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**D E C I S I O N**  
**of 22 January 2004**

**Case Number:** T 0304/02 - 3.2.3

**Application Number:** 92910184.8

**Publication Number:** 0663858

**IPC:** B05B 1/34, A62C 31/02

**Language of the proceedings:** EN

**Title of invention:**  
Fire fighting equipment

**Patentee:**  
Sundholm Göran

**Opponent:**  
FOGTEC Brandschutz GmbH

**Headword:**  
-

**Relevant legal provisions:**  
EPC Art. 56

**Keyword:**  
"Inventive step - additional effect"

**Decisions cited:**  
-

**Catchword:**  
-



Case Number: T 0304/02 - 3.2.3

**D E C I S I O N**  
**of the Technical Board of Appeal 3.2.3**  
of 22 January 2004

**Appellant:** FOGTEC Brandschutz GmbH  
(Opponent) Schanzenstraße 35  
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**Representative:** Simons, Johannes, Dipl.-Ing.  
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**Respondent:** Sundholm Göran  
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**Representative:** Jenkins, Peter David  
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**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office dated 23 January 2002  
rejecting the opposition filed against European  
patent No. 0663858 pursuant to Article 102(2)  
EPC.

**Composition of the Board:**

**Chairman:** C. T. Wilson  
**Members:** F. Brösamle  
J. P. Seitz

## Summary of Facts and Submissions

- I. European patent application No. 92 910 184.8 was granted with claims 1 to 15 on 8 September 1999 as European patent No. 0 663 858.
- II. Granted claims 1 (method) and 5 (apparatus) read as follows:
- "1. A method for fighting fire with fire-fighting equipment having a first nozzle (3), a second nozzle (3, 4) and liquid-supply means for supplying a fire-extinguishing liquid to the first nozzle (3) at a pressure for spraying a first spray of very small droplets at a first spread angle, and to the second nozzle (3, 4) at a pressure for spraying a second spray of very small droplets at a second spread angle, the first and second nozzles (3, 4) being spaced and divergent; characterized in that the first and second sprays are entrained into a concentrated, single fog-like flow pattern with strong penetrating power through the suction caused by a combination of the pressure, which is from about 70 bar to about 200 bar, the sizes of the droplets, the first and second spread angles, the spacing and the angle of divergence."
- "5. Fire-fighting equipment, comprising a spray head (1) with an inlet (5), a first nozzle (3), a second nozzle (3, 4) and liquid-supply means for supplying a fire-extinguishing liquid to the first nozzle (3) at a pressure for spraying a first spray of very small droplets at a first spread

angle, and to the second nozzle (3, 4) at a pressure for spraying a second spray of very small droplets at a second spread angle, the first and second nozzles (3, 4) being spaced and divergent; characterized in that the combination of the pressure of the liquid, which is from about 70 bar to about 200 bar, the sizes of the droplets, the first and second spread angles, the spacing and the angle of divergence, is such that the first and second sprays are in use entrained by the suction into a concentrated, single fog-like flow pattern with strong penetrating power."

III. With decision of 23 January 2002 the opposition division rejected the opposition of FOGTEC Brandschutz GmbH against the above European patent *inter alia* relying on

(D1) Broschüre "Flüssigkeitszerstäubung und Vernebelung mit Lechler Bündeldüsen" der Fa. Paul Lechler, Stuttgart - N and

(D2) Broschüre "Feuerlöschen mit Höchstdruck-Wasserstaub" der Fa. Oertzen.

IV. Against the decision of the opposition division the opponent - appellant in the following - lodged an appeal on 22 March 2002 paying the fee on the same day and filing the statement of grounds of appeal on 28 May 2002 in which objections under Articles 100(a) and (b) EPC were raised.

V. In its communication pursuant to Article 11(2) RPBA the board set out his provisional opinion with respect to the requirements of Article 100(b) EPC whereafter oral proceedings were carried out on 22 January 2004 in which the appellant and the proprietor - respondent in the following - essentially argued as follows with respect to Articles 56, 100(a) EPC:

(a) appellant:

- (D1) and (D2) were publicly available before the priority date of the contested patent see (D1) and the old telephone number set out on the front sheet and its page 8 last line indicating the printing number "B 178/5000/1249 0/1407" in which "1249" was a reference to December 1949 and see (D2) and its date "10 November 1988" being again before the priority date of EP-B1-0 663 858;
- following the board's provisional opinion only the issue of inventive step was discussed in the oral proceedings before the board; (D1) did not only disclose the preamble of claim 1 (claim 5 being essentially identical with it) but also further features of this claim such as first and second sprays which form a single fog-like flow pattern with strong penetrating power causing suction of air into it and leading to a constriction thereof by the effect of the injection of air into the flow pattern of droplets;

- from (D1) the interrelationship of applied liquid-pressure and the degree of atomization combined with a cooling effect and the effect to exclude the presence of oxygen was derivable in combination with fire fighting; not known from (D1) was the claimed range of the liquid to be sprayed being 70 to 200 bar;
  
- the objectively remaining problem to be solved by the claimed invention could therefore only be seen in realizing good cooling and quick fire fighting;
  
- the above pressure range was rendered obvious by (D2) so that a combination of (D1) and (D2) rendered obvious the claimed subject-matter since (D1) was not restricted to 20 bar and taught that overlapping sprays led to finer droplets while maintaining penetrating power making the installation applicable for effective fire fighting; the effect of constriction is a physical effect whether directly mentioned in the prior art or not and a direct consequence of a fast flowing jet of a liquid surrounded by air;
  
- (D1) does, however, not solely rely on the effect of collision, but rather on the geometry of the nozzles, namely by providing small channels/openings for the liquid to be sprayed;
  
- finally it was observed that the "penetrating power" is not clearly specified in the contested patent specification and that apart from pressure the independent claims do not contain the geometrical parameters to achieve the claimed

effect of entrainment of two sprays into a single fog-like flow pattern making the apparatus different from prior art installations;

- as a consequence claims 1 and 5 did not define inventive subject-matter within the meaning of Articles 56 and 100(a) EPC.

(b) respondent:

- right from the beginning the respondent had questioned the issue of public availability of (D1) and (D2); since the appellant withdrew his request for oral proceedings before the opposition division there was no chance for the respondent to hear the witness offered by the appellant;
- with respect to (D1) it has to be admitted that the physical effect of suction of air into a fast moving jet of particles of any liquid cannot be denied *per se*; what makes the subject-matter claimed different from (D1) was the teaching that the first and second sprays were entrained into a concentrated, single fog-like flow pattern by suction instead of the geometry of the nozzle's arrangement in the spray head;
- under these circumstances collision of particles was largely excluded thus maintaining the particle's velocity and penetrating power, being a must for effective fire fighting including cooling and the exclusion of oxygen;

- (D1) was therefore based on "design" rather than on "suction" so that the "overlap by suction" was not derivable therefrom, even if (D2) was considered which document was restricted to a single nozzle without addressing the problems of overlapping sprays/particle's collisions and the specific use of surge effects to entrain individual sprays into a single flow pattern; (D2's) high pressure simply led to more collisions and finer particles not, however, to an enhanced penetrating power so that no incentive could be seen to consider this document in combination with (D1);
  
- claims 1 and 5 read by a skilled person taught away from the prior art even without prescribing in detail all geometrical parameters of the nozzles and their arrangement in the spray head since the functional link between suction and penetration was clearly not derivable from (D1) and (D2) singly or in combination.

VI. The appellant requested that the decision under appeal be set aside and that the European patent No. 0 663 858 be revoked.

VII. The respondent requested that the appeal be dismissed.

### **Reasons for the Decision**

1. The appeal is admissible.



*Article 100(b) EPC*

2. Following the board's communication pursuant to Article 11(2) RPBA preparing the oral proceedings before the board dated 22 January 2004 the appellant and the respondent no longer discussed this ground of opposition so that the board refers to its arguments raised in the above communication, namely:
  - 2.1 Appellant's arguments with respect to the requirements of Article 100(b) EPC appear to be a mixture with the requirements of Article 84 EPC (clarity) which is not a ground of opposition.
  - 2.2 The appellant basically attacks the characterising feature of granted claim 1 to create "a concentrated single fog like pattern in that it is unclear what had to be understood under "fog-like", "single', "concentrated' and "pattern" so that a skilled person would not be able to decide in which case be contravened the claimed teaching and when not.
  - 2.3 In this context reference has to be made to granted Figures 1 to 3 and to column 6, lines 7 to 30 of EP-B1-0 663 858.

In lines 7/8 thereof the number of nozzles (four) and their orientation (downwards) is defined; in lines 10 to 14 it is set out that the nozzles take up "relatively little space and can ... be disposed close to one another" to "achieve a concentration of the fog formations" into "a directional spray". Thereafter the interrelationship between pressure and concentration is dealt with so that the fog sprays converge "more

quickly and being combined thereafter". In lines 19 to 22 parameters like "spread angles" and the "mutual main directions of the individual nozzles" are discussed, whereas in lines 25 to 27 "the resulting fog-like flow pattern" is stated to resemble "a sponge with a relatively round head". Finally the droplet sizes are defined as being 60 and 80 pm.

- 2.4 Summarising, the patent specification appears to contain sufficient information to the skilled person to carry out the claimed invention, Article 100(b) EPC, and to achieve the features cited in above remark 4.2, What counts in this respect is the patent specification as a whole and not the claims alone.

*Article 100(a) EPC*

3. *Inventive step*

- 3.1 Novelty not being disputed by the first instance, the appellant and the board the crucial issue to be decided in combination with the requirements of Article 100(a) EPC is inventive step in the light of (D1) and (D2) which documents were accepted as prior art by the board for the following reasons.

- 3.2 (D1) without clearly offering a publication date indicates on its last page on the bottom thereof a hint to its publication date since "1249" has to be accepted as a synonym for its publication on December 1949 - as explained by the appellant. The old telephone number of "Paul Lechler" to be seen on the bottom of the cover sheet of (D1) clearly proves that (D1) was published in the Fifties and well before the priority date of the

contested patent so that the board is convinced that (D1) forms part of the prior art. In this context it has to be considered that the respondent in the present case had to prove that "1249" of (D1) is meaningless, and the Board would further point out that it is not sufficient "to reserve the right to contest the public availability" of (D1) without clearly bringing forward arguments which support the non availability of (D1) and (D2), respectively. Under these circumstances the board decided to accept (D1) and also (D2) - showing a clear publication date decades before the priority date of the contested patent - as prior art in the oral proceedings.

- 3.3 (D1) is seen as the starting point of the claimed invention since it discloses a spray head with first and second nozzles leading to different sprays which are thereafter combined to a single fog-like flow pattern simply by the spray head's construction and the nozzle's arrangement thereon leading to sprays which immediately after leaving the nozzles overlap (collision of particles) with the consequence of creating on the one hand finer particles, on the other hand, however, reducing the penetrating power of the particles which thereby lose a lot of their velocity and spray direction towards the substrate to be treated/cooled. Summarizing, (D1) is based on a fog-like single flow pattern which is obtained by the effect of repeated collisions of particles as a consequence of the **design** of the spray head and its nozzles.

3.4 Starting from (D1) the objectively remaining problem to be solved by the invention can be seen from EP-B1-0 663 858, see column 1, lines 18 to 21, with its two aspects, namely firstly creating a strong penetrating power and secondly safeguarding a low consumption of liquid applied to the fire to be extinguished.

3.5 The above problem is solved with the features of claims 1 (method) and 5 (equipment/apparatus) which are so narrowly related that they can be dealt with together (as in the oral proceedings before the board).

The crucial difference between the subject-matter of claims 1/5 and (D1) is that the claimed invention is based on already spraying fine particles out of the nozzles which particles are not colliding immediately on leaving the nozzles but rather are subject to suction effects created by the high pressure of the liquid/high velocity of sprayed particles and which suction is the "motor" for changing the particle's trajectories in that they are **entrained** (by suction) into a concentrated, single fog-like flow pattern. It is obvious that under these circumstances collisions between particles are largely obviated and that the particles maintain their impetus (velocity)/penetrating power which effect allows to reduce the quantity of liquid to be sprayed.

3.6 This teaching and the effects set out above are clearly derivable from claims 1 and 5 even if the only parameter thereof is the liquid's pressure since in column 6, lines 14 to 17, of EP-B1-0 663 858 this effect is dealt with in detail for a skilled reader ("converging more quickly and being combined

- thereafter") setting out that the **operating pressure** is the crucial parameter therefore.
- 3.7 Relying on **suction** rather than on **design** as in (D1) is a principle not rendered obvious by (D1) - as set out above - or (D2). Since the latter document is based on a **single** nozzle in which context the problem of **combined** sprays cannot arise (also true for the effect of **collision** and its consequence for the **penetrating power**) even a combination of (D1) and (D2) - no incentive for combining their teachings without knowing the claimed invention can be seen - would not achieve the claimed subject-matter and its advantageous effects.
- 3.8 Summarizing, the subject-matter of granted claims 1 (method) and 5 (equipment) is novel and inventive so that these claims and their dependent claims are valid.
- 3.9 Appellant's further arguments with respect to the prior art and to the subject-matter of claims 1 and 5 are not supported by the facts and not convincing since the **principles** which lead to a single fog-like flow pattern in (D1), (D2) and claims 1 and 5 **are different** as pointed out above so that a skilled person even considering the complete prior art teachings of (D1/D2) was not led to the claimed subject-matter.

It is true that claims 1 and 5 (and the patent specification) do not specify all parameters of the nozzles and their spray head; as set out above the liquid's pressure is the **crucial parameter** for achieving the claimed teaching of creating a **single** fog-like flow pattern since pressure for a skilled person is a synonym for **suction** (responsible for the

entrainment of sprays). Even if claims' 1 and 5 term "penetrating power" is not defined in detail in the contested patent it is clear what is meant, namely maintaining the particles' velocities and trajectories to have **enough energy** to reach the fire thereby penetrating any shield of exhaust gasses and flames.

**Order**

**For these reasons it is decided that:**

The appeal is dismissed.

The Registrar:

The Chairman:

A. Counillon

C. T. Wilson