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Aktenzeichen / Case Number / N^o du recours : T 195/84
Anmeldenummer / Filing No / N^o de la demande : 81 200 789.6
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Bezeichnung der Erfindung: Extendible airfoil cable drum track assembly
Title of invention:
Titre de l'invention :

Klassifikation / Classification / Classement :

ENTSCHEIDUNG / DECISION

vom / of / du 10 October 1985

Anmelder / Applicant / Demandeur : The Boeing Company

Patentinhaber / Proprietor of the patent /
Titulaire du brevet :

Einsprechender / Opponent / Opposant :

Stichwort / Headword / Référence :

EPÜ/EPC/CBE Article 52(1), Article 56
"Inventive Step"

Leitsatz / Headnote / Sommaire

The state of the art to be considered when examining for inventive step includes, as well as that in the specific field of the application, the state of any relevant art in neighbouring fields and the state of the art in a non-specific (general) field dealing with the solution of any general technical problem which the application seeks to solve in its specific field. Such solutions of general technical problems in non-specific (general) fields must be considered to form part of the general technical knowledge which a priori is to be attributed to those skilled persons versed in any specific technical field.

Europäisches
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European Patent
Office

Boards of Appeal

Office européen
des brevets

Chambres de recours



Case Number: T 195 / 84

DECISION
of the Technical Board of Appeal 3.2.1
of 10 October 1985

Appellant: The Boeing Company
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Decision under appeal: Decision of Examining Division 070 of the European Patent
Office dated 29 March 1984 refusing European patent
application No 81 200 789.6 pursuant to Article 97(1)
EPC

Composition of the Board:
Chairman: M. Huttner
Member: C. Wilson
Member: P. Ford

Summary of Facts and Submissions

I European patent application No. 81 200 789.6, filed on 7 July 1981 and published on 17 February 1982 (publication No. 0 045 987) was refused by a decision of Examining Division 070 of the European Patent Office dated 29 March 1984. The decision was based on Claims 1-3 received on 17 August 1982.

The reason given for the refusal was that the subject-matter of Claim 1 did not involve an inventive step having regard to the following documents:

"Aircraft Engineering", Nov. 1973, pages 24 and 25 (1),

DE-B-1 233 216 (2).

II On 29 May 1984 the appellants lodged an appeal against the decision. The appeal fee was duly paid and the statement of grounds was received on 30 July 1984.

The appellants argued that the skilled man, confronted with the problem of overcoming the disadvantages of the device disclosed in (1), would not have come across (2). But even if he had studied (2) he would not be led to the invention because of inherent incompatibility of the teachings of (1) and (2).

The appellants further requested the reimbursement of the appeal fee in view of an alleged procedural violation (Article 113(1) EPC) because they had been denied a chance to request oral proceedings.

III As a result of objections raised by the Board of Appeal during the procedure before the Board, the appellants submitted a new Claim 1 together with proposals for corresponding amendment to the description, with a communication dated 1 April 1985. They requested that the impugned decision be set aside and a European patent be granted on the basis of the presently effective documents. The effective Claim 1 reads as follows:

"Mechanism for extending a high-lift device such as an auxiliary airfoil relative to a main airfoil, comprising a carrier track connected to said high-lift device and extending chordwise of said main airfoil, guide means secured to said main airfoil and being in guiding contact with said track for support thereof, and a cable drive for extending and retracting the high-lift device, said cable drive comprising a cable fastened at either end of the carrier track and at least one cable drum adapted to winding engagement with said cable and being out of rolling engagement with the carrier track, characterized in that the carrier track has an inverted U-shaped cross-section forming a channel along the length thereof, said cable drum extending with its axis transversely to the carrier track and substantially in the plane of symmetry of the channel, and said cable being fastened between the inner walls of the track channel."

IV The appellants reaffirmed their position during the oral proceedings on 10 October 1985, held at their request.

They also introduced a third document US-A-2 901 764, into the procedure, asserting that it was this prior art which was being referred to in the discussion of prior art in document (2) above.

V For the original claims and description, reference should be made to publication No. 0 045 987.

Reasons for the Decision

1. The appeal complies with Articles 106 to 108 and Rule 64 EPC and is therefore admissible.
2. The question whether there are any formal objections to the current version of the claims and of the description, e.g. whether Claim 1 by the addition of the phrase "at least one" contains subject-matter which extends beyond the content of the application as filed, need not be answered since the claim is unallowable on other grounds anyway.
3. After examination of the citations uncovered by the search report and that introduced by the appellants during the proceedings, the Board is satisfied that none of them discloses a mechanism for extending a high-lift device including all the features stated in Claim 1. Since this has never been disputed, there is no need for further detailed substantiation of this matter. Therefore, the subject-matter as set forth in Claim 1 is novel (Article 54 EPC).
4. The precharacterising portion of the new amended independent Claim 1 comprises only features also disclosed in combination in the closest prior art as demonstrated in "Aircraft Engineering", Nov. 1973, pages 24 and 25, (1).
5. In the mechanism known from (1), the carrier tracks are all reciprocated by means of a central hydraulic actuator acting through individual cable runs extending spanwise of the main airfoil. Thus each individual track requires a number of guide pulleys located adjacent the track to enable the two cable ends fastened to opposite ends of the track to extend parallel thereto, to ensure proper reciprocation. This requires considerable cable lengths.

According to the appellants, this mechanism has the further drawbacks that the cable drive takes up much space in the wing, and that the cable is also liable to accumulate dirt.

6. The problem to be solved by the present application therefore resides in the provision of a mechanism for extending a high-lift device which does not use the long cables.
7. The solution of the problem underlying the application is based on the idea of using a single pulley and short cable connected to each end of the track in the same plane as the track to reciprocate it.
8. The question now to be considered is whether in these circumstances the subject-matter according to Claim 1 still involves an inventive step. From the assessment of this matter, the following points emerge.
 - 8.1 Since the overcoming of recognised draw-backs and the achievement of improvements resulting therefrom must be considered as the normal task of the skilled person, no contribution to the inventive step of the solution can possibly be seen in the perception of the problem as indicated in paragraph 6.
 - 8.2 The question now arises whether the prior art and/or the common knowledge of the skilled person would provide any indication as to how the mechanism according to (1) may be made independent of the use of long cables.

The skilled person could be expected to realise that if he wishes to eliminate the long cables to save space between the tracks he must consider the use of the shortest possible cable drive, i.e. individual drives associated with each track. The question then is whether there is a suitable short

cable drive available. This is undoubtedly a problem for a mechanical engineer who - in relying on common engineering knowledge relating to machine design components available - can be expected readily to apply such knowledge to its solution and to this end he could be expected to consult any suitable engineering reference source to find engineering components capable of performing the required function and meeting the requirements imposed.

8.3 Thus, the acknowledgement of prior art in DE-B-1 233 216(2) (column 1, lines 4-12), which document was introduced in the first instance, represents such a reference source, providing the general common teaching, how a reciprocable member can be connected to a rotatable shaft by means of a pulley and cable lying in the same plane as the reciprocable member. This finding is corroborated by the total absence of any particular application of the cable drive. Although it is not specifically stated in this acknowledgement that no contact exists between the pulley and member, it follows from the invention of (2), which specifies contact, that nevertheless a non-contact arrangement had previously been proposed. Furthermore, although no particular application of this drive motion translating system is disclosed therein, the fact that this acknowledgement is a true reflection of the general principle represented in the prior art is confirmed in US-A-2 901 764, introduced by the appellants' representative at the oral proceedings, which shows just one specific example of the application of such non-contact drives applied in this instance to a windshield wiper.

8.4 Since there is no indication of any specific field in which to apply this general disclosure, i.e. also not to the specific field of the present application, and since it is classified in another class, for patent searching purposes, it might at first sight appear to be correct to consider it as remote art (see T 176/84 to be published), and for that

reason it would not be obvious to combine it with the closest piece of prior art (i.e. "Aircraft Engineering"). However, since this disclosure nevertheless deals with the solution of a general engineering problem in a non-specific field, it must be considered to form part of the general engineering knowledge which a priori is to be attributed to any mechanical engineer versed in any one specific field (i.e.

also to an aircraft engineer) so that it is to be expected that he is either aware of these teachings or will look for suggestions for solving his general engineering problem in that non-specific field.

Consequently, such art ought to be considered as attributable technical knowledge for him.

- 8.5 The skilled person will therefore immediately realise that the same general idea is suitable for solving his particular problem and thus is also applicable for driving a carrier track. Therefore, the replacement of the long cable drive according to (1) by a number of individual drives, each utilising a pulley and cable lying in the same plane as the carrier track without any contact between the pulley and track, such as generally known in the engineering art and exemplified in the documents referred to above, in order to make use of the known function and advantageous effects of such drives must be regarded as obvious for the person skilled in the art.

No inventive significance can be seen in driving the shaft from the reciprocable member, as opposed to the other way around, nor in positioning the pulley under the reciprocable member as opposed to above it. Similarly the selection of an inverted U-shaped track cannot be seen to be of inventive significance, particularly since a U-shaped reciprocable

member is known from (2), and since it is not specified in Claim 1 that the pulley extends into the track to save space.

9. The further arguments submitted by the appellants in support of inventiveness are not sufficiently persuasive to reverse the above conclusion of obviousness.

(a) The appellants assert that the person skilled in the art would not have found (2), nor its American equivalent, since the latter as well as the former is classified in a general heading. However, this submission fails to recognise a basic principle of the Convention: According to Article 54(2) EPC, the disclosure of any document, published before the priority date of a European Application, is included in the state of the art and has for that reason to be at least considered in evaluating inventive step under the provisions of Article 56 EPC. Therefore, document (2) has to be taken into account in the assessment of inventive step since it relates to a general drive motion translating system by which the problem posed in the application is solved.

(b) The appellants further assert that even if found, (2) would not have been taken into account for the following reasons:

(i) They assert that since the track in (1) is curved, and that in (2) is straight, it would not have been obvious to combine them. However, since as was pointed out in the oral proceedings, Claim 1 is not restricted to a curved track, nor indeed to a straight track, the shape of the track in this respect is irrelevant, and forms no impediment to the combination of the teachings from the two citations. The appellants cannot therefore rely on such arguments to support the

presence of an inventive step in the subject-matter of Claim 1.

(ii) The appellants further assert that the drive of (2) could not function with a curved track when the pulley was arranged on the concave side as disclosed in (2). Again, since Claim 1 is not restricted to this arrangement, this argument is also irrelevant. Equally, since Claim 1 is not restricted to a drive including means to compensate for the change in length needed in the cable, any arguments in this respect are also of no significance.

(iii) The fact that (2) is twenty years old is considered irrelevant since it is considered that the motion conversion device described representatively therein forms part of the general engineering knowledge of the person skilled in the art, which is not restricted to a certain time or period of time.

(iv) The appellants further argue that a number of steps were involved to get from the mechanism according to (1) to that according to Claim 1. However, the Board remains of the opinion that having once recognised that the long cables are the problem, they can be replaced by the drives known from (2) to arrive directly at the mechanism of Claim 1, without producing any unexpected effect whatsoever.

10. For the foregoing reasons, the subject-matter of the claim lacks an inventive step as required by Article 56 EPC. Therefore it cannot be allowed having regard to Article 52(1) EPC.

11. The representative objected at the oral proceedings that new grounds were being presented for arguing against an inventive step, to which he had not previously had an opportunity to reply (Article 113 EPC). The Board could not share this

opinion. Whereas in the decision to reject the application the Examining Division combined the disclosure of (1) with the particular embodiment of (2), the Board at the oral proceedings relied on the disclosure of (1) and the acknowledgement of the prior art in (2). The significance of this difference is that the invention of (2) relates to improving the drive between the reciprocating member and the pulley and cable by providing direct friction contact between the pulley and member. The skilled person reading this citation would therefore immediately have realised that in the prior art, from which (2) sets out, no direct contact exists between the pulley and member. This is also the case in the present application. The fact that the representative was aware that such prior art existed was shown when he introduced US-A-2 901 764 into the oral proceedings asserting that this was an application of the drive referred to in the prior art acknowledged in (2). It was therefore considered that the representative had had sufficient time fully to consider this prior art. Furthermore, he did not request any additional time to consider this art in more detail and did not ask for an adjournment.

12. The requested reimbursement of the appeal fee may only be ordered in a case in which the appeal is deemed to be allowable. This requirement is not met in the present case.

Moreover, it should be pointed out that the appellants have not shown sufficient cause to justify the finding of a procedural violation. They have had an opportunity to put forward arguments, and to request oral proceedings, in order to meet objections raised by the Examining Division, regardless of which EPO Form was used for the first communication. The Examining Division have assessed this response and found it wanting, and have accordingly rejected the application in the second communication. Article 113(1) EPC does not require that the Applicant be given a repeated

opportunity to comment on the argumentation of the Examining Division. (See T 84/82 OJ EPO, 11/1983, p. 451, Headnotes I and II and T 161/82 OJ EPO, 11/1984, p. 551, Headnote I).

Order

For these reasons, it is decided that:

The appeal against the decision of the Examining Division of 29 March 1984 is dismissed.

The Registrar

The Chairman

B.A. Norman

M. Huttner