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Dentons US LLP 1900 K. Street, N.W. Washington, DC 20006			HUANG, CHENG YUAN	
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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* SANG UK RYU, DONG RYUL KIM, and JONG MIN MOON

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Appeal 2019-005803  
Application 14/442,301  
Technology Center 1700

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Before JOSEPH L. DIXON, DONNA M. PRAISS, and BRIAN D. RANGE,  
*Administrative Patent Judges.*

DIXON, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant<sup>1</sup> appeals from the Examiner's decision to reject claims 1, 4, 6–10, and 15. *See* Final Act. 1. Claims 2, 3, 5, and 11 are canceled. Claims 12–14 and 16 are withdrawn from consideration. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

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<sup>1</sup> We use the word Appellant to refer to “applicant” as defined in 37 C.F.R. § 1.42 (2018). Appellant identifies the real party in interest as LG CHEM, LTD. Appeal Br. 2.

### CLAIMED SUBJECT MATTER

The claims are directed to a gas barrier film with protective coating layer containing inorganic particles. Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. A gas barrier film consisting of:

a substrate layer;

a barrier layer;

an intermediate layer between the barrier layer and the substrate layer, the intermediate layer having a thickness of 0.3  $\mu\text{m}$  to 2  $\mu\text{m}$  and comprising a silica component comprising a hydrolysis reaction product of tetraethyl orthosilicate or tetraethoxy orthosilicate and a silane containing a substituent selected from the group consisting of vinyl, phenyl, gamma-glycidoxypropyl, gamma-methacryloxypropyl and methyl; and

a cured protective layer formed on the barrier layer so as to be in contact with the barrier layer,

wherein the cured protective layer is a curing reaction product of a coating composition that contains spherical nanoparticles, an initiator and a binder, wherein:

the nanoparticles are present in an amount of 40 wt% to 70 wt% based on the total weight of the nanoparticles and the binder;

the nanoparticles have an average diameter of 10 to 20 nm; and

the binder is selected from the group consisting of 1,6-hexanediol diacrylate, neopentyl glycol diacrylate, diethylene glycol diacrylate, tripropylene glycol diacrylate, dicyclopentanyl diacrylate, butylene glycol diacrylate, pentaerythritol diacrylate, trimethylolpropane

triacrylate, propionoxide modified trimethylolpropane triacrylate, pentaerythritol triacrylate, ditrimethylolpropane tetraacrylate, dipentaerythritol hexaacrylate, caprolactone modified dipentaerythritol hexaacrylate, tetramethylolmethane tetraacrylate, polyester acrylate, polyether acrylate, urethane acrylate, epoxy acrylate, polyol acrylate and a combination thereof.

#### REFERENCES

The prior art relied upon by the Examiner is:

Rotenberg et al	US 4,229,228	Oct. 21, 1980
Vanheusden et al.	US 2006/0189113 A1	Aug. 24, 2006
Adachi	US 2014/0154504 A1	June 5, 2014
Hara et al.	US 2015/0285972 A1	Oct. 8, 2015

#### REJECTION<sup>2</sup>

Claims 1, 4, 6–10, and 15 stand rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over Adachi in view of Rotenberg, Vanheusden, and Hara. Final Act. 6–7.

#### OPINION

*35 U.S.C. § 103(a)*

*Claim 1*

Appellant contends that the combination of the teachings of Adachi, Rotenberg, Vanheusden, and Hara does not result in the instantly claimed gas barrier films. Appeal Br. 22. Appellant further contends that the Adachi reference does not teach any gas barrier film in which a cured protective

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<sup>2</sup> The Examiner withdrew the obviousness rejections based on the combination of the Lewis, Rotenberg, Vanheusden, Mikuni, and Lee references. Ans. 6; *see also* Reply Br. 3.

layer is “formed on the barrier layer so as to be in contact with the barrier layer” as instantly claimed. Appeal Br. 23.

The Examiner bases the rejection upon a broad interpretation of the claimed term “cured protective layer *formed on the barrier layer so as to be in contact with* the barrier layer.” (Emphasis added). Ans. 7–8. The Examiner finds that Adachi’s paragraph 150 explicitly discloses a gas barrier layer between the outermost layer, i.e. cured protective layer, and the silver layer. Ans. 7. The Examiner further finds that it is clear that the cured protective layer is in contact with the gas barrier layer, as presently claimed. The Examiner further finds the Appellant is taking a narrow construction of the present claim to require direct contact between the cured protective layer and the barrier layer where the broadest reasonable interpretation of the term “contact” encompasses both direct contact and indirect contact. Ans. 7.

The Examiner concludes the lack of guidance in both the present claims and originally filed Specification concerning the definition of the term “contact” is a reasonable basis to interpret the term “contact” to include indirect contact because nothing in the present claims requires direct contact between the cured protective layer and gas barrier layer. Ans. 7. The Examiner finds Adachi’s paragraph 150 teaches the functional film comprises an order of layers as follows: outermost layer, gas barrier layer, and silver layer, it is clear that the outermost layer, i.e. cured protective layer, is in contact (in at least indirect contact) with the gas barrier layer since all recited layers are present in the functional film, and thus meets the presently claimed limitation. *Id.* at 7–8.

We agree with Appellant that the Examiner's claim interpretation is unreasonable in light of the plain language of independent claim 1 and the disclosed embodiment in Figure 1, which evidences "a gas barrier film 10 according to one embodiment of the present invention sequentially includes a substrate layer 14, an intermediate layer 13, and a barrier layer 12. Also, a protective layer 11 is attached on the barrier layer 12 to further improve durability and a gas barrier property." Spec. 18: 3-8; Appeal Br. 7; Reply Br. 4-6. Because the Examiner's "indirect contact" claim interpretation is unreasonable, we determine the language of claim 1 to require the "cured protective layer formed on the barrier layer so as to be in contact with the barrier layer," thereby a direct contact between the protective layer and the barrier layer.

Additionally, Appellant generally argues that nothing in the Rotenberg, Vanheusden or Hara references cures these defects in the Adachi reference. Appeal Br. 23-24. Appellant further argues that the Examiner's combination is based upon "hindsight" reconstruction and the ordinarily skilled artisan would not and could not have been led by the teachings of Rotenberg, which is directed to solving the problem of abrasion resistance of a plastic surface, to include an intermediate layer as instantly claimed between a substrate and a barrier layer. Reply Br. 8. Appellant contends there is no reasonable basis on which one of ordinary skill in the art would have included the silica component of Rotenberg as the intermediate layer of Adachi in order to impart abrasion resistance, since Rotenberg teaches including its coating on the outermost surface in order to impart abrasion resistance. Reply Br. 8-9. We agree with Appellant that the Examiner's

proffered combination is based upon hindsight reconstruction of independent claim 1.

Because the Examiner has not shown a teaching in the prior art applied or proffered a suggestion why it would have been obvious to one of ordinary skill in the art at the time of the invention based upon the prior art applied to provide a “cured protective layer formed on the barrier layer so as to be in contact with the barrier layer,” i.e. a direct contact between the protective layer and barrier layer, we cannot sustain the Examiner obviousness rejection of illustrated independent claim 1.

*Dependent claims 4, 6–10, and 15*

Appellant sets forth separate arguments for patentability and these arguments generally rely upon the arguments advanced with respect to independent claim 1. Appeal Br. 24–27. We cannot sustain the Examiner’s obviousness rejection of claims 4, 6–10, and 15 for the same reasoning.

CONCLUSION

The Examiner’s obviousness rejection is reversed.

DECISION SUMMARY

<b>Claims Rejected</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
1, 4, 6–10, 15	103(a)	Adachi, Rotenberg, Vanheusden, Hara		1, 4, 6–10, 15

REVERSED