

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SATOSHI SAKURAI, FUMIAKI TSUZUKI,
and TAKEHIKO WAKASA

Appeal 2007-3833
Application 10/486,352
Technology Center 1700

Decided: May 23, 2008

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

HASTINGS, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134 from the Examiner's decision rejecting claims 1-3 and 5. We have jurisdiction under 35 U.S.C. § 6.¹

We AFFIRM.

BACKGROUND

Appellants claim an easily applicable adhesive sheet. Appellants, in the Background Art section of the specification, describe that a problem was that

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

air bubbles tend to form between the adhesive layer of the sheet and the adherent (Spec. paragraph bridging p. 1-2). Appellants describe that their solution to this problem is including tapered concave grooves of a specified shape and pattern in the adhesive layer, which allow the air to be removed (Spec. 3, 1st and 2nd full paragraphs).

Claim 1 is illustrative:

1. An easily applicable adhesive sheet having, on a surface of a substrate, an adhesive layer in which tapered concave grooves opened at an end edge of the substrate are disposed in a lattice shape oblique to the end edge of the substrate, and the adhesive layer has an area for a planar portion of 50 to 90%, a cut-in angle of the concave groove to a planar surface of 20 to 75°, a width for an opening at an upper surface of the concave groove of 10 to 80 μm and a depth of the concave groove of 5 to 50 μm .

The references set forth below are relied upon by the Examiner as evidence of obviousness:

Sher	US 6,197,397	Mar. 6, 2001
Maehashi (as translated)	JP 2001203107	Jul. 27, 2001
Mikami	US 6,524,675	Feb. 25, 2003

The Examiner rejected claims 1-3 and 5 under 35 U.S.C. § 103(a) as being unpatentable over Mikami in view of Sher or Maehashi.

Appellants do not argue with any reasonable specificity any of the individual dependent claims. Therefore, we select claim 1 to decide the issues on appeal.

ISSUES ON APPEAL

The issues on appeal arising from the contentions of Appellants and the Examiner are whether the Appellants have shown that the Examiner reversibly erred in rejecting the claims because:

(a) there is no prima facie case of obviousness since none of the references disclose an adhesive layer having tapered concave grooves in a lattice shape oblique to the edge of a substrate; and

(b) if there is a prima facie case of obviousness, the asserted prima facie case has been overcome by Appellants' showing of unexpected results via the comparative data in the Specification.

OPINION

We agree with the Examiner's findings of facts and legal conclusions of obviousness as set out in the Answer. We have thoroughly reviewed each of Appellants' arguments and evidence for patentability. However, we are in full agreement with the Examiner that the claimed subject matter would have been obvious to one of ordinary skill in the art within the meaning of § 103 in view of the applied prior art. Accordingly, we will sustain the Examiner's rejections for essentially those reasons expressed in the Answer and those set out herein.

The issue of prima facie obviousness

The Examiner correctly finds (Ans. 4) that Mikami teaches an adhesive sheet having a planar portion which falls within the claimed range of the area for the planar portion of the adhesive layer, and having tapered concave

grooves dimensioned such that they fall within the claimed cut-in angle, width and depth ranges in a lattice pattern, which findings Appellants have not disputed. Mikami describes “The channels [i.e., grooves] of the present invention can take various shapes or patterns.” (col. 2, ll. 19-20.) Also correct is the Examiner's finding (Ans. 4) that the secondary references of Sher and Maehashi each teach that a lattice pattern of grooves in an adhesive layer can be oblique to the end edge of the sheet.

Specifically, Sher exemplifies, in Figs. 1 and 3, a lattice pattern of grooves that would have been immediately envisaged by one of ordinary skill in the art as oblique to the edge surface of the substrate. Sher also describes that the grooves permit fluid egress and exhaust entrapped air, and that the groove shape, size, and patterns may be varied to optimize the fluid egress, “not unlike a tributary-river configuration in a watershed” (see, e.g., col. 5, ll. 17-25; col. 7, ll. 34-40).

Maehashi teaches that grooves in a lattice pattern oblique to the edge of a bonded sheet magnet, which may use an adhesive, are effective to prevent air pockets (i.e., bubbles) and/or to expel air (see, e.g., ¶¶ [0004]-[0007], [0014]).

The Examiner acknowledges that Mikami fails to explicitly teach that the lattice shape of the tapered concave grooves is oblique to the end edge of the sheet as required by independent claim 1 but, based on the above-noted findings, concludes that it would have been obvious for one with ordinary skill in this art to have arranged the lattice shape of the groove pattern of Mikami as claimed based on a reasonable expectation of successfully

removing air from under the adhesive sheet and achieving the desired result (Ans. 5).

Appellants argue there is no prima facie case for the Examiner's conclusion that it would have been obvious to orient the lattice pattern of grooves of Mikami oblique to the end edge of the substrate (App. Br. 4).

We agree with the Examiner's conclusion that it would have been prima facie obvious for an artisan to orient the lattice of Mikami oblique to the end edge of a substrate as required by representative claim 1. This conclusion is supported by Mikami's teaching that the channels "can take various shapes or patterns." This teaching would have given the artisan a reasonable expectation that the lattice of channels (i.e., grooves) depicted in Fig 2A would have been effective in any "pattern", including an oblique orientation as claimed. *See Pfizer, Inc. v. Apotex*, 480 F.3d 1348, 1364 (Fed. Cir. 2007) (the expectation of success need only be reasonable, not absolute).

Appellants contend that Sher does not describe the orientation of the lattice with respect to the edge of the sheet, nor is there any evidence that one would have immediately envisioned this orientation (App. Br. 4; Reply Br. 1-2). We disagree. It would have been expected that the scanning electron micrographs of Figs. 1-4 are orientated in the same direction as the sheet from which the pictures were taken. Thus, the burden of proof to show otherwise shifts to Appellants. Appellants have proffered no such evidence. Appellants also contend that Maehashi (an alternative secondary reference) only teaches the oblique pattern of grooves in the magnet substrate per se and not in an adhesive layer. Even assuming Appellants are correct, we agree with the Examiner that Maehashi's teaching of the oblique orientation of a groove

lattice to solve the same problem as in Mikami (namely, to expel air and prevent air bubbles) would have readily suggested to one of ordinary skill in the art the applicability of that teaching to the lattice of grooves for air removal in the adhesive of Mikami (see Ans. 7).

The present record establishes that a person of ordinary skill would have recognized that various patterns could have been used in the adhesive substrate. For this reason, an artisan would have sought to determine suitable “patterns” for the lattice of grooves (e.g., including the oblique angled orientation thereof) taught by Mikami. *See In re Geisler*, 116 F.3d 1465, 1471 (Fed. Cir. 1977).

Having determined that a prima facie case of obviousness exists with respect to representative claim 1, we now proceed to an evaluation of Appellants' proffered evidence of nonobviousness.

The ultimate issue of obviousness versus nonobviousness

Unexpected Results

When prima facie obviousness has been established, we must begin our consideration anew and consider the evidence of obviousness against the evidence of non-obviousness (such as the data in Appellants' Specification). *See In re Oetiker*, 977 F. 2d 1443, 1445 (Fed. Cir. 1992). The burden rests with Appellants to establish that the results are unexpected, based on comparisons with the closest prior art, and commensurate in scope with the claimed subject matter. *See, e.g., In re Klosak*, 455 F.2d 1077, 1080 (CCPA 1972); *In re Kulling*, 897 F. 2d 1147, 1149 (Fed. Cir. 1990). We determine that Appellants have not met this burden. We determine that Appellants'

evidence of non-obviousness is insufficient to overcome the rejection for at least the following reasons.

As evidence of nonobviousness in the form of unexpected results, Appellants refer to the Specification. According to Appellants, "...any such prima facie case is overcome by evidence of criticality for the claimed invention, i.e., unexpected improved results...Appellants respectfully submit such evidence of unexpected results is present in the specification... Comparative Examples 1-4 comprise the closest prior art to the claimed invention." (App. Br. 5-6; Reply Br. 4).

We agree with the Examiner that the Comparative Examples in the Specification are not the closest prior art (Ans. 7). Mikami illustrates that the use of a lattice pattern of channels (i.e., grooves) in an adhesive layer to remove air having all the appropriate dimensions as claimed are known in the prior art (Ans. 4-5). Thus, Mikami is the closest prior art. Appellants have not compared their claimed invention with Mikami.

Furthermore, we agree with the Examiner that determining the optimal appropriate orientation for the groove pattern of Mikami would have been within the skill in the art, especially since Mikami teaches other patterns may be used, and obliquely orientated groove patterns for air removal were known as suggested by Sher and Maehashi.

Indeed, we determine that *even if* Appellants have shown that the use of an obliquely orientated lattice exhibited unexpectedly superior air removal over the alternative orientation (e.g., note that each of a parallel or perpendicular orientation result in the same orientation when dealing with a square lattice pattern as shown in Fig. 2A of Mikami), this secondary

consideration does not overcome the strong showing of obviousness in this case. *See Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1372 (Fed. Cir. 2007) (“[T]his secondary consideration does not overcome the strong showing of obviousness in this case. Although secondary considerations must be taken into account, they do not necessarily control the obviousness conclusion.”); *see also Newell Cos. v. Kenney Mfg. Co.*, 864 F.2d 757, 769 (Fed. Cir. 1988).

However, even assuming arguendo that the Comparative Examples in the Specification are the closest prior art as urged by the Appellants (Br. 5-6; Reply Br. 2), unexpected results have not been established thereover.

First, the results have not been characterized as unexpected to a person of ordinary skill in the art, rather, the results are characterized in the Specification only as “good” versus “poor” (Spec. pp. 14-15, Tables 1, 2).² This is particularly significant because the test results standing alone do not demonstrably evince an unexpected outcome (e.g., substantially improved results). *See In re Geisler*, 116 F.3d at 1470. The only relevant Comparative Example is Example 4 which shows an angle of orientation of 0° for the concave grooves has “poor” air removability. In contrast, all of the inventive Examples 1-5 of Table 1 report “good” air removability. However, no quantitative analysis is given. While “good” is a subjective evaluation of an improvement of the invention over the “poor” result of the Comparative Example 4, this qualitative improvement does not evince, on its face, an outcome which would have been unexpected by one with ordinary skill in this art. For example only, as discussed previously, we note that Sher teaches that

² While Appellants' attorney refers to these results as unexpected (Reply Br. 2; *see also* App. Br. 2), attorney argument is no substitute for evidence. *Enzo Biochem, Inc. v. Gen-Probe, Inc.*, 424 F.3d 1276, 1284 (Fed. Cir. 2005).

grooves in a pattern like a “tributary-river configuration in a watershed” optimizes the fluid egress.

Further, for all we know, this difference would have been expected by an artisan as a typical consequence depending on how one accomplished the air removal. The Specification states an air bubble is deliberately formed and then rubbed by a squeezer to press out the air bubble to visually confirm the removed state of air (Spec. p. 13 (2)). The Specification does not give any further details as to how the test was performed. We determine that one of skill in the art would have readily appreciated that the direction that the squeezer runs over the underlying lattice of grooves would impact the quality of the air removal. One would have expected that if a squeezer were moved in a straight downward direction over a lattice with a parallel orientation versus an oblique orientation, the air removal would not have been as efficient with the parallel orientation, since the air would be more likely to be trapped at the parallel intersections of grooves.

Moreover, the Specification states in regards to the evaluation of “[d]eformation on the substrate surface” that “[i]t was visually confirmed whether the unevenness developed or not on the surface....for which air removal was confirmed in (2) above” (Spec. p. 13, (3)). Interestingly, the same Comparative Example 4 reports that “deformation on the substrate surface” is “good” (i.e., no deformation). It appears that if the air removal were “poor”, one would expect some deformation to occur. This apparently contradictory result is not explained (that is, “poor” air removal and yet “good” (i.e., no) deformation on the substrate surface).

Second, the improved results shown in Comparative Example 4 is inconclusive as to whether the improvement was due to the oblique orientation of the lattice or to the method or direction of air removal, as mentioned previously.

Third, the Examples 1-5 are not commensurate in scope with representative claim 1. *See In re Peterson*, 315 F.3d 1325, 1330-31 (Fed. Cir. 2003). For example only, the claim defines an adhesive sheet with a lattice pattern of grooves at any oblique angle, including, e.g., an angle from 1° to 89°. In contrast, *all* of Examples 1-5 are only at a 45° angle. The appeal record provides no way of knowing whether improved results would occur over the entire broad range claimed (namely, an oblique angle of 1° versus none, or 89° versus 90°). Also, the claim defines broad ranges for the planar portion and for the cut-in angle, the width, and the depth of the grooves. In contrast, the inventive Examples only exemplify a small number of the dimensions encompassed by the claims. None of the inventive examples were at, and most were not even near, the end points of the wide ranges of each of these variables encompassed by the representative claim.

Finally, we again emphasize that, although secondary considerations of nonobviousness must be taken into account, they do not necessarily control the obviousness conclusion. *Pfizer, Inc. v. Apotex*, 480 F.3d at 1372. Here, the record establishes a strong case of obviousness whereas the Specification Examples in support of nonobviousness (1) fail to characterize the results as being unexpected, (2) are inconclusive as to whether the argued parameter was responsible for generating these results, and (3) are not commensurate in scope with the representative claim on appeal. The case of obviousness

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established by the Examiner is so strong that Appellants' alleged superior results are ultimately insufficient.

These circumstances support our determination that the product defined by claim 1 would have been obvious to one with ordinary skill in this art in view of the prior art applied by the Examiner.

CONCLUSION

For the above stated reasons, we sustain the § 103 rejection based on Mikami in view of Sher or Maehashi of claims 1-3 and 5.

The decision of the Examiner 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

PL Initial:

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