NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

HORIZON MEDICINES LLC,
Plaintiff-Appellant

v.

ALKEM LABORATORIES LTD.,
Defendant-Appellee

2021-1480

Appeal from the United States District Court for the District of Delaware in No. 1:18-cv-01014-RGA, Judge Richard G. Andrews.

Decided: November 16, 2021

CARYN BORG-BREEN, Green, Griffith & Borg-Breen LLP, Chicago, IL, argued for plaintiff-appellant. Also represented by JESSICA TYRUS MACKAY, TIMOTHY O'BRIEN.

WILLIAM A. RAKOCZY, Rakoczy Molino Mazzochi Siwik LLP, Chicago, IL, argued for defendant-appellee. Also represented by AMY D. BRODY, XIAOMEI CAI.

Before DYK, O'MALLEY, and HUGHES, *Circuit Judges*.

DYK, *Circuit Judge*.

Horizon Medicines LLC ("Horizon") is the owner of U.S. Patent Nos. 8,067,033 ("the '033 patent") and 8,067,451 ("the '451 patent"). In response to Abbreviated New Drug Application ("ANDA") No. 211890 submitted by Alkem Laboratories LTD. ("Alkem"), Horizon filed suit in the United States District Court for the District of Delaware alleging that Alkem's ANDA infringed Horizon's patents. After a bench trial, the district court found that claims 1, 8, 11, and 14 of the '033 patent were invalid for obviousness and not infringed, and that claims 1–3 and 8–10 of the '451 patent were not infringed. We *affirm* the district court's findings that the asserted claims of the '033 patent were invalid for obviousness and that the asserted claims of the '451 patent were not infringed.

BACKGROUND

I

Patients with rheumatoid arthritis and osteoarthritis may take high doses of non-steroidal anti-inflammatory drugs ("NSAIDs") to combat chronic pain and inflammation. NSAIDs may be selective or non-selective.[1] Non-selective NSAIDs, such as ibuprofen, can cause stomach ulcers after prolonged use. Before 2004, doctors prescribed

---

[1] Cyclooxygenase ("COX") is an enzyme required to create certain molecules responsible for inflammation and pain. It comes in two varieties, COX-1 and COX-2. COX-1 enzymes also play a role in maintaining the mucus lining of the stomach. Non-selective NSAIDs inhibit both COX-1 and COX-2. Selective NSAIDs only target COX-2, thereby providing anti-inflammatory relief without compromising the stomach lining. *See* Ida Ghlichloo & Valerie Gerriets, *Nonsteroidal Anti-inflammatory Drugs (NSAIDs)* (May 12, 2021), https://www.ncbi.nlm.nih.gov/books/NBK547742/.

selective NSAIDs to relieve pain and inflammation while causing fewer gastrointestinal complications. In 2004, selective NSAID Vioxx was removed from the market because it created a risk of cardiovascular complications. Anticipating a shift toward non-selective NSAIDs (such as ibuprofen), Dr. George Tidmarsh and Barry Golombik formed Horizon in September 2004 to develop a solution to the problem created by taking non-selective NSAIDs.

The regular use of ibuprofen creates a risk of upper gastrointestinal ulcers in patients with rheumatoid arthritis and osteoarthritis. The '033 and '451 patents are directed to a pharmaceutical composition wherein 800 mg ibuprofen and 26.6 mg famotidine are combined in a tablet product to treat pain while decreasing the risk of ulceration. The use of ibuprofen to treat pain and famotidine to reduce the risk of ulceration was known in the art. Combining ibuprofen and famotidine into a single dose was also known in the prior art, thereby allowing patients to receive both drugs concomitantly and avoiding the patient compliance issues associated with a regimen consisting of two separate dosage forms. However, due to the chemical incompatibility between ibuprofen and famotidine, such single dose forms degraded over time, particularly in conditions of elevated temperature and relative humidity.

The claimed invention of the patents in suit was to develop a single dosage form comprising both ibuprofen and famotidine that "exhibit[s] exceptional stability under forced degradation conditions." J.A. 223. The '033 patent achieves this stability by minimizing the surface area of direct physical contact between the incompatible ingredients, as recited in claim 1 below:

> 1. A pharmaceutical composition comprising
>
> a first portion that comprises 800 mg ibuprofen and a second portion that comprises 26.6 mg famotidine,

> wherein the surface area of direct physical contact between ibuprofen and famotidine does not exceed 130 mm^2,
>
> wherein no more than about 1% sulfamide is present when the composition is stored at 40° C. and 75% relative humidity for a period of one month,
>
> wherein the composition is formulated so that release of both the ibuprofen and the famotidine occurs rapidly at about the same time,
>
> wherein none of the composition, the famotidine, and the ibuprofen is enterically coated or formulated for sustained or delayed release, and
>
> wherein the composition is for use according to a TID (three times per day) administration schedule for reducing the risk of developing ibuprofen-induced ulcers in a human patient requiring ibuprofen for an ibuprofen-responsive condition.

Dependent claim 8 additionally recites a "barrier layer" separating the ibuprofen and famotidine.

The '451 patent discloses the use of Opadry® White YS-1-7003 ("YS-1-7003") as a barrier layer to further improve stability. Claim 1 of the '451 patent is reproduced in relevant part below, reciting the use of the ingredients in YS-1-7003 in a "barrier layer" limitation:

> 1. An oral dosage in tablet form comprising
>
> a first portion that comprises 800 mg ibuprofen and a second portion that comprises 26.6 mg famotidine,
>
> wherein a barrier layer comprising hydroxyl propyl methyl cellulose 2910, polyoxyethylene glycol 400, polysorbate 80, and titanium dioxide surrounds the second portion completely separating it from the first portion . . .

II

Horizon sells DUEXIS®, an FDA-approved tablet-in-tablet product with a famotidine core, an ibuprofen shell, and an Opadry® White barrier layer in between. In 2018, Alkem submitted its ANDA seeking FDA approval for an ibuprofen core, famotidine shell tablet product while also making a Paragraph IV Certification under the provisions of the Hatch-Waxman Act, 21 U.S.C. § 355(j)(2)(A)(vii)(IV), asserting that its product did not infringe Horizon's patents or that the patents were invalid. In response, Horizon filed suit in the district court alleging infringement by Alkem's ANDA submission.

During claim construction, the district court found that Horizon narrowed the claim scope of the '451 patent by specifying a barrier layer of YS-1-7003, describing it by listing the ingredients. The district court accordingly construed the "barrier layer" limitation in the '451 patent to mean "consisting essentially of" the ingredients in YS-1-7003. Horizon apparently believed that claim 1 of the '451 patent was not infringed under the district court's claim construction and did not present infringement evidence at trial.

After trial, the district court found the asserted claims of the '033 patent invalid for obviousness and not infringed. The district court also entered judgment in favor of Alkem that its ANDA products did not infringe the claims of the '451 patent. Horizon appeals. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(1).

DISCUSSION

We review the district court's factual findings after a bench trial for clear error and the court's legal conclusions *de novo*. *See, e.g.*, *Meds. Co. v. Mylan, Inc.*, 853 F.3d 1296, 1302 (Fed. Cir. 2017).

I. The '033 Patent

A

In finding the asserted claims invalid for obviousness, the district court relied in part on U.S. Patent Application Pub. No. 2007/0043096 A1 ("the '096 publication"). Horizon argues that the district court committed legal error because the '096 publication is not prior art to the '033 patent. We see no error in the district court's finding that the '096 publication is prior art.

Under pre-AIA 35 U.S.C. § 102(a), a reference is prior art if it was "known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent." The court looks to "not merely the differences in the listed inventors, but whether the portions of the reference relied on as prior art, and the subject matter of the claims in question, represent the work of a common inventive entity." *Riverwood Int'l Corp. v. R.A. Jones & Co., Inc.*, 324 F.3d 1346, 1356 (Fed. Cir. 2003). The '033 patent claims the 800 mg ibuprofen and 26.6 mg famotidine combination dosage form disclosed in the '096 publication.

The '096 publication published on February 22, 2007, listing both Golombik and Tidmarsh as inventors. The '033 patent has a priority date of November 30, 2007, listing Tidmarsh but not Golombik as an inventor.[2] Horizon

---

[2] We note that the '096 publication lists Tidmarsh, Golombik, and Lii as inventors and that the '033 patent lists Tidmarsh and Xu as inventors. In view of our disposition regarding Golombik's inventorship on the '033 patent, we need not consider the impact of the additional inventors Lii and Xu as to whether the '096 publication is prior art.

sought to correct the inventorship of the '033 patent by adding Golombik as an inventor pursuant to 35 U.S.C. § 256 so that Golombik and Tidmarsh would be listed as inventors on both the '033 patent and the '096 publication. The district court denied the request. Horizon argues that because the district court determined that Tidmarsh and Golombik invented the dosage amounts and dosing regimen disclosed in the '096 publication, which appear in claim 1 of the '033 patent, then Golombik must have also invented this subject matter in the '033 patent and Horizon should be allowed to add Golombik to the list of inventors on the '033 patent.

We see no error in the district court's decision declining to add Golombik as an inventor on the '033 patent. The general rule is that the inventors named in an issued patent are presumed to be correct, and "a district court must find clear and convincing evidence that [an] alleged unnamed inventor was in fact a co-inventor before correcting inventorship." *Caterpillar Inc. v. Sturman Indus., Inc.*, 387 F.3d 1358, 1377 (Fed. Cir. 2004). "[I]nventor[] testimony, standing alone, is insufficient to prove conception—some form of corroboration must be shown" to safeguard against inventors who might otherwise "be tempted to remember facts favorable to their case." *EmeraChem Holdings, LLC v. Volkswagen Grp. of Am., Inc.*, 859 F.3d 1341, 1346 (Fed. Cir. 2017). In the related context of analyzing corroboration for priority of invention, this court has held that "testimony of one co-inventor cannot be used to help corroborate the testimony of another." *Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1171 (Fed. Cir. 2006).

Our cases are clear that inventing something in an earlier patent or patent application does not automatically make one an inventor of patents that incorporate the earlier invention. *See, e.g.*, *Eli Lilly and Co. v. Aradigm Corp.*, 376 F.3d 1352, 1358, 1362 (Fed. Cir. 2004) ("A contribution of information in the prior art cannot give rise to joint

inventorship because it is not a contribution to conception."). Otherwise, as the district court pointed out, "the inventors of ibuprofen and famotidine would be properly named inventors of the '033 patent, as the patent claims build on the prior art by using those two ingredients." J.A. 143–44.

Horizon relies on *Pannu v. Iolab Corp.*, 155 F.3d 1344 (Fed. Cir. 1998) to argue that Tidmarsh and Golombik were engaged in a collaborative enterprise and thus their disclosure in the '096 publication should not prevent Golombik from being included as an inventor on the '033 patent. However, *Pannu* is inapt because the court declined to find sole inventorship in a situation where it was "undisputed that [the individuals] collaborated in the development and production of one-piece prototype embodiments of the invention." *Id.* at 1351. The only support for Golombik's contribution to the '033 patent is testimony by Tidmarsh and Golombik. The district court discounted these testimonies as "non-specific," "convenient, uncorroborated, and not very credible," and concluded that "there was no proof that Mr. Golombik made even the slightest contribution to the '033 patent." J.A. 143. We see no clear error in these determinations. There is also no corroborated collaboration with respect to the invention of the '033 patent. Indeed, Golombik minimized his own involvement in its conception and admitted that Tidmarsh came up with the idea of separating the ibuprofen and famotidine into two portions.

B

With respect to the issue of obviousness, Horizon argues that the district court committed legal error in finding that a person of ordinary skill in the art would have had a reasonable expectation of success to achieve the claimed degree of stability in the '033 patent. Contrary to Horizon's argument, the district court did not place the burden on Horizon to establish a reasonable expectation of success.

Rather, the district court found that a prior art reference ("the '671 publication") disclosed tablet-in-tablet separation methods, like those recited in the '033 patent, "to achieve greater stability" in pharmaceutical formulations containing drugs similar to ibuprofen and famotidine, under the same stability conditions claimed in the '033 patent. J.A. 159. The district court's analysis is also supported by testimony from Alkem's expert witness. For example, in response to a question about what the stability data in the '671 publication disclosed to a skilled person, Alkem's expert stated the following:

> Well, they put the embodiment in the room temperature and elevated accelerated temperature conditions. The same 40 degrees C, 75 relative humidity that's in claim 1 of the '033 patent. And they stored it, not only for one month as required in the ']033 limitation, but for one, two, three to six months. And what they found was that the ranitidine which was the compound they were stabilizing by structure small core, barrier layer, larger shell, was stable at that 40 degrees, 75 percent humidity for up to six months.

J.A. 11101. We see no clear error in the district court's findings regarding expectation of success.

C

Horizon also appeals the district court's noninfringement finding with respect to the '033 patent. Because we affirm the district court's finding that the asserted claims of the '033 patent are invalid for obviousness, the infringement issue is moot, and we do not reach it. *TypeRight Keyboard Corp. v. Microsoft Corp.*, 374 F.3d 1151, 1157 (Fed. Cir. 2004) ("[A] judgment of invalidity necessarily moots the issue of infringement.").

II. The '451 Patent

Horizon argues that the district court erred in construing "comprising" in the "barrier layer" term in the '451 patent to mean "consisting essentially of," and that the construction and subsequent finding of noninfringement should be vacated. However, in its briefing before this court, Horizon makes no effort to show how the alleged error in interpreting "comprising" was prejudicial. Accordingly, Horizon has failed to establish harmful error warranting reversal. *See Ecolab, Inc. v. Paraclipse*, 285 F.3d 1362, 1374 (Fed. Cir. 2002) ("[T]o warrant a new trial, Ecolab must show that the erroneous jury instruction was in fact prejudicial. When the error in a jury instruction 'could not have changed the result, the erroneous instruction is harmless.'") (citations omitted); *see also Omega Patents, LLC v. CalAmp Corp.*, 920 F.3d 1337, 1343 (Fed. Cir. 2019).

In any case, the prosecution history of the '451 patent supports the district court's construction. Across multiple exchanges with the examiner, Horizon explained that it was amending the claims to "focus on an embodiment of the invention that uses Opadry® White (YS-1-7003) as a barrier layer," acknowledged that the claims specified that "the barrier layer is Opadry White (YS-1-7003)," and distinguished prior art based on current claims with "the limitation that the barrier layer be Opadry White (YS-1-7003)." J.A. 123. For example, Horizon argued in an office action response that "[t]he [p]rior [a]rt, [e]ither [a]lone or [i]n [c]ombination, [p]rovides [n]o [r]ationale for a [b]arrier [l]ayer of Opadry White (YS-1-7003)." J.A. 2425. Horizon eventually amended its claims to include the "comprising" language at issue, but this was only at the Examiner's suggestion "to combine the method claims with the specific composition comprising OP[A]DRY-WHITE (YS[-]1-7003) for a favorable consideration." J.A. 124. Considering the intrinsic record, the district court concluded that "the

amendment resulted in no increase in scope regarding the barrier layer." *Id.* We do not see any error in the district court's determination that Horizon unambiguously narrowed its claim scope to a barrier layer of YS-1-7003.

CONCLUSION

We affirm the district court's findings that claims 1, 8, 11, and 14 of the '033 patent are invalid for obviousness and that claims 1–3 and 8–10 of the '451 patent are not infringed by Alkem's ANDA.

AFFIRMED