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**D E C I S I O N**  
of 12 January 1996

**Case Number:** T 0427/94 - 3.2.1

**Application Number:** 85201361.4

**Publication Number:** 0188825

**IPC:** B64C 1/14

**Language of the proceedings:** EN

**Title of invention:**

Translatable outward opening plug-type aircraft door and actuating mechanism

**Patentee:**

The Boeing Company

**Opponent:**

Deutsche Aerospace Airbus GmbH

**Headword:**

-

**Relevant legal provisions:**

EPC Art. 54, 56

**Keyword:**

"Novelty (yes)"  
"Inventive step (yes)"

**Decisions cited:**

T 0003/90

**Catchword:**

-



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Boards of Appeal

Chambres de recours

Case Number: T 0427/94 - 3.2.1

**D E C I S I O N**  
of the Technical Board of Appeal 3.2.1  
of 12 January 1996

**Appellant:**  
(Proprietor of the patent) The Boeing Company  
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**Representative:**  
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**Respondent:**  
(Opponent) Deutsche Aerospace Airbus GmbH  
Patentabteilung GZ13BRE  
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**Representative:** -

**Decision under appeal:** Interlocutory decision of the Opposition Division  
of the European Patent Office given on 22 February  
1994 and issued in writing on 11 March 1994  
concerning maintenance of European patent  
No. 0 188 825 in amended form.

**Composition of the Board:**

**Chairman:** F. Gumbel  
**Members:** S. Crane  
J.-C. De Preter

### Summary of Facts and Submissions

- I. European patent No. 0 188 825 was granted on 2 May 1990 on the basis of European patent application No. 85 201 361.4.

Claim 1 of the granted patent reads as follows:

"An outward opening plug-type aircraft door (50) of the type adapted to be mounted in an ingress/egress cutout opening (51) formed in the aircraft fuselage (52) and bounded by generally vertical fore and aft fuselage frame members (54, 55), said door (50) comprising, in combination:

- a) means defining a generally L-shaped hinge element (99) having a relatively short hinge arm (100) and a relatively long hinge arm (105);
- b) means for securing said relatively short hinge arm (100) to one of the generally fore and aft frame members (54, 55) bounding the ingress/egress cutout opening (51) in the aircraft fuselage (52) with freedom for rotation about a first generally vertical hinge axis (104);
- c) an outwardly opening plug-type aircraft door (50) dimensioned to be received in and to close the ingress/egress cutout opening (51) in the aircraft fuselage (52), said door being mounted in cantilever fashion on the free extremity of said relatively long hinge arm (105) for rotation about a second generally vertical hinge axis (109) and with freedom for limited up and down vertical movement relative to said hinge element (99) and the ingress/egress cutout opening (51) in the aircraft fuselage (52);
- d) means defining a programming mechanism (114, 116, 118-120) interconnecting said aircraft door (50) and said one of the fore and aft fuselage frame members

(54, 55) for controlling to rotational attitude of said aircraft door (50) as the latter is shifted between fully closed and fully opened positions and for maintaining said aircraft door (50) in a plane essentially parallel to the plane containing the ingress/egress cutout opening (51);

e) cooperable latch means (94, 96) mounted on the fore and aft vertical edges of said aircraft door and on the fore and aft generally vertical fuselage frame members (54, 55) bounding the ingress/ egress cutout opening (51) for selectively latching said aircraft door (50) in a seated, fully closed and latched condition. and,

f) manually operable actuating means (58) mounted on said aircraft door for lifting said aircraft door (50) within the fuselage ingress/egress cutout opening (51) a distance from a seated, fully latched and closed position to a raised unlatched and closed position and for lowering said aircraft door (50) within the fuselage ingress/egress cutout opening (51) a distance from a raised, unlatched and closed position to a seated, fully latched and closed position; characterized by said means defining said programming mechanism interconnecting said aircraft door (50), said hinge element (99) and said one of the fore and aft fuselage frame member (54, 55) with said door (50) being maintained in a plane essentially parallel to the plane containing the ingress/egress cutout opening (51) at all door positions intermediate a fully closed and fully opened position.

Dependent Claims 2 to 13 relate to preferred embodiments of the aircraft door according to Claim 1.

II. The granted patent was opposed by the present respondents on the grounds that its subject-matter lacked novelty and/or inventive step (Article 100(a) EPC) having regard to the state of the art represented by the following documents:

(D1) DE-B-1 105 725,

(D2) DE-A-2 005 532, and

(D3) US-A-3 051 280.

III. With its decision given at oral proceedings on 22 February 1994, and issued in writing on 11 March 1994, the Opposition Division held that the subject-matter of granted claim 1 lacked novelty with respect to document (D1) but that the patent could be maintained in amended form on the basis of the documents according to the auxiliary request of the present appellants (proprietors of the patent) submitted at the oral proceedings.

IV. An appeal against this decision was filed on 11 May 1994 and the appeal fee paid at the same time. The statement of grounds of appeal was received on 11 July 1994.

The appellants requested that the decision under appeal be set aside and the patent maintained unamended.

They argued in essence that the decision of the Opposition Division was illogical since it was based on the finding that the definition of the "programming mechanism" in part (d) of the preamble of claim 1 was the same as that in the characterising clause of the claim and that the door, the hinge element and the

fuselage frame members constituted part of this "programming mechanism". This was clearly at odds with the wording of the claim.

V. With a reply dated 18 November 1994 the respondents requested that the appeal be dismissed. In this reply two further prior art documents were referred to namely

(D4) US-A-3 004 303, and

(D5) US-A-4 125 235.

The respondents argued that the analysis of the subject-matter of granted claim 1 made by the Opposition Division was correct. The requirements of the characterising clause of the claim were all met in document D1 since the aircraft door and the fuselage frame members connected the programming mechanism and the hinge element together. However, even if novelty were to be recognised then the subject-matter of the claim lacked inventive step having regard to document D1 in combination with documents D2 to D5.

VI. In a communication dated 1 February 1995 pursuant to Article 110(2) EPC the Board gave the reasons for its provisional opinion that the subject-matter of claim 1 was novel with respect to document D1. It was also pointed out that the written submissions of the respondents contained nothing which amounted to a substantiated attack on the inventive step of the subject-matter of this claim.

VII. In a reply to this communication dated 27 April 1995 the respondents requested oral proceedings. These were duly appointed for 18 January 1996. With a letter dated 5 December 1995 the respondents stated that they would not be attending the oral proceedings. Since this

statement is equivalent to a withdrawal of the request for oral proceedings (see decision T 3/90, OJ EPO 1992, 737) they were duly cancelled.

### Reasons for the Decision

1. The appeal complies with the requirements of Articles 106 to 108 and Rules 1(1) and 64 EPC. It is therefore admissible.
2. The claimed invention is concerned with an outwardly opening aircraft door which is maintained essentially parallel to the door opening as it is moved between closed and open positions.

A door of this type is disclosed in document D1, which is the family equivalent of document D4 on which the preamble of granted claim 1 is based and which was cited in the application as originally filed. The aircraft door shown in document D1 uses a lower main hinge element 13, an upper control member 26, each of which is pivotally connected at one end to the aircraft frame adjacent the ingress/egress opening and at its other end to the approximate midpoint of the door, with the uppermost control member serving to maintain parallel movement of the door as it is translated to and from a fully opened position.

There is no dispute as to which elements of the known aircraft door features (a) to (c), (e) and (f) of the preamble of claim 1 are to be correlated with. The difficulty resides in feature (d). In the contested decision the "programming mechanism" defined in this feature is taken as comprising the hinge element 13, the door, the fuselage frame member and the control member

26 of the known door. However, according to this feature the "programming mechanism" **interconnects** the door and the fuselage frame members and in the given context the Board can only understand the term "interconnect" as meaning extend between and be connected to. Thus the finding in the contested decision as to what constitutes the "programming mechanism" runs counter to both the language and logic of claim 1 since the required interconnections between the various parts cannot be achieved by those parts themselves. Instead, the proper interpretation of document D1 is that the "programming mechanism" is constituted by the control member 26. Since this control member interconnects (in the above sense) neither the door and the hinge element nor the hinge element and the fuselage frame member, as required by the characterising clause of the claim, it follows that the subject-matter of the claim is novel with respect to document D1.

The novelty of the subject-matter of granted claim 1 with respect to the remaining cited prior art documents is not in dispute. Further elaboration on this issue is therefore unnecessary.

3. As stated in the patent specification the aircraft door as described and shown in document D4 is unsuited for practical use as it is not held reliably in a parallel position during the full movement from open to closed position and vice versa. In the position where the pivots of the upper control member and the pivot axis of the connection of the lower main hinge with the door are lying in one plane the door can pivot unexpectedly out of its parallel position for example due to an unexpected gust of wind or due to a pushing force exerted by the operator. This can easily lead to damaging of the door and aircraft skin.



The technical problem with which the invention is concerned is therefore to provide an aircraft door of the type set out in the preamble of claim 1 which can be operated reliably and maintains its substantially parallel position during the full movement from closed to open position and back.

According to the characterising clause of claim 1 this problem is solved in that the programming mechanism interconnects the aircraft door, the hinge element and the relevant one of the fore and aft fuselage frame members in such a manner that parallelism of the plane of the door is maintained at all positions. More particularly, in the preferred embodiment, the programming mechanism comprises a bell crank lever pivoted on the hinge element and having respective arms connected by respective links to the door and the frame member.

The respondents have not specifically indicated in what way the skilled person would be encouraged by the teachings of the other prior art documents they rely upon to modify the programming mechanism known from document D1 in such a way as to arrive at the subject-matter of claim 1. Document D2 was originally cited only against the details of the locking mechanism contained in claim 2. The aircraft door disclosed in document D2 does not comprise a programming mechanism of any form for maintaining a parallel position of the door on opening and closing. The aircraft door of document D3 operates in a manner in which it is first moved inwardly, rotated such that it extends at substantially right angles to the door opening, and is then swung through the door opening. This manner of operation is fundamentally different to that of the claimed door. Document D4 is the family equivalent of document D1 and need not be commented on further. Document D5 relates to

an escape slide deployment system for use with an aircraft door. This deployment system has same similarities with that used in the preferred embodiment of the present invention but the door itself is of a wholly different type.

It is thus apparent that the cited prior art cannot lead the skilled person in an obvious manner to the subject-matter of granted claim 1.

**Order**

**For these reasons it is decided that:**

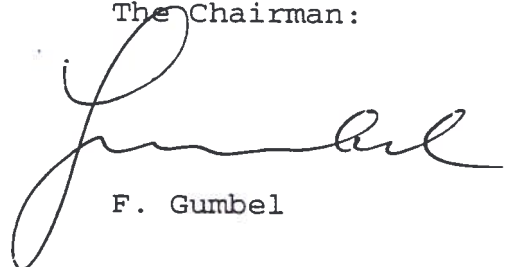
1. The decision under appeal is set aside.
2. The patent is maintained unamended.

The Registrar:



S. Fabiani

The Chairman:



F. Gumbel