United States Court of Appeals for the Federal Circuit

MEDTRONIC, INC., MEDTRONIC VASCULAR, INC.,
Appellants

v.

TELEFLEX INNOVATIONS S.A.R.L.,
Appellee

2021-2359, 2021-2362, 2021-2366

Appeals from the United States Patent and Trademark Office, Patent Trial and Appeal Board in Nos. IPR2020-00129, IPR2020-00134, IPR2020-00138.

Decided: June 5, 2023

JENNIFER L. GRABER, Wilmer Cutler Pickering Hale and Dorr LLP, Washington, DC, argued for appellants. Also represented by BRITTANY BLUEITT AMADI; TASHA JOY BAHAL, MARK CHRISTOPHER FLEMING, HANNAH ELISE GELBORT, MADELEINE C. LAUPHEIMER, Boston, MA.

JOSEPH W. WINKELS, Carlson, Caspers, Vandenburgh & Lindquist PA, Minneapolis, MN, argued for appellee. Also represented by PETER M. KOHLHEPP, TARA CATHERINE NORGARD, J. DEREK VANDENBURGH.

Before MOORE, *Chief Judge*, LOURIE and DYK, *Circuit Judges*.

MOORE, *Chief Judge*.

Medtronic, Inc. and Medtronic Vascular, Inc. (collectively, Medtronic) appeal *inter partes* review decisions of the Patent Trial and Appeal Board holding Medtronic failed to establish the unpatentability of various claims of U.S. Patent Nos. RE45,380; RE45,760; and RE47,379 (the patents-in-suit). Medtronic also appeals the Board's decisions granting Teleflex Innovation S.à.r.l's (Teleflex) motion to amend certain claims of the '379 patent. For the following reasons, we affirm.

BACKGROUND

Coronary artery disease, in which plaque buildup narrows the lumen (i.e., the tubular cavity) of a patient's artery and obstructs blood flow, affects millions of Americans. Cardiologists refer to this narrowing of a patient's artery as stenosis. *See* '380 patent at 1:48–49.[1] For decades, cardiologists have used devices known as guide catheters to deliver interventional cardiology devices (e.g., guidewires, stents, balloon catheters) designed to alleviate stenoses. *Id.* at 1:39–52. Treatment typically involves inserting the guide catheter into the patient's femoral or radial artery and guiding the catheter to the patient's aorta until the distal tip of the catheter reaches the ostium (i.e., opening) of the coronary artery. *Id.* at 1:53–59. Interventional devices can then be inserted into the proximal opening of the catheter, advanced through the lumen of the catheter using a

[1] The patents-in-suit share a common specification. For simplicity, all citations to the written description will refer to the '380 patent.

guidewire, and delivered past the stenosis.[2] *Id.*

These procedures involved certain challenges and risks. For example, "[c]rossing tough lesions can create enough backward force to dislodge the guide catheter from the ostium of the artery being treated," disrupting the procedure and potentially harming the patient. *Id.* at 1:59–63, 4:56–62. This problem drove practitioners to seek new catheter designs and methods with increased "back-up support" that would prevent backward dislodgment of the catheter. *Id.* at 1:59–67. For example, one method disclosed in a prior art journal article (Takahashi) involves a "mother-and-child" technique in which a standard 5 French guide catheter is inserted into a 6 French guide catheter and advanced until its distal tip is deep within the patient's ostium, a technique known as deep seating.[3] *Id.* at 2:40–51; *see* J.A. 2276–80 (Takahashi). However, deep seating using standard guide catheters in the mother-and-child technique also involved risks, including that the stiff distal end of the inner catheter could damage the coronary artery when deeply embedded. '380 patent at 2:51–56.

The patents-in-suit, owned by Teleflex, sought to address these problems by using a coaxial extension catheter insertable into standard guide catheters that offered increased back-up support and the ability to deep seat without the attendant drawbacks of traditional mother-and-child systems. *See id.* at 2:9–27, 4:56–5:27. In a preferred embodiment, the disclosed extension catheter includes three parts: (1) a proximal substantially rigid portion 20 (yellow); (2) a reinforced portion 18 (blue); and (3) a distal

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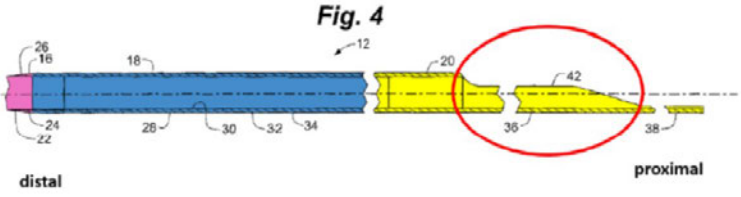
[2] The proximal and distal ends of a catheter respectively refer to the ends nearest to and farthest from the treating physician.

[3] One French is the standard unit of measurement for catheter diameters. One French equals one third of a millimeter. *See* J.A. 1952 ¶ 50.

flexible tip 16 (pink). *See id.* at 6:31–7:15; *see also id.* at Fig. 4 (reproduced below as annotated by Medtronic's expert). The proximal end of the guide extension catheter includes a "side opening," i.e., a partially cylindrical region (red circle), which permits the extension catheter to receive and deliver interventional cardiological devices while it is within the guide catheter. *Id.* at 10:1–20. As depicted in Figure 4, the side opening may include multiple inclined regions separated by a non-inclined region, a structure referred to herein as a double-inclined side opening. The patents-in-suit also disclose and claim embodiments in which the diameter of the extension catheter is no more than one French smaller than the diameter of the guide catheter, thereby preserving maximal volume within the coaxial lumen for receiving interventional devices. *See id.* at 3:28–49.



PROCEDURAL HISTORY

In November of 2019, Medtronic petitioned for *inter partes* review of the patents-in-suit, alleging the challenged claims would have been obvious over U.S. Patent No. 7,604,612 (Ressemann), which discloses an evacuation sheath assembly with a distal side opening used to aspirate embolic material while occluding blood flow using sealing balloons, in view of various combinations of secondary references. The secondary references included: (1) U.S. Patent No. 5,439,445 (Kontos), which discloses a support catheter for delivering angioplasty balloons; (2) U.S. Patent Application Publication No. 2005/0015073 (Kataishi),

disclosing a suction catheter designed to remove thrombi in blood vessels; and (3) Takahashi.

The Board instituted each petition and issued final written decisions holding some claims unpatentable and others not. *Medtronic, Inc. v. Teleflex Innovations S.à.r.l.*, No. IPR2020-00129, 2021 WL 2524890 (P.T.A.B. June 17, 2021) (*'380 Decision*); *Medtronic, Inc. v. Teleflex Innovations S.à.r.l.*, No. IPR2020-00134, Paper No. 122 (P.T.A.B. June 7, 2021) (*'760 Decision*); *Medtronic, Inc. v. Teleflex Innovations S.à.r.l.*, IPR2020-00138, Paper No. 104 (P.T.A.B. June 7, 2021) (*'379 Decision*).[4,5] In addition, the Board granted Teleflex's contingent motion to amend certain claims of the '379 patent and determined the amended claims were not unpatentable. *'379 Decision*, at J.A. 133–64.

The parties organize the claims determined not unpatentable into three (overlapping) sets, a categorization we adopt for our analysis. The One-French Claims are claims 32 and 33 of the '380 patent; claims 48 and 51–53 of the '760 patent; and claims 46–51 of the '379 patent. The Double-Incline Claims are claim 27 of the '380 patent and claims 44, 46–48, and 51 of the '379 patent. Lastly, the Substitute Claims are claims 46, 47, and 49–51 of the '379 patent.

DISCUSSION

Medtronic appeals the Board's determination that Medtronic failed to prove the One-French and Double-Incline Claims would have been obvious. It also challenges the Board's decision granting Teleflex's motion to introduce

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[4] The *'760 Decision* is included in the Joint Appendix at J.A. 53–77.

[5] The *'379 Decision* is included in the Joint Appendix at J.A. 78–167.

substitute claims in the '379 patent. We address each issue in turn.

I

We first address Medtronic's arguments that the Board erred in determining the One-French and Double-Incline Claims are not unpatentable as obvious.[6] Obviousness is a question of law based on underlying facts. *In re Gartside*, 203 F.3d 1305, 1316 (Fed. Cir. 2000). We review the Board's ultimate determination of obviousness de novo and its underlying findings of fact for substantial evidence. *Id.*

A. ONE-FRENCH CLAIMS

Claim 48 of the '760 patent is representative of the One-French Claims. It recites:

> 48. A system comprising:
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> a guide catheter configured to be advanceable through a main blood vessel to a position adjacent to an ostium of a coronary artery, the guide catheter having a lumen extending from a hemostatic valve at a

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[6] Teleflex contends Medtronic forfeited various arguments by failing to raise them in its Requests for Director Rehearing made pursuant to 37 C.F.R. § 42.71(d), which requires the petitioning party to "specifically identify all matters the party believes the Board misapprehended or overlooked." Specifically, Teleflex argues Medtronic's alleged failure to comply with § 42.71(d), while not a jurisdictional bar to our review, grants us discretion to find unraised issues forfeited. We need not resolve this question. Even if Medtronic forfeited these arguments, an issue we do not decide, we have the discretion to reach them on appeal. *Ciena Corp. v. Oyster Optics, LLC*, 958 F.3d 1157, 1161 (Fed. Cir. 2020) ("[I]t is a discretionary decision to forgive waivers of non-jurisdictional challenges . . . .").

proximal end of the guide catheter to a distal end of the guide catheter that is adapted to be positioned adjacent to the ostium of the coronary artery;

a guide extension catheter configured to be partially advanceable through the guide catheter and into the coronary artery, the guide extension catheter having a length such that the distal end of the guide extension catheter is extendable through the lumen and beyond the distal end of the guide catheter, and a proximal end of the guide extension catheter is extendable through the hemostatic valve at the proximal end of the guide catheter;

the guide extension catheter including, in a proximal to distal direction, a substantially rigid segment, a segment defining a side opening, and a tubular structure defining a lumen coaxial and in fluid communication with the lumen of the guide catheter, the lumen of the tubular structure having a length that is shorter than the length of the lumen of the guide catheter and *having a uniform cross-sectional inner diameter that is not more than one French size smaller than the cross-sectional inner diameter of the lumen of the guide catheter*, the side opening extending for a distance along the longitudinal axis of the segment defining the side opening and accessible from a longitudinal side defined transverse to the longitudinal axis, and the side opening and the lumen of the tubular structure configured to receive one or more stents or balloon catheters when the segment defining the side opening and a proximal end

> portion of the tubular structure are positioned within the lumen of the guide catheter and the distal end of the guide extension catheter extends beyond the distal end of the guide catheter;
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> wherein the segment defining the side opening comprises a portion of the guide extension catheter that is more rigid than a distal end portion of the tubular structure.

'760 patent at claim 48 (emphasis added).

As relevant on appeal, Medtronic asserted the One-French Claims would have been obvious over Ressemann in view of Takahashi. *'380 Decision*, at *3; *'760 Decision*, at J.A. 59; *'379 Decision*, at J.A. 88. Medtronic argued a skilled artisan would have been motivated to modify Ressemann by removing its sealing balloons and replacing its inflation lumen with a pushrod or wire so that it could be used as an extension catheter. *See, e.g.*, *'380 Decision*, at *16. Medtronic alleged a skilled artisan would be motivated to remove the sealing balloons and inflation lumen used to aspirate emboli because, *inter alia*, Ressemann teaches its device can also be used to deliver certain interventional cardiological devices such as stents or angioplasty balloons. *Id.* It further alleged a skilled artisan would be motivated to incorporate Takahashi's five-in-six system into Ressemann as modified to achieve the increased back-up support touted by Takahashi. *Id.*

Teleflex responded that Medtronic's modifications would not have been obvious because they would render Ressemann inoperable as a catheter capable of providing embolic protection (i.e., preventing embolic debris from escaping down the bloodstream while the embolism is being removed), which Teleflex alleged was the entire purpose of Ressemann. *Id.* Teleflex further argued the modifications were based on hindsight and that the alleged benefits could

not be achieved without further modifications not detailed in the petitions. *See, e.g.*, *'379 Decision*, at J.A. 118–19. In reply, Medtronic argued removing Ressemann's sealing balloons would not render it inoperable for embolic protection because other non-occlusive, distal protection devices could be used instead. *'380 Decision*, at *16.

The Board agreed with Teleflex and held Medtronic failed to establish the One-French Claims would have been obvious. *'380 Decision*, at *16–17; *'760 Decision*, at J.A. 71–72; *'379 Decision*, at J.A. 119–21. Contrary to Medtronic's position that Ressemann is a multi-purpose device, the Board found Ressemann's "entire premise" was to provide embolic protection using sealing balloons and that Medtronic's "extensive" modifications would eliminate "the capability of Ressemann's aspiration catheter to act as an aspiration catheter." *'379 Decision*, at J.A. 120; *'380 Decision*, at *16 (finding Medtronic's "intended-purpose-destroying modification counsels strongly against an obviousness determination"); *'760 Decision*, at J.A. 71–72 (same). The Board rejected Medtronic's argument that embolic protection could be preserved through other means, noting Medtronic did not raise these arguments in its petitions and that the additional extensive modifications were further evidence of hindsight bias. *E.g.*, *'380 Decision*, at *17.

On appeal, Medtronic argues the Board legally erred by focusing on the detrimental effects of Medtronic's modifications to one of Ressemann's intended purposes (embolic protection) to the neglect of Ressemann's other purpose of delivering interventional cardiological devices. According to Medtronic, the Board's reasoning conflicts with our decision in *Intel Corp. v. Qualcomm Inc.*, in which we held the "intended purpose of [a reference] does not control" the obviousness inquiry. 21 F.4th 784, 800–01 (Fed. Cir. 2021). We do not agree.

Medtronic's argument, although styled as a legal challenge, is premised on an assertion of fact contrary to the Board's findings, namely that Ressemann is suitable for procedures that do not employ occlusive sealing balloons. The Board did not find that Ressemann's device was intended to function for any purpose, including delivering interventional devices, in the absence of sealing balloons. Rather, it found Ressemann's "*entire premise*" was to use sealing balloons to prevent embolic flow and that removing the balloons would "render Ressemann *completely inoperable* for its stated purpose of embolic protection." *'379 Decision*, at J.A. 120 (emphasis added) (adopting Teleflex's positions). That finding is supported by substantial evidence, including Teleflex's expert testimony that "Ressemann's sealing balloons are critical to [its] goal of allowing a lesion to be treated without embolic debris being carried downstream" and Ressemann's own disclosures emphasizing the role of sealing balloons for embolic protection. *Id.* (citing J.A. 20596–97 ¶ 148; J.A. 2240–43 (Ressemann) at 8:12–15, 12:31–53, 13:15–14:39). Medtronic's experts also acknowledged Ressemann is "directed to an embolic protection device" and that Ressemann's sealing balloons were a "necessary part" of that function. J.A. 12192 at 396:20–397:20; *see also '379 Decision*, at J.A. 118 (citing Medtronic's expert testimony that "[i]f a POSITA desired to only use Ressemann for delivering therapy devices, . . . Ressemann's device would be simplified to eliminate the features necessary for evacuating emboli," including sealing balloons).

Medtronic contends this finding is inconsistent with Ressemann's disclosures that its device can be used in other surgical procedures, including to deliver interventional devices. *See* J.A. 2239 at 6:25–34 (describing Ressemann's device "is contemplated for use . . . in other procedures . . . where reduction or removal of a blockage in a blood vessel is beneficial"); J.A. 2248 at 23:8–20 (disclosing Ressemann's evacuation sheath is "designed to allow

for the passage of interventional devices"). Teleflex's experts, however, explained that sealing balloons would still be used during such procedures to occlude blood flow. J.A. 20597 ¶ 148; *see also* J.A. 2243 (Ressemann) at 13:15–14:39 (discussing the use of sealing balloons to occlude blood flow during stent delivery). Medtronic relies on other disclosures indicating an elastomeric tube could be used in lieu of sealing balloons, *see* J.A. 2240 at 8:41–44, but this does not lead to a conclusion that the Board's finding is not supported by substantial evidence.[7] *Consolo v. Fed. Mar. Comm'n*, 383 U.S. 607, 620 (1966) ("[T]he possibility of drawing two inconsistent conclusions from the evidence does not prevent an administrative agency's finding from being supported by substantial evidence."); *Velander v. Garner*, 348 F.3d 1359, 1378 (Fed. Cir. 2003) ("If the evidence will support several reasonable but contradictory conclusions, we will not find the Board's decision unsupported by substantial evidence simply because the Board chose one conclusion over another plausible alternative.").

Even if Ressemann contemplates use cases without sealing balloons, the Board's reasoning does not constitute legal error. Medtronic contends the Board's finding is inconsistent with our holding in *Intel* that the intended purpose of a prior art device is not dispositive of whether a skilled artisan would have been motivated to modify it. *See* 21 F.4th at 800–01.

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[7] Teleflex argues Medtronic forfeited its argument that sealing balloons are not mandatory because they could be replaced by an elastomeric tube. It also disputes, as a factual matter, whether inflatable elastomeric tubes are meaningfully distinct from sealing balloons. We will not resolve this factual dispute on appeal. Even if Medtronic's argument is not forfeited and has a reasonable basis in fact, it does not compel reversal of the Board's finding.

But there is no conflict. We read the Board as finding that Ressemann teaches against using its device without sealing balloons because doing so while advancing interventional cardiac devices like those contemplated for use with the challenged claims might produce safety concerns. *See, e.g., '380 Decision*, at *8, *16 (finding that removing sealing balloons would undermine Ressemann's ability to "capture particulate matter during a procedure," for example "positioning and placing [a] stent"); J.A. 20565 ¶ 103, 20597 ¶ 148 (Teleflex expert asserting that a person of ordinary skill in the art would not "insert and deploy a balloon or stent catheter through the Ressemann device without first using the balloons to occlude blood flow"); '380 patent at abstract & 1:42–44 (invention directed at extension catheter for use with interventional devices such as stents and balloon catheters).

In other words, the Board found that removing Ressemann's sealing balloons would undermine a goal it *shares* with the challenged claims—safely advancing interventional devices to treat cardiac lesions. *See '380 Decision*, at *2 (finding that the '380 patent is directed at guide catheters for advancing "a stent or balloon catheter" to treat a cardiac lesion); *id.* at *9 (finding that Ressemann allows surgeons to advance a "therapeutic device, such as a stent" to treat a cardiac lesion while collecting "dislodged material"); J.A. 2237 (Ressemann) (noting that procedures such as stent placement carry the risk "that some of the treated plaque will be disrupted," and "if allowed to flow through the vascular system, may cause subsequent infarctions or ischemia"). Medtronic did not argue that the procedures contemplated in the challenged claims were free from such risks. *See, e.g.*, J.A. 28399–400 (arguing instead that Ressemann could retain the ability to catch loose plaque even if modified); J.A. 22129–130 (same). The Board reasonably recognized that modifying a device in a manner that would undermine a purpose it shares with the

challenged claims counsels against a motivation to make such modifications.

Intel is both consistent with the Board's analysis and distinguishable from the facts at hand. In *Intel*, we rejected the Board's reasoning that a proposed rationale for modifying a circuit was insufficient because it "would have resulted in the circuit not being suitable for its intended purpose." 21 F.4th at 800. We explained this reasoning—in which the intended purpose of the device was given controlling weight—was inconsistent with the Supreme Court's recognition that "common sense teaches . . . that familiar items may have obvious uses beyond their primary purposes," and with the reference's express recognition of use cases compatible with the proposed modification to the circuit. *Id.* at 801 (quoting *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 420 (2007)). We did not hold, however, that a proposed modification's destruction of a device's primary purpose is always legally irrelevant to obviousness. Such a conclusion is equally at odds with common sense and gives in to the very hindsight bias the obviousness inquiry is designed to avoid. Indeed, we have held it was error for the Board to ignore evidence that a proposed modification would interfere with a reference's stated purpose. *See Polaris Indus. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1061, 1067–69 (Fed. Cir. 2018) (vacating Board decision that failed to consider whether modifying prior art reference would undermine its goal, shared with the challenged claims, of constructing stable all-terrain vehicles).

The Board's analysis was consistent with these principles. The Board found, in the context of these patents, that the destruction of Ressemann's "entire premise" "counsel[ed] strongly against" obviousness, not that it was determinative. *See, e.g.*, *'032 Decision*, at *16. The Board went on to consider Medtronic's argument that embolic protection could be achieved without sealing balloons but found that argument unpersuasive because it was not presented in Medtronic's petition and the extensive nature of the

additional proposed modifications was suggestive of hindsight.[8] *Id.* Further, unlike in *Intel*, in which the reference contemplated use cases beyond the "intended purpose," 21 F.4th at 801, the Board found Ressemann's "entire premise" was founded on the sealing devices Medtronic's proposed modifications would remove. We conclude the Board did not err in determining the destruction of Ressemann's entire purpose, shared with the challenged claims, was probative of whether Medtronic's modifications would have been obvious.

The Board did not err in determining Medtronic failed to carry its burden to show the One-French Claims would have been obvious, and substantial evidence supports its underlying findings of fact. Accordingly, we affirm the Board's holding that Medtronic failed to establish the One-French Claims are unpatentable.

B. DOUBLE-INCLINE CLAIMS

Claim 27 of the '380 patent is representative of the Double-Incline Claims. It recites:

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[8] Medtronic argues the Board legally erred and abused its discretion by "refusing to consider" these arguments because Medtronic properly raised them in reply to rebut Teleflex's arguments. Appellant's Opening Br. 39. The Board's decisions make plain, however, that it considered Medtronic's arguments. *See '032 Decision*, at *17 (recounting and rejecting Medtronic's reply arguments); *'760 Decision*, at J.A. 72 (same); *'379 Decision*, at J.A. 121 (same). It simply found them unpersuasive because they relied on extensive modifications not discussed in the petition, suggesting they were "improperly based on a hindsight desire to recreate the inventions . . . and not a known need in the art for such a device." *'379 Decision*, at J.A. 121.

> 27. The system of claim 26, wherein the side opening includes at least *two different inclined slopes*.

'380 patent at claim 27 (emphasis added).

Medtronic asserted the Double-Incline Claims would have been obvious over Ressemann and Kataishi. It argued a skilled artisan would have been motivated to incorporate the double-inclined shape of Kataishi's distal tip into Ressemann's proximal side opening because doing so would increase entry area (i.e., the area in which to insert interventional devices into the extension catheter) and improve crossability (i.e., the ability to advance the extension catheter through the guide catheter and into vasculature). *See '032 Decision*, at *13–14; *'379 Decision*, at J.A. 124–26.

The Board found neither motivation persuasive and accordingly held Medtronic failed to prove the Double-Incline Claims are unpatentable. *'380 Decision*, at *14–15; *'379 Decision*, at J.A. 127–29. Specifically, crediting Teleflex's expert testimony, the Board found Medtronic failed to show a skilled artisan would be motivated to use the shape of Kataishi's *distal* tip for Ressemann's *proximal* side opening because opening area does not depend on having a double-inclined opening and because using the shape of Kataishi's distal tip in lieu of Ressemann's proximal side opening may actually impair crossability by increasing the risk of kinking. *'380 Decision*, at *14–15; *'379 Decision*, at J.A. 127–29.

On appeal, Medtronic argues the Board's findings rest on legal error. In particular, it asserts the Board erred by (1) concluding an alternative design choice to increase entry area negated its proposed motivation to combine, (2) reasoning the location of Kataishi's tip vis-à-vis Ressmann's side opening (i.e., distal vs. proximal) weighed against a motivation to combine, and (3) effectively requiring physical incorporation of Kataishi into Ressemann

when it credited Teleflex's expert that using Kataishi's double-inclined tip would increase the risk of kinking.

Medtronic's arguments are unavailing. First, the Board did not find a lack of motivation to use Kataishi's double-inclined shape merely because entry area could be increased in other ways. The Board expressly found the use of a double-inclined opening is irrelevant to entry area because, as Teleflex's expert testified, entry area depends only on the angle of the opening. *See '380 Decision*, at *14 (crediting expert testimony that "increased area is a function of how sharp one chooses to angle the opening and does not depend on having a complex, multi-angle shape like that of Kataishi"); *'379 Decision*, at J.A. 128 (same). While Medtronic may be correct that the entry area of Kataishi's double-inclined tip is larger than Ressemann's side opening, the Board found this is not due to Kataishi's tip being doubly-inclined and that Medtronic therefore failed to show increasing entry area would have motivated a skilled artisan to incorporate *this feature* into Ressemann.

The Board's reasoning does not rest upon the existence of alternative designs to achieve the same ends. It rests on the idea that the design feature Medtronic sought to incorporate—a double-inclined opening—does not achieve that end. Something else does, namely a sharper opening angle. This was not legal error. Indeed, to hold otherwise would countenance motivation arguments based on functionally irrelevant features of references that happen to exhibit a benefit for altogether different reasons, a recipe that would be ripe for hindsight abuse.

Second, the Board did not err in finding that the alleged benefits associated with Kataishi's distal tip would not translate to Ressemann's proximal opening. The Board relied on substantial evidence, including Teleflex's expert testimony explaining that the ability of Kataishi's tip to "cross tortuous vasculature is almost entirely driven by the design of its distal end, as that is the portion that interacts

with vasculature as it is being advanced" and that "[c]onsiderations for suctioning a thrombus into the distal opening of Kataishi, in a distal-to-proximal direction, would not apply to inserting interventional devices, in a proximal-to-distal direction, into Ressemann's proximal opening." *'379 Decision*, at J.A. 127 (citing J.A. 20600 ¶ 153, J.A. 12931 ¶ 193, and J.A. 12470 at 385:1–23). Given its finding that the benefits of Kataishi's distal tip were tied to its distal location and the "lack of any teaching suggesting any interventional devices being passed through Kataishi's suction catheter," the Board reasonably found Medtronic failed to carry its burden to establish a motivation to combine. Medtronic again points to its contrary expert testimony that Kataishi teaches its shape would improve crossability even if applied to a proximal opening because it would improve the proximal opening's ability to smoothly navigate through the guide catheter (as opposed to vasculature). But the Board's decision to credit Teleflex's experts over Medtronic's does not render its finding unsupported by substantial evidence. *In re Jolley*, 308 F.3d 1317, 1329 (Fed. Cir. 2002).

Lastly, Medtronic's contention that the Board required physical incorporation of the references is without merit. Medtronic argues the Board's finding that kinking would discourage skilled artisans from using Kataishi's distal tip was improperly predicated on using the materials disclosed in Kataishi. Yet, the Board's decisions make no reference to Kataishi's materials. Instead, the Board credited Teleflex's expert testimony explaining that, because Ressemann's device already has an angled side opening, no further benefits to crossability would accrue from using a double-inclined opening. *'380 Decision*, at *15. The Board's reasoning was thus explicitly focused on the *shape* of Kataishi's distal tip, not its materials. The Board further found that utilizing that shape would disadvantageously increase flexibility at Ressemann's proximal end, "thereby *increasing* the risk of kinking." *Id.* (citing J.A. 12933

¶ 197). As Kataishi's shape is the very feature Medtronic sought to incorporate into Ressemann, the Board's decisions do not demonstrate that it improperly required physical incorporation of the references beyond that proposed by Medtronic.

We conclude the Board did not err in its analysis and that substantial evidence supports its findings. We therefore affirm its determination that Medtronic failed to carry its burden to prove the Double-Incline Claims would have been obvious.

C. SUBSTITUTE CLAIMS

During the *inter partes* review proceedings for the '379 patent, Teleflex filed a contingent motion to amend proposing certain substitute claims. Proposed substitute claim 49, which amends claim 38, is representative of the Substitute Claims:

> 49. A method of forming a device adapted for use with a standard guide catheter having a continuous lumen extending for a predefined length, the method comprising:
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> *providing a flexible tip segment* having a lumen therethrough;
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> *providing a reinforced segment* including one or more metallic elements covered with a polymer and having a uniform, fixed outer diameter and a lumen for coaxial alignment a lumen for coaxial alignment with the lumen of the flexible tip segment, said flexible tip segment and reinforced segment defining a tubular structure with a single lumen that is configured to be coaxial with the continuous lumen of the guide catheter when positioned therein, wherein said tubular structure has an inner diameter that is not more than about

one French smaller than the continuous inner lumen of the guide catheter;

providing a substantially rigid segment defining a rail structure without a lumen extending from a proximal end portion to a distal end portion, wherein the substantially rigid segment is more rigid along a longitudinal axis than the flexible tip segment;

defining a side opening portion, including forming, in a proximal to distal direction, an arcuate cross-sectional shape and hemicylindrical cross-sectional shape, the side opening portion extending for a distance along a longitudinal axis of the device such that the side opening is accessible from a longitudinal side, defined transverse to the longitudinal axis, to receive a balloon catheter and stent; and

arranging, in a proximal to distal direction, the substantially rigid segment, the side opening portion, the reinforced segment, and the flexible tip segment such that when the flexible tip segment is extended distally of a distal end of the guide catheter, the proximal end portion of the substantially rigid segment extends proximally of a proximal end of the guide catheter and the side opening portion is positioned within the continuous lumen of the guide catheter, whereby the reinforced segment and substantially rigid segment are configured to resist forces exerted by the balloon catheter and stent that are passed through and beyond the coaxial lumen that would otherwise tend to dislodge the guide catheter

> from a branch artery into which the reinforced segment has been advanced.

See '379 Decision, at J.A. 137–38 (emphases added).

Before the Board, Medtronic argued the Substitute Claims lacked adequate written description in the original application to which the '379 patent claims priority, namely Application Serial No. 11/416,629. *See* J.A. 30456–97 ('629 application). In particular, Medtronic contended the Substitute Claims encompass catheters with side openings separate from the substantially rigid segment, whereas the written description only describes side openings that were part of the substantially rigid segment. In addition, as relevant on appeal, Medtronic argued the Substitute Claims would have been obvious over U.S. Patent No. 5,439, 445 (Kontos) in view of, *inter alia*, Kataishi and Takahashi.[9]

The Board determined the Substitute Claims had adequate written description support and would not have been obvious over Medtronic's asserted grounds. *'379 Decision*, at J.A. 139–47, J.A. 162–64. On appeal, Medtronic argues the Board erred by finding written description support based on the absence of any disclosure that the location of the side opening was critical to the invention and by

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[9] Medtronic also argued the Substitute Claims would have been obvious over U.S. Patent No. 7,736,355 (Itou) in view of Ressemann or Kataishi. On appeal, Medtronic argues the Board erred by failing to address the Itou-Kataishi grounds. In a separate decision, we affirmed the Board's finding in a parallel proceeding that Itou postdates May 3, 2006, the priority date of the '379 patent, and consequently is not prior art. *See Medtronic, Inc. v. Teleflex Innovations S.À.R.L.*, No. 2021-2356, 2023 WL 3606143, at *1 (Fed. Cir. May 24, 2023). We therefore need not address the Board's alleged failure to address this ground.

deferring to the examiner's interpretation of the prosecution history. It also argues the Board committed legal error when it determined Medtronic failed to show the Substitute Claims would have been obvious. We are not persuaded.

Medtronic contends the Board failed to assess whether the disclosures of the '629 application would have reasonably conveyed to a skilled artisan that the applicant possessed a catheter with a side opening separate from the substantially rigid segment, but this is precisely the inquiry the Board undertook. The Board acknowledged written description requires "the patent specification [to] describe an invention in sufficient detail that one skilled in the art can clearly conclude that the inventor invented what is claimed" and found, after "[h]aving reviewed the portions of the [s]pecification referenced by [Teleflex]," that the specification provided adequate support. *'379 Decision*, at J.A. 145 (quoting *Cordis Corp. v. Medtronic AVE, Inc.*, 339 F.3d 1352, 1364 (Fed. Cir. 2003)). It then identified written disclosures and figures it found provided the necessary support, including the patent's description that "[t]he rigid portion *may* include a cutout portion [i.e., a side opening] and a full circumference portion." *Id.* (emphasis added) (quoting '629 application at 8:18–21).

The Board further supported its finding by noting that the '629 application's specification "does not indicate that putting the side opening specifically in the substantially rigid portion is critical to the invention" and that the applicant never asserted the location of the side opening was a point of novelty during prosecution. J.A. 146. Applying our holding in *Ethicon Endo-Surgery, Inc. v. U.S. Surgical Corp.*, the Board correctly determined the absence of embodiments in the '629 application with a side opening separate from the rigid segment did not preclude written description. J.A. 146–47 (citing 93 F.3d 1572, 1582 n.7 (Fed. Cir. 1997) ("If [the inventor] did not consider the precise location of the [feature] to be an element of his

invention, he was free to draft [the claims] broadly (within the limits imposed by the prior art) to exclude the lockout's exact location as a limitation of the claimed invention.")). As we explained in *Ethicon*, if the precise location of the side opening was not an element of the invention, claims that do not recite the location as a limitation are not "unsupported by the specification even though [they] would be literally infringed by undisclosed embodiments." 93 F.3d at 1582 n.7; *see In re Rasmussen*, 650 F.2d 1212, 1215 (CCPA 1981) ("[T]hat a claim may be broader than the specific embodiment disclosed in a specification is in itself of no moment. Indeed, the statutory provision for broadened claims in reissue applications is intended to meet precisely the situation in which a patentee has claimed 'less' than he had a right to claim."). As the Board acknowledged, written description requires only that a skilled artisan would reasonably conclude, based on the patent's disclosures and the knowledge of a person skilled in the art, that the applicant possessed catheters in which the side opening could be located outside the rigid segment. *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc) ("[T]he test for sufficiency is whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date."). Medtronic has not demonstrated the Board's findings in this regard constitute legal error.[10]

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[10] Medtronic's argument that the Board erroneously deferred to the examiner's acceptance of amendments directed to this issue, *see* J.A. 18718–19050, is without merit. The Board recounted, but did not rely, on the examiner's allowance of the claim to find written description. *'379 Decision*, at J.A. 143–44. Instead, it expressly based its finding on "portions of the specification . . . [that] adequately support[] the proposed substitute claims." *Id.* at J.A. 145.

Finally, Medtronic argues the Board erred in determining the Substitute Claims are not unpatentable because it made two findings that are inconsistent with other findings made in this and other *inter partes* reviews of related patents. First, Medtronic contends the Board contradicted its finding in this proceeding that Kataishi discloses a double-inclined side opening. *Compare '379 Decision*, at J.A. 162 ("Kataishi fails to disclose the recited Complex Side Opening feature of the proposed substitute claims"), *with id.* at J.A. 128 ("Kataishi discloses . . . [a] mutli-angled distal tip"). Read in context, the Board's statements do not evince legal error. The Board's full statement is as follows: "As discussed hereinabove in our analysis of [Medtronic's] challenges to original claim 44, however, we determine Kataishi fails to disclose the recited Complex Side Opening feature of the proposed substitute claims." *Id.* at J.A. 162. The Board's "finding" must therefore be read in view of its discussion of claim 44, which it expressly incorporated in the very same sentence. Critically, in analyzing claim 44, the Board did not rely on Kataishi's lack of disclosure to hold the claim not unpatentable,[11] but instead relied on Medtronic's failure to establish a motivation to incorporate Kataishi's distal tip into Ressemann's proximal side opening. *See* Section I.B *supra*. Understood in this context, the Board's statement regarding Kataishi's disclosure is best read to refer to the underlying lack of motivation to combine Kataishi with Kontos. We acknowledge the Board's statement in this regard is imprecise. But, as we have explained many times, "we do not require perfect explanations" of the Board, *In re Nuvasive, Inc.*, 842 F.3d 1376, 1382 (Fed. Cir. 2016); rather, we only require that its path be reasonably discernible, *Ariosa Diagnostics v. Verinata Health, Inc.*, 805 F.3d 1359, 1365 (Fed. Cir. 2015). That

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[11] Indeed, in analyzing claim 44, the Board recognized Kataishi discloses a double-inclined distal tip. *See* J.A. 122–23.

standard is satisfied here, where the allegedly contradictory phrase is prefaced by thorough analysis (incorporated by reference) elucidating the basis for the Board's decision.

Second, Medtronic contends the Board contradicted its findings in other proceedings involving related patents that Kontos discloses a reinforced segment. *Compare '379 Decision*, at J.A. 163 (finding Medtronic's Kontos/Kataishi combination "requires modifying Kontos to achieve . . . substitute claim 49's limitation of 'a reinforced segment'"), *with Medtronic, Inc. v. Teleflex Innovations S.à.r.l.*, No. IPR2020-00127, 2021 WL 2518685, at *14 (P.T.A.B. June 7, 2021) (finding "Kontos's body 12 identified in Petitioner's Reply are proximal to the flexible cylindrical distal tip portion and represent 'cylindrical reinforced portions'"). This argument is similarly unavailing. Even if true, this would not require vacatur because the Board provided an alternative ground for its determination that Medtronic failed to establish the unpatentability of proposed substitute claim 49, namely a lack of motivation to combine. The Board found Medtronic failed to establish a skilled artisan would have been motivated to combine Kataishi and Kontos because they disclose "different devices, used in different procedures, and directed to different problems that might be encountered during an interventional procedure." *'379 Decision*, at J.A. 163 (quoting J.A. 20749 ¶ 121). Medtronic does not challenge the factual bases for these findings. Accordingly, we affirm on this ground without deciding whether and to what effect the Board may have reached inconsistent findings.

CONCLUSION

We have considered the parties' other arguments and find them unpersuasive. For the reasons given, we affirm the Board's decisions holding the Double-Incline and One-French Claims not unpatentable and granting issuance of the Substitute Claims.

AFFIRMED