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D E C I S I O N
of 8 January 2004

Case Number: T 0112/02 - 3.2.1

Application Number: 95920333.2

Publication Number: 0764253

IPC: F16L 55/055, F04B 11/00

Language of the proceedings: EN

Title of invention:
Shock absorber for liquid conduits

Patentee:
LJ OLJELEDNINGAR AB

Opponent:
Hydac Technology GmbH

Headword:
-

Relevant legal provisions:
EPC Art. 56, 69(1)

Keyword:
"Inventive step (yes)"

Decisions cited:
T 0016/87

Catchword:
-



Case Number: T 0112/02 - 3.2.1

D E C I S I O N
of the Technical Board of Appeal 3.2.1
of 8 January 2004

Appellant: Hydac Technology GmbH
(Opponent) Industriegebiet
D-66273 Sulzbach/Saar (DE)

Representative: Bartels, Martin Erich Arthur
Patentanwälte
Bartels und Partner
Lange Strasse 51
D-70174 Stuttgart (DE)

Respondent: LJ OLJELEDNINGAR AB
(Proprietor of the patent) P.O. Box 64
S-374 02 Asarum (SE)

Representative: Andersson, Per-Olof
Awapatent AB
Box 5117
S-200 71 Malmö (SE)

Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 29 November 2001
rejecting the opposition filed against European
patent No. 0764253 pursuant to Article 102(2)
EPC.

Composition of the Board:

Chairman: S. Crane
Members: M. Ceyte
H. Preglau

Summary of Facts and Submissions

- I. The respondent is proprietor of the European patent No. 0 764 253 (application No. 95 920 333.2).

Claim 1 as granted reads as follows:

"1. A shock absorber in a liquid conduit (4), said shock absorber comprising a closed liquid tank (10) which is partly filled with gas and has a joint means (11) which is connected to the conduit (4) and through which liquid can flow to and from the tank (10) for compressing and decompressing the gas, **characterised** by a check valve means arranged in said joint means (11) and adapted to permit, in its forward direction, a substantially free liquid flow from the conduit (4) to the liquid tank (10) and to permit, in its rearward direction, a throttled liquid flow from the tank (10) to the conduit (4)."

- II. The patent was opposed by the appellant on the grounds of lack of novelty and lack of inventive step.

The following state of the art was *inter alia* cited:

A2: Drawing "Kolbenspeicher SK 210-2,5-50L-Ø180"

A6: US-A-2 774 381

A7: Mannesmann Rexroth GmbH, "Der Hydraulik Trainer", 10.88, pp. 106-107

III. By its decision posted 29 November 2001 the opposition division rejected the opposition.

IV. On 28 January 2002 the appellant (opponent) lodged an appeal against that decision and paid the required appeal fee.

In the statement of grounds of appeal filed on 28 January 2002 was further cited

A9: Mannesmann Rexroth GmbH, "Der Hydraulik Trainer"
Band 3, p. 99.

V. The appellant (opponent) requested that the decision under appeal be set aside and that the European patent be revoked in its entirety.

By letter dated 26 November 2003 the appellant informed the Board that it will not attend the oral proceedings due to take place on 12 December 2003 and requested that the appeal proceedings be resumed in writing. In a notification dispatched on 2 December 2003 the Registry on behalf of the Board informed the parties that the oral proceedings had been cancelled.

VI. In support of its request the appellant made essentially the following submissions:

The wording of claim 1 "a closed liquid tank which is partly filled with gas" covers a tank in which the liquid and the gas are separated by a separating member such as a membrane. Such claim cannot be construed as limited to a shock absorber in which the liquid and the gas are in direct contact with each other.

It follows that claim 1 as drafted covers usual shock absorbers such as that disclosed in A2. This known arrangement is equipped with a check valve adapted to permit in its rearward direction a throttled liquid flow from the tank to the conduit. As is apparent from A9 shock absorbers equipped with a separating means such as a membrane or a piston and those without a separating means have in essence the same effect. For the skilled person confronted with the problem of using shock absorbers without a separating means, in a pipe line system, it would be obvious to provide them with a check valve such as that disclosed in A2 which permits in its rearward direction, that is in its closed position, a throttled liquid flow.

VII. The patentee did not reply in substance to the appellant's submissions.

It requested simply that the appeal be rejected.

Reasons for the Decision

1. The appeal is admissible.
2. The appellant submitted in essence that the wording of claim 1 covers an alternative in which a separating means such a membrane or a piston is interposed between the liquid and the gas contained in the tank. The alternative and thus the whole subject-matter claimed in claim 1 was said to be not patentable having regard in particular to the teaching of A2.

The interpretation above does not correspond to the basic meaning of a "closed liquid tank partly filled with gas" that is a storage chamber containing liquid and gas in contact with each other.

Moreover, when determining whether an alternative is outside the claimed invention or not, the crucial question to be dealt with is whether such alternative actually achieves the described particular effect or, in other words, actually solves the technical problem posed in the European patent.

It is observed that the provision in Article 69(1) EPC stipulating that the description and the drawings be used to interpret the claims also applies during opposition proceedings when an objective assessment of the content of a claim has to be made in order to determine whether its subject-matter is novel and non-obvious (see e.g. T 16/87 OJ EPO 92, 212).

In the introductory part of the description it is said that the object of the present invention is to improve a shock absorber of the type mentioned by way of introduction in such a manner that neither frequent functional check-ups (due to the presence of a compressible pad or a piston) nor additional gas supply is required (see paragraph [0007]).

This object is said to be achieved "by a check valve means arranged in the joint means and adapted to permit, in its forward direction, a substantially free liquid flow from the conduit to the tank and, in its rearward direction, a throttled liquid flow from the tank to the conduit" (see paragraph [0008]).

According to paragraph [0009] of the specification the throttling of the liquid from the tank to the conduit has the effect that "gas bubbles, which during the absorption of a shock, are taken up by the liquid, have enough time to leave the liquid before it flows from the liquid tank back to the conduit".

Thus it is clear that the object to be achieved or, expressed differently, the technical problem to be solved only occurs when there is a loss of gas caused by frothing and that this necessarily implies a direct contact between the liquid and the gas in the tank.

Consequently, the plain meaning of claim 1 as indicated above corresponds to the only possible interpretation in the light of the description, namely that the shock absorber comprises a liquid tank partly filled with gas, without the interposition of a separating member such as a membrane or a piston between the liquid and the gas, that is with a direct liquid-gas contact.

3. The closest prior art document is A6 which relates to a shock absorber of the type disclosed in the pre-characterising part of claim 1. In this citation a liquid tank (12) is partly filled with gas so that there is a direct gas-liquid contact (cf. column 2, lines 7 to 13). A piston is arranged in a joint means provided between the tank (12) and the conduit (11). A gap is provided between the outer circumference of the piston and its cylinder through which liquid can flow in both directions.

According to the European patent (cf. paragraph [0006]) a shock absorber of this kind suffers from the problem that especially in the case of pipelines for conveying oil products "there is a tendency that the gas held in the liquid tank or the cylinder disappears in the course of time among other things owing to frothing. Additional gas must therefore be supplied at relatively frequent intervals which however is not a very efficient solution, especially for extensive pipeline systems with a plurality of shock absorbers".

Therefore the technical problem to be solved by the present invention is in essence the same as that stated in paragraph [007] of the European patent, that is to provide a shock absorber of the kind specified in the pre-characterising part which overcomes this disadvantage i.e. which avoids loss of gas due to frothing and thus does not require frequent additional gas supplies.

This problem is in essence solved by the features stated in the characterising part of claim 1.

None of the cited documents give the skilled person any indication that in the case of a direct gas-liquid contact the loss of gas caused by frothing may be reduced by a check valve which permits a substantially free liquid flow in the forward direction from the conduit to the tank and a throttled liquid flow in the rearward direction from the tank to the conduit.

In A2 a piston is interposed between the liquid and the gas, so that there is no direct gas-liquid contact and thus no frothing. Therefore this drawing, even if it

were available to the public, would have been of no help to the skilled person seeking to solve the problem of the present invention namely that of reducing the loss of gas due to frothing when there is a direct liquid-gas contact.

The same applies to prior art document A7 which discloses a shock absorber in which a separating member such as a membrane is interposed between the liquid and the gas.

In A9 it is stated that shock absorbers equipped with a separating means and those without such separating means have in essence the same shock absorption effect. This however does not imply that these two kinds of shock absorbers are equivalent as to the particular effect achieved by the present invention, that is the reduction of gas loss caused by frothing in the case of a direct liquid-gas contact.

Accordingly, in the Board's judgement, the subject-matter of claim 1 as granted involves an inventive step (Article 56 EPC).

4. Dependent claims 2 to 4 relate to particular embodiments of the invention claimed in claim 1 and are likewise allowable.

The opposition grounds thus do not prejudice the maintenance of the patent as granted.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

S. Fabiani

S. Crane