

# United States Court of Appeals for the Federal Circuit

01-1003

THE DOW CHEMICAL COMPANY

Plaintiff-Appellant,

v.

ASTRO-VALCOUR, INC.,

Defendant-Appellee.

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Appealed from: United States District Court for the Northern District of New York

Judge David N. Hurd

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DECIDED: September 28, 2001

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Before MICHEL, BRYSON, and DYK, Circuit Judges.

DYK, Circuit Judge.

This case presents the question of whether, when challenging the validity of a patent under 35 U.S.C. § 102(g), a prior inventor must have known that he was an inventor. We conclude that such a state of mind is not required. Accordingly, we agree that the invention covered by the contested claims of U.S. Patent Nos. BI 4,640,933 (the "933 patent"), 4,694,027 (the "027 patent"), and 4,663,361 (the "361 patent") assigned to the Dow Chemical Company ("Dow") was first invented by defendant Astro-Valcour, Inc. ("AVI"). Also, we agree that AVI did not abandon, suppress, or conceal its invention. Accordingly, we affirm the district court's decision invalidating claim 3 of the '933 patent, claim 1 of the '027 patent, and claim 1 of the '361 patent. Dow Chem. Co. v. Astro-Valcour, Inc., 110 F. Supp. 2d. 104 (N.D.N.Y. 2000).

## I.

Plastic foam products may be made by using a blowing agent to expand a polystyrene, polyethylene, or other polymer resin. A blowing agent is a chemical that produces an above atmospheric pressure inside the cells of a polymer, causing the individual cells to grow, thus transforming the polymer from a high density solid to a low density cellular product. Prior to the middle 1980s foam manufacturers commonly used chlorofluorocarbon ("CFC") blowing agents to produce polyethylene foam, but environmental concerns prompted the search for more environmentally sensitive, cost-effective blowing agents that could produce high-quality foam.

Non-party Japanese Styrene Paper Company ("JSP") held a patent claiming a process for producing foam using non-CFC blowing agents. JSP filed a patent application for a patent on the process in the United States Patent and Trademark Office ("PTO") on April 19, 1968, which resulted in U.S. Patent No. 3,808,300 issued to Miyamoto, et al. (the "Miyamoto patent").

In 1983, AVI began to develop alternatives to the CFC blown foams. An AVI employee, Mr. Fred Collins, became aware of the Miyamoto patent and initiated negotiations for a license to use the patented invention. On March 3, 1984, in a laboratory in Glens Falls, New York, AVI tested the feasibility of making foam by following the teachings of the Miyamoto patent and using isobutane as the non-CFC blowing agent. On March 14, 1984, AVI purchased a license to the Miyamoto patent from JSP. On August 22, 1984, at its Glens Falls, New York production facility, AVI made foam by following the teachings of the Miyamoto patent, again using isobutane as a blowing agent.

Subsequently, AVI began to develop a commercially viable process of producing foam using isobutane as a blowing agent. Because of safety concerns due to the flammability of isobutane, AVI abandoned the implementation of the process at its Glens Falls facility and, in the winter of 1985-86, built a new facility in Plymouth, Indiana. AVI began commercial production of isobutane-blown foam by September 1986, and by October 13, 1986, had sold 190 rolls of isobutane-blown polyethylene sheet foam.

Dr. Chung Park, a scientist at Dow, also developed a process for producing isobutane-blown foam, which resulted in the '933 patent, the '027 patent, and the '361 patent (collectively the "Park patents"), of which Dow is the assignee. The inventions claimed in the Park patents are directed to plastic foam products and methods of making the foam. The '933 patent claims the finished foam; the '361 patent claims the chemical composition that may be expanded to form the finished foam; and the '027 patent claims the process for making the foam from the precursor chemical composition. Dr. Park recognized that the choice of blowing agent was an important factor in the quality and long-term stability of the finished foam product. His recognition that the use of isobutane as a blowing agent in conjunction with a stability control agent known as glycerol monostearate ("GMS") could be used to make quality foam led to the patents in suit. The parties agree, for purposes of this appeal, that Dr. Park conceived the claimed inventions in late August 1984. Dr. Park actually reduced the claimed inventions to practice on September 13-14, 1984, and constructively reduced the claimed inventions to practice on December 24, 1985, by filing patent applications.

The Miyamoto patent was not considered by the PTO during the prosecution of the applications leading to the Park patents. In 1994, however, both Dow and AVI filed requests for Reexamination of the '933 patent with the PTO, citing the Miyamoto patent, among other references. The PTO merged the two requests, with the Miyamoto patent being the primary

reference of concern, and on September 10, 1996, issued Reexamination Certificate No. BI 4,640,933, thus concluding that that the Park invention claimed in the '933 patent was patentable over the Miyamoto patent under 35 U.S.C. §§ 102, 103, and 112. Reexamination of the '361 and the '027 patents was not requested.

## II.

Dow commenced the present action on September 21, 1995, by filing suit against AVI for infringement of two unrelated patents. On October 2, 1996, while the action was pending, and shortly after issuance of the Reexamination Certificate by the PTO, AVI filed a counterclaim for a declaratory judgment of invalidity with respect to all the claims of the '933 patent. On December 30, 1996, Dow filed an amended complaint alleging infringement of the '933, '027, and '361 patents, and on January 17, 1997, AVI amended its counterclaims to seek additional declaratory judgments of invalidity of all of the claims of the '027 and '361 patents. On November 9, 1999, AVI moved for summary judgment that claim 3 of the '933 patent, claim 1 of the '027 patent, and claim 1 of the '361 patent were invalid under 35 U.S.C. § 102(g) based on AVI's making of the foam claimed in the Park patents prior to Park's conception and reduction to practice of the invention. The United States District Court for the Northern District of New York found that AVI presented clear and convincing evidence that it had made the inventions prior to Park's inventive efforts and that Dow raised no genuine issue of material fact to dispute this. Accordingly, the district court granted AVI's motion for summary judgment of invalidity. Dow Chem. Co. v. Astro-Valcour, Inc., 110 F. Supp. 2d 104 (N.D.N.Y. 2000).

The district court found that it was not disputed that AVI had "manufactured a physical embodiment of the Miyamoto invention, meeting the limitations of the Park patents, as early as March 3, 1984, and in any event no later than August 22, 1984." Id. at 106 (footnote omitted). The court also found that AVI used isobutane as a blowing agent and a GMS stability control agent on both dates. Id. at 107. Although Dow questioned whether AVI used normal butane (n-butane) rather than isobutane during the March 3, 1984, production, the district court found that, as he testified, an AVI employee had ordered and installed a tank of isobutane for use as the blowing agent in the testing, that test records showed that AVI had used isobutane as a blowing agent, and that AVI employees witnessed the production of isobutane-blown foam. The court therefore found that no genuine issue of material fact existed regarding whether AVI used isobutane in March and August 1984. Id. The district court additionally found that AVI had produced isobutane-blown foam using a GMS stability control agent that met the limitations of the Park patents prior to Dow's reduction to practice on September 13-14, 1984. Id. at 108.

Dow argued that the foam produced by AVI in March and August of 1984 could not constitute an invention made in this country by AVI under § 102(g) because JSP had already constructively reduced the invention to practice by filing the Miyamoto patent application in 1968, but the district court found no support for the "proposition that the actual reduction to practice by a licensee of a United States patent holder, undertaken prior to conception by a later inventor, is ineffective to constitute prior art. To the contrary, such reduction to practice anticipates the later concept." Id. at 107-08.

Next, the district court addressed the issue of whether AVI abandoned, suppressed, or concealed the invention that it made, and found that the invention had been disclosed to the public by the issuance of the Miyamoto patent in 1974. Id. at 108. Thus, the district court found that AVI's activities subsequent to its making isobutane-blown foam in 1984 were irrelevant to the issue of abandonment, suppression, and concealment, since the invention had already

been disclosed to the public in 1974.

The district court concluded that AVI's production of foam using isobutane as a blowing agent and GMS as a stability control agent anticipated the Park patents. The district court granted AVI's motion for summary judgment that the claims-at-issue of the Park patents were invalid under 35 U.S.C. §102(g), dismissed Dow's claims for infringement of the Park patents, and entered final judgment accordingly. Id. at 109-10. Dow filed this timely appeal to this court. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(1).

### III.

Summary judgment is properly granted when "there is no genuine issue as to any material fact and . . . the moving party is entitled to a judgment as a matter of law." Fed. R. Civ. P. 56(c); Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus., Inc., 145 F.3d 1303, 1307, 46 USPQ2d 1752, 1755 (Fed. Cir. 1998). We review a district court's grant of a motion for summary judgment without deference. Ethicon Endo-Surgery, Inc. v. United States Surgical Corp., 149 F.3d 1309, 1315, 47 USPQ2d 1272, 1275 (Fed. Cir. 1998).

### IV.

At the outset, we note that this case does not present a question of anticipation under § 102 (a). The PTO, in its Reexamination of the '933 patent, concluded that the Miyamoto patent does not anticipate the '933 patent under § 102(a), and no party on this appeal urges that the Park patents are anticipated by the Miyamoto patent under § 102(a). The issue before us is anticipation under § 102(g).

Section 102 of the Patent Act provides in pertinent part that:

A person shall be entitled to a patent unless –

(g) . . . (2) before such person's invention thereof, the invention was made in this country by another inventor who had not abandoned, suppressed, or concealed it. In determining priority of invention under this subsection, there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other.

35 U.S.C. § 102. Therefore, "if a patentee's invention has been made by another, prior inventor who has not abandoned, suppressed, or concealed the invention, § 102(g) will invalidate that patent." Apotex USA, Inc. v. Merck & Co., 254 F.3d 1031, 1035, 59 USPQ2d 1139, 1142 (Fed. Cir. 2001). Our recent decision in Apotex clarified the burdens of proof and production the parties bear when the validity of a patent is challenged under § 102(g). In Apotex, we held that the challenger of the validity of a patent must establish prior invention by clear and convincing evidence. If the challenger does so, the burden of production shifts to the patentee to produce evidence sufficient to create a genuine issue of material fact as to whether the prior inventor abandoned, suppressed, or concealed the invention. If the patentee carries this burden of production, the challenger may rebut the evidence of abandonment, suppression, or concealment, with clear and convincing evidence to the contrary. Id. at 1037-38.

## A.

Dow urges that the district court erred in invalidating the claims at issue under § 102(g). The record establishes that the foam made by AVI in March and August 1984 was made with polyethylene, an isobutane blowing agent, and a GMS stability control agent. The district court found that by making this foam AVI made a product, "meeting the limitations of the Park patents, as early as March 3, 1984, and in any event no later than August 22, 1984." Dow Chem., 110 F. Supp. 2d at 106. Dow has made no showing on appeal that the making of this foam did not meet the limitations of the claims-at-issue.

Because the foam made by AVI would infringe the Park patents if made after the Park invention, it anticipates in fact the relevant claims of the Park patents, since it was made before Park's invention. Lewmar Marine, Inc. v Barient, Inc. 827 F2d 744, 3 USPQ2d 1766 (Fed. Cir. 1987), cert. denied, 484 U.S. 1007 (1988) ("[T]hat which would literally infringe if later in time anticipates if earlier than the date of invention."). Thus, AVI's production of foam on March 3, 1984, and August 22, 1984, would invalidate the relevant claims of the Park patents, if the other requirements of § 102(g) were met.

However, Dow asserts that the district court nonetheless improperly invalidated the Park patents. Dow urges that § 102(g) does not apply to this case because no one at AVI qualifies as an "inventor" under § 102(g), since no one at AVI believed he invented anything during AVI's March and August 1984 activities. Dow points to statements made by AVI employees, concerning the foam they produced, that "[i]t never occurred to us to take a patent for something that we already licensed from JSP"; "[t]his technology was brought in from Japan"; and "[t]he Japanese are the inventors of the Miyamoto process and the AVI employees were applying that process to AVI's own production of foam." Dow urges that an "inventor" must be a person who conceives of an invention and reduces it to practice, either actually (by making the invention) or constructively (by filing a patent application), and that because the version of § 102(g) in effect at the time the Park patents were secured applied only to prior makings of the invention by another inventor, prior art under § 102(g) is limited to prior makings by someone who conceived the invention and reduced it practice.

Before enactment of the American Inventors Protection Act of 1999, Pub. L. no. 106-113, 113 Stat. 1501A-552, on November 29, 1999, § 102(g) prohibited an applicant from receiving a patent if, prior to the applicant's invention, "the invention was made in this country by another . . ." 35 U.S.C. § 102(g) (1994) (emphasis added). The 1999 Act changed this language to: "the invention was made in this country by another inventor . . ." 35 U.S.C. § 102(g)(2) (1994) (emphasis added). In other words, the language of the pre-1999 statute did not specifically require that the invention be made by a prior inventor. Dow contends, however, that the statute was always understood to apply only to inventors, since § 102(g) deals with interference disputes between inventors with competing claims to an invention. No legislative history exists to explain the 1999 change in the statutory language. We agree with Dow that under the pre-1999 version of the statute, as with the current version, it must be shown that an "inventor" made the claimed invention to establish a first-inventor defense under § 102(g). However, we disagree with Dow's contention that no one at AVI was an inventor.

Dow's argument is that even if AVI reduced the Park invention to practice in 1984, AVI nevertheless failed to conceive of any invention that occurred as a result of its 1984 testing and production of foam, and thus no one at AVI can be considered to be an inventor, as required by 102(g). Dow cites Heard v. Burton, 333 F.2d 239, 251, 142 USPQ 97, 99-100

(CCPA 1964), and Silvestri v. Grant, 496 F.2d 593, 597, 181 USPQ 706, 708 (CCPA 1974), for the proposition that one cannot be an inventor without recognizing or appreciating that he invented something.

We disagree. Heard and Silvestri reveal the weakness of Dow's argument and support AVI's position that its employees are prior inventors under § 102(g). In Heard, our predecessor court held, in the context of an interference contest, that a party who first reduced to practice, but who "fail[ed] to recognize that he had produced a new form [of matter] . . . is indicative that he never conceived the invention." 333 F.2d at 243, 142 USPQ at 100. Heard had used a method known in the prior art to produce a catalyst of alumina and platinum to reform naphtha and accidentally produced a new form of catalyst, but did not realize he had produced the new catalyst in his reaction until four years later and two years after the opposing party in the opposition filed a patent application for the new catalyst. Silvestri concerned a priority dispute, also in the context of an interference proceeding, over the inventorship of a new form of an antibiotic known as ampicillin. There, the CCPA re-affirmed the Heard rule that "there is no conception or reduction to practice where there has been no recognition or appreciation of the existence of the new form," 496 F.2d at 597, but stated that Heard "does not require that [a prior inventor] establish that he recognized the invention in the same terms as those recited in the count. The invention is not the language of the count but the subject matter thereby defined. [The prior inventor] must establish that he recognized and appreciated [the] new form." 496 F.2d at 599.

Thus, the cases establish that the date of the conception of a prior inventor's invention is the date the inventor first appreciated the fact of what he made. These cases do not establish that an inventor must be the first to appreciate the patentability of the invention, and we hold that he need not be.

We find undisputed, clear and convincing evidence in the record that AVI's employees immediately appreciated what they had made, and indeed its significance, when they made isobutane-blown foam in March and August 1984. AVI presented documentary evidence and the testimony of witnesses who observed the production of foam in 1984 that AVI employees were aware the foam was made with polyethylene, an isobutane blowing agent, and a GMS stability control agent. AVI's witnesses testified that at the time of the testing and production they were "surprised" and "elated" at the ease of making the "beautiful," "good" foam that they made in March 1984. On March 14, 1984, eleven days after the first test of isobutane-blown foam, AVI purchased a license to the Miyamoto patent, evidencing its confidence that its invention would work for its intended purpose. On August 27, 1984, five days after the production run in Glens Falls, Mr. Collins wrote to a representative of JSP to express his pleasure with the results of the August run, and his expectation that having a license to use the Miyamoto patent to produce foam would give AVI an advantage over the industry. Thus, we find that AVI clearly recognized and appreciated the existence of its new process and product. Whether AVI understood that it had produced a legally patentable invention is immaterial for purposes of § 102(g)(2). It is enough that the AVI employees appreciated the fact of their invention.

## B.

Dow also asserts that, even if AVI is a prior inventor, AVI suppressed or concealed the invention such that its invention does not qualify as § 102(g) prior art.

When addressing the issue of abandonment, suppression, or concealment, Dow does not distinguish between the inventions claimed in the '933, the '027, and the '361 patents. Rather, Dow refers to "the Park invention" in the singular and states that "the Park invention is included in all three patents-at-issue . . . ." Appellant's Brief at 8. Indeed, Dow asserts that "[t]o invalidate the Park patents under § 102(g) . . . AVI had the burden of proving . . . that it conceived and reduced to practice the Park invention . . . and that it did not abandon, suppress or conceal its invention." Appellant's Brief at 36 (emphases added). And Dow admits that AVI's invention was "publicly disclosed [in] August/September 1986." Appellant's Reply Brief at 28. Dow treats the sole invention as being the finished foam composition, and so do we for the purposes of the analysis of abandonment, suppression, or concealment.

Our case law distinguishes between two types of abandonment, suppression, or concealment. Apotex, 254 F.3d at 1038. The first is implicated when an inventor actively abandons, suppresses, or conceals his invention from the public. Fujikawa v. Wattanasin, 93 F.3d 1559, 1567, 39 USPQ2d 1895, 1901 (Fed. Cir. 1996). The second occurs when abandonment, suppression, or concealment may be inferred based upon the prior inventor's unreasonable delay in making the invention publicly known. Int'l Glass Co. v. United States, 408 F.2d 395, 403, 159 USPQ 434, 441 (Ct. Cl. 1969). The latter type is allegedly involved here. The failure to file a patent application, Peeler v. Miller, 535 F.2d 647, 654, 190 USPQ 117, 121 (CCPA 1976), to describe the invention in a published document, Corona Cord Tire Co. v. Dovan Chem. Corp., 276 U.S. 358, 372-73 (1928), or to use the invention publicly, Lutzker v. Plet, 843 F.2d 1364, 1367, 6 USPQ2d 1370, 1372 (Fed. Cir. 1988), within a reasonable time after first making the invention may constitute abandonment, suppression, or concealment. See also Int'l Glass, 408 F.2d at 403 (collecting cases); Paulik v. Rizkalla, 760 F.2d 1270, 1274-75, 226 USPQ 224, 227 (Fed. Cir. 1985) (collecting cases).

In this case, the district court erred in holding that AVI could not have abandoned, suppressed, or concealed the invention because it had previously become publicly known when the Miyamoto patent issued in 1974. The court held that "the Miyamoto patent was issued in 1974. The invention was disclosed to the public at that time." But as we stressed above, the potentially invalidating invention is contained in the 1984 activities of AVI, not in the disclosure of the Miyamoto patent. Thus, the issuance of a patent to Miyamoto has no bearing on whether AVI abandoned, suppressed, or concealed its invention. We nonetheless conclude that the district court reached the correct result, albeit for the wrong reason.

Our case law has not set strict time limits regarding the minimum or maximum periods between a prior inventor's first making of the invention and the subsequent disclosure of the invention necessary to establish or infer suppression, or concealment. Fujikawa, 93 F.3d 1559, 1568; Checkpoint Sys., Inc. v. U.S. Int'l Trade Comm'n, 54 F.3d 756, 761, 35 USPQ2d 1042, 1046 (Fed. Cir. 1995) ("there is no particular length of delay that is per se unreasonable"). Although unreasonable delay in bringing knowledge of the invention to the public may raise an inference of suppression or concealment, Apotex, 254 F.3d at 1038, "[m]ere delay, without more, is not sufficient to establish suppression or concealment," Young v. Dworkin, 489 F.2d 1277, 1281, 180 USPQ 388, 391 (CCPA 1974). Rather, "each case involving the issue of suppression or concealment must be considered on its own particular set of facts." Paulik, 760 F.2d at 1275 (quoting Shindelar v. Holdeman, 628 F.2d 1337, 1343, 207 USPQ 112, 117 (CCPA 1980)).

In its main brief, Dow urges that the two and one-half year delay between AVI's first making and publicly disclosing its invention "gives rise to a presumption that AVI abandoned,



suppressed and concealed its alleged invention." Appellant's Brief at 38-39. Dow does not cite any authority holding that a delay of a certain length of time gives rise to presumption of abandonment, suppression, or concealment. We are not aware of any such authority and decline to create any such rule.

Dow further urges in its brief that because the two and one-half year period between AVI's reduction to practice and public disclosure of its invention allegedly "was solely because AVI was waiting until it could commercialize its product" and not because AVI was improving or modifying the invention; and therefore this delay in disclosing the invention cannot be excused. Id. at 39 (citing Lutzker v. Plet, 843 F.2d 1364, 1367-68, 6 USPQ2d 1370, 1372 (Fed. Cir. 1988) and Young v. Dworkin, 489 F.2d 1277, 1281-82). We note that, unlike this case, both Lutzker and Young involved interference disputes between two inventors who both had filed patent applications. The issue in those cases was whether the prior inventor had abandoned, suppressed, or concealed his invention between first making it and filing his patent application. In Lutzker we held a long delay between a prior inventor's first reduction to practice and subsequent filing of a patent application may be excused if the inventor worked during that period to improve or perfect the invention disclosed in the patent application, Lutzker, 843 F.2d at 1367, accord Young, 489 F.2d at 1281, but if the inventor's activities during that period were directed only to commercialization and were not "reflected in his patent application," they could not be excused, Lutzker 843 F.2d at 1368, accord Young, 489 F.2d at 1281-82. In Checkpoint, 54 F.3d at 762-63, we distinguished Lutzker on the ground that Checkpoint involved a prior inventor who did not file a patent application but who publicly disclosed his invention by commercializing it four years after first making it. In Checkpoint, we stated that "[t]he public thus received the benefit of [the prior inventor's] invention promptly when Checkpoint's integral commercial system was brought to market. [The prior inventor] was under no duty to file a patent application and, although he may have failed to establish his own right to a patent, there was no lack of diligence in his attempts to make the benefit of his invention available to the public." Id. at 763.

Checkpoint establishes that "[i]n cases in which an invention is disclosed to the public by commercialization, courts have excused delay upon proof that the first inventor engaged in reasonable efforts to bring the invention to market." Id. at 762. Here, AVI's public disclosure of its isobutane-blown foam invention occurred through commercialization of its foam. Dow has produced no evidence showing that AVI's efforts to commercialize its prior invention entailed any abandonment, suppression, or concealment of the invention. To the contrary, during the 30 months between first making the isobutane-blown foam and selling the foam, AVI actively and continuously took steps towards the commercialization of the foam, including the procurement of financing to build a new production plant and the attention to safety considerations associated with using isobutane as a blowing agent. A prior inventor is not required to take the fastest route to commercialization, but only to make "reasonable efforts to bring the invention to market." Id. Because the undisputed evidence shows that AVI made reasonable efforts towards commercialization, Dow has not shown, even prima facie, that AVI suppressed or concealed its invention.

Because there is no genuine issue of material fact, and AVI has produced clear and convincing evidence that it made the Park invention prior to Park's date of invention and Dow has not produced any evidence that AVI abandoned, suppressed, or concealed the invention, we find the claims-at-issue of the Park patents are invalid under § 102(g)(2). We accordingly affirm the decision of the district court.

No costs.

#### FOOTNOTES:

[1] The parties apparently cannot agree on the exact date. While AVI asserts that the conception date was August 28, 1984, Dow asserts that the inventions were conceived on August 24, 1984. This four-day difference is, however, immaterial to resolving the issues before us.

[2] By stipulation of the parties, the claims relating to the unrelated patents have been dismissed.

[3] While AVI originally sought a declaratory judgment of invalidity of all the claims of the Park patents, in its motion for summary judgment of invalidity AVI sought a declaration of invalidity only as to claim 3 of the '933 patent, claim 1 of the '027 patent, and claim 1 of the '361 patent. We consider only those claims to be part of this appeal and conclude that AVI has abandoned litigation with respect to the remaining claims of the patents.

[4] As noted below in section B, we treat the invention as being a single invention, i.e., the foam.

[5] That AVI needed a license to the Miyamoto patent to produce its isobutane-blown foam does not mean that AVI did not advance the art over the Miyamoto invention, but only that AVI's/Dow's invention was an improvement over the dominant Miyamoto patent.