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D E C I S I O N
of 3 June 2003

Case Number: T 0673/02 - 3.2.1

Application Number: 99923269.7

Publication Number: 1085997

IPC: B60N 2/16, B60N 2/52, F16K 11/065

Language of the proceedings: EN

Title of invention:
Pneumatic seat valve having a rapid exhaust mode

Applicant:
GT Development Corporation

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56

Keyword:
"Inventive step (yes)"

Decisions cited:
-

Catchword:
-

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Case Number: T 0673/02 - 3.2.1

D E C I S I O N
of the Technical Board of Appeal 3.2.1
of 3 June 2003

Appellant: GT Development Corporation
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Representative: Sanderson, Michael John
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 6 February 2002 refusing European patent application No. 99 923 269.7 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: S. Crane
Members: M. Ceyte
H. Preglau

Summary of Facts and Submissions

I. European patent application No. 99 923 269.7 (PCT/US99/11236) was refused by a decision of the Examining Division posted 6 February 2002.

II. The reason given for the decision was that amended claim 1 did not involve an inventive step in view of the prior art disclosed in

D1: US-A-5 447 178

D2: DE-A-3 321 937

III: On 21 March 2002 the appellant (applicant) lodged an appeal against this decision and paid the prescribed appeal fee at the same time.

The statement of grounds of appeal was filed on 29 May 2002.

IV. In reply to the communication annexed to the summons to oral proceedings dated 11 February 2003, the appellant requested that the decision under appeal be set aside and a patent be granted on the basis of the subsidiary request accompanying his letter of 23 December 2002, that is on the basis of the following documents:

Claims: 1 to 7 as filed with letter dated 23 December 2002 (subsidiary request).

Description: pages 1, 2 as published;
page 3 as filed with letter dated 6 November 2001;
pages 3a, 3b, 3c filed with letter dated

23 December 2002 (subsidiary request);
pages 4 to 15 as published.

Drawings: Figures 1 to 7b as published.

It also withdrew its request for oral proceedings, conditional upon the Board deciding that a patent could be granted on the basis of this request.

Amended claim 1 reads as follows:

"1. A pneumatic valve (10) suitable for use in a vehicle with a pneumatic seat (12), the valve (10) comprising:

a housing (80) having an inlet port (92), a seat air inlet/outlet port (96), and at least a first exhaust port (94), and

a slide member (34) supported by the housing (80) for reciprocating movement relative to the housing (80) to selectively control airflow therethrough, the slide member (34) having an upper surface and a lower surface,

characterised in that

a spring loaded valve (108) comprising a cam projection (113) is slidably mounted within the seat air inlet/outlet port (96),

the lower surface of the slide member (34) is provided with a cammed portion (58) for engaging said cam projection (113) to selectively and automatically permit rapid exhaustion of air from within the seat air inlet/outlet port (96) and the exhaust port (94), the cammed portion (58) further comprising a detent notch (70) which is sized to receive the cam projection (113) of the spring loaded valve (108) to selectively lock the slide member (34) into the rapid exhaust position."

Reasons for the Decision

1. The appeal is admissible.

2. There are no formal objections under Article 123(2) EPC to the amendments to claim 1, since they are adequately supported by the original disclosure.

3. Claim 1 is based in its precharacterising portion on the disclosure of the prior art document D1 acknowledged in the introductory part of the patent application.

It is not disputed that this document represents the closest prior art.

A pneumatic valve disclosed therein is designed for use in pneumatic seats of vehicles such as long haul trucks. It comprises a housing having an inlet port, a seat air inlet/outlet port and an exhaust port. A slide member is reciprocally disposed within the housing such that it may be reciprocated between a fill position, an exhaust position and a closed position.

The pneumatic valve is normally biased into the closed position by a coil compression spring. In the fill position, pressure is applied by the seat occupant to the control paddle of the control valve to slide the slide member within the control valve to place the inlet port and seat air inlet/outlet port into fluid communication. Compressed air is permitted to flow through the control valve to supply air to an air bag, thereby inflating the air bag to the desired height. After the desired seat height is reached, the occupant

releases the control valve to place the control valve back into its normal closed position, wherein air flow between the inlet port and the seat air inlet/out let port is blocked by the slide member.

When the occupant desires to lower the seat, such as to its minimum level, he toggles the control paddle into the exhaust position to vent the air inside the air bag.

According to the appellant's submissions a pneumatic valve of this kind suffers from the problem that in the exhaust position it requires the occupant to continuously apply a pressure to the control paddle until the seat is at the desired position.

As stated in the introductory part of the European patent application, (page 2 last paragraph) prior attempts at automatically deflating the air bag without requiring the occupant to continuously apply a pressure to the valve have resulted in moderately complex valves. One such valve utilizes a pin located on the exterior of the control valve that is used to lock the control paddle into the exhaust position. In such a valve, after the control paddle is displaced into the appropriate position, the pin is positioned to interfere with the control paddle and maintain it in the desired position. This often requires the occupant to use two hands to deflate the air bag; one hand to toggle the control paddle into the desired position and the other hand to lock the pin against the control paddle. Further, because such a valve requires the use of a pin to lock it into an automatic mode this type of control valve tends to be larger than control valves without the pin. Therefore, although such control

valves are effective at adjusting the height of pneumatic seats, they tend to be larger and more complicated to operate than desired.

Therefore, the technical problem to be solved by the present invention is to provide a pneumatic valve of the type stated in the precharacterising part of claim 1 which overcomes the above-mentioned disadvantage ie which permits the slide member to be selectively held in the exhaust position without requiring the occupant to apply a continuous pressure thereto and this without rendering the valve more cumbersome and more complicated to operate.

This problem is in essence solved by the following features stated in the characterising part of claim 1:

(i) a spring loaded valve comprising a cam projection is slidably mounted within the seat air inlet/outlet port,

(ii) the lower surface of the slide member is provided with a cammed portion for engaging said cam projection and thus for opening the spring loaded valve to permit rapid exhaustion of air from within the seat air inlet/outlet port and the exhaust port,

(iii) the cammed portion comprises a detent notch which is sized to receive the cam projection of the spring loaded valve to selectively lock the slide member into the rapid exhaust position.

4. The examination as to whether the pneumatic valve according to claim 1 is disclosed in any of

documents D1 and D2 leads to the conclusion that the subject-matter of claim 1 is novel having regard to this prior art, due to the fact that they both fail to disclose the above features (i), (ii) and (iii).

5. It still remains to be examined whether the subject-matter of claim 1 involves an inventive step in view of the prior art disclosed in these citations.

As stated herein above, the closest prior art document D1 shows a pneumatic valve which requires the occupant to continuously apply a pressure to the slide member through the control paddle to hold the slide member in the exhaust position in the absence of any means for selectively locking the slide member in this position.

D2 relates to a fluid control valve and in particular to a two position valve comprising a body member having two control ports and a supply or inlet port. A slide member is supported by the body member for movement between a selected one of its two positions. In one of the positions, the supply port is in communication with one control port and in a second position of the slide member the supply port is in communication with another control port. The body member and the slide member are provided with complementary cam means in the form of stationary cam portions formed on the floor surface of the body member and cam projections on the slide member; The cam portions of the body member and the cam projections of the slide member are provided for maintaining or locking the slide member in one of its two selected positions.

The use of an non-stationary cam projection provided on

a spring loaded valve slidably mounted within a port of the body member and of an associated detent notch provided on the slide member in order to, on the one hand, open said port and permit exhaustion of air and on the other hand, selectively lock the slide member in this exhaust position (distinguishing features (i), (ii) and (iii)) is neither disclosed nor suggested in document D2 and accordingly cannot be considered to be rendered obvious by the teaching of this citation. Therefore, even if the skilled person had considered applying the teaching given therein to the known pneumatic seat valve according to document D1, he would not have arrived at the claimed solution.

The Board has also considered the further prior art documents cited in the search report and found them not prejudicial to the patentability of the subject-matter of claim 1, even when seen in combination with the above cited documents D1 and D2.

Accordingly, in the Board's judgment, the subject-matter of claim 1 involves an inventive step.

5. Dependent claims 2 to 7 contain particular embodiments of the pneumatic valve claimed in claim 1 and are likewise allowable.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the

order to grant a patent on the basis of the documents indicated in point IV above.

The Registrar: The Chairman:

S. Fabiani S. Crane