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D E C I S I O N
of 7 December 1993

Case Number: T 0767/91 - 3.2.3

Application Number: 85200473.8

Publication Number: 0161698

IPC: B09B 5/00

Language of the proceedings: EN

Title of invention:

Method for cleansing and decontaminating soil and the equipment used for this purpose

Patentee:

Wegenbouwmaatschappij J. Heijmans B.V.

Opponent:

Klöckner-Oecotec GmbH

Headword:

-

Relevant legal norms:

EPC Art. 56

Keyword:

"Inventive step (denied; aggregation of features solving a two-part problem)"

Decisions cited:

-

Catchword:

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Boards of Appeal

Chambres de recours

Case Number: T 0767/91 - 3.2.3

D E C I S I O N
of the Technical Board of Appeal 3.2.3
of 7 December 1993

Appellant:
(Opponent)

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Respondent:
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Decision under appeal:

Decision of the Opposition Division of the
European Patent Office dated 22 March 1991,
reasoned decision posted on 24 July 1991,
rejecting the opposition filed against European
patent No. 0 161 698 pursuant to Article 102(2)
EPC.

Composition of the Board:

Chairman: C.T. Wilson
Members: F. Brosamle
L.C. Mancini

Summary of Facts and Submissions

I. With its decision of 22 March 1991, posted on 24 July 1991, the Opposition Division has rejected the opposition against European patent No. 0 161 698 pursuant to Article 102(2) EPC.

II. Claim 1 thereof reads as follows:

"1. Method for the cleansing and decontamination of soil by (a) the extraction of soil contaminated principally by cyanides, hydrocarbons or other organic material, and/or heavy metals, by (a) mixing the contaminated soil with water comprising extractant in a washer provided with stirrer, in which the pH during and after washing is controlled according to the nature of the contaminants, (b) separating the cleansed or at least partially cleansed soil from the water, (c) separating the contaminants from the water and (d) recirculating the water as extractant, characterized by the use of a scrubber as the washer with two or more compartments, each provided with a mechanical stirrer, in which the mixture is processed having a solids content of 60-80% by weight and the cyanides are removed by oxydation in the washer."

III. The Opponent (Appellant) lodged an appeal against this decision on 30 September 1991 paying the appeal fee on the same date. The Statement of Reasons of Appeal was filed on 3 December 1991; his requests are the following:

- (a) to set aside the impugned decision, and
- (b) to revoke the European patent No. 0 161 698.

- IV. The Proprietor (Respondent) requests to dismiss the appeal, i.e. he defends the patent in its granted form.
- V. In the oral proceedings before the Board, which took place following a communication of the Board pursuant to Article 11(2) RPBA on 7 December 1993, the parties maintained their requests.
- VI. The Appellant argued that the starting point of the invention is document

(D0) "Handboek bodemsaneringstechnieken", 1 July 1983,
pages 17/18;

and that the subject-matter of granted Claim 1 is achieved by improving the known method in **two ways**, namely by firstly applying a mechanical treatment to the soil and by secondly applying a chemical treatment to the waste water.

In respect of the further prior art documents

(D1) Robert Weiner "Die Abwässer der Galvanotechnik und Metallindustrie", Eugen Leuze Verlag,
Sautgan/Württ, 1973, pages 155 to 165, and

(D2) four pages of "EAGLE IRON WORKS" DES MOINES, Iowa,
1968

it was felt that a skilled person would envisage the combination of documents (D0) and (D2) for solving the mechanical aspect of the problem to be solved and the combination of documents (D0) and (D1) for solving the chemical aspect of the problem to be solved.

The Appellant set out that the total of **three** documents for anticipating Claim 1 is only a consequence of the

fact that Claim 1 is based on an **aggregation** of features. Considering the two groups of features of Claim 1 individually however, only **two** documents are necessary to cover the corresponding features. A synergistic effect cannot be seen between the two groups of features of granted Claim 1 so that this claim has to be dealt with as an aggregation of features.

Applying the decision T 195/84, OJ EPO 1986, 121, a skilled person will turn at least to the technical field of waste water treatment with the result that the subject-matter of granted Claim 1 cannot be seen as inventive.

- VII. The Respondent pointed to the prior art in the year 1984 according to which hydrocarbons were extracted from water. He further argued that it was the merit of the attacked invention to use a special scrubber for separating cyanides from soil, to remove the free cyanides with water and to oxidise them into non-toxic substances. Using a scrubber for that purpose was not known and the combination of a scrubber and the step of oxidising the free cyanides is therefore seen as an invention. Even combining three prior art documents would not fully anticipate the method of granted Claim 1 since the step of oxidising the free cyanides in the washer would still be missing. The problem of the invention is seen by the Respondent in removing cyanides from the soil. The request to dismiss the appeal is thus justified.

Reasons for the Decision

1. The appeal is admissible.

2. Novelty was not disputed in the proceedings before the Opposition Division and the Board of Appeal so that this issue needs no further argument.
3. The starting point of the invention is a method for cleansing and decontamination of soil according to the handbook (D0), see page 18 in particular.

From document (D0) it is known:

- (a) to mix the contaminated soil with water in a washer with a stirrer;
 - (b) to maintain a specific pH value in the washer;
 - (c) to separate the cleansed soil from the water;
 - (d) to separate the contaminants (solids) from the remaining water according to step c);
 - (e) to recirculate the water to step a) (as extractant).
4. Not known are the features of the characterising part of granted Claim 1, namely:
 - (f) to use a scrubber as the washer, which scrubber contains two or more compartments, each provided with a mechanical stirrer;
 - (g) the washing steps (a) and (b) are carried out in a way to maintain a solids content of 60 to 80% by weight in the water; and
 - (h) cyanides are removed by oxidation in the washer.

Granted Claim 1 is not open to an objection under Rule 29(1)(a) and (b) EPC.

5. The starting point of the invention and the claimed method being clear from granted Claim 1, it has now to be decided whether or not the method of granted Claim 1 can be seen as an inventive contribution to the art. In this context the problem-solution approach has to be applied.

Starting from the nearest prior art document the problem to be solved by the invention has to be defined. The patent specification EP-B1-0 161 698 is not helpful in this context so that the problem to be solved by the invention has to be assessed in view of the subject-matter of granted Claim 1 on an objective basis.

This problem appears to be to improve the separation of contaminants adhering to soil particles and subsequently to decontaminate the mixture of separated contaminants and water.

6. Under these circumstances the skilled person for the solution of the above problem is an expert in the technical field of contaminated solid particles, such as soil or sand, by the application of water.
7. Any skilled person confronted with the above objective problem would turn to the technical field where similar problems arise, such as the technical field of sand cleaning and the technical field of cleaning contaminated water. A skilled person would therefore consider documents (D1) and (D2) by relying on the principles laid down in the fundamental decisions T 176/84, OJ EPO 1986, 50 and T 195/84, OJ EPO 1986, 121, in which decisions it is set out that at least a neighbouring technical field in which similar problems

- as those of the attacked patent exist has to be considered when looking for a solution of a problem.
8. From (D2) a scrubber with two or more compartments is known (see last page and central figure thereof) in which arrows indicate the flow from one compartment to the other and in which several stirrers are existent; the known scrubber is used to scrub sand at high densities of solids. In paragraphs "Application" and "Operation" of (D2) it is stated that "the unit is normally used in applications where coatings adhere to sand grains ..." and that "an Attrition Mill is usually necessary to remove the coating from the sand ..." and "The Eagle Attrition Mill operates on a proven principle of scrubbing and disintegration resulting from grain to grain attrition", whereby a solids content of 65 to 80% by weight is maintained. These values are nearly identical to the claimed values lying between 60 and 80% by weight.
 9. (D1) is insofar highly relevant since it deals with the decontamination of waste water produced in **galvanic plants** which water is contaminated principally by cyanides. The disclosed method is the complete oxidation of cyanide by means of the addition of an oxidant, e.g. hypochlorite, to the waste water, see its page 157, paragraph 4 ("Zerstörung des Cyans durch Oxidation").
 10. Summarising, document (D2) discloses therefore the features (g) and (f) according to above remark 4; feature (h) is known from document (D1) so that the method of granted Claim 1 is rendered obvious by the combination of documents (D0), (D2) and (D1).
 11. It should be added that the total of **three** documents for destroying the inventiveness of the subject-matter of Claim 1 is only necessary since granted Claim 1 is an

aggregation of features without any combinatory effect, namely

- separation of contaminants from soil and
- decontamination of cyanides by oxidation.

In this case, every block of features can be dealt with **separately** since the separation and the decontamination of cyanides cover different problems, see also above remark 5 (object to be solved) from which remark it can also be seen that the problem points in two directions, namely separation and decontamination, making it obvious that the problem and its solution cover **two** aspects, one of them being rendered obvious by (D2) and the other by (D1).

12. The arguments raised by the Respondent are not convincing since the assessment of inventive step has to be based on the "problem-solution-approach". This approach requires *inter alia* the definition of the "objectively remaining problem to be solved by the invention".
- 12.1 This problem cannot be seen in the general statement to remove cyanides from soil, but rather in the narrower problem as defined in above remark 5.
- 12.2 For the consideration of document (D2) it is not necessary to know the invention, since in this document it is set out that the described "Attrition Mill" is designed "for scrubbing sand", (see its paragraph headed "Application"). For a skilled person it is obvious that "sand" is more or less a synonym for "soil", (consider for example "sandy soil"), at least it is a clear hint for a skilled person to envisage this sort of mechanical treatment in a context in which **solid particles** (sand

grains) are contaminated by adhering particles. Respondent's findings that scrubbers were not in use for treating "soil" particles before the present invention was made cannot therefore be accepted.

12.3 Considering the result of an (attrition) scrubber it is obvious that the contaminants are freed from the soil particles, i.e. the contaminants for instance in the form of cyanides are contained in the water used in the scrubber. For reasons of economy, a skilled person will make any effort to recirculate the water so that the decontamination of the water is a prerequisite for its recirculation. A skilled person would therefore look for possibilities which allow to make the cyanides contained in the water after the scrubbing process **non-toxic**.

12.4 Without inventive skill it must be expected from a skilled person that he turns to document (D1) which is a standard book for treating waste water and which offers the possibility to oxidise cyanides into non-harmful substances such as carbon dioxide and nitrogen, (see its page 157, paragraph 4).

12.5 It appears therefore not to be justified to point to the total of **three** documents, and to derive therefrom that under these circumstances the existence of an invention must be accepted, since it is obvious that the mechanical treatment is only a preliminary step to decontaminate soil and that a subsequent step is an absolute must in order to remove the cyanides from the water by converting them into non-toxic substances (by oxidation). The two treatments of the soil and the washing water respectively are carried out completely separately and a **synergistic effect** between these two treatments cannot be seen, since the mechanical treatment solves the separation of cyanides and soil particles and leads to the expected effect and since the

chemical treatment accomplishes the decontamination by oxidising the cyanides contained in the washing water and again achieves nothing other than the expected effect.

Both groups of features of granted Claim 1 have therefore to be seen separately when assessing the question of inventive step.

- 12.6 The Respondent contends that even the total content of all three anticipations together would not disclose the feature of granted Claim 1 that the water is treated in the scrubber.

However, this argument is also not convincing since the context of this feature has to be seen. For a skilled person it follows from document (D1) that the oxidation of cyanides has to be carried out in a **liquid phase**. In the claimed method according to Claim 1 of the attacked patent the "liquid phase" enters into existence after the mechanical treatment of the soil by the scrubber, since the water used in this treatment step is contaminated by cyanides immediately after these are freed from the soil particles. The contaminated water is contained in the washer. It is therefore not surprising that the liquid phase oxidation of the cyanides is carried out in the container where the contaminated water is, since this is more or less the only place where the water can be treated.

13. Summarising the above considerations, the Board cannot see patentable subject-matter in granted Claim 1 since the available prior art documents give sufficient guidance for a skilled person to solve the objectively remaining technical problem when starting from the disclosure according to document (D0) to arrive at the method as laid down in granted Claim 1.

This claim does not, therefore, meet the requirements of Article 56 EPC and is not valid. Thus, there is no basis for maintaining the European patent No. 0 161 698.

Order

For these reasons, it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:



N. Maslin

The Chairman:



C.T. Wilson