.

VI. Following the communication pursuant to Article 110(2) EPC dated 6 November 1997 and the communication pursuant to Article 11(2) RPBA dated 23 September 1998 in which the Board expressed its provisional opinion primarily on the issue of Article 123(2) and (3) EPC the Appellant filed with a letter received on 29 July 1999 Claims 1 to 4 according to the main request.

VII. During oral proceedings conducted on 14 September 1999 the Appellant filed Claims 1 to 3 according to the auxiliary request.

The Appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of Claims 1 to 4 filed on 29 July 1999 or by way of auxiliary request on the basis of Claims 1 to 3 filed in the oral proceedings of 14 September 1999.

Claim 1 according to the main request reads as follows:

"1. Apparatus for conditioning the air in a room, comprising:

1.1 a frame (2) supporting means (3) for compressing a fluid;

1.2 means (4) for its condensation;

1.3 means (5) for its evaporation; and

1.4 cooling means (6) for said condensing means;

1.5 said condensing means comprising;

- 1.5.1 at least a first condenser (7) for the air-cooling of said fluid and
- 1.5.2 at least one second condenser (8) for the water-cooling of said fluid
- 1.5.3 whereby said first and second condensers are mutually associated for the flow of said fluid from the former towards the latter and for the flow in the opposite direction to said fluid, of a present volume of cooling air provided by a fan (12) from said second condenser to said first condenser;
- 1.6 said present volume of air, in the case of air-cooling of said fluid, under-cools said fluid in said second condenser and, in the case of water-cooling of said fluid, pre-cools it in said first condenser;
- 1.7 said cooling means comprise at least one water delivery element (13), arranged above said second condenser (8);
- 1.8 said first condenser (7) is arranged above said second condenser (8) such that it prevents water particles from being expelled during cooling of the second condenser and in a chamber (9) provided in said frame in order that cooling-water from said water delivery element (13) flows in the same direction as the fluid;

1.9 said chamber (9) having a first opening (10) downwardly connected to the outside and second opening (11) upwardly connected to said fan (12) for sucking said volume of air;

characterized in that

1.10 after depletion of water in the container (14) the conditioner automatically or controllably shifts to operation with air-cooling, whereby the fan (12) automatically increases its rpm rate."

Claim 1 according to the auxiliary request differs from Claim 1 according to the main request in that it comprises the additional wording in feature 1.10:

"whereby said first (7) and second (8) condensers are arranged in said chamber (9) in order that the longitudinal axes of said first and said second condensers are substantially mutually orthogonal, and that the longitudinal axis of said second lower condenser (8) is vertical."

It has been requested to amend the term "present" in the features 1.5.3 and 1.6 to "preset" in Claims 1 of both requests.

The essential arguments brought forward by the Appellant are as follows:

The prior art described by (D4) is not relevant to the subject-matter of Claim 1 of the main request since the citation does not disclose the features 1.5.3, 1.7 and

1.8 as claimed. In particular, the water delivery element is not arranged above the second condenser but within this condenser and the first condenser is not positioned above the second condenser and in a chamber. Furthermore, the fan is arranged rather between than above the condensers.

The aim of the invention that is to provide an apparatus for conditioning the air in a room which can operate with air-or-water-cooling of its condensers is not posed in the apparatus described by (D2) since this citation teaches a steady supply of water. Due to the structural differences between the apparatus disclosed by (D2) and by (D4) the skilled person will not combine the teachings of these documents.

Having regard to Claim 1 of the auxiliary request the longitudinal axes of the first and the second condenser are defined by the greatest extension of the respective condenser as shown in Figure 1 of the patent. Because of the vertical positioning of the longitudinal axis of the second lower condenser a great speed of the cooling air through the relatively small cross-sectional flow area of this condenser results in an excellent cooling effect being obtained. In the enlarging channel portion above the second condenser the air flow speed is reduced allowing thus the water droplets collected in the first condenser to fall down towards the second condenser. The inherent problem to provide an air conditioning apparatus cooled by water and air which on depletion of water in the water tank maintains the cooling operation is effectively solved by Claim 1.

VIII. The Respondent requests that the appeal be dismissed.

He argued essentially as follows:

In the apparatus for conditioning air according to the disclosure of (D4) the first condenser is shown in Figure 1 to be arranged above the second condenser such that the first condenser prevents water from being expelled during cooling of the second condenser. This citation teaches furthermore the shifting of the fan to an increased speed when the water supply runs short.

The subject-matter of Claim 1 lacks novelty in the light of (D4). In any case it does not involve an inventive step in view of the combination of (D2) and (D4).

The claims according to the auxiliary request handed over during oral proceedings have been filed too late, in particular taking account of the fact that Claim 1 thereof is not restricted to features comprised in the claims as granted. If these claims are nevertheless admitted into the proceedings it must be pointed out that the term "longitudinal axes of said first and second condensers" is not clear since there is no definition of such axes in the patent in suit. The alleged effects to be obtained by the particular arrangement of the said longitudinal axes can also not be understood because there is no disclosure relating to the cross-sectional flow area of the condensers. Claim 1 of the auxiliary request does not therefore provide a useful teaching to the skilled person and should not be allowed.

Reasons for the Decision

1. The appeal is admissible.

2. *Main request*

2.1 Amendments

Claim 1 comprises all the features according to Claim 1 as granted and incorporates additionally the following features and terms, respectively:

Feature 1.8:

The term "...during cooling of the second condenser and in order that cooling water..." has been replaced by the term "...during cooling of the second condenser and in a chamber provided in said frame in order that cooling water...". This amendment is supported by the original Claim 3 (granted Claim 2).

Feature 1.9: In its entirety

This feature is also supported by the original Claim 3 (granted Claim 2)

Feature 1.10: In its entirety

This feature is supported by page 6, paragraph 3 of the original description (column 3, lines 45 to 52 of the patent).

Claim 1 complies therefore with Article 123(2) EPC. The amendments are of a character restricting the scope of Claim 1 as granted. Claim 1 therefore satisfies also Article 123(3) EPC.

Claims 2 to 4 correspond to Claims 3 to 5 as granted.

2.2 Novelty

In the judgement of the Board (D2) discloses the nearest prior art. This citation describes an apparatus for conditioning the air in a room comprising the features according to the precharacterising portion of Claim 1 (see the Appellant's letter dated 27 July 1999, page 2, paragraph 3). In addition, it describes also a container (water tank 17) for feeding the water delivery element (sprinkler 16).

Claim 1 differs from the disclosure of (D2) by the feature 1.10 according to the characterising portion of Claim 1 that after depletion of water in the container the conditioner automatically or controllably shifts to operation with air-cooling whereby the fan automatically increases its rpm rate.

Claim 1 is therefore novel in the sense of Article 54 EPC. At the end of the oral proceedings, novelty of Claim 1 was no longer disputed so that this issue requires no further argument.

2.3 Inventive step

- 2.3.1 In the air conditioning apparatus described by (D2) water is used up to a substantial extent by efflux through the cooling air inlet and by vaporisation. In order to avoid a decrease of the refrigerating capacity of the apparatus the water tank must be regularly filled up. Due to missing replenishment of the water tank fluctuations of the temperature in the room to be

cooled may occur. The problem therefore arises to prevent or at least to reduce such temperature fluctuations (see the Appellant's letter dated 27 July 1999, in particular page 2, paragraph 3 to page 3, paragraph 2).

2.3.2 (D4) (see Figure 1) describes an apparatus for conditioning the air in a room comprising an evaporator (5), a compressor, a first (9) and a second (8) condenser and devices (rotary pump 14, fan 15) for cooling the condensers. As described in connection with the embodiment of Figure 3 (see page 4, last paragraph to page 6, paragraph 1 of the English translation (D4-T) of (D4)), the apparatus is controlled such that after depletion of the water supply in the tank a change-over to air cooling is automatically effected whereby the fan is rotated at an increased speed. This action is taken with the aim of reducing the lowering of the cooling capacity (see page 6, paragraph 2 of (D4-T)).

Due to the fact that the inherent technical problem of (D4) corresponds with the object of the patent, that is to adapt the air conditioner such that fluctuations of the temperature in the room to be cooled are avoided or reduced, the skilled person, in expectation of the advantage of an essentially constant room temperature, will integrate the control system of the fan speed as taught by (D4) into the air conditioner of (D2) and arrive thereby in an obvious manner at the subject-matter of Claim 1.

2.3.3 Contrary to the opinion of the Appellant, (D2) does not teach the use of a water delivery duct devoid of a

water storage basin in which apparatus the problem underlying the patent would allegedly not arise. It is unambiguously explained in this citation that the apparatus comprises a water tank 17 provided with a pump 18 to supply water within the water tank 17 to the sprinkling pipes 15 and there is also provided a water supply opening for supplying water from outside the cooling machine to the water tank (see the description of (D2-T), page 3, line 4 from below to page 4, paragraph 2). Due to the presence of a water tank it is clear that there exists basically the risk of depletion of the tank so that water cooling of the condenser fails. Even in case of a water supply pipework without the provision of a water tank a breakdown of the water supply could occur so that also in this case the problem of reducing temperature fluctuations of the room to be cooled would arise.

The Appellant further argues that there are structural differences between the subject-matter of the patent and of (D4), in particular as to the arrangement of the water delivery element relative to the second condenser, the arrangement of the first and the second condenser to each other and the positioning of the fan relative to the condensers. Further according to the Appellant, these structural differences would dissuade the skilled person from a combination of the disclosures of (D2) and (D4).

The above opinion of the Appellant does not correspond with the case law of the Boards of Appeal according to which the problem-solution approach is recommended consistently for achieving objectivity in the assessment of invention step. This approach is

distinguished by starting out from the objectively ruling state of the art, in the light of which the technical problem is determined which the invention addresses and solves (T 248/85, OJ EPO 8/1986, 261). This method has been applied in the case to be decided by starting out from (D2) as the relevant prior art, determining the problem which is solved by Claim 1 and investigating whether the skilled person was motivated to integrate a specific feature of Claim 1, namely feature 1.10, described in the prior art, that is in (D4), into the apparatus disclosed by the relevant prior art (D2). It is irrelevant whether parts of the structural features of the apparatus disclosed in (D4) are different from the respective features according to the patent since these features are known from the relevant prior art (D2) as admitted by the Appellant when incorporating these features into the preamble of Claim 1. (D4) does not contain any statement that would restrain the skilled person from combining the feature relating to the automatic increase of the condenser fan speed after depletion of the cooling water with the apparatus described by (D2). What is more, the above said feature is used in the apparatus described by (D4) with the aim and the success of achieving exactly the same effect as according to Claim 1. It follows therefore from the application of the problem-solution approach in the present case that the skilled person would have combined the disclosures of (D2) and (D4) arriving thus in an obvious manner at the subject-matter of Claim 1.

2.3.4 The Board comes to the conclusion that Claim 1 according to the main request cannot form a basis for maintaining the patent since its subject-matter does

not involve an inventive step (Article 56 EPC).
Claims 2 to 4 being dependent on Claim 1 fall with the
latter.

3. *Auxiliary request*

3.1 The Board considers the filing of Claims 1 to 3 during
oral proceedings as an attempt to overcome the
objection of lack of inventive step raised. As the main
feature added to Claim 1 according to the main request,
that is the mutually orthogonal arrangement of the
first and second condensers, is contained in the claims
as granted and has already been considered by the first
instance the Board finds it appropriate in the present
situation to admit these claims into the proceedings.

3.2 Claim 1 differs from Claim 1 according to the main
request in that it comprises the additional wording in
feature 1.10: "whereby (a) said first (7) and second
(8) condensers are arranged in said chamber (9) in
order that the longitudinal axes of said first and said
second condensers are substantially mutually
orthogonal, and (b) that the longitudinal axis of said
second lower condenser (8) is vertical".

Feature (a) is supported by the original Claim 6.

As to the disclosure of feature (b), Figure 1 of the
original drawings was referred to by the Appellant.

Figure 1 being a lateral elevation view in transverse
cross-section shows a rectangularly shaped box
designated "tube condenser 8" with the longer dimension
thereof extending in the vertical direction. Neither of

Figures 1 and 2, however, shows the position of the longitudinal axis of the second condenser 8 which deficiency applies as well to the first condenser 7. The drawings do not contain any figure illustrating the dimensions of the condensers in the direction orthogonal to the plane depicted in Figure 1.

The original disclosure including the claims and the description is completely silent about the position of the longitudinal axes of the condensers. These axes may in principle also extend in a direction orthogonal to the plane shown in Figure 1. The skilled person is not, therefore, informed about the dimensions of the condensers regarding in particular the cross-sectional area available to the cooling air flow.

The Appellant's argument relating to a great speed of the cooling air through the second (lower) condenser due to its relatively small cross-sectional flow area and a reduced air speed at the inlet to the first condenser due to an increased flow area is without basis since in the originally filed documents no information is provided as to the three-dimensional configuration of the condensers and the pertinent cooling air ducts.

- 3.3 For the foregoing reasons the Board comes to the conclusion that the subject-matter added to Claim 1 is neither clear nor supported by the description (Article 84 EPC). Taking into consideration the amendments made by the Appellant, Claim 1 according to the auxiliary request does not meet the requirements of the EPC and cannot therefore be maintained (Article 102(3) EPC).

Since Claims 2 and 3 according to the auxiliary request are dependent on unallowable Claim 1 these claims can also not be maintained.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

N. Maslin

C. T. Wilson