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D E C I S I O N
of 14 June 2000

Case Number: T 0542/98 - 3.5.2

Application Number: 90908099.6

Publication Number: 0469094

IPC: G08G 5/06

Language of the proceedings: EN

Title of invention:
An aircraft parking and information system

Patentee:
FMT INTERNATIONAL TRADE AB

Opponent:
SAFEGATE INTERNATIONAL AB

Headword:
-

Relevant legal provisions:
EPC Art. 56, 123(2)(3)

Keyword:
"Inventive step - yes, after amendment"

Decisions cited:
-

Catchword:
-

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Case Number: T 0542/98 - 3.5.2

D E C I S I O N
of the Technical Board of Appeal 3.5.2
of 14 June 2000

Appellant: (Proprietor of the patent)
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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 1 April 1998 revoking European patent No. 0 469 094 pursuant to Article 102(1) EPC.**

Composition of the Board:

Chairman: W. J. L. Wheeler
Members: A. G. Hagenbucher
P. H. Mühlens

Summary of Facts and Submissions

I. The appellant contests the decision of the opposition division to revoke European patent No. 469 094. The reason given for the revocation was that the subject-matter of claim 1 as granted did not involve an inventive step, having regard to document

D21: Airport Forum 1/1989, pages 48, 49, 50 and 53 and

general knowledge.

II. In the appeal proceedings the arguments concentrated on D21 and D15: US-A-3 872 474, which had been cited in the opposition proceedings.

III. Oral proceedings were held before the Board on 14 June 2000, during which the appellant filed amended claims.

Claim 1 now reads as follows:

"1. A system for information/guidance and mechanised parking of aircraft to guide a pilot driving the aircraft in ground in such a manner as to allow him to stop the aircraft with extreme precision at a carefully predetermined stopping point in an airport, comprising a display unit (1) which is positioned in front of the stopping point, and characterised by a microwave antenna (4) which is positioned in or in close vicinity to the display unit and which emits microwaves directed towards the aircraft, said waves being reflected by the aircraft back to and being received by the antenna (4), so that by measuring the time difference between the emitted and the received waves the position of the aircraft may be analyzed with

great accuracy by a computer and be indicated on the display unit (1), and in that the control system of the parking system and the airport FIDS System, i.e. the Flight Information and Destination System, are linked together to enable the type of arriving aircraft to be automatically selected, and to set said parking system in order to indicate the correct stop position for the selected type of aircraft."

Claims 2 and 3 are dependent on claim 1.

IV. The appellant argued essentially as follows:

Document D21 described on page 49 the Inogon moiré approach which used moiré interference patterns displayed on two display units: one for centre line guidance and one for closing rate and stopping guidance. A demonstration during the oral proceedings, where the members of the Board walked towards the moiré apparatus, showed vertical lines on both displays at the correct stop position. The appellant explained that if the aircraft was not precisely on the centre line of the airport parking area, the final stop position could not be exactly determined, so that problems arose, eg in the handling of passenger bridges. Therefore, a laser ranger had been developed to provide greater parking accuracy. In the appellant's opinion the paragraph in D21, namely

"to provide greater parking accuracy, the company has developed a laser ranger that monitors the position of the aircraft's nose from a distance of 40 m and has been aiming at achieving a docking accuracy of 50 mm with the new equipment",

was not clear, especially in respect of the position of the laser and the path of the laser beam. It would be interpreted by a person skilled in the art as meaning that the laser ranger should be used similarly to the use of the sensors of the other docking systems described in D21. This could be implemented by arranging a number of beam splitters in the path of a laser beam parallel to the centre line. Each beam splitter would deviate a part of the laser beam by 90° so that it was directed transversely to the centre line. Intersection of the appropriate transversely directed beam by the nose of the aircraft would indicate that the correct stop position had been reached. Even if the above quoted paragraph in D21 were interpreted as meaning a measurement of the distance to the aircraft from the front, the person skilled in the art would reject this idea because of the implied problems. Since an aircraft was a composite object the distance to the same point on the aircraft had always to be measured. This could not be done by a fixed laser ranger because different aircraft had different heights above the ground and different shapes. In order not to be deterred by this problem, the skilled person would have to think of using a scanning laser which sequentially measured the distance to different points on the aircraft so that the system could determine which of the measured distances was the relevant one. This would require complex computer processing and it was questionable whether enough computer capacity was available at the priority date of the patent in suit. Alternatively, the skilled person would need to think of replacing the laser ranger with microwave equipment including an antenna which emitted a microwave lobe hitting a large part of the front of the aircraft so that the system could analyse the reflected signals to

determine the correct distance. Radar waves had been used, however, before the priority date of the patent in suit, mainly for measuring longer distances and not for short distances as required for the present invention.

D21 referred on page 53 to problems arising with remote control of an aircraft guidance docking system which required an operator to input information on a remotely located operator-panel, for example the type of arriving aircraft based on the information from the FIDS System, so that human error could not be excluded. D21 did not mention a microwave antenna.

V. The respondent argued that a laser ranger such as mentioned in D21 served for measuring distances from the front, not from the side, and measured time-of-flight of emitted and reflected waves of radiation. If the measurement from a distance of 40 m with an accuracy of 50 mm indicated in D21 should be implemented by laser beam splitters, about 800 beam splitters would be necessary. This would require immense optical power and therefore remain out of consideration. A laser beam was strongly reflected back to the laser from plane surfaces but not from curved ones such as the nose of an aircraft. Therefore the present invention used microwaves emitted by a microwave antenna. Short distance measurement by means of microwaves was a standard technique, known from D15, see especially Figure 8, and cheaper than techniques using lasers. The use of microwaves instead of a laser beam was therefore obvious. D21 mentioned on page 53 remote computer control in conjunction with FIDS monitoring at a ramp control location. The meaning of the words "set said parking system" in claim 1 as filed

in the oral proceedings was not clear.

As far as claim 1 could be understood, its subject-matter lacked an inventive step.

VI. The appellant requested that the decision under appeal be set aside and that the patent be maintained in amended form in the following version:

Description, pages 1 to 5, claims 1 to 3 and drawing, all as filed in the oral proceedings.

VII. The respondent requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.

2. *Amendments*

The amendments made to the patent documents (claims and description) comply with Article 123(2) and (3) EPC.

Claim 1 has been restricted with respect to claim 1 as granted by specifying that the control system of the parking system and the airport FIDS System are linked together to enable the type of arriving aircraft to be automatically selected and to set said parking system in order to indicate the correct stop position for the selected type of aircraft. This system is disclosed in the description on page 2, lines 34 to 37; page 4, lines 44 to 48; page 5, lines 16, 29 to 34 of the patent in suit; and in the originating PCT application WO 90/13104, page 2, lines 28 to 34; page 8, lines 25

to 34; page 9, lines 22 and 23; page 10, lines 12 to 23. Claim 3 has been amended in accordance with claim 3 as originally filed. The description has been properly adapted to the new claims and includes an acknowledgment of document D21.

3. *Novelty*

The novelty of the claimed subject-matter is not in dispute.

4. *Inventive step*

4.1 It has not been contested that document D21 was publicly available before the priority date of the patent in suit and represents the closest prior art. D21 mentions using a laser ranger with the moiré device to provide greater parking accuracy. The laser ranger monitors the position of the aircraft's nose from a distance and aims at achieving a docking accuracy of 50 mm with the equipment. The Board concurs with the opposition division and the respondent's opinion that this suggestion means measurement of the aircraft from the front and not from the side using beam splitters, the latter being not realistic in view of the high laser power that would be required. However, the use of a frontal laser beam requires an expensive scanning device. The paragraph "problems arising with remote control of an aircraft guidance docking system" on page 53 of document D21 is not necessarily to be read in conjunction with the paragraph "the moiré approach" on page 49 and the system described there requires an operator to enter data at a remote operation centre, even in conjunction with FIDS monitoring, so that the risk of human error remains.

Starting from this prior art, the problem solved by the present invention is to develop a reliable, flexible and economical system for information/guidance and mechanised parking of aircraft using standard type components to guide a pilot in charge of the aircraft with extreme precision to allow him to stop the aircraft exactly at a predetermined stopping point in the airport; see EP-B1-469 094, page 2, lines 3 to 6, 18 to 23, and 55.

4.2 This problem is solved by the features in claim 1.

Measuring the distance to the aircraft by means of microwaves emitted from a microwave antenna allows in conjunction with the indication of the arriving type of aircraft by the FIDS System a reliable and economical determination of the correct stop position. A microwave measurement can be implemented by standard components. What is meant by "setting the parking system" in claim 1, is explained on page 2, lines 18 to 21, lines 34 to 41; page 3, lines 3 to 6; page 4, lines 35 to 52; page 5, lines 16 to 18 of EP-B1 469 094.

4.3 The Board agrees with the opposition division that the person skilled in the art may use microwaves emitted from a microwave antenna instead of the laser-distance measurement suggested in document D21 because measuring short and long distances by means of radar is known in the prior art in connection with aircraft (see eg D15). Neither claim 1 nor the description of the contested patent recites any specific details of how microwaves are used for the indicated purpose, it being assumed that the implementation is within the capability of a person skilled in the art. However, the prior art does not hint at the additional use of the FIDS System for

an automatic selection of the type of arriving aircraft and setting of said parking system in order to indicate the correct stop position for the selected type of aircraft. Document D21 mentions on page 53 problems arising with remote control of an aircraft guidance docking system. The relevant paragraph is not completely clear. It mentions activation "from air traffic control" and "remote computer control in conjunction with FIDS monitoring at the ramp control location" but does not give any further information about this. In particular, there is no mention of an automatic selection as required in claim 1.

The Board agrees with the opposition division, that the other documents cited during the opposition proceedings are of less relevance than D21 and D15.

4.4 Hence, the Board is of the opinion that the subject-matter of claim 1 is not obviously derivable from a combined consideration of the cited prior art documents so that the subject-matter of claim 1 involves an inventive step within the meaning of Article 56 EPC.

5. In the judgement of the Board, independent claim 1, together with dependent claims 2 and 3 are allowable. The patent can be maintained in the amended form requested by the appellant, it being noted that the description begins on page 2, not on page 1 which is the cover sheet of the patent specification. Thus, the order has been worded to correct this obvious mistake (Rule 89 EPC).

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 maintain the patent in amended form in the following version:

   Description, pages 2 to 5, claims 1 to 3 and drawing, all as filed in the oral proceedings.

The Registrar: The Chairman:

M. Hoernell W. J. L. Wheeler