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Datasheet for the decision of 27 May 2009

Case Number: T 2040/07 - 3.2.01

Application Number: 96304980.4

Publication Number: 0752361

IPC: B62D 5/06

Language of the proceedings: EN

Title of invention:
Flow control device

Patentee:
UNISIA JECS CORPORATION

Opponent:
RÖSSIG, Rolf

Headword:
-

Relevant legal provisions:
EPC Art. 123(2)

Relevant legal provisions (EPC 1973):
EPC Art. 84

Keyword:
"Claims - clarity (no)"
"Amendments - added subject-matter (yes)"

Decisions cited:
-

Catchword:
-

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Case Number: T 2040/07 - 3.2.01

D E C I S I O N
of the Technical Board of Appeal 3.2.01
of 27 May 2009

Appellant: (Opponent)
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D-81679 München (DE)

Representative:
-

Respondent: (Patent Proprietor)
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Decision under appeal:
Interlocutory decision of the Opposition Division of the European Patent Office posted 8 October 2007 concerning maintenance of European patent No. 0752361 in amended form.

Composition of the Board:

Chairman: S. Crane
Members: J. Osborne
G. Weiss

Summary of Facts and Submissions

I. The opponent's appeal is directed against the interlocutory decision posted 8 October 2007 according to which, account being taken of the amendments made by the patent proprietor during the opposition proceedings, the patent and the invention to which it relates were found to meet the requirements of the EPC 1973.

II. With a letter dated 1 September 2008 the respondent requested that the appeal be dismissed (main request) or in the alternative that the patent be maintained in further amended form according to first to sixth auxiliary requests filed therewith.

III. The board summoned the parties to oral proceedings to be held on 27 May 2009. In an annex to the summons it indicated its provisional opinion that the amendments made to the claims 1 according to all requests rendered them unclear and introduced subject-matter which was not disclosed in the application as originally filed. It pointed out that since the opponent was the sole appellant the possibilities for the respondent to amend the claims were restricted by the principle of prohibition of *reformatio in peius*.

IV. With a letter of 7 May 2009 the respondent indicated that it would not attend the oral proceedings. At the oral proceedings on 27 May 2009 the appellant requested that the contested decision be set aside and the patent revoked. The respondent did not attend.

V. The claims 1 according to the respondent's requests read as follows, wherein in comparison with claim 1 as

granted wording added is underlined and wording deleted is struck through:

Main request:

"A flow control device in a power steering system, comprising:
a housing (1) having an axially extending hole (H);
a spool valve (14) movably disposed in a hole (H) and having first and second ends, the first end delimiting a first pressure chamber (15) in the said hole (H), a drain passage (19) being opened to the first pressure chamber (15) and closable with the spool valve (14);
a spring holding member (37) movably and coaxially disposed in the said hole (H), the spring holding member (37) having a first end face (40) delimiting a second pressure chamber (16) and having a second end face (41) larger in pressure-receiving area than the first end face (40), the second pressure chamber (16) being defined between the second end of the spool valve (14) and the said first end face (40), the said second end face (41) delimiting a pressure control chamber (36) communicated with the second pressure chamber (16);
a restricting orifice (9) communicated with the first pressure chamber (15), an introduction passage (20) being communicated through the restricting orifice (9) with a discharge passage (8) and being opened to the first pressure chamber (15), pressure in the discharge passage (8) being introduced into the second pressure chamber (16); and
a first spring (17) disposed in the second pressure chamber (16) and between the spool valve (14) and the spring holding member (37) to bias the spool valve (14)

in a direction to close the drain passage (19); characterised by a second spring (43) acting between the housing (1) and the spring holding member (37) to bias the spring holding member (37) in a direction to resist an increase in the volume of the pressure control chamber (36)."

First auxiliary request:

As claim 1 according to the main request except for the characterising portion:
“a second spring (43) acting between the housing (1) and the spring holding member (37) to bias the spring holding member (37) in a direction to ~~resist an increase in~~ reduce the volume of the pressure control chamber (36)."

Second auxiliary request:

As claim 1 according to the main request except for the characterising portion:
"a second spring (43) acting directly between the housing (1) and the spring holding member (37) to bias the spring holding member (37) in a direction to resist an increase in the volume of the pressure control chamber (36)."

Third auxiliary request:

"A flow control device in a power steering system including an actuator, the flow control device comprising:
a housing (1) having an axially extending hole (H);
a spool valve (14) movably disposed in a hole (H) and

having first and second ends, the first end delimiting a first pressure chamber (15) in the said hole (H), a drain passage (19) being opened to the first pressure chamber (15) and closable with the spool valve (14);
a spring holding member (37) movably and coaxially disposed in the said hole (H), the spring holding member (37) having a first end face (40) delimiting a second pressure chamber (16) and having a second end face (41) larger in pressure-receiving area than the first end face (40), the second pressure chamber (16) being defined between the second end of the spool valve (14) and the said first end face (40), the said second end face (41) delimiting a pressure control chamber (36) communicated with the second pressure chamber (16);
a restricting orifice (9) communicated with the first pressure chamber (15), an introduction passage (20) being communicated through the restricting orifice (9) with a discharge passage (8) and being opened to the first pressure chamber (15), pressure in the discharge passage (8) being introduced into the second pressure chamber (16); and
a first spring (17) disposed in the second pressure chamber (16) and between the spool valve (14) and the spring holding member (37) to bias the spool valve (14) in a direction to close the drain passage (19);
characterised by a second spring (43) acting between the housing (1) and the spring holding member (37) to bias the spring holding member (37) in a direction to resist an increase in the volume of the pressure control chamber (36);
wherein, in a condition in which the actuator of the power steering system is not operated, in which the hydraulic fluid pressure is low, the spring holding

member (37) moves in the direction to decrease the volume of the pressure control chamber (36), thereby to reduce the biasing force of the first spring (17) so as to increase the opening area of the drain passage (19)."

Fourth auxiliary request:

As claim 1 according to the third auxiliary request except for the characterising portion:
"a second spring (43) acting between the housing (1) and the spring holding member (37) to bias the spring holding member (37) in a direction to ~~resist an increase in~~ reduce the volume of the pressure control chamber (36);
wherein, in a condition in which the actuator of the power steering system is not operated, in which the hydraulic fluid pressure is low, the spring holding member (37) moves in the direction to decrease the volume of the pressure control chamber (36), thereby to reduce the biasing force of the first spring (17) so as to increase the opening area of the drain passage (19)."

Fifth auxiliary request:

As claim 1 according to the third auxiliary request except for the characterising portion:
"a second spring (43) acting between the housing (1) and the spring holding member (37) to bias the spring holding member (37) in a direction to resist an increase in the volume of the pressure control chamber (36);
wherein, in a condition in which the actuator of the

power steering system is not operated, in which the hyrau1ic fluid pressure is low, the spring holding member (37) moves in the direction to decrease the volume of the pressure control chamber (36), thereby to reduce the biasing force of the first spring (17) so as to increase the opening area of the drain passage (19); and wherein, in a condition in which the pressure in the pressure control chamber (36) rises, the spring holding member (37) moves in the direction to increase the volume of the pressure control chamber (36) against the biasing force of the second spring (43), thereby to gradually increase the biasing force of the first spring (17)."

Sixth auxiliary request:

As claim 1 according to the third auxiliary request except for the characterising portion:
"a second spring (43) acting between the housing (1) and the spring holding member (37) to bias the spring holding member (37) in a direction to ~~resist an increase in~~ reduce the volume of the pressure control chamber (36);
wherein, in a condition in which the actuator of the power steering system is not operated, in which the hydraulic fluid pressure is low, the spring holding member (37) moves in the direction to decrease the volume of the pressure control chamber (36), thereby to reduce the biasing force of the first spring (17) so as to increase the opening area of the drain passage (19); and wherein, in a condition in which the pressure in the pressure control chamber (36) rises, the spring holding member (37) moves in the direction to increase the volume of the pressure control chamber (36) against

the biasing force of the second spring (43), thereby to gradually increase the biasing force of the first spring (17)."

VI. Neither party made any submissions in respect of the objections raised by the board in its annex to the summons.

Reasons for the Decision

1. A system for assisting manual steering effort in an automotive vehicle conventionally comprises a pump driven by an internal combustion engine to supply hydraulic fluid to an actuator. The system is required to provide its greatest assistance force for the steering effort whilst the vehicle is stopped or manoeuvring at low speed, when the engine may be idling. When the vehicle is running at higher speeds, however, little assistance is required for the steering effort although the engine and the pump normally then are running at higher speeds and more hydraulic fluid is discharged than is required. The patent relates to a flow control device in which hydraulic fluid discharged from the pump flows through an orifice and is thereby restricted when the output of the pump increases to a certain level, whereby excess fluid is returned to a reservoir. In order to reduce energy loss caused by unwanted fluid being pumped through the orifice the device is constructed in such a way that the amount of fluid passing through the orifice is minimised when the actuator has no demand for fluid.

Main request

2. Claim 1 as granted was directed to "a flow control device" and specified features only of the device itself. The actual wording of the claim is that listed under "main request" in section V above with the exception of the wording underlined. During the opposition procedure the claim was amended to include the underlined wording and remains in that form in accordance with the present request. As a consequence of the amendment the subject-matter of the claim is now specified as "a flow control device in a power steering system".

3. Article 84 EPC 1973 provides that "the claims shall define the matter for which protection is sought. They shall be clear and concise and supported by the description."

3.1 As a result of the amendment to specify the subject of the claim as "a flow control device in a power steering system" it is uncertain whether the subject-matter of the claim is merely a flow control device intended to be used in a power steering system or a power steering system including such a device. For this reason the claim does not fulfil the requirement of Article 84 EPC 1973 in respect of clarity.

3.2 In the power steering system as described in the patent specification the control device has its introduction passage connected to an engine-driven pump and its discharge passage supplying an actuator. Indeed, as explained above, the entire basis of the problem addressed by the patent resides in the combination of

an engine-driven pump and a steering actuator which have opposing characteristics of hydraulic fluid supply and demand. By comparison, in present claim 1 both the power steering system and the arrangement of the flow control device therein are wholly unspecified. This inconsistency with the description results in a lack of clarity because it raises doubts as to whether, and if so how, the flow control device might be incorporated into a power steering system having other characteristics.

4. The arrangement of the flow control device in the power steering system set out in the patent specification and referred to above is also the only one contained in the application as originally filed. As already explained in respect of clarity, that arrangement formed the entire basis of solving the problem addressed by the application. In as far as present claim 1 now relates to an unspecified arrangement of the flow control device in a power steering system of unspecified characteristics the content has been extended beyond that of the application as originally filed, in contravention of the requirement of Article 123(2) EPC.

First and second auxiliary requests

5. The claims 1 according to these auxiliary requests have been amended in the same way as for the main request, to specify the flow control device "in a power steering system". The other amendments which have been included in the present claims have no bearing on the objections which arise from that same amendment. The objections against the main request therefore apply equally to these requests.

Third to sixth auxiliary requests

6. Claims 1 according to these requests have been amended to further specify the power steering system as "including an actuator" and to include a functional feature relating to the operation of the flow control device when the actuator is not operating. However, both the arrangement of the flow control device in relation to the actuator and the characteristics at least the fluid supply of the power steering system remain undefined and the objections which arise against claim 1 according to the main request remain applicable.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar: The Chairman:

A. Vottner S. Crane