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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 23

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TOM FENG and JOEL ASKINAZI

Appeal No. 1997-2859
Application 08/340,676

ON BRIEF

Before THOMAS, KRASS 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[1] of claims 15 to 20 and 22 to 24.

The disclosed invention relates to infrared (IR) windows

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[1] An amendment after the final rejection was filed [paper no. 13] and was entered in the record [paper no. 14].

and, more particularly, to composite IR windows comprising a protective IR-transparent layer directly bonded to an IR-transparent substrate without adhesive therebetween. Conventional IR windows for airborne applications lack high-speed sand and rain impact durability and, as a result, experience cumulative surface and sub-surface damage which results in large optical transmittance loss. According to the invention, an inner surface of the protective layer and an outer surface of the IR substrate are directly bonded without adhesive in between. The invention is further illustrated by the following representative claim.

23. An infrared (IR) window which has a high transmittance at IR frequencies comprising:

a protective IR-transparent layer directly bonded to an IR-transparent substrate without adhesive therebetween using direct bonding, wherein said protective IR transparent layer includes silicon and said IR transparent substrate includes at least one of zinc sulfide, zinc selenium, germanium, and gallium arsenide.

The Examiner relies on the following references:

Kraatz et al. (Kraatz)	4,778,731	Oct. 18, 1988
Hilton, Sr. (Hilton)	5,194,985	Mar. 16, 1993

Claims 15 to 16, 18 to 20 and 22 to 24 stand rejected under 35 U.S.C. § 102 as being anticipated by Hilton. Claim

17 stands rejected under 35 U.S.C. § 103 over Hilton and Kraatz.

Rather than repeat the arguments of Appellants and the Examiner, we make reference to the briefs[2] and the answer[3] 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 affirm.

In our analysis, we are guided by the precedence of our reviewing court that the limitations from the disclosure are not to be imported into the claims. In re Lundberg, 244 F.2d

[2] A reply brief was filed as paper no. 18 and its entry approved without any further response by the Examiner [paper no. 19].

[3] We note that the Examiner's answer does not have page numbers. For our convenience, we have added the page numbers.

543, 113 USPQ 530 (CCPA 1957); In re Queener, 796 F.2d 461, 230 USPQ 438 (Fed. Cir. 1986). We are also mindful of the requirements of anticipation under 35 U.S.C. § 102. We must point out, however, that anticipation under 35 U.S.C. § 102 is established only when a single prior art reference discloses, either expressly or under the principles of inherency, each and every element of a claimed

invention. See RCA Corp. V. Applied Digital Data Systems, Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984), cert. dismissed, 468 U.S. 1228 (1984). Furthermore, only those arguments actually made by Appellant have been considered in making this decision. Arguments which Appellant could have made but chose not to make in the briefs have not been considered [37 37 CFR § 1.192(a)].

Furthermore, in an appeal involving a rejection under 35 U.S.C. § 103, we are guided by the general proposition that an examiner is under a burden to make out a prima facie case of obviousness. If that burden is met, the burden of going forward then shifts to the applicant to overcome the prima facie case with argument and/or evidence. Obviousness is then

determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. See In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); In re Hedges, 783 F.2d 1038, 1039, 228 USPQ 685, 686 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976).

Analysis

At the outset, we point out that we will treat individually only those claims which have been argued by Appellants separately.

Rejection of claims 15 to 16, 18 to 20 and 22 to 24

These claims are rejected under 35 U.S.C. § 102 as being anticipated by Hilton. We first take the broadest claim, 23. The Examiner asserts [final rejection, pages 2 to 3] that "[t]he patent of Hilton, Sr. discloses the applicants' claimed invention as follows: ... " Appellants argue [brief, pages 4 to 8 and reply brief, pages 1 to 3] that "independent claim 23

explicitly calls for a protective layer ‘directly bonded’ to a substrate without adhesive therebetween ‘using direct bonding.’” [id. 4]. Appellants further argue [id. 6] that “[i]n contrast, [in Hilton], epitaxial growth includes an atom by atom build up of the layer on the substrate.” The Examiner responds [answer, page 4] that “[w]hile Hilton, Sr. doesn’t provide the same process as the [A]ppellants for bonding, the final product is structurally the same, a protective layer directly on a substrate, using the same materials set forth by the [A]ppellants, without an intermediate layer.” Appellants further argue [reply brief, page

2] that “Hilton, Sr. does not teach a bonded structure.”

We agree with the Examiners interpretation of the claimed feature “directly bonded”. During the prosecution of a patent application, an Examiner is required to give a claim the broadest reasonable interpretation consistent with the specification. In re Morris, 127 F.3d 1048, 1054, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997). Here, the Examiner is taking into consideration the process limitation to the extent called for by claim 23, but is not reading into the claim all the

process limitations from the specification. We find that, in Hilton, following the Examiner's reasoning above, the protective layer is directly bonded to the substrate as there is no adhesive in between the layer and the substrate. Moreover, we also find that contrary to Appellants' views above, epitaxial growth in Hilton results into a protective layer being directly bonded to the substrate, since there is no intermediate layer.

Appellants further argue [brief, pages 7 to 8 and reply brief, page 2] that, as to the claimed limitation of “using direct bonding,” “Applicants are entitled to use functional language, ... which clearly defines the boundaries of the subject matter for which protection is sought [id. 7].” The Examiner responds [answer, page 4] that “the use of ‘direct bonding,’ as stated above, can be reasonably interpreted to mean any bonding which uses no intermediate layer, such as an adhesive.” Although we agree with Appellants that they are permitted to use functional language, we again agree with the Examiner’s position for the same rationale as for the limitation of “directly bonded” above. Thus, we sustain the anticipation rejection of claim 23 over Hilton.

With respect to the other independent claim, 15, Appellants further argue [brief, pages 6 to 7 and reply brief, page 2] that "Applicants' reference to 'removably', when read in the light of the specification, recites that the protective layer is bonded to the substrate so as to be debondable therefrom without destroying the members [id. 6]." The Examiner responds [answer, page 4] that "it is evident that [,in Hilton,] at some temperature, the protective layer will be removed from the substrate. While this temperature may be different than that set forth in the appellants' disclosure, it is not a claimed feature. Neither is [claimed] any recitation as to the appearance of the substrate after the removal of the protective layer." We are convinced by the Examiner's reasoning. Appellants' claim 15 does not require that the protective layer be removed by heating to a particular temperature. For example, it may be removed by heating to a sufficiently high temperature. Also, we find it to be true that claim 15 does not specify the appearance or condition of the surface of the substrate after the protective layer is removed. In other words, there is no requirement in the claim that the substrate must be left in a reusable

condition. Appellants want the Examiner to read into the claims limitations from the specification. This, the Examiner has correctly not done. Therefore, we sustain the anticipation rejection of claim 15 over Hilton.

As to claim 16, Appellants argue [brief, pages 8 to 9] that “Applicants’ reference to removing particles recites that unbonded areas between the layers can be prevented ...” The Examiner [final rejection, page 3] asserts that “it is an inherent step in any optical manufacturing process to clean the components in order to eliminate contaminants which may degrade the ability of the optics to function properly.” We agree with the Examiner’s rationale. Moreover, we also note that the very nature of direct bonding inherently requires that particles be removed from the contacting surfaces for a strong direct bond. We, therefore, sustain the anticipation rejection of claim 16 over Hilton.

With respect to claim 18, after reviewing the arguments of Appellants [brief, page 9] and of Examiner [final rejection, page 3], we find that Hilton does anticipate claim 18 since Hilton discloses its device being used in harsh

weather (column 1, lines 28 to 36). Thus, we sustain the anticipation rejection of claim 18 over Hilton.

Regarding claim 20, we have reviewed the positions of Appellants [brief, page 9] and the Examiner [final rejection, page 3] and find that Hilton, contrary to Appellants' views, contemplates the removal of the protective silicon layer by etching and refilling the "etched channels" with epitaxially grown material, see Col. 3, Lines 41-52, albeit for a different purpose. However, the purpose for such removal is not material to the teaching of removal of the protective layer, per se. This, combined with an expected economic need for the removal of a protective layer rather than the whole window, lends support to the examiner's rejection. Therefore, we affirm the anticipation rejection of claim 20 over Hilton.

As to claim 22, Appellants have not presented any substantial arguments. Still, we agree with the Examiner [final rejection, page 3] that Hilton has used silicon and gallium arsenide as the suitable materials in its IR device because of their hydrophilic nature, and thus Hilton meets claim 22.

Regarding claim 24, Appellants present the same arguments

as to claims 15 and 23 [brief, pages 9 to 10]. For the same rationale as for claims 15 and 23 above, we sustain the anticipation rejection of claim 24.

Rejection of Claim 17

Claim 17 is rejected under 35 U.S.C. § 103 over Hilton and Kraatz. After noting the difference between claim 17 and Hilton, the Examiner asserts [final rejection, pages 4 and 5] that "[i]t would have been obvious ... to use an AR [i.e., anti-reflection] coating as taught by Kraatz et al. on the window disclosed by Hilton, Sr. in order to increase transmission through and decrease the reflected signal from the window." Additional to the arguments regarding claim 15 above, Appellants argue [brief, page 11] that "Kraatz does not describe coating at least one of an outer surface of a protective layer and an inner surface of a substrate of an infrared window ..." We find that Kraatz does disclose (column 2, lines 62 to 65) that "[a] series of ... antireflection coatings is then deposited on the ... surfaces of any of the substrates employed." The purpose of such coatings is to achieve high optical transmissivity [abstract] and to obtain the capability of transmissivity over a greater

bandwidth [Kratz, col. 1, lines 30 to 36]. We also find that Hilton, at col. 3, lines 38-40, teaches the use of anti-reflective coating applied directly to the surface of the silicon layer 11. Thus, the Examiner's suggested combination of Hilton and Kraatz to meet claim 17 is proper and we affirm the rejection.

In conclusion, we have affirmed the decision of the Examiner rejecting claims 15 to 20 and 22 to 24.

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

AFFIRMED

JAMES D. THOMAS Administrative Patent Judge	)	
ERROL A. KRASS Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES

PARSHOTAM S. LALL)
Administrative Patent Judge)

psl/ki
K. Lum
Hughes Aircraft Company
Bldg. C01 A126
P.O. Box 80028
Los Angeles, CA 90080-0028