

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLORADO**

Civil Action No. 1:21-cv-2112-CMA-SKC

SMITH SPORT OPTICS, INC., a Delaware company,
and KOROYD SARL, a Monaco company,

Plaintiff,

v.

THE BURTON CORPORATION, a Vermont company,

Defendant.

DECLARATION OF STEVE COPELAND

TABLE OF CONTENTS

I.	PERSONAL AND PROFESSIONAL BACKGROUND	1
II.	SUMMARY OF OPINIONS	3
III.	MATERIALS REVIEWED AND CONSIDERED	3
IV.	MY UNDERSTANDING OF PATENT LAW	5
	A. Non-Infringement.....	6
	B. Invalidity	6
	1. Anticipation	7
	2. Obviousness	7
V.	PERSON OF ORDINARY SKILL IN THE ART ("POSA")	9
VI.	THE '373 PATENT.....	11
	A. Described Embodiments	11
	B. The Challenged Claims	13
VII.	CLAIM INTERPRETATION	14
VIII.	BURTON DOES NOT INFRINGE CLAIMS 1-3 OR 7 OF THE '373 PATENT	16
	A. Claim 1 – "Plurality of vents" and visibility of the shock absorbing insert.....	17
	B. Claim 1 – Cells "positioned within the perimeter" of the openings of the vents.....	20
	C. Claim 3 – Tubes	22
IX.	PRIOR-ART REFERENCES AND STATE OF THE ART	23
	A. General State of the Art.....	23
	B. Fox Striker Helmet ("Striker Helmet")	29
	C. U.S. Pat. Appl'n Publication No. 2004/0064873 ("Muskovitz")	32
	D. U.S. Pat. Appl'n Publication No. 2008/0307568 ("Sajic").....	34
	E. U.S. Patent No. 4,422,183 ("Landi").....	36
	F. <i>Shock Absorption Performance of a Motorbike Helmet with Honeycomb Reinforced Liner</i> (2011) ("Caserta Article") and <i>The Use of Honeycomb in the Design of Innovative Helmets</i> (2012) ("Caserta Thesis").....	37
X.	THE ASSERTED CLAIMS ARE INVALID IN LIGHT OF THE PRIOR ART	39
	A. Ground 1: Anticipation by the Striker Helmet	39
	B. Ground 2: Obviousness Based On Muskovitz Alone.....	40

C. Ground 3: Obviousness Based On Muskovitz In Light of Landi	44
D. Ground 4: Obviousness Based On Sajic and Muskovitz	48

I, Steven Copeland, declare:

1. I have been retained by Wolf, Greenfield & Sacks, P.C., counsel for Defendant, The Burton Corporation d/b/a Burton Snowboards ("Burton"), to assess claims 1-3 and 7 (the "challenged claims") of U.S. Patent No. 10,736,373 ("the '373 patent"). I am being compensated for my time at my standard rate of \$275.00 per hour, plus actual expenses. My compensation is not dependent in any way upon the outcome of this litigation.

I. PERSONAL AND PROFESSIONAL BACKGROUND

2. I have been a professional industrial designer for almost 40 years receiving numerous awards for unique consumer products. My design experience includes: the creation of original designs for helmets, model making and prototyping protective sports equipment and components, and the design of head protection for Canadian, American and European testing and certification.

3. I was the design supervisor for Cooper Canada from 1980 to 1985, leading a team of twelve designers on the design, development and testing of sports equipment for hockey, baseball, lacrosse, and football.

4. I founded the design consultancy Paradox Design in 1985 which provided design, manufacturing, and testing services including: concept drawings, CAD modelling, logos, packaging, rapid prototyping, sourcing of tooling, materials and supplies, standards testing and certification, patent applications and documentation, market research, focus groups, and integration of new technologies.

5. I previously taught industrial design at three different colleges, which included courses in the design of protective equipment.

6. I hold over 60 patents, including 5 patents on helmets.

7. I created the CAD models for the facially figured headforms used by the Canadian Standards Association that are mandated in several standards for impact testing of protective facemasks and eyewear.

8. I have been involved in the design of six snowboard helmets for Burton.

9. I have been involved in the design of, and/or consulted on, other sports helmets and/or helmet components, including bicycle, baseball, hardhat, military, firefighters', lacrosse, whitewater, and equestrian helmets for companies including but not limited to Bauer, Bell, Brine, CCM, Cooper, Fisher Price, Hatco, Hespeler, Itech, Nike, MSA, Troxel, Reebok and Warrior.

10. I am a professional industrial designer, registered with the Association of Industrial Designers of Ontario since 1986, and was a member of the Canadian Standards Committee for Hockey Equipment from 1996 to 2019.

11. I have created over ten start-up companies based on unique product designs; and through my company Humanscope, I continue to develop new products including smart helmets and medical devices for our partners and clients.

12. My CV, examples of my designs, and filed head protection patents are included in the attached Exhibit A.

13. I have not authored any publications in the last 10 years. I have not testified in any legal matter in the last 4 years.

II. SUMMARY OF OPINIONS

14. *Burton's helmets do not infringe claims 1-3 or 7 of the '373 patent:* The accused Anon/Burton helmets each are missing elements that are required by the asserted claims, and therefore, they do not infringe.

15. *Claims 1-3 and 7 of the '373 patent are invalid:* (a) the Fox Striker helmet anticipates the challenged claims; (b) the challenged claims would have been obvious to a person having ordinary skill in the art based on U.S. Pat. Application Publication No. 2004/0064873 ("Muskovitz"); (c) the challenged claims would have been obvious to a person having ordinary skill in the art based on Muskovitz in light of U.S. Patent No. 4,422,183 ("Landi"); and (d) the challenged claims would have been obvious to a person having ordinary skill in the art based on U.S. Pat. Application Publication No. 2008/0307568 ("Sajic") in light of Muskovitz.

III. MATERIALS REVIEWED AND CONSIDERED

16. My findings, as explained below, are based on my years of education, research, experience, and background in the field of helmet design, as well as my investigation and study of relevant materials for this declaration. When developing the opinions set forth in this declaration, I assumed the perspective of a person having ordinary skill in the art, as set forth in Section V below. In forming my opinions, I have studied and considered the materials identified in the list below and as identified throughout my report, and attached as an exhibit, where an exhibit letter is shown.

Exhibit	Description
A	Steve Copeland CV and Experience
	U.S. Patent No. 10,736,373

Exhibit	Description
B	Fox MTB 2011 Collection Catalog (excerpts)
C	U.S. Pat. Application Publication No. 2004/0064873 ("Muskovitz")
D	U.S. Patent No. 4,422,183 ("Landi")
E	U.S. Pat. Application Publication No. 2008/0307568 ("Sajic")
	U.S. Pat. Appl'n No. 2009/0178184 ("Brine")
	U.S. Pat. No. 7,673,351 ("Copeland")
F	U.S. Pat. No. 7,207,071
G	Caserta, G., Iannucci, L. & Galvanetto, <i>Shock absorption performance of a motorbike helmet with honeycomb reinforced liner</i> , Composite Structures 93, 2748-59 (2011)
H	Caserta, G., <i>The Use of Honeycomb in the Design of Innovative Helmets</i> , Imperial College of London (2012)
I	German Patent No. DE4336468A1 and translation ("Duchene")
J	Striker Helmet Claim Chart
K	Muskovitz Claim Chart
L	Landi Claim Chart
M	Sajic Claim Chart
	https://www.skiinghistory.org/history/ski-helmets-how-we-got-here
	<i>The 6 Best Ski and Snowboard Helmets of 2013</i> , https://www.outsideonline.com/
	https://www.onthesnow.com/
	http://www.activelifestore.com/blog/best-snowboard-and-ski-helmets-for-big-heads-which-helmet-should-i-buy-for-a-large-head/
	anon Merak WAVECEL Helmet size M
	anon Logan WAVECEL Helmet size M
	The LinkedIn Profiles for the Purported Inventors James "Drew" A. Chilson, John Lloyd, James Rogers and Piers Storey
	Measurements of Anon Helmets and WaveCel Material
	Declaration of David Smith (Dkt. 6)
	Declaration of Michael Bottlang (Sept. 7, 2021)

IV. MY UNDERSTANDING OF PATENT LAW

17. In developing my opinions, I discussed various relevant legal principles with Burton's attorneys. Though I do not purport to have extensive prior knowledge of such principles, I understood them when they were explained to me and have relied upon such legal principles, as explained to me, in the course of forming the opinions set forth in this declaration. My understanding in this respect is as follows:

18. I understand that, in this litigation, Smith Sport Optics, Inc. ("Smith") and Koroyd SARL ("Koroyd") (together "Plaintiffs") will ultimately have the burden of proving the necessary facts (*i.e.*, that the accused products satisfy each claim limitation literally or under the doctrine of equivalents) to show that the challenged claims of the '373 patent are infringed by a preponderance of the evidence. I understand that "preponderance of the evidence" means that Plaintiffs have the burden to convince the fact finder that it is more likely than not that Burton has infringed each asserted claim.

19. I understand that, in this litigation, Burton will ultimately have the burden of proving that the challenged claims of the '373 patent are invalid by clear and convincing evidence. I understand that "clear and convincing evidence" means that it is highly probable that each challenged claim is invalid.

20. I understand that, in patent litigation, claim terms in a patent are given their ordinary and customary meaning as understood by a person of ordinary skill in the art ("POSA") in the context of the entire patent and the prosecution history pertaining to the patent. If the specification provides a special definition for a claim term that differs from the meaning the term would otherwise possess, the specification's special

definition controls. I have applied these standards in preparing the opinions in this declaration.

A. Non-Infringement

21. I understand that determining whether an accused product directly infringes a patent claim requires (1) interpreting the meaning of that claim, and (2) comparing the interpreted claim to the accused product to determine whether the accused product meets each limitation of the claim, whether literally or under the “doctrine of equivalents.”

22. I understand that making, using, offering to sell, or selling such a product within the United States constitutes an act of direct infringement.

23. I understand that when an accused product satisfies each limitation of a claim, that product is said to infringe the claim “literally.”

24. I understand that to establish literal infringement of a dependent claim, Plaintiffs must show that it is more likely than not that the accused helmets include each and every element of the dependent claim and each element of the independent claims from which the dependent claims depend.

B. Invalidity

25. I understand that for an invention claimed in a patent to be patentable, it must be, among other things, new (novel—*i.e.*, not anticipated) and not obvious from the prior art. My understanding of these two legal standards is set forth below.

1. Anticipation

26. I understand that, for a patent claim to be “anticipated” by the prior art (and therefore not novel), each and every limitation of the claim must be found, expressly or inherently, in a single prior-art reference. I understand that a claim limitation is disclosed for the purpose of anticipation if a POSA would have understood the reference to disclose the limitation based on inferences that a POSA would reasonably be expected to draw from the explicit teachings in the reference when read in light of the POSA’s knowledge and experience.

27. I understand that a claim limitation is inherent in a prior art reference if that limitation is necessarily present when practicing the teachings of the reference, regardless of whether a POSA recognized the presence of that limitation in the prior art.

2. Obviousness

28. I understand that a patent claim may be invalid if it would have been obvious in view of a single prior-art reference or a combination of prior-art references.

29. I understand that a patent claim is obvious if the differences between the subject matter of the claim and the prior art are such that the subject matter as a whole would have been obvious to a POSA in the relevant field at the time the invention was made. Specifically, I understand that the obviousness question involves a consideration of:

- the scope and content of the prior art;
- the differences between the prior art and the claims at issue;
- the knowledge of a POSA in the pertinent art; and

- if present, objective factors indicative of non-obviousness, sometimes referred to as “secondary considerations.” To my knowledge, neither Smith nor Koroyd have asserted any such secondary considerations with respect to the ’373 patent.

30. I understand that in order for a claimed invention to be considered obvious, a POSA must have had a reason for combining teachings from multiple prior-art references (or for altering a single prior-art reference, in the case of obviousness in view of a single reference) in the fashion proposed.

31. I further understand that in determining whether a prior-art reference would have been combined with other prior art or with other information within the knowledge of a POSA, the following are examples of approaches and rationales that may be considered:

- combining prior-art elements according to known methods to yield predictable results;
- simple substitution of one known element for another to obtain predictable results;
- use of a known technique to improve similar devices in the same way;
- applying a known technique to a known device ready for improvement to yield predictable results;
- applying a technique or approach that would have been “obvious to try,” *i.e.*, choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

- known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations would have been predictable to one of ordinary skill in the art; or,
- some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior-art reference or to combine prior-art reference teachings to arrive at the claimed invention. I understand that this teaching, suggestion or motivation may come from a prior-art reference or from the knowledge or common sense of one of ordinary skill in the art.

32. I understand that for a single reference or a combination of references to render the claimed invention obvious, a POSA must have been able to arrive at the claimed invention by altering or combining the applied references.

V. PERSON OF ORDINARY SKILL IN THE ART (“POSA”)

33. I have been informed and understand that for purposes of assessing whether prior-art references disclose every element of a patent claim (thus “anticipating” the claim) and/or would have rendered the claim obvious, the patent and the prior-art references must be assessed from the perspective of a person having ordinary skill in the art (“POSA”) to which the patent is related, based on the understanding of that person at the time of the patent claim’s priority date. I have been informed and understand that a POSA is presumed to be aware of all pertinent prior art and the

conventional wisdom in the art, and is a person of ordinary creativity. I have applied this standard throughout my declaration.

34. The '373 patent involves technology in the field of helmet design. I have been asked to provide my opinions as to the state of the art in this field by August 2013. I use this timeframe because the face of the '373 patent indicates an earliest claimed priority date of August 13, 2013. Whenever I offer an opinion in this declaration about the knowledge of a POSA, the manner in which a POSA would have understood the claims of the '373 patent or its description, the manner in which a POSA would have understood the prior art, or what a POSA would have been led to do based on the prior art, I am referencing the August 2013 timeframe, even if I do not say so specifically in each case.

35. In my opinion, a 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. More education could substitute for experience, and vice versa. This person would have been capable of understanding and applying the teachings of the '373 patent and the prior-art references discussed in this declaration.

36. I understand that Plaintiffs' declarant, David Smith, Ph.D., opines that "a person having ordinary skill in the art of Helmets with shock absorbing inserts would have had a bachelor's degree in mechanical engineering and 3-4 years of product design experience. Additional education can compensate for less experience and additional experience can compensate for less education." Dkt. 6, D. Smith Decl., ¶ 7.

37. I disagree with Mr. Smith's conclusion, in large part because he opines that a POSA would have had to have had a mechanical engineering degree. In my experience with others in the helmet design field, I have found most designers do not have mechanical engineering degrees, but instead, like me, have degrees in Industrial Design or a similar degree.

38. This point is reinforced in that, at least according to their LinkedIn profiles, not one of the named inventors on the '373 patent have degrees in mechanical engineering. James "Drew" A. Chilson appears to have a two-year degree in Landscape Architecture, and a bachelor's degree in Environmental Design; John Lloyd has a bachelor's degree in Business Studies; James Rogers has a bachelor's degree in Product Design; and Piers Storey has a bachelor's degree in Industrial Design and Technology.

39. By 2013, I held a degree in Industrial Design, and I had decades of experience with helmet design. Therefore, I was a person of more than ordinary skill in the art during the relevant timeframe. However, I worked with many people who fit the characteristics of the POSA, and I am familiar with their level of skill. When developing the opinions set forth in this declaration, I assumed the perspective of a person having ordinary skill in the art, as set forth above.

VI. THE '373 PATENT

A. Described Embodiments

40. The '373 patent describes a few potential embodiments. Figure 5 of the '373 patent, annotated below, is exemplary of these embodiments.

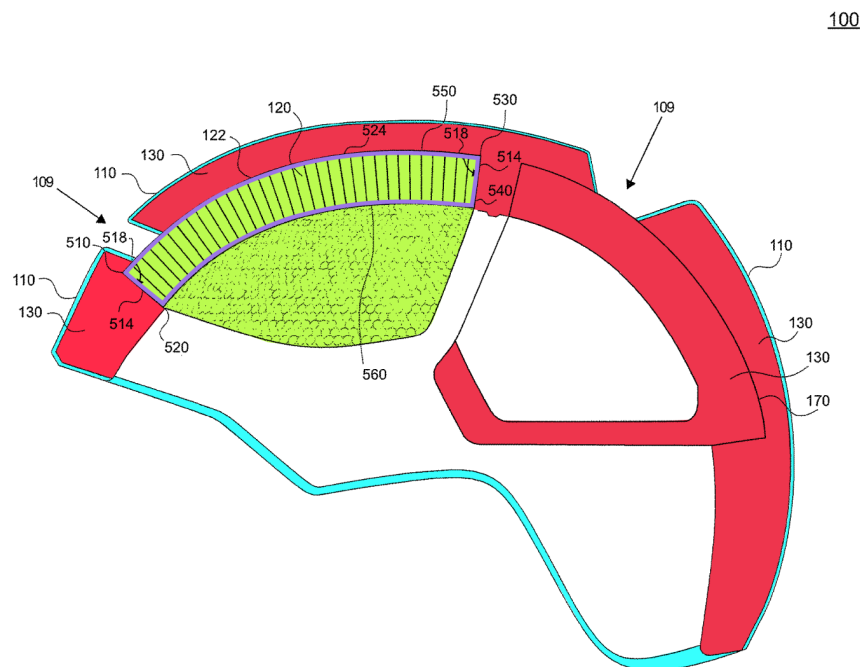


FIG. 5

41. As described in the patent (5:10-30), Figure 5 shows a cross section of a helmet. The helmet includes a thin shell (110, light blue) with several vents (arrows at 109, front and back). Inside the shell is a shock absorbing liner (130, red). The '373 patent describes the shock absorbing liner as being made with "EPS material or the EPP material." 2:62-63; *see also* 1:57-61 ("The present invention is generally directed to a helmet formed having a shell, a shock absorbing liner formed from a first shock absorbing material (e.g., expanded polystyrene (EPS) material, expanded polypropylene (EPP) material, or another suitable shock absorbing material)."). Both EPS and EPP were and are standard foams used within helmets. The '373 patent further describes that the shock absorbing liner has what it calls a "cavity," formed between the inner surface of the shock absorbing liner (524, outlined in purple), and cabined off on the sides as well by sidewalls of the shock absorbing liner (514, purple).

In the cavity, an “insert” (120, green) is provided, which the ’373 patent describes as being “formed from a second shock absorbing material (e.g., a honeycomb material).” 1:64-65.

B. The Challenged Claims

42. I understand that Smith is asserting claims 1-3 and 7 against Burton. Accordingly, I was asked to opine on only those claims, reproduced below. Claim 1 is broken-up into elements to better understand the scope of the claim, with [bracketed] letters that I inserted for ease of reference throughout this Declaration:

Claim 1. [A] A helmet, comprising:

[B] a shell comprising a plurality of vents including a first vent defining a first opening and a second vent defining a second opening;

[C] 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

[D] a shock absorbing insert positioned in and substantially filling the cavity such that the shock absorbing insert is visible through and spans across at least a portion of each of the plurality of vents,

[E] wherein at least a portion of the shock absorbing liner is positioned between the shell and the shock absorbing insert,

[F] wherein the shock absorbing insert comprises an array of energy absorbing cells, each having respective open first longitudinal ends and open second longitudinal ends, 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 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.

Claim 2. The helmet of claim 1, wherein the shock absorbing liner is seamless.

Claim 3. The helmet of claim 1, wherein the array of energy absorbing cells of the shock absorbing insert comprises an array of tubes.

Claim 7. The helmet of claim 1, wherein the shock absorbing insert extends to a portion of the helmet configured to be [sic] positioned at a back of a wearer's head.

VII. CLAIM INTERPRETATION

43. I understand that determining whether a claimed invention is novel and non-obvious requires comparing the prior art to the claim. I discuss in this Section below the interpretations I have applied to certain claim terms, in accordance with the standards set forth in this declaration.

44. *“Tubes” and “Cells”* – Claim 1 of the '373 patent repeatedly refers to “cells,” or more specifically, it states that the shock absorbing insert “comprises an array of energy absorbing cells.” Claim 3 further requires that “wherein the array of energy absorbing cells of the shock absorbing insert comprises¹ an array of tubes.” Claim 4 (not asserted) further states that the tubes of claim 3 are “cylindrical in shape.”

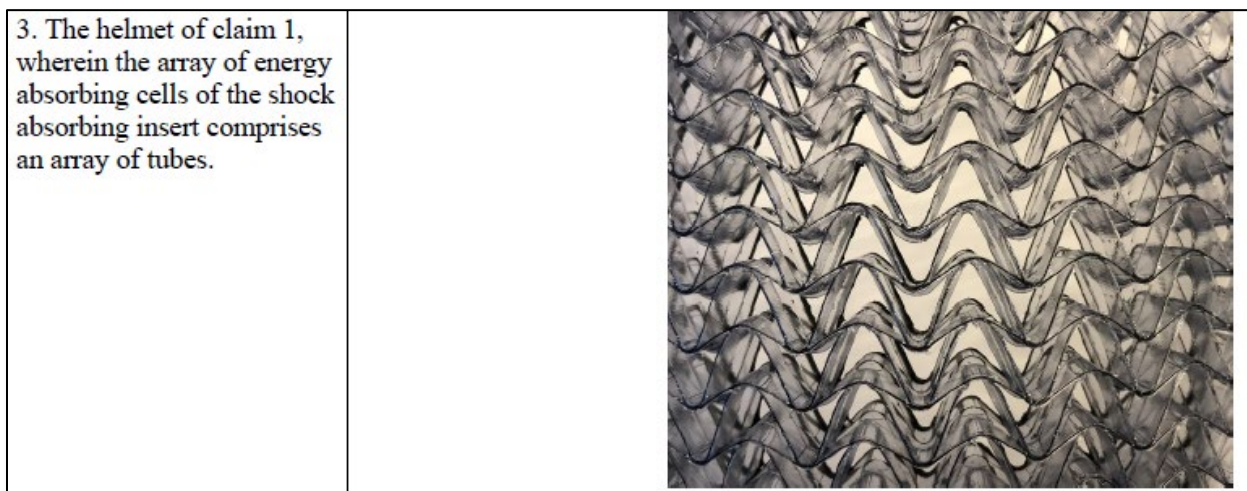
45. In the written description of the '373 patent, it further explains that “[t]he tubes may be a hollow structure having any regular or irregular geometry. In some embodiments, the tubes have a circular cylindrical structure or circular conical structure.” 4:14-17. But it also reinforces that “cells” and “tubes” are not the same thing:

- 2:18-22 (“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.”); and,
- 4:6 (“Each of the cells may include a tube.”)

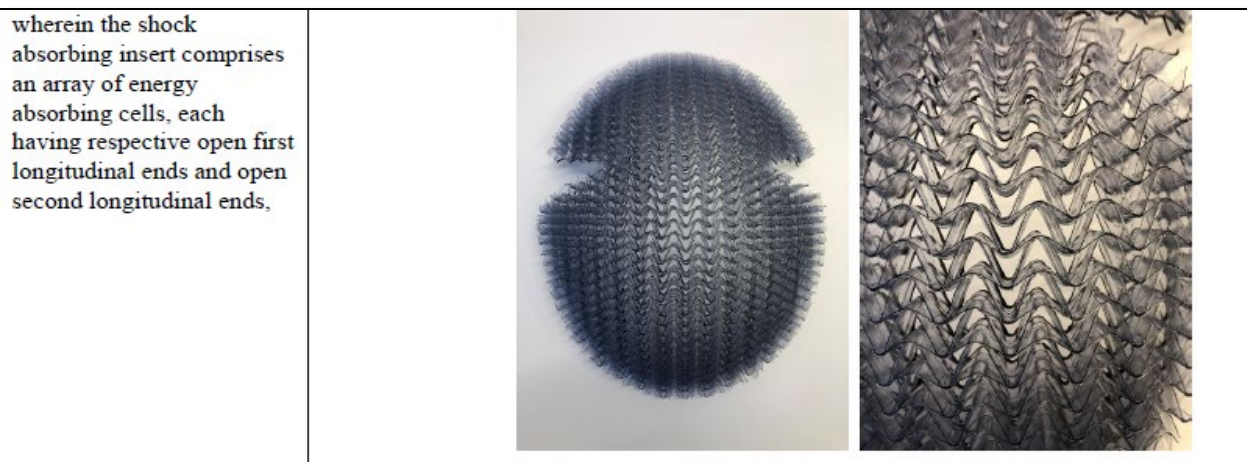
¹ I understand that the terms “comprising” and “comprises” are open-ended and do not exclude additional, unrecited elements.

46. Put simply, a “cell” cannot “include a tube” if they are meant to be the same thing or the terms are meant to be synonymous. A “car” and an “automobile” are synonyms and no one would have claim a “car” includes an “automobile.”

47. Though he does not discuss what his definition of either “tubes” or “cells” is, or what exactly he alleges as “tubes” in the accused Burton helmets, in his analysis of claim 3, Mr. Smith asserts that the Wavecel material in the accused Burton helmets compromises “an array of tubes” (Dkt. 6 at 42 and 51):



48. Mr. Smith uses nearly the same image, with no analysis, to allege that Burton’s helmets have “an array of energy absorbing cells” and infringe claim 1 (Dkt. 6 at 48):



49. In other words, despite the '373 patent making evident that a “cell” is different from a “tube,” neither Mr. Smith nor the Plaintiffs make any attempt to reconcile the difference between them in their infringement analysis. Given their fusion of the terms “cells” and “tubes,” unless otherwise noted, I similarly apply the same definition to each throughout this report.

50. Beyond the terms “tubes” and “cells,” at this time and with my limited investigations to-date, I apply the plain and ordinary meaning of each word in my analysis. Should Plaintiffs rely on a meaning of a word in a claim that is different than the meaning I apply in this declaration, or additional evidence comes to light, I reserve the right to revisit my opinions accordingly.

VIII. BURTON DOES NOT INFRINGE CLAIMS 1-3 OR 7 OF THE '373 PATENT

51. I understand that Plaintiffs have the burden of proof of showing infringement of the asserted claims of the '373 patent by a preponderance of the evidence.

52. I also understand that asserted claims 2, 3, and 7 are dependent from claim 1, and thus that if Plaintiffs fail to show infringement of claim 1, claims 2, 3, and 7 cannot be found to be infringed either.

53. Reviewing Mr. Smith's charts allegedly showing infringement, and based upon my own inspection of the accused helmets, I believe Mr. Smith fails to show infringement for at least three reasons.

A. Claim 1 – “Plurality of vents” and visibility of the shock absorbing insert

54. Claim 1 requires, in part, a shell “comprising *a plurality of vents* including a first vent defining a first opening and a second vent defining a second opening.” Then the claim later refers back to those plurality of vents, requiring that “the shock absorbing insert is visible through and spans across at least a portion of *each of the plurality of vents*.” Importantly, the purported inventors did not write the claim to say that the shock absorbing insert is visible through and spans across at least a portion of each of the first vent and second vent, but instead that the insert is visible across at least a portion “*each of the plurality of vents*”—in other words, not just the “first” and “second” vents, but each and every one of the plurality of vents that is part of the shell. And, later in claim 1, the purported inventors added separate requirements regarding the “first vent,” “first opening,” “second vent,” and “second opening” (emphasis added):

“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** 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”

So the purported inventors knew how to refer to and add requirements regarding the “first and second vents,” “first opening,” and “second opening,” but for this limitation, instead they chose to refer to “each of the plurality of vents”—all of the vents in the helmet shell.

55. The accused helmets, the Logan and Merak helmets, do have a plurality of vents. But Mr. Smith fails to observe that the accused helmets have some vents that do not align with the WaveCel material. Specifically, both the Logan and Merak have vents running along the back of the helmet near the lower edge, in addition to the vents higher up on the helmet that Mr. Smith does discuss. And the Merak helmet has two vents along the front brow line of the helmet that do not align with the WaveCel material. Using the images of the helmets that Mr. Smith provided (copied below), I have circled in green the vents that Mr. Smith does not discuss in his report and labeled them (also in green) as “third vent,” “fourth vent,” and “fifth vent,” but there is also a sixth vent on the opposite side of the Merak helmet, not shown:

'373 Patent, Claim 1	<p align="center">Defendant's Logan Helmet</p> <p align="center"> https://www.burton.com/us/en/p/logan-wavecel/H21-227341.html https://wavecel.com/products </p>
<p>1. A helmet, comprising:</p> <p>a shell comprising a plurality of vents including a first vent defining a first opening and a second vent defining a second opening;</p>	

'373 Patent, Claim 1	<p align="center">Defendant's Merak Helmet</p> <p align="center"> https://www.burton.com/us/en/p/merak-wavecel/H21-227331.html https://wavecel.com/products </p>
<p>1. A helmet, comprising:</p> <p>a shell comprising a plurality of vents including a first vent defining a first opening and a second vent defining a second opening;</p>	

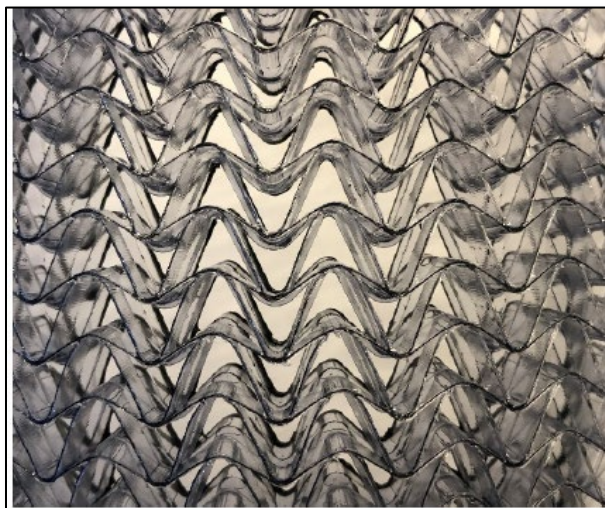
56. None of these circled vents align in any manner with the Wavecel insert in the accused helmets. Accordingly, the shock absorbing insert is *not* visible through these vents, and the insert does *not* “span across at least a portion” of these vents. Therefore, for these reasons, the accused helmets do not infringe.

B. Claim 1 – Cells “positioned within the perimeter” of the openings of the vents

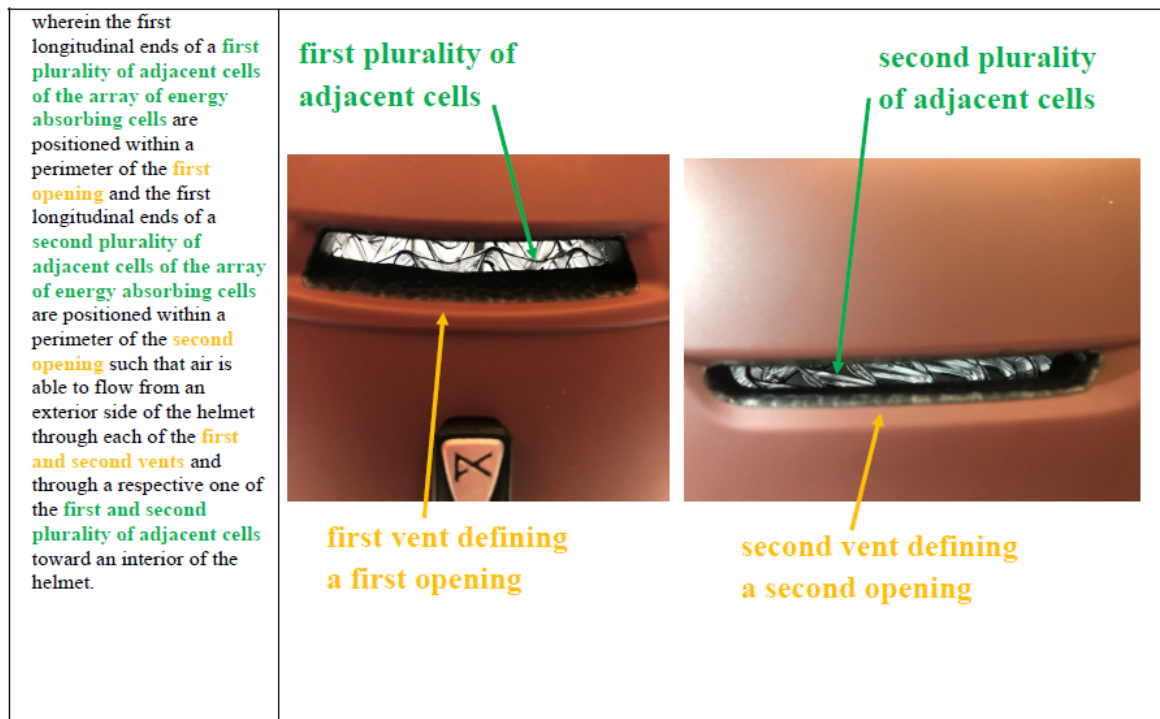
57. Claim 1 also requires the following (with emphasis added):

herein the shock absorbing insert comprises an array of energy absorbing cells, each having respective open first longitudinal ends and open second longitudinal ends, 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***

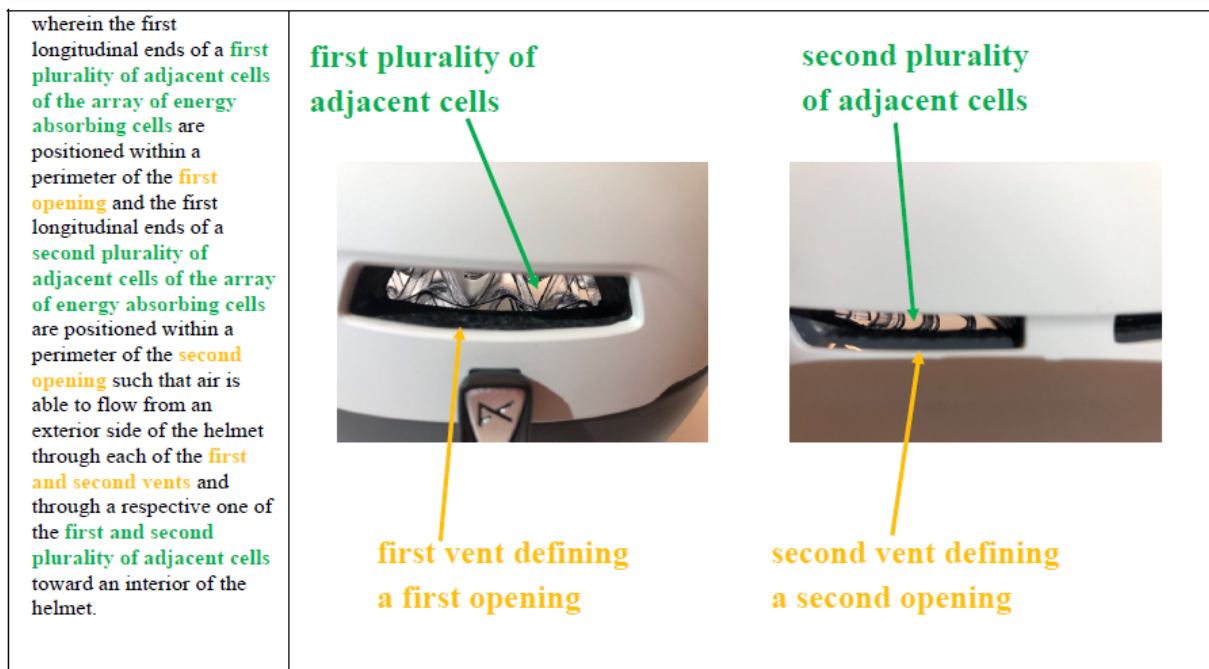
58. As shown below, WaveCel is constructed of a number of sheets that are bonded together to form openings (which Mr. Smith calls cells) that are roughly triangular in shape when viewed from the end.



59. As shown below in two excerpts from Mr. Smith’s report, he simply ignores these limitations, placing those limitations in black font, which he does not analyze:



Mr. Smith Logan Helmet Analysis (Dkt. 6 at 40).



Mr. Smith Merak Helmet Analysis (Dkt. 6 at 49).

60. Mr. Smith focuses on the fact that there is an opening, and that there are what he calls “cells” visible through the opening, but ignores whether those alleged cells, let alone a “plurality of adjacent cells,” are “positioned within [the] perimeter” of those openings, as required by the claims. Based on my evaluation of the pictures that Mr. Smith includes, and a review of the accused helmets, I could not find any examples of where any complete “cells” of the WaveCel material are “positioned within a perimeter” of the openings or vents. Indeed, the dimensions of the vents relative to those of the WaveCel material do not allow for any one (let alone two adjacent) cell to be so positioned. Because there are no complete cells “positioned within [the] perimeter” of the openings, the accused helmets do not infringe.

61. The claim language does not allow for mere *portions* of the cells to be so positioned. It says “...cells are positioned...” — not “portions of cells are positioned.” By contrast, when the patentees wanted to indicate that only a portion of something was required by their claim, they said so. For example, in claim 1, the patent requires that the shock absorbing insert be visible through and span “at least **a portion** of each of the plurality of vents, wherein at least **a portion** of the shock absorbing liner is positioned between the shell and the shock absorbing insert...” (emphasis added).

C. Claim 3 – Tubes

62. Claim 3 depends from claim 1 and requires that the “array of energy absorbing cells of the shock absorbing insert comprises an array of tubes.” As discussed in the Claim Construction section of my declaration (Section VII), Mr. Smith

and Plaintiffs make no distinction in their infringement analysis between “cells” and “tubes,” but the specification and claim 3 requires that there be some distinction.

63. I do not see a separate “tube” in the WaveCel materials used in the accused helmets. Instead, I see what Mr. Smith refers to as “cells” that are created by the layering of wavy plastic sheets to form the WaveCel, but none of these openings (even assuming they are “cells”) “comprise[s] an array of tubes,” nor do Mr. Smith’s charts show anything that I believe a POSA would consider to be an “array of tubes.”

IX. PRIOR-ART REFERENCES AND STATE OF THE ART

64. I briefly introduce in this Section a general background on the state of the art in helmet design, and specifically snow helmet design, as of 2013. I also generally describe various prior-art references discussed in this declaration.

A. General State of the Art

65. Snowboarding was developed in the 1960s and ’70s, grew in popularity in the 1980s, and became an Olympic sport in 1998. In the mid-1980s, few U.S. ski resorts allowed snowboarders on their hills. This reinforced the attraction of nonconformist skateboarders who had their own unique style inspired by grunge and hip-hop fashion that was so different from the traditional ski clothing.

66. There were several snowboarding pioneers who started manufacturing snowboards in the early ’80s. This included Burton Snowboards (founded by Jake Burton Carpenter), Sims Snowboards (founded by skateboarder Tom Sims), Barfoot Snowboards (founded by surfer Chuck Barfoot); and Gnu Snowboards (founded by Mike Olson). These enthusiasts organized snowboard competitions that attracted some

major brands. These events gradually helped the skiing community acknowledge snowboarding's critical contribution to the revival of the snow resort industry.

67. During this time as the popularity of snowboarding continued to grow, amateur and professional snowboarders were getting concussions from falling while doing tricks on rails and halfpipes. Ski helmets barely existed as a consumer product despite growing acceptance of helmet use by cyclists, kayakers, and rock climbers. In snow sports, only downhill racers were required to use helmets, and slalom racers used them mostly to protect their goggles from impact with breakaway gates. It was not cool for a snowboarder to wear a helmet.

68. In 1994 my company, Paradox Design, approached Burton Snowboards with a prototype snowboard helmet that reflected the unique style of snowboarders. Paradox worked with Burton to create the R.E.D. Skycap and bring it to market in 1997. The Skycap was worn by the USA team when the giant slalom and the halfpipe snowboarding competitions were introduced at the Olympic Winter Games in Nagano, Japan, in 1998. The European CE Ski Helmet standard CEN 1077 was issued in 1996. This standard includes a penetration test that forced all ski helmets at the time to have a rigid plastic shell with no vent holes. With temperature variations throughout the day boarders were looking for a way to stay cool while wearing a helmet. The Skycap was introduced with small vent holes opening into larger channels for good air flow. These small vents do not allow the CEN test penetrator to touch the headform inside the helmet so the helmet complies with the CEN standard. The American Society of Testing and Materials (ASTM) introduced the Snow Sport Standard F2040 in 2000. This

standard does not include a penetration test. Without a penetration test, designers were allowed to add vent openings in a ski helmet shell that were significantly larger and still pass the more stringent ASTM impact standards with tests simulating tree or rock collisions.

69. Expanded polystyrene bead foam (EPS), invented in 1954, has been used as an inexpensive, light weight, shock absorbing liner, inside a fiberglass shell, for race car and motorcycle rider's crash helmets since 1957.

70. Acrylonitrile butadiene styrene (ABS), a tough, resilient plastic was invented in 1948. Unlike fiberglass, an ABS shell could be designed to split or crush to absorb impact. Most important, it could be injection-molded, making it much less expensive than fiberglass, which had to be laid up by hand on a form. ABS helmets, lined with EPS, offered an inexpensive ski helmet to market to the public. By 1973, European companies like Jofa, Boeri, Uvex and Carrera were marketing inexpensive plastic helmets, especially for children.

71. Beginning around 1974, regional cycling associations began looking for improved bicycle helmets. A number of good helmets were produced based on climbing-helmet designs, but they provided inadequate cooling, or were deemed too heavy. Eventually the bicycle business settled on a simple EPS helmet with a light fabric cover, or only a very thin decorative polycarbonate shell. Giro was founded in 1987 based on this design, just as the U.S. Cycling Federation began requiring certified helmets in all competitions. By 2003, when the Union Cycliste Internationale followed suit, dozens of factories filled the need for lightweight bike helmets. Most of them

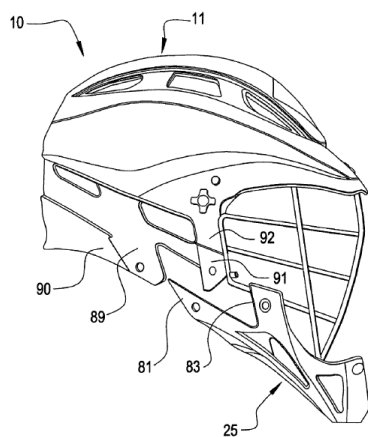
immediately adapted their cycling helmets for the ski market. By 2010, Snowsports Industries America listed 31 different brands of ski and snowboard helmets, all of them based on EPS liners with ABS shells and most certified to the European EN1077 standard, and the vast majority had some sort of venting system, many times adjustable. Some met the more stringent ASTM 2040 standard and a very few meet Snell's RS98 standard, which tests at more than 30 percent higher impact.

72. *The 6 Best Ski and Snowboard Helmets of 2013*, <https://www.outsideonline.com/outdoor-gear/snow-sports-gear/bolle-synergy-helmet/>, listed: the Bolle Synergy Helmet ("All of the helmets here have vents, but none are as adjustable as the Synergy's. Two front scoops help prevent goggle fog and channel air back. But it's the six up top we like best: three positions (open, cracked, and shut)"); the Smith Gage Helmet ("It's just the basics here, with 12 vents and a simple fit system. While the vents could do a better job at cooling you off,"); the Lazer Dissent Helmet ("the Dissent marks the company's first foray into snow sports. It has all the amenities—adjustable fit, audio compatibility, removable brim, and optional built-in GoPro mount (\$10). But the smartest feature is a magnetic buckle in the chin strap"); the Scott Couloir Mountain Helmet ("Fourteen airy vents make the Couloir the most breathable helmet here"); the Giro Battle Helmet ("With an adjustable fit system, a generously padded and audio-compatible ear liner, and eight well-placed vents, the Battle has all the features we look for—at half the price of comparable lids,"); and the POC Fornix Helmet ("The Fornix has an internal structure made from molded Aramid strands, similar to Kevlar, POC claims it disperses impacts evenly across the entire helmet, even with sharp hits

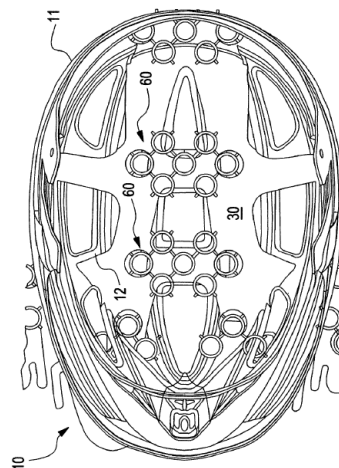
on one side. Smart: two front vents direct air downward to help prevent goggle fogging.”).

73. In short, by at least the summer of 2013, the art around helmet design, and more particularly snow sport helmet design, was considerably evolved. By that time, the general design of helmets was relatively universal among manufacturers: a hard, usually ABS, shell designed to absorb initial impacts and protect against more precise impacts (e.g., sharp ice, tree branches, snow equipment like skis, etc.); vents (often adjustable) to allow for airflow in the helmet; an impact-absorbing material, often but not always a foam such as expanded polystyrene (EPS); a comfort insert typically made of a soft foam and fabric, sometimes offering additional impact absorption; a suspension or other fit system to allow the user to adjust the helmet to their head; and a harness system to prevent the helmet from coming off.

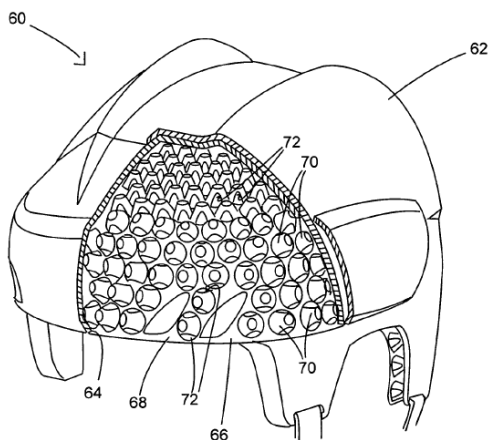
74. Moreover, helmet designers were using honeycomb-like materials in their helmet designs instead of more traditional EPS. The Fox Striker helmet, discussed further below, is one example. Others are shown below, and others are discussed in more detail throughout this report:



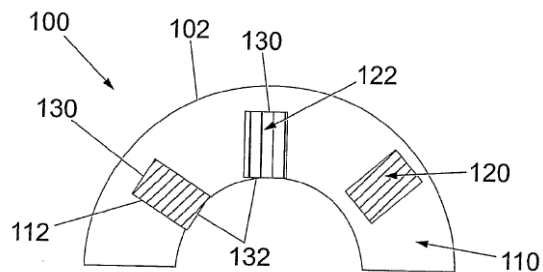
U.S. Pat. Appl'n No. 2009/0178184
("Brine"), Fig. 5



Brine, Fig. 10



U.S. Pat. No. 7,673,351 ("Copeland"),
Fig. 5



U.S. Pat. Appl'n Publication No.
2008/0307568 ("Sajic"), Fig. 9

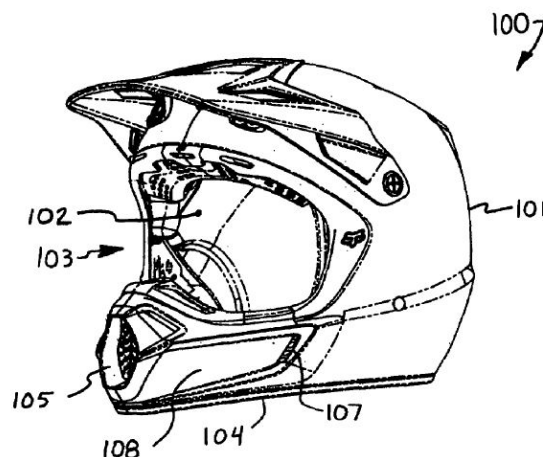


FIGURE 1

U.S. Pat. No. 7,207,071

Fig. 1 (105 being a "front vent" that is honeycomb-shaped)

B. Fox Striker Helmet ("Striker Helmet")

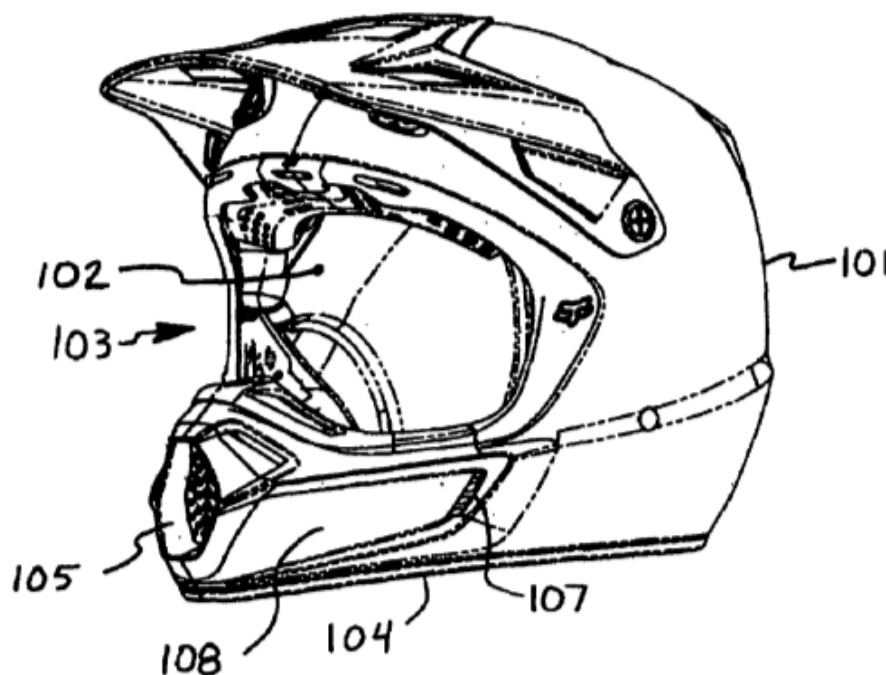
75. In 2011, Fox introduced a mountain biking helmet "for riders seeking light weight and comprehensive protection." See 2011 Fox Catalog (Ex. B) at 7. The Striker Helmet was not disclosed by the alleged inventors of the '373 patent to the Patent Office during prosecution of the '373 patent, nor was it considered by the Patent Office during that prosecution.

76. One feature that Fox used in the Striker Helmet was "Structural Honeycomb venting inserts in the lower back shell," as shown below in an image from the 2011 Fox Catalog:



77. This type of venting insert was also described in the U.S. Pat. No. 7,207,071 (Ex. F), entitled “Ventilated Helmet System,” filed by Fox in 2004 for a motorcycle helmet (2:65-3:6):

In some embodiments of the present invention, the forward portion of the chin bar 104 has a front vent 105 [made of honeycomb]. The front vent 105 allows for the introduction of air into the helmet 101. In some embodiments, the air that passes through the front vent 105 may be routed in to ducts or air passages. In some embodiments, the front vent 105 may have a filter or dust cover residing within the opening of the vent or adjacent to the opening. In some embodiments, the helmet 101 may have one or more side vents 107.



78. This honeycomb insert in the Fox Striker helmet allowed better air flow through the helmet to cool the rider, but also had an impact—or shock-absorbing—effect. For instance, if the rider fell and struck the back of the helmet on a rock, the honeycomb would have absorbed some of the blow—especially compared to not having any vent insert at all. This impact-absorbing effect is reflected in Fox referring to the honeycomb as a “structural” insert.

79. Indeed, I understand that engineers at WaveCel tested the honeycomb insert and confirmed that it has an impact-absorbing effect considerably greater than a mere block of hardened plastic, and that it actually performed better as a shock absorbing insert than the Koroyd honeycomb material Smith uses in its helmets, when compared using inserts of equivalent thickness. See Bottlang Decl., ¶¶ 48-50.

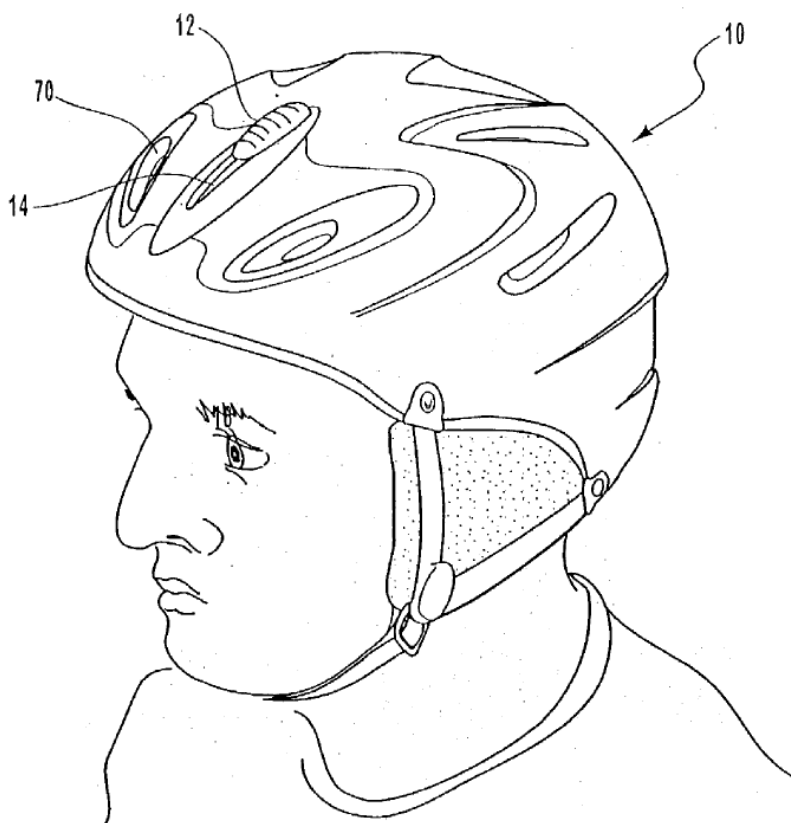
C. U.S. Pat. Appl'n Publication No. 2004/0064873 ("Muskovitz")

80. Muskovitz (Ex. C) is a U.S. patent application that was filed on May 29, 2003 and was published on April 8, 2004. Muskovitz was not disclosed by the alleged inventors of the '373 patent to the Patent Office during prosecution, nor was it considered by the Patent Office during prosecution of the '373 patent.

81. In the abstract to his application, Muskovitz describes his inventions as follows:

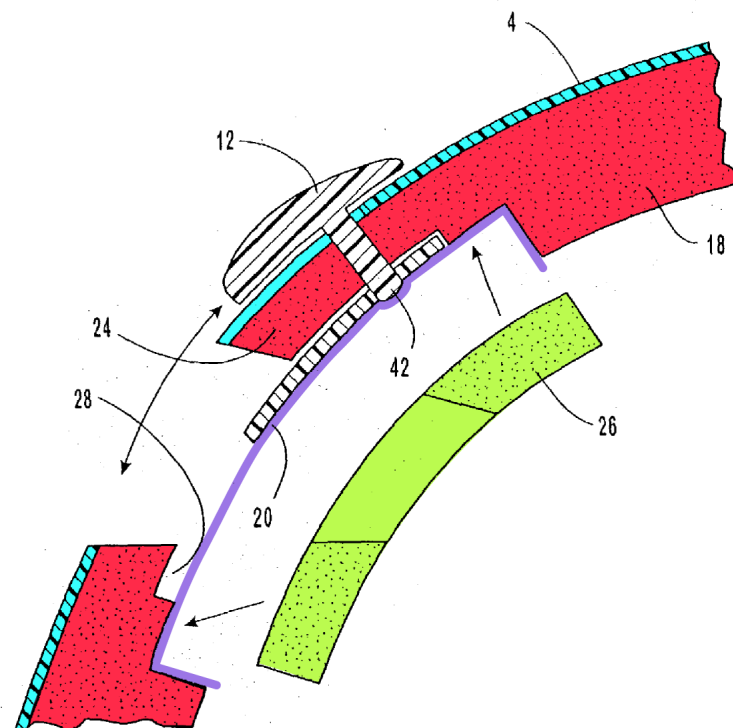
The present invention provides a lightweight protective helmet having an improved ventilation system therein. The protective helmet comprises an outer shell and an inner liner that are joined together to form a shell/liner composite. The ventilation system interacts with one or more ventilation ports in the protective helmet to control the flow of ambient air in and out of the interior of the protective helmet. The ventilation system may be integrated or encased within the shell/liner composite, or it may be adapted to be used on the exterior of the helmet. In addition, the ventilation system may include one of several types of interchangeable insert members to allow active or passive control of ambient air into the interior of the helmet.

82. Figure 9 of Muskovitz shows one particular embodiment of his invention, with multiple vents and means of adjusting air flow throughout the helmet:



83. In a related embodiment, shown in Figure 10, annotated below, Muskovitz describes a venting system in a helmet where the helmet includes:

- An outer shell [4, light blue];
- An impact absorbing liner [18, red];
- A recess formed within in the liner where an insert can be placed [outlined in purple];
- A removable insert member [26, green] that is of a “similar size and shape as the recess formed within the liner” and may be made of “various material compositions” that have “the same or similar impact absorbing material as the liner.”



D. U.S. Pat. Appl'n Publication No. 2008/0307568 ("Sajic")

84. Sajic (Ex. E) is a U.S. patent application that was filed on October 31, 2006 and was published on December 18, 2008.

85. In the abstract to his application, Sajic describes his inventions as follows:

A body protecting device for wearing by a user comprising: an impact surface; and an array of energy absorbing cells, wherein each of said cells comprises a tube, and wherein the longitudinal axis of the tubes of one or more of said cells is arranged at an oblique angle to the impact surface.

86. Figure 9 of Sajic, annotated below, shows one particular embodiment of his invention, where it shows a cross section of a helmet with (3:54-66):

- An outer shell that Sajic refers to as an "impact surface" (102, light blue) (§ 2);
- An "expanded polystyrene foam," which is a shock absorbing material that Sjic refers to as a "spacing member" (110, red) (§ 114);

- A “number of receptacles or cavities” (outlined in purple) (¶ 114) formed within the foam; and,
- Within the cavities, a number of “inserts” (green) are positioned (¶¶ 115-16).

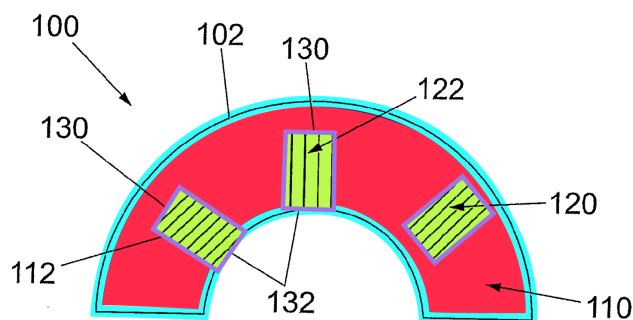


Fig. 9

87. Sajic further explains that the inserts comprise “an array of energy absorbing tubes,” (¶ 117, green), that are shown in Figure 2 of Sajic:

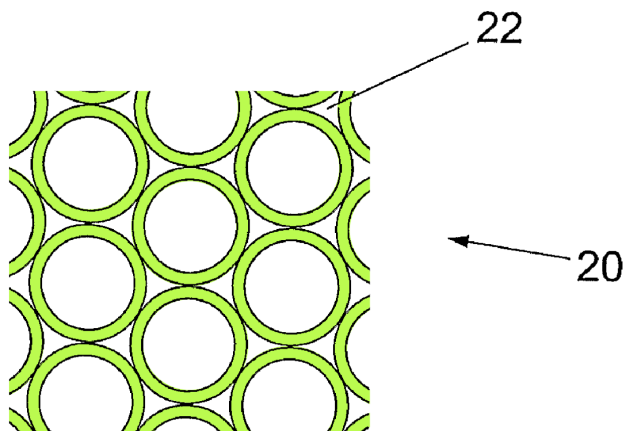


Fig. 2

E. U.S. Patent No. 4,422,183 (“Landi”)

88. Engineers and designers have experimented with and used honeycomb-like structures for decades as a shock- or impact-absorbing material. Landi is just one example showing such use.

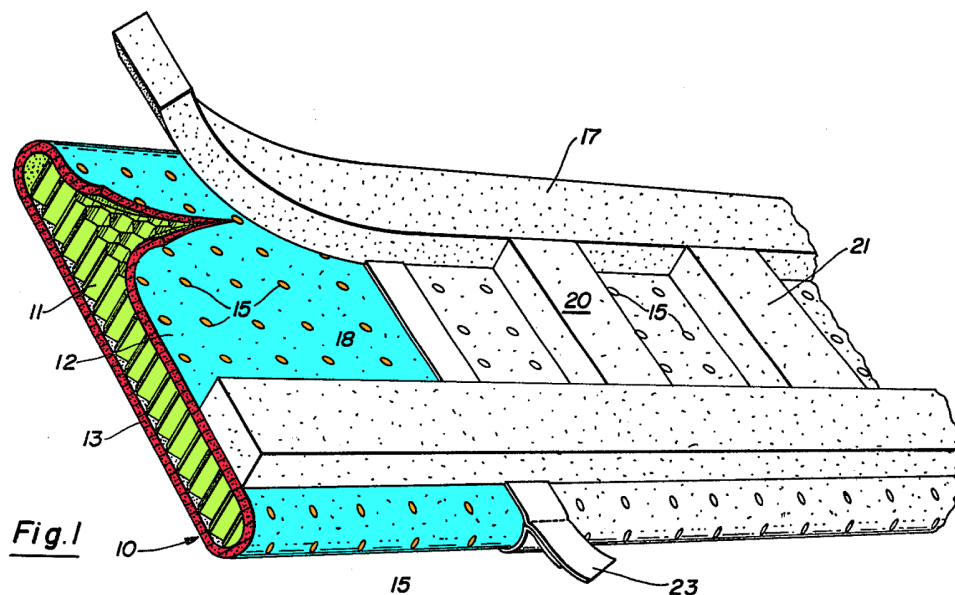
89. Landi (Ex. D) is a U.S. patent that was filed on October 3, 1980 and issued on December 27, 1983. Landi was not disclosed by the alleged inventors of the '373 patent during prosecution, nor was it considered by the Patent Office during prosecution of the of the '373 patent.

90. In the abstract to his patent, Landi describes his inventions as follows:

A protective body shield including a honeycomb core arranged with the axis of each cell perpendicular to the body of the wearer and a layer of resilient foam covering at least that side of the shield in contact with the body to produce a shield that is rigid and shock-absorbing in the direction of anticipated impacts, but flexible and yieldable in other directions so as to not interfere with movement of the wearer's body.

91. Figure 1 of Landi, annotated below, shows one particular embodiment of his invention, where it shows a cross section of the protective body shield with:

- A honeycomb core (11, green);
- A “resilient flexible material covering the open ends of the cores that are on the body side of the device” (12, light blue);
- A separate layer of “resilient material covering the open ends of the cells on the outside” (13, red); and,
- Openings or vents “on both the inside and outside portions to provide ventilation for the wearer in order to dissipate body heat” (15, orange).



92. Not surprisingly, Landi recognized that, given its open structure, the honeycomb structure itself would have ventilation effects: “Perforations in the resilient material will provide a breathable shield in that the open nature of the core is no impediment to ventilation no matter how thick it is.” (3:19-22.)

F. Shock Absorption Performance of a Motorbike Helmet with Honeycomb Reinforced Liner (2011) (“Caserta Article”) and The Use of Honeycomb in the Design of Innovative Helmets (2012) (“Caserta Thesis”)

93. Dr. Gaetano Caserta researched the use of an aluminum honeycomb structure for use in helmets. As a result of his research, he published an article and a thesis:

- Caserta, G., Iannucci, L. & Galvanetto, *Shock absorption performance of a motorbike helmet with honeycomb reinforced liner*, Composite Structures 93, 2748-59 (2011) (Ex. G); and,
- Caserta, G., *The Use of Honeycomb in the Design of Innovative Helmets*, Imperial College of London (2012) (Ex. H).

94. Dr. Caserta investigated in his research the efficacy of using a honeycomb structure in helmets, as opposed to more traditional foams, as shown below:

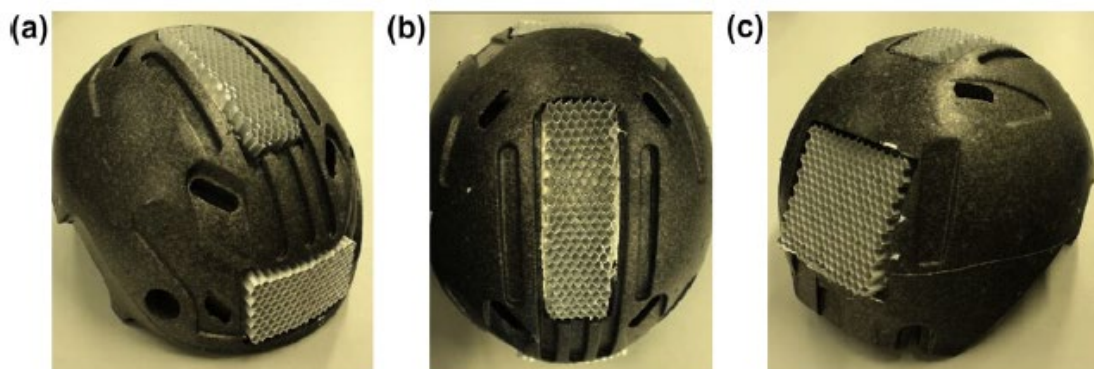


Fig. 2. Helmet prototype liner: (a) perspective front view; (b) top view; (c) perspective rear view.

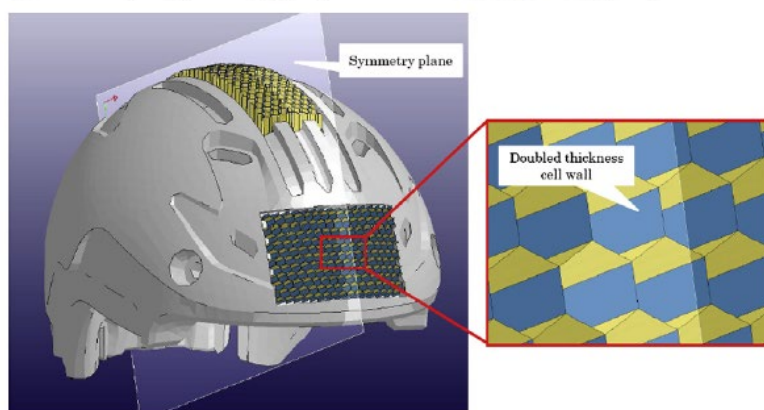


Fig. 4. Orientation of the honeycombs with respect to the symmetry plane of the prototype helmet.

95. Dr. Caserta showed through his research that such a honeycomb structure is a good substitute for other energy absorbing materials available on the market. *E.g.*, Caserta Article at 2749 (“In our investigation, we tested different configurations of honeycomb–foam sandwich panels and EPS foams commonly used for the manufacturing of modern motorbike helmets. ... In all the tests, it was *observed that sandwich configurations showed better shock absorption properties than the one provided by the EPS foams of equal weight.*”); *id.* (“Aluminium honeycomb layers were introduced in the helmet prototypes to enhance the energy absorption properties offered

by the polymeric inner liner, and so improve the protection of the head against impacts. The honeycombs were inserted in the front, top and rear surfaces of the liner.”); Caserta Thesis at 47 (“As stated in Chapter 1, the substitution of parts of the helmet energy absorbing liner with layers of aluminium honeycombs could significantly improve the safety levels provided by commercially available helmets.”); and, *id.* at 161 (“Another advantage of the solution proposed in this thesis is the simplicity of the concept, which does not require excessive costs of production and can be easily implemented in helmet manufacturing processes.”).

X. THE ASSERTED CLAIMS ARE INVALID IN LIGHT OF THE PRIOR ART

96. I have been asked to provide my opinion concerning whether claims 1-3, and 7 of the '373 patent are anticipated or would have been obvious to a POSA in light of the prior-art references identified above. For the reasons explained below, it is my opinion that each of claims 1-3, and 7 is anticipated by the prior art, and furthermore would have been obvious to a POSA in light of other prior art.

A. Ground 1: Anticipation by the Striker Helmet

97. As shown in detail in the claim chart that is Exhibit J to my declaration, every element of claims 1-3 and 7 was disclosed by the Striker Helmet. Accordingly, those claims of the '373 patent are anticipated by the Striker Helmet, and therefore invalid.

98. If one were to argue that the shock-absorbing insert on the back of the Striker Helmet is merely ornamental, that theory is contradicted by Fox itself, which refers to the honeycomb inserts as “Structural Honeycomb venting inserts.” (2011 Fox

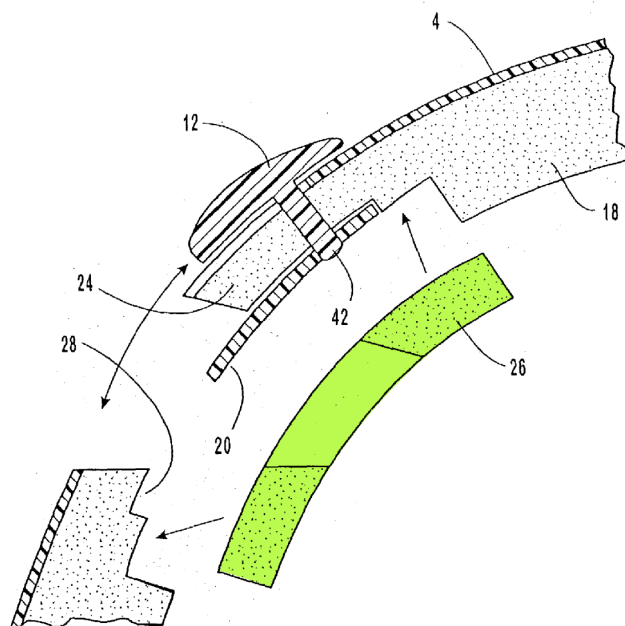
Striker Catalog at 7.) A POSA would have understood that such a “structural” element to a helmet would have a shock-absorbing function, in particular because a POSA would have recognized that the honeycomb could be crushed down either by a direct impact along the longitudinal axis of the honeycombs, or from an impact at an angle oblique to the longitudinal axis of the honeycombs.

99. Moreover, the engineers at Wavecel tested the Striker Helmet insert and found that it had substantial shock-absorbing properties—indeed, even more so than the Koroyd material that Smith uses: “For the Fox honeycomb insert, the improvement in performance of 46% over Koroyd is significant and clearly indicates a key function of the Fox honeycomb insert to absorb shock.” (Bottlang Decl., ¶ 48.) I agree with Dr. Bottlang’s conclusion that the honeycomb insert in the Striker Helmet is a shock absorbing insert. (*Id.*, ¶50)

B. Ground 2: Obviousness Based On Muskovitz Alone

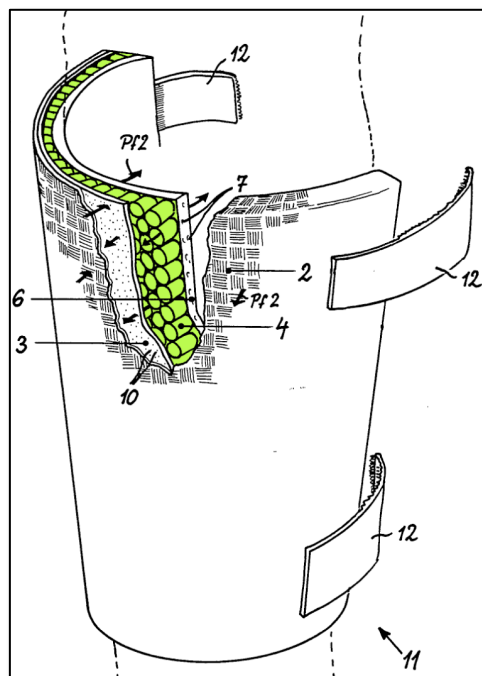
100. As shown in detail in the claim chart that is Exhibit K to my declaration, and below, the invention disclosed in Muskovitz discloses a helmet (claim 1[A]), a shell with a plurality of vents (claim 1[B]), a shock absorbing liner attached to the shell with a cavity aligned with the vents (claim 1[C]), a separate shock-absorbing insert filling the cavity and spanning at least a portion of the vents (claim 1 [D]), the shock-absorbing liner positioned between the shell and the insert (claim 1 [E]), and Muskovitz discloses that the shock-absorbing insert “may comprise various material compositions,” including any “similar impact absorbing material” as the shock absorbing liner. (Muskovitz, ¶ [0087]).

101. A POSA would have known that any honeycomb-like structure—i.e., one that has an “array of energy absorbing cells, each having respective open first longitudinal ends and open second longitudinal ends”—could be used to replace the “insert” (26, green) shown in Muskovitz Figure 10, below, and it would have been a “similar impact absorbing material” as Muskovitz describes:



102. A POSA would have known that such a honeycomb like structure would have had “similar impact absorbing” properties to more traditional EPS foam, if not better. See, e.g., Caserta Article at 2794 (“In our investigation, we tested different configurations of honeycomb–foam sandwich panels and EPS foams commonly used for the manufacturing of modern motorbike helmets.... In all the tests, it was observed that sandwich configurations showed better shock absorption properties than the one provided by the EPS foams of equal weight.”); Landi at 2:14-29 (“Force applied to a honeycomb material in the direction parallel to the axes of the cells is resisted by the

stiffness of the honeycomb material and such forces are absorbed and widely distributed by the buckling of the side walls of the cells. When one wall of a cell buckles, the other walls of the same cell must also buckle because they are all connected to one another, and since all walls of the cell are also walls of adjacent cells, the walls of adjacent cells also buckle under the effect of a force. This effect gives the honeycomb core of this invention the ability to absorb a great deal of energy from an impact and in addition the energy of impact that is not absorbed is distributed over a wide area beneath the core even though it may be focused on a small area where it occurs.”); Duchene at 1:45-50 (“Such a composite layer is capable of absorbing both hard point-shaped impacts and also pressure effects acting over an area and doing so extremely well. *The elastic honeycomb layer can also absorb high acting forces by deforming*, and



the acting forces, even though small, are distributed over the area by the layers above the honeycomb layer.”) (emphasis added), and 4:50-55 (“The inventive lamination is suitable for a variety of applications in various adapted embodiments accordingly. Examples of products include bicycle helmets or inserts for motorcycle helmets...”). Figure 1 of Duchene, at right, shows the honeycomb layer, highlighted in green.

103. A POSA would be especially motivated to make such a substitution because a POSA would have known that such a

honeycomb structure would allow for air flow through the vent to the wearer's head without any modification of the structure of the insert or other components. See, e.g., U.S. Pat. No. 7,673,351 (Copeland) at 4:9-24 (discussing use of open shock-absorbing structure to allow for air flow through holes in a helmet); Duchene at 5:5-10 ("It should also be pointed out that thorough drying after a cleaning, for example, is also possible thanks to the air permeability and the resulting breathable design of the laminations."), 1:56-2:1 ("All the layers are 'breathable,' so the wearing comfort has been greatly improved."), 4:45-50 ("Due to the porosity of the shin guard 11, a buildup of heat cannot occur even with great physical exertion, and the resulting perspiration can escape well due to the prevailing air circulation."), and Abstract ("The lamination that is provided is suitable in particular for personal protection, but also for all applications in which a high shock-absorbing capacity is desired in addition to a low weight and good air permeability at the same time.").

104. A POSA would also understand claim 2 of the '373 patent to have been obvious in light of Muskovitz alone as Muskovitz discloses, throughout its images, a shock absorbing liner that is seamless. Moreover, a POSA at the time of Muskovitz would have known that such a seamless liner would be advantageous as the introduction of a seam may create a failure point within a helmet. Seamless suggests that the shock absorbing liner is made in one piece. This way of manufacturing has been the norm for all EPS helmet liners because a liner made in two pieces would add unnecessary additional cost in tooling and production.

105. A POSA would also understand claim 3 of the '373 patent to have been obvious in light of Muskovitz alone because, as described in paragraph 102, a POSA would have had reason to use a standard honeycomb structure that comprises an array of “tubes,” as that term is used by Plaintiffs and Mr. Smith in his report.

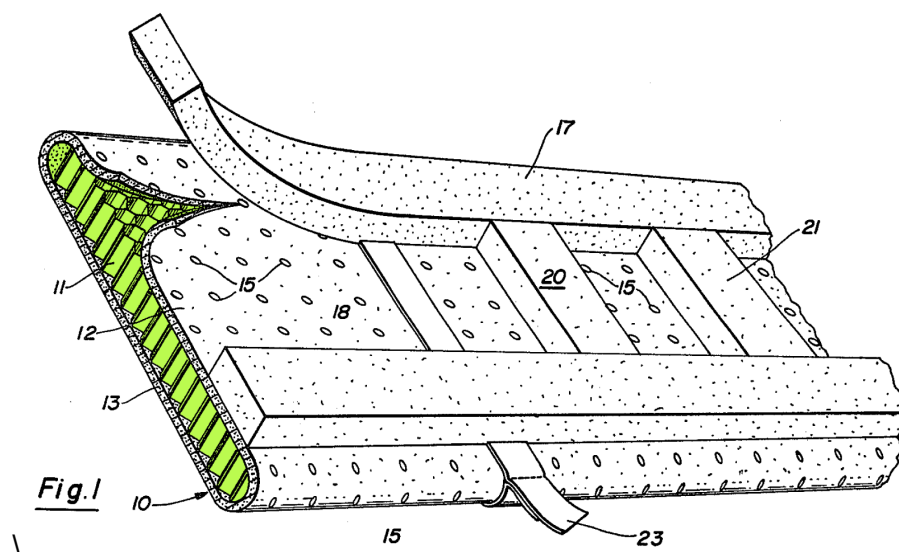
106. Finally, Muskovitz provides examples of helmets with vents at various places on the helmets, including extending to the back of the wearer’s head. *See, E.g.*, Figs. 1 & 7. Muskovitz further never limits where the arrangement with the insert shown in Fig. 10 could be placed on a helmet, and a POSA would understand Muskovitz to disclose that such an arrangement could be used with a vent positioned at the back of the helmet, resulting in the shock-absorbing insert extending to a portion of the helmet configured to be positioned at the back of a wearer’s head. Accordingly, claim 7 would have been obvious to a POSA.

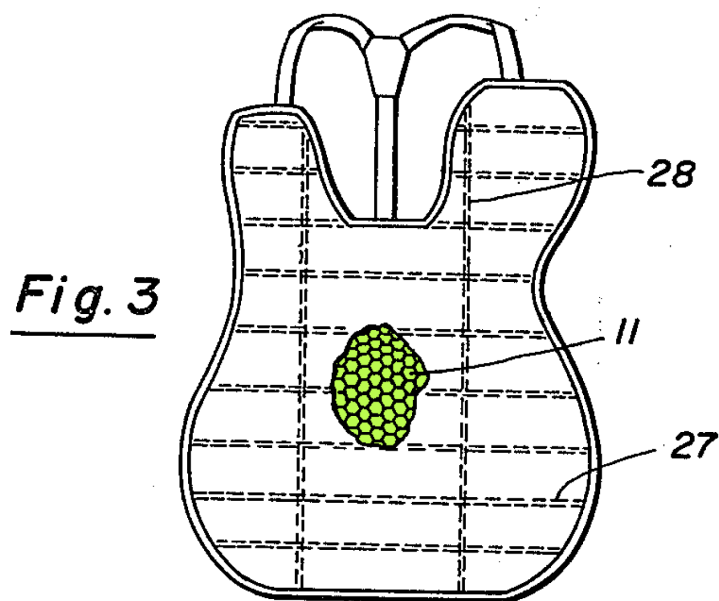
C. Ground 3: Obviousness Based On Muskovitz In Light of Landi

107. As shown in detail in the claim chart that is Exhibit K to my declaration, the invention disclosed in Muskovitz shows a helmet (claim 1[A]), a shell with a plurality of vents (claim 1[B]), a shock absorbing liner attached to the shell with a cavity aligned with the vents (claim 1[C]), a separate shock absorbing insert filling the cavity and spanning at least a portion of the vents (claim 1 [D]), the shock absorbing liner positioned between the shell and the insert (claim 1 [E]), and Muskovitz discloses that the shock absorbing insert “may comprise various material compositions,” including anything with a “similar impact absorbing material” as the shock absorbing liner. (Muskovitz, ¶ [0087]).

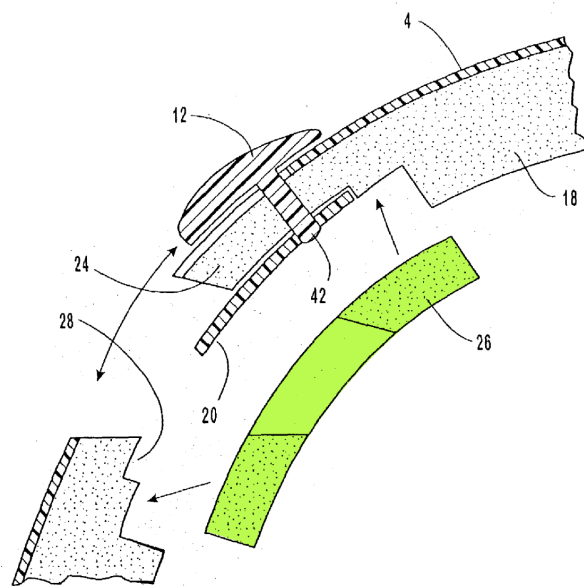
108. The other elements of claims 2 and 7 are also disclosed in Muskovitz, as shown in the claim chart in Exhibit K.

109. As further shown in the claim chart that is Exhibit L to my declaration, Landi discloses a structure to use a body shield “constructed of many, short, honeycomb cells side by side.” (Landi, 1:66-68.) This structure is shown in the annotated versions of Figures 1 and 3 of Landi, below, with the honeycomb highlighted in green as shown in the cutaway images:





110. A POSA would have had reason to use this honeycomb structure of Landi in place of the insert (26) of Muskovitz, as shown below:



111. First, as explained in ¶102, a POSA would have known that such a honeycomb structure would have had similar shock-absorbing properties as the rest of

the liner in Muskovitz. And Landi reinforces that the honeycomb-like structure is shock absorbing. *E.g.*, Landi, 2:41-42 (“The thin cells can absorb a great deal of shock by buckling.”); 2:19-29 (“When one wall of a cell buckles, the other walls of the same cell must also buckle because they are all connected to one another, and since all walls of the cell are also walls of adjacent cells, the walls of adjacent cells also buckle under the effect of a force. This effect gives the honeycomb core of this invention the ability to absorb a great deal of energy from an impact and in addition the energy of impact that is not absorbed is distributed over a wide area beneath the core even though it may be focused on a small area where it occurs.”).

112. Second, a POSA would have had reason to use the honeycomb structure of Landi because Landi touts that the honeycomb can be lighter than some foams. *E.g.*, Landi, 1:50-51 (“The protective body shield of this invention is very light in weight...”); 2:6-9 (“The honeycomb material is inherently lightweight because its cell walls are very thin and occupy very small volume compared with the volume of the honeycomb material itself.”). And a POSA would know that lighter-weight helmets, if they offer similar levels of protection, are more desirable than heavier helmets for numerous reasons, including that the wearer will be less fatigued wearing one, and a lighter-weight helmet may be safer as it may reduce rotational injuries.

113. Third, a POSA would have had reason to use the honeycomb structure of Landi in Muskovitz because a POSA would know, and Landi confirms, that the honeycomb structure will allow for better airflow through the helmet. (Landi, 3:19-22 (“Perforations in the resilient material will provide a breathable shield in that *the open*

nature of the core [honeycomb] is no impediment to ventilation no matter how thick it is.”) (emphasis added).)

114. Accordingly, it would have been obvious to a POSA to use the honeycomb disclosed in Landi as the “insert” in Muskovitz, rendering claims 1 and 2 of the ’373 patent obvious, as further shown in Ex. J and Ex. K.

115. Moreover, claim 3 of the ’373 patent would have been obvious to a POSA. Using the definition of “cell” and “tube” that Plaintiffs and Mr. Smith use, claim 3 would have been obvious for the same reasons as claim 1.

116. Finally, Muskovitz provides examples of helmets with vents at various places on the helmets, including extending to the back of the wearer’s head. *See, E.g.*, Figs. 1 & 7. Muskovitz further never limits where the arrangement with the insert shown in Fig. 10 could be placed on a helmet, and a POSA would understand Muskovitz to disclose that such an arrangement could be used with a vent positioned at the back of the helmet, resulting in the shock-absorbing insert extending to a portion of the helmet configured to be positioned at the back of a wearer’s head. Accordingly, claim 7 would have been obvious to a POSA.

D. Ground 4: Obviousness Based On Sajic and Muskovitz

117. As shown in detail in the claim chart that is Exhibit M to my declaration, the invention disclosed in Sajic shows a helmet (claim 1[A]), a shell (claim 1[B]), a shock-absorbing liner attached to the shell (claim 1[C]), a separate shock absorbing insert filling the cavity (claim 1 [D]), and the shock-absorbing liner positioned between the shell and the insert (claim 1 [E]). As discussed above and in Exhibit J to my

declaration, Muskovitz disclosed a similar arrangement, but as it discussed more of a sports helmet as opposed to a motorcycle helmet, Muskovitz discloses vents.

118. A POSA would have had reason to modify the helmet shown in Sajic to incorporate the vents from Muskovitz and to align those vents with the honeycomb inserts Sajic discloses, including at the back of the helmet, rendering claims 1-3 and 7 of the '373 patent invalid.

119. A POSA would recognize that Sajic's invention is directed to helmets generally, but all of his disclosed embodiments show a motorcycle helmet. See Sajic ¶0004 ("It is known that body protecting devices, in particular motorcycle safety helmets..."). A POSA would further recognize that air vents are generally discouraged in motorcycle helmets because such a vent can weaken the shell of the helmet and there is a risk that a rock or other object could penetrate a vent and cause serious harm. At the time of the filing of the '373 patent, however, air vents were generally accepted on sports helmets, including snow sports helmets, including those discussed in Muskovitz. Such vents let a wearer cool their head on warmer days or when exerting themselves through exercise.

120. Accordingly, when designing a sports helmet, a POSA would have had reason to include vents in the shell of Sajic. Further, a POSA would have had reason to at least partially align those vents with the honeycomb structures shown in Sajic as such alignment would have allowed air flow into the helmet. See, e.g., U.S. Pat. No. 7,673,351 (Copeland) at 4:9-24 (discussing use of open shock-absorbing structure to allow for air flow through holes in a helmet); Duchene at 5:5-10 ("It should also be

pointed out that thorough drying after a cleaning, for example, is also possible thanks to the air permeability and the resulting breathable design of the laminations.”), 1:56-2:1 (“All the layers are ‘breathable,’ so the wearing comfort has been greatly improved.”), 4:45-50 (“Due to the porosity of the shin guard 11, a buildup of heat cannot occur even with great physical exertion, and the resulting perspiration can escape well due to the prevailing air circulation.”), and Abstract (“The lamination that is provided is suitable in particular for personal protection, but also for all applications in which a high shock-absorbing capacity is desired in addition to a low weight and good air permeability at the same time.”).

121. Such a combination would have been obvious, rendering claim 1 of the '373 patent invalid.

122. Claim 2 also would have been obvious to a POSA because Sajic shows that its shock-absorbing liner was seamless (see Figs. 9 & 10), as was common at the time.

123. Claim 3 also would have been obvious to a POSA because Sajic discloses that for its “array of energy absorbing cells,” “each of said cells comprises a tube.” *E.g.*, ¶0014.

124. Claim 7 would have been obvious to a POSA because Sajic discloses placing the shock-absorbing inserts in both the “front and rear” of the helmet. ¶0119.

125. Accordingly, each of claims 1-3 and 7 would have been obvious to a POSA based on Sajic in light of Muskovitz, rendering those claims invalid.

* * * * *

I declare under penalty of perjury under the laws of the United States of America
that the foregoing is true and correct.

Dated: September 15, 2021

Signed in Ontario, Canada

A handwritten signature in black ink, appearing to be "J. Smith", is written over a horizontal line.