

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

THE BURTON CORPORATION,  
Petitioner,

v.

SMITH SPORT OPTICS, INC. AND KOROYD SARL,  
Patent Owner.

---

IPR2022-00354  
Patent 10,736,373 B2

---

Before LYNNE H. BROWNE, SCOTT A. DANIELS, and  
NEIL T. POWELL, *Administrative Patent Judges*.

POWELL, *Administrative Patent Judge*.

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

## I. INTRODUCTION

### A. BACKGROUND

The Burton Corporation (“Petitioner”) filed a Petition for *inter partes* review of claims 1–5, 7, 12, 13, and 15–17 of U.S. Patent No. 10,736,373 B2 (Ex. 1001, “the ’373 patent”). Paper 2 (“Pet.”). Smith Sport Optics, Inc. and Koroyd Sarl (“Patent Owner”) filed a Preliminary Response. Paper 6 (“Prelim. Resp.”). Pursuant to our authorization, Petitioner filed a Reply to Patent Owner’s Preliminary Response. Paper 7 (“Reply”). Also pursuant to our authorization, Patent Owner filed a Sur-reply. Paper 8 (“Sur-reply”).

Under 35 U.S.C. § 314(a), an *inter partes* review may not be instituted unless the information presented in the Petition and any response thereto shows “there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” Considering the Petition, the Preliminary Response, the Reply, the Sur-reply, and the evidence of record, we determine that Petitioner does not show a reasonable likelihood that at least one of the challenged claims is unpatentable. Accordingly, we do not institute *inter partes* review.

### B. RELATED PROCEEDINGS

The parties note that the ’373 patent is involved in *Smith Sport Optics, Inc. v. The Burton Corp.*, Case No. 1:21-cv-2112 (D. Col.). Pet. ix; Paper 3, 2.

C. THE '373 PATENT

The '373 patent describes helmets and their manufacture. Ex. 1001, code (57). The '373 patent shows a helmet in Figure 1. *Id.* at 1:37–38, 2:10–11. Figure 1 is reproduced below.

100

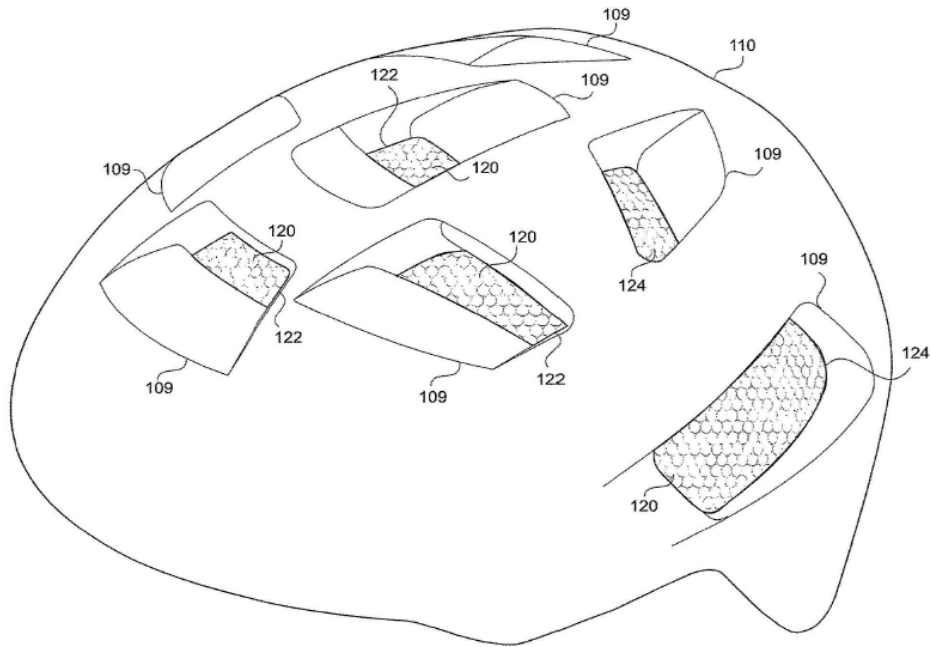


FIG. 1

Figure 1 “is an isometric view of the front, top and left side of” helmet 100. *Id.* at 1:37–38.

Helmet 100 has shell 110 with vents 109 for ventilating the wearer’s head. *Id.* at 2:10–13. Inserts 122, 124 are visible through vents 109.

*Id.* at 2:14–16. Figure 2 shows helmet 100 from another perspective.

*Id.* at 2:28–29. Figure 2 is reproduced below.

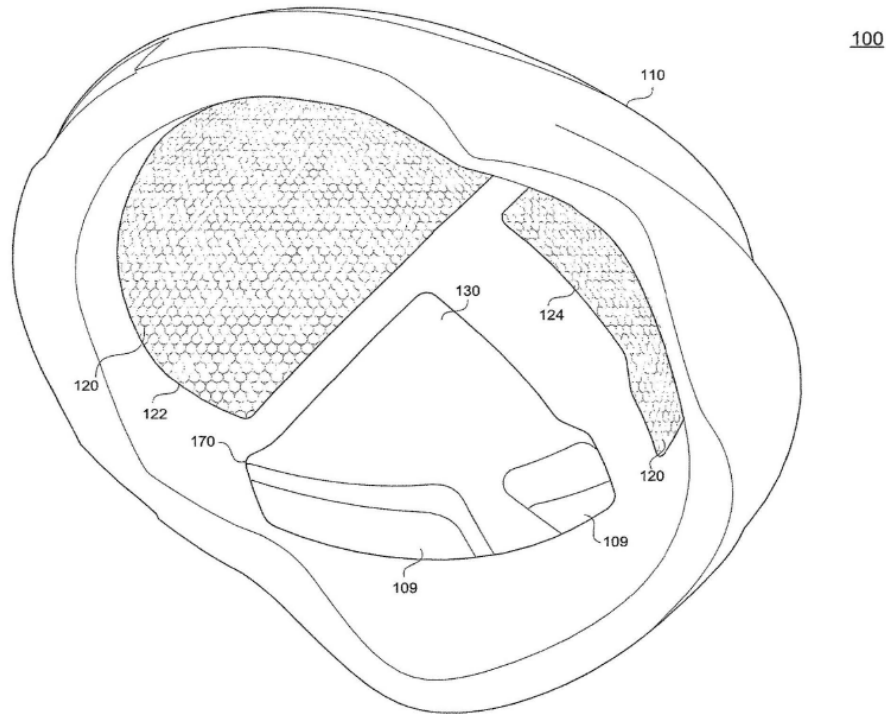


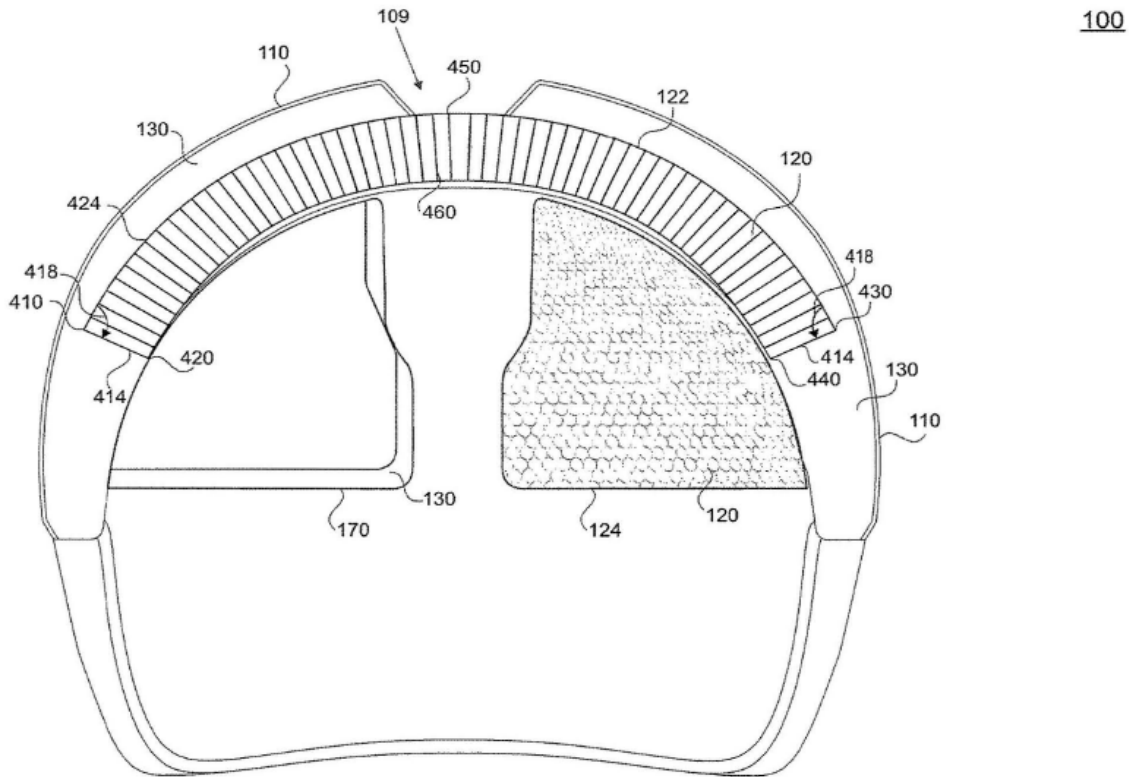
FIG. 2

Figure 2 “is an isometric view of the left side and the inside of” helmet 100.

*Id.* at 1:39–41.

Figure 2 shows helmet 100’s shock absorbing liner 130 with cavities that hold inserts 122, 124. *Id.* at 2:28–35. In Figure 2, “an insert 126 is removed to show a cavity . . . 170 of the shock absorbing liner 130 in which the insert 126 may be inserted.” *Id.* at 2:35–37. Collectively, shock absorbing liner 130 and inserts 122, 124, and 126 define a bowl shape to accommodate a wearer’s head. *Id.* at 2:37–40.

The '373 patent provides cross-sectional views of helmet 100 in Figures 4 and 5. *Id.* at 1:44–50, 4:40–42, 5:10–13. Figure 4 is reproduced below.

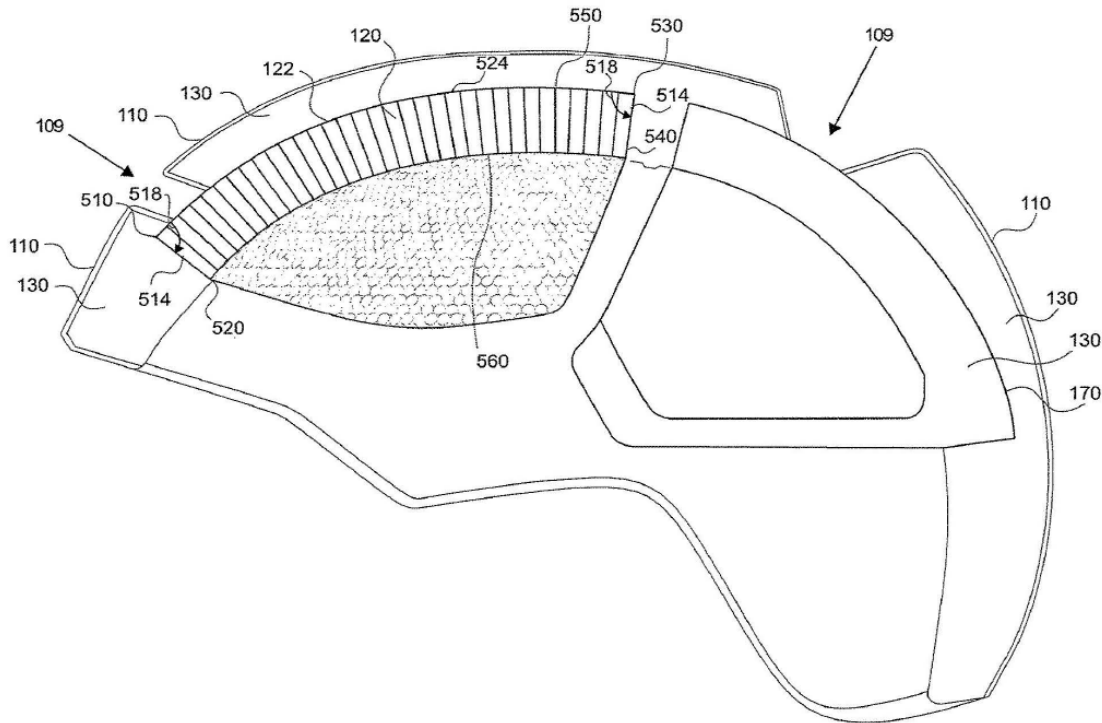


**FIG. 4**

Figure 4 is “a left to right vertical cross-sectional view of [helmet 100] including a cross-section of a front shock absorbing insert,” specifically insert 122. *Id.* at 1:44–46, 4:40–42.

Figure 5 is reproduced below.

100



**FIG. 5**

Figure 5 “is a front to back vertical cross-sectional view of [helmet 100] including a cross-section of [insert 122], and a cross-section of a cavity for a rear shock absorbing insert.” *Id.* at 1:47–50.

Helmet 100 may have shock absorbing liner 130 secured to shell 110’s inner surface. *Id.* at 3:13–14. “[S]hock absorbing liner 130 may be formed from various materials, for example, [expanded polystyrene (EPS)] material, [expanded polypropylene (EPP)] material, or other suitable shock absorbing materials.” *Id.* at 3:54–58.

Inserts 122, 124, and 126 may be formed of second shock absorbing material 120. *Id.* at 2:14–16, 2:43–45, 4:1–3, 4:40–44. The ’373 patent explains that

the second shock absorbing material 120 may be a honeycomb material. A honeycomb material may be used to provide impact absorption and have tubes with open longitudinal ends that allow air to freely flow through the tubes in the shell 110 to the head of the wearer. For example, the honeycomb material includes tubes arranged in a closely packed array.

*Id.* at 2:17–23. The '373 patent also explains that

at least a portion of one or more of the inserts 122, 124, and 126 may align with a vent 109 in the shell 110 to provide ventilation. Thus, a vent 109 of the shell 110 overlaps (e.g., aligns) with a portion of the cavity 170 of the shock absorbing liner 130. The vent 109 aligned with the insert 122, 124, or 126 is configured to allow air to flow through the vent 109 and the insert 122, 124, and 126 to the head of a wearer.

*Id.* at 4:17–24.

#### D. ILLUSTRATIVE CLAIM

Of the challenged claims, claims 1 and 12 are independent. Each of claims 2–5, 7, 13, and 15–17 depends, directly or indirectly, from one of independent claims 1 and 12. Claim 1 is illustrative and is reproduced with certain reformatting:<sup>1</sup>

1. [1PRE] A helmet, comprising:
  - [1A] a shell comprising a plurality of vents including a first vent defining a first opening and a second vent defining a second opening;
  - [1B] a shock absorbing liner adjacent to and attached to the shell and comprising a cavity at least partially aligned with the plurality of vents; and

---

<sup>1</sup> The Petition uses the identifiers [1PRE], [1A], [1B], [1C], [1C1], [1C2], [1C3], [1C4], and [1C5] to label the different portions of claim 1. We have applied the same identifiers. Additionally, we have added carriage returns between certain portions of claim 1.

- [1C] a shock absorbing insert positioned in and substantially filling the cavity
- [1C1] such that the shock absorbing insert is visible through and spans across at least a portion of each of the plurality of vents
- [1C2] wherein at least a portion of the shock absorbing liner is positioned between the shell and the shock absorbing insert
- [1C3] wherein the shock absorbing insert comprises an array of energy absorbing cells, each having respective open first longitudinal ends and open second longitudinal ends
- [1C4] wherein the first longitudinal ends of a first plurality of adjacent cells of the array of energy absorbing cells are positioned within a perimeter of the first opening and the first longitudinal ends of a second plurality of adjacent cells of the array of energy absorbing cells are positioned within a perimeter of the second opening
- [1C5] such that air is able to flow from an exterior side of the helmet through each of the first and second vents and through a respective one of the first and second plurality of adjacent cells toward an interior of the helmet.

Ex. 1001, 6:58–7:16.



E. ASSERTED GROUND OF UNPATENTABILITY

Petitioner challenges the patentability of claims 1–5, 7, 12, 13, and 15–17 of the '373 patent on the following ground (Pet. 1):

Claims Challenged	35 U.S.C. §	Reference(s)
1–5, 7, 12, 13, 15–17	103 <sup>2</sup>	Muskovitz, <sup>3</sup> Sajic, <sup>4</sup>

In support of its unpatentability contentions, Petitioner also relies on the Declaration of Steve Copeland. Ex. 1003. Patent Owner submits a Declaration of Stephanie Bonin, PhD, PE. Ex. 2001.

II. ANALYSIS

A. LEVEL OF ORDINARY SKILL

Petitioner contends that

[a] person of ordinary skill in the art (POSA) would have had a Bachelor's degree in mechanical engineering, industrial design, or a similar such degree, and at least two years of experience with helmet design and would have had familiarity with the materials and manufacturing processes thereof. Additional education could have substituted for experience, and vice versa.

Pet. 7. Patent Owner does not dispute Petitioner's description of a person of ordinary skill in the art. *See generally* Prelim. Resp. For purposes of deciding whether Petitioner has demonstrated a reasonable likelihood of

---

<sup>2</sup> The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) ("AIA"), amended 35 U.S.C. § 103, effective March 16, 2013. Because the '373 patent has an effective filing date after the effective date of the applicable AIA amendments, we refer to the AIA version of § 103.

<sup>3</sup> Muskovitz, U.S. Patent Application Publication No. 2004/0064873 A1, published Apr. 8, 2004 (Ex. 1005) ("Muskovitz").

<sup>4</sup> Sajic, U.S. Patent Application Publication No. 2008/0307568 A1, published Dec. 18, 2008 (Ex. 1006) ("Sajic").

prevailing, we adopt Petitioner’s definition of a person of ordinary skill in the art.

B. CLAIM CONSTRUCTION

In an *inter partes* review proceeding, a claim of a patent is construed using the same standard used in federal district court, including construing the claim in accordance with the ordinary and customary meaning of the claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. 37 C.F.R. § 42.100(b) (2020). According to the applicable standard, claim terms “are generally given their ordinary and customary meaning” as understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc) (citations omitted). Only those terms that are in controversy need be construed, and only to the extent necessary to resolve the controversy. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citing *Vivid Techs., Inc. v. America Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

Petitioner expressly interprets certain language of the challenged claims. Pet. 10–11. Patent Owner suggests we should apply “ordinary and customary constructions.” Prelim. Resp. 3. We do not discern a need to construe any claim language expressly in order to determine whether Petitioner demonstrates a reasonable likelihood of prevailing.

C. ALLEGED OBVIOUSNESS OVER MUSKOVITZ AND SAJIC

1. *Overview of Muskovitz*

Muskovitz relates to ventilated, protective helmets. Ex. 1005 ¶ 3. Muskovitz shows one embodiment of a protective helmet in Figure 1. *Id.* ¶ 75. Figure 1 is reproduced below.

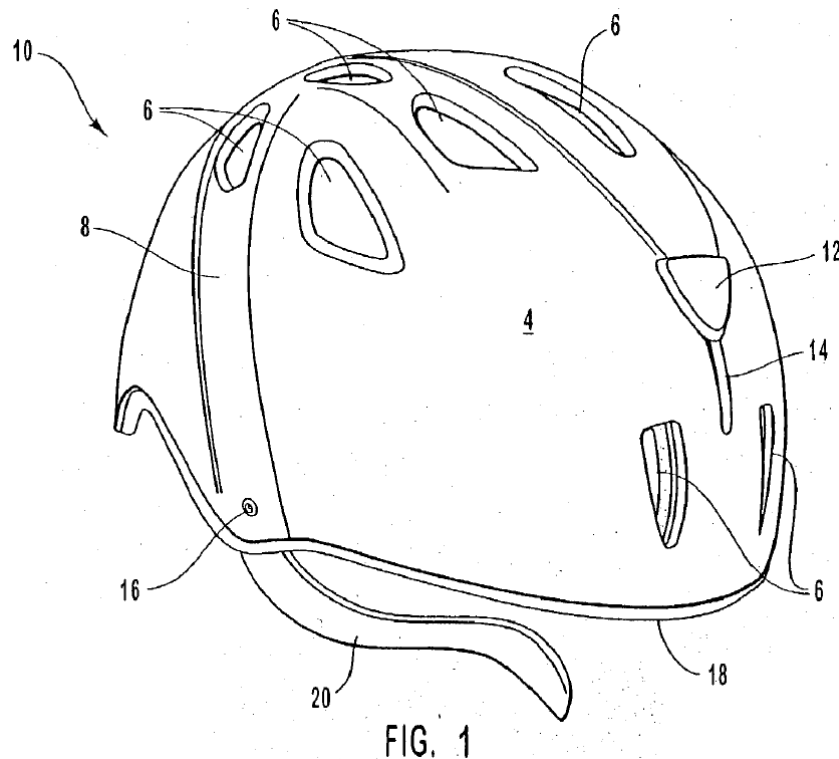


Figure 1 shows protective helmet 10, which includes outer shell 4 and inner liner 18. *Id.* ¶ 75.

“Inner liner 18 comprises impact absorbing material serving as the protective element for protective helmet 10.” *Id.* ¶ 81. For example, Muskovitz explains that “[t]he protective helmet of the present invention may be composed of expanded polystyrene foam (EPS) as a helmet liner to meet the impact attenuation safety requirements.” *Id.* ¶ 119. Muskovitz elaborates that “[a]lternatively, to provide improved protection and greater or increased impact attenuation, the protective helmet of the present invention may comprise a laminated, dual density, closed-cell, foamed polymeric material, preferably a nitrogen blown, cross-linked, high-density polyethylene foam.” *Id.* ¶ 120.

Ventilation ports 6 pass from outer shell 4 into protective helmet 10's interior. *Id.* ¶ 75. Muskovitz seeks to “provide a protective helmet having a ventilation system that is adjustable according to user preference.” *Id.* ¶ 15. In that vein, protective helmet 10 includes fluid airflow actuator 12 for adjusting air flow through ventilation ports 6. *Id.* ¶ 75. Fluid airflow actuator 12 can slide up or down along slotted portion 14, “such that ventilation or air flow through ventilation ports 6 may be modified and controlled by the user. Air flow may be total, partial, or blocked.” *Id.* With fluid airflow actuator 12 in the position shown in Figure 1, ambient air can flow through ventilation ports 6. *Id.* Moving fluid airflow actuator 12 down blocks air through ventilation ports 6 with a vent shield, which is not illustrated in Figure 1. *Id.*

Muskovitz discloses housing the vent shield inside a vent space “to control ambient air flow into and out of the helmet.” *Id.* ¶ 21. One embodiment of this arrangement appears in Figures 4 and 5. *Id.* ¶¶ 43, 78. Figure 4 is reproduced below.

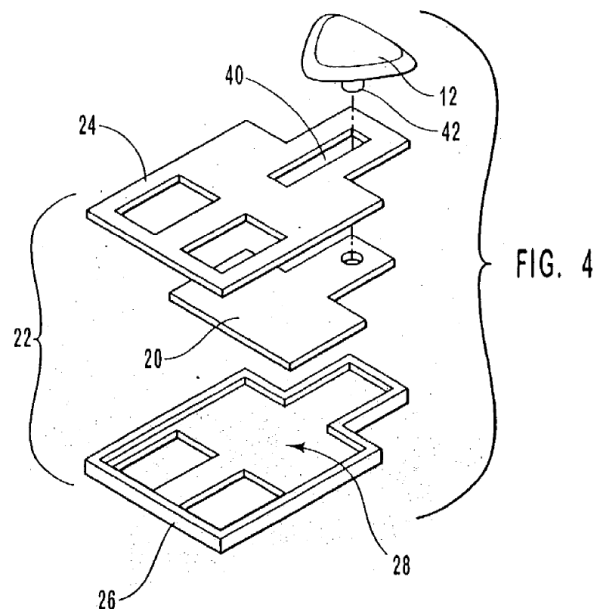


Figure 4 “illustrates a perspective view of [vent box 22] having [vent shield 20] contained therein.” *Id.* ¶¶ 42, 78. Vent box 22 includes upper member 24 and lower member 26, which bound vent space 28. *Id.* ¶ 80.

Figure 5 shows vent box 22 incorporated into protective helmet 10. *Id.* ¶¶ 43, 80. Figure 5 is reproduced below.

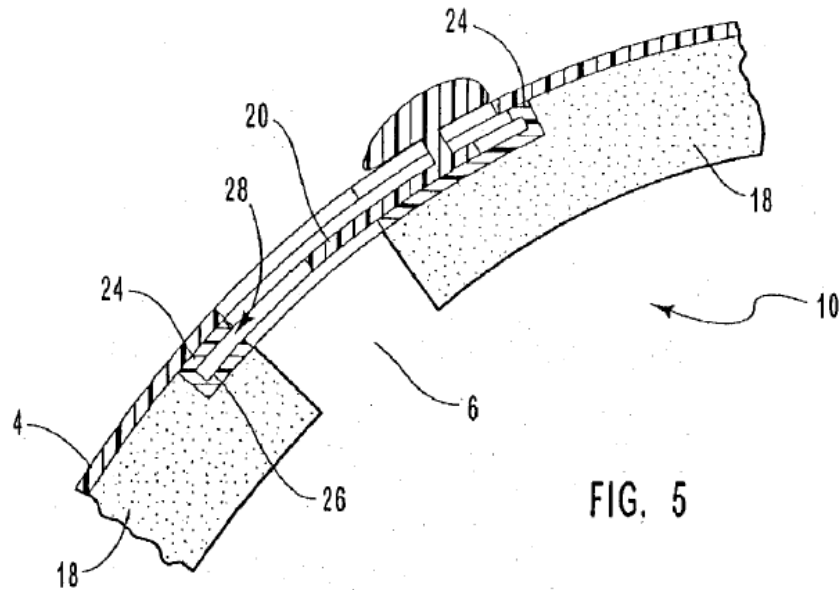


Figure 5 “illustrates a cut away side view of one embodiment of the protective helmet and vent system as integrated with the protective helmet.” *Id.* ¶ 43.

In Figure 5, vent box 22 has upper member 24 and lower member 26 “embedded within a recess in an outer portion of liner 18 beneath outer shell 4.” *Id.* ¶ 80. Upper member 24 and lower member 26 encase vent shield 20 within vent space 28. *Id.* Vent shield 20 can move within vent box 22, such that “vent shield 20 either covers, uncovers, or partially covers ventilation ports 6 to control the flow of ambient air into the interior protective helmet 10.” *Id.* Fluid airflow actuator 12 is connected to vent shield 20, allowing a user to manipulate fluid airflow actuator to move vent shield 20 and adjust airflow through ventilation ports 6. *Id.* ¶¶ 78–79.

Muskovitz shows another embodiment of protective helmet 10 in Figure 10. *Id.* ¶¶ 48, 87. Figure 10 is reproduced below.

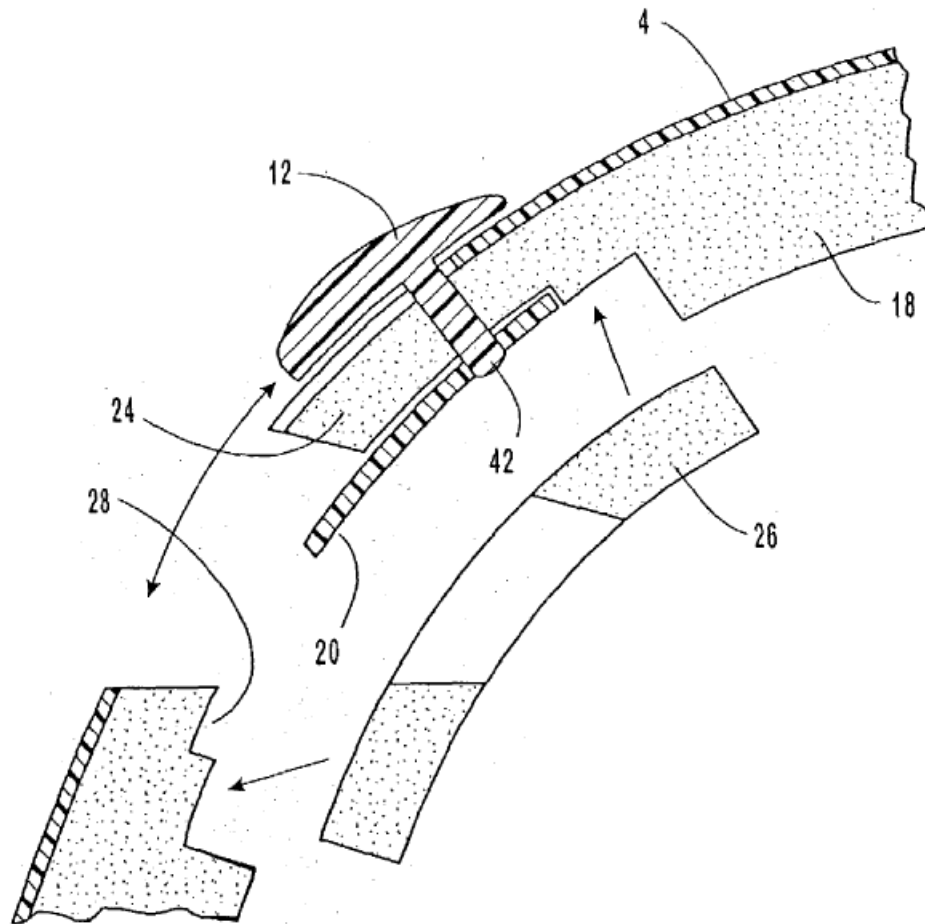


FIG. 10

Figure 10 “illustrates a cut away front view of one embodiment of the protective helmet according to the present invention in which a removable absorbing material piece fits within a recess located in the inner liner in a matching relationship to create a vent space housing a vent shield.” *Id.* ¶ 48.

In the embodiment of Figure 10, impact absorbing liner 18 has a recess, “such that inner liner 18 forms the upper boundary of vent space 28.” *Id.* ¶ 87. Additionally, the embodiment of Figure 10 includes removable

insert member 26, which fits within liner 18's recess "to enclose vent shield 20 and define vent space 28." *Id.* According to Muskovitz, "[i]nset member 26 may comprise various material compositions, but is preferably the same or a similar impact absorbing material as liner 18." *Id.*

## 2. *Overview of Sajic*

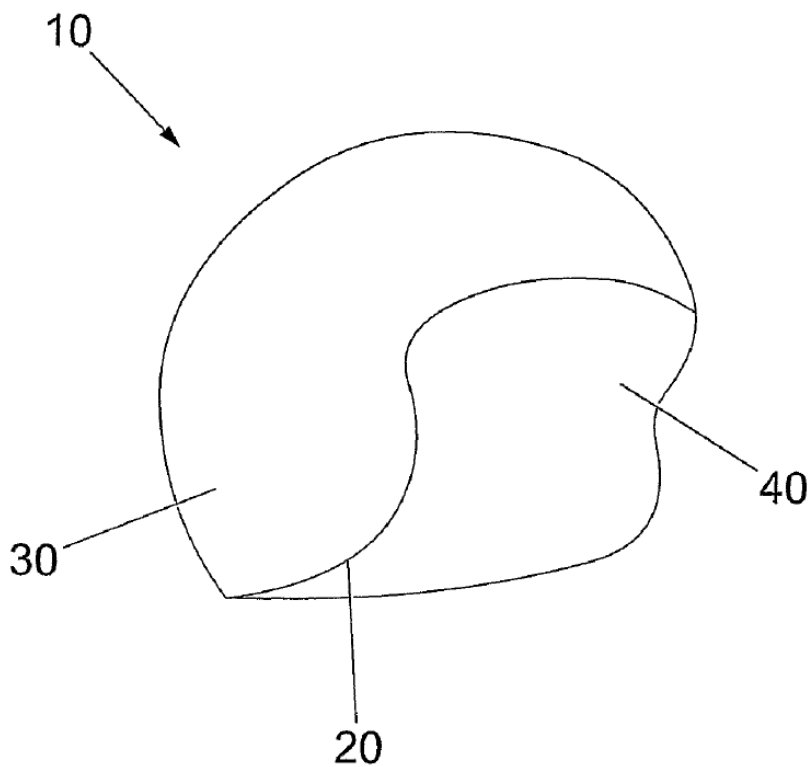
Sajic's disclosure "relates to body protecting devices," "such as safety helmets." Ex. 1006 ¶ 1. Sajic explains that "[s]afety helmets conventionally comprise a substantially spheroidal outer skin of tough plastics material and an inner skin of resilient material such as hard foam." *Id.* ¶ 2. Sajic notes that body protecting devices should absorb impact energy in a steady, controlled manner, reducing impact load on the user. *Id.* ¶ 3. Sajic also notes a desire to provide a safety helmet that maximizes protection in locations of frequent impacts and vulnerable anatomy. *Id.* ¶ 4.

In one example, Sajic discloses providing a body protecting device that includes an impact absorbing surface and an array of energy absorbing cells. *Id.* ¶¶ 12–14. "[E]ach of said cells comprises a tube." *Id.* ¶ 14.

In another example, Sajic discloses a body protecting device that includes a spacing member and one or more inserts. *Id.* ¶¶ 46–48. A first material forms the spacing member. *Id.* ¶ 47. The first material preferably comprises a foam. *Id.* ¶ 52. The spacing member includes "one or more receptacles in the plane of the spacing member." *Id.* ¶ 47. A second material forms the inserts, each of which is "located at a receptacle of the spacing member." *Id.* ¶ 48. Preferably, "each insert comprises an array of energy absorbing cells, wherein each cell comprises a tube," "the array defines a first and second discontinuous surface," and "a sealing material is provided at one or both of the first and second discontinuous surfaces." *Id.*

¶¶ 53, 68. Similarly, an exemplary method preferably involves using inserts formed of a second material with an array of energy absorbing cells with “first and second discontinuous surface[s]” and “a sealing material at one or both of the first and second discontinuous surfaces.” *Id.* ¶¶ 69–72, 79, 82.

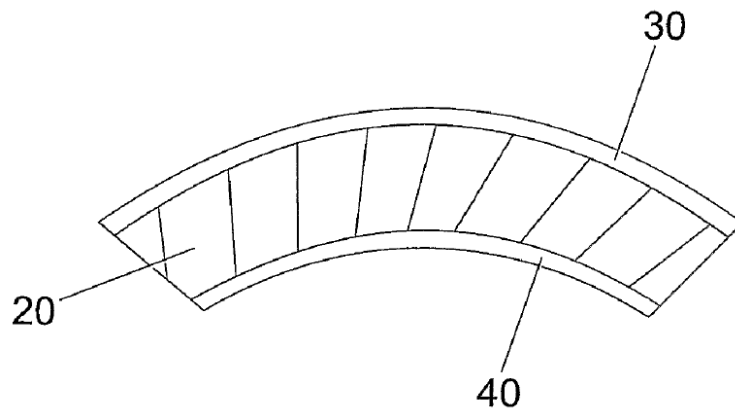
Sajic “shows a first embodiment of a body protecting device in the form of a safety helmet 10” in Figures 1(a) and 1(b). *Id.* ¶ 97. Figure 1(a) is reproduced below.



***Fig. 1a***

Figure 1(a) “is a perspective view of [safety helmet 10].” *Id.* ¶¶ 84, 97. Figure 1(b) is reproduced below.





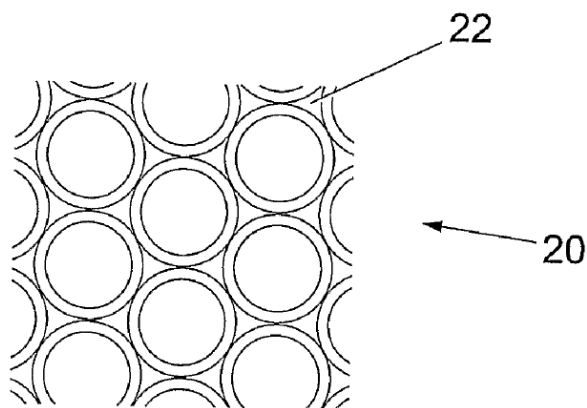
*Fig. 1b*

Figure 1(b) “is a sectional side view of a portion of [safety helmet 10].”

*Id.* ¶¶ 85, 97.

“[H]elmet 10 comprises a first material or core 20 which is sandwiched between a second material or outer layer 30 and a third material or inner layer 40.” *Id.* ¶ 97. Adhesive bonds the three layers to one another. *Id.* “In this embodiment, each of the first, second and third materials are continuous throughout the (arcuate) major plane of the helmet.” *Id.*

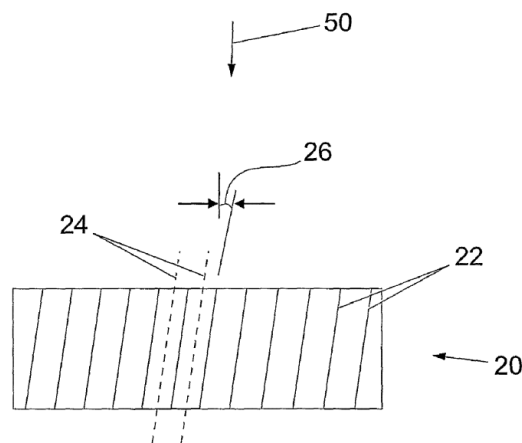
Core 20 “has a tubular structure,” as depicted in Figure 2. *Id.* ¶ 98. Figure 2 is reproduced below.



*Fig. 2*

Figure 2 “is a plan view of a tubular array of cells used in the safety helmet of [Figure] 1(a).” *Id.* ¶ 86. The tubular array has tubes 22 in “a close packed array such that the gap between adjacent tubes is [minimized].” *Id.* ¶ 98.

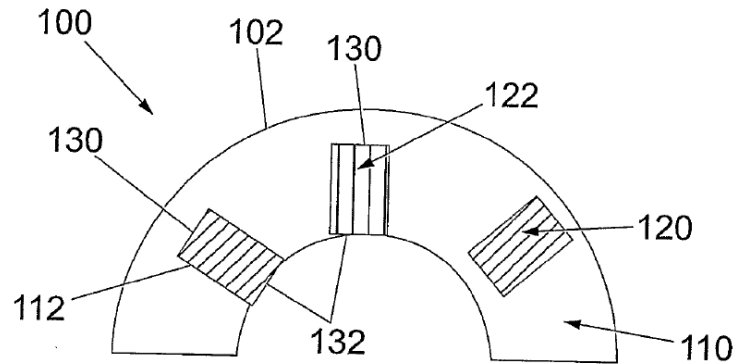
Sajic discloses orienting the axes of tubes 22 at an angle to applied loads. *E.g., id.* ¶¶ 99–100. One example of this appears in Figure 3(a). *Id.* ¶ 99. Figure 3(a) is reproduced below.



*Fig. 3a*

Figure 3(a) is “a side view” that “shows a first arrangement of tubes according to the invention when subject to a load 50.” *Id.* ¶¶ 87, 99. Sajic elaborates that longitudinal axes 24 of tubes 22 extend at an angle to load 50’s direction. *Id.* ¶ 99.

Sajic discusses details of another embodiment in connection with Figure 9. *Id.* ¶ 113. Figure 9 is reproduced below.



*Fig. 9*

Figure 9 “is a cross sectional side view of a portion of a safety helmet,” specifically safety helmet 100. *Id.* ¶¶ 93, 113.

Helmet 100 includes spacing member 110, which defines multiple receptacles or cavities 112. *Id.* ¶ 114. Helmet 100 also includes inserts 120, 122, and 124, each of which occupies one of cavities 112. *Id.* ¶ 115. “The inserts may be positioned during forming of the spacing member or inserted afterwards, such as by forming pockets in the spacing member.” *Id.* ¶ 116. A first material, specifically an expanded polystyrene foam, forms spacing member 110. *Id.* ¶ 114. Each insert 120, 122, and 124 comprises a second material. *Id.* ¶ 115. Specifically, “[e]ach insert 120, 122, 124 comprises an array of energy absorbing tubes as described for the first embodiment.” *Id.* ¶ 117. “Each array defines a first 130 and second 132 discontinuous surface. A sealing material (not shown) is provided at both of these discontinuous surfaces. This prevents the foam material from entering the open ends of the tubes.” *Id.* ¶ 122.

According to Sajic, “[t]he inserts 120, 122 provide a high level of protection from impact loads.” *Id.* ¶ 123. Sajic adds that “[i]n other areas of

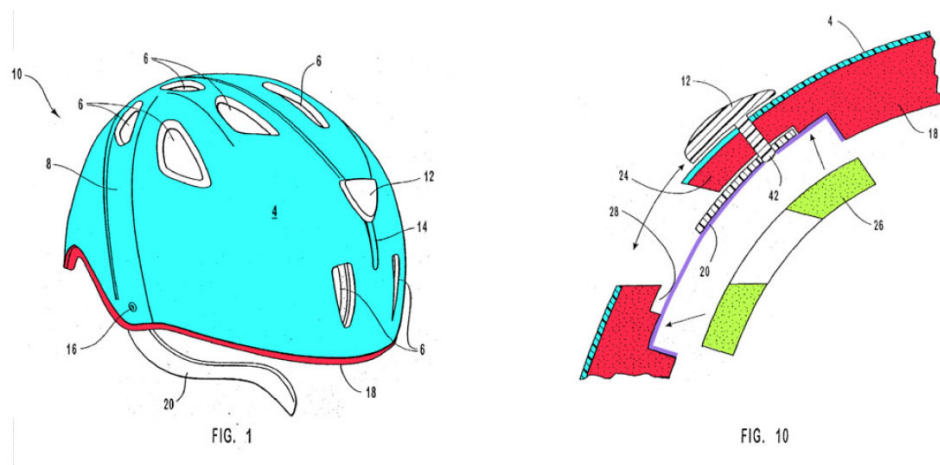
the helmet 100, an acceptable level of protection is still provided by the foam spacing member 110. Indeed, the level of protection is at least equal to that of conventional helmets which use only a foam core.” *Id.* ¶ 126.

### 3. Discussion

a) *The Parties' Arguments and Evidence*

(1) *The Petition*

Petitioner alleges Muskovitz teaches most of the limitations of independent claims 1 and 12. Pet. 8–9, 37–62, 70–73. For example, Petitioner alleges that “Muskovitz discloses limitations [1A]-[1C] of claim 1.” *Id.* at 9. In connection with this, Petitioner provides annotated versions of Muskovitz’s Figures 1 and 10, reproduced below. *Id.*



**Figs. 1 and 10, Muskovitz (Annotated)**

In these annotated versions of Figures 1 and 10, Petitioner shades certain components of Muskovitz's helmet 10 with different colors. Specifically, outer shell 4 is shaded with aqua, impact-absorbing liner 18 is shaded with red, and insert member 26 is shaded with green. *Id.* Additionally, part of liner 18's recess is outlined in purple. *Id.* In support of its position that Muskovitz discloses limitations [1A]–[1C], Petitioner explains that

Muskovitz discloses that protective helmet 10 comprises: “an outer shell 4” (aqua) comprising “ventilation ports 6,” as recited in [1A]; “an impact-absorbing inner liner 18” (red) “joined (molded or bonded)” to outer shell 4 and comprising a cavity (outlined in purple) in liner 18 aligned with corresponding ventilation ports 6 (Muskovitz, [0023], [0076]], [0087]), as recited in [1B]; and “an insert member” (green) comprising “impact absorbing material” positioned in and substantially filling the cavity (*id.*), as recited in [1C].

*Id.*

According to Petitioner, “[t]he remaining limitations of claim 1 limit the structure of the ‘*shock absorbing insert*’ and merely recite what results from using known ‘honeycomb material’ for the shock absorbing insert arranged as recited in [limitations] [1A]-[1C].” *Id.* Addressing these “remaining limitations,” Petitioner cites Sajic. *Id.* at 10. Petitioner explains that “Sajic discloses such honeycomb inserts provided in the impact-absorbing liner of a safety helmet for improved impact absorption.” *Id.* According to Petitioner, “[t]he obvious and straightforward use of Sajic’s inserts for Muskovitz’s insert member 26 meets each of the limitations of claim 1.” *Id.*

Petitioner argues that it would have been obvious to “us[e] Sajic’s EAT-material for insert member 26.”<sup>5</sup> *Id.* at 19. Petitioner illustrates this allegedly obvious modification using modified versions of Sajic’s Figure 3(a) and Muskovitz’s Figure 10, which are reproduced below. *Id.* at 30–31.

---

<sup>5</sup> Petitioner uses “EAT” to refer to “energy absorbing tubes.” *See, e.g.*, Pet. 15 (“Sajic is directed to the use of a core material comprising ‘energy absorbing tubes’ (EAT) to improve the impact absorption performance of safety helmets.”).

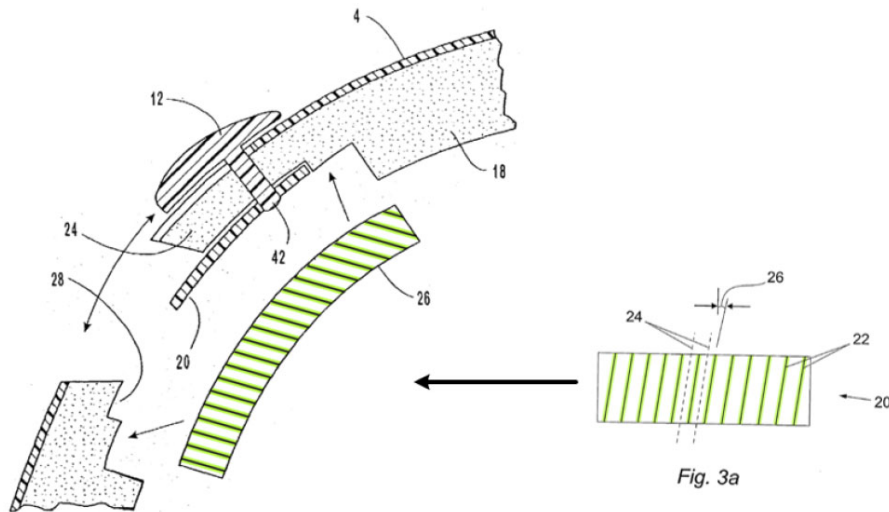


FIG. 10

Petitioner's modified version of Sajic's Figure 3a adds green color where tube walls appear. Petitioner's modified version of Muskovitz's Figure 10 "us[es] Sajic's EAT-insert [from Figure 3(a)] . . . that is sized and shaped as the Muskovitz insert member 26." *Id.*

In support of its position that this modification would have been obvious to a person of ordinary skill in the art, Petitioner advances a number of arguments. Petitioner contends that the modification "is nothing more than the straightforward application of Sajic's teachings to Muskovitz." *Id.* at 31. Petitioner explains that

Muskovitz discloses that insert member 26 can be formed of any of 'various material compositions' (Muskovitz, [0087]) and it would have been obvious to a [person of ordinary skill in the art] to use an EAT-Insert-Member at least because doing so is nothing more than the use of a known material (arrays of energy absorbing tubes) for their intended function (impact attenuation) to yield the predictable result of providing Muskovitz's insert member with the advantageous impact attenuation properties disclosed in Sajic (*see e.g.*, [0106]-[0107]).

*Id.* at 19. Petitioner asserts that "the improved impact attenuation properties of Sajic's EAT-Insert-material itself" would have motivated a person of

ordinary skill in the art to use it for Muskovitz's insert member 26. *Id.* at 20. Petitioner adds that "a [person of ordinary skill in the art] would have recognized that implementing an EAT-Insert-Member would provide meaningful impact absorption improvement given the significant footprint of active vent systems disclosed in Muskovitz." *Id.*

Additionally, Petitioner suggests that Sajic indicates EAT-inserts may improve impact absorption in places beyond the location of the EAT-inserts. *Id.* at 22. Accordingly, Petitioner argues that adding an EAT-insert member in the recess of Muskovitz's liner 18 "may improve impact absorption even beyond the active vent region." *Id.*

Addressing Muskovitz's disclosure of using "the same or similar impact-absorbing material" for liner 18 and insert member 26, Petitioner contends Muskovitz does not provide any reason to disfavor using a different material for insert member 26. *Id.* at 22–23. According to Petitioner, Muskovitz obviously indicates that the material of insert member 26 should be chosen "to provide the same or similar impact absorption as the impact-absorbing liner 18." *Id.* at 22. "Thus, an EAT-Insert-Member would comport with and exceed the reasons for the stated preference of material insert," Petitioner argues. *Id.* at 23.

In addition to the allegedly obvious general modification of "using Sajic's EAT-material for insert member 26," Petitioner identifies certain other, more specific allegedly obvious modifications. *E.g., id.* at 27–32. For example, Petitioner argues that

it would have been obvious, and a [person of ordinary skill in the art] would have been motivated to, implement the EAT-Insert-Member using the EAT-material as manufactured in a close packed array of open-ended tubes, preferably of the six-tube-

adjacency arrangement, with an arcuate cross-section as disclosed in Sajic—and sized to fit into the recess of the Muskovitz inner-liner.

*Id.* at 30. In support of this assertion, Petitioner reasons that “a [person of ordinary skill in the art] would have understood that providing cut-outs or apertures in the EAT-Insert-Member is undesirable due to reduction in the amount of impact-absorbing material provided by the insert and at locations where there is no other impact-absorbing material.” *Id.* Additionally, Petitioner cites Mr. Copeland’s testimony that

providing cut-outs or apertures in the EAT-Insert-Member would have not only added an unnecessary step in the manufacturing process, but is undesirable due to the reduction in the amount of energy absorbing material provided by the insert and at locations where there is no other impact absorbing material, as I previously discussed. Thus, it would have been obvious and a POSA would have been motivated to implement the EAT-Insert-Member using the EAT-material as manufactured, that is, as an integral material formed of a close packed array of open-ended tubes, preferably of the six-tube adjacency arrangement that is arcuately-shaped as disclosed in Sajic and sized to fit into the recess of the Muskovitz inner liner. Sajic subsequently applies a sealing material after manufacture of the EAT-material to “prevent[] the foam material from entering the open ends of the tubes” (Sajic, [0122]) Sajic, [0062], [0080], [0098]-[0101], [0080], [0103], [0112], [0122]. For the EAT-Insert-Member, obviously no sealing material would subsequently be applied as there is no need to prevent foam from entering the EAT-Insert-Member as it is not insert into the helmet during formation of the helmet as in Sajic, but rather is designed to be a “removeable insert member” as Muskovitz discloses. Muskovitz, [0087]-[0088]. Thus, the EAT-Insert-Member would be used as it is manufactured with open-ends. Sizing and shaping Sajic’s EAT-material like the Muskovitz insert member 26 would have been well within the capabilities of a POSA and Sajic discloses that the EAT-material can be formed to any desired shape and size. *Id.*



Ex. 1003 ¶ 116. Thus, Petitioner and Mr. Copeland contend that it would have been obvious, when inserting Sajic’s energy absorbing tubes in the recess of Muskovitz’s liner 18, to omit the sealing material that Sajic provides over the discontinuous end surfaces of the energy absorbing tubes. *See, e.g.*, Ex. 1006 ¶ 122.

According to Petitioner, with Sajic’s sealing material omitted, the energy absorbing tubes could freely transmit air, obviating any need for a ventilation cutout like the one Muskovitz’s insert member 26 has. Pet. 24–27. Eliminating such a ventilation cutout would provide certain benefits, such as “providing impact-absorbing material across the active vent openings where there otherwise is none.” *Id.* at 27. This would have provided another reason for a person of ordinary skill in the art to use Sajic’s energy absorbing tubes for Muskovitz’s insert member 26, Petitioner argues. *Id.* at 24–27.

Petitioner calls the result of the allegedly obvious modifications the “Muskovitz-Sajic-Helmet.”<sup>6</sup> *Id.* at 32. Petitioner argues that “[t]he Muskovitz-Sajic-Helmet renders obvious each of claims 1-5, 7, 12-13, and 15-17.” *Id.* at 37. Petitioner then explains in detail how the Muskovitz-Sajic-Helmet allegedly renders obvious the various limitations of the challenged claims. *Id.* at 37–75.

## (2) *The Preliminary Response*

Patent Owner argues, among other things, that a person of ordinary skill in the art would not have been motivated to modify the prior art in the

---

<sup>6</sup> Petitioner further identifies two variations of the Muskovitz-Sajic-Helmet. Pet. 34–37. The differences between the two variations do not affect our analysis.

ways Petitioner proposes. *E.g.*, Prelim. Resp. 32–40. For example, Patent Owner contends that improved impact-absorbing performance would not have motivated replacing Muskovitz’s insert member 26 with Sajic’s energy absorbing tubes. *Id.* at 34–35. Patent Owner asserts that, contrary to Petitioner’s suggestion, Muskovitz does not teach using insert member 26 “for purposes of improving or even contributing to the shock absorbing performance of the helmet.” *Id.* at 34. Rather, Patent Owner argues, Muskovitz teaches using insert member 26 “to define a ‘vent space’” for vent shield 20. *Id.* Patent Owner adds that “Muskovitz teaches that insert member 26 is ‘removable . . . allowing the user to place or displace insert member 26 as desired.’” *Id.* Patent Owner then argues that

a [person of ordinary skill in the art] would not look to the insert as a way to enhance the impact absorbing performance of the helmet by introducing a new material, as argued by Petitioner. This is because any benefit from doing so would be obviated at the caprice of a user who may remove the insert at her discretion.”

*Id.* at 35.

Patent Owner also disputes Petitioner’s position that a person of ordinary skill in the art would have been motivated to use Sajic’s energy absorbing tubes without outer layers.<sup>7</sup> *Id.* at 30–33, 44–54. Patent Owner contends that “the state of the art . . . understood honeycomb structures to be usefully applied when sandwiched between resilient outer layers that would serve to attenuate impact forces across multiple cells and thereby avoid detrimental buckling of the core.” *Id.* at 45–46. Patent Owner asserts that

---

<sup>7</sup> Patent Owner refers to Sajic’s energy absorbing tubes as a “honeycomb core.” *E.g.*, Prelim. Resp. 30.

“there is no indication that a [person of ordinary skill in the art] would expect beneficial performance of the honeycomb core without using abutment layers across one or more ends.” *Id.* at 52. No such indication appears in Muskovitz or Sajic, Patent Owner contends. *Id.* Indeed, Patent Owner argues, leaving the ends of Sajic’s energy absorbing tubes unsealed “is contrary to Sajic’s teachings.” *Id.* at 30. Patent Owner cites Sajic’s teaching of sealing the ends of the energy absorbing tubes to prevent foam from entering the tubes. *Id.* (citing Ex. 1006 ¶ 122).

Moreover, Patent Owner argues that Petitioner’s proposed modifications contradict Muskovitz’s teachings. *Id.* at 28–33. For example, Patent Owner argues that omitting sealing material from Sajic’s energy absorbing tubes and using them to replace Muskovitz’s insert member 26 “defeats the central purpose of Muskovitz—to provide a user with a vent shield capable of opening and closing the helmet to ambient air flow.” *Id.* at 30. Patent Owner contends that the proposed modifications would allow ambient air to flow through Muskovitz’s slotted portion 14 and Sajic’s energy absorbing tubes to the wearer’s head, even with vent shield 20 in “what is supposed to be the ‘closed’ position.” *Id.* at 31–32. Patent Owner further argues that

failure to employ Sajic’s teaching of sealed honeycomb core ends . . . would, over time, allow for penetration of the ends of the honeycomb core into the foam liner of Muskovitz, causing the honeycomb core to encroach on the ‘vent space 28’ depicted in Figure 10 of Muskovitz . . . and thus interfere with the movement of the vent shield.”

*Id.* at 32. This would also undermine Muskovitz’s disclosure of allowing a user to easily displace insert member 26, Patent Owner adds. *Id.*

Patent Owner also disputes Petitioner's various other arguments in support of the proposed modifications of the prior art. *Id.* 35–40. For example, Patent Owner disputes Petitioner's position that replacing Musk's insert member 26 with Sajic's energy absorbing tubes simply uses known material for its intended function and yields a predictable result. Prelim. Resp. 35; Pet. 19. According to Patent Owner, "Petitioner does not use Sajic's honeycomb core according to its intended function. Honeycomb cores have been used for decades as the core of a sandwich panel bonded to outer layers providing more predictable buckling of the honeycomb walls and avoiding localized failure in the core." *Id.* at 35. Patent Owner adds that the prior art does not support "Petitioner's contention that an intended function of the honeycomb core in Sajic is to span an opening with no abutting layer, foam, or shell on either side of the core, for the purpose of absorbing impacts and facilitating ventilation." *Id.* at 36.

Patent Owner also argues that a person of ordinary skill in the art would not have had a reasonable expectation of success for the modifications Petitioner proposes. *Id.* at 46–51. Patent Owner contends that Casserta (Exhibit 2002) and Bottlang (Exhibit 1008) contain disclosures that would have discouraged a person of ordinary skill in the art from modifying the prior art in the manner Petitioner proposes. *Id.* at 46–51. According to Patent Owner "no [person of ordinary skill in the art], with knowledge of Caserta and Bottlang, would find it obvious to strip a honeycomb core of its outer layers, then place that core proximate to gaps in the helmet at ventilation ports." *Id.* at 51.

Patent Owner concludes that "the language of the Challenged Claims is the lodestar of [Petitioner's assertions of obviousness over Muskovitz and

Sajic].” *Id.* at 54. According to Patent Owner, “hindsight bias is the most plausible basis for Petitioner’s proposed obviousness combination, given the extent to which it contradicts the prior art evidence.” *Id.* at 54–55.

(3) *The Reply*

In its Reply, Petitioner responds to Patent Owner’s arguments about the proposed modifications allegedly undesirably letting air leak into Muskovitz’s helmet. Reply 1–4. Petitioner contends that, contrary to Patent Owner’s arguments, Muskovitz does not suggest completely sealing the helmet to prevent influx of ambient air. *Id.* at 1–2. Petitioner also argues that Patent Owner mischaracterizes Muskovitz’s insert as serving to “act as a wind block.” *Id.* at 2. Petitioner contends that “Muskovitz says nothing about insert member 26 being a wind block or anything about unwanted air entering slot 14 or liner 18 that would need to be blocked.” *Id.* at 3. Petitioner also asserts that Patent Owner relies on proportions in the drawings, whereas a person of ordinary skill in the art would not. *Id.* at 3–4. Petitioner argues that, rather than “us[ing] Muskovitz’s patent drawings as a blueprint,” a person of ordinary skill in the art “would have employed ordinary creativity in dimensioning the helmet components, making any necessary modification to prevent any unwanted air flow.” *Id.* at 3.

The Reply also argues that “[c]ontrary to [Patent Owner’s] mischaracterization, the Petition does not propose positioning Sajic’s inserts with ‘no abutting layer, foam, or shell on either side of the core.’” *Id.* at 4. Rather, Petitioner proposes “position[ing] Sajic’s inserts within and abutting Muskovitz’s shock absorbing liner 18 and underneath outer shell 4.” *Id.* According to Petitioner, its modifications increase, rather than reduce, protection. *Id.* at 5.

The Reply also argues that, in the Preliminary Response, “every challenge to Petition’s combination argues irrelevantly that a [person of ordinary skill in the art] would not have modified conventional sandwich-panel configurations.” *Id.* at 5. Petitioner argues that Sajic is not limited to a “sandwich panel configuration.” *Id.* at 6. Petitioner also contends that Patent Owner argued during prosecution that Sajic’s core material by itself resists undesirable buckling. *Id.*

(4) *The Sur-reply*

In the Sur-reply, Patent Owner maintains that Petitioner’s proposed modifications would have allowed unwanted air flow into Muskovitz’s helmet. Sur-reply 1–4. Patent Owner asserts that [r]egardless of whether Muskovitz discloses leaving some ventilation ports open, it strives to fully block air flow through those ports with provisions for controlling air flow. *Id.* at 1. Additionally, Patent Owner disputes Petitioner’s argument that the proposed modifications would not create undesired leaking, as well as Petitioner’s argument that it would have been obvious to make any adjustments necessary to prevent undesired leaking. *Id.* at 1–4.

The Sur-reply also responds to the Reply’s argument that the Petition proposes placing Sajic’s energy absorbing tubes in abutment with Muskovitz’s liner 18. *Id.* at 4–6. Specifically, the Sur-reply argues that “in the vented areas of the proposed combination,” Sajic’s energy absorbing tubes would not be abutted by supporting material. *Id.* at 5. Additionally, the Sur-reply argues that, contrary to the Reply’s suggestion, Patent Owner’s prosecution arguments did not indicate that core material without outer layers would resist undesirable buckling. *Id.* at 6.

*b) Analysis*

Weighing the parties' arguments and evidence, we find that Petitioner has not shown sufficiently that it would have been obvious to implement the specific combination of modifications Petitioner proposes to arrive at the challenged claims of the '373 patent. In particular, Petitioner does not show sufficiently that it would have been obvious to omit outer layers from Sajic's energy absorbing tubes and insert them in the recess of Muskovitz's liner 18 in the proposed manner.

Petitioner emphasizes that the embodiment shown in Sajic's Figure 9 "employ[s] Sajic's core material outside of the sandwich panel configuration as an *insert* positioned in a cavity of the foam liner to improve the impact attenuation of a protective helmet—just as the Petition provides Sajic's inserts within and abutting Muskovitz's liner 18 and under shell 4 to achieve the same benefit." Reply 6. As Petitioner notes, Sajic's discussion of the Figure 9 embodiment does not refer to a "sandwich panel" when describing inserts 120, 122, and 124. *E.g.*, Ex. 1006 ¶¶ 115–123.

But Sajic discloses that inserts 120, 122, and 124 have outer layers of sealing material on their discontinuous surfaces 130, 132. Ex. 1006 ¶¶ 116–117, 122. Sajic discloses including the sealing material to prevent spacing member 110's "foam material from entering the open ends of the tubes." Ex. 1006 ¶¶ 114–117, 122. Thus, if a person of ordinary skill in the art inserted Sajic's energy absorbing tubes with the sealing material into the recess of Muskovitz's liner 18, the sealing material could prevent the foam of liner 18 from entering the energy absorbing tubes. *See, e.g.*, Pet. 30–31 (illustrating proposed modifications with parts of Sajic's energy absorbing tubes adjacent foam of liner 18). Petitioner nevertheless argues that it would

have been obvious to omit the sealing material from Sajic's energy absorbing tubes and insert them into the recess of Muskovitz's liner 18. Pet. 27–32.

In support of this position, Petitioner cites Mr. Copeland's testimony. *Id.* (citing Ex. 1003 ¶¶ 109–121). According to Mr. Copeland, in the allegedly obvious modifications of Muskovitz's insert member 26 with Sajic's energy absorbing tubes, “obviously no sealing material would subsequently be applied as there is no need to prevent foam from entering the EAT-Insert-Member as it is not insert[ed] into the helmet during formation of the helmet as in Sajic, but rather is designed to be a ‘removeable insert member’ as Muskovitz discloses.” Ex. 1003 ¶ 116 (citing Ex. 1005 ¶¶ 87–88). Facially, Muskovitz tends to support Mr. Copeland's testimony that Muskovitz's “removable” insert member 26 “is not insert[ed] into the helmet during formation of the helmet.” *See, e.g.*, Ex. 1005 ¶¶ 87–88.

But neither Muskovitz nor Sajic supports Mr. Copeland's view that Sajic teaches using the sealing material only to prevent foam penetrating the tubes during manufacturing. *See* Ex. 1003 ¶ 116. Rather, Sajic discloses, without qualification, that providing the sealing material “prevents the foam material from entering the open ends of the tubes” at any time, including during the helmet's use. Ex. 1006 ¶ 122.

Moreover, other portions of Sajic contradict Mr. Copeland's view that Sajic uses the sealing material only because the energy absorbing tubes are “inserted into the helmet during formation of the helmet.” *See* Ex. 1003 ¶ 116. For example, Sajic discloses that “inserts 120, 122, 124 may be positioned during forming of the spacing member 110 *or inserted*



*afterwards.” Id.* ¶ 116 (emphasis added). Thus, in cases where inserts 120, 122, and 124 are inserted after formation of spacing member 110, Sajic’s sealing material prevents foam from penetrating the energy absorbing tubes after, not during, formation of spacing member 110. This reinforces that Sajic discloses using the sealing material to prevent the foam from penetrating the energy absorbing tubes at any time. Our understanding of Sajic is consistent with Dr. Bonin’s testimony that Sajic includes its sealing material for more than just keeping foam out of the energy absorbing tubes during formation of the helmet. Ex. 2001 ¶ 93.

With Petitioner and Mr. Copeland failing to recognize and accurately account for these aspects of Sajic, Petitioner’s allegations regarding intended functions, predictability, and benefits do not show sufficiently that a person of ordinary skill in the art would have deviated from Sajic’s disclosure of constructing its inserts with outer layers of sealing material over the energy absorbing tubes’ ends. For example, we agree with Patent Owner that Petitioner does not adequately support its position that using Sajic’s energy absorbing tubes separated from outer layers of sealing material and disposed directly adjacent foam material and ventilation openings merely uses Sajic’s energy absorbing tubes “for their intended function” with a “predictable result.” Pet. 19; Prelim. Resp. 35–37.

Additionally, the alleged motivating benefits of the proposed modifications appear dubious in light of Muskovitz’s and Sajic’s disclosures. For instance, Patent Owner’s observation that Muskovitz teaches discretionary removal of insert member 26 casts doubt on Petitioner’s position that a person of ordinary skill in the art seeking to use Sajic’s energy absorbing tubes to improve the helmet’s impact absorption

would substitute the energy absorbing tubes for insert member 26. *See, e.g.*, Prelim. Resp. 34–35; Pet. 18–32. As Patent Owner explains, when the user has removed the insert, it would not help at all with impact absorption. Prelim. Resp. 34–35. Moreover, Petitioner does not address whether the alleged benefit of avoiding the ventilation cutout of Muskovitz’s insert member 26 would have provided an advantage outweighing Sajic’s disclosed benefit of keeping foam out of the energy absorbing tubes with sealing material. *See, e.g.*, Pet. 24–27; Ex. 1005 ¶ 122. Keeping the foam from penetrating the energy absorbing tubes might, for example, help with impact absorption as much or more than eliminating a ventilation cutout. Petitioner does not persuasively weigh Sajic’s disclosed benefit of keeping foam out of the energy absorbing tubes against the alleged benefits of Petitioner’s proposed modifications.

In sum, we do not find that Petitioner has demonstrated a reasonable likelihood of establishing obviousness of any of the challenged claims based on Muskovitz and Sajic.

### III. CONCLUSION

Because we determine that the information presented in the record does not establish there is a reasonable likelihood that Petitioner would prevail with respect to at least one challenged claim of the patent ’373 patent, we do not institute an *inter partes* review.

### IV. ORDER

For the reasons given, it is:

ORDERED that the Petition is *denied* as to all challenged claims of the ’373 patent and no trial is instituted.

IPR2022-00354  
Patent 10,736,373 B2

For PETITIONER:

Marc Johannes  
Anant Saraswat  
Adam Wichman  
WOLF, GREENFIELD & SACKS, P.C.  
mjohannes-ptab@wolfgreenfield.com  
asaraswat-ptab@wolfgreenfield.com  
awichman-ptab@wolfgreenfield.com

For PATENT OWNER:

Mark Miller  
Gina Cornelio  
Elen Wetzel  
DORSEY & WHITNEY LLP  
miller.mark@dorsey.com  
cornelio.gina@dorsey.com  
wetzel.elen@dorsey.com