

EXHIBIT G-0
Initial Invalidity Chart for U.S. Patent No. 12,290,418

As described in the accompany cover pleading, many of the features of the Asserted Patents are known in the prior art, as shown by the attached claim charts, and the table below. Ascentcare reserves the right to rely on references in the table below to supplement or replace the prior art in the attached claim charts. For example, Ascentcare reserves the right to use Hirsch or Isolite instead of Black or AirBug for the claim elements shown below:

US 12,290,418	Prior Art
1[a] An isolation mouthpiece for use with a suction system in a dental procedure, the isolation mouthpiece comprising	See Claim 19 of Ex. A-0.
1[b] a main body portion having a first end and a second end, the main body portion including	See Claim 19 of Ex. A-0.
1[c] a first wall having a first shape defined by 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	See Claim 19 of Ex. A-0.
1[d] a second wall having a second shape defined by 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 first plurality of perforations extending along a portion of the third edge, and a second plurality of perforations extending along a portion of the fourth edge	See Claim 19 of Ex. A-0. Black FIG. 4C, 13 KR101082826: FIG. 2 CN102631180: FIG. 3 Hirsch: FIGs 19A, 19E
1[e] 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	See Claim 19 of Ex. A-0.

1[f] and wherein the first wall and the second wall are shaped such that the 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, and	See Claim 19 of Ex. A-0.
1[g] a third wall connecting the first wall and the second wall such that the first wall is spaced from the second wall	See Claim 19 of Ex. A-0.
1[h] 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	See Claim 19 of Ex. A-0.
1[i] a suction connector portion extending from the first end of the main body portion, the suction connector portion including: a tubular conduit including an opening extending through the conduit and in fluid communication with the plurality of troughs of the wave-like structure, the opening being configured to receive a vacuum portion of the suction system therein, the tubular conduit further including a cutout configured to engage a protrusion on the suction system to aid in coupling the isolation mouthpiece to the suction system, and	See Claim 19 of Ex. A-0.

1[j] 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	See Claim 9 of E-0.
1[k] 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.	See Claim 19 of Ex. A-0.
2 The isolation mouthpiece of claim 1, wherein the first plurality of perforations includes five perforations and the second plurality of perforations include five perforations.	See Claim 9 of '329 Chart. Duplication of parts is obvious. <i>In reHarza</i> , 274 F.2d 669, 124 USPQ 378 (CCPA 1960); MPEP 2144.04(VI)(B)
3 The isolation mouthpiece of claim 2, wherein at least one of the first plurality of perforations and at least one of the second plurality of perforations are located adjacent to the second end and near the cheek retractor portion.	See Claim 19 of Ex. A-0. Hirsch: FIGs. 19A, 19E Black: FIG. 4C, 13 KR101082826: FIG. 2 CN102631180: FIG. 3
4 The isolation mouthpiece of claim 1, wherein the first wall and the second wall of the main body portion transition into and are connected in the cheek retractor portion to form the cheek retractor portion, 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.	See Claim 19 of Ex. A-0. See Claim 9 of Exs. E.
5 The isolation mouthpiece of claim 4, wherein at least one of the first plurality of perforations and at least one of the second	See Claim 19 of Ex. A-0. Hirsch: FIGs. 19A, 19E Black: FIG. 4C, 13

plurality of perforations are located adjacent to the second end and near the cheek retractor portion.	KR101082826: FIG. 2 CN102631180: FIG. 3
6 The isolation mouthpiece of claim 1, wherein the cutout has a shield shape.	<i>See</i> Claim 9 of '970 chart. To the extent any reference is silent regarding this limitation, changing the shape is obvious. <i>In reDailey</i> , 357 F.2d 669, 149 USPQ 47 (CCPA 1966); MPEP 2144.04(IV)(B)
8 The isolation mouthpiece of claim 1, further including a stability bar located along a center aligned with a longitudinal axis of the first wall at least adjacent to the second end of the main body, at least one of the first plurality of perforations being positioned along one edge of the second wall and at least one of the second plurality of perforations being positioned along another edge of the second wall.	Black: FIG. 23A, longitudinal thickener 347 Hirsch '321: FIG. 19A, Col. 11 Ln. 52–67, spine 365 KR101217041: FIG. 1 - spine KR101082826 – FIG. 2-3 – line for light. CN102631180: FIGS. 1, 3 and 4 – spine To the extent any reference fails to teach claim 7, it would have been obvious for an ordinarily skilled artisan to combine the central spine taught by any of the above or the longitudinal stiffener or Black to an isolation mouthpiece. The resulting combination would satisfy the requirements of the claimed invention.
11[a] An isolation mouthpiece for use with a suction system in a dental procedure, the isolation mouthpiece comprising:	<i>See</i> Limitation 1[a].
11[b] a main body portion having a first end and a second end, the main body portion including:	<i>See</i> Limitation 1[b].
11[c] a first wall having a first shape defined by 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,	<i>See</i> Limitation 1[c].

11[d] a second wall having a second shape defined by 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 first plurality of perforations extending along a portion of the third edge, and a second plurality of perforations extending along a portion of the fourth edge,	<i>See Limitation 1[d].</i>
11[e] 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, and	<i>See Limitation 1[e].</i>
11[f] a third wall connecting the first wall and the second wall such that the first wall is spaced from the second wall,	<i>See Limitation 1[g].</i>
11[g] 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;	<i>See Limitation 1[h].</i>
11[h] a suction connector portion extending from the first end of the main body portion, the suction connector portion including: a tubular conduit including an opening extending through the conduit and in fluid communication with the plurality of troughs	<i>See Limitation 1[i].</i>

of the wave-like structure, the opening being configured to receive a vacuum portion of the suction system therein, and	
11[i] 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	<i>See Limitation 1[j].</i>
11[j] 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.	<i>See Claim 4.</i>
12 The isolation mouthpiece of claim 11, wherein the tubular conduit includes a cutout configured to engage a protrusion on the suction system to aid in coupling the isolation mouthpiece to the suction system.	<i>See Limitation 1[i].</i>
13 The isolation mouthpiece of claim 11, wherein the first plurality of perforations includes five perforations and the second plurality of perforations include five perforations.	<i>See Claim 2.</i>
14 The isolation mouthpiece of claim 13, wherein the at least one of the first plurality of perforations and the at least one of the second plurality of perforations are located adjacent to the second end and near the cheek retractor portion.	<i>See Claim 3.</i>

15 The isolation mouthpiece of claim 11, wherein the first wall and the second wall are shaped such that the 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.	See Limitation 1[f].
16 The isolation mouthpiece of claim 11, further including a stability bar located along a center aligned with a longitudinal axis of the first wall at least adjacent to the second end of the main body, at least one of the first plurality of perforations being positioned along one edge of the second wall and at least one of the second plurality of perforations being positioned along another edge of the second wall.	See Claim 8.
19 The isolation mouthpiece of claim 11, wherein a wall thickness within the suction connector portion is greater than a wall thickness of the first wall or the second wall of the main body.	Black, FIG. 24D Hirsch, FIG. 19D To the extent any reference is silent regarding this limitation, changes in size/proportion are obvious. <i>n re Rose</i> , 220 F.2d 459, 105 USPQ 237 (CCPA 1955); <i>In re Rinehart</i> , 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); MPEP 2144.04(IV)(A)
20[a] A mouthpiece comprising:	See Claim 19 of Ex. A-0.
20[b] a main body having a first end opposite a second end that is narrower than the first end, the main body comprising:	See Claim 19 of Ex. A-0.
20[c] a first wall that extends from the first end to the second end, wherein the first wall includes a plurality of first edges,	See Claim 19 of Ex. A-0.
20[d] 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	See Claim 19 of Ex. A-0.

therebetween, and wherein the second wall includes a plurality of second edges,	
20[e] 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; and	See Claim 19 of Ex. A-0.
20[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	See Claim 19 of Ex. A-0.
20[g] a cheek retractor portion extending from the second end and connected to the first wall and the second wall of the main body.	See Claim 19 of Ex. A-0.
21 The mouthpiece of claim 20, further comprising a suction connector extending from the first end of the main body, wherein an evacuation conduit within the suction connector is in communication with the interior space between the first wall and the second wall.	See Claim 19 of Ex. A-0.
22 The mouthpiece of claim 21, wherein the suction connector further includes a cutout configured to interlock with a corresponding protrusion of a vacuum adapter.	See Claim 19 of Ex. A-0.
24 The mouthpiece of claim 20, wherein a material used to form the main body is a flexible, translucent, high heat-resistant, autoclavable silicone-based material.	Hirsch '321: Col. 11 Ln. 19–35 Black: Claims 3–7, 33, 34 KR101217041: [0025] KR101082826: “[0032] The described mouse prop (100) is designed to be inserted into the oral cavity, made of synthetic materials such

	as clear silicone” & “the mouse prop can be sterilized after use” KR100654392: FIG. 1, “The material may be synthetic resin (plastic) such as silicone or its equivalents, and is not limited to any specific material. Moreover, it is preferable to form the entire unit as a single piece” CN108042228: “The tongue plate portion 1 requires soft texture and does not cause damage to the tongue. Therefore, in some embodiments, the tongue plate portion 1 is made of medical silicone material, but from the standpoint of single use and cost saving, The tongue plate 1 can be made of plastic material.” CN105342717: In series, since the barrier sheet and the fins thereon are made of an approximately transparent silicone material, the LED lamp can provide good illumination for the entire mouth after being illuminated, and the doctor has a very simple operation and a very good field of vision. Moreover, using flexible, translucent, high heat-resistant, autoclavable silicone-based material to form a dental mouthpiece was within the general knowledge of a POSA.
25 The mouthpiece of claim 20, further comprising a mouth prop injection-molded in one piece.	Hirsch ‘321: Abstract KR101082826: “[0032] The described mouse prop (100) is designed to be inserted into the oral cavity, made of synthetic materials such as clear silicone” KR100654392: FIG. 1, “The material may be synthetic resin (plastic) such as silicone or its equivalents, and is not limited to any specific material. Moreover, it is preferable to form the entire unit as a single piece”

	CN102631180: “The function is to thicken the glue position of the inner flow channel 7 so as not to pull the inner flow channel 7 apart when the mold of the tongue glue 14 is opened during the injection process.” Johnson: “The clamp body, handles and tongue are all integrally formed, preferably by injection molding, of a strong resilient and semi-rigid plastic.” To the extent any reference is silent regarding forming in one-piece Moreover, using injection molding to form plastics was within the general knowledge of a POSA.
26 The mouthpiece of claim 25, wherein the mouth prop is connected to a suction connector.	See Claim 19 of Ex. A-0.
28 The mouthpiece of claim 20, wherein the plurality of perforations are distributed along one or more of the second edges of the second wall.	See Claim 19 of Ex. A-0.

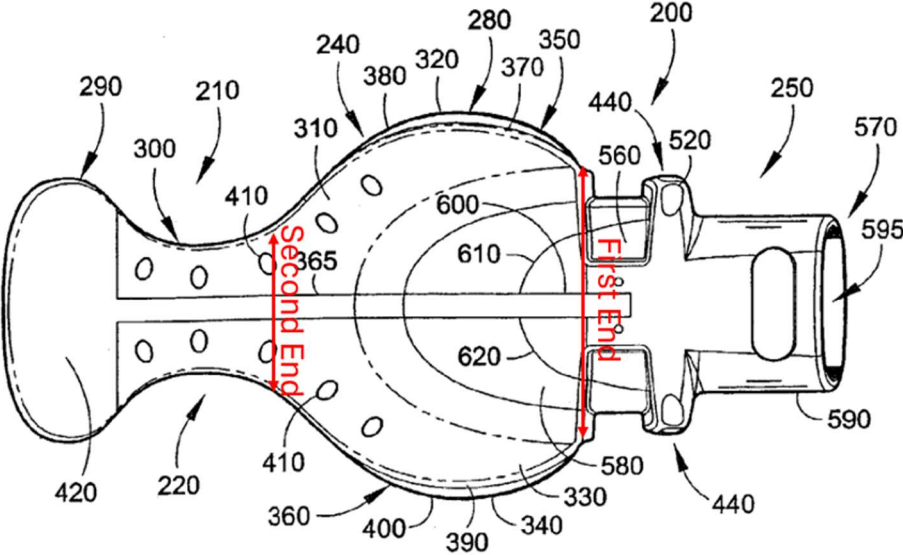
EXHIBIT G-1 (Hirsch or Isolite Mouthpiece in Combination with One or Two of Black, AirBug Mouthpiece, Park, Baughan, Johnson, and the Skill of a PHOSITA)
Initial Invalidity Chart for U.S. Patent No. 12,290,418

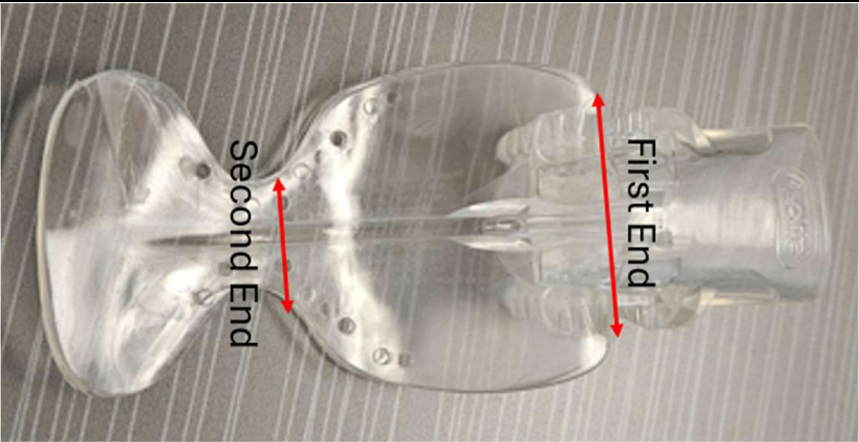
Ascentcare incorporates by reference the cover pleading to its Initial Invalidity Contentions. These Initial Invalidity Contentions, including these claim charts, are not an admission regarding claim scope or the accused products, and, in particular, that the accused products, including any current or past versions of these products, are covered by, or infringe the Asserted Claims, particularly when they are properly construed. Nothing in these contentions should be interpreted as an acquiescence to or assertion of a particular claim construction by the Parties. In addition, these Initial Invalidity Contentions should not be taken as an admission that any of the asserted claims satisfy the requirements of 35 U.S.C. § 112. Where Ascentcare identifies portions of the prior art reference below, those identifications are intended to be exemplary in nature and are based on Ascentcare's investigation to-date. Ascentcare reserves the right to rely on un-cited portions of the reference to establish invalidity of the Asserted Claims.

Pursuant to pre-AIA 35 U.S.C. § 103 and as described in the cover pleading and shown below, Black, Hirsch, Park, Baughan, and Johnson were patented or printed in a publication more than one year prior to the filing date of the application, and therefore anticipates and/or renders obvious, either alone or in combination with the other prior art, the knowledge of one of ordinary skill in the art, or one or more of the references identified in the cover pleading and/or one or more of the references from the other claim charts attached as exhibits to these contentions, U.S. Patent No. 12,290,418.

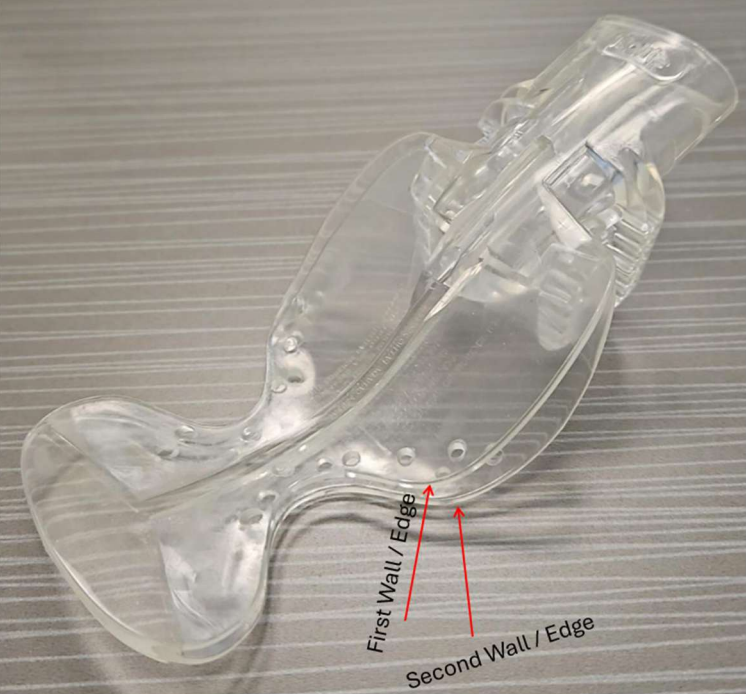
Pursuant to pre-AIA 35 U.S.C. § 103 and as described in the cover pleading and shown below, the AirBug Mouthpiece¹ and the Isolite Mouthpiece were on sale or in public use more than one year prior to the priority date of the '418 Patent, and therefore anticipates and/or renders obvious, either alone or in combination with the other prior art, the knowledge of one of ordinary skill in the art, or one or more of the references identified in the cover pleading and/or one or more of the references from the other claim charts attached as exhibits to these contentions, U.S. Patent No. 12,290,418.

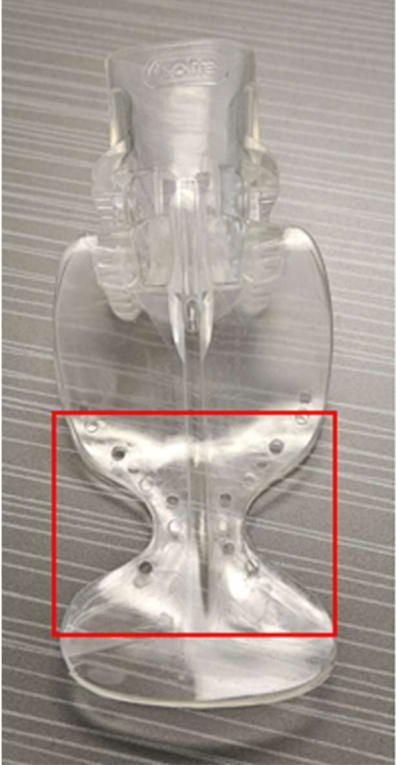
¹ It is Ascentcare's understanding that several of the embodying products discussed herein may have multiple embodiments over the years. Discovery is ongoing, and Ascentcare has issued subpoenas seeking the prior art embodiments. To the extent that Ascentcare currently relies on more current embodiments of these mouthpieces, upon information and belief, the differences in those embodiments are minor and do not affect the invalidity analysis. Ascentcare reserves the right to amend these contentions as discovery progresses. It is Ascentcare's understanding, for example that the AirBug Mouthpiece is a product embodying Black, and thus, any of the references to Black likewise support the AirBug Mouthpiece, and vice versa. Likewise, the same analysis applies to the Isolite Mouthpiece and Hirsch.

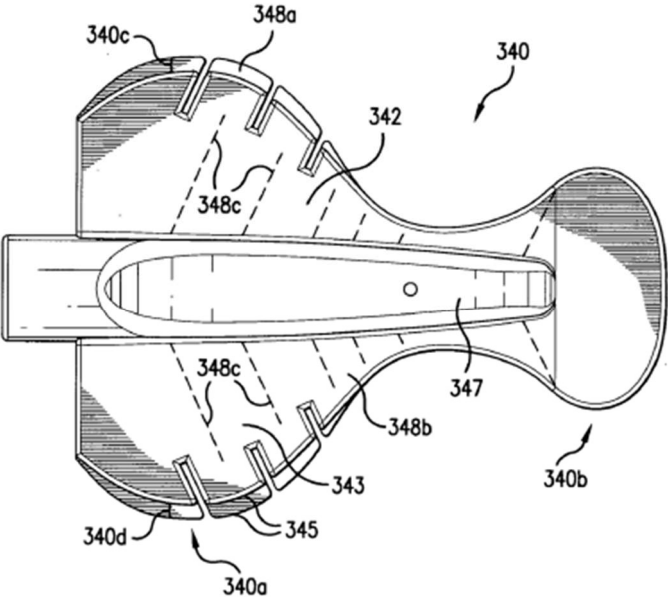
The '418 Patent	Exemplary Disclosures in the Prior Art
1[a] An isolation mouthpiece for use with a suction system in a dental procedure, the isolation mouthpiece comprising	To the extent the preamble is limiting, each of the prior art references discussed herein are isolation mouthpieces for use with a suction system in a dental procedure.
1[b] a main body portion having a first end and a second end, the main body portion including	Both Hirsch and the Isolite Mouthpiece disclose “a main body having a first end opposite a second end,”  FIG. 19A

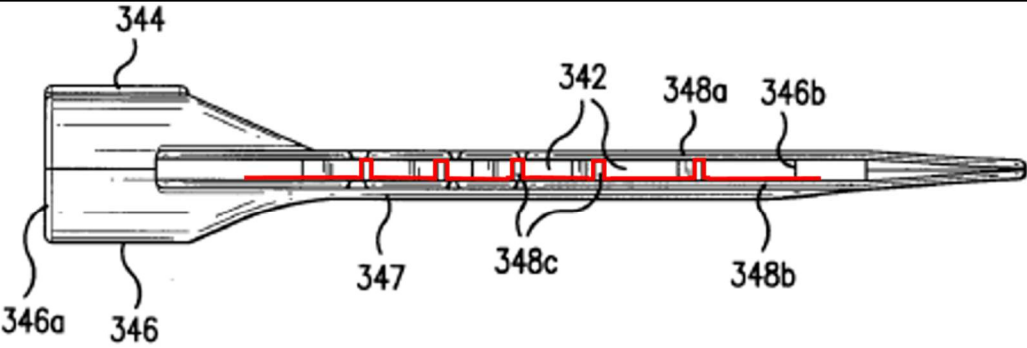
The '418 Patent	Exemplary Disclosures in the Prior Art
	
1[c] a first wall having a first shape defined by a first edge and a second edge extending from the first end of the main body portion towards the second end of the main body portion	Both Hirsch and Isolite disclose a first wall having a first shape defined by a first edge and second edge extending from the first end of the main body portion towards the second end of the main body portion:

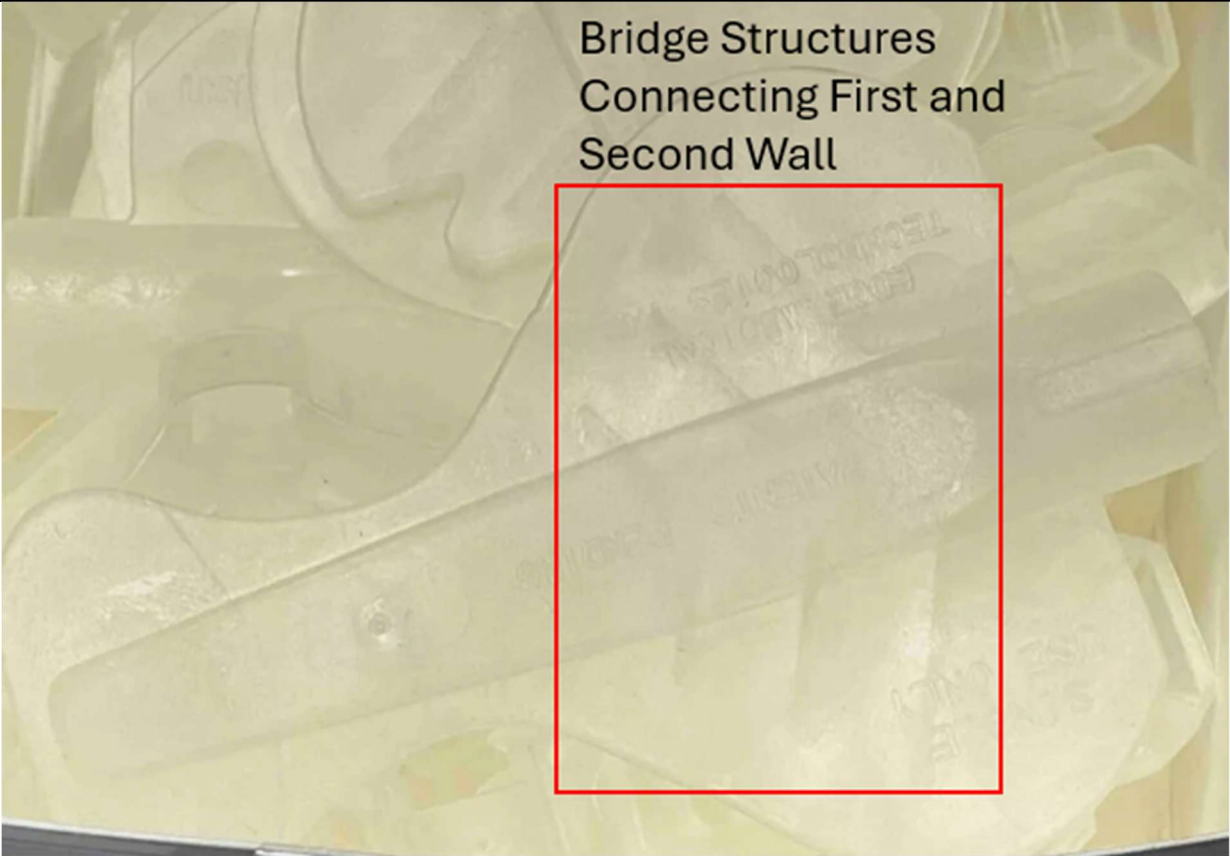
The '418 Patent	Exemplary Disclosures in the Prior Art
	FIG. 18A

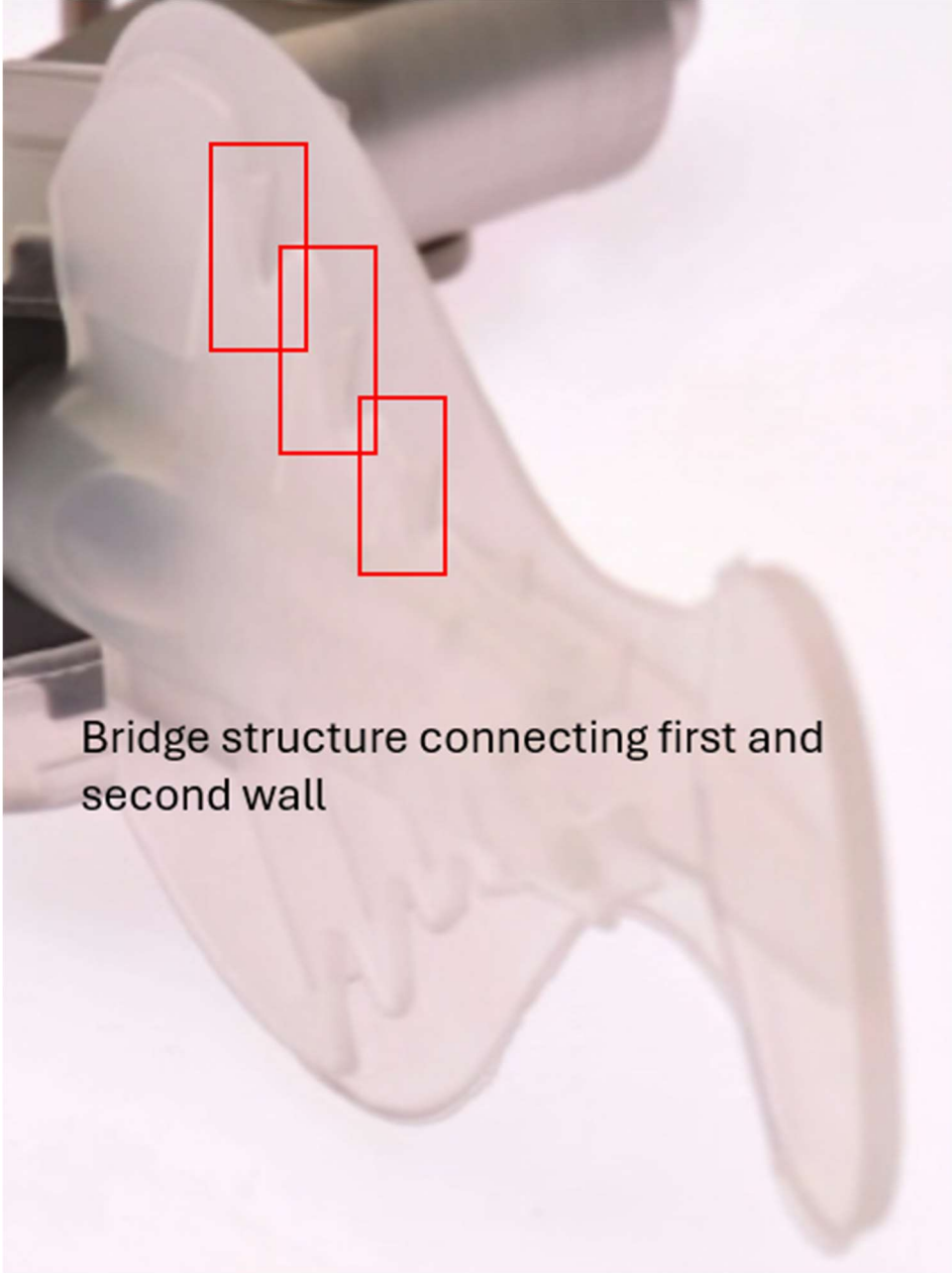
The '418 Patent	Exemplary Disclosures in the Prior Art
	
1[d] a second wall having a second shape defined by third edge and a fourth edge extending from the first end of the main body portion towards the second end of the main body portion, the second wall including a first plurality of perforations extending along a portion of the third edge, and a second plurality of perforations extending along a portion of the fourth edge	As construed in Solmetex's infringement contentions, both Hirsch and Isolite Mouthpiece disclose a second wall having a second shape defined by 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 first plurality of perforations extending along a portion of the third edge, and a second plurality of perforations extending along a portion of the fourth edge:

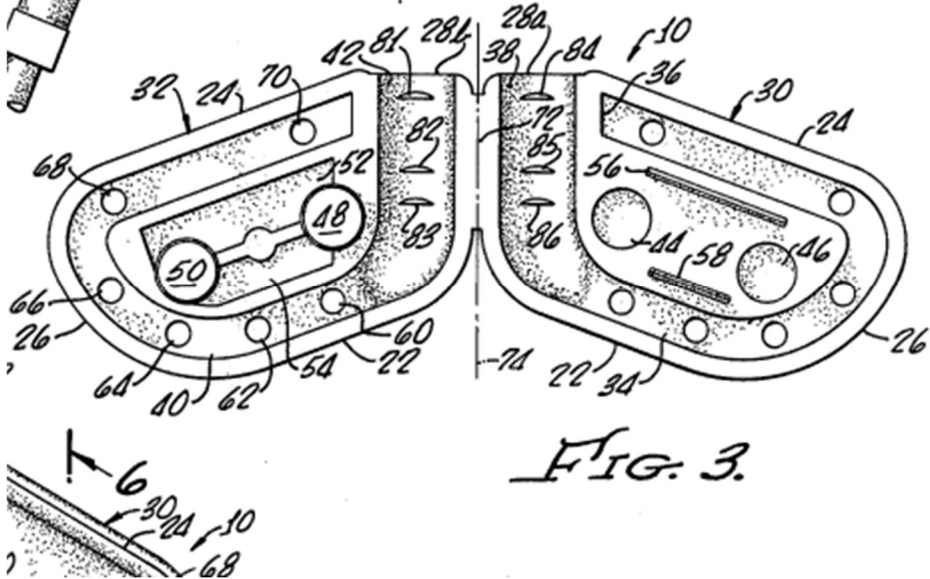
The '418 Patent	Exemplary Disclosures in the Prior Art
	
1[e] wherein a plurality of crests of a wave-like structure is formed on an interior surface of the second wall to provide contact points with the first wall, and a plurality of troughs of the wave-like structure provides gaps between adjacent ones of the plurality of crests for allowing the suctioning of fluid through the plurality of troughs	Hirsch and Isolite are silent on the 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. However, Black teaches transverse walls 348c spaced apart from each other to form channels 342 therebetween. Black, 14:21-47. Black explains that these transverse walls form conduits for debris and fluid, “thereby allowing for simultaneous aspiration of debris and fluid from top (palate of mouth) to bottom (floor of mouth), and through the passageway, during dental procedures.” Black, 14:38-47. Black also explains that the transverse walls prevent collapse under suction. Black, 14:21-47. The transverse walls 348c are a wave-like structure, as claimed. 51-52. Indeed, the Examiner also found that Black taught the claimed wave-like structure. <i>Id.</i> The transverse walls extend from an interior surface of the posterior flap 348a and to the anterior flap 348b (transverse walls shown dashed). Black, 14:21-47. Thus, the transverse walls are protrusions. <i>Id.</i> Also, because the

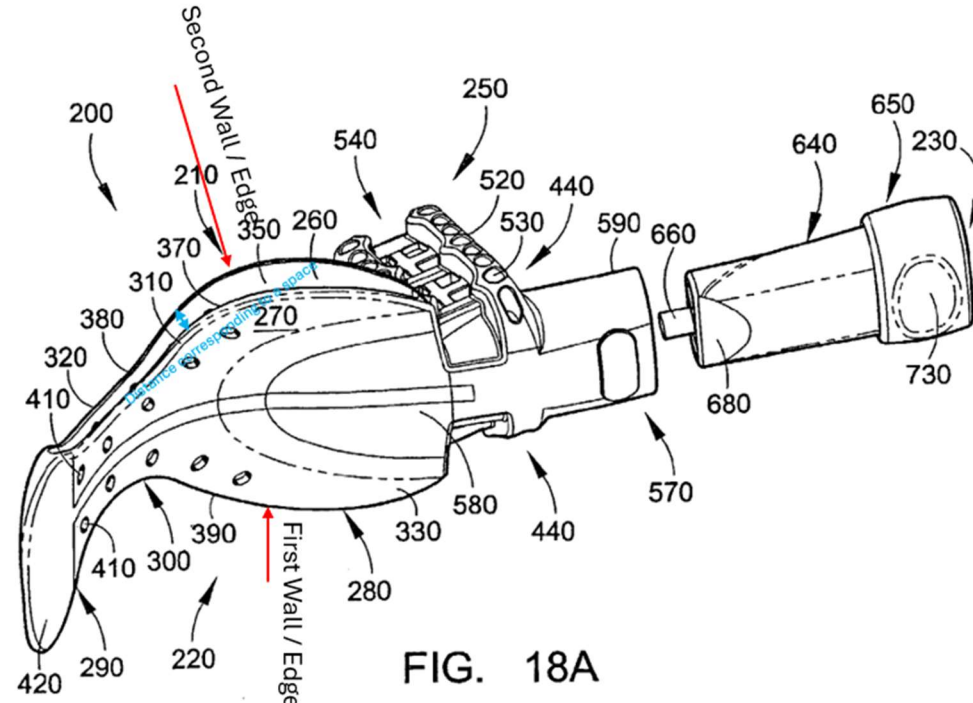
The '418 Patent	Exemplary Disclosures in the Prior Art
	transverse walls connect to both the anterior and posterior wall, they form “contact points” with both the anterior and posterior wall at those connection locations.  FIG. 23A This limitation requires that the bridge structure has a plurality of “wave-like” protrusions. In light of the specification, this merely means that the wave-like structure needs spaced-apart projections with gaps therebetween. The resulting shape of any such bridge structure is necessarily a wave shape. Black teaches a square wave shape formed by the channels 342 and the transverse walls 348c (i.e., the presence transverse walls 348c and the gaps therebetween that form the channels 342). <i>See</i>, annotated FIG. 23C below.

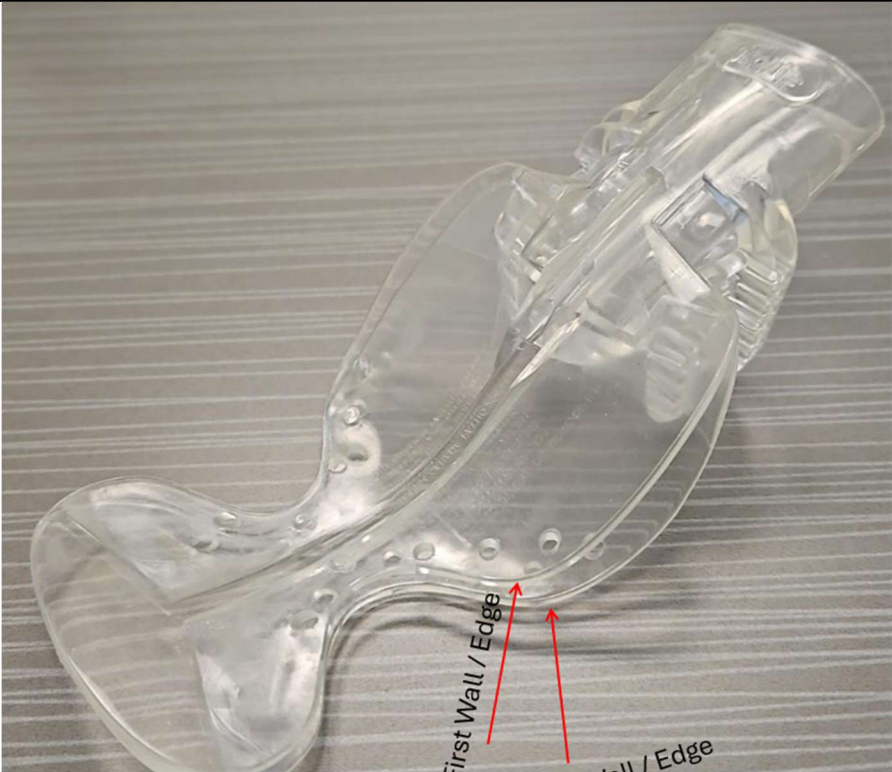
The '418 Patent	Exemplary Disclosures in the Prior Art
	 FIG. 23C The AirBug Mouthpiece discloses the same:

The '418 Patent	Exemplary Disclosures in the Prior Art
	Bridge Structures Connecting First and Second Wall 

The '418 Patent	Exemplary Disclosures in the Prior Art
	 Bridge structure connecting first and second wall

The '418 Patent	Exemplary Disclosures in the Prior Art
	 A PHOSITA would have been motivated to add such structures to prevent collapse, as Hirsch and Isolite were known to collapse at the sides under suction, according to the inventor himself. <i>See Hirsch 2, 3:12-5:8.</i>
1[f] and wherein the first wall and the second wall are shaped such that the 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, and	Both Hirsch and Isolite disclose mouthpieces in which the first wall and second wall are identically shaped:

The '418 Patent	Exemplary Disclosures in the Prior Art
	 FIG. 18A

The '418 Patent	Exemplary Disclosures in the Prior Art
	
1[g] a third wall connecting the first wall and the second wall such that the first wall is spaced from the second wall	Under Solmetex's construction, both Hirsch and Isolite include a central spine as a "connecting wall."

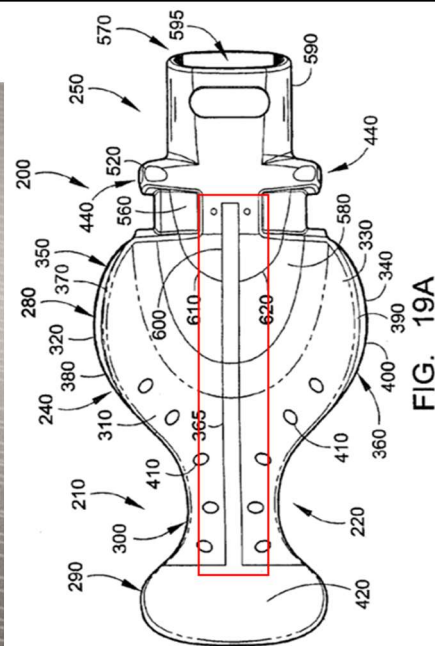
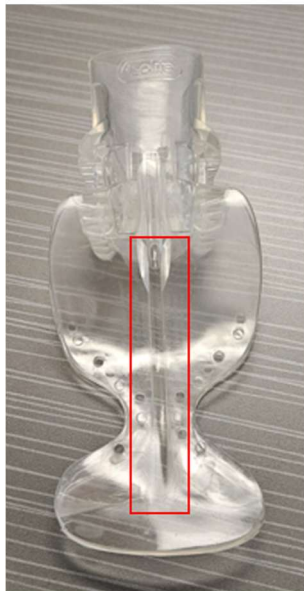
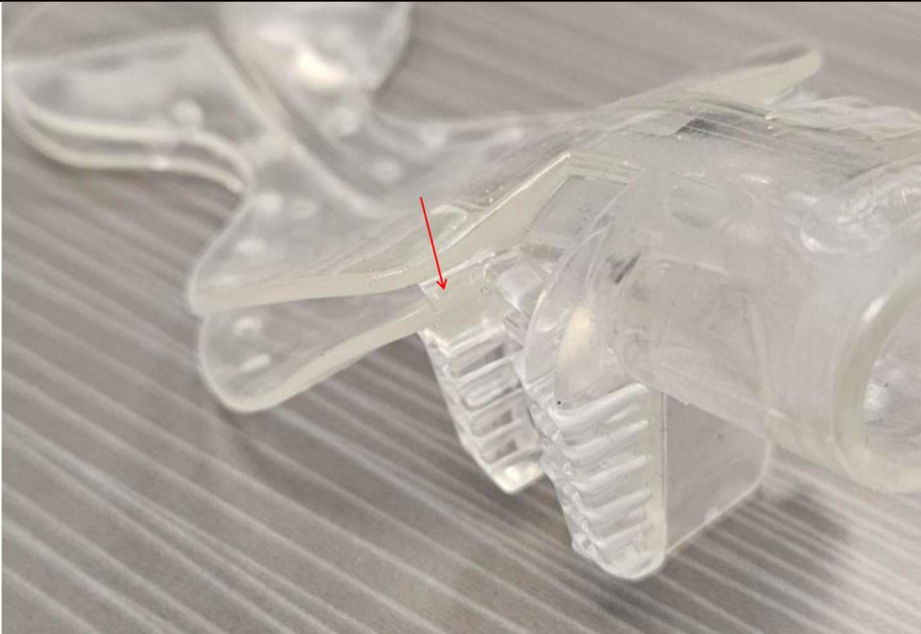
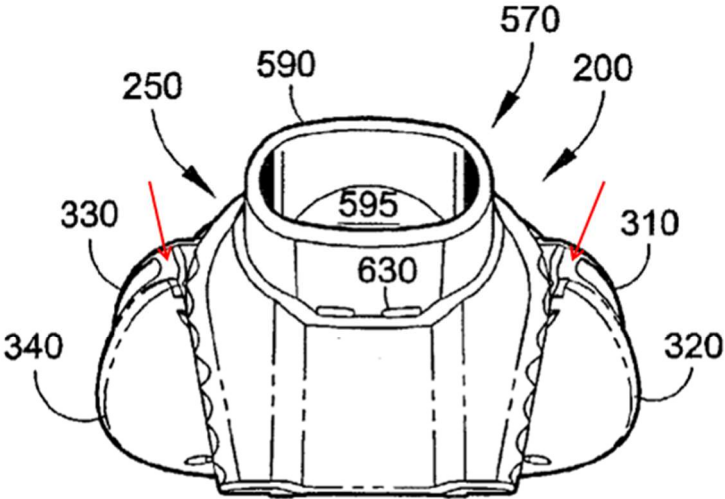
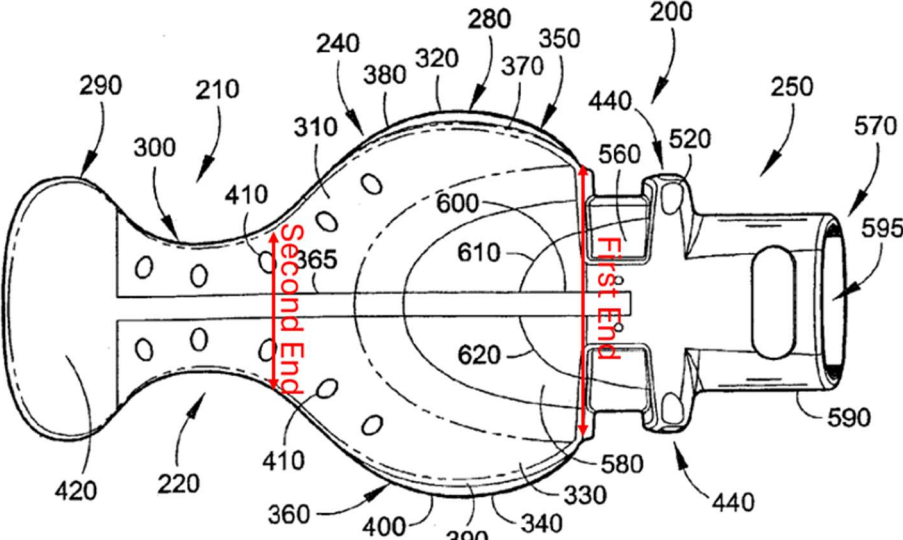


FIG. 19A

Notwithstanding the fact that Solmetex disclaimed such a spine as a “connecting wall” during prosecution, both Hirsch and Isolite also include, in the alternative, connecting walls that connect the first wall and the second wall across a space:

The '418 Patent	Exemplary Disclosures in the Prior Art
	 A photograph of a clear plastic dental aligner, likely a Veneer or similar device, resting on a textured surface. A red arrow points to a specific feature on the device, which appears to be a small, rectangular, raised or recessed area. The device has a complex, multi-part structure with various ridges and grooves.

The '418 Patent	Exemplary Disclosures in the Prior Art
	 FIG. 19D
1[h] 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	Both Hirsch and Isolite teach mouthpieces that are wider at one end.

The '418 Patent	Exemplary Disclosures in the Prior Art
width, and wherein the third width is greater than the fourth width	 FIG. 19A
1[i] a suction connector portion extending from the first end of the main body portion, the suction connector portion including: a tubular conduit including an opening extending through the conduit and in fluid communication with the plurality of troughs of the wave-like structure, the opening being configured to receive a vacuum portion of the suction system therein, the tubular conduit further	Hirsch discloses a connection section 570 (suction connector) that extends from the retractor 240 and attaches to the vacuum-only adapter 230 to deliver suction to the intraoral device. Hirsch, ¶ 89, FIG. 19E. The connection section 570 includes a tube 590 having slots 630 that retain corresponding retention barbs on the vacuum-only adapter 230. Hirsch, ¶ 90, FIG. 19E. The slots are 630 a locking mechanism, in the form of a hole (i.e. cut out), formed on the suction connector of a mouthpiece and configured to receive corresponding protrusions from a vacuum adapter.

The '418 Patent	Exemplary Disclosures in the Prior Art
including a cutout configured to engage a protrusion on the suction system to aid in coupling the isolation mouthpiece to the suction system, and	FIG. 19E Isolite teaches the same:

The '418 Patent	Exemplary Disclosures in the Prior Art
	It would have been obvious to a PHOSITA to modify Hirsch or Isolite's suction connector cutout. Holes formed on the suction connector that accept projections on the vacuum tube are merely an obvious variant lock-and-key mechanism, since it is just choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success. MPEP 2143(I)(E). The Supreme Court has likewise found modifications on one system to fit another on the market to be obvious to a PHOSITA. <i>KSR Int'l Co. v. Teleflex Inc.</i>, 550 U.S. 398, 424, 127 S. Ct. 1727, 1744, 167 L. Ed. 2d 705 (2007) ("The interaction of multiple components means that changing one component often requires the others to be modified as well. Technological developments made it clear that engines using computer-controlled throttles would become standard. As a result, designers might have decided to design new pedals from scratch; but they also would have had reason to make pre-existing pedals work with the new engines. Indeed, upgrading its own pre-existing model led KSR to design the pedal now accused of infringing the Engelgau patent.").
1[j] 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	Both Hirsch and Isolite disclose an inwardly tapering mouthprop with a plurality of ridges.

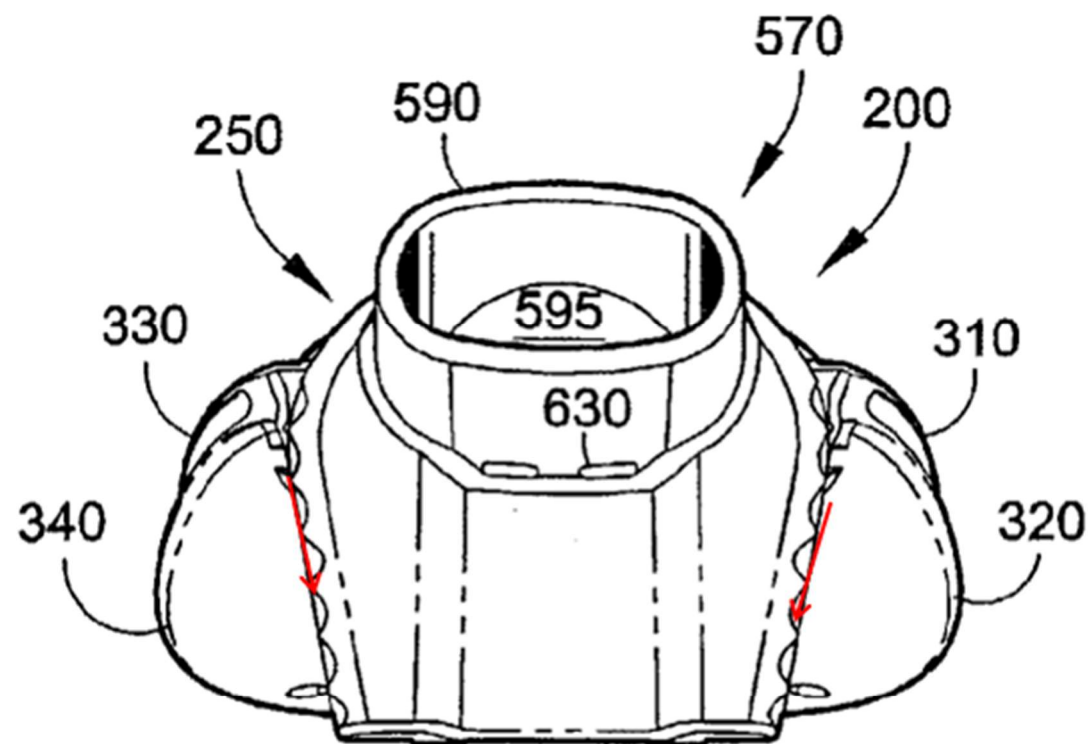
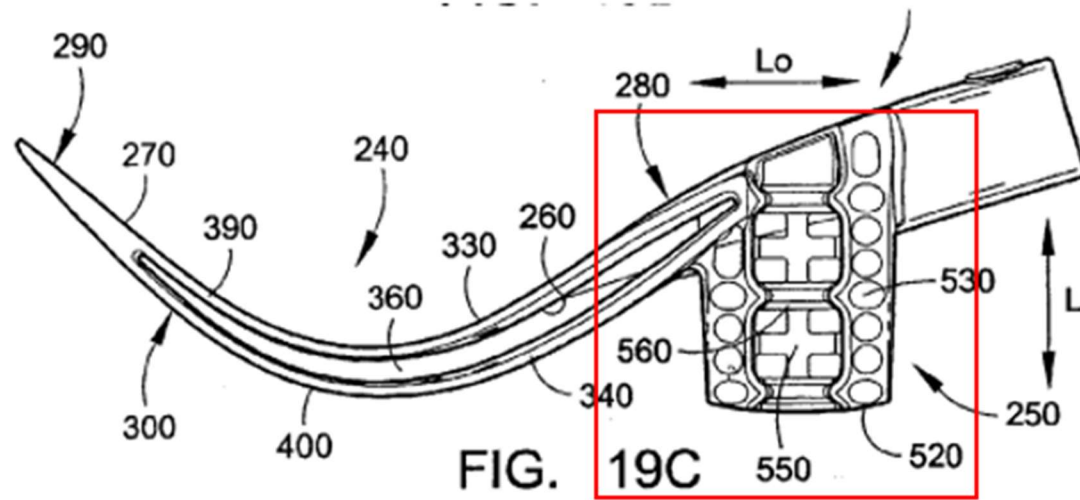
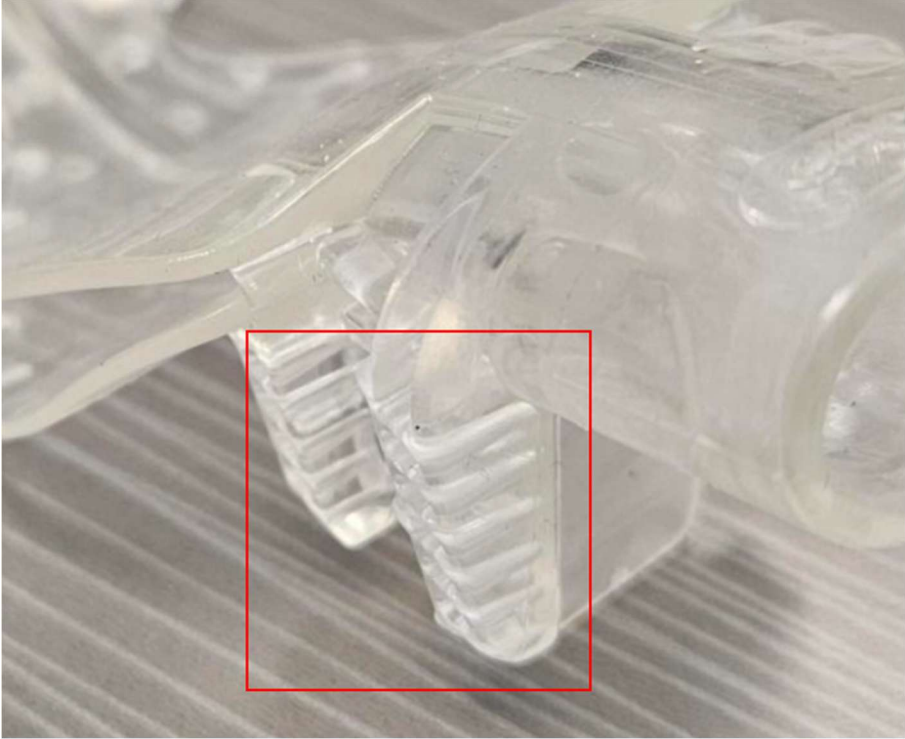
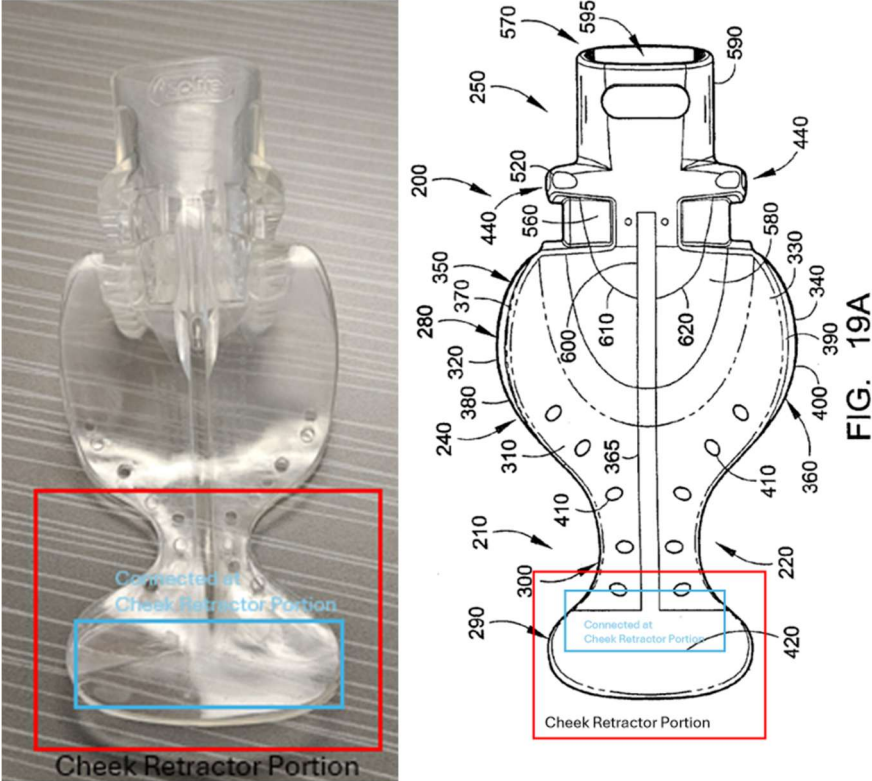
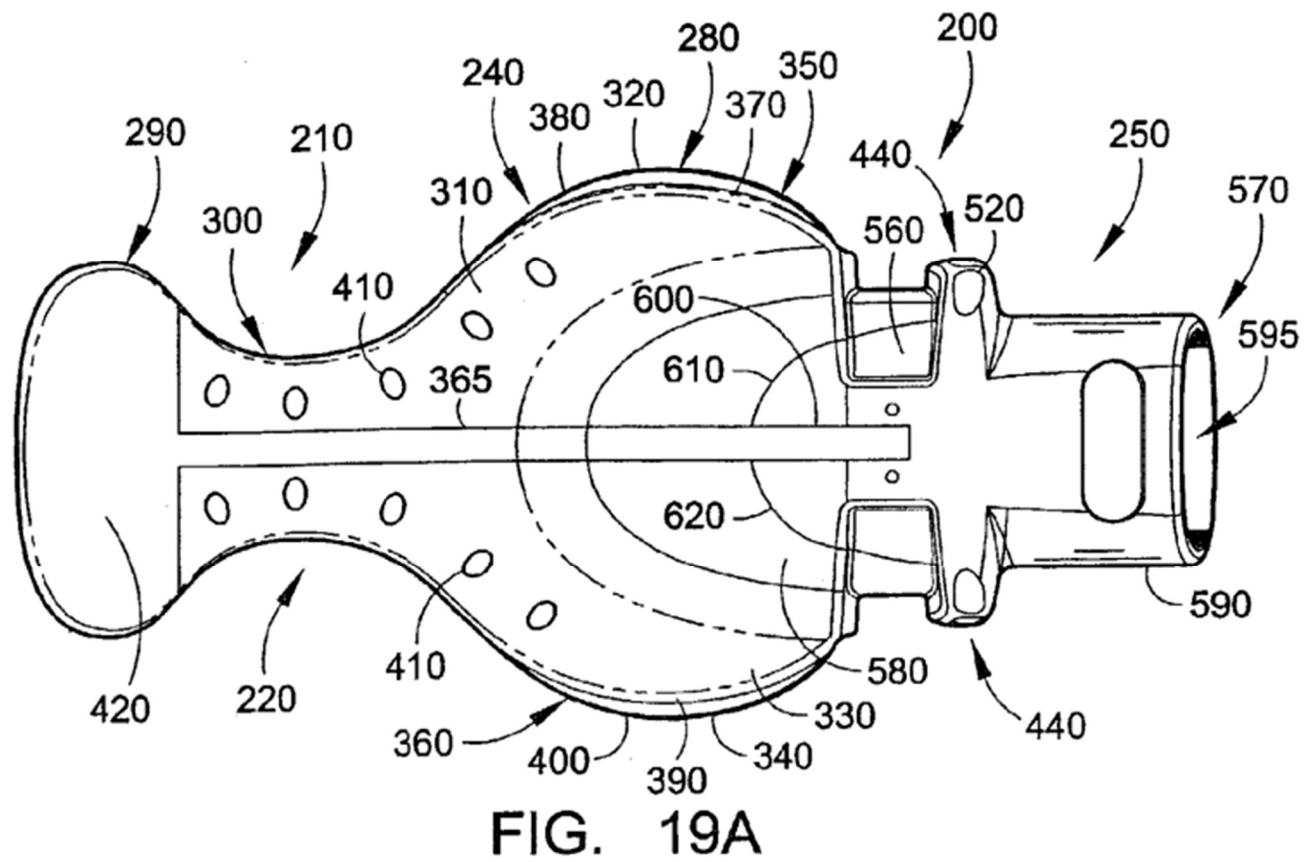


FIG. 19D

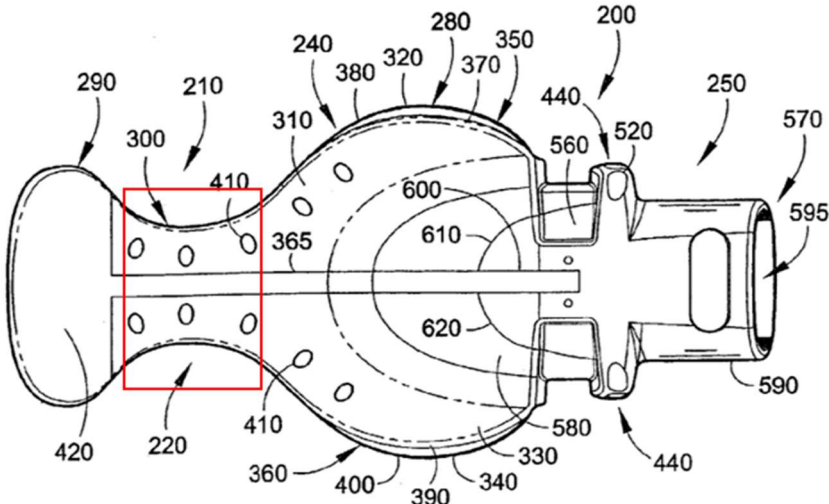
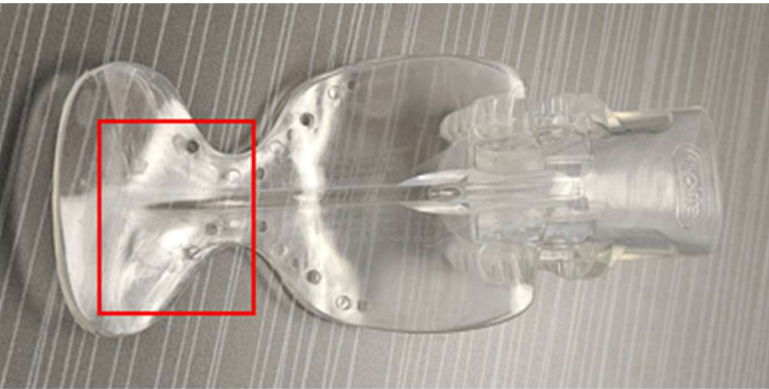


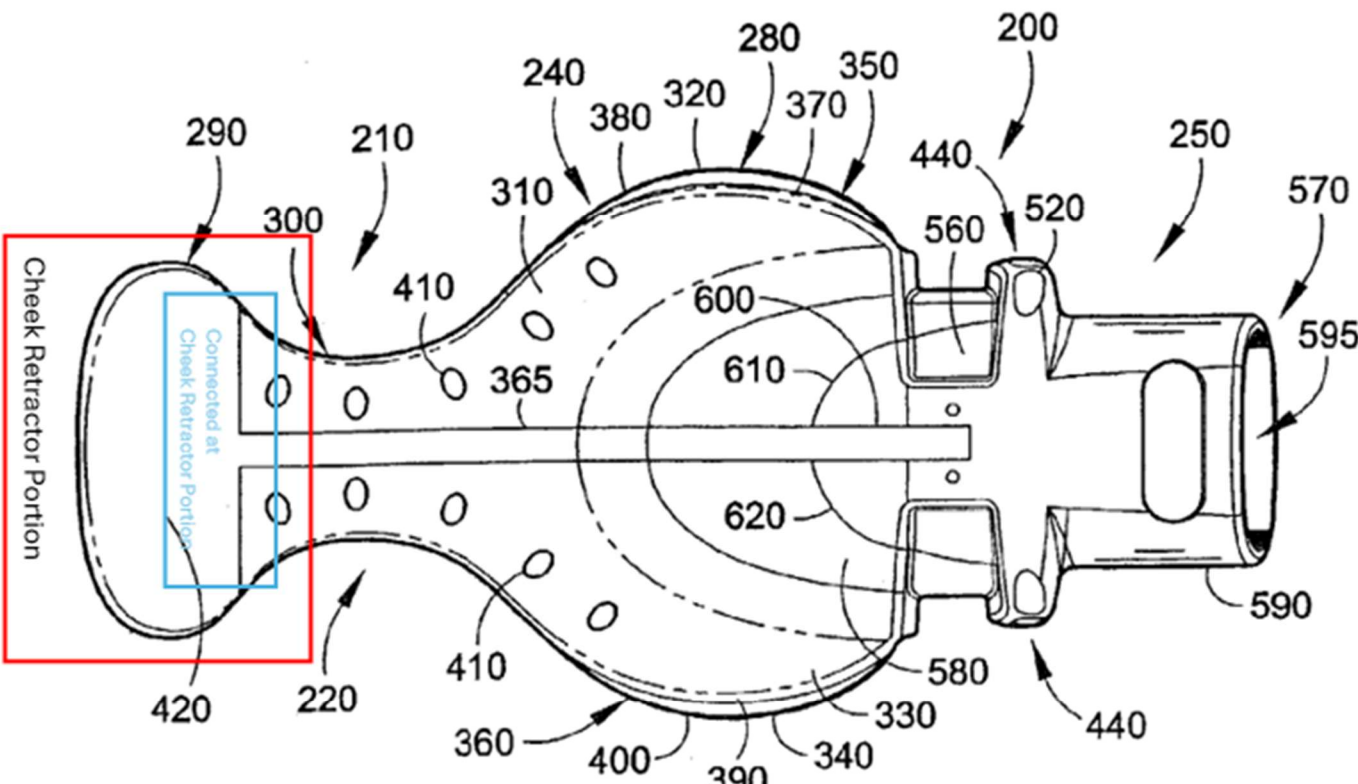
The '418 Patent	Exemplary Disclosures in the Prior Art
	 A photograph of a clear plastic dental aligner, likely a Veneer or similar device, showing its internal structure. A red rectangular box highlights a specific feature on the inner surface, which appears to be a series of parallel ridges or a channel designed for a specific function. The aligner is shown against a dark, textured background.

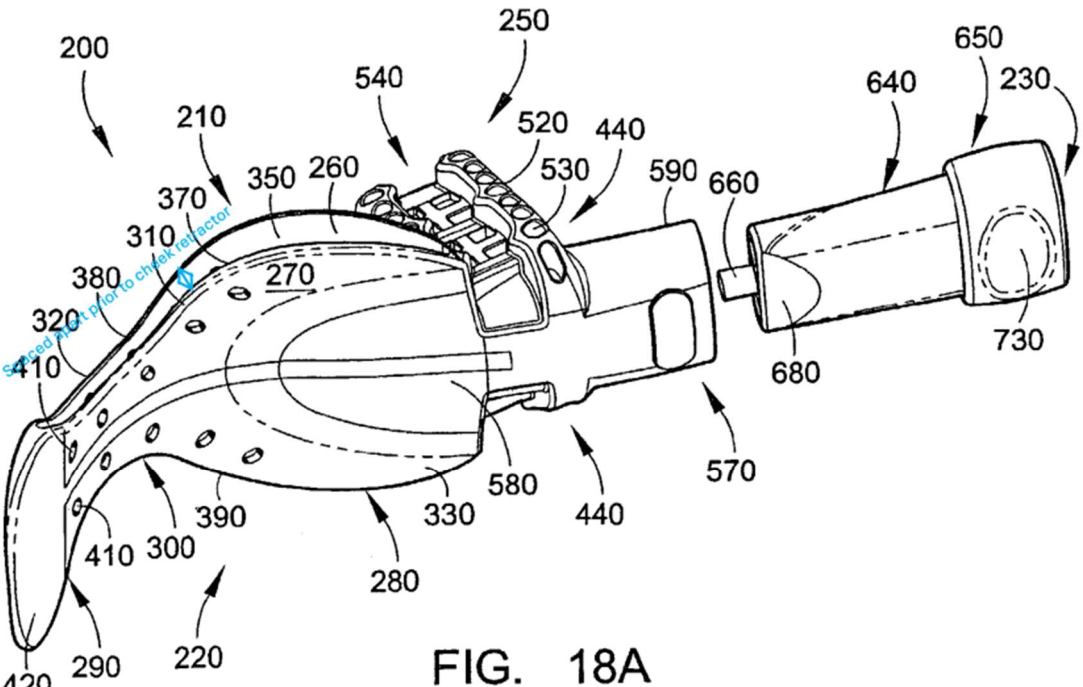
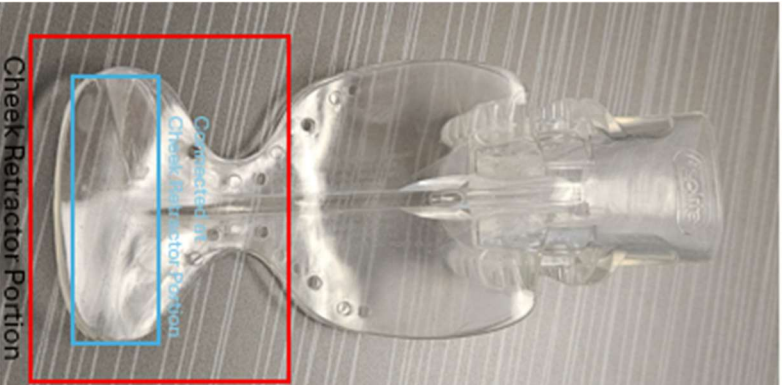
The '418 Patent	Exemplary Disclosures in the Prior Art
1[k] a cheek retractor portion having a first cheek-retractor end coupled to the second end of the main body portion and a second cheek-retractor end, the first cheek-retractor end and the second cheek-retractor end each having rounded edges.	Both Hirsch and Isolite teach 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: 
2 The isolation mouthpiece of claim 1, wherein the first plurality of perforations includes five perforations and the second plurality of perforations include five perforations.	Both Hirsch and Isolite disclose at least five perforations in each plurality of perforations.

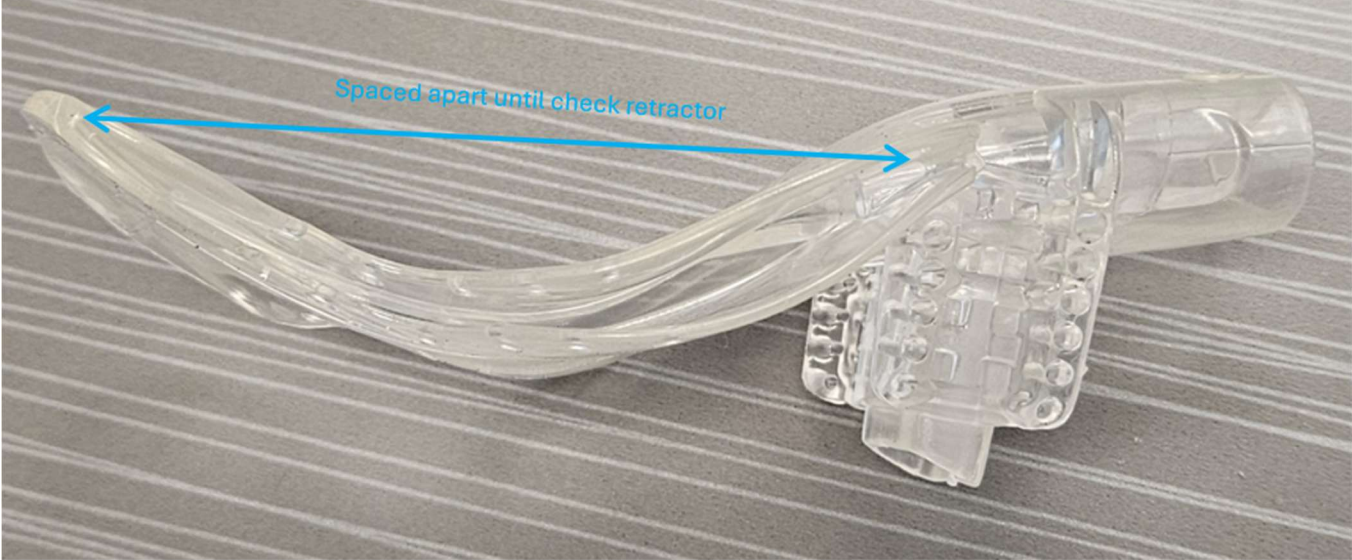


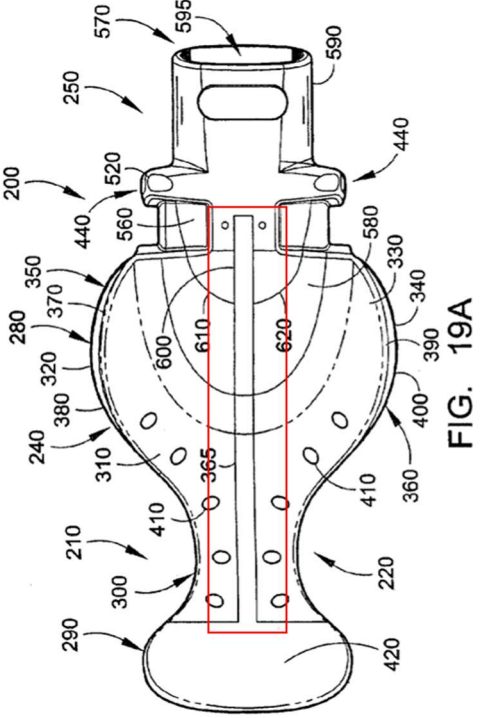
The '418 Patent	Exemplary Disclosures in the Prior Art
	 If Solmetex argues that there are an insufficient number of perforations along the main body portion (e.g., there must be at least 10 total perforations), adding more perforations would be obvious to a PHOSITA, as a mere duplication of parts. MPEP 2144.04(VI)(B). Further, a PHOSITA would understand that additional perforations on the main body would increase and distribute suction or fluid flow.
3 The isolation mouthpiece of claim 2, wherein at least one of the first plurality of perforations and at least one of the second plurality of perforations are located adjacent to the second end and near the cheek retractor portion.	<i>See Claim 2. See also:</i>

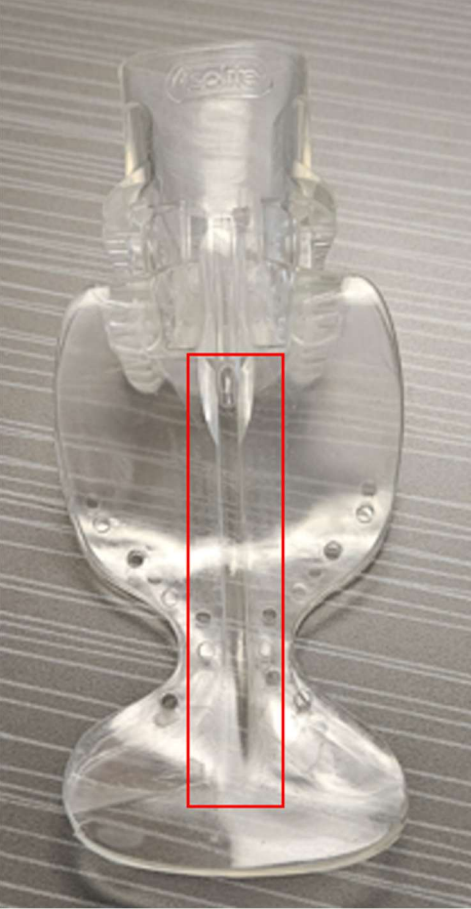
The '418 Patent	Exemplary Disclosures in the Prior Art
	 FIG. 19A 
4 The isolation mouthpiece of claim 1, wherein the first wall and the second wall of the main body portion transition into and are connected in the cheek retractor portion to form the cheek retractor portion, the first wall and the second wall	Both Hirsch and Isolite Mouthpiece disclose the first wall and the second wall of the main body portion transition into and are connected in the cheek retractor portion to form the cheek retractor portion, 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.

The '418 Patent	Exemplary Disclosures in the Prior Art
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.	 FIG. 19A

The '418 Patent	Exemplary Disclosures in the Prior Art
	 FIG. 18A 

The '418 Patent	Exemplary Disclosures in the Prior Art
	 A photograph of a clear, curved dental cheek retractor. A blue arrow points from the text "Spaced apart until cheek retractor" to a specific feature on the device. The device has a curved body with a series of small, rectangular protrusions or slots along one edge.
5 The isolation mouthpiece of claim 4, wherein at least one of the first plurality of perforations and at least one of the second plurality of perforations are located adjacent to the second end and near the cheek retractor portion.	<i>See Claim 3.</i>
6 The isolation mouthpiece of claim 1, wherein the cutout has a shield shape.	<i>See Limitation 1[i]. To the extent that Solmetex contends that none of the references disclose a “shield shape,” Ascentcare further notes that the USPTO has already noted that “having a particular shape for the cutout is a matter of choice in which a person of ordinary skill in the art would have found obvious by the absent [sic] of persuasive evidence in the present application, that the particular configuration of the claimed shape of the cutout is significant.” See Prosecution History '329 Patent at Office Action 9/23/2023, page 11, ¶ 32. Changing the slots 630 from rectangular to a “shield” shape is obvious. MPEP 2144.04(IV)(B).</i>
8 The isolation mouthpiece of claim 1, further including a	Both Hirsch and Isolite Mouthpiece disclose a stability bar. <i>See Claims 4-5 regarding perforations.</i>

The '418 Patent	Exemplary Disclosures in the Prior Art
stability bar located along a center aligned with a longitudinal axis of the first wall at least adjacent to the second end of the main body, at least one of the first plurality of perforations being positioned along one edge of the second wall and at least one of the second plurality of perforations being positioned along another edge of the second wall.	 FIG. 19A

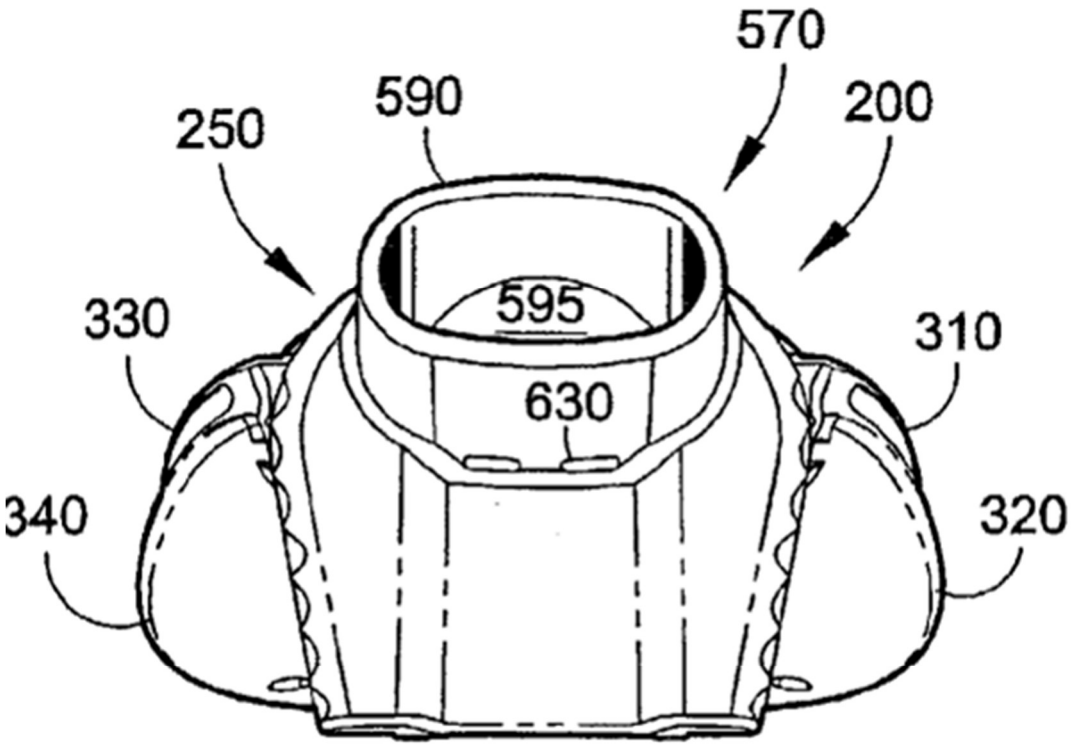
The '418 Patent	Exemplary Disclosures in the Prior Art
	
11[a] An isolation mouthpiece for use with a suction system in a dental procedure, the isolation mouthpiece comprising:	<i>See Limitation 1[a].</i>
11[b] a main body portion having a first end and a second end, the main body portion including:	<i>See Limitation 1[b].</i>

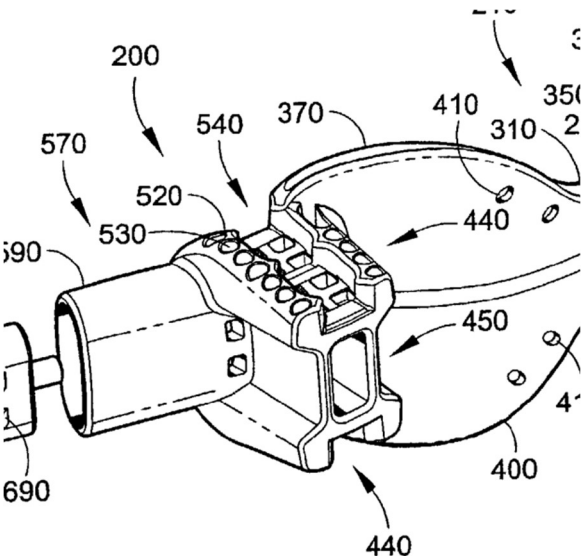
The '418 Patent	Exemplary Disclosures in the Prior Art
11[c] a first wall having a first shape defined by first edge and a second edge extending from the first end of the main body portion towards the second end of the main body portion,	<i>See</i> Limitation 1[c].
11[d] a second wall having a second shape defined by 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 first plurality of perforations extending along a portion of the third edge, and a second plurality of perforations extending along a portion of the fourth edge,	<i>See</i> Limitation 1[d].
11[e] 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, and	<i>See</i> Limitation 1[e].
11[f] a third wall connecting the first wall and the second wall such that the first wall is spaced from the second wall,	<i>See</i> Limitation 1[g].

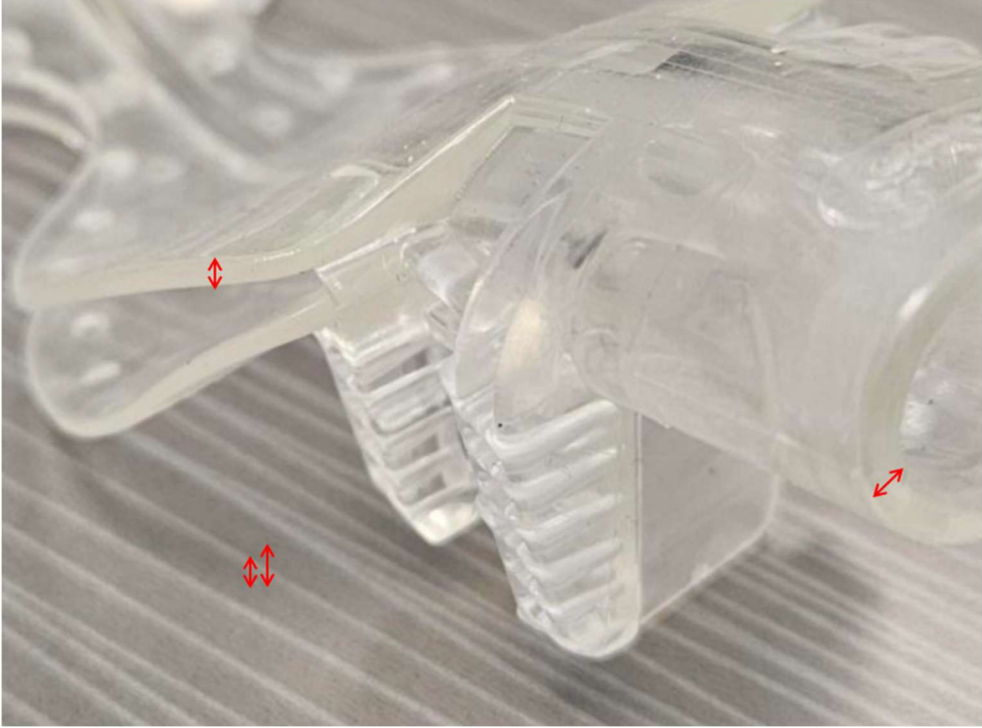
The '418 Patent	Exemplary Disclosures in the Prior Art
11[g] wherein a portion of the first wall has a first width adjacent to the first end of the main body portion and a second width adjacent to the second end of the main body portion, wherein a portion of the second wall has a third width adjacent 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;	<i>See</i> Limitation 1[h].
11[h] a suction connector portion extending from the first end of the main body portion, the suction connector portion including: a tubular conduit including an opening extending through the conduit and in fluid communication with the plurality of troughs of the wave-like structure, the opening being configured to receive a vacuum portion of the suction system therein, and	<i>See</i> Limitation 1[i].
11[i] 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	<i>See</i> Limitation 1[j].

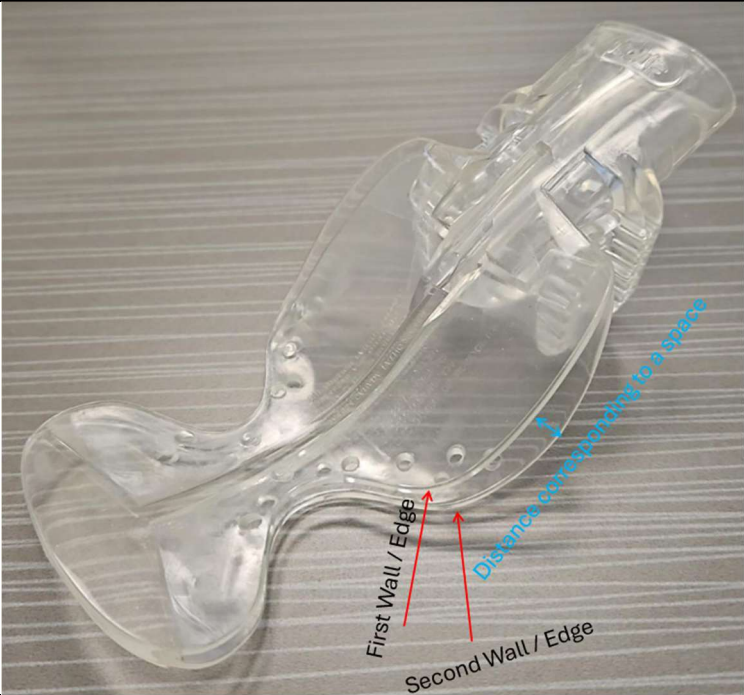
The '418 Patent	Exemplary Disclosures in the Prior Art
mouth prop, the first side and the second side each including a plurality of ridges; and	
11[j] a cheek retractor portion having a first cheek-retractor end coupled to the second end of the main body portion and a second cheek-retractor end, the 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.	<i>See Claim 4.</i>
12 The isolation mouthpiece of claim 11, wherein the tubular conduit includes a cutout configured to engage a protrusion on the suction system to aid in coupling the isolation mouthpiece to the suction system.	<i>See Limitation 1[i].</i>
13 The isolation mouthpiece of claim 11, wherein the first plurality of perforations includes five perforations and the second plurality of perforations include five perforations.	<i>See Claim 2.</i>

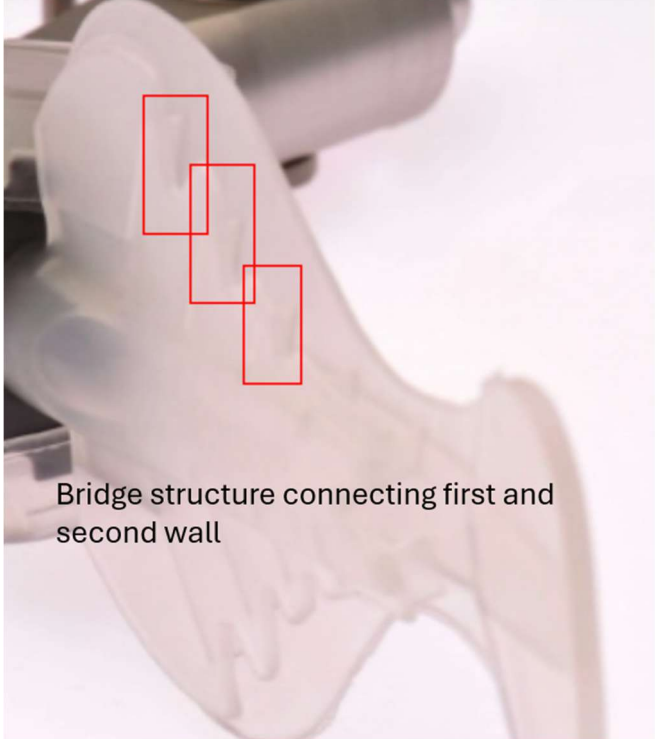
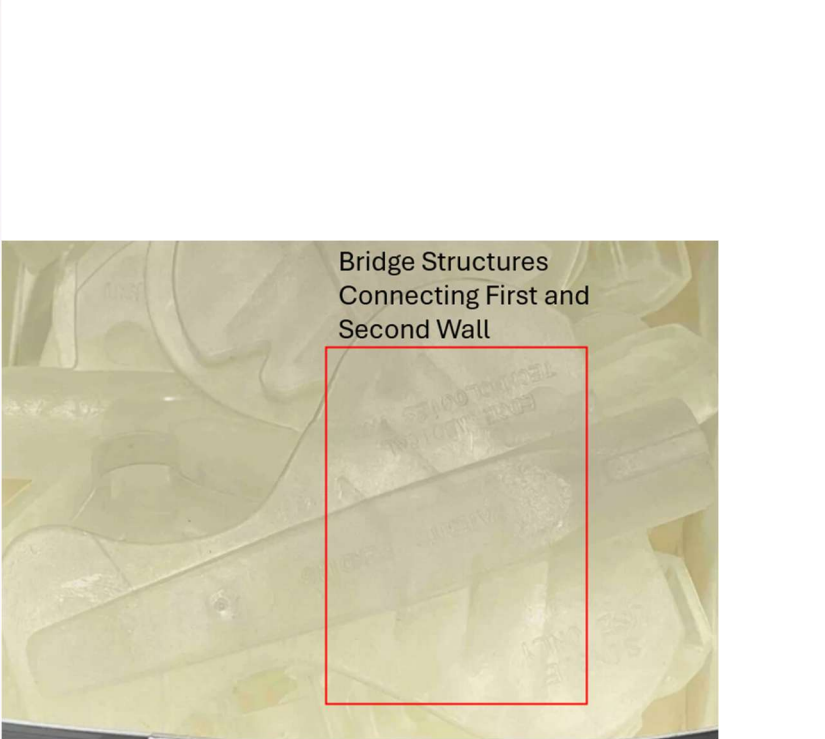
The '418 Patent	Exemplary Disclosures in the Prior Art
14 The isolation mouthpiece of claim 13, wherein the at least one of the first plurality of perforations and the at least one of the second plurality of perforations are located adjacent to the second end and near the cheek retractor portion.	<i>See Claim 3.</i>
15 The isolation mouthpiece of claim 11, wherein the first wall and the second wall are shaped such that the 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.	<i>See Limitation 1[f].</i>
16 The isolation mouthpiece of claim 11, further including a stability bar located along a center aligned with a longitudinal axis of the first wall at least adjacent to the second end of the main body, at least one of the first plurality of perforations being positioned along one edge of the second wall and at least one of the second plurality of perforations being positioned along another edge of the second wall.	<i>See Claim 8.</i>
19 The isolation mouthpiece of claim 11, wherein a wall	Both Hirsch and Isolite Mouthpiece disclose a wall thickness within the suction connector portion as greater than a wall thickness of the first wall or the second wall of the main body.

The '418 Patent	Exemplary Disclosures in the Prior Art
thickness within the suction connector portion is greater than a wall thickness of the first wall or the second wall of the main body.	In Hirsch, this is demonstrated by the fact that the suction connector has some thickness while the thickness of the walls is drawn by a line:  FIG. 19D

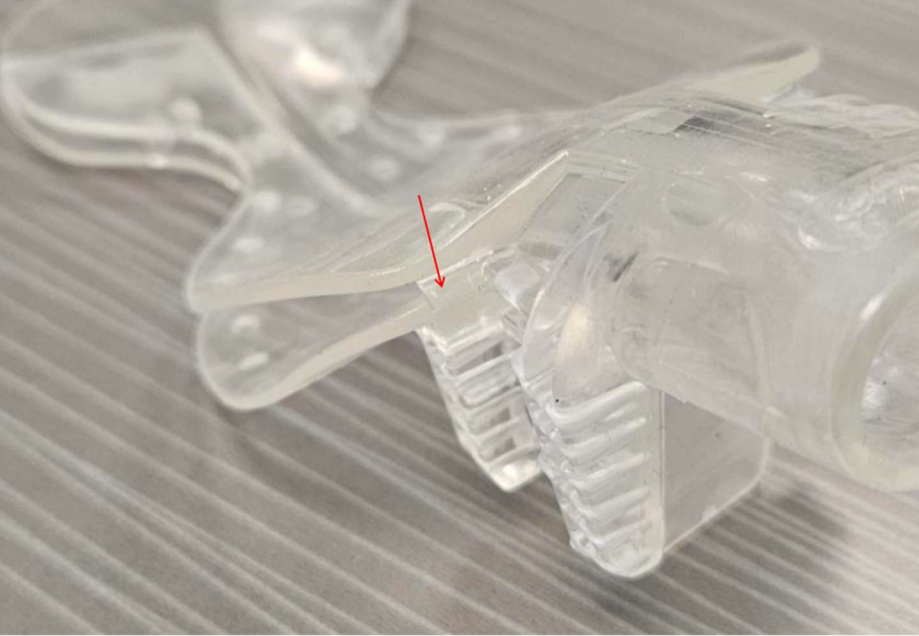
The '418 Patent	Exemplary Disclosures in the Prior Art
	 FIG. 18B

The '418 Patent	Exemplary Disclosures in the Prior Art
	 Further, a PHOSITA would know that the suction connector would generally need to be thicker than the first and second walls, as the first and second walls are designed to be flexible to effectuate suction, while the suction connectors are designed to be sturdy to effectuate a secure connection.
20[a] A mouthpiece comprising:	<i>See Limitation 1[a].</i>
20[b] a main body having a first end opposite a second end that is narrower than the first end, the main body comprising:	<i>See Limitation 1[b].</i>
20[c] a first wall that extends from the first end to the second end, wherein the first wall includes a plurality of first edges,	<i>See Limitation 1[c].</i>

The '418 Patent	Exemplary Disclosures in the Prior Art
	
20[e] 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; and	<i>See Limitation 1[e].</i> To the extent that Solmetex contends that neither Black nor AirBug disclose protrusions that are not connected to the first wall, it would have been obvious for a PHOSITA to modify Black to be able to detach either wall from the bridge structures such that the overall mouthpiece would have been easier to clean.

The '418 Patent	Exemplary Disclosures in the Prior Art
	 Bridge structure connecting first and second wall  Bridge Structures Connecting First and Second Wall Further, this limitation is taught by Park in view of one or more of Baughan and Johnson. Additionally, Baughan teaches such a mechanical element that prevents collapse under suction. Baughan, 3:43-48. Specifically, Baughan teaches three projecting discs 17 that prevent collapse under suction when a sleeve is inserted over a tube 15. Baughan, 2:19-25, 2:51-55, 3:43-48. The discs 17 project outward from the tube, span the distance between the tube and the sleeve, and engage the sleeve. <i>Id.</i> These rigid structures, spaced apart from each other, prevent the sleeve from collapsing under suction. <i>Id.</i> Baughan teaches that the projecting discs 17 are secured to the tube 15 but the discs 17 are not attached to the sleeve 24, as they merely contact the sleeve or the sleeve rests upon the discs. Baughan, 2:19-25, 2:51-61. Thus, Baughan teaches projecting discs connected to and protruding from one structure (the tube 15) but not attached to another structure (the sleeve 24). <i>Id.</i> While Baughan teaches outward projecting discs, a PHOSITA using basic common sense, would modify the discs 17 for a tube-shaped embodiment to be projections for a flatter, non-tube embodiment. Johnson, FIG. 3. Indeed, it was well known in the art how to make projections on a flat surface. Johnson, FIG. 3, 4:16-23; ¶¶ 100-101. Johnson

The '418 Patent	Exemplary Disclosures in the Prior Art
	further teaches that the projections are molded projections, which means the projections are integral with an interior surface on which they were formed. <i>Id.</i> Even so, making something integral is an obvious design choice. MPEP 2144.04(V)(B). Applying the simple teachings of Baughan and Johnson to Hirsch or Isolite, it would have been obvious to include a plurality of spaced-apart projections formed on the posterior wall of Hirsch or Isolite to prevent collapsing of the posterior and anterior walls under suction at weak points of the mouth prop. A PHOSITA would have expected success because these simple mechanical structures ensure separation between two walls that would otherwise collapse under suction. Baughan, 3:43-48; Moreover, Black and AirBug taught this same concept but with an “open” mouthpiece lacking sidewalls. Park opted for sidewalls, but the concept of using perpendicularly projecting structures to prevent collapse of parallel walls under suction was demonstrated by Black, AirBug and by Baughan. Baughan, 3:43-48. Thus, a PHOSITA would have expected success in using spaced-apart projections to prevent walls from collapsing under suction. A PHOSITA would have further known that spaced-apart projections ensure that channels for sucking saliva and foreign substances remain between the spaced-apart projections, lest the purpose of Park’s mouth prop be defeated.; Baughan, 3:36-48. Modifying Hirsch or Isolite in view of Baughan and Johnson would involve nothing more than applying a known technique (anti-collapse structure) to a known device ready for improvement to yield predictable results or combining prior art elements (a mouth prop having an interior chamber) according to known methods (using spaced-apart projections to prevent collapse under suction) to yield predictable results (the projections would prevent collapse under suction and still allow for suction channels therebetween). The spaced-apart projections taught by Baughan could be formed on either the first wall or the second wall. A PHOSITA would know that it makes no difference which wall connects to the projections so long as the projections connect to one of the walls. Baughan, FIG. 3 Further, the MPEP provides that modifying something to be “separable” is a common practice and are considered routine changes. MPEP § 2144.04V.C. (citing <i>In reDulberg</i>, 289 F.2d 522, 523 (CCPA 1961).
20[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	See Limitation 1[g]. Hirsch and Isolite both disclose a connecting wall that connects the edges of the first and second wall:

The '418 Patent	Exemplary Disclosures in the Prior Art
	

The '418 Patent	Exemplary Disclosures in the Prior Art
and connected to the first wall and the second wall of the main body.	
21 The mouthpiece of claim 20, further comprising a suction connector extending from the first end of the main body, wherein an evacuation conduit within the suction connector is in communication with the interior space between the first wall and the second wall.	<i>See Limitation 1[i].</i>
22 The mouthpiece of claim 21, wherein the suction connector further includes a cutout configured to interlock with a corresponding protrusion of a vacuum adapter.	<i>See Limitation 1[i].</i>
24 The mouthpiece of claim 20, wherein a material used to form the main body is a flexible, translucent, high heat-resistant, autoclavable silicone-based material.	Both Hirsch and Isolite Mouthpiece disclose a mouthpiece made from a flexible, translucent, high heat-resistant, autoclavable silicone-based material. Hirsch, Abstract.

The '418 Patent	Exemplary Disclosures in the Prior Art
	
25 The mouthpiece of claim 20, further comprising a mouth prop injection-molded in one piece.	Both Hirsch and Isolite disclose a mouthpiece injected molded in one piece. Hirsch, Abstract.

The '418 Patent	Exemplary Disclosures in the Prior Art
	
26 The mouthpiece of claim 25, wherein the mouth prop is connected to a suction connector.	Both Hirsch and Isolite each disclose bite blocks connected to suction connectors.

The '418 Patent	Exemplary Disclosures in the Prior Art
second edges of the second wall.	

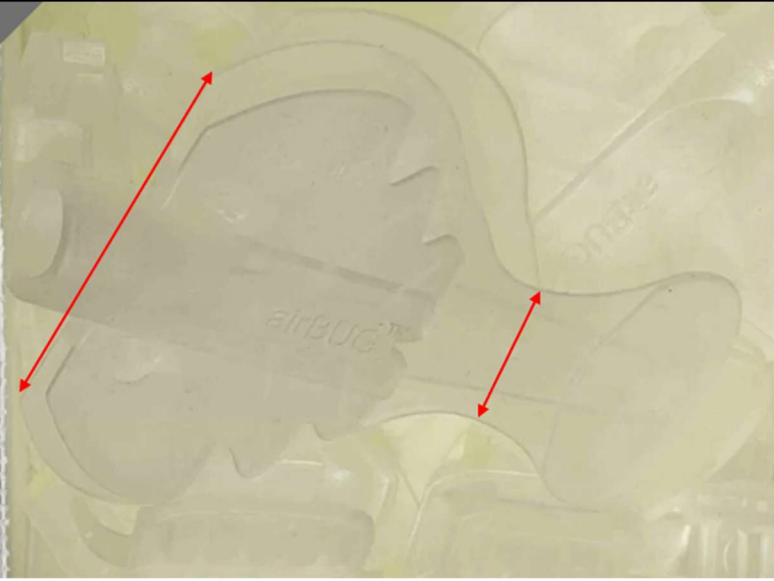
EXHIBIT G-2 (Black or AirBug in Combination with One or Two of Hirsch, Isolite Mouthpiece, Park, Baughan, Johnson, and the Skill of a PHOSITA)
Initial Invalidity Chart for U.S. Patent No. 12,290,418

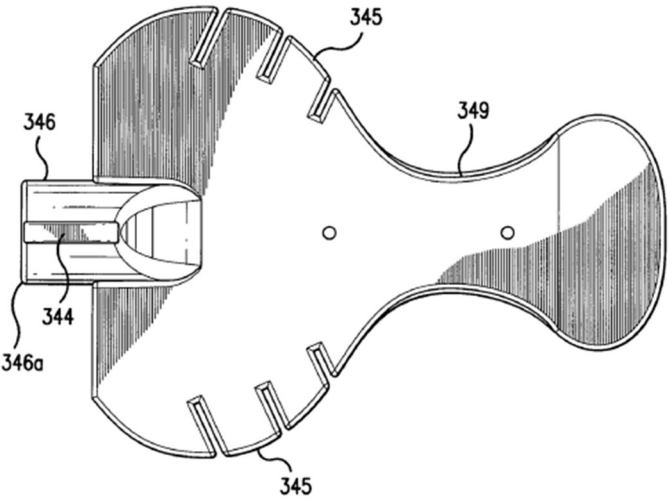
Ascentcare incorporates by reference the cover pleading to its Initial Invalidity Contentions. These Initial Invalidity Contentions, including these claim charts, are not an admission regarding claim scope or the accused products, and, in particular, that the accused products, including any current or past versions of these products, are covered by, or infringe the Asserted Claims, particularly when they are properly construed. Nothing in these contentions should be interpreted as an acquiescence to or assertion of a particular claim construction by the Parties. In addition, these Initial Invalidity Contentions should not be taken as an admission that any of the asserted claims satisfy the requirements of 35 U.S.C. § 112. Where Ascentcare identifies portions of the prior art reference below, those identifications are intended to be exemplary in nature and are based on Ascentcare's investigation to-date. Ascentcare reserves the right to rely on un-cited portions of the reference to establish invalidity of the Asserted Claims.

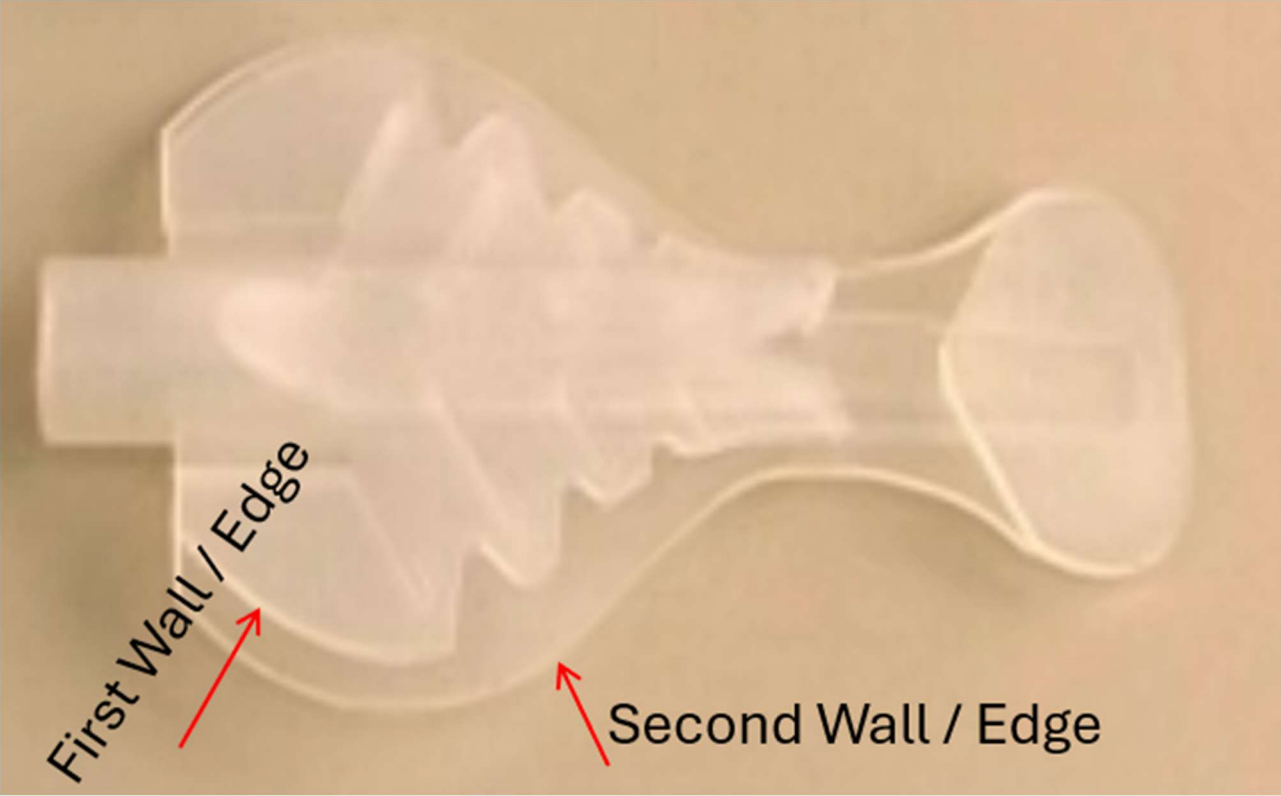
Pursuant to pre-AIA 35 U.S.C. § 103 and as described in the cover pleading and shown below, Black, Hirsch, Park, Baughan, and Johnson were patented or printed in a publication more than one year prior to the filing date of the application, and therefore anticipates and/or renders obvious, either alone or in combination with the other prior art, the knowledge of one of ordinary skill in the art, or one or more of the references identified in the cover pleading and/or one or more of the references from the other claim charts attached as exhibits to these contentions, U.S. Patent No. 12,290,418.

Pursuant to pre-AIA 35 U.S.C. § 103 and as described in the cover pleading and shown below, the AirBug Mouthpiece² and the Isolite Mouthpiece were on sale or in public use more than one year prior to the priority date of the '418 Patent, and therefore anticipates and/or renders obvious, either alone or in combination with the other prior art, the knowledge of one of ordinary skill in the art, or one or more of the references identified in the cover pleading and/or one or more of the references from the other claim charts attached as exhibits to these contentions, U.S. Patent No. 12,290,418.

² It is Ascentcare's understanding that several of the embodying products discussed herein may have multiple embodiments over the years. Discovery is ongoing, and Ascentcare has issued subpoenas seeking the prior art embodiments. To the extent that Ascentcare currently relies on more current embodiments of these mouthpieces, upon information and belief, the differences in those embodiments are minor and do not affect the invalidity analysis. Ascentcare reserves the right to amend these contentions as discovery progresses. It is Ascentcare's understanding, for example that the AirBug Mouthpiece is a product embodying Black, and thus, any of the references to Black likewise support the AirBug Mouthpiece, and vice versa. Likewise, the same analysis applies to the Isolite Mouthpiece and Hirsch.

The '418 Patent	Exemplary Disclosures in the Prior Art
	
1[c] a first wall having a first shape defined by 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	Black teaches that the first flap 340a includes a posterior layer 348a. Black, 14:25-30. A PHOSITA would consider this to be a first wall. FIG. 23B of Black shows that the posterior layer 348a has a shape defined by multiple edges, and that the posterior layer 348a extends from the first end to the second end.

The '418 Patent	Exemplary Disclosures in the Prior Art
	 FIG. 23B AirBug Mouthpiece likewise teaches a first wall (notably, under Solmetex's construction for infringement, it does not appear to matter which wall is the first wall and which wall is considered the second wall):

The '418 Patent	Exemplary Disclosures in the Prior Art
	
1[d] a second wall having a second shape defined by 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 first plurality of perforations extending along a portion of the third edge, and a second plurality of perforations extending along a portion of the fourth edge	Black teaches that the first flap 340a includes an anterior layer 348b. Black, 14:25-30. A PHOSITA would consider this to be a second wall. FIG. 23A of Black shows that the anterior layer has a shape defined by multiple edges, and that the anterior layer 348b extends from the first end to the second end.

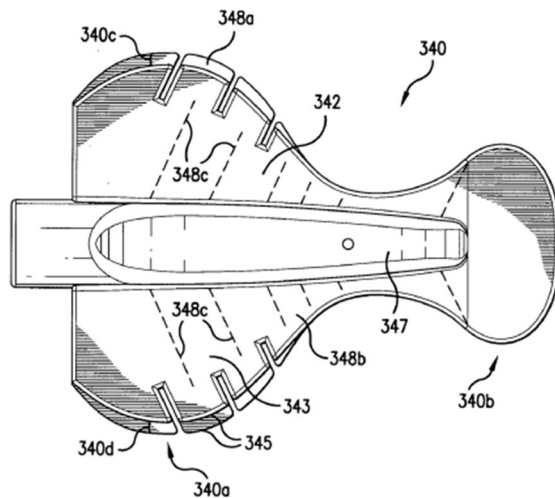


FIG. 23A

The posterior layer 348a is spaced apart from the anterior layer 348b by transverse walls 348c. Black, 14:25-30. FIG. 23C of Black shows an interior area between the posterior and anterior layers 348a, 348b, and FIG. 23A of Black show the channels 342, 343 created between the transverse walls 348c. Black, 14:30-63. The tongue shield aspirator 340 also has a longitudinal lumen that runs down the center of the mouthpiece and is fluidly connected to each channel 342, 343. Black, FIG. 3B, FIG. 23A, 14:21-25. Both the lumen and the channels 342, 343 are interior spaces between the posterior layer 348a and the anterior layer 348b.

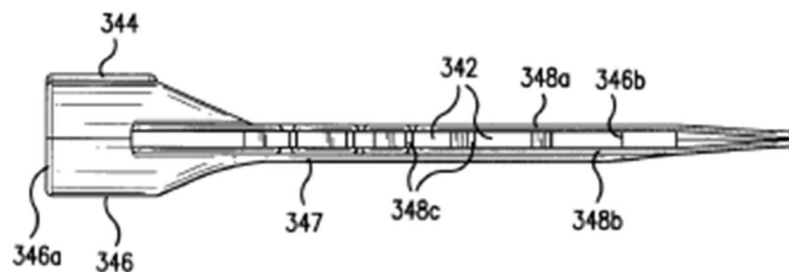
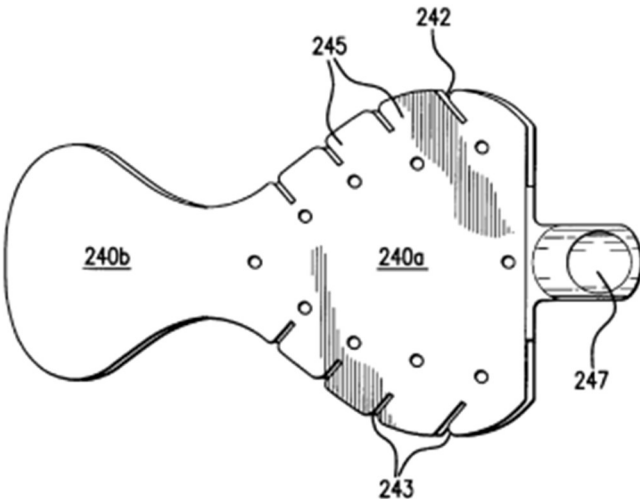
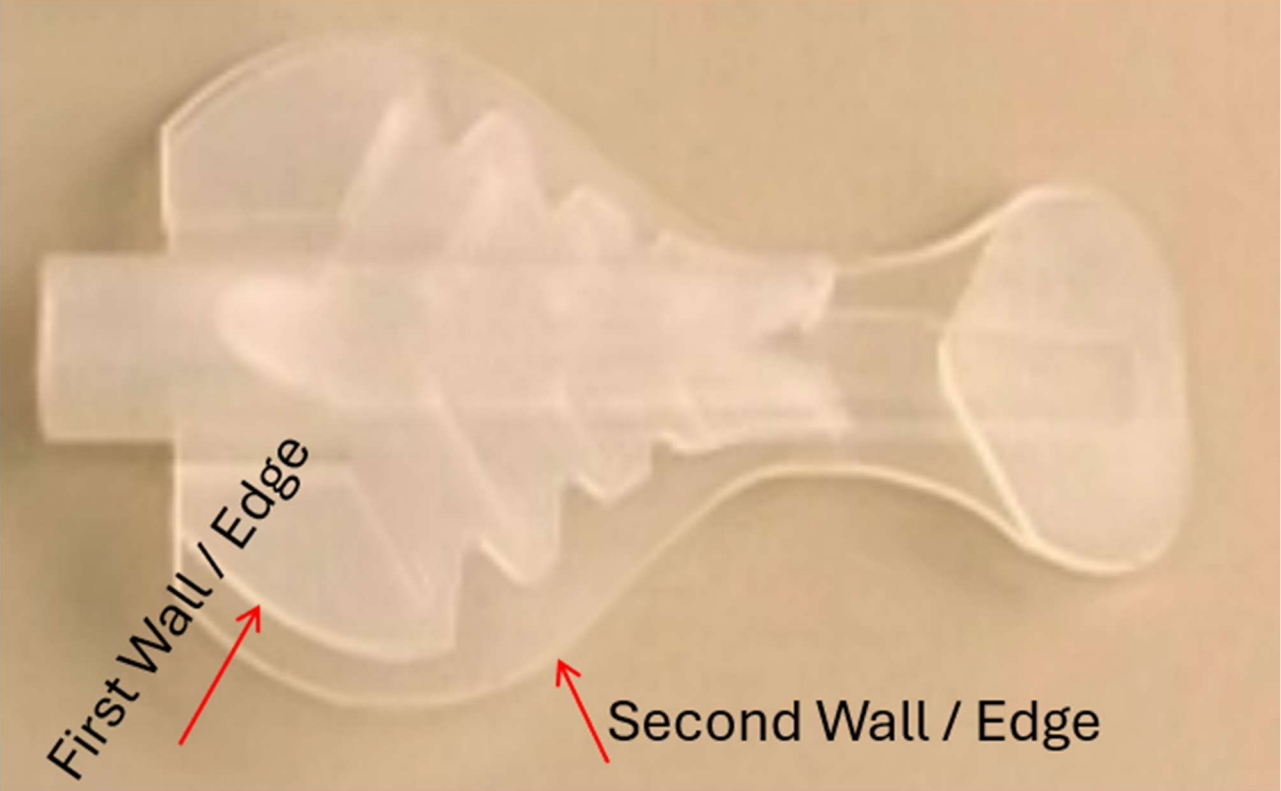


FIG. 23C

Black, in a different embodiment, teaches a tongue shield aspirator having first and second pluralities of holes (perforations) formed along first and second edges of the second wall, respectively. Black, FIG. 4C. To the extent obviousness is required here, combining features between embodiments within the same reference “does not require a leap of inventiveness.” *Boston*, 554 F.3d at 991.

The '418 Patent	Exemplary Disclosures in the Prior Art
	 FIG. 4C AirBug teaches “a second wall having a second shape defined by 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” but is silent on the orientation of any perforations along the edges.

The '418 Patent	Exemplary Disclosures in the Prior Art
	 However, it would have been obvious to a PHOSITA, to include perforations in the anterior or posterior layer 348a of AirBug in view of Hirsch or Isolite. Hirsch discloses an intraoral device 200 having flaps 310, 320, 330, 340. Hirsch, ¶ 79. The flaps 310, 320, 330, 340 have evacuation holes 410 (perforations) extending along the edges of the flaps 310, 320, 330, 340. Therefore, Hirsch teaches this limitation. <i>Id.</i>

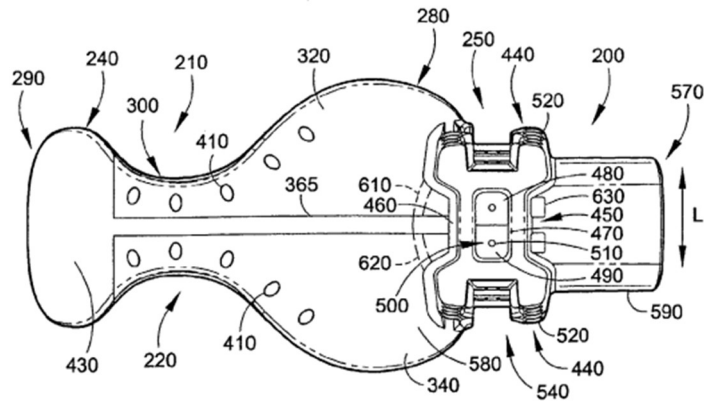
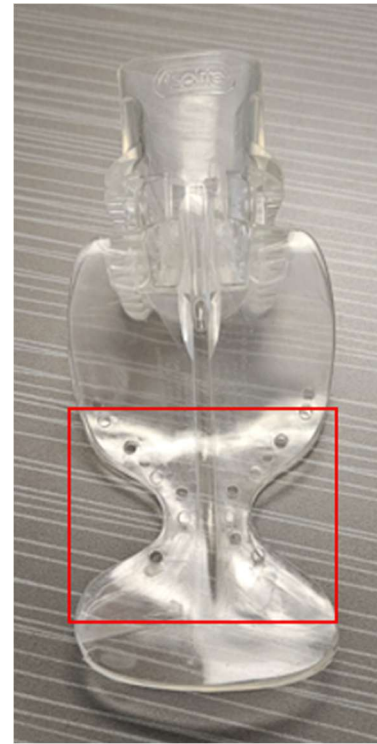
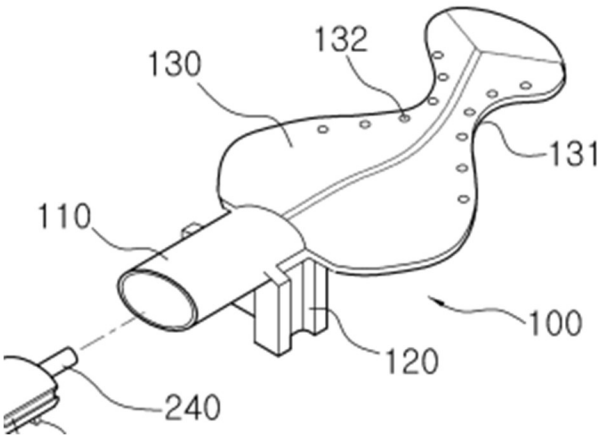
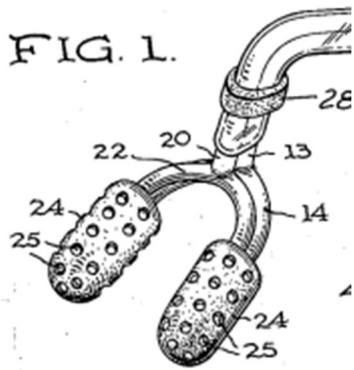


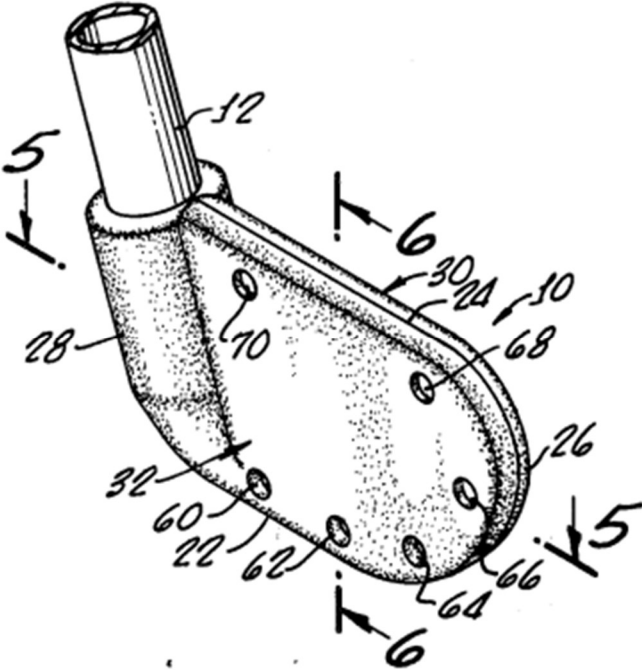
FIG. 19E

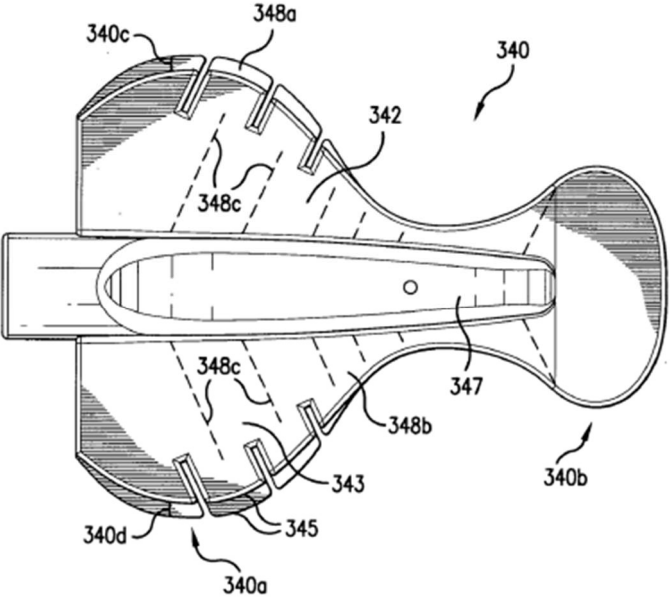
Isolite Mouthpiece teaches the same:

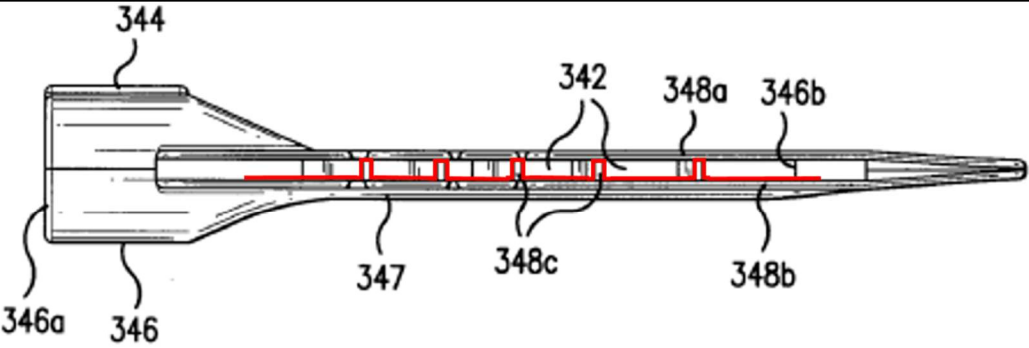


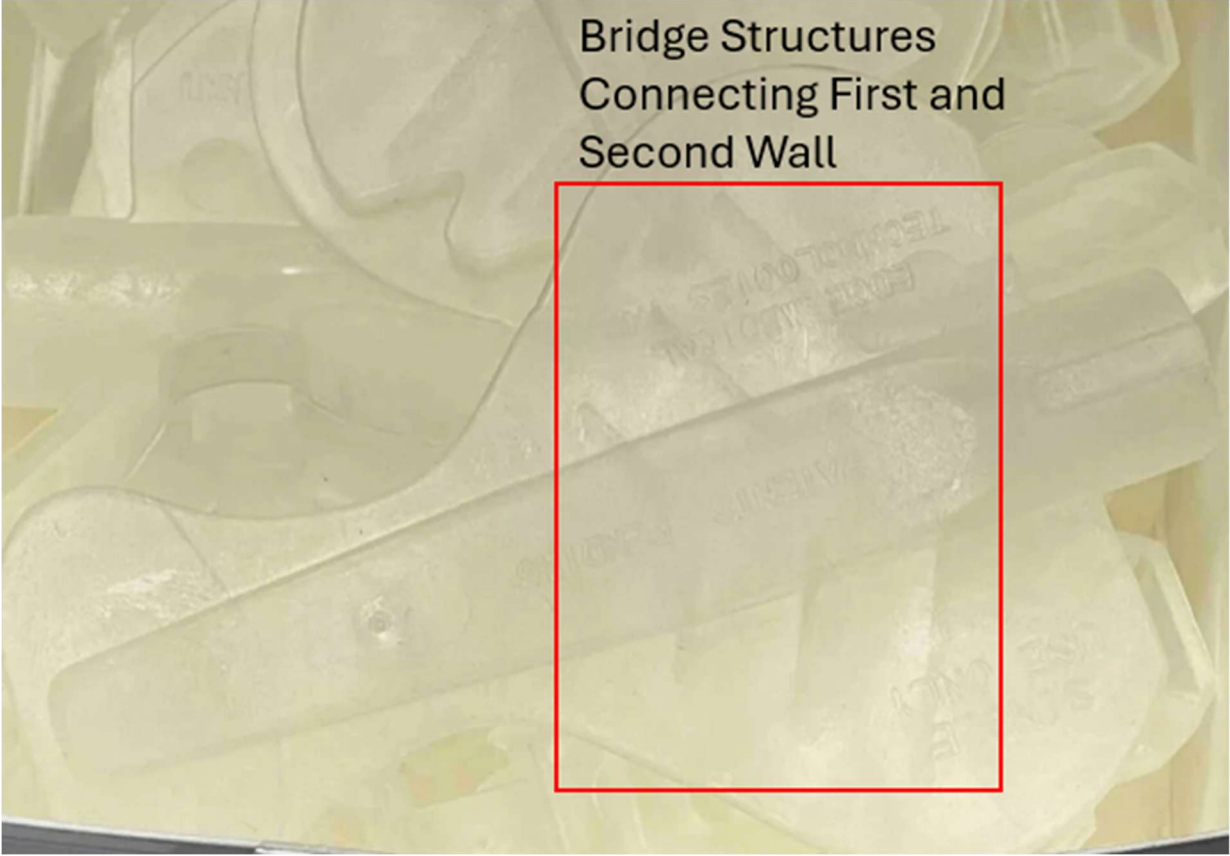
Park teaches the same:

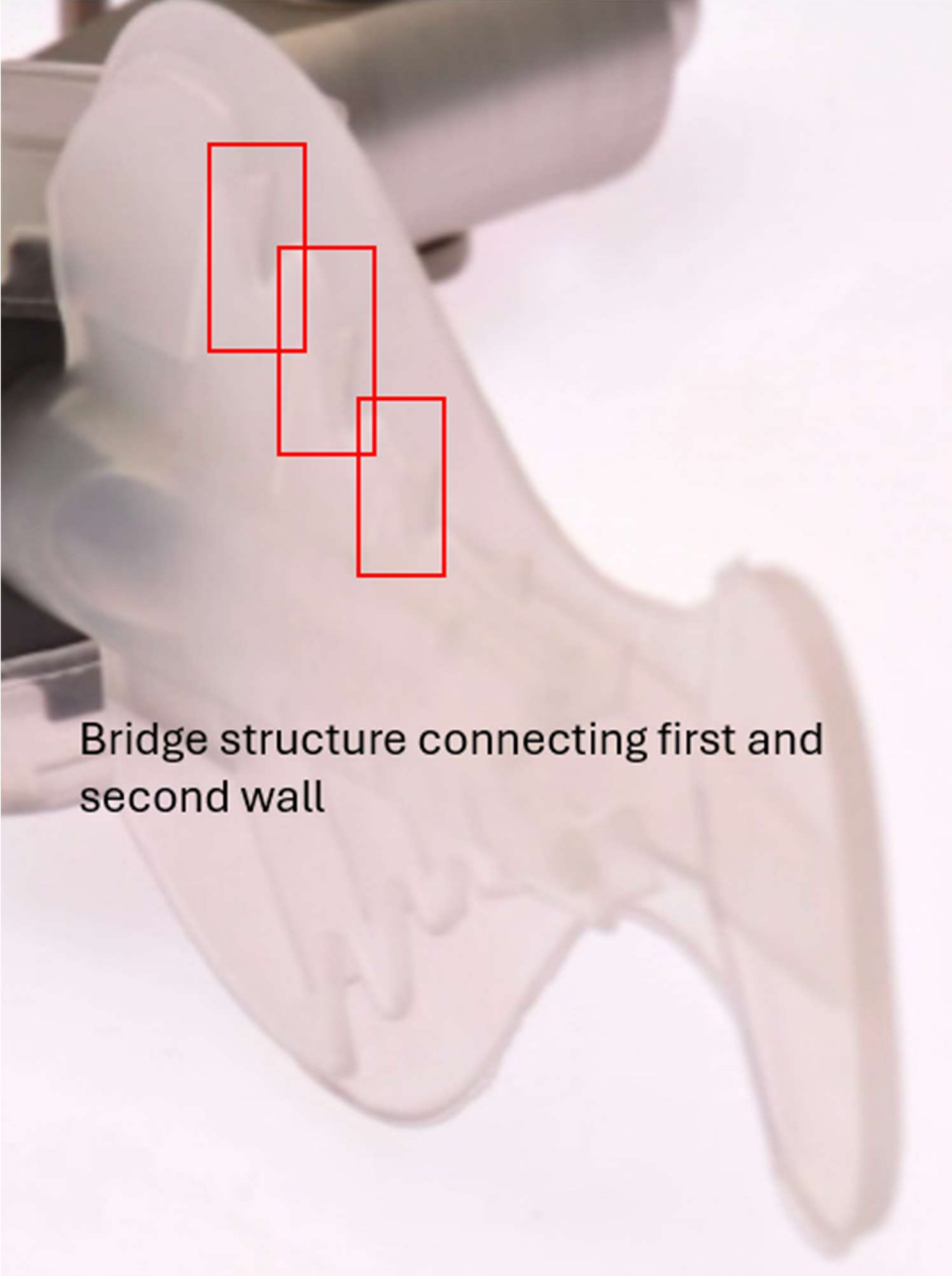
The '418 Patent	Exemplary Disclosures in the Prior Art
	 Both Baughan and Johnson likewise disclose perforations for ejecting saliva: 

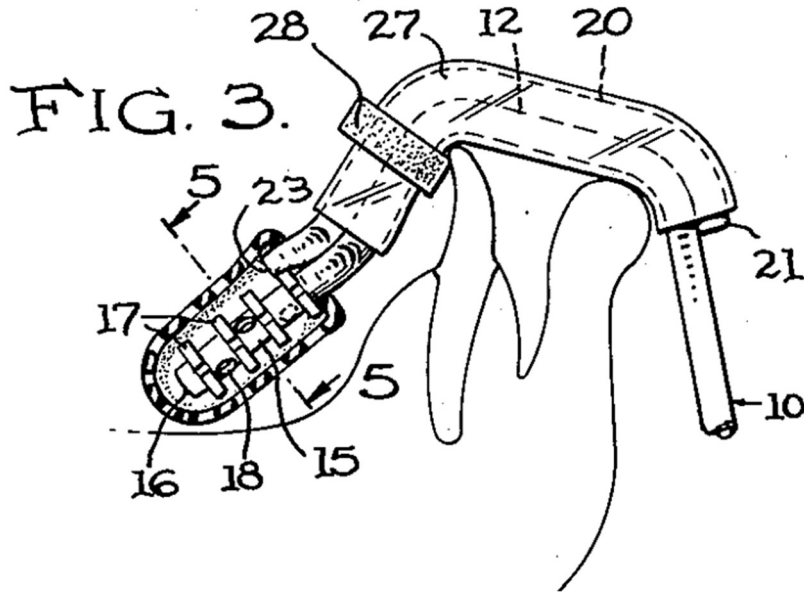
The '418 Patent	Exemplary Disclosures in the Prior Art
	 A PHOSITA have been motivated to modify either the anterior or the posterior layer 348a of AirBug to include the evacuation holes 410 improve the suction through the tongue shield aspirator 340 and allow for suction through the anterior or posterior wall in case fluid escaped the barrier created by the tongue shield aspirator or fluid pools in the mouth. A PHOSITA would have expected success in adding holes to the anterior and posterior layer because both Black, Hirsch, Isolite, Park, Baughan, and Johnson teaches that holes on those layers can result in suction through those layers.
1[e] 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	Black teaches transverse walls 348c spaced apart from each other to form channels 342 therebetween. Black, 14:21-47. Black explains that these transverse walls form conduits for debris and fluid, “thereby allowing for simultaneous aspiration of debris and fluid from top (palate of mouth) to bottom (floor of mouth), and through the passageway, during dental procedures.” Black, 14:38-47. Black also explains that the transverse walls prevent collapse under suction. Black, 14:21-47. The transverse walls 348c are a wave-like structure, as claimed. 51-52. Indeed, the Examiner also found that Black taught the claimed wave-like structure. <i>Id.</i>

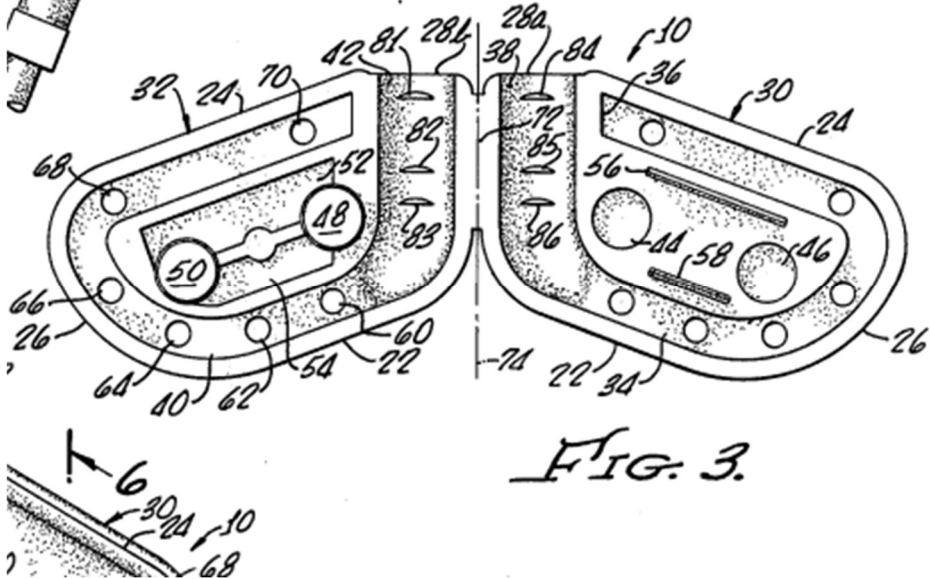
The '418 Patent	Exemplary Disclosures in the Prior Art
adjacent ones of the plurality of crests for allowing the suctioning of fluid through the plurality of troughs	The transverse walls extend from an interior surface of the posterior flap 348a and to the anterior flap 348b (transverse walls shown dashed). Black, 14:21-47. Thus, the transverse walls are protrusions. <i>Id.</i> Also, because the transverse walls connect to both the anterior and posterior wall, they form “contact points” with both the anterior and posterior wall at those connection locations.  FIG. 23A This limitation requires that the bridge structure has a plurality of “wave-like” protrusions. In light of the specification, this merely means that the wave-like structure needs spaced-apart projections with gaps therebetween. The resulting shape of any such bridge structure is necessarily a wave shape. Black teaches a square wave shape formed by the channels 342 and the transverse walls 348c (i.e., the presence transverse walls 348c and the gaps therebetween that form the channels 342). <i>See</i>, annotated FIG. 23C below.

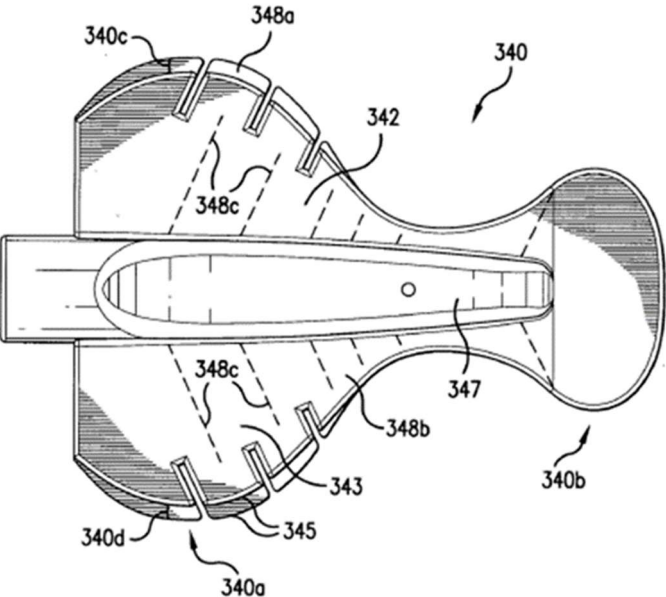
The '418 Patent	Exemplary Disclosures in the Prior Art
	 FIG. 23C The AirBug Mouthpiece discloses the same:

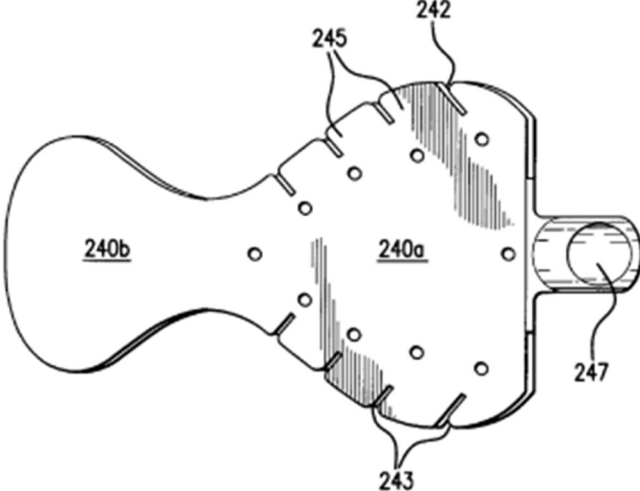
The '418 Patent	Exemplary Disclosures in the Prior Art
	Bridge Structures Connecting First and Second Wall 

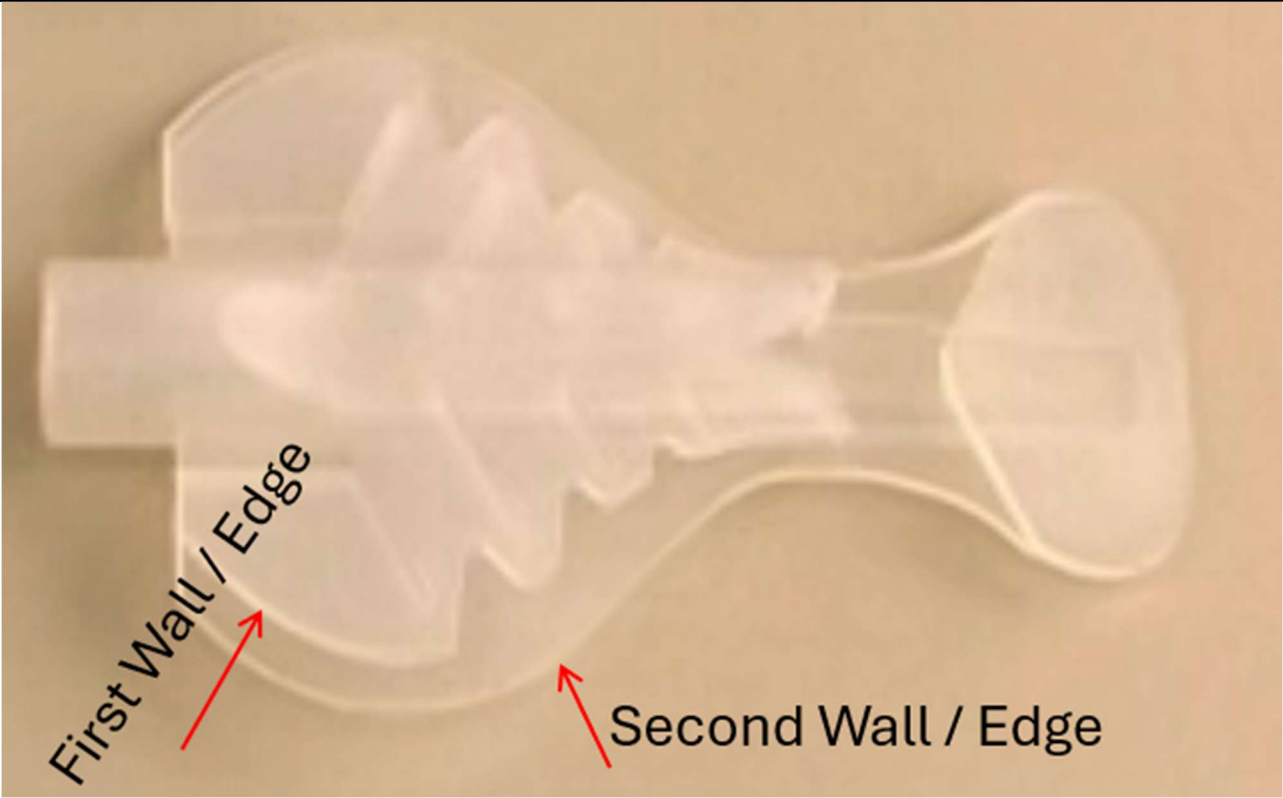
The '418 Patent	Exemplary Disclosures in the Prior Art
	 Bridge structure connecting first and second wall

The '418 Patent	Exemplary Disclosures in the Prior Art
	To the extent Solmetex disagrees, the wavelike structure of crests and troughs are likewise disclosed by Baughan and Johnson. Baughan teaches such a mechanical element that prevents collapse under suction. Baughan, 3:43-48. Specifically, Baughan teaches three projecting discs 17 that prevent collapse under suction when a sleeve is inserted over a tube 15. Baughan, 2:19-25, 2:51-55, 3:43-48. The discs 17 project outward from the tube, span the distance between the tube and the sleeve, and engage the sleeve. <i>Id.</i> These rigid structures, spaced apart from each other, prevent the sleeve from collapsing under suction. <i>Id.</i> Baughan teaches that the projecting discs 17 are secured to the tube 15, and the sleeve rests upon the discs. Baughan, 2:19-25, 2:51-61. While Baughan teaches outward projecting discs, a PHOSITA using basic common sense, would modify the discs 17 for a tube-shaped embodiment to be projections for a flatter, non-tube embodiment. 3. Indeed, it was well known in the art how to make projections on a flat surface. Johnson, FIG. 3, 4:16-23; 

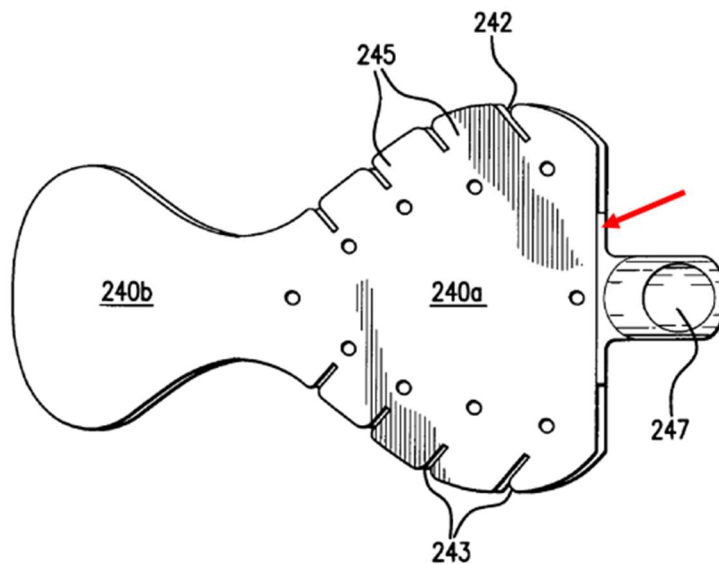
The '418 Patent	Exemplary Disclosures in the Prior Art
	 <i>FIG. 3.</i>
1[f] and wherein the first wall and the second wall are shaped such that the first edge of the first wall corresponds in shape to the third edge of the second wall and the second edge of the first wall corresponds in shape to the fourth edge of the second wall; and wherein the first shape of the first wall corresponds to the second shape of the second wall, and	Black teaches that the first flap 340a has an anterior layer 348b and a posterior layer 348a having shapes defined by edges on the upper and lower sides of the layer, respectively. Black, 14:25-30, FIG. 23A.

The '418 Patent	Exemplary Disclosures in the Prior Art
	 FIG. 23A As clearly shown in FIG. 23A, the upper and lower edges of the anterior layer 348b are very similar in size and shape to the respective upper and lower edges of the posterior layer 348a, such that a PHOSITA would understand that the first (upper) edge of the first wall corresponds to the third (upper) edge of the second wall and the second (lower) edge of the first wall corresponds to the fourth (lower) edge of the second wall. Admittedly, in FIG. 23A, the posterior layer 348a is slightly larger than the anterior layer 348b. Black, 15:57-63. Other embodiments in Black show anterior and posterior layers that are identical in size and shape. <i>See</i>, Black, FIG. 4C.

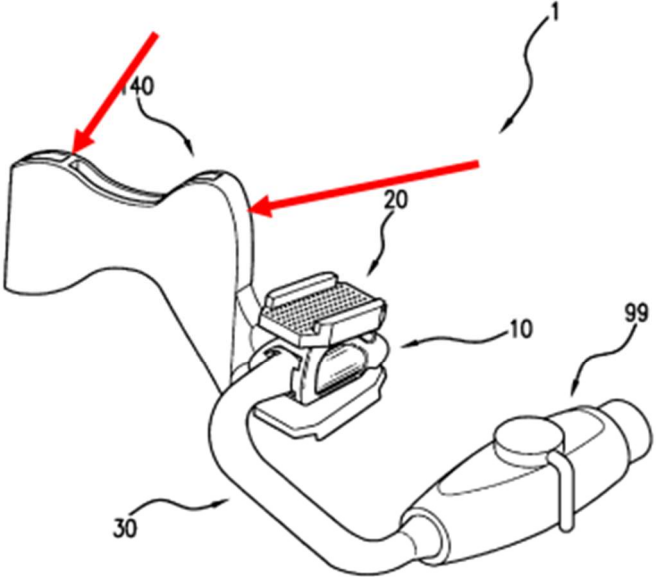
The '418 Patent	Exemplary Disclosures in the Prior Art
	 FIG. 4C Combining features between embodiments within the same reference “does not require a leap of inventiveness.” <i>Boston</i>, 554 F.3d at 991. Solmetex appears to be construing “corresponding” to mean something like a general resemblance in the size and shape of the two walls, which is much broader than “identical in shape and size.” However, as shown above, Black clearly teaches an anterior layer that corresponds in shape to the posterior layer such that the edges of the posterior and anterior layers correspond to one another under Solmetex’s implied construction or under the “identical in shape and size” construction. AirBug teaches the same:

The '418 Patent	Exemplary Disclosures in the Prior Art
	 However, to the extent that Solmetex contends, contrary to its construction of “corresponding” used in its infringement contentions, that AirBug discloses mouthpieces with different sizes, it would have been obvious to make the sizes of the two walls identical in view of Black, Hirsch, Isolite, or Park, as it would have helped to prevent any blockage in suction when the mouthpiece was in use.
1[g] a third wall connecting the first wall and the second wall such that the first wall is spaced from the second wall	Black teaches that the first flap 340a has a third wall. Black, FIG. 23A, <i>see also</i> FIGS. 19, 1, 3A, 4C, 24D.

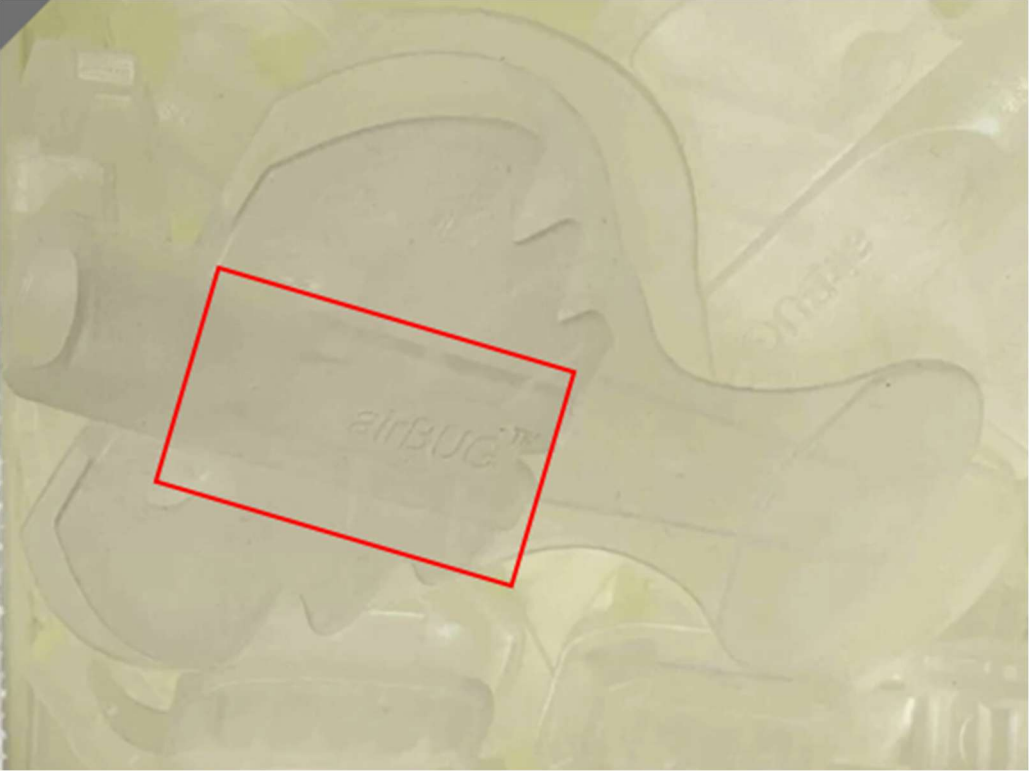
The '418 Patent	Exemplary Disclosures in the Prior Art
	FIG. 23A FIG. 19 To the extent Solmetex argues that FIGS. 18–19 and 23A–23C do not definitively show a third wall formed at the point shown above, many of the previous embodiments unequivocally showed such a third wall. Black, FIGS. 19, 1, 3A, 4C, 24D. For example, the tongue shield aspirator 240 includes a third wall formed near the “hollow neck 246”, which is the suction port of the tongue shield aspirator. FIG. 4C clearly shows a wall formed near the suction port and connecting the posterior flap and the anterior flap. It would have been obvious to include the third wall shown in FIG. 4C in the tongue shield aspirator 340 to provide additional structural integrity and more anti-collapse structure near the neck 346.

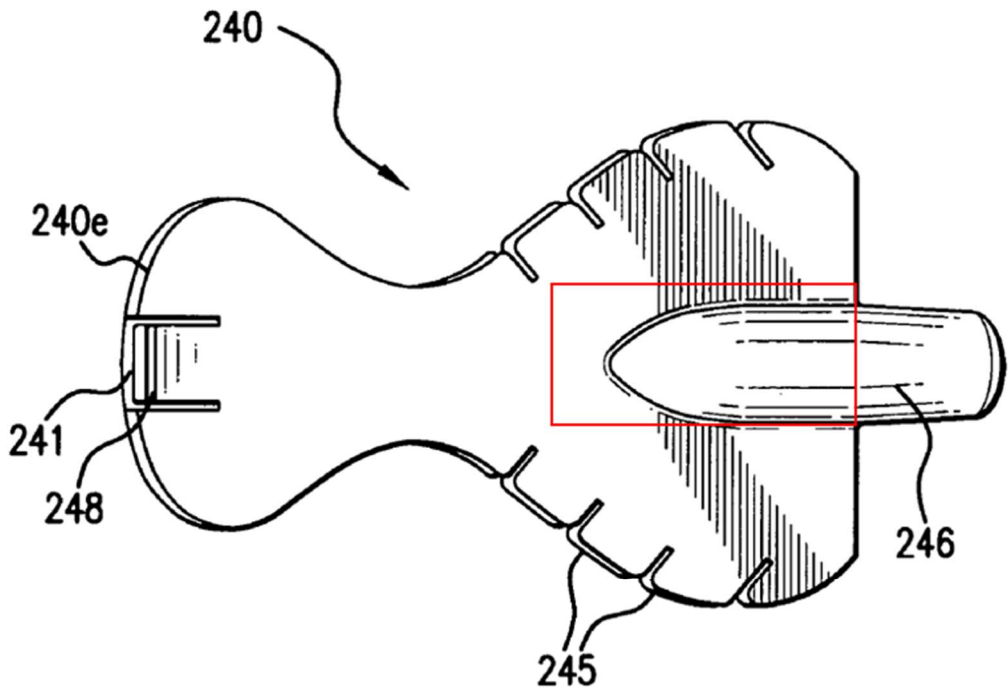
**FIG. 4C**

This wall connects an edge of the anterior flap to an edge of the posterior flap, exactly as claimed. Many other embodiments of Black show similar walls with different widths varying from partially expanding along an edge of the mouthpiece to extending across the entirety of an edge.

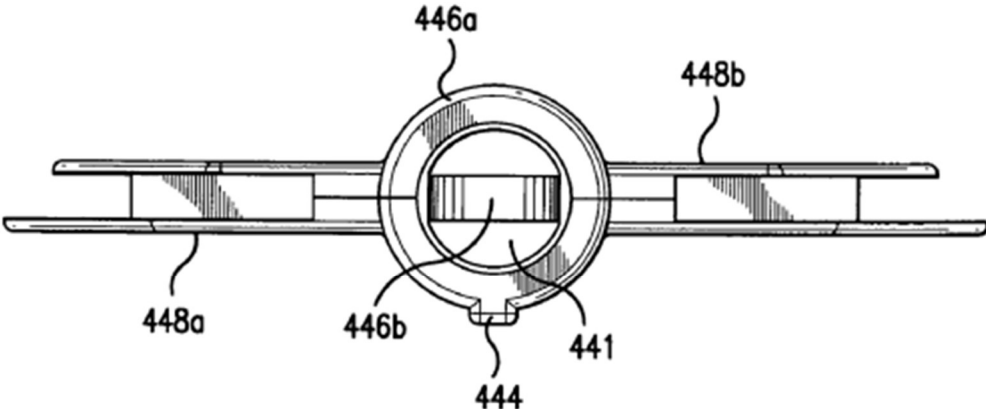
The '418 Patent	Exemplary Disclosures in the Prior Art
	 FIG. 1 To the extent that Solmetex argues that the embodiment shown in FIG. 4C does not connect an entire “edge”, it would have been obvious to extend the wall across the entire hollow neck side. Such a change would just be a change in the dimensions or proportions of the wall. MPEP 2144.04. AirBug teaches the same:

The '418 Patent	Exemplary Disclosures in the Prior Art
	Additionally, under the construction adopted by Solmetex in its infringement contentions, the central spine / longitudinal stiffener of AirBug and Black also meet this limitation:

The '418 Patent	Exemplary Disclosures in the Prior Art
	 A photograph of a dental mold, likely for a dental appliance. The mold is made of a light-colored, translucent material. A red rectangle is drawn on the mold, highlighting the text 'airBUG' which is embossed or molded into the surface. The text is in a stylized, lowercase font. The background of the mold shows various other shapes and contours, typical of a dental appliance mold.

The '418 Patent	Exemplary Disclosures in the Prior Art
	 FIG.4A
1[h] 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	Black teaches that the anterior layer 348b and the posterior layer 348a are wider at one end. <i>See</i> annotated FIG. 23A.

The '418 Patent	Exemplary Disclosures in the Prior Art
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	FIG. 23A AirBug teaches the same:

The '418 Patent	Exemplary Disclosures in the Prior Art
1[i] a suction connector portion extending from the first end of the main body portion, the suction connector portion including: a tubular conduit including an opening extending through the conduit and in fluid communication with the plurality of troughs of the wave-like structure, the opening being configured to receive a vacuum portion of the suction system therein, the tubular conduit further including a cutout configured to engage a protrusion on the suction system to aid in coupling the isolation mouthpiece to the suction system, and	Black teaches a suction connector 446 with cutout 441 configured to interlock with corresponding protrusion 332 of a vacuum adapter, wherein a shape of the cutout follows a shape of a shield logo.  FIG. 24D

The '418 Patent	Exemplary Disclosures in the Prior Art
	FIG. 22A Further, Black teaches a “lock-and-key locking mechanism” that interlocks the bite member 310 and the evacuation tube 330. Black, 13:16-67. “[T]he lock-and-key mechanism ensures that the evacuation tube [i.e., vacuum source] will not detach from the bite member during use...” Black, 13:57-59. This is exactly, or at worst an obvious variation of, what claim 6 describes. AirBug Mouthpiece discloses the same:

The '418 Patent	Exemplary Disclosures in the Prior Art
	If Solmetex argues that Black or AirBug does not teach a locking mechanism of the suction connector, specifically, it would be obvious to include a locking mechanism on the suction connector in view of Hirsch. Hirsch discloses a connection section 570 (suction connector) that extends from the retractor 240 and attaches to the vacuum-only adapter 230 to deliver suction to the intraoral device. Hirsch, ¶ 89, FIG. 19E. The connection section 570 includes a tube 590 having slots 630 that retain corresponding retention barbs on the vacuum-only adapter 230. Hirsch, ¶ 90, FIG. 19E. The slots are 630 a locking mechanism, in the form of a hole (i.e. cut out), formed on the suction connector of a mouthpiece and configured to receive corresponding protrusions from a vacuum adapter.

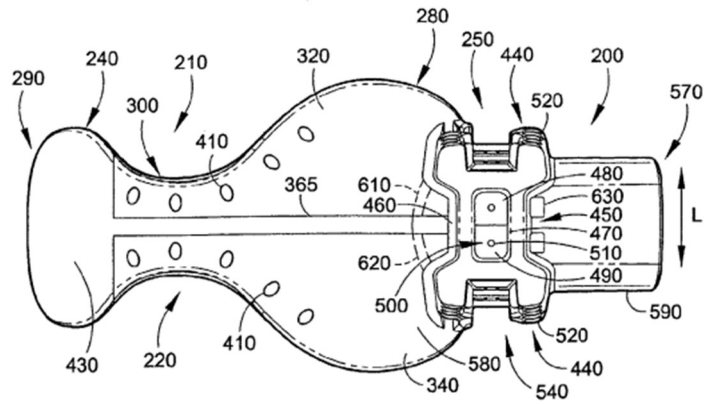
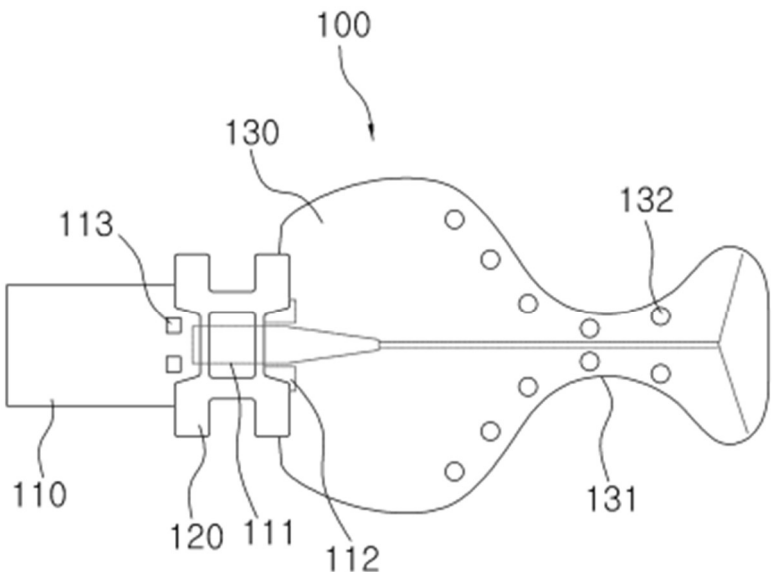


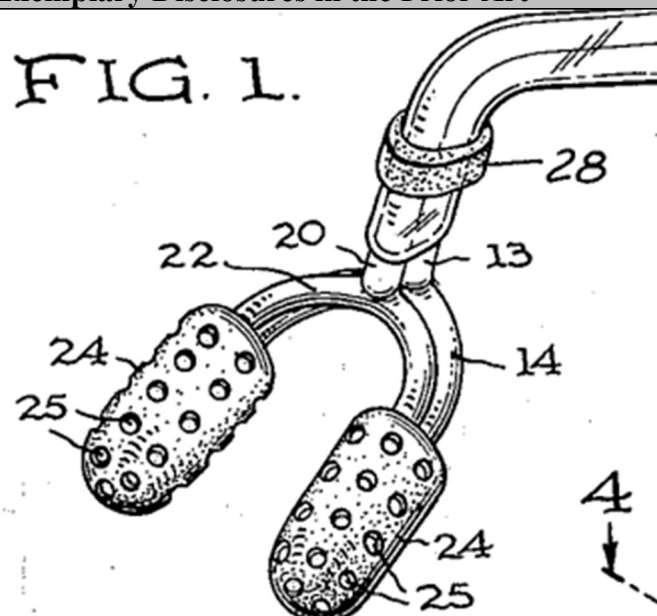
FIG. 19E

Isolite teaches the same:

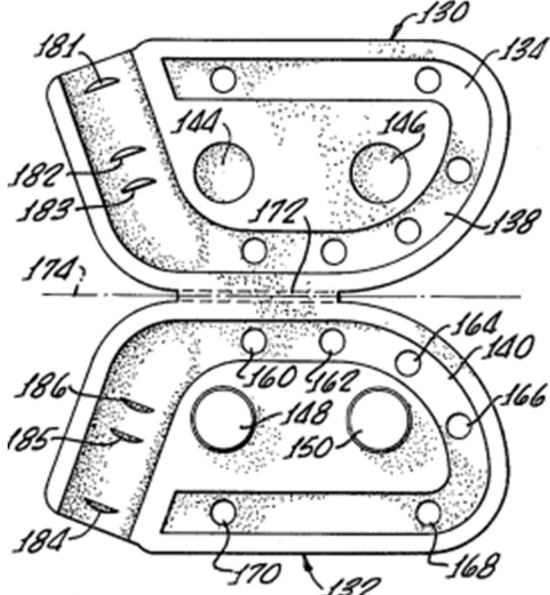


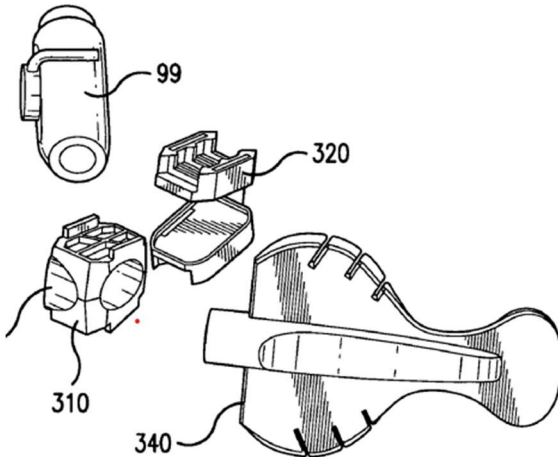
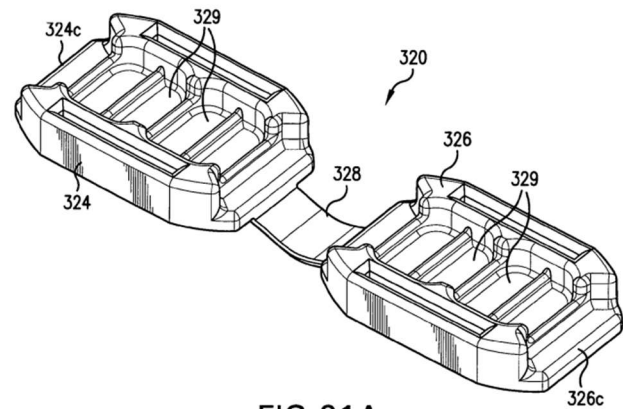
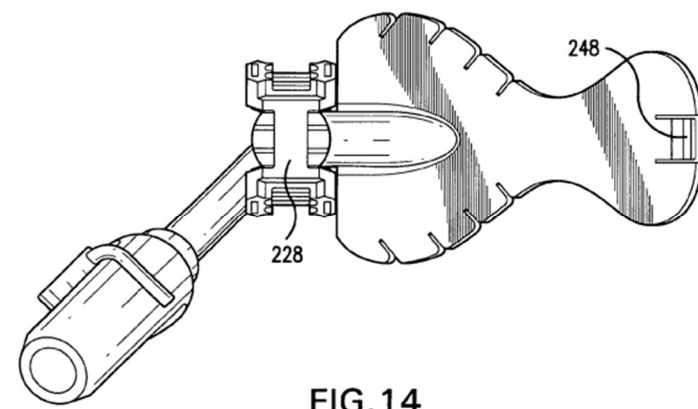
Park teaches the same:

The '418 Patent	Exemplary Disclosures in the Prior Art
	 It would have been obvious to a PHOSITA to modify Black or AirBug's suction connector to include Hirsch, Isolite, or Park's slots 630 at least to make a more secure connection between the mouthpiece and vacuum source. Black, 16:1-7. In fact, Black points out how important it is to have a secure connection to the vacuum source. Black, 13:57-59. Holes formed on the suction connector that accept projections on the vacuum tube are merely an obvious variant of Black's lock-and-key mechanism, since it is just choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success. MPEP 2143(I)(E). Both Baughan and Johnson likewise discloses a tubular conduit to facilitate suction, along with mechanisms to keep those tubular conduits coupled:

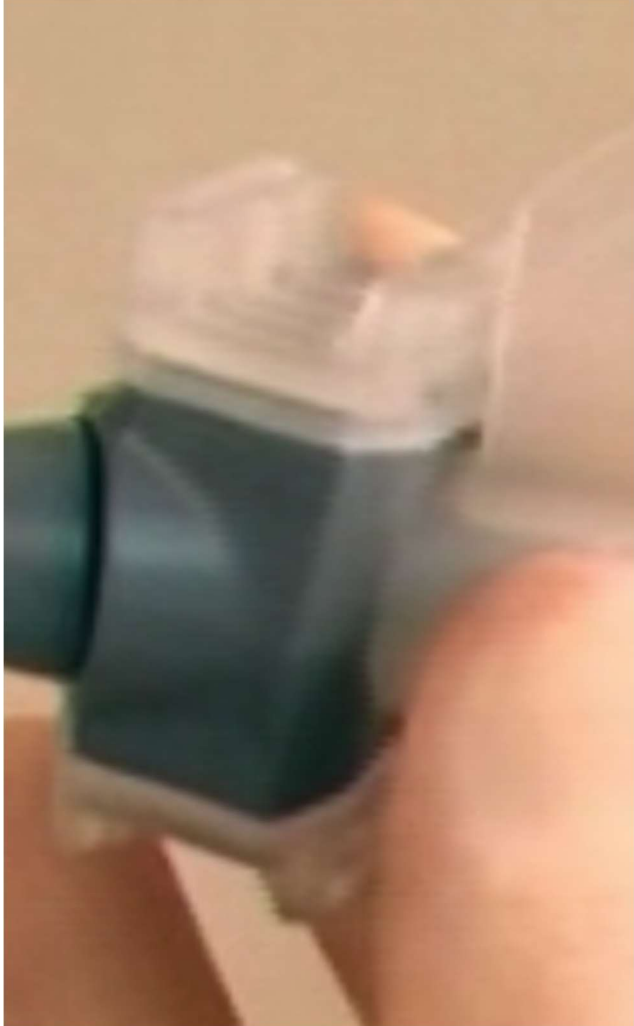


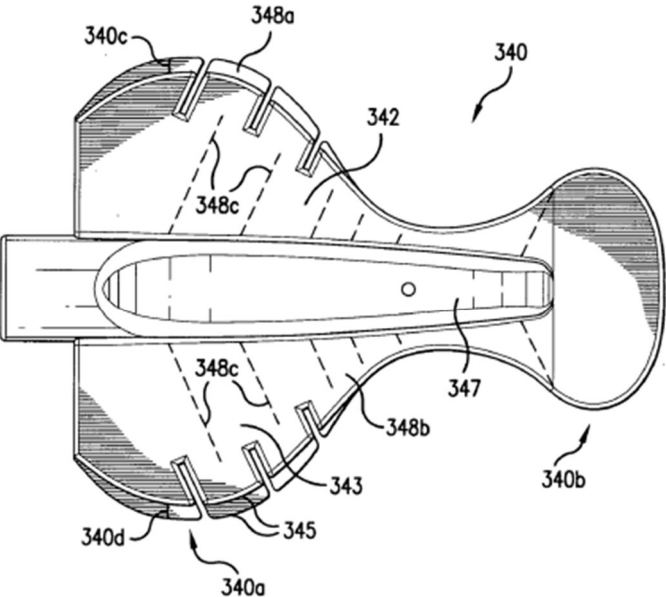
Baughan 3:1-10.

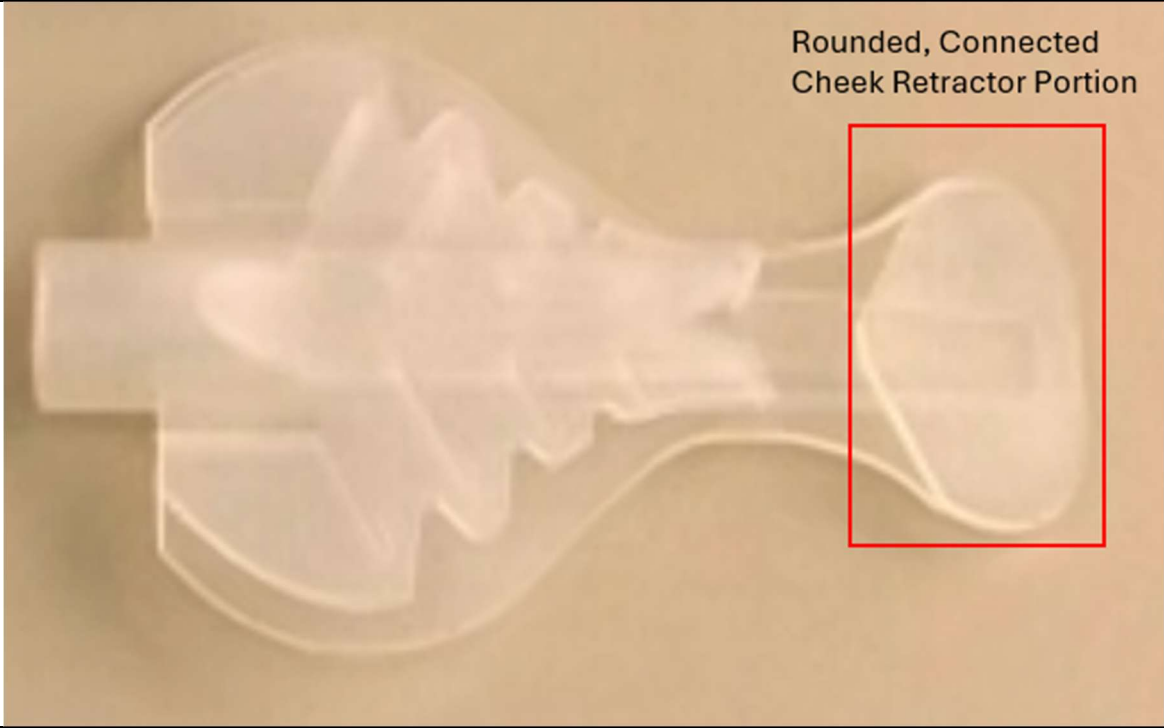
The '418 Patent	Exemplary Disclosures in the Prior Art
	<i>FIG. 9.</i>  Johnson 5:60-65. The Supreme Court has likewise found modifications on one system to fit another on the market to be obvious to a PHOSITA. <i>KSR Int'l Co. v. Teleflex Inc.</i>, 550 U.S. 398, 424, 127 S. Ct. 1727, 1744, 167 L. Ed. 2d 705 (2007) (“The interaction of multiple components means that changing one component often requires the others to be modified as well. Technological developments made it clear that engines using computer-controlled throttles would become standard. As a result, designers might have decided to design new pedals from scratch; but they also would have had reason to make pre-existing pedals work with the new engines. Indeed, upgrading its own pre-existing model led KSR to design the pedal now accused of infringing the Engelgau patent.”).
1[j] 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	This limitation requires a mouth prop that has a smaller posterior surface than the anterior surface. Almost all bite blocks are designed in this way. This design follows the natural shape of the mouth when it is open, because the jaw is a hinge, which any PHOISTA would understand based on very basic dental anatomy. Black teaches a bite member 310 (mouth prop) having a top side 314 and a bottom side 316, and Black teaches that the sides lie in divergent planes (<i>i.e.</i>, taper) Black, 11:61-12:9.

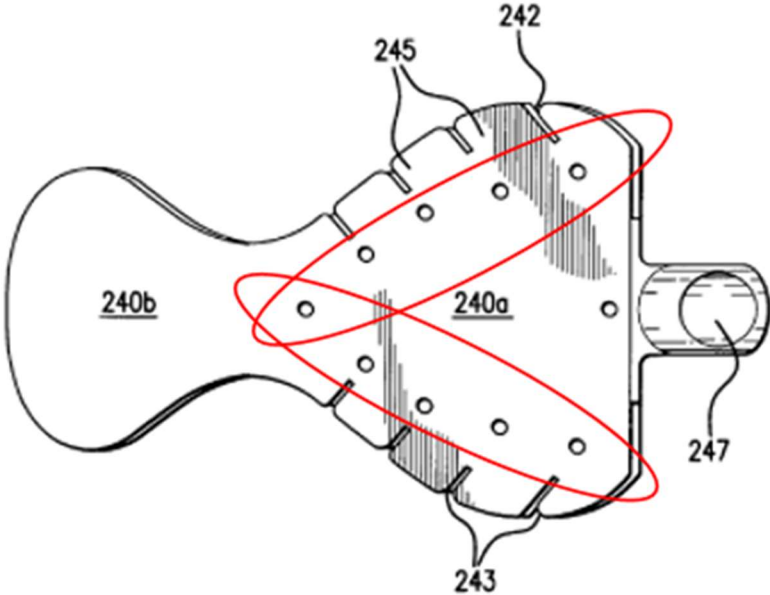
The '418 Patent	Exemplary Disclosures in the Prior Art
mouth prop, the first side and the second side each including a plurality of ridges; and	As shown in FIGS. 19 and 21A, Black illustrates that the bite member 310 includes a bite grip 320 with a plurality of ridges on each side of the bite grip 320.  FIG.19  FIG.21A  FIG.14 AirBug discloses the same:

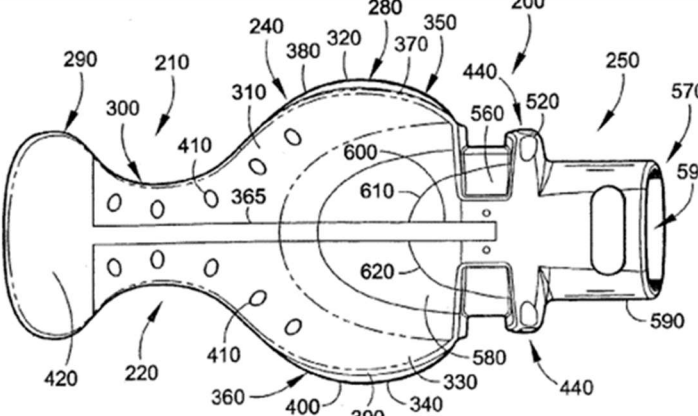
The '418 Patent	Exemplary Disclosures in the Prior Art
	

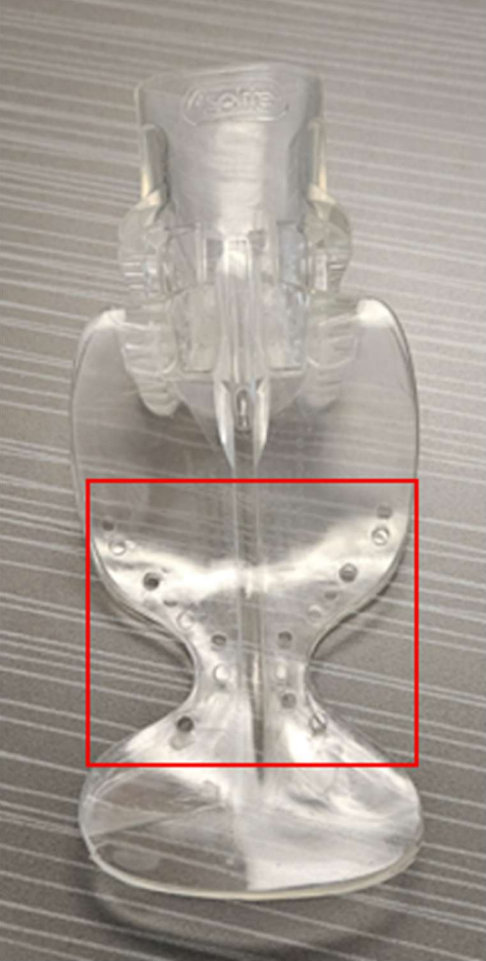
The '418 Patent	Exemplary Disclosures in the Prior Art
	
1[k] a cheek retractor portion having a first cheek-retractor end coupled to the second end of the main body portion and a second cheek-retractor end, the first cheek-retractor end and the second cheek-retractor end each having rounded edges.	Black teaches a second flap 340b that functions as a cheek retractor and is formed on the opposite side of the tongue shield aspirator 340 from the neck 346. Black, 14:5-9, FIG. 23A. As shown in FIG. 23A the second flap 340b is connected to, and expands outwardly away from, the second end of the first flap 340a and has rounded edges.

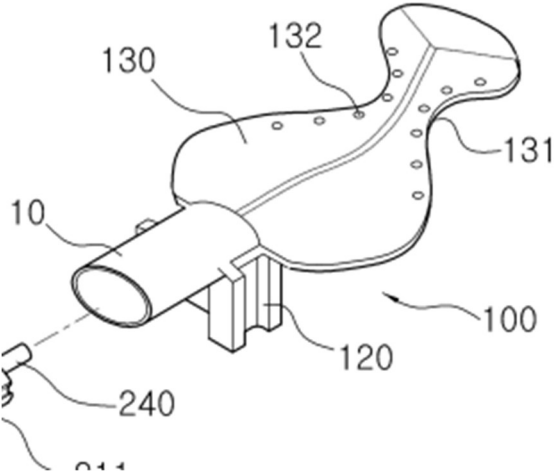
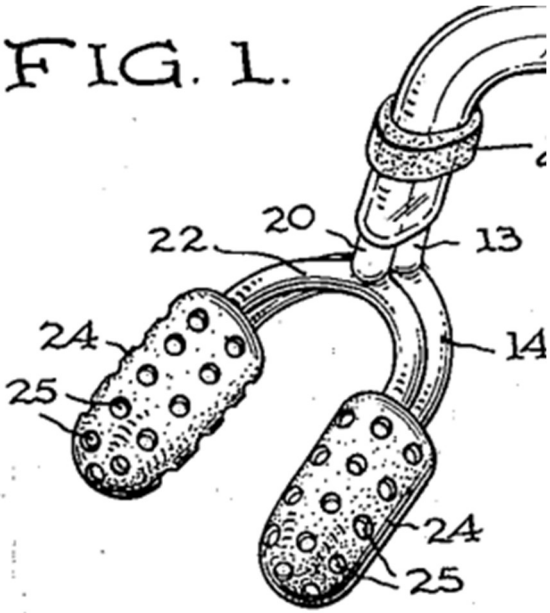
The '418 Patent	Exemplary Disclosures in the Prior Art
	 FIG. 23A AirBug teaches the same:

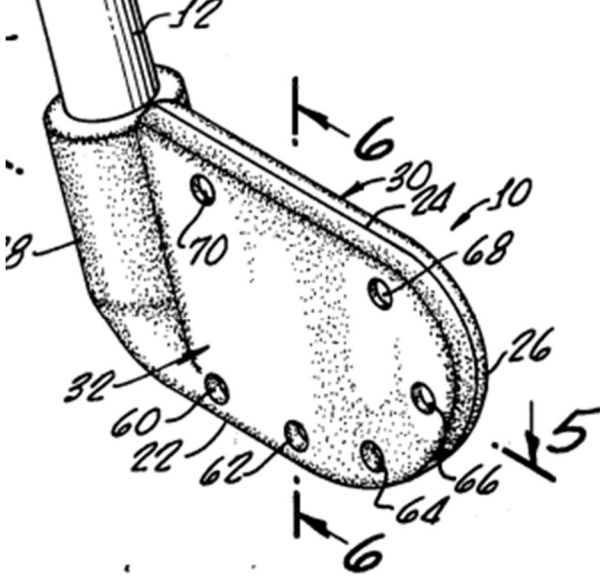
The '418 Patent	Exemplary Disclosures in the Prior Art
	 Rounded, Connected Cheek Retractor Portion
2 The isolation mouthpiece of claim 1, wherein the first plurality of perforations includes five perforations and the second plurality of perforations include five perforations.	Black teaches a wall having first and second plurality of perforations. FIG. 4C shows that the first plurality of perforations (along the upper edge) has five perforations and the second plurality of perforations (along the lower edge) has five perforations. The perforation nearest the cheek retractor counts as part of both the first and second pluralities of perforations. The claim language does not require the first and second pluralities of perforations be completely separate from one another.

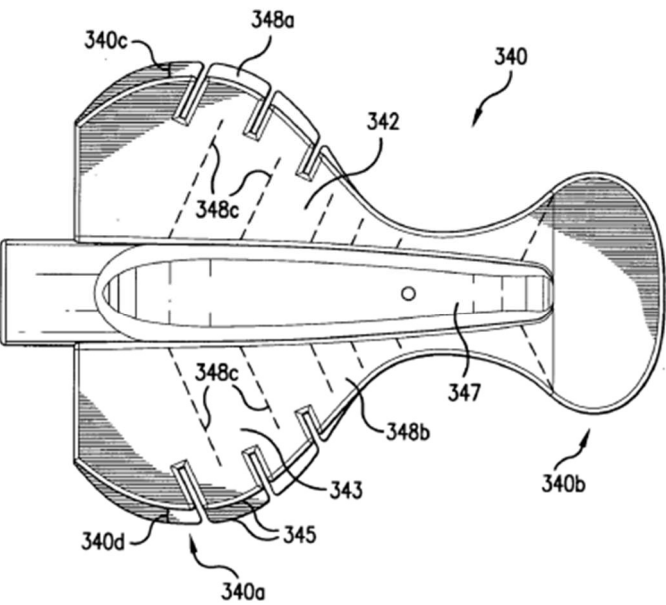
The '418 Patent	Exemplary Disclosures in the Prior Art
	 FIG. 4C If Solmetex argues that there is no overlap between the pluralities of perforations (e.g., there must be at least 10 total perforations), adding more perforations would be obvious to a PHOSITA, as a mere duplication of parts. MPEP 2144.04(VI)(B). Adding more perforations to the tongue shield aspirator of Black would improve suction. AirBug is silent on perforations. However, a PHOSITA would find it obvious to modify Blackor AirBug in view of Hirsch, Isolite, Park, Baughan, or Johnson to have more perforations to improve suction. Hirsch teaches an intraoral device 200 including front flaps 310, 330 having a first plurality of five perforations (along the edge of front flap 310) and a second plurality of five perforations (along the edge of front flap 330). Hirsch, ¶ 79, FIG. 19A.

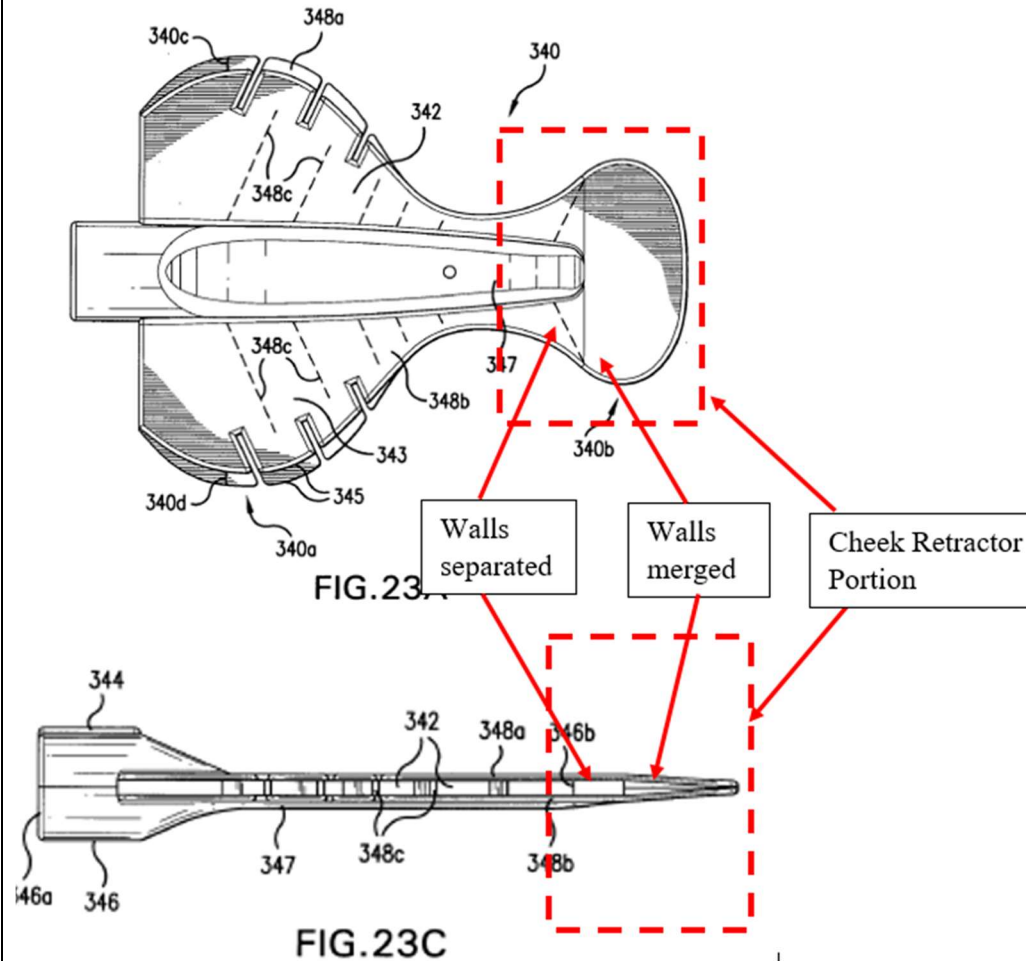
The '418 Patent	Exemplary Disclosures in the Prior Art
	 FIG. 19A Isolite Mouthpiece teaches the same:

The '418 Patent	Exemplary Disclosures in the Prior Art
	 Park likewise teaches such perforations:

The '418 Patent	Exemplary Disclosures in the Prior Art
	 Baughan and Johnson likewise teach at least 5 perforations: 

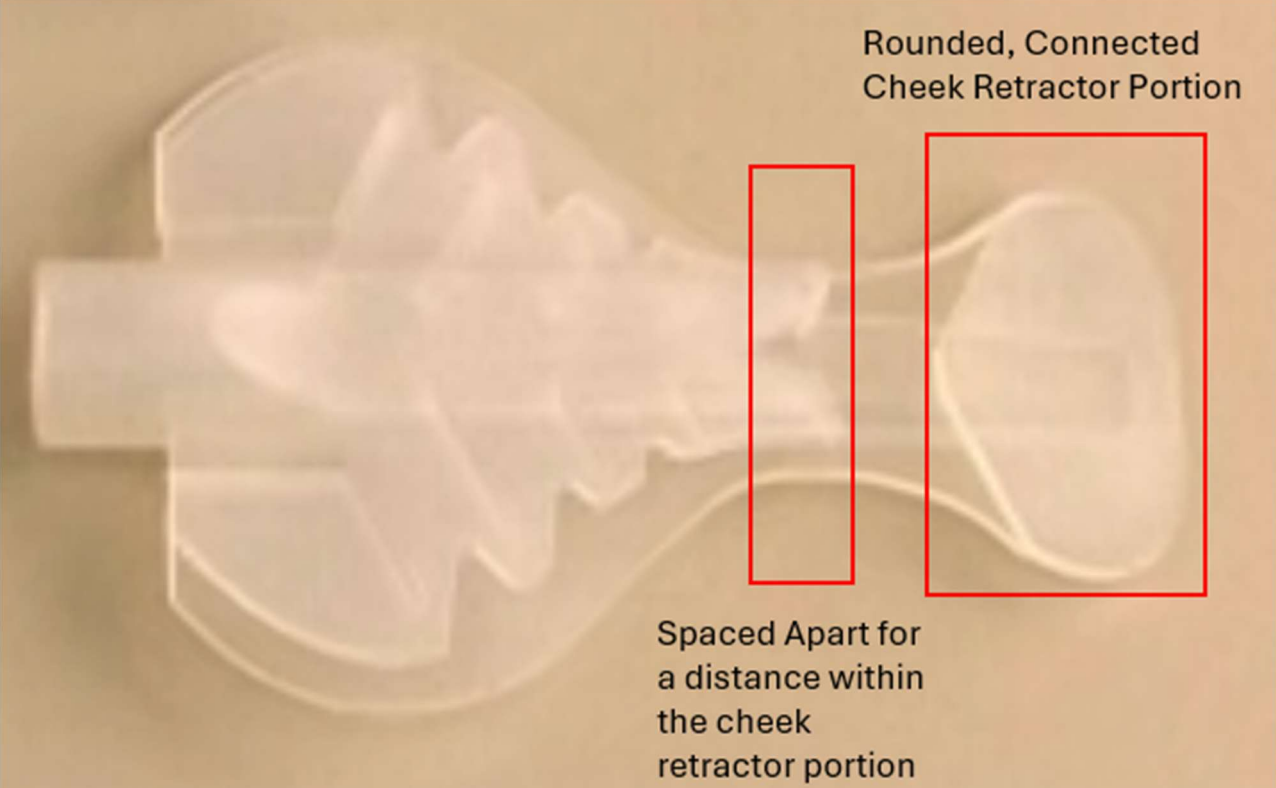
The '418 Patent	Exemplary Disclosures in the Prior Art
	 To the extent that Solmetex contends that not all the perforations are in the main body portion, adding additional perforations to make it to five perforations is a mere duplication of parts. Further, a PHOSITA would understand that additional perforations on the main body would increase and distribute suction or fluid flow.
3 The isolation mouthpiece of claim 2, wherein at least one of the first plurality of perforations and at least one of the second plurality of perforations are located adjacent to the second end and near the cheek retractor portion.	Black or AirBug, as modified to have the perforations of Hirsch, Isolite, Park, Baughan, or Johnson, teaches that at least one of the first plurality of perforations and at least one of the second plurality of perforations are located adjacent to the second narrower end of the main body and near a portion of the first wall that is spaced apart from the second wall. <i>See e.g.</i> Claim 2.

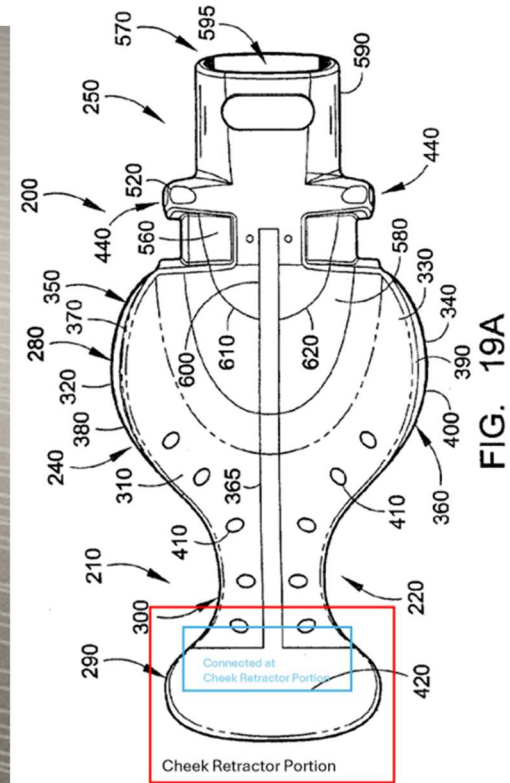
The '418 Patent	Exemplary Disclosures in the Prior Art
4 The isolation mouthpiece of claim 1, wherein the first wall and the second wall of the main body portion transition into and are connected in the cheek retractor portion to form the cheek retractor portion, the first wall and the second wall of 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.	Black teaches a second flap 340b that functions as a cheek retractor and is formed on the opposite side of the tongue shield aspirator 340 from the neck 346. Black, 14:5-9, FIG. 23A. As shown in FIG. 23A the second flap 340b is connected to, and expands outwardly away from, the second end of the first flap 340a.  FIG. 23A FIG. 23C of Black illustrates that both the posterior and anterior layers 348b, 348a transition into the second flap 340b (cheek retractor). For a short distance after the narrowest portion of the isthmus (349) the layers 348a, 348b remain separated from one another before merging together to form the cheek retractor. Annotated FIG. 23C (below) illustrates that the posterior layer 348a and the anterior layer 348b are separated in the cheek retractor portion (dashed area) and then merge together in the dashed area.

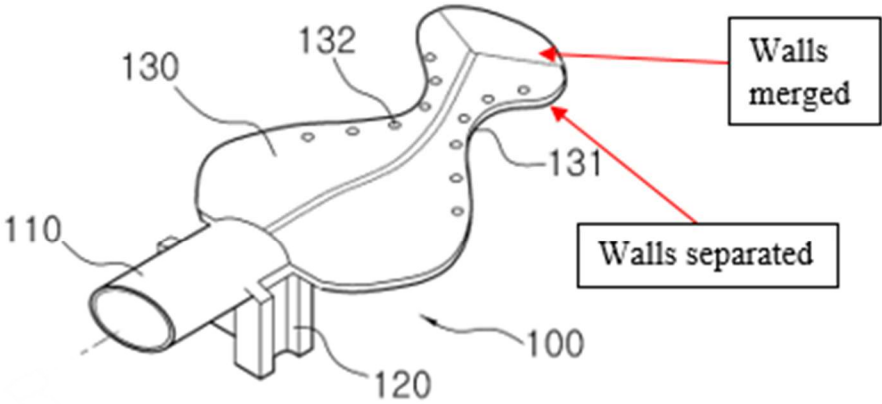


Black explains: “In embodiments of the invention, the upper opening defined by the space between the top edges of the anterior and posterior layers, and the lower opening defined by the space between the bottom edges of the anterior and posterior layers may extend through the transition section 349 (as shown, e.g., in FIG. 23C) *as well as at least a portion of the distal flap 340b.*” Black, 15:14-20 (emphasis added). This is exactly how the cheek retractor portion is claimed in claim 1.

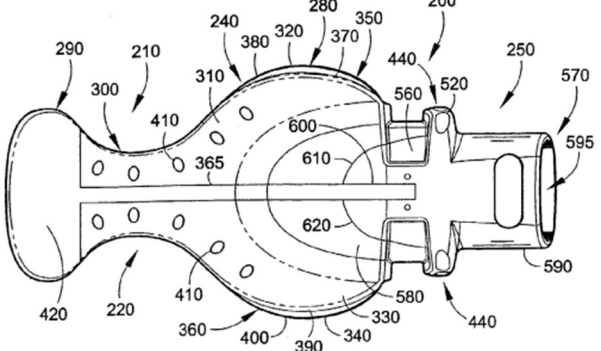
AirBug teaches the same:

The '418 Patent	Exemplary Disclosures in the Prior Art
	 Rounded, Connected Cheek Retractor Portion Spaced Apart for a distance within the cheek retractor portion If Solmetex tries to argue that the dashed area above is not the “cheek retractor portion,” it should be noted that the specification defines the cheek retractor portion 130 as the area where the mouthpiece widens again after the narrow, “rectangular area.”. In fact, the specification specifically says that the narrow rectangular area is part of the “main body portion.”. Therefore, the “cheek retractor portion” in Black must be the point where the mouthpiece begins to widen again after the narrow isthmus 349. This is entirely in-line with the specification. 1B. Additionally, Black defines the transition section 349 as “the narrowest section of the tongue shield aspirator,” and the distal flap (cheek retractor) as the portion beyond the transition section. Black, 14:1-20. To the extent Solmetex disagrees, it would have been obvious to extend the first wall such that it connects at the cheek retractor portion, as such a configuration would facilitate suction at the cheek retractor portion as well. Such a limitation is disclosed by Black, Hirsch, Isolite, and Park.



The '418 Patent	Exemplary Disclosures in the Prior Art
	
5 The isolation mouthpiece of claim 4, wherein at least one of the first plurality of perforations and at least one of the second plurality of perforations are located adjacent to the second end and near the cheek retractor portion.	Black or AirBug, as modified to have the perforations of Hirsch, Isolite, Park, Johnson, or Baughan, teaches that at least one of the first plurality of perforations and at least one of the second plurality of perforations are located adjacent to the second narrower end of the main body and near a portion of the first wall that is spaced apart from the second wall. <i>See e.g.</i> Claim 2.
6 The isolation mouthpiece of claim 1, wherein the cutout has a shield shape.	<i>See</i> Limitation 1[i]. To the extent that Solmetex contends that neither Black nor AirBug disclose a shield shaped cutout, Ascentcare notes that shields are commonly circular, and Solmetex does not specify any specific shield shape in its specification. To the extent that Solmetex contends that none of the references disclose a “shield shape,” Ascentcare further notes that the USPTO has already noted that “having a particular shape for the cutout is a matter of choice in which a person of ordinary skill in the art would have found obvious by the absent [<i>sic</i>] of persuasive evidence in the present application, that the particular configuration of the claimed shape of the cutout is significant.” .” <i>See</i> Prosecution History ’329 Patent at Office Action 9/23/2023, page 11, ¶ 32. Changing the slots 630 from rectangular to a “shield” shape is obvious. MPEP 2144.04(IV)(B).

The '418 Patent	Exemplary Disclosures in the Prior Art
	To the extent Solmetex disagrees, Hirsh teaches a spine 365 extending (i) along the longitudinal axis of the mouthpiece and (ii) between the first and second walls. Hirsch, ¶ 78. The spine 365 reinforces the cheek retractor to help retract cheek tissue.

The '418 Patent	Exemplary Disclosures in the Prior Art
	 FIG. 19A Isolite Mouthpiece discloses the same:

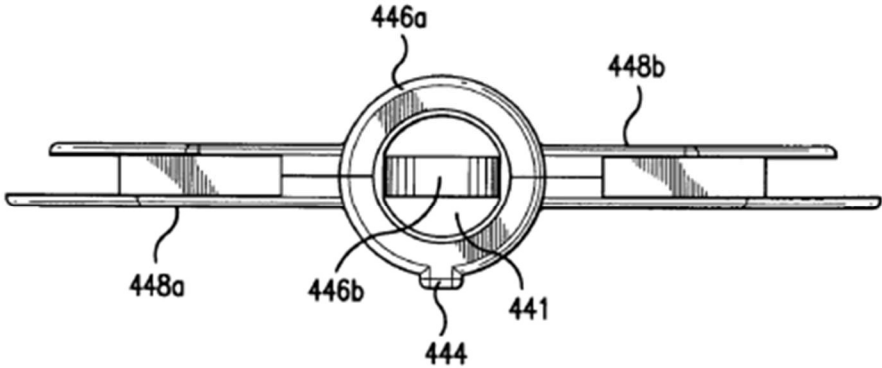
The '418 Patent	Exemplary Disclosures in the Prior Art
	A PHOSITA would have been motivated to modify the tongue shield aspirator 340 of Black or AirBug to include the spine 365 of Hirsch or Isolite to provide added anti-collapse rigidity and increased cheek retraction force to the tongue shield aspirator 340 of Black or AirBug. Black, 15:63-67. It would be obvious to a PHOSITA that the spine 365 could replace the transverse walls 348 that make up the longitudinal lumen extending through the mouthpiece and would strengthen those walls near the transition section 349 leading up to the second flap 340b (cheek retractor), thereby providing increased rigidity and cheek retraction force to push cheek tissue away from the procedure area. Black, 14:1-20,. Adding the spine 365 of Hirsch or ISolite to the tongue shield aspirator 340 of Black or AirBug could also simply be seen as moving the stiffener 347 to extend from an inner surface of the anterior layer 348b (where it would extend towards the posterior layer) and not an exterior surface. Further, as discussed in Claim 5, it would have been obvious to include the plurality of perforations.

The '418 Patent	Exemplary Disclosures in the Prior Art
11[a] An isolation mouthpiece for use with a suction system in a dental procedure, the isolation mouthpiece comprising:	<i>See</i> Limitation 1[a].
11[b] a main body portion having a first end and a second end, the main body portion including:	<i>See</i> Limitation 1[b].
11[c] a first wall having a first shape defined by 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,	<i>See</i> Limitation 1[c].
11[d] a second wall having a second shape defined by 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 first plurality of perforations extending along a portion of the third edge, and a second plurality of perforations extending along a portion of the fourth edge,	<i>See</i> Limitation 1[d].
11[e] 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	<i>See</i> Limitation 1[e].

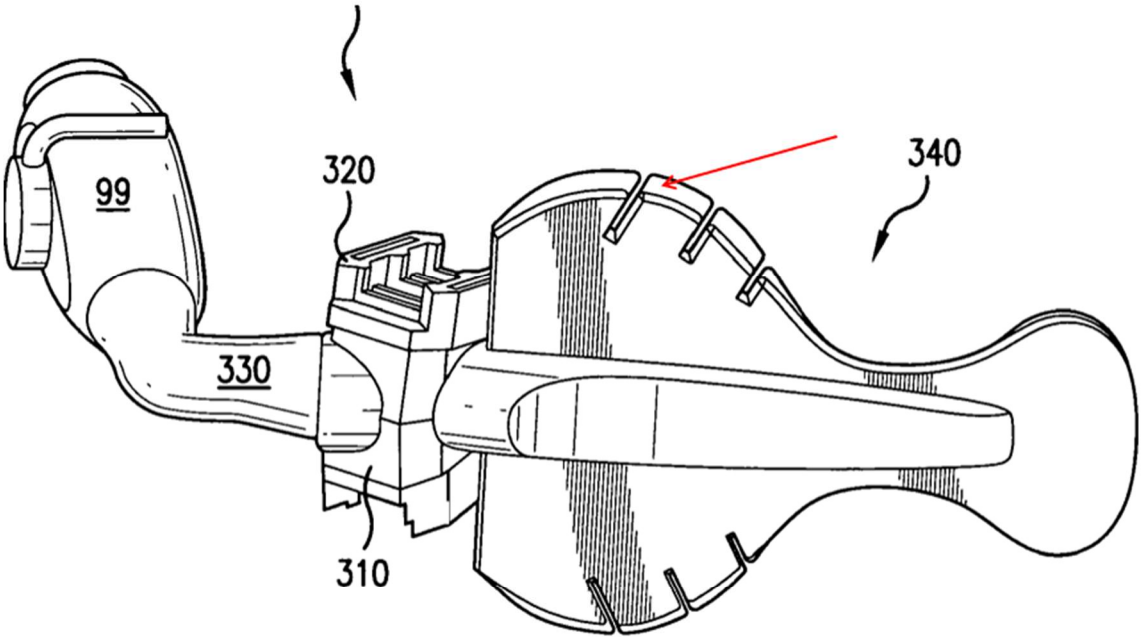
The '418 Patent	Exemplary Disclosures in the Prior Art
adjacent ones of the plurality of crests for allowing the suctioning of fluid through the plurality of troughs, and	
11[f] a third wall connecting the first wall and the second wall such that the first wall is spaced from the second wall,	<i>See</i> Limitation 1[g].
11[g] 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;	<i>See</i> Limitation 1[h].
11[h] a suction connector portion extending from the first end of the main body portion, the suction connector portion including: a tubular conduit including an opening extending through the conduit and in fluid communication with the plurality of troughs of the wave-like structure, the	<i>See</i> Limitation 1[i].

The '418 Patent	Exemplary Disclosures in the Prior Art
opening being configured to receive a vacuum portion of the suction system therein, and	
11[i] 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	<i>See Limitation 1[j].</i>
11[j] 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.	<i>See Claim 4.</i>
12 The isolation mouthpiece of claim 11, wherein the tubular conduit includes a cutout configured to engage a protrusion on the suction system to aid in coupling the isolation mouthpiece to the suction system.	<i>See Limitation 1[i].</i>

The '418 Patent	Exemplary Disclosures in the Prior Art
13 The isolation mouthpiece of claim 11, wherein the first plurality of perforations includes five perforations and the second plurality of perforations include five perforations.	<i>See Claim 2.</i>
14 The isolation mouthpiece of claim 13, wherein the at least one of the first plurality of perforations and the at least one of the second plurality of perforations are located adjacent to the second end and near the cheek retractor portion.	<i>See Claim 3.</i>
15 The isolation mouthpiece of claim 11, wherein the first wall and the second wall are shaped such that the 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.	<i>See Limitation 1[f].</i>
16 The isolation mouthpiece of claim 11, further including a stability bar located along a center aligned with a longitudinal axis of the first wall at least adjacent to the second end of the main body, at least one of the first plurality of perforations being positioned along one edge of the second	<i>See Claim 8.</i>

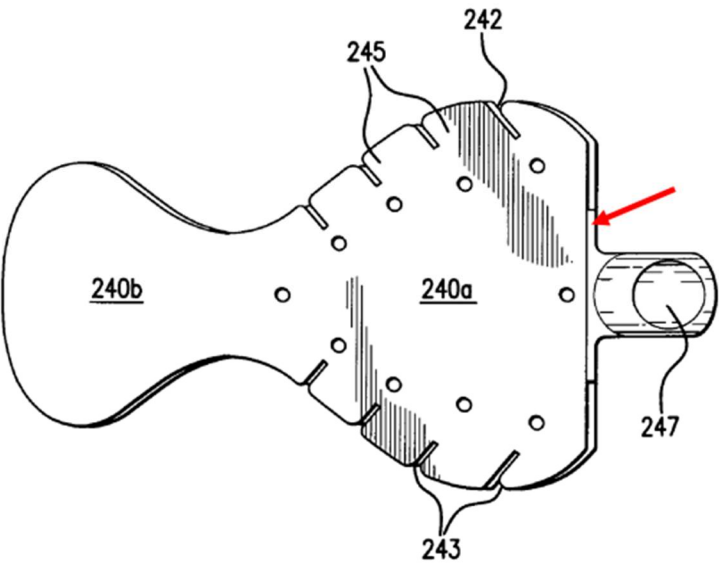
The '418 Patent	Exemplary Disclosures in the Prior Art
wall and at least one of the second plurality of perforations being positioned along another edge of the second wall.	
19 The isolation mouthpiece of claim 11, wherein a wall thickness within the suction connector portion is greater than a wall thickness of the first wall or the second wall of the main body.	Black discloses a tongue shield aspirator 440 including anterior and posterior layers 448a, 448(b) and a neck 446. Black, 16:15-49. FIG. 24D shows that the neck 446 (suction connector) is far thicker than the anterior and posterior layers 448a, 448b. <i>Id.</i>  FIG. 24D AirBug mouthpiece discloses the same:

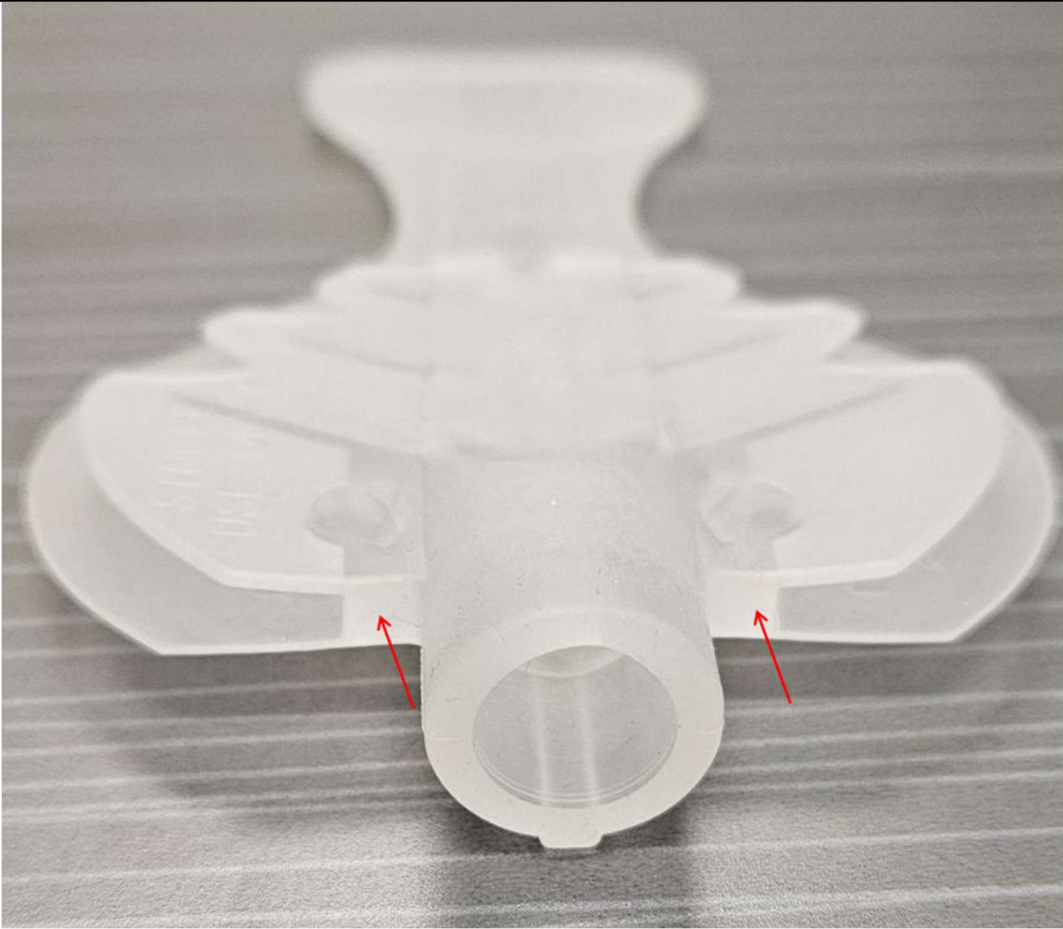
The '418 Patent	Exemplary Disclosures in the Prior Art
	
20[a] A mouthpiece comprising:	<i>See</i> Limitation 1[a].
20[b] a main body having a first end opposite a second end that is narrower than the first end, the main body comprising:	<i>See</i> Limitation 1[b].
20[c] a first wall that extends from the first end to the second end, wherein the first wall includes a plurality of first edges,	<i>See</i> Limitation 1[c].
20[d] 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	<i>See</i> Limitation 1[d]. Further, under the construction used by Solmetex in infringement, both Black and AirBug likewise include an interior space therebetween:

The '418 Patent	Exemplary Disclosures in the Prior Art
second wall includes a plurality of second edges,	 FIG. 18 

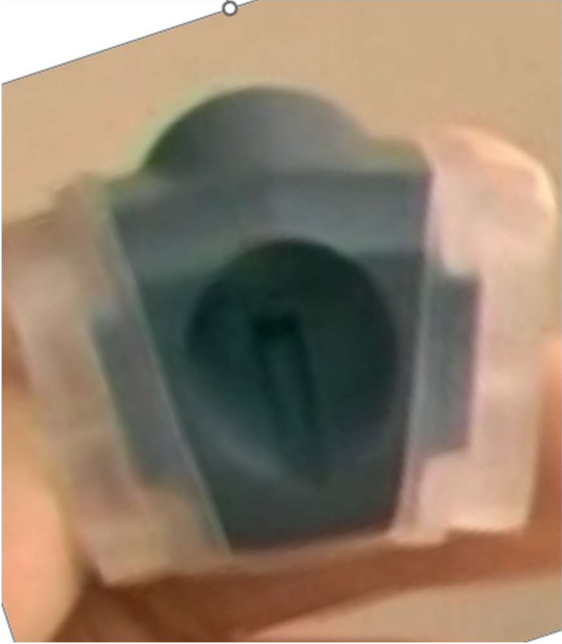
The '418 Patent	Exemplary Disclosures in the Prior Art
20[e] wherein a plurality of crests is formed on an interior surface of the second wall to provide a plurality of contact points with the first wall, and wherein a plurality of troughs provide a plurality of gaps through which fluids can pass between the contact points, wherein the contact points are not attached to the first wall; and	See Limitation 1[e]. To the extent that Solmetex contends that neither Black nor AirBug disclose protrusions that are not connected to the first wall, it would have been obvious for a PHOSITA to modify Black to be able to detach either wall from the bridge structures such that the overall mouthpiece would have been easier to clean. Bridge structure connecting first and second wall Bridge Structures Connecting First and Second Wall Further, this limitation is taught by Park in view of one or more of Baughan and Johnson. Additionally, Baughan teaches such a mechanical element that prevents collapse under suction. Baughan, 3:43-48. Specifically, Baughan teaches three projecting discs 17 that prevent collapse under suction when a sleeve is inserted over a tube 15. Baughan, 2:19-25, 2:51-55, 3:43-48. The discs 17 project outward from the tube, span the distance between the tube and the sleeve, and engage the sleeve. <i>Id.</i> These rigid structures, spaced apart from each other, prevent the sleeve from collapsing under suction. <i>Id.</i> Baughan teaches that the projecting discs 17 are secured to the tube 15 but the discs 17 are not attached to the sleeve 24, as they merely contact the sleeve or the sleeve rests upon the discs.

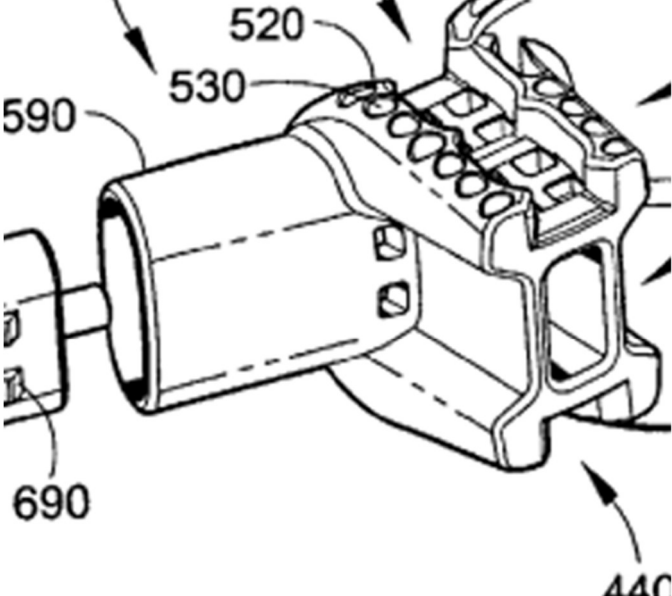
The '418 Patent	Exemplary Disclosures in the Prior Art
	Baughan, 2:19-25, 2:51-61. Thus, Baughan teaches projecting discs connected to and protruding from one structure (the tube 15) but not attached to another structure (the sleeve 24). <i>Id.</i> While Baughan teaches outward projecting discs, a PHOSITA using basic common sense, would modify the discs 17 for a tube-shaped embodiment to be projections for a flatter, non-tube embodiment. Johnson, FIG. 3. Indeed, it was well known in the art how to make projections on a flat surface. Johnson, FIG. 3, 4:16-23; ¶¶ 100-101. Johnson further teaches that the projections are molded projections, which means the projections are integral with an interior surface on which they were formed. <i>Id.</i> Even so, making something integral is an obvious design choice. MPEP 2144.04(V)(B). Applying the simple teachings of Baughan and Johnson to Park, it would have been obvious to include a plurality of spaced-apart projections formed on the posterior wall of Park to prevent collapsing of the posterior and anterior walls under suction at weak points of the mouth prop. A PHOSITA would have expected success because these simple mechanical structures ensure separation between two walls that would otherwise collapse under suction. Baughan, 3:43-48; Moreover, Black and AirBug taught this same concept but with an “open” mouthpiece lacking sidewalls. Park opted for sidewalls, but the concept of using perpendicularly projecting structures to prevent collapse of parallel walls under suction was demonstrated by Black, AirBug and by Baughan. Baughan, 3:43-48. Thus, a PHOSITA would have expected success in using spaced-apart projections to prevent walls from collapsing under suction. A PHOSITA would have further known that spaced-apart projections ensure that channels for sucking saliva and foreign substances remain between the spaced-apart projections, lest the purpose of Park’s mouth prop be defeated.; Baughan, 3:36-48. Modifying Park in view of Baughan and Johnson would involve nothing more than applying a known technique (anti-collapse structure) to a known device ready for improvement (the mouth prop 100 of Park) to yield predictable results (preventing collapse at weak parts of the mouth prop 100 under suction), or combining prior art elements (a mouth prop having an interior chamber) according to known methods (using spaced-apart projections to prevent collapse under suction) to yield predictable results (the projections would prevent collapse under suction and still allow for suction channels therebetween). The spaced-apart projections taught by Baughan could be formed on either the first wall or the second wall. A PHOSITA would know that it makes no difference which wall connects to the projections so long as the projections connect to one of the walls. Baughan, FIG. 3 Further, the MPEP provides that modifying something to be “separable” is a common practice, and are considered routine changes. MPEP § 2144.04V.C. (citing <i>In reDulberg</i>, 289 F.2d 522, 523 (CCPA 1961).
20[f] a third wall that connects one of the first edges of the first	See Limitation 1[g]. Black and AirBug each disclose mouthpieces with a third wall that connect at the edges:

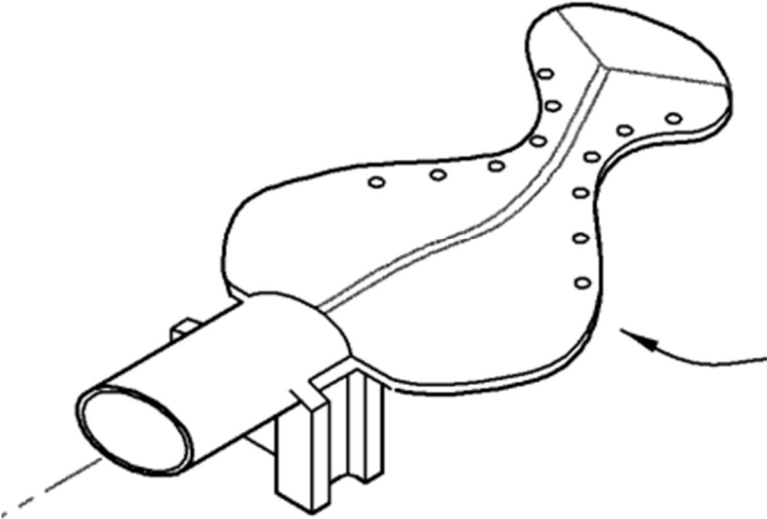
The '418 Patent	Exemplary Disclosures in the Prior Art
wall to one of the second edges of the second wall; and	 FIG. 4C

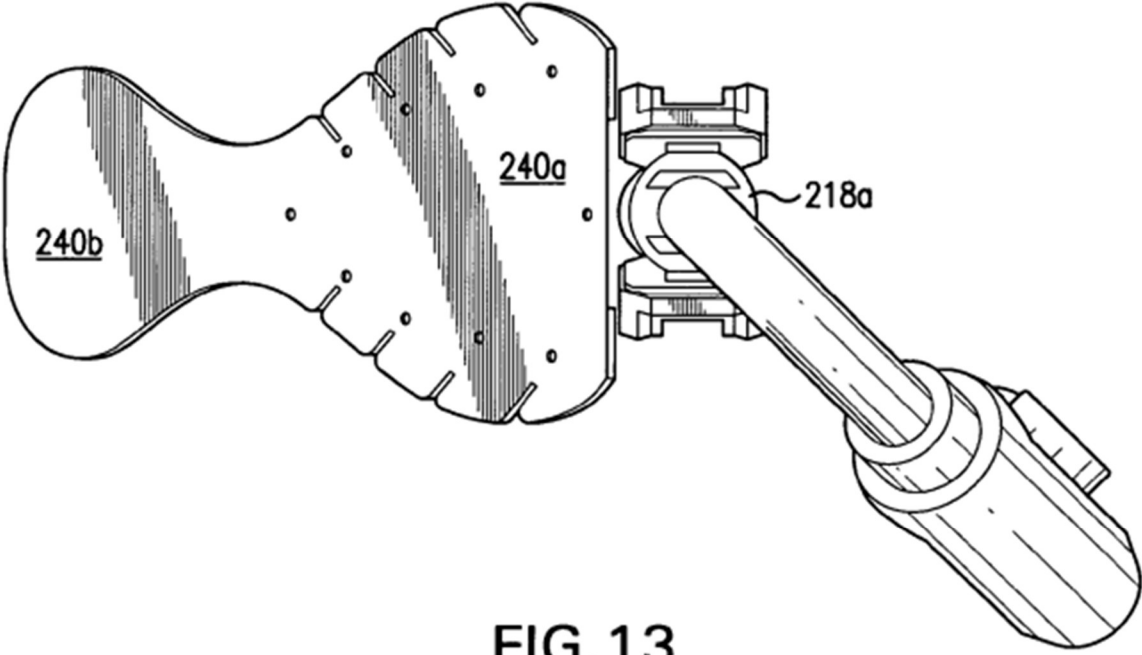
The '418 Patent	Exemplary Disclosures in the Prior Art
	
20[g] a cheek retractor portion extending from the second end and connected to the first wall and the second wall of the main body.	<i>See Limitation 1[k].</i>

The '418 Patent	Exemplary Disclosures in the Prior Art
21 The mouthpiece of claim 20, further comprising a suction connector extending from the first end of the main body, wherein an evacuation conduit within the suction connector is in communication with the interior space between the first wall and the second wall.	<i>See Limitation 1[i].</i>
22 The mouthpiece of claim 21, wherein the suction connector further includes a cutout configured to interlock with a corresponding protrusion of a vacuum adapter.	<i>See Limitation 1[i].</i>
24 The mouthpiece of claim 20, wherein a material used to form the main body is a flexible, translucent, high heat-resistant, autoclavable silicone-based material.	Both Black and AirBug disclose a mouthpiece made from a flexible, translucent, high heat-resistant, autoclavable silicone-based material. Black 8:58-9:8.
25 The mouthpiece of claim 20, further comprising a mouth prop injection-molded in one piece.	Both Black and AirBug disclose a mouthpiece injected molded in one piece. Black, Abstract; 2:8-23.

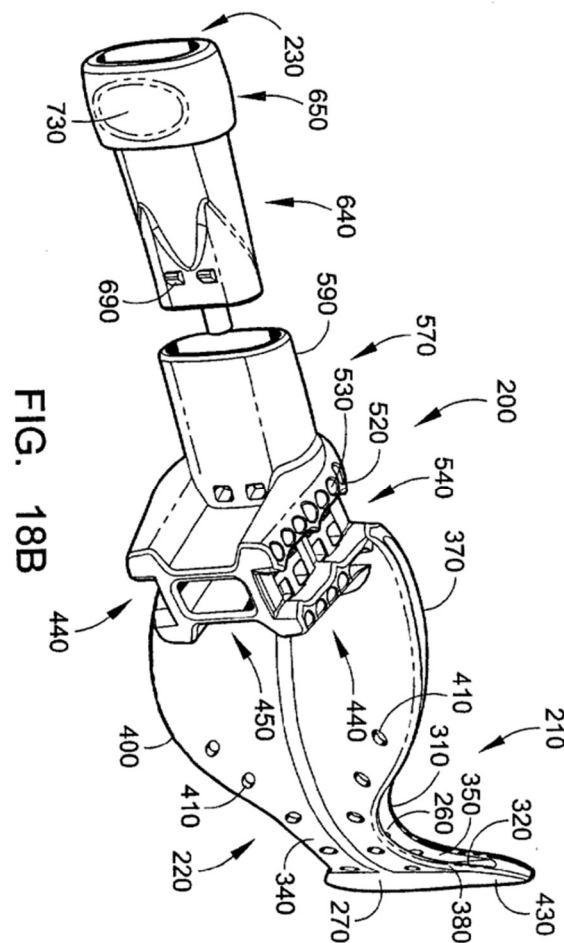
The '418 Patent	Exemplary Disclosures in the Prior Art
	 To the extent that Solmetex disagrees that the AirBug includes a mouth prop injection-molded in one piece, it would have been obvious to injection mold the mouth prop in one piece to reduce costs and ease of use. For example, each of Hirsch, Isolite, and Park disclose one-piece mouth props:

The '418 Patent	Exemplary Disclosures in the Prior Art
	 FIG. 18B 

The '418 Patent	Exemplary Disclosures in the Prior Art
	
26 The mouthpiece of claim 25, wherein the mouth prop is connected to a suction connector.	Both Black and AirBug disclose a mouth prop connected to a suction connector:

The '418 Patent	Exemplary Disclosures in the Prior Art
	 FIG.13

The '418 Patent	Exemplary Disclosures in the Prior Art
	 To the extent that Solmetex disagrees that there are bite blocks connected to suction connectors in Black or AirBug, Hirsch, Isolite, and Park each disclose bite blocks connected to suction connectors.



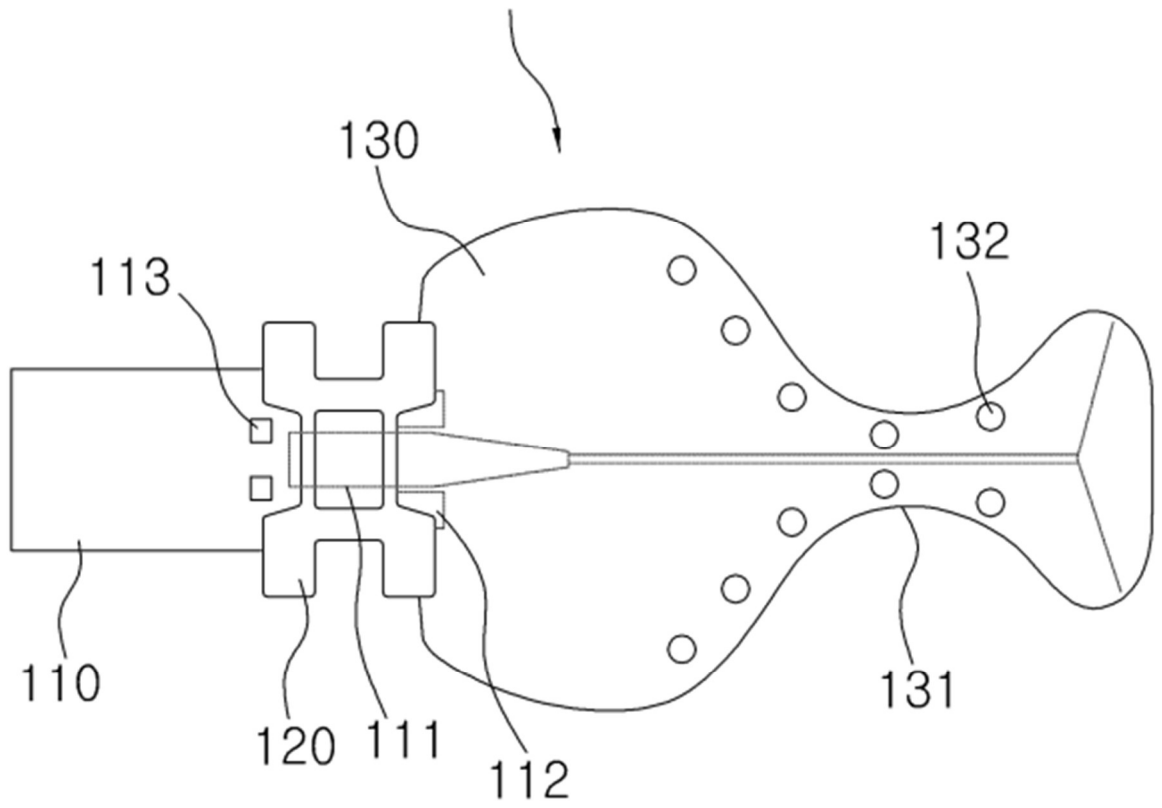
The '418 Patent	Exemplary Disclosures in the Prior Art
	
28 The mouthpiece of claim 20, wherein the plurality of perforations are distributed along one or more of the second edges of the second wall.	See Limitation 1[d]. Claim 28 is also invalid as the “plurality of perforations” lacks any antecedent basis.

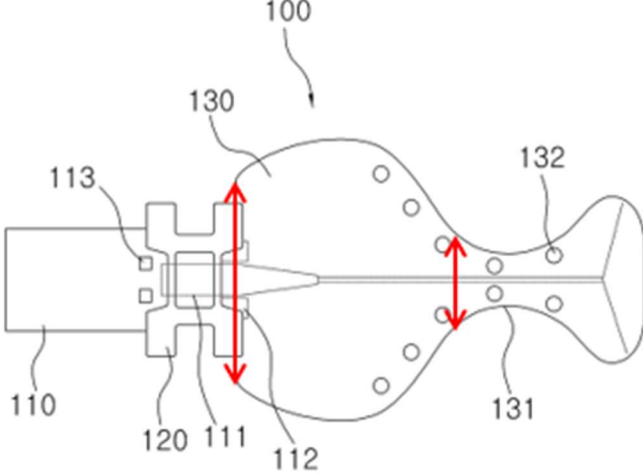
EXHIBIT G-3 (Park in Combination with One or Two of Black, AirBug Mouthpiece, Isolite Mouthpiece, Hirsch, Baughan, Johnson, and the Skill of a PHOSITA)
Initial Invalidity Chart for U.S. Patent No. 12,290,418

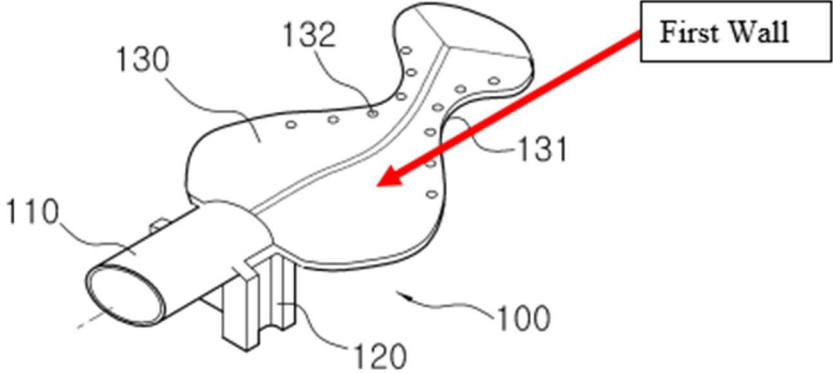
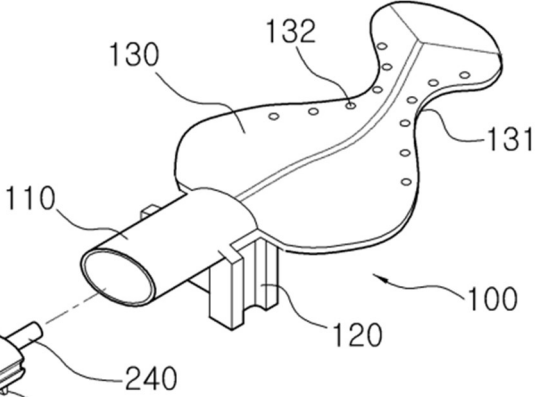
Ascentcare incorporates by reference the cover pleading to its Initial Invalidity Contentions. These Initial Invalidity Contentions, including these claim charts, are not an admission regarding claim scope or the accused products, and, in particular, that the accused products, including any current or past versions of these products, are covered by, or infringe the Asserted Claims, particularly when they are properly construed. Nothing in these contentions should be interpreted as an acquiescence to or assertion of a particular claim construction by the Parties. In addition, these Initial Invalidity Contentions should not be taken as an admission that any of the asserted claims satisfy the requirements of 35 U.S.C. § 112. Where Ascentcare identifies portions of the prior art reference below, those identifications are intended to be exemplary in nature and are based on Ascentcare's investigation to-date. Ascentcare reserves the right to rely on un-cited portions of the reference to establish invalidity of the Asserted Claims.

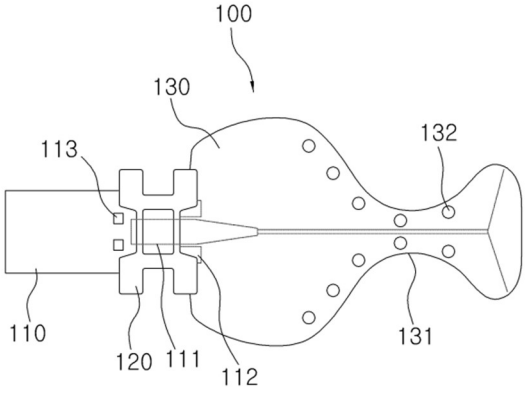
Pursuant to pre-AIA 35 U.S.C. § 103 and as described in the cover pleading and shown below, Black, Hirsch, Park, Baughan, and Johnson were patented or printed in a publication more than one year prior to the filing date of the application, and therefore anticipates and/or renders obvious, either alone or in combination with the other prior art, the knowledge of one of ordinary skill in the art, or one or more of the references identified in the cover pleading and/or one or more of the references from the other claim charts attached as exhibits to these contentions, U.S. Patent No. 12,290,418.

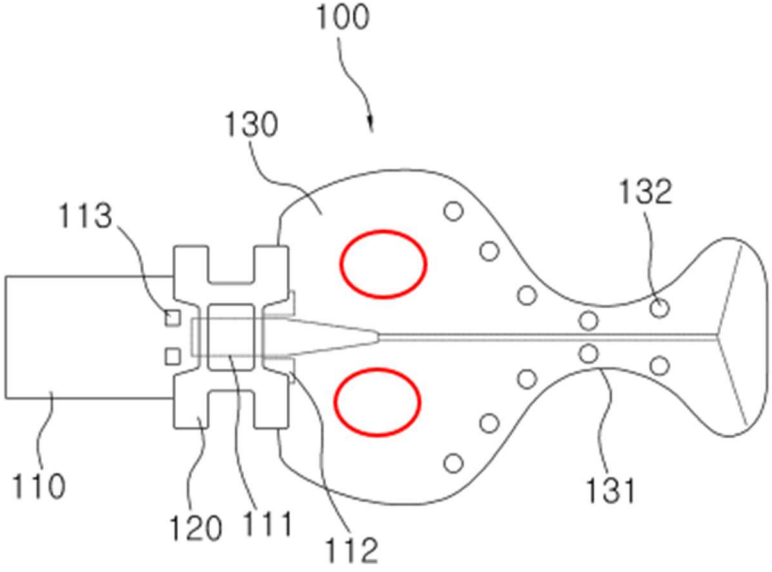
Pursuant to pre-AIA 35 U.S.C. § 103 and as described in the cover pleading and shown below, the AirBug Mouthpiece³ and the Isolite Mouthpiece were on sale or in public use more than one year prior to the priority date of the '418 Patent, and therefore anticipates and/or renders obvious, either alone or in combination with the other prior art, the knowledge of one of ordinary skill in the art, or one or more of the references identified in the cover pleading and/or one or more of the references from the other claim charts attached as exhibits to these contentions, U.S. Patent No. 12,290,418.

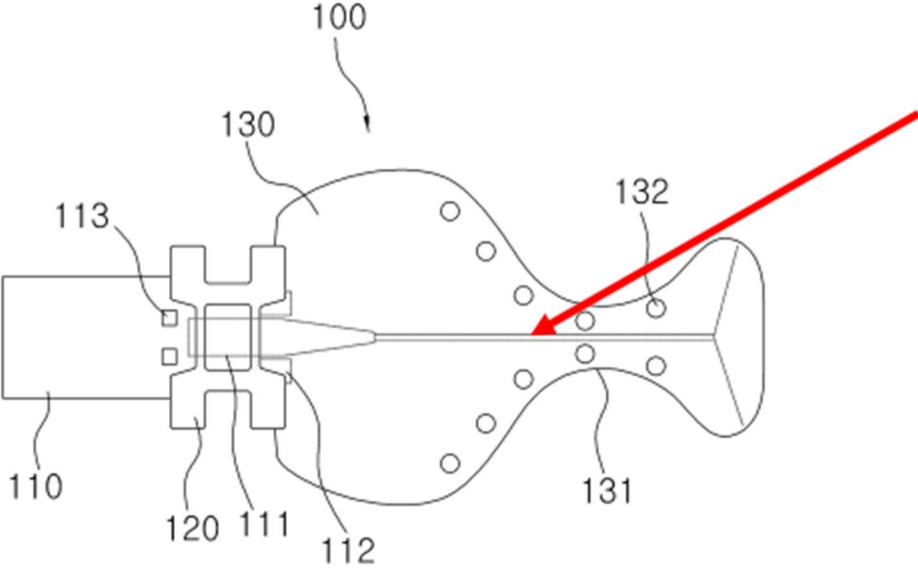
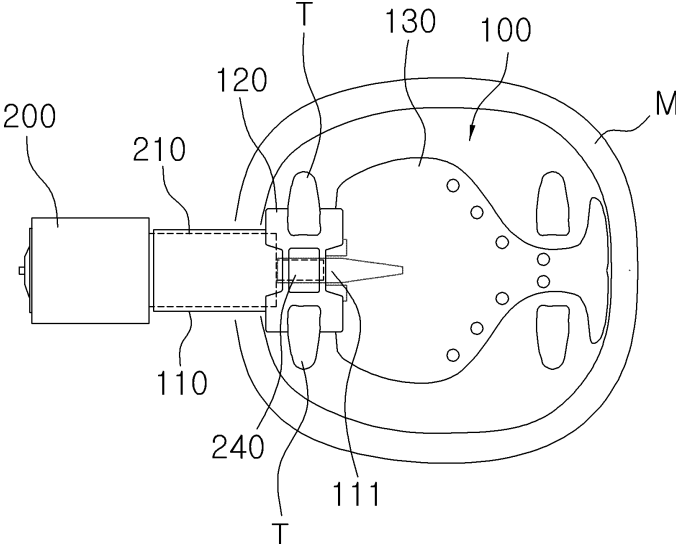
³ It is Ascentcare's understanding that several of the embodying products discussed herein may have multiple embodiments over the years. Discovery is ongoing, and Ascentcare has issued subpoenas seeking the prior art embodiments. To the extent that Ascentcare currently relies on more current embodiments of these mouthpieces, upon information and belief, the differences in those embodiments are minor and do not affect the invalidity analysis. Ascentcare reserves the right to amend these contentions as discovery progresses. It is Ascentcare's understanding, for example that the AirBug Mouthpiece is a product embodying Black, and thus, any of the references to Black likewise support the AirBug Mouthpiece, and vice versa. Likewise, the same analysis applies to the Isolite Mouthpiece and Hirsch.

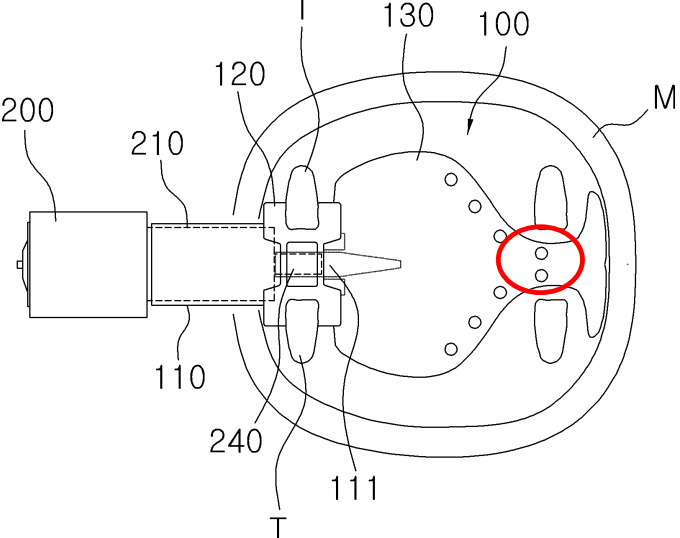
The '418 Patent	Exemplary Disclosures in the Prior Art
1[a] An isolation mouthpiece for use with a suction system in a dental procedure, the isolation mouthpiece comprising	To the extent the preamble is limiting, each of the prior art references discussed herein are isolation mouthpieces for use with a suction system in a dental procedure.
1[b] a main body portion having a first end and a second end, the main body portion including	Park discloses a main body portion having a first end and a second end, one end wider than the other: 
1[c] a first wall having a first shape defined by 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	Park teaches that the tongue retractor 130 has a first wall (anterior wall best shown in FIG. 2) having a plurality of edges. Park, FIG. 2. The first wall extends from the first end near the insertion port 110 to the second end near the concave portion 131. <i>Id.</i>

The '418 Patent	Exemplary Disclosures in the Prior Art
	 A perspective view of a dental device 100. It features a main body portion 130 with a first wall 131 and a second wall 132. A cylindrical component 110 is attached to the first end of the main body portion. A bracket 120 is positioned at the first end. A red arrow points to the first wall 131, which is labeled in a box. The device includes a plurality of perforations along the first wall 131 and the second wall 132.
1[d] a second wall having a second shape defined by 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 first plurality of perforations extending along a portion of the third edge, and a second plurality of perforations extending along a portion of the fourth edge	Park discloses a second wall having a second shape defined by 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 first plurality of perforations extending along a portion of the third edge, and a second plurality of perforations extending along a portion of the fourth edge:  A perspective view of a dental device 100, similar to the one above. It features a main body portion 130 with a first wall 131 and a second wall 132. A cylindrical component 110 is attached to the first end of the main body portion. A bracket 120 is positioned at the first end. A component 240 is shown at the first end of the main body portion. The device includes a plurality of perforations along the first wall 131 and the second wall 132.

The '418 Patent	Exemplary Disclosures in the Prior Art
	
1[e] 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	Park is silent regarding whether any structures are formed inside the interior chamber of the main body, which may be intentional as Park mentions that “common features,” such as anti-collapse structures, are “omitted.” Park, ¶ 22. However, a PHOSITA would understand that when suction is applied through the suction port 112, the first wall and the second wall are likely to collapse under the suction force. Baughan, 3:46-48. This collapsing would occur because Park teaches that the mouth prop comprises a flexible material, such as silicone. Park, ¶¶32, 34. The sidewalls and the insertion part 111 would help resist this collapsing force, but a PHOSITA would understand that additional anti-collapsing structure would assist at the weakest areas of the tongue retractor 130. More specifically, an area of the mouth prop furthest from a rigid structure, such as the sidewall, the socket 111, or the insertion port 110 would be most likely to collapse under suction. A PHOSITA would understand that these areas, depicted below, are the most likely areas to collapse under suction due to their location and distance from rigid structure. <i>Id.</i>

The '418 Patent	Exemplary Disclosures in the Prior Art
	 If these areas collapse under suction, suction power would be significantly reduced or blocked entirely. Thus, a PHOSITA would have been motivated to add anti-collapsing structure to prevent collapse. <i>Id.</i> Moreover, it is unclear whether the mouth prop 100 includes a spine or other rigid structure running through the middle of the mouth prop 100. FIG. 3 of Park suggest that something is running from the socket 111 toward the cheek retractor end of the mouth prop. Park, FIG. 3.

The '418 Patent	Exemplary Disclosures in the Prior Art
	 However, this line is not shown in FIG. 6.  Thus, 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. Park, ¶ 39. Thus, the weakest part of the mouth prop may actually be the exact center of the mouth prop (see annotated FIG. 6 below).

The '418 Patent	Exemplary Disclosures in the Prior Art
	 Regardless, a PHOSITA would know that Park is weak in at least one area and may collapse or restrict fluid communication due to wall collapse caused by suction due to the flexible material comprising the mouth prop 100. Park, ¶ 32. To prevent collapse or restriction, a PHOSITA would have been motivated to add mechanical elements that prevent collapse under suction. However, Black teaches transverse walls 348c spaced apart from each other to form channels 342 therebetween. Black, 14:21-47. Black explains that these transverse walls form conduits for debris and fluid, “thereby allowing for simultaneous aspiration of debris and fluid from top (palate of mouth) to bottom (floor of mouth), and through the passageway, during dental procedures.” Black, 14:38-47. Black also explains that the transverse walls prevent collapse under suction. Black, 14:21-47. The transverse walls 348c are a wave-like structure, as claimed. 51-52. Indeed, the Examiner also found that Black taught the claimed wave-like structure. <i>Id.</i> The transverse walls extend from an interior surface of the posterior flap 348a and to the anterior flap 348b (transverse walls shown dashed). Black, 14:21-47. Thus, the transverse walls are protrusions. <i>Id.</i> Also, because the transverse walls connect to both the anterior and posterior wall, they form “contact points” with both the anterior and posterior wall at those connection locations.

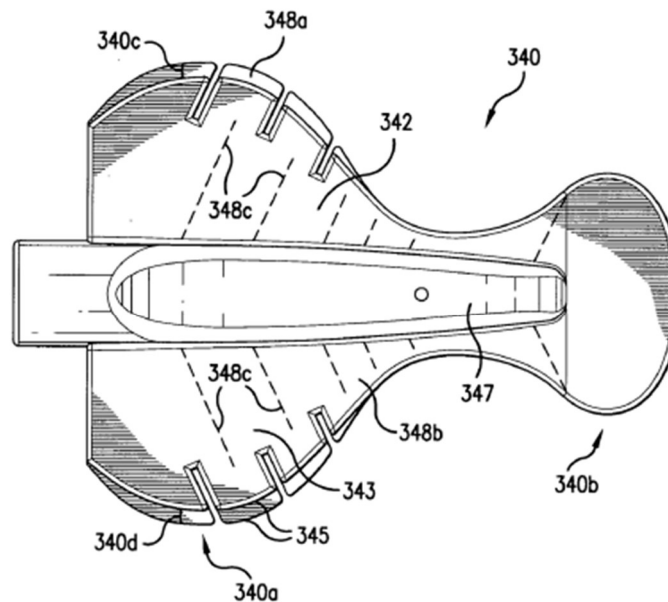


FIG. 23A

This limitation requires that the bridge structure has a plurality of “wave-like” protrusions. In light of the specification, this merely means that the wave-like structure needs spaced-apart projections with gaps therebetween. The resulting shape of any such bridge structure is necessarily a wave shape. Black teaches a square wave shape formed by the channels 342 and the transverse walls 348c (i.e., the presence transverse walls 348c and the gaps therebetween that form the channels 342). *See*, annotated FIG. 23C below.

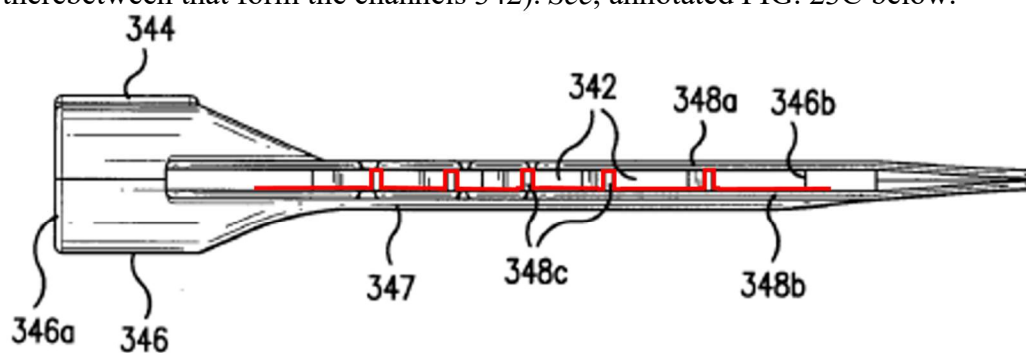
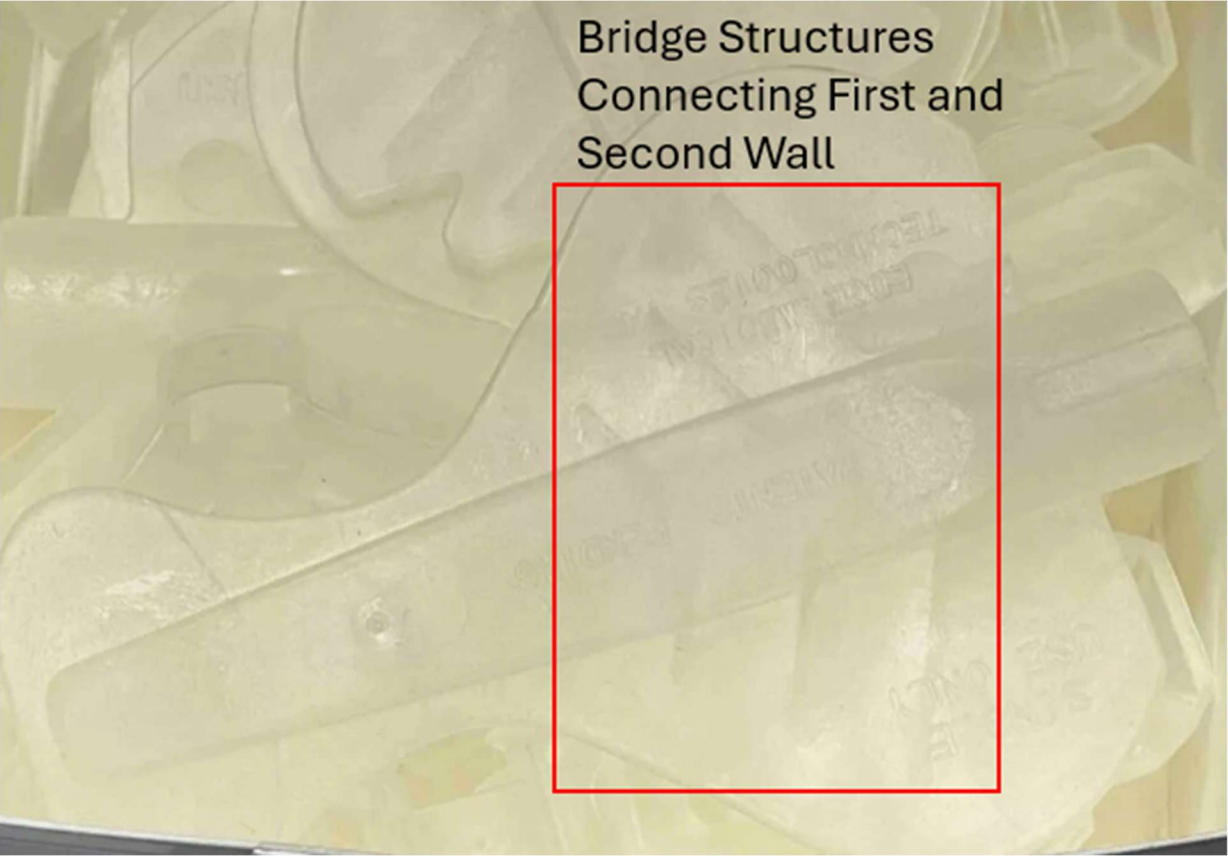
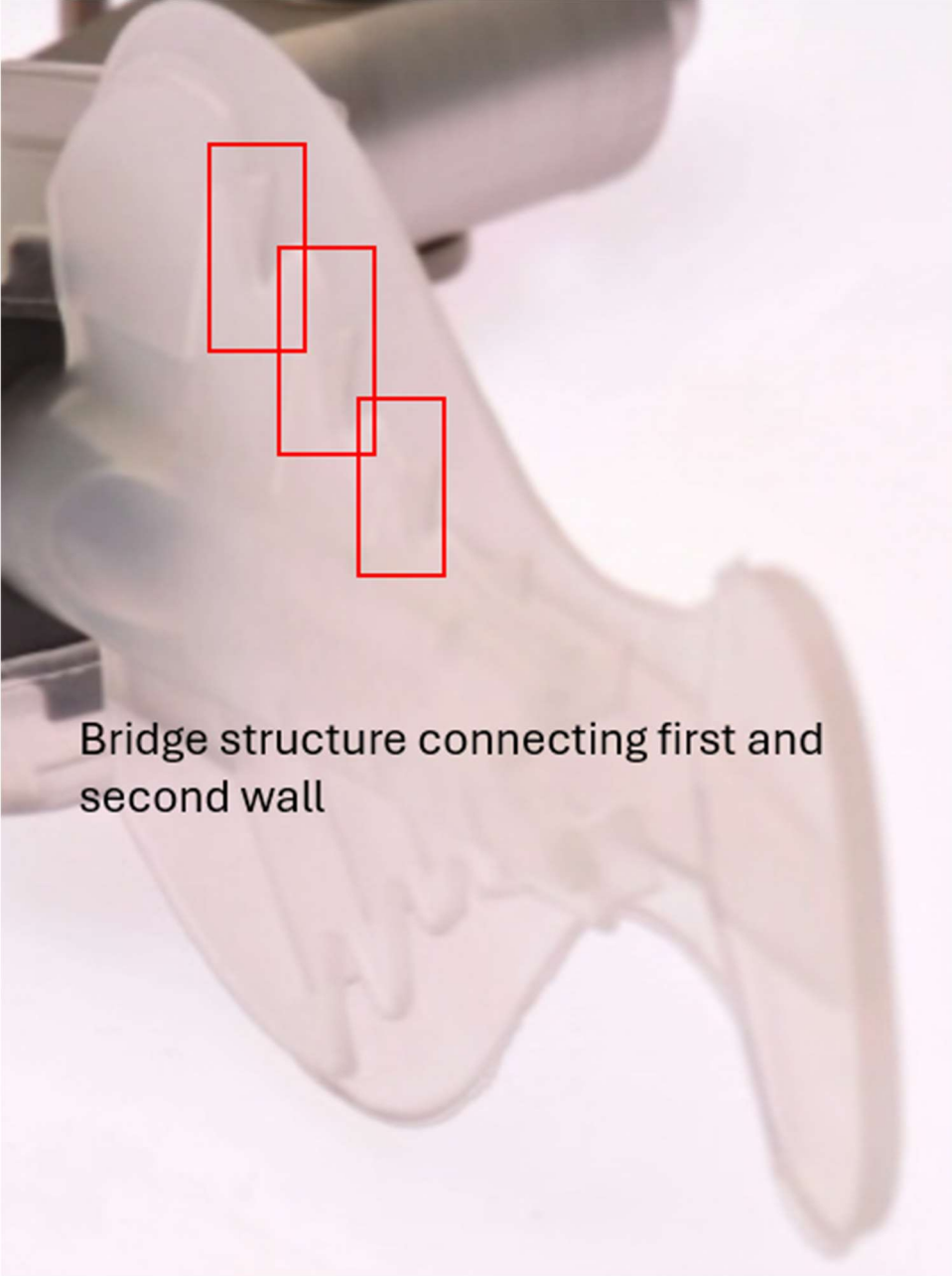
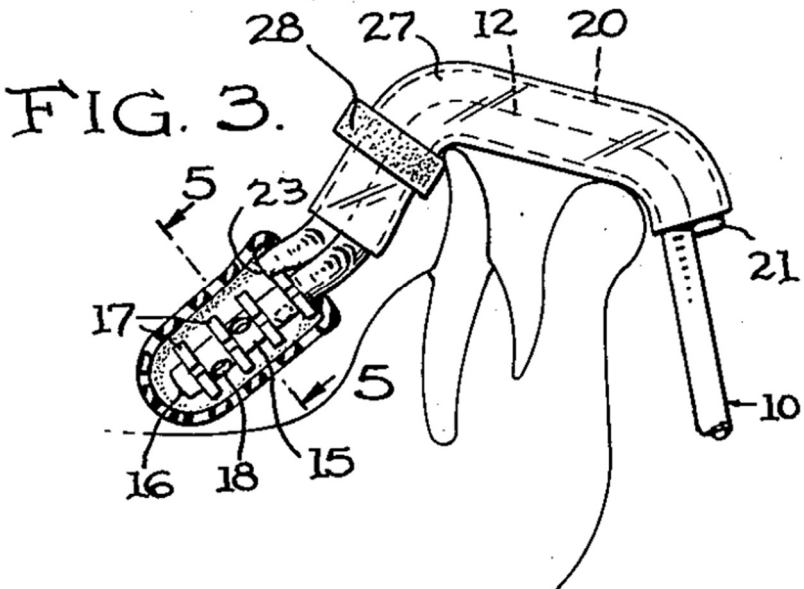
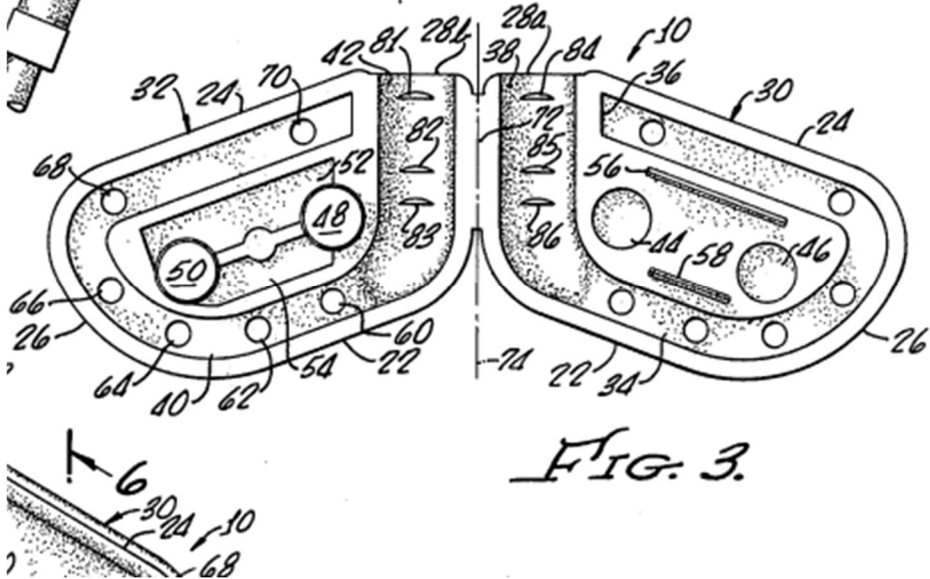


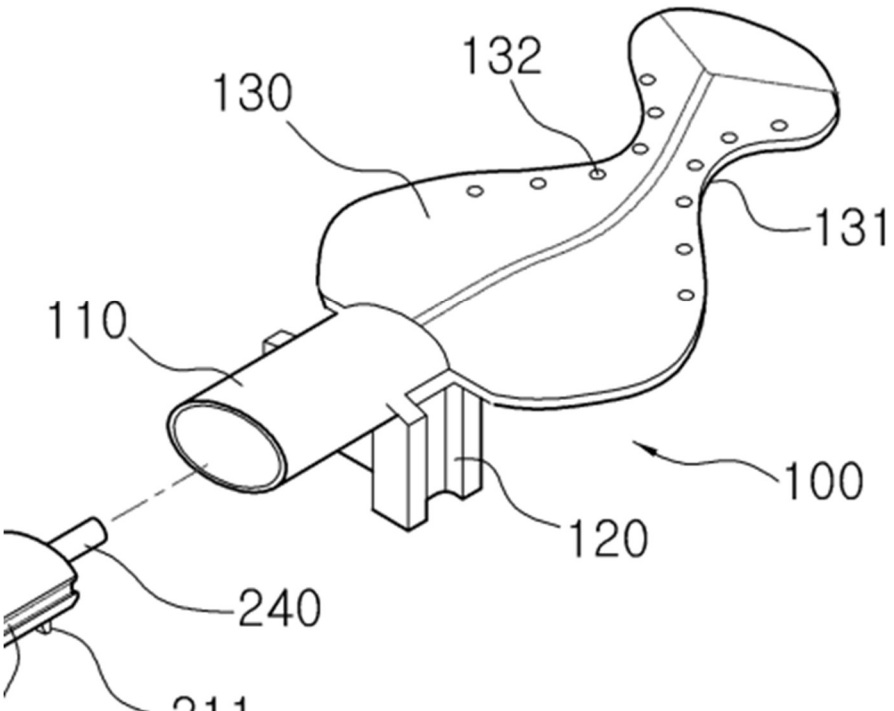
FIG. 23C

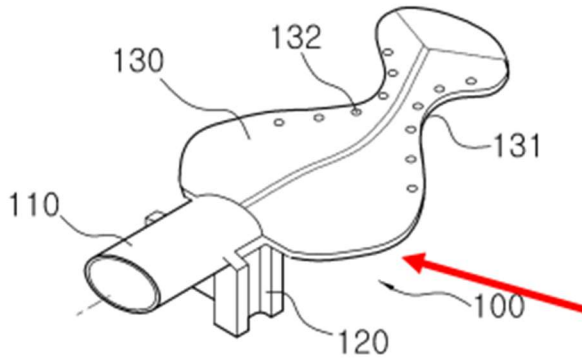
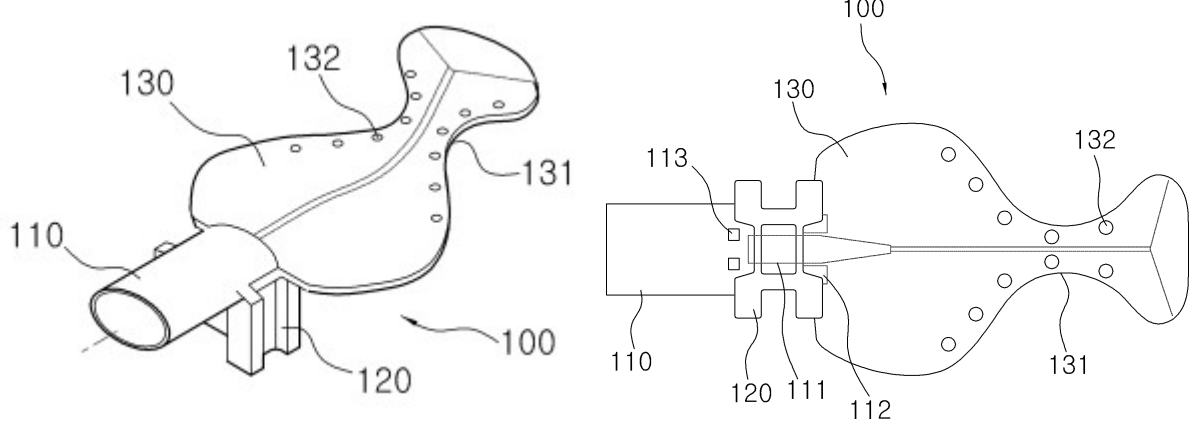
The '418 Patent	Exemplary Disclosures in the Prior Art
	The AirBug Mouthpiece discloses the same: 

The '418 Patent	Exemplary Disclosures in the Prior Art
	 Bridge structure connecting first and second wall

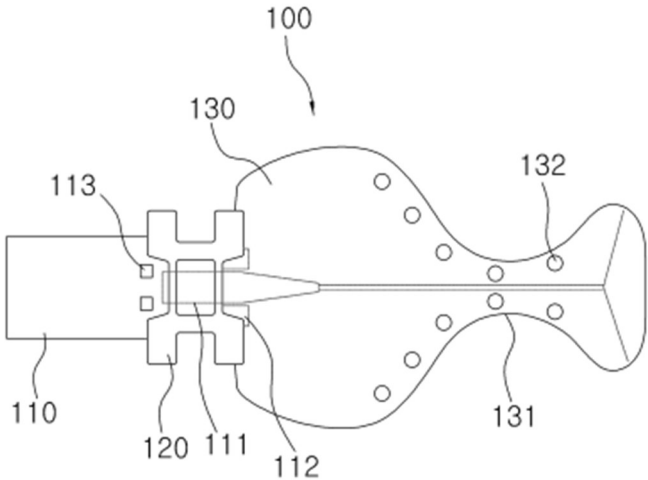
The '418 Patent	Exemplary Disclosures in the Prior Art
	Baughan teaches such a mechanical element that prevents collapse under suction. Baughan, 3:43-48. Specifically, Baughan teaches three projecting discs 17 that prevent collapse under suction when a sleeve is inserted over a tube 15. Baughan, 2:19-25, 2:51-55, 3:43-48. The discs 17 project outward from the tube, span the distance between the tube and the sleeve, and engage the sleeve. <i>Id.</i> These rigid structures, spaced apart from each other, prevent the sleeve from collapsing under suction. <i>Id.</i> Baughan teaches that the projecting discs 17 are secured to the tube 15, and the sleeve rests upon the discs. Baughan, 2:19-25, 2:51-61. While Baughan teaches outward projecting discs, a PHOSITA using basic common sense, would modify the discs 17 for a tube-shaped embodiment to be projections for a flatter, non-tube embodiment. 3. Indeed, it was well known in the art how to make projections on a flat surface. Johnson, FIG. 3, 4:16-23; 

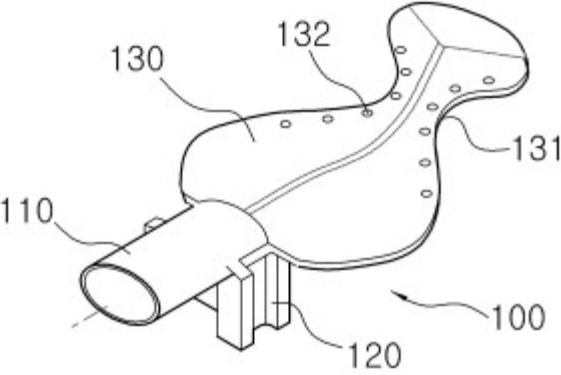
The '418 Patent	Exemplary Disclosures in the Prior Art
	 <i>FIG. 3.</i>
1[f] and wherein the first wall and the second wall are shaped such that the first edge of the first wall corresponds in shape to the third edge of the second wall and the second edge of the first wall corresponds in shape to the fourth edge of the second wall; and wherein the first shape of the first wall corresponds to the second shape of the second wall, and	Park discloses a mouthpiece in which the first wall and second wall are identically shaped:

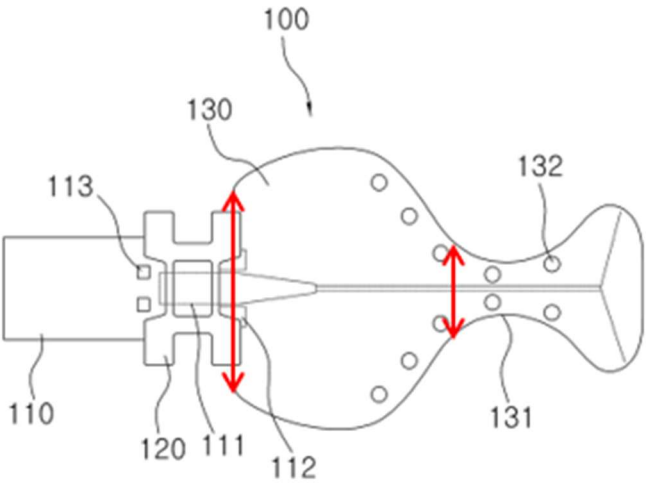
The '418 Patent	Exemplary Disclosures in the Prior Art
	
1[g] a third wall connecting the first wall and the second wall such that the first wall is spaced from the second wall	The tongue retractor 130 of Park has a second (posterior) wall that is exactly the same shape as the first wall. Park, FIG. 2-3. Thus, as shown in FIG. 3, the tongue retractor 130 of Park extends from the first end to the second end and includes a plurality of edges. <i>Id.</i>

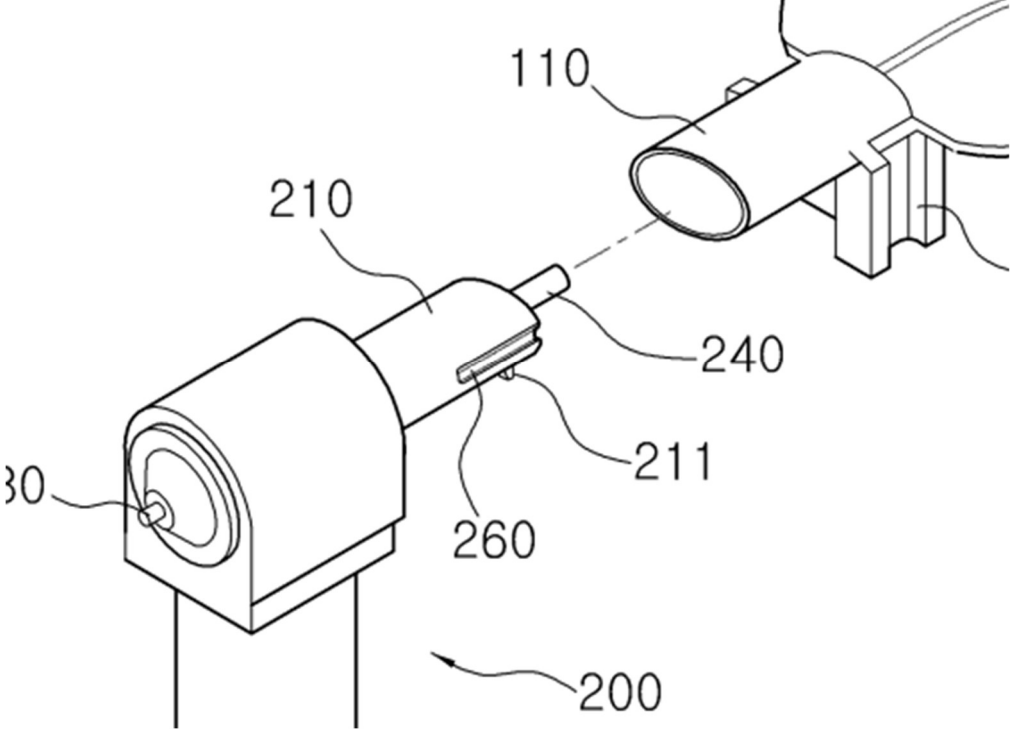
The '418 Patent	Exemplary Disclosures in the Prior Art
	 Second Wall (not shown in FIG. 2, but under first wall) The second wall is spaced at a distance to the first wall because Park has an interior chamber and because of the existence of the sidewalls. The tongue retraction portion 130 defines an interior space. Park, ¶ 26. In fact, the tongue retractor 130 is a four-sided body with an anterior wall, a posterior wall, and two sidewalls that together enclose an interior open space where suction occurs. Park, FIG. 2. The interior space corresponds to the distance between the first and second wall.  A PHOSITA would recognize Park as an enclosed mouthpiece with sidewalls from FIGs. 1-3 of Park. FIG. 2 even illustrates the sidewalls extending into the insertion port 110, thereby clearly demonstrating their presence. Park illustrates a continuous sidewall around all edges of the tongue retractor 130, and that continuous edge extends onto the insertion port 110 and the tooth support section 120. <i>Id.</i> Thus, Park illustrates an isolation mouthpiece with sidewalls. Park, FIG. 2. These sidewalls are the third wall that connect the first and second wall along the edges.

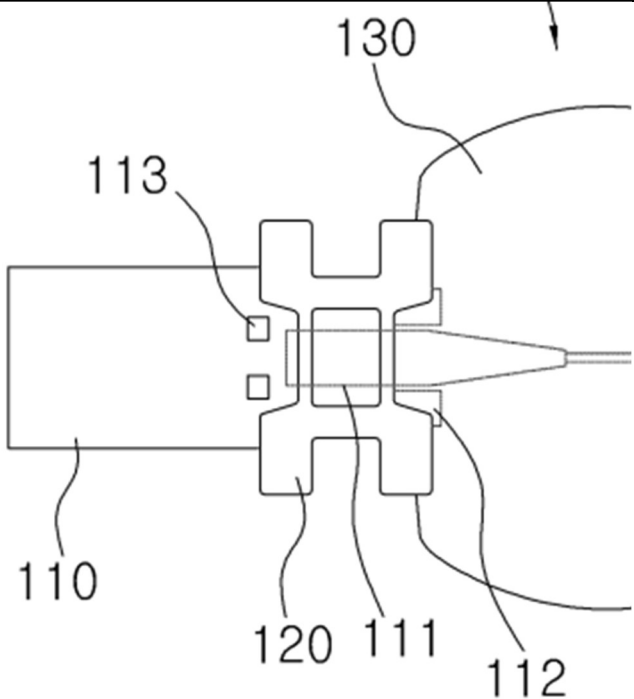
The '418 Patent	Exemplary Disclosures in the Prior Art
	The specification further supports this conclusion. As shown in FIG. 3, the mouth prop 100 includes two suction ports 112 formed in the hollow insertion port 110 and extending into the tongue retractor 130. Park, FIG. 3, ¶¶ 27-28. Park teaches that the insertion port 110 is hollow and only <i>one</i> end of the insertion port 110 is open. Park, ¶ 27-28. Park further teaches that the insertion port 110 has a central interior that includes a post fitting groove 111 and suction ports 112. <i>Id.</i> Because only one end of the insertion port 110 is open, Park teaches that the second end, where the suction ports 112 are formed (see Park, FIG. 2), is enclosed and extends into an interior space of the tongue retractor 130. Park, ¶ 26-31. Indeed, Park specifically teaches that the tongue retractor 130 extends from the insertion port 110. Park, ¶ 26. The existence of holes further supports the conclusion that Park teaches an interior space. The suction ports 112 only extend partially into the tongue retractor 130, and the suction ports 112 do not extend to the through-holes 132 as a dedicated channel. Park, ¶ 26-31, FIG. 3. Additionally, Park fails to teach that any suction can occur through the sides of the mouth prop 100. Thus, a PHOSITA would understand that Park's mouth prop 100 has an interior open space that fluidly connects the holes 132 to the suction ports 112. Park, ¶¶ 30-31, FIG. 2. If the mouth prop 100 did not include an interior open space formed in the tongue retractor 130, then the holes 132 would serve no purpose, and the suction ports 112 would aspirate nothing. The existence of an interior chamber of the mouth prop is necessary to fluidly connect the suction ports 112 and the holes 132; otherwise Park would be inoperable to perform "suction of foreign substances in the oral cavity." Park, ¶ 10. Finally, Park depicts the suction ports 112 (and the socket 111) using a line of a lighter shade than the edges of the tongue retractor 130. Park, FIG. 3. This is likely because the suction ports are only partially visible through clear silicone, but indicating that they extend into an internal chamber of the tongue retractor 130. Park, ¶ 32. These differences in shading are clearer on a computer screen than a printed copy.

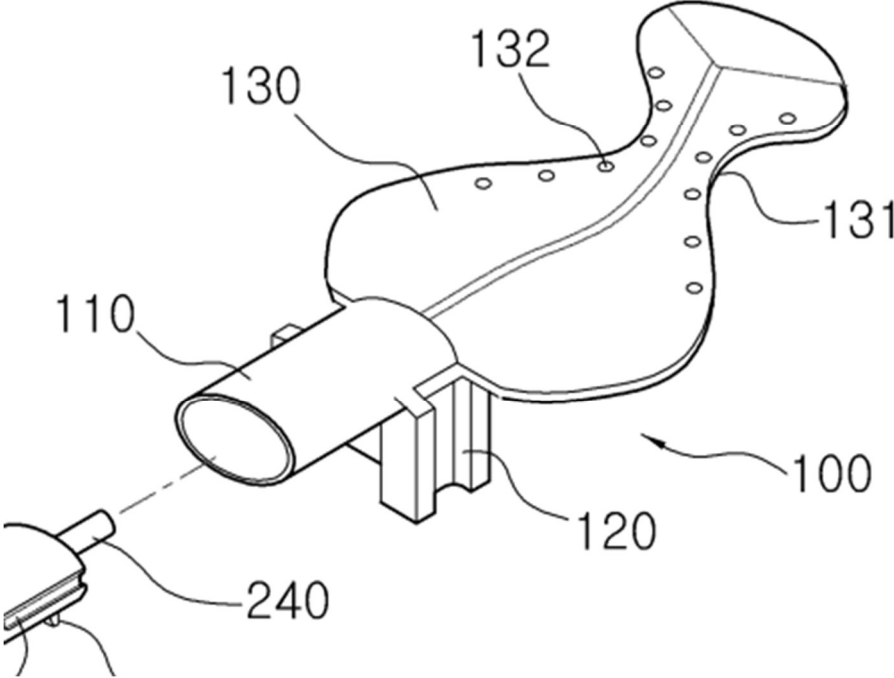
The '418 Patent	Exemplary Disclosures in the Prior Art
	 Indeed, a PHOSITA would know that a mouth prop having through holes 132 that do not fluidly connect to the suction ports 112 would allow debris and fluid to pass through the through holes 132 and down a patient's throat, something a PHOSITA would know to avoid. If the suction connector 112 was not fluidly connected to the holes 132 through the tongue retractor 130 of the mouth prop 100, the suction port 112 would serve no purpose or be extremely ineffective, and a patient might choke or experience severe discomfort by the debris, fluid, etc. passing through the holes 132 during a dental procedure. Moreover, a PHOSITA would know that a dentist would position the mouth prop 100 in a patient's mouth such that the concave area 131 would wrap behind teeth on the side of the mouth where a dentist would operate. Park, ¶ 47, 31. FIG. 6. 2. This is because the whale tale end, opposite the suction connector 112, retracts the patient's cheek near a dental operation. Park, ¶ 31. If the through-holes 132 were not fluidly connected to the suction ports 112 through the tongue retractor 130, then the suction ports 112 of the mouth prop 100 of Park would be positioned at the furthest possible location in the mouth from the dental operation. A PHOSITA would know that suction should occur as close as possible to the operating area to maximize capture of debris, fluids, and aerosols. <i>Id.</i> The farther away suction is positioned from generated fluid, debris, blood, etc., the less powerful it becomes; meaning the suction would not effectively aspirate unwanted fluids and debris in the mouth. <i>Id.</i> In other words, a PHOSITA would understand that the mouth prop of Park fluidly connects the suction ports 112 to the holes 132 through an inner chamber of the tongue retractor 130 to guide and channel the suction applied through the suction ports. A PHOSITA would understand that the only logical reason a mouth prop configured to expel debris and fluid (Park, ¶ 28, 9) would include through holes 132 is to ensure that suction occurs through the holes 132 via a fluid connection

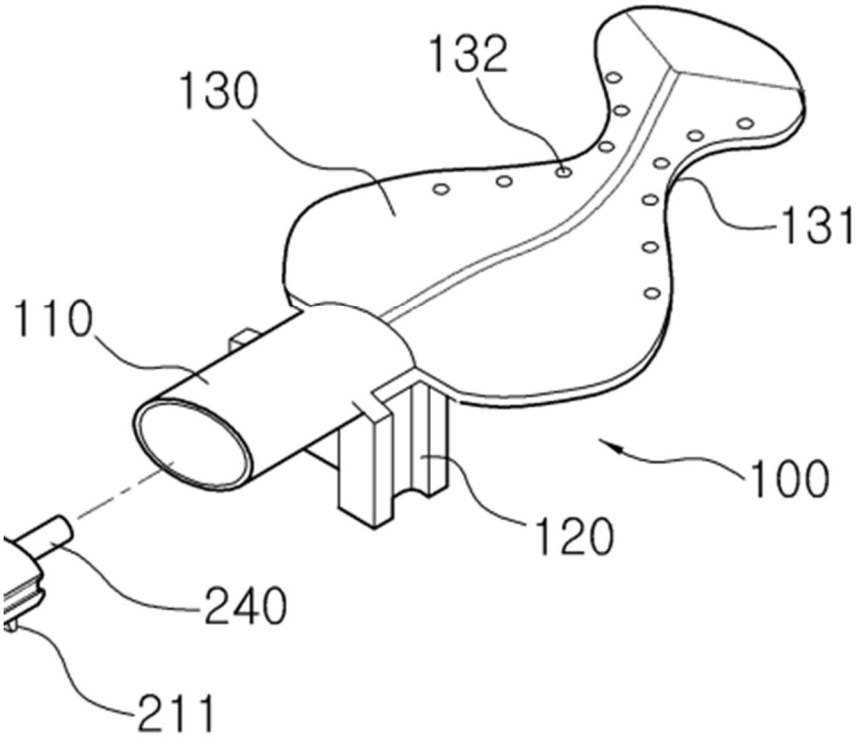
The '418 Patent	Exemplary Disclosures in the Prior Art
	with the suction ports 112, especially considering the holes 132 align with the location where a dental operation occurs. The only way the holes 132 would have an efficient fluid connection with the suction ports 112 is if the mouth prop 100 included an inner chamber through the mouth prop. <i>Id.</i> Thus, Park, at worst, implicitly teaches a four-sided mouth prop formed as a pocket with an inner chamber formed between the four walls. <i>Id.</i> Thus, Park teaches a tongue retractor 130 extending from the insertion port 110 to the cheek retractor near the concave portion 131 and having an interior open space formed in the tongue retractor 130 between the suction ports 112 and the holes 132. <i>Id.</i> 
1[h] 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	Park discloses a mouthpiece that is wider at one end.

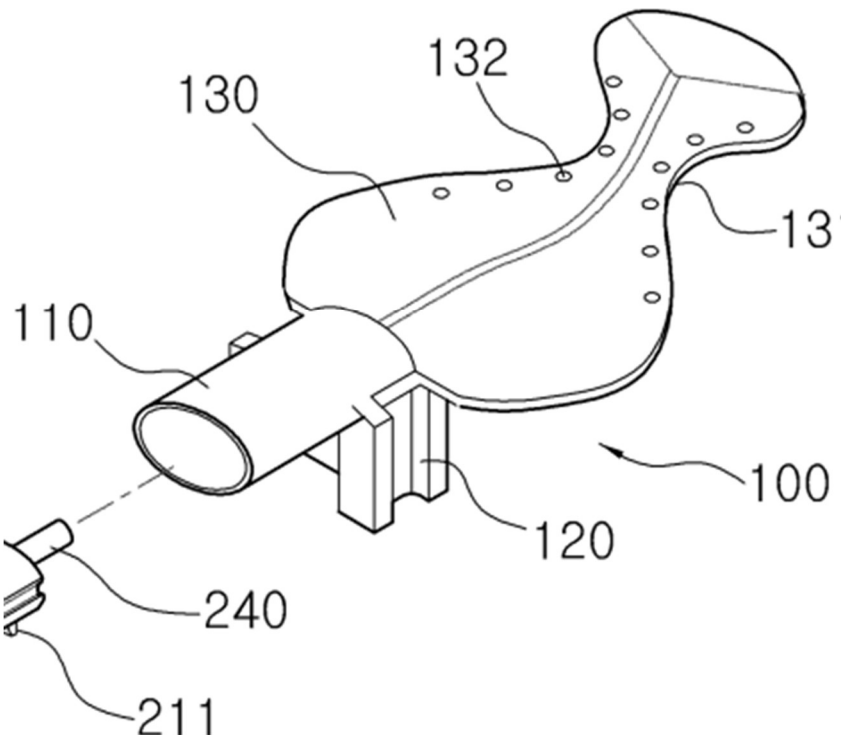
The '418 Patent	Exemplary Disclosures in the Prior Art
width is greater than the fourth width	
1[i] a suction connector portion extending from the first end of the main body portion, the suction connector portion including: a tubular conduit including an opening extending through the conduit and in fluid communication with the plurality of troughs of the wave-like structure, the opening being configured to receive a vacuum portion of the suction system therein, the tubular conduit further including a cutout configured to engage a protrusion on the suction system to aid in coupling the isolation	Park discloses such a suction connector portion:

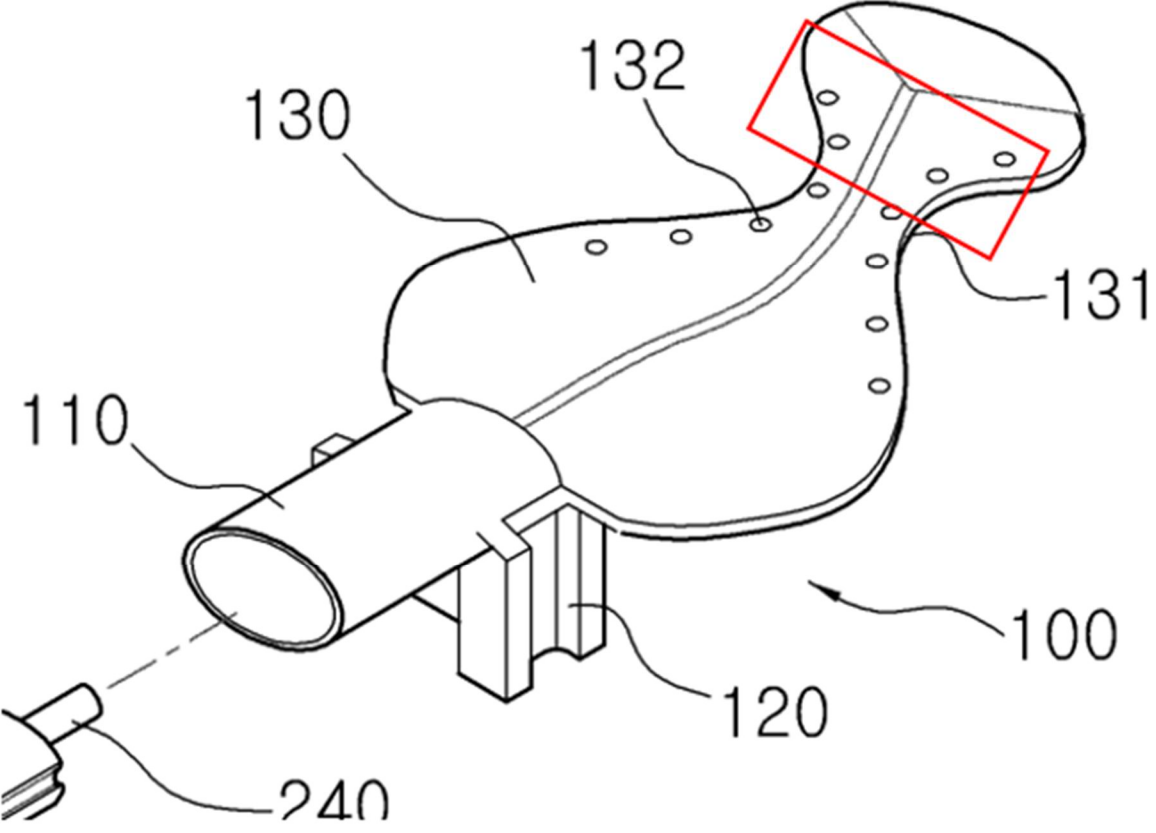
The '418 Patent	Exemplary Disclosures in the Prior Art
mouthpiece to the suction system, and	

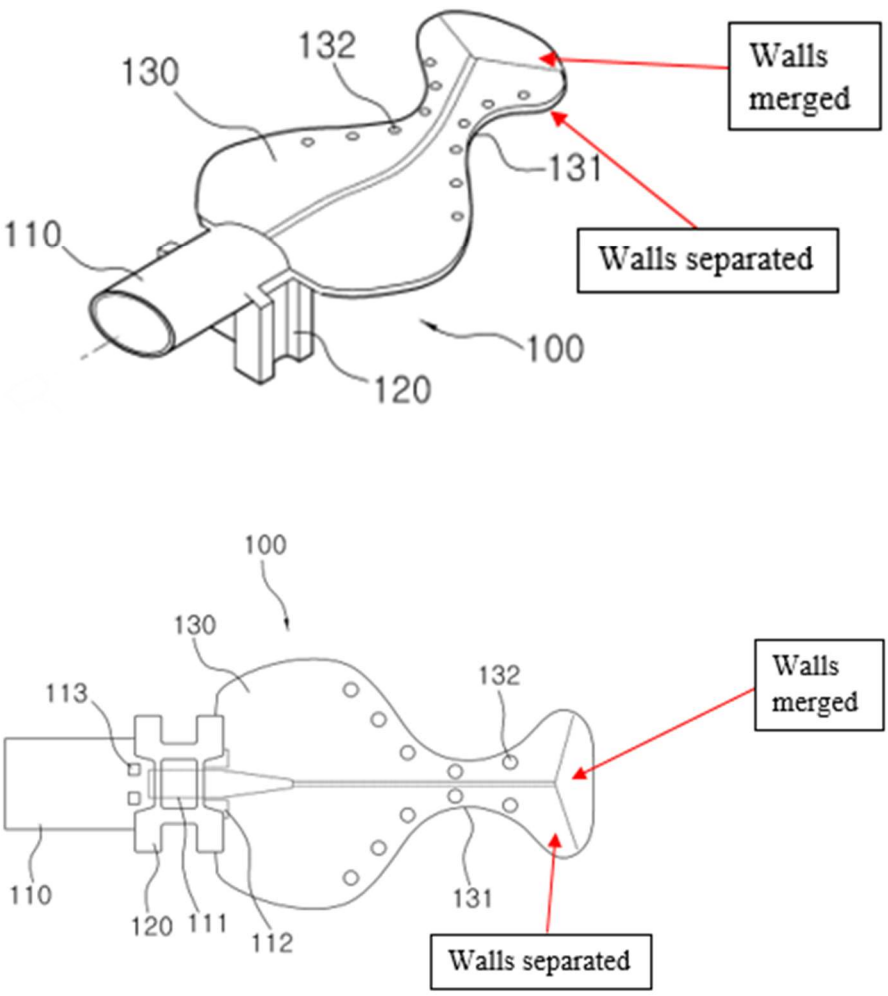
The '418 Patent	Exemplary Disclosures in the Prior Art
	 It would have been obvious to a PHOSITA to modify Park's suction connector cutout. Holes formed on the suction connector that accept projections on the vacuum tube are merely an obvious variant of lock-and-key mechanism, since it is just choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success. MPEP 2143(I)(E).
1[j] 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	Park discloses an inwardly tapering mouthprop.

The '418 Patent	Exemplary Disclosures in the Prior Art
the second side each including a plurality of ridges; and	 To the extent that Solmetex disagrees, inwardly tapered mouthprops with a plurality of ridges were well-known in the art as mouthprops followed the hinged-shape of a jaw. Further, such inwardly tapered mouthprops were taught by Black, AirBug, Hirsch, and Isolite. <i>See</i> G-1 and G-2.

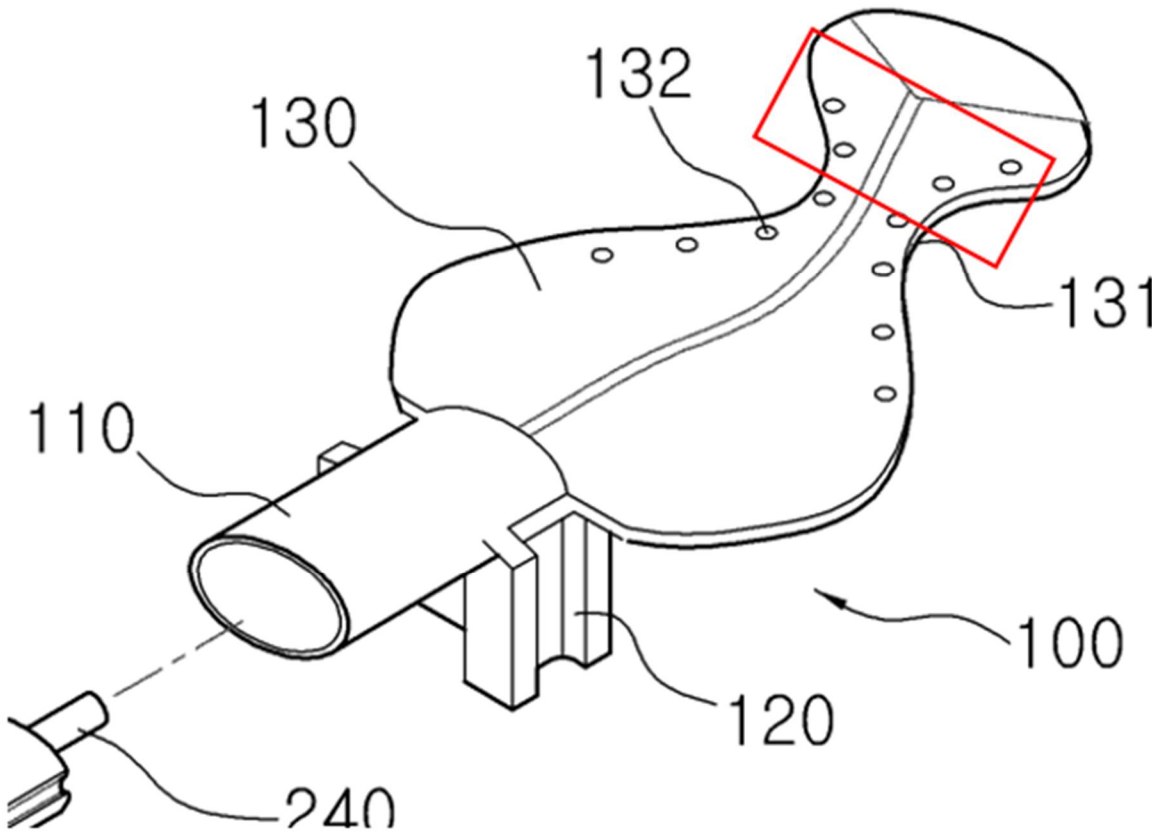
The '418 Patent	Exemplary Disclosures in the Prior Art
1[k] a cheek retractor portion having a first cheek-retractor end coupled to the second end of the main body portion and a second cheek-retractor end, the first cheek-retractor end and the second cheek-retractor end each having rounded edges.	Park teaches 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: 
2 The isolation mouthpiece of claim 1, wherein the first plurality of perforations includes five perforations and the second plurality of perforations include five perforations.	Park discloses at least five perforations in each plurality of perforations.

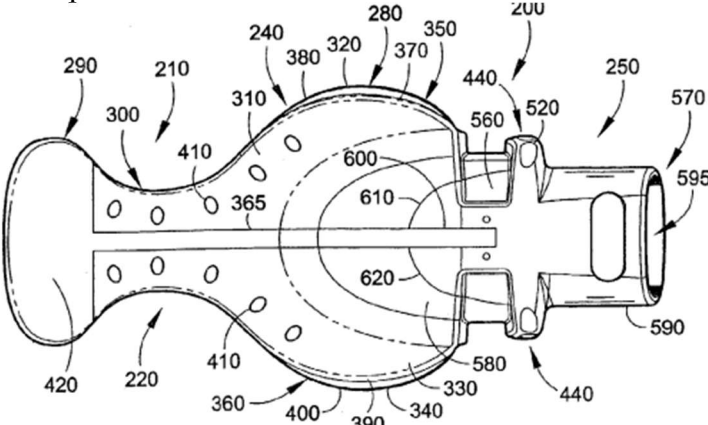
The '418 Patent	Exemplary Disclosures in the Prior Art
	 If Solmetex argues that there are an insufficient number of perforations in the main body (e.g., there must be at least 10 total perforations), adding more perforations would be obvious to a PHOSITA, as a mere duplication of parts. MPEP 2144.04(VI)(B). Further, a PHOSITA would understand that additional perforations on the main body would increase and distribute suction or fluid flow.
3 The isolation mouthpiece of claim 2, wherein at least one of the first plurality of	See Claim 2.

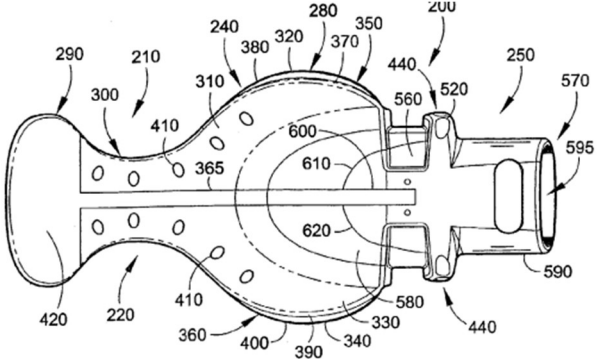
The '418 Patent	Exemplary Disclosures in the Prior Art
perforations and at least one of the second plurality of perforations are located adjacent to the second end and near the cheek retractor portion.	
4 The isolation mouthpiece of claim 1, wherein the first wall and the second wall of the main body portion transition into and are connected in the cheek retractor portion to form the cheek retractor portion, the first wall and the second wall of the main body portion that transition into the cheek retractor portion are spaced	Park teaches two walls separated from each other to form an inner cavity anywhere holes 132 exist. FIG. 2 shows holes 132 are present right up until the two lines that form a “Y-shape” near the end of the mouth prop, which means that the first and second walls that transition into the cheek retractor portion remain separated for a distance within the cheek retractor portion. Past the “Y-shaped” lines, the first wall connects to the second wall, such that they are no longer separated. <i>Id.</i>

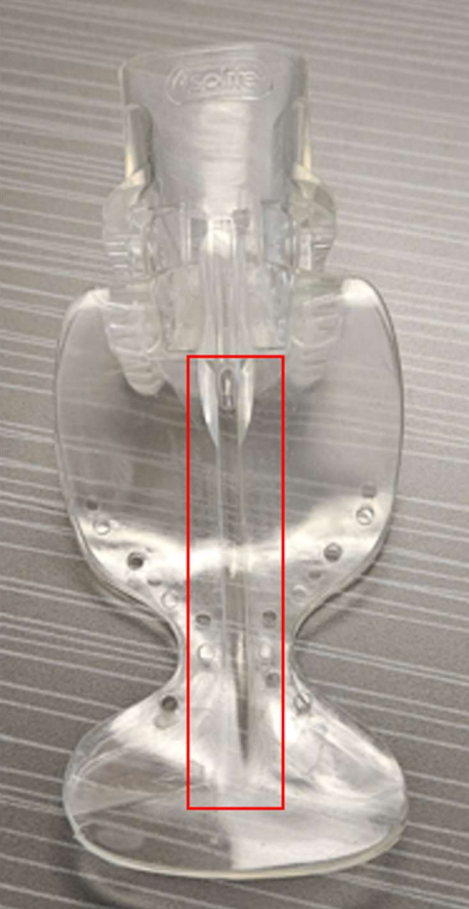
The '418 Patent	Exemplary Disclosures in the Prior Art
apart from each other for a distance within the cheek retractor portion before being connected to each other in the cheek retractor portion.	 Additionally, Park's design is basically identical to the cheek retractor that Patent Owner appears to assert as infringing this limitation. <i>Id.</i>

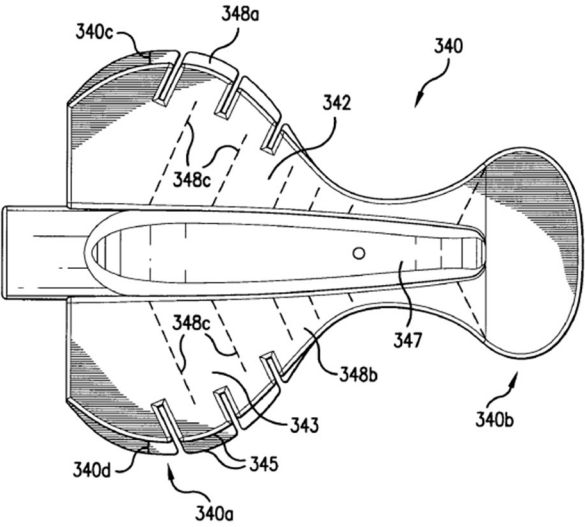
The '418 Patent	Exemplary Disclosures in the Prior Art
	
5 The isolation mouthpiece of claim 4, wherein at least one of the first plurality of perforations and at least one of the second plurality of perforations are located adjacent to the second end and near the cheek retractor portion.	Park teaches the perforations adjacent to the second end and near the cheek retractor portion.

The '418 Patent	Exemplary Disclosures in the Prior Art
	
6 The isolation mouthpiece of claim 1, wherein the cutout has a shield shape.	<i>See</i> Limitation 1[i]. To the extent that Solmetex contends that none of the references disclose a “shield shape,” Ascentcare further notes that the USPTO has already noted that “having a particular shape for the cutout is a matter of choice in which a person of ordinary skill in the art would have found obvious by the absent [<i>sic</i>] of persuasive evidence in the present application, that the particular configuration of the claimed shape of the cutout is significant.” .” <i>See</i> Prosecution History ’329 Patent at Office Action 9/23/2023, page 11, ¶ 32. Changing the slots 630 from rectangular to a “shield” shape is obvious. MPEP 2144.04(IV)(B). The Supreme Court has likewise found modifications on one system to fit another on the market to be obvious to a PHOSITA. <i>KSR Int’l Co. v. Teleflex Inc.</i>, 550 U.S. 398, 424, 127 S. Ct. 1727, 1744, 167 L. Ed. 2d 705 (2007) (“The interaction of multiple components means that changing one component often requires the others to be modified as

The '418 Patent	Exemplary Disclosures in the Prior Art
	well. Technological developments made it clear that engines using computer-controlled throttles would become standard. As a result, designers might have decided to design new pedals from scratch; but they also would have had reason to make pre-existing pedals work with the new engines. Indeed, upgrading its own pre-existing model led KSR to design the pedal now accused of infringing the Engलगau patent.”).
8 The isolation mouthpiece of claim 1, further including a stability bar located along a center aligned with a longitudinal axis of the first wall at least adjacent to the second end of the main body, at least one of the first plurality of perforations being positioned along one edge of the second wall and at least one of the second plurality of perforations being positioned along another edge of the second wall.	Park depicts a line running down the longitudinal axis of the mouth prop 100. Park, FIGs. 2-3. Park fails to expressly teach what this line is or how it functions. Park implies that this line likely assists in light transmission, especially considering that the light socket 111 is formed at one end of the line. Park, ¶ 39. It was well known before the priority date of the '418 Patent to include a spine in a dental isolation mouthpiece. For example, Hirsch teaches a dental isolation mouthpiece with a spine 365 running down a longitudinal axis of the mouthpiece.  FIG. 19A Hirsch teaches that the spine protrudes from an interior surface of the posterior wall and extends at least partially through the cheek retractor along a longitudinal axis. Hirsch teaches that this spine 365 assists in dispersing light in the oral cavity – a goal that Hirsch and Park share. Park, Abstract. The additional benefit of the spine would be additional rigidity and resiliency, particularly where gums/ridges engage the concave portion 131. Thus, a PHOSITA would have been motivated to include the spine of Hirsch to the mouthpiece of Park to increase rigidity and help disperse light across the entire mouthpiece. <i>Id.</i> The increased rigidity would also help retract cheek tissue. Black, 7:21-39.

The '418 Patent	Exemplary Disclosures in the Prior Art
	A PHOSITA would have expected success in adding the spine to the mouthpiece of Park, especially considering that both mouthpieces perform the same function and have very similar designs (Hirsch simply lacks sidewalls). Moreover, the addition of the spine would help prevent collapse of the top wall and bottom wall under suction. <i>Id.</i> The combination of the spine and the projections would prevent collapse at all weak areas of the mouth prop 100. <i>Id.</i> Finally, Park already envisioned two suction ports 112, so the addition of a dividing spine would not affect the ability to suction from all parts of the mouth prop 100. <i>Id.</i>  FIG. 19A Isolite discloses the same:

The '418 Patent	Exemplary Disclosures in the Prior Art
	 Black teaches that the tongue shield aspirator 340 includes a longitudinal stiffener 347 to prevent kinking when the aspirator 340 is flexed and/or bent for placement within the oral cavity. Black, 15:63-16:37, FIG. 23A. Put another way, the stiffener 347 reinforces at least a portion of the main body — particularly, the cheek retractor to help provide the necessary force to retract cheek tissue. The stiffener 347 extends along a longitudinal axis of the main body and corresponds to a thickened area of the main body. Black, FIG. 23A. Black's stiffener 347 extends from the exterior surface of the anterior layer 348b, and not between the first and second walls.

The '418 Patent	Exemplary Disclosures in the Prior Art
	 FIG. 23A AirBug discloses the same:

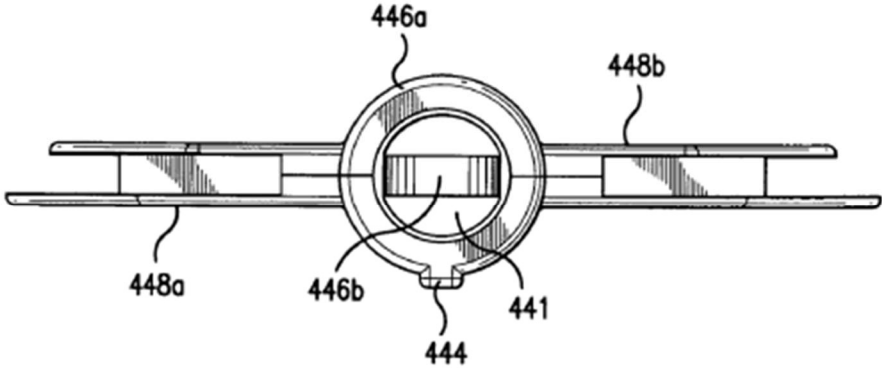
The '418 Patent	Exemplary Disclosures in the Prior Art
	 <i>See Claims 4-5 regarding perforations.</i>
11[a] An isolation mouthpiece for use with a suction system in a dental procedure, the isolation mouthpiece comprising:	<i>See Limitation 1[a].</i>
11[b] a main body portion having a first end and a second	<i>See Limitation 1[b].</i>

The '418 Patent	Exemplary Disclosures in the Prior Art
end, the main body portion including:	
11[c] a first wall having a first shape defined by 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,	<i>See</i> Limitation 1[c].
11[d] a second wall having a second shape defined by 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 first plurality of perforations extending along a portion of the third edge, and a second plurality of perforations extending along a portion of the fourth edge,	<i>See</i> Limitation 1[d].
11[e] 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, and	<i>See</i> Limitation 1[e].
11[f] a third wall connecting the first wall and the second	<i>See</i> Limitation 1[g].

The '418 Patent	Exemplary Disclosures in the Prior Art
wall such that the first wall is spaced from the second wall,	
11[g] 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;	<i>See</i> Limitation 1[h].
11[h] a suction connector portion extending from the first end of the main body portion, the suction connector portion including: a tubular conduit including an opening extending through the conduit and in fluid communication with the plurality of troughs of the wave-like structure, the opening being configured to receive a vacuum portion of the suction system therein, and	<i>See</i> Limitation 1[i].
11[i] a mouth prop including a first side and a second side that are inwardly tapered from a top	<i>See</i> Limitation 1[j].

The '418 Patent	Exemplary Disclosures in the Prior Art
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	
11[j] 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.	<i>See Claim 4.</i>
12 The isolation mouthpiece of claim 11, wherein the tubular conduit includes a cutout configured to engage a protrusion on the suction system to aid in coupling the isolation mouthpiece to the suction system.	<i>See Limitation 1[i].</i>
13 The isolation mouthpiece of claim 11, wherein the first plurality of perforations includes five perforations and the second plurality of	<i>See Claim 2.</i>

The '418 Patent	Exemplary Disclosures in the Prior Art
perforations include five perforations.	
14 The isolation mouthpiece of claim 13, wherein the at least one of the first plurality of perforations and the at least one of the second plurality of perforations are located adjacent to the second end and near the cheek retractor portion.	<i>See Claim 3.</i>
15 The isolation mouthpiece of claim 11, wherein the first wall and the second wall are shaped such that the 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.	<i>See Limitation 1[f].</i>
16 The isolation mouthpiece of claim 11, further including a stability bar located along a center aligned with a longitudinal axis of the first wall at least adjacent to the second end of the main body, at least one of the first plurality of perforations being positioned along one edge of the second wall and at least one of the second plurality of perforations being positioned along another edge of the second wall.	<i>See Claim 8.</i>

The '418 Patent	Exemplary Disclosures in the Prior Art
19 The isolation mouthpiece of claim 11, wherein a wall thickness within the suction connector portion is greater than a wall thickness of the first wall or the second wall of the main body.	Park does not disclose whether the insertion port 110 has a different thickness than the anterior or posterior walls. However, each of Black, AirBug, Hirsch, and Isolite disclose different thicknesses on the insertion port when compared to the walls. Black discloses a tongue shield aspirator 440 including anterior and posterior layers 448a, 448(b) and a neck 446. Black, 16:15-49. FIG. 24D shows that the neck 446 (suction connector) is far thicker than the anterior and posterior layers 448a, 448b. <i>Id.</i>  FIG.24D It would be immediately obvious to a PHOSITA to modify the insertion port 110 of Park to be thicker, like the neck 446 of Black, because the neck forms a connection with an evacuation tube, which should be strong and unlikely to break. Additionally, the neck is not inside the patient's mouth, so there is less of a patient comfort need in making the insertion port 110 soft. Black, 4:47-55. Such a change is also simply a change in size or proportion. MPEP 2144.04(IV)(A). AirBug discloses the same:

The '418 Patent	Exemplary Disclosures in the Prior Art
	 Hirsch and Isolite Mouthpiece disclose a wall thickness within the suction connector portion as greater than a wall thickness of the first wall or the second wall of the main body:

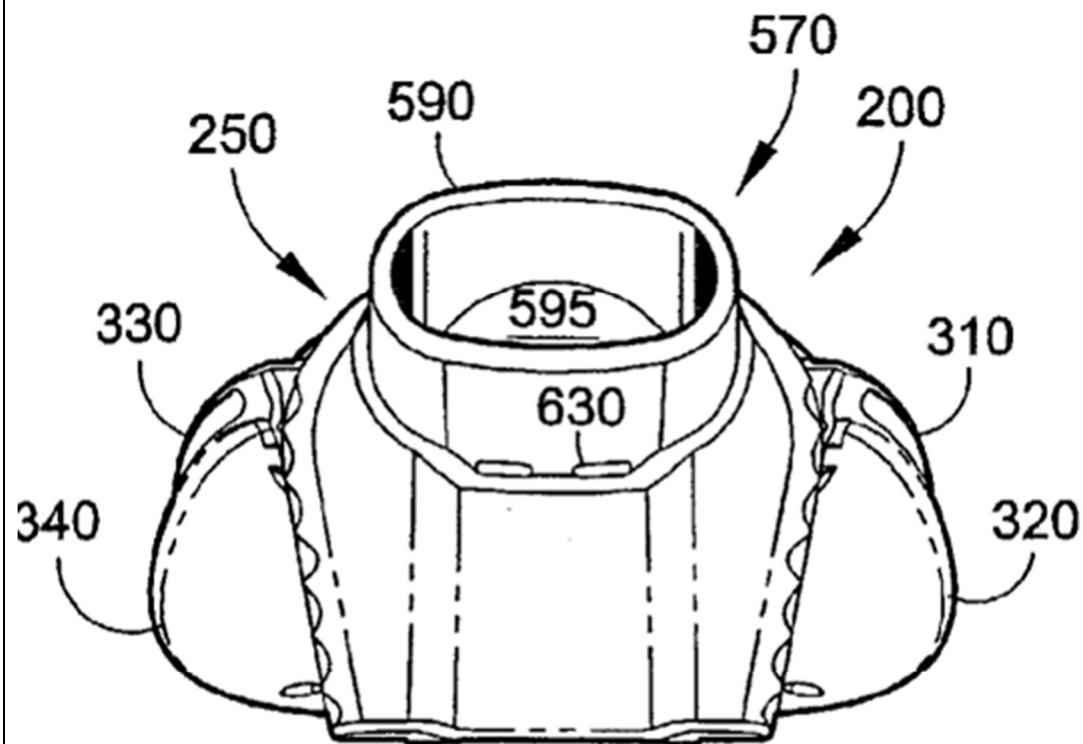
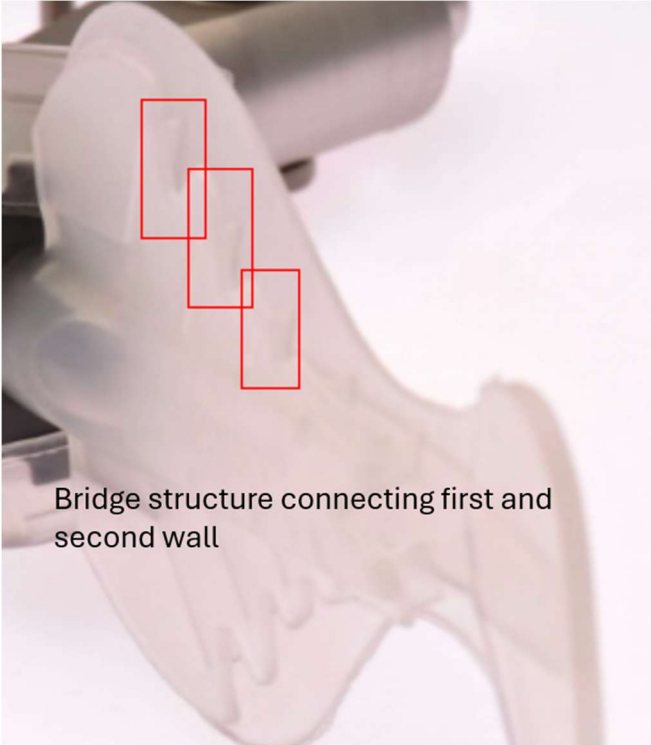
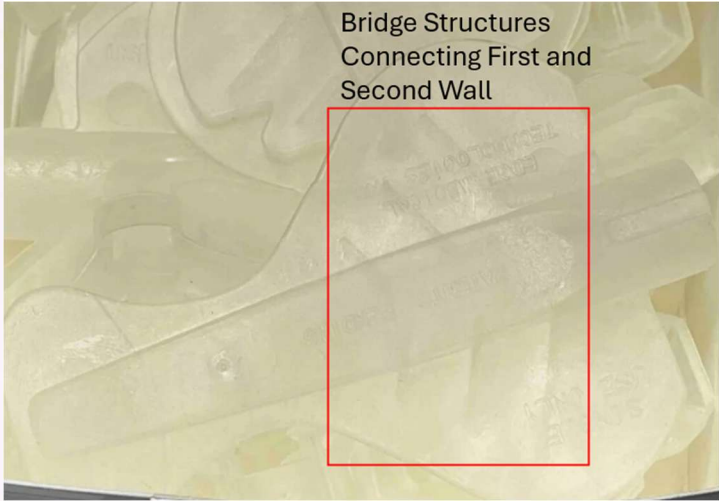


FIG. 19D

The '418 Patent	Exemplary Disclosures in the Prior Art
	
20[a] A mouthpiece comprising:	<i>See Limitation 1[a].</i>
20[b] a main body having a first end opposite a second end that is narrower than the first end, the main body comprising:	<i>See Limitation 1[b].</i>
20[c] a first wall that extends from the first end to the second end, wherein the first wall includes a plurality of first edges,	<i>See Limitation 1[c].</i>
20[d] 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,	<i>See Limitation 1[d].</i>

The '418 Patent	Exemplary Disclosures in the Prior Art
20[e] 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; and	See Limitation 1[e]. To the extent that Solmetex contends that neither Black nor AirBug disclose protrusions that are not connected to the first wall, it would have been obvious for a PHOSITA to modify Black to be able to detach either wall from the bridge structures such that the overall mouthpiece would have been easier to clean.  Bridge structure connecting first and second wall  Bridge Structures Connecting First and Second Wall Further, this limitation is taught by Park in view of one or more of Baughan and Johnson. Additionally, Baughan teaches such a mechanical element that prevents collapse under suction. Baughan, 3:43-48. Specifically, Baughan teaches three projecting discs 17 that prevent collapse under suction when a sleeve is inserted over a tube 15. Baughan, 2:19-25, 2:51-55, 3:43-48. The discs 17 project outward from the tube, span the distance between the tube and the sleeve, and engage the sleeve. <i>Id.</i> These rigid structures, spaced apart from each other, prevent the sleeve from collapsing under suction. <i>Id.</i> Baughan teaches that the projecting discs 17 are secured to the tube 15 but the discs 17 are not attached to the sleeve 24, as they merely contact the sleeve or the sleeve rests upon the discs.

The '418 Patent	Exemplary Disclosures in the Prior Art
	Baughan, 2:19-25, 2:51-61. Thus, Baughan teaches projecting discs connected to and protruding from one structure (the tube 15) but not attached to another structure (the sleeve 24). <i>Id.</i> While Baughan teaches outward projecting discs, a PHOSITA using basic common sense, would modify the discs 17 for a tube-shaped embodiment to be projections for a flatter, non-tube embodiment. Johnson, FIG. 3. Indeed, it was well known in the art how to make projections on a flat surface. Johnson, FIG. 3, 4:16-23; ¶¶ 100-101. Johnson further teaches that the projections are molded projections, which means the projections are integral with an interior surface on which they were formed. <i>Id.</i> Even so, making something integral is an obvious design choice. MPEP 2144.04(V)(B). Applying the simple teachings of Baughan and Johnson to Park, it would have been obvious to include a plurality of spaced-apart projections formed on the posterior wall of Park to prevent collapsing of the posterior and anterior walls under suction at weak points of the mouth prop. A PHOSITA would have expected success because these simple mechanical structures ensure separation between two walls that would otherwise collapse under suction. Baughan, 3:43-48; Moreover, Black and AirBug taught this same concept but with an “open” mouthpiece lacking sidewalls. Park opted for sidewalls, but the concept of using perpendicularly projecting structures to prevent collapse of parallel walls under suction was demonstrated by Black, AirBug and by Baughan. Baughan, 3:43-48. Thus, a PHOSITA would have expected success in using spaced-apart projections to prevent walls from collapsing under suction. A PHOSITA would have further known that spaced-apart projections ensure that channels for sucking saliva and foreign substances remain between the spaced-apart projections, lest the purpose of Park’s mouth prop be defeated.; Baughan, 3:36-48. Modifying Park in view of Baughan and Johnson would involve nothing more than applying a known technique (anti-collapse structure) to a known device ready for improvement (the mouth prop 100 of Park) to yield predictable results (preventing collapse at weak parts of the mouth prop 100 under suction), or combining prior art elements (a mouth prop having an interior chamber) according to known methods (using spaced-apart projections to prevent collapse under suction) to yield predictable results (the projections would prevent collapse under suction and still allow for suction channels therebetween). The spaced-apart projections taught by Baughan could be formed on either the first wall or the second wall. A PHOSITA would know that it makes no difference which wall connects to the projections so long as the projections connect to one of the walls. Baughan, FIG. 3 Further, the MPEP provides that modifying something to be “separable” is a common practice, and are considered routine changes. MPEP § 2144.04V.C. (citing <i>In reDulberg</i>, 289 F.2d 522, 523 (CCPA 1961).
20[f] a third wall that connects one of the first edges of the first	<i>See</i> Limitation 1[g].

The '418 Patent	Exemplary Disclosures in the Prior Art
wall to one of the second edges of the second wall; and	
20[g] a cheek retractor portion extending from the second end and connected to the first wall and the second wall of the main body.	<i>See</i> Limitation 1[k].
21 The mouthpiece of claim 20, further comprising a suction connector extending from the first end of the main body, wherein an evacuation conduit within the suction connector is in communication with the interior space between the first wall and the second wall.	<i>See</i> Limitation 1[i].
22 The mouthpiece of claim 21, wherein the suction connector further includes a cutout configured to interlock with a corresponding protrusion of a vacuum adapter.	<i>See</i> Limitation 1[i].
24 The mouthpiece of claim 20, wherein a material used to form the main body is a flexible, translucent, high heat-resistant, autoclavable silicone-based material.	Park teaches a mouth prop formed of silicone that is flexible, translucent, and high heat resistant that is reusable after sterilization. Park, ¶ 32, Abstract. Park further teaches the mouth prop 100 as transparent. Park, ¶ 49.
25 The mouthpiece of claim 20, further comprising a mouth prop injection-molded in one piece.	Park teaches a mouth prop formed as one piece. Park, ¶ 32. A PHOSITA would know that forming silicone is commonly performed using injection molding.

The '418 Patent	Exemplary Disclosures in the Prior Art
26 The mouthpiece of claim 25, wherein the mouth prop is connected to a suction connector.	Park teaches a tooth support section 120, which is a mouth prop, formed into one piece with the rest of the mouth prop 100. Park, ¶¶ 29, 32, 54, Abstract, FIG. 1-3. Park teaches and shows the tooth support section 120 connected to the insertion port 110. Park, ¶ 29, FIG. 2.
28 The mouthpiece of claim 20, wherein the plurality of perforations are distributed along one or more of the second edges of the second wall.	<i>See</i> Limitation 1[d]. Claim 28 is also invalid as the “plurality of perforations” lacks any antecedent basis.

Table 1 (August 18, 2025)

In addition to the above figures, since service of Initial Invalidation Contentions, Ascentcare has acquired physical samples of the AirBug Mouthpiece and supplements its AirBug photos to demonstrate any of the above limitations, in addition to any of the limitations in any of the other Asserted Patents charted in Exs. A-J, as follows:

