

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AIRBUS AMERICAS, INC.,
Petitioner,

v.

HARPER ENGINEERING COMPANY,
Patent Owner.

IPR2022-00195
Patent 10,801,244 B1

Before BART A. GERSTENBLITH, JAMES A. TARTAL, and
RICHARD H. MARSCHALL, *Administrative Patent Judges*.

TARTAL, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Airbus Americas, Inc. (“Petitioner”)¹ filed a Petition pursuant to 35 U.S.C. §§ 311–319 requesting an *inter partes* review of claims 1–15 (“the Challenged Claims”) of U.S. Patent No. 10,801,244 B1 (Ex. 1001, “the ’244 patent”). Paper 1 (“Pet.”). Harper Engineering Company (“Patent Owner”)² filed a Preliminary Response. Paper 6 (“Prelim. Resp.”). With our authorization, Petitioner filed a Reply to Patent Owner’s Preliminary Response (Paper 7 (“Reply”)) and Patent Owner filed a Sur-reply (Paper 8 (“Sur-reply”)).

We have authority to determine whether to institute an *inter partes* review. 35 U.S.C. § 314(b) (2018); 37 C.F.R. § 42.4(a) (2021). An *inter partes* review may not be instituted “unless . . . the information presented in the petition . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). Moreover, a decision to institute under 35 U.S.C. § 314 may not institute on fewer than all claims challenged in the petition. *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018).

Upon consideration of the Petition, the Preliminary Response, the Reply, the Sur-reply, and the evidence of record, we conclude that the information does not show a reasonable likelihood that Petitioner would prevail in showing the unpatentability of at least one of the Challenged Claims. Accordingly, we do not institute an *inter partes* review.

¹ Petitioner identifies no additional real parties in interest. Pet. 3.

² Patent Owner identifies no additional real parties in interest. Paper 5, 2.

II. BACKGROUND

A. *The '244 Patent*

The '244 patent issued on October 13, 2020, from U.S. Application No. 16/941,018, which was filed on July 28, 2020, and, ultimately, claims priority to U.S. Provisional Application No. 62/533,575, filed on July 17, 2017. Ex. 1001, codes (45), (21), (22), (60). The '244 patent is directed to a “stowage bin assembly.” *Id.* at code (57). The '244 patent explains that stowage bin assemblies of transportation vehicles generally include bin buckets and stowage bin doors pivotably coupled thereto via hinges. *Id.* at 1:23–24, 1:30–32. The '244 patent states as follows:

hinges typically protrude outwardly from a wall of the bin bucket or other attaching structure to which they are attached. For example, in some instances, hinges or similar structures about which the stowage bin door pivotably rotates protrude outwardly from an inside surface of a sidewall of the bin bucket. Such hinges, however, reduce compactness of the stowage bin assemblies, reduce storage capacity of the bin buckets, and contribute to increased weight of the stowage bin assemblies.

Id. at 1:32–40.

Figure 1 of the '244 patent is reproduced below.

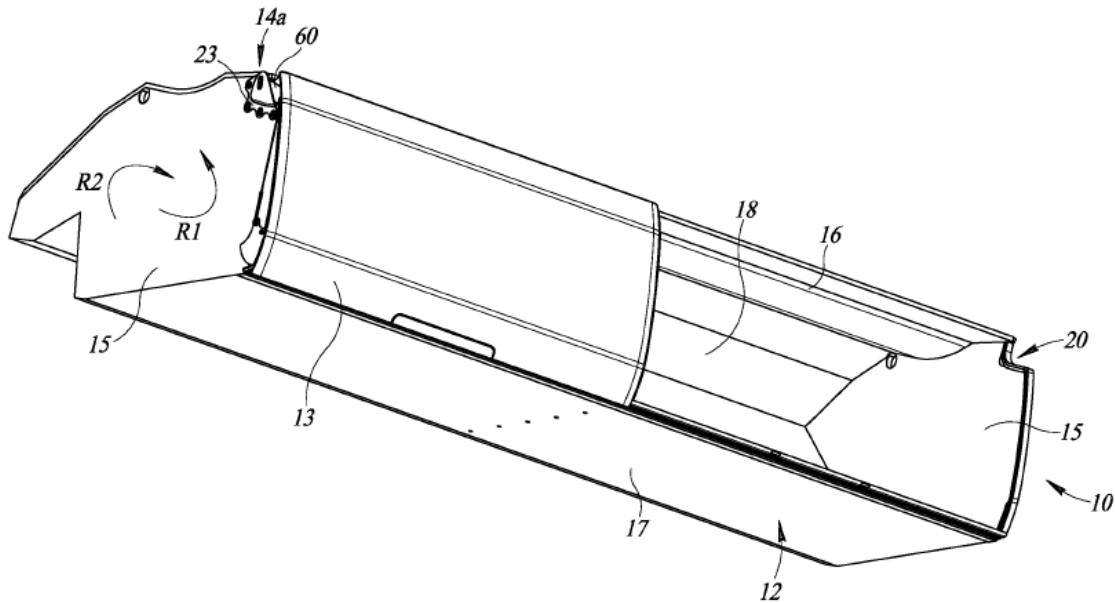


FIG. 1

Figure 1 illustrates an embodiment of integrated stowage bin assembly 10 including bin bucket assembly 12 coupled to stowage bin door 13 via hinge assemblies 14a, 14b (hinge assembly 14b hidden from view by storage bin door 13). *Id.* at 3:25–30. Bin bucket assembly 12 includes sidewalls 15, upper wall 16, lower wall 17, and rear wall 18. *Id.* at 3:40–43. One or more of sidewalls 15 include a notch for hinge assembly 14a. *Id.* at 3:51–53.

Figure 6 of the '244 patent is reproduced below.

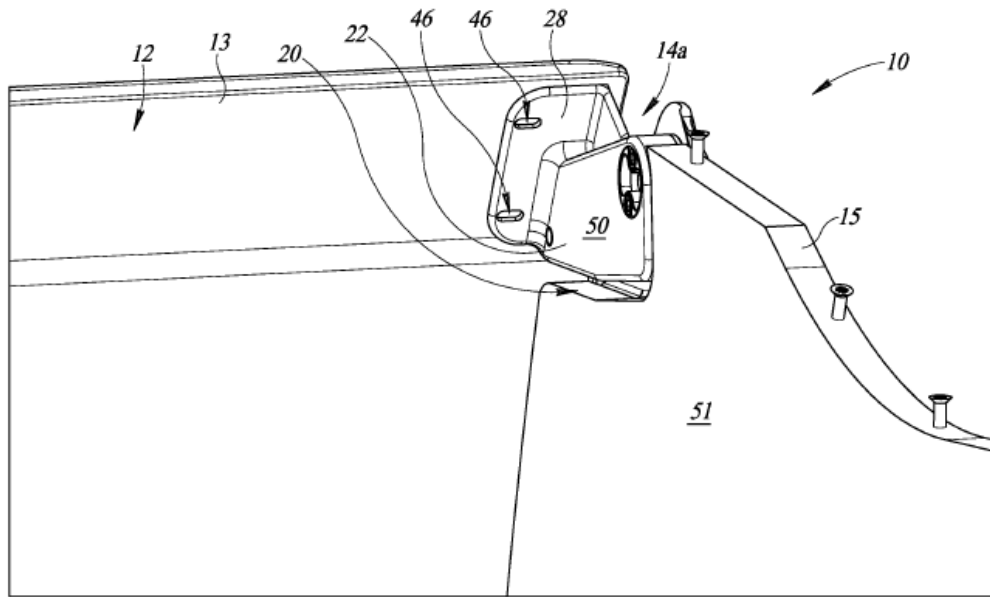


FIG. 6

Figure 6 depicts notch 20 in sidewall 15 of bin bucket assembly 12. *Id.* at 4:10–13. The '244 patent explains that “notch 20 is sized and shaped in a manner such that the hinge assembly 14a is seated substantially flush with an interior surface of the sidewall 15, such that any protrusion of the hinge assembly 14a is reduced and/or minimized.” *Id.* at 3:56–60. In particular, housing 22 of hinge assembly 14a includes interior surface 50, which substantially aligns with interior surface 51 of sidewall 15. *Id.* at 4:13–15. According to the '244 patent, seating hinge assembly 14a in notch 20 of sidewall 15 increases storage capacity of the bin buckets and reduces weight. *Id.* at 4:15–19.

Figure 7 of the '244 patent is reproduced below.

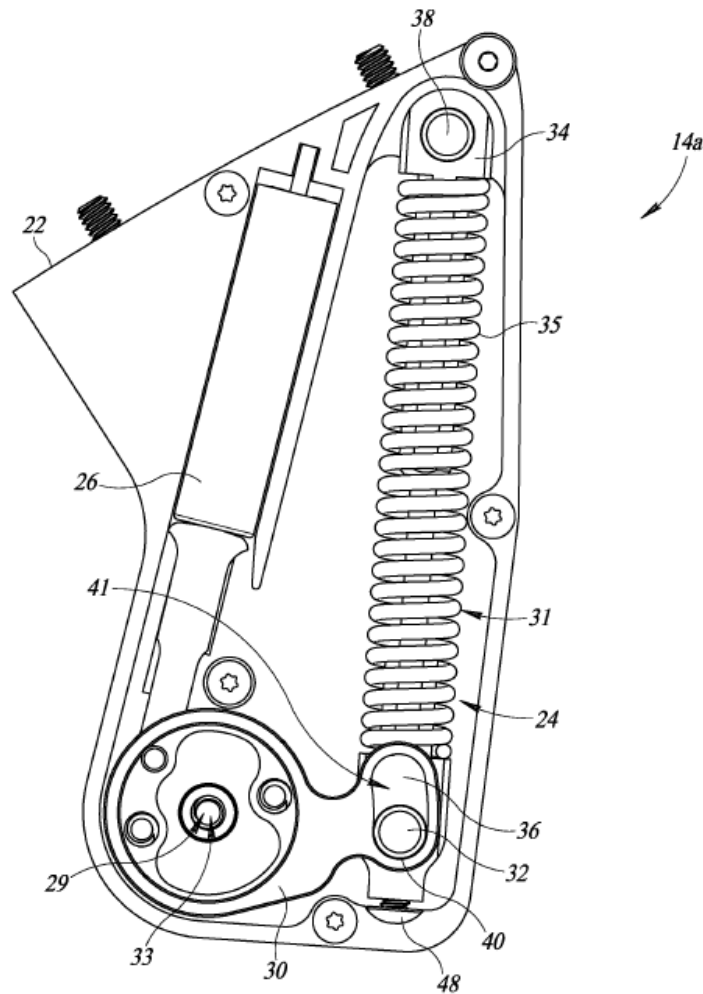


FIG. 7

Figure 7 depicts hinge assembly 14a including self-opening mechanism 24 and damper 26. *Id.* at 4:7–10. Damper 26 “is sized and shaped to control the rate of pivotable movement of the stowage bin door 13 between open and closed positions.” *Id.* at 4:53–56. “[S]elf-opening mechanism 24 is generally configured to provide a variable force that varies proportional to torque of the stowage bin door 13 that varies based, in part, on the variable gravitational torque of the stowage bin door 13.” *Id.* at 4:59–63. Self-opening mechanism 24 provides a variable counteracting force based on the

non-linear, radial path of stowage bin door 13 when moving between closed and open positions. *Id.* at 4:63–66, 5:6–9. In particular, self-opening mechanism 24 includes rotary crank 30 with opening aperture 41, biasing device 31 with spring 35, and rotary pin 32. *Id.* at 5:10–14, 31–33. The '244 patent explains as follows:

as the stowage bin door 13 moves between the open and closed positions, a moment arm of the spring 35 changes proportionally to the gravitational torque applied by the stowage bin door 13, where the compressive forces applied by the spring 35 variably adjust as the opening aperture 41 allows the biasing device 31 to adjust its position to, in part, align with, and counteract the gravitational torque.

Id. at 5:39–46.

B. Illustrative Claims

Petitioner challenges claims 1–15 of the '244 patent. Pet. 1. Claims 1 and 9 are independent. Ex. 1001, 7:31–47, 8:11–36. Claims 2–8 depend from claim 1, and claims 10–15 depend from claim 9. *Id.* at 7:48–8:4, 8:37–60. Claims 1 and 9 are illustrative of the claimed subject matter and are reproduced below.

1. A stowage bin assembly comprising:
 - a bin bucket assembly including a bin bucket having:
 - a first sidewall including a first notch and an interior surface;
 - a second sidewall;
 - a partition positioned between the first and second sidewalls;
 - a first hinge assembly having a housing which is received in the first notch, the housing having an interior surface, the interior surface of the housing being flush with the interior surface of the first sidewall when the housing of the first hinge assembly is received in the first notch;
 - a partition hinge assembly coupled to the partition; and

a stowage bin door pivotably coupled to the bin bucket assembly via the first hinge assembly, the stowage bin door moveable between an open position and a closed position.

Id. at 7:31–47.

9. An integral overhead stowage bin assembly, comprising:
 - a bin bucket assembly including a bin bucket including:
 - a sidewall having an interior surface;
 - an upper wall;
 - a rear wall;
 - a notch extending through the sidewall, the notch positioned adjacent to the upper wall;
 - a stowage bin door pivotably coupled to the bin bucket assembly, the stowage bin door moveable between an open position and a closed position; and
 - a hinge assembly having a housing which is received in the notch, the housing having an interior surface, the interior surface of the housing being flush with the interior surface of the sidewall when the housing of the hinge assembly is received in the notch, the hinge assembly including:
 - a biasing device;
 - a rotary crank having a pivot pin aperture, a center of which defines a pivot axis;
 - a pivot pin received in the pivot pin aperture, the pivot pin pivotably coupling the stowage bin door to the bin bucket assembly; and
 - a connecting element that couples the biasing device to the rotary crank.

Id. at 8:11–36.

C. Asserted Grounds of Unpatentability

Petitioner asserts that the Challenged Claims are unpatentable based on the following grounds:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–3, 8, 14, 15	103	Rheaume, ³ Ehlers, ⁴
4–7	103	Rheaume, Ehlers, Savian, ⁵
9–13	103	Rheaume, Savian
1–8, 14, 15	103	Savian, Ehlers, Frazier ⁶
9–13	103	Savian, Frazier

Pet. 5. Petitioner relies on the supporting Declaration of Daniel Codd, Ph.D., dated November 11, 2021. Ex. 1003 (“the Codd Declaration”). Patent Owner’s Preliminary Response is supported by the Declaration of Dr. Adam Dershowitz, dated February 15, 2022. Ex. 2001.

D. Related Proceedings

The parties identify the ’244 patent as a subject of *Harper Engineering Co. v. FACC Operations GmbH and Airbus Americas, Inc.*, No. 1:20-cv-00510-CG-C (S.D. Ala.). Pet. 3; Paper 5, 2. Petitioner also states that it concurrently filed a petition for *inter partes* review of U.S. Patent No. 10,760,315 B2 (IPR2022-00192), which shares the same specification as the ’244 patent. Pet. 3.

³ US 2020/0040633 A1, published Feb. 6, 2020 (Ex. 1005, “Rheaume”).

⁴ US 2009/0194635 A1, published Aug. 6, 2009 (Ex. 1014, “Ehlers”).

⁵ WO 2014/127161 A1, published Aug. 21, 2014 (Ex. 1006, “Savian”).

⁶ U.S. Patent No. 9,090,351 B1, issued July 28, 2015 (Ex. 1008, “Frazier”).

III. ANALYSIS

A. *Legal Standards*

A patent claim is unpatentable under 35 U.S.C. § 103 “if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains.” In *Graham v. John Deere Co. of Kan. City*, 383 U.S. 1 (1966), the Supreme Court set out a framework for assessing obviousness under § 103 that requires consideration of four factors: (1) the “level of ordinary skill in the pertinent art,” (2) the “scope and content of the prior art,” (3) the “differences between the prior art and the claims at issue,” and (4) “secondary considerations” of nonobviousness such as “commercial success, long felt but unsolved needs, failure of others, etc.” *Id.* at 17–18; *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). Neither party presents evidence or argument directed to secondary considerations.

B. *Level of Ordinary Skill in the Art*

In determining the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (citation omitted). Petitioner contends that a person of ordinary skill in the art “would have had at least a bachelor’s degree in mechanical engineering, aerospace engineering industrial design, or a similar discipline, or the equivalent experience, with at least some experience in the field of aircraft

interior design, aerospace engineering, or hinges for use in mobility or stationary-use storage solutions.” Pet. 9 (citing Ex. 1003 ¶¶ 19–24).

Patent Owner argues that “Petitioner’s broad definition fails to consider that a [person of ordinary skill in the art] *must* have some prior education and experience specific to aeronautical/aerospace engineering as well as the unique environment presented by aircraft interiors.” Prelim. Resp. 10 (citing Ex. 2001 ¶¶ 54–63). Patent Owner further asserts that “Petitioner provided no evidence that a [person of ordinary skill in the art] can include practitioners having general knowledge only of hinges in ‘mobility or stationary-use storage solutions.’” *Id.* According to Patent Owner, “a [person of ordinary skill in the art] on July 17, 2017, would have [had] at least a bachelor’s degree in aeronautical or aerospace engineering, and at least three years’ experience working in a field related to aircraft interiors.” *Id.* at 9 (citing Ex. 2001 ¶¶ 54–63).

Patent Owner offers no plausible explanation for its proposed level of ordinary skill in the art in light of the subject matter of the ’244 patent, which is not limited to “aeronautical” or “aerospace” applications, claims a “stowage bin assembly” and a “hinge assembly,” and expressly refers broadly to “transportation vehicles” as typically including “overhead storage compartments,” identifying “airplanes” only as an “example” of a “transportation vehicle.” Ex. 1001, code (57), 1:12–15, 7:31–8:64. Patent Owner’s argument appears to be no more than a transparent attempt to baselessly suggest that Dr. Codd should be excluded from testifying because he lacks “the proper background or sufficient experience in the field” under Patent Owner’s unreasonable proposed level of ordinary skill. *See* Prelim. Resp. 17–18.

Dr. Dershowitz’s testimony in support of Patent Owner on the level of ordinary skill is not credible because it is inconsistent with the ’244 patent and the asserted art. Ex. 2001 ¶¶ 58–63. For example, Dr. Dershowitz acknowledges that “[h]inges are common to many mechanical systems,” but then suggests “being familiar with hinges in general may not directly apply to the specifics of this invention” without identifying anything “specific” to the ’244 patent that requires the level of skill Dr. Dershowitz endorses. *Id.* ¶ 62. Dr. Dershowitz suggests “hinges used in storage solutions that are stationary have fewer requirements related to mass and volume and are not subject to the same forces and stresses that are experienced on an aircraft,” however, the challenged claims of the ’244 patent do not preclude “stationary” storage solutions, do not require anything pertaining to “mass and volume,” and are not required to withstand any “forces and stresses” experienced on an aircraft. Dr. Dershowitz’s opinion that “[d]ue to the unique environment and specialized nature of the technology at issue” a person of ordinary skill in the art would have needed “to have an educational background and experience that is specific to the aerospace field” is not supported by the ’244 patent or the asserted art. *See id.* ¶ 63; *see also* Ex. 1005 ¶ 2 (Rheaume stating it “relates to a hinge assembly and, more particularly to a hinge assembly for retaining a door of a storage bin”); Ex. 1006 ¶ 2 (Savian stating it “relates generally to overhead storage bin assemblies”); Ex. 1008, 3:24–27 (Frazier stating it discloses “improvements to standard luggage and storage bins commonly found in commercial aircraft as well as other aircraft, buses, passenger vans, and other vehicles”). Dr. Dershowitz’s misapprehension of the appropriate level of ordinary skill in the art is a consideration we apply in weighing his opinion of how a

person of ordinary skill in the art would have understood the prior art at issue.

We find that the '244 patent and the cited prior art references reflect the appropriate level of skill at the time of the claimed invention and that the level of appropriate skill reflected in these references and in the '244 patent is consistent with the definition of a person of ordinary skill in the art proposed by Petitioner. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). Accordingly, we adopt Petitioner's proposed level of ordinary skill in the art.

C. Claim Construction

"In an *inter partes* review proceeding, a claim of a patent . . . shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b)." 37 C.F.R. § 42.100(b). That standard "includ[es] construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent." *Id.*; *see also Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). "When a patentee explicitly defines a claim term in the patent specification, the patentee's definition controls." *Martek Biosciences Corp. v. Nutrinova, Inc.*, 579 F.3d 1363, 1380 (Fed. Cir. 2009). "[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy." *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

Petitioner contends that no claim terms require construction. Pet. 10 (citing Ex. 1003 ¶¶ 64–66). Patent Owner proposes an express construction for "stowage bin door" and "self-opening mechanism." Prelim. Resp. 13–17. We find no claim term requires an express construction in reaching our

decision for the reasons below to deny institution of *inter partes* review. See *Vivid Techs.*, 200 F.3d at 803.

D. Scope and Content of the Prior Art

Petitioner relies on Rheume, Ehlers, Savian, and Frazier, each of which we briefly summarize in relevant part below. Pet. 15–19.

1. Summary of Rheume

Rheume, titled “Hinge Assembly,” relates to “a hinge assembly for retaining a door of a storage bin.” Ex. 1005, code (54), ¶ 2. Rheume explains that overhead bins in aircraft cabins typically have door hinges that are attached to the inner surfaces of the bin walls, which reduces available storage space in the bin. *Id.* ¶ 3.

Figure 2 of Rheume is reproduced below.

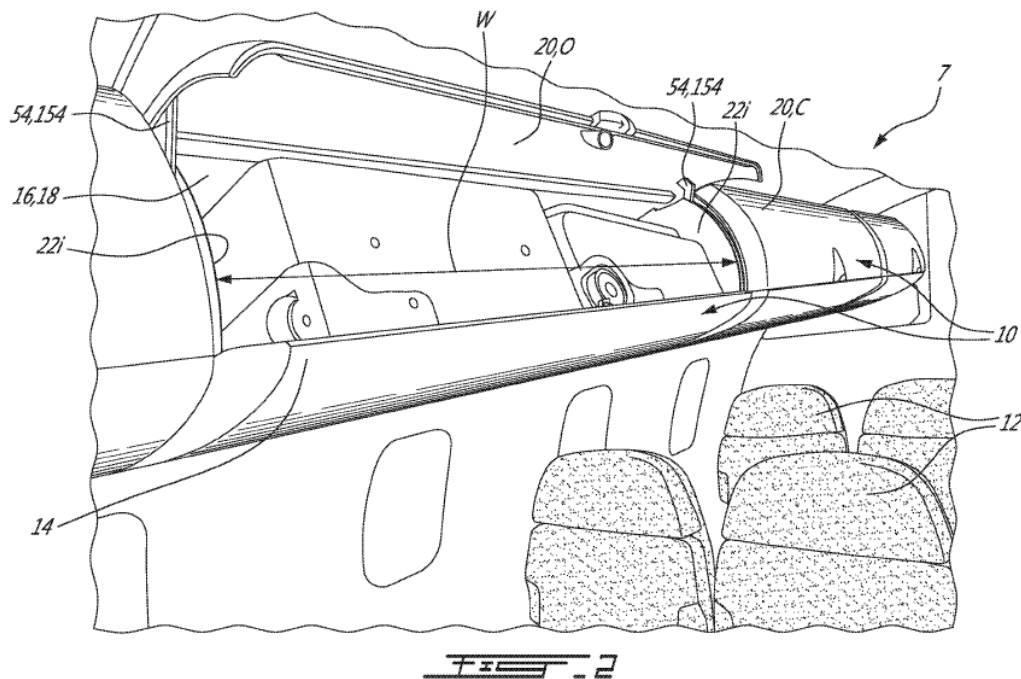


Figure 2 depicts overhead storage bin 10 including bin body 14, which defines storage space 16 for luggage, and opening 18 for accessing storage space 16. *Id.* ¶ 34. Door 20 pivots between open position O and closed

position C with respect to opening 18. *Id.* Storage bin 10 also includes walls 22 having inner surface 22i located within storage space 16. *Id.* ¶ 35.

Figure 3 of Rheume is reproduced below.

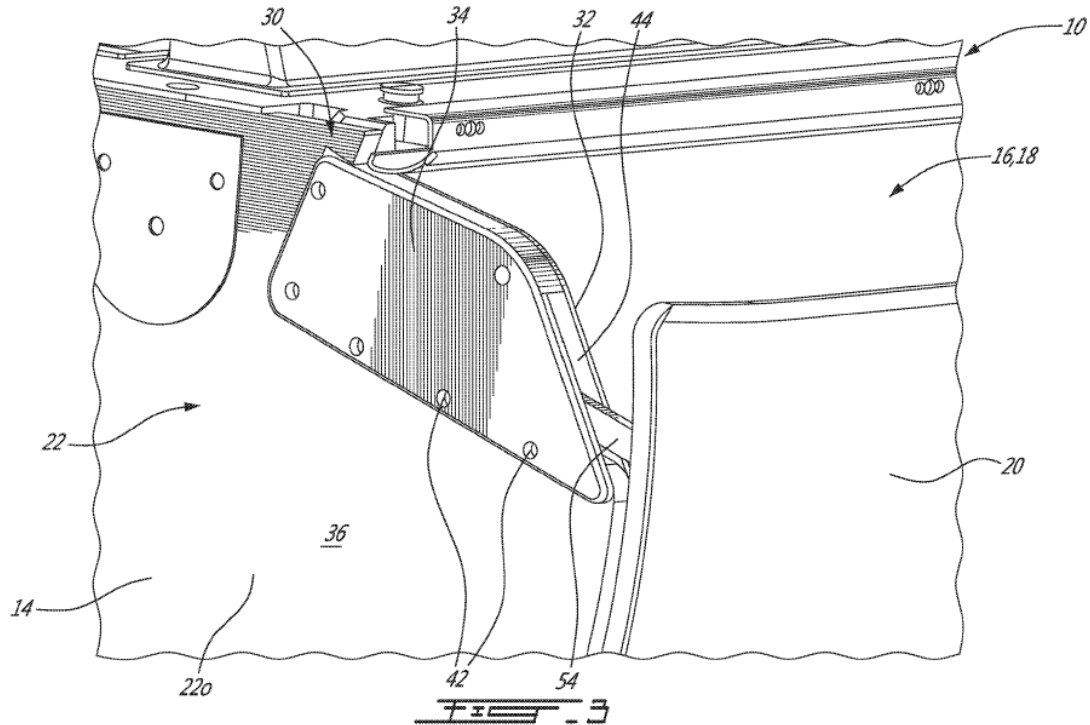


Figure 3 depicts hinge assembly 30 for allowing door 20 to move between open and closed positions. *Id.* ¶ 36. Inner wall panel 32 and outer wall panel 34 detachably connect to wall body 36 of wall 22 along the edge of cut-out 38 (not shown) via fasteners 42. *Id.* ¶ 38. Wall panels 32, 34 extend from the edge of cut-out 38 to complete the perimeter of opening 18 and define receiving space 44. *Id.* ¶ 39. Hinge assembly 30 includes hinge arm 54, which has a portion located in receiving space 44 and engaged to pivot 50 (not shown), and which connects to door 20. *Id.* ¶ 43. Hinge arm 54 pivots in a vertical plane that is aligned with wall 22 and remains in receiving space 44 between wall panels 32, 34. *Id.* Rheume states as follows:

hinge assembly 30, 130 advantageously allows for support of the door 20 without causing an obstruction in the storage space 16, since the hinge arm 54, 154 remains outward of the inner wall surface 22*i* of the corresponding wall 22, and the structure supporting the hinge arm 54, 154 is also provided outward of the inner wall surface 22*i*.

Id. ¶ 56.

2. Summary of Ehlers

Ehlers, titled “Overhead Bin for Use on Both Sides in an Aircraft,” relates to “an overhead bin for use on both sides in an aircraft.” Ex. 1014, code (54), ¶ 2. Ehlers explains “baggage of various sizes may be stowed in the bin from both sides so that there is no longer any need for passengers in a passenger cabin to resort to using overhead bins that are situated on the outside and that can only be accessed from one end.” *Id.* ¶ 5. Ehlers includes three figures, each of which we reproduce and discuss below.

Figure 1 of Ehlers is reproduced below.

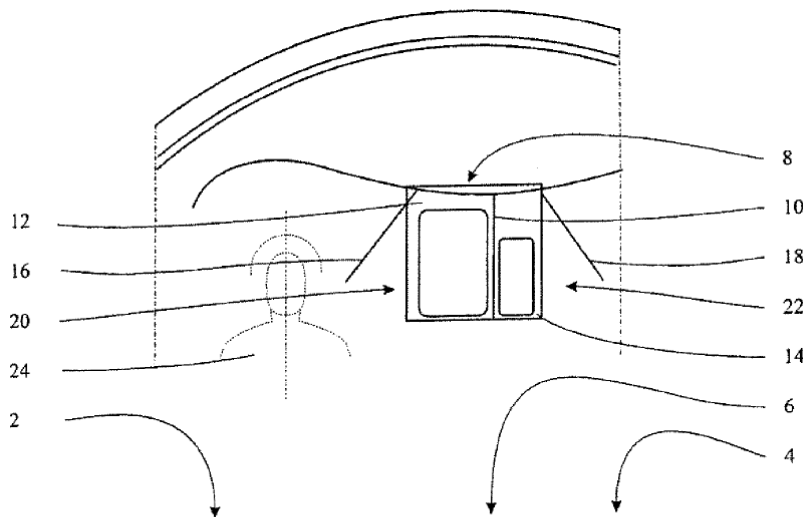


Fig. 1

Figure 1 depicts a cross section of a passenger aircraft having centre bins 8 (also referred to as “overhead bins 8”) for stowing baggage of passengers sitting in centre seat groups 6. *Id.* ¶ 15. Centre bins 8 includes partition 10, which separates baggage compartments 12 and 14. *Id.* ¶ 16. Partition 10 may be a fixed wall or a “mesh-like or net-like” structure to separate baggage compartments 12 and 14. *Id.* ¶ 17.

Figure 2 of Ehlers is reproduced below.

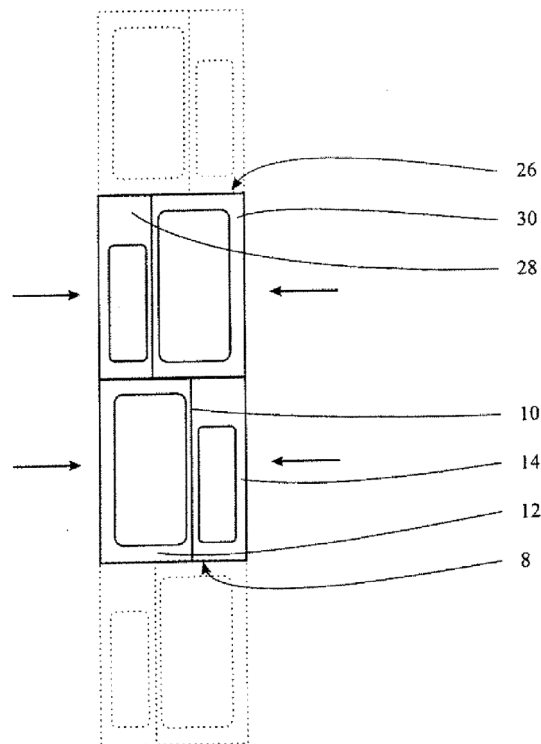


Fig. 2

Figure 2 depicts “a top view of a passenger cabin with successive overhead bins . . . in longitudinal section.” *Id.* ¶ 13. Figure 2 shows “overhead bin 8 comprises a large baggage compartment 12 and on its right-hand end a smaller stowage space 14, with the two stowage spaces being separated by a

partition 10.” *Id.* ¶ 19. Overhead bin 26 is shown adjacent in longitudinal direction to overhead bin 8, “and on its left-hand end comprises a smaller baggage compartment 28, while on its right-hand end it comprises a larger baggage compartment 30.” *Id.* A passenger in the left aisle may access large baggage compartment 12 or smaller baggage compartment 28, while a person in the right aisle may access smaller stowage space 14 or larger baggage compartment 30. *Id.*

Figure 3 of Ehlers is reproduced below.

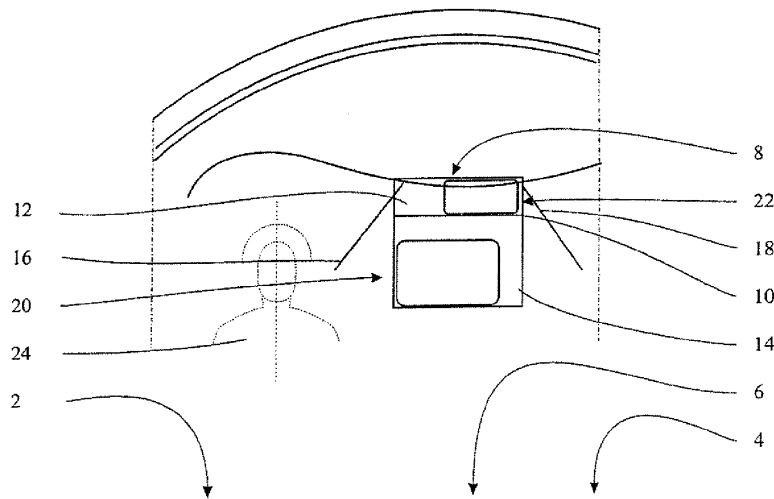


Fig. 3

Figure 3 depicts overhead bin 8 with horizontally aligned partition 10 providing with first baggage compartment 12 above second baggage compartment 14. *Id.* ¶ 21. First baggage compartment 12 is accessible through first loading opening 20 from the left and second baggage compartment 14 is accessible through second loading opening 22 from the right. *Id.*

3. *Summary of Savian*

Savian, titled “Pivot Bin Assembly,” relates to “an overhead storage bin assembly that includes a clamshell pivot bin.” Ex. 1006, code (54), ¶ 2. Savian discloses a pivot bin assembly configured to receive luggage in the interior of an aircraft. *Id.* ¶ 51.

Figure 21 of Savian is reproduced below.

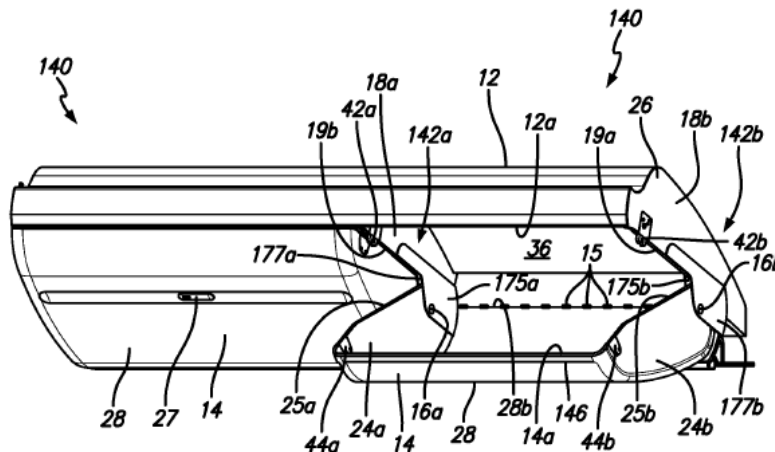


FIG. 21

Figure 21 of Savian depicts pivot bin assembly 140, which includes upper housing 26 having bucket 14 pivotally-connected via clevis assemblies 142a, 142b and pivot axles 16a, 16b to define bin interior 36. *Id.* ¶¶ 108–109. Upper housing 26 includes strongback 12 and side panels 18a, 18b. *Id.* ¶ 109. A plurality of stop members 15 positioned on strongback 12 and bucket 14 stop bucket 14 from opening further than a preferred open position. *Id.* Savian explains as follows:

bucket 14 and upper housing 26 provide a “clamshell design,” where at least a portion of the bottom edge 19a of the first side panel 18a and the bottom edge 19b of the second side panel 18b meet edge to edge with or abut one another and the front bottom edge 12a of the strongback 12 meets edge to edge with or abuts the top edge 14a of the bucket 14.

Id. ¶ 110.

Figure 25B of Savian is reproduced below.

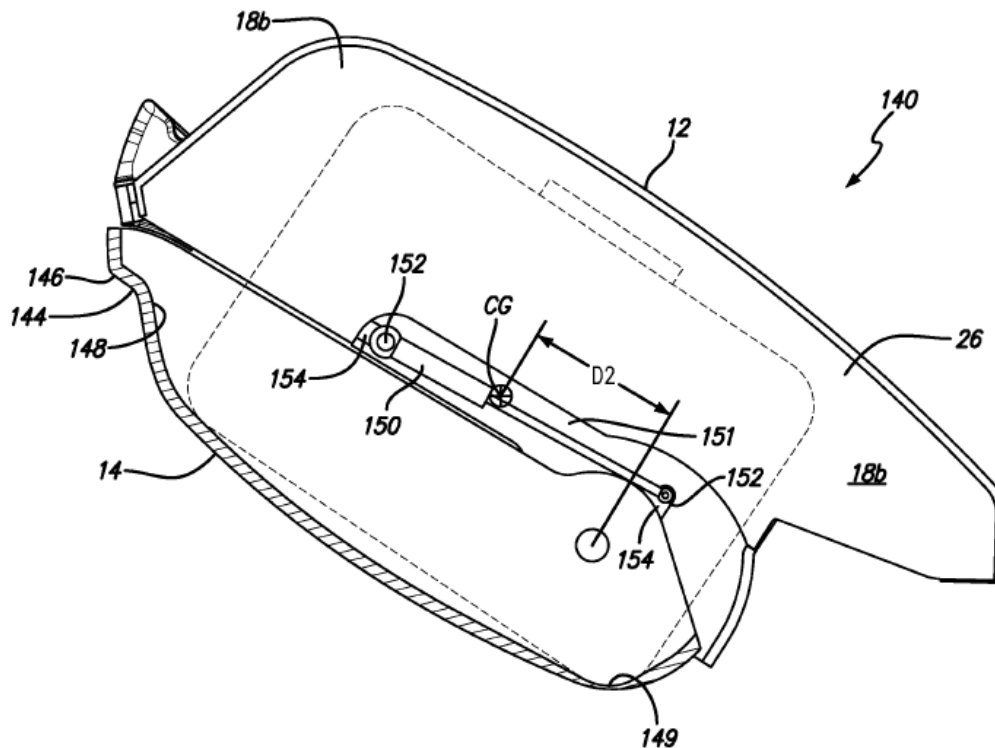


FIG. 25B

Figure 25B depicts one end of pivot bin assembly 140 with connector unit 150 positioned in cut out 151 of side wall 18b. *Id.* ¶ 123. One end of connector 150 connects to bucket 14 and the other end connects to side wall 18b of upper housing 26. *Id.* Savian explains that “connector unit 150 generally can be used for either one or both of damping the opening of the bucket 14 or assisting with the closing of the bucket 14.” *Id.* Connector unit 150 includes springs (not shown) and pivots about pivotal connections 152 to lengthen and contract as necessary for opening and closing bucket 14. *Id.* ¶ 124.

4. *Summary of Frazier*

Frazier, titled “Aircraft Luggage Bin Attachment and Stop System,” is directed to “improvements to standard luggage and storage bins commonly found in commercial aircraft as well as other aircraft, buses, passenger vans, and other vehicles.” Ex. 1008, 3:24–27. In particular, Frazier discloses an attachment system for coupling a luggage bin to a housing. *Id.* at 1:14–18.

Figure 7 of Frazier is reproduced below.

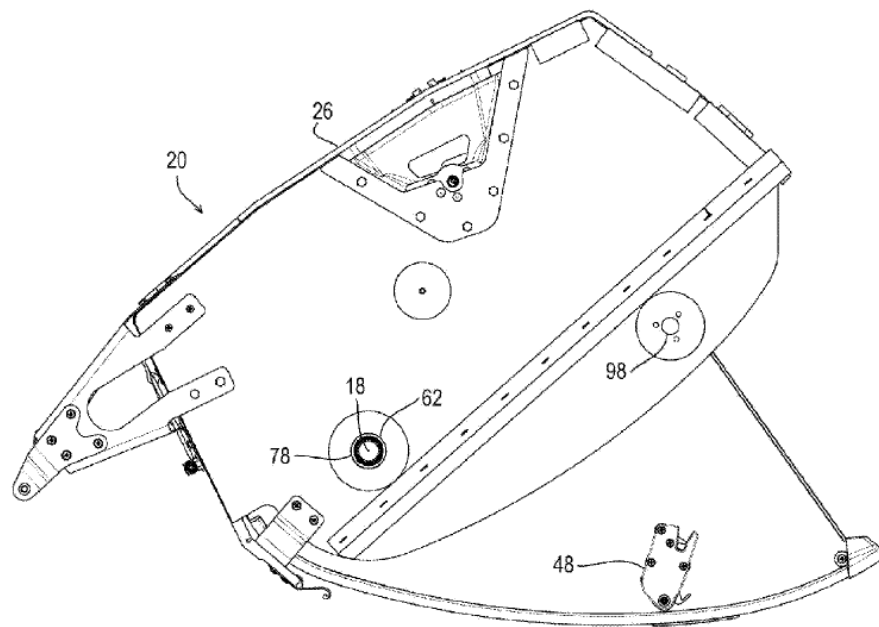


Fig. 7

Figure 7 depicts aircraft luggage bin attachment and stop system 20 with the bin in a fully open position. *Id.* at 4:46. Frazier explains, with reference to Figure 7, that “the left bin housing wall 74 and right bin housing wall 76 may have a surface defining a void 78 utilized independent of, or in cooperation with, the pivot receiver 68 to engage the outer surface of the bushing 66.” *Id.* at 5:2–6. Frazier states as follows:

this arrangement allows for a relatively long pivot protrusion 62 to be utilized within a relatively shallow pivot receiver 68 to maximize the internal width 78 (storage volume) of each bin 44

between internal surfaces 80 and 82 of the bin end-walls 184 and 186 and maintain structural integrity of the system.

Id. at 5:6–11.

E. Alleged Obviousness over Rheume and Ehlers

Petitioner contends that claims 1–3, 8, 14, and 15 of the '244 patent would have been obvious over Rheume and Ehlers. Pet. 16–34; *see also* Ex. 1003 ¶¶ 68–89 (declaration testimony of Dr. Codd supporting Petitioner's contentions).

1. Independent Claim 1

Claim 1 requires, in part, a bin bucket with “a partition positioned between first and second sidewalls” and “a partition hinge assembly coupled to the partition.” Ex. 1001, 7:31–47. Petitioner relies on Ehlers, which, as described above, teaches an overhead bin above center seat groups with a partition that divides the interior of the bin into separate compartments, some of which may be accessed by passengers in an aisle to the left of the center seat groups through a first hinged lid and some of which may be accessed by passengers in an aisle to the right of the center seat groups through a second hinged lid, as shown in Figures 1 and 2 of Ehlers, reproduced above (*see supra* Section III.D.2). Petitioner proposes adding “the partition disclosed by Ehlers to the bin assembly of Rheume so that a divider or partition was positioned between the first and second sidewalls.” Pet. 22.

With regard to “a partition hinge assembly coupled to the partition,” Petitioner recognizes Ehlers does not teach a “hinge assembly.” Petitioner argues that Rheume teaches the “hinge assembly” and proposes combining that teaching with the teaching of a partition by Ehlers. Pet. 27 (citing Ex. 1003 ¶ 80). Thus, Patent Owner's argument that “Ehlers does not

disclose a partition hinge assembly” is misplaced as Petitioner relies on a combination of the hinge assembly of Rheume and the partition of Ehlers as rendering obvious the claimed “partition hinge assembly coupled to the partition.” *See* Prelim. Resp. 47.

The fundamental deficiency in Petitioner’s argument lies in the absence of any plausible rationale for applying the partitions taught by Ehlers to the overhead storage bin and hinge assembly of Rheume to arrive at the claimed “partition hinge assembly coupled to the partition,” absent improper hindsight based on the disclosures of the ’244 patent, itself. As Patent Owner explains, “Ehlers teaches that the partitions are spatially separated from the hinged attachment points of the lids.” Prelim. Resp. 47–48 (citing Ex. 1014, Figs. 1, 3). To overcome the absence of any teaching or suggestion in Ehlers of a partition situated to receive a hinge assembly, Petitioner improperly directs us to the ’244 patent and asserts that it “explains that the claimed ‘partition’ can be just another bin sidewall.” Pet. 22 (citing Ex. 1001, 3:43–50). Petitioner cannot rely on what the ’244 patent discloses in place of what Ehlers fails to describe, and Ehlers fails to describe any partition that is “just another bin sidewall” or a partition oriented parallel to a bin sidewall. *See* Ex. 1014, Figs. 1–3.

Thus, there is no support in Ehlers or Rheume for Petitioner’s assertion that it would have been obvious to a person of ordinary skill in the art “to incorporate another intermediate hinge assembly in a partition wall, like the partition wall disclosed by Ehlers.” Pet. 27 (citing Ex. 1003 ¶ 80). Rheume does not teach or suggest an “intermediate hinge assembly” and Ehlers fails to teach or suggest a partition wall oriented in a manner suitable for receiving an “intermediate hinge assembly.”

We also find Petitioner’s purported rationales for the asserted combination insufficient and unsupported. Petitioner suggests that its proposed combination would increase “structural stability of the bin,” “optimize efficiency of storage space,” and “would provide greater attachment security for the bin door” (Pet. 27), but those assertions are supported by no more than the conclusory statements of Dr. Codd, which largely duplicate without further explanation what is stated in the Petition. *See* Ex. 1003 ¶¶ 80, 89. Dr. Codd states “creating multiple compartments described in Ehlers” would “increase structural integrity of the bin, improve crashworthiness (i.e., security of bin contents), and optimize efficiency of storage space.” *Id.* ¶ 89. Dr. Codd, however, provides no citations in support of his opinion, does not explain any need in the art to “increase structural integrity of the bin” or to “improve crashworthiness,” and offers no explanation for how adding a partition to include a hinge assembly would “optimize efficiency of storage space” in the combination with the storage bin of Rheume.

Whether, as Dr. Codd suggests, partitions are “commonplace design elements used in storage systems generally” is of no moment to why a person of ordinary skill in the art would have applied the partitions taught by Ehlers to the storage bin and hinge assembly of Rheume to arrive at the claimed “partition hinge assembly coupled to the partition.” *See id.* As Patent Owner explains, Ehlers teaches a partition to allocate space in an overhead storage bin above a center seat group accessed from aisles on either side of the bin, while Rheume teaches a storage bin that opens on only one side. Prelim. Resp. 50–52 (citing Ex. 1005, Fig. 2; Ex. 1014 ¶¶ 2, 3, 15, 16, Fig. 1). Petitioner identifies no plausible explanation why a person of ordinary skill in the art would have had reason to reorient the

partition of Ehlers to be parallel to a sidewall in a storage bin accessed from only one side, as taught by Rheume, much less to further add a hinge assembly to that partition when neither Rheume nor Ehlers suggests a need for an intermediate hinge assembly to support the bin door. Accordingly, we find that Petitioner has not established a reasonable likelihood of prevailing in demonstrating the unpatentability of claim 1 as obvious over Rheume and Ehlers for the reasons provided above.

2. *Dependent Claims 2, 3, and 8*

Claims 2, 3, and 8 depend from claim 1. We find that Petitioner has not established a reasonable likelihood of prevailing in demonstrating the unpatentability of claims 2, 3, or 8 as obvious over Rheume and Ehlers for the reasons provided above with regard to claim 1.

3. *Dependent Claims 14 and 15*

Claims 14 and 15 depend from claim 9. Ex. 1001, 8:52–59. Although Petitioner contends that claims 14 and 15 would have been obvious over Rheume and Ehlers, Petitioner does not contend that claim 9 would have been obvious over Rheume and Ehlers. *See, e.g.*, Pet. 5, 16–34. The only grounds of unpatentability directed to claim 9 in the Petition are obviousness over Rheume and Savian and obviousness over Savian and Frazier. *Id.* at 5. Thus, both grounds of unpatentability directed to claim 9 require Savian. *Id.* Petitioner’s contention that claims 14 and 15 would have been obvious over Rheume and Ehlers is insufficient and unsupported because Petitioner fails to allege how each limitation of claims 14 and 15, including those limitations of claim 9 from which they depend, is taught or suggested by the combination of Rheume and Ehlers. Accordingly, we find that Petitioner has not established a reasonable likelihood of prevailing in

demonstrating the unpatentability of claims 14 or 15 as obvious over Rheume and Ehlers.

F. Alleged Obviousness over Rheume, Ehlers, and Savian

Petitioner contends that claims 4–7 would have been obvious over Rheume, Ehlers, and Savian. Pet. 34–46; *see also* Ex. 1003 ¶¶ 90–102 (declaration testimony of Dr. Codd supporting Petitioner’s contentions). Petitioner relies on the addition of Savian only with regard to the additional limitations of claims 4–7. *Id.* As to the limitations of claim 1, from which claims 4–7 depend, Petitioner relies on its contention that claim 1 would have been obvious over Rheume and Ehlers, which we find insufficient for the reasons provided above (*see supra* Section III.E.1). *Id.* Accordingly, we find that Petitioner has not established a reasonable likelihood of prevailing in demonstrating the unpatentability of claims 4–7 as obvious over Rheume, Ehlers, and Savian because Petitioner has not established a reasonable likelihood of prevailing in demonstrating the unpatentability of claim 1, from which claims 4–7 depend, based on Rheume and Ehlers and Petitioner does not otherwise contend claim 1 would have been obvious over Rheume, Ehlers, and Savian.

G. Alleged Obviousness over Rheume and Savian

Petitioner contends that claims 9–13 would have been obvious over Rheume and Savian. Pet. 46–52; *see also* Ex. 1003 ¶¶ 103–120. (declaration testimony of Dr. Codd supporting Petitioner’s contentions).

1. Independent Claim 9

Petitioner contends that Rheume teaches an “overhead stowage bin assembly,” including “a bin bucket assembly,” “a bin bucket,” and “a stowage bin door,” as required by claim 9. Pet. 46–48. With regard to the “hinge assembly” recited in claim 9, Petitioner further relies on Savian as

teaching “a biasing device,” “a rotary crank,” “a pivot pin,” and “a connecting element that couples the biasing device to the rotary crank.” *Id.* at 48–49. Under the heading “Motivation to Combine Rheume and Savian,” Petitioner states that “[i]t would have been obvious to combine Rheume and Savian for the same reasons discussed above,” and directs us to Section VIII(B)(5) of the Petition. Section VIII(B) of the Petition corresponds to what Petitioner identifies as “Ground 2: Claims 4–7 are unpatentable under 35 U.S.C. §103 in view of Rheume, Ehlers, and Savian,” and Section VIII(B)(5) is titled “Motivation to Combine Savian with Rheume and Ehlers” Pet. ii, 44. Petitioner also cites paragraph 120 of Dr. Codd’s Declaration, which states “[i]t would have been obvious to combine Rheume and Savian for the same reasons I described above in connection with Ground 2.” Ex. 1003 ¶ 120; *see also id.* ¶ 90 (identifying “Ground 2” as “Claims 4–7 Are Obvious in View of Rheume, Ehlers and Savian”).

Petitioner’s argument purporting to show a motivation to combine Savian and Rheume to teach or suggest the limitations of claim 9 based only on the same arguments Petitioner presents to show a motivation to combine Savian, Rheume, and Ehlers to teach or suggest the limitations of claims 4–7 is fundamentally problematic because the limitations of claim 9, as a whole, are not the same as the limitations of any of claims 4–7, and the ground directed to claims 4–7 includes a reference, Ehlers, not asserted with respect to claim 9. For example, claim 4 requires that “the first hinge assembly includes a self-opening mechanism.” Ex. 1001, 7:56–57. Claim 9 does not recite a “self-opening mechanism.” Claim 9, however, expressly requires “a pivot pin received in the pivot pin aperture, the pivot pin pivotably coupling the stowage bin door to the bin bucket assembly.” *Id.*

at 8:11–36. None of claims 4–7 require a “pivot pin” as recited in claim 9. In the absence of any explanation for why the same rationale supporting the combination of a different set of references for a set of claims with different limitations applies to claim 9, we find Petitioner’s arguments insufficient to establish a reasonable likelihood of prevailing in demonstrating the unpatentability of claim 9 as obvious over Rheume and Savian because Petitioner fails to offer any rationale in support of combining the teachings of Savian with Rheume directed to the specific limitations of claim 9. *See* Pet. 44–46.

Further, in the context of claims 4–7, Petitioner asserts that Rheume and Savian “relate to improvements in the storage capacity of overhead bins in aircraft,” that “the various self-opening mechanisms described in Savian ‘could be easily incorporated into the hinge assembly of Rheume to simplify access to the overhead storage,’” that adding the purported “self-opening mechanisms recited in claims 4–7 and taken from Savian would have been ‘completely natural, intuitive, and straightforward design elements to incorporate in Rheume,’” and that “the specific features taken from Savian (*i.e.*, the various springs and cranks) are all ‘commonplace design elements used with pivoting doors and hinges generally to facilitate operation of the doors.’” Pet. 44–46 (quoting Ex. 1003 ¶ 102). Assuming the same rationale could apply to claim 9, we further find the purported rationales advanced by Petitioner are directed to generic motivations with no relation to the claimed limitations that merely suggest a combination “could” be made, but fail to provide a reason why a person of ordinary skill in the art would have had reason to combine Rheume and Savian in the manner asserted by Petitioner to correspond to the limitations of claim 9.

2. *Dependent Claims 10–13*

Claims 10–13 depend from claim 9. We find that Petitioner has not established a reasonable likelihood of prevailing in demonstrating the unpatentability of claims 10–13 as obvious over Rheume and Savian for the same reasons provided above with regard to claim 9.

H. *Alleged Obviousness over Savian, Ehlers, and Frazier*

Petitioner contends that claims 1–8, 14, and 15 would have been obvious over Savian, Ehlers, and Frazier. Pet. 52–74; *see also* Ex. 1003 ¶¶ 121–153 (declaration testimony of Dr. Codd supporting Petitioner’s contentions).

1. *Independent Claim 1*

Claim 1 requires, in part, “a stowage bin assembly comprising” both “a bin bucket assembly including a bin bucket” and “a stowage bin door pivotably coupled to the bin bucket assembly.” Ex. 1001, 7:31–47. Petitioner relies only on Savian as teaching these limitations. *See* Pet. 53–56, 66–67.

Petitioner first directs us to “bucket 14 and upper housing 26” of Savian as corresponding to the recited limitations of claim 1 directed to a “bin bucket assembly including a bin bucket,” without clearly articulating what specific elements of Savian it contends correspond to each recited feature of claim 1. Pet. 53 (citing, e.g., Ex. 1006 ¶ 79, Figs. 3, 21). Petitioner further contends that bucket 14 of Savian is a “stowage bin door” that “pivotably couples to the bin bucket assembly 12.” *Id.* at 66–67 (citing Ex. 1006, Fig. 24). Savian, however, identifies element 12 as a “strongback,” and Petitioner offers no explanation for why it first identifies “bucket 14 and upper housing 26” of Savian as corresponding to the recited “bin bucket assembly including a bin bucket,” and then identifies element 12

of Savian as “the bin bucket assembly.” Petitioner’s imprecise and inconsistent contentions are insufficient to adequately inform the Board and Patent Owner how Petitioner contends the asserted references teach each limitation of claim 1.

Moreover, Petitioner improperly relies upon bucket 14 of Savian as both the recited “bin bucket,” as part of the “bin bucket assembly,” and as the “stowage bin door,” which are independent elements required by claim 1. Pet. 53–56, 66–67. Petitioner argues “[t]here is no requirement in the claims or specification that the bin door be ‘separate from the bin bucket.’” Reply 1. The issue, however, is not whether a “bin bucket” and a “stowage bin door” must be “separate” in accordance with claim 1, but whether Petitioner may rely on one element in Savian as corresponding to both the recited “bin bucket” (or a part thereof) and the recited “stowage bin door” of claim 1. We find that the plain language of claim 1 precludes Petitioner from relying on bucket 14 of Savian to be both a “bin bucket,” as part of the “bin bucket assembly,” and to be a “stowage bin door pivotably coupled to the bin bucket assembly,” as further explained below.

Petitioner argues that “the claimed bin bucket and bin door are not synonymous, but rather might partially overlap or include some common elements,” that “bucket 14 and upper housing 26 [of Savian] ‘cooperate’ to define a bin interior,” and that the “EP Examining Division agreed that bucket 14 of Savian can constitute the bin door, while upper housing 26 forms part of the bin bucket.” Reply 2 (citing Pet. 66–67, 67 n.12). None of these arguments address the issue presented, which turns on Petitioner’s improper reliance on bucket 14 for two independent elements of claim 1. Claim 1 recites separately “a stowage bin door” that must be “pivotably coupled to the bin bucket assembly.” Petitioner offers no plausible

interpretation of claim 1 that permits the separately recited “stowage bin door” to also be a “bin bucket” as part of the “bin bucket assembly” to which the “stowage bin door” also must be “pivotably coupled.” *See* Sur-reply 1–2 (stating that a person of ordinary skill in the art “*reading the claims* would consider the bin door to be distinct from the bin bucket assembly because the claims recite that those components are rotatably coupled to each other”).

In sum, Petitioner fails to show sufficiently that Savian teaches a “stowage bin door pivotably coupled to a bin bucket assembly,” as required by claim 1. Petitioner does not otherwise rely on Ehlers or Frazier as to this limitation. Accordingly, we find that Petitioner has not established a reasonable likelihood of prevailing in demonstrating the unpatentability of claim 1 as obvious over Savian, Ehlers, and Frazier.⁷

2. *Dependent Claims 2–8*

Claims 2–8 depend from claim 1. We find that Petitioner has not established a reasonable likelihood of prevailing in demonstrating the unpatentability of claims 2–8 as obvious over Savian, Ehlers, and Frazier for the reasons provided above with regard to claim 1.

3. *Dependent Claims 14 and 15*

Claims 14 and 15 depend from claim 9. Ex. 1001, 8:52–59.

Petitioner does not contend that claim 9 would have been obvious over Savian, Ehlers, and Frazier, but does assert claim 9 would have been obvious

⁷ Additionally, we note that Petitioner’s reliance on Ehlers with regard to the recited “partition hinge assembly coupled to the partition” of claim 1, and the rationale asserted in support of the combination with Savian and Frazier, substantially mirror the arguments addressed above with regard to the asserted combination of Rheaume and Ehlers and we find Petitioner’s contentions suffer from the same deficiencies addressed above. *See supra* Section III.E.1.

over Savian and Frazier. Pet. 5. Petitioner relies on the addition of Ehlers with regard to the additional limitations of claims 14 and 15. *Id.* at 71–72.

As to the limitations of claim 9, from which claims 14 and 15 depend, Petitioner presumably relies on its contention that claim 9 would have been obvious over Savian and Frazier. As explained below, Petitioner has not established a reasonable likelihood of prevailing in demonstrating the unpatentability of claim 9 as obvious over Savian and Frazier. *See infra* Section III.I. Accordingly, we find that Petitioner has not established a reasonable likelihood of prevailing in demonstrating the unpatentability of claims 14 and 15 as obvious over Savian, Ehlers, and Frazier, because Petitioner has not established a reasonable likelihood of prevailing in demonstrating the unpatentability of claim 9, from which claims 14 and 15 depend, based on Savian and Frazier and Petitioner does not otherwise contend claim 9 would have been obvious over Savian, Ehlers, and Frazier.

I. Alleged Obviousness over Savian and Frazier

Petitioner contends that claims 9–13 would have been obvious over Savian and Frazier. Pet. 74–82; *see also* Ex. 1003 ¶¶ 154–170 (declaration testimony of Dr. Codd supporting Petitioner’s contentions). Like claim 1, claim 9 requires, in part, a “bin bucket assembly including a bin bucket” and “a stowage bin door pivotably coupled to the bin bucket assembly.”

Ex. 1001, 8:11–36. Petitioner contends Savian teaches these limitations for the same reasons Petitioner asserts with regard to claim 1, discussed above. *See* Pet. 74–77. Accordingly, we find that Petitioner has not established a reasonable likelihood of prevailing in demonstrating the unpatentability of claim 9, or of claims 10–13 depending from claim 9, for the same reasons discussed above with regard to the alleged unpatentability of claim 1 over Savian, Ehlers, and Frazier. *See supra* Section III.H.1.

IV. CONCLUSION

For the foregoing reasons, we determine that Petitioner does not demonstrate a reasonable likelihood of prevailing with respect to at least one of the Challenged Claims. Accordingly, we do not institute *inter partes* review of the '244 patent.⁸

V. ORDER

Upon consideration of the record before us, it is:

ORDERED that the Petition is *denied* and no trial is instituted.

⁸ Patent Owner also argues that we should exercise our discretion under 35 U.S.C. §325(d) to deny institution of *inter partes* review. Prelim. Resp. 35–45. We deny institution of *inter partes* review for the reasons provided above and, therefore, do not reach Patent Owner's arguments regarding discretionary denial.

IPR2022-00195
Patent 10,801,244 B1

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