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D E C I S I O N
of 4 April 2000

Case Number: T 0158/97 - 3.3.5

Application Number: 91304016.8

Publication Number: 0499732

IPC: C02F 1/46

Language of the proceedings: EN

Title of invention:
Dual system using three electrodes to treat fluid

Patentee:
Ibbott, Jack Kenneth

Opponent:
Ion Enterprises Ltd

Headword:
Treating electical conductive fluid/IBBOTT

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (no), technically non-functional modification"

Decisions cited:
T 0119/82, T 1027/93, T 0072/95, T 0157/97, T 0176/97

Catchword:

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0158/97 - 3.3.5

D E C I S I O N
of the Technical Board of Appeal 3.3.5
of 4 April 2000

Appellant: (Opponent)
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Decision under appeal: **Interlocutory decision of the Opposition Division of the European Patent Office posted 12 December 1996 concerning maintenance of European patent No. 0 499 732 in amended form.**

Composition of the Board:

Chairman: R. K. Spangenberg
Members: G. J. Wassenaar
J. Van Moer

Summary of Facts and Submissions

I. The appeal is from the decision of the Opposition Division to maintain European patent No. 0 499 732 in amended form with claims 1 to 15 submitted as second auxiliary request during oral proceedings on 14 November 1996. Claim 1 thereof reads as follows:

"Apparatus for treating electrically conductive fluid flowing through piping, said apparatus comprising:
a pipe (7) having an inlet and outlet for connection to the piping;
a positive electrode (1) of electrically conductive material;
a negative electrode (2) of electrically conductive material that is spaced apart and electrically isolated from the electrically conductive material of said positive electrode (1);
the electrically conductive materials of said electrodes (1,2) having different electrochemical potentials such that when a body of electrically conductive fluid to be treated in the device flows between said electrodes, an electroconductive connection that develops an electroconductive potential between said electrodes is only established through the body of fluid whereby the fluid is ionized; and
a third electrode (3) of electrically conductive iron or iron alloy;
all of said electrodes being provided internally of said pipe (7);
the electrically conductive material of said third electrode (3) being electrically isolated from the electrically conductive material of said negative electrode (2); and
the electrically conductive material of said third

electrode (3) being electrically connected to the electrically conductive material of said positive electrode (1) such that when a body of fluid to be treated in the device extends between said third and said positive electrodes, iron ions of the electrically conductive material of said third electrode (3) are released into the fluid."

II. The Opposition Division considered, inter alia, the following document:

D4: EP-A-0 267 296.

It considered that the technical problem to be solved was to prevent discolouration of the water at the initial opening of the system following a long period of time when the water has not been flowing through the system. It was held that in the prior art there was no incentive to the claimed device and that the skilled person would not have arrived at the subject-matter of claim 1 by ordinary routine work.

III. In the statement of the grounds of appeal, the appellant submitted, inter alia, that the subject-matter of claims 1 and 13 lacked an inventive step over D4. It was argued that the device according to claim 1 differed from the device disclosed in D4 only in the presence of an additional iron electrode connected to the isolated carbon electrode and that it was obvious that the problem of iron discolouration in water systems could be solved by a sacrificial iron anode. In order to release ions the iron anode should form a galvanic couple with an electrode of less electronegative potential, ie to the carbon electrode.

IV. The respondent replied that it was not necessary to add to the comments already on file and suggested that the Board should decide the case on the basis of the existing written submissions.

V. The appellant requested that the decision under appeal be set aside and that the patent be revoked.

The respondent requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.

2. The only issue to be decided in the present appeal is that of inventive step.

2.1 The Board considers that D4 represents the closest state of the art. D4, an earlier European patent application of the respondent, discloses a device for treating water, which, apart from the presence of an internal third electrode, comprises all the features of present claim 1. One of the properties of the device according to D4 is said to be the prevention of the forming of iron-containing scale (pages 3 and 16). Another property is said to be the removal of the oxide scale from a water pipeline system comprising the device (page 5, first paragraph). D4 corresponds to US-A-4 902 391, discussed in the patent in suit. In the patent in suit it is admitted that the known device is effective for removing an iron-containing scale. It is however alleged that the action of removing such a scale is relatively slow. Using such an apparatus a period of one month to several months may be required

to clean an iron-containing scale out of a fluid containment system depending on the thickness of the scale. Apart from the extended period of time required to remove the scale, there is another disadvantage in that a considerable increase remains in the iron oxide particles released into the fluid as the fluid is flushed from the system. Therefore, a relatively long time is required to flush out the system each morning before a clear fluid can be obtained.

According to the patent in suit it was therefore an object of the present invention to provide an apparatus which will effect a slow cleaning of a particular compound from within a fluid containment system as the fluid is flowing through the system and which will at the same time inhibit the release of large amounts of such a compound into the fluid when the fluid is not flowing through the system, such as during the night (column 2, lines 18-54).

The patent in suit, however, does not contain comparative examples with respect to the device according to D4 which could support the alleged advantages. Disclosed are tests whereby the influence of tap water on a piece of rusted iron in a glass beaker is examined, whereby the influence of ordinary tap water was compared with that of tap water that had first been passed through the claimed apparatus. The tests showed that with the treated water, discolourisation by the rust was reduced and it was concluded that by employing the apparatus of the patent in suit the release of iron was delayed (column 6, line 6 to column 7, line 11). These tests are, however, not suitable to demonstrate a technical effect over D4. For that purpose, the effect of tap water having passed

the apparatus according to the patent in suit should have been compared with tap water having passed the apparatus according to D4. In the absence of a direct comparison with the closest prior art apparatus, the Board cannot accept the alleged advantages as a basis for defining the problem underlying the invention.

Under these circumstances the Board regards the technical problem underlying the invention as being the provision of a further apparatus for treating electrically conductive fluid suitable for removing or preventing iron-containing scale.

The patent in suit proposes to solve this problem essentially by adding a third electrode of iron or an iron alloy, electrically connected to the "positive electrode", ie the electrode with the highest electrode potential. The Appellant has not questioned the scale-removing or preventative properties of the claimed apparatus. The Board therefore accepts that the above mentioned problem is solved by the apparatus according to claim 1.

2.2 It remains to be decided whether the modifications according to present claim 1 with respect to the known devices disclosed in D4 are obvious to a person skilled in the art.

The respondent did not make any statement with respect to the issue of inventive step in the appeal proceedings. With regard to D4, the only comment in the opposition file was that Fig. 5 therein did not disclose a device comprising a third electrode; see the respondent's letter dated 15 June 1995, point 2.3.

2.3 In the absence of any proof of the alleged influence of the addition of the said third electrode on scale reduction or on any other technically relevant property of the device, the Board can only consider the addition of the third electrode to the device according to D4 as a modification which at best has no technical function, and may even be technically disadvantageous.

A technical disadvantage caused by the introduction of the third electrode can be seen in the need for an additional step in the construction of the device. Such a disadvantageous modification does not involve an inventive step, if the skilled person could clearly predict this disadvantage and was right in his assessment thereof, and if, as is the case here, this predictable disadvantage was not compensated by any unexpected technical advantage (see T 119/82, OJ EPO 1984, 217).

Likewise, a technically non-functional modification cannot render a known device inventive.

The Board is aware of decision T 1027/93 of 11 November 1994 (not published in OJ EPO), in which another Board observed (obiter) that the EPC does not require that an invention, to be patentable, must entail any useful effect, and that the apparent futility of a given modus operandi could rather be said to render it completely non-obvious.

In the Board's judgment, however, technically non-functional modifications are irrelevant to inventive step, even if the skilled person would never think of such a modification. A parallel can be drawn with a new design based on a known technical concept. That new

design might be a surprise and thus "not obvious" for professional designers. Nevertheless if the modifications have no technical relevance and are, from a technical point of view, arbitrary, the new design is not patentable and does not involve an inventive step within the meaning of Article 56 EPC; cf. T 72/95, point 5.4; T 157/97, point 4.2.4 and T 176/97, point 4.4, all dated 18 March 1998. In the present case too, the device according to claim 1 is considered to be no more than an arbitrary modification of the design of the device according to D4 which does not involve an inventive step within the meaning of Article 56 EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar: The Chairman:

S. Hue R. Spangenberg