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Datasheet for the decision of 5 October 2016

Case Number: T 2047/15 - 3.2.01

Application Number: 10844555.2

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IPC: B60R22/48

Language of the proceedings: EN

Title of invention:
SEATBELT RETRACTOR AND SEATBELT DEVICE PROVIDED WITH SAME

Applicant:
Takata Corporation

Headword:

Relevant legal provisions:
EPC Art. 56
RPBA Art. 13(1)

Keyword:
Main Request- Inventive step -(no)
Auxiliary Requests- not admitted

Decisions cited:

Catchword:

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Case Number: T 2047/15 - 3.2.01

D E C I S I O N
of Technical Board of Appeal 3.2.01
of 5 October 2016

Appellant: (Applicant)	Takata Corporation 12-31 Akasaka 2-chome Minato-ku Tokyo 107-8508 (JP)
Representative:	Vossius & Partner Patentanwälte Rechtsanwälte mbB Siebertstrasse 3 81675 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 10 March 2015 refusing European patent application No. 10844555.2 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	G. Pricolo
Members:	Y. Lemblé
	P. Guntz

Summary of Facts and Submissions

I. The appeal is directed against the decision of the examining division to refuse the European patent application No. 10 844 555.2.

II. The Examining Division held that the subject-matter of claim 1 filed with letter of 19 December 2013 (combination of originally filed claims 1 and 2) did not involve an inventive step in view of a combined consideration of the prior art documents US 2008/0105777 (D1) and DE 10 2006 036 554 (D2).

III. In its statement setting out the grounds of appeal, the Appellant (Applicant) requested that the decision of the Examining Division be set aside and that a patent be granted on the basis of the claims filed with letter dated 19 December 2013.

IV. On 30 June 2016 the Board issued an annex to the summons to oral proceedings according to Article 15(1) RPBA (Rules of Procedure of the Boards of Appeal of the EPO) in which it indicated that it shared the view of the Examining Division that the subject-matter of claim 1 did not involve an inventive step.

V. In response to this preliminary opinion of the Board, the Appellant maintained with letter dated 5 September 2016 the claims on file as a Main Request and filed six sets of claims according to Auxiliary Requests 1 to 6.

VI. Oral Proceedings were held before the Board on 5 October 2016. The Appellant (Applicant) requested that the decision be set aside and a patent be granted on the basis of the claims filed with letter of 19

December 2013 (Main Request), or on the basis of the claims according to one of the Auxiliary Requests 1 to 6 filed with letter dated 5 September 2016.

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

"A seatbelt retractor comprising:
at least a spool (10) configured to retract a seatbelt (4);
drive means (8) for rotating the spool (10); and
a rotation detecting member (15) configured to detect the amount of rotation of the spool (10), the amount of rotation of the spool (10) being controlled by driving and controlling the drive means (8) on the basis of the amount of rotation of the spool detected by the rotation detecting member (15),
wherein the rotation detecting member (15) is disposed eccentrically with respect to a rotating shaft (10a) of the spool (10) in a radial direction of the rotating shaft (10a), and wherein the rotation detecting member (15) is disposed in a direction in which the rotating shaft (10a) is separated from the rotation detecting member (15) by a load applied from the seatbelt (4) to the spool (10) in an emergency."

Claim 1 of Auxiliary Request 1 differs from claim 1 of the Main Request by the addition of the features of claim 2 of the Main Request which read as follows:
"wherein the rotation detecting member (15) includes a rotating disk (18) that includes a predetermined number of magnets (21) and a receiving member (23; 30) rotatable integrally with the predetermined number of magnets (21), the predetermined number of magnets (21) including N-pole magnets (21a) and S-pole magnets (21b) alternately and annularly arranged concentrically with the rotating disk (18), the seatbelt retractor (3)

further comprising a transmitting member (24; 31) configured to transmit rotation of the spool (10) to the receiving member (23; 30), the transmitting member (24; 31) being mounted on the spool (10) so as to be rotatable integrally with the spool (10); and a magnet detecting member (20) configured to detect a magnet (21) located at a predetermined position, the magnet (21) being any of the predetermined number of magnets (21)."

Claim 1 of Auxiliary Request 2 differs from claim 1 of the Auxiliary Request 1 by the addition of the features of claim 3 of the Main Request which read as follows: "and a speed increasing mechanism (25; 29) configured to increase a rotation speed of the receiving member (23; 30) to transmit the rotation speed to the transmitting member (24; 31), and increase a rotation speed of the spool (10) to rotate the magnets (21)."

Claim 1 of the Auxiliary Requests 3, 4, 5 and 6 respectively begins with the following wording:

"A seatbelt retractor comprising:
at least a spool (10) configured to retract a seatbelt (4);
drive means (8) for rotating the spool (10); and
a rotation detecting member (15) configured to detect the rotation speed of the spool (10), the rotation speed of the spool (10) being controlled by driving and controlling the drive means (8) on the basis of the rotation speed of the spool detected by the rotation detecting member (15),…"

VIII. In support of its requests the Appellant argued substantially as follows:

The Board expressed the preliminary opinion that, starting from D1 as nearest prior art, the skilled person had only to answer the question of how this known belt retractor was intended to be attached to a vehicle body and what would be the pulling direction of the seatbelt in case of emergency. This characterization of the objective technical problem already included a pointer to the solution and was an impermissible approach when properly applying the problem-and-solution approach. Rather, for a proper assessment of the objective technical problem it was important to characterize the technical effect of the distinguishing features. Disposing the rotation detecting member 15 as recited in claim 1 in a direction in which the rotating shaft 10a was separated from the rotation detecting member 15 by a load applied from the seatbelt 4 to the spool 10 in an emergency led to a situation where very little load was transmitted to the rotation sensor (see, e.g., paragraph [0033] of the application as published), so that it was possible to more effectively suppress an increase in size of the seatbelt retractor 3 in the thrust direction and to improve detection accuracy of the rotation sensor (see, e.g., paragraphs [0034] and [0035]). As such, the previously suggested objective technical problem to increase the accuracy of rotation detection of the reel shaft and to reduce the influence of forces to the rotation detection member was still believed to be appropriate.

This was particularly true in view of the fact that D1 lacked any disclosure regarding the orientation of the retractor disclosed therein. While the Board asserted that orienting the retractor in the way as recited by the present invention would be obvious in view of Dl, particularly when additionally considering the

disclosure D2, this was entirely speculative. The reference to Figures 3a, 3b and 9 did not show a direction in which the frame 12 was to be mounted. Specifically, it was impossible to conclude from the position of the hole in the frame 12 in which direction the retractor was mounted. For example, Figures 1 and 2 of Dl also comprised further mounting structures illustrated at the top of Figures 1 and 2, which included mounting holes and cutouts as well as a hook-shaped component which might well be used in mounting the retractor in an orientation opposite from that considered by the Board to be obvious to the skilled person.

It was apparent from paragraph [0044] and Figure 4 of D1 that the belt reel 14 of the retractor of this document rotated in counterclockwise direction in case of emergency so as to wind up the belt on the reel. If it was assumed that the reel of Figure 9 of D1 was attached to a vehicle body through the frame 12, this offered two options for the path taken by the belt to restrain the passenger (vertically upwards or vertically downwards of the retractor). Claim 1 of D1 clearly taught that in case of emergency ("upon activation of said locking mechanism") the rotation detector should remain coupled to the belt reel such that it generated a signal upon rotation of the belt reel. This implied that the teeth of element 42 of the rotation sensor 34 and of element 44 of the rotation shaft of the wheel (see Figure 9) had to remain engaged under all circumstances. Choosing a path for the belt so that it would project out of the belt reel 14 in the upward direction of Figure 9 would tend to separate the rotation shaft of the belt reel from the rotation detector in case of emergency and be incompatible with the teaching of D1. The skilled person would therefore deduce from D1 that the belt had to project out of the

reel in the downward direction of Figure 9. An arrangement in which the belt projected out of the belt reel 14 in the upward direction of Figure 9, as mentioned by the Examining Division in its decision or the Board in its preliminary opinion, was mere speculation and not obvious, since it would be contrary to the teaching of D1.
The subject-matter of claim 1 according to the main request was therefore based on an inventive step.

The six alternative sets of claims according to Auxiliary Requests 1 to 6 were submitted in view of the rather surprising preliminary opinion of the Board. Claim 1 of Auxiliary Request 1 was a combination of claims 1 and 2 of the Main Request and claim 1 of Auxiliary Request 2 was a combination of claims 1, 2 and 3 of the Main Request with the dependent claims being renumbered accordingly. In case of the Auxiliary Requests 3 to 6, the amendments found support in the original specification as indicated in the marked-up versions of those claim sets.

As such, it was believed that these claims were not constituting a fresh case, particularly as the amendments were straightforward and did not seem to be particularly complex. While the Applicant was aware of the fact that it was rather late in the procedure, the Board was respectfully asked to consider the newly submitted Auxiliary Requests.

Reasons for the Decision

1. The appeal is admissible.

2. Main Request; Inventive step

2.1 It is not contested by the Appellant that the embodiment of the Figures 9-10 of document D1 discloses the following features of claim 1 (see paragraphs [0042] to [0055]):
A seat belt retractor 10 comprising:
at least a spool 14 configured to retract a seat belt;
drive means (see paragraph [0003]) for rotating the spool; and
a rotation detecting member 34 configured to detect the amount of rotation of the spool 14, the amount of rotation of the spool 14 being controlled by driving and controlling the drive means on the basis of the amount of rotation of the spool detected by the rotation detecting member (see paragraphs [0003] and [0051]),
wherein the rotation detecting member 34 is disposed eccentrically with respect to a rotating shaft of the spool 14 in a radial direction of the rotating shaft.

2.2 The feature that the rotation detecting member is disposed in a direction in which the rotating shaft is separated from the rotation detecting member by a load applied from the seat belt to the spool in an emergency is not directly and unambiguously disclosed in D1.

2.3 In accordance with Article 56 EPC, since document D1 lacks any specific indication of the direction of a load applied from the seat belt to the spool in an emergency, it should be examined whether the distinguishing feature is obvious to a person skilled in the art.
In this context, it was not disputed by the Applicant that the question arises of how the belt retractor shown in Figure 9 of D1 is intended to be attached to a vehicle body. The answer to this question will also

determine the pulling direction of the seat belt in case of emergency.

2.4 The Examining Division took the view that the mounting hole in the frame 12 of the retractor of D1 (Figure 9) makes it obvious that the frame 12 of D1 is adapted to resist a pulling load applied to the spool 14 in a direction vertically upwards in Figures 3a,3b tending to space said spool apart form said fixing hole 12 (item 2.3.1 of the decision).
The Applicant accepts the proposition that the hole in the frame 12 is a mounting hole for fixing the retractor to a vehicle bodywork, it contends, however, that the seat belt must project downwardly from the belt reel 14 of the retractor of D1.

2.5 It is clear to a person skilled in the field of safety restraint devices for vehicles that a seat belt retractor is designed such as to withstand the efforts to which it will be subjected. This design also takes into account the pulling direction of the seat belt and the magnitude of the forces involved in case of emergency. Inversely, given the design of a seat belt retractor, the pulling direction of the belt in case of emergency is also given. In the same way, a seat belt retractor cannot be mounted/attached to a vehicle body in an arbitrary manner but its orientation and fixture is made with due consideration of the way it is intended to work in case of emergency.

2.6 Accordingly in the present case, looking at the retractor of Figure 9 of D1, a skilled person confronted with the technical problem how this belt retractor is intended to be attached to a vehicle body and what would be the pulling direction of the seat belt in case of emergency would recognise (see also

Figures 1 to 4 and 9 of D1) that the mounting hole in the frame 12 typically indicates the position at which the retractor's frame 12 is intended to be anchored near the vehicle's floor in a standard three-point safety restrain system. Accordingly, it is obvious that the seat belt is drawn out from the retractor at the upper side thereof in the same manner as shown in Figure 3 of D2 (see a similar retractor with seat belt 6 mentioned in paragraph [0025]). The triangular shape of the frame 12 in the region of the mounting hole is a construction which is particularly adapted to resist a traction exerted by a belt extending vertically upwards, these pulling forces pressing the retractor against the corresponding face of the vehicle body. An occupant who wants to fasten the seat belt, would pull the seat belt out from the belt reel 14 in the upward direction of Figures 9 and 10. In an emergency case, when the pyrotechnical tensioning unit 18 is activated and the seat belt is wound up (D1: last paragraph of page 2), the pulling forces that the seat belt exerts on the reel 14 (see wording of claim 1: "load applied from the seat belt to the spool in an emergency") tend to separate the rotation shaft of the reel 14 from the rotation detecting member 42,34.
The skilled person would not choose a path for the belt in the opposite direction (downwards) because the pulling load exerted in that case would create a torque on the frame, tending to bend it around the main anchoring point (mounting hole), a loading condition for which the retractor has not been conceived and which is clearly mechanically defective.

2.7 The argument of the Applicant that the skilled person starting from D1 would not arrive at the claimed retractor because the forces involved in case of emergency would separate the engagement between the

reel shaft and the detector, is not compelling. Even if it is assumed that the efforts involved in case of emergency tend to separate the reel shaft 14 from the detector 34, this does not imply that the toothed engagement between the shaft 14 and the rotation detecting device 34 is suppressed.

2.8 On the basis of these considerations, the Board comes to the conclusion that the subject-matter of independent claim 1 according to the Main Request does not involve an inventive step.

3. Auxiliary Requests 1 to 6; admissibility

With the filing of the Auxiliary Requests, the Applicant invoked the surprise caused by the preliminary opinion of the Board. The Board cannot recognise how the Applicant could have been surprised by the preliminary opinion of the Board. This preliminary opinion relies on the same arguments as those already presented by the opposition division in the notifications dated 31 January 2014, 8 January 2015, in the oral proceedings dated 17 February 2015 and in the impugned decision. Therefore the auxiliary requests 1 to 6 could and should have been filed in the first instance proceedings and there could be no justification for presenting them at this late stage of the appeal procedure.

Moreover, the subject-matter of these requests does not appear clearly allowable. Claim 1 of auxiliary request 1 is a combination of claim 1 with claim 2 of the main request (combination of claims 1, 2 and 3 as filed). The features coming from claim 2 of the main request and referring to the rotation detecting member are mentioned in the application itself as known per se

from the prior art (see also document JP 2008-275636 which is cited in the International Preliminary Report and refers to such a rotary sensor). It is questionable whether the use of this known sensor in the device of claim 1 involves an inventive step in view of a combined consideration of documents D1/D2 with the JP document. This also applies to claim 1 of the second auxiliary request which combines the features of claims 1, 2 and 3 of the main request. The features coming from claim 3 of the main request are known from D1/D2.

In the auxiliary requests 3 to 6 the wording "to detect the **amount of** rotation of the spool" has been modified in "to detect the rotation **speed** of the spool". This modification represents an *aliud* which does not seem to have any basis in the original disclosure. Besides, the amended subject-matter amounts to the introduction of a so-called "fresh case" which has obviously not been searched as such.

In application of Article 13(1) RPBA the Board therefore decided not to introduce the auxiliary requests into the proceedings.

Order

For these reasons it is decided that:

The Appeal is dismissed.

The Registrar: The Chairman:

A. Vottner G. Pricolo

Decision electronically authenticated