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D E C I S I O N
of 16 June 1998

Case Number: T 0488/97 - 3.2.4

Application Number: 88302645.2

Publication Number: 0288164

IPC: A62C 35/00

Language of the proceedings: EN

Title of invention:
A method and apparatus for suppressing explosions and fires

Patentee:
O'Connell, Michael Oliver

Opponent:
Kidde fire Protection Limited

Headword:
-

Relevant legal provisions:
EPC Art. 54, 69(1), 84, 123, 111(1)

Keyword:
"Novelty (yes)"

Decisions cited:
T 0014/83, T 0169/83, T 0023/86, T 0016/87, T 0450/89, T 0677/91, T 0511/92, T 0056/87

Catchword:
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Case Number: T 0488/97 - 3.2.4

D E C I S I O N
of the Technical Board of Appeal 3.2.4
of 16 June 1998

Appellant:
(Proprietor of the patent)

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Respondent:
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Decision under appeal:

Decision of the Opposition Division of the European Patent Office posted 14 March 1997 revoking European patent No. 0 288 164 pursuant to Article 102(1) EPC.

Composition of the Board:

Chairman: C. A. J. Andries
Members: R. E. Gryc
M. Lewenton

Summary of Facts and Submissions

I. The appellant (patent proprietor) lodged an appeal, received at the EPO on 9 May 1997, against the opposition division's decision revoking European patent No. 288 164 notified by post on 14 March 1997.

The appeal fee was paid on 12 May 1997 and the statement setting out the grounds of appeal was filed on 14 July 1997.

II. An opposition was filed requesting revocation of the patent as a whole on the basis of Article 100(a) EPC. The opposition division held that lack of novelty (Article 54 EPC) prejudiced the maintenance of the patent having regard to the document D1: US-A-386 621.

III. With the statement setting out the grounds of appeal, the appellant filed a main request and three auxiliary requests all based on amended independent claims. The appellant pointed out that the main steps of the method according to the invention were obviously not taught in the continuous recirculation system of D1. According to the appellant, the system of D1 provides no maintenance of the pressure and temperature conditions of the water in the reservoir means and only steam is discharged into the enclosures to be protected. Moreover, there is no identifiable charge of liquid in the dynamic system of D1 contrary to the static system according to the invention. The appellant was therefore of the opinion that the invention was new in view of D1.

In his reply the respondent (opponent) contended that the fact that, in D1, the water may not be at the same temperature throughout the whole system does not mean that the temperature and the pressure of the water is not maintained at a particular level sufficient to make the superheated water flash off as steam upon being released.

The respondent also pointed out that D1 discloses that liquid water escapes into the enclosure to be protected and that it was inevitable that a portion of the hot water will be fragmented into droplets when the superheated water is discharged into the room forming a vapour cloud as according to the invention.

According to the respondent none of the subject-matter of the independent claims filed as main or auxiliary requests is patentable.

IV. Oral proceedings took place on 16 June 1998.

The appellant confirmed that the term "area" used in the claims means a defined or specific region and has no difference with the term "enclosure" defined in the introduction of the description of the opposed patent.

According to the appellant, the system of D1 is a basic general multi-purpose system for buildings designed to provide only steam generated at a central location. In the system of D1, there is a continuous circulation of water and the temperature and pressure of the water is supposed to vary.

The respondent contended that also in D1 a specific and limited amount of water in a sufficient quantity, which can be also referred to as a charge, would be injected into the area to be protected. In his opinion, the whole system of D1 forms the reservoir means, included the spent water tank, and the skilled person can derive directly and unambiguously from D1 that the superheated water escapes into the enclosure. The respondent emphasized that, when superheated water is discharged into a room, it is inevitable that droplets are formed and that, in the system of D1, there should necessarily be control means to maintain a sufficient level of water temperature and pressure in the circuit.

According to the respondent, the skilled person can directly derive from D1 that the pressure and temperature conditions should be such to meet the requirements of the room and that when superheated water is released droplets of water are formed.

The respondent came thus to the conclusion that the subject-matter of the independent claims of the main and of the two first auxiliary requests was totally anticipated by the state of the art disclosed in D1 and admitted however that the subject-matter of claims 1 and 3 of the third auxiliary request was new due to the use of pressure sensing means which are not evocated in D1.

At the end of the oral proceedings, the appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of the main request or of one of the three auxiliary requests filed with letter dated 11 July 1997.

The respondent requested that the appeal be dismissed.

V. Independent claims 1 and 3 of the main request read as follows:

Claim 1:

"A method of suppressing, extinguishing or inhibiting a fire or an explosion in an area comprising the step of releasing a charge of suppressant into the area in response to fire or explosion conditions in the area, characterised in that the method comprises the steps of:
introducing a charge of water into a reservoir means (5, 25, 80, 90) having an outlet means (7, 26) closed by a valve means (10, 24, 40, 85, 86, 96);
heating and pressurising the water in the reservoir means (5, 25, 80, 90) to increase the liquid heat content of the water in the reservoir means (5, 25, 80, 90) to such a level that, on release into the lower pressure area, a portion of the pressurised hot water forms droplets and a portion of the water flashes off as steam;
maintaining by control means the elevated temperature and pressure conditions of the water in the reservoir means (5, 25, 80, 90);
sensing fire or explosion conditions in the area;
and opening the valve means (10, 24, 40, 85, 86, 96) in response to fire or explosion conditions occurring in the area to introduce hot water with increased liquid heat content from the reservoir means (5, 25, 80, 90) into the area at a pressure higher than that in the area, so that a portion of the pressurised hot water, the temperature and corresponding pressure of which has been raised by the heating means and maintained by the

control means, is fragmented into water droplets and another portion of the water flashes off as steam on entry into the lower pressure area, whereby a vapour cloud formed by the droplets and the flash steam extinguishes or inhibits a fire or an explosion in the area and prevents re-ignition."

Claim 3:

"Hazard suppression apparatus constructed and adapted to carry out the method of claims 1 and 2, said apparatus being of the type comprising reservoir means (5, 25, 80, 90) having outlet means (7, 26) through which suppressant is introduced into an area, and valve means (10, 24, 40, 86, 96)
characterised in that the suppressant is pressurised water with increased liquid heat content at a pressure in the reservoir means which is higher than that in the area into which it is released, and in that the apparatus includes:
- heating means (9. 28. 83. 95) for heating the water to increase the liquid heat content of the water in the reservoir means (5. 25. 80. 90) to such a level that, on release into the lower pressure area, a portion of the pressurised hot water forms droplets and a portion of the water flashes off as steam;
- control means for maintaining the elevated temperature and pressure conditions of the water in the reservoir means (5, 25, 80, 90);
- sensing means for detecting fire or explosion conditions in the area; and
- actuating means responsive to said sensing means for opening the valve means (10, 24, 40, 86, 96) in response to fire or explosion conditions occurring in the area to introduce pressurised hot water with increased liquid heat content from the reservoir means (5, 25, 80, 90) into the area at a pressure higher than that in the area, whereby in use a portion of the

pressurised hot water, the temperature and corresponding pressure which has been raised by the heating means and maintained by the control means, is fragmented into water droplets and another portion of the water flashes off as steam on entry into the lower pressure area, whereby a vapour cloud formed by the droplets and the flash steam extinguishes or inhibits a fire or an explosion in the area and prevents re-ignition."

Reasons for the Decision

1. *Admissibility*

The appeal is admissible.

2. *Main request*

2.1 Modifications of the description and claim 1 (Article 123 EPC)

In the description, the word "causes" has been replaced by "caused" (page 2, line 21) and the expression "according to the invention" (page 4, line 14 and page 8, line 4), as well as the paragraph from line 38 to line 41 of page 8 have been deleted.

On the contrary, the expression: "by control means" has been incorporated between the words "maintaining" and "the elevated", respectively on page 2, line 55 of the description and page 9, line 25 of claim 1, this matter having a counterpart in the application as originally filed, page 12, lines 20 and 21.

Since these modifications are minor corrections or add subject-matter described in the application as originally filed and limit the protection conferred by the patent, they do not contravene Article 123(2) and (3) EPC and are acceptable.

2.2 Interpretation of independent claims 1 and 3

2.2.1 The EPC rules that the subject-matter of the claims for which protection is sought should be supported by the description (Article 84 EPC) and, according to consistent case law of the boards of appeal, the disclosure of an invention is to be assessed on the basis of the specification as a whole, including the description and the drawings, and not of the claims alone (see for example decisions T 14/83, OJ EPO 1984, 105 and T 169/83, OJ EPO 1985, 193).

Therefore, when examining the novelty of the subject-matter of claims 1 and 3, the wording of said claims shall not be considered and understood in isolation but in the framework of the overall disclosure of the specification and more particularly in the context of the description.

As a rule, a claim should normally be clear in the sense of Article 84 EPC and understandable as it stands i.e. the subject-matter for which protection is sought should be understandable without ambiguity from the wording of the claim. However, in opposition and appeal proceedings, when doubts exist about the exact meaning of a claimed feature and when the substance of the independent claims calls for closer consideration before a decision can be reached on the question of patentability of their subject-matter, the question of whether a claim is "clear" must be looked at only as regards the amendments made. Otherwise, the whole content of the specification shall be used to

understand the wording of the claim since the provision in Article 69(1) EPC, stipulating that the description and drawings be used to interpret the claims, also applies during opposition and appeal proceedings (see for example decisions T 23/86, OJ EPO 1987, 316 and T 16/87, OJ EPO 1992, 212).

2.2.2 Consequently, in the present case, the following terms and expressions of claims 1 and 3 which are controversial between the parties, have not been modified after grant and cannot thus be objected under Article 100 EPC need to be interpreted in the light of the description and such an interpretation gives the following:

- **The term "area"** (see claim 1: page 9, lines 16, 17, 18, 23, 27, 29, 30, 33 and 34 and claim 3: page 9, lines 43, 46, 49, 53, 55, 56 and 57 and page 10, lines 2 and 3) is to be interpreted, in agreement with both parties, in a restrictive way as an equivalent to the term "enclosure" defined in the introductory part of the description (see the specification: page 2, lines 6 to 9), i.e. any space having a boundary. Moreover, in the light of the description, it appears that the method and the apparatus according to the invention are not conceived for protecting an undefinite enclosure or even simply an open space against fires or explosions but are adapted for protecting a particular and predetermined "area" (enclosure).

- **the term "charge"** in the expressions "charge of suppressant" and "charge of water" (see claim 1: page 9, lines 17 and 20) should be interpreted as referring to a definite (predetermined) quantity of suppressant or water depending on the area to be protected since the volume of water which is to be introduced into the reservoir means and used

for extinguishing a fire is described as being calculated with regard to the characteristics of the enclosure and the material to be protected (see the description: page 5, lines 41 to 44 and from line 49 to page 6, line 49 and also page 7, line 25).

- **the expression "reservoir means"** (see claim 1, page 9, lines 20 to 22, 25 and 29 and claim 3, lines 42, 45, 49 and 56) is used throughout the specification to designate either a reservoir (see page 3, lines 43/44 and Figures 1 and 9), or the distribution piping system itself (see page 8, lines 51/52 and Figures 2 to 5,10 and 11). This expression should therefore be interpreted widely as meaning any hermetically closed receptacle allowing pressurisation of the definite, predetermined water charge therein.

2.2.3 The argument of the appellant, that the general wording of both independent claims 1 and 3 allowed another more general interpretation of that wording, finds no basis in the application as originally filed. Indeed the technical reality as disclosed in this application is unequivocally clear so that it would be unfair to take into account the not disclosed and clearly not intended general interpretations. The wording used in the claims fairly defines the disclosed method and apparatus.

2.3 Novelty of claims 1 and 3 (Article 54 EPC)

2.3.1 When examining novelty it should be borne in mind that a claimed subject-matter would lack novelty only if it were derivable as a whole directly and unambiguously from one document (see for example the unpublished decisions T 450/89, T 677/91 and T 511/92).

Moreover, the technical disclosure in a prior art document should be considered in its entirety, as it would be done by a person skilled in the art and it is not justified arbitrarily to isolate parts of such document from their context in order to derive therefrom a technical information which would be distinct from the integral teaching of the document (see decision T 56/87, OJ EPO 1990, 188).

2.3.2. D1 discloses a steam system for extinguishing fire in any locality or building covered by the system of distribution, said known system involving a continuous circulation of superheated water caused to circulate by means of a pump through suitable supply and return mains laid in the streets of the locality (see D1: page 1, lines 11 to 25 ; the claim: page 2, lines 93 to 109 and Figure 1). The system of distribution according to D1 is thus a dynamic system wherein the superheated water is in continuous movement through the mains where it loses some heat and pressure (see D1: page 1, lines 66 to 71), this system being conceived to cover and protect simultaneously several areas of a locality or building.

On the contrary, the method and apparatus according to the invention are conceived to form a static system in which a predetermined amount of superheated water (i.e. a "charge" of water in the meaning of the claimed invention) allotted for the protection of an identified enclosure remains stationary in the reservoir means where its temperature and pressure conditions are maintained substantially constant by control means.

So the concept of keeping apart in a specific reservoir a predetermined charge of water, corresponding to a specific room to be protected, is neither disclosed nor even suggested in D1.

Therefore, the invention already differs from the state of the art disclosed in D1 by its basic concept i.e. a static system "made to measure" for the protection of one pre-identified enclosure versus a dynamic "ready-made" system for the simultaneous protection of several areas.

2.3.3 Also, contrary to the invention, D1 appears to be concerned with the exclusive distribution of steam made, in particular (see D1: page 2, lines 60 to 64), from the escape of superheated water through valves openings or outlets.

In his written statements and also during the oral proceedings the respondent contended that it is inevitable that, when pressurised superheated water is released in a room at a lower pressure, not only steam but also water in a liquid phase is introduced. However, since D1 does not give any indication with regard to the portion of superheated water entering the enclosure which is converted into steam, it cannot be excluded that, in D1, substantially the totality of superheated water released into the enclosure be converted into steam. In addition, D1 does not suggest in which form (i.e. droplets or leakage) the water in liquid state (if any) may enter the room.

2.3.4 As regards the known method, D1 does not explicitly teach that the liquid heat content of the water should be increased to such a predetermined level that allows only a portion of the water to flash off as steam and the rest to form droplets according to the invention, in order to provide a "combination of suppressant qualities plus inerting qualities", as described in the description of the opposed patent (See page 5, lines 6 and 7).

And, contrary to the claimed method, D1 does not mention any control means at all to maintain the temperature and the pressure conditions of the superheated water in the reservoir means in the meaning of the present invention and this document acknowledges implicitly that the superheated water circulating through the long distance supply mains looses some heat before being released (see D1: page 1, lines 66 to 70), whereas the invention teaches the use of control means to maintain these conditions of temperature and pressure.

2.3.5 For the aforementioned reasons, the system according to the invention appears to be of a quite different nature to the one disclosed in D1 and several essential features of the subject-matter of claims 1 and 3 (i.e. the charge of water, the state and the form of the released superheated water, the maintenance of the temperature and pressure conditions of the water, the presence of control means, the formation of a vapour cloud with steam and liquid droplets) are either not disclosed at all in D1 or cannot be said to derive in combination "directly and unambiguously" from that document.

Therefore, in line with the consistent case law of the boards of appeal of the EPO, the Board considers that, in comparison with the state of the art disclosed in D1, the subject-matter of claims 1 and 3 is new in the meaning of Article 54 EPC.

3. *Auxiliary requests*

The subject-matter of claims 1 and 3 of the main request being new, there is no need to consider the appellant's auxiliary requests in this respect.

4. *Remittal to the first instance*

In opposition proceedings, revocation of the patent was requested by the respondent on the grounds of lack of novelty (Article 54 EPC) and lack of inventive step (Article 56 EPC) and the Opposition Division revoked the patent for lack of novelty of the subject-matter of claims 1 and 3.

Both parties having the right to have said second ground for opposition be also examined by two instances, the Board has considered it appropriate to make use of Article 111(1) EPC and to refer the matter to the first instance for further prosecution on the basis of the documents of the appellant's main request.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside

2. The case is remitted to the first instance for further prosecution on the basis of the claims, description and drawings of the appellant's main request filed with letter dated 11 July 1997.

The Registrar: The Chairman:

N. Maslin C. Andries