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**Datasheet for the decision
of 2 December 2013**

Case Number: T 0884/10 - 3.2.02

Application Number: 03711163.0

Publication Number: 1503821

IPC: A61M1/10

Language of the proceedings: EN

Title of invention:
FLUID PUMP

Applicant:
Design Mentor, Inc.

Headword:

Relevant legal provisions:
EPC Art. 123(2), 84, 111(1)

Keyword:
Amendments - added subject-matter (no)
Claims - clarity (yes)
Appeal decision - remittal to the department of first instance
(yes)

Decisions cited:

Catchword:



**Beschwerdekammern
Boards of Appeal
Chambres de recours**

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Case Number: T 0884/10 - 3.2.02

D E C I S I O N
of Technical Board of Appeal 3.2.02
of 2 December 2013

Appellant: Design Mentor, Inc.
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Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 17 December
2009 refusing European patent application
No. 03711163.0 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman: E. Dufrasne
Members: D. Ceccarelli
P. L. P. Weber

Summary of Facts and Submissions

- I. The applicant has appealed the Examining Division's decision, dispatched on 17 December 2009, to refuse European patent application No. 03 711 163.0.
- II. Claim 1 of the only request on which the impugned decision was based reads as follows:

"A pump (16) for pumping a fluid and including at least one linear electromagnetic motor (12), at least one pump drive head (50), coupled to said linear electromagnetic motor (12), said pump drive head (50) configured for movement in a linear direction (28); at least one fluid housing (52), responsive to said linear movement of said at least one pump drive head (50), and defining a deformable fluid chamber (54) configured to contain a fluid, and wherein said pump drive head (50) is configured to deform said deformable fluid chamber (54) causing a pressure differential within said deformable fluid chamber (54), thus changing the volume of said deformable fluid chamber (54) and forcing said fluid in or out said deformable fluid chamber (54) through valves (70,72),

characterized by

said fluid housing including a first and at least a second port (60, 62), wherein said first port (60) includes a ball check valve (70) including a ball valve retainer region (69), a valve seat (73), and an occluder ball (71) disposed in said ball valve retainer region, whereby said first port (60) in combination with said ball check valve (70) are configured for allowing said fluid to flow substantially into said deformable fluid chamber (54) while allowing an amount

of fluid flow reversal, and wherein said second port (62) includes a ball check valve (72) including a ball valve retainer region (69), a valve seat (73), and an occluder ball (71) disposed in said ball valve retainer region, whereby said second port (62) in combination with said ball check valve (72) are configured for allowing said fluid to flow substantially out of said deformable fluid chamber (54), while allowing an amount of fluid flow reversal, a controller (121), coupled to said at least one linear motor (12), and configured to apply an energizing current to said linear electromagnetic motor (12) in the form of a predetermined waveform, said waveform applying a predetermined diastolic current to the motor during pump diastole phase to maintain a desired diastolic pressure, said waveform also applying a predetermined systolic current to the motor during pump systole phase to maintain a desired systolic pressure, such that said energizing current applied by said controller (121) in the form of said predetermined waveform is responsive to cause a volume of fluid for a given diastolic and systolic pressure to be displaced within said fluid chamber (54), wherein said controller (121) and port/valve combinations (60/70 and 62/72) cooperate to cause said fluid to flow substantially in one direction when said energizing current is applied to said linear electromagnetic motor (12) based upon said systolic current value setting established in said controller (121), said amount of fluid flow reversal allowed by said first and second ports (60, 62) causing an adjustable amount of the fluid to flow in a reverse direction when said diastolic current value setting established in said controller (121) is applied to said linear electromagnetic motor (12), thereby causing pulsatile fluid flow, namely fluid flow in a predominantly forward direction with some fluid flow

reversal, wherein the amount of fluid flow reversal is adjusted based on a distance the occluder ball travels between the valve retainer region and the valve seat and/or the volume of the first and second valve ports."

III. The Examining Division found that a number of features of claim 1 introduced subject-matter extending beyond the content of the application as originally filed.

The features concerned were the following:

"at least one pump drive head (50), coupled to said linear electromagnetic motor (12), said pump drive head (50) configured for movement in a linear direction (28)",

"a deformable fluid chamber (54) configured to contain a fluid",

"a ball check valve (70)" and "a ball check valve (72)",

"allowing an amount of fluid flow reversal",

"a controller (121), coupled to said at least one linear motor (12)",

"controller (121) and port/valve combinations (60/70 and 62/72) cooperate to cause said fluid to flow substantially in one direction",

"said amount of fluid flow reversal allowed by said first and second ports (60, 62) causing an adjustable amount of the fluid to flow in a reverse direction",
and

- "the amount of fluid flow reversal is adjusted based on a distance".
- IV. The Examining Division also held that the wording "A pump (16) for pumping a fluid" and "the amount of fluid flow reversal is adjusted based on a distance" lacked clarity.
- V. Consequently, the application was refused because claim 1 did not comply with Article 84 and Article 123(2) EPC.
- VI. The notice of appeal was received on 16 February 2010 and the appeal fee was paid on the same day. The statement setting out the grounds of appeal was received on 15 April 2010.
- VII. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the main request or, in the alternative, of one of the first to third auxiliary requests, filed with letter dated 15 April 2010.
- VIII. Claim 1 of the main request reads as follows:

"A heart pump for pumping blood comprising:
at least one motor;
at least one pump drive head coupled to said motor; and
at least one fluid housing defining a deformable fluid chamber adapted to contain blood, said fluid housing including at least one port, said port including a ball valve retainer region, a valve seat, and an occluder ball disposed in said ball valve retainer region, wherein, in use, said pump drive head deforms said deformable fluid chamber and causes a

pressure differential within said fluid chamber thus changing the volume of said fluid chamber and forcing said blood in or out said fluid chamber, and wherein, in use,

a first pressure differential causes said occluder ball to move from a first position within said ball valve retainer region whereby said occluder ball is against the valve seat and said blood cannot pass through said port, to a second position within said ball valve retainer region whereby said occluder ball is forced against said valve retainer and said blood moves annular to and generally around said occluder ball; and

a second pressure differential reverse to said first pressure differential causes said occluder ball to move from said second position to said first position wherein said occluder ball is forced against said valve seat whereby said blood cannot pass through said port and blood flow is stopped, and

wherein said movement of said occluder ball from said second position to said first position creates a slight reversal in the flow of said blood thereby establishing a pulsatile flow of said blood."

IX. The appellant's arguments are summarised as follows:

The claims of the main request were largely based on original claims 1 to 16. They did not relate to unsearched subject-matter and did not comprise any feature that had given rise to added-matter objections during prosecution of the application.

With respect to originally filed claim 1, independent claim 1 of the main request had been amended such that it was directed to a "heart pump for pumping blood". There was a basis for that amendment in the original

description as a whole and more particularly on page 5, lines 7 to 9. For consistency, references to "fluid" had been changed to "blood". The definition of a "first pressure differential" and a "second pressure differential reverse to said first pressure differential" causing "said occluder ball to move from said second position to said first position wherein said occluder ball is forced against said valve seat whereby said blood cannot pass through said port and blood flow is stopped" had also been introduced. There was a basis for this on page 8, line 21 to page 9, line 2 of the original description. Claim 1 further included the feature that "movement of said occluder ball from said second position to said first position creates a slight reversal in the flow of said blood thereby establishing a pulsatile flow of said blood", which had a basis on page 9, lines 2 to 5 and 15 to 18 of the description as originally filed.

It followed that the subject-matter of claim 1 of the main request did not extend beyond the content of the application as filed, as required by Article 123(2) EPC.

Reasons for the Decision

1. The appeal is admissible.
2. *Main request*
 - 2.1 *Article 123(2) EPC*

It is immediately apparent that, compared to claim 1 on which the impugned decision was based, independent claim 1 of the main request no longer comprises any of the features objected to under Article 123(2) EPC by

the Examining Division in the impugned decision and is based, to a large extent, on claim 1 as originally filed.

Compared to the latter, claim 1 of the main request, which generally concerns a pump comprising a pump drive head for acting on a deformable fluid chamber, is restricted to a heart pump for pumping blood. There is a basis for this feature on page 5, lines 7 to 9 and 12 to 15, and in claim 8 of the application as originally filed.

Furthermore, the functioning of the pump, in use, has been more precisely defined, in particular with the introduction of a first and a second pressure differential and the reference to pulsatile fluid flow. The basis for this amendment is found on page 8, line 21 to page 9, line 5 of the original application, whereby the denomination of "first" and "second" is appropriate in order to identify two different operational conditions during the pump stroke.

The Board is satisfied that claim 1 complies with Article 123(2) EPC.

2.2 *Article 84 EPC*

Also, the features which were found unclear by the Examining Division in the impugned decision are no longer present in claim 1 according to the main request. In particular, the definition of a heart pump in claim 1 brings it into line with the general teaching of the application as filed and the explicit reference to conditions of use clearly identifies the functional features in the claim.

Hence, claim 1 also complies with Article 84 EPC.

3. Since in the impugned decision the Examining Division only considered the requirements of Article 123(2) and 84 EPC with respect to claim 1 and did not carry out any detailed examination as to novelty and inventive step, to preserve the appellant's right to have its case considered by two instances it is appropriate to remit the case to the department of first instance 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 department of first instance for further prosecution.

The Registrar:

The Chairman:



D. Hampe

E. Dufrasne

Decision electronically authenticated