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**Datasheet for the decision
of 27 October 2023**

Case Number: T 2743/19 - 3.2.05

Application Number: 12844161.5

Publication Number: 2771603

IPC: F16K31/44, F16K41/08

Language of the proceedings: EN

Title of invention:

Valve and stem sealing assembly

Applicant:

Aegis Flow Technologies, LLC

Relevant legal provisions:

EPC Art. 54(1), 111(1), 123(2)

RPBA 2020 Art. 11

Keyword:

Added subject-matter (no)

Novelty (yes)

Remittal to the examining division (yes)



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Case Number: T 2743/19 - 3.2.05

D E C I S I O N
of Technical Board of Appeal 3.2.05
of 27 October 2023

Appellant: Aegis Flow Technologies, LLC
(Applicant) 6041 Industrial Drive
Geismar, LA 70734 (US)

Representative: Stuart Forrest
WP Thompson
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Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 24 April 2019
refusing European patent application
No. 12844161.5 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman P. Lanz
Members: O. Randl
I. Beckedorf

Summary of Facts and Submissions

- I. The applicant filed an appeal against the decision of the examining division refusing European patent application No. 12 844 161.5.
- II. The examining division was of the opinion that the subject-matter of the main request and of auxiliary requests 1 and 3 was anticipated by document D3 (US 4,556,196) and that the subject-matter of auxiliary requests 2 to 5 lacked inventive step over document D5 (US 6,007,070) in combination with common general knowledge.
- III. Oral proceedings before the board took place on 27 October 2023 by videoconference.
- IV. In the course of the oral proceedings, the appellant withdrew its former main request and auxiliary requests 1 to 6 and made its auxiliary request 7 filed on 1 October 2021 its new main request.
- V. The appellant (applicant) requested that the decision under appeal be set aside and that the case be remitted to the examining division for further prosecution on the basis of the new main request.
- VI. Claim 1 of the main request reads (the changes with respect to claim 1 of the application as filed are underlined):

A valve (100) comprising:

- a. a body (101 and 102) having a first port (103) and a second port (104) with a passage (105) configured to flow a media extending between said first port

and said second port, wherein said body has a flow-element positioned between said first port and said second port,

- b. a stem (109) secured to said flow-element and an actuator (110), wherein said stem extends through a stem port located on said body and is configured to actuate said flow-element (108); and
- c. a bonnet secured to said body; and,
- d. a sealing assembly substantially adjacent to said stem and configured to fit within an annular space between said stem, said body, and said bonnet, said sealing assembly comprising:
 - i. a primary seal (115) having a cavity between its inner circumference and outer circumference, wherein the cavity is sized and configured to receive~~ii.~~ a primary shaft insert (116), and wherein the primary shaft insert (116) is sized and configured to fit within saidthe cavity of saidthe primary seal (115);
 - iii. a spacer (118) located above said primary seal; and,
 - iiiv. a force transmitting member (119) configured to transfer an axial load to said primary shaft insert, wherein said primary shaft insert is ~~configured to transfer~~ constructed of a material capable of expanding radially when subjected to an axial load such that it transfers said axial load radially to said primary seal creating a seal with the walls of said annular space.

VII. The appellant argued as follows:

(a) Compliance with Article 123(2) EPC

Claim 1 corresponds to claim 1 of the application as filed. It was amended to clarify the arrangement of the sealing assembly. The definition of the primary seal (115) has its basis in paragraph [0038] of the application as filed, which states that "[t]he cavity is preferably sized and configured to receive the primary shaft insert 116". Furthermore, claim 1 was amended to state that the primary shaft insert is sized and configured to fit within the cavity of the primary seal. The basis for this amendment can be found in paragraph [0039] and claim 17 of the application as filed.

(b) Novelty over document D3

The claims specify that the primary shaft insert is sized and configured to fit within the cavity of the primary seal. The examining division considered that this feature is present in column 5, lines 46 to 53 of document D3. However, the ring 62 of document D3 does not "fit within" the cavity of the lip seal 24. The ring member of document D3 acts on the corners of the lip seal such that the radial force is experienced by the lip corners to force the outer lip outwards to engage with the bonnet, and the inner lip inwards to engage with the stem (see document D3, column 2, lines 56 to 60). Document D3 explicitly states that it is not intended for the metallic ring member 62 to come into sealing engagement with the inner and outer lips of the lip member (see D3, column 5, lines 36 to 39). This is important in document D3 because it is desired for fluid to enter the space between the lips of the lip

seal 24, through the "gap", under high pressure, and it is the pressure of the fluid that provides the desired sealing function under high fluid pressures (see document D3, column 5, lines 26 to 36). In contrast, claim 1 requires the primary shaft insert to be sized and configured to fit within the cavity of the primary seal. Consequently, the subject-matter of claim 1 is new over document D3.

Reasons for the Decision

1. Compliance with Article 123(2) EPC

Claim 1 of the main request is based on claim 1 of the original international application. As can be seen from point VI. above, the relevant amendments are the following:

- (1) addition of the feature "wherein the cavity is sized and configured to receive a primary shaft insert" to feature i.;
- (2) deletion of former feature ii.;
- (3) replacement of the words "configured to transfer" in the second part of former feature iv. by the words "constructed of a material capable of expanding radially when subjected to an axial load such that it transfers";
- (4) addition of the feature "and wherein the primary shaft insert (116) is sized and configured to fit within the cavity of the primary seal (115)".

In its provisional opinion the examining division had not raised objections against these amendments, which were already present in claim 1 of the former main request filed on 9 July 2018.

When it was first made (on 18 January 2016), amendment (1) was said to be based on paragraph [0038] of the original application (see page 10, line 1). The board is satisfied that this is a sufficient basis.

Amendment (2) concerns former feature ii. The board notes that a feature equivalent to former feature ii. has been inserted into feature i. by means of amendment (4). Consequently, the deletion of former feature ii. is unproblematic.

When it was introduced (letter dated 9 July 2018), amendment (3) was said to be based on paragraph [0039] of the original application. The board is of the opinion that the sentence on page 10, lines 21 to 23, constitutes an appropriate basis for the amendment.

Amendment (4) is based on paragraph [0039] of the original application.

Consequently, the board is satisfied that claim 1 complies with the requirements of Article 123(2) EPC.

2. Novelty over document D3

In points 1.1 to 1.4 of the decision under appeal, the examining division concluded that the subject-matter of claim 1 of the main request was anticipated by document D3 and in particular by the embodiment of Figs. 1 to 3.

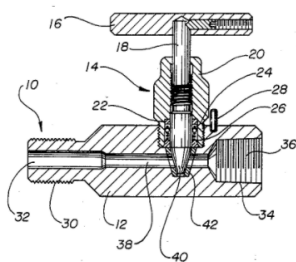


FIG. 1

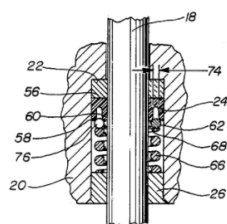


FIG. 3

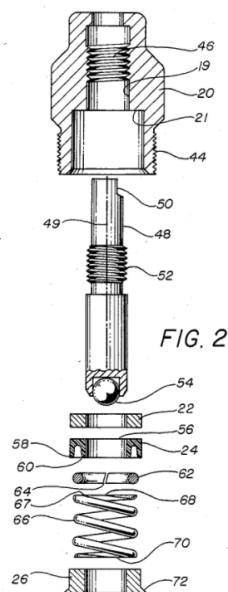


FIG. 2

The valve stem sub-assembly shown in Fig. 2 comprises a plastic lip seal 24 having two annular lips 58 and 60. A metallic ring member 62 is provided for engagement with these lips. A spring 66 exerts a force on the ring member 62 so that it engages with the lips of the lip seal 24. Consequently, the inner lip 60 is pushed inwardly into sealing engagement with the valve stem 48, whereas the outer lip 58 is pushed outwardly into sealing engagement with the bonnet 20. The ring member 62 comprises a gap 64, the purpose of which is to allow the passage of fluid into the space between the inner and outer lips of the lip seal 24. Another effect of this gap is mentioned in col. 5, lines 46 to 53:

"Also, the gap 64 of the metallic ring member may allow the ring member 62 to more easily "open" or "close" to conform to the spacing between the inner and outer lips, so that the ring member 62 more uniformly acts upon both the inner lip and the outer lip throughout at least a substantial portion of the circumference of the inner and outer lips."

The examining division construed the lip seal 24 to be the primary seal, the spring 66 to be the force transmitting member and the ring member 62 to be the primary shaft insert. It explained that, according to col. 5, lines 46 to 53 (quoted above), the metallic and elastic slit ring 62 tended to expand radially to transfer the axial load radially to the seal 24.

The ring member 62 itself is made of metal or a relatively hard or inelastic plastic or synthetic material (see col. 8, lines 57 to 62). Thus, although the ring member is capable of expanding radially to some extent, it is not mainly because of its material but because of its construction, in particular because of the presence of its gap 64. Nonetheless, the opening of the gap requires the material to deform at least to some extent, and this deformation necessarily has a radial component. A perfectly brittle or hard material would break or make the gap opening impossible, so that the gap could not perform its role. Consequently, document D3 must be held to contain the implicit disclosure that the ring member is constructed of a material capable of expanding radially when subjected to an axial load.

It remains to be seen whether the primary shaft insert 62 of document D3 is sized and configured to fit within the cavity of the primary seal 24. The examining division concluded that it was. The reasons for this conclusion can be found in points 2.2 and 2.3 of the Reasons for the decision under appeal:

"... the feature "wherein the primary shaft insert is sized and configured to fit within the cavity of the primary seal" ... does not really change the scope of claim 1 in comparison to claim 1 of the

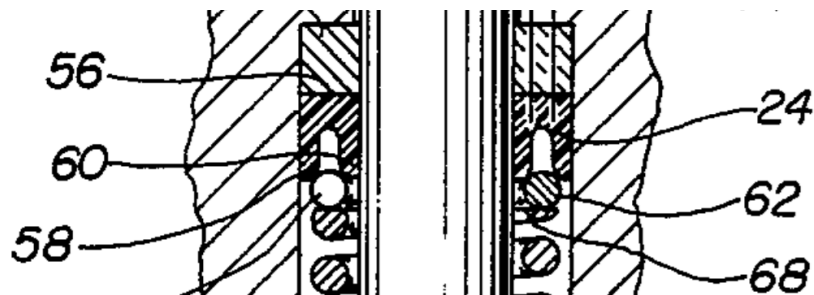
main request where it is already defined that "the cavity is sized and configured to receive a primary shaft insert". For the same reasons as for claim 1 of the main request and since D3 also discloses (see in particular the figures) that the primary shaft insert is sized and configured to at least partially fit within the cavity of the primary seal, the subject-matter of claim 1, auxiliary request 1, is not new over D3.

During the oral proceedings, the representative argued that if the ring (62) was within the cavity, it would not act on the lips of the primary seal. The examining division cannot agree: D3, column 5, line 46-53 explicitly discloses that the ring partially fits between the lip and therefore within the cavity."

The cited passage of document D3 reads:

"... Also, the gap 64 of the metallic ring member may allow the ring member 62 to more easily "open" or "close" to conform to the spacing between the inner and outer lips, so that the ring member 62 more uniformly acts upon both the inner lip and the outer lip throughout at least a substantial portion of the circumference of the inner and outer lips."

The board is unable to endorse the examining division's assertion that this passage discloses that the primary shaft insert 62 is sized and configured to fit within the cavity of the primary seal 24.



Detail of Fig. 3 of document D3

The shaft insert 62 is not received in the cavity between the lips of seal 24. It engages with these lips but remains outside the cavity.

Consequently, the board is satisfied that the subject-matter of claim 1 is new over the disclosure of document D3 in the sense of Article 54(1) EPC.

3. Remittal to the examining division

The examining division had no reason to examine whether the subject-matter of present claim 1 involved an inventive step. Therefore the board is satisfied that special reasons present themselves for a remittal of the case to the examining division. Consequently it is appropriate to grant the appellant's request for the case to be remitted to the examining division for further prosecution in accordance with Article 111(1) EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the examining division for further prosecution.

The Registrar:

The Chairman:



N. Schneider

P. Lanz

Decision electronically authenticated