UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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*Ex parte* PHILIPPE BOIRE and XAVIER TALPAERT

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Appeal 2008-1296
Application 10/079,483
Technology Center1700

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Decided: May 28, 2008

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Before EDWARD C. KIMLIN, JEFFREY T. SMITH, and
KAREN M. HASTINGS, *Administrative Patent Judges*.

KIMLIN, *Administrative Patent Judge*.

DECISION ON APPEAL[1]

This is an appeal from the final rejection of claims 25-31 and 37-55. Claims 25, 28, and 37 are illustrative:

25. A method, comprising the steps of:

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[1] An Oral Hearing for this appeal was held on May 13, 2008.

chemical vapor depositing a titanium precursor selected from the group consisting of titanium halides on a glass substrate at a temperature of 400 to 600°C; and

annealing the glass substrate to produce titanium dioxide in a crystalline phase as a photocatalytically-activated self-cleaning coating over the glass substrate.

28. A method, comprising the steps of:

depositing a barrier layer with respect to alkali metals on a surface of a glass substrate,

depositing a photocatalycially-activated self-cleaning coating on a surface of the glass substrate by directing a solution of titanium acetylacetonate at a temperature of 400 to 600°C; and

annealing to produce titanium dioxide as a photocatalytically-activated self-cleaning coating over the glass substrate.

37. A method, comprising the steps of:

depositing a barrier layer with respect to alkali metals on a surface of a substrate; and

depositing a photocatalytically-activated self-cleaning coating by liquid spray pyrolysis over the barrier layer, whereupon the barrier layer inhibits migration of sodium ions from the surface of the substrate to the photocatalytically-activated self-cleaning coating.

The Examiner relies upon the following references as evidence of obviousness:

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| Van Laethem | 4,414,015 | Nov. 8, 1983 |
| Pikington | EP 0 348 185 | Dec. 27, 1989 |
| Soubeyrand | 5,798,142 | Aug. 25, 1998 |

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|---|---|---|
| Watanabe | 5,853,866 | Dec. 29, 1998 |
| Suntola | 6,500,780 B1 | Dec. 31, 2002 |
| Boire '028 | 2003/0207028 | Nov. 6, 2003 |
| Boire '487 | 2004/0216487 | Nov. 4, 2004 |

Takahashi et al., Journal of Materials Science, 24, pp. 243-246 (1989)

Lee et al., Mat. Res. Bull. Vol. 27, pp. 685-692 (1992)

Cui et al., Mat. Res. Bull. Vol. 28, pp. 195-201 (1993)

Fukayama et al., 187th Electrochemical Society Meeting, Reno, 21-26 May 1995 Extended Abstracts, 95-1 (Abstract 735, p. 1102)

US Patent Application 10/419,872
US Patent Application 10/856,876

Appellants' claimed invention is directed to a method of providing a photocatalytically-activated coating of titanium dioxide on the surface of a glass substrate. The coating may be deposited by chemical vapor deposition (claim 25) or liquid spray pyrolysis (claim 37), and a barrier layer may be deposited on the glass substrate before the photocatalytically-activated coating.

The appealed claims stand rejected under 35 U.S.C. § 103(a) as follows:

(a) claims 28-31 and 37-42 over Takahashi in view of Fukayama and Watanabe,

(b) claims 44-46 and 50 over Fukayama in view of Soubeyrand and Van Laethem,

(c) claims 50 and 55 over Takahashi in view of Soubeyrand, Van Laetham, and Watanabe,

(d) claims 43, 47-49, 51, 52, and 54 over Takahashi in view of Soubeyrand, Van Laethem, Watanabe, Fukayama and EP '185,

(e) claims 43, 47-49, 51, 52, and 54 over Fukayama in view of Soubeyrand, Van Laetham, and EP '185,

(f) claims 28-31 and 37-42 over Cui in view of Fukayama,

(g) claims 50 and 55 over Cui in view of Soubeyrand and Van Laethem,

(h) claims 43, 47-49, 51, 52, and 54 over Cui in view of Soubeyrand, Van Laethem, Fukayama, and EP '185,

(i) claims 25-27 over Fukayama in view Lee and Suntola.

In addition claims 25-27, 43-46, and 50-54 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 25-28 of copending Application US Serial No. 10/419,872. Also, claims 25-31, 34, 43-46, and 50-54 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 25-78 of copending Application US Serial No. 10/856,876.

Appellants fail to set forth separate, substantive arguments for the groups of claims separately rejected by the Examiner. While Appellants devote a separate paragraph to each of the claims on appeal, and repeatedly state that the applied "references fail to suggest such a method" which includes the recited features, these conclusory remarks are not tantamount to the requisite substantive arguments that set forth why the Examiner's rationale for the obviousness of the claimed features is in error. Accordingly, the groups of claims separately rejected by the Examiner stand or fall together.

We have thoroughly reviewed each of Appellants' arguments for patentability. However, we are in complete agreement with the Examiner's reasoned analysis and application of the prior art, as well as his cogent and thorough disposition of the arguments raised by Appellants. Accordingly, we will adopt the Examiner's reasoning as our own in sustaining the rejections of record, and we add the following for emphasis only.

At the outset, we will not provide additional, unnecessary commentary on all the Examiner's § 103 rejections since some of the rejections and pertinent arguments by Appellants include essentially the same rationales.

We consider first the § 103 rejection of claims 28-31 and 37-42 over Takahashi in view of Fukayama and Watanabe. As acknowledged by Appellants, Fukayama discloses a method of depositing a photocatalytic coating of $TiO_2$-Pt on a glass substrate but, as recognized by the Examiner, Takahashi does not expressly disclose depositing a barrier layer before the photocatalytic coating. However, as explained by the Examiner, Fukayama teaches that the provision of a silicon barrier film on a glass substrate before the deposition of the photocatalytic coating results in a more active photocatalytic layer because the silica barrier prevents sodium migration from the glass substrate to the photocatalytic coating. Accordingly, based on the collective teachings of Takahashi and Fukayama, we find no error in the Examiner's legal conclusion that it would have been obvious for one of ordinary skill in the art to provide a barrier layer between the glass substrate and photocatalytic coating of Takahashi.

We are not persuaded by Appellants' argument that, since Takahashi deposits a film of $TiO_2$-Pt and Fukayama deposits a film of $TiO_2$ on a barrier

layer, "[n]o evidence has been cited by the examiner which suggests that the Pt-$TiO_2$ coating described by Takahashi would have photocatalytic properties when deposited on the $SiO_2$-coated glass substrate described by Fukayama" (p. 9 of principal Brief, pernultimate paragraph). In fact, the Examiner cites Watanabe as additional evidence that a $TiO_2$-Pt film is photocatalytic and that the inclusion Pt increases the photoactivity of $TiO_2$ (col. 3, ll. 10-20). Hence, we find that the Examiner has cited sufficient evidence to support the conclusion that one of ordinary skill in the art would have had the requisite reasonable expectation of successfully forming a photocatalytic coating of $TiO_2$-Pt on a barrier layer overlying a glass substrate. Appellants have advanced no argument why one of ordinary skill in the art would have expected otherwise. In particular, Appellants have presented no reason why one of ordinary skill in the art would have expected that the provision of a barrier layer would neutralize the photocatalytic nature of Takahashi's $TiO_2$-Pt film.

We now turn to the § 103 rejection of claims 44-46 and 50 over Fukayama in view of Soubeyrand and Van Laethem. Appellants do not dispute the Examiner's factual determination that Fukayama discloses the claimed method of chemical vapor depositing a titanium precursor on a glass substrate with the exception of teaching that the glass substrate is a float glass strip. However, as set forth by the Examiner, "Soubeybrand discloses at col. 1, lines 20-42 that it is advantageous to deposit layers on the surface of a glass substrate during its formation in the float glass process to utilize residual heat from the ribbon forming process" (page 5 of Answer, last paragraph). Also, the Examiner cites Van Laethem for disclosing that "titanium oxide coatings can be successfully formed on float glass strips by

spray pyrolysis or CVD (col. 7, line 55 to col. 8, line 50)" (*id*). Consequently, based on the collective teachings the references, we fully concur with the Examiner's conclusion that "[i]t would have been obvious to have formed the photocatalytic coatings [of Fukayama] on a float glass strip with a reasonable expectation of success because doing so would have been expected to take advantage of residual heat from the glass ribbon forming process, hence reducing process costs and providing a continuous coating process" (*id*). Again, we find no merit in Appellants' argument that, since Soubeyrand and Van Laethem do not disclose photocatalytic coatings, "the Office has cited no evidence that modifying the method described in Fukayama . . . would produce a photocatalytically-active $TiO_2$ coating" (p. 14 of principle Brief, third paragraph). Appellants' arguments fail to address the thrust of the Examiner's reasoning and provide no reason why one of ordinary skill in the art would have had any concern about coating a photocatalytic film on a float-glass strip.

Regarding the rejection of claims 50 and 55, we also agree with the Examiner that it would have been obvious for one of ordinary skill in the art to deposit the photocatalytic coating of Takahashi on a hot glass substrate in view of the teachings of Soubeyrand, Van Laethem, and Watanabe. While Appellants state that Takahashi "fails to describe depositing a barrier layer on the substrate" (p. 15 of principal Brief, third paragraph), claims 50 and 55 do not require a barrier layer.

As for the remaining rejections under 35 U.S.C. § 103, we will not further burden the record with additional commentary which reflects the Examiner's reasoning. We do note, however, that a claimed deposition temperature different than temperatures disclosed by the prior art requires a

showing of criticality, i.e., unexpected results attributed to the temperature difference. It is well settled that where patentability is predicated upon a change in a condition of a prior art process or composition, such as a change in temperature, pressure or concentration, the burden is on the Applicant to establish with objective evidence that the change produces unexpected results. *In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990); *In re Aller*, 220 F.2d 454, 456 (CCPA 1955). Appellants have proffered no such evidence of record.

As a final point, we note that Appellants have chosen not to substantively challenge the obviousness-type double patenting rejections but have stated that "no Terminal Disclaimer is required at this time" (p. 35 of principal Brief). In response, the Examiner properly notes that these rejections are provisional in nature.

In conclusion, based on the foregoing and the reasons well-stated by the Examiner, the Examiner's decision rejecting the appealed claims is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

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