

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 20

UNITED STATES PATENT AND TRADEMARK OFFICE

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Ex parte DOUGLAS G. NELSON

Appeal No. 2003-0622
Application No. 09/974,545

ON BRIEF

Before ABRAMS, FRANKFORT, and STAAB, Administrative Patent Judges.
ABRAMS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1-55. Claims 8-11, 14, 23-26, 29, 45-48 and 51 have been indicated as containing allowable subject matter. We therefore need consider only the rejections of claims 1-7, 12, 13, 15-22, 27, 28, 30-44, 49, 50 and 52-55.

We REVERSE AND REMAND THE APPLICATION TO THE EXAMINER.

BACKGROUND

The appellant's invention relates to a system for preventing hijacking of an aircraft. An understanding of the invention can be derived from a reading of exemplary claim 1, which is reproduced below.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Borthayre et al. (French Patent)¹ (Borthayre '798) 2,107,798 May 12, 1972

Borthayre (French Patent)¹ (Borthayre '842) 2,584,842 Jan. 16, 1987

Flight Test Evaluation of the Stanford University/United Airlines Differential GPS Category III Automatic Landing System, Kaufmann et al., NASA TM-110354, June 1995, page 474 (Auto 737).

RQ-1 Predator Unmanned Aerial Vehicle, U.S. Air Force Fact Sheet, August 2000 http://www.af.mil/news/factsheets/RQ_1_Predator_Unmanned_Aerial.html 9 (RQ -1).

How to stop commercial air hijackings without inconveniencing air travelers, Kirsch, Sep. 20, 2001, <http://www.skirsch.com/politics/plane/disable.htm> (Kirsch).

Claims 1-4, 7, 13, 17-22, 28, 32-36, 39, 41, 44, 50 and 55 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Borthayre '842.

Claims 1-4, 7, 13, 17-22, 28, 32-36, 39, 41, 44, 50 and 55 also stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Borthayre '842 in view of Auto 737.

¹Our understanding of these foreign language documents was obtained from PTO translations, copies of which are enclosed.

Claims 5, 6, 16, 31, 38, 40, 42, 43, 53 and 54 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Borthayre '842 in view of Auto 737 and RQ-1.

Claims 12, 15, 27, 30, 37, 49 and 52 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Borthayre '842 in view of Auto 737 and Kirsch.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellant regarding the above-noted rejections, we make reference to the Answer (Paper No. 12) and the Supplemental Answer (Paper No. 17) for the examiner's complete reasoning in support of the rejections, and to the Supplemental Brief (Paper No. 11) and Reply Brief (Paper No. 13) for the appellant's arguments thereagainst.

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellant's specification and claims, to the applied prior art references, and to the respective positions articulated by the appellant and the examiner. As a consequence of our review, we make the determinations which follow.

The objective of the appellant's invention is to defeat an attempt to hijack an aircraft that is equipped with an automatic pilot by, upon determining that an attempt to hijack is being perpetrated, deactivating the pilot's normal on-board flight controls and on-board control of the autopilot, and then directing the autopilot to fly the aircraft to a safe landing. The invention is manifested in independent method claim 1 in the following manner:

A method for preventing hijacking of an aircraft, comprising operations of:
providing a hijacking intervention module aboard an aircraft having an autopilot system;
the module sensing a predetermined override input;
responsive to the sensing of the predetermined override input, the module performing operations comprising:
 deactivating on-board control of predetermined aircraft flight systems;
 deactivating on-board control of the autopilot system;
 directing the autopilot system to fly the aircraft to a landing.

It is the examiner's view that claims 1, 18, 33, 34 and 55, which constitute all of the independent claims, are anticipated² by Borthayre '842 or, in the alternative, would have been obvious³ over Borthayre '842 in view of Auto 737. The cornerstone of the Section 102 rejection is the examiner's finding that Borthayre '842 discloses and/or teaches all of the subject matter required by the independent claims to one of ordinary skill in the art, considering that although Borthayre '842 does not expressly disclose an autopilot system such would have been inherent in the claimed aircraft. As an alternative, the examiner enters a Section 103 rejection in which he concludes that if an autopilot is not considered to inherently be present in the aircraft, one of ordinary skill in

²Anticipation is established only when a single prior art reference discloses, either expressly or under the principles of inherency, each and every element of the claimed invention. See In re Paulsen, 30 F.3d 1475, 1480-1481, 31 USPQ2d 1671, 1675 (Fed. Cir. 1994) and In re Spada, 911 F.2d 705, 708, 15 USPQ2d 1655, 1657 (Fed. Cir. 1990).

³The test for obviousness is what the combined teachings of the prior art would have suggested to one of ordinary skill in the art. See, for example, In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981).

the art would have found it obvious to provide “well known autopilot systems” to reduce pilot workload in view of the teachings of Auto 737 (Answer, pages 4 and 5).⁴ The appellant argues that Borthayre ‘842 does not disclose or teach an autopilot system, and even if such a device were present, Borthayre ‘842 does not anticipate the claims, nor are the claims obvious in view of the combination of Borthayre ‘842 and Auto 737, for lack of teaching in both cases that the autopilot is directed to fly the aircraft to a landing by the same module that deactivates on-board controls and deactivates on-board control of the autopilot upon receipt of the hijacking signal.

Borthayre ‘842 is directed to a system for thwarting the hijacking of an aircraft. As we understand the Borthayre ‘842 system, some sort of a module or the like aboard the aircraft, which is not described, senses a predetermined indication of a hijacking (translation, page 2), such as the accelerated heart rate resulting from the fear or emotions of persons on the aircraft being threatened by the hijackers (translation, page 4). Upon receiving such an indication, this module causes “the complete disengagement of the pilot from to [sic] the rudder bar, control column, and the air brake, with the control tower taking complete and exclusive control of these devices” (translation, page 2). Borthayre ‘842 goes on to explain that the aircraft controls are operated by the control tower “independently by radio . . . by a robotic device that

⁴We note, however, that Auto 737 is directed only to an automatic system for precision approaches and landings.

activates these three devices [the rudder bar, control column, and the air brake], which are provided for this purpose with dual controls of the type found in aviation schools” (translation, page 2), and that this robotic action “transfers the possibility of maneuvering and, thus, the control of the flight to the control tower, thereby eliminating the pilot” (translation, page 3). Borthayre ‘842 states in his claim 1 that the method “transfers the work of the pilot to the control tower from which the plane departed, and which can now return the plane to the departing base by means of radio controls” (translation, page 5). Borthayre ‘842 does not disclose that the aircraft is equipped with an autopilot. However, if the aircraft were equipped with an autopilot system, it is our view that it would be reasonable to assume from the above-cited teachings of the reference that the control tower takes “complete and exclusive control” of the controls of the aircraft and that the autopilot also would be deactivated at least to the extent that it cannot be operated by the pilot.

The appellant’s claim 1 requires that there be a module aboard the aircraft and that “the module” (emphasis added), in response to sensing a predetermined override input, performs the following three operations:

- (1) Deactivates on-board control of predetermined aircraft flight systems.
- (2) Deactivates on-board control of the autopilot system.
- (3) Directs the autopilot system to fly the aircraft to a landing.

We agree with the appellant that at least the third of the above operations is not disclosed or taught by Borthayre '842. This is because Borthayre '842 specifically teaches that control of the aircraft is taken over by the control tower, and therefore even if Borthayre '842 were to be interpreted so broadly as to consider that the control tower directs the flight of the aircraft by passing its control signals to the "robotic device" through the aircraft's autopilot, it still does not meet the requirement in claim 1 that the autopilot is directed to do so by the same on-board module that senses the override input and deactivates on-board control of flight systems and on-board control of the autopilot.

Borthayre '842 therefore does not anticipate the subject matter recited in independent claim 1, and we will not sustain the Section 102 rejection of claim 1 or, it follows, of claims 2-4, 7, 13⁵ and 17, which depend from claim 1 and are rejected on the same basis.

We also will not sustain the alternative rejection of these claims as being unpatentable over Borthayre '842 in view of Auto 737. Considering Borthayre '842 in the light of 35 U.S.C. § 103(a) does not alter our conclusion that this reference fails to disclose that the third of the claimed operations is performed by the on-board module, as explained above. Auto 737 teaches that it was known in the art at the time of the

⁵ Borthayre '798 was listed on page 3 of the Answer as an applied reference. However, it was not recited in any of the statements of rejection, but merely was mentioned on page 8 of the Answer as disclosing a panic button as required in claims 13, 28 and 50. According to the examiner, it is the equivalent of a reference referred to on page 1 of the translation of Borthayre '842.

appellant's invention to provide large aircraft with automatic landing systems, and it is our opinion that even if this were considered to be an "autopilot," the deficiency discussed above with regard to the Section 102 rejection would not be alleviated. It is our view that suggestion does not exist in the applied references which would have motivated one of ordinary skill in the art to modify the Borthayre '842 system in such a manner as to meet the terms of the claim.

Independent claim 18 is directed to a signal-bearing medium tangibly embodying a program of machine-readable instructions executable by a hijacking intervention module "aboard an aircraft" which performs the same method recited in claim 1. Both of the rejections applied against this claim suffer from the same shortcoming that was discussed above with regard to claim 1. In addition, neither Borthayre '842 nor Auto 737 disclose or teach an on-board module which performs the required steps in response to a signal-bearing medium tangibly embodying a program of machine-readable instructions nor, in our view, would the evidence adduced by the examiner and applied to this claim have suggested to one of ordinary skill in the art that such be incorporated in the system disclosed by Borthayre '842. The rejections of independent claim 18 and dependent claims 19-22, 28 and 32 under Sections 102 and 103 are not sustained.

We reach the same conclusion, for the same reasons as were advanced against claim 18, with regard to the like rejections of independent claim 33, which is directed to

a logic circuit of multiple interconnected electrically conductive elements configured to cause a module on board the aircraft to perform the same operations recited in claim 18 to prevent hijacking of the aircraft.

Independent claim 34 and dependent claims 35, 36, 39, 41, 44 and 50 also stand rejected as being anticipated by Borthayre '842 or, in the alternative, as being unpatentable over Borthayre '842 in view of Auto 737. Claim 34 is directed to an anti-hijacking system for use "in an aircraft," which we interpret to mean that all of the components are located on board the aircraft. The claimed system comprises a transceiver to communicate with remote stations, a manual panic input, and "a manager, coupled to the transceiver and the manual panic input, programmed to perform operations" which include "directing the autopilot system to fly the aircraft to a landing." As was explained above, there is no teaching in Borthayre '842 that this step be accomplished by the same on-board manager that senses the panic override and deactivates on-board control of aircraft systems and on-board control of the autopilot, nor do we agree with the examiner that it would have been obvious to modify the Borthayre '842 system to do so. The rejections of claims 34-36, 39, 41, 44 and 50 under Sections 102 and 103 therefore are not sustained.

Independent claim 55 recites an anti-hijacking system "for use in an aircraft" having an autopilot system, and sets forth the invention in terms of first means for communicating with remote stations, second means for receiving manual panic input,

and processing means coupled to the first and second means for recognizing the activation of the second means. The processing means, which would be “in” the aircraft, receives override signals from one or more remote means via the first means, and responsive thereto deactivates the on-board control of aircraft systems and on-board control of the autopilot, and directs the autopilot system to fly the aircraft to a landing. As was the case with the other independent claims, neither Borthayre ‘842 nor Borthayre ‘842 together with Auto 737 teach or suggest that the same on-board processing means that senses the emergency and deactivates the on-board control systems and on-board control of the autopilot, also directs the autopilot to fly the aircraft to a landing site. This being the case, we will not sustain either of the rejections of claim 55.

Claims 5, 6, 16, 31, 38, 40, 42, 43 and 53 stand rejected as being unpatentable over Borthayre ‘842 in view of Auto 737 and RQ-1, which was applied for teaching that it was known at the time of the appellant’s invention to provide flight routing and landing instructions from a remote location. Be that as it may, incorporation of the teachings of RQ-1 would not overcome the above-noted deficiency in the Borthayre ‘842 reference. Since all of these claims depend from one of the independent claims whose rejections we have not sustained, we in turn will not sustain this rejection.

The same reasoning and conclusion applies to the rejection of dependent claims 12, 15, 27, 30, 37, 49 and 52 on the basis of Borthayre ‘842, Auto 737 and

Kirsch, which was cited for teaching receiving the hijacking signal from a remote guidance facility.

REMAND TO THE EXAMINER

The Kirsch and RQ-1 references were obtained from the internet. It would appear, especially from Kirsch, that over the past two decades, during which time aircraft hijacking has become more common, the internet has become a repository for information on systems for preventing the hijacking of aircraft. This application therefore is remanded to the examiner for consideration of searching the internet for additional prior art applicable to the subject matter recited in the appellant's claims. In this regard, we also direct the examiner's attention to the "SAFE mode" discussion found in Kirsch, at pages 5 and 6.

SUMMARY

None of the rejections are sustained.

The decision of the examiner is reversed.

This application is remanded to the examiner for action consistent with the comments made immediately above.

REVERSED AND REMANDED TO THE EXAMINER

NEAL E. ABRAMS)
Administrative Patent Judge)

CHARLES E. FRANKFORT
Administrative Patent Judge

LAWRENCE J. STAAB
Administrative Patent Judge

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