

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board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. 33

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TATSURO OTAKI
and KUMIKO OTAKI

Appeal No. 2001-1956
Application 08/923,424

ON BRIEF

Before KRASS, BARRETT and LALL, Administrative Patent Judges.

LALL, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1-8, 14-16, 20 and 27-32, all the pending claims in the application.¹

¹ The rejection of claims 27-32 under 35 U.S.C. § 112, first paragraph, for lack of enablement, has been withdrawn, see examiner's answer at page 9.

According to appellants, the invention is directed to primarily replacing optical members 5 and 6 (Figure 6 of the disclosure) by the birefringent optical member members 1 and 2 (Figure 1 of the disclosure). The birefringent optical members are made by combining an isotropic member and a birefringent member. The orientation of members 1 and 2 with respect to the condenser lens 13 and objective lens 16 (Figure 1 of the disclosure) is critical to the invention. The following claim is illustrative of the invention.

1. A differential interference microscope comprising:

a light source capable of providing a polarized light;

a first birefringent optical member capable of separating the light from the light source into two linearly polarized light components having planes of vibration perpendicular to each other;

a condenser lens capable of conducting the two linearly polarized light components, separated by the first birefringent optical member, to an object being examined;

an objective capable of focusing each of the two linearly polarized light components from the object being examined;

a second birefringent optical member capable of synthesizing each of the two linearly polarized light components from the object being examined; and

polarization interference means for synthesizing the linearly polarized light components,

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wherein the first birefringent optical member includes;

a first wedge-shaped prism made of an isotropic optical material, and

a second wedge-shaped prism positioned between the condenser lens and the wedge-shaped prism and made of a birefringent optical material having a center thickness of between about 0.4 and 0.6 mm, and

wherein the second birefringent optical member includes a third wedge-shaped prism made of a birefringent optical material having a center thickness of between about 0.4 and 0.6 mm, and a fourth wedge-shaped prism positioned between the third wedge-shaped prism and the polarization interference means and made of an isotropic optical material.

The examiner relies on the following references:

DeVeer	3,868,168	Feb. 25, 1975
Hayashi	4,964,707	Oct. 23, 1990

Bass et al. (Bass), "Handbook of Optics", Second Edition, Vol. 2, pages 17.32-17.37 (1995)

Appellants' admitted prior art at pages 2-6 and shown in Figures 6-8.

Claims 1, 2, 5, 6, 14, 15, 27 and 28 stand rejected under 35 U.S.C. § 103 as being unpatentable over the admitted prior art in view of DeVeer.

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Claims 3, 4, 16, 29 and 30 stand rejected under 35 U.S.C. § 103 in view of the admitted prior art, DeVeer and Bass.²

Claims 7, 8, 20, 31 and 32 stand rejected under 35 U.S.C. § 103 as being unpatentable over the admitted prior art, DeVeer and Hayashi.

Rather than repeat the arguments of appellants and the examiner, we make reference to the briefs (substitute brief, Paper No. 25, reply brief, Paper No. 29) and the examiner's answer (Paper No. 26) for the respective details thereof.

OPINION

We have considered the rejections advanced by the examiner and the supporting arguments. We have, likewise, reviewed the appellants' arguments set forth in the briefs.

We reverse.

The combination of the admitted prior art and DeVeer is essential to all the rejections on appeal. Therefore, we consider this combination. We take claim 1 as an example. In rejecting claim 1 under this combination (final rejection at

² The rejections based on 35 U.S.C. § 112, first paragraph, for lack of enablement, are withdrawn by the examiner (answer at page 9). Furthermore, the objection to the drawings is a procedural matter, and not for our consideration.

pages 4-5) the examiner asserts (id. at page 4) that "[t]he only feature missing from the prior art is that it does not teach that one of the prisms used to form each set of the birefringent members is an isotropic prism consisting of an isotropic material for the purpose of reducing the optical path of the light beam passing through the prisms, improving the quality of image formed and reducing the manufacture cost." The examiner finds that DeVeer in Figure 11 teaches a birefringent optical member consisting of a glass wedge-shaped prism cemented to a birefringent wedge-shaped prism. The examiner contends (final rejection at page 5) that "[t]hus, it would have been obvious...to modify the differential interference microscope as provided by the prior art by using a birefringent member consisting of a glass (or isotropic) wedge-shaped prism cemented to a birefringent wedge-shaped prism as suggested by DeVeer for the purpose of reducing the optical path of light passing through the birefringent member, improving the image quality, and reducing the manufacture cost." Appellants argue (brief at page 14 and reply brief at pages 3 to 5) that there is no teaching in DeVeer or in the admitted prior art to combine the teaching of the two references.

We agree with appellants' position. We find that DeVeer does teach the forming of a birefringent optical member in Figure 11 by cementing an isotropic prism with a refringent member prism. However, we do not find any teaching of using such a prism in place of a conventional prism. We note that in column 2, lines 30-35 DeVeer does mention that there is a significant reduction in cost from the "elimination of matching pairs of complementary wedges," which alludes to the formation of a birefringent optical member having an isotropic member and the reinfringent member. However, there is no suggestion of using such a prism in place of a conventional prism in an differential interference microscopic arrangement recited by appellants.

Appellants further argue (brief at pages 13 and 14) that the recited orientation of the birefringent optical members is not shown by the combination even if the combination was taught by the references. The examiner responds (answer at page 6) that "such an arrangement is an obvious matter within the level of one skilled in the art. One skilled in the art can easily use the prism with isotropic or glass material neat (sic, near) the object to be eliminated. Furthermore, the arrangement of the birefringent elements with the differential materials as argued

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by the appellant [sic] is not [a] critical feature of the invention...."

We disagree with the examiner's position. The claim recites a particular and specific manner in which the refringent optical members each consisting of an isotropic prism and a refringent prism are physically arranged with respect to the condenser and the objective lenses in the differential microscope. To arbitrarily allege that such an arrangement would have been obvious without the support of any factual evidence is a mere speculation on the part of the examiner.

The recited central thickness of the birefringent optical member between 0.4 and 0.6 mm, (which is not so recited in the other independent claim 14), is also not shown by the combination of the admitted prior art and DeVeer, even if such a combination were appropriate.

Therefore, we do not sustain the rejections based on the primary combination of the admitted prior art and DeVeer.

Since Bass and/or Hayashi do not cure the deficiency of this basic combination, we also do not sustain the rejections based on the basic combination as modified by Bass with respect to claims 3, 4, 16, 29 and 30; or as modified by Hayashi with respect to claims 7, 8, 20, 31, and 32.

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The decision of the examiner rejecting the claims under
35 U.S.C. § 103 is reversed.

REVERSED

Errol A. Krass)	
Administrative Patent Judge)	
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Lee E. Barrett)	BOARD OF PATENT
Administrative Patent Judge)	APPEALS AND
)	INTERFERENCES
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