THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

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. 17

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MARK T. KERN

Appeal No. 1998-0856
Application 08/486,022[1]

ON BRIEF

Before JOHN D. SMITH, OWENS, and TIERNEY, Administrative Patent Judges.

TIERNEY, Administrative Patent Judge.

Decision on Appeal

This is an appeal under 35 U.S.C. §134 from the examiner's refusal to allow claims 1-18. Upon consideration of the record, including the Appeal Brief (Paper No. 12), the Reply Brief (Paper No. 14) and the Examiner's Answer (Paper No. 13), we reverse the rejections of the examiner.

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[1]Application for patent filed on June 7, 1995.

The Invention

The appellant's invention relates to detectors of electromagnetic radiation, more particularly, thermopile radiation detectors. (Specification, p. 1). The thermopile radiation detectors of the invention possess an optical filter layer spanning an opening in a substrate. A copy of the claims under appeal is set forth in the appendix to appellant's brief. Independent claim 1 is illustrative of the invention and reads as follows:

1. A radiation detector, comprising:

a substrate surrounding a cavity;

a filter layer overlying at least a portion of a surface of said substrate and spanning the cavity, said filter layer having a first surface facing the cavity and a second surface opposite the first surface; and

a least one thermally responsive junction between dissimilar materials that is disposed upon and supported by said second surface of said filter layer over the cavity; wherein

said filter layer is comprised of alternating films of a first material and a second material selected for absorbing incident electromagnetic radiation within a predetermined band of wavelengths and for reflecting incident electromagnetic radiation outside of the predetermined band of wavelengths.

The References

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

Hopfer	3,147,436	Sept. 1, 1964

Villers et al (Villers)	3,424,624	Jan. 28, 1969
Rancourt et al (Rancourt)	4,229,066	Oct. 21, 1980
Steinbruegge et al (Steinbruegge)	4,436,363	Mar. 13, 1984
Tar	4,459,484	Jul. 10, 1984
Sclar	4,558,342	Dec. 10, 1985
LaBaw	5,159,199	Oct. 27, 1992

The above references are available as prior art under 35 U.S.C. § 102(b).

The Rejections

(1) Claims 1-2, 6-7, 11-12 and 16-18 stand rejected under 35 U.S.C. § 103 as unpatentable over Schlar in view of LaBaw.

(2) Claims 3, 8 and 13 stand rejected under 35 U.S.C. § 103 as unpatentable over Schlar in view of LaBaw as applied to claims 1, 6 and 11 and further in view of either Villers or Hopfer.

(3) Claims 4, 9 and 14 stand rejected under 35 U.S.C. § 103 as unpatentable over Schlar in view of LaBaw as applied to claims 1, 6 and 11 and further in view of either Steinbruegge or Rancourt.

(4) Claims 5, 10 and 15 stand rejected under 35 U.S.C. § 103 as unpatentable over Schlar in view of LaBaw as applied to claims 1, 6 and 11 and further in view of Tar.

Opinion

We have carefully considered all of the arguments advanced by appellant and the examiner and

agree with appellant that the aforementioned rejections are not well founded. Accordingly, we reverse these rejections.

The Schlar Reference

Schlar describes a thermoelectric infrared detector which contains p-n junctions of a thermopile which are located on a thin layer of unsupported silicon dioxide. (Abstract and col. 4, lines 6-7). The silicon dioxide layer spans an opening which extends through a silicon semiconductor substrate. (Abstract and col. 3, line 50 to col. 4, line 5). The conduction of heat between the detecting p-n junction and the reference junctions is limited by the thin insulating layer of silicon dioxide which joins the detecting p-n junctions to the substrate under the reference junctions. (Abstract). Additionally, a second insulating layer of silicon dioxide is deposited over the thermocouple line elements and a black IR absorbing layer which defines the detector area is then deposited on the second insulating layer. (Col. 4, lines 44-48). In particular, a thin oxide is formed over the thermopile on which a black absorbing layer is deposited on and patterned to provide selective IR absorption over the hot area of the detector. (Col. 5, lines 48-51).

The LaBaw Reference

LaBaw describes a spectral imaging system having an integrated filter and photodetector array.

(Abstract). The filter is deposited directly on the photodetector array by a low temperature deposition process. (Abstract). The optical filter being deposited directly thereon substantially eliminates stray and background optical signals from being detected by the photodetector. (Col. 3, lines 12-16). Without the filter, the detector would detect background radiation at wavelengths ranging from that of room temperature optics out to a wavelength of about 14 µm. (Col. 8, lines 14-18).

The Rejection of Claims 1-2, 6-7, 11-12 and 16-18 over Schlar in view of LaBaw

The examiner has rejected claims 1-2, 6-7, 11-12 and 16-18 as unpatentable under 35 U.S.C. § 103 over Schlar in view of LaBaw. According to the examiner, Schlar discloses a thermoelectric infrared detector array. The array is formed by depositing an insulating layer on a substrate and depositing the thermopiles on the insulating layer. The substrate is then etched or laser drilled beneath the thermopiles. The examiner recognizes, however, that Schlar does not disclose that the insulating layer acts as a filter. To remedy this deficiency, the examiner cites LaBaw for its teaching of forming a multi-layer film filter on a photodetector array that varies in transmission frequency with respect to position. From Schlar and LaBaw, the examiner concludes that it would have been obvious to one skilled in the art to use the filter of LaBaw in place of the insulating substrate of Schlar in order to filter unwanted wavelengths and enable each thermopile to detect specific infrared wavelengths. (Examiner's Answer, pages 4-5).

It is well settled that "a *prima facie* case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art." *In re Bell*, 991 F.2d 781, 783, 26 USPQ2d 1529, 1531 (Fed. Cir. 1993) (quoting *In re Rinehart*, 531 F.2d 1048, 1051, 189 USPQ 143, 147 (CCPA 1976)). Yet, any motivation to modify the prior art references must flow from some teaching in the art that suggests the desirability or incentive to make the modification needed to arrive at the claimed invention. *In re Napier*, 55 F.3d 610, 613, 34 USPQ2d 1782, 1784 (Fed Cir. 1995); *In re Gorman*, 933 F.2d 982, 986-87, 18 USPQ2d 1885, 1888, (Fed. Cir. 1991). ("When it is necessary to select elements of various teachings in order to form the claimed invention, we ascertain whether there is any suggestion or motivation in the prior art to make the selection made by the applicant. [Citations omitted] . . . The extent to which such suggestion must be explicit in, or may be fairly inferred from, the references, is decided on the facts of each case in the light of the prior art and its relationship to the applicants' invention.").

We concur with appellant that the combination of Schlar and LaBaw does not teach or suggest the claimed subject matter. The fact that the Schlar reference can be combined or modified with LaBaw does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 682, 16 USPQ2d 1430, 1432 (Fed. Cir. 1990). Yet, a review of the combined teachings of Schlar and LaBaw fails to provide such a suggestion.

At the outset, Schlar's insulating layer is described as limiting the conduction of heat between the detecting p-n junctions and the reference junctions. Thus, Schlar's insulating layer serves the specific purpose of insulating the detector. The examiner, however, has provided no motivation or suggestion as to why one skilled in the art would replace the required insulating layer of Schlar with a filter layer. Indeed, there is no teaching in LaBaw that would suggest that the filter of LaBaw will act as a suitable insulating layer for Schlar's detector.

Schlar's detector array possesses a thin oxide layer on which a black absorbing layer is deposited and patterned to provide selective IR absorption. Accordingly, Schlar's detector possesses a filter layer. Neither LaBaw nor Schlar, however, suggest that one skilled in the art should replace or combine the filter layer of Schlar with the specific filter of LaBaw. Further, there is no teaching that such a combination or substitution of the filters would lead one skilled in the art to form a detector having a filter spanning an opening in a substrate with a thermopile being formed upon the filter surface opposite the opening (Independent claim 11) or form a detector where the thermopile is supported by a filter layer spanning a cavity (Independent claims 1 and 6).

As the Schlar and LaBaw references taken as a whole fail to establish a *prima facie* case of obviousness as to the claimed invention, we reverse the examiner's rejection of claims 1-2, 6-7, 11-12 and 16-18 as unpatentable under 35 U.S.C. § 103 over Schlar in view of LaBaw.

Rejections over Villers, Hopfer, Steinbruegge, Rancourt and Tar

All of the appealed rejections rely upon the combined teachings of the Schlar and LaBaw references. As the additional references, Villers, Hopfer, Steinbruegge, Rancourt and Tar fail to rectify the deficiencies in the combined teachings of Schlar and LaBaw with respect to claims 1-2, 6-7, 11-12 and 16-18, we conclude that there is no *prima facie* case of obviousness with respect to claims 3-5, 8-10 and 13-15. Accordingly, the additional rejections of: 1) claims 3, 8 and 13 as unpatentable over Schlar in view of LaBaw as applied to claims 1, 6 and 11 and further in view of either Villers or Hopfer; 2) claims 4, 9 and 14 as unpatentable over Schlar in view of LaBaw as applied to claims 1, 6 and 11 and further in view of either Steinbruegge or Rancourt; and 3) claims 5, 10 and 15 as unpatentable over Schlar in view of LaBaw as applied to claims 1, 6 and 11 and further in view of Tar are also reversed.

Conclusion

To summarize, the decision of the examiner to reject claims 1-18 under 35 U.S.C. §103 is Reversed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

REVERSED

JOHN D. SMITH	)
Administrative Patent Judge	)
	)
	)
	) BOARD OF PATENT
TERRY J. OWENS	)
Administrative Patent Judge	) APPEALS AND
	)
	) INTERFERENCES
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MICHAEL P. TIERNEY	)
Administrative Patent Judge	)

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