

Part III DETAILED ACTION

Notice to Applicants

1. This office action is responsive to the amendment filed on February 13, 1995 . As per request, claims 1-13 have been amended. Claims 14-39 have been added. Thus, claims 1-39 are pending.
2. New title has been entered.

Election/Restriction

3. Newly submitted claims 29-30 are directed to an invention that is independent or distinct from the invention originally claimed for the following reason:

Newly added claims 29 and 30 are directed to a method for producing a terrain data based comprising terrain data and said terrain data represented as one or more polygons. However, the original set of claims are directed to a pilot aid which uses an aircraft's position and attitude to transform data from a digital based to present a pilot with a synthesized three dimensional projected view of the world.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution

on the merits. Accordingly, claims 29-30 are withdrawn from consideration as being directed to a non-elected invention. See 37 C.F.R. § 1.142(b) and M.P.E.P. § 821.03.

Claim Rejections - 35 USC § 112

4. Claim 1-28 and 31-39 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4.1. As per claim 1 (as exemplary of claims 1, 7 and 13), line 7, the phrase "one or more" is vague and indefinite. The word "and" should be added after the phrase "to said aircraft's orientation" on line 17.

4.2. As per claim 5 (as exemplary of claims 5 and 11), line 2, the phrase "one or more operating features" is unclear since they are not defined properly.

4.3. As per claim 6 (as exemplary of claims 6, 12 and 37), the phrases "said one or more operating features" and "the group" on lines 2 and 3, respectively, have no antecedent basis.

4.4. As per newly added claim 17 (as exemplary of claims 17-19), the instant passage on lines 3-6 is unclear as to what the first region of terrain represented. Verification is requested. Furthermore, the phrases "one or more" and "distance

or more" on lines 5 and 6, respectively, are vague and indefinite.

4.5. As per newly added claim 20 (as exemplary of claims 20-22), similar to the above, it is unclear as to what the second region represented. Moreover, the phrases "one or more" and "distance or more" on lines 2 and 4, respectively, are vague and indefinite.

4.6. As per newly added claims 23 and 26 (as exemplary of claims 23-28), it is unclear as to what the no elevation point means. Clarification is requested.

4.7. As per newly added claim 36, the comma at the end of line 10 should be deleted.

4.8. As per newly added claim 38, lines 5-6, the phrase "one or more vertices defined by one or more of said elevation points" is vague and indefinite. Furthermore, the instant passage on lines 7-14 is unclear as to how to examining an adjacent one of the plurality and how to expanding the polygon to include the adjacent one of the plurality of elevation points. Verification is requested. Moreover (as exemplary of claims 38 and 39), the phrases "one or more" and "distance or more" on lines 9 and 14, respectively, are vague and indefinite.

4.9. The remaining claims, not specifically mentioned, are rejected for incorporating the defects from their respective parent by dependency.

5. The following rejections are based on the examiner's best interpretation of the claims in light of the 35 U.S.C. 112 errors noted above.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

7. Claims 1-12 are rejected under 35 U.S.C. § 103 as being unpatentable over Beckwith et al (4,660,157) in view of Behensky et al. (5,005,148) or a brochure from Atari Game Corp. ('Hard Driving') or a brochure from Atari Game Corp. ('Steel Talons').

7.1. With respect to claims 1, 5-7, 11-12, 14 and 36-37, Beckwith et al. discloses a digital system for producing a real time video display in perspective of terrain over which an aircraft is passing on the basis of compressed digital data stored on a cassette tape (see at least an abstract). Beckwith

et al. discloses that the system includes a position determining means for locating the aircraft's position in three dimensions and an attitude determining means for determining the aircraft's orientation in three dimensional space (see at least figure 1 and columns 5 and 6). Beckwith et al. further discloses that the system includes a digital data base means for storing a compressed terrain data (see at least the abstract). Beckwith et al. also discloses a computer means for reading compressed terrain data from the digital data base means in a controlled manner based on the instantaneous geographical of the aircraft as provided by the aircraft navigation computer system, reconstructing the compressed data by suitable processing and writing the reconstructed data into a scene memory, and then providing a 3D perspective on the display (see at least columns 2 and 3).

Beckwith et al. does not explicitly disclose that a digital data base means containing polygon data representing terrain and manmade structures. However, Behensky et al. suggests a driving simulator for a video game which includes the road and other terrain are produced by mathematically transforming a three-dimensional polygon data base (see at least column 2, lines 33-38). The suggestion of Behensky et al. in at least column 2 would have motivated one of ordinary skill in the art to combine with the system of Beckwith et al. in order to provide a significant reduction of data base storage and a larger

geographic areas can be stored so that it is not necessary to generate a data base of each mission. Similarly, the digital data base means containing polygon data representing terrain and manmade structures is also taught in a brochure from Atari Game Corp. ('Hard Driving') or a brochure from Atari Game Corp. ('Steel Talons'). Thus, because of the motivation set forth above, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Behensky et al. or the brochure from Atari Game Corp. ('Hard Driving') or the brochure from Atari Game Corp. ('Steel Talons') with the system of Beckwith et al.

7.2. With respect to claims 2-3 and 8-9, Beckwith et al. discloses the claimed invention as discussed above but does not explicitly disclose that the position determining means comprises a standard system for retrieving and processing data from the global positioning system and the attitude determining means comprises a standard avionics systems. However, the use of the standard system for retrieving and processing data from global positioning system and the standard avionics systems are well known effective and efficient means for determining the position and the orientation of the aircraft. For examples, the Maher patent (4,485,383) shows a receiver for receiving global positioning system and the Timothy patent shows a method for determining the orientation of a moving object from a single GPS receiver and producing roll, pitch, and yaw information. It

would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the global positioning system and the standard avionics system in such a system as taught through Beckwith et al. because it would produce high degree of accuracy in determining the position and orientation of the aircraft including roll, pitch, and yaw information.

7.3. With respect to claims 4 and 10, Beckwith et al. does not specifically disclose that the digital data base means comprises a CD rom disc and CD rom drive. However, the use of CD rom disc and CD rom drive for storing data is well known effective and efficient means for storing any data. It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize CD rom disc and CD rom drive in such a system as taught through Beckwith et al. because it would permit high degree of accuracy in the storing and restoring data, random access to the data so that the requirements for cache storage are reduced.

8. Claim 13 is rejected under 35 U.S.C. § 103 as being unpatentable over Beckwith et al and Behensky et al. as applied to claims 1-12 above, and further in view of the sales brochure from the Polhemus company.

Beckwith et al. and Behensky et al. disclose the claimed invention except for a head mounted display means worn by the pilot and an attitude determining means for determining the

orientation of the pilot's head in three dimensional space. However, the sales brochure from the Polhemus company suggests the commercial availability of a position and orientation sensor which can be used on a head-mounted display. The suggestion of the Polhemus company would have motivated one of ordinary skill in the art to combine the teaching of Polhemus company with the system of Beckwith et al. in order to allow the pilot to have a complete range of motion to receive a synthesized view of the world, a complete unhindered by the aircraft structure. Thus, because of the motivation set forth above, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings in Polhemus's brochure and Beckwith et al. patent.

9. In view of the indefinite state(s) of the claimed invention, no prior art has been applied against the claims 17-28, 31-35 and 38-39. However, applicants are requested to consider the cited references below fully when responding to the office action.

10. All claims are rejected.

11. The following references are cited as being of general interest: Sullivan et al. (4,213,252), Hertz (4,715,005), Dawson et al. (5,179,638) and Nack et al. (5,317,689).

Remarks

12. Applicant's arguments filed on February 13, 1995 have been fully considered but they are not deemed to be persuasive.

13. On page 16, second paragraph, the applicants argue that claims 1-12 are patentable over Beckwith et al. and Behensky et al. because there is no teaching or suggestion to combine the references. It is not necessary that the references actually suggest, expressly or in so many words, the changes or improvements that applicant has made. The test for combining references is what the references as a whole would have suggested to one of ordinary skill in the art. In re Shecler, 168 USPQ 716 (CCPA 1971); In re McLaughlin, 170 USPQ 209 (CCPA 1971); In re Young, 159 USPQ 725 (CCPA 1986).

The Examiner recognizes that references cannot be arbitrarily combined and that there must be some logical reason why one skill in the art would be motivated to make the proposed combination of references. In re Regel 188 USPQ 136 (CCPA 1975). However, there is no requirement that the motivation to make the combination be expressly articulated in one or more of the references; the teaching, suggestion or inference can be found not only in the references but also from knowledge generally available to one of ordinary skill in the art. Ashland Oil v. Delta Resins 227 USPQ 657 (CAFC 1985). The test for combining

references is what the combination of disclosures taken as a whole would suggest to one of ordinary skill in the art. In McLaughlin 170 USPQ 209 (CCPA 1971); In re Rosselet 146 USPQ 183 (CCPA 196). References are evaluated by what they collectively suggest to one versed in the art, rather than by their specific disclosures. In Re Simon, 174 USPQ 114 (CCPA 1972); In Re Richman 165 USPQ 509, 514 (CCPA 1970).

14. On page 16, third paragraph, the applicants argue that the polygon of Behensky et al. do not represent real terrain in any manner, but rather are, instead, essentially "building blocks" which may be accessed from the data base to create the fictional scene through which the drive is driving. This limitation is not found in the claims. The only recitation is that "data base comprising terrain data, said terrain data representing as one or more polygons". Therefore, the building blocks as taught in Behensky et al. still are considered as the terrain data. Therefore, the rejection under 35 U.S.C. § 103 is considered to be proper.

In addition, the digital data base which comprises terrain data representing as at least one of polygons is well known in the art at the time the invention was made (see at least U.S. patent number 5,192,208 issued to Ferguson et al., for example).

15. On page 17, second paragraph, the applicants argue that there is no teaching of constructing polygon based on an array of elevation points. This limitation is not found in the claims. Claimed subject matter not the specification, is the measure of invention. Disclosure contained in the specification can not be read into the claims for the purpose of avoiding the prior art. In re Sporck, 55 CCPA 743, 386 F.2d 924, 155 USPQ 687 (1986); In re Self, 213 USPQ 1,5 (CCPA 1982); In re Priest, 199 USPQ 11,15 (CCPA 1978).

16. Applicant's amendment necessitated the new grounds of rejection. Accordingly, **THIS ACTION IS MADE FINAL**. See M.P.E.P. § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 C.F.R. § 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Tan Nguyen, whose telephone number is (703) 305-9755. The examiner can normally be reached on Monday-Thursday from 7:30 AM-6:00 PM.

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Art Unit: 2304

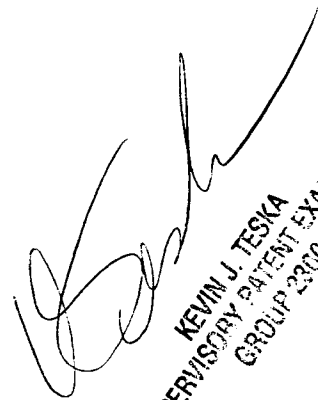
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin J. Teska, can be reached on (703) 305-9704. The fax phone number for this Group is (703) 305-9564.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3800.



TAN NGUYEN
May 04, 1995



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