United States Court of Appeals for the Federal Circuit

2008-1247

SÜD-CHEMIE, INC.,

Plaintiff-Appellant,

v.

MULTISORB TECHNOLOGIES, INC.,

Defendant-Appellee.

Kevin M. O'Brien, Baker & McKenzie LLP, of Washington, DC, argued for plaintiff-appellant. With him on the brief were Kevin J. Sullivan and Thomas A. Doyle, and James J. Dries, of Chicago, Illinois.

Michael R. McGee, McGee and Gelman, of Buffalo, New York, argued for defendant-appellee.

Appealed from: United States District Court for the Western District of Kentucky

Judge Charles R. Simpson, III

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Plaintiff-Appellant,

v.

MULTISORB TECHNOLOGIES, INC.,

Defendant-Appellee.

Appeal from the United States District Court for the Western District of Kentucky in case no. 3:03-CV-29, Judge Charles R. Simpson, III.

DECIDED: January 30, 2009

Before RADER, FRIEDMAN, and BRYSON, Circuit Judges.

BRYSON, Circuit Judge.

Desiccant containers are frequently used to maintain a dry environment for products during storage or shipping. Some desiccants function by absorbing water vapor and undergoing a phase change into liquid form. Leakage of the liquid from the desiccant container would defeat the purpose of the desiccant and could damage either the products that are being maintained in a dry environment or the container in which the products are being shipped. For that reason, it is important that desiccant containers used in that manner be permeable to water vapor but impermeable to liquid water, and

water, and that they have strong, leak-proof seals, so that the seals will not fail even if a substantial volume of liquid collects inside the container.

Süd-Chemie, Inc., owns U.S. Patent No. 5,743,942 ("the '942 patent"), which is directed to a desiccant container made from a water-vapor-permeable, multilayered packaging material. The packaging material recited by the '942 patent consists of two films: a microporous film and a laminate film. The two films are heat-sealed to each other around the edges to form a closed container for the desiccant material that is placed within. Süd-Chemie manufactures commercial desiccant containers covered by the '942 patent.

According to the '942 patent, many prior art desiccant packages sought to solve the problem of water leakage from the package by creating seals from films coated with adhesives and sealed together with heat sealers. '942 patent, col. 1, ll. 61-64. In contrast, the '942 patent sought to solve the leakage problem by requiring the use of packaging films that are not coated with adhesives but that are "compatible" with each other. The '942 patent explains that when they are sealed together with a heat sealer, uncoated but compatible film materials form stronger seals than adhesive-coated films. In addition, they are less costly and can be sealed using conventional high-throughput heat-sealing machines that cannot readily be used with adhesive-coated films. Id. at col. 3, ll. 16-28. Claim 1 of the '942 patent, which is the only independent claim, reads as follows:

> A desiccant container comprising a desiccant material surrounded by a laminated, water vapor permeable desiccant packaging material, wherein said packaging material comprises an uncoated microporous film having an inner and outer surface heat sealed to an uncoated laminate film having an inner and outer surface, wherein the uncoated microporous film comprises a different composition from the uncoated laminate film, wherein

> wherein edges of the inner surface of the uncoated microporous film are sealed to edges of the inner surface of the uncoated laminate film, and wherein the inner surface of the uncoated microporous film and the inner surface of the uncoated laminate film are comprised of compatible polymeric materials.

Defendant Multisorb manufactures and sells TranSorb desiccant bags, which are also designed and marketed to protect cargo from moisture damage during shipment. In 2003 Süd-Chemie brought suit against Multisorb in the United States District Court for the Western District of Kentucky, alleging that Multisorb's TranSorb product line infringes the '942 patent. After the district court issued an order construing the disputed terms of claim 1, the parties filed cross-motions for summary judgment on the issues of infringement and validity.

The central issue with respect to validity was whether a prior art patent, U.S. Patent No. 4,487,791 ("Komatsu"), rendered the '942 patent invalid for obviousness. The Komatsu patent is directed to an oxygen-absorbing package in which an oxygen-absorbing material is surrounded by a gas-permeable packaging material. The packaging material in Komatsu consists of a microporous film and a laminate film sealed together with a conventional heat-sealing machine. Komatsu, col. 1, ll. 6-8, 57-61. The district court found that the polymeric microporous and laminate films disclosed by Komatsu were identical to those described in the '942 patent and that both patents taught heat sealing the films using conventional high-speed packaging equipment. The court therefore concluded that "the Komatsu patent taught the same container as the '942 patent, with the exception of the absorbent material disposed between the layers." According to the district court, the '942 patent simply substituted a desiccant material for an oxygen-absorbing material. Citing the Supreme Court's decision in KSR International

International Co. v. Teleflex Inc., 127 S. Ct. 1727 (2007), the court held that the substitution of one absorbing material for another would have been obvious to a person of skill in the art of atmospheric packaging. The district court therefore granted summary judgment that the '942 patent was invalid for obviousness in view of the prior art Komatsu patent. Süd-Chemie appeals that decision to this court.

I

Süd-Chemie asserts that the district court erred in concluding that the Komatsu and '942 patents teach identical containers that differ only as to the absorbent substance encapsulated by the packaging materials. Specifically, Süd-Chemie contends that Komatsu fails to teach three of the limitations pertaining to the desiccant container that are recited in claim 1: (1) the use of uncoated microporous and laminated films; (2) the water-vapor-permeable character of the packaging materials; and (3) the use of "compatible" polymeric materials (as that term is defined in the specification of the '942 patent) on the inner surfaces of the microporous film and the laminated film. We agree with Multisorb that Komatsu teaches the first two elements. However, we conclude that the evidence before the district court does not support the court's conclusion that Komatsu discloses the use of compatible polymeric materials, and for that reason, we conclude that the court's summary judgment order must be vacated. We address each of the three disputed claim limitations in turn.

A

Claim 1 of the '942 patent requires that the desiccant packaging material be composed of an "uncoated microporous film . . . heat sealed to an uncoated laminate film . . . ." In its claim construction order, the district court construed the term "uncoated"

"uncoated" to mean "uncoated with an adhesive." According to the '942 patent, uncoated compatible films can produce stronger seals than those formed using incompatible films that are coated with adhesive. '942 patent, col. 7, ll. 14-16. Furthermore, the patent explains that adhesive-coated films are more expensive and that using adhesives can prevent conventional heat-sealing machines from operating at maximum efficiency. Id., col. 3, ll. 19-21, 26-28.

Komatsu refers generally to microporous "films" and laminated nonwoven fabric "sheets." Moreover, Komatsu repeatedly refers to the process of adhering the films and sheets together by heat sealing, with no indication that the process contemplates the use of adhesive coatings on the films. See Komatsu, col. 1, ll. 29-31; col. 3, ll. 42-43; col. 4, ll. 14-15, 36-37. Süd-Chemie contends that because Komatsu does not specifically refer to the films as "uncoated," it fails to teach the purportedly critical requirement of the '942 patent that both the laminate and microporous films be uncoated.

Süd-Chemie draws the wrong inference from Komatsu's failure to specifically refer to the films as uncoated. As noted, Komatsu plainly teaches that containers can be made of films that are heat sealed without the use of adhesives, and thus without coatings. Moreover, Süd-Chemie has not offered any evidence that a reference to a microporous or laminate film would be understood by one of skill in the art as contemplating a film with an adhesive coating attached. The district court was thus correct to characterize Komatsu as teaching the use of uncoated films and not to interpret Komatsu as disclosing only films coated with adhesives.

Süd-Chemie further asserts that Komatsu "includes no teaching or suggestion on how the films are prepared." In fact, Komatsu describes in fair detail how the microporous film may be prepared:

> The microporous film employed in the practice of this invention may be prepared by: cold orientation of film; orientation of different substance-containing film; extraction of different substance from different substance-containing film; extraction of different substance-containing film, followed by orientating the so-treated film; laminatings of nonwoven fabrics; cross dispersing of bundle of fibers, followed by heat-pressing the resulting material; and irradiation of film with an electron beam.

Komatsu, col. 2, ll. 21-30.[1] Notably, neither that description nor Komatsu's description of the laminated films contains any suggestion that the process described in Komatsu requires the use of adhesive coatings. The district court therefore did not err in concluding that Komatsu discloses the use of uncoated microporous and laminated films.

B

Claim 1 also requires that the desiccant container be composed of "water vapor permeable" packaging material. The district court did not specifically address that requirement of the '942 patent. Süd-Chemie contends that there is a disputed issue of

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[1] The '942 patent contains a virtually identical description of how to produce microporous films:

> The uncoated microporous or nonwoven film may be prepared by any conventional film forming process including cold orientation of the film, orientation of different substance-containing films, extraction of different substances from different substance-containing films, extraction of different substance-containing film followed by orientation of the treated film, cross-dispersing of a bundle of fibers followed by heat-pressing the resulting film and any other conventional procedures utilized for the formation of a microporous film.

'942 patent, col. 5, ll. 16-24.

fact as to whether Komatsu teaches the use of water-vapor-permeable packaging materials. However, Komatsu describes the packaging films as permeable to air. Komatsu, col. 2, ll. 39-41, 50-52. As Multisorb's expert represented in his affidavit (without any expert rebuttal from Süd-Chemie), air invariably includes water vapor. Thus, by disclosing air-permeable films, Komatsu necessarily discloses films that are water-vapor-permeable.

Based on Komatsu's references to the packaging materials as "waterproof" and "water impermeable," Süd-Chemie contends that Komatsu does not disclose—and in fact teaches away from—a water-vapor-permeable packaging material. That argument is unpersuasive, however, because it erroneously equates impermeability to water with impermeability to water vapor. A material can be both permeable to water vapor and impermeable to liquid water, as the specification of the '942 patent makes clear. See '942 patent, col. 1, ll. 37-42. Although Komatsu refers to "water" without specifying its state of matter, it is clear from context that Komatsu's reference to "water" was to liquid water, as opposed to water in its gaseous (water vapor) or solid (ice) states. Thus, Komatsu explains that because the packaging films are "water impermeable," the container "can be packed with liquid or semi-liquid foodstuffs." Komatsu, col. 3, ll. 60-62. From its specification, it is therefore clear that Komatsu teaches materials that are impermeable to liquid water, but not to water vapor. The '942 patent similarly describes the desiccant container as "absorbing water vapor without releasing water from the container . . . ." '942 patent, col. 3, line 67, through col. 4, line 1. Komatsu's reference to "waterproof" packaging materials therefore is not inconsistent with its disclosure of water-vapor-permeable materials.

Even if Komatsu did not disclose water-vapor-permeable films, it would have been obvious to a person of skill in the art to create a desiccant container with packaging materials that are permeable to water vapor. The '942 patent acknowledges that desiccant containers that absorb water vapor were well known in the art at the time of the invention. '942 patent, col. 1, ll. 12-13. Because the containers for a desiccant must necessarily be permeable to water vapor, it would have been obvious at the time of the invention to design a desiccant container using water-vapor-permeable packaging materials.

C

Finally, claim 1 of the '942 patent requires that the inner surfaces of the microporous and laminate films be "comprised of compatible polymeric materials." The district court concluded that Komatsu teaches the use of compatible films because "[t]he Komatsu patent suggests the employment of the same materials claimed by the '942 patent to be 'compatible polymeric materials.'" It is true that Komatsu discloses the same general classes of materials that are identified in the '942 patent. Thus, both patents state that the microporous and laminate films can be made from polyethylene, polypropylene, and other polyolefinic materials. See Komatsu, col. 2, ll. 19-21; col. 3, ll. 12-15; '942 patent, col. 5, ll. 12-15, 47-50. However, in concluding that Komatsu teaches the use of compatible polymeric materials, the district court failed to acknowledge that the specified classes of materials comprise a large number of substances with quite different properties, and that various combinations of those materials can be compatible or incompatible depending on how they are assembled in layers to form the container.

The specification of the ’942 patent expressly defines the term “compatible.” It states:

> “Compatible” means that the materials mix on a molecular scale and will crystallize homogeneously. Thus, while such layers may not have precisely the same softening point, they should have softening points which are consistent, so that the materials will mix on a molecular level.

’942 patent, col. 6, ll. 6-10. Thus, “compatible” materials have similar melting or softening temperatures, while incompatible materials have dissimilar softening points. The district court reasoned that “[t]he Komatsu patent does not identify the inner surfaces of the films as comprised of compatible polymeric materials, but that does not mean[] that they are not.” However, the Komatsu specification does identify the relative softening points of the various polymeric films that constitute the package material, and an analysis of those softening points indicates that Komatsu teaches the use of incompatible materials for the inner surfaces of the containers, whereas the ’942 patent requires the use of compatible materials for those surfaces.

The container disclosed in Komatsu comprises three layers: a single-layered microporous film and a two-layered laminate film. The three layers are heat-sealed to each other so as to create a closed container for the oxygen-absorbent material. The preferred embodiment of the desiccant container in the ’942 patent also contains a single-layered microporous film sealed to a two-layered laminate film.[2] Thus, the

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[2] The specification of the ’942 patent provides that the microporous film can consist of either a single layer or a laminate of two or more microporous film layers. ’942 patent, col. 4, ll. 55-58; col. 5, ll. 9-12. As noted, however, the specification makes clear that the preferred embodiment of the desiccant package contains a single-layered microporous film. Moreover, in briefing and at oral argument the parties seemed to assume that the container claimed in the ’942 patent has a total of three layers: a single-layered microporous film and a two-layered laminate film. In any event, the discussion below, which focuses on whether the inner surface of the microporous film is compatible

packages disclosed by the Komatsu and ’942 patents share a three-layered structure in which the inner layer of the laminate film faces and seals to the inner surface of the microporous film. Additionally, both patents provide that the outer layer of the laminate film should be incompatible with its inner layer. The ’942 patent states that the outer surface of the laminate film “should be manufactured from incompatible materials . . . with a higher softening point than the inner surface of the laminate film material,” ’942 patent, col. 6, ll. 15-19, while Komatsu similarly states that the outer surface of the laminate film should have a higher softening point than its inner surface, Komatsu, col. 3, ll. 28-29.

Despite these similarities, the containers disclosed in Komatsu and in the ’942 patent differ in a key respect. Claim 1 of the ’942 patent requires that the inner surface of the laminate film be compatible with the inner surface of the microporous film—that is, the softening points of those two layers must be consistent. In contrast, Komatsu teaches that the microporous film and the inner laminate films should have quite different softening points; Komatsu explains that the softening point of the microporous film should preferably be at least 20°C higher than that of the inner laminate film. Komatsu, col. 3, ll. 16-19. Thus, Komatsu teaches the use of incompatible films precisely where

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compatible with the inner laminate layer, applies with equal force to an alternative embodiment of the container having four or more layers. The difference between the containers described in the two patents would be even greater if the three-layered Komatsu container were compared to a four-layered embodiment of the ’942 container. The possibility that the microporous film can have more than one layer in the ’942 patent therefore does not alter our conclusion that the district court erred in finding that the Komatsu and ’942 patents teach identical containers.

precisely where the ’942 patent requires the films to be compatible.[3] That difference is important, according to the disclosure of the ’942 patent, because the ’942 specification asserts that uncoated films with similar softening points will mix on a molecular level to form bonds that are significantly stronger than the bonds formed using incompatible adhesive-coated films. See ’942 patent, col. 6, ll. 1-12.

Multisorb argues that Komatsu must be understood to teach the use of compatible materials on the container’s inner surfaces because the two patents disclose the same scheme of relative softening points. To support that assertion, Multisorb points to language in the ’942 patent stating that the softening temperature of the inner surface of the laminate film should be “lower than or equal to the softening temperature of the inner surface of the uncoated microporous film.” ’942 patent, col. 5, ll. 54-55. Based on that language, Multisorb argues that both Komatsu and the ’942 patent require that the inner surface of the laminate film have the lowest softening point and that the outer surface of the laminate film have the highest softening point of the three layers. However, Multisorb ignores the fact that while the ’942 patent requires the inner surfaces of the laminate and microporous films to have similar softening points, Komatsu requires the films to have dissimilar softening points. Komatsu thus does not teach the use of a microporous film that is compatible with the inner surface of the laminate film. The teaching of both patents with regard to the relative softening temperatures among the

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[3] The container disclosed in Komatsu differs from that described in the ’942 patent in another respect. The specification of the ’942 patent provides that the outer laminate layer should preferably be “formed from materials which are incompatible with the microporous layer, such as materials having a higher melting or softening point.” ’942 patent, col. 5, ll. 63-67. In contrast, Komatsu permits the outer laminate layer to be compatible with the microporous film layer. Komatsu, col. 3, ll. 24-25.

temperatures among the various surfaces does not obviate that fundamental difference.

It is therefore evident that even though the patents disclose the same classes of polymeric materials used to form the packaging material, the containers described in Komatsu and in the ’942 patent are different in a way that the ’942 patent treats as important to the invention. In essence, the Komatsu container is formed by heat-sealing a microporous layer with a high softening point to an inner laminate layer with a low softening temperature. In contrast, the ’942 container is formed by sealing a microporous layer with a low softening point to an inner laminate layer that also has a low softening temperature. The district court looked only to the classes of materials described in the patents and did not examine the softening points of the materials. It therefore failed to recognize that Komatsu discloses the use of incompatible materials where the ’942 patent requires compatible materials, and it therefore incorrectly concluded that Komatsu teaches the same container as that claimed in the ’942 patent.

II

Süd-Chemie contends that secondary considerations, including unexpected results, copying, and commercial success indicate that the invention of the ’942 patent would not have been obvious to a person of skill in the art. The district court did not explicitly address any of the secondary consideration evidence, other than to state that the ’942 patent did not employ elements that worked together in an unexpected manner. As we have repeatedly emphasized, evidence relating to secondary considerations “constitutes independent evidence of nonobviousness” and can be quite instructive in the obviousness inquiry. Ortho-McNeil Pharm., Inc. v. Mylan Labs., Inc., 520 F.3d 1358, 1365 (Fed. Cir. 2008). The district court should therefore attend carefully to any

evidence of these secondary considerations of nonobviousness on remand. See Ruiz v. A.B. Chance Co., 234 F.3d 654, 667 (Fed. Cir. 2000) (district court erred in failing to consider or discuss evidence of secondary considerations).

Süd-Chemie focuses in particular on the evidence of unexpected results. In that regard, Süd-Chemie argues that a person of skill in the art would not have expected uncoated laminate and microporous films to form stronger bonds than adhesive-coated films. In response to that argument, Multisorb contends that the '942 patent's mere assertion that "[i]t has been surprisingly discovered that strong, laminated desiccant packaging materials can be produced from uncoated microporous or nonwoven films" is insufficient to establish an unexpected result. See '942 patent, col. 4, line 67, through col. 5, line 3.

Multisorb is correct that conclusory statements in a patent's specification cannot constitute evidence of unexpected results in the absence of factual support. See In re Soni, 54 F.3d 746, 750 (Fed. Cir. 1995). However, the '942 patent provides evidence pertaining to the allegedly unexpected advantages of uncoated over coated films beyond its mere declaration that the results were surprising. Examples 1 and 2 of the '942 patent describe embodiments of the desiccant container in which uncoated but compatible laminate and microporous films formed seals with an average strength of more than nine pounds per square inch. In contrast, Example 3 shows that coated but incompatible films produced weaker bonds with a seal strength of only 2.77 pounds per square inch. The specification therefore contains specific evidence pertinent to Süd-Chemie's contention that the use of uncoated films yields advantages over more conventional combinations such as the incompatible surfaces disclosed in the Komatsu

patent. See Soni, 54 F.3d at 750 (specification contained more than a merely conclusory assertion of unexpected results because it also provided data demonstrating improved properties). The district court should consider that evidence, as well as any contrary evidence offered by Multisorb, as it pertains to the obviousness inquiry. Of course, evidence of unexpected results and other secondary considerations will not necessarily overcome a strong prima facie showing of obviousness, see Pfizer, Inc. v. Apotex, Inc., 480 F.3d 1348, 1372 (Fed. Cir. 2007), and we make no judgment as to the probative value of Süd-Chemie's evidence regarding the asserted secondary considerations beyond emphasizing that the district court should take such evidence into account when conducting its obviousness analysis.

III

The '942 patent contains one independent claim and 11 dependent claims. The district court's summary judgment opinion only addressed claim 1, the '942 patent's sole independent claim. Multisorb argues that the patent's dependent claims are also invalid as obvious, and Süd-Chemie challenges that assertion in its reply brief. Because Süd-Chemie did not address the validity of the dependent claims in its summary judgment motions below or in its opening brief on appeal, we will not consider its argument that the patent's dependent claims are valid regardless of the disposition of claim 1.

In summary, we hold that the district court erred in certain respects in the course of ruling, on summary judgment, that the '942 patent was invalid due to obviousness. While, as indicated above, we agree with much of the district court's treatment of the differences between claim 1 of the '942 patent and the prior art Komatsu patent, we disagree with the court's analysis in two important respects: (1) with regard to its

conclusion that Komatsu teaches using the same materials on the container's inner surfaces as those claimed in the '942 patent; and (2) with regard to its treatment of the evidence set forth in the '942 specification that the use of compatible materials on the container's inner surfaces produces results that are significantly better than the conventional sealing methods. Because our resolution of those issues may affect the trial court's ultimate decision whether summary judgment of obviousness is appropriate in this case, we remand for further proceedings consistent with this opinion.

Each party shall bear its own costs for this appeal.

VACATED and REMANDED.