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File Number: T 476/89 - 3.2.1
Application No.: 81 902 892.9
Publication No.: 0 062 060
Title of invention: Back-flow prevention valve

Classification: F16K 31/12

DECISION
of 10 September 1991

Proprietor of the patent: Sargent-Welch Scientific Company

Opponent: Leybold AG

Headword:

EPC Articles 56, 104, 69(1)

Keyword: "Interpretation of a claim"
"Inventive step (yes)" -
"Apportionment of costs (no)"

Headnote



Case Number : T 476/89 - 3.2.1

D E C I S I O N
of the Technical Board of Appeal 3.2.1
of 10 September 1991

Appellant : Leybold AG
(Opponent) Wilhelm-Rohn-Straße 25
D - 6450 Hanau am Main (DE)

Representative : Leineweber, Jürgen,
Nagelschmiedshütte 8
D - 5000 Köln 40 (DE)

Respondent : Sargent-Welch Scientific Company
(Proprietor of the patent) 7300 North Linder Avenue
Skokie, Illinois 60077 (US)

Representative : Harrison, David Christopher et al
MEWBURN ELLIS & CO
2/3 Cursitor Street
London EC4A 1BQ (GB)

Decision under appeal : Decision of Opposition Division of the European
Patent Office dated 22 March 1989, posted
24 May 1989 rejecting the opposition filed
against European patent No. 0 062 060 pursuant to
Article 102(2) EPC.

Composition of the Board :

Chairman : F. Gumbel
Members : P. Alting van Geusau
F. Benussi

Summary of Facts and Submissions

- I. European patent No. 0 062 060 in respect of European patent application No. 81 902 892.9, which was filed as an international application PCT/US81/01354 on 8 October 1981, was granted with nine claims on 15 May 1985 (cf. Bulletin 85/20).

The sole independent Claim 1 reads as follows:

"1. A back-flow prevention valve assembly for use with a pump, the assembly including a housing (12) defining a fluid flow passageway (14) therethrough, a valve (18) movable between open and closed positions in the latter of which the passageway (14) is closed, pressure-responsive means (26) associated with the valve (18) to drive it to its closed position, upon pressure difference developing between a chamber (24) and the passageway (14) when the valve is open, a bleed allowing leakage from the chamber (24) to the passageway (14) and a valve-controlled actuating fluid passageway (22) leading to the chamber (24) characterized in that

the chamber (24) is defined by part of the housing (12),

the pressure-responsive means is a plunger (26) at least partly received in said chamber,

the bleed is a clearance between the housing (12) and the plunger (26) where the latter emerges from the chamber (24),

the control valve (30) for the actuating fluid passageway (22) is a diaphragm having an open position (Figure 5) for admitting gas to the chamber (24) and a closed position (Figure 4) for cutting off that admission, and

means (32) are provided for bringing a control pressure from the pump to the diaphragm (30) to cause it to adopt its open or closed position."

II. On 13 February 1986 notice of opposition was filed by the Appellant (Opponent) requesting revocation of the patent on the grounds that its subject-matter lacked an inventive step. The Opposition was supported, *inter alia*, by the following documents:

D1 : Zeitschrift Maschinenmarkt, Würzburg, 79(1973),
Seiten 1191-1193;

D2 : Technische Information, Leybold-Heraeus,
Werksgruppe WV (as additional information for
document (1) not as prior art);

D3 : DE-B-1 266 438;

D4 : DE-A-2 323 458.

III. By a decision delivered orally on 22 March 1989 with written reasons posted on 24 May 1989, the Opposition Division rejected the opposition. In their opinion the cited prior art did not give any lead to the solution of the underlying problem of the invention such as defined in the independent Claim 1.

IV. An appeal was lodged against this decision on 21 July 1989 and the appropriate fee was paid on the same day. In the Statement of Grounds of Appeal received on 26 December 1989 the Appellant submitted that Claim 1 lacked clarity and that he did not agree with the interpretation of the features of Claim 1 given by the Opposition Division. Further, he maintained his view that the subject-matter of Claim 1 lacked an inventive step and referred to the additional prior art documents:

D5 : DE-C-673 497;

D6 : GB-A-1 195 361;

D7 : DE-A-2 755 328.

V. With summons to oral proceedings, auxiliarily requested by the Appellant, the Board expressed in a communication pursuant to Article 11(2) of the rules of procedure of the Boards of Appeal the preliminary opinion that, read in the context of the patent specification, there appeared to be no reason to question the clarity of Claim 1. With respect to the alleged lack of inventive step of the subject-matter of Claim 1 the Board considered the Appellant's arguments not convincing.

VI. The Appellant's arguments submitted in writing and expressed orally during the oral proceedings can be summarised as follows.

As regards the scope of the feature "control pressure from the pump" in Claim 1 the Appellant was of the opinion that this feature could be interpreted to include all possible control pressures, be it fluid or mechanical pressures from the pump itself, its drive means or even auxiliary means driven by the pump shaft. In this respect he referred to D6 in which a number of alternatives of such means are disclosed.

On the basis of such an interpretation of the features of Claim 1 the remaining sole difference between the claimed subject-matter and the disclosure of D1 is the use of a control valve having a diaphragm instead of a mechanically actuated closing, part. Diaphragm valves are however known

in themselves from D3 and D4, and their use in the present case must therefore be considered to represent nothing more than an obvious alternative.

Even when the feature of the control pressure from the pump would be limited to a fluid pressure from the pump itself, the subject-matter of Claim 1 must be considered obvious in view of the disclosures of D1 and D5, the latter document clearly showing that it was already known to use the pump pressure for control of the back flow prevention valve in a vacuum pump arrangement.

As regards the late citing of the documents D5 to D7, the Appellant argued that reference to that further prior art was necessary to provide evidence of possible other interpretations of the feature "a control pressure from the pump" which, in his view, was not correctly interpreted by the Opposition Division.

VII. The Respondent contested the arguments brought forward by the Appellant.

As regards the introduction of new prior art documents after the 9 month period stipulated in Article 99(1) EPC the Respondent held that these documents are no more relevant than the documents already in the proceedings and that therefore these newly cited documents should not be considered any further.

It was agreed that document D1 represents the closest prior art but it was contested that D1 discloses a bleed in the form of a clearance between the housing and the plunger. Considering the alleged lack of clarity of the feature of "a control pressure from the pump" the Respondent did not see any difficulty with respect to its interpretation which could - for the skilled person - only

lead to the conclusion that a positive fluid pressure from the vacuum pump itself is used. It was not agreed either that D5 would give the skilled person a lead to the subject-matter of Claim 1: in D5 the back-flow prevention valve is directly controlled during functioning of the pump by its own vacuum rather than that the pressure of the pump is used as a means for control of a secondary valve as is the case in the subject-matter of Claim 1.

Further, the Respondent was of the opinion that the present case showed a parallel with the case decided in T 101/87 3.2.1 of 25 January 1990 concerning apportionment of costs by virtue of attendance of the representative at oral proceedings abusively sought by the Appellant.

VIII. Requests:

The Appellant requested that the decision under appeal be set aside and that the European patent No. 0 062 060 be revoked.

The Respondent requested that the appeal be dismissed and that the patent be maintained. Further, he requested that the costs incurred by him because of the oral proceedings should be apportioned to the Appellant.

Reasons for the Decision

1. The appeal complies with Articles 106 and 108 and Rule 64 EPC and is admissible.
2. Interpretation of Claim 1
 - 2.1 The Board notes that when considering the subject-matter of Claim 1 the Appellant questioned the clarity of the

feature "a control pressure from the pump" and that he attributed a technical meaning to this feature to also include mechanically exerted forces from auxiliary means driven by the pump shaft or fluid forces from such auxiliary means as well as negative pressures (vacuum).

- 2.2 However, when doubt exists about the exact meaning of a feature in a claim of a granted patent the description and drawings shall be used to interpret the claims (Article 69(1) EPC).

In this respect, it is clearly set out in the description in column 1, lines 62 to 65 that the present invention is distinguished by constructional features which make it capable of working entirely in response to various fluid pressures. No references to mechanically exerted control forces are referred to anywhere in the specification. Therefore, even if there would be doubt whether mechanically exerted control forces were covered by the definition in Claim 1, in the context of the patent specification the feature "control pressure from the pump" can, in the Board's opinion, only be interpreted as a fluid pressure of the pump. Since neither in the claim nor in the description auxiliary means are referred to it must also be a fluid pressure originating in the pump itself.

- 2.3 Considering now whether the control pressure is a pressure related to the suction or pressure side of the pump the Board draws attention to the definition of the control valve in Claim 1. This valve is defined as a directly controlled diaphragm (depicted in Figures 4 and 5 of the patent under discussion) and for functioning as a valve in the manner as claimed it needs a connection to the pressure side of the pump. A connection to the suction side is excluded because of the fact that the pressure on the diaphragm for cutting off admission of gas to the

chamber (24) must be higher than the pressure working on the opposite side of the diaphragm which pressure is, before closing of the control valve, higher than the pressure in the fluid flow passageway (14) connected to the suction side of the pump. Again, nothing else is disclosed or hinted to in the patent specification.

- 2.4 Therefore, in view of the above conclusion, when considering the subject-matter of Claim 1 with respect to the substantive requirements of novelty and inventive step this interpretation of its features is used as a basis for this further examination.

The requirement of clarity according to Article 84 EPC is not a ground of opposition and does not affect the validity of the patent.

3. Novelty

- 3.1 The closest prior art is, in the opinion of the Board and agreed to by the parties, disclosed in D1.

D1 discloses in "Bild 4" on page 1193 (embodiment shown in the left-hand figure) a back-flow prevention valve assembly for use with a pump, the assembly including a housing defining a fluid flow passageway therethrough, a valve (d) movable between open and closed positions, in the latter of which the passageway is closed, pressure-responsive means (e) associated with the valve (d) to drive it to its closes position, upon pressure difference developing between a chamber (f) and the passageway when the valve is open, a bleed allowing leakage from the chamber (f) to the passageway and a valve-controlled actuating fluid passageway (g) leading to the chamber (f) wherein the chamber is defined by part of the housing,

the pressure-responsive means is a plunger (e) at least partly received in said chamber, the bleed is a clearance between the housing and the plunger where the latter emerges from the chamber, the control valve for actuating the fluid passageway having an open position for admitting gas to the chamber and a closed position for cutting off that admission, and means are provided for causing the valve to adopt its open or closed position.

The back flow prevention valve according to Claim 1 of the patent under discussion thus differs from this known valve in that

- (a) the control valve is a diaphragm, and
- (b) means are provided for bringing a control pressure from the pump to the diaphragm to cause it to adopt its open or closed position.

The subject-matter of Claim 1 is therefore deemed to be novel over the prior art.

3.2 As regards the feature in Claim 1 defining that the bleed is a clearance between the housing and the plunger, the Respondent contested that this feature has been disclosed in D1.

In this respect the Board is of the view that although in the description of D1 on page 1193 reference is made to a bleed in the form of a nozzle only, the skilled person would immediately recognise that in the left-hand figure of the back flow prevention valve shown in "Bild 4" another embodiment of the bleed is disclosed which embodiment relates to a bleed in the form of a clearance between the plunger and its housing. In the present case

this difference is clearly visible from the drawing in particular when comparing the constructions of the valve depicted in the left-hand figure to the valve depicted in the right-hand figure so that no further explanation is considered to be necessary in the description for realising that two alternative bleed constructions are shown.

4. Inventive step

- 4.1 Because the control valve in D1 is operated by means of a governor mounted on the pump shaft, failure of the pump itself cannot be surely recognised in this known arrangement. The back flow prevention valve assembly according to Claim 1 under discussion uses a fluid control pressure from the pump itself and therefore provides a fail-safe system responding also to any deficiency of pump action, e.g. failure concerning the sliding movement of the pump rotor blades.

Starting from the closest prior art as represented by D1 the objective problem to be solved by the back-flow prevention valve according to Claim 1 under discussion can therefore be seen in the provision of a back flow prevention valve assembly responding to any failure of pump action.

- 4.2 No inventive activity in the Board's opinion would be required to recognise this problem since in the case of failure of the pump in D1 the skilled person would immediately realise that its shortcomings were caused by the indirect manner of operation of the control valve. It remains to be determined, therefore, whether the solution specified in Claim 1 is obvious having regard to the disclosures in the cited documents.

4.3 In this respect, the Board notes that none of the cited prior art documents discloses the features (a) and (b) referred to in paragraph 3.1 above.

As far as this prior art discloses the provision of a secondary control valve these valves are operated by a governor (D1), solenoids (US-A-4 070 001 cited in the patent and D4) or a pressure difference across the back flow prevention valve (DE-A-17 75 356 also cited in the patent) and cannot therefore be considered to give a hint to the features (a) and (b).

Back flow prevention valves in the form of a membrane valve are known from D3 and D4 but their construction is substantially different from the membrane valve defined in Claim 1 and as such are, moreover, not related to a control valve. Therefore these prior art documents cannot, in the Board's opinion, lead to the subject-matter of Claim 1 under discussion either.

4.4 In Figure 1 of D5 a directly controlled back flow prevention valve is disclosed which valve is opened by vacuum generated by the pump (see page 2, lines 76 to 79) although the fluid connection is made near the output side of the pump.

Even if the skilled person might be led to use a pressure generated by the pump itself to operate the back flow prevention valve arrangement, a direct application of the means disclosed in D5 to the closest prior art arrangement disclosed in D1 is not considered possible because of the different type of backflow prevention valve and its control. Substantial modifications to which no lead can be derived from D5 would be necessary, namely further adaptations with respect to the use of the output pressure from the pump to control a specially adapted control valve

in which the diaphragm itself functions as a valve and no incentive whatsoever can be drawn to such adaptations from any of the cited other documents either. Therefore the Appellant's arguments concerning the obviousness of the subject-matter of Claim 1 in view of the disclosure of D1 and D5 are in the Board's opinion not convincing. In this respect the documents D6 and D7 cannot help the skilled person any further. D6 shows auxiliary means for direct operation of the back flow prevention valve and D7 discloses a back flow prevention valve in its simplest form, acting on a pressure difference on both sides of the valve without there being any separate valve actuating means.

4.5 For these reasons the Board is satisfied that the back flow prevention valve assembly claimed in Claim 1 and hence also that claimed in the remaining Claims 2 to 8 which are all appendant thereto is not only novel but also involves an inventive step within the meaning of Article 56 EPC.

5. It is noted that Claim 1 is not related in its pre-characterising part to the closest prior art disclosed in D1 as required by Rule 29(1) EPC. In the present case this deficiency cannot be removed because of the fact that it does not constitute a ground of opposition requiring the patent to be amended. There is, therefore, also no possibility to amend the description in order to comply with Rule 27 EPC.

6. Request for apportionment of costs by the Respondent

6.1 In accordance with Article 104(1) each party to the proceedings shall meet the costs he has incurred unless a decision, for reasons of equity, orders a different

apportionment of costs during taking of evidence or in oral proceedings. In this respect it is established jurisprudence of the Boards that costs should be awarded only if a party to proceedings can be held to have caused unnecessary expense that could well have been avoided with the required due care.

6.2 The Respondent requested an apportionment of costs in his favour because in his view the Appellant persisted in his request for oral proceedings although he did nothing more but reiterate argumentation already brought forward during the opposition proceedings. Moreover, the Appellant attempted to introduce into the appeal proceedings new documents which are irrelevant. In these circumstances the decision T 101/87 -3.2.1 of 25 January 1990 would appear to apply in which an apportionment of costs in the Respondent's favour had been decided.

6.3 Considering the decision T 101/87 - 3.2.1, it will be clear, in the Board's opinion, that a different situation is given.

In T 101/87 the Appellant exclusively relied on four new documents cited in the appeal procedure (see page 8, first paragraph of this decision) which was considered by the Board as an abuse of the opposition procedure.

In the present case the further documents were cited clearly in response to the different interpretations of Claim 1 by the Opposition Division and the Appellant. Moreover, the Appellant based his main argument still on the document D1 as he did in the opposition procedure and used the newly cited prior art as illustration and proof of his further submissions in response to the Opposition Division's decision. This sort of procedure is, in the

Board's opinion, legitimate and cannot be considered to be an abuse of the appeal procedure.

In this respect the Board also draws attention to page 5, first paragraph, second part of the decision T 101/87 according to which the citation of new documents in response to comments of the Opposition Division in order to provide a "missing link" would not have been abusive.

It cannot, in the Board's opinion, be said either that the oral proceedings have proved superfluous. In particular as regards the interpretation of Claim 1 the differing standpoints have been elucidated additionally.

Hence the Board sees nothing that could substantiate an abuse of procedure, consequently there is no reason for a deviation from the general principle set-out in Article 104(1) EPC.

The Respondent's request for an apportionment of costs must therefore be rejected.

Order

For these reasons, it is decided that:

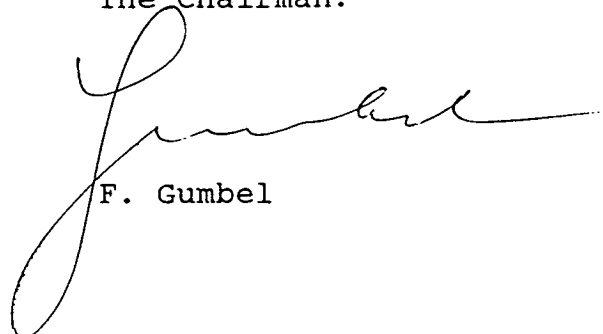
1. The appeal is dismissed.
2. The request for apportionment of costs is rejected.

The Registrar:



N. Maslin

The Chairman:



F. Gumbel

