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EXAMINER	
ARCIERO, ADAM A	

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte TAKEO YAMAGUCHI,
YUHEI OSHIBA, HIDENORI OHASHI, JIN TOMATSU,
KOJI FURUYA, TAKAO OHNO, and MAMI NANBU

Appeal 2024-003101
Application 16/319,661
Technology Center 1700

Before JEFFREY T. SMITH, GEORGE C. BEST, and JEFFREY R. SNAY, *Administrative Patent Judges*.

SNAY, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals the rejection of claims 1, 4, 5, 7, 9–11, 21, and 23–25. We have jurisdiction. 35 U.S.C. § 6(b).

We REVERSE.

[1] "Appellant" refers to "applicant" as defined in 37 C.F.R. § 1.42. Appellant identifies Teijin Ltd. as the real party in interest. Appeal Br. 2.

CLAIMED SUBJECT MATTER

The invention relates to substrates for composite membranes. Spec. ¶ 14. Independent claim 1 reads as follows:

> 1. A substrate comprising a microporous polyolefin membrane, the substrate being of a mono-layer structure wherein:
>
> the average pore size is 1 nm to 50nm;
>
> the porosity is 50% to 78%;
>
> the membrane thickness is 1 μm to 10 μm;
>
> the Gurley value as measured according to JIS P8117 is 90 s/100 cc or less; and
>
> wherein the polyolefin consists of a polyethylene composition comprising a high molecular weight polyethylene with a mass average molecular weight of 900,000 or more and a low molecular weight polyethylene with a mass average molecular weight of 200,000 to 800,000 mixed at a mass ratio of 20:80 to 80:20.

Appeal Br. 17 (Claims App.).

The remaining claims on appeal depend from claim 1.

REJECTIONS

I. Claims 1, 4, 5, 7, 9–11, 21, 23, and 25 under 35 U.S.C. § 103 as unpatentable over Ohno,[2] Nishikawa,[3] and Takahashi.[4]

II. Claim 24 under 35 U.S.C. § 103 as unpatentable over Ohno, Nishikawa, Takahashi, and Ishihara.[5]

[2] WO 2014/181761 A1, published November 13, 2014 (as translated).
[3] US 2013/0236767 A1, published September 12, 2013.
[4] US 2016/0250603 A1, published September 1, 2016.
[5] US 2015/0005405 A1, published January 1, 2015.

OPINION

We need only address the Examiner's rejection of claim 1 to resolve the issues raised in this appeal.

Claim 1 recites, *inter alia*, a substrate in which "the Gurley value as measured according to JIS P8117 is 90 s/100 cc or less." The Gurley value represents a standardized measure of air permeability. *See* Ishihara ¶ 91.

In rejecting claim 1, the Examiner finds Ohno discloses a polyethylene membrane substrate but fails to teach the recited Gurley values. Final Act. 3. The Examiner finds Nishikawa discloses polyolefin membranes having a range of Gurley values that overlaps the recited range. *Id.* The Examiner further finds Nishikawa teaches that the Gurley value was a known result-effective variable, the optimization of which would have been obvious to one of ordinary skill in the art. *Id.* Based on these prior art disclosures, the Examiner determines "it would have been obvious to one of ordinary skill in the art to modify the membrane of Ohno to comprise the claimed Gurley values." *Id.*

Appellant argues the Examiner has not established a reason why one of ordinary skill in the art would have applied Nishikawa's disclosed Gurley values to Ohno's substrate. Appeal Br. 8. We agree.

Ohno discloses a liquid filter substrate for filtering particles of about 10–50 nm. Ohno ¶ 21. Nishikawa, on the other hand, discloses a range of Gurley values suitable for a porous base material in a battery separator. Nishikawa ¶¶ 56, 127. As Appellant aptly points out (Appeal Br. 7–8), Nishikawa states that the disclosed range of Gurley values are suitable to provide a battery separator with a desired mechanical strength and electrical resistance. *See, e.g.*, Nishikawa ¶¶ 127–128. The Examiner provides no

substantiated reason as to why one of ordinary skill in the art would have considered Nishikawa's Gurley values to have been relevant to Ohno's liquid filter.

The Examiner's reliance on Nishikawa as identifying Gurley value as a result-effective variable also is flawed. First, the mere fact that Nishikawa teaches a range of Gurley values is not, alone, sufficient evidence that Gurley value would have been recognized as a result-effective variable. Nishikawa merely teaches that the disclosed range of Gurley values were considered adequate with regard to mechanical strength and electrical resistance of a battery separator. Moreover, even if Nishikawa were viewed as teaching Gurley value as a result-effective variable, the Examiner presents no evidence that optimization of Gurley value for Nishikawa's disclosed purpose would have been expected to result in Gurley values within the recited range. As Appellant observes (Appeal Br. 7–8), Nishikawa discusses Gurley value with regard to mechanical strength and electrical resistance in a battery separator, whereas the Specification describes the recited range of Gurley values with regard to achieving a desired permeation of hydrophilic resin into the microporous membrane. Spec. ¶ 29. The Examiner provides no evidence to support a reasonable expectation that optimization for strength and electrical resistance would have yielded Gurley values optimized for resin permeation.

For the foregoing reasons, the Examiner's rejections are not sustained.

CONCLUSION

The Examiner's decision rejecting claims 1, 4, 5, 7, 9–11, 21, and 23–25 is reversed.

DECISION SUMMARY

In summary:

Claim(s) Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1, 4, 5, 7, 9–11, 21, 23, 25	103	Ohno, Nishikawa, Takahashi		1, 4, 5, 7, 9–11, 21, 23, 25
24	103	Ohno, Nishikawa, Takahashi, Ishihara		24
Overall Outcome				1, 4, 5, 7, 9–11, 21, 23–25

REVERSED