UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

C&D ZODIAC, INC.
Petitioner

v.

B/E AEROSPACE, INC.
Patent Owner

Patent No. 9,434,476
Filing Date: May 11, 2015
Issue Date: September 6, 2016
Title: AIRCRAFT INTERIOR LAVATORY

Inter Partes Review No. _____

PETITION FOR *INTER PARTES* REVIEW

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PETITIONER EXHIBIT	DESCRIPTION
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1020	McDonnell Douglas DC-10 Customer Configuration Summary (a/k/a Orange Book), revised October 1978 (the "Orange Book").
1021	U.S. Patent No. 6,742,840 to Bentley ("Bentley")

I. Summary

Through counsel, C&D Zodiac, Inc. ("Petitioner") hereby petitions for initiation of *inter partes* review of claims 1-6 of U.S. Patent No. 9,434,476 ("the '476 Patent"), assigned to B/E Aerospace, Inc. ("Patent Owner"). A copy of the '476 Patent is attached as Exhibit 1001 and a copy of the prosecution history of the '476 Patent is attached as Exhibit 1002.

The '476 Patent includes just four columns of description, less than one column of which is the three-paragraph "Detailed Description." The patent describes an enclosure for use in an aircraft (e.g., a closet or a lavatory). The first figure admits that an enclosure with a flat forward wall was well known in the art. The only aspect of the purported invention that is not admitted to be prior art is the recessed forward wall of the embodiment shown in Figure 2. And as explained in further detail below, aircraft enclosures with recessed forward walls have been known and used in the art for decades.

During an IPR of the parent of the '476 Patent, the Board already considered the dispositive issue here: whether it was obvious to apply a curved forward wall to a lavatory. The Board found that it was obvious. Yet, the Examiner inexplicably ignored the Board's decision without mentioning it and allowed Patent Owner's follow-on claims directed to the same subject matter already determined to be obvious—lavatories with a recessed forward wall. In view of the prior art,

Petitioner respectfully requests that the Board again find that the same subject matter already determined to be obvious with respect to the parent patent is also obvious with respect to the children. Accordingly, Petitoner requests that the Board cancel the challenged claims of the ’476 Patent.

A. Real Party-in-Interest

The real party-in-interest, C&D Zodiac, Inc., is a Delaware corporation with its principal business address at 5701 Bolsa Avenue, Huntington Beach, California 92647. No other entity is controlling, directing, or funding the submission of this petition and any proceeding initiated as a result therefrom.

B. Related Matters

The ’476 Patent is asserted against Petitioner in *B/E Aerospace, Inc. v. Zodiac Aerospace, Inc. et al.*, No. 2:14-cv-01417 (E.D. Tex., Dec. 15, 2016) (the “Underlying Litigation”). Patent Owner also asserts the following four related patents in that case: U.S. Patent Nos. 9,073,641; 9,365,292; 9,440,742 and D764,031. Patent Owner has sought a preliminary injunction against Petitioner in the Underlying Litigation. On or around the time this Petition is filed, Petitioner also will file Petitions for *Inter Partes* Review challenging the three related utility patents. On April 10, 2017 Petitioner filed a Post Grant Review challenging the claim of D764,031, which has been assigned PGR2017-00019.

All five of the asserted patents in the Underlying Litigation claim priority to U.S. Patent No. 8,590,838 ("the '838 Patent"), attached as Exhibit 1017. Patent Owner previously asserted the '838 Patent against Petitioner in *B/E Aerospace, Inc. v. Zodiac Aerospace, Inc. et al.*, No. 2:14-cv-210 (E.D. Tex. Mar. 11, 2014) (the "Prior Litigation"). Patent Owner also sought a preliminary injunction against Petitioner in that case. During the Prior Litigation, Petitioner sent Patent Owner a series of letters containing invalidating prior art. *See* Ex. 1008. Patent Owner subsequently withdrew its motion for preliminary injunction and voluntarily dismissed the Prior Litigation on June 19, 2014. Exs. 1014; 1015.

Petitioner also filed a Petition for *Inter Partes* Review of the '838 Patent. That earlier IPR was assigned Case No. IPR2014-00727, and received a Final Written Decision on October 26, 2015. The Board held claims 1, 3-7, 9, 10, 12-14, 16-19, 21, 22, 24-29, 31, and 33-37 unpatentable. That Final Written Decision is attached as Exhibit 1003. That Decision is currently on appeal to the Federal Circuit where it is assigned Case Nos. 16-1496, 16-1497.

There are several entities related to Petitioner also being sued for infringement of the patents identified above. Petitioner is an indirectly-owned subsidiary of Zodiac Aerospace, a Societe Anonyme organized and existing under the laws of France. Petitioner is a wholly owned subsidiary of Zodiac US Corporation, a corporation organized and existing under the laws of Delaware.

Zodiac Aerospace and Zodiac US Corporation have been sued for infringement of the patents identified above in the Underlying Litigation. Also sued for infringement of the patents identified above in the Underlying Litigation are:

- Zodiac Seats US LLC, a limited liability company organized and existing under the laws of Texas.
- Heath Tecna, Inc., a corporation organized and existing under the laws of Delaware.
- Northwest Aerospace Technologies, Inc., a corporation organized and existing under the laws of Washington.

C. Fees

This petition is accompanied by a fee payment of $23,000, which includes the $9,000 *inter partes* review request fee, and the $14,000 *inter partes* review post-institution fee. Petitioner further authorizes a debit from Deposit Account 20-1430 for whatever additional payment is necessary in granting this petition.

D. Designation of Lead Counsel and Backup Counsel

Lead Counsel for Petitioner is John C. Alemanni (Reg. No. 47,384), of Kilpatrick Townsend & Stockton LLP. Back-up counsel for Petitioner are Dean W. Russell (Reg. No. 33,452), David A. Reed (Reg. No. 61,226), Michael T. Morlock (Reg. No. 62,245), and Andrew Rinehart (Reg. No. 75,537).

E. Service Information

As identified in the attached Certificate of Service, a copy of the present petition, in its entirety, is being served to the address of the attorneys or agents of record for the ’476 Patent and to the attorneys of record in the Underlying Litigation. Petitioner may be served at its counsel, Kilpatrick Townsend & Stockton LLP. Petitioner consents to service via email to its lead and backup counsel at the following email address: Zodiac-BE-IPR@kilpatricktownsend.com.

F. Power of Attorney

A power of attorney with designation of counsel is filed herewith in accordance with 37 C.F.R. § 42.10(b).

G. Standing

The ’476 Patent was filed on May 11, 2015 and claims priority to a utility application filed on April 18, 2011 and therefore is eligible for *inter partes* review immediately following the date of the grant of the patent. 37 C.F.R. § 42.102(a)(2). Further, the ’476 Patent is currently asserted in a co-pending litigation, and this petition is being filed within one year of Petitioner being served with a complaint for infringement. Petitioner certifies that the ’476 Patent is available for *inter partes* review and that Petitioner is not barred or estopped from requesting an *inter partes* review challenging the patent claims on the grounds identified in this petition.

II. Background

A. Priority Date and Family

The ’476 Patent issued on September 6, 2016 from Application No. 14/709,409, filed on May 11, 2015. The ’476 Patent claims priority to U.S. Patent No. 8,590,838, filed on April 18, 2011, and to Provisional Application No. 61/326,198, filed April 20, 2010, and Provisional Application No. 346,835, filed May 20, 2010. Thus, the earliest possible effective filing date is April 20, 2010.

Several other related patents also claim priority to the ’838 Patent, including U.S. Patent Nos. 9,073,641; 9,365,292; 9,440,742; and D764,031. The related utility patents share a common disclosure with the ’476 Patent.

B. The Written Specification and Figures

The ’476 Patent relates to an aircraft enclosure, “such as a lavatory, an aircraft closet, or an aircraft galley,” having a forward wall (i.e., the wall toward the nose of the aircraft) with a recess that substantially conforms to the aft (i.e., back) surface of a passenger seat located immediately forward of the enclosure. Ex. 1001, 2:17-27.

The challenged claims relate to an enclosure with a contoured forward wall to allow a row of seats to be placed slightly further aft in an aircraft. As explained in further detail below, Figure 1 of the ’476 Patent admits that every claim element, other than a contoured forward wall, was known in the prior art. The only

other figure—Figure 2—shows an embodiment with a contoured forward wall with the same prior art seat as shown in Figure 1 positioned slightly further aft.

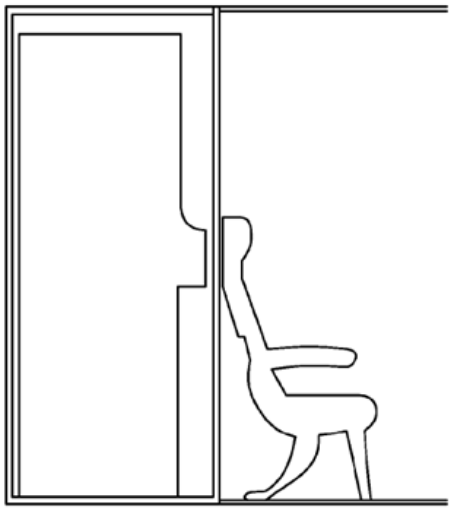


FIG. 1
(Prior Art)

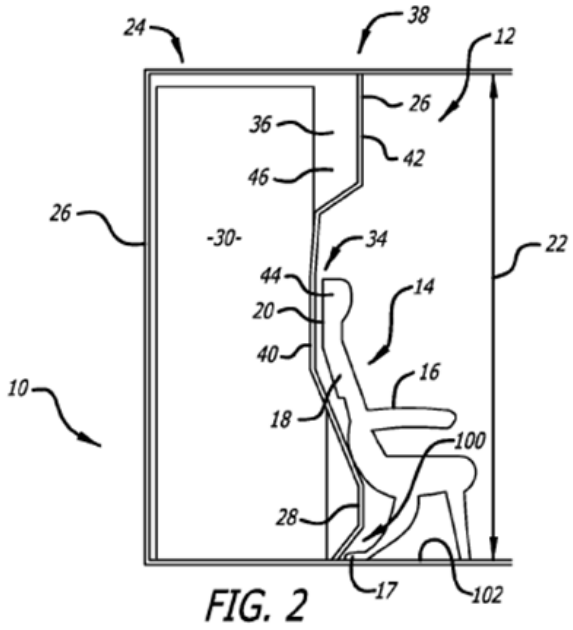
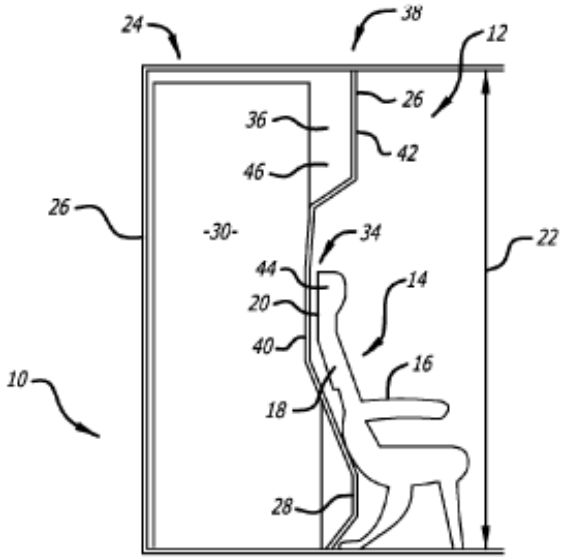
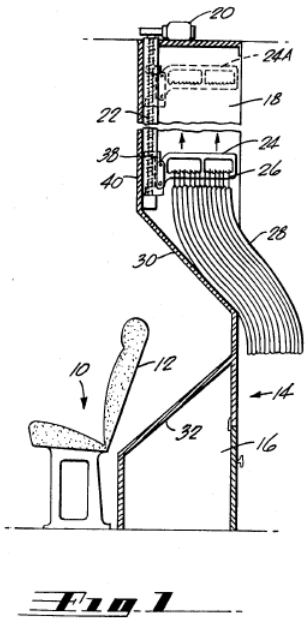


FIG. 2

Such a contoured forward wall was well known in the art long before the earliest claimed priority date, April 20, 2010. This is clear from Figure 1 of Ex. 1005 (Betts), which shows an airplane enclosure with a contoured forward wall from the early 1970s. The forward wall of Betts is almost identical to the forward wall shown in Figure 2 of the ’476 Patent. And an embodiment of the Betts enclosure flew on commercial DC-10 aircraft for decades before the earliest claimed priority date. Ex. 1004, ¶¶43, 46; Ex. 1020, at 143-163 (showing commercial embodiments of Betts). This is a fact that Patent Owner itself has admitted to the Federal Circuit. Ex. 1016, 26 (“Betts was patented in 1973. It was actually built and flown on DC-10 aircraft, for decades.”).

Ex. 1001, Figure 2	Ex. 1005 (Betts), Figure 1
 FIG. 2	 Fig. 1

C. The Earlier IPR and Underlying Litigation

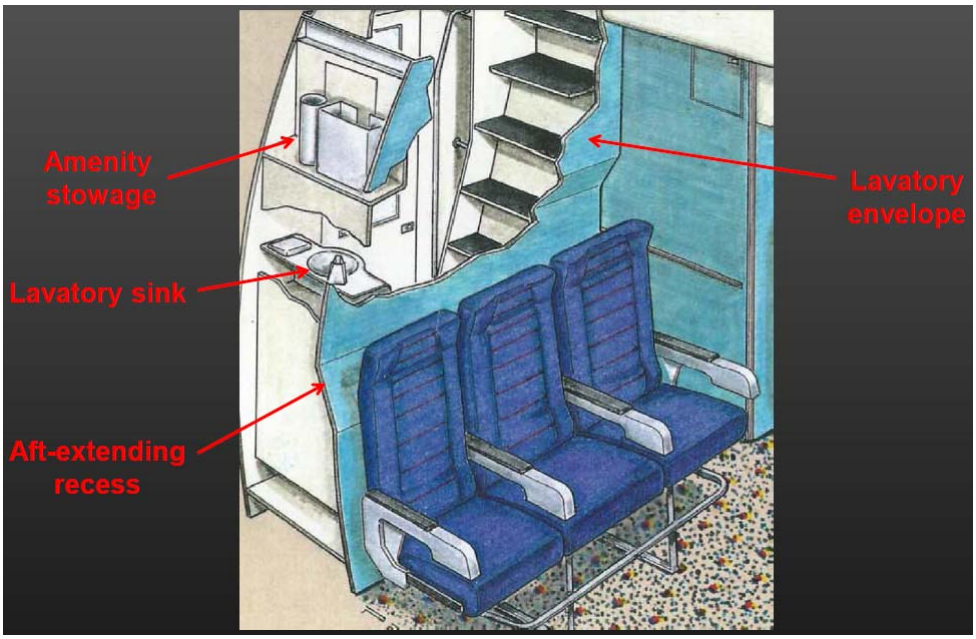
In an earlier proceeding addressing the claims of this patent's parent—the '838 Patent (Ex. 1017)—the Board invalidated most of those claims as obvious in view of Betts (Ex. 1005). In so doing, the Board specifically found that:

> ***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.***

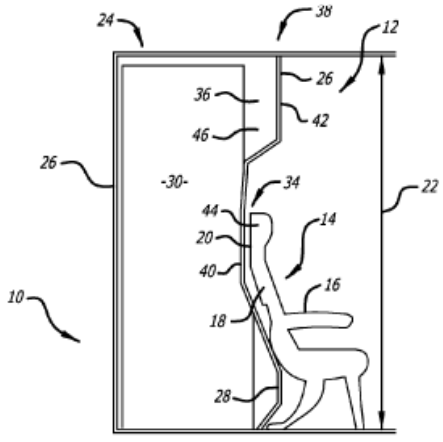
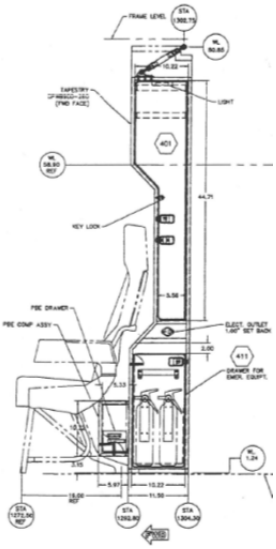
Ex. 1003 at 12 (emphasis added).

In addition to Betts, there are many other examples of contoured wall enclosures in the prior art. Indeed, one of Patent Owner's own engineers designed a prior art enclosure that was installed in Boeing 747 aircraft in the 1990s. Ex.

1006, 1007. An annotated image of this enclosure is shown below.



Further, before the application that led to the ’476 Patent was filed, Patent Owner was aware that Petitioner commercialized enclosures with recessed forward walls long before the earliest claimed priority date. *See* Ex. 1008.

Ex. 1001, Figure 2	Petitioner’s S4 Enclosure	Petitioner’s S4 Enclosure
 FIG. 2		

Indeed, when Petitioner identified this prior art to Patent Owner (Ex. 1008) Patent Owner withdrew its previous Motion for Preliminary Injunction and voluntarily dismissed its previous complaint asserting the ’838 Patent against Petitioner. *See* Exs. 1014 and 1015.

In spite of all this, Patent Owner continued filing applications and convinced an examiner to allow the ’476 Patent along with other continuations of the ’838 Patent. Several of these are now asserted against Petitioner. Each utility patent shares a common specification, and claims a contoured forward wall along with a collection of other features. Each of these other features are either admitted to be prior art in Figure 1 or are not described in the patents’ written description, which comprises just four columns, less than one column of which is the three-paragraph “Detailed Description.” Ex. 1001.

The prior art discloses or renders obvious every limitation in the challenged claims. Petitioner respectfully requests that this *inter partes* review proceeding be instituted.

III. Statement of Relief Requested

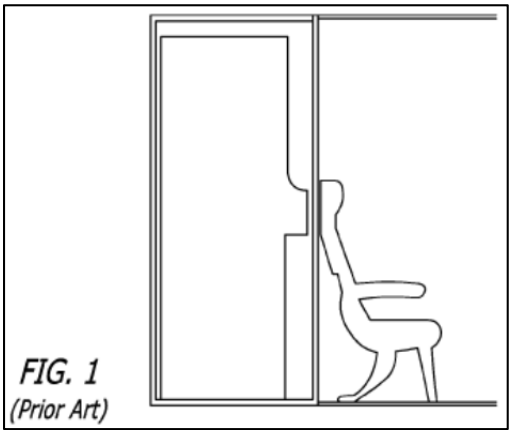
Pursuant to 35 U.S.C. § 311 and 37 C.F.R. § 42.104(b), this petition requests cancellation of claims 1-6 as rendered obvious under 35 U.S.C. § 103 by the following combinations:

- Admitted Prior Art ("APA") in Exhibit 1001 and U.S. Patent No. 3,738,497 to Betts et al. ("Betts") (Exhibit 1005), in view of the knowledge of a person of ordinary skill in the art.
- APA in Exhibit 1001 and the KLM Crew Rest documents (Exhibit 1009), in view of the knowledge of a person of ordinary skill in the art.

IV. Summary of the Prior Art

A. Admitted Prior Art (Exhibit 1001)

A flat wall lavatory and a passenger seat were both well known in the art before the earliest claimed priority date of the '476 Patent. Figure 1 of the '476 Patent shows a flat wall lavatory and passenger seat and states that these were "prior art." Ex. 1001, 4:6-8 (emphasis added) ("FIG. 1 is a schematic diagram of a **prior art** installation of a lavatory immediately aft of and adjacent to an aircraft passenger seat.").



Further, the '476 Patent includes additional admissions that such lavatories were known prior art. "Aircraft lavatories, closets and other full height enclosures commonly have forward walls that are flat in a vertical plane." Ex. 1001, 1:24-26. Many of the features found in the claims are anticipated or obvious in view of this admitted prior art. A summary of the admitted prior art shown in Figure 1 is in the graphic below. Ex. 1004, ¶86.

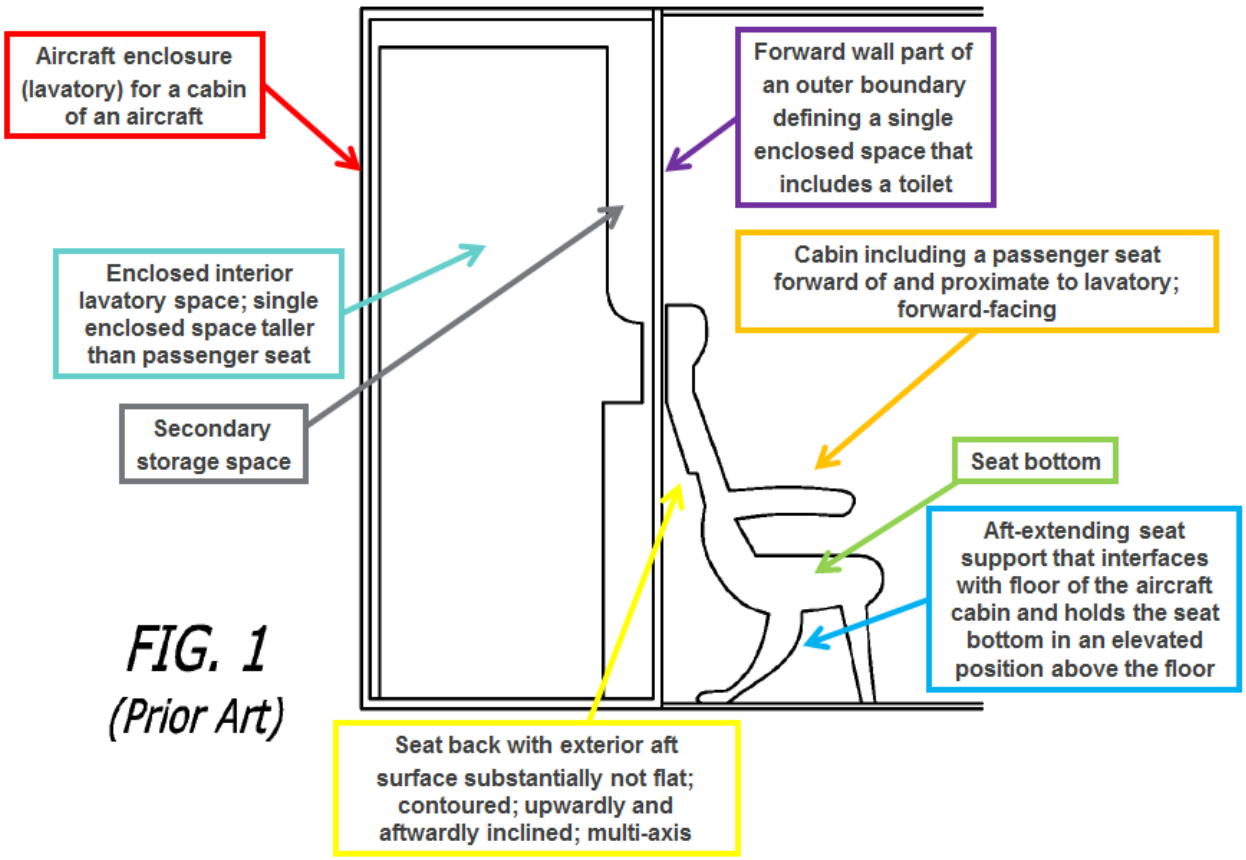


FIG. 1
(Prior Art)

The Board may rely on this admitted prior art. "Admissions in the specification regarding the prior art are binding on the patentee for purposes of a later inquiry into obviousness." *PharmaStem Therapeutics, Inc. v. ViaCell, Inc.*,

491 F.3d 1342, 1362 (Fed. Cir. 2007); *see also In re Nomiya*, 509 F.2d 566, 570-71 (CCPA 1975) ("We see no reason why appellants' representations in their application should not be accepted at face value as admissions that Figs. 1 and 2 may be considered 'prior art' for any purpose, including use as evidence of obviousness under § 103."); *Constant v. Advanced Micro–Devices, Inc*., 848 F.2d 1560, 1570 (Fed. Cir. 1988) ("A statement in a patent that something is in the prior art is binding on the applicant and patentee for determinations of anticipation and obviousness."); *I/P Engine, Inc. v. AOL, Inc*. 576 Fed.Appx. 982, 987 (Fed. Cir. 2014) ("Given that its own patents acknowledge that using the original search query for filtering was a 'conventional' technique, I/P Engine cannot now evade invalidity by arguing that integrating the query into the filtering process was a non-obvious departure from the prior art.").

The only aspect of the purported invention in the '476 Patent that is not admitted prior art is the contoured forward wall depicted in Figure 2.

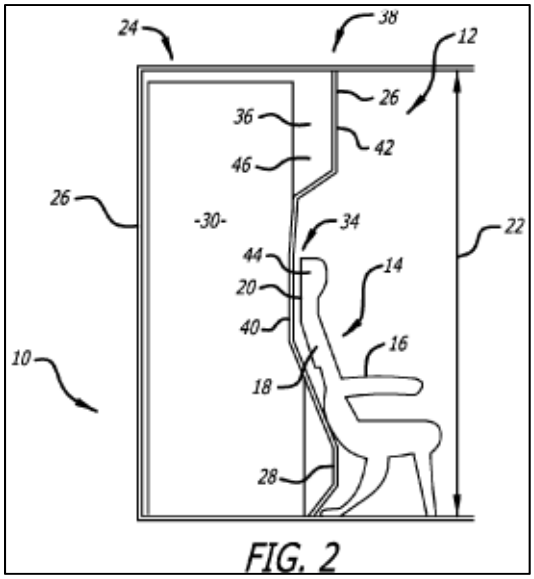


FIG. 2

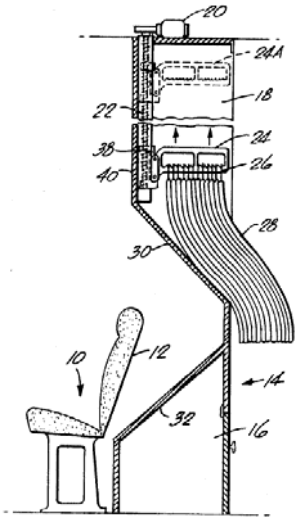
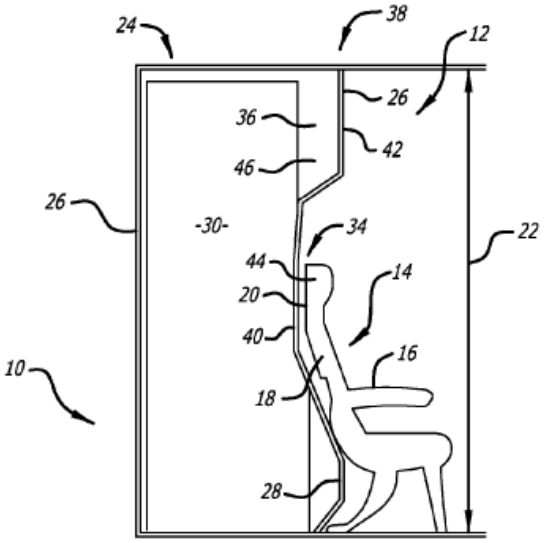
But enclosures with contoured forward walls were well-known in the art as described below.

B. Betts (Exhibit 1005)

Exhibit 1005, U.S. Patent No. 3,738,497 to Betts *et al*. ("Betts"), is assigned to McDonnell Douglas Corporation and issued on June 12, 1973, and is thus prior art under 35 U.S.C. § 102(b). Betts describes a coat closet with a recessed forward wall that "provide[s] more room for passengers in an aircraft or other vehicle." Ex. 1005, 1:5-7. The design shown in Betts was implemented and flown on commercial DC-10 aircraft well before the earliest claimed priority date. Ex. 1004, ¶¶43, 46.

Figure 1 of Betts is a side elevation that shows an assembly of an overhead coat closet for a cabin of an aircraft that is located immediately aft of and adjacent

to a passenger seat. The forward wall of Betts is very similar to that shown in Figure 2 of the ’476 Patent

Betts, Figure 1	Ex. 1001, Figure 2
 Fig. 1	 FIG. 2

The Betts passenger seat has an exterior aft surface that is substantially not flat in a vertical plane. *See* Ex. 1005, Fig. 1; 2:7-14. Betts explains that this contour is positioned “to provide a space for seatback 12 to be tilted rearwardly.” Ex. 1005, 2:19-24. One of ordinary skill in the art would understand that the coat closet includes walls forming a complete enclosure of the closet. Ex. 1004, ¶45.

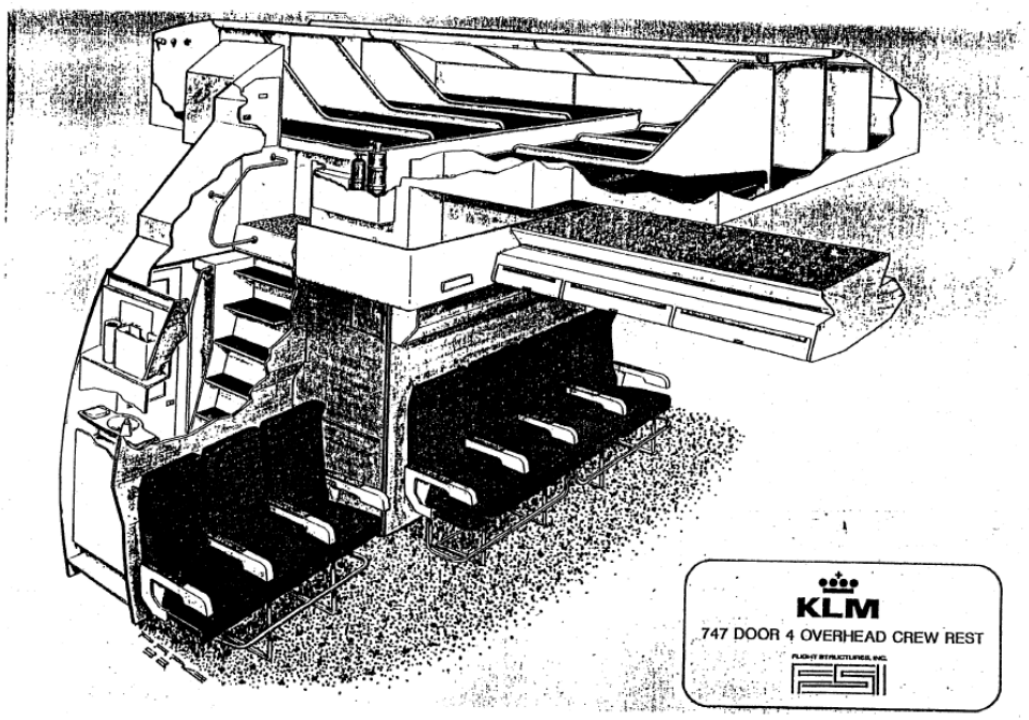
Betts states that the passenger seat is “of the type having a tiltable backrest 12 for the comfort of the occupant.” Ex. 1005, 2:8-9. Thus, as described and shown in Betts Figure 1, the passenger seat is contoured and reclineable and therefore not

flat in a vertical plane. The seat back shown in Betts closely conforms to the shape of the recess in the forward wall of the enclosure. Ex. 1004, ¶45.

C. The KLM Crew Rest Document (Exhibit 1009)

In 1991, Flight Structures, Inc. ("FSI")—a company B/E now owns—was awarded a contract to develop a crew rest for Royal Dutch Airlines, better known as KLM. Ex. 1007, ¶7. Specifically, FSI was awarded a contract to develop an overhead crew rest for KLM's 747-400 aircraft. FSI developed the KLM Crew Rest during 1991 and 1992. Ex. 1007, ¶7. The KLM Crew Rest was designed to include berths in the overhead space of KLM's 747-400 aircraft for crew members to rest during lengthy flights. Ex. 1007, ¶9.

To provide access to the overhead crew rest, FSI designed an entry on the right side of the aircraft. The entry was modeled on a lavatory envelope (i.e., the outer walls forming a lavatory enclosure) and was located at a typical location for a lavatory on a 747-400 aircraft. Ex. 1007, ¶10. The interior of the lavatory envelope was modified to include a staircase in place of a toilet, which allows the crew to access the overhead space. Ex. 1007, ¶10. A rendering of the prior art KLM Crew Rest is shown below.



The image of the KLM Crew Rest above was included in the file history of an issued patent. *See* Ex. 1009, at 70.

The Board may rely on the KLM Crew Rest document in that file history as prior art. Patent Owner submitted information regarding the KLM Crew Rest in an Information Disclosure Statement during pendency of the application that issued as U.S. Patent No. 6,520,451. *See* Ex. 1009, at 66-91. This Information Disclosure Statement was submitted on March 18, 1999, more than ten years before the earliest claimed priority date. *Id*. at 64. And U.S. Patent No. 6,520,451 issued on February 18, 2003, several years before the earliest claimed priority date. Ex. 1010.

Thus, these documents were made available to the public no later than the issue date of U.S. Patent No. 6,520,451, February 18, 2003, when its file history

was made available to the public. Ex. 1010; *See* 37 C.F.R. § 1.11(a) ("The specification, drawings, and all papers relating to the file of: A published application; a patent; or a statutory invention registration are open to inspection by the public, and copies may be obtained . . ."). These KLM-related documents are therefore printed publications that may be used in this proceeding.

The Board has held previously that a file history is available as prior art. *Duodecad It Servs. Luxembourg S.A.R.L.*, IPR2015-01036, 2016 WL 6946904 (Oct. 20, 2016) ("It is undisputed that Chen FH was fully available to anyone who ordered it. We find that one of ordinary skill, being aware of Chen, would consult its file history. We conclude, based on the record as fully developed, that Chen FH is available as prior art against the challenged claims."). This is fully consistent with the MPEP, which explains "[i]n the examination of an application, it is sometimes necessary to inspect the application papers of some previously abandoned application (provisional or nonprovisional) or granted patent." MPEP § 901.01(a). The MPEP goes on to provide Examiners with instructions for locating file wrappers for patented and abandoned applications. *Id*.

The Board's decision in *Duodecad* is consistent with Federal Circuit precedent, which holds that to qualify as a printed publication, a reference "must have been sufficiently accessible to the public interested in the art." *In re Cronyn*, 890 F.2d 1158, 1160 (Fed. Cir. 1989). A reference is sufficiently accessible if it

has been indexed or cataloged. *Blue Calypso, LLC v. Groupon, Inc*., 815 F.3d 1331, 1348 (Fed. Cir. 2016) ("we generally inquire whether the reference was sufficiently indexed or cataloged."). The Federal Circuit has found that an issued patent is "classified and indexed," and that this is sufficient to "provid[e] the roadmap that would have allowed one skilled in the art to locate the [] application." *Bruckelmyer v. Ground Heaters, Inc*., 445 F.3d 1374, 1378–79 (Fed. Cir. 2006); *see also Ultimax Cement Mfg. Corp. v. CTS Cement Mfg. Corp.*, 587 F.3d 1339, 1355-56 (Fed. Cir. 2009) ("Information disclosed in a patent, even a foreign one, is 'generally known to the public,' especially the relevant public . . . Indeed, one of the primary purposes of patent systems is to disclose inventions to the public."); *Guardian Media Technologies, Ltd. v. Amazon.com, Inc*., 2014 WL 12561616 *5 (C.D. Cal. Dec. 9, 2014) (finding a patent application file history as prior art as of the date the patent issued). Here, the KLM Crew Rest document was included in the publicly available file wrapper of an issued patent and thus is prior art.

Further, "[a]ccessibility goes to the issue of whether interested members of the relevant public could obtain the information if they wanted to." *Constant v. Advanced Micro–Devices, Inc*., 848 F.2d 1560, 1568 (Fed. Cir. 1988). The Federal Circuit has further explained that "a published article with an express citation to the potentially invalidating reference would [] provide the necessary guidance." *Blue Calypso*, 815 F.3d at 1350. This is also the case here, as the face of U.S.

Patent No. 6,520,451 identifies the KLM Crew Rest submission in a related technical area. Ex. 1010, 1:11-17 (emphasis added) ("This invention relates generally to resting and sleeping quarters for an aircraft crew . . . in ***a space-saving*** and weight-saving configuration ***occupying substantially otherwise unused space aboard an aircraft***.").

OTHER PUBLICATIONS

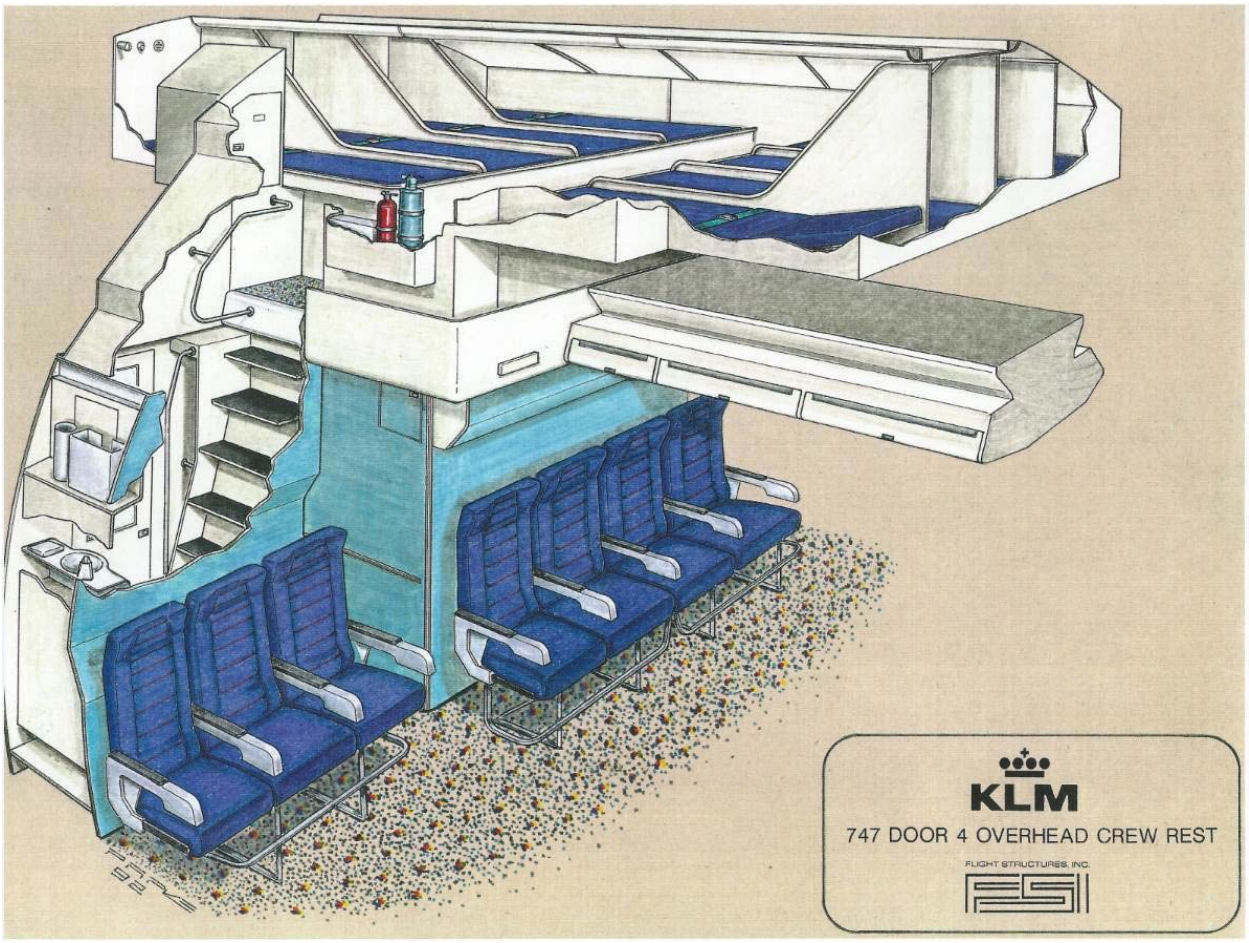
Boeing 747 Crew Rest Compartment and Proposals for Same; Correspondence From Flight Structures, Inc. to Air France Dated Aug. 3, 1994 (10 Pages), Nov. 15, 1994 (4 Pages) and Jul. 23, 1996 (11 Pages).

Ex. 1010.

Thus, this issued patent provides a "roadmap" for how to locate that reference, e.g., by accessing the publicly available file wrapper. And the Board may therefore rely on the printed publication describing the KLM Crew Rest.

While Petitioner relies on the black and white version of the KLM Crew Rest document shown in Exhibit 1009, a color version is shown below and attached as Exhibit 1006.[1]

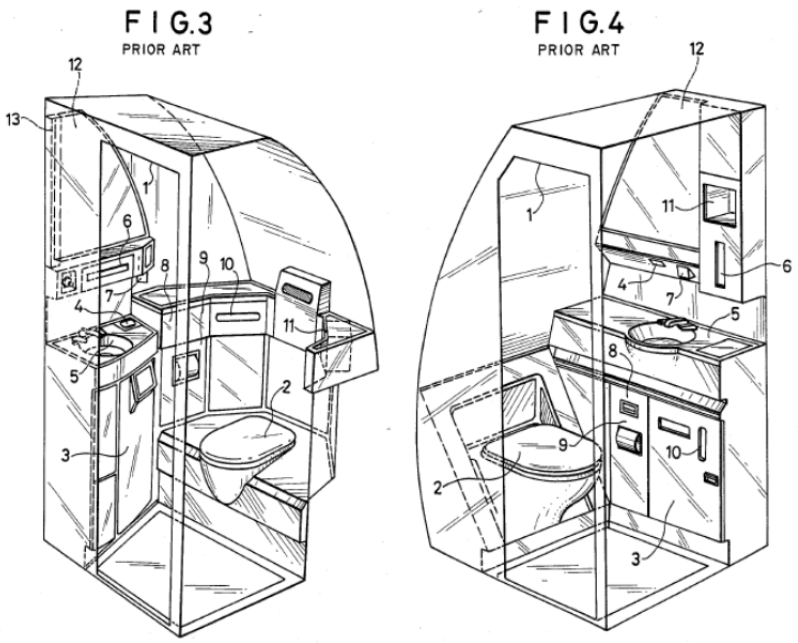
[1] *See* Ex. 1007, ¶17.



V. Motivation to Combine

A. Motivation to Combine APA and Betts

As discussed in Section IV.A above, the ’476 Patent admits that a flat wall lavatory was well known in the prior art before its earliest claimed priority date. This is further evidenced by Exhibit 1011, U.S. Patent No. 4,884,767 to Shibata (“Shibata”), which issued in 1989 and includes figures showing flat wall lavatories, which it admits were prior art as of its filing date, 1988.



It would have been obvious to one of ordinary skill in the art to modify a prior art flat wall lavatory to include a contoured forward wall like the wall shown in Betts. Ex. 1004, ¶¶56-64.

First, the Board has previously considered this very combination, and found that it would be obvious to make such a modification. Indeed, the Board stated:

> *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****.*

Ex. 1003 at 12 (emphasis added).

Second, as Mr. Anderson explains, a primary goal of the design of interiors of commercial aircraft is efficient use of valuable passenger cabin space. Ex. 1004, ¶57. Efficient use of space allows an aircraft to accommodate more passengers

and/or to accommodate passengers more comfortably, thereby increasing the utility of the aircraft. Ex. 1004, ¶57. As of April 2010, a primary motivation of one of ordinary skill in the art of aircraft interior design would have been to make efficient use of space in the aircraft interior cabin. Ex. 1004, ¶57.

The contoured forward facing wall shown in Betts advantageously provides additional space to locate a seat further aft in an aircraft. Ex. 1004, ¶58. Betts says that the coat hanger rack is elevated "to provide more passenger room." Ex. 1005, Abstract. Betts also describes that it "provide[s] more room for passengers in an aircraft or other vehicle." Ex. 1005, 1:5-7. As shown in the annotated figure below, the seat shown in Betts could not be located in the position in which it is shown if the forward wall were flat. Ex. 1004, ¶58; Ex. 1005. Thus, this contoured forward wall makes more efficient use of the valuable space in the aircraft passenger cabin than would be available with a flat forward wall. Ex. 1004, ¶58.

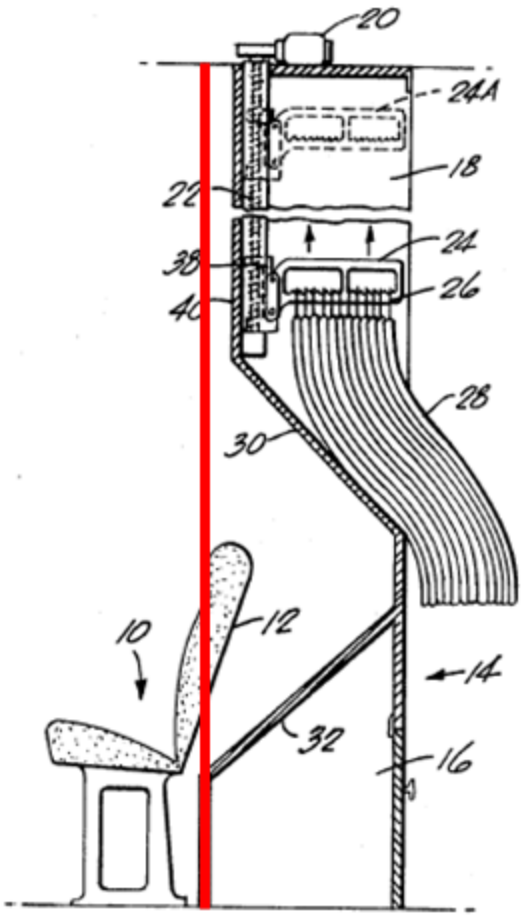


Fig. 1

One of ordinary skill in the art would understand that the forward wall of the enclosure shown in Betts would also be suitable for use with other aircraft enclosures, including lavatories. Ex. 1004, ¶59. In an aircraft, as a row of seats is moved further aft, the first thing that would make contact with a flat wall is the top of the back of the seat. Ex. 1004, ¶59. And so Betts includes a recess that receives that portion of the seat back. Applying the contoured wall of Betts to a lavatory

allows the row of seats placed immediately in front of that contoured wall to be placed further aft. Ex. 1004, ¶59.

The challenged patent does not distinguish between different types of enclosures, instead explaining that the recessed forward wall is applicable to all types of aircraft cabin enclosures, e.g., "[t]he 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." Ex. 1001, 1:20-23. As Mr. Anderson explains, multiple different types of prior art enclosures include one or more recesses to enable seats to be positioned further aft in a cabin. Ex. 1004, ¶59. Combining different types of enclosures, designs and shapes of recesses, and seat geometries would have been obvious to one of skill in the art and provides the predictable result of allowing a seat to be positioned further aft.

Patent Owner has argued in the Underlying Litigation that a person of ordinary skill would not have applied a recess to a lavatory at least because the industry had been reluctant to decrease the width out of concern that airlines and passengers would not accept narrower lavatory spaces. But even if Patent Owner were correct, whether a narrower lavatory would be acceptable to airlines and passengers has no bearing on the obviousness of applying a contoured wall to a lavatory. *Orthopedic Equip. Co. v. U.S.*, 702 F.2d 1005, 1013 (Fed. Cir. 1983) ("[T]he fact that the two disclosed apparatus would not be combined by

businessmen for economic reasons is not the same as saying that it could not be done because skilled persons in the art felt that there was some technological incompatibility that prevented their combination. Only the latter fact is telling on the issue of nonobviousness"). Customer acceptance of a narrow lavatory is a market force, not a technical challenge. *See Friskit, Inc. v. Real Networks, Inc.*, 306 Fed. App'x 610, 617-18 (Fed. Cir. 2009).

B. Motivation to Combine APA and the KLM Crew Rest Document

As discussed in Section IV.A above, a flat wall lavatory was well known in the prior art before the earliest claimed priority date of '476 Patent. It would have been obvious to one of ordinary skill in the art to modify a prior art lavatory to include a contoured forward wall like the wall shown in the KLM Crew Rest document. Ex. 1004, ¶¶65-72.

As noted above, and explained by Mr. Anderson, a primary goal of the design of interiors of commercial aircraft is efficient use of valuable passenger cabin space. Ex. 1004, ¶66. Efficient use of space allows an aircraft to accommodate more passengers and/or to accommodate passengers more comfortably, thereby increasing the utility of the aircraft. Ex. 1004, ¶66. As of April 2010, a primary motivation of one of ordinary skill in the art of aircraft interior design would have been to make efficient use of space in the aircraft interior cabin. Ex. 1004, ¶66. The contoured forward facing wall shown in the

KLM Crew Rest document advantageously provides additional space to locate a seat further aft in an aircraft. Ex. 1004, ¶66. The recess in the forward wall of the KLM Crew Rest was designed to allow the last row of seats in front of the contoured wall to sit further aft in the aircraft, yet still be able to recline. *Id.*; Ex. 1007, ¶13.

The seat in the KLM Crew Rest could not be located in the position in which it is shown if the forward wall was flat, because a flat wall would restrict the passenger's ability to recline the seat and this was not permitted by the customer requirements for the crew rest; rather, if the wall were flat, the seat would need to be moved forward. Ex. 1007, ¶12; Ex. 1004, ¶67. One of ordinary skill in the art would understand that the forward wall of the enclosure used by the KLM Crew Rest would be suitable for use in a lavatory, at least because the KLM Crew Rest itself is designed for occupancy by people and is based on a lavatory envelope, without a toilet, but including "a lavatory sink (and related plumbing), lighting, a mirror, soap dispenser, shaver outlet and amenity stowage." Ex. 1007, ¶16, Ex. 1004, ¶67.

Further one of ordinary skill in the art would recognize that in an aircraft, as a row of seats is moved further aft, the first thing that makes contact with a flat wall is the top of the back of the seat. Ex. 1004, ¶68. And so the KLM Crew Rest document includes a recessed forward wall that receives that portion of the seat

back. Ex. 1004, ¶68. Including the contoured wall of the KLM Crew Rest document allows the row of seats placed immediately in front of that contoured wall to be placed further aft. Ex. 1004, ¶68.

The challenged patent explains that the claimed concept is equally applicable to all types of aircraft cabin enclosures, e.g., "[t]he 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." Ex. 1001, 1:20-23. As Mr. Anderson explains, multiple different types of prior art enclosures include one or more recesses to enable seats to be positioned further aft in a cabin. Ex. 1004, ¶68. Combining different types of enclosures, designs and shapes of recesses, and seat geometries would have been obvious to one of skill in the art and provides the predictable result of allowing a seat to be positioned further aft.

Further, one of the designers of the KLM Crew Rest, Robert Papke, confirmed during direct testimony elicited by attorneys for Patent Owner that this contoured wall was really the logical way to allow seats to be placed further aft in an aircraft. Ex. 1004, ¶69; Papke Tr. at 190:1-11.

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Q. When you developed the vestibule with the indentation in it, was your design motivated by some prior system?

MR. REED: Object to form.

THE WITNESS: No. It was defined by the need or the requirements of the airline to provide their recline. There was only one really logical way to get there and still have a usable space for access into the crew rest and provide the closet space that they requested adjacent to the stair housing -- or staircase, itself.

VI. Factual Background

A. Declaration Evidence

This petition is supported by the declaration of Mr. Alan Anderson. Mr. Anderson worked at Boeing for 43 years. From 1999-2011 Mr. Anderson was the Director of Engineering, Payload Systems, where he oversaw all engineering for interiors for all models of Boeing aircraft. He was also Chief Engineer for Interiors for the development of the 787 Interior from 2002 until 2008. Mr. Anderson's declaration is attached as Exhibit 1004.

B. Person of Ordinary Skill in the Art

A person of ordinary skill in the art of the '476 Patent would have had 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. 1004, ¶¶27-29.

VII. Claim Construction

In *inter partes* review, claim terms are interpreted under a "broadest reasonable construction" standard. *See* 37 C.F.R. § 42.100(b). Under 37 C.F.R. § 1.42.104(b)(4), the "claim terms are presumed to take on their ordinary and customary meaning." *See* 77 Fed. Reg. 48699 (2012), Response to Comment 35. The interpretation of the claims presented either implicitly or explicitly herein should not be viewed as constituting, in whole or in part, Petitioner's own interpretation of such claims for the purposes of any litigation or proceeding where the claim construction standard differs from the broadest reasonable interpretation, but instead should be viewed as a broadest reasonable claim construction.

A. "forward wall being substantially not flat and configured to receive a portion of the exterior aft surface of said seat back when the seat back is in an unreclined seat position"

Claim 1 of the '476 Patent recites an enclosure unit with a "forward wall being substantially not flat and configured to receive a portion of the exterior aft surface of a seatback when the seat back is in an unreclined seat position." Claim 2 similarly recites an enclosure unit with a "forward wall being substantially not flat and configured to receive a portion of the exterior aft surface the passenger seat back in an unreclined seat position."

The specification describes a forward wall with a recess that permits a seat positioned in front of the forward wall to be positioned further aft than would be

possible if the wall were flat. *See* Ex. 1001, 4:46-52 ("the recess 34 and the lower recess 100 combine to permit the passenger seat 16 to be positioned farther aft in the cabin than would be possible if the lavatory enclosure 10 included a conventional flat and vertical forward wall without recesses like that shown in FIG. 1, or included a forward wall that did not include both recesses 34, 100."). The '476 Patent further describes that the recess causes the forward wall to be "substantially not flat in the vertical plane." Ex. 1001, 4:34-36 ("The forward wall portion has a shape that is substantially not flat in the vertical plane, and preferably is shaped to include a recess 34 . . ."). The broadest reasonable interpretation of a "forward wall being substantially not flat and configured to receive a portion of the exterior aft surface of a seatback when the seat back is in an unreclined seat position" as used by the '476 Patent is at least broad enough to include a forward wall having "a shape that is substantially not flat in the vertical plane where the forward-most portion of the wall extends forward farther than the aft-most portion of the seat in the upright position."

VIII. Full Statement of the Reasons for the Relief Requested

A. Claims 1-6 are Obvious Under 35 U.S.C. § 103 Over APA and Betts.

The combination of APA and Betts teaches or renders obvious to one of skill in the art each element of the challenged claims and each challenged claim as a

whole as described in this section. As discussed in Section V above, one of skill in the art would be motivated to modify the APA in view of the teachings of Betts.

> **[*'476 Claim 1 Preamble*] A method of retrofitting an aircraft to provide additional passenger seating in the cabin of said aircraft, the cabin including a passenger seat having a seat back with an exterior aft surface that is substantially not flat, a seat bottom, and a seat support that interfaces with the floor of the aircraft cabin and holds the seat bottom in an elevated position above the floor of the aircraft cabin, the method comprising the steps of:**

As explained above, a person of ordinary skill in the art would be motivated to maximize seating on an aircraft by providing additional passenger seating. Providing more room for passengers is the express goal of Betts, which provides a closet with a recessed wall to "provide more room for passengers in an aircraft." Ex. 1005, 1:5-7. Moreover, all of the elements of the preamble are admitted prior art as shown below in the annotated Figure 1 of the '476 Patent. Ex. 1004, ¶¶86-88, 95-97, 140-141.

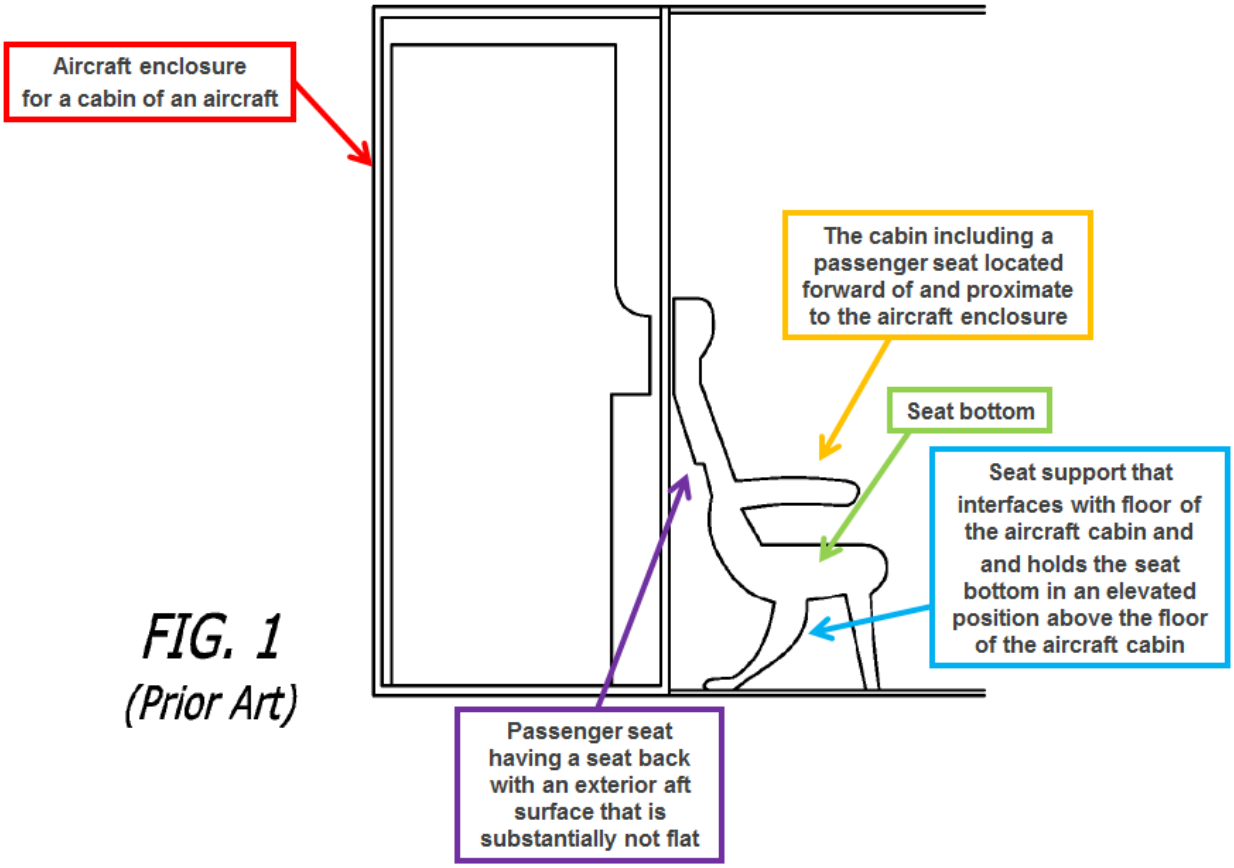


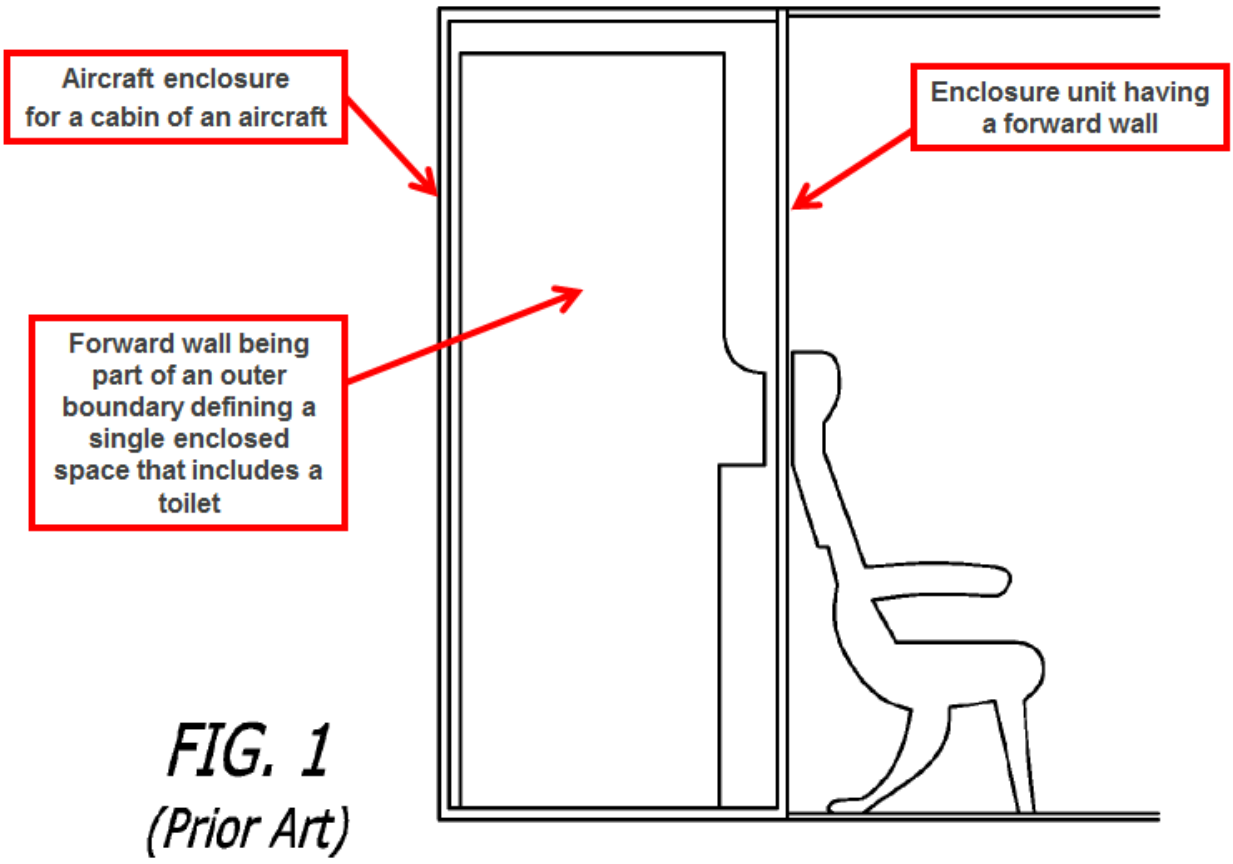
FIG. 1
(Prior Art)

Mr. Anderson further explains that it would have been obvious to install the described lavatory on an aircraft either as a retrofit for existing aircraft or as a line fit for new aircraft. Ex. 1004, ¶142.

> **[*'476 Claim 1 Element A*] installing an aircraft enclosure unit comprising a forward wall, said forward wall being part of an outer boundary defining a single enclosed space that includes a toilet,**

Element A is admitted prior. The '476 Patent describes Figure 1 as "a schematic diagram of a prior art installation of a lavatory immediately aft of and adjacent to an aircraft passenger seat." Ex. 1001, 4:6-8. A person of ordinary skill would understand that a prior art flat wall lavatory typically would include a toilet.

Ex. 1004, ¶98-99, 143. Prior art Figure 1 depicts element A of claim 1 as shown in the annotated figure below. Ex. 1004, ¶¶86-88.



[*'476 Claim 1 Element B*] said forward wall being substantially not flat and configured to receive a portion of the exterior aft surface of the seat back when the seat back is in an unreclined seat position,

As shown below, Betts includes a forward wall that is substantially not flat and that is configured to receive a portion of the exterior aft surface of a seat back when the seat back is in an unreclined seat position. Ex. 1005. A person of ordinary skill in the art would understand that Figure 1 of Betts depicts a seatback

located in the upright position, and that the forward wall of Betts receives a portion of the aft surface of the seat back when the seat back is in an unreclined position. Ex. 1004, ¶¶100-102, 144-145.

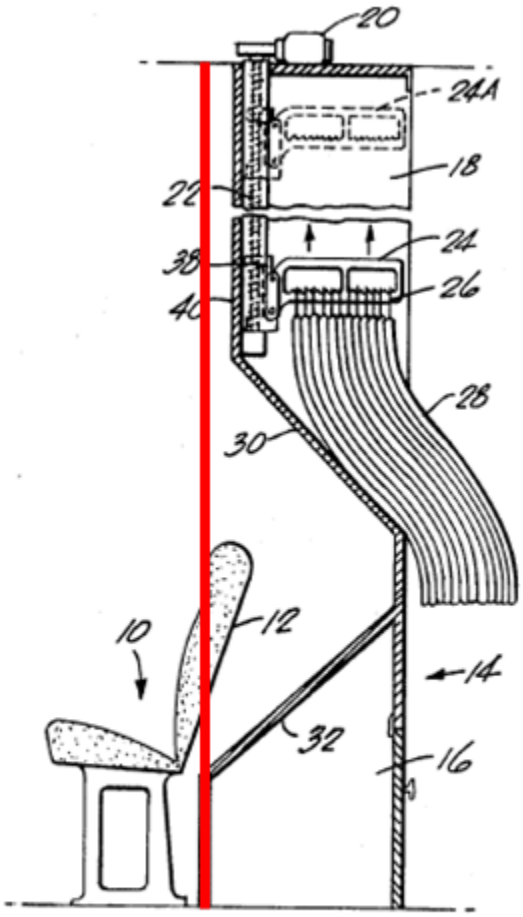
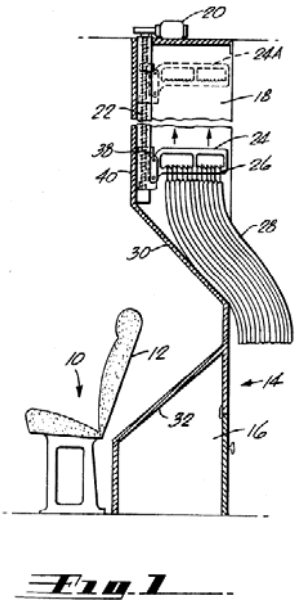
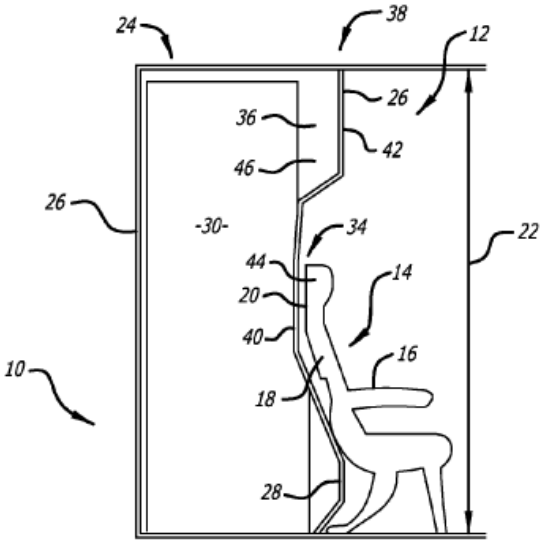


Fig. 1

It would have been obvious to a person of ordinary skill in the art to apply the recessed forward wall of Betts to a lavatory such as the admitted prior art shown in Figure 1 of the '476 Patent. Ex. 1004, ¶¶100-102, 144-145; Ex. 1003, at 12, 14-17.

[*'476 Claim 1 Element C*] wherein said forward wall is adapted to provide more space forward of the enclosure unit such that the seat support can be positioned further aft in the cabin than if the cabin included another enclosure unit having a substantially flat front wall located in substantially the same position in the cabin as the forward wall, and

Figure 1 of Betts is a side elevation that shows an assembly of an enclosure that is located immediately aft of and adjacent to a passenger seat and is nearly identical to Figure 2 of the '476 Patent.

Betts, Figure 1	Ex. 1001, Figure 2
 Fig. 1	 FIG. 2

Betts includes a contoured forward wall. Ex. 1005. A person of ordinary skill in the art would realize that this contoured forward wall provides additional space forward of the enclosure unit for the seat to be placed further aft in an aircraft cabin than would be possible if the forward wall was instead substantially flat. Ex. 1004,¶¶103-105, 146. Indeed Betts specifically states that it "provide[s]

more room for passengers in an aircraft." Ex. 1005, 1:5-7.

[*'476 Claim 1 Element D*] wherein said enclosed space is taller than the passenger seat; and

Prior art Figure 1 depicts element D of claim 1 as shown in the annotated figure below. A person of ordinary skill in the art would understand that the enclosed space of a lavatory would continue to be taller than a passenger seat after applying a contour to the forward wall. Ex. 1004, ¶¶106-108, 147.

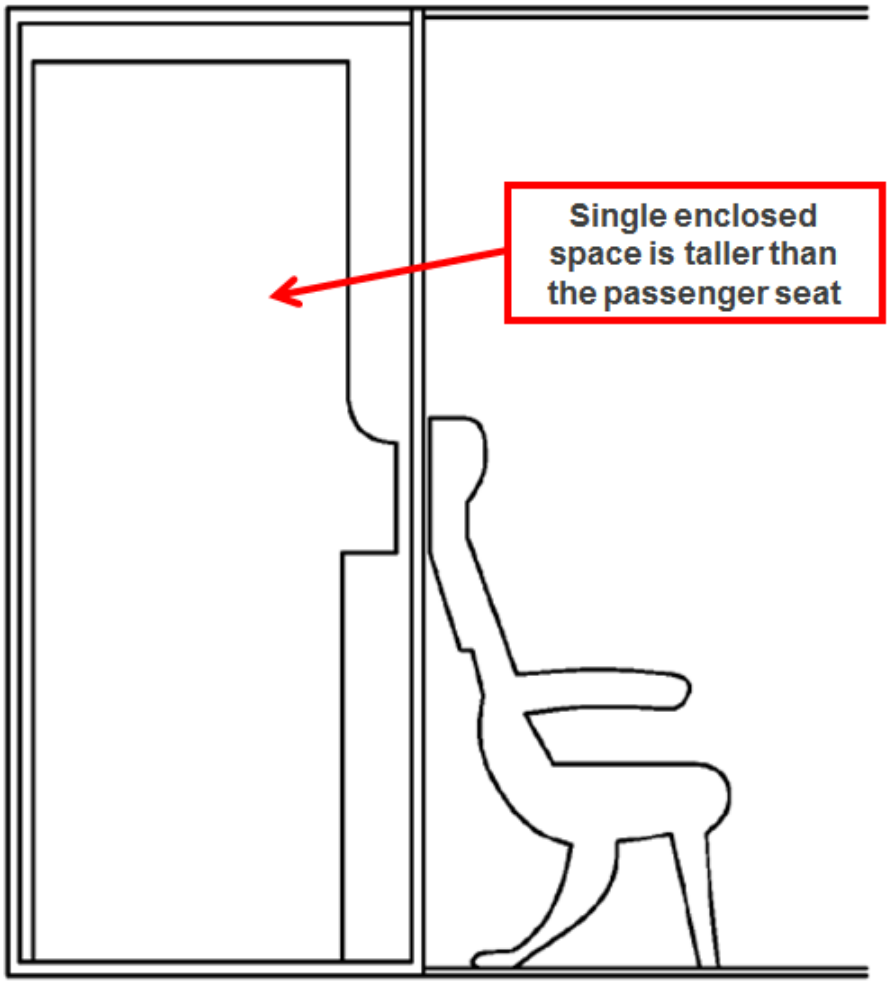
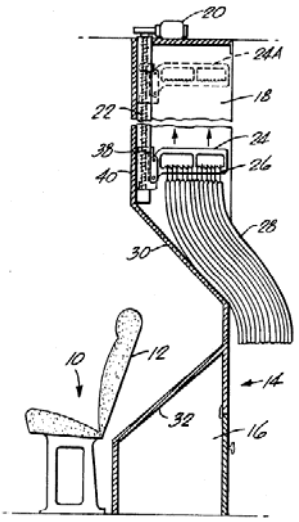
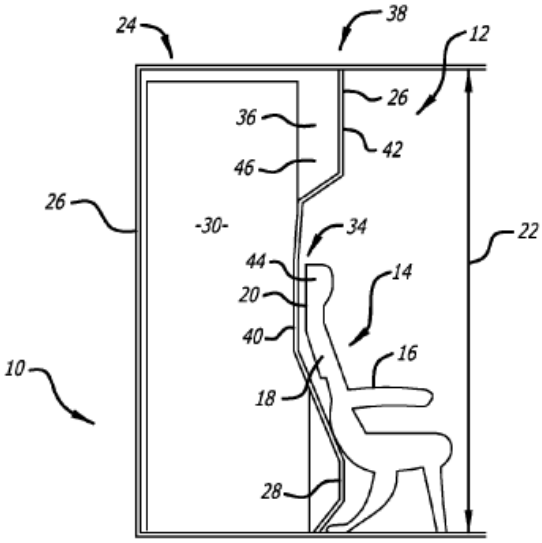


FIG. 1
(Prior Art)

> **[*'476 Claim 1 Element E*] positioning said seat support further aft in said aircraft cabin than said seat support could have been positioned prior to retrofitting said aircraft, whereby a portion of the exterior aft surface of said passenger seat back in the unreclined seat position is received by said forward wall.**

As is shown below, Betts includes a contoured forward wall that provides additional space forward of the enclosure unit for the seat to be placed further aft in an aircraft cabin than would be possible if the forward wall was instead substantially flat. Ex. 1004, ¶149. Indeed Betts specifically states that it "provide[s] more room for passengers in an aircraft." Ex. 1005, 1:5-7. A person of ordinary skill in the art would understand that retrofitting an aircraft with an enclosure having a contoured wall as disclosed by Betts would permit the seat support to be positioned further aft than the seat support could have been positioned before the retrofit. Ex. 1004, ¶¶148-150.

Betts Figure 1	Ex. 1001 Figure 2
	

The forward wall of Betts also is configured to receive a portion of the exterior aft surface of a seat back when the seat back is in an unreclined seat position. Ex. 1005. A person of ordinary skill in the art would understand that Figure 1 of Betts depicts a seatback located in the unreclined position, and that the forward wall of Betts receives a portion of the aft surface of the seat back when the seat back is in an unreclined position. Ex. 1004, ¶¶148-150.

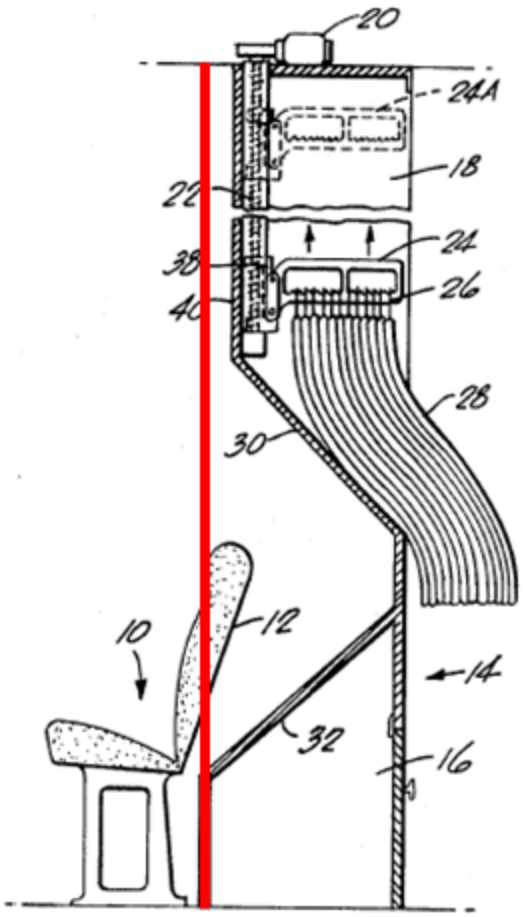


Fig. 1

It would have been obvious to a person of ordinary skill in the art to apply the forward wall of Betts to a lavatory such as the admitted prior art shown in Figure 1 of the ’476 Patent. Ex. 1004, ¶¶148-150

> **[*’476 Claim 2 Preamble*] A method of providing an aircraft with more passenger seats in the aircraft's cabin, the method comprising the steps of:**

As explained above, a person of ordinary skill in the art would be motivated to maximize seating on an aircraft by providing additional passenger seating.

Providing more room for passengers is the express goal of Betts, which provides a closet with a recessed wall to "provide more room for passengers in an aircraft." Ex. 1005, 1:5-7.

> **[*'476 Claim 2 Element A*] installing a combination of an enclosure unit and a passenger seat in the aircraft, said passenger seat having a seat back, a seat bottom, and a seat support that interfaces with the floor of the aircraft cabin and holds the seat bottom in an elevated position above the floor of the aircraft cabin, the combination comprising**

Element A is admitted prior art. The '476 Patent describes Figure 1 as "a schematic diagram of a prior art installation of a lavatory immediately aft of and adjacent to an aircraft passenger seat." Ex. 1001, 4:6-8. Prior art Figure 1 depicts element A of claim 2 as shown in the annotated figure below. Ex. 1004, ¶¶86-88, 95-99, 152.

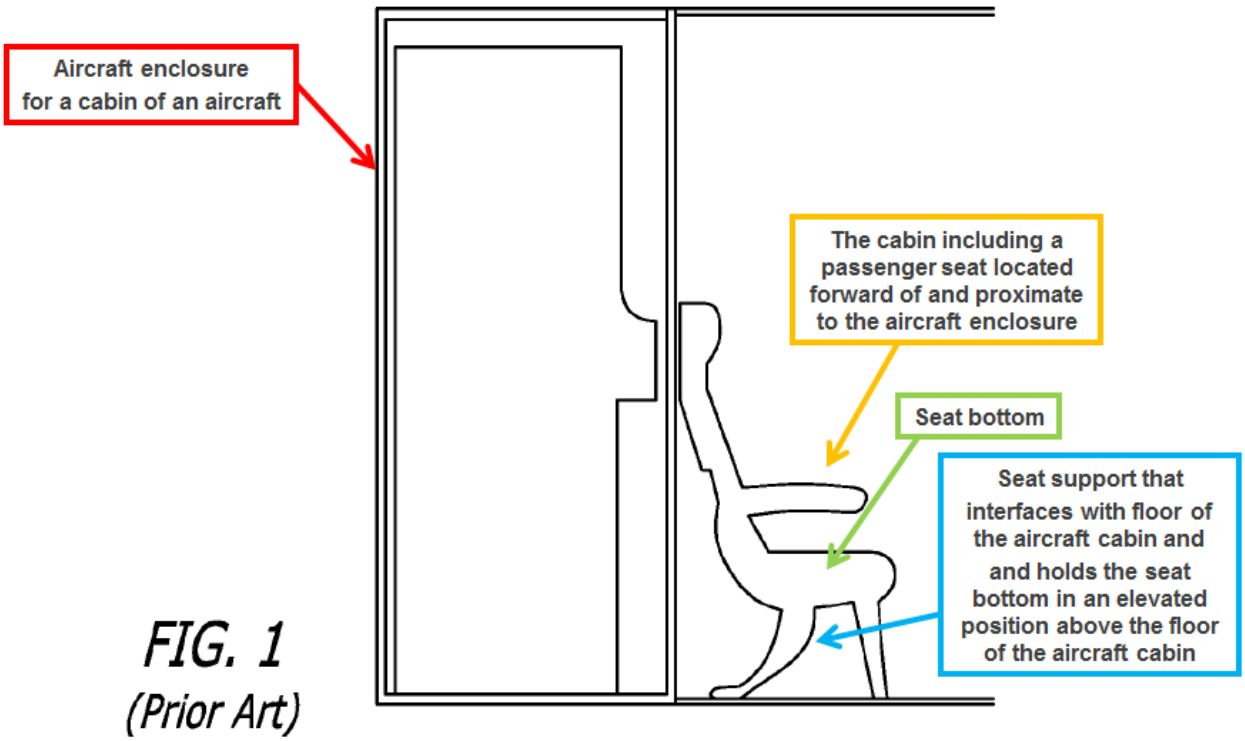


FIG. 1
(Prior Art)

[*'476 Claim 2 Element B*] the passenger seat being configured to be located forward of and proximate to the enclosure unit,

Element B is admitted prior art. Figure 1 of the '476 Patent depicts a passenger seat located forward of and proximate to the enclosure unit. Ex. 1001, 4:6-9 ("FIG. 1 is a schematic diagram of a prior art installation of a lavatory immediately aft of and adjacent to an aircraft passenger seat"). Betts also shows an enclosure unit and a passenger seat forward of and proximate to the enclosure unit. Ex. 1004, ¶153.

[*'476 Claim 2 Element C*] the enclosure unit being located aft of the passenger seat, the enclosure unit having a forward wall, said forward wall being part of an outer boundary defining a single enclosed space that includes a toilet,

Element C is admitted prior art. The '476 Patent describes Figure 1 as "a schematic diagram of a prior art installation of a lavatory immediately aft of and adjacent to an aircraft passenger seat." Ex. 1001, 4:6-8. A person of ordinary skill would understand that a prior art flat wall lavatory typically would include a toilet. Ex. 1004, ¶98-99, 143, 154. Prior art Figure 1 depicts element A of claim 1 as shown in the annotated figure below. Ex. 1004, ¶¶86-88.

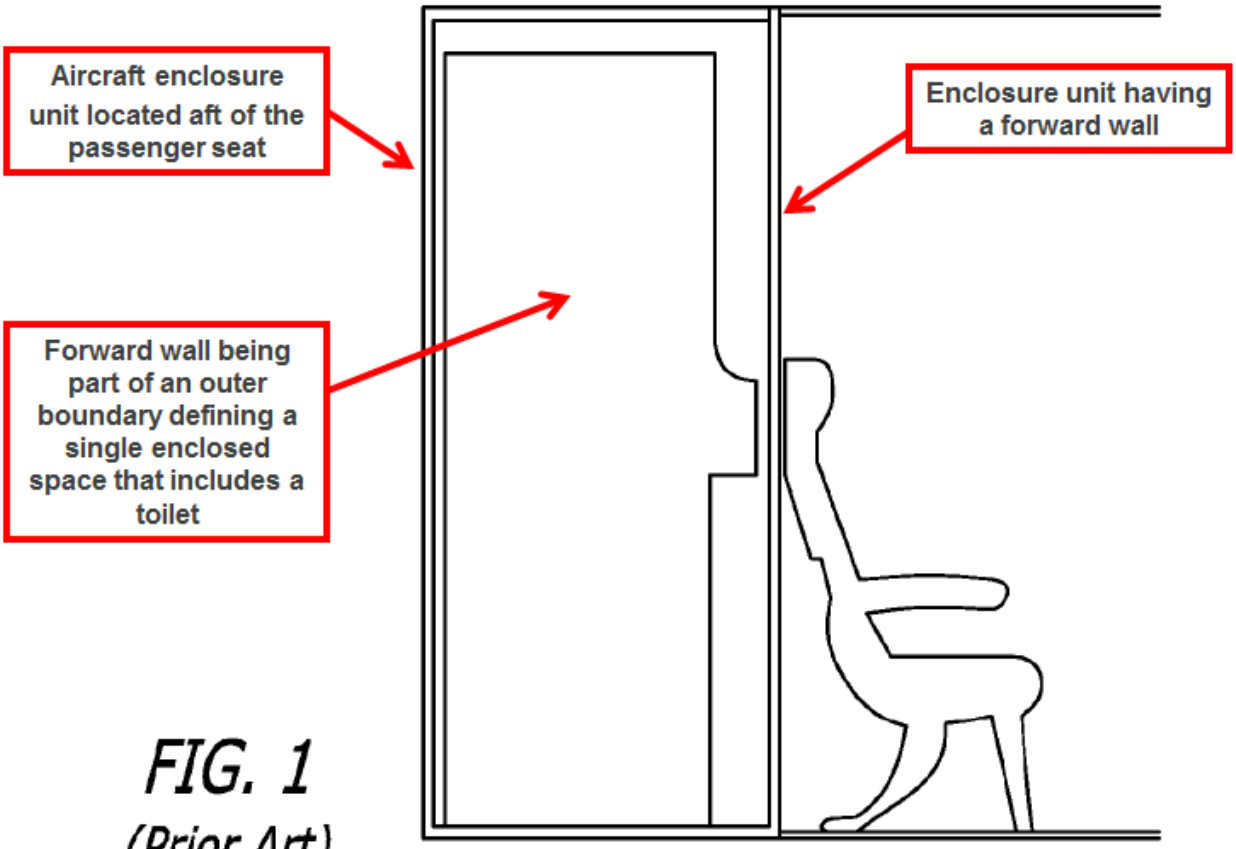


FIG. 1
(Prior Art)

[*'476 Claim 2 Element D*] said forward wall being substantially not flat and configured to receive a portion of the exterior aft surface of the passenger seat back in an unreclined seat position,

As shown below, Betts includes a forward wall that is substantially not flat and that is configured to receive a portion of the exterior aft surface of a seat back when the seat back is in an unreclined seat position. Ex. 1005. A person of ordinary skill in the art would understand that Figure 1 of Betts depicts a seatback located in the upright position, and that the forward wall of Betts receives a portion of the aft surface of the seat back when the seat back is in an unreclined position.

Ex. 1004, ¶¶100-102, 144-145, 155.

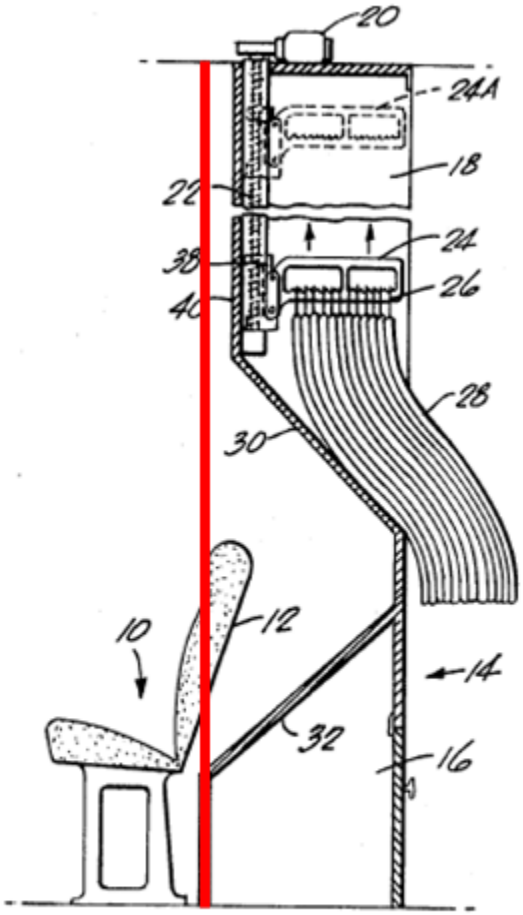
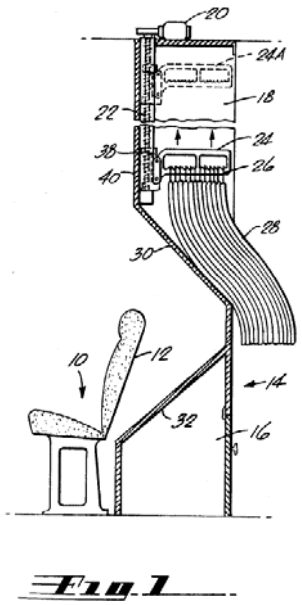
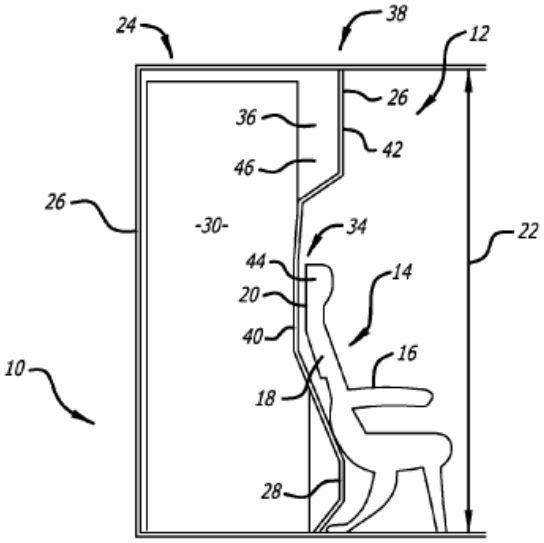


Fig. 1

It would have been obvious to a person of ordinary skill in the art to apply the forward wall of Betts to a lavatory such as the admitted prior art shown in Figure 1 of the '476 Patent. Ex. 1004, ¶¶100-102, 144-145, 155.

> **[*'476 Claim 2 Element E*] wherein said forward wall is adapted to provide more space forward of the enclosure unit such that the seat support can be positioned further aft in the cabin than if the cabin included another enclosure unit having a front wall that is substantially flat and is located in substantially the same position in the cabin as the forward wall,**

Figure 1 of Betts is a side elevation that shows an assembly of an enclosure that is located immediately aft of and adjacent to a passenger seat and is nearly identical to Figure 2 of the ’476 Patent.

Betts, Figure 1	Ex. 1001, Figure 2
	

As is shown above, Betts includes a contoured forward wall. Ex. 1005. A person of ordinary skill in the art would realize that this contoured forward wall provides additional space forward of the enclosure unit for the seat to be placed further aft in an aircraft cabin than would be possible if the forward wall was instead substantially flat. Ex. 1004, ¶¶103-105, 146, 156. Indeed, Betts specifically states that it “provide[s] more room for passengers in an aircraft.” Ex. 1005, 1:5-7.

[*’476 Claim 2 Element F*] wherein said enclosed space is taller than the passenger seat,

Element F is admitted prior art. Figure 1 of the ’476 Patent depicts element F

as shown in the annotated figure below. A person of ordinary skill in the art would understand that the enclosed space of a lavatory would continue to be taller than a passenger seat after applying a contour to the forward wall. Ex. 1004, ¶¶106-108, 147, 157.

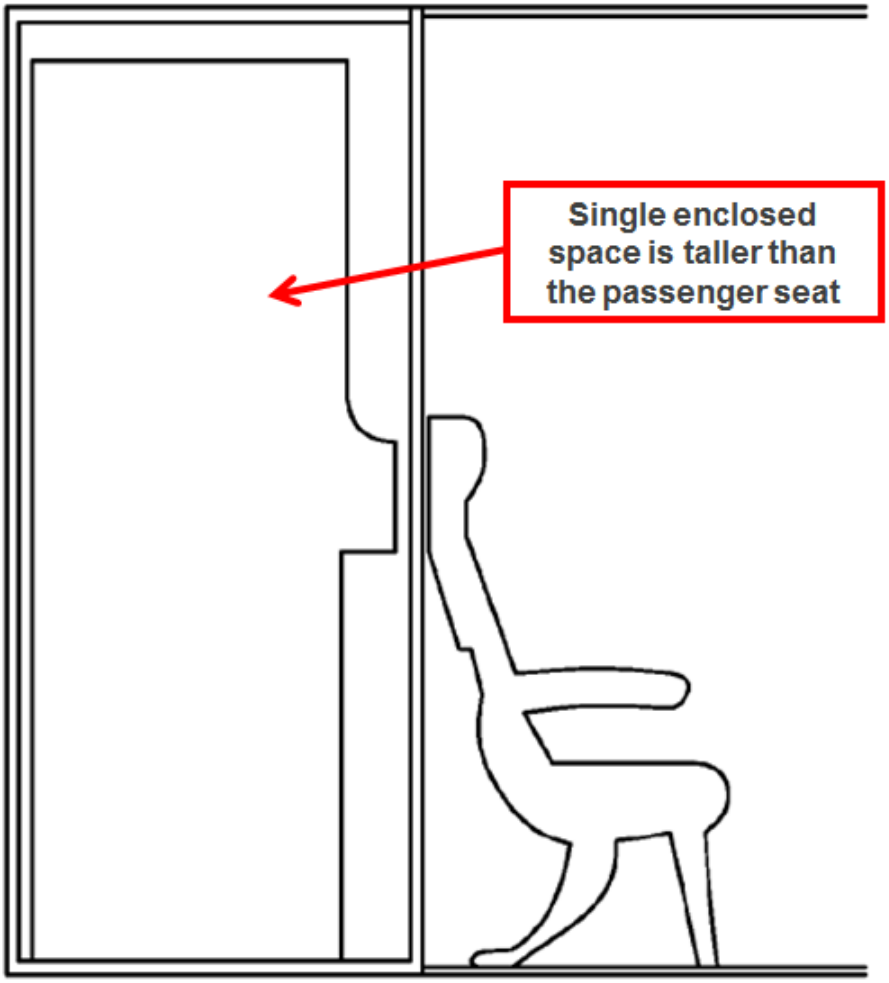
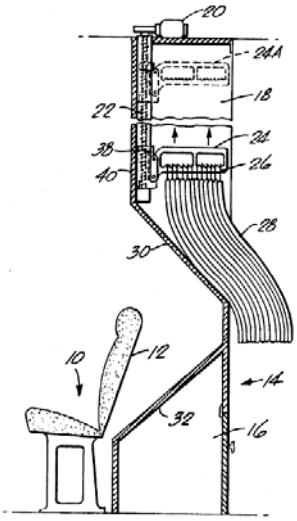
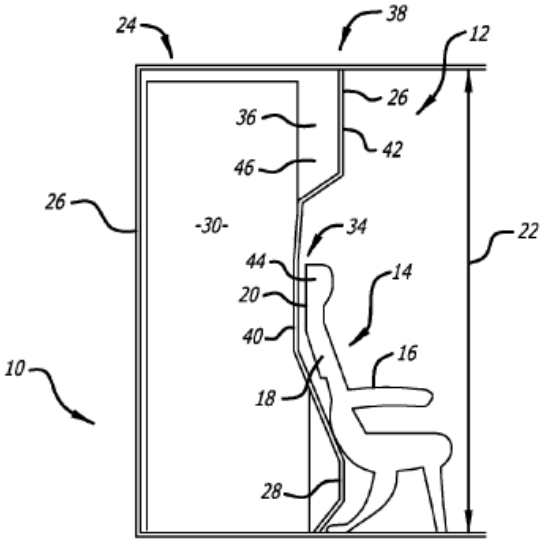


FIG. 1
(Prior Art)

[*'476 Claim 2 Element G*] whereby said seat support is installed further aft in said cabin than would be possible if the substantially flat front wall of the other enclosure unit was located in substantially the same position in the aircraft cabin as the forward wall, and

As is shown below, Betts includes a contoured forward wall. Ex. 1005. A person of ordinary skill in the art would realize that this contoured forward wall provides additional space forward of the enclosure unit for the seat to be placed further aft in an aircraft cabin than would be possible if the forward wall was instead substantially flat and located in substantially the same position. Ex. 1004, 148-150, 158. Indeed Betts specifically states that it "provide[s] more room for passengers in an aircraft." Ex. 1005, 1:5-7.

Betts Figure 1	Ex. 1001 Figure 2
	

[*'476 Claim 2 Element H*] whereby a portion of the exterior aft surface of said passenger seat back in the unreclined seat position is received by said forward wall.

The forward wall of Betts is configured to receive a portion of the exterior aft surface of a seat back when the seat back is in an unreclined seat position. Ex. 1005. A person of ordinary skill in the art would understand that Figure 1 of Betts depicts a seatback located in the upright position, and that the forward wall of Betts receives a portion of the aft surface of the seat back when the seat back is in an unreclined position. Ex. 1004, ¶¶148-150, 159.

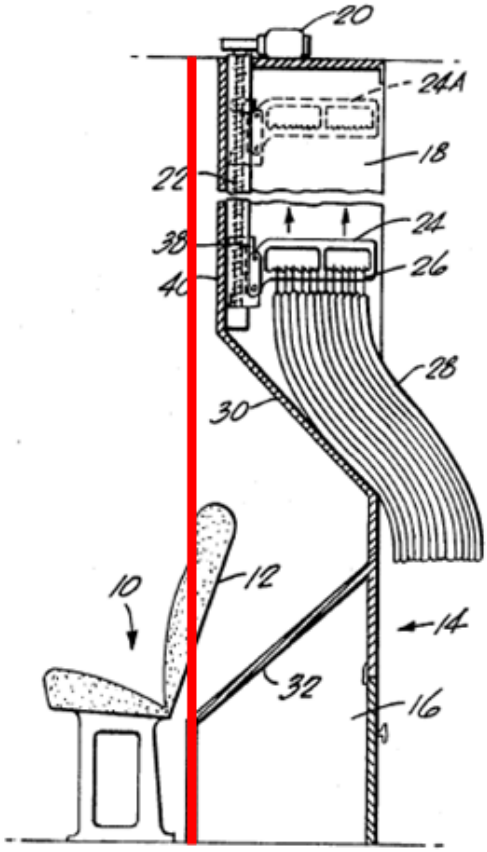


Fig. 1

It would have been obvious to a person of ordinary skill in the art to apply the forward wall of Betts to a lavatory such as the admitted prior art shown in Figure 1 of the '476 Patent. Ex. 1004, ¶¶148-150, 159.

> **[*'476 Claim 3*] The method of claim 1, wherein said exterior aft surface of the passenger seat back has a contoured shape, and wherein said forward wall is shaped to substantially conform to the contoured shape of the exterior aft surface of the passenger seat back when the exterior aft surface of said passenger seat back in the unreclined position is received by said forward wall.**

Mr. Anderson explains that one of ordinary skill in the art would understand Betts to show an example of a recess in which the shape of the recess conforms to the shape of the passenger seat. Ex. 1004, ¶¶160-164.

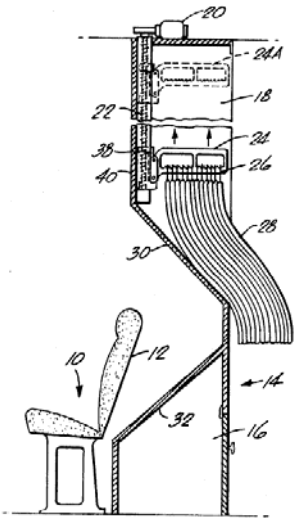


Fig. 1

In the case of Betts, the seat is provided with the ability to recline, so the recess is shaped to conform to the shape of the seatback in the reclined position. Ex. 1004, ¶¶160-164. If recline were not required, Mr. Anderson explains that a

person of ordinary skill in the art would have been motivated to conform the shape of the recess to the shape of the passenger seat in the unreclined position to maximize use of space. Ex. 1004, ¶¶163-164. Mr. Anderson explains that providing a forward wall that is shaped to substantially conform to the shape of a seat back when the seat is in the unreclined position would have been obvious to a person of ordinary skill in the art. Ex. 1004, ¶¶160-165.

> **[*'476 Claim 4*] The method of claim 2, wherein said exterior aft surface of the passenger seat back has a contoured shape, and wherein said forward wall is shaped to substantially conform to the contoured shape of the exterior aft surface of the passenger seat back when the exterior aft surface of said passenger seat back in the unreclined position is received by said forward wall.**

Mr. Anderson explains that one of ordinary skill in the art would understand Betts to show an example of a recess in which the shape of the recess conforms to the shape of the passenger seat. Ex. 1004, ¶¶¶¶160-164, 167.

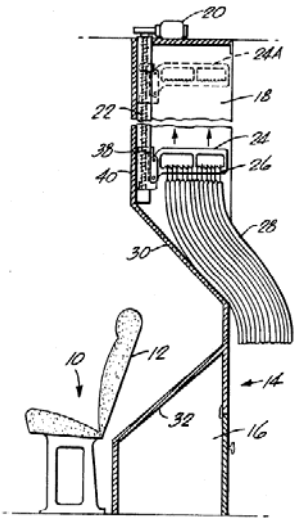


Fig. 1

In the case of Betts, the seat is provided with the ability to recline, so the recess is shaped to conform to the shape of the seatback in the reclined position. Ex. 1004, ¶¶160-164, 167. If recline were not required, Mr. Anderson explains that a person of ordinary skill in the art would have been motivated to conform the shape of the recess to the shape of the passenger seat in the unreclined position to maximize use of space. Ex. 1004, ¶¶163-164, 167. Mr. Anderson explains that providing a forward wall that is shaped to substantially conform to the shape of a seat back when the seat is in the unreclined position would have been obvious to a person of ordinary skill in the art. Ex. 1004, ¶¶160-165, 167.

> **[*'476 Claim 5*] The method of claim 3, wherein said contoured shape includes a first section extending along a first axis and a second section extending along a second axis, said first section adapted to support a passenger's head and a second adapted to support a passenger's back, wherein said first axis is not parallel with said second axis.**

Figure 1 of the '476 Patent shows a passenger seat with a contoured shape that includes a first section extending along a first axis and a second section extending along a second axis. The first section is adapted to support a passengers head and the second section is adapted to support a passengers back, and the two axes are not parallel. The '476 Patent thus admits that the claimed seat shape is in the prior art. Ex. 1004, ¶¶86-88. Mr. Anderson explains that it would have been obvious to use the admitted prior art seat shape with a contoured forward wall as taught by Betts. Ex. 1004, ¶¶166-168.

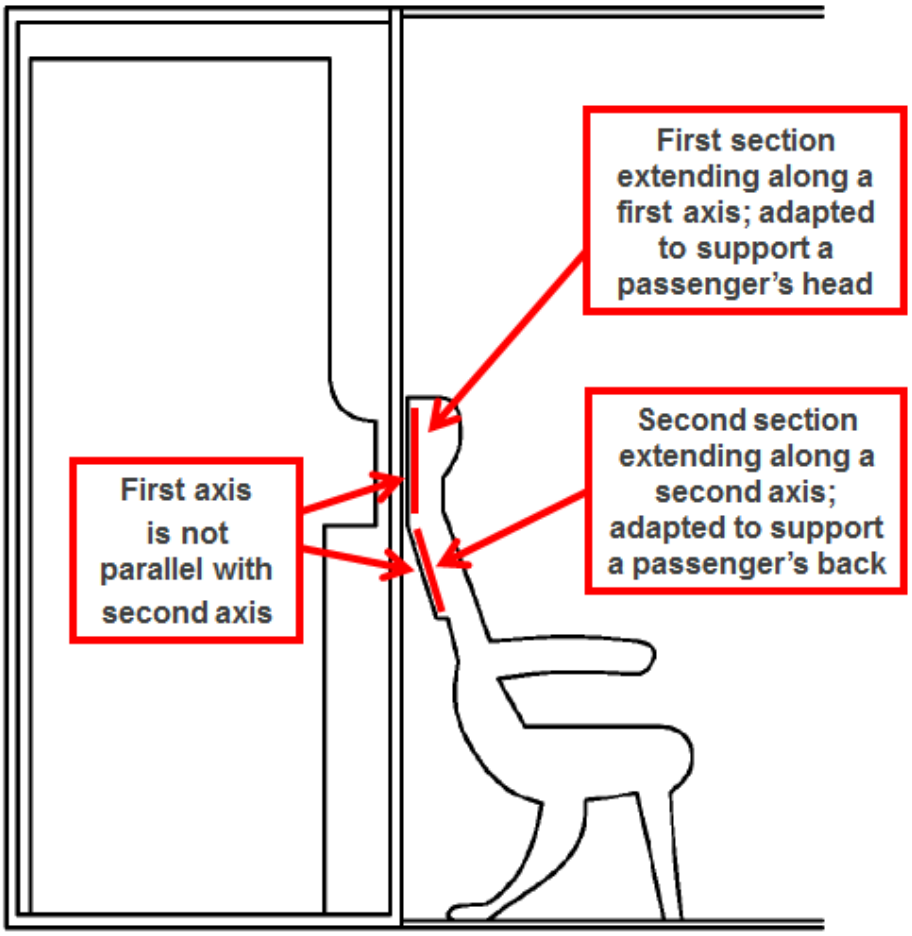


FIG. 1
(Prior Art)

[*'476 Claim 6*] The method of claim 4, wherein said contoured shape includes a first section extending along a first axis and a second section extending along a second axis, said first section adapted to support a passenger's head and a second adapted to support a passenger's back, wherein said first axis is not parallel with said second axis.

Figure 1 of the '476 Patent shows a passenger seat with a contoured shape that includes a first section extending along a first axis and a second section extending along a second axis. The first section is adapted to support a passengers head and the second section is adapted to support a passengers back, and the two

axes are not parallel. The '476 Patent thus admits that the claimed seat shape is in the prior art. Ex. 1004, ¶¶86-88. Mr. Anderson explains that it would have been obvious to use the admitted prior art seat shape with a contoured forward wall as taught by Betts. Ex. 1004, ¶¶166-168.

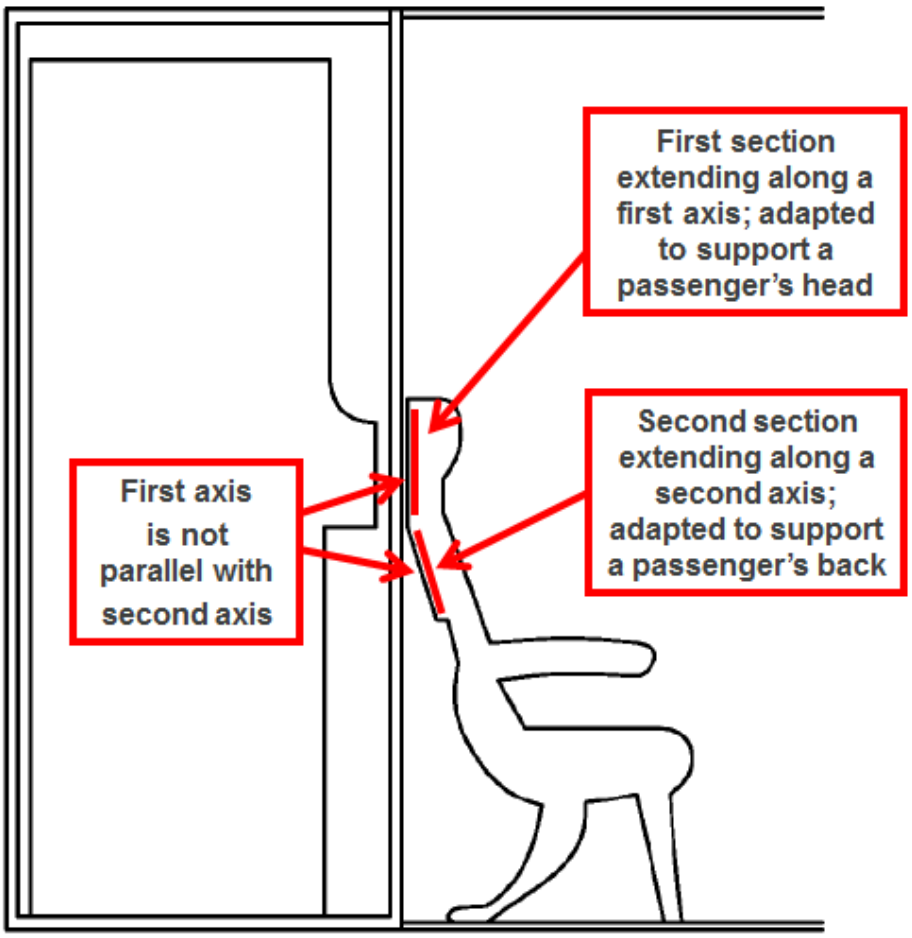


FIG. 1
(Prior Art)

B. Claims 1-6 are Obvious Under 35 U.S.C. § 103 over APA and the KLM Crew Rest Document.

The combination of APA and the KLM Crew Rest document teaches or renders obvious to one of skill in the art each element of the challenged claims and each challenged claim as a whole as described in this section. As discussed in

Section V above, one of skill in the art would be motivated to modify the APA in view of the teachings of the KLM Crew Rest document.

> **[*'476 Claim 1 Preamble*] A method of retrofitting an aircraft to provide additional passenger seating in the cabin of said aircraft, the cabin including a passenger seat having a seat back with an exterior aft surface that is substantially not flat, a seat bottom, and a seat support that interfaces with the floor of the aircraft cabin and holds the seat bottom in an elevated position above the floor of the aircraft cabin, the method comprising the steps of:**

As explained above, a person of ordinary skill in the art would be motivated to maximize seating on an aircraft by providing additional passenger seating. Moreover, all of the elements of the preamble are admitted prior art as shown below in the annotated Figure 1 of the '476 Patent. Ex. 1004, ¶¶86-88, 95-97, 140-141.

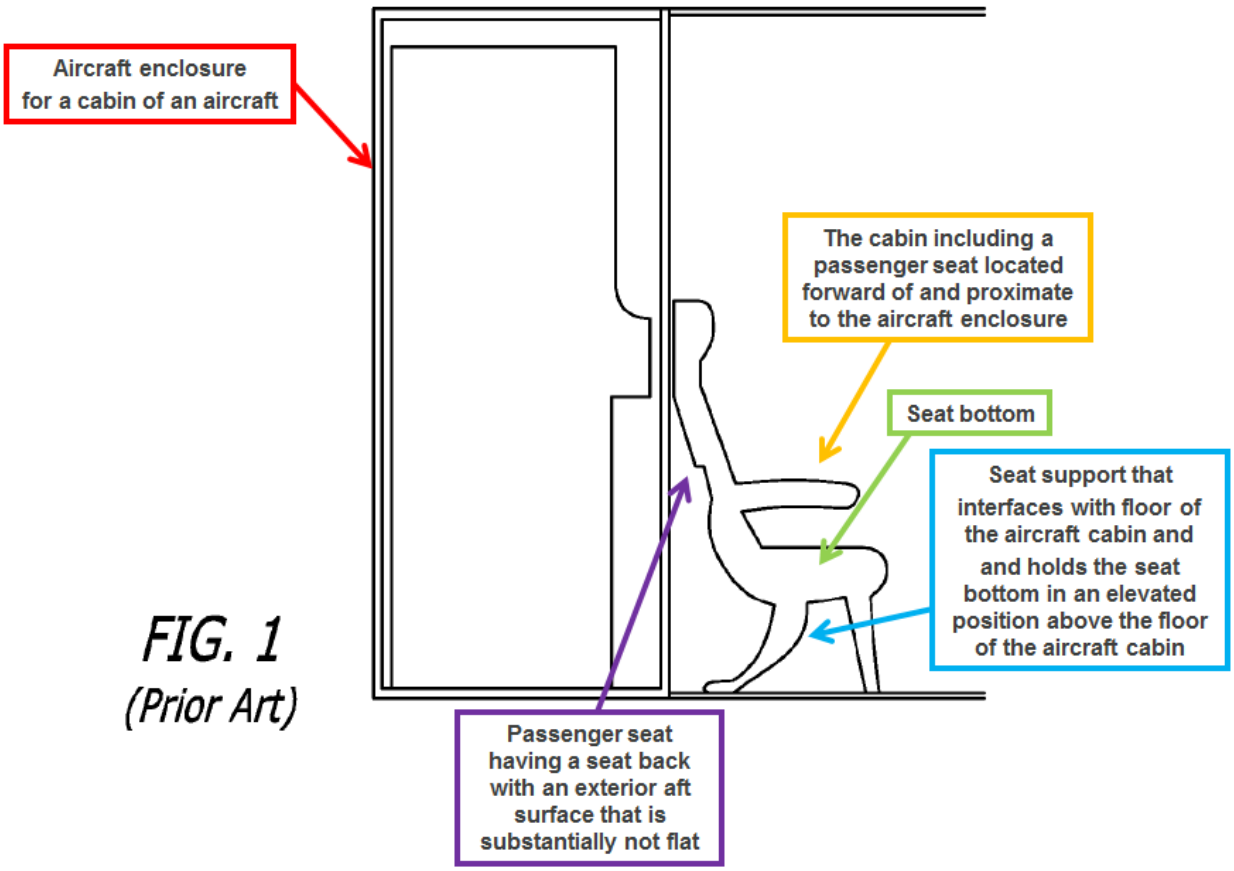


FIG. 1
(Prior Art)

Mr. Anderson further explains that it would have been obvious to install the described lavatory on an aircraft either as a retrofit for existing aircraft or as a line fit for new aircraft. Ex. 1004, ¶142.

> **[*'476 Claim 1 Element A*] installing an aircraft enclosure unit comprising a forward wall, said forward wall being part of an outer boundary defining a single enclosed space that includes a toilet,**

Element A is admitted prior. The '476 Patent describes Figure 1 as "a schematic diagram of a prior art installation of a lavatory immediately aft of and adjacent to an aircraft passenger seat." Ex. 1001, 4:6-8. Prior art Figure 1 depicts element A of claim 1 as shown in the annotated figure below. Ex. 1004, ¶¶86-88.

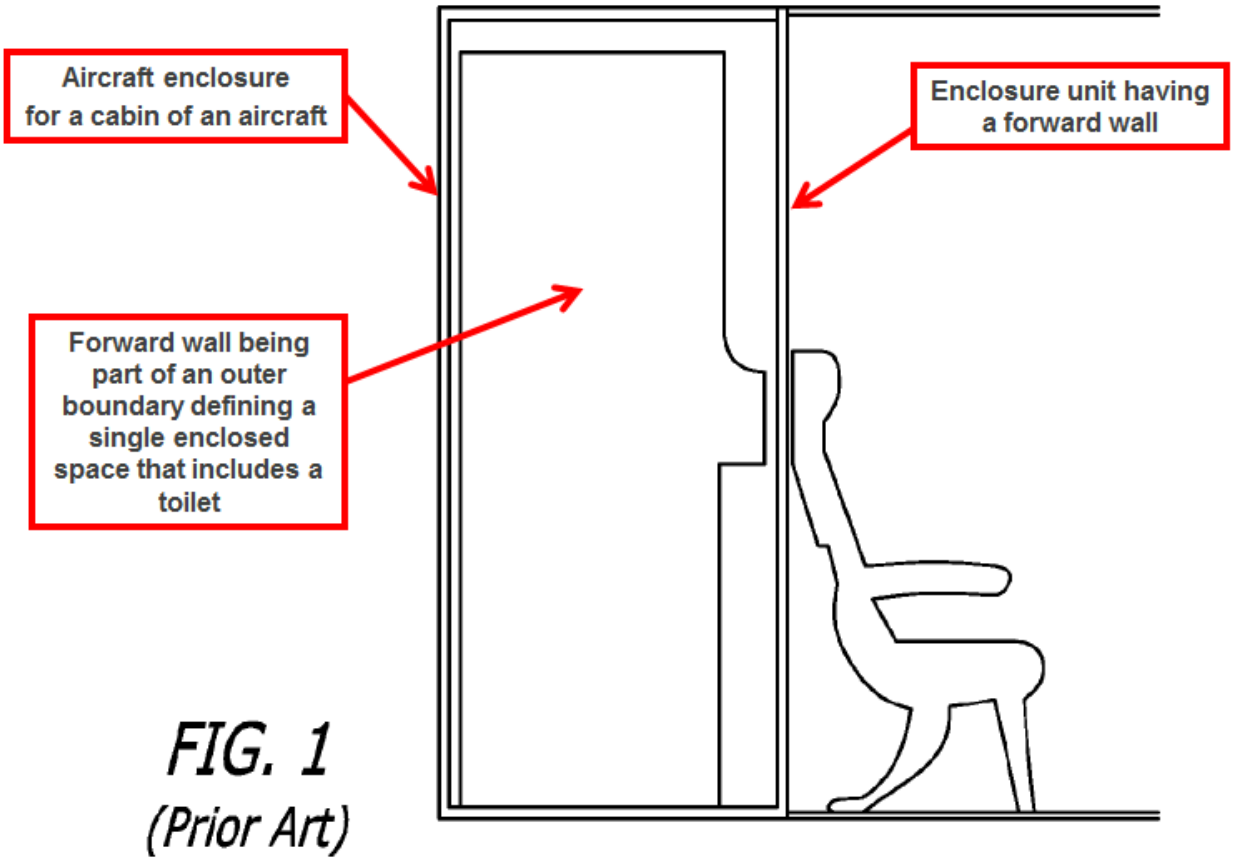
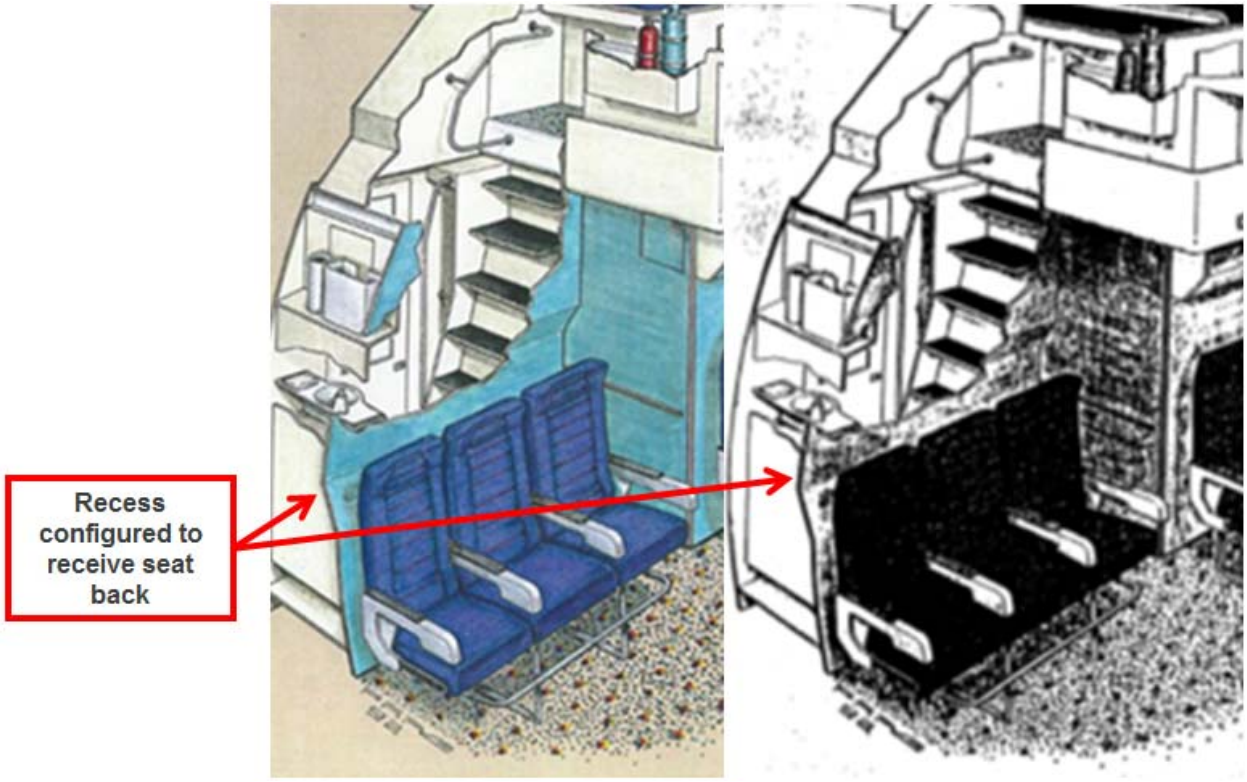


FIG. 1
(Prior Art)

[*'476 Claim 1 Element B*] said forward wall being substantially not flat and configured to receive a portion of the exterior aft surface of the seat back when the seat back is in an unreclined seat position,

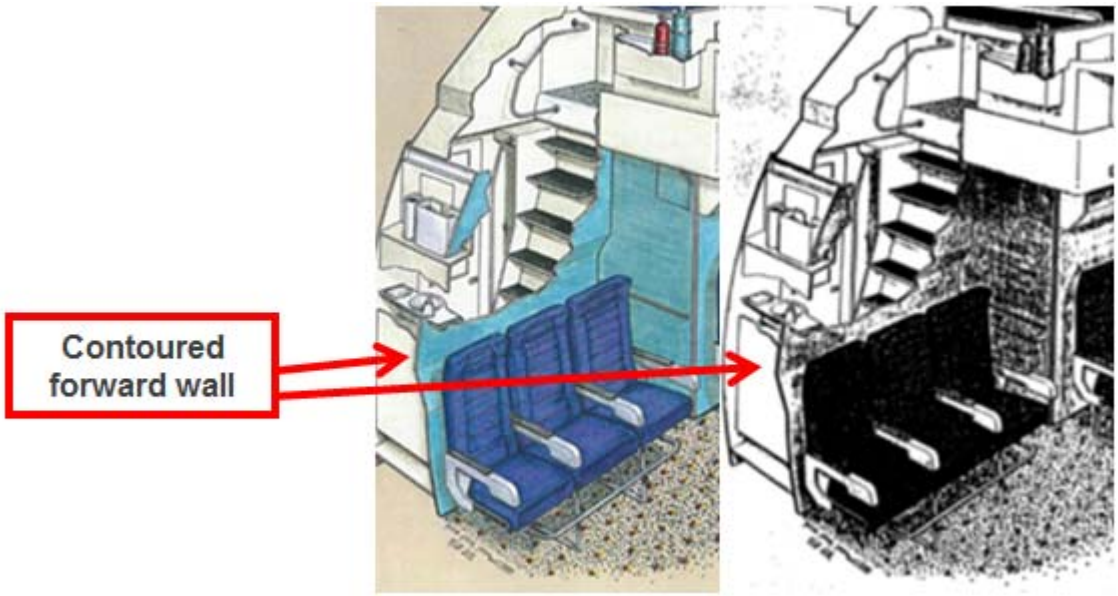
The KLM Crew Rest document includes a forward wall that is substantially not flat and that is configured to receive a portion of the exterior aft surface of the seat back located forward of the enclosure. Ex. 1009. The annotated figure below shows the recess in the forward wall of the crew rest, which was designed based on the shape of a lavatory. Ex. 1004, ¶¶100-102, 144-145.



It would have been obvious to a person of ordinary skill in the art to apply the forward wall of the KLM Crew Rest to a lavatory such as the admitted prior art shown in Figure 1 of the ’476 Patent. Ex. 1004, ¶¶100-102, 144-145. Mr. Anderson further explains that it would have been an obvious design choice to design the recess to receive the seat back when the seat back is in an unreclined position. Ex. 1004, ¶102.

> **[*'476 Claim 1 Element C*] wherein said forward wall is adapted to provide more space forward of the enclosure unit such that the seat support can be positioned further aft in the cabin than if the cabin included another enclosure unit having a substantially flat front wall located in substantially the same position in the cabin as the forward wall, and**

As explained in Section V above, a person of ordinary skill in the art would be motivated to modify a flat wall lavatory to use the KLM Crew Rest design on the forward wall of a lavatory. The KLM Crew Rest document shows a side elevation of a lavatory enclosure. The enclosure has a contoured wall to allow space for a seat that is located forward of and proximate to the aircraft enclosure. Ex. 1009.



Such a design "is adapted to provide more space forward of the enclosure unit such that the seat support can be positioned further aft in the cabin than if the cabin included another enclosure unit having a substantially flat front wall located

in substantially the same position in the cabin as the forward wall." Ex. 1004, ¶103-105, 146. For example, the seat in the KLM Crew Rest document is positioned such that it can recline into space made available by the contour. Ex. 1007, ¶13. This design allows for passenger seats to be placed further aft than they could be placed with a flat wall. Ex. 1004, ¶103-105, 146. This allows for additional seating in the cabin of an aircraft when installed. Ex. 1004, ¶103-105, 146.

[*'476 Claim 1 Element D*] wherein said enclosed space is taller than the passenger seat; and

Prior art Figure 1 depicts element D of claim 1 as shown in the annotated figure below. A person of ordinary skill in the art would understand that the enclosed space of a lavatory would continue to be taller than a passenger seat after applying a contour to the forward wall. Ex. 1004, ¶¶106-108, 147.

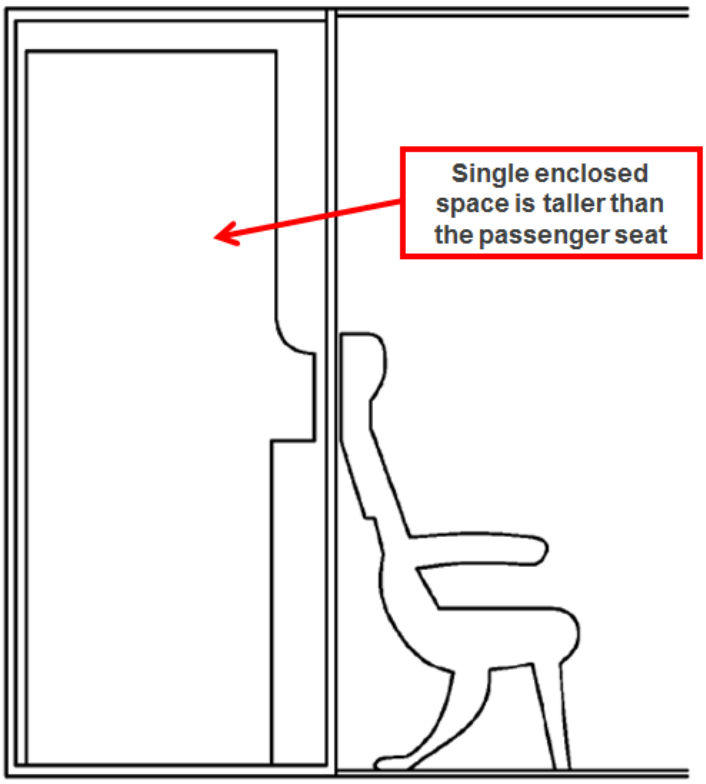
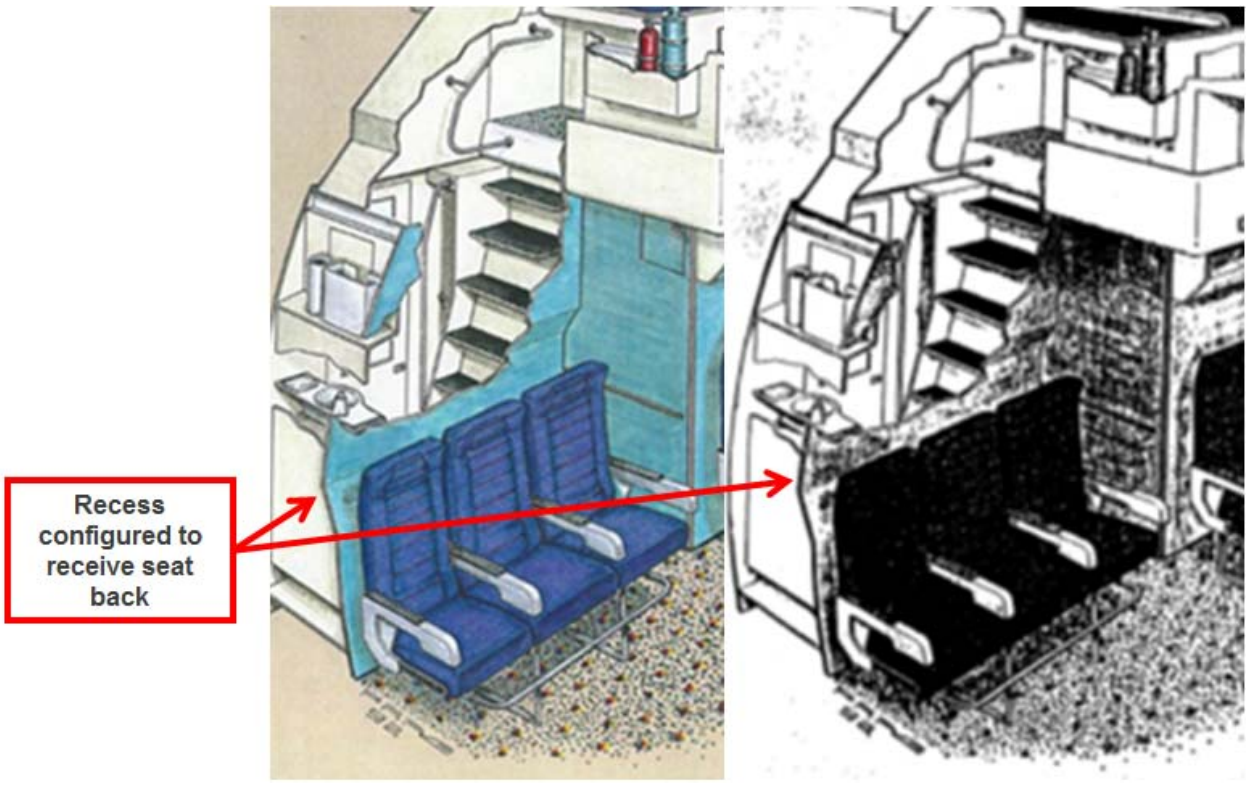


FIG. 1
(Prior Art)

[*'476 Claim 1 Element E*] positioning said seat support further aft in said aircraft cabin than said seat support could have been positioned prior to retrofitting said aircraft, whereby a portion of the exterior aft surface of said passenger seat back in the unreclined seat position is received by said forward wall.

The KLM Crew Rest document includes a forward wall that is substantially not flat and that is configured to receive a portion of the exterior aft surface of the seat back located forward of the enclosure. Ex. 1009. As explained in Section V above, a person of ordinary skill in the art would be motivated to apply the forward wall of the KLM Crew Rest to a lavatory such as the admitted prior art shown in Figure 1 of the '476 Patent.



Mr. Anderson explains that a person of ordinary skill in the art would understand that the seats shown in the KLM Crew Rest rendering are positioned further aft than the seats could have been positioned without the recess in the forward wall to receive the aft surface of the seat back. Ex. 1004, ¶150.

The seats in the KLM Crew Rest rendering are positioned such that they can recline into space made available by the recess. Ex. 1007, ¶13. Mr. Anderson further explains, however, that it would have been an obvious design choice to move the seat support further aft such that the seat back was received in the recess in the unreclined position. Ex. 1004, ¶150. Moving the seats further aft in this manner would provide additional space in the cabin to allow for additional seating or increased seat pitch (seat spacing). Ex. 1004, ¶150.

> **[*'476 Claim 2 Preamble*] A method of providing an aircraft with more passenger seats in the aircraft's cabin, the method comprising the steps of:**

As explained above, a person of ordinary skill in the art would be motivated to maximize seating on an aircraft by providing additional passenger seating. Ex. 1004, ¶¶140-142, 151.

> **[*'476 Claim 2 Element A*] installing a combination of an enclosure unit and a passenger seat in the aircraft, said passenger seat having a seat back, a seat bottom, and a seat support that interfaces with the floor of the aircraft cabin and holds the seat bottom in an elevated position above the floor of the aircraft cabin, the combination comprising**

Element A is admitted prior art. The '476 Patent describes Figure 1 as "a schematic diagram of a prior art installation of a lavatory immediately aft of and adjacent to an aircraft passenger seat." Ex. 1001, 4:6-8. Prior art Figure 1 depicts element A of claim 2 as shown in the annotated figure below. Ex. 1004, ¶¶86-88, 95-99, 152.

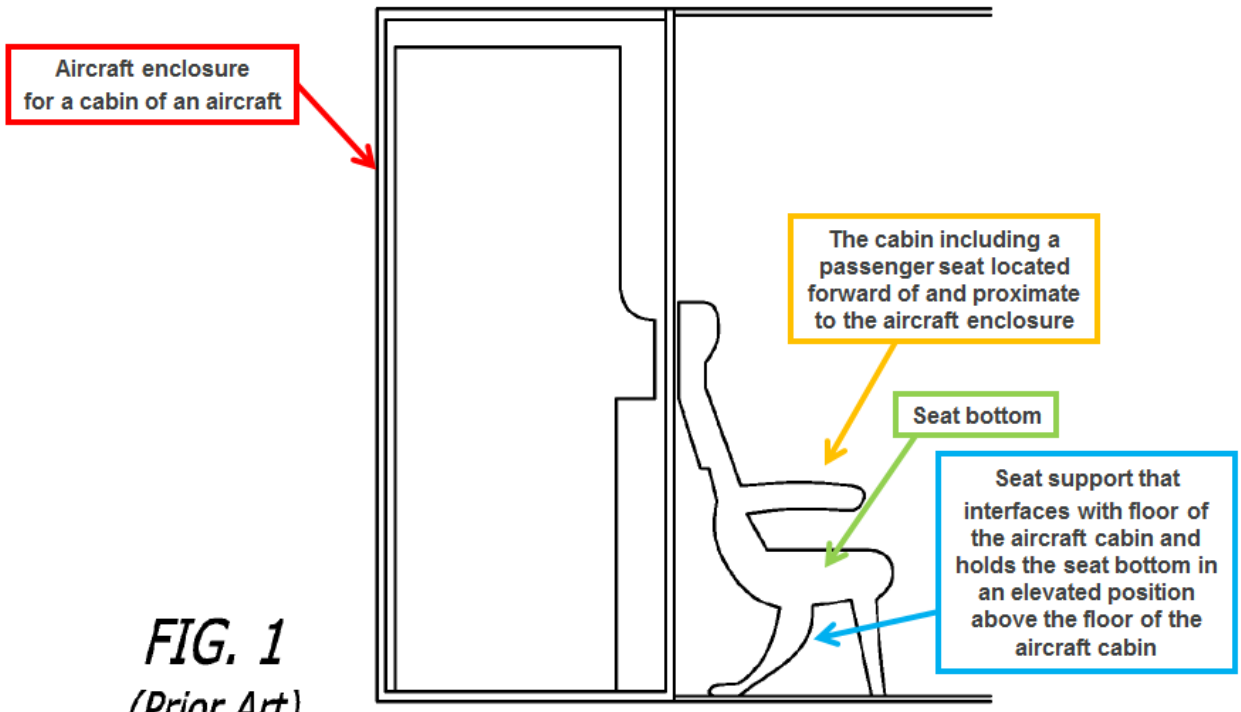


FIG. 1
(Prior Art)

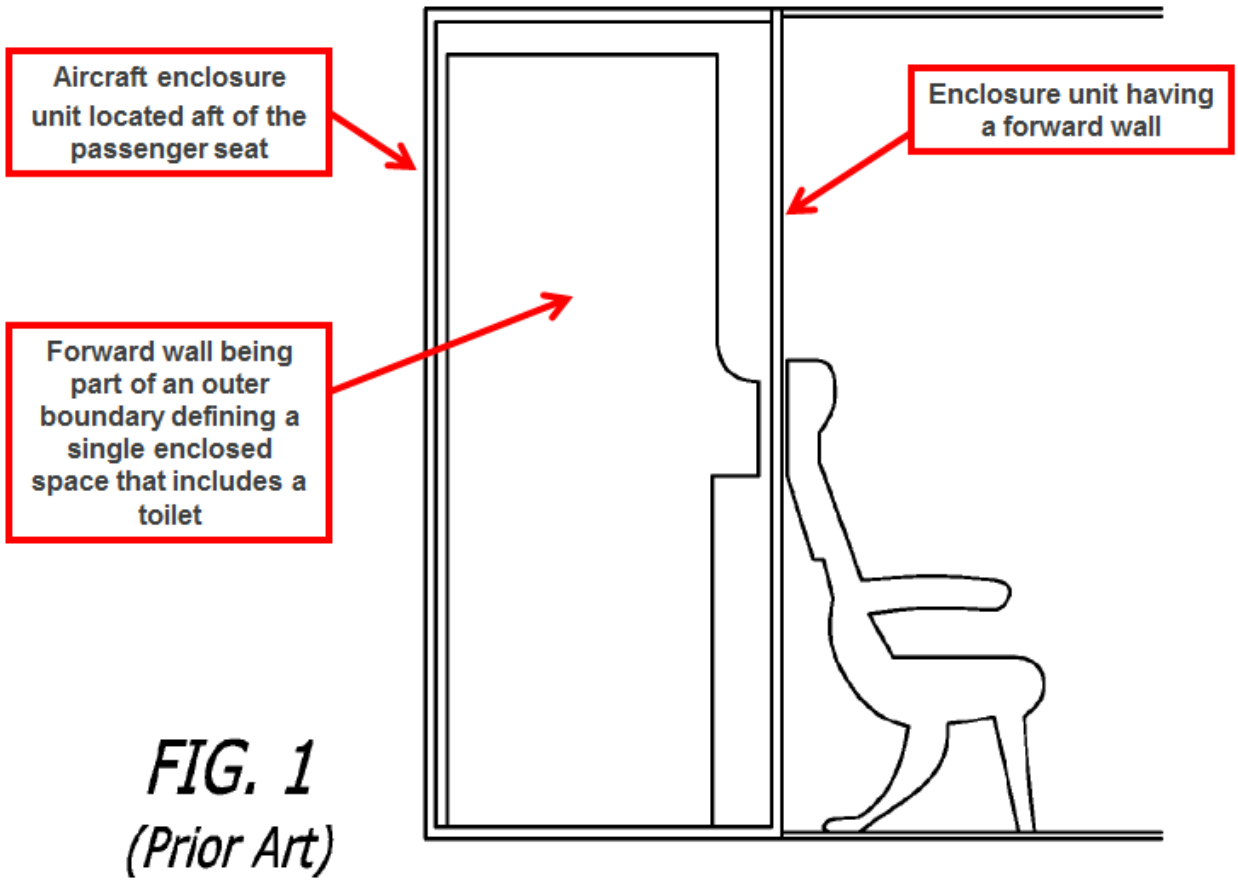
[*'476 Claim 2 Element B*] the passenger seat being configured to be located forward of and proximate to the enclosure unit,

Element B is admitted prior art. Figure 1 of the '476 Patent depicts a passenger seat located forward of and proximate to the enclosure unit. Ex. 1001, 4:6-9 ("FIG. 1 is a schematic diagram of a prior art installation of a lavatory immediately aft of and adjacent to an aircraft passenger seat").

[*'476 Claim 2 Element C*] the enclosure unit being located aft of the passenger seat, the enclosure unit having a forward wall, said forward wall being part of an outer boundary defining a single enclosed space that includes a toilet,

Element C is admitted prior art. The '476 Patent describes Figure 1 as "a schematic diagram of a prior art installation of a lavatory immediately aft of and adjacent to an aircraft passenger seat." Ex. 1001, 4:6-8. A person of ordinary skill

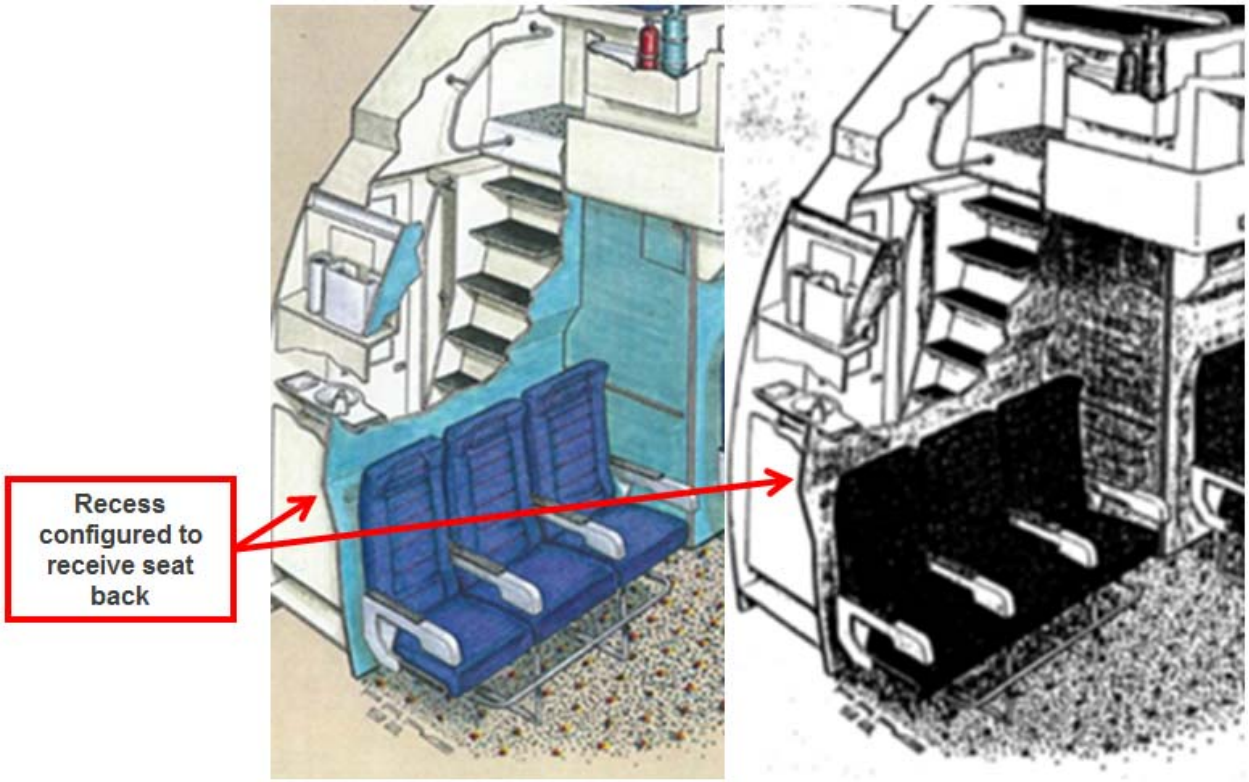
would understand that a prior art flat wall lavatory typically would include a toilet. Ex. 1004, ¶98-99, 143, 154. Prior art Figure 1 depicts element A of claim 1 as shown in the annotated figure below. Ex. 1004, ¶¶86-88.



[*'476 Claim 2 Element D*] said forward wall being substantially not flat and configured to receive a portion of the exterior aft surface of the passenger seat back in an unreclined seat position,

As shown below, the KLM Crew Rest document includes a forward wall that is substantially not flat and that is configured to receive a portion of the exterior aft surface of the seat back located forward of the enclosure. Ex. 1009. The

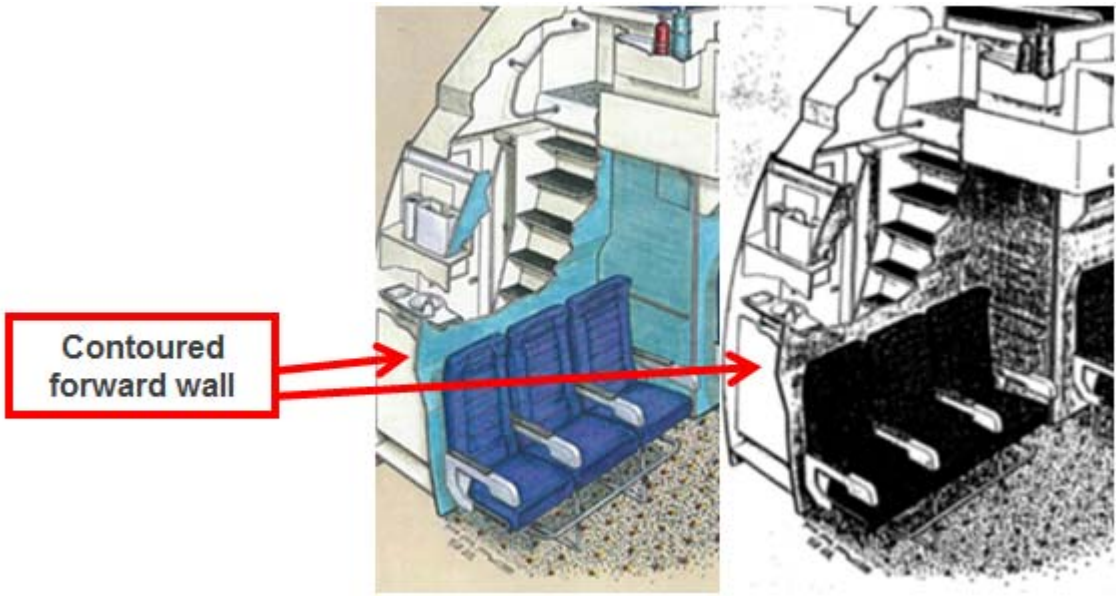
annotated figure below shows the recess in the forward wall of the crew rest, which was designed based on the shape of a lavatory. Ex. 1004, ¶¶100-102, 144-145.



It would have been obvious to a person of ordinary skill in the art to apply the forward wall of the KLM Crew Rest to a lavatory such as the admitted prior art shown in Figure 1 of the ’476 Patent. Ex. 1004, ¶¶100-102, 144-145. Mr. Anderson further explains that it would have been an obvious design choice to design the recess to receive the seat back when the seat back is in an unreclined position. Ex. 1004, ¶102.

> **[*'476 Claim 2 Element E*] wherein said forward wall is adapted to provide more space forward of the enclosure unit such that the seat support can be positioned further aft in the cabin than if the cabin included another enclosure unit having a front wall that is substantially flat and is located in substantially the same position in the cabin as the forward wall,**

As explained in Section V above, a person of ordinary skill in the art would be motivated to modify a flat wall lavatory to use the KLM Crew Rest design on the forward wall of a lavatory. The KLM Crew Rest rendering shows a side elevation of a lavatory enclosure. The enclosure has a contoured wall to allow space for a seat that is located forward of and proximate to the aircraft enclosure. Ex. 1009.



Such a design "is adapted to provide more space forward of the enclosure unit such that the seat support can be positioned further aft in the cabin than if the cabin included another enclosure unit having a front wall that is substantially flat

and is located in substantially the same position in the cabin as the forward wall." Ex. 1004, ¶103-105, 146. For example, the seat in the KLM Crew Rest rendering is positioned such that it can recline into space made available by the contour. Ex. 1007, ¶13. This design allows for passenger seats to be placed further aft than they could be placed with a flat wall. Ex. 1004, ¶103-105, 146. This allows for additional seating in the cabin of an aircraft when installed. Ex. 1004, ¶103-105, 146.

[*'476 Claim 2 Element F*] wherein said enclosed space is taller than the passenger seat,

Element F is admitted prior art. Figure 1 of the '476 Patent depicts element F as shown in the annotated figure below. A person of ordinary skill in the art would understand that the enclosed space of a lavatory would continue to be taller than a passenger seat after applying a contour to the forward wall. Ex. 1004, ¶¶106-108, 147, 157.

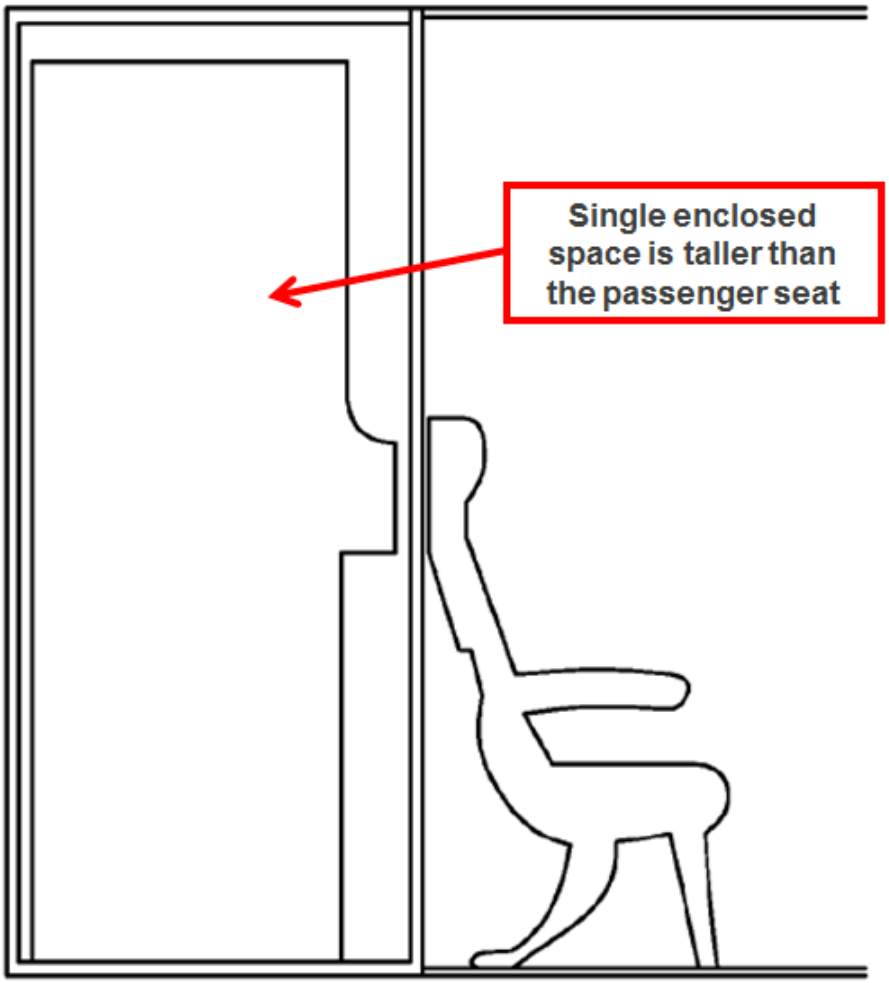
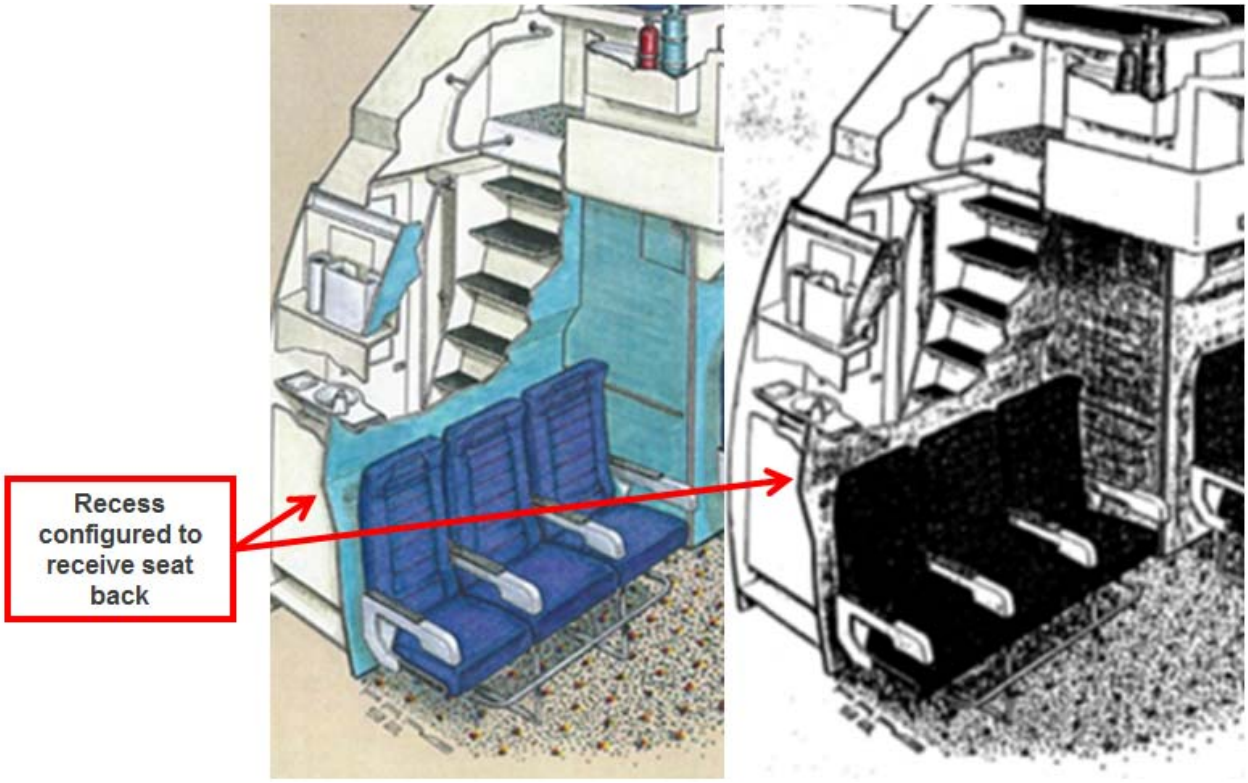


FIG. 1
(Prior Art)

[*'476 Claim 2 Element G*] whereby said seat support is installed further aft in said cabin than would be possible if the substantially flat front wall of the other enclosure unit was located in substantially the same position in the aircraft cabin as the forward wall, and

The KLM Crew Rest document includes a forward wall that is substantially not flat and that is configured to receive a portion of the exterior aft surface of the seat back located forward of the enclosure. Ex. 1009. As explained in Section V above, a person of ordinary skill in the art would be motivated to apply the forward

wall of the KLM Crew Rest to a lavatory such as the admitted prior art shown in Figure 1 of the ’476 Patent.

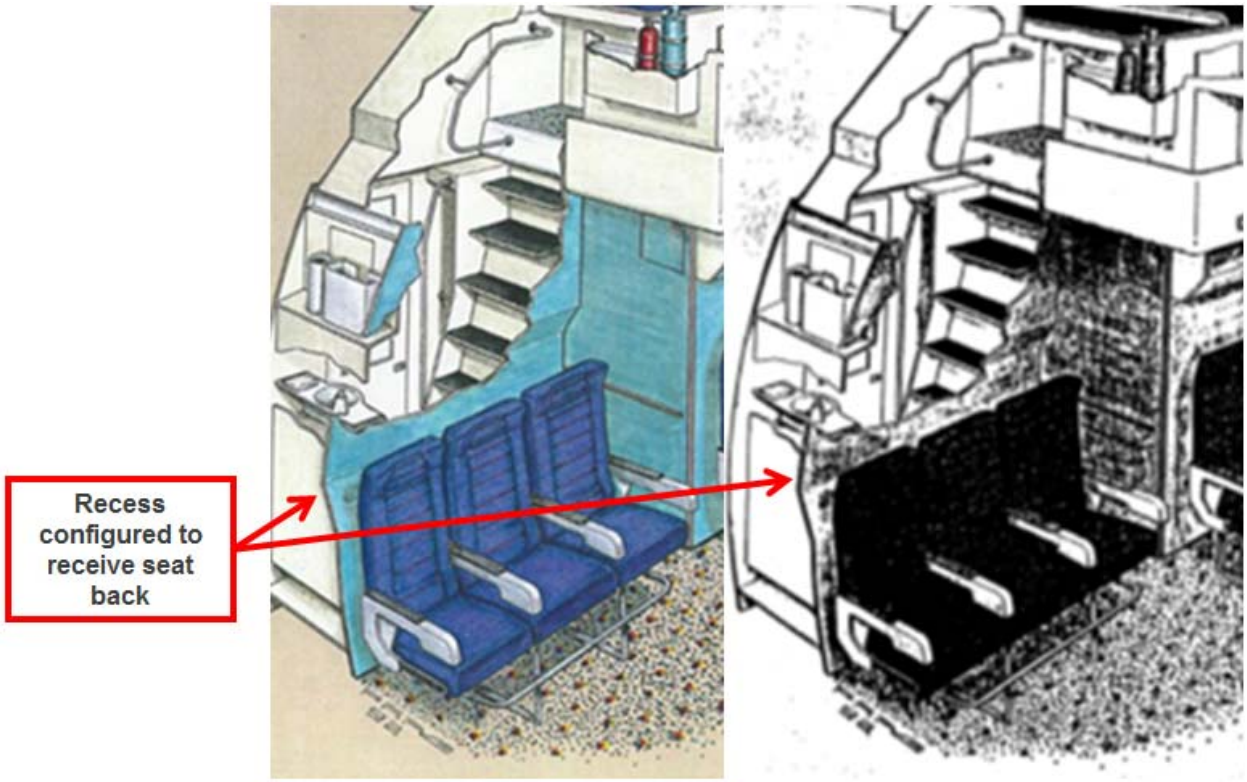


Mr. Anderson explains that a person of ordinary skill in the art would understand that the seats shown in the KLM Crew Rest rendering are positioned further aft than the seats could have been positioned without the recess in the forward wall to receive the aft surface of the seat back. Ex. 1004, ¶150, 158.

> **[*’476 Claim 2 Element H*] whereby a portion of the exterior aft surface of said passenger seat back in the unreclined seat position is received by said forward wall.**

The KLM Crew Rest document includes a forward wall that is substantially not flat and that is configured to receive a portion of the exterior aft surface of the seat back located forward of the enclosure. Ex. 1009. The annotated figure below

shows the recess in the forward wall of the crew rest, which was designed based on the shape of a lavatory. Ex. 1004, ¶¶100-102, 148-150, 158.

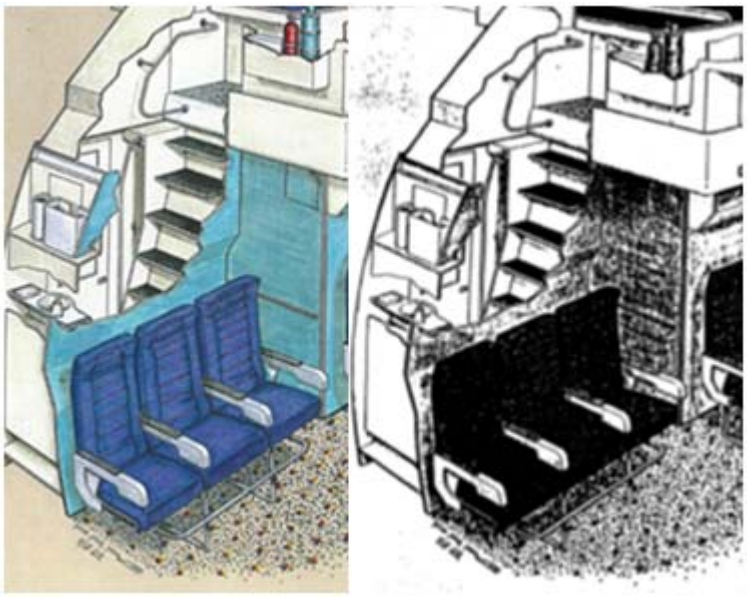


It would have been obvious to a person of ordinary skill in the art to apply the forward wall of the KLM Crew Rest to a lavatory such as the admitted prior art shown in Figure 1 of the '476 Patent. Ex. 1004, ¶¶100-102, 148-150, 158. The seats in the KLM Crew Rest rendering are positioned such that they can recline into space made available by the contour. Ex. 1007, ¶13. Mr. Anderson further explains, however, that it would have been an obvious design choice to move the seat support further aft such that the seat back was received in the recess in the unreclined position. Ex. 1004, ¶102, 150, 158. Moving the seats further aft in this matter would provide additional space in the cabin to allow for additional seating

or increased seat pitch (seat spacing). Ex. 1004, ¶102, 150, 158.

> **[*'476 Claim 3*] The method of claim 1, wherein said exterior aft surface of the passenger seat back has a contoured shape, and wherein said forward wall is shaped to substantially conform to the contoured shape of the exterior aft surface of the passenger seat back when the exterior aft surface of said passenger seat back in the unreclined position is received by said forward wall.**

Mr. Anderson explains that one of ordinary skill in the art would understand the KLM Crew Rest document to show an example of a recess in which the shape of the recess conforms to the contoured shape of the passenger seat back. Ex. 1004; ¶160-164.

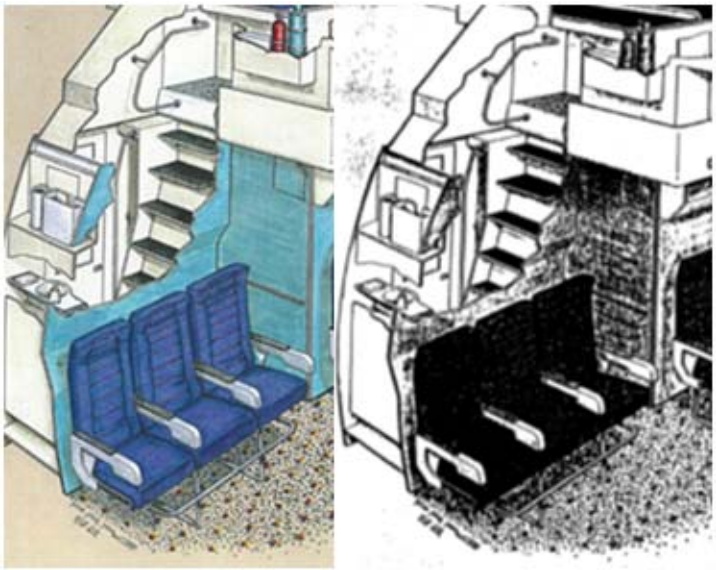


In the case of the KLM Crew Rest document, the seat is provided with the ability to recline, so the recess is shaped to conform to the shape of the seatback in the reclined position. Ex. 1004, ¶¶163-166. If recline were not required, Mr. Anderson explains that a person of ordinary skill in the art would have been

motivated to conform the shape of the recess to the shape of the passenger seat in the unreclined position to maximize use of space. Ex. 1004, ¶¶163-166. Mr. Anderson explains that providing a forward wall that is shaped to substantially conform to the shape of a seat back when the seat is in the unreclined position would have been obvious to a person of ordinary skill in the art. Ex. 1004, ¶¶163-166.

> **[*'476 Claim 4*] The method of claim 2, wherein said exterior aft surface of the passenger seat back has a contoured shape, and wherein said forward wall is shaped to substantially conform to the contoured shape of the exterior aft surface of the passenger seat back when the exterior aft surface of said passenger seat back in the unreclined position is received by said forward wall.**

Mr. Anderson explains that one of ordinary skill in the art would understand the KLM Crew Rest document to show an example of a passenger seat having a contoured seat back and a recess in which the shape of the recess conforms to the shape of the passenger seat. Ex. 1004; ¶160-164, 167.



In the case of the KLM Crew Rest rendering, the seat is provided with the ability to recline, so the recess is shaped to conform to the shape of the seatback in the reclined position. Ex. 1004, ¶¶163-167. If recline were not required, Mr. Anderson explains that a person of ordinary skill in the art would have been motivated to conform the shape of the recess to the shape of the passenger seat in the unreclined position to maximize use of space. Ex. 1004, ¶¶163-167. Mr. Anderson explains that providing a forward wall that is shaped to substantially conform to the shape of a seat back when the seat is in the unreclined position would have been obvious to a person of ordinary skill in the art. Ex. 1004, ¶¶163-167.

> **[*'476 Claim 5*] The method of claim 3, wherein said contoured shape includes a first section extending along a first axis and a second section extending along a second axis, said first section adapted to support a passenger's head and a second adapted to support a passenger's back, wherein said first axis is not parallel with said second axis.**

As shown in the annotated figures below, both Figure 1 of the '476 Patent and the KLM Crew Rest document show a passenger seat with a contoured shape that includes a first section extending along a first axis and a second section extending along a second axis. Ex. 1004, ¶¶168-170. The first section is adapted to support a passengers head and the second section is adapted to support a passengers back, and the two axes are not parallel. *Id*. The claimed seat shape was well-known in the prior art. *Id*.

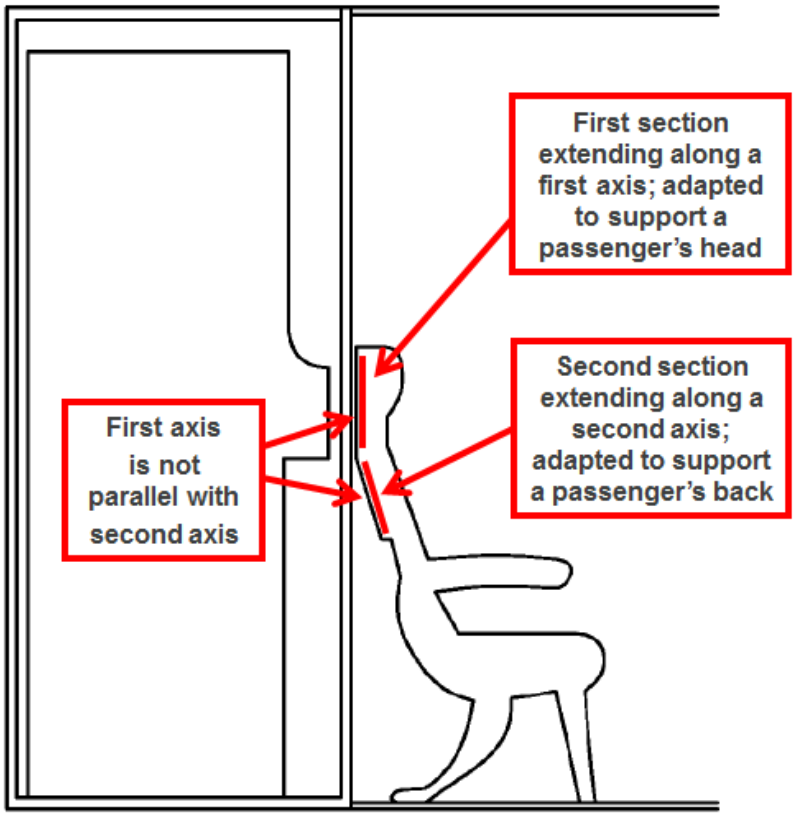
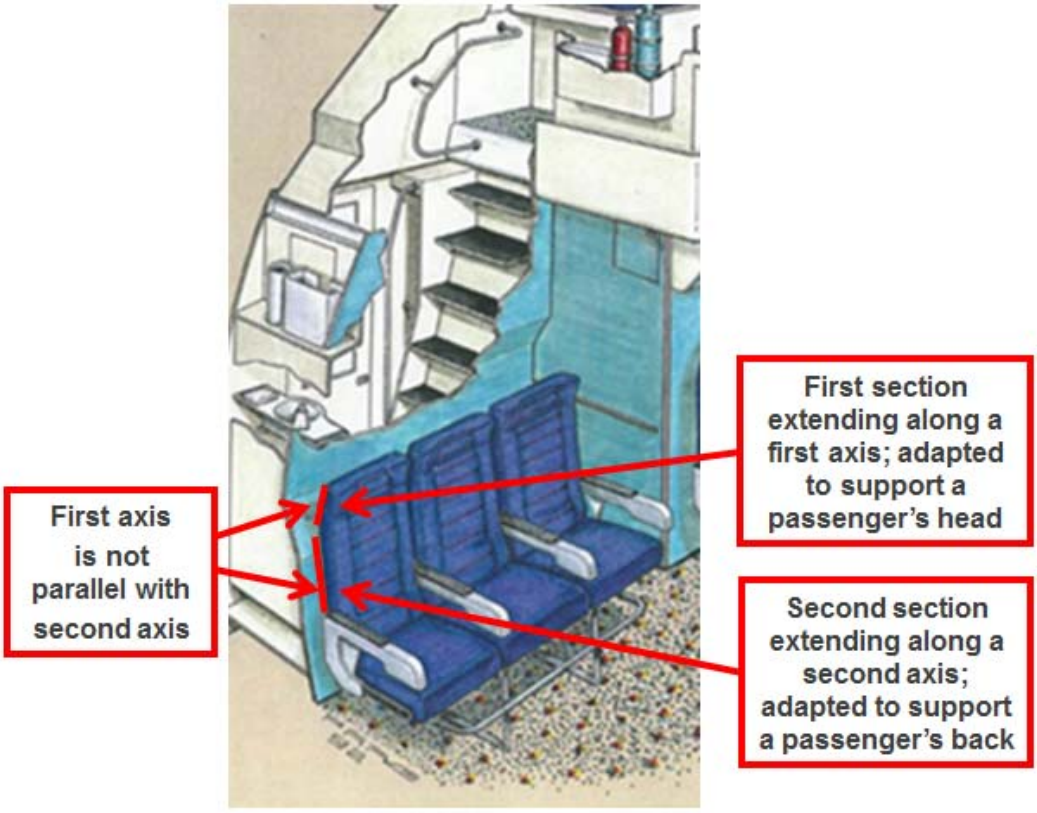


FIG. 1
(Prior Art)



> **[*'476 Claim 6*] The method of claim 4, wherein said contoured shape includes a first section extending along a first axis and a second section extending along a second axis, said first section adapted to support a passenger's head and a second adapted to support a passenger's back, wherein said first axis is not parallel with said second axis.**

As shown in the annotated figures below, both Figure 1 of the '476 Patent and the KLM Crew Rest document show a passenger seat with a contoured shape that includes a first section extending along a first axis and a second section extending along a second axis. Ex. 1004, ¶¶168-171. The first section is adapted to support a passengers head and the second section is adapted to support a passengers back, and the two axes are not parallel. *Id*. The claimed seat shape was well-known in the prior art. *Id*.

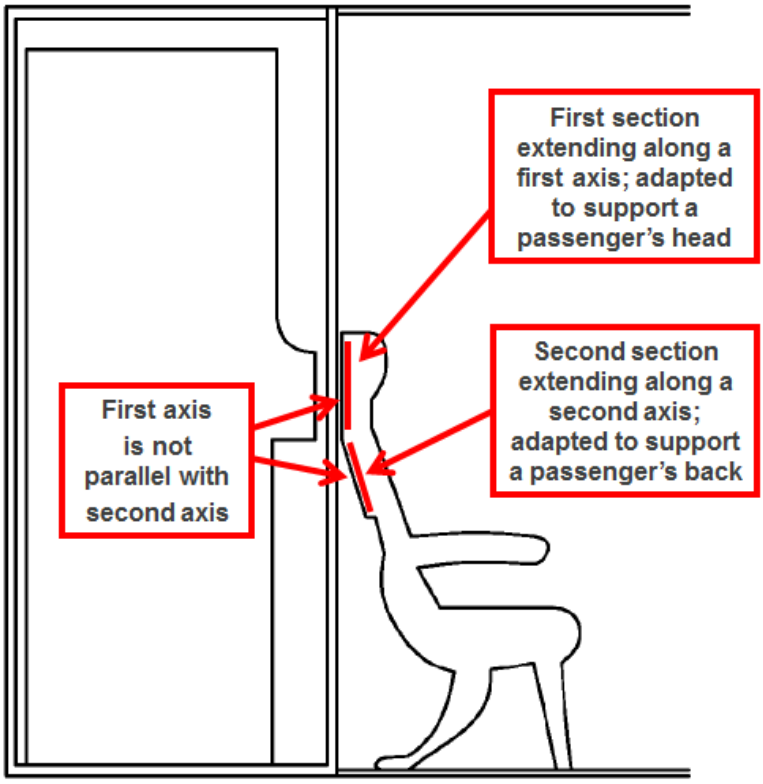
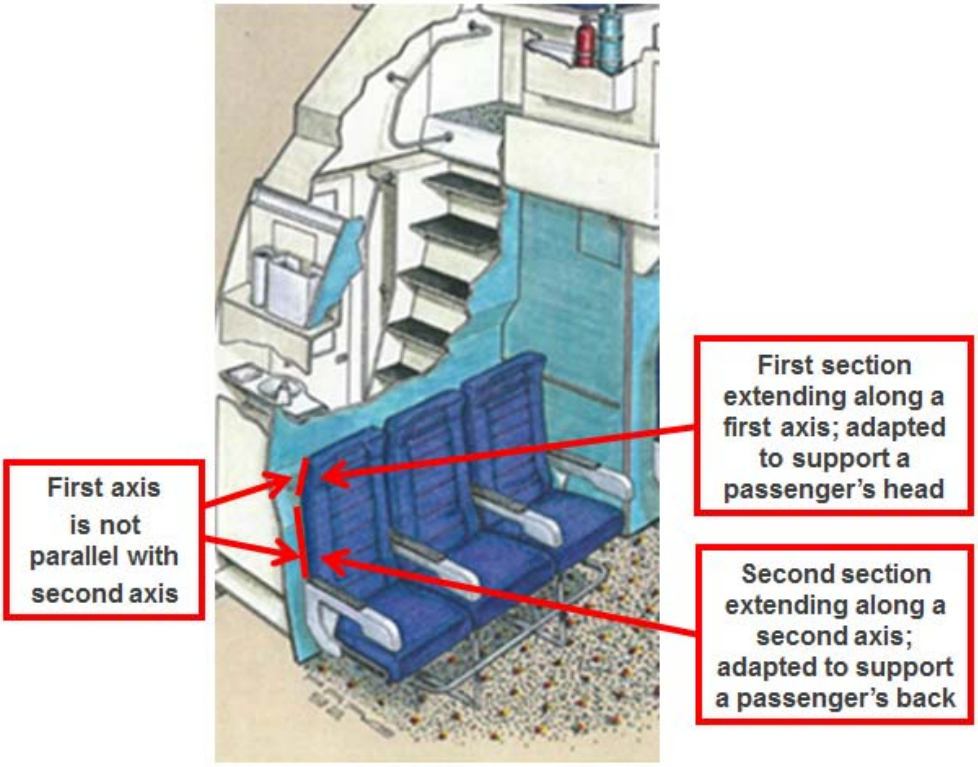


FIG. 1
(Prior Art)



IX. Any Secondary Considerations Cannot Overcome the Clear Evidence of Obviousness.

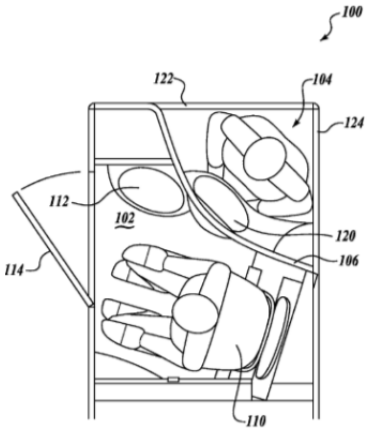
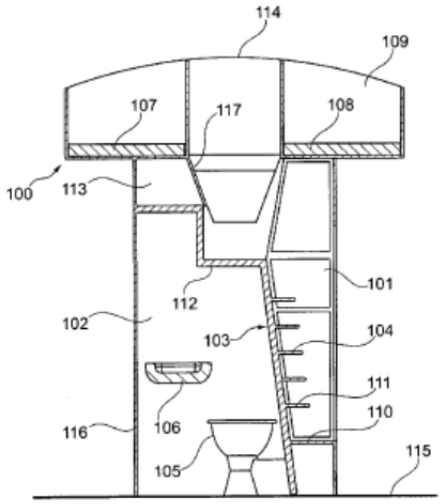
Patent Owner may attempt to overcome the clear obviousness of the challenged claims by pointing to alleged secondary considerations of non-obviousness. The Board has already considered Patent Owner's secondary considerations in the prior IPR regarding the parent '838 Patent. The Board determined that Patent Owner's secondary considerations were insufficient in the face of the strong evidence of obviousness in view of Betts. Ex. 1003, at 23-24. Patent Owner's secondary considerations fail here for the same reasons.

First, evidence of second considerations is significant only if there is a nexus between the claimed invention and the evidence. *Ormco Corp. v. Align Tech., Inc.*,

463 F.3d 1299, 1311-12 (Fed. Cir. 2006) ("Evidence of commercial success, or other secondary considerations, is only significant if there is a nexus between the claimed invention and the commercial success."). All types of objective evidence of non-obviousness must be shown to have such a nexus. *Chums, Inc. v. Cablz, Inc*., IPR2014-01240, Paper No. 43 at 27 (PTAB Feb. 8, 2016) (citations omitted).

Patent Owner cannot establish a nexus here because all claim elements were known in the prior art. When objective evidence results from something that is not "both claimed and ***novel*** in the claim, there is no nexus to the merits of the claimed invention." *In re Kao*, 639 F.3d 1057, 1068 (Fed. Cir. 2011) (emphasis in original); *ClassCo, Inc. v. Apple*, Inc. 838 F.3d 1214, 1220 (Fed. Cir. 2016) ("A nexus may not exist where, for example, the merits of the claimed invention were 'readily available in the prior art.'" (quoting *Richdel, Inc. v. Sunspool Corp*., 714 F.2d 1573, 1580 (Fed. Cir. 1983)); *ArcelorMittal France v. AK Steel Corp*., 700 F.3d 1317, 1325 (Fed. Cir. 2012) ("[O]ur cases make clear that the commercial success of the embodiment with additional unclaimed features is to be considered when evaluating the obviousness of the claim, provided that embodiment's success has a sufficient nexus to the ***claimed and novel features of the invention***." (emphasis added)). No claim element is novel and there is thus no nexus to any secondary consideration of non-obviousness.

Second, contrary to Patent Owner's assertion, prior art lavatory designs included contours that intruded on the interior space of the lavatory. Ex. 1004, ¶¶60-64. Two prior art examples are shown below:

US 7,284,287, Ex. 1012	**U.S. 2009/0050738 A1, Ex. 1013**
	

Patent Owner's argument that one of ordinary skill in the art would not have contoured a lavatory wall or intruded on interior lavatory space simply has no merit. Further, the patent itself makes clear that the disclosure is not limited to lavatories with a wall that intrudes on passenger space. Rather, the patent explains that "the present invention can provide a more spacious lavatory or other enclosure with no need to move adjacent seats or other structures forward." Ex. 1001, 1:62-65.

Finally, even if Patent Owner were able to establish any secondary considerations and a nexus to them, secondary considerations are insufficient to

overcome a strong case of obviousness, like the one here. *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1246 (Fed. Cir. 2010) ("[S]econdary considerations of nonobviousness . . . simply cannot overcome a strong prima facie case of obviousness."); *Leapfrog Enters., Inc. v. Fisher–Price, Inc*., 485 F.3d 1157, 1162 (Fed. Cir. 2007) (holding that the objective considerations of nonobvious-ness presented, including substantial evidence of commercial success, praise, and long-felt need, were inadequate to overcome a strong showing of primary considerations that rendered the claims at issue invalid); *Rothman v. Target Cor*p., 556 F.3d 1310, 1322 (Fed. Cir. 2009) ("a strong prima facie obviousness showing may stand even in the face of considerable evidence of secondary considerations."); *Stamps.com Inc. v. Endicia, Inc*., 437 Fed.Appx. 897, 905 (Fed. Cir. 2011) ("Given the strong showing of obviousness, we find that the evidence of secondary considerations was inadequate to overcome the legal conclusion that the contested claims would have been obvious.").

X. Conclusion

In view of the foregoing, Petitioner respectfully submits that there is a reasonable likelihood that Petitioner will prevail with respect to claims 1-6 of the '476 Patent. Accordingly, Petitioner requests that the Board grant this petition and initiate an *inter partes* review.

Respectfully submitted,

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CERTIFICATE OF WORD COUNT

The undersigned certifies pursuant to 37 C.F.R. § 42.24(d) that the foregoing **Petition for Inter Partes Review** excluding any table of contents, table of authorities, certificates of service or word count, or appendix of exhibits or claim listing, contains 12,584 words according to the word-processing program used to prepare this paper (Microsoft Word). Including annotations in figures, Petitioner certifies that this **Petition for Inter Partes Review** does not exceed the applicable type-volume limit of 37 C.F.R. § 42.24(a).

Dated: April 13, 2017

/s/ *John C. Alemanni*
Counsel for Petitioner

CERTIFICATE OF SERVICE

The undersigned hereby certifies that on the date below a copy of this **Petition for *Inter Partes* Review** has been served by Express Mail upon the following:

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