

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FLUKE CORPORATION,
Petitioner,

v.

AMETEK DENMARK A/S,
Patent Owner.

Case IPR2016-01428
Patent 8,342,742 B2

Before LORA M. GREEN, DAVID C. McKONE, and
DANIEL J. GALLIGAN, *Administrative Patent Judges*.

GREEN, *Administrative Patent Judge*.

FINAL WRITTEN DECISION

Determining That Claims 1, 2, 4–6, and 18–20 Have Not Been
Shown to Be Unpatentable
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

Fluke Corporation (“Fluke” or “Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–20 of U.S. Patent No. 8,342,742 C1 (Exs. 1001, 1003 (the reexamination certificate adding claims 13–20), “the ’742 patent”). Paper 2 (“Pet.”). Ametek Denmark A/S (“Ametek” or “Patent Owner”) filed a Preliminary Response to the Petition. Paper 5 (“Prelim. Resp.”). The Board determined that the information presented in the Petition and the Preliminary Response demonstrated that there was a reasonable likelihood that Petitioner would prevail in challenging claims 1, 2, 4–6, and 18–20 as unpatentable under 35 U.S.C. § 102(b). Pursuant to 35 U.S.C. § 314 and 37 C.F.R. § 42.4, the Board instituted trial on January 13, 2017, as to claims 1, 2, 4–6, and 18–20 of the ’742 patent. Paper 6 (“Institution Decision” or “Dec. Inst.”).

Patent Owner filed a Response (Paper 14, “PO Resp.”), and Petitioner filed a Reply (Paper 19, “Reply”). Patent Owner also filed a Contingent Motion to Amend (Paper 15), to which Petitioner filed an Opposition (Paper 20) and Patent Owner filed a Reply (Paper 27). Oral hearing was held on October 17, 2017, and a transcript of that hearing has been entered into the record. Paper 35 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a).

Based on the record before us, we conclude that Petitioner has failed to demonstrate by a preponderance of the evidence that claims 1, 2, 4–6, and 18–20 of the ’742 patent are unpatentable. As we determine that Petitioner has not demonstrated the unpatentability of the claims by a preponderance of

the evidence, we need not reach Patent Owner's Contingent Motion to Amend.

A. Related Proceedings

According to the parties, there are no other judicial or administrative matters related to this proceeding. Pet. 3; Paper 4.

B. The '742 Patent (Ex. 1001)

The '742 patent issued on January 1, 2013, with Jan Haakon Harslund, Jorgen Reinholdt Larsen, and Folke Galsgaard as the listed co-inventors. Ex. 1001. According to the '742 patent, the "invention relates to a temperature calibrating system comprising a thermo siphon, a heat pipe or an equivalent connected between a cooling unit and a temperature calibration unit." *Id.* at 1:13–16. The '742 patent teaches that in the

system the condensator end of the thermo siphon or heat pipe is cooled by an active cooling device (for example [a] compressor system, thermoelectric module or a Stirling cooler) and the evaporating end of the thermo siphon or heat pipe is used to cool a media (example metal block of dry block calibrator or liquid of a liquid bath).

Id. at 1:64–2:2. As taught by the '742 patent, the "system further comprises an external chamber connected to the heat pipe/thermo siphon or equivalent for controlling the thermal conductivity between the two units." *Id.* at 2:6–10.

An objective of the system of the '742 patent "is to expand the temperature range of the temperature calibrator above the ratings of the cooling unit (e.g. a Stirling cooler)." *Id.* at 2:42–44. Another objective is "to better control the heat flow to and from the calibration unit and to provide faster cooling of the calibration unit when desired." *Id.* at 2:45–47.

Figure 1 of the '742 patent, as annotated by Patent Owner (Prelim. Resp. 5), is reproduced below:

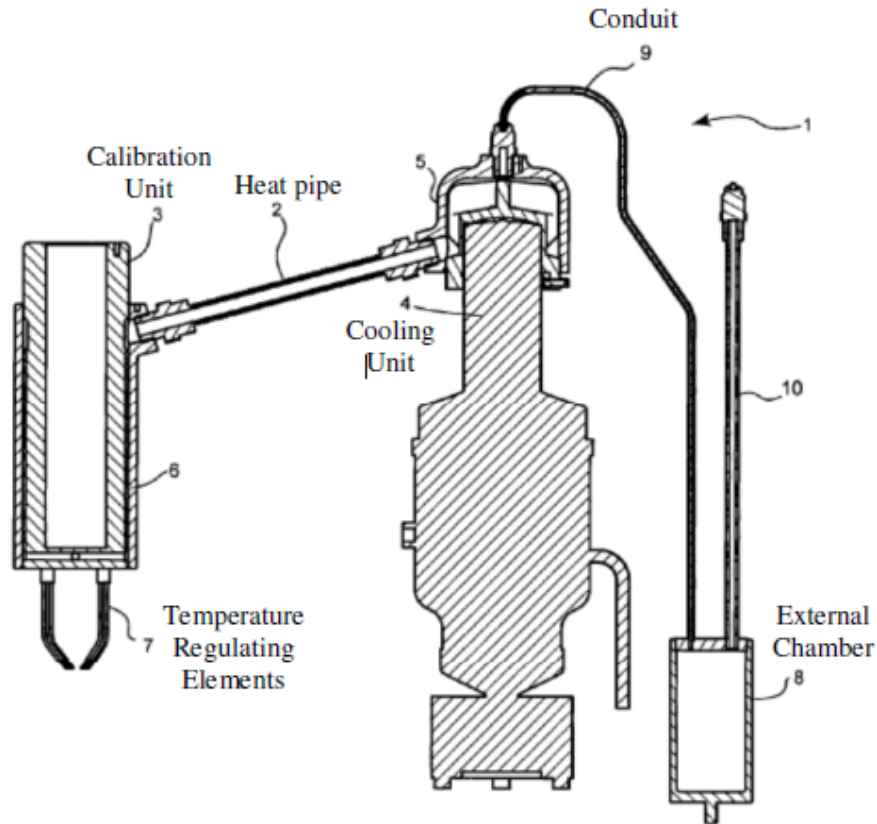


Fig. 1

Figure 1 “shows a schematic cross-sectional view of a first embodiment of a thermal calibrating system.” Ex. 1001, 2:64–65. As shown in the Figure, in system 1, “a thermo siphon 2, heat pipe or equivalent is used to transfer heat away from a temperature calibration unit 3 with the help of a cooling unit 4.” *Id.* at 3:4–6 (emphasis removed). The '742 patent discloses examples of temperature calibration units 3, such as a dry-block calibrator or liquid of a liquid bath. *Id.* at 3:8–15.

According to the '742 patent, condensing end 5 of thermo siphon 2 is cooled by active cooling device 4, and evaporating end 6 of thermo siphon 2

is used to cool a media, such that heat is transferred from media 3 to cooling unit 4. *Id.* at 3:8–15. External chamber 8 is connected to thermo siphon 2.

Id. at 3:38–39. The '742 patent teaches:

When the temperature of the heat pipe/thermo siphon 2 is higher than the temperature of the external chamber 8, the working fluid will condensate in the external chamber 8 leaving only gas in the heat pipe/thermo siphon 2. The heat pipe/thermo siphon 2 will therefore stop transferring energy and the pressure of the unit will be limited to the boiling pressure of the working fluid at the temperature of the external chamber 8.

Id. at 3:40–47.

C. *Illustrative Claim*

Petitioner challenges claims 1, 2, 4–6, and 18–20 of the '742 patent. Claim 1 is the only independent challenged claim, is representative, and is reproduced below:

1. *A temperature calibrating system* comprising a thermo siphon or a heat pipe connected between a cooling unit and *a temperature calibration unit*, and an external chamber connected to the thermo siphon or heat pipe for controlling the thermal conductivity between the two units.

Ex. 1001, 5:32–36 (emphases added).

D. *Instituted Challenge*

The Board instituted trial based on the following ground of unpatentability (Dec. Inst. 39):

References	Basis	Claims Challenged
Marcarino ¹	§ 102(b)	1, 2, 4–6, and 18–20

¹ P. Marcarino et al., *Gas-Controlled Heat-Pipes for Accurate Temperature Measurements*, 23 APPLIED THERMAL ENGINEERING 1145–52 (2003) (Ex. 1006) (“Marcarino”).

Petitioner relies on the Declaration of Charles A. Garris, Jr., Ph.D. (Ex. 1002), as well as the Supplemental Declaration of Dr. Garris (Ex. 1038).

Patent Owner relies on the Declaration of John P. Abraham, Ph.D. (Ex. 2003).

II. ANALYSIS

Petitioner bears the burden of proving unpatentability of the challenged claims, and the burden of persuasion never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). To prevail, Petitioner must establish facts supporting its challenge by a preponderance of the evidence. *See* 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). Below, we explain why Petitioner has failed to meet its burden with respect to the challenged claims.

A. *Level of Ordinary Skill in the Art*

According to Petitioner, the level of skill of the ordinary artisan in the field of thermal systems at that time would have at least a bachelor's degree in mechanical engineering, a specialty in heat transfer and thermal systems, and at least a few years of experience incorporating heat transfer devices (such as heat pipes) in product design and utilizing temperature calibration systems

Pet. 5 (citing Ex. 1002 ¶ 23). Patent Owner does not offer a definition of the level of skill of the ordinary artisan in its Response.

Based on our review of the record, we agree with and adopt Petitioner's statement of the level of ordinary skill in the art. Moreover, we note that, in this case, the level of ordinary skill in the art is reflected by the prior art of record. *Cf. Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995).

B. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are interpreted according to their broadest reasonable construction in light of the specification of the patent in which they appear. *See* 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–45 (2016) (upholding the use of the broadest reasonable interpretation standard). Under that standard, we presume that a claim term carries its “ordinary and customary meaning,” which “is the meaning that the term would have to a person of ordinary skill in the art in question” at the time of the invention. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007); *see also TriVascular, Inc. v. Samuels*, 812 F.3d 1056, 1062 (Fed. Cir. 2016) (“Under a broadest reasonable interpretation, words of the claim must be given their plain meaning, unless such meaning is inconsistent with the specification and prosecution history.”). Any special definition for a claim term must be set forth in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

We must keep in mind, however, that “[e]ven when giving claim terms their broadest reasonable interpretation, the Board cannot construe the claims ‘so broadly that its constructions are *unreasonable* under general claim construction principles.’” *In re Smith Int., Inc.*, 871 F.3d 1375, 1382 (Fed. Cir. 2017) (quoting *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1298 (Fed. Cir. 2015)). That is, the “‘protocol of giving claims their broadest reasonable interpretation . . . does not include giving claims a legally incorrect interpretation’ ‘divorced from the specification and the record evidence.’” *Id.* (quoting *Microsoft*, 789 F.3d at 1298).

In the Institution Decision, the Board determined that none of the terms in the challenged claims required express construction at that time. Dec. Inst. 10 (citing *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (noting that only claim terms that are in controversy need to be construed, and then only to the extent necessary to resolve the controversy)). For purposes of this Final Written Decision, we determine that only the following terms need express construction.

“temperature calibrating system” and “temperature calibration unit”

Petitioner did not offer a construction for “temperature calibrating system” as set forth in the preamble of independent claim 1 in its Petition, nor did it offer a construction for the term “temperature calibration unit.”

In its Response, Patent Owner does not expressly offer a construction for “temperature calibrating system” but does offer a construction for “temperature calibration unit.” PO Resp. 7–8. According to Patent Owner, the Specification of the ’742 patent describes “temperature calibration unit 3” as a “dry block calibrator 3” but also states that the temperature calibration unit may be a liquid bath. *Id.* at 7. Patent Owner argues further that even though both of those structures are “typically associated with a ‘known device’ calibration,” the ordinary artisan would understand that the “temperature calibration unit” could also include systems for “‘fixed-point’ calibrations.” *Id.* at 7–8 (citing Ex. 2003 ¶¶ 92–93). Moreover, in responding to Petitioner’s anticipation challenge, Patent Owner argues that Marcarino does not teach a temperature calibrating system comprising a temperature calibration unit. *Id.* at 24–27 (citing Ex. 2003 ¶¶ 175–176). Specifically, Dr. Abraham testifies (1) that Marcarino does not teach calibrating a sensor, such as a thermometer, as the mercury in the gas-

controlled heat pipe was not held at its triple point, (2) that the system in Figure 1 of Marcarino only holds a single thermometer, and (3) that Marcarino does not provide a description of a device that could be used to calibrate a thermometer inserted into that single thermometer well. Ex. 2003 ¶¶ 175–176.

In its Reply as to the term “temperature calibrating system,” Petitioner argues that the term is in the preamble and should not be read as limiting. Reply 6. “At best,” Petitioner asserts, “Patent Owner impliedly construes the preamble, ‘a temperature calibration system,’ as requiring the system be used for temperature calibration.” *Id.* But, Petitioner asserts, “the body of claim 1 describes all of the structures necessary to build the invention (i.e., cooling unit, external chamber, etc.).” *Id.*

As to the claim term “temperature calibration unit,” Petitioner argues that term should be construed as a “device that is capable of use in a temperature calibration system.” *Id.* at 7 (citing Ex. 1038 ¶¶ 33–34). According to Petitioner,

[g]iven that the claimed temperature calibration unit could be nothing more than some amount of undefined media (i.e. as little as a blob of liquid), a construction that requires the element to be “configured” for temperature calibration is too narrow. Ex. 1038 ¶ 30-31 (noting that a volume of liquid or a piece of metal, by themselves, are not configured for, and cannot perform temperature calibration).

Id. at 8. Petitioner notes further that the Specification does not contain the terms “a known device calibration or a fixed-point calibration” and, in fact, does not even describe the temperature calibration process. *Id.* at 8–9.

We acknowledge that the Specification does not specifically define the meaning of a temperature calibration unit. The Specification does,

however, provide examples of the use of a dry-block calibrator or liquid in a liquid bath. Ex. 1001, 3:12–14. The Specification teaches further that the temperature calibration unit has temperature regulating units 7 and that the heat pipe/thermo siphon transfers heat from the temperature calibration unit. *Id.* at 3:20–30. In view of those teachings of the Specification, we determine that Petitioner’s proposed construction of a “device that is capable of use in a temperature calibration system” is too broad, as it encompasses any component of a temperature calibration system. *See* Ex. 2013, 98:2–104:5. And we determine that the ordinary artisan would understand that the examples of a dry-bock calibrator and a liquid bath provided by the Specification limit the temperature calibration unit to one in which the temperature of a device to be calibrated can be compared to a known reference temperature.

In view of the teachings of the Specification, we, therefore, construe “temperature calibration unit” as a unit that is used to calibrate a device for measuring temperature, such as a thermometer, against a known reference, such as a second thermometer, which is consistent with the testimony of Dr. Abraham (Ex. 2003 ¶ 176). In that regard, we determine that the preamble language “temperature calibrating system” is limiting and “breathes life and meaning” into the body of the claim, as it provides context essential for understanding the term “temperature calibration unit.” *See In re Paulsen*, 30 F.3d 1475, 1479 (Fed. Cir. 1994); *see also* Pet. 5 (stating that “[t]emperature calibration is a process for comparing measurements from a thermometer or thermocouple to a known or reference temperature,” which is consistent with our construction that a “temperature calibration unit” is used to calibrate a device for measuring temperature, such as a thermometer,

against a known reference, such as a second thermometer). In view of the Specification, the ordinary artisan would understand that a temperature calibration unit, such as a dry block calibrator or a liquid bath, is a unit that is used to calibrate a temperature sensor against a reference temperature. *See Seachange International, Inc. v. C-Cor Inc.*, 413 F.3d 1361, 1376 (Fed. Cir. 2005) (noting that in construing a claim term, the “preamble provides the only antecedent basis and thus the context essential to understand the meaning” of that claim term); *see also* Pet. 5 (in explaining the art at the time of invention, noting that “[i]n a calibration system, a calibration media such as a liquid bath or air-filled block is heated to a reference temperature and the device being calibrated is disposed within the media to take measurements for comparison”).

C. Anticipation by Marcarino (Ex. 1006)

Petitioner asserts that claims 1, 2, 4–6, and 18–20 are anticipated by Marcarino. Pet. 14–17, 27–33, 47–49. Patent Owner contends that Petitioner has not established by a preponderance of the evidence that claims 1, 2, 4–6, and 18–20 are anticipated by Marcarino. PO Resp. 19–35.

i. Overview of Marcarino (Ex. 1006)

Marcarino discloses several gas-controlled heat pipes that are used for temperature measurements from 100 to 962°C. Ex. 1006, Abstract. According to Marcarino, the use of gas-controlled heat-pipes allows for “isothermal chambers with very high temperature uniformity and stability.” *Id.* at 1145–46.

Figure 1 of Marcarino is reproduced below (*id.* at 1147):

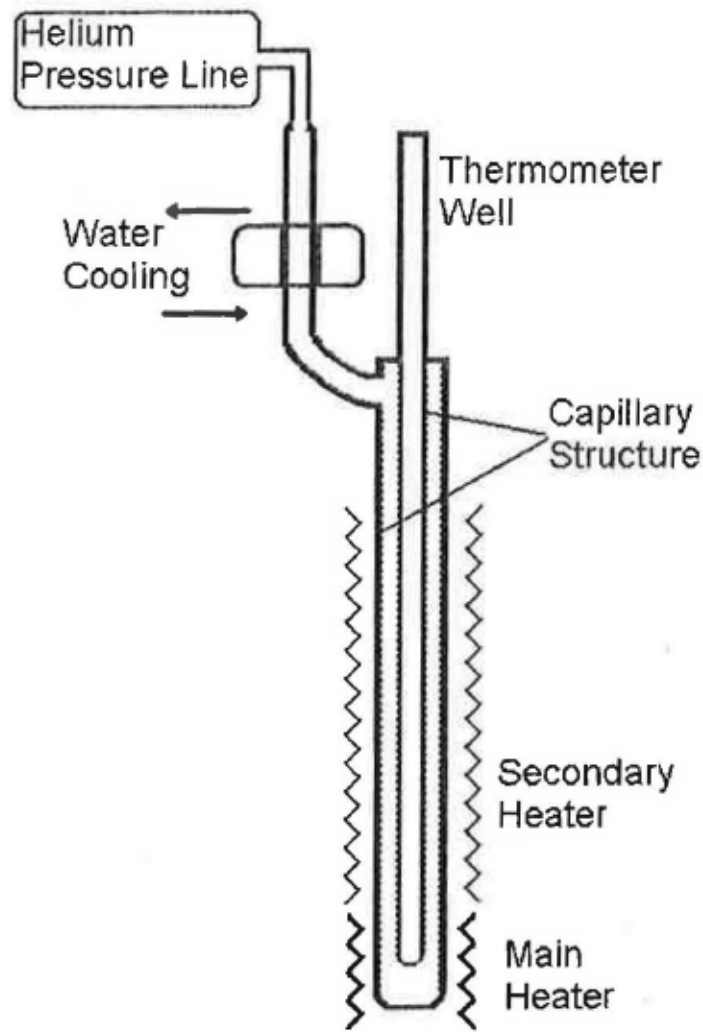


Figure 1 shows a stainless steel mercury gas-controlled heat pipe. *Id.* The heat pipe “is made of a stainless steel cylindrical envelope,” and a “lateral chimney, provided with a water cooler, is welded to the upper part of the cylindrical envelope and connects the inner volume of the heat-pipe to a helium pressure-line.” *Id.* at 1146. “A thermometer well, closed at the bottom, is welded to the cap of the heat-pipe, to allow the thermometers to be inserted in the measuring chamber.” *Id.* A main heater is placed at the bottom of the heat pipe, and an auxiliary, or secondary heater, is placed over

the main heater over the remaining length of the heat pipe to supply the heating needed to extend the uniform measuring zone to the chimney. *Id.*

In use, the heat-pipe is filled with pure mercury, and connected to a helium line. *Id.* According to Marcarino, “[t]he continuous rinsing of the heat-pipe inner surface by liquid mercury coming from the cooling section to the evaporating section, provided a complete cleaning of the stainless steel surface in order to remove all oxides and to obtain a uniform wetting of the surface by mercury.” *Id.* Marcarino teaches that when the inner surface of the heat pipe is not completely covered by the mercury phase transition layer, quick response times were not obtained and the temperature was not as stable as expected. *Id.* at 1146–47.

Figure 6 of Marcarino, showing a Pyrex heat-pipe, is reproduced below (*id.* at 1151):

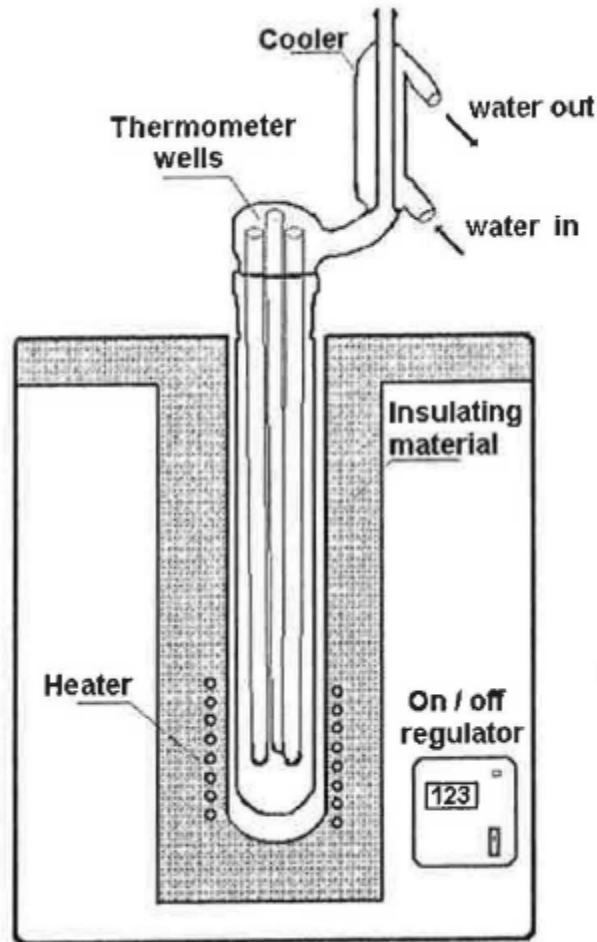


Figure 6 shows a glass heat pipe inside a furnace. *Id.* According to Marcarino, Pyrex was used because of its transparency, which allows for an understanding of what is happening inside the heat pipe. *Id.* at 1150. Marcarino teaches that the upper cover is easily removable to allow for changes inside the chamber. *Id.*

The heat pipe is made with three thermometer wells so that different capillary structures obtained with cylindrical wire nets of different meshes placed around the thermometer wells could be compared. *Id.* at 1150–51. Each heat pipe contains a working fluid, and the heat pipes were operated in

air at ambient pressure. *Id.* at 1151–52. Marcarino teaches that the apparatus “allows the accurate comparison of the temperature distribution along each thermometer well and among the thermometer wells, as well as comparing the effect of different capillary structures obtained with different wire nets.” *Id.* at 1152.

ii. Principles of Law

To establish anticipation, each and every element in a claim, arranged as recited in the claim, must be found in a single prior art reference. *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008). We analyze the asserted grounds of unpatentability in accordance with the above-stated principle.

iii. Analysis

Petitioner relies on Marcarino for teaching “temperature calibration systems that include a heat pipe into which thermometers are inserted for performing temperature calibrations.” Pet. 15 (citing Ex.1006, 1146–48; Ex. 1002 ¶¶ 108–109).

Petitioner provides the following annotated version of Figure 1 of Marcarino:

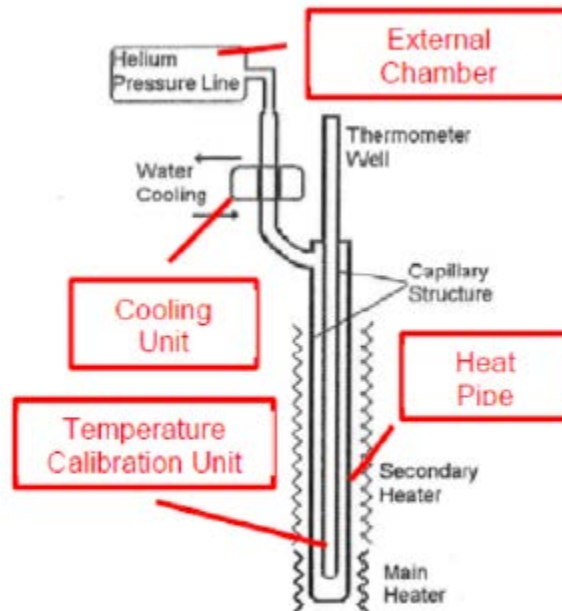


Fig. 1. View of the stainless steel mercury gas-controlled heat-pipe.

**Figure B - Annotated FIG. 1 of
Marcarino**

Id. at 16.

Annotated Figure 1 of Marcarino shows a stainless steel mercury gas-controlled heat pipe annotated with Petitioner's mapping of depicted structure to the limitations of claim 1. Pet. 15–16. Specifically, Petitioner asserts that, as shown in the annotated Figure, a heat pipe is connected between a cooling unit and a temperature calibration unit, i.e., the thermometer well. Pet. 15. As to the limitation of “an external chamber connected to the thermo siphon or heat pipe for controlling the thermal conductivity between the two units,” as can be seen in the annotated Figure, Petitioner relies on the helium pressure line of the system of Marcarino to meet that limitation. *Id.* at 16.

In particular, Petitioner asserts that the helium pressure line adjusts the thermal conductivity between the thermometer well (the temperature calibration unit) and the water cooling (cooling unit). *Id.* (citing Ex, 1006, 1147; Ex. 1002 ¶¶ 42, 111–112). In addition, Petitioner asserts that the ordinary artisan would understand that the helium pressure line includes a “chamber, tank or container . . . for holding the helium gas.” *Id.* According to Petitioner, altering the gas pressure in the helium pressure line “varies the location of an interface between the gas and the working fluid vapor in the condensing area of the heat pipe,” thus, varying its thermal conductivity. *Id.* at 17 (citing Ex. 1002 ¶¶ 42–44, 112).

Notably, as to the limitation of a “temperature calibration unit,” the Petition relies only on annotated Figure 1 of Marcarino and states merely that “[i]n annotated FIG. 1 of *Marcarino*, a heat pipe is connected between a cooling unit (‘water cooling’) and a temperature calibration unit (‘thermometer well’).” *Id.* at 15. Petitioner states further that “FIG. 1 of *Marcarino* shows an external chamber (‘Helium Pressure Line’), reproduced in Figure B, that adjusts the thermal conductivity between the temperature calibration unit (‘thermometer well’) and the cooling unit (‘water cooling’).” *Id.* at 16 (citing Ex.1006, 1147; Ex.1002 ¶¶ 42, 111–112). The Petition does not provide any further explanation as to why the ordinary artisan would read the thermometer well of Marcarino as disclosing a temperature calibration unit.

Patent Owner responds that Figure 1 of Marcarino does not disclose a “temperature calibrating system comprising . . . a temperature calibration unit” as required by challenged claim 1. PO Resp. 19. According to Patent Owner, the system of Figure 1 of Marcarino is used to study the vapor

pressure relationship of mercury, and Marcarino does not disclose its use in temperature calibration. *Id.* at 15, 20. Specifically, Patent Owner argues that “Marcarino is silent . . . regarding any device actually configured to calibrate a thermometer.” *Id.* at 23 (citing Ex. 2003 ¶¶ 170, 176). Patent Owner contends that, although Petitioner relies of the Declaration of Dr. Garris as explaining how Figure 1 of Marcarino anticipates a calibration system having a temperature control unit, Dr. Garris does not explain how that system performs a temperature calibration. *Id.* at 24–27 (citing Ex. 1002 ¶¶ 108–109). Patent Owner asserts that although Dr. Garris suggested that more than one thermometer could be placed in the thermometer well of Figure 1 of Marcarino, Marcarino does not disclose using the system in that manner. *Id.* at 27–28 (citing Ex. 2004, 145:21–146:15).

We agree with Patent Owner that the Petition does not demonstrate by a preponderance of the evidence that Figure 1 of Marcarino anticipates the limitation of a “temperature calibrating system comprising . . . a temperature calibration unit” as required by challenged independent claim 1. In that regard, we note that the Petition, in discussing the state of the art at the time of invention, acknowledges that “[t]emperature calibration is a process for comparing measurements from a thermometer or thermocouple to a known or reference temperature,” wherein “a calibration media such as a liquid bath or air filled block is heated to a reference temperature and the device being calibrated is disposed within the media to take measurements for comparison.” Pet. 5 (citing Ex. 1002 ¶¶ 25, 39). The Petition, however, does not offer an express construction for either a “temperature calibrating system” or a “temperature calibration unit.” The Petition merely states that the thermometer well of Figure 1 of Marcarino discloses the temperature

calibration unit required by independent claim 1 without further explanation. *See id.* at 15–16. As noted above, we construe a temperature calibration unit, such as a dry block calibrator or a liquid bath, to be a unit that is used to calibrate a temperature sensor against a reference. Because the Petition fails to explain how the thermometer well of Figure 1 of Marcarino meets that limitation, the Petition fails to demonstrate by a preponderance of the evidence that Figure 1 of Marcarino anticipates the temperature calibration system of challenged claim 1.

Petitioner, in its Reply, complains that Patent Owner did not, in the Preliminary Response, make the argument it is now making as to the temperature calibration unit. Reply 2. Patent Owner’s decision not to include that argument in its Preliminary Response is irrelevant to the issue, however, as Patent Owner is not required to file a preliminary response. 37 C.F.R. § 42.107(a) (noting that patent owner *may* file a preliminary response). Petitioner argues further that Patent Owner’s Response “never actually contends that Marcarino’s ‘thermometer well’ does not qualify as a ‘temperature calibration unit.’” Reply 3. That argument appears to place the burden of persuasion on Patent Owner to demonstrate that the prior art does not teach all of the limitations of the challenged claims. The burden of persuasion, however, never shifts to Patent Owner. *Dynamic Drinkware*, 800 F.3d at 1378.

Petitioner also relies on the following annotated Figure 2 from the '742 patent:

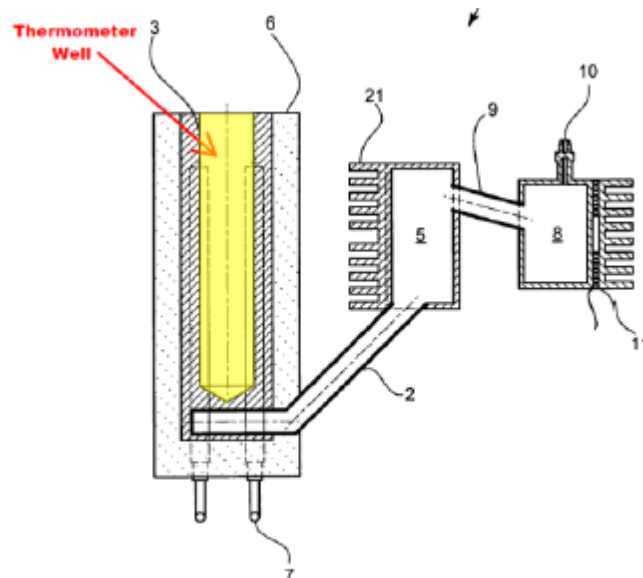


Fig. 2

Reply 4. Figure 2 of the '742 patent shows a second embodiment of a thermal calibrating system. Ex. 1001, 2:66–67. Petitioner, for the first time, identifies component 3 as a thermometer well. Reply 4–5 (citing Ex. 1002 ¶¶ 59–61). Petitioner, however, does not point to where the '742 patent describes that element as a thermometer well. Rather, the '742 patent describes it as a “calibration unit 3 for higher temperatures,” noting that “[d]ue to the similarities between the first and second embodiments, the same reference numerals will be used to refer to the same elements of the two embodiments.” Ex. 1001, 4:53–56. Thus, we disagree with Petitioner (Reply 10) that “[t]here is no dispute that Marcarino teaches all the structural limitations of claim 1,” as the Petition does not establish that Figure 1 of Marcarino has a “temperature calibration unit” as construed above.

Petitioner, in the Reply and at oral argument relies heavily on *In re Schreiber*, 128 F.3d 1473, 1477–78 (Fed. Cir. 1997), asserting that the issue

to be decided is whether “the thermometer well in Marcarino’s Figure 1 is *capable of* being a temperature calibration unit.” Reply 12; Tr. 51. That is, Petitioner asserts, “[s]o as long as Marcarino’s thermometer well can be used with other equipment to perform *some* reasonable degree of temperature calibration, it is ‘capable of temperature calibration’ for the purposes of anticipating the patent.” Reply 13.

Initially, we note that Petitioner argues for the first time in its Reply that challenged claim 1 is anticipated so long as the structure of Figure 1 may be used with other equipment to perform some degree of temperature calibration. In the challenge of claim 1, however, the Petition does not state what other equipment may be needed. *See Wasica Finance GmbH v. Continental Automotive Systems, Inc.*, 853 F.3d 1272, 1286 (Fed. Cir. 2017) (noting that it is improper for a petitioner to bring new theories on unpatentability in its reply, rather than explaining how the challenge as set forth in the petition is correct). Moreover, in order to anticipate, each and every element of the claim, arranged as recited in the claim, must be found in a single prior art reference, in this case Marcarino. *Net MoneyIN, Inc.*, 545 F.3d at 1369. The only element that the Petition pointed to as corresponding to the temperature calibration unit required by independent challenged claim 1 is the thermometer well of Figure 1 of Marcarino. *See* Pet. 15–16.

We find Petitioner’s reliance on *In re Schreiber* to be unavailing. In *Schreiber*, the Federal Circuit found that there was “no dispute” that all of the claim limitations were found in the prior art reference. *Schreiber*, 128 F.3d at 1477. Thus, the only issue before the court was intended use. *Id.* In this proceeding, as discussed above, we find that the Petition does not

establish that Marcarino teaches a “temperature calibration unit” as required by independent challenged claim 1.

Petitioner asserts also that the system of Figure 1 “is capable of and configured for being used for known device temperature calibration.”

Reply 13. According to Petitioner, the temperature well can hold two thermometers, that is, a reference thermometer and the thermometer to be calibrated, either simultaneously or sequentially, asserting that Marcarino states that the thermometer well is capable of holding two thermometers. *Id.* at 13–14 (citing Ex. 1006, 1146). Petitioner, however, makes that argument for the first time in its Reply, and fails to explain that is how it was relying on Marcarino in stating its challenge in the Petition. We decline to rely on such arguments for the first time made in the Reply.

We acknowledge that Marcarino states that “[a] thermometer well, closed at the bottom, is welded to the cap of the heat-pipe, to allow the thermometers to be inserted in the measuring chamber.” Ex. 1006, 1146. We do not read that as meaning that Marcarino suggests putting multiple thermometers into one thermometer well at the same time. Figure 2 of Marcarino shows the temperature response to a pressure change, and only shows one line, implying that only one temperature reading was obtained for each point. *Id.* at 1147. Moreover, when Marcarino included multiple thermometer wells, those wells were explicitly shown in the schematic of the heat pipe. *Id.* at 1149, Fig. 4; *id.* (noting that “[s]ix thermometer wells . . . are welded to the top cover of the heat-pipe, to allow the thermometers to be inserted in the measuring chamber”); *id.* at 1151, Fig. 6; *id.* at 1150–51 (in discussing the heat-pipe of figure 6, noting that it had three thermometer wells).

Petitioner asserts further that the thermometer well of Figure 1 would be held at a known or calculated temperature for hours at a time, which would provide plenty of time to calibrate a second thermometer. Reply 16. In addition, Petitioner asserts, “the temperature at a given depth in Marcarino can be calculated based on the pressure of the helium line using the Clausius-Clapeyron equation.” *Id.* Again, Petitioner makes those arguments for the first time in its Reply, rather than in support of its challenge as set forth in the Petition. That is, Petitioner does not explain how the ordinary artisan would have understood the thermometer well of Figure 1 of Marcarino to be a temperature calibration unit as set forth in the Petition.

Petitioner relies also on Figure 8 from a different reference (“Marcarino and Bonnier”)² submitted by Patent Owner with its Preliminary Response. Reply 19. Specifically, Petitioner argues that this figure “shows a temperature calibration system that *expressly uses a mercury heat pipe of the same type of Marcarino’s Figure 1 for temperature calibration.*” *Id.* Anticipation, however, requires that each and every element in a claim, arranged as recited in the claim, must be found in a single prior art reference. *Net MoneyIN, Inc.*, 545 F.3d at 1369. Petitioner cannot now rely on an additional reference, which contains additional structure and which was not cited in the Petition, to demonstrate that Figure 1 of Marcarino anticipates the claim.

Petitioner, therefore, has not established by a preponderance of the evidence that Marcarino anticipates claim 1 of the ’742 patent. Claims 2, 4–

² (Ex. 2001).

6, and 18–20 depend from claim 1, and, thus, Petitioner has also failed to demonstrate that those claims are anticipated.

iv. Contingent Motion to Amend

As we find that Petitioner has not established that claims 1, 2, 4–6, and 18–20 are anticipated by Marcarino, we need not address Patent Owner’s Contingent Motion to Amend (Paper 15).

III. CONCLUSION

After considering Petitioner’s and Patent Owner’s positions and evidence, we conclude that Petitioner has not demonstrated by a preponderance of the evidence that claims 1, 2, 4–6, and 18–20 of the ’742 patent are unpatentable as anticipated.

IV. ORDER

Accordingly, it is hereby:

ORDERED that Petitioner has failed to show by a preponderance of the evidence that claims 1, 2, 4–6, and 18–20 of the ’742 patent are unpatentable under 35 U.S.C. § 102(b); and

FURTHER ORDERED that, because this is a final written decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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