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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte GEOFF SEAN LYON

Appeal 2019-003466
Application 15/462,753
Technology Center 3700

Before KENNETH G. SCHOPFER, BRADLEY B. BAYAT, and
ROBERT J. SILVERMAN, *Administrative Patent Judges*.

SILVERMAN, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's decision rejecting claims 1–24. An oral hearing was held on July 30, 2020. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM-IN-PART.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as CoolIT Systems, Inc. Appeal Br. 3.

ILLUSTRATIVE CLAIM

1. A fluid heat exchanger for cooling an electronic device, the heat exchanger comprising:

a plurality of walls defining a corresponding plurality of microchannels, wherein each microchannel extends from a first end to a second end, and wherein the plurality of microchannels defines at least two opposed outer microchannels and a centrally located microchannel positioned between the opposed outer microchannels;

a fluid inlet passage configured to deliver a heat-exchange fluid to each microchannel at a position between the corresponding first end and the corresponding second end of the respective microchannel; and

a fluid outlet passage having an enlarged outlet region from the centrally located microchannel compared to a corresponding outlet region from one or both of the opposed outer microchannels.

REFERENCES

The prior art relied upon by the Examiner is:

Name	Reference	Date
Atarashi et al. ("Atarashi" herein)	US 5,592,363	Jan. 7, 1997
Chu	US 5,835,347	Nov. 10, 1998
Campbell et al. ("Campbell" herein)	US 7,762,314 B2	July 27, 2010

REJECTIONS

I. Claims 23 and 24 are rejected under 35 U.S.C. § 112(a), as failing to comply with the written description requirement.²

² In view of the filing date of the application at issue in this Appeal, the AIA version of 35 U.S.C. § 112 applies.

II. Claim 11 is rejected under 35 U.S.C. § 112(b), as failing to particularly point out and distinctly claim the subject matter that the inventor or a joint inventor regards as the invention.

III. Claims 1, 2, 5–12, and 15 are rejected under 35 U.S.C. § 102(b) as anticipated by Chu.

IV. Claims 1, 17, 23, and 24 are rejected under 35 U.S.C. § 102(e) as anticipated by Campbell.

V. Claims 3, 4, 13, 14, and 16–22 are rejected under 35 U.S.C. § 103(a) as unpatentable over Chu and Atarashi.

FINDINGS OF FACT

The findings of fact relied upon, which are supported by a preponderance of the evidence, appear in the following Analysis.

ANALYSIS

Written Description

Claims 23 and 24 stand rejected under 35 U.S.C. § 112(a), as failing to comply with the written description requirement, because the Specification lacks disclosure for the limitation of claim 23 reciting “the plurality of walls are evenly spaced from each other such that the plurality of microchannels are uniformly wide” and the limitation of claim 24 reciting “each in the plurality of microchannels has a same width as a width of each other microchannel in the plurality.” Final 2.

Disputing the rejection, the Appellant argues that Figure 2 of the Specification discloses uniformly wide microchannels 103. Appeal Br. 22. Further, the Appellant argues that the Specification’s disclosure of the microchannels being “substantially parallel with each other” and “hav[ing] dimensions and properties which seek to reduce or possibly minimize

pressure drop or differential of fluid flowing through the channels 103 defined therebetween” amounts to a disclosure of uniform microchannel width. *Id.* (quoting Spec. 1, l. 24; 5, ll. 19–21). *See also id.* at 23. The Appellant also argues that the Specification’s disclosure of forming microchannel walls, by skiving (Spec. 11, l. 6), amounts to a disclosure of uniform width:

A person of ordinary skill in the art would have understood, at the time of filing the application, that skiving is a manufacturing process that cuts into, or shaves, ductile metals to lift the walls from a larger block of the metal, similar to the manner in which a cheese grater cuts into, or shaves, a block of cheese to peel small pieces of cheese from the larger block. Blades of a skiving machine are often, but not always, evenly spaced to form uniformly wide channels between the lifted pieces (walls 210, in this instance).

Appeal Br. 22.

In response, the Examiner states that Specification “fails to state the drawings are made to scale,” such that Figure 2 may not be relied upon for any disclosure of uniformly wide microchannels. Ans. 14. Indeed, “patent drawings do not define the precise proportions of the elements and may not be relied upon to show particular sizes if the specification is completely silent on the issue.” *Hockerson-Halberstadt, Inc. v. Avia Grp. Int’l*, 222 F.3d 951, 956 (Fed. Cir. 2000). *See also Nystrom v. Trex Co., Inc.*, 424 F.3d 1136, 1149 (Fed. Cir. 2005); *In re Wright*, 569 F.2d 1124, 1127 (CCPA 1977) (“Absent any written description in the specification of quantitative values, arguments based on measurement of a drawing are of little value.”) *But cf. Cummins-Allison Corp. v. SBM Co., Ltd.*, 484 F. App’x 499, 507 (Fed. Cir. 2012) (nonprecedential) (“As long as a person of skill in the art could derive the claimed dimensions from the patent’s disclosure, there is no

additional requirement that the specification must explicitly disclose the precise proportions or particular sizes.”) Yet, even if not made to scale, drawings can teach quantitative relationships among the elements depicted that do not depend upon their actual dimensions. For example, *Vas-Cath Inc. v. Mahurkar* and *In re Heinle*—both considering whether drawings could provide written-description support for claimed subject matter—demonstrate that drawings alone can teach relative sizes of depicted elements. *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1566 (Fed. Cir. 1991) (concerning claims requiring “a return lumen diameter substantially less than 1.0 but substantially greater than 0.5 times the diameter of the combined lumens”); *In re Heinle*, 342 F.2d 1001, 1007 (CCPA 1965) (concerning the claimed “circumferential width of each of said apertures being approximately one-fourth of the circumference of said core.”) The claimed uniformly wide microchannels of claims 23 and 24 involve such a comparison of dimensions. However, with regard to Figure 2 of the Appellant’s Specification, the amount of detail provided in the drawing does not adequately disclose the relative sizes of the microchannels, so as to determine that the microchannels have a uniform width.

Regarding the microchannels being parallel with each other and having dimensions and properties that reduce the pressure drop (*see* Appeal Br. 22, 23), the Examiner states that these characteristics have no bearing on the spacing or width of microchannels. Ans. 14. Indeed, the Appellant provides no explanation as to how these features might mandate microchannels of uniform width.

As to whether disclosure of the skiving technique, in the Specification, sufficiently supports the claimed microchannels of uniform

width, the Examiner states that skiving “would produce a uniform width of *one* microchannel by a single cutting blade, but does not assure all the blades have the same width or are uniformly spaced apart to form the microchannels.” Ans. 14. Further, as the Examiner emphasizes (*id.*), the Appellant concedes that the “[b]lades of a skiving machine are often, *but not always*, evenly spaced to form uniformly wide channels between the lifted pieces” (Appeal Br. 22) (emphasis added). Therefore, the Specification’s disclosure of skiving does not persuade us of error.

Accordingly, the Appellant does not persuade us of error in the rejection for failure to comply with the written description requirement. We sustain the rejection of claims 22 and 23 under 35 U.S.C. § 112(a).

Indefiniteness

Claim 11 stands rejected under 35 U.S.C. § 112(b), as failing to particularly point out and distinctly claim the subject matter that the inventor or a joint inventor regards as the invention. Final 3. According to the Examiner, the limitation “the second enlarged outlet region” lacks antecedent basis, rendering it indefinite. *Id.*

The Appellant does not address this rejection. *See* Appeal Br. 9 n.3.

Therefore, we summarily sustain the rejection of claim 11 under 35 U.S.C. § 112(b).

Anticipation by Chu

The Appellant contends that the Examiner erred in rejecting independent claim 1, along with its dependent claims 2, 5–12, and 15, as anticipated by Chu, because the reference lacks claim 1’s “fluid outlet passage having an enlarged outlet region from the centrally located microchannel compared to a corresponding outlet region from one or both of

the opposed outer microchannels.” Appeal Br. 10–13. The Appellant states that Chu, “in contrast to structure according to claim 1, merely vents a flow of air from its heatsink channels to a surrounding environment, without any outlet passage.” *Id.* at 10.

The Examiner maintains that the “central channel 38” (see Chu col. 3, ll. 1–4) shown in Chu’s Figure 1 teaches the recited “centrally located microchannel,” as well as the recited “fluid outlet passage” (including the “enlarged outlet region” thereof). See Ans. 11. Figure 1 of the Chu reference is reproduced below:

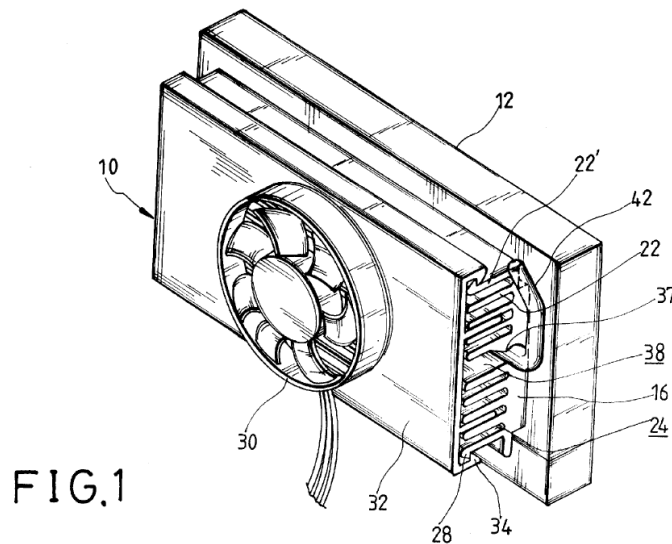


Figure 1 is a perspective view of Chu’s heat dissipation device. Chu col. 2, ll. 11–13.

Thus, the Examiner construes the “fluid outlet passage,” its “enlarged outlet region,” and the “centrally located microchannel” such that these structural limitations may be coextensive with each other and, further, that all three limitations could read on Chu’s “central channel 38.”

A comparison of the language of claim 1, with that of certain claims depending therefrom, reveals a flaw in the Examiner’s position. “Because

claim terms are normally used consistently throughout the patent, the usage of a term in one claim can often illuminate the meaning of the same term in other claims.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2015) (en banc) (citations omitted). *See also Fin Control Sys. Pty, Ltd. v. OAM, Inc.*, 265 F.3d 1311, 1318 (Fed. Cir. 2001) (“[T]he same terms appearing in different portions of the claims should be given the same meaning unless it is clear from the specification and prosecution history that the terms have different meanings at different portions of the claims.”)

The Examiner’s construction of the identified claim terms conflicts with the language of, at least, dependent claim 12. Claim 12 depends from claim 1, further reciting: “the fluid outlet passage comprises an outlet opening to receive fluid from each microchannel, wherein each respective outlet opening is positioned adjacent the corresponding first end of the respective microchannel.”

According to the Examiner, Chu’s “central channel 38” teaches the “fluid outlet passage comprises an outlet opening to receive fluid from” and “positioned adjacent the corresponding first end of the respective microchannel” (per claim 12). Final 6. Consequently, this condition applies to the “central microchannel” (as recited in base claim 1) — a feature that the Examiner maps to Chu’s “central channel 38,” as discussed above.

However, with the “outlet opening” being “positioned adjacent the corresponding first end of” Chu’s “central channel 38” (per the Examiner’s mapping), then Chu’s “central channel 38” cannot satisfy claim 12’s limitation of “the fluid outlet passage comprises an outlet opening to receive fluid from each microchannel.” Under the Examiner’s mapping, the recitations of claim 12 would require Chu’s “central channel 38” to “receive

fluid from” itself. In other words, the claimed “fluid outlet passage” cannot include the claimed “microchannel[s]” and, consequently, it cannot include the “centrally located microchannel.” Therefore, the Examiner’s mapping of the “centrally located microchannel” and the “fluid outlet passage” (including its “enlarged outlet region”) to Chu’s “central channel 38” is erroneous.

Accordingly, we do not sustain the Examiner’s rejection of independent claim 1 and dependent claims 2, 5–12, and 15 under 35 U.S.C. § 102(b).

Anticipation by Campbell

Claim 1

The Appellant contends that the Examiner erred in rejecting independent claim 1 as anticipated by Campbell, because the reference lacks the following limitation of claim 1: “a fluid inlet passage configured to deliver a heat-exchange fluid to each microchannel at a position between the corresponding first end and the corresponding second end of the respective microchannel.” *See* Appeal Br. 16–18.

The Campbell reference discloses a cooling apparatus, in which coolant flows from a “coolant inlet plenum 155” into a “manifold structure 153” that “comprises alternating inlet and outlet passageways 151, 152 defined by an assembled plurality of manifold plates.” Campbell col. 5, ll. 57–59, col. 6, ll. 10–12, Figs. 1–7. The “[c]oolant inlet plenum 155 . . . provides coolant to a plurality of coolant inlet passageways 151,” which “inject coolant onto the surface to be cooled.” *Id.* at col. 5, ll. 61–62, col. 6, ll. 2–3. The “coolant strikes the surface to be cooled and turns 180° for return through the plurality of coolant outlet passageways 152.” *Id.* at col. 6,

ll. 6–8. In passing from “an “inlet passageway 151” to “outlet passageway 152,” the coolant passes through “separation gap 122” between the edge of a corresponding “manifold plate” (of the “manifold structure 153”) and the “surface to be cooled 116.” *Id.* at col. 5, ll. 15–32. The “coolant outlet passageways 152” are “in fluid communication with” “coolant outlet plenum 157,” “from which exhausted coolant exits.” *Id.* at col. 5, l. 64 – col. 6, l. 1.

The Examiner maps claim 1’s “fluid inlet passage” to Campbell’s “coolant inlet plenum 155” and claim 1’s “fluid outlet passage” to Campbell’s “coolant outlet plenum 157.” Final 7; Ans. 12. Further, the Examiner maps the claimed “plurality of microchannels” to Campbell’s “coolant inlet passageways 151” and “coolant outlet passageways 152.” Final 6–7; Ans. 12. According to the Examiner’s analysis, the claimed “centrally located microchannel” and the claimed “at least two opposed outer microchannels” correspond to particular ones of Campbell’s “coolant outlet passageways 152.” Final 6–7.

The Appellant argues that Campbell cannot meet claim 1’s limitation of “a fluid inlet passage configured to deliver a heat-exchange fluid to each microchannel,” because Campbell’s coolant flows from “coolant inlet plenum 155” to “coolant inlet passageways 151” and then turns 180° for return through the plurality of “coolant outlet passageways 152.” Appeal Br. 16. According to the Appellant, the language of claim 1 prohibits such an indirect delivery of fluid from the claimed “fluid inlet passage” to the “microchannel[s]” — the indirect delivery of Campbell including the intermediate flow of coolant (after leaving the “coolant inlet plenum 155”) “through the “inlet passageways 151” and the respective “separation gap

122,” before passing into the “outlet passageways 152.” *See* Reply Br. 9–

11. The Appellant argues:

“Indirect delivery” is an unworkable interpretation and ignores the specifically claimed function performed by the claimed inlet passage, e.g., delivery to each microchannel. If “configured to deliver . . . to” were construed to encompass even indirect delivery, the inlet passage also could also [sic] be constructed as being “configured to deliver heat-transfer fluid” to every structure downstream of the inlet passage, rendering the claim 1 recitation “to each microchannel” superfluous and meaningless.

Id. at 10–11.

According to the Examiner, the use of the word “comprising” (an open-ended transition term), in the preamble of claim 1, indicates that the claim does not preclude the presence of structures additional to those that are recited. Ans. 12. Referring to the element numerals of Campbell, in regard to the terms of claim 1, the Examiner states: “[F]luid inlet passage 155 delivers heat-exchange fluid *indirectly* to each [of] microchannels 152 via microchannels 151. The claim does not recite *direct* fluid communication.”

Id. at 13.

Indeed, the Appellant does not explain why the recitation “to each microchannel” (of claim 1) would be rendered “superfluous and meaningless” (Reply Br. 11) if the claim covered the indirect flow technique of Campbell. The Appellant appears to place special significance on the word “configured” of claim 1. *See* Reply Br. 10–11. Indeed, the phrase “configured to” is regarded as invoking structural specificity for a particular role — akin to the phrases “made to” and “designed to” — as opposed to broader meaning of the phrases “suitable for” and “capable of.” *In re Man Machine Interface Techs. LLC*, 822 F.3d 1282, 1286 (Fed. Cir. 2016)

(citations omitted). However, there does not appear to be a reason why the phrase “configured to” would mandate the so-called direct “deliver[y]” of fluid, in the claim limitation at issue: “a fluid inlet passage configured to deliver a heat-exchange fluid to each microchannel at a position between the corresponding first end and the corresponding second end of the respective microchannel.” Instead, the phrase “configured to” bears a stronger connection to claim language referring to the location of the fluid delivery (i.e., “at a position between the corresponding first end and the corresponding second end of the respective microchannel”), rather than any direct (as opposed to indirect) flow to the “microchannels.” The Specification (for example, page 7, lines 3–22) supports this understanding, in the disclosure regarding the spatial location of “fluid inlet opening 114,” which corresponds to the “fluid inlet passage” of claim 1 (*see* Appeal Br. 4–5). The concern expressed in the Specification relates to “[t]he delivery of fresh fluid first to the region that is in direct communication with the heat generating component to be cooled,” which “seeks to create a uniform temperature at the contact region as well as areas in the heat spreader plate away from the contact region.” Spec. 7, ll. 11–14.

Construing the language of claim 1, in a manner that permits both the so-called direct and indirect “deliver[y]” of fluid from the “fluid inlet passage” to “each microchannel,” accords with the guidance provided by our reviewing court:

The correct inquiry in giving a claim term its broadest reasonable interpretation in light of the specification is not whether the specification proscribes or precludes some broad reading of the claim term adopted by the examiner. And it is not simply an interpretation that is not inconsistent with the specification. It is an interpretation that corresponds with what

and how the inventor describes his invention in the specification, *i. e.*, an interpretation that is “consistent with the specification.” *In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997) (citation and internal quotation marks omitted); *see also In re Suitco Surface*, 603 F.3d 1255, 1259-60 (Fed. Cir. 2010).

In re Smith Int’l, Inc., 871 F.3d 1375, 1382–83 (Fed. Cir. 2017). We are similarly mindful of admonitions against unwarranted importation of features from the Specification into claim constructions. *See McCarty v. Lehigh Valley R.R. Co.*, 160 U.S. 110, 116 (1895) (“[I]f we once begin to include elements not mentioned in the claim, in order to limit such claim . . . , we should never know where to stop”); *Johnson Worldwide Assocs., Inc. v. Zebco Corp.*, 175 F.3d 985, 989 (Fed. Cir. 1999) (“General descriptive terms will ordinarily be given their full meaning; modifiers will not be added to broad terms standing alone.”) (citations omitted); *Virginia Panel Corp. v. MAC Panel Co.*, 133 F.3d 860, 865–66 (Fed. Cir. 1997) (unmodified term “reciprocating” not limited to linear reciprocation); *Specialty Composites v. Cabot Corp.*, 845 F.2d 981, 987 (Fed. Cir. 1988) (“Where a specification does not *require* a limitation, that limitation should not be read from the specification into the claims.”); *Lemelson v. U.S.*, 752 F.2d 1538, 1551–52 (Fed. Cir. 1985) (“Even if the specification only discloses apparatus directed to executing automatic repositioning of the workpiece or the measurement device or both, this does not dictate reading such a limitation into the repositioning step of the claim.”)

In view of the foregoing, we are not persuaded that the flowpath through the identified elements of Campbell fails to satisfy claim 1’s recitation of “a fluid inlet passage configured to deliver a heat-exchange

fluid to each microchannel at a position between the corresponding first end and the corresponding second end of the respective microchannel.”

Accordingly, we are not persuaded of error in the Examiner’s rejection of claim 1 as anticipated by Campbell, such that we sustain this rejection of claim 1 under 35 U.S.C. § 102(e).

Claim 17

The Appellant contends that the Examiner erred in rejecting independent claim 17, as anticipated by Campbell. Similar to the Appellant’s interpretation of claim 1, the Appellant contends that claim 17 requires direct delivery or receipt of fluid — both from the claimed “fluid inlet passage” to “each microchannel flow passage” and from “the first end and the second end of each microchannel” to the “fluid outlet passage”:

Campbell’s inlet plenum 155 delivers fluid only to the inlet passageways 151, and not to the outlet passageways 152 as the Examiner alleged in rejecting claim 17. *See* Campbell, col. 5:57–63, FIGs. 1, 1A, 1B, and 2; *Cf.* Action, p. 8. Further, Campbell’s separation gap 122, the only structure in Campbell that receives fluid from the inlet passageways 151, lacks an outlet region being smaller adjacent an outer inlet passageway 151 relative to adjacent the centrally located inlet passageway 151. Thus, Campbell does not disclose an outlet region from an outer microchannel being smaller than an outlet region from a centrally located microchannel, as claim 17 recites.

Appeal Br. 18–19.

As an initial matter, the Appellant does not accurately represent the Examiner’s mapping of claim limitations to Campbell. The Examiner maps the “fluid inlet passage” to Campbell’s “coolant inlet plenum 155”; the Examiner maps the “microchannel[s]” to Campbell’s “coolant inlet passageways 151” and “coolant outlet passageways 152” (with the “centrally

located microchannel” and the “outer microchannels” being mapped only to particular ones of Campbell’s “coolant outlet passageways 152”); and the Examiner maps the claimed “fluid outlet passage” (including its “smaller” “first outlet region” and its “second outlet region”) to Campbell’s “coolant outlet plenum 157.” Final 6–8; Ans. 13. The Examiner does not map any limitation of claim 17 to Campbell’s “separation gap 122.”

The issue of whether the relevant language of claim 17 (i.e., “a fluid inlet passage configured to deliver a heat-exchange fluid to each microchannel flow passage between the corresponding first end and corresponding second end of the respective microchannel flow passage”) requires so-called direct delivery is substantially the same issue discussed, above, with respect to claim 1. The foregoing analysis applies equally with respect to claim 17.

The Appellant also contends that claim 17 requires the “fluid outlet passage” to “receive” fluid directly “from the first end and the second end of each microchannel.” Appeal Br. 18–19; Reply Br. 12–14. According to the Appellant:

Where, as in claim 17, the means of delivery and the means of receiving fluid are specified, it is difficult to conclude that a person of ordinary skill in the art would understand the claim to mean anything other than direct delivery or direct receipt. To conclude otherwise would render the recitations “to each microchannel” and “from each microchannel” superfluous, and meaningless.

Reply Br. 13.

The Appellant does not explain why any of the “to each microchannel,” “from each microchannel,” or “configured to receive” language of claim 17 should be construed to require direct receipt of fluid by

the “fluid outlet passage” — or why construing the claim language to permit so-called indirect receipt might render any claim language “superfluous, and meaningless.” *See id.*

In view of the claim construction principles discussed, above, in regard to the Appellant’s arguments for claim 1, we do not construe claim 17 to be limited in the manner that the Appellant suggests. Notably, the Appellant does not identify any portion of the Specification that might require direct flow from the claimed “microchannel[s]” to the “fluid outlet passage” — or from the corresponding elements of the disclosed embodiments. Rather than addressing — let alone, attaching any significance to — the directness of flow from, e.g., “microchannels 103” to “fluid outlet openings 124,” the Specification emphasizes other features relating to the corresponding portion of the flow path, such as: the “dimensions and properties” of “microchannel walls 110” that could “reduce or possibly minimize the pressure drop or differential of fluid flowing through the channels 103 defined therebetween” (Spec. 5, ll. 16–21); the location of “fluid outlet openings 124” relative to the “heat spreader plate 102,” whereby, for example, “fluid passing through the channels pass axially along the length of the channels between walls 110 and then changes direction to pass away from surface 102a out from between the walls 110 to exit through openings 124” (*id.* at 8, ll. 9–16); the shapes or dimensions of “fluid outlet openings 124” (*id.* at 8, l. 25 – 9, l. 2); and the creation of “two subflows moving away from each other and away from inlet 114 toward openings 124 at the ends of the microchannels” (*id.* at 10, ll. 6–8).

In view of the foregoing, we are not persuaded that claim 17 requires direct delivery or receipt of fluid — both from the claimed “fluid inlet

passage” to “each microchannel flow passage” and from “the first end and the second end of each microchannel” to the “fluid outlet passage.”

Therefore, we are not persuaded of error in the Examiner’s mapping of the identified claim limitation to the respective elements of Campbell.

Accordingly, we sustain the Examiner’s rejection of claim 17 under 35 U.S.C. § 102(e).

Claims 23 and 24

Claim 23 depends from independent claim 1 and claim 24 depends from independent claim 17, with claims 23 and 24 adding limitations reciting that the “microchannels” of each claim have a uniform width.

Disputing the rejection, the Appellant relies upon the arguments presented for the respective base claims 1 and 17. Appeal Br. 19.

In addition, the Appellant argues that the Examiner’s mapping of the claimed portions of the “outlet regions” (which vary in size), to elements of Campbell, preclude any mapping, to the reference, of the claimed uniformly wide “microchannels” in claims 23 and 24. *Id.*

However, the Examiner’s analysis of claims 1 and 17 does not state that there is any difference in width, among the elements of Campbell (“coolant inlet passageways 151” and “coolant outlet passageways 152”) mapped to the claimed “microchannel[s].” *See* Final 6–8; Ans. 13. Indeed, the Examiner specifically states: “Figure 6B [of Campbell] discloses the plurality of walls 300, 400 are evenly spaced from each other such that the plurality of microchannels 151, 152 are uniformly wide.” Final 8. Specifically, in rejecting independent claims 1 and 17, the Examiner maps the portions of the claimed “outlet regions” (that vary in size) to different portions of Campbell’s “coolant outlet plenum 157” — not Campbell’s

“coolant inlet passageways 151” and/or “coolant outlet passageways 152.”
See Final 6–8.

Therefore, in view of the foregoing, as well as our analyses of the rejections of independent base claims 1 and 17, we are not persuaded of error in the rejection of claims 23 and 24. We sustain the rejection of claims 23 and 24 under 35 U.S.C. § 102(e).

Obviousness

Dependent claims 3, 4, 13, 14, and 16–22 stand rejected as obvious over the combination of Chu with Atarashi. The rejection of these claims relies upon the Examiner’s mapping employed in analyzing Chu’s anticipation of independent claim 1, with Atarashi being relied upon to teach certain further limitations. Final 8–10.

Yet, the Examiner does not rely upon Atarashi, or any aspect of the obviousness analysis, to overcome the error, addressed above, in the mapping of claim 1 to Chu. *See* Appeal Br. 20–21.

Accordingly, we do not sustain the rejection of claims 3, 4, 13, 14, and 16–22 under 35 U.S.C. § 103(a).

CONCLUSION

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
23, 24	112(a)	Written Description	23, 24	
11	112(b)	Indefiniteness	11	
1, 2, 5–12, 15	102(b)	Chu		1, 2, 5–12, 15
1, 17, 23, 24	102(e)	Campbell	1, 17, 23, 24	

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
3, 4, 13, 14, 16–22	103(a)	Chu, Atarashi		3, 4, 13, 14, 16–22
Overall Outcome			1, 11, 17, 23, 24	2–10, 12–16, 18–22

TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED-IN-PART