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Datasheet for the decision of 11 January 2022

Case Number: T 2440/19 - 3.2.01

Application Number: 14192920.8

Publication Number: 2899119

IPC: B64C3/56

Language of the proceedings: EN

Title of invention:
System for latching and locking a folding wing

Patent Proprietor:
The Boeing Company

Opponent:
AIRBUS OPERATIONS, S.L. (ES) AIRBUS OPERATIONS LTD (GB) AIRBUS OPERATIONS SAS (FR) AIRBUS OPERATIONS GMBH (DE) AIRBUS SAS (FR)

Headword:

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

Keyword:
Inventive step - (yes)

Decisions cited:

Catchword:

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European Patent Office
Office européen des brevets

Beschwerdekammern

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Case Number: T 2440/19 - 3.2.01

D E C I S I O N
of Technical Board of Appeal 3.2.01
of 11 January 2022

Appellant: (Opponent)	AIRBUS OPERATIONS, S.L. (ES) AIRBUS OPERATIONS LTD (GB) AIRBUS OPERATIONS SAS (FR) AIRBUS OPERATIONS GMBH (DE) AIRBUS SAS (FR) Paseo John Lennon/ Pegasus House - Aerospace Avenue, Filton/ 316 route de Bayonne/ Kreetslag 10/2, Rond Point Emile Dewoitine 28906 GETAFE/Bristol BS99 7AR/31060 Toulouse/ 21129 Hamburg/31700 Blagnac (ES)
Representative:	Abel & Imray LLP Westpoint Building James Street West Bath BA1 2DA (GB)
Respondent: (Patent Proprietor)	The Boeing Company 100 North Riverside Plaza Chicago, IL 60606-1596 (US)
Representative:	Boult Wade Tennant LLP Salisbury Square House 8 Salisbury Square London EC4Y 8AP (GB)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 27 June 2019 rejecting the opposition filed against European patent No. 2899119 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	G. Pricolo
Members:	S. Mangin
	A. Jimenez

Summary of Facts and Submissions

I. The appeal was filed by the appellant (opponent) against the decision of the opposition division to reject the opposition filed against the patent in suit (hereinafter "the patent").

II. The opposition division rejected the opposition. The opposition division decided that:
(1) The subject-matter of claims 1 and 12 was novel over D4 (EP 2727828 A2) and D5 (US 2014/0014768 Al).
(2) The subject-matter of claims 1 and 12 involved an inventive step inter alia over D10 (US 5310138) in combination with D1 (US 5558299), D5, or common general knowledge.

III. Oral proceedings were held before the Board on 11 January 2022.

IV. The appellant (opponent) 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 or, in the alternative, that the patent be maintained on the basis of one of the auxiliary requests 1-4 filed in opposition proceedings with letter dated 14 June 2018 or auxiliary request 5 filed in opposition proceedings with letter dated 21 March 2019.

V. Independent claims 1 and 12 of the main request

Claim 1 of the main request reads:

A folding wing (130; 400) comprising:
a fixed section (220; 404);
a folding section (210; 402);
a latch system (410; 510) for latching the folding section (210; 402) to the fixed section (220; 404), including a plurality of latch pins (420; 520; 600), and
a corresponding plurality of non-backdriveable mechanical latch pin actuators(430; 530; 610) for extending the latch pins (420; 520) to engage the folding section (210; 402),
whereby the folding section (210; 402) is hinged to the fixed section (220; 404) at a hinge line;
characterized in that the latch pins (420; 600) are in line and are oriented parallel to the hinge line.

Claim 12 of the main request reads:
A method comprising locking a folding section (210; 402) of a folding wing according to claim 1 to a fixed section (220; 404), including using a non-backdriveable roller screw (630) to extend a latch pin (420; 520; 600) into the folding section (210; 402).

Reasons for the Decision

1. Inventive step of the main request - Articles 100(a) and 56 EPC

The appellant only contested the appealed decision regarding inventive step starting from D10 in combination with D1 or D5. The Board confirms the finding of the opposition division.

1.1 Leaving aside whether in D10, the worm gear 112 (see figure 7) can be considered as a non-backdriveable

mechanical latch pin actuator, the subject-matter of claim 1 differs from D10 at least in that the latch pins are in line and oriented parallel to the hinge line.

1.1.1 The appellant argued that the third and fourth latch pins (18) from the left in figure 2 of D10 were in line and that the only difference between the subject-matter of claim 1 and D10 was that the latch pins were oriented parallel to the hinge line.

1.1.2 It is established case law that for a feature solely shown on a drawing to be directly and unambiguously disclosed, not only should the structure of the feature be shown sufficiently clearly in the drawing, but also the technical function achieved should be derivable (see Section I.C.4.6 of the 9th edition of the Case Law of the Board of Appeal).
Figure 2 of D10 does not show clearly that the latch pins are in line. In fact in figure 2 of D10, the latch pins follow the curved lower surface of the wing, which can be best seen with the latch pins positioned at the ends of the wing (first and last latch pins) where the lower surface of the wing has a higher curvature. Furthermore, the description is silent on the alignment of the latch pins. Under these circumstances it cannot be derived directly and unambiguously from figure 2 of D10 that the latch pins are in line as alleged by the appellant.

Additionally as mentioned by the respondent it is rather artificial to separate the fact that the latch pins are in line from the fact that the latch pins are oriented parallel to the hinge line. These two features should be read together, requiring de facto that the latch pins are coaxial along a line parallel to the

hinge line. These two features cannot be considered as structurally and functionally independent as the appellant did.

1.2 Regardless of whether the problem to be solved by the latch pins being *"in line and oriented parallel to the hinge line"* is to provide a simpler and more reliable latch pin system as argued by the respondent or whether it is to provide an alternative orientation of the latch pin of D10 as argued by the appellant, the skilled person would not combine the teaching of D10 with the teaching of D1 or D5 as the latch systems of these documents are incompatible. Their respective way of functioning and their implementation in the foldable wings are very distinct. In any case, even when combining the teaching of D10 with either D1 or D5, the skilled person would not arrive at the subject-matter of claim 1.

1.2.1 The appellant argued that the skilled person had the same level of skill for assessing inventive step and sufficiency of disclosure. The skilled person could carry out the present invention although the disclosure of the patent was very schematically and did not indicate any size of the actual arrangements or how the arrangements interacted with all the other internal elements in an aircraft wing. Furthermore two different arrangements were disclosed in the patent, one with the latch pins parallel to the hinge line (figures 4A, 4C) and one with the latch pins perpendicular to the hinge line (figure 5) without the wing structure or the aerofoil shape. Therefore, the skilled person, who could put the claimed invention into effect, must be assumed to have the ability to make the same routine engineering choices when combining the teaching of the prior art documents.

The skilled person would consider Dl when trying to solve the technical problem of providing an alternative latch pin orientation to that shown in Dl0. Dl disclosed a folding wing arrangement similar to that shown in Dl0, with the latch pins in line and oriented parallel to the hinge line. Therefore, the skilled person would find it obvious to apply this teaching of D1 to the arrangement shown in Dl0. The skilled person would have to adjust the size and the spacing of the latch pins in D10, and this was within the ability of the skilled person.

Starting from D10 and in view of the problem to be solved, namely to provide an alternative orientation of the latch pins, the skilled person would only take from D1 the teaching that the pins can be in line and oriented parallel to the hinge and apply it to D10.

1.2.2 The Board does not agree. While the figures of the patent may be schematic and require from the skilled person knowledge in the field of mechanics and aeronautic to implement the invention, the skilled person with these same skills would recognise that the arrangements of the folding wings of D10 and D1 are very distinct in the way the two parts of the wings are connected and in the way they are locked.
D10 discloses on the one hand a folding wing in which the hinge is placed at the top side of the wing, and the latch pins are oriented perpendicular to the lower side of the wing and will only be locking the two parts of the wing when they are deployed.
On the other hand D1 discloses a folding wing in which the hinge is placed in the middle of the wing, and the latch pins are in line and oriented parallel to the

hinge line and will lock the two parts of the wing when they are both deployed and folded.
Furthermore the ways the latch pins are actuated in D10 and in D1 are also very different. While several actuators are used in D10, only one actuator is necessary to push the pin and the ball bearings in D1. The skilled person starting from D10 would therefore not apply the teaching of D1 to D10.

But even if the skilled person would consider applying the teaching of D1, s/he would not only take the orientation of the latch pins in isolation, without considering the whole teaching of D1. Indeed the skilled person would consider the disclosure of D1 in its entirety without arbitrarily isolating the orientation of the latches from their context, and this would require extensive and non-obvious changes to be made to the folding wings of D10.

Finally, utilising the hinge assembly of D1 in the system of D10 would not result in the claimed subject-matter as a single actuator is provided in D1 (figure 5, column 5, lines 35-48), whereas claim 1 requires a plurality of latch pin actuators.

1.2.3 Acknowledging that D5 did not explicitly and clearly disclose that the latch pins were oriented such that they were exactly in line and parallel to the hinge line, the appellant argued that the skilled person would find it obvious to use the teaching of D5 to provide latch pins that were at least approximately in line and parallel to the hinge line. Such an arrangement would fall within a reasonable interpretation of the scope of claim 1. The appellant concluded that claim 1 lacked an inventive step over D10 in combination with D5.

1.2.4 Considering figure 6 of D5, showing latch pins 614 on either side of the wing, it is evident that they are not in line. The latch pin on the left of figure 6 is farther away from the hinge line than the latch pin on the right side. Therefore even if the skilled person would combine the teaching of D10 with D5, s/he would not arrive at the subject-matter of claim 1. Claim 1 does not require that the latch pins are "approximatively" in line, but requires that they are in line and oriented parallel to the hinge line, resulting in the latch pins being at the same distance from the hinge line.

1.3 As the subject-matter of claim 1 involves an inventive step starting from D10 in combination with D1 or D5, the method claim 12 comprising locking a folding section of a folding wing according to claim 1 to a fixed section likewise involves an inventive step starting from D10 in combination of D1 or D5.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

A. Voyé G. Pricolo

Decision electronically authenticated