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Datasheet for the decision of 8 October 2013

Case Number: T 2471/11 - 3.2.08

Application Number: 03720976.4

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Language of the proceedings: EN

Title of invention:
Hydraulic mount

Patent Proprietor:
FUKOKU Co., Ltd.

Opponent:
Hano, Christian

Headword:

Relevant legal provisions:
EPC Art. 100(a), 56

Keyword:
Inventive step - (yes)

Decisions cited:

Catchword:

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Case Number: T 2471/11 - 3.2.08

D E C I S I O N
of Technical Board of Appeal 3.2.08
of 8 October 2013

Appellant: (Opponent)	Hano, Christian Fichtenstrasse 6 82166 Gräfelfing (DE)
Representative:	von Füner, Nicolai v. Füner Ebbinghaus Finck Hano Patentanwälte Postfach 95 01 60 81517 München (DE)
Respondent: (Patent Proprietor)	FUKOKU Co., Ltd. 3-105, Sugaya Ageo-shi, Saitama 362-0003 (JP)
Representative:	Waldren, Robin Michael Marks & Clerk LLP 90 Long Acre London WC2E 9RA (GB)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 5 October 2011 concerning maintenance of the European Patent No. 1500846 in amended form.**

Composition of the Board:

Chairman: T. Kriner
Members: M. Alvazzi Delfrate
D. T. Keeling

Summary of Facts and Submissions

I. By decision posted on 5 October 2011 the opposition division decided that European patent No. 1 500 846 in amended form according to the auxiliary request then on file and the invention to which it related met the requirements of the EPC.

II. The appellant (opponent) lodged an appeal against this decision on 30 November 2011, paying the appeal fee on the same day. The statement setting out the grounds of appeal was filed on 26 January 2012

III. Oral proceedings before the Board of Appeal were held on 8 October 2013.

IV. The appellant requested that the decision under appeal be set aside and that the patent be revoked.

The respondent (patent proprietor) requested that the appeal be dismissed and that the decision under appeal be confirmed (Main Request) or, in the alternative, that the patent be maintained on basis of the set of claims of one of Auxiliary Requests 1 to 7 on file.

V. Claim 1 of the Main Request reads as follows:

"A liquid seal type fluid-filled mount, comprising:
a cup-shaped housing (1) having a flange (1A) provided with a mounting hole;
a stud (3) with a threaded hole (3A) provided at an upper end thereof; the stud being disposed along a central axis of the cup-shaped housing (1) so as to be positioned in a central opening of a fixed damping unit (10, 35);

a flexible seal cap (7, 20) providing a fluid-tight seal between the upper end of the stud (3) and the cup shaped housing (1), the flexible seal cap (7, 20) having a cap body (8) and a holder (9), the cap body (8) being made of a rubber material being formed to a doughnut shape having a centre hole;
a high viscosity liquid (2) for filling a chamber formed by the cup-shaped housing (1) and the flexible seal cap (7, 20), a movable damping plate (4, 31) mounted to a lower end of the stud (3) and placed in the high viscosity fluid;
a fixed damping unit (10, 35) provided with a damping body (11) made of an elastic material, said fixed damping unit (10, 35) having a doughnut-shape, fixed between the flexible seal cap (7, 20) and the movable damping plate (4, 31) and placed in the high viscosity fluid, the fixed damping unit (10, 35) including a first holder (12);
a spring (13) disposed between a bottom of the cup-shaped housing (1) and the movable damping plate (4, 31);
a first fluid passage formed between an inner circumferential surface of the cup-shaped housing (1) and an outer circumferential surface of the movable damping plate (4, 31) to exhibit a damping effect; and
a second fluid passage formed between an inner surface of the central opening (1OA) of the fixed damping unit (10) and an outer circumferential surface of the stud (3) wherein the high viscosity fluid passes through the second fluid passage to exhibit an additional damping effect;
characterized in that the first holder (12) has a first cylindrical portion (12A) vulcanized to and embedded in the damping body (11) and a first flange portion (12B), and in that the center hole of the cap body (8) is

vulcanized to an upper portion of the stud (3), sealed fluid-tight."

The auxiliary requests are not relevant for the present decision.

VI. The following documents played a role for the present decision:

D2: US -A- 5 988 610;
D2bis: annotated copy of Figure 9 of D2;
D14: JP -A- 11 210807 (as well as computer-translation and translation).

VII. The arguments of the appellant can be summarised as follows:

The mount shown in Figure 9 of D2 represented the most relevant prior art and exhibited all the features according to the preamble of claim 1 of the Main Request.

The features stipulated in the characterising portion of claim 1 were standard and did not provide any advantage in respect of that prior art. In the mount shown in Figure 9 of D2 a downward movement of the stud reduced the space available for the high viscosity fluid below the damping body indicated as 11 in D2bis. Hence, the high viscosity fluid inevitably had to pass through both the first and the second fluid passages shown in this figure exhibiting the same damping effect as the claimed mount. By contrast, there was no evidence that a cap body vulcanised to the stud in accordance with claim 1 of the Main Request provided a pumping action to enhance the damping effect, as stated by the respondent.

Moreover, such a configuration of the cap body and the stud was already known before the priority date.

D2 itself disclosed in the discussion of the prior art that the cap body could be vulcanised to the stud.

A mount with a cap body vulcanised to the stud was also known from D14. Figure 7 of this document depicted a mount with a doughnut-shaped cap body whose functioning was exactly the same as that of the mounts of Figure 9 of D2 and of the patent in suit. Here again, the high viscosity fluid passed through two fluid passages, which were bordered by the attenuation plates 7 and 8, to cause a damping action. Therefore, it was obvious to provide the mount of Figure 9 of D2 with a cap body vulcanised to the stud, as shown in D14.

As to the cylindrical portion in the damping body, this was a standard measure in the field as evidenced for instance by D14, wherein the movable damping body 7 exhibited this feature.

Therefore, the subject-matter of claim 1 of the Main Request did not involve an inventive step.

VIII. The arguments of the respondent can be summarised as follows:

The mount depicted in Figure 9 of D2 represented the most relevant prior art. Starting from this prior art the object underlying the claimed invention resided in the provision of an improved damping effect.

This object was achieved in accordance with claim 1 by means of the features of the characterising portion.

Since the center hole of the cap body was vulcanised to an upper portion of the stud and sealed fluid-tight, a downward movement of the stud reduced the volume of the chamber formed by the cap body and the fixed damping unit 10. This provided a pumping action that pushed the fluid downwards through the second fluid passage and resulted in a further damping effect which was not present in the mount according to D2.

D14 gave no hint that the teaching of D2 should be departed from and the given object achieved in accordance with claim 1. Indeed, since the function of the mount of D14 was different from that of D2, there was no reason to combine these documents.

Therefore, the subject-matter of claim 1 of the Main Request involved an inventive step.

Reasons for the Decision

1. The appeal is admissible.

2. Main Request - Inventive step

2.1 D2 relates to a liquid seal type fluid-filled mount. Figure 9 undisputedly shows a liquid seal type fluid-filled mount comprising: a cup-shaped housing (reference 1 in D2bis) having a flange (reference 1A in D2bis) provided with a mounting hole (reference 1D in D2bis);
a stud (reference 3 in D2bis) with a threaded hole (reference 3A in D2bis) provided at an upper end thereof;
the stud being disposed along a central axis of the cup-shaped housing so as to be positioned in a central

opening of a fixed damping unit (reference 10 in D2bis);
a flexible seal cap (reference 7 in D2bis) providing a fluid-tight seal between the upper end of the stud and the cup shaped housing, the flexible seal cap having a cap body (reference 8 in D2bis) and a holder (reference 9 in D2bis), the cap body being made of a rubber material (see column 8, line 47-49) being formed to a doughnut shape having a centre hole;
a high viscosity liquid (see claim 1) for filling a chamber formed by the cup-shaped housing and the flexible seal cap, a movable damping plate (reference 4 in D2bis) mounted to a lower end of the stud and placed in the high viscosity fluid;
a fixed damping unit (reference 10 in D2bis) provided with a damping body (reference 11 in D2bis) made of an elastic material, said fixed damping unit having a doughnut-shape, fixed between the flexible seal cap and the movable damping plate and placed in the high viscosity fluid, the fixed damping unit including a first holder (reference 12 in D2bis);
a spring (reference 13 in D2bis) disposed between a bottom of the cup-shaped housing (1) and the movable damping plate;
a first fluid passage formed between an inner circumferential surface of the cup-shaped housing and an outer circumferential surface of the movable damping plate to exhibit a damping effect; and a second fluid passage formed between an inner surface of the central opening of the fixed damping unit and an outer circumferential surface of the stud wherein the high viscosity fluid can pass through the second fluid passage.

2.2 It is undisputed that neither

- a first holder with a first cylindrical portion vulcanised to and embedded in the damping body nor

- a center hole of the cap body vulcanised to an upper portion of the stud, sealed fluid-tight

are disclosed in Figure 9 of D2.

2.3 The respondent submitted that as a result of this arrangement a downward movement of the stud in the mount of claim 1 provides a pumping action, which pushes the fluid downwards through the second fluid passage and results in an additional damping effect in respect of the mount of D2.

However, no such effect is described in the patent in suit. Moreover, it is questionable whether a pumping action which pushes the fluid downwards through the second fluid passage is possible at all.

It is true that in the claimed mount a downward movement of the stud reduces the volume of the chamber formed by the cap body 8 and the fixed damping unit 10. However, since that chamber can be partly filled with air (see Figure 1), which is highly compressible this reduction must not necessarily result in a pumping action. Moreover, as the the stud moves downward its portion immersed in the fluid below the fixed damping unit increases, pushing that fluid upwards, as in the mount of D2. Therefore, the Board is not satisfied that in the mount of claim 1 the downward movement of the stud provides an increased damping effect in respect of D2.

As a consequence, the object underlying the claimed invention is considered merely to provide a mount configuration alternative to that of D2.

2.4 To assess inventive step it must thus be established whether or not it was obvious to achieve this object by modifying the mount of Figure 9 of D2 in accordance with the characterising portion of claim 1, in particular by vulcanising the cap to the stud.

2.4.1 As already correctly pointed out in the decision under appeal (page 13, first paragraph) it is mandatory for the invention of D2 that the stud is mounted so as to be slidable in an axial direction relative to the cap body (see claim 1).

It is true that this document discloses also arrangements wherein the cap is vulcanised to the stud (see Figures 3 and 4). However, these arrangements belong to the prior art discussed in D2 and are described as disadvantageous (see column 2, lines 1 to 28), so that D2 clearly teaches away from that configuration (see also column 2, lines 44 to 65).

Therefore, the person person skilled in the art trying to achieve the object above starting from D2 would not take into consideration an arrangement as shown in Figures 3 and 4 of D2 or in D14 (see Figures 1 and 7), wherein, contrary to the teaching of D2, the stud is not slidable in respect of the body.

2.4.2 Moreover, the mount depicted in D14 has a movable damping plate which comprises a rubber portion, a fixed damping unit which does not comprise a rubber portion and defines a large fluid passage and an upper chamber partly filled with air. By contrast, the mount shown in

Figure 9 of D2 has a movable damping plate which does not comprise a rubber portion, a fixed damping unit which comprises a rubber portion and defines a narrow fluid passage and an upper chamber completely filled with high viscosity fluid.

Given these constructional differences each of the two mounts functions in a different way. Hence, the isolation of a feature of the mount of D14 which influences its function - the configuration of the cap vulcanised to the stud - and its adoption in the mount of D2 could only be the result of hindsight. Before the priority date of the present invention the person skilled in the art would rather have adopted the whole construction of the mount of D14.

Since that construction is not in accordance with claim 1 (see for instance the fixed damping unit 8), even considering D14 for achieving the object above would not have lead to the claimed invention.

2.4.3 Hence, the subject-matter of claim 1 of the Main Request involves an inventive step.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

V. Commare T. Kriner

Decision electronically authenticated