

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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C&D ZODIAC, INC.,  
Petitioner,

v.

B/E AEROSPACE, INC.,  
Patent Owner.

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Case IPR2014-00727  
Patent 8,590,838 B2

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Before MICHAEL J. FITZPATRICK, SCOTT A. DANIELS, and  
CARL M. DEFRANCO, *Administrative Patent Judges*.

FITZPATRICK, *Administrative Patent Judge*.

FINAL WRITTEN DECISION  
*35 U.S.C. § 318; 37 C.F.R. § 42.73*

## I. INTRODUCTION

Petitioner, C&D Zodiac, Inc., filed a corrected Petition for an *inter partes* review of claims 1, 3–10, 12–14, 16–22, 24–31, and 33–38 of U.S. Patent No. 8,590,838 B2 (“the ’838 patent”). Paper 4 (“Pet.”). Patent Owner, B/E Aerospace, Inc., filed a Preliminary Response pursuant to 35 U.S.C. § 313. Paper 12 (“Prelim. Resp.”). In an October 29, 2014, Decision, we instituted trial on all challenged claims as follows:

(1) claims 1, 3–7, 9, 10, 12–14, 16–19, 21, 22, 24–29, 31, and 33–37 as asserted to be unpatentable under 35 U.S.C. § 103(a)<sup>1</sup> in view of Betts (Ex. 1003)<sup>2</sup>; and

(2) claims 8, 20, 30, and 38 as asserted to be unpatentable under 35 U.S.C. § 103(a) in view of Betts and the Orange Book (Ex. 1004).<sup>3</sup>

Paper 15 (“Inst. Dec.”).

After institution, Patent Owner filed a Second Corrected Patent Owner Response (Paper 31, “PO Resp.”), Petitioner filed a Reply (Paper 41, “Pet. Reply”), and an oral hearing was held on June 30, 2015.<sup>4</sup>

<sup>1</sup> The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, took effect on March 18, 2013. Because the application from which the ’838 patent issued was filed before that date, our citations to Title 35 are to its pre-AIA version.

<sup>2</sup> U.S. Patent No. 3,738,497 (June 12, 1973).

<sup>3</sup> McDonnell Douglas DC-10 Customer Configuration Summary (Oct. 1978), which is commonly referred to as the “Orange Book” (Ex. 1008 ¶ 4), presumably because its cover is colored orange. *See* Ex. 1004, 1.

<sup>4</sup> A transcript of the oral hearing is included in the record under seal. Paper 63. A public version of the transcript with redactions to portions of a single sentence is

As discussed below, Petitioner has shown by a preponderance of the evidence that claims 1, 3–7, 9, 10, 12–14, 16–19, 21, 22, 24–29, 31, and 33–37 of the '838 patent are unpatentable as obvious over Betts. But, Petitioner has *not* shown by a preponderance of the evidence that claims 8, 20, 30, and 38 are unpatentable as obvious in view of Betts and the Orange Book, as Petitioner has not established that the evidence relied upon within the Orange Book is a printed publication.

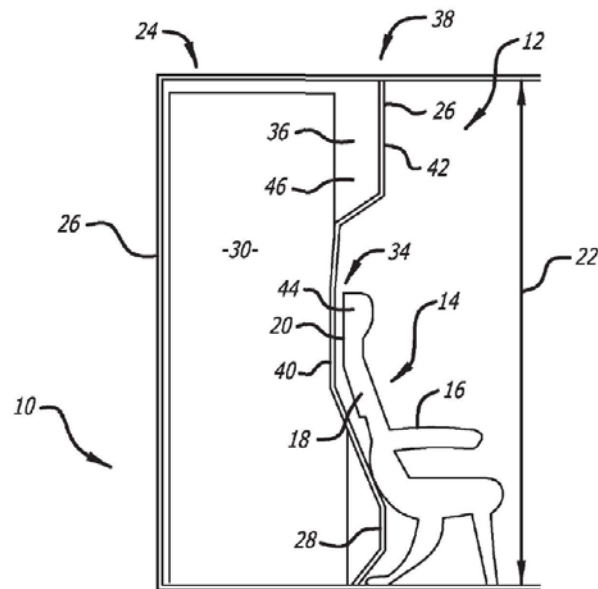
#### A. Related Proceedings

Patent Owner asserted the '838 patent against Petitioner in *B/E Aerospace, Inc. v. Zodiac Aerospace, Inc.*, No. 2:14-cv-210 (E.D. Tex.). Pet. 1; Paper 7, 2. The lawsuit was unilaterally terminated by Patent Owner on June 19, 2014, via a Notice Of Voluntary Dismissal Of Complaint Without Prejudice.

#### B. The '838 Patent

The '838 patent relates to space-saving aircraft enclosures, including lavatories, closets, and galleys. Ex. 1001, 1:14–19, 2:18–22. Figure 2 of the '838 patent is reproduced below.

also included in the record. Paper 64 (“Tr.”).



**FIG. 2**

Figure 2, reproduced above, illustrates enclosure 10, such as a lavatory, positioned aft of aircraft cabin 12. Ex. 1001, 4:8–13. The lavatory has walls that define interior lavatory space 30. *Id.* at 4:20–25. Forward wall 28 of the lavatory is described as “substantially not flat in a vertical plane” and “disposed immediately aft of and adjacent to or abutting the exterior aft surface of” passenger seat 16. *Id.* at 4:14–26. In particular, the forward wall includes recess 34, which accommodates the partially-reclined backrest of the passenger seat, as shown in Figure 2. *Id.* at 4:25–29.

The '838 patent contrasts the embodiment of Figure 2 with a prior art configuration shown in Figure 1, which is reproduced below.

**FIG. 1**  
(Prior Art)

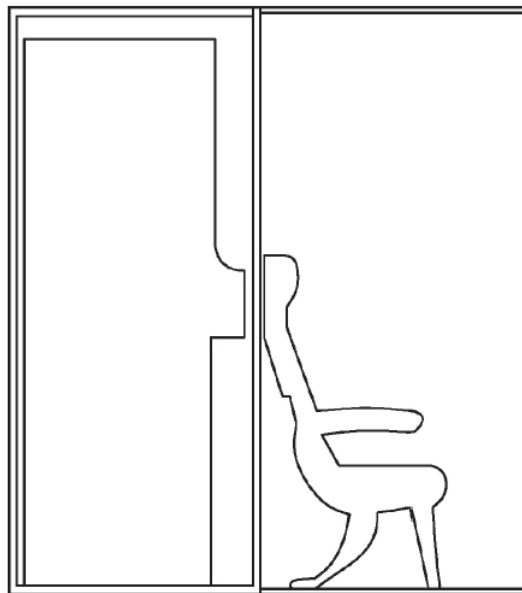


Figure 1, reproduced above, illustrates “a prior art installation of an aircraft lavatory immediately aft of and adjacent to an aircraft passenger seat.” Ex. 1001, 3:65–67. In the depiction of the prior art, a forward wall of the lavatory (double-lined structure immediately aft of seat) is flat in the vertical plane.

### C. Illustrative Claims

Independent claim 1 and dependent claim 8 are illustrative and reproduced as follows:

1. A lavatory for a cabin of an aircraft, the cabin including a passenger seat having an aft portion that is substantially not flat in a vertical plane, the lavatory comprising:

a lavatory stall unit having at least one wall having a forward wall portion, said at least one wall defining an interior lavatory space, and said forward wall portion being configured to be disposed immediately aft of and adjacent to an aircraft cabin passenger seat

having an aft portion with an exterior aft surface having a shape that is substantially not flat in a vertical plane; and

wherein said forward wall portion is shaped to substantially conform to the shape of the exterior aft surface of the aft portion of the aircraft cabin passenger seat, and said forward wall portion includes an aft-extending recess in said forward wall portion configured to receive the aft portion of the aircraft cabin passenger seat therein.

8. The lavatory of claim 1, wherein said lavatory stall unit has a top, a bottom, a height therebetween, and a middle therebetween, said lavatory stall unit has varying lengths along the height of the lavatory stall unit, and said lavatory stall unit is longer at the top of the lavatory stall unit than at the bottom of the lavatory stall unit.

## II. ANALYSIS

### A. Claim Construction

“A claim in an unexpired patent shall be given its broadest reasonable construction in light of the specification of the patent in which it appears.” 37 C.F.R. § 42.100(b). That construction must be consistent with the specification, and the claim language should be read in light of the specification as it would be interpreted by one of ordinary skill in the art. *In re Suitco Surface, Inc.*, 603 F.3d 1255, 1260 (Fed. Cir. 2010). Thus, we give claim terms their ordinary and customary meaning. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007) (“The ordinary and customary meaning is the meaning that the term

would have to a person of ordinary skill in the art in question.” (internal quotation marks omitted)).

Petitioner did not propose an express construction of any claim term. Pet. 7. Patent Owner proposed an express construction for several claim terms. PO Resp. 8–19.

*1. “enclosure unit”*

Independent claim 9, for example, recites “enclosure unit.” Patent Owner proposes it be construed as “a single functional space, enclosed on all sides.” PO Resp. 8. In doing so, Patent Owner asserts that the doctrine of claim differentiation supports its position because “enclosure unit” must be narrower than “enclosure.” PO Resp. 8 (citing *Phillips v. AWH Corp.*, 415 F.3d 1303, 1314–15 (Fed. Cir. 2005) (en banc)). But, Patent Owner is mistaken that claim differentiation applies, given the evidence Patent Owner presents. In that regard, Patent Owner instructs us to compare “Ex. 1001, 5:37 *with* 5:41.” PO Resp. 8. Line 37 of column 5 is part of the preamble of independent claim 9 and recites, in relevant part, “[a]n aircraft enclosure.” Ex. 1001, 5:37. Line 41 of column 5 is part of the body of the *same claim* and recites, in relevant part, “an enclosure unit.” *Id.* at 5:41. These are parts of the same claim. Thus, even if the preamble were limiting, the doctrine of claim differentiation would not apply here. *See Phillips*, 415 F.3d at 1314–15 (“Differences among claims can also be a useful guide in understanding the meaning of particular claim terms. For example, the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim.”) (internal citations omitted).

Patent Owner does cite a case that is relevant to the use of different terms within the same claim. PO Resp. 9 (citing *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111 (Fed. Cir. 2004)). In that case, the Court of Appeals held that “when an applicant uses different terms in a claim *it is permissible* to infer that he intended his choice of different terms to reflect a differentiation in the meaning of those terms.” *Innova*, 381 F.3d at 1119–20 (emphasis added). *Innova* thus does not *require* different constructions be given to “enclosure unit” and “enclosure.” In light of the specification, which uses the terms extremely similarly, we see no reason to give them different constructions. *Compare* Ex. 1001, 1:14–17 (“The present invention relates generally to aircraft enclosures, and more particularly relates to an aircraft cabin enclosure, such as a lavatory, an aircraft closet, or an aircraft galley, for example.”), *with* 2:27–28 (“The enclosure unit can be a lavatory, an aircraft closet, or an aircraft galley, for example.”). Both terms are inclusive of lavatories, aircraft closets, and aircraft galleys.

The specific construction proposed by Patent Owner for “enclosure unit”—that it be “a single functional space, enclosed on all sides”—is not supported by the intrinsic evidence. As just discussed, the ’838 patent states that “enclosure unit” includes an aircraft galley. Ex. 1001, 2:27–28. An aircraft galley is not necessarily enclosed on all sides, and it may serve multiple functions. Ex. 1020 ¶ 3 (“Galleys incorporate features such as storage areas, ovens, sinks, coffee makers, and the like, and are usually built up from individual panels, commonly referred to as modules.”).



The term “enclosure unit” encompasses lavatories, aircraft closets, and aircraft galleys. Given the grounds of unpatentability that Petitioner raises, there is no need to further construe this term.

2. “*lavatory stall unit*”

Whereas independent claim 1 recites “enclosure unit,” independent claim 9 recites “lavatory stall unit.” Patent Owner proposes the latter be construed as “a single room, enclosed on all sides, having a toilet and washbasin and large enough to fit a person inside.” PO Resp. 12. For reasons similar to those with respect to “enclosure unit,” we reject Patent Owner’s proposed construction of “lavatory stall unit.”

Further, given the grounds of unpatentability that Petitioner raises, there is no need to provide an express construction for this term. More specifically, Petitioner does not rely on any particular prior art lavatory. Indeed, Petitioner does not rely on either of the asserted references to teach a “lavatory stall unit,” instead relying on the knowledge and skill of a person of ordinary skill in the art.

3. “*substantially not flat in a vertical plane*”

Independent claim 1 recites (with emphasis added) “a passenger seat having *an aft portion that is substantially not flat in a vertical plane.*” Patent Owner proposes that the italicized language be construed as “a back side shape that is contoured or substantially non-planar in an upright position.” PO Resp. 13.

Similar to claim 1, each of independent claims 9, 21, and 31 recites (with emphasis added) a “passenger seat having *an aft portion with an exterior aft surface having a shape that is substantially not flat in a vertical plane.*” Patent

Owner proposes that the italicized language be construed as “a back side shape with a back exterior surface that is contoured or substantially non-planar in an upright position.” PO Resp. 13–14.

These proposed constructions would render the claim language “in a vertical plane” meaningless because tilting a seatback between an upright position and another position would have no effect on the shape of the aft surface of the seatback. Therefore, we do not adopt them. *See Cardiac Pacemakers, Inc. v. St. Jude Med., Inc.*, 296 F.3d 1106, 1115 (Fed. Cir. 2002) (proposed construction that rendered a portion of the claim language meaningless held improper). Rather, we construe “in a vertical plane” according to its ordinary and customary meaning and consistent with the specification, which contrasts a forward wall in a vertical plane (*see* Fig. 1—the prior art) against a recessed forward wall (*see* Fig. 2—an embodiment of the claimed invention).

In sum, the full limitation at issue encompasses an aft portion (in the case of claim 1) and an aft portion with an exterior aft surface (in the case of claims 9, 21, and 31) that has a flat shape but which is not within a vertical plane. This is within the broadest reasonable construction in light of the Specification, which discloses a substantially conforming recessed forward wall positioned behind the seat (*see* Ex. 1001, Fig. 2), as opposed to a wall that is flat in a vertical plane (*see id.* at Fig. 1).

4. *“forward wall portion is shaped to substantially conform to the shape of the exterior aft surface of the aft portion of the . . . passenger seat”*

In its Preliminary Response, Patent Owner had proposed that this term be construed to require that “the forward wall portion is shaped to generally match or coincide with the shape of the exterior back surface of the back of the . . .

passenger seat.” Prelim. Resp. 14. In instituting this *inter partes* review, we adopted Patent Owner’s proposed construction because it was the broadest reasonable construction in light of the Specification as it would be interpreted by one of ordinary skill in the art. Inst. Dec. 8.

In offering a construction for the instant limitation, Patent Owner now further argues the following:

Notably, in each claim, it is a very specific forward wall portion that must have this conforming shape. [Ex. 2027 ¶¶ 121–123.] The forward wall in question must be one that is “defining an interior [enclosure/lavatory space]” of the same “[lavatory stall/enclosure] unit” referenced throughout the claims. *Id.* Separate walls defining separate spaces for separate enclosures could not be the root for the claimed “forward wall portion,” even if such separate walls were shaped in the requisite manner. *Id.*

PO Resp. 19. Without saying so, Patent Owner is advancing a construction of different limitations of the independent claims, namely the forward wall “defining an interior lavatory space” in claims 1 and 31 and “defining an interior enclosure space” in claims 9 and 21. Confusingly, this is after Patent Owner proposed an express construction for these very terms. *See* PO Resp. 13 (proposing that these terms be construed to mean “forming a boundary or shape of the interior of the [lavatory/enclosure].”) (bracketed material not added).

The forward wall “defining an entire . . . space” does not mean fully enclosing the space, because the limitation is in reference to a *forward* wall. Hence, the forward wall is required to define merely the forward side of the space. Nothing more is required of that particular claim language. Patent Owner does not provide persuasive evidence, intrinsic or extrinsic, to support a construction of the

forward wall that would exclude a wall that defines the forward side of *two* spaces instead of one.

Patent Owner's construction clearly is designed to avoid Betts, which teaches a wall forward of both an overhead coat compartment and floor luggage space. But, the ground of unpatentability at issue is not anticipation by Betts but obviousness in view of Betts. Thus, even if we were to adopt Patent Owner's overly narrow construction, it would not save the claims because, as discussed below, Petitioner has shown that it would have been obvious to apply the recessed forward wall design of Betts to other enclosures, including single-spaced lavatories.

5. *"immediately aft of and adjacent to . . . passenger seat"*

Patent Owner proposes that this term, which is recited in all of the independent claims, be construed to mean "located behind and closely proximate to . . . passenger seat without intervening cabin structures." PO Resp. 17. Thus, Patent Owner's construction effectively would replace "aft" with "behind" and "adjacent" with "closely proximate . . . without intervening cabin structures." The claim term, however, does not need an express construction. Its plain and ordinary meaning is readily apparent.

B. Obviousness in View of Betts

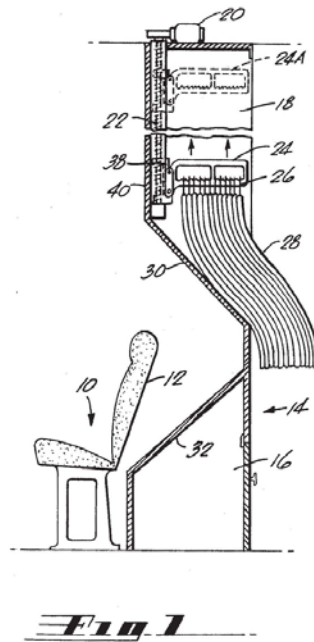
In assessing obviousness, "the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved." *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). Additionally, secondary considerations

such as “commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy.” *Id.* at 17–18.

Petitioner asserts that the subject matter of claims 1, 3–7, 9, 10, 12–14, 16–19, 21, 22, 24–29, 31, and 33–37 would have been obvious over Betts. Pet. 18–32.<sup>5</sup> For reasons explained below, Petitioner has established this assertion by a preponderance of the evidence.

### 1. Disclosure of Betts

Figure 1 of Betts is reproduced below.



<sup>5</sup> Petitioner asserted that the subject matter of claims 8, 20, 30, and 38 also would have been obvious over Betts, but we did not institute on this ground with respect to those additional claims. Inst. Dec. 25.

Figure 1 discloses airplane passenger seat 10 having tiltable backrest 12. Ex. 1003, 2:8–9. Behind the seat is coat closet 14, which has luggage space 16 along the floor and overhead coat compartment 18. *Id.* at 2:9–14. “The lower portion 30 of the coat compartment 18 slants rearwardly to provide a space for seatback 12 to be tilted rearwardly as desired by the occupant. The top 32 of storage space 16 also slants rearwardly so as not to interfere with seatback 12 when tilted.” *Id.* at 2:19–24. Thus, together slanting wall portions 30 and 32 form a recess in the forward wall of the overhead coat compartment/floor luggage space.

## *2. The Independent Claims*

### *a. Independent Claim 1*

Betts discloses all of the features of claim 1 except for the lavatory-specific limitations. Ex. 1003, Fig. 1. Petitioner offers testimony from Alan Anderson that it would have been obvious to a person of ordinary skill in the art<sup>6</sup> at the time of the invention to apply the recessed design of the forward wall of Betts to other aircraft enclosures, including lavatories. Ex. 1009 ¶¶ 65–68. In particular, Mr. Anderson testifies that a person of ordinary skill in the art would have been

<sup>6</sup> Mr. Anderson opines that a person of ordinary skill in the art would be someone having “a bachelor’s degree in mechanical engineering, industrial design, or a similar discipline, or the equivalent experience, with at least two years of experience in the field of aircraft interior design.” Ex. 1009 ¶ 30. Adam Dershowitz opines, on behalf of the Patent Owner, that the person of ordinary skill in the art would have had the same or similar education background but a few more years of experience in the field. Ex. 2027 ¶ 43. Our legal conclusions of obviousness in this Decision are supported by either level of skill.

motivated to efficiently use space on an aircraft, as evidenced by Betts, “to provide more room for passengers.” *Id.* ¶ 65 (quoting Ex. 1003, 1:6–7). Mr. Anderson further testifies that Betts teaches the person of ordinary skill in the art a recessed forward wall configuration that uses space more efficiently than a flat configuration, and that a person of ordinary skill in the art would have been motivated to apply the recessed configuration to other aircraft enclosures, including lavatories.

Patent Owner argues that a person of ordinary skill in the art “would have been discouraged from attempting to tailor Betts’ divided space design to any lavatory stall unit (or any other enclosure unit) because Betts required separate enclosures divided both functionally and spatially.” PO Resp. 29. But, Petitioner’s ground of unpatentability is not premised on whether it would have been practical or possible to convert Bett’s “divided space” (i.e., its overhead coat compartment and floor luggage space) into a lavatory. Rather, Petitioner argues that it would have been obvious to apply Bett’s recessed forward wall design to other aircraft enclosures, including a lavatory. Pet. 19 (“One of ordinary skill in the art would recognize that the teachings of the McDonnell Douglas patent [i.e., Betts] are equally applicable to the forward walls of other enclosure units, such as lavatories or galleys.”) (citing Ex. 1009 ¶¶ 65–68); *cf. In re Etter*, 756 F.2d 852, 859 (Fed. Cir. 1985) (en banc) (“Etter’s assertions that Azure cannot be incorporated in Ambrosio are basically irrelevant, the criterion being not whether the references could be physically combined but whether the claimed inventions are rendered obvious by the teachings of the prior art as a whole.”); *In re Keller*, 642 F.2d 413, 425 (CCPA 1981) (“The test for obviousness is not whether the

features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.”).

Patent Owner argues that the aft portion of the seat in Betts does not meet the “substantially not flat in a vertical plane” limitation because it is flat. PO Resp. 31. That argument is premised on an erroneously narrow construction of the limitation, which we rejected above. Although the aft portion of the Betts seatback is flat, it is not flat in a vertical plane.

Patent Owner argues that Betts does not disclose positioning a forward wall “immediately aft of and adjacent to” an aircraft passenger seat. PO Resp. 27–29. But, Betts depicts the seat immediately in front of the lowest portion of the forward wall (i.e., the vertical wall portion below lower slanting wall 32). Ex. 1003, Fig. 1. This alone meets the limitation in question. Further, Betts expressly teaches that the backrest is tiltable toward lower slanting wall 32, the slanting of which is meant to accommodate the tilting. *Id.* at 2:19–24.

Finally, Patent Owner presents arguments concerning purported distinctions between Betts and the challenged claims. In particular, Patent Owner argues that Betts requires two separate compartments behind its forward wall and also machinery for its coat compartment. PO Resp. 22–27. None of these arguments addresses the obviousness ground raised by Petitioner, which is not premised on modifying the existing structure of the Betts embodiment illustrated in Figure 1,



but rather on applying its space-saving recessed forward wall design to other enclosure units, such as lavatories or galleys. *See, e.g.*, Pet. 19.

*b. Independent Claims 9, 21, and 31*

The remaining independent claims are of similar scope to claim 1. Independent claim 9 is similar to claim 1, with the primary difference being that, whereas claim 1 recites “a lavatory stall unit,” claim 9 recites “an enclosure unit that is taller than the passenger seat.” Independent claim 21 is similar to claim 9, with the primary difference being that claim 21 recites “an aircraft cabin passenger seat” as part of the claimed apparatus. Independent claim 31 is similar to claim 1, with the primary difference being that claim 31 recites “an aircraft cabin passenger seat” as part of the claimed apparatus. Applying the recessed forward wall design of Betts to an aircraft lavatory, which a person of ordinary skill in the art would have been motivated to do as discussed above with respect to claim 1, also renders obvious the subject matter of claims 9, 21, and 31.

*3. The Dependent Claims*

*a. Claims 14 and 25*

Claims 14 and 25 depend from claims 9 and 21, respectively, and additionally recite that the “enclosure unit comprises a lavatory stall, and said at least one wall defines an interior lavatory space.” This limitation is met by the asserted prior art because, as discussed above in connection with claim 1, it would have been obvious to apply the space-saving recessed forward wall design of Betts to other enclosure units, including lavatories.

*b. Claims 10 and 22*

Claim 10 depends from claim 9 and additionally recites that “the passenger seat is installed immediately forward of said enclosure unit.” Claim 22 depends from claim 21 and additionally recites that “the aircraft cabin passenger seat is installed immediately forward of said aircraft enclosure unit.” These limitations are taught by Betts, as discussed above in connection with claim 1. *See* Ex. 1003, Fig. 1.

*c. Claims 3, 12, 16, 24, and 33*

Claim 3 depends from claim 1 and additionally recites that the “forward wall portion includes a forward projection configured to project over an aft portion of the seat back of the aircraft cabin passenger seat immediately forward of the lavatory stall unit.” Claims 12, 16, 24, and 33 recite similar limitations. To meet these limitations, Petitioner relies on Figure 1 of Betts, which shows upper slanting wall 30 forming a forward projection above a portion of seatback 12. Pet. 22 (citing Ex. 1003, 2:7–11, 2:19–22, Fig. 1). Wall 30 projects partly above the seatback even in the non-reclined configuration shown in Figure 1. When the seat is reclined, wall 30 projects above even more of the seatback. *See* Ex. 1003, 2:22–24 (discussing tilting of the seatback). We are persuaded that the prior art, as asserted by Petitioner, meets the additional limitations of these dependent claims.

*d. Claims 4, 13, 26, and 34*

Claim 4 depends from claim 3 and additionally recites that the “forward wall portion defines a secondary space in said interior lavatory space in an area forward of an aft-most portion of the forward wall portion above the seat back of the

aircraft cabin passenger seat.” Claims 13, 26, and 34 recite similar limitations. To meet these limitations, Petitioner relies on Figure 1, which shows upper slanting wall 30 defining a space above the backrest of the Betts seat and forward of the aft-most portion of the forward wall of the coat closet. Pet. 22 (citing Ex. 1003, 2:11–14, Fig. 1; Ex. 1009 ¶¶ 67–68). Patent Owner argues that the coat closet is a primary space in Betts, not a secondary space. PO Resp. 30. That argument, however, addresses Betts in isolation, whereas the asserted ground of unpatentability is based on a person of ordinary skill in the art applying the recessed forward wall design of Betts (which forms a space above the seatback) to other enclosure units, including lavatories. *Cf. In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986) (“Non-obviousness cannot be established by attacking references individually where the rejection is based upon the teachings of a combination of references.”).

The ’838 patent specification uses the term “secondary space” broadly and without providing much detail. For example, the specification provides the following:

In another presently preferred aspect, the forward wall portion defines a secondary space 36 in the interior lavatory space in an area 38 forward of an aft-most portion 40 of the forward wall portion, and the forward wall portion includes a forward projection 42 configured to project over the aft portion of the adjacent passenger seat back 44 immediately forward of the lavatory stall unit. The secondary space can include an amenity stowage space 46 inside the lavatory stall unit in the area forward of the aft-most portion of the forward wall portion, and the secondary space can include design elements providing visual space, such as a visual

perception of space, inside the lavatory in the area forward of an aft-most portion of the forward wall portion.

Ex. 1001, 4:33–45. In Figure 2, the '838 patent illustrates a secondary space 36. Other than its location, the Figure does not illustrate any details regarding the secondary space. *Id.* at Fig. 2, ref. 36. As set forth above, the specification does state that the “secondary space can include an amenity stowage space 46,” but it is not a requirement of a secondary space. *Id.* at 4:39–40.

We are persuaded that the prior art, as asserted by Petitioner, meets the “secondary space” limitation within the broadest reasonable construction of that term as read in light of the specification as it would be interpreted by one of ordinary skill in the art.

*e. Claims 5, 17, 27, and 35*

Claim 5 depends from claim 1 and additionally recites that the “forward wall portion includes a lower portion that extends under the aft portion of the aircraft cabin passenger seat.” Claims 17, 27, and 35 recite similar limitations. To meet these limitations, Petitioner relies on Figure 1 of Betts, which shows lower slanting wall 32 extending under the backrest. Pet. 23 (citing Ex. 1003, 2:7–11, 2:22–24, Fig. 1). We are persuaded that the prior art, as asserted by Petitioner, meets the additional limitations of these dependent claims.

*f. Claims 6, 18, 28, and 36*

Claim 6 depends from claim 1 and additionally recites that the “aft-extending recess in said forward wall portion is disposed between a forward-extending upper wall portion and a forward-extending lower wall portion.” Claims

18, 28, and 36 recite similar limitations. To meet these limitations, Petitioner relies on Figure 1 of Betts, which shows an aft-extending recess formed by the slanting upper and lower walls 30, 32. Pet. 23 (citing Ex. 1003, 2:19–24, Fig. 1). We are persuaded that the prior art, as asserted by Petitioner, meets the additional limitations of these dependent claims.

*g. Claims 7, 19, 29, and 37*

Claim 7 depends from claim 1 and additionally recites that the “aft-extending recess in said forward wall portion extends along substantially a full width of said forward wall portion.” Claims 19, 29, and 37 recite similar limitations. To meet these limitations, Petitioner relies, in part, on Figure 1 of Betts. Pet. 24 (citing Ex. 1003, Fig. 1). Patent Owner argues that Betts does not disclose such a feature. PO Resp. 53. However, Petitioner’s declarant, Mr. Anderson, points out that Figure 1 of Betts is a side elevation view and testifies that one of ordinary skill would have understood that the depicted recess extends the full width of the forward wall. Ex. 1009 ¶ 62. Mr. Anderson further testifies that, regardless of what is depicted, one of ordinary skill would have been motivated to extend the recess the full width of the forward wall in order to accommodate a full row of seats installed immediately forward of the wall. *Id.* ¶ 63. We agree with Petitioner that Figure 1 depicts a recess extending along the full width of the forward wall. We additionally find persuasive Mr. Anderson’s testimony that, even if Betts did not disclose such a configuration, it would have been obvious to one of ordinary skill in the art to extend the recess along the full width of the forward wall.

#### 4. Secondary Considerations

As the Court of Appeals has “repeatedly held, ‘evidence rising out of the so-called ‘secondary considerations’ must always when present be considered en route to a determination of obviousness.’” *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA, Inc.*, 699 F.3d 1340, 1349 (Fed. Cir. 2012) (quoting *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538 (Fed. Cir. 1983)). Thus, we turn now to the evidence of secondary considerations that Patent Owner has offered as purportedly demonstrating non-obviousness of the independent claims (and, thus, also the dependent claims). *See* PO Resp. 55–61.

In particular, Patent Owner asserts that its claimed invention has received industry praise and commercial success and has been copied. *Id.*

For evidence of industry praise, Patent Owner points to its Spacewall lavatory product (“Spacewall”), which Patent Owner asserts “is a commercial embodiment of the ’838 patent.”<sup>7</sup> PO Resp. 56. Patent Owner presents evidence that Spacewall received the Crystal Cabin Award, which Patent Owner asserts is “the premier international honor bestowed for excellence in aircraft interior design.” *Id.* at 58 (citing Ex. 2033 ¶ 25). Other evidence cited by Patent Owner reveals that there are seven such awards annually, one in each of seven categories. Ex. 2010, 1–2. Patent Owner also presents evidence of complimentary remarks about Spacewall that appeared in the *Wall Street Journal*, *Barron’s*, and *APEX* blog. PO Resp. 59 (citing Ex. 2033 ¶¶ 21–24; Exs. 2006–2009).

<sup>7</sup> Patent Owner does not specify which claims of the ’838 patent read on Spacewall.

Patent Owner's evidence of commercial success consists of a contract "to be the exclusive manufacturer of modular lavatory systems for Boeing's 737 Next-Generation family of airplanes, as well as the upcoming 737 MAX." PO Resp. 57. The contract is reportedly valued at \$800 million or more. Ex. 2004, 2. Although such a figure may sound impressive in vacuum, Patent Owner does not provide a frame of reference against which we can make an informed judgment of the evidentiary value of the \$800 million figure.

We are left with many unanswered questions with respect to the dollar figure provided by Patent Owner. For example, Patent Owner does not tell us: how many years over which the \$800 million is spread; how much revenue Patent Owner's competitors estimate they will make off aircraft lavatory manufacturing over the same period; how much Patent Owner has made over prior spans of the same number of years (in constant dollars); what the global market sales revenue is for aircraft lavatories each year and what share of that belongs to Patent Owner; or whether the share has changed since Patent Owner introduced Spacewall and by how much. Because questions like these are unanswered, the \$800 million figure does not compel a conclusion of commercial success. *See Vandenberg v. Dairy Equip. Co.*, 740 F.2d 1560, 1567 (Fed. Cir. 1984) ("appellants failed to show how sales of the patented device compared to sales of their previous model, or what percentage of the market their new model commanded").

Patent Owner's evidence of copying is limited to alleged copying by Petitioner, and not by any additional, third parties. PO Resp. 59–61. In that regard, Patent Owner argues that Petitioner has a product that allegedly "practices the '838 patent claims." *Id.* at 60. Even it were true that claims of the '838 patent

read on Petitioner’s product—and we make no determination either way in that regard—such evidence alone is insufficient to establish copying as objective evidence of non-obviousness. *See Iron Grip Barbell Co. v. USA Sports, Inc.*, 392 F.3d 1317, 1325 (Fed. Cir. 2004) (“Not every competing product that arguably [falls] within the scope of a patent is evidence of copying. Otherwise every infringement suit would automatically confirm the nonobviousness of the patent.”). “Rather, copying requires the replication of a specific product.” *Id.* The Court of Appeals in *Iron Grip* listed specific examples of the types of evidence that can establish copying, none of which is present here. *See id.*

Considering all the evidence presented, including the strong evidence of obviousness in view of Betts, the moderate evidence of industry praise, and the weak evidence of copying and commercial success, we determine that claims 1, 3–7, 9, 10, 12–14, 16–19, 21, 22, 24–29, 31, and 33–37 would have been obvious over Betts to a person of ordinary skill in the art.

### C. Obviousness in View of Betts and the Orange Book

Petitioner asserts that the subject matter of claims 8, 20, 30, and 38 would have been obvious over Betts in view of the Orange Book. Pet. 38–39, 43, 47, 49, 52.<sup>8</sup>

Claim 8 depends from claim 1 and additionally recites that the “lavatory stall unit has a top, a bottom, a height therebetween, and a middle therebetween, said

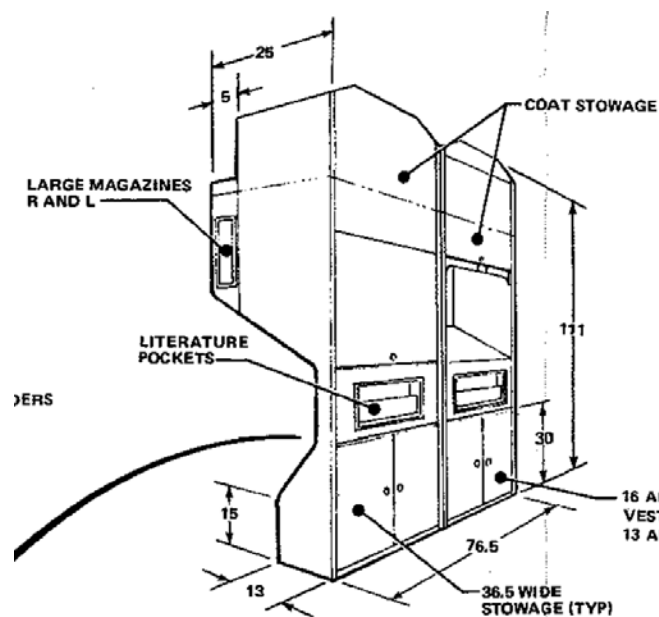
<sup>8</sup> Petitioner also challenged other claims as obvious over Betts in view of the Orange Book, but we instituted on this ground only with respect to claims 8, 20, 30, and 38. Inst. Dec. 25.



lavatory stall unit has varying lengths along the height of the lavatory stall unit, and said lavatory stall unit is longer at the top of the lavatory stall unit than at the bottom of the lavatory stall unit.” Claims 20, 30, and 38 recite similar limitations. Figure 1 of Betts appears to disclose equal lengths at the top and bottom.

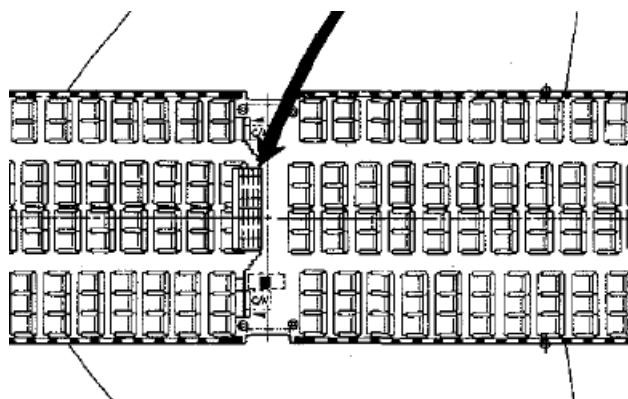
Ex. 1001, Fig. 1. Petitioner relies on McDonnell Douglas DC-10 Customer Configuration Summary (October 1978), also known as the Orange Book, to meet this limitation.

An illustration of the embodiment from page 5.3 of the Orange Book version in evidence here, and on which Petitioner relies, is reproduced below.



The illustration above shows an elevated coatroom having a recessed forward wall. Ex. 1004, 5.3. The forward wall has a greater length at the top (i.e., 20 inches) than at the bottom (i.e., 13 inches) of its elevated coatroom. Ex. 1004, 5.3.

Petitioner also relies on a related illustration from the same page of the Orange Book, depicting the location of the elevated coatroom within a passenger airplane, as reproduced below.



The illustration above shows placement of the elevated coatroom overlapping the aft portion of the last row of seats in a cabin portion. Petitioner offers testimony from Mr. Anderson that it would have been obvious to a person of ordinary skill in the art at the time of the invention to apply the recessed design of the forward wall of the elevated coatroom of the Orange Book (with its forward extension at the top being greater than at the bottom) to other aircraft enclosures, including lavatories, because Betts teaches that person to make efficient use of space in the aircraft interior cabin. Ex. 1009 ¶¶ 93–96.

Patent Owner argues, among other things, that the Orange Book is not a printed publication and, thus, cannot serve as a basis of holding any claim unpatentable in this *inter partes* review. PO Resp. 33; *see also* 35 U.S.C. § 311(b) (“A petitioner in an *inter partes* review may request to cancel as unpatentable 1 or more claims of a patent only on a ground that could be raised under section 102 or 103 and *only on the basis of prior art consisting of patents or printed publications.*”) (emphasis added).

Public accessibility is the touchstone for determining whether a printed document is a publication for prior art purposes. *In re Bayer*, 568 F.2d 1357, 1359 (CCPA 1978).

A document is publicly accessible if it “has been disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art, exercising reasonable diligence, can locate it and recognize and comprehend therefrom the essentials of the claimed invention without need of further research or experimentation.”

*Cordis Corp. v. Boston Sci. Corp.*, 561 F.3d 1319, 1333 (Fed. Cir. 2009) (quoting *In re Wyer*, 655 F.2d 221, 226 (CCPA 1981)).

Petitioner presented declaration testimony from Jarold Newkirk regarding publication of the Orange Book. In particular, Mr. Newkirk testified that he was an employee of McDonnell Douglas Corporation (and its predecessor Douglas Aircraft Corporation) from 1962–2002, and that, in 1973, he joined the company’s commercial aircraft division, where his responsibilities included interior design and customer engineering. Ex. 1008 ¶ 3. Mr. Newkirk testified to having personal knowledge of the publication and distribution of the Orange Book to airline customers to provide those customers with customization options for interior cabins for the DC-10 aircraft. *Id.* ¶¶ 5–6. In fact, Mr. Newkirk initially testified that “[t]he copy of the Orange Book attached hereto as Exhibit A [i.e., Ex. 1004 in this proceeding<sup>9</sup>] is a true and correct copy of the Orange Book *as it appeared*

<sup>9</sup> Compare Ex. 1008, “Exhibit A”, with Ex. 1004. (Petitioner should not have filed a duplicate of the Orange Book as an exhibit to Mr. Newkirk’s declaration. See 37 C.F.R. § 42.6(d). Instead, it should have directed Mr. Newkirk to refer to

*when published and distributed publicly in October 1978.”* Ex. 1008 ¶ 8 (emphasis added).

Patent Owner points out that the Orange Book is actually a three-ringed binder of loose-leaf pages that can be inserted or removed, for example, when updating the Orange Book. PO Resp. 33 (citing Ex. 2025; Ex. 2026); *see also* Ex. 1008 ¶ 7 (Mr. Newkirk testifying that McDonnell Douglas published “[u]pdated versions of the Orange Book”). This is significant because, on cross-examination, Mr. Newkirk admitted that he lacked personal knowledge of whether the version of the Orange Book submitted as Exhibit 1004 was actually published in October 1978.

Q. How do you know the particular copy you reviewed is exactly as it was published and distributed in October 1978?

A. Well, the way it was presented to me was that the person that had had it was given the book by McDonnell Douglas. And so based on that, I felt that it was, you know, an accurate book that was published at that time, based on the revision dates that were in the book. *I mean, whether or not it was exactly that, I have no knowledge.*

Q. And when you say “the person that had had it,” who are you referring to?

A. John Schoenberg.

Q. And who specifically gave to you the copy that you reviewed in preparing your declaration?

Exhibit 1004.)

A. Well, it was someone in our Legal department.

Q. Okay. Have you spoken with John Schoenberg about the Orange Book?

A. I have not.

Q. Did you ever get a copy of the Orange Book directly from John Schoenberg?

A. I did not. I had no contact with him.

Ex. 2023, 45:20–46:17 (emphasis added).

Petitioner submitted a declaration by John Schoenberg. Ex. 1019. In it, Mr. Schoenberg testified that he worked for a company called Fairchild Stratos (“Fairchild”) from at least the late 1960s until 1981 when he went to work for “C&D Plastics, later re-named C&D Aerospace, then C&D Zodiac” (i.e., Petitioner). *Id.* ¶ 4. He then testified to the following:

I am familiar with the McDonnell Douglas DC-10 Customer Configuration Summary, commonly referred to as the “Orange Book.” The so-called Orange Book (Ex. 1004) came into my possession *possibly from the Fairchild marketing department in 1981 or perhaps later* when at C&D I was in charge of developing the OEM ceiling panels for all DC-10 and MD-11 aircraft.

*Id.* ¶ 5 (emphasis added). This testimony is not definitive of what was published and by when. It lacks an affirmative statement that Exhibit 1004 is a true and accurate copy of the version of the Orange Book that he says came into his possession. Also, it does not establish that any Orange Book ever came into Mr.

Schoenberg's possession prior to the critical date of the '838 patent.<sup>10</sup> Mr. Schoenberg says "possibly" and "perhaps." Ex. 1019 ¶ 5.

On cross-examination, Mr. Schoenberg testified that he believed his copy of the Orange Book was in his possession (at his office at Petitioner C&D Zodiac) before he retired, which was in 1997 and before the critical date. But this testimony does not establish how the Orange Book came into his possession. Moreover, we are not persuaded that Mr. Schoenberg's testimony regarding the Orange Book relates specifically to the version of the Orange Book on which Petitioner relies. Indeed, at his deposition, he could not say whether the copy of the Orange Book that was placed in front of him was the same copy he had once possessed. Ex. 2024, 22:2–5; *see also* Tr. 81:3–9 (Trial Board: "How do we know that the specific page that you're relying on was part of the Orange Book back in that relevant time frame?" / Counsel for Petitioner: "John [Schoenberg] showed me – so, we have testimony that those are the pages of the Orange Book. We don't have testimony that that specific page was in that specific Orange Book.").

Petitioner has not shown, by a preponderance of the evidence, that Exhibit 1004 was published prior to the critical date of the '838 patent.

<sup>10</sup> Petitioner asserted the Orange Book as prior art under 35 U.S.C. § 102(b), but not under § 102(a). Pet. 14. The earliest possible filing date of the '838 patent is April 20, 2010. Ex. 1001, at [60]. The earliest possible critical date is therefore April 20, 2009. 35 U.S.C. § 102(b).

### III. MOTIONS TO EXCLUDE

Petitioner filed a Motion to Exclude Exhibits 2004, 2018, 2019, 2034–2036, and portions of Exhibit 2022 (evidence pertaining to secondary considerations of non-obviousness) and Exhibit 2027 (Mr. Dershowitz’s declaration pertaining to patentability of the claims). Paper 48. Because we do not rely on any of that evidence in a manner ultimately adverse to Petitioner, we dismiss the Motion as moot.

Patent Owner filed a Motion to Exclude Exhibit 1029, which is a declaration by Gary L. Frazier challenging Patent Owner’s commercial success evidence. Paper 50. Because we do not rely on Exhibit 1029 in any manner, we dismiss the Motion as moot.

### IV. CONCLUSION

Petitioner has shown by a preponderance of the evidence that claims 1, 3–7, 9, 10, 12–14, 16–19, 21, 22, 24–29, 31, and 33–37 of the ’838 patent are unpatentable as obvious over Betts.

Petitioner has *not* shown by a preponderance that claims 8, 20, 30, and 38 are unpatentable as obvious in view of Betts and the Orange Book.

### V. ORDER

Accordingly, it is

ORDERED that claims 1, 3–7, 9, 10, 12–14, 16–19, 21, 22, 24–29, 31, and 33–37 of U.S. Patent No. 8,590,838 B2 are held unpatentable; and

FURTHER ORDERED that, because this Decision is final, a party 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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