

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. 18

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte BRIAN L. JUSTUS, ALAN L. HUSTON and ANTHONY J. CAMPILLO

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Appeal No. 1998-1925  
Application No. 08/430,956

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ON BRIEF

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Before COHEN, ABRAMS, and McQUADE, Administrative Patent Judges.  
ABRAMS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1-31, which are all of the claims pending in this application.

We REVERSE.

### BACKGROUND

The appellants' invention relates to an optical limiter. An understanding of the invention can be derived from a reading of exemplary claim 1, which appears in the appendix to the appellants' Brief.

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

Murphy	5,020,884	Jun. 4, 1991
Becker <u>et al.</u> (Becker)	5,382,985	Jan. 17, 1995

Wood et al., Proceedings - The International Society for Optical Engineering, Volume 1307, pages 376-393, April 20, 1990 (Wood)

Justus et al., Applied Physics Letter, Volume 63, No. 11, pages 1483-1485, September, 13, 1993 (Justus)

Swartzlander et al., International Journal of Nonlinear Optical Physics, Volume 2, No. 4, pages 577-611, 1993 (Swartzlander)

Claims 1-5, 9, 14-20 and 24-26 stand rejected under 35 U.S.C. § 103 as being unpatentable over Justus or Swartzlander in view of Murphy and Wood.

Claims 1-31 stand rejected under 35 U.S.C. § 103 as being unpatentable over Justus or Swartzlander in view of Murphy, Wood and Becker.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellants regarding the above-noted rejections, we make reference to the Answer (Paper No. 15) and the Supplemental Answer (Paper No. 17) for the examiner's complete

reasoning in support of the rejections, and to the Brief (Paper No. 14) and Reply Brief (Paper No. 16)<sup>1</sup> for the appellants' arguments thereagainst.

### OPINION

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

The appellants' invention is directed to a "hybrid passive optical limiter for protecting eyes and sensors from intense visible and near infrared laser radiation." To accomplish this, it utilizes a thermal-defocusing mechanism to limit the passage of a focused incident light beam within a first predetermined intensity range and a nonlinear scattering mechanism to limit the passage of such light having an intensity above this range. Specification, page 1. As disclosed, both of these tasks are accomplished by a single protective element comprising a cell having a chamber whose inner walls are of roughened glass and which contains a thermally responsive solution the light-passing characteristics of which change in response to the heat applied to it by an incident beam of light. Depending upon the thermal influence upon the solution, it acts upon the light in

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<sup>1</sup>Submitted with the Reply Brief was a declaration under 37 C.F.R. 1.132 by inventors Justus and Huston, which the examiner refused to enter on the ground that it was not timely submitted (Supplemental Answer, page 1). Accordingly, the declaration is not before us, and we have not considered the information contained therein.

various fashions. See specification, pages 19-22, and Figures 1, 2A-C, and 5. As manifested in independent claim 1, the invention is described as functioning to protect a light-sensitive object from damage due to an incident light beam above a first predetermined value of light intensity. The claim describes the structure as comprising “first optical means for focusing an incident light beam to a focal point,” “a protective element disposed near the focal point said protective element being responsive to a focused incident light beam,” and a “second optical means for focusing substantially all of the light passing through said protective element and said second optical means onto the light-sensitive object.” The protective element has three possible responses to the focused incident light beam:

- (1) If the beam is below a first predetermined intensity level, the protective element allows it to pass through.
- (2) If the beam is between the first predetermined level and a higher second predetermined level, the protective element deflects by way of thermal defocusing substantially all of the focused incident light into rings of light and passes through only a small portion.
- (3) If the beam is above the second predetermined intensity level the protective element scatters that incident light in all directions to decrease the intensity level below the damage threshold of the light sensitive object.

In the first rejection of claim 1, the examiner takes the position that Justus and Schwartzlander both disclose protective elements in which optical defocusing is utilized to reduce the intensity of a beam of focused incident light that is above a predetermined level

of intensity so as to protect a light-sensitive object, that Murphy teaches this objective also can be accomplished by a protective element that utilizes a cell having a chamber with spaced inner walls having a roughened glass surface and containing a solution responsive to the heat present in an applied incident light beam, and that Wood discloses both thermal defocusing and nonlinear scattering as being means for reducing the intensity of focused incident light beams and “recommends using a combination of these passive optical limiting systems to provide better high power limiting and greater [sic] dynamic range than any one device alone can achieve,” and “[t]hermal defocusing is recommended to be the first limiter” (Answer, pages 3 and 4). Therefore, the examiner concludes, one of ordinary skill in the art would have found it obvious to construct the system recited in the appellants’ claim 1 (Answer, page 5). The appellants, as can be expected, offered arguments in opposition to the examiner’s point of view.

Applying the guidance provided by our reviewing court for evaluating a rejection under 35 U.S.C. § 103,<sup>2</sup> we find ourselves in agreement with the appellants that the

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<sup>2</sup>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 In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). However, the mere fact that the prior art structure 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). The initial burden of establishing a basis for denying patentability to a claimed invention rests with the examiner. See In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984).

teachings of the references do not support such a conclusion. It is true that both Justus and Schwartzlander teach protecting a sensor from damaging intensities of light by passing a focused incident beam through a defocusing device. It also is true that Murphy teaches that a scattering device can be used to accomplish the same objective. However, we agree with the appellants that the examiner's rejection fails because the teachings of Wood have wrongly been interpreted. Wood discloses three protecting means for acting upon light beams. One of these is a scattering device (pages 379-385), and another is a thermal defocusing device (pages 388-392). At the end of the discussion on thermal defocusing, Woods concludes that "[a] device of this type [thermal defocusing] may be desirable in front of all other devices as a means of protecting other limiters as well as sensitive optical elements from extremely high incident fluences" (page 392). The examiner apparently interprets this to mean that this suggests combining the two devices into a single protective element. We do not agree. From our perspective, the extent of Wood's teaching in this regard is only that a complete thermal defocusing device be used in series ahead of a complete scattering device, and such would include for each of the devices a first optical means for focusing an incident light beam at a focal point, a protective element located near the focal point, and a second optical means for focusing the light beam exiting from the protective element upon the light sensitive object. The examiner has not pointed out, nor do we find, any reason upon which to base a conclusion

that the Wood teachings would have motivated one of ordinary skill in the art to do anything more. Two separate devices in series is a far cry from the hybrid optical limiter recited in claim 1, which requires that a first optical means focus an incident light beam to “a” focal point, that “a” protective element be disposed near “the” focal point, and that “said” protective element respond to an intensity of light below a predetermined first intensity by allowing the entire beam to pass through, to an intensity of light between the first intensity and a second intensity higher than the first by defocusing the light so that only a small portion is allowed to pass, and to a third intensity higher than the second predetermined intensity by scattering the light in all directions to decrease the intensity below the damage threshold of the sensitive object. In sum, we fail to perceive any teaching, suggestion or incentive in the references which would have led one of ordinary skill in the art to combine them in the manner proposed by the examiner; from our viewpoint, such is found only in the hindsight afforded one who first viewed the appellants’ disclosure which, of course, is not a proper basis for a rejection. In re Fritch, 972 F.2d 1260, 1264, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992).

It thus is our conclusion that the combined teachings of the references applied against claim 1 in this rejection fail to establish a prima facie case of obviousness with regard to the subject matter recited therein, and we will not sustain the rejection of claim 1 or of claims 2-15, which depend therefrom.

Independent claim 16 also stands rejected on this same basis. It is directed to protecting a sensitive object from laser beams and all near ultraviolet, visible and near infrared wavelengths above a first predetermined level of light intensity. It does not include the limitation that there be a first optical means for focusing an incident light beam on "a" focal point, but it specifies that there be "a" sample cell containing a solution of absorbing material dissolved in a solvent, that "said" sample cell be responsive to deflect substantially all of the focused incident light beam into rings of light and pass only a small portion, and that it include means for scattering the incident light when it is above a second predetermined level higher than the first. Here, as with claim 1, we fail to perceive any suggestion for combining the references in such a manner as to render claim 16 obvious, other than by means of hindsight. Therefore, we will not sustain this rejection of claim 16 or dependent claims 17-31.

The examiner also has rejected claims 1 and 16 as being unpatentable over the four references applied in the first rejection, taken further in view of Becker. This reference discloses an optical switching device comprising a substrate of light absorbent material with a plurality of holes therethrough containing a liquid material having an index of refraction that is temperature dependent. Why the examiner has applied it against these claims is not apparent to us from the very abbreviated explanation on page 6 of the Answer. In any event, it is our opinion that Becker fails to

overcome the shortcoming in the basic combination of references. Such being the case, this rejection of independent claims 1 and 16 and dependent claims 2-15 and 17-31 also is not sustained.

SUMMARY

Neither rejection is sustained.

The decision of the examiner is reversed.

REVERSED

IRWIN CHARLES COHEN	)	
Administrative Patent Judge	)	
	)	
	)	
	)	
	)	BOARD OF PATENT
NEAL E. ABRAMS	)	APPEALS
Administrative Patent Judge	)	AND
	)	INTERFERENCES
	)	
	)	
	)	
JOHN P. McQUADE	)	
Administrative Patent Judge	)	

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