THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 12

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JOHN NELLA,
JOSEPH W. AUSTIN, and PETER M. LIVINGSTON

Appeal No. 1998-2753
Application 08/740,887[1]

ON BRIEF

Before CALVERT, ABRAMS, and NASE, Administrative Patent Judges.

ABRAMS, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the decision of the examiner finally rejecting claims 1-3 and 5-7, which constitute all of the claims remaining of record in the application.

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[1] Application for patent filed November 4, 1996.

The appellants' invention is directed to a target detection, seeking and guidance system for a missile and to a method for detecting, seeking and intercepting a target with a missile. The subject matter before us on appeal is illustrated by reference to claim 1, which reads as follows:

1. A target detection, seeking and guidance system for an air-to-air, air-to-ground and/or ground-to-air missile comprising

a hyperspectral imaging system for detecting a target having a predetermined hyperspectral signature;

means for enabling the missile to track the target matching the predetermined hyperspectral signature; and

means including a missile controller for guiding the flight path of the missile to intercept the flight path of the target matching said predetermined hyperspectral signature.

THE REFERENCES

The references relied upon by the examiner to support the final rejection are:

Pinson	5,323,987	Jun. 28, 1994
Davies	5,329,595	Jul. 12, 1994
Cutts	5,379,065	Jan. 3, 1995

"A System for the Processing and Analysis of Multi- and Hyperspectral Data," Lurie *et al.*, SIG Technology Review, Winter 1994, pp. 43-58 (Lurie)

THE REJECTIONS

The following rejections stand under 35 U.S.C. § 103:

(1) Claims 1-3 and 5-7 on the basis of Pinson and Cutts.

(2) Claims 1-3 and 5-7 on the basis of Pinson and Davies.

(3) Claims 1-3 and 5-7 on the basis of Pinson and Lurie.

Rather than attempt to reiterate the examiner's full commentary with regard to the above-noted rejections and the conflicting viewpoints advanced by the examiner and the appellants regarding the rejections, we make reference to the Examiner's Answer (Paper No. 9) for the reasoning in support of the rejections, and to the Appellants' Briefs (Paper Nos. 8 and 10), for the arguments thereagainst.

OPINION

The 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). In establishing a *prima facie* case of obviousness, it is incumbent upon the examiner to provide a reason why one of ordinary skill in the art would have been led to modify a prior art reference or to combine reference teachings to arrive at the claimed invention. See

Ex parte Clapp, 227 USPQ 972, 973 (Bd. Pat. App. & Int. 1985). To this end, the requisite motivation must stem from some teaching, suggestion or inference in the prior art as a whole or from the knowledge generally available to one of ordinary skill in the art and not from the appellant's disclosure. See, for example, ***Uniroyal, Inc. v. Rudkin-Wiley* Corp.**, 837 F.2d 1044, 1052, 5 USPQ2d 1434, 1439 (Fed. Cir.), *cert. denied*, 488 U.S. 825 (1988).

The appellants' invention is directed to target detection, seeking and guidance systems for missiles that are launched against targets. According to the opening page of the specification, prior systems have tracked targets either in a single or a few spectral bands, thus opening the door to the effective use of countermeasures that prevent such systems from acquiring and/or tracking the target. The appellants further point out that the powers of discrimination of these prior art systems were such that they could inadvertently target friendly targets. The appellants' invention is based upon the principle that targets have hyperspectral signatures that are formed from literally hundreds of spectra, which the inventive system determines and utilizes.

Claim 1 is representative of all four of the independent claims. It requires a hyperspectral imaging system for detecting a target having a predetermined hyperspectral signature, means for enabling the missile to track the target matching this signature, and means including a missile controller for guiding the missile to intercept a target matching the predetermined hyperspectral signature. All three of the rejections set out by the examiner utilize Pinson as the primary reference. Pinson discloses an optical target detection, seeking and guidance system that appears, at best, to be an example of the prior art systems over which the appellants believe their system to be an improvement. In any event, the examiner concedes that Pinson "does not disclose a hyperspectral imaging system for detecting and tracking a target having a hyperspectral signature" (Answer, page 4). It is the examiner's position, however, that each of the three secondary references discloses a hyperspectral imaging system for flight vehicles "that detects and tracks targets" (with regard to Cutts, Answer, page 4), and that it therefore would have been obvious to modify Pinson by replacing the disclosed system with a hyperspectral one. The appellants argue that

one of ordinary skill in the art would not have been motivated to combine the teachings in the manner proposed by the examiner. We agree with the appellants.

We begin our analysis by focusing on the admonition of our reviewing court that the mere fact that the prior art could be modified does not make such a modification obvious unless the prior art suggests the desirability of doing so. See ***In re Gordon***, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). For the reasons hereinafter stated, it is our view that the applied prior art fails to suggest the desirability of the modification to Pinson that has been proposed by the examiner. First of all, there is no mention in any of the three secondary references of utilizing hyperspectral imaging for a missile firing system. Cutts teaches utilizing hyperspectral imaging from a vehicle in space to scan the earth (column 3, lines 1-2 and 50) for the purpose of identifying mineral or vegetative types (column 7, lines 65-66). While the appellants have acknowledged that the system disclosed in Davies would be "suitable for use" in the claimed missile system (specification, page 4), the reference does not mention such use, suggesting only that the system be

used in “earth monitoring satellites” (column 1, lines 24-25), such as oceanography, mapping and mineral exploration, for example (column 1, lines 51-54). The only uses suggested in the Lurie reference are in space borne cameras that monitor environmental and agricultural situations (page 44). Thus, the “targets” to which the examiner refers in the Answer as being tracked by the hyperspectral systems of the three secondary references are not the types of targets that are defined in the appellants’ specification as being the focus of missile systems. Second, the claims before us on appeal all require that the system detect, track, and guide a missile based upon the “predetermined hyperspectral signature of a target of interest” which, as we understand the teachings of the applied references, is not the manner in which these systems operate. Third, none of the applied references recognize the problems to which the appellants’ invention are directed, namely, providing a target tracking system for missiles that provides a high degree of recognition and is immune to countermeasures.

We therefore fail to perceive any teaching, suggestion or incentive in the applied references which would have led one

of ordinary skill in the art to replace the imaging system disclosed by Pinson with one that responds to the predetermined hyperspectral signature of a target. It would appear that the only suggestion for doing so is provided by the luxury of the hindsight accorded one who first viewed the appellants' disclosure. This, of course, is not a proper basis for a rejection under 35 U.S.C. § 103. See, for example, ***In re Fritch***, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992).

SUMMARY

The combined teachings of Pinson and each of the three secondary references fail to establish a *prima facie* case of obviousness with regard to the subject matter of the appellants' claims. This being the case:

None of the rejections are sustained.

The decision of the examiner is reversed.

REVERSED

Ian A. Calvert Administrative Patent Judge	)	
Neal E. Abrams Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
Jeffrey V. Nase Administrative Patent Judge	)	

tdl

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