

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ASCENTCARE DENTAL PRODUCTS, INC.,

Petitioner

v.

SOLMETEX, LLC

Patent Owner

Patent No. 12,290,418

Case No. IPR2025-01175

DECLARATION OF MICHAEL JOBIN

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I, Michael Jobin, declare as follows:

1. I make this declaration based upon my own personal knowledge and, if called upon to testify, would testify competently to the matters stated herein.

2. I have been retained on behalf of Solmetex, LLC, (“Solmetex” or “Patent Owner”) as an independent expert consultant to provide this declaration concerning the technical subject matter relevant to U.S. Patent No. 12,290,418 (“the ‘418 patent”) in connection with an *inter partes* review (“IPR”) petition filed by Ascentcare Dental Products, Inc. (“Ascentcare” or “Petitioner”).

3. I am being compensated at my standard hourly rate of \$595 per hour for the time I spend on this matter. My compensation is not based on the content of my opinions or the resolution of this matter, and I have no other interest in this proceeding.

4. I understand that Solmetex is asserting the ‘418 Patent against Ascentcare in a related matter currently pending in the United States District Court for the Western District of Michigan (“the Parallel Litigation”).

5. In this declaration, I offer opinions relating to the ‘418 patent, claim construction, the references in the Petition, and the declaration submitted by Petitioner. The substance and bases of my opinions appear below.

I. BACKGROUND AND QUALIFICATIONS

6. In formulating my opinions, I have relied on my knowledge, training, and experience in the relevant field, which I will summarize briefly herein. In addition, Ex. 2032 is a true and correct copy of my current *curriculum vitae* (CV).

A. Education

7. I received two degrees from the University of Michigan in 1991, a Bachelor of Science, Engineering with a focus on mechanical engineering, and a Bachelor of Fine Arts, Industrial Design with a focus on product development, both cum laude. I was the recipient of the Kiefer Award for excellence in Industrial Design.

B. Work Experience

8. I have worked in various product development companies throughout my 33 year career, and have developed many products that demonstrate knowledge and experience with the subject matter relevant in this case. I provide below a summary of my work experience and relevant project examples.

9. After my undergraduate degrees, I was hired as a program manager by Design 4 Plastics, Inc. I leveraged my industrial design and engineering education to develop a wide range of products. My projects included a heavy emphasis on plastic part design (including injection molding, rotational molding, vacuum and pressure forming) and sheet metal fabrication (stamping, forming).

10. For NTI Surgical, I designed a custom sterilized impeller pump and tubing set for insufflation of the abdomen during laparoscopic surgery. I developed a cleaning and storage system for reusable tonometer tips, which are used to measure intraocular pressure.

11. For Coca-Cola, I developed a disposable valve for a bag-in-box syrup dispensing system using FDA grade materials.

12. Next, in 1996, I joined Proteus, Inc. as Senior Mechanical Engineer. There, I focused on product design and engineering of products for consumer, medical, and laboratory applications. For example, I developed a disposable cartridge for measuring blood coagulation characteristics prior to surgery.

13. For PUR, I developed a faucet mounted water filter with replaceable cartridge and a rotary actuated valve, and filtered water pitchers.

14. For Physiometrix, I developed an anesthesia monitor including flexible disposable electrodes for fitment to the head.

15. I founded Boston Innovation in 1998, focusing on developing precision fluidic dispensing instruments for pharmaceutical research applications that leveraged a novel pressure activated valve technology that I invented. In these instruments, sample fluid was stored in small sealed reservoirs, and precision low volumes dispensed by the translation of a needle and application of a rinse fluid and/or air pressure. *See, e.g.*, U.S. Pat. Nos. 6,085,773 and 6,706,538.

16. For Gillette, I designed a disposable, handheld shaving cream dispenser.

17. For Bard, I designed a handheld endoscopic device with integrated irrigation and suction.

18. In 2000, I joined Arthur D. Little, where I led mechanical engineering of a next-generation network storage product, integrating contributions of mechanical, software, hardware and industrial designers.

19. I founded MicroBioSciences in 2001. There, I invented and developed novel disposable fluid handling cartridges for high throughput screening in pharmaceutical research.

20. Later in 2001, I joined Altitude, Inc., a product development consulting firm, first as Engineering Manager, and then I was promoted to Director of Engineering in 2005. I performed design and engineering activities and led a team of designers and engineers to develop a wide range of consumer products, medical devices and instrumentation.

21. I developed a wide range of home humidifiers for Honeywell, Kaz and Vicks. These included water reservoirs with removable caps and elastomer valves.

22. I developed a water dispenser for PUR with chilled and heated water and dispensing valves. This included a refillable water reservoir with wide mouth threaded cap and valve for easy cleaning.

23. For Colgate, I developed a low-cost, low profile electric toothbrush in or around 2008. This toothbrush was the first commercially available toothbrush that ran on one AA battery (rather than multiple batteries).

24. For Exact Sciences, I designed a custom cylindrical sample collection and shipping vessel with large diameter threaded lid and elastomer gaskets.

25. I developed the first integrated ice shaving and blending frozen drink appliances for home use for Margaritaville. These products included a reservoir for ice, a robust motor and rotary ice shaving blade, a blender, and electronic controls.

26. I developed a wine preservation and dispensing system for home use. The product stored multiple wine bottles at the user-selected optimum temperature using thermoelectric chiller technology, and used valves and air pressure for dispensing, and vacuum for preservation.

27. I developed a handheld eye medication dispenser for Optimyst. This product included a custom disposable fluid reservoir and ultrasonic dispensing technology. *See* U.S. Pat. Nos. D597,206; 8,545,463; 8,012,136.

28. I developed a range of safety eyewear for UVEX. These included adjustable features leveraging advanced injection molding techniques such as in-mold assembly and plastic and elastomer materials. *See, e.g.*, U.S. Pat. Nos. 7,758,789; 7,246,901; 7,237,892; 7,210,777; 7,175,270.

29. In 2008 I founded Aston Technology Advisors, and continued with product development and consulting activities.

30. There I developed an instrument that uses sound to measure wind. This included a novel hydronic heating system for melting snow. *See* U.S. Pat. Nos. 8,958,269 and 9,279,821.

31. I developed a custom plastic and elastomer sterilizable probe for measuring blood oxygen inside the cheek (buccal mucosa) for Pendar Technologies. The probe was positioned in the mouth to press against the inside of the cheek.

32. I developed a custom, portable dispenser for hand sanitizer for use by health care professionals.

33. In 2012, I cofounded 908 Devices Inc. to develop portable chemical detection instrumentation based on mass spectroscopy. Here I have developed various instruments with applications in pharmaceutical research, forensics and hazardous material identification at the point of need. These instruments include complex fluid handling, fluidic and pneumatic connectors, custom vacuum pumps,

pressure regulators and pressure sensors. *See* U.S. Pat. Nos. D703,074; D703,075; 9,093,253; 9,502,226; 9,698,000; 9,978,574; 10,438,787.

34. At 908 Devices I developed reusable sensors and for bioprocessing applications designed to survive repeated autoclaving cycles. I also developed various single use sterilized tubing sets.

35. Throughout my professional career, I have designed products that have won various awards, including: Industrial Designers Society of America (IDSA) IDEA Awards, R&D 100, The Scientist Top 10 Innovations, and The Instrument Business Outlook Industrial Design Gold Award.

36. I have served as an expert in multiple cases. For example, in *Keurig, Inc. v. Kappos*, I was hired on behalf of the United States Patent & Trademark Office as an expert regarding technical concepts related to a USPTO Examiner's rejection of patent claims around Keurig's K-Cup coffee pods, including analysis of relevant prior art. Key issues included high volume manufacturing of thermoformed plastic pods, forming and assembly of filter baskets and fluid flow through the system under high pressure. Ultimately, the USPTO Examiner's rejection was affirmed on appeal.

C. Patents

37. I am a named inventor on nineteen issued utility patents and six issued design patents, which are listed below. These patents range in technologies from

consumer products to medical devices to instrumentation, and address technical issues like precision fluid handling, injection molding, and compact mass spectroscopy.

1. U.S. D932,046 Fluidic cartridge assembly
2. U.S. 10,438,787 Integrated mass spectrometry systems
3. U.S. 9,978,574 Sample collection in compact mass spectrometry systems
4. U.S. 9,698,000 Integrated mass spectrometry systems
5. U.S. 9,502,226 Sample collection in compact mass spectrometry systems
6. U.S. 9,279,821 Deicing system in sodar systems
7. U.S. 9,093,253 High pressure mass spectrometry systems and methods
8. U.S. 8,958,269 Transducer for phased array acoustic systems
9. U.S. D703,074 Handheld sensor
10. U.S. D703,075 Sensor device
11. U.S. 8,545,463 Ophthalmic fluid reservoir assembly for use with an ophthalmic fluid delivery device
12. U.S. 8,525,111 High pressure mass spectrometry systems and methods

- 13.U.S. 8,012,136 Ophthalmic fluid delivery device and method of operation
- 14.U.S. 7,758,789 Temple bar assembly for eyeglasses
- 15.U.S. D597,206 Ophthalmic misting device
- 16.U.S. 7,246,901 Adjustable length upper frame member for eyeglasses
- 17.U.S. 7,237,892 Temple bar with ball and socket hinge and method of making same
- 18.U.S. 7,210,777 Floating lens brow bar attachment for eyeglasses
- 19.U.S. 7,175,270 Flexible frame assembly for eyeglasses
- 20.U.S. D534,446 Handheld instrument
- 21.U.S. 7,080,904 One piece spectacle with temple pre-load
- 22.U.S. 6,706,538 Microvolume liquid dispensing array
- 23.U.S. 6,085,773 Automatic fluid switching valve
- 24.U.S. D425,979 Window fan
- 25.U.S. 5,794,897 Transmission line hanger, a method of attaching the hanger and the resulting assembly

II. MATERIALS CONSIDERED

38. In forming the opinions set forth herein, I have considered and relied upon my education, knowledge of the relevant field, and my experience. I have

also reviewed and considered the '418 Patent (Ex. 1001), the '418 Patent's file history (Ex. 1002), and at least the following additional materials:

- Ascentcare's Petition for *Inter Partes* Review of the '418 Patent (Paper 2);
- Declaration of Dr. Brian P. Black (Ex. 1003);
- U.S. Patent No. 8,029,280 ("Black," Ex. 1005);
- Korean Patent No. 10-1082826 ("Park," Ex. 1006);
- U.S. Patent No. 3,101,543 ("Baughan," Ex. 1007);
- U.S. Patent No. 4,017,975 ("Johnson," Ex. 1008);
- U.S. Patent Publication No. 2003/0134253 ("Hirsch," Ex. 1012);
- Prosecution History of U.S. Patent No. 8,911,232 (Ex. 1015);
- Chinese Patent Application Publication No. 200420094338.X ("Zheng," Ex. 1021);
- Prosecution History of U.S. Patent No. 11,589,970 (Part 1, Ex. 2019)
- Prosecution History of U.S. Patent No. 11,589,970 (Part 2, Ex. 2020)
- Prosecution History of U.S. Patent No. 11,589,970 (Part 3, Ex. 2021)
- Prosecution History of U.S. Patent No. 11,744,686 (Part 1, Ex. 2025)
- Prosecution History of U.S. Patent No. 11,744,686 (Part 2, Ex. 2026)
- Prosecution History of U.S. Patent No. 11,744,686 (Part 3, Ex. 2027)
- Dow Chemical Company, Silicone Rubber Selection Guide (Ex. 2037)

- Elkem – Medical Grade Silicone (Ex. 2038);
- Merriam-Webster Dictionary – “crest” (Ex. 2035);
- Merriam-Webster Dictionary – “wave”) (Ex. 2036);
- Declaration of Dr. Brian P. Black, IPR2025-01057, Exhibit 1003 (May 20, 2025) (Ex. 2041); and
- DryShield User Guide (Ex. 2042).

39. I also considered any materials cited in this declaration to the extent they are not expressly listed above.

40. I am informed and understand that Ascentcare has challenged additional related patents in other *inter partes* review petitions as set forth in the table below.

Patent No.	Case No.
11,589,969	IPR2025-01020
11,589,970	IPR2025-01057
11,744,686	IPR2025-01059

41. The ‘418 Patent claims priority to the application that led to the related ‘686 Patent. Each of these patents claims priority to U.S. Non-Provisional Application No. 14/100,323, filed on December 9, 2013, which issued as Patent No. 8,911,232.

42. I understand that Patent Owner submitted its preliminary patent owner responses in each of the above-listed IPR proceedings. I also understand that Patent Owner submitted declarations from Professor Charles Garris, Ph.D. in support of its preliminary patent owner responses. I am informed and understand that due to a medical issue, Prof. Garris was not able to continue his work and offer opinions on the '418 Patent and the Petition for this proceeding.

43. I have reviewed Prof. Garris' declarations concerning the '969, '970, and '686 Patents and corresponding IPR petitions. Many of the issues Prof. Garris addressed in those declarations overlap with the issues I address in this declaration for the '418 Patent. For example, Petitioner relies on a combination of Park, Baughan, and Johnson for all four related patents. As another example, Petitioner relies on the Black reference in grounds challenging the '969 Patent and the '418 Patent. I agree with Dr. Garris' opinions and analysis. Given the overlapping issues between the '418 Patent and the other related patents, some of the analysis and opinions herein are the same as those provided by Prof. Garris, and in those cases, I have adopted Dr. Garris' analyses and opinions as my own.

III. LEGAL STANDARDS

44. In forming the opinions set forth herein, I have considered and relied upon my education, my work experience, and my personal experience designing medical devices.

A. Claim Construction

45. I understand that claim construction is the process by which a court determines the scope and meaning of terms used in the claims of a patent. I understand that the goal of this process is to give claim terms the ordinary and customary meaning they would have had to a person of ordinary skill in the art (“POSITA”) at the time of the invention, after reading the patent and its prosecution history.

46. I understand that the patent specification may reveal a special definition given to a claim term by the patentee that differs from the plain and ordinary meaning it would otherwise have to a POSITA. In such cases, I understand that the patentee’s definition usually controls.

47. I understand that the prosecution history of a patent can inform the meaning of some claim language and that the prosecution history must be considered when construing the claims.

48. I understand that the court may consider extrinsic evidence, such as dictionaries, treatises, and expert opinions, to understand the technology at issue and the way in which claim terms would be understood by a POSITA in the relevant timeframe.

49. I understand that a dependent claim incorporates each and every limitation of the claim or claims from which it depends.

B. Anticipation

50. I have been informed and understand that a patent claim may be unpatentable as “anticipated” under 35 U.S.C. § 102. I understand that anticipation analysis is a two-step process. The first step is to determine the meaning and scope of the asserted claims. Each claim must be viewed as a whole, and it is improper to ignore any element of the claim. For a claim to be anticipated: (1) each and every claim element must be identically disclosed, either explicitly or inherently, in a single prior art reference; (2) the claim elements disclosed in the single prior art reference must be arranged in the same way as in the claim; and (3) the identical invention must be disclosed in the single prior art reference, in as complete detail as set forth in the claim. Where even one element is not disclosed in a reference, there is no anticipation.

51. I understand that to serve as an anticipatory reference, the reference itself must be enabled, i.e., it must provide enough information so that a person of ordinary skill in the art can practice the subject matter of the reference without undue experimentation.

52. I further understand that where a prior art reference fails to explicitly disclose a claim element, the prior art reference inherently discloses the claim element only if the prior art reference must necessarily include the undisclosed claim element. Inherency may not be established by probabilities or possibilities.

The fact that an element may result from a given set of circumstances is not sufficient to prove inherency.

C. Obviousness

53. I understand that a patent claim is invalid under 35 U.S.C. § 103 as being obvious only if the differences between the claimed invention and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person of ordinary skill in that art. An obviousness analysis requires consideration of four factors: (1) scope and content of the prior art relied upon to challenge patentability; (2) differences between the prior art and the claimed invention; (3) the level of ordinary skill in the art at the time of the invention; and (4) the objective evidence of non-obviousness, such as commercial success, unexpected results, the failure of others to achieve the results of the invention, a long-felt need which the invention fills, copying of the invention by competitors, praise for the invention, skepticism for the invention, or independent development.

54. I understand that a prior art reference is proper to use in an obviousness determination if the prior art reference is analogous art to the claimed invention. I understand that a prior art reference is analogous art if at least one of the following two considerations is met. First, a prior art reference is analogous art if it is from the same field of endeavor as the claimed invention, even if the prior

art reference addresses a different problem and/or arrives at a different solution.

Second, a prior art reference is analogous art if the prior art reference is reasonably pertinent to the problem faced by the inventor, even if it is not in the same field of endeavor as the claimed invention.

55. I understand that it must be shown that one having ordinary skill in the art at the time of the invention would have had a reasonable expectation that a modification or combination of one or more prior art references would have succeeded. Furthermore, I understand that a claim may be obvious in view of a single prior art reference, without the need to combine references, if the elements of the claim that are not found in the reference can be supplied by the knowledge or common sense of one of ordinary skill in the relevant art. However, I understand that it is inappropriate to resolve obviousness issues by a retrospective analysis or hindsight reconstruction of the prior art and that the use of “hindsight reconstruction” is improper in analyzing the obviousness of a patent claim.

56. I further understand that the law recognizes several guidelines that inform the obviousness analysis. First, I understand that a reconstructive hindsight approach to this analysis, i.e., the improper use of post-invention information to help perform the selection and combination, or the improper use of the listing of elements in a claim as a blueprint to identify selected portions of different prior art references in an attempt to show that the claim is obvious, is not permitted.

Second, I understand that any prior art that specifically teaches away from the claimed subject matter, i.e., prior art that would lead a person of ordinary skill in the art to a specifically different solution than the claimed invention, points to non-obviousness, and conversely, that any prior art that contains any teaching, suggestion, or motivation to modify or combine such prior art reference(s) points to the obviousness of such a modification or combination. Third, while many combinations of the prior art might be “obvious to try,” I understand that any obvious to try analysis will not render a patent invalid unless it is shown that the possible combinations are: (1) sufficiently small in number so as to be reasonable to conclude that the combination would have been selected; and (2) such that the combination would have been believed to be one that would produce predictable and well understood results. Fourth, I understand that if a claimed invention that arises from the modification or combination of one or more prior art references uses known methods or techniques that yield predictable results, then that factor also points to obviousness. Fifth, I understand that if a claimed invention that arises from the modification or combination of one or more prior art references is the result of known work in one field prompting variations of it for use in the same field or a different one based on design incentives or other market forces that yields predictable variations, then that factor also points to obviousness. Sixth, I understand that if a claimed invention that arises from the modification or

combination of one or more prior art references is the result of routine optimization, then that factor also points to obviousness. Seventh, I understand that if a claimed invention that arises from the modification or combination of one or more prior art references is the result of a substitution of one known prior art element for another known prior art element to yield predictable results, then that factor also points to obviousness.

57. I understand that each alleged prior art reference in a proposed obviousness combination must be evaluated in its entirety, i.e., including those portions that would argue against obviousness, and must be considered for everything that it teaches, not simply the described invention or a preferred embodiment. I understand that it is impermissible to pick and choose from any one reference only so much of it as will support a given position to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one skilled in the art, or to ignore portions of the reference that argue against obviousness. I also understand that all of the supposed prior art to be combined as proposed must also be evaluated as a whole and should be evaluated for what they teach in combination as well as separately.

D. Dependent Claims

58. I understand that a dependent claim incorporates each and every limitation of the claim(s) from which it depends. Thus, my understanding is that if

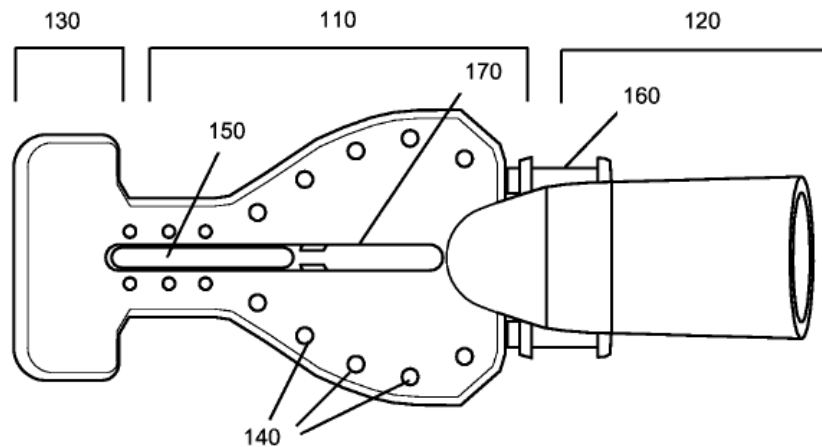
a prior art reference fails to anticipate an independent claim, then that prior art reference also necessarily fails to anticipate all of its dependent claims. Similarly, my understanding is that if a prior art reference or combination of prior art references fails to render obvious an independent claim, then that prior art reference or combination of prior art references also necessarily fails to render obvious all of its dependent claims.

IV. OVERVIEW OF THE ‘418 PATENT

59. The ‘418 Patent discloses and claims a dental appliance often referred to as a dental isolation mouthpiece. Ex. 1001 at 1:26-27. The background section of the ‘418 Patent explains that at the time of the invention, “[v]arious mouthpieces are currently used by dental health professionals, dental hygienists, and dental assistants.” Ex. 1001 at 1:31-33. Traditionally, dental procedures were (and often still are) performed by “a two-person team that comprises a dental professional and a dental assistant” and used “many different types of dental equipment and materials.” Ex. 1001 at 1:33-37. By using a two-person teams, the dental assistant can “assist the dental professional in coordinating the use of these multiple items of different equipment and materials.” Ex. 1001 at 1:45-48.

60. As reflected in the background section, the inventors of the ‘418 Patent recognized “a need in the art for improved systems and methods of providing dental services in a more efficient, comfortable, and safe manner to the

dental patient.” Ex. 1001, 1:49-51. The ‘418 Patent discloses “a mouthpiece that may be attached to a high-suction dental adapter for the purpose of assisting the dental staff during dental procedures through chair-side, hands-free suction, and isolation.” Ex. 1001 at 1:55-59. In one example, an isolation mouthpiece includes a main body portion 110, a suction connector portion 120, and a check retractor portion 130. Ex. 1001 at 3:28-34. FIG. 1B of the ‘418 Patent, which shows these features, is reproduced below:



Ex. 1001 at FIG. 1B

61. The main body portion 110 “may include an anterior wall facing the front of the mouth (e.g., the side with slit 170) and a posterior wall facing the back of the mouth.” Ex. 1001 at 3:53-58. The walls “protect the back of the mouth (e.g., throat and airway) from falling debris.” Ex. 1001 at 3:66-4:1.

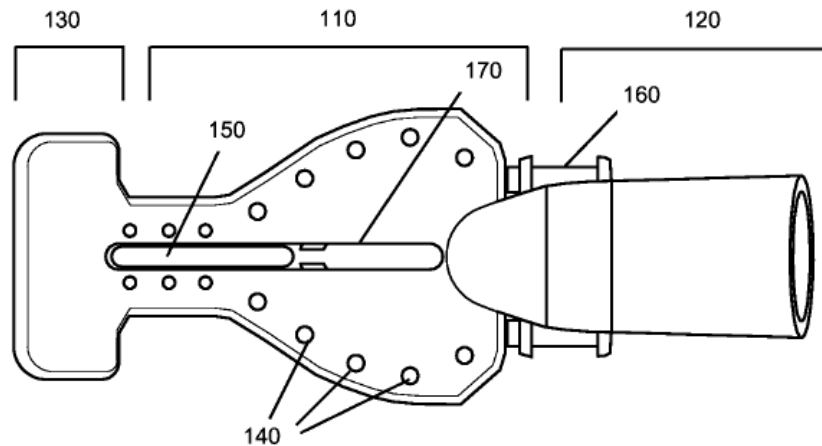
62. The specification details how the mouthpiece is used in a dental procedure. “When placed in a patient’s mouth, the suction connector portion may

protrude from one side of the patient's mouth, while the main body portion 110 lies against the back of the patient's mouth, and the cheek retractor portion 130 retracts the patient's cheek on the opposite side of the patient's mouth." Ex. 1001 at 33:41-46. An illustration of how the mouthpiece fits into the patient's mouth, which I understand is from Patent Owner's literature for its "DryShield" product, is shown below:



Ex. 2042

63. To allow for suctioning of fluids while positioned within the patient's mouth during a dental procedure, the main body portion 110 of the mouthpiece includes perforations 140 that "assist in suctioning of water, saliva and debris from the oral cavity." Ex. 1001 at 4:13-17. The open slit 170 may also assist in the suctioning "of water, saliva and debris." Ex. 1001 at 4:48-54.

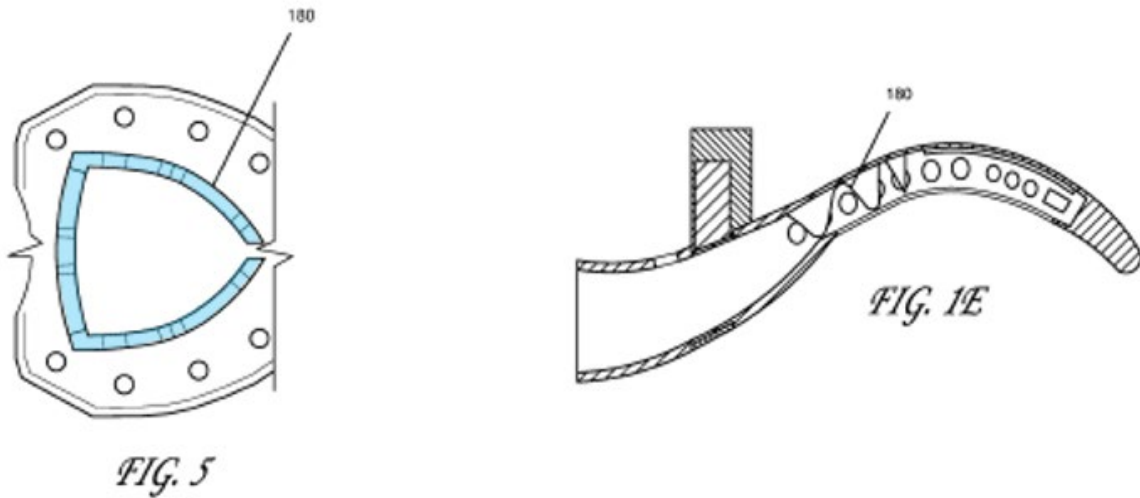


Ex. 1001 at FIG. 1B

64. Given this particular design, including the inclusion of the open slit 170 in the anterior wall, when suction is applied to the mouthpiece during operation, the opposing anterior and posterior surfaces of the main body 110 could collapse and limit or block the suctioning through the perforations 140. To avoid this problem, the '418 Patent teaches that a bridge structure 180 can be formed "on an interior surface [of the main body 110] to ensure that the anterior and posterior surfaces remain separated during suction." Ex. 1001 at 4:48-51.

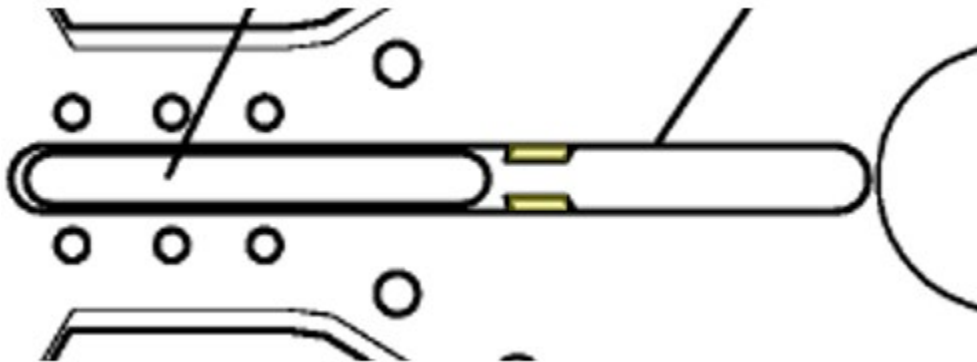
65. FIG. 5 shows a "close-up view of the bridge structure 180," and FIG. 1E shows a cross-sectional view illustrating the bridge structure 180 formed on the interior surface of upper wall of the main body 110 and protruding toward the

lower wall:



Ex. 1001 at FIGS. 5, 1E (annotated)

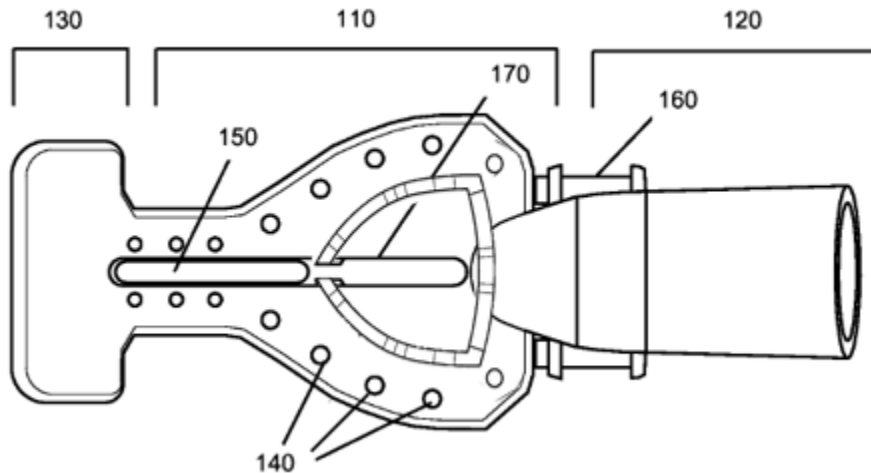
66. In FIG. 1A, a portion of the internal bridge structure is visible through the open slit 170, as shown by the highlighting below:



Ex. 1001 at FIG. 1B (excerpted and annotated)

67. In the figure below, FIG. 5 is superimposed on top of FIG. 1B to show how the bridge structure 180 is positioned in the area of the slit 170, and how

portions of the bridge structure 180 are near some of the perforations 140 that follow the edges of the main body 110.



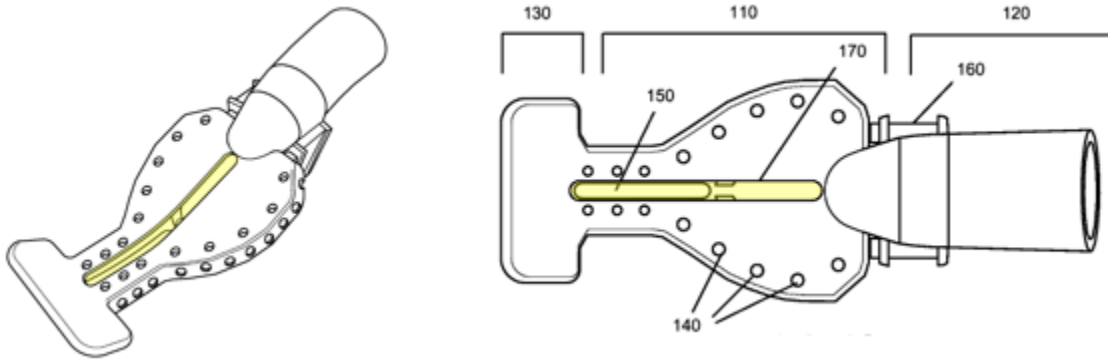
Ex. 1001 at FIGS. 1B and 5 (superimposed)

68. As shown the cross-sectional view illustrated in FIGS. 1E and 2E, the bridge structure 180 is “formed as a[] wave-like protrusion that generally corresponds to the distance between the anterior and posterior walls extending substantially (e.g., within 1 mm) the full distance at its crest and substantially flush to the surface at its trough.” Ex. 1001 at 4:61-66. Within the wave-like structure, “[t]he crests provide a plurality of contact points with the anterior wall to keep the anterior wall separated from the posterior wall during suction [while] the troughs provide gaps that allow for suction of air, fluids, and small debris through the bridge structure.” Ex. 1001 at 2:27-30. The geometry of the bridge structure 180 is important during use of the dental isolation mouthpiece because “[t]he gaps (or troughs) between the waves of the bridge structure 180 assist in the suction-driven

transfer of water and saliva to the suction connector portion 120,” which is “configured to attach to a high-suction vacuum adapter and to assist in transferring water, saliva, and debris from the oral cavity to the external adapter for removal” from of the patient’s mouth during a dental procedure. Ex. 1001 at 5:1-13.

69. Because the wave-like protrusions are formed on the interior surface of only one wall, but not both walls, of the main body 110, this provides an additional benefit in that both walls of the main body 110 can be pulled away from each other (e.g., by hand) to permit access into the interior space between the walls to facilitate cleaning and maintenance. The ‘418 Patent teaches that the mouthpiece can be made of “a high heat-resistant and autoclavable material” so that the “mouthpiece may be reusable.” Ex. 1001 at 1:64-67. Being “autoclavable” refers to the ability to be cleaned and sterilized for reuse in medical (e.g., dental) procedures, typically using steam.

70. The specification explains that in addition to allowing suctioning of materials, the open slit 170 also permits access into the interior space between the walls to “assist in cleaning and maintenance.” Ex. 1001 at 4:51-54.



Ex. 1001 at FIGS. 1A-1B (annotated)

The open slit 170 allows one to insert a cleaning brush in the interior of the main body 110 through the open slit 170 for cleaning or maintenance, as taught by the specification.

71. Since the wave-like protrusions of the bridge structure 180 are formed on the interior surface of one wall of the main body 110, this configuration provides additional flexibility to the mouthpiece. This is helpful when attempting to position the mouthpiece within the patient's mouth for a dental procedure. If the bridge structure 180 were instead connected to the interior surfaces of both walls, the main body 110 would be more rigid and more resistive of torsional forces when attempting to twist the mouthpiece into the proper position for a dental procedure.

72. Additionally, because the wave-like protrusions are formed on the interior surface of one wall of the main body 110, the main body 110 is more flexible and the walls can be pulled apart from each other to allow access into the interior space the main body 110 for maintenance or cleaning. When suction forces

are applied, the wave-like protrusions keep the two walls separated from each other by using the contact points at the crests of the wave-like protrusions, while still permitting the suction of air, fluids, and small debris through the troughs between the crests of the wave-like protrusions. Ex. 1001 at 2:27-30.

73. Independent claims 1, 11, and 20 of the '418 Patent, which I understand are the challenged independent claims, are reproduced below with the identifiers used in the Petition and Dr. Black's declaration for ease of reference:

74. Independent claim 1 recites:

1(a)	A mouthpiece comprising:
1(b)	a main body having a first end opposite a second end that is narrower than the first end, the main body comprising:
1(c)	a first wall having a plurality of first edges and extending from the first end to the second end,
1(d)	a second wall having a plurality of second edges and located at a distance from the first wall, the distance corresponding to an interior space between the first wall and the second wall, wherein the second wall also extends from the first end to the second end,

1(e)	a connecting wall that connects one of the first edges of the first wall to one of the second edges of the second wall across the distance between the first wall and the second wall, and
1(f)	a bridge structure that includes a plurality of spaced protrusions protruding from an interior surface of the second wall, the bridge structure extending across the distance between the first wall and the second wall through the interior space towards the first wall; and
1(g)	a cheek-retractor portion connected to the narrower second end of the main body portion and expanding outwardly away from the second narrower end, the first wall and the second wall of the main body transitioning into and being connected in the cheek-retractor portion to form the cheek-retractor portion, wherein the first wall and the second wall of the main body portion that transition into the cheek-retractor portion are spaced apart from each other for a distance within the cheek-retractor portion before being connected at the cheek-retractor portion.

75. Independent claim 9 recites:

9(a)	An isolation mouthpiece for use with a suction system in a dental procedure, the mouthpiece comprising:
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9(b)	a main body portion having a first end and a second end, the main body portion including:
9(c)	a first wall having a first edge and a second edge extending from the first end of the main body portion towards the second end of the main body portion, the first wall including a first plurality of perforations formed adjacent to and extending along a portion of the first edge and a second plurality of perforations formed adjacent to and extending along a portion of the second edge,
9(d)	a second wall having a third edge and a fourth edge extending from the first end of the main body portion towards the second end of the main body portion, the second wall including a third plurality of perforations formed adjacent to and extending along a portion of the third edge, and a fourth plurality of perforations formed adjacent to and extending along a portion of the fourth edge, wherein the second wall further includes a plurality of protrusions extending from an interior surface of the second wall towards the first wall in a shape having one or more crests and one or more troughs, and
9(e)	a third wall connecting the first wall and the second wall such that the first wall is spaced from the second wall to define an inner cavity,

	<p>wherein a portion of the first wall has a first width adjacent to the first end of the main body portion and a second width adjacent to the second end of the main body portion, wherein a portion of the second wall has a third width adjacent to the first end of the main body portion and a fourth width adjacent to the second end of the main body portion, wherein the first width is greater than the second width, and wherein the third width is greater than the fourth width;</p>
9(f)	<p>a suction connector portion extending from the first end of the main body portion, the suction connector portion including: a generally tubular conduit including: an opening extending through the conduit and in fluid communication with the inner cavity, the opening being configured to receive a vacuum portion of the suction system therein, and a cutout configured to engage a protrusion on the suction system to aid in coupling the mouthpiece to the suction system</p>
9(g)	<p>a mouth prop including a first side and a second side that are inwardly tapered from a top surface of the mouth prop towards a bottom surface of the mouth prop, the first side and the second side each including a plurality of ridges; and</p>

9(h)	<p>a cheek retractor portion having a first cheek-retractor end coupled to the second end of the main body portion and a second cheek-retractor end, the first cheek-retractor end and the second cheek-retractor end each having rounded edges, wherein the first wall and the second wall of the main body portion that transition into the cheek-retractor portion are spaced apart from each other for a distance within the cheek-retractor portion before being connected to each other in the cheek-retractor portion.</p>
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76. Independent claim 20 recites:

21(a)	<p>A mouthpiece comprising:</p>
21(b)	<p>a main body having a first end opposite a second end that is narrower than the first end, the main body comprising:</p>
21(c)	<p>a first wall that extends from the first end to the second end, wherein the first wall includes a plurality of first edges,</p>
21(d)	<p>a second wall that extends from the first end to the second end, wherein the first wall and the second wall define an interior space therebetween, and wherein the second wall includes a plurality of second edges,</p>
21(e)	<p>wherein a plurality of crests is formed on an interior surface of the second wall to provide a plurality of contact points with the first wall,</p>

	and wherein a plurality of troughs provide a plurality of gaps through which fluids can pass between the contact points, wherein the contact points are not attached to the first wall; and
21(f)	a third wall that connects one of the first edges of the first wall to one of the second edges of the second wall; and
21(g)	a cheek retractor portion extending from the second end and connected to the first wall and the second wall of the main body.

V. LEVEL OF SKILL IN THE ART

77. I understand that the level of ordinary skill in the relevant art at the time of the invention is relevant to inquiries such as the meaning of claim terms, the meaning of disclosures found in the prior art, and the reasons one of ordinary skill in the art may have for combining references.

78. I have reviewed the definition of the level of ordinary skill in the art proposed in the Petition, which is:

a PHOSITA, at the time the '418 Patent was filed, would have been a person with at least a B.S. degree in mechanical engineering or a related field with at least two years' experience designing dental devices. Less work experience may be compensated by a higher level of education, such as a master's degree, and vice versa

Petition at 29.

79. I am informed and understand that in connection with its IPRs challenged related patents, including the '969, '970, and '686 Patents, Petitioner has proposed a different definition for a POSITA that requires at least a B.S. in mechanical engineering and two years' experience designing medical devices.

80. I am informed and understand that in connection with the Parallel Litigation, Petitioner has proposed the following definition for a POSITA for purposes of the '418 Patent: "a person having at least a degree in mechanical engineering or related field with at least 2 years of experience designing dental devices *or suction devices*." I also understand that Petitioner proposed this definition in connection with its IPR challenging U.S. Patent No. 11,826,217, which is also owned by Patent Owner and is directed to a dental isolation mouthpiece. I note that I have offered opinions regarding the '217 Patent and the Petition in that proceeding.

81. In my view, either (1) the definition Petitioner had proposed in connection with the prior IPRs, which requires either experience designing medical devices rather than the more narrow field of dental devices or (2) the definition Petitioner had proposed in the Parallel Litigation, which requires either experience designing dental devices or suction devices, is more appropriate than the narrow definition set forth in the Petition.

82. The challenged claims do not require any specialized knowledge regarding dentistry or dental devices. The types of issues and challenges a POSITA may face in designing a dental isolation mouthpiece are the same types of problems and issues that would arise when designing other devices of similar complexity that involve suction or transfer of fluids. For example, the mouthpieces disclosed and claimed in the '418 Patent are simple devices manufactured in silicone or other suitable rubber or elastomer material. They connect via fittings and tubing to a vacuum source or pump to pull fluids through the mouthpiece. The claims in the '418 Patent are directed towards mechanical features of the mouthpiece, e.g., "wall[s]," "main body," "suction connector," "perforations," "crests," "troughs," etc. and the physical arrangement of these and other similar features. The mechanical nature of the claim elements, not specific to any specialized knowledge of dental devices supports my opinion that a broader definition for a POSITA is appropriate.

83. I was, as of at least December 2012, and still am, a person of ordinary skill in the art through my education and experience under the definition Petitioner had proposed in the prior IPRs for related patents and the definition Petitioner proposed in the Parallel Litigation for the '418 Patent. I am also familiar with individuals having this level of skill in the relevant timeframe.

84. To the extent Petitioner's narrower definition in the Petition is adopted for the '418 Patent, in my view, my many years of experience in the field of designing medical devices and suction devices, coupled with my education, is equivalent to 2 years of experience designing dental devices.

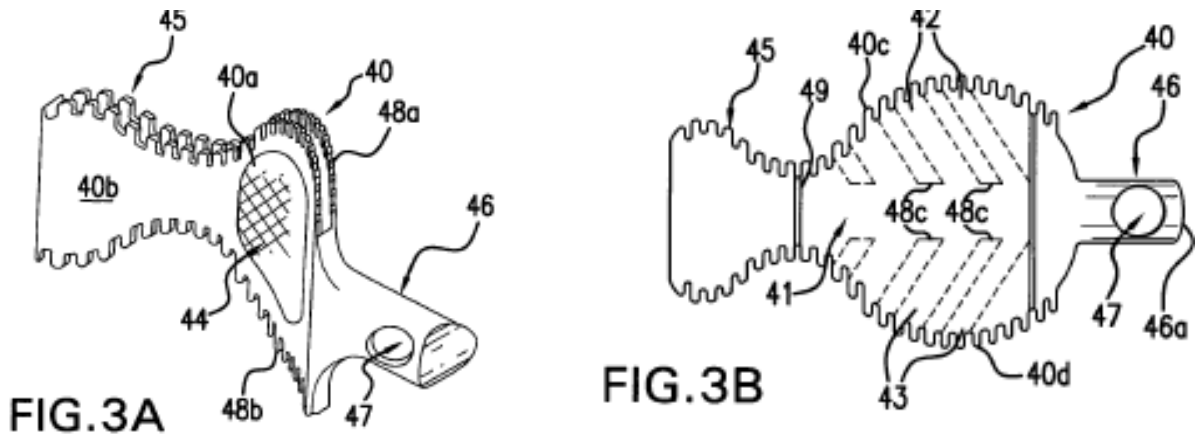
VI. SUMMARY OF REFERENCES IN THE PETITION

85. Below, I provide a summary of the references that are relied upon in Grounds 1-7 of the Petition.

A. Black (Ex. 1005) (Grounds 1, 5, and 7)

86. Black describes an intraoral device with a tongue shield aspirator a bite member, a bite grip, and an evacuation tube. Ex. 1005, Abstract. Black discloses multiple embodiments.

87. In a first embodiment, Black describes a tongue shield aspirator 40 that includes "a first (posterior) layer 48a and a second (anterior) layer 48b which are connected to, but spaced apart from, one another by transverse walls 48c." Ex. 1005 at 5:55-60. The transverse walls 48c (which are shown in dashed lines in FIG. 3B below) connect the first layer 48a to the second layer 48b within the interior of the tongue shield aspirator 40 and are angled relative to the longitudinal (central) axis of the tongue shield aspirator 40.



Ex. 1005 at FIGS. 3A-3B

88. Black explains that “each set of two consecutive walls 48c that are disposed above the longitudinal lumen 41 forms an upper channel 42” while “[e]ach set of two consecutive walls 48c that are disposed below the longitudinal hollow lumen 41 forms a lower channel 42.” Ex. 1005 at 5:27-36.

89. In a second embodiment, Black describes a tongue shield aspirator 340 including “a first (posterior) layer 348a and a second (anterior) layer 348b which are connected to, but spaced apart from, one another by transverse walls 348c (shown in phantom in FIG. 23A).” Ex. 1005 at 14:25-30. As in the first embodiment, these transverse walls 348c are angled relative to the longitudinal (central) axis of the tongue shield aspirator 340, as can be seen below in FIG. 23A.

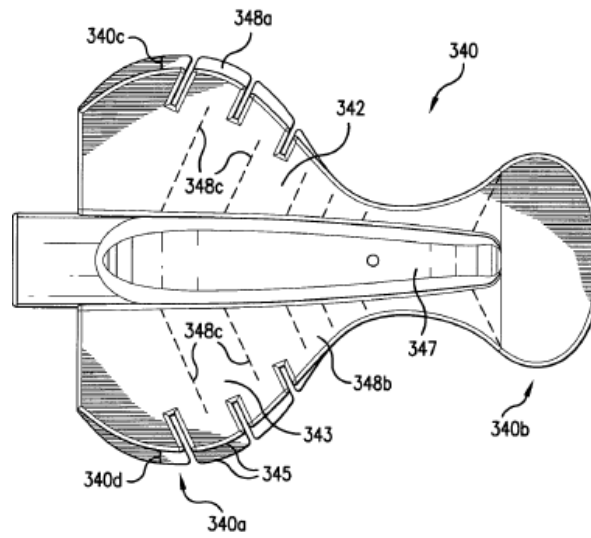


FIG. 23A

Ex. 1005 at FIG. 23A

90. In the figure above, pairs of consecutive transverse walls 348c form the upper channels 342 and the lower channels 343 within the interior, like the first embodiment. Ex. 1005 at 14:33-37.

91. Black's figures do not include a side view of the embodiment in FIGS. 3A-B. However, FIG. 23C (which shows the other embodiment) shows a side view of the tongue shield aspirator 340 from FIGS. 23A, including the transverse walls 348c connecting the first layer 348a and the second layer 348b, and the channels 342 between adjacent transverse walls 348c.

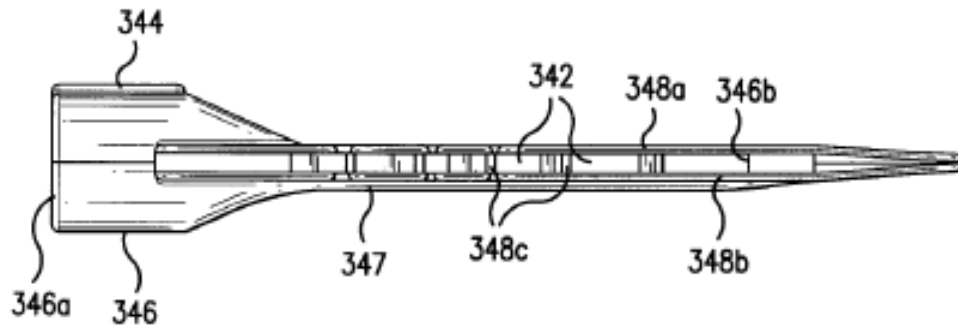


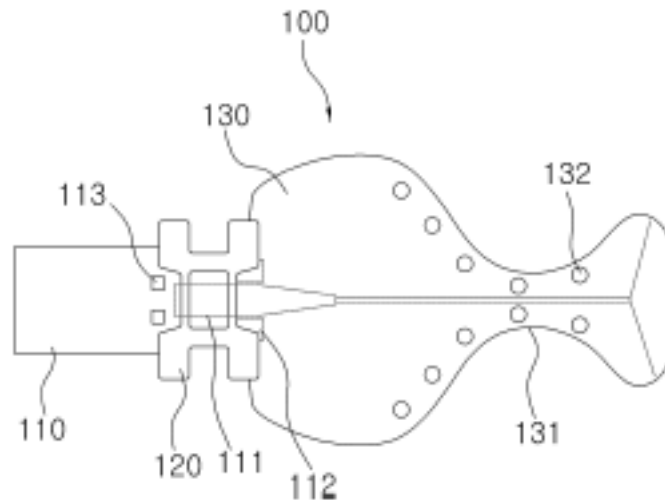
FIG. 23C

Ex. 1005 at FIG. 23C

B. Park (Ex. 1006) (Grounds 2-4 and 6-7)

92. Park is a Korean patent reference that describes “a detachable oral illuminating device with a mouth prop that maintains the patient’s mouth in an open state, suppresses the movement of the tongue, allows for illumination and suction of foreign substances in the oral cavity, and enables the sterilization of only the mouth prop.” Ex. 1006 at ¶ [0010].

Fig. 3

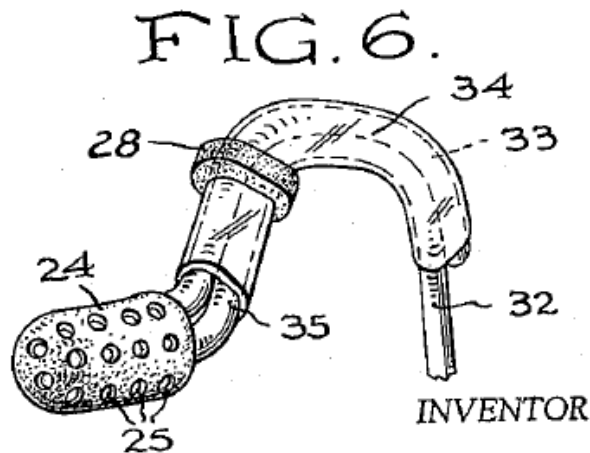


Ex. 1006 at FIG. 3

C. Baughan (Ex. 1007) (Grounds 2-4 and 6-7)

93. Baughan is directed to a different type of dental appliance than the '970 Patent: a dental saliva ejector with "suction relief means." Ex. 1007 at 1:6-7. The background section of the '686 Patent mentions high speed and low speed "suction ejector[s]" as being a different type of dental device than an isolation mouthpiece. Ex. 1001 at 1:6-20.

94. Baughan's dental saliva ejector is designed so that it "cannot traumatize or damage the mouth tissue by sucking the tissue into the suction orifices during the operation of the device for removing saliva from the mouth." Ex. 1007 at 1:6-20.

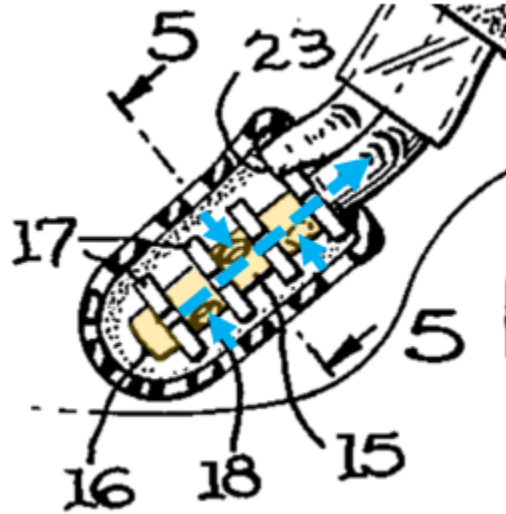


Ex. 1007 at FIG. 6

95. In Baughan, suction is applied via a terminal tube portion 15 with orifices 18, which in turn is surrounded by a series of circular discs 17 which

prevent the outer sleeve 24 from blocking the orifices 18 during operation. Ex.

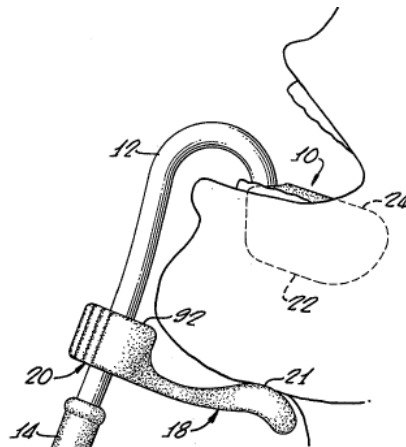
1007 at 3:36-48.



Ex. 1007, FIG 3 (excerpted and annotated)

D. Johnson (Ex. 1008) (Grounds 2-4 and 6-7)

96. Johnson describes a “saliva ejector capable of acting as a tongue guard” and “a chin holder . . . adapted for use with dental appliances, such as saliva ejectors.” Ex. 1008 at 1:6-11. An example is shown below:

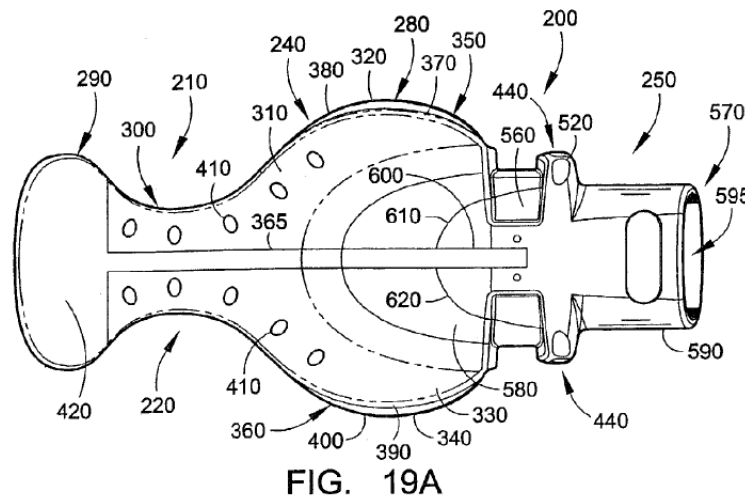


Ex. 1008 at FIG. 1

E. Hirsch (Ex. 1012) (Grounds 1, 3-5, and 7)

97. Hirsch describes “dental appliances for illuminating and/or vacuum suction of the mouth of a dental patient for examination and/or operative purposes.” Ex. 1012 at ¶ [0002].

98. Referring to FIG. 19A, Hirsch includes two flaps 310 and 320. A central spine 365 located between those two flaps “may serve as a light pipe and a separator for an upper internal evacuation channel and a lower internal evacuation channel.” Ex. 1012 at ¶ [0078].



Ex. 1012 at FIG. 19A

F. Zheng (Ex. 1021) (Grounds 6-7)

99. Zheng is a Chinese Patent Publication that describes “an oral moisture barrier device that can effectively protect the tongue and buccal mucosa of the patient.” Ex. 1021 at 5.

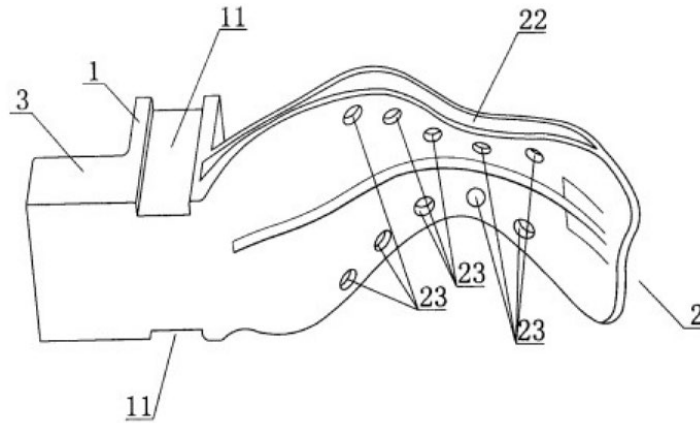


Figure 2

Ex. 1021 at FIG. 2

VII. CLAIM CONSTRUCTION

100. I understand that Petitioner and Dr. Black did not expressly propose any terms or phrases from the ‘418 Patent for construction. Petition at 32-33; Ex. 1003 at ¶¶ 53-56.

101. I am informed and understand that the parties have proposed constructions for some of the terms or phrases in the ‘418 Patent in the Parallel Litigation.

102. I offer certain opinions below regarding claim constructions that may be relevant to the issues in this IPR.

A. “Wave-Like Structure” (Claims 1 and 11)

103. Independent claims 1 and 11 of the ‘418 Patent both recite: (1) “wherein a plurality of crests of a wave-like structure is formed on an interior surface of the second wall to provide contact points with the first wall” and (2) “a

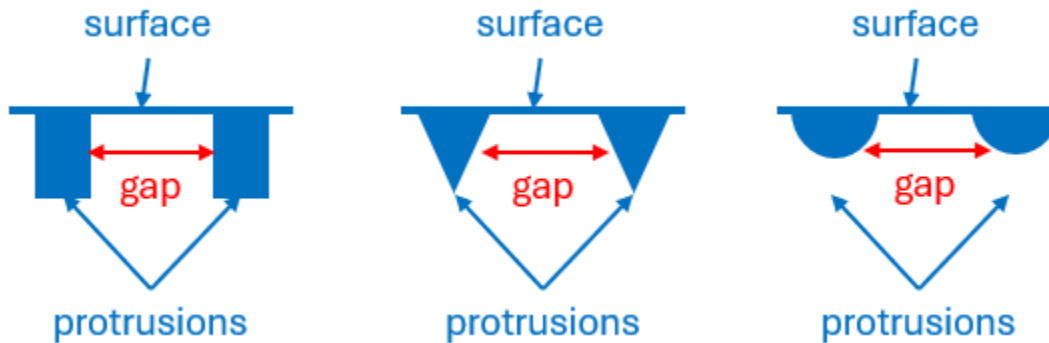
plurality of troughs of the wave-like structure provides gaps between adjacent ones of the plurality of crests for allowing the suctioning of fluid through the plurality of troughs.” Ex. 1001 at 6:36-42 (claim 1), 7:67-8:6 (claim 11).

104. I note that Petitioner and Dr. Black do not expressly propose any claim construction for the term “wave-like structure” (or the broader phrase containing this term). Petition at 32-33; Ex. 1003 at ¶¶ 53-56. However, the Petition argues that “[i]n light of the specification, this merely means that the bridge structure needs spaced-apart projections with gaps therebetween” and “[t]he resulting shape of any such bridge structure is necessarily a wave shape.” Petition at 44. Dr. Black also asserts “the claim’s requirement that a bridge structure have ‘wave-like’ protrusions in view of the specification merely means that you need spaced-apart projections with gaps therebetween” and “[t]he resulting shape is necessarily a wave shape.” Ex. 1003 at 97.

105. I disagree. Instead, a POSITA would understand, in light of the plain and ordinary meaning of the claim language, the specification, and the prosecution history, that this phrase means the interior surface of the second wall includes a structure with curved surfaces between (i) crests that provide contact points with the first wall during suction, and (ii) troughs that provide gaps that allow for the transfer of fluids during suction.

106. Starting with the claim language itself, independent claims 1 and 11 recite “wherein a plurality of crests of a wave-like structure is formed on an interior surface of the second wall to provide contact points with the first wall and a plurality of troughs of the wave-like structure provides gaps between adjacent ones of the plurality of crests for allowing the suctioning of fluid through the plurality of troughs.” Independent claim 20 recites “a plurality of crests is formed on an interior surface of the second wall to provide a plurality of contact points with the first wall, and wherein a plurality of troughs provide a plurality of gaps through which fluids can pass between the contact points, wherein the contact points are not attached to the first wall.” The fact that the term “wave-like” appears in claims 1 and 11, but not claim 20, reinforces that it defines a particular shape or geometry for the crests and troughs.

107. Regarding Petitioner and Dr. Black’s assertion that “wave-like structure” simply means “spaced-apart projections with gaps therebetween,” I observe that any plurality of protrusions or projections (two or more) that protrude from a given surface, regardless of their shape, will have a gap between each protrusion or projection. These gaps define separate protrusions or projections. If there are no gaps, then there cannot be a plurality of (two or more) protrusions or projections. This is true regardless of how the protrusions or projections are shaped (e.g., rectangular, triangular, semi-circular, etc.).



108. Claims 1 and 11 of the ‘418 Patent require more than just a plurality of spaced-apart projections. They require “a *wave-like* structure” with crests and troughs. This language defines a specific shape or geometry for the resulting crests and troughs.

109. As I noted above, Petitioner and Dr. Black appear to take the position that this entire phrase merely requires “spaced-apart projections with gaps therebetween.” I disagree. A POSITA would not read claims 1 and 11 this way because doing so would strip the term “wave-like” of any meaning since any plurality of protrusions or projections will necessarily have a gap between each protrusion. Stated another way, if Petitioner and Dr. Black’s interpretation is correct, then phrase “wave-like” adds nothing to the claim and is superfluous.

110. The specification describes the “bridge structure” feature as follows:

The main body may further include an protruding bridge structure on the interior surface of the posterior wall. Such a bridge structure may protrude from the interior surface in a wave shape with crests and troughs. The crests provide a plurality of contact points with the

anterior wall to keep the anterior wall separated from the posterior wall during suction. Meanwhile, the troughs provide gaps that allow for suction of air, fluids, and small debris through the bridge structure.

Ex 1001 at 2:24-32.

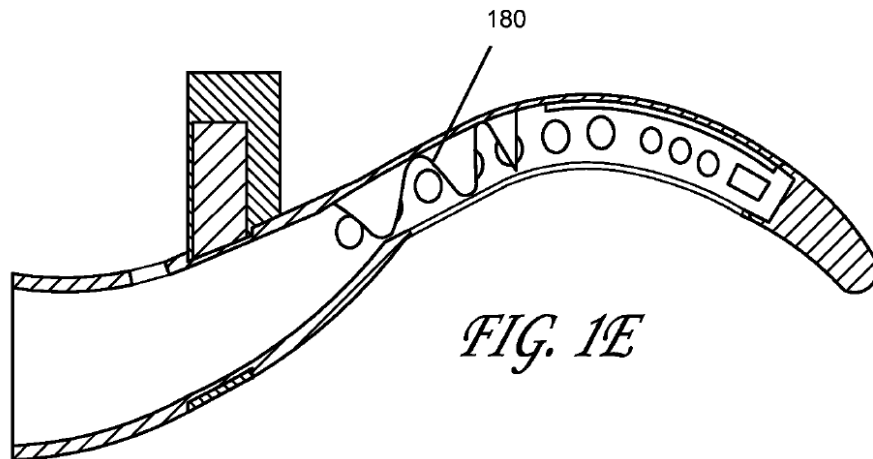
111. The specification also discloses:

Additionally, the main body of the mouthpiece may include a bridge structure 180 on an interior surface to ensure that the anterior and posterior surfaces remain separated during suction. FIG. 1E is a cross-sectional view of the mouthpiece in which the bridge structure 180 is illustrated. FIG. 5 is a close-up view of the bridge structure 180 without the surrounding walls of the main body portion. Such a bridge structure 180 may be formed as an wave-like protrusion that generally corresponds to the distance between the anterior and posterior walls extending substantially (e.g., within 1 mm) the full distance at its crest and substantially flush to the surface at its trough. In some embodiments, the bridge structure 180 may be centrally-located in the main body portion 110 of the mouthpiece. The gaps (or troughs) between the waves of the bridge structure 180 assist in the suction-driven transfer of water and saliva to the suction connector portion 120 and ultimately, into a central suction vacuum. In some embodiments, the bridge structure 180 may follow the shape of a logo (e.g., an arrowhead or shield).

Ex. 1001 at 4:61-66.

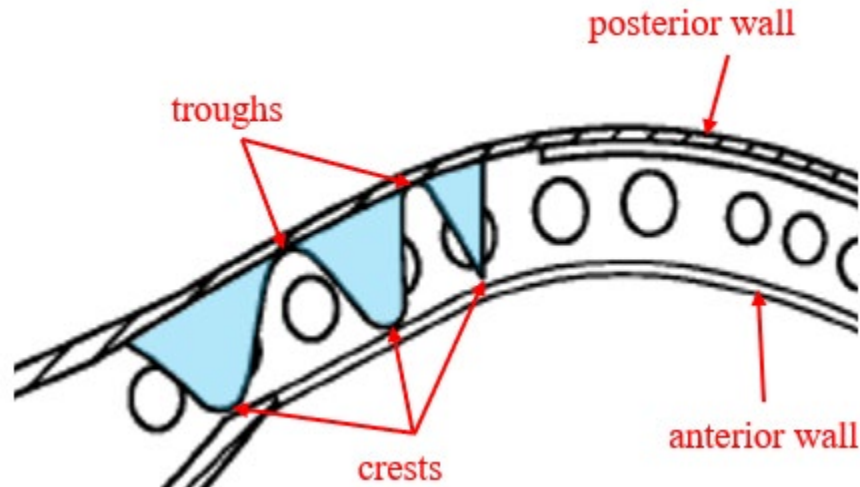
112. I note that the claims use the term “wave-like.” The inclusion of the word “like” does not detract from a POSITA’s understand that this term does not encompass a series of rectangular walls, as confirmed by the specification and prosecution history (which I discuss in detail below). The specification uses “wave” and “wave-like” interchangeably when discussing the “bridge structure” feature. Ex. 1001 at 2:27 (referring to “a wave shape with crests and troughs”), 4:39 (referring to “wavelike bridge structure”), 4:62-63 (referring to “wave-like protrusion”), 5:1-2 (referring to “waves of the bridge structure”).

113. FIG. 1E shows a cross-sectional view of an exemplary bridge structure 180 with crests and troughs:



Ex. 1001 at FIG. 1E

The zoomed-in, annotated version of FIG. 1E below shows a bridge structure having the “wave-shape” with its crests and troughs:



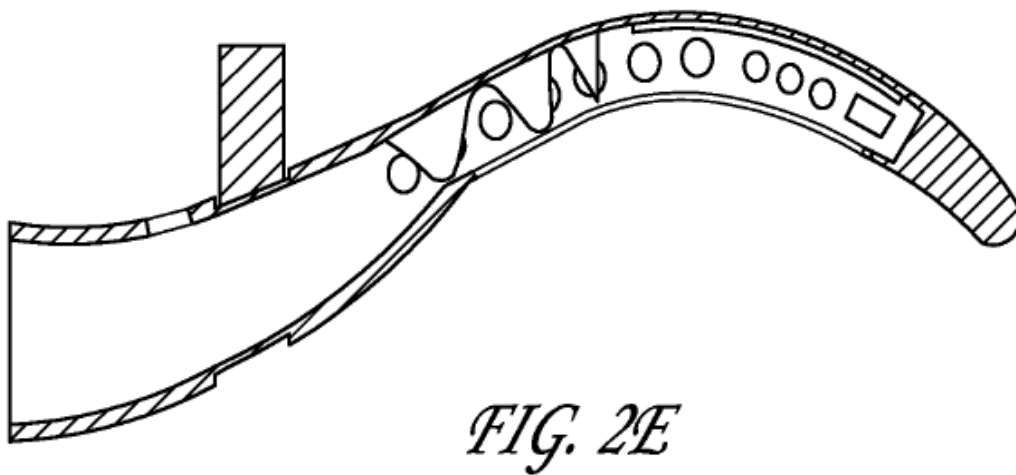
Ex. 1001 at FIG. 1E (excerpted and annotated)

As shown above, the wave-shaped pattern has curved surfaces at locations between the crests and troughs.

114. I note that for the bridge structure 180 shown in FIG. 1E, it may appear at first brush in the drawing that the right protrusion of the three protrusions has less curvature between its crest and the adjacent trough. But that is merely because of the angle at which the drawing shows the bridge structure. Considering the bending of the legs of the bridge structure 180 as shown in FIG. 5, in the side view in FIG. 1E, the leg of the bridge structure 180 is either bending into or out of the page (depending on what side one is looking from), which is why the view of the right protrusion of the bridge structure in FIG. 1E appears to have little curvature. A POSITA would understand that, if the viewing angle in FIG. 1E were modified to be more perpendicular to right protrusion, that right protrusion would

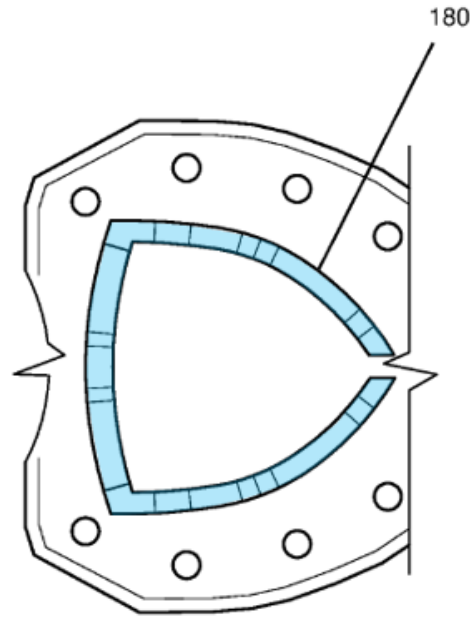
look similar to the central protrusion and the left protrusion shown in FIG. 1E, which is consistent with “wave” shape description in the specification. Ex. 1001 at 2:26-27, 4:37-41, 4:61-66, 5:1-7.

115. A cross-sectional view of the exemplary bridge structure 180 is also illustrated in FIG. 2E.



Ex. 1001 at FIG. 2E

116. A top view of the bridge structure is shown in FIG. 5 of the ‘418 Patent (highlighted in blue). The lighter transverse lines are tangency lines depicting the radii of the crests and troughs.



Ex. 1001 at FIG. 5 (annotated)

117. There is no example of a “bridge structure” in the specification or drawings of the ‘418 Patent that includes protrusions in a rectangular or square shape.

118. As noted above, the ‘418 Patent’s specification and claims use the term “wave-like” to describe the bridge structure. The most common mechanical “wave” that comes to mind is a wave on a body of water (e.g., a wave in the ocean), and such waves have at least some degree of curvature. This is consistent with dictionary definition of “wave,” which is: “a shape or outline having successive curves.” Ex. 2036 (Merriam-Webster Dictionary).

119. The prosecution history for the ‘418 Patent and related applications/patents, including U.S. Patent No. 8,911,232 (“the ‘232 Patent”), U.S.

Patent No. 11,744,686 (“the ‘686 Patent”), and U.S. Patent No. 11,589,970 (“the ‘970 Patent”) confirm this understanding of the term “wave-like structure” in claims 1 and 11.

120. Starting with the ‘418 Patent, the Notice of Allowance specifically mentions the “wave-like structure” as not being taught by the prior art that was before the Examiner:

the art of record does not teach or render obvious, either alone or in combination, an isolation mouthpiece for use with a suction in a dental procedure, where the isolation mouthpiece including a plurality of crests of a *wave-like structure* formed on an interior surface of a second wall to provide contact points with a first wall and a plurality of troughs of the *wave-like structure* providing gaps between adjacent ones of the plurality of crests for allowing the suctioning of fluid through the plurality of troughs in combination with the elements set forth in the claim.

Ex. 1002 at 265-66. I understand that Black was among the art considered by the Examiner. Thus, the Notice of Allowance for the ‘418 Patent confirms that Black does disclose the claimed “wave-like structure.”

121. The ‘418 Patent claims priority to several non-provisional patent applications dated back to U.S. Application No. 14/100,323, which issued as the ‘232 Patent. During prosecution of the ’232 Patent, the Examiner rejected the pending claims in a first office action as anticipated by Rhoades or as obvious over

Rhoades and Black (the same reference used in the Petition). Ex. 1015 at 49-52.

Dependent claims 9-10 rejected based on Rhoades and Black claimed that the bridge structure has a “wave shape” similar to claims 1 and 11 of the ‘418 Patent.

These claims are reproduced below:

9. The mouthpiece of claim 8, wherein the bridge structure protrudes from the interior surface of the posterior wall in a wave shape, and wherein the contact points are at crests of the wave shape.

10. The mouthpiece of claim 9, wherein troughs of the wave shape are configured to allow suction through the bridge structure.

Id. at 25.

122. In the next office action, the Examiner rejected claims 1 and 8 as anticipated by Black, but found that dependent claims 9-10 were allowable over Black because:

the prior art fail to disclose or reasonably teach of a mouthpiece holding comprising, inter alia: a bridge structure protruding from an interior surface of a posterior wall *in a wave shape*, wherein the contact points are at *crests of the wave shape*.

Ex. 1015 at 109-11 (emphases added). This finding is similar to and consistent with the Examiner’s finding in the Notice of Allowance for the ‘418 Patent. Ex. 1002 at 265-66.

123. In response to this office action, Applicant amended the pending claims but did *not* include the “wave shape” feature in those amended claims. Ex. 1015 at 124-31. The Applicant’s amendment to pending independent claim 1 relating to the “bridge structure” is reproduced below:

1. (currently amended) A dental mouthpiece composed of a bendable material, the dental mouthpiece formed in a curve and comprising:
a main body portion at a central part of the curve and comprising a defined pocket having an anterior wall inside the curve, a posterior wall outside the curve, and a side wall in between the anterior wall and the posterior wall, wherein the anterior wall, the posterior wall, and the side wall define an interior portion of the defined pocket, wherein the posterior wall comprises a bridge structure protruding from an interior surface of the posterior wall, the protruding bridge structure comprising a plurality of spaced contact points that keep the anterior wall separated from the posterior wall during suction, wherein the spaced contact points are at crests of the bridge structure, and wherein a plurality of troughs between the spaced contact points allow for suction through the bridge structure;

124. The claim was amended to recite that the bridge structure comprises “a plurality of spaced contact points that keep the anterior wall separated from the posterior wall during suction” and “a plurality of troughs between the spaced contact points allow for suction through the bridge structure.” Ex. 1015 at 124. This is similar to Petitioner and Dr. Black’s suggestion that claims 1 and 11 of the ‘418 Patent should be construed to merely require spaced-apart projections with gaps therebetween.

125. The Examiner issued a Notice of Allowance after this amendment. However, the Examiner amended the claims to add the “wave shape” feature. Ex. 1015 at 145-48. The interview summary indicates that Hirsch and Black were discussed and mentions the “wave shape” claim language. *Id.* at 147.

Issues Discussed	<input type="checkbox"/> 101	<input type="checkbox"/> 112	<input checked="" type="checkbox"/> 102	<input checked="" type="checkbox"/> 103	<input type="checkbox"/> Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)					
Claim(s) discussed: <u>1 and 21-38.</u>					
Identification of prior art discussed: <u>Hirsch, Black.</u>					
Substance of Interview (For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)					
<u>Proposed examiner's amendment to include the claim language "wave shape" in claim 1 and to correct claim dependency of claims 22-38 were dicussed and authorized by Applicant's counsel.</u>					

126. As shown below, the “wave shape” language was added to independent claim 1 to secure an allowance over Black. Ex. 1015 at 148.

<p>1. (currently amended) A dental mouthpiece composed of a bendable material, the dental mouthpiece formed in a curve and comprising:</p> <p style="padding-left: 40px;">a main body portion at a central part of the curve and comprising a defined pocket having an anterior wall inside the curve, a posterior wall outside the curve, and a side wall in between the anterior wall and the posterior wall, wherein the anterior wall, the posterior wall, and the side wall define an interior portion of the defined pocket, wherein the posterior wall comprises a bridge structure protruding from an interior surface of the posterior wall <u>in a wave shape</u>, the protruding bridge structure comprising a plurality of spaced contact points that keep the anterior wall separated from the posterior wall during suction, wherein the spaced contact points are at crests of the <u>wave shape bridge structure</u>, and wherein a plurality of troughs <u>of the wave shape</u> between the spaced contact points allow for suction through the bridge structure;</p>

127. The prosecution history of the related ‘686 Patent further confirms this understanding of the “wave-like structure” requirement in claims 1 and 11. I understand that the ‘686 Patent is the great grandparent of the ‘418 Patent. During prosecution, the Examiner rejected the pending claims as anticipated by the Black reference. Ex. 2026 at 309-10. The Examiner found that Black discloses a “bridge structure 448c (shown as dashed lines 44c in Fig. 24A) ... wherein the protrusions of the bridge structure 448c protrude in a wave shape comprising one or more crests and one or more troughs (Figs. 24A and 26A).” *Id.* at 310.

The main body 640 further comprises a bridge structure 448c (shown as dashed lines 448c in Fig. 24A) that includes a plurality of protrusions 448c integral with and protruding from an interior surface within the space between the first wall and the second wall, wherein the protrusions of the bridge structure 448c protrude in a wave shape comprising one or more crests and one or more troughs (Figs. 24A and 26A). Note that Fig. 26A shows the protrusions/walls 448c themselves being crests and channels 443 formed therebetween are troughs.

128. In response, the Applicant explained that “Black cannot teach ‘wherein the bridge structure is not attached [to] the first wall’ as claimed” and that “the walls 448c of Black are *rectangular columns* and *do not ‘protrude in a wave shape* comprising one or more crests and one or more troughs’ that protrude from ‘an interior surface of the second wall’ as claimed.” Ex. 2026 at 369-70.

Moreover, the walls 448c of *Black* are rectangular columns and do not 'protrude in a wave shape comprising one or more crests and one or more troughs' that protrude from 'an interior surface of the second wall' as claimed. Thus, *Black* cannot teach 'wherein the protrusions of the bridge

129. The Examiner withdrew the rejection based on *Black* after these arguments were made. Ex. 2026 at 384. This discussion shows that Patent Owner has been consistent in its interpretation of the "wave-like structure" requirement, including the fact that *Black*'s rectangular walls do not constitute a wave shape.

130. The prosecution history of the related '970 Patent further confirms this understanding of the "wave-like structure" requirement in claims 1 and 11 of the '418 Patent. Like the '418 Patent, the '970 Patent claims priority to the application that led to the '232 Patent. In an Office Action dated June 30, 2016, the Examiner applied the *Black* reference and asserted that it teaches a bridge structure as claimed in dependent claims. Ex. 2019 at 246.

8. **Claims 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rhoades in view of Black (2009/0274991).** Rhoades discloses the invention substantially as claimed except for a bridge structure comprising a plurality of protrusions and wave-shaped bridge structure. Black et al. discloses an intraoral suction device comprising a wave-shaped bridge structure 48c having formed therein the interior wall of the device 40 (Fig. 3B; paragraph 80). Note that the troughs between bridges/transverse walls 48c allow for communication with the suction source. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Rhoades by forming such bridge/transverse walls therein the interior of the intraoral device as taught by Black et al. in order to reinforce the device while still allowing effective suction.

131. In a response dated September 30, 2016, the Applicant made claim amendments. Pending independent claim 1 recited: “wherein the bridge structure comprises a plurality of spaced apart protrusions.” Ex. 2019 at 307. Dependent claim 15 recited: “the bridge structure defines a wave shape, and wherein the spaced protrusions are at crests of the wave shape.” *Id.* at 309. The Applicant responded to the rejection of the dependent claims directed to the “bridge structure” shape as follows:

Regarding claims 13-16, Applicants have cancelled claims 13-14, incorporating the subject matter therein into independent claim 1. The *Office Action* acknowledges that *Rhoades* fails to disclose a bridge structure as claimed. To remedy this deficiency, the *Office Action* relies on the teachings of *Black*, and in particular the internal walls (48c) that form channels 42 and 43 in the *Black* device. Applicants respectfully disagree and submit that the walls of *Black* do not provide a wave shape as claimed in dependent claims 15 and 16. Even assuming that the transverse walls of *Black* were considered to have a wave shape, claim 1 explicitly claims that the protrusions of the bridge structure are unattached to the anterior wall.

As shown above, the Applicant specifically argued that “the walls of Black do not provide a wave shape as claimed in dependent claims 15 and 16.” *Id.*

132. In the next Office Action dated April 12, 2017, the examiner withdrew the prior rejections based on *Black*. Ex. 2019 at 391. The Examiner instead rejected the amended claims based on *Hirsch* but found that dependent claims 15-16, which recited that the bridge structure has a “wave shape” with “crests and “troughs” were allowable over *Hirsch* and *Black*. *Id.* at 387-90.

133. The prosecution history of this patent family shows that the term “wave-like structure” requires more than a plurality of spaced apart protrusions, and that the “wave-like structure” feature was a key distinction between the claims and the *Black* reference.

B. District Court Claim Constructions

134. I am informed and understand that in the Parallel Litigation, the parties agreed to the following constructions relating to the '418 Patent:

Term/Phrase	Agreed Construction
“troughs” (claims 1, 11, 20)	the points nearest to the second wall that create the gaps between the crests that allow for the transfer of fluids during suction
“cutout has a shield shape” (claim 6)	a cutout having the general shape of an isosceles triangle with rounded sides

135. I am also informed and understand that in the Parallel Litigation, the parties dispute certain claim constructions and have offered competing proposals, as set forth below:

Term/Phrase	Patent Owner’s Construction	Petitioner’s Construction
--------------------	------------------------------------	----------------------------------

<p>“main body portion” (Claims 1, 11, 20)</p>	<p>Plain and ordinary meaning</p>	<p>The portion of the mouthpiece between, but not including, the cheek retractor portion and the suction connector and mouth prop, if present</p>
<p>“a third wall that connects one of the first edges of the first wall to one of the second edges of the second wall” (Claim 20)</p>	<p>Plain and ordinary meaning</p>	<p>A sidewall that connects either the inferior edge of the first wall to the inferior edge of the second wall or the superior edge of the first wall to the superior edge of the second wall</p>
<p>“a third wall connecting the first wall and the second wall such that the first wall is spaced from the second wall” (Claims 1 and 11)</p>	<p>Plain and ordinary meaning</p>	<p>Indefinite; or A sidewall that connects either the inferior edge of the first wall to the inferior edge of the second wall or the superior edge of the first wall to the superior edge of the second wall</p>

<p>“first wall and the second wall are shaped such that that first edge of the first wall corresponds in shape to the third edge of the second wall and the second edge of the first wall corresponds in shape to the fourth edge of the second wall; and wherein the first shape of the first wall corresponds to the second shape of the second wall” (Claim 1)</p>	<p>Plain and ordinary meaning</p>	<p>A second wall having a substantially identical shape to the shape of the first wall such that the edges of the second wall are aligned with the edges of the first wall</p>
<p>“a mouth prop injection-molded in one piece” (Claim 25)</p>	<p>Mouth prop molded (or injection-molded) as a unitary structure</p>	<p>No construction necessary</p>
<p>“interior space” / “space” (Claim 20)</p>	<p>Plain and ordinary meaning</p>	<p>An open space defined by an enclosure without subdivisions that spans between the anterior wall, the posterior wall, and inferior sidewall and/or a superior sidewall</p>
<p>“an interior surface of the second wall”</p>	<p>Plain and ordinary meaning</p>	<p>A surface of the second wall facing the first wall between, but not including, the edges of the second wall</p>

136. My opinions set forth herein regarding the grounds in the Petition for the ‘418 Patent would not change regardless of which these constructions are adopted. If an IPR is instituted, I reserve the right to address these constructions,

including whether they are consistent with a POSITA's understanding and whether the references and/or combinations of references in the Petition meet these constructions.

VIII. OPINIONS ON GROUNDS IN THE PETITION

137. The Petition and Dr. Black's declaration include seven grounds challenging the validity of the '418 Patent. My opinions on each ground follow.

A. **Ground 1: Obviousness Based on Black and Hirsch (Claims 1-9, 11-17, and 19)**

138. In Ground 1, Petitioner and Dr. Black assert that independent claims 1 and 11 and dependent claims 2-9, 12-17, and 19 of the '418 Patent are obvious over Black and Hirsch. Petition at 37-65; Ex. 1003 at ¶¶ 80-157. For at least the reasons discussed below, I disagree.

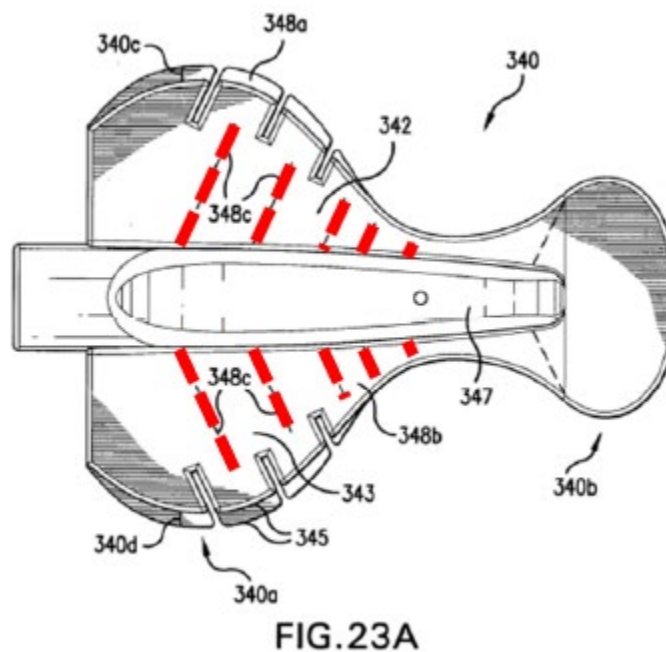
1. **Independent Claims 1 and 11**

139. Limitations 1(e) and 11(e) in claims 1 and 11, respectively, recite: (1) "wherein a plurality of crests of a wave-like structure is formed on an interior surface of the second wall to provide contact points with the first wall" and (2) "a plurality of troughs of the wave-like structure provides gaps between adjacent ones of the plurality of crests for allowing the suctioning of fluid through the plurality of troughs." Ex. 1001 at 6:36-42 (claim 1), 7:67-8:6 (claim 11).

140. At the outset, I note that Petitioner and Dr. Black's analysis for limitation 11(e) is the same as limitation 1(e), so I address both of them together

and my opinions for limitation 1(e) apply equally to limitation 11(e). Petition at 63;
Ex. 1003 at ¶ 144.

141. For these limitations, Petitioner and Dr. Black point to and rely on Black's transverse walls 348c in the embodiment shown in FIG. 23 of Black. FIG. 23A, which the transverse walls 348c annotated in red, is reproduced below:



Ex. 1005 at FIG. 23A (annotated)

142. Petitioner and Dr. Black assert that “Black teaches a square wave shape formed by the channels 342 and the transverse walls 348c (i.e., the presence [sic] transverse walls 348c and the gaps therebetween that form the channels 342).” Petition at 44-45; Ex. 1003 at ¶¶ 97-98 (arguing “Black teaches a wave-like structure exactly as claimed in claim 1”). In other words, Petitioner and Dr. Black

contend that Black's transverse walls 348c form the claimed "wave-like structure."

For at least the reasons discussed below, I disagree.

143. Black's transverse walls 348c extend between and are attached to both the posterior layer 348a and the anterior layer 438b. Ex. 1005 at 14:25-30. This is clear from FIG. 23C of Black, which Petitioner annotated below:

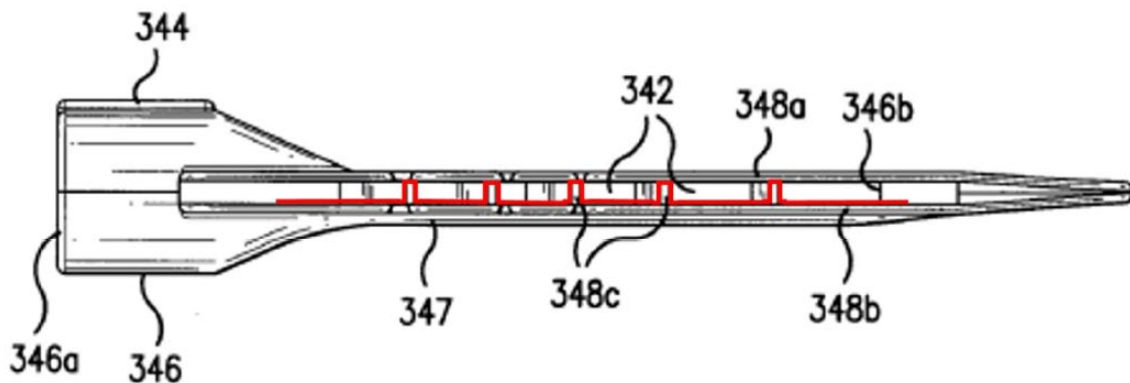
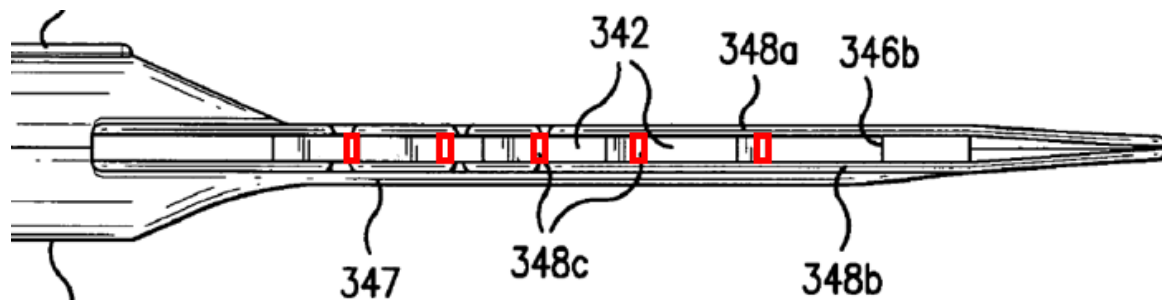


FIG. 23C

Petition at 45 (annotating Ex. 1005 at FIG. 23C)

144. In my view, the red annotations added by Petitioner are misleading because they suggest the transverse walls 348c are not connected to the posterior layer 348a. The annotation below, in my view, more accurately reflects the structure of the transverse walls 348c in Black:

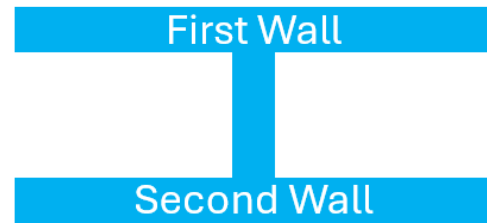
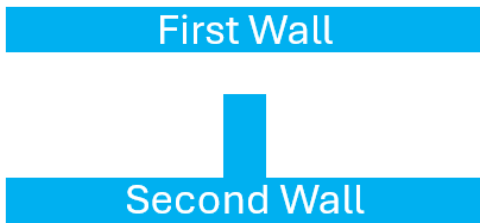


Ex. 1005 at FIG. 23C (annotated)

145. Black's transverse walls 348c do not meet Patent Owner's proposed construction because there are no curved surfaces. Petitioner and Dr. Black's assertion that these transverse walls 348c are a "wave-like structure" as claimed in the '418 Patent appear to be premised on their interpretation of this claim language to merely require "spaced-apart projections with gaps therebetween." Petition at 44; Ex. 1003 at ¶¶97-98. I explained in detail why I disagree with that interpretation of the claim language above in the section addressing claim construction. In particular, the prosecution history (e.g., the Notice of Allowance in the '418 Patent, the Examiner's findings during prosecution of the '232 Patent, and the Applicants arguments during prosecution of the related '686 and '970 Patents) makes clear that the claim language does not cover Black's transverse walls 348c.

146. In addition, even if Petitioner and Dr. Black were correct, that the "wave-like structure" in the claims only requires "spaced-apart projections with gaps therebetween," I still disagree with their assertion that Black meets this interpretation because Black's walls are not projections.

147. The graphic below illustrates the point. On the left, a structure extends from a second wall towards a first wall. That is a projection. On the right, a structure is attached to both the first wall and the second wall. A POSITA would not consider that to be a projection but rather a connector between the two walls.



148. Consistent with Black’s terminology, the transverse walls 348c that Petitioner and Dr. Black rely on are *walls* that *connect* or *attach* the anterior and posterior walls, not projections.

149. Black distinguishes between “walls” and “projections” or “protrusions.” The term “wall” or “walls” appears approximately 30 times in Black. *See, e.g.*, Ex. 1005 at 1:53 (referring to a “plurality of walls”), 2:12-15 (same), 5:24-59 (describing “transverse walls 48c”), 14:25-63 (describing “transverse walls 348c”), 15:40-41 (referring to “a wall of the conduit 312”), 16:26-38 (describing “two consecutive walls 448c”), 21:30 (referring to “walls 848c”), 22:29 (reciting “plurality of walls” in claim 1), 23:35-53 (reciting “walls” in dependent claims 15 and 16), 23:52 (reciting “plurality of walls” in claim 32).

150. The term “projection” or “projections” appears over a dozen times in Black. Ex. 1005, 6:47-62, 15:36-63, 16:63-17:1, 21:26-30. For example, referring to FIG. 3, Black describes “finger-like projections 45,” which are different than the transverse walls 48c. Ex. 1005 at 6:47-62.

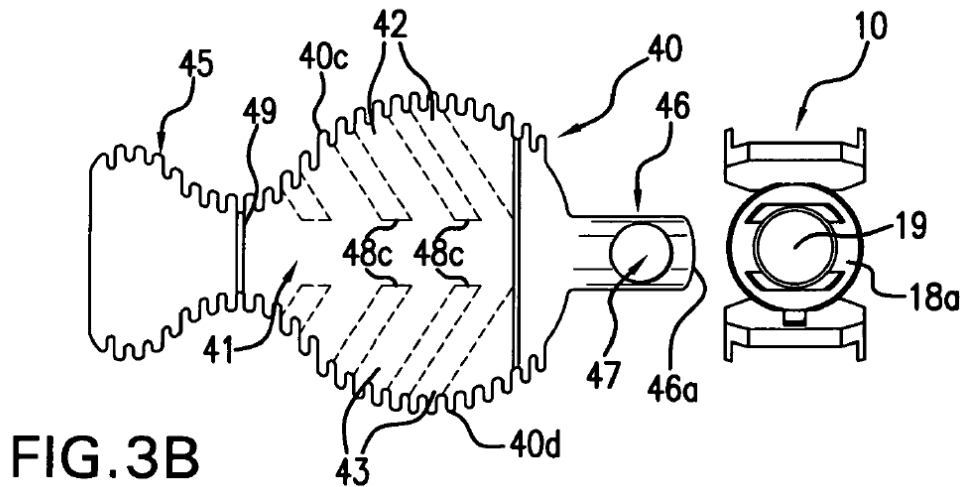


FIG. 3B

Ex. 1005 at FIG. 3B

151. The term “protrusion” appears 16 times in Black, but never in relation to the transverse walls 348c. For example, the embodiment shown in FIG. 9 includes mating protrusions 14 and 14b “which project from the upper member 14 of the bite member 10.” Ex. 1007 at 10:4-11. As another example, the embodiment shown in FIGS. 20E, 22A and 22B include “protrusions 313.” Ex. 1005 at 13:1-67. Claim 31 of Black recites “protrusions” and depends from independent claim 1, which separately recites “a plurality of walls.”

152. Black’s terminology is consistent with the ‘418 Patent, which separately describes walls and protrusions. *See, e.g.*, Ex. 1001 at 3:53-58 (anterior and posterior walls “may connect at a superior wall and an inferior wall...”), 4:29-32 (“Stability bar 150 may be a protrusion...”), 4:62 (“bridge structure 180 may be

formed as a[] wave-like protrusion...”), 5:44-45 (“...interlocking with a corresponding protrusion...”).

153. In view of the foregoing, a POSITA would understand that Black’s transverse walls 348c are, as the name says, walls, and not projections. Thus, Black does not have a “wave-like structure” with crests and troughs even if this phrase were broadly construed to merely require spaced-apart projections.

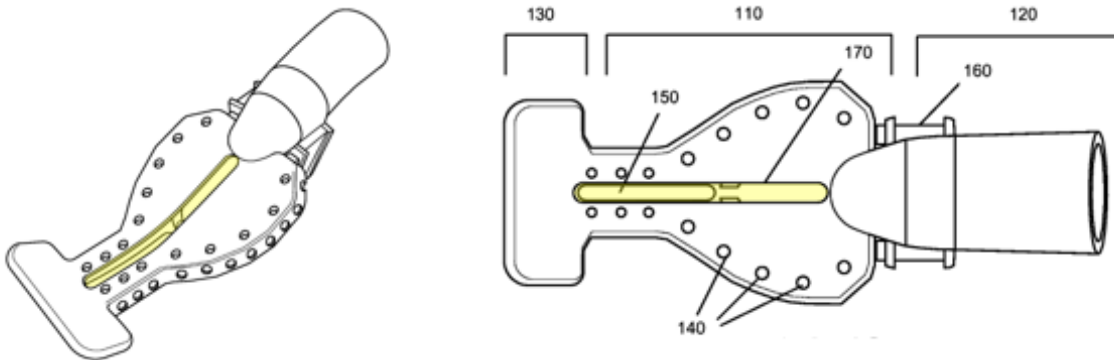
154. I also disagree with Petitioner and Dr. Black’s apparent contention that Black’s transverse walls 348c have crests that provide contact points as claimed in the ‘418 Patent. Claims 1 and 11 specify that the plurality of crests, which are formed on an interior surface of the second wall, “provide *contact points* with the first wall.” Ex. 1001 at 6:36-39 (claim 1), 8:2-3 (claim 11).

155. At the outset, I note that the Petition never uses the words “crests” or “troughs” when discussing limitations 1(e) and 11(e) in Ground 1. Dr. Black refers to Black’s transverse walls 348c as “crests/projections.” Ex. 1003 at ¶ 93. He also states that “the transverse walls have contact points with the posterior wall.” *Id.* at ¶ 96. I disagree. Black’s transverse walls 348c do not provide contact points – they provide attachment or connection points.

156. A POSITA would understand in light of the specification that there is a reason why the claimed “crests” provide “contact points” during suction as opposed to attachment or connection points. First, the specification teaches that the

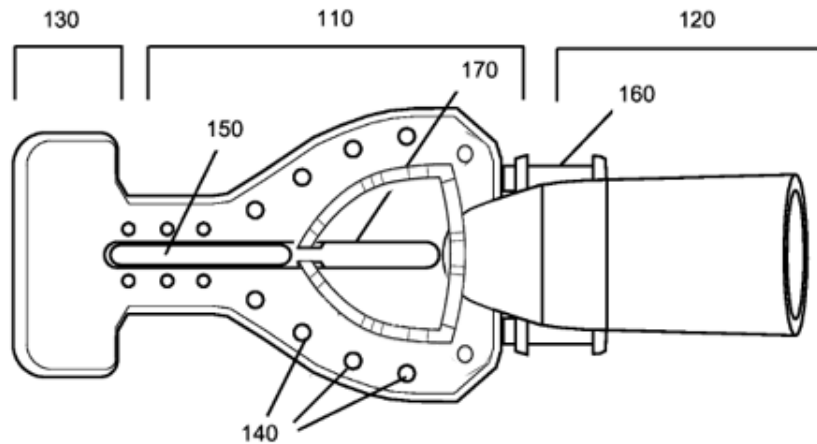
crests are “extending substantially (e.g., within 1 mm) the full distance” between the anterior and posterior walls. Ex. 1001 at 4:61-65. There is no example in the specification where the crests extend relative to the posterior wall and are attached to the anterior wall.

157. Second, the specification teaches that the mouthpiece can be manually cleaned via the open slot 170. Ex. 1001 at 4:51-54.



Ex. 1001, FIGS. 1A-1B (annotated)

If the bridge structure 180 was attached to the anterior and posterior walls, one would not be able to insert a brush to clean the mouthpiece because the bridge structure 180 would block or impede the brush.



EX1001, FIGS. 1B and 5 (superimposed)

It is clear in light of the specification that “contact points” during suction is different than attachment or connection points (which would exist regardless of whether suction is applied). Dr. Black’s suggestion that “contact points” reads on attachment points is inconsistent with the purpose of these features as described in the specification.

158. I note that claim 20 of the ‘418 Patent expressly says that “the contact points are not attached to the first wall.” Ex. 1001 at 9:27-28. But this does not change my opinions regarding how a POSITA would understand “contact points” in claims 1 and 20. As noted above in the claim construction section of this declaration, the Applicant argued that Black does not disclose the claimed inventions for at least two reasons during prosecution: (1) it lacks a wave or wave-like shape and (2) the transverse walls are attached to the posterior and anterior walls. In some claims, the applicant expressly recited a negative limitation

requiring no attachment to make it even more clear that Black is different. I am informed and understand that during prosecution of a patent application, the Patent Office applies the broadest reasonable interpretation of the claims, whereas in this IPR, the Board applies the plain and ordinary meaning. I am further informed and understand that the broadest reasonable interpretation of a claim term or phrase may be different than the plain and ordinary meaning. This explains why claim 20 includes express “not attached” language, i.e., adding this language made it so that the Examiner could not reasonably say that Black’s transverse walls have the claimed crests if one were to broadly interpret “contact points” to encompass attachment or connection points.

159. In the Notice of Allowance for the ‘418 Patent, the Examiner stated that independent claim 20 was allowed for the following reasons:

the art of record does not teach or render obvious, either alone or in combination, a mouthpiece including a plurality of crests is formed on an interior surface of the second wall to provide a plurality of contact points with the first wall and wherein a plurality of troughs provides a plurality of gaps through which fluids can pass between the contact points in combination with the elements.

Ex. 1002 at 266. I note that (1) Black was among the art considered by the Examiner and (2) the Examiner did not reference the “not attached” limitation as the reason why claim 20 was allowable over the art (that included Black). This

further supports my view that Black lacks crests that provide contact points as recited in claims 1 and 11.

160. For at least these reasons, I disagree with Petitioner and Dr. Black's conclusions for Ground 1 and independent claims 1 and 11 of the '418 Patent.

2. Dependent Claims 2-9, 12-17, and 19

161. Petitioner and Dr. Black's discussion of dependent claims 2-9, 12-17, and 19 focus on the additional limitations in those dependent claims and does not address the deficiencies above with respect to Black's failure to disclose the "wave-like structure" or "contact points" in independent claims 1 and 11. Petition at 54-62, 64-65; Ex. 1003 at ¶¶ 120-40, 151-57. Thus, I disagree with Petitioner and Dr. Black's conclusions for these dependent claims for at least the same reasons as independent claims 1 and 11 (from which all of these dependent claims depend).

B. Ground 2: Obviousness Based on Park, Baughan, and Johnson (Claims 20-22 and 24-28)

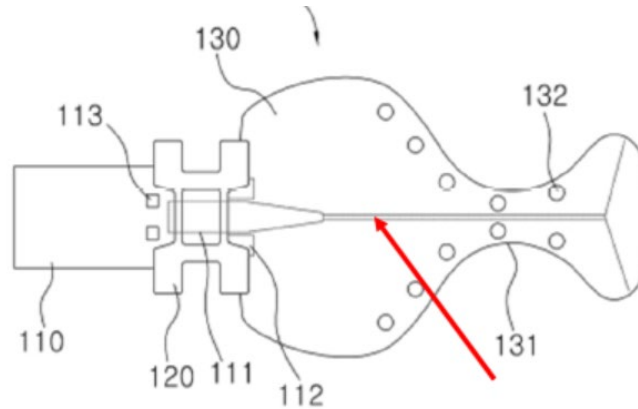
162. In Ground 2, Petitioner and Dr. Black assert that independent claim 20 and dependent claims 21-22 and 24-28 of the '418 Patent are obvious over Park, Baughan, and Johnson. Petition at 65-83; Ex. 1003 at ¶¶ 158-202. For the reasons discussed below, I disagree.

1. Independent Claim 20

163. Limitation 20(e) recites: “wherein a plurality of crests is formed on an interior surface of the second wall to provide a plurality of contact points with the first wall, and wherein a plurality of troughs provide a plurality of gaps through which fluids can pass between the contact points, wherein the contact points are not attached to the first wall.”

164. Park does not disclose, teach, or suggest limitation 20(e), including the claimed “crests” and “troughs.” I note that Dr. Black admits that “Park fails to expressly describe or illustrate whether the mouth prop 100 includes any internal features that assist with suction or preventing collapse under suction.” Ex. 1003 at ¶ 179. The Petition admits that “Park is silent regarding whether any structures are formed inside the interior chamber of the main body.” Petition at 72.

165. Both the Petition and Dr. Black’s declaration indicate that they are speculating as to what certain features are in Park’s drawings. For example, using the annotated version of Park’s FIG. 3 below, Dr. Black refers to the central component and says that this “appears to be a light pipe” but concedes that “it is unclear whether this is structural or simply something to assist with lighting.” Ex. 1003 at ¶ 179. I agree that this component is not expressly described in Park.



Ex. 1003 at ¶ 179 (annotating Ex. 1005 at FIG. 3)

The Petition also indicates that it is not sure what this feature is. Petition at 75 (“the line shown in FIG. 3 may not provide any rigidity or anti-collapse features at all and may only assist in guiding light from the light guide 240”).

166. Later in his declaration, Dr. Black says that his “first impression was that the mouth prop 100 includes a spine.” Ex. 1003 at ¶ 229. He also indicates that for a least some of the analysis he provides, he “assumes that there is a spine running down the symmetrical axis of the mouthpiece” *Id.* at ¶ 182. For purposes of my analysis, and without necessarily agreeing with Dr. Black, I will apply the same assumption in my analysis of Park.

167. The Petition asserts that Park’s lack of details “may be intentional as Park mentions that ‘common features,’ such as anti-collapse structures, ‘are omitted.’” Petition at 72 (quoting Ex. 1006 at ¶ 22). However, I have not seen any evidence in the Petition that the use of an anti-collapse structure in a dental isolation mouthpiece like the one in Park was known or “common” at the time of

the inventions in the '418 Patent. I have seen no evidence that such a feature is inherent in Park and necessarily would have been present even though that Park does not expressly describe any such features.

168. Petitioner and Dr. Black propose modifying Park to include “crests” and “troughs” as claimed. The Petition asserts that a POSITA would modify Park because Park’s walls are “likely to collapse under the suction force.” Petition at 73. Dr. Black asserts that “a POSA would know that the anterior and posterior walls (first and second walls) [in Park] are likely to collapse into each other due to the suction force applied by the external suction device 300.” Ex. 1003 at ¶ 181 (citing Ex. 1006 at ¶¶ 28, 43-43, 51 and Ex. 1007 at 3:46-48). For at least the reasons discussed below, I disagree. Park does not disclose or suggest that the walls are likely to collapse under suction and therefore motivate a POSITA to modify Park as alleged by Petitioner and Dr. Black. The other references in the Petition (e.g., Baughan, Johnson, Black, Hirsch, etc.) do not disclose, teach, or suggest that the walls in Park’s dental isolation mouthpiece are likely to collapse under suction.

169. Dr. Black asserts that a POSITA would recognize that Park’s walls would collapse under suction “given how thin Park’s mouth prop 100 appears.” Ex. 1003 at ¶ 181. Park does not disclose any dimensions for the walls. Nor does Park indicate that the figures are drawn to scale. I understand that in its IPR Petition challenging the related '969 Patent, Petitioner admitted that “Park . . . is

silent regarding the thickness of its various walls.” Ex. 2022 at 74. Thus, in my view, a POSITA would not be able to glean the relative thickness of Park’s walls based solely on the drawings, much less determine that the thickness of Park’s mouthpiece is such that the walls would collapse under suction.

170. Dr. Black also asserts that a “POSA would recognize this tendency to collapse because Park explains that the mouth prop 100 is made of silicone with ‘excellent tactile properties as well as a predetermined elasticity.’” Ex. 1003 at ¶ 181. I disagree. While Park does refer to a “predetermined elasticity,” Park does not disclose any values for this elasticity. Ex. 1006 at ¶ [0032]. A POSITA would know that the silicone material described by Park can have varying properties depending on what silicone material is selected.

171. For example, Ex. 2037 is a silicone rubber selection guide that a POSITA might consult when constructing a device made from silicone. The guide shows that multiple silicone products are available with a wide range of properties in terms of hardness, density, tensile strength, elastic modulus, tear strength, and heat resistance (including sufficient heat resistance for an autoclavable part). A POSITA would know that silicone material can be selected that is relatively flexible but at the same time strong enough to avoid collapsing when a suction force is applied in the application described by Park.

172. Ex. 2038 is a similar product guide for medical grade liquid silicone rubbers (LSR) for healthcare applications. Like the other selection guide discussed above, Ex. 2038 confirms that medical grade silicone can have varying values for hardness, tensile strength, and tear strength. In particular, different durometers are available, including very soft low durometer, mid durometer, and high durometer.

173. I understand that in his declaration concerning the related '969 Patent, Dr. Black referred to the same sentence regarding "elasticity" from Park and stated "the elasticity would retract the cheek tissue," and further that a POSITA "would understand that elasticity and 'resiliency' are essentially synonymous concepts when describing how an elastic device can retract cheek tissue." Ex. 2041 at ¶ 155. In my opinion, elasticity sufficient to retract the cheek tissue would indicate to a POSITA stiffness sufficient to prevent collapse of the walls during use, further supporting my opinion that the silicone material used in Park could be a resilient material that would not collapse under suction.

174. Additionally, whether Park's walls would collapse under suction would depend on the applied suction force. Park is silent regarding the suction forces that are present inside the mouthpiece during operation. A POSITA would know that the suction force would, in part, be a function of the vacuum used to supply the suction force. A POSITA would also know that the suction forces inside the mouthpiece would be a function of the mouthpiece's through holes and internal

geometry and dimensions, which again, Park does not disclose. Park also discloses that the mouthpiece is attached to a suction line via fitting connection portion 210, as shown in FIG. 2.

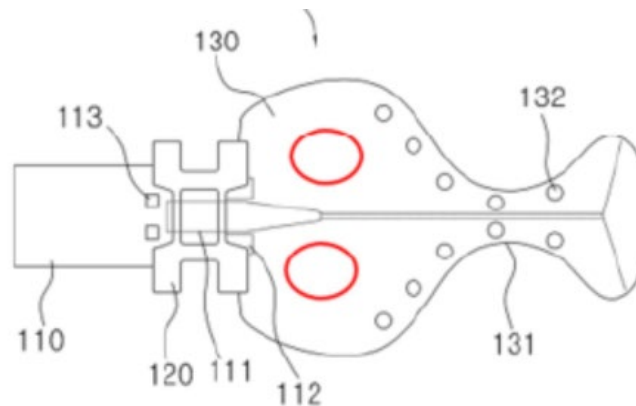
175. A POSITA would further know that the suction forces present inside the mouthpiece would depend in part on the geometry and dimensions of the fitting connection portion. Park does not disclose any dimensions for this component. In my view, it is at best speculative to suggest that Park's walls would "likely" collapse under suction. If anything, there is strong evidence that they would not collapse under suction.

176. Petitioner and Dr. Black's analysis shows that the material used in Park provides at least some rigidity and is not inherently susceptible to collapsing during suction. For example, Dr. Black asserts that Park's mouthpiece has "sidewalls" and that these "sidewalls would assist with preventing collapse under suction." Ex. 1003 at ¶ 181. If Park has "sidewalls," those sidewalls would be made of the same material as the rest of the mouthpiece. According to Dr. Black, the "sidewalls" provide rigidity and resist collapse during suction despite the fact that they comprise the same silicone material as the walls he contends would collapse under suction given their material. Ex. 1003 at ¶ 181.

177. Dr. Black assumes that Park has a "spine" that runs down the longitudinal axis, and Dr. Black characterizes the spine as "anti-collapsing

structure.” Ex. 1003 at ¶¶ 181. The “spine” would be made of the same silicone materials as the walls but according to Dr. Black the “spine” is an anti-collapsing structure.

178. Dr. Black circles the areas in red below and says, assuming there is a spine, these are the areas that are most likely to collapse under suction in Park’s mouthpiece:



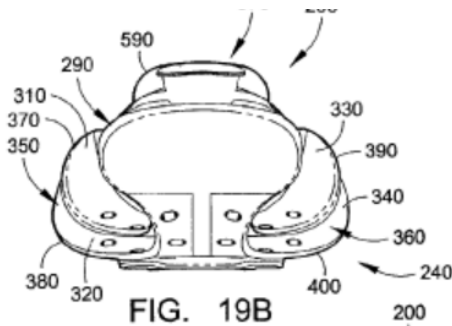
Ex. 1003 at ¶ 181 (annotating Ex. 1006 at FIG. 3)

I disagree with Dr. Black’s assertion that these areas would collapse under suction solely because they are made from a silicone material, for the reasons discussed above.

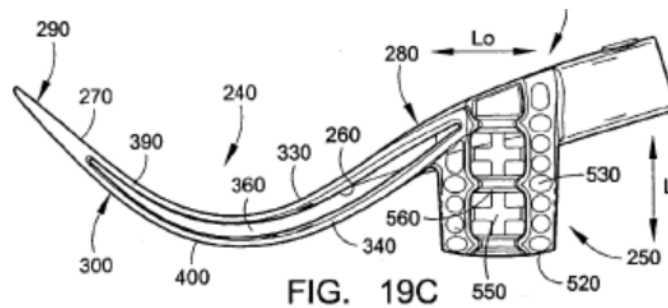
179. Petitioner and Dr. Black also rely on the Hirsch reference. Dr. Black states that “the designs of Park and Hirsch are very similar – Hirsch simply lacks a sidewall that Park disclose.” Ex. 1003 at ¶ 232. The Petition states that “both mouthpieces [in Park and Hirsch] perform the same function and have very similar designs (Hirsch simply lacks sidewalls).” Petition at 97. Given the similarities

between Park and Hirsch, one would expect that if Park's walls were likely to collapse under suction, then Hirsch's walls would at least equally be susceptible to collapsing under suction. Since according to Petitioner and Dr. Black, Hirsch lacks sidewalls in Park that resist collapse, one would expect that the problem with walls collapsing under suction would be even greater in Hirsch than in Park.

180. I agree with Petitioner and Dr. Black that Park and Hirsch are very similar. In at least one embodiment, Hirsch lacks a "sidewall," as shown below:



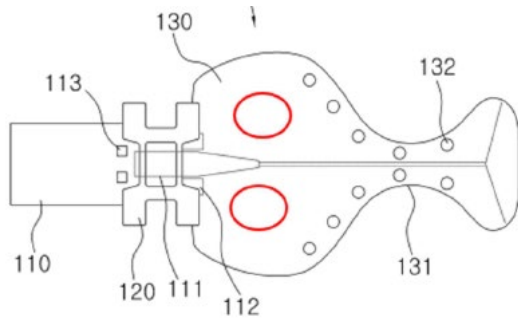
Ex. 1012 at FIG. 19B



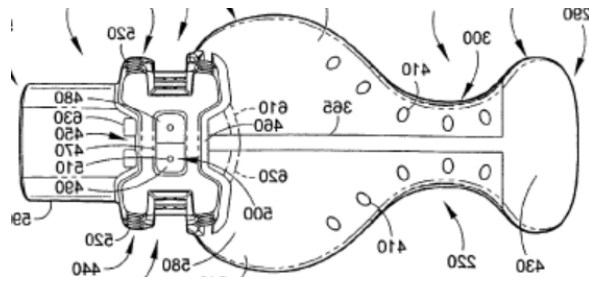
Ex. 1012 at FIG. 19C

And, similar to Park, Hirsch's mouthpiece comprises a "translucent (e.g., transparent), flexible, soft, elastic, resilient, biocompatible thermoplastic elastomer." Ex. 1012 at ¶ [0074].

181. In Hirsch, there is no "anti-collapse" structure at the locations identified by Dr. Black as the "weak points" in Park that supposedly require reinforcement.



Ex. 1003 at ¶ 181

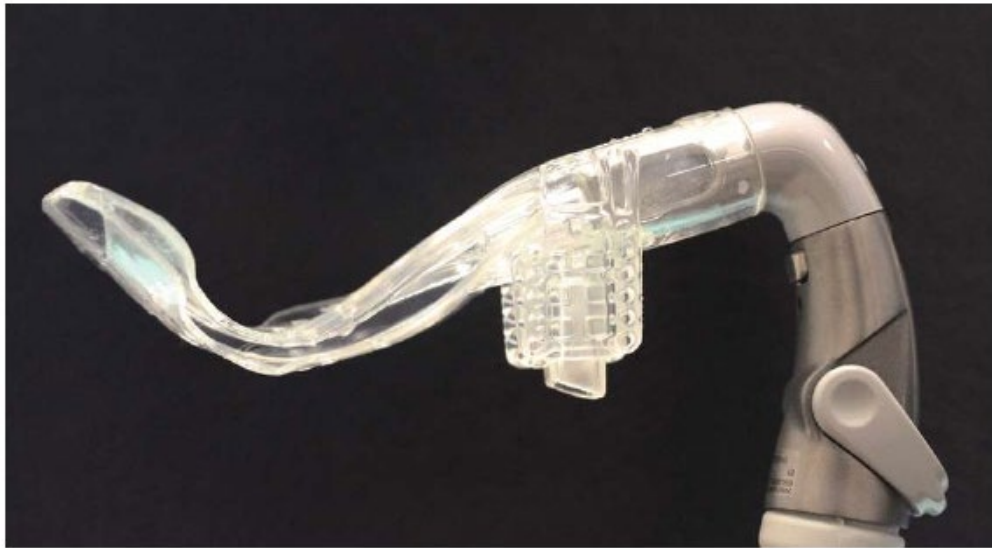


Ex. 1012 at FIG. 19E (rotated)

182. The fact that Hirsch does not contain “anti-collapse structure” at these locations bolsters the conclusion that a POSITA viewing Park would not believe that the walls are susceptible to collapsing and blocking suction, which according to Petitioner and Dr. Black would therefore motivate a POSITA to modify Park to arrive at the claimed inventions.

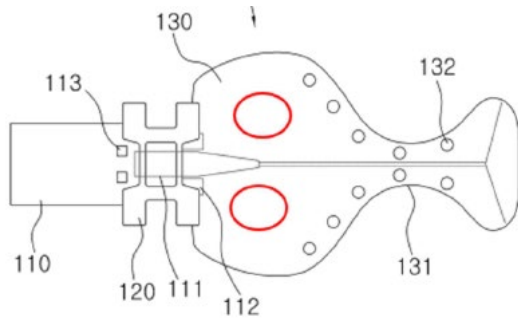
183. Dr. Black discusses a dental isolation mouthpiece product called “Isolite” in the background section of his declaration:





Ex. 1003 at ¶ 11

184. I note that this “Isolite” mouthpiece appears very similar to Hirsch. I also understand that the corresponding patent associated with Hirsch is assigned to the seller of the Isolite mouthpiece. Like Hirsch, there is no “sidewall” in Isolite, so one would expect at least the same problem with the walls collapsing as Park (if there is such a problem) and likely an even worse problem. Given that the Isolite product uses a transparent material, it is evident from Dr. Black’s photos that there is no “anti-collapse” structure at the locations that Dr. Black claims are likely to collapse under suction in Park.



Ex. 1003 at ¶ 181



Ex. 1003 at ¶ 11

185. Dr. Black’s discussion of the “Isolite” product reinforces my conclusion that a POSITA would recognize that Park does not suffer from a problem where its walls would collapse on one another when suction is applied during operation, as alleged by Dr. Black and Petitioner.

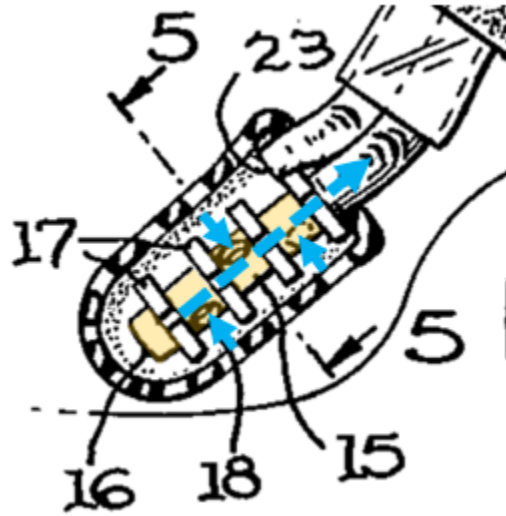
186. The Petition asserts that unless Park is modified in view of Baughan and/or Johnson to include the claimed bridge structure, then “collapsing would occur” in Park. Petition at 73 The Petition then explains what Petitioner believes the consequences of this problem are: “[i]f these areas collapse under suction, suction power would be significantly reduced or blocked entirely.” Petition at 74. Dr. Black similarly states that “[e]ven if the areas identified above do not completely collapse, they may significantly narrow under suction due to the flexible nature of the mouth prop 100.” Ex. 1003 at ¶ 183.

187. Park teaches that its objective is to “form[] a suction line to expel foreign substances from the oral cavity” during dental procedures. Ex. 1006 at ¶ [0012]. If suction were blocked entirely as suggested by the Petition, this would

render Park's mouthpiece inoperable for its intended purpose. Even significantly reducing suction power would also render Park inoperable or at least highly ineffective at achieving its intended purpose. Nothing in Park would suggest to a POSITA that the mouthpiece disclosed therein is inoperable for its intended purpose. In other words, if Park's mouthpiece were such that the walls would collapse under suction (and therefore require modifications), then the mouthpiece would not work for its intended purpose in the first place.

188. Baughan is not directed to a dental isolation mouthpiece like the one in Park. Instead, Baughan is directed to a different type of dental equipment called a saliva ejector. Ex. 1007 at 1:6-7. I note that the '418 Patent itself distinguishes the disclosed and claimed isolation mouthpiece from a saliva ejector. Ex. 1001 at 1:37-40. Baughan does not teach or suggest that a dental isolation mouthpiece like the one in Park would collapse under suction without adding an anti-collapse structure.

189. Baughan is directed to a different problem and geometry than the alleged problem with Park's walls when suction is applied. Baughan's discs 17 prevent sleeve 24 from blocking the orifices 18 of the terminal tube portion 15. Ex. 1007 at 3:36-48.



Ex. 1007 at FIG 3 (excerpted and annotated)

190. Baughan's discs 17 prevent a moveable surface (the sleeve 24) from blocking holes providing suction from a fixed surface (the tube 15). In Park, two surfaces are urged toward one another under suction rather than one surface being urged towards the source of suction.

191. The Petition acknowledges that Baughan uses "outward projecting discs" around the circumference of an inner cylindrical tube. Petition at 78. The Petition also acknowledges that Baughan's discs would need to be modified for use with Park and argues that "a PHOSITA using basic common sense, would modify the discs for a tube-shaped embodiment to be projections for a flatter, non-tube embodiment." *Id.* I disagree. The only reference that Petitioner alleges teaches this feature is Johnson.

192. Like Baughan, Johnson is not directed to a dental isolation mouthpiece. Dr. Black asserts that “Johnson shows how to form projections 81-86 on a flat surface 40 for dental application.” Ex. 1003 at ¶ 186. The Petition similarly argues that “Johnson teaches integral projections 81-86 formed on a flat surface in a dental apparatus.” Petition at 78. I disagree. Johnson’s projections are *not* formed on a flat surface. Instead, they are formed on a curved or semi-circular surface.

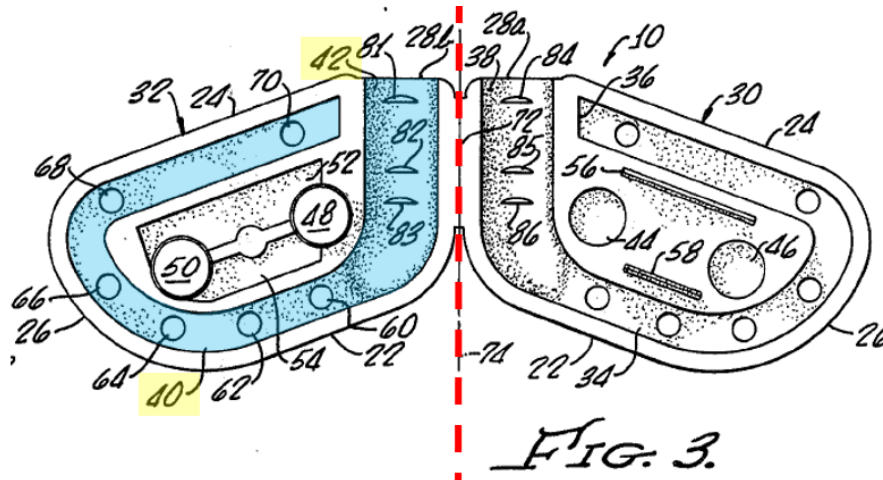
193. Johnson explains: “[i]f deemed necessary or desirable, molded projections 81, 82, 83, 84, 86, 86 are formed on the interior surfaces of the neck sections 28a and 28b, having sharper corners or edges on their downwardly (as viewed in FIG. 3) facing edges in order to more firmly grasp the surface of the vacuum tube 12 and to better clamp the tube against inadvertent withdrawal from the cylindrical receiving opening.” Ex. 1008 at 4:16-23. Johnson does not suggest that these projections serve the purpose of preventing two surfaces from collapsing onto one another. Instead, Johnson’s projections are used to grip or clamp the vacuum tube 12.

194. I observe that the plates in Johnson are “molded of a suitable rigid or semi-rigid plastic” Ex. 1008 at 4:24-25. Johnson discusses “resilient latch means.” Ex. 1008 at 3:31-52. The presence of a living hinge connecting the two plates in the as-molded condition indicates that the primary embodiment is most likely

molded in polypropylene. Further, the geometry of the plates when snapped around the tube do not suggest anti-collapse features because the faces are depicted in contact (except for the small diameter flow channel). *See* Ex. 1008 at FIGS. 5, 6. The fact that Johnson's device is rigid further reinforces that, like the other references in the Petition, Johnson does not disclose or suggest the alleged problem with flexible materials collapsing on to one another under suction.

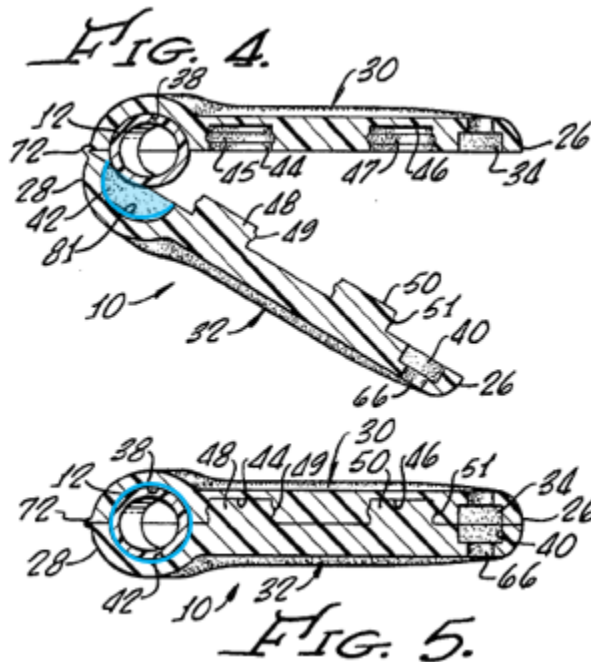
195. Johnson explains that “[t]he grooves 38, 42, which communicate with the passage recesses 34, 40 of the respective plates 30, 32 are enlarged as compared to the passage recesses and each has a substantially *semi-circular* configuration to collectively define a circular cross-section vacuum tube receiving opening in the neck sections 28a and 28b of the neck 28 of the saliva ejector.” Ex. 1008 at 3:66-4:4 (emphasis added).

196. Johnson describes reference numeral 40 in FIG. 3 as follows: “recess 40 extend[s] from a closed end at the top rear edge of the plate forwardly along the edge of the plate, downwardly along the front edge and rearwardly along the bottom edge where it terminates at groove 42 formed in the neck 28b of plate 32.” Ex. 1008 at 3:25-30. The plates 30 and 32 “pivot with respect to one another about a hinge axis (denoted by a line 74).” Ex. 1008 at 4:11-13.



Ex. 1008 at FIG. 3 (annotated)

197. As shown in FIGS. 4-5, when the plates 30 and 32 are closed, the recess 40 is not “flat” as asserted by Petitioner and Dr. Black.



Ex. 1008 at FIGS. 4-5 (annotated)

198. I disagree with Dr. Black's assertion that the discs 17 in Baughan are "essentially the exact same concept I taught in Black when I taught transverse walls." Ex. 1003 at ¶ 187. Black's transverse walls are not the "same concept" as the discs 17 in Baughan. As explained above, Baughan's discs 17 go around the circumference of the cylindrical tube 15, which contains orifices that apply suction, and prevent another generally cylindrical sleeve from collapsing onto the tube 15 and blocking the orifices, whereas the transverse walls 348c in Black merely connect flaps together.

199. Dr. Black asserts that the transverse walls additionally "prevented collapse under suction." Ex. 1003 at ¶ 187 (citing Ex. 1005 at 5:54-59). The cited portion of Black does not disclose that the transverse walls 48c were intended to prevent collapse under suction. Ex. 1005 at 5:54-59. Black does not expressly mention collapsing under suction as a problem or potential problem, or disclose that transverse walls are the solution.

200. Even if a POSITA were to recognize that the walls in Park's mouthpiece were likely to collapse under suction, a POSITA would have other options available to them to address this problem as opposed to modifying Park's mouthpiece to include crests and troughs as proposed by Petitioner and Dr. Black. For instance, a POSITA would know if Park's walls were too "thin" and therefore too weak to avoid collapse when suction is applied, as Dr. Black asserts, a POSITA

could simply thicken the walls to reinforce them and increase rigidity of the mouthpiece and eliminate the problem.

201. As another example, if Park's material were too flexible and susceptible to collapse, a POSITA would know that they could easily select a stronger material that would be more resistive to collapsing when suction is applied during operation while still maintaining enough flexibility for use in a dental procedure (e.g., the mouthpiece would still be flexible enough to be placed in the patient's mouth at the beginning of a dental procedure).

202. A POSITA would recognize that both options would be far simpler and cheaper to implement in Park as opposed to adding crests and troughs as proposed by Petitioner and Dr. Black. Petitioner's proposed modification requires a more complicated mold to create the mouthpiece with additional components compared to simply changing the material or thickening the walls. A POSITA would know that the mouthpiece in Park, which according to Dr. Black has an interior cavity, could be formed by injection molding with a single mold in a single molding process. This mold would include a structure to keep the walls separated and define the cavity. If crests and troughs were added to Park, the mold and/or the molding process would need to be modified to create the crest that provide contacts points are not attached to the first wall. For example, the physical mold would need to be modified to include a more complicated geometry. As another example, this

might require two separate molding processes to create the mouthpiece. This presents another potential point for failures or defects during manufacturing, which would be undesirable.

2. Dependent Claims 21-22 and 24-28

203. Petitioner and Dr. Black's discussion of dependent claims 21-22 and 24-28 does not address any of the aforementioned issues with respect to the Park, Baughan, and Johnson combination. Petition at 83-100; Ex. 1003 at ¶¶ 195-202. Thus, I disagree with Dr. Black's conclusions for these dependent claims for at least the same reasons as independent claim 20.

C. Ground 3: Obviousness Based on Park, Baughan, Johnson, and Hirsch (Claims 1-9, 11-17, and 23)

204. In Ground 3, Petitioner and Dr. Black assert that independent claims 1 and 11 and dependent claims 2-9, 12-17, and 23 of the '418 Patent are obvious over Park, Baughan, Johnson, and Hirsch. Petition at 83-100; Ex. 1003 at ¶¶ 203-52. As set forth below, I disagree.

1. Independent Claims 1 and 11

205. Limitations 1(e) and 11(e) in claims 1 and 11, respectively, recite: (1) "wherein a plurality of crests of a wave-like structure is formed on an interior surface of the second wall to provide contact points with the first wall" and (2) "a plurality of troughs of the wave-like structure provides gaps between adjacent ones

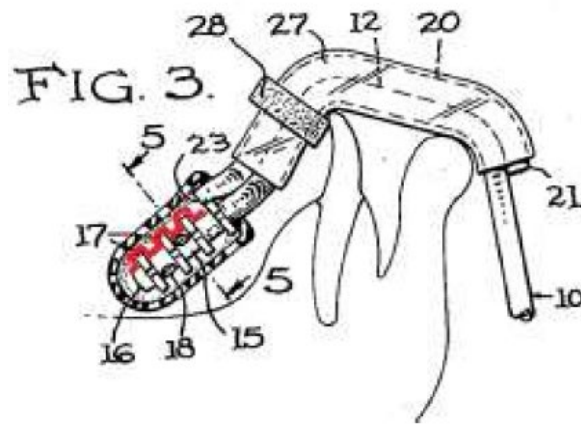
of the plurality of crests for allowing the suctioning of fluid through the plurality of troughs.” Ex. 1001 at 6:36-42 (claim 1), 7:67-8:6 (claim 11).

206. In Ground 3, the Petition refers back to its discussion for limitation 1(e) in Ground 2 regarding the Park-Baughan-Johnson combination. Petition at 84 (referring to Section IX.B.1.e for limitation 1(e) in Ground 2). Dr. Black refers back to paragraphs 179-191 for limitation 1(e), which address the Park-Baughan-Johnson without any additional analysis. Ex. 1003 at ¶ 210 (“See paragraphs 179-191”). Similarly, for limitation 11(e), the Petition refers to Section IX.C.1.e and paragraph 240 of Dr. Black’s declaration. Petition at 98-99. For limitation 11(e), Dr. Black states “See paragraph 210,” which in turn says “See paragraphs 179-191” discussing the Park-Baughan-Johnson combination for Ground 2. Ex. 1003 at ¶ 240. I disagree with Petitioner and Dr. Black’s conclusions for limitations 1(e) and 11(e) in Ground 3 for at least the same reasons I provided above for limitation 20(e) in Ground 2.

207. Additionally, unlike claim 20, claims 1 and 11 recite a “wave-like structure,” which I discussed above at length in the claim construction section of this declaration and for Ground 1. Petitioner and Dr. Black do not expressly address this term in their Ground 3 analysis. However, when discussing Ground 2, Dr. Black contends that “Baughan teaches a wave-like structure (discs 17)” and that “the spaced-apart discs 17 of Baughan protrude from a surface of the tube in a

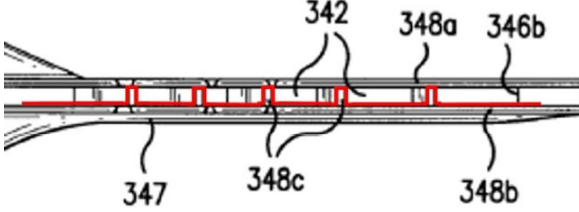
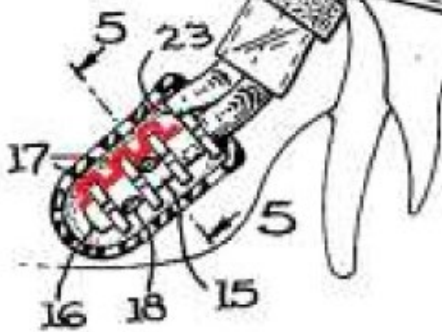
wave shape with three crests (rings) and at least two troughs (space between the rings)” and a “square-wave shape is a wave-shape.” Ex. 1003 at ¶¶ 184-85. I disagree.

208. Petitioner and Dr. Black annotate FIG. 3 of Baughan as follows to show the alleged wave-like structure:



Petition, 77; Ex. 1003 at ¶ 185 (annotating Ex. 1007 at FIG. 3)

209. The annotated structure is a series of rectangular protrusions, which as discussed above in the claim construction section, is not a wave-like structure as claimed. Indeed, the pattern in Baughan that Petitioner and Dr. Black rely on has the same shape as the rectangular transverse walls 348c in Black that the prosecution history makes clear are not a “wave-like structure” as claimed in the ‘418 Patent.

Black	Baughan
 <p data-bbox="224 575 781 653">Petition at 45 (annotating Ex. 1005 at FIG. 23C)</p>	 <p data-bbox="881 604 1360 682">Petition at 77; Ex. 1003 at ¶ 185 (annotating Ex. 1007 at FIG. 3)</p>

210. Thus, the proposed Park-Baughan-Johnson-Hirsch combination in Ground 3 does not disclose a “wave-like structure” for at least the same reasons that Black does not as set forth above for Ground 1.

211. The Petition also alleges that “each individual disc 17 is formed in a wave shape with notches 19” and “the notches 19 in the disc also form a square wave shape.” Petition at 77. Petitioner shows this using the annotated image reproduced below:



Petition at 77 (annotating Ex. 1007 at FIG. 5)

212. I note that Dr. Black does not appear to address this argument from the Petition in his declaration and only addresses FIG. 3 of Baughan in relation to the “wave-like structure” requirement. Ex. 1003 at ¶¶ 184-85.

213. I disagree with Petitioner’s assertion that the “square wave shape” allegedly shown in FIG. 5 of Baughan is a wave-like structure as claimed for at least the same reasons that the pattern shown in FIG. 3 of Baughan is not a wave-like structure as claimed in the ‘418 Patent.

2. Dependent Claims 2-9, 12-17, and 23

214. Petitioner and Dr. Black’s discussion of dependent claims 2-9, 12-17, and 23 of the ‘418 Patent does not address any of the aforementioned deficiencies with respect to the Park, Baughan, Johnson, and Hirsch combination. Petition at 90-100; Ex. 1003 at ¶¶ 221-52. Thus, I disagree with Dr. Black’s conclusions for these dependent claims for at least the same reasons as the independent claims from which they depend.

D. Ground 4: Obviousness Based on Park, Baughan, Johnson, and Black (Claim 19)

215. The Petition argues in Ground 4 that dependent claim 19 of the ‘418 Patent is obvious over Park, Baughan, Johnson, Hirsch, and Black. Petition at 100-01. Petitioner proposes “to modify the insertion port 110 of Park to be thicker, like the nec 446 of Black.” *Id.* at 101. This argument does not address the issues I

discussed above for the Park-Baughan-Johnson combination, so I disagree with the Petition for at least the reasons I provided above for Ground 3.

216. I note that there is a discrepancy between the Petition and Dr. Black's declaration. Under a section header starting with "Ground 4," Dr. Black's declaration refers to claims 7, 21-25, and 27-29 of the '418 Patent and then reproduces a "Claim 7" in a sub header that differs from claim 7 of the '418 Patent.

E. Ground 5: Obviousness Based on Black, Hirsch, and Zheng (Claims 1-9, 11-17, and 19)

217. In Ground 5, Petitioner and Dr. Black assert that independent claims 1 and 11 and dependent claims 2-9, 12-17, and 19 of the '418 Patent are obvious over Park, Baughan, Johnson, Hirsch, and Zheng. Petition at 101-02; Ex. 1003 at ¶ 256. The Petition argues that if "the Board does not agree that Black teaches two walls that are separated for a short distance in the cheek retractor before merging together to form the cheek retractor, it would have been obvious to modify the mouthpiece to do so in view of Zheng." Petition at 101. Because this additional argument does not address the deficiencies discussed above for Black, including its failure to disclose a "wave-like structure" or "crests" that provide "contact points," I disagree with Petitioner and Dr. Black's conclusions for Ground 5 for at least the same reasons I provided for Ground 1.

F. Ground 6: Obviousness Based on Park, Baughan, Johnson, Hirsch, and Zheng (Claims 1-9, 11-17, and 20-28)

218. In Ground 6, Petitioner relies on the same obviousness theory for claims 1-9, 11-17, and 20-28 based on the Park, Baughan, and Johnson combination as in Ground 3, and additionally argues that it would have been obvious to modify Black in view of Zheng to include “two walls that are separated for a short distance in the cheek retractor before merging together to form the cheek retractor.” Petition at 102-03. The proposed combination with Zheng does not address the issues I detailed above for the Park-Baughan-Johnson combination, so I disagree with Petitioner’s assertions for Ground 6 for at least the same reasons I provided for Ground 3.

219. I note that Dr. Black’s declaration does not address a “Ground 6.” Instead, his declaration addresses “Ground 5” (Ex. 1003 at ¶ 256) and then “Grounds 8, 9, and 10” (*id.*, at ¶ 257). To the extent this is meant to support Ground 6 in the Petition, I disagree for at least the reasons discussed above.

G. Ground 7: Obviousness Based on Park, Baughan, Johnson, Hirsch and Zheng (Claim 19)

220. In Ground 7, Petitioner uses the same obviousness theory based on the Park, Baughan, Johnson, and Hirsch combination as it did in Ground 4, as well as the same combination with Zheng set forth in Ground 6. Petition at 102-03. Because the proposed combination with Zheng does not address any of the

deficiencies in Ground 4, I disagree with Petitioner's assertion for Ground 7 for at least the same reasons I provided for Ground 4.

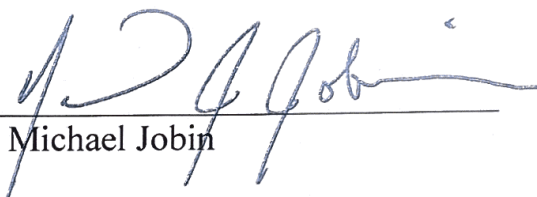
221. I note that Dr. Black's declaration does not address a "Ground 7." Instead, as I noted above, his declaration addresses "Ground 5" (Ex. 1003 at ¶ 256) and then "Grounds 8, 9, and 10" (*id.*, at ¶ 257). To the extent this discussion is meant to support Ground 7 in the Petition, I disagree for at least the reasons I discussed above.

IX. CONCLUSION

222. I reserve the right to modify or supplement my opinions, if necessary, based on further review and analysis of the evidence in this case, including review and analysis of information that may be provided to me subsequent to the date of this Declaration.

I declare that all statements made herein of my own knowledge are true and all statements made on information and believe are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Date: October 22, 2025


Michael Jobin