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**Datasheet for the decision
of 19 January 2010**

Case Number: T 0647/08 - 3.2.01

Application Number: 96201194.6

Publication Number: 0743246

IPC: B64D 25/14

Language of the proceedings: EN

Title of invention:

Mechanism for arming, disarming and activating airplane
emergency slide evacuation systems

Patentee:

The Boeing Company

Opponent:

AIRBUS SAS et al.

Headword:

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Relevant legal provisions:

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Relevant legal provisions (EPC 1973):

EPC Art. 100(a), (c)

Keyword:

"Opposition grounds - extension of subject-matter"
"Opposition grounds - lack of patentability - inventive step"

Decisions cited:

G 0001/93, T 0890/02

Catchword:

-



Case Number: T 0647/08 - 3.2.01

D E C I S I O N
of the Technical Board of Appeal 3.2.01
of 19 January 2010

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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
21 January 2008 concerning maintenance of the
European patent No. 0743246 in amended form.

Composition of the Board:

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

Summary of Facts and Submissions

I. The appeal is directed against the decision posted 21 January 2008 according to which, account being taken of the amendments made by the patent proprietor during the opposition proceedings, European patent No. 0 743 246 and the invention to which it relates were found to meet the requirements of the EPC.

The following evidence which was in the opposition proceedings played a role during the appeal:

D1: JP-A-03 157297;

D15: EP-A-0 437 150;

D16: JP-A-60 195225.

The appellants additionally referred to the following evidence which the opposition division had disregarded:

D17: I. Artobolevski, *"Les mécanismes dans la technique moderne"*, Deuxième partie, " Mécanismes à leviers ", Moscou, Editions MIR, Translation into French 1976, 64-67, 84, 85, 190-193;

The appellants introduced the following evidence during the appeal proceedings:

D19: US-A-3 753 540;

D20: FR-A-2 686 856;

D21: GB-A-396 020.

II. At oral proceedings held on 19 January 2010 the appellants requested that the contested decision be set aside and the patent revoked. The respondent requested that the appeal be dismissed (main request) or in the alternative that the patent be maintained in further amended form on the basis of claims according to first to fourth auxiliary requests received 16 December 2009.

III. Claim 1 according to the respondent's main request (as approved by the opposition division, claim 1 remaining as granted) reads:

"An emergency evacuation system for an aircraft, including an arming/disarming and activating mechanism (10), and further including an escape slide having a girt bar (16) connected to one end of the slide, the system being disarmed when the girt bar (16) connects to a door (14) of the airplane, and the system being armed when the girt bar (16) connects to the fuselage of the airplane below the door (14), the door (14) being movable from a closed and locked position to an open and unlocked position, the arming/disarming and activating mechanism (10) comprising:

(a) a floor fitting (18) mountable to the fuselage of the airplane below the door (14), the floor fitting (18) including:

(i) a base (32) defining a notch (40) for receiving the girt bar (16); and

(ii) a pawl (42) mounted to the base (32), the pawl (42) being rotatable relative to the base (32) from a locked position preventing removal of the girt bar (16) from the notch (40) when the girt bar (16) is located therein, to an unlocked position permitting removal of

the girt bar (16) from the notch (40);

(b) a support fitting (20) mountable to the airplane door (14) and including a downwardly extending first jaw (58), the jaw (58) being positioned on one side of the notch (40), and facing theretowards when the door (14) is closed and locked;

characterized by:

(c) a first linkage member (60) rotatably mounted to the support fitting (20) along an axis of rotation (62) generally parallel to the longitudinal axis of the girt bar (16), the first linkage member (60) including a connection arm (64) having an end extending away from the axis of rotation (62), wherein a slot (68) is defined in the end of the connection arm (69), the connection arm being rotatable from a first position to a second position, and rotatable from the second position to the first position; and

(d) a second linkage member (70) rotatably mounted to the support fitting (20) along an axis of rotation (82) generally parallel to the longitudinal axis of the girt bar (16), the second linkage member (70) including:

(i) a bent arm having an elbow (86) and an end, the end including a pin (98) extending transversely therefrom and received in the slot (68) of the first linkage member (60); and

(ii) a second jaw (94) facing generally towards the first jaw (58), whereby when the door (14) is closed and locked, rotation of the connection arm (64) of the first linkage member (60) from the first position to the second position causes the elbow (86) to press against the pawl (42) and rotate the pawl (42) to the unlocked position, and the second jaw (94) to rotate towards the first jaw (58), capturing the girt bar (16) between the first and second jaws (58,94) when the girt

bar (16) is located in the notch (40) of the floor fitting (18), thereby disarming the emergency evacuation system, and rotation of the connection arm (64) of the first linkage member (60) from the second position to the first position causes the elbow (86) to move away from the pawl (42) to rotate the pawl (42) to the locked position, and the second jaw (94) to rotate away from the first jaw (58), thereby releasing the girt bar (16) from between the jaws (58,94) when the girt bar (16) is located in the notch (40) of the floor fitting (18) and arming the emergency evacuation system, the support member (20) further being arranged to engage with the floor fitting (18) when the door (14) is closed and locked."

Claim 1 is followed by claims 2 to 9 which specify features additional to the subject-matter of claim 1.

IV. The submissions of the appellants in respect of the respondent's main request may be summarised as follows:

Claim 1 was amended prior to grant in such a way as to include subject-matter which extends beyond the content of the application as originally filed. As originally filed claim 1 was directed to a mechanism for arming/disarming and activating an emergency evacuation system in an aircraft. In the description the mechanism and the system were described as functioning together. During the grant procedure, however, claim 1 was amended to specify an emergency evacuation system for an aircraft, including an arming/disarming and activating mechanism. That composition of the emergency evacuation system was not originally disclosed and the amendment therefore is an extension of subject-matter.

Claim 8 as originally filed specified that the system included a mechanism suitable for arming/disarming but not activating an emergency evacuation system. The mechanism in present claim 1, on the other hand, is different in as far as it is an arming/disarming and activating mechanism. The patent proprietor gained an advantage through this extension of the original teaching because the amendment overcame an objection from the examiner and therefore permitted grant of the patent. Moreover, whereas the combination disclosed in the application as originally filed implied the presence of the aircraft, the subject-matter as presently claimed is the system alone, whereby the patent proprietor has facilitated attacks on infringers.

The closest state of the art for consideration of inventive step is known from the first embodiment of D1. The subject-matter of present claim 1 differs therefrom in that the slot in the end of the connection arm of the first linkage member and the pin on the second linkage member replace a third linkage member. This has the effect of simplifying the mechanism and rendering it more compact. The skilled person would make such an amendment on the basis of his common general knowledge alone. D15 represents that common general knowledge by illustrating the correspondence between the two mechanisms and teaches the same solution to the same problem. It is, moreover, in the same technical field of transport. The skilled person would not consider the solution of D15 insufficiently reliable for an aircraft because, as evidenced by D19 to D21, pin-in-slot linkage connections are known in that technical field. The problem of freezing which is addressed in the description of the patent specification does not relate

to the mechanism in which this linkage is situated. Moreover, the examples 1869 and 1870 in D17 illustrate the correspondence between the respective linkages of D1 and the present patent. D17 is an encyclopaedia of mechanisms illustrating the common general knowledge of the skilled person. D17 therefore is highly relevant and should not have been disregarded.

V. The respondent's rebuttal was essentially as follows:

The subject-matter of claim 1 would be the same if it were specified as being directed to a combination of the emergency evacuation system and the arming/disarming and activating mechanism. There is no new teaching which results from the formulation which has been used. The ability to overcome an objection by amendment during pre-grant examination is not an appropriate criterion for judging extension of subject-matter. The appellants' assertion that the arming/disarming and activating mechanism as presently claimed could be used for arming/disarming and activating any system is contrary to the general principles of claim interpretation.

It is correct that the subject-matter of present claim 1 differs from the disclosure of D1 in the simplified construction of the linkage. However, D15 neither originates from a neighbouring technical field nor represents the common general knowledge of the skilled person. D19 to D21 should be disregarded since they are late-filed and of insufficient relevance to the case. In particular, the pin/slot connections disclosed therein serve different purposes to that in the presently claimed mechanism and would not encourage

the skilled person beginning from D1 to adopt the present solution.

Reasons for the Decision

1. Passenger aircraft conventionally are equipped with inflatable slides to aid emergency escape through a doorway. The slides are packaged and stored at the base of the door. During flight conditions for deployment during an emergency the system is "armed" by attaching a "girt bar" of the slide to the aircraft floor. The slide is automatically inflated when the door is opened. In order to permit the door to be opened for regular entrance and exit at an airport the system is "disarmed" by releasing the bar from the floor and the slide may then move together with the door into the open position without being deployed. The present patent relates to the mechanism which operates to attach and release the bar.

Main request

Addition of subject-matter

2. Claim 1 as originally filed specified "a mechanism for arming/disarming and activating an emergency evacuation system in an airplane ...". The wording of present claim 1, which was not amended during opposition, is largely identical but specifies "an emergency evacuation system for an aircraft, including an arming/disarming and activating mechanism ...". This amendment was made in response to an objection by the examining division that the claim was unclear because

it attempted to define the mechanism by reference to the emergency evacuation system although that did not form part of the subject-matter of the claim (communication dated 26 May 2003, point 1.2). The wording was accordingly amended to introduce the subject-matter of the emergency evacuation system into the subject-matter of the claim. It is clear upon a reasonable interpretation of both the application as originally filed and the present patent specification that the skilled person receives no additional technical information as a result of the amendment. Moreover, the appellants' argument with reference to a statement in G 1/93 (OJ EPO 1994, 541), see point 9 of the reasons, that the respondent by virtue of permitting its patent to be granted benefitted from the amendment is not a valid one because it is evident that the statement referred to by the appellants concerns the introduction of technical teaching which was not included at the time of filing an application.

- 2.1 Although the appellants argue that there was no original disclosure of the system including the mechanism as presently claimed, in the detailed teaching of the application as originally filed there was no clear distinction between the system and the mechanism. The girt bar whose connection to the door or the floor determines the respective armed or disarmed condition of the system is a part of the escape slide and therefore of the emergency evacuation system and was disclosed as such in claim 1 as originally filed. Whilst the mechanism is described as an arming/disarming and activating mechanism, simply opening and closing the jaws of the mechanism is insufficient to arm/disarm the system. Both arming and

activation of the system require the girt bar to be entered into the floor fitting which therefore is an essential part not only of the mechanism but also of the system.

2.2 There was, moreover, an explicit disclosure in the application as originally filed of the mechanism being included in the system. Original claim 8, which related to an interlock device for use with an emergency evacuation system, already specified that the system included "a mechanism for arming and disarming the system, the mechanism being mounted to the door of the airplane, and including ... jaws being movable ... to remove the girt bar from the floor ... which disarms the system, and ... releasing the girt bar ..., which arms the system ...". The appellants acknowledge the disclosure of original claim 8 but argue that that mechanism differs from that of present claim 1 firstly because the former was not specified as being suitable for "activating" the system and secondly because present claim 1 in specifying "an arming/disarming and activating mechanism" fails to specify that it is a mechanism for arming/disarming "the system" as in original claim 8.

2.2.1 As regards the specification of the mechanism as being for "activating" the system, it is clear from the original disclosure, particularly claims 12, 13, that this function is provided by additional features such as a pneumatic reservoir to provide power to open the door in an emergency situation. However, the absence or presence of those additional features has no influence on the question of whether the arming/disarming mechanism specified in original claim 8 is that specified in present claim 1.

2.2.2 As regards the specification of the mechanism as being for arming and disarming "the system", original claim 8 did not merely specify the mechanism as "for arming and disarming the system" but explicitly as including "jaws being movable ... to connect the girt bar to the door of the airplane, which disarms the system, and ... releasing the girt bar to be retained in the floor fitting, which arms the system ...". Present claim 1 similarly specifies that the operation of the mechanism "causes ... the second jaw to rotate towards the first jaw, capturing the girt bar ... thereby disarming the emergency evacuation system ... and to rotate away from the first jaw, thereby releasing the girt bar ... and arming the emergency evacuation system ...".

2.3 The board does not agree with the appellants' argument that the amendment to claim 1 is an extension of subject-matter by virtue of an alleged removal of an aircraft from the subject-matter of the claim. Claim 1 as originally filed specified both the floor fitting and the support fitting as being "mountable" to the floor and door respectively, thereby clearly defining the components in isolation.

2.4 On the basis of the foregoing the board finds that claim 1 was not amended before grant in such a way as to extend beyond the subject-matter of the application as originally filed.

Inventive step

3. The board agrees with both parties that the closest state of the art for considering inventive step is the disclosure of D1. D1 in its first embodiment relates to an emergency evacuation system which comprises most of the features of present claim 1 but differs in some features of the support fitting. In particular, the first and second linkage members are connected by a third linkage member. The board agrees with the appellants that the subject-matter of present claim 1 differs from the system disclosed in D1 in that:

- a slot is defined in the end of the connection arm of the first linkage member; and
- the end of the second linkage member includes a pin extending transversely therefrom and received in the slot of the first linkage member.

These differentiating features result in a less complex linkage and, according to the respondent, reduced costs and greater reliability. The appellants take the view that the differentiating features belong to the common general knowledge of the skilled person and are therefore freely available for use in place of the linkage of D1.

3.1 In support of that view they cite D15 which relates to a transmission selector lever linkage in an automotive vehicle. D15 acknowledges earlier state of the art D16 relating to a similar linkage in which two levers are interconnected by a third. It explains that in D16 the linkage comprises a bell-crank lever pivoting about an

axis which is positioned low relative to the pivot axis of the selector lever and that in order to achieve sufficient mechanical advantage the selector lever and the bell-crank lever are connected by an intermediate link. It states that the presence of the intermediate link introduces an undesirable amount of play in the linkage and increases both weight and cost. The solution offered by D15 is to raise the pivot axis of the bell-crank lever to be at essentially the same height as the pivot axis of the selector lever and to provide a pin on the bell-crank lever engaging with a slot on the selector lever.

- 3.1.1 The common general knowledge of the skilled person is normally represented by encyclopaedias, text books, dictionaries and handbooks on the subject in question. Exceptionally that knowledge is also represented by the content of patent specifications and for each case the common general knowledge of the skilled person working in a particular technical field must be decided on its own merits, see T 890/02 (OJ EPO 2005, 497). In the present case D15 relates to the technical field of automotive vehicles which is quite distinct and separate from the technical field of emergency evacuation systems in aircraft. Moreover, the problem addressed by D15 is not one relating to a linkage in general but to the particular linkage of D16, specifically as regards the relative positioning of the pivot axes of the bell-crank lever and selector lever in view of the need to achieve sufficient mechanical advantage. The person skilled in the technical field of emergency evacuation systems in aircraft would have no reason to search in the field of automotive vehicles. Even if he were to do so and become aware of D15 the

teaching relating to repositioning of the pivot axis would render it not obviously applicable to the linkage of D1. The linkage of D16 is sufficiently simple as to readily accommodate repositioning of the pivot axis. The corresponding pivot axis in the relatively complex mechanism of D1, on the other hand, locates the second link which interacts with an interlock to prevent release of the girt bar when the door is open and repositioning the axis would involve redesign well beyond the teaching contained in D15.

- 3.1.2 The board therefore concludes that D15 cannot be regarded either as representing the common general knowledge of the skilled person in the present technical field or as a teaching which he otherwise would consider.
- 3.2 The appellants presented D17 during the opposition procedure as an example of the common general knowledge of the skilled person. D17 was late-filed and the opposition division exercised its discretion to disregard it due to lack of relevance. The board sees no cause to overturn the opposition division's action and therefore also disregards D17.
- 3.3 D19 to D21 relate to various systems in aircraft in which pin-in-slot connections are employed. They are not to be regarded as being late-filed in as far as they were submitted in response to an argument presented in the contested decision that the person skilled in the technical field of aviation emergency evacuation systems would not consider the teaching of D15 in view of the differing reliability requirements. However, as set out above, irrespective of such

considerations the board finds that the teaching of D15 anyway is not detrimental to inventive step of the subject-matter of present claim 1. D19 to D21 therefore need not be considered in further detail.

4. On the basis of the foregoing the board finds that the appellant has not demonstrated that the subject-matter of present claim 1 follows in an obvious manner from the state of the art so that, accordingly, it is to be seen as involving an inventive step (Article 56 EPC 1973). Since claims 2 to 9 contain all features of present claim 1 the same conclusion applies equally to those claims. Consideration of the respondent's auxiliary requests therefore would be superfluous.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

A. Vottner

S. Crane