Application Data Sheet 37 CFR 1.76	Attorney Docket Number	INCEP-001COA
	Application Number	
Title of Invention	INTRAORAL DEVICE WITH MESH	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
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Secrecy Order 37 CFR 5.2

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2(Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

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Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175
EX1002
Petitioner Ascentcare ('969 Patent)

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Customer Number	28661		
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Application Information:

Title of the Invention	INTRAORAL DEVICE WITH MESH		
Attorney Docket Number	INCEP-001COA	**Small Entity Status Claimed**	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	11	**Suggested Figure for Publication (if any)**	

Filing By Reference

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country i

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

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Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
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Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	INCEP-001COA
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Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation of	14100323	2013-12-09
Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
14100323	Claims benefit of provisional	61734939	2012-12-07

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Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(d). When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(h)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

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Application Number	Country i	Filing Date (YYYY-MM-DD)	Access Code (if applicable)

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Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

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☐ Authorization to Permit Access to the Instant Application by the Participating Offices

If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application.

In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.

In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

◉ Assignee	○ Legal Representative under 35 U.S.C. 117	○ Joint Inventor
○ Person to whom the inventor is obligated to assign.	○ Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor :	

If the Applicant is an Organization check here. ☒

Organization Name	Incept, Inc.

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Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication . An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here ☐

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	INCEP-001COA
		Application Number	
Title of Invention	INTRAORAL DEVICE WITH MESH		

Signature:

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Signature	/Tam Thanh Pham/				
First Name	Tam Thanh	Last Name	Pham	Registration Number	50565
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INTRAORAL DEVICE WITH MESH

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present application is a continuation and claims the priority benefit of U.S. patent application 14/100,323 filed December 9, 2013, which claims the priority benefit of U.S. provisional patent application number 61/734,939 filed December 7, 2012, the disclosure of which is incorporated herein by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0002] The present invention generally relates to the field of dental mouthpieces. More specifically, the present invention relates to intraoral dental suction and isolation mouthpieces.

2. Description of Related Art

[0003] Various mouthpieces are currently used by dental health professionals, dental hygienists, and dental assistants in the field of dentistry. In the past, a dental patient has been treated by a traditional two-person team that comprises a dental professional and a dental assistant. Further, dental treatment may be provided by the team using many different types of dental equipment and materials. Such dental equipment and materials may include such items as an intraoral mirror, a bite block, a slow speed suction ejector, a high speed suction ejector, gauzes, cotton rolls, and dry angles. Each item of dental equipment may be used for different purposes, though some may be used in combination for some types of dental services. As such, a dental professional seeking to provide such dental services may need to use multiple items of such dental equipment. An important role of the dental assistant is therefore to assist the dental professional in

coordinating the use of these multiple items of different equipment and materials.

[0004] There is, therefore, a need in the art for improved systems and methods of providing dental services in a more efficient, comfortable, and safe manner to the dental patient.

SUMMARY OF THE CLAIMED INVENTION

[0005] Embodiments of the present invention may include a mouthpiece that may be attached to a high-suction dental adapter for the purpose of assisting the dental staff during dental procedures through chair-side, hands-free suction, and isolation. Such a mouthpiece may comprise a main body portion, a cheek retractor portion, and a suction connector portion. In some embodiments, the main body portion, cheek retractor portion, and suction connector portion (and sub-portions thereof) may be molded in one piece, preferably by injection molding. In an exemplary embodiment, the mouthpiece may be made of a material that is flexible, translucent, conducive to injection molding, high heat-resistant, and autoclavable. Such a material may include silicone. Because the mouthpiece may be made of a high heat-resistant and autoclavable material, such a mouthpiece may be reusable.

[0006] The main body portion may comprise an enclosed pocket made up of an anterior wall, a posterior wall, and a side wall in between the anterior and posterior walls. The side wall may be perforated with a plurality of perforations. Such perforations may constitute a mesh. Additional perforations may be located on the anterior and posterior walls. The main body portion may further include a slit along a longitudinal, central axis on the anterior wall. Such openings (*e.g.*, perforations and slit) allow for suction of air, fluids, and small debris from the patient's mouth, through the openings into the interior portion, and into the suction connector portion towards a suction source. Because the mouthpiece is made of a flexible and resilient material (*e.g.*, silicone), the mouthpiece may be bent when placed in a patient's mouth to conform to the shape of the mouth. When properly positioned, the suction connector portion may protrude from one side of the patient's mouth, while the main body lies against the back of the patient's mouth, and the cheek retractor presses against the patient's cheek on the opposite side of the patient's mouth.

[0007] The main body may further include an protruding bridge structure on the interior surface of the posterior wall. Such a bridge structure may protrude from the

interior surface in a wave shape with crests and troughs. The crests provide a plurality of contact points with the anterior wall to keep the anterior wall separated from the posterior wall during suction. Meanwhile, the troughs provide gaps that allow for suction of air, fluids, and small debris through the bridge structure.

BRIEF DESCRIPTION OF THE FIGURES

[0008] FIG. 1A is a perspective view of an exemplary mouthpiece with a detachable mouth prop.

[0009] FIG. 1B is a top view of the exemplary mouthpiece and detachable mouth prop of FIG. 1A.

[0010] FIG. 1C is a bottom view of the exemplary mouthpiece and detachable mouth prop of FIG. 1A.

[0011] FIG. 1D is a side view of the exemplary mouthpiece and detachable mouth prop of FIG. 1A.

[0012] FIG. 1E is a cross-sectional view of the exemplary mouthpiece and detachable mouth prop of FIG. 1A.

[0013] FIG. 2A is a perspective view of the exemplary mouthpiece of FIG. 1A where the detachable mouth prop has been detached.

[0014] FIG. 2B is a top view of the exemplary mouthpiece of FIG. 2A.

[0015] FIG. 2C is a bottom view of the exemplary mouthpiece of FIG. 2A.

[0016] FIG. 2D is a side view of the exemplary mouthpiece of FIG. 2A.

[0017] FIG. 2E is a cross-sectional view of the exemplary mouthpiece of FIG. 2A.

[0018] FIG. 3A is a front view of an exemplary mouth prop.

[0019] FIG. 3B is a back view of the exemplary mouth prop of FIG. 3A.

[0020] FIG. 3C is a bottom view of the exemplary mouth prop of FIG. 3A.

[0021] FIG. 3D is a perspective view of the exemplary mouth prop of FIG. 3A .

[0022] FIG. 3E is a side view of the exemplary mouth prop of FIG. 3A.

[0023] FIG. 3F is a top view of the exemplary mouth prop of FIG. 3A.

[0024] FIG. 4 is a close-up view of exemplary mesh sides in an exemplary mouthpiece.

[0025] FIG. 5 is a close-up view of an internal bridge in an exemplary mouthpiece.

[0026] FIG. 6A is a close-up view of an exemplary reinforcing bar in an exemplary mouthpiece.

[0027] FIG. 6B is a cross-sectional view of the exemplary reinforcing bar of FIG. 6A.

[0028] FIG. 7A is a close-up view of an exemplary cheek retractor portion in an exemplary mouthpiece.

[0029] FIG. 7B is a cross-sectional view of the exemplary cheek retractor portion of FIG. 7A.

DETAILED DESCRIPTION

[0030] Embodiments of the present invention provide for a mouthpiece comprising a main body portion, a cheek retractor portion, and a suction connector portion. In some embodiments, the main body portion, cheek retractor portion, and suction connector portion (and sub-portions thereof) may be molded as one-piece, preferably by injection molding. In an exemplary embodiment, the mouthpiece may be made of a material that is flexible, translucent, conducive to injection molding, high heat-resistant, and autoclavable. Such a material may include silicone. Because the mouthpiece may be made of a high heat-resistant and autoclavable material, such a mouthpiece may be reusable.

[0031] FIGs. 1A-E are different views of an exemplary mouthpiece with an attachable mouth prop 160, while FIGs. 2A-E are different views of the exemplary mouthpiece of FIG. 1A where the attachable mouth prop 160 has been detached. Such a mouthpiece may include a main body portion 110, a suction connector portion 120, and a cheek retractor portion 130.

[0032] The main body portion 110 may include mesh or perforations140, a stability bar 150, an open slit 170, and an internal bridge 180. The main body potion 110 may connect to a suction connector portion 120 on one end and a cheek retractor portion 130 at the other end. Such a cheek retractor portion 130 may be configured to press against and retract a patient's cheek away from the patient's teeth. When placed in a patient's mouth, the suction connector portion 120 may protrude from one side of the patient's mouth, while the main body portion 110 lies against the back of the patient's mouth, and the cheek retractor portion 130 retracts the patient's cheek on the opposite side of the patient's mouth. The flexibility of the material used to form the mouthpiece allows for some bending when placed in the patient's mouth. The material is, however, resilient enough that the cheek retractor portion presses against the inside of the patient's cheek with such pressure being sufficient to move the cheek away from the patient's teeth.

[0033] An exemplary main body portion 110, when placed in a mouth, may include an

anterior wall facing the front of the mouth (*e.g.*, the side with slit 170) and a posterior wall facing the back of the mouth. The two walls may connect at a superior wall and an inferior wall forming a body that is at least partially enclosed.

Superior may be used herein to refer to the side that rests against a roof of a patient's mouth when placed therein, and inferior may be used to refer to the side that rests against the floor of the patient's mouth. The superior and inferior sides may be formed identically, which may allow for the mouthpiece to change orientation such that the superior side may appear as the inferior side and vice versa, in the new orientation. When in use, the respective sides of the main body portion 110 may serve to protect and separate the top of the mouth and the bottom of the mouth/tongue. In addition, the main body portion 110 may also serve to protect the back of the mouth (*e.g.*, throat and airway) from falling debris.

[0034] Much of the main body portion 110 of the mouthpiece may be shaped as a straight-line arrowhead or shield whose base generally conforms to the intraoral shape of a patient's mouth. Differently-sized mouthpieces may be provided for differently-sized mouths of adults and children. Part of the base side of the arrowhead may be formed with thicker walls than the rest of the main body. Such thickening may provide additional stability.

[0035] In addition, the main body portion 110 of the mouthpiece may include a plurality of holes 140 distributed along the superior and inferior sides of the anterior and posterior walls to assist in suctioning of water, saliva and debris from the oral cavity. In some embodiments, a set of holes may also form a mesh along the walls of the superior and inferior edges. FIG. 4 is a close-up view of an exemplary mesh wall in an exemplary mouthpiece.

[0036] At the narrow end of the arrowhead that connects to the cheek retractor portion 130, the main body portion 110 may include a rectangular portion. Narrower than the base of the arrowhead, the rectangle may additionally include a reinforcing bar (or stability bar) 150 (described in further detail below) and may be at least partially crossed by a slit 170 (described in further detail below) into the interior of the pocket of

the main body portion 110.

[0037] Stability bar 150 may be a protrusion or otherwise a thickened area that reinforces the stability of the rectangular portion and assist in shaping this region to the intraoral posterior shape of a patient's mouth. FIG. 6A is a close-up view of an exemplary stability bar 150 of an exemplary mouthpiece. FIG. 6B is a cross-sectional view of the exemplary reinforcing bar in the cheek retractor connector portion of FIG. 6A.

[0038] In some embodiments, the internal, rectangular-shaped reinforcing or stability bar 150 may be located distally to the internal wavelike bridge structure 180 and attached to both the interior side of the posterior surface of the main body and the rectangular portion. Such a stability bar 150 may be located in the area where a positioned mouthpiece begins to wrap from the lingual side of the most posterior mandibular tooth, around the distal side of the most posterior tooth, and to anterior side of the most posterior mandibular tooth, thereby assisting in shaping the mouthpiece to the general intraoral shape of a patient's mouth.

[0039] Various embodiments of the mouthpiece may further include a longitudinal, open slit 170 extending over approximately two-thirds of the main body on the anterior surface. Running along the center of the main body across the rectangle and most of the arrowhead, such a slit 170 may assist in capture and suction of water, saliva and debris, as well as assisting in cleaning and maintenance.

[0040] Additionally, the main body of the mouthpiece may include a bridge structure 180 on an interior surface to ensure that the anterior and posterior surfaces remain separated during suction. FIG. 1E is a cross-sectional view of the mouthpiece in which the bridge structure 180 is illustrated. FIG. 5 is a close-up view of the bridge structure 180 without the surrounding walls of the main body portion. Such a bridge structure 180 may be formed as an wave-like protrusion that generally corresponds to the distance between the anterior and posterior walls extending substantially (*e.g.*, within 1 mm) the full distance at its crest and substantially flush to the surface at its trough. In some embodiments, the bridge structure 180 may be centrally-located in the main body

portion 110 of the mouthpiece. The gaps (or troughs) between the waves of the bridge structure 180 assist in the suction-driven transfer of water and saliva to the suction connector portion 120 and ultimately, into a central suction vacuum. In some embodiments, the bridge structure 180 may follow the shape of a logo (e.g., an arrowhead or shield).

[0041] The suction connector portion 120 may be oval-shaped and also attached to the main body portion 110. The suction connector portion 120 may be formed with thicker walls than the main body portion 110 and configured to attach to a high-suction vacuum adapter and to assist in transferring water, saliva, and debris from the oral cavity to the external adapter for removal. The suction connector portion 120 may also include an internal stop to assist in sliding the mouthpiece onto the adapter to a desired depth. The suction connector portion 120 may additionally have an external, concave, notched region 210 that corresponds to a removable strap such that when the strap is in place, the external walls of the strap and the rest of the connector portion may be flush.

[0042] The cheek retractor portion 130 is illustrated as a hammerhead distal region, which may be attached to the main body portion 110. FIG. 7A is a close-up view of an exemplary cheek retractor portion 130 in an exemplary mouthpiece. FIG. 7B is a cross-sectional view of the exemplary cheek retractor portion 130 of FIG. 7A.

[0043] The mouthpiece may be used with a mouth prop 160, as illustrated in FIGs. 1 (with a mouth prop 160) and FIGs. 2 (illustrated without the mouth prop 160). FIGs. 3A-E provide different close-up views of an exemplary mouth prop 160. The removable strap 310 may be attached to mouth prop 160, which may be used to prop open a patient's mouth and teeth. In this regard, the suction connector portion 120 may additionally have an external plug 220 (FIG. 2C) protruding from the posterior side of the suction connector portion 120. Such a plug 220 may correspond to and serve to connect with an opening in the mouth prop 160. The mouth prop 160 may be reinforced by the presence of the plug 220 in the opening, thereby resulting in a more crush-resistant, nearly incompressible, and stable mouth prop 160. In some embodiments, the suction connector portion 120 may further have a cutout 230 (*e.g.*, which may be shaped

as a logo) providing extra interlocking with a corresponding protrusion (*e.g.*, which may also be shaped as a logo) on an external high-suction vacuum adapter.

[0044] The mouth prop 160 may be made of thickened silicone material injection molded in a single piece with an elastic strap corresponding to the circumference of the suction connector portion. The mouth prop 160 has an internal, rectangular-shaped female slot designed to fit snugly with the external, rectangular-shaped male plug 220 of the suction connector portion 120 of the mouthpiece. Mouth props may be made in different sizes for differently sized mouths. Because the mouth prop and mouthpiece are detachable from each other, different sizes of each may be mixed and matched as needed for a particular patient's mouth.

[0045] The mouthpiece as described herein may be used with a one-piece, autoclavable, high-suction vacuum adapter. Such a high-suction vacuum body adapter may be made of a single homogenous material. Having a single lever design, such a vacuum adapter may function in the same manner as all the current high-suction vacuum evacuators and saliva ejectors in controlling the removal of water, saliva, and debris from the oral cavity to the outside vacuum source. The single lever may be designed to control the removal of water, saliva, and debris from the at least partially enclosed so main body through a single, large evacuation conduit within the suction connector portion.

[0046] While various embodiments have been described above, it should be understood that they have been presented by way of example only, and not limitation. The descriptions are not intended to limit the scope of the invention to the particular forms set forth herein. Thus, the breadth and scope of a preferred embodiment should not be limited by any of the above-described exemplary embodiments. It should be understood that the above description is illustrative and not restrictive. To the contrary, the present descriptions are intended to cover such alternatives, modifications, and equivalents as may be included within the spirit and scope of the invention as defined by the appended claims and otherwise appreciated by one of ordinary skill in the art. The scope of the invention should, therefore, be determined not with reference to the

above description, but instead should be determined with reference to the appended claims along with their full scope of equivalents.

CLAIMS

WHAT IS CLAIMED IS:

1. A dental mouthpiece comprising:

a main body portion configured as a pocket having an interior defined by:

an anterior wall,

a posterior wall, and

a side wall connecting an edge of the anterior wall to an edge of the posterior wall, and wherein at least part of the side wall comprises a plurality of perforations.

2. The dental mouthpiece of claim 1, wherein the perforations on the side wall are spaced to comprise a mesh.

3. The dental mouthpiece of claim 1, wherein the anterior wall further comprises one or more perforations.

4. The dental mouthpiece of claim 3, wherein the perforations on the anterior wall are spaced to comprise a mesh.

5. The dental mouthpiece of claim 1, wherein the posterior wall further comprises one or more perforations.

6. The dental mouthpiece of claim 5, wherein the perforations on the posterior wall are spaced to comprise a mesh.

7. The dental mouthpiece of claim 1, wherein the anterior wall further includes a slit along a longitudinal axis of the main body.

8. The dental mouthpiece of claim 1, further comprising a suction connector portion that connects the interior portion to a vacuum source, wherein activation of the vacuum source provides suction of fluids through the perforations in the side wall into the interior of the pocket.

9. The dental mouthpiece of claim 8, further comprising a bridge structure protruding from an interior surface of the posterior wall, the protruding bridge structure comprising a plurality of spaced contact points that keep the anterior wall separated from the posterior wall during suction.

10. The dental mouthpiece of claim 9, wherein the provided suction further draws fluids through spaces between the contact points towards the vacuum source.

11. The dental mouthpiece of claim 1, further comprising a cheek retractor portion configured to press against a cheek of a patient when placed in a mouth of the patient, wherein resilience of the material causes the cheek retractor portion to retract a cheek of the patient away from the teeth of the patient.

12. The dental mouthpiece of claim 11, wherein the cheek retractor portion is connected to the main body portion and includes an extension of the pocket, wherein a side wall of the extension comprises one or more perforations.

13. The dental mouthpiece of claim 1, further comprising a stability bar protruding from an interior surface of the posterior wall along a longitudinal axis of the main body and extending through at least part of the cheek retractor, wherein a thickness of the stability bar increases resilience of the cheek retractor portion during bending.

14. The dental mouthpiece of claim 1, wherein the main body portion is formed by injection-molding as one piece.

15. The dental mouthpiece of claim 1, wherein a material used in the injection-molding is a flexible, translucent, high heat-resistant, autoclavable silicone-based material.

16. The dental mouthpiece of claim 1, wherein the anterior wall and the posterior wall have different thicknesses.

17. The dental mouthpiece of claim 1, further comprising a detachable mouth prop.

18. The dental mouthpiece of claim 17, wherein the detachable mouth prop comprises a bite block portion and a strap portion.

19. The dental mouthpiece of claim 18, wherein the bite block portion and strap portion are injection-molded in one piece.

20. The dental mouthpiece of claim 18, wherein the bite block portion comprises an opening corresponding to a plug connected to the main body.

ABSTRACT

A dental mouthpiece is provided that may be attached to a high-suction dental adapter for the purpose of assisting the dental staff during dental procedures through chair-side, hands-free suction, and isolation. Such a mouthpiece may comprise a main body portion, a cheek retractor portion, and a suction connector portion. In some embodiments, the main body portion, cheek retractor portion, and suction connector portion (and sub-portions thereof) may be molded in one piece, preferably by injection molding. In an exemplary embodiment, the mouthpiece may be made of a material that is flexible, translucent, conducive to injection molding, high heat-resistant, and autoclavable. Such a material may include silicone. Because the mouthpiece may be made of a high heat-resistant and autoclavable material, such a mouthpiece may be reusable.

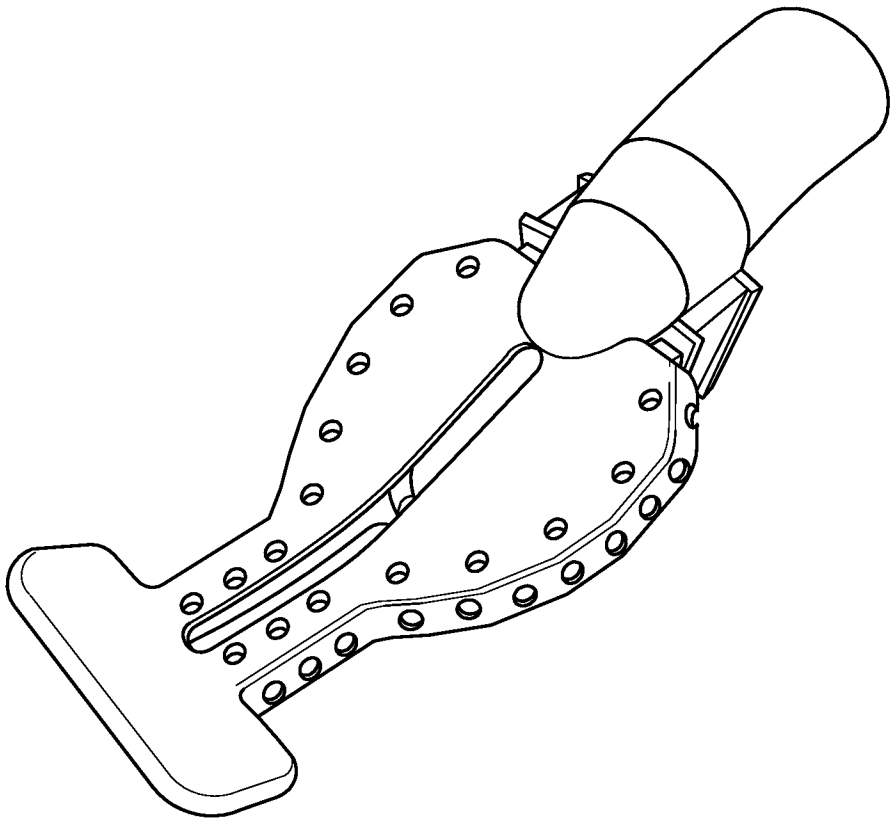

FIG. 1A

FIG. 1C

FIG. 1B

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

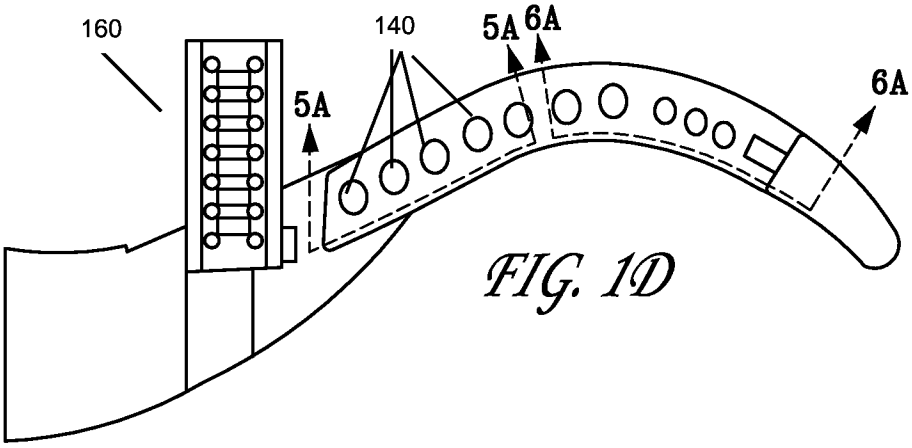

FIG. 1D

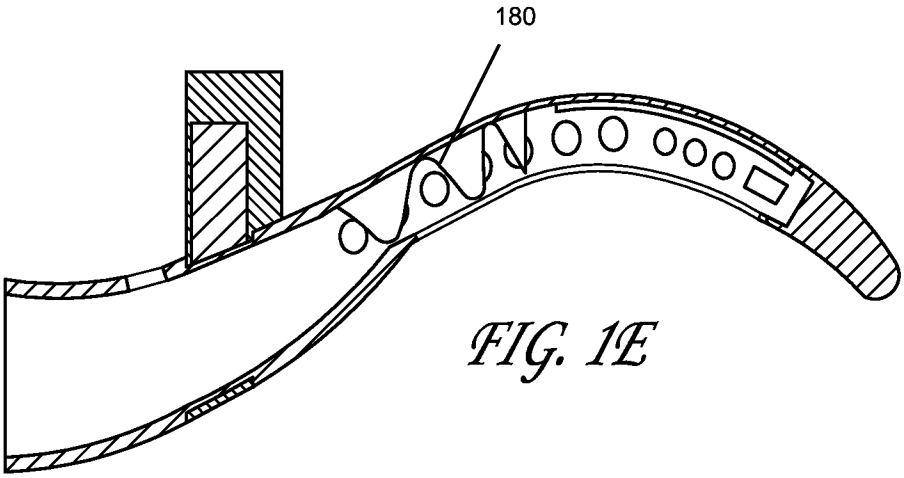

FIG. 1E

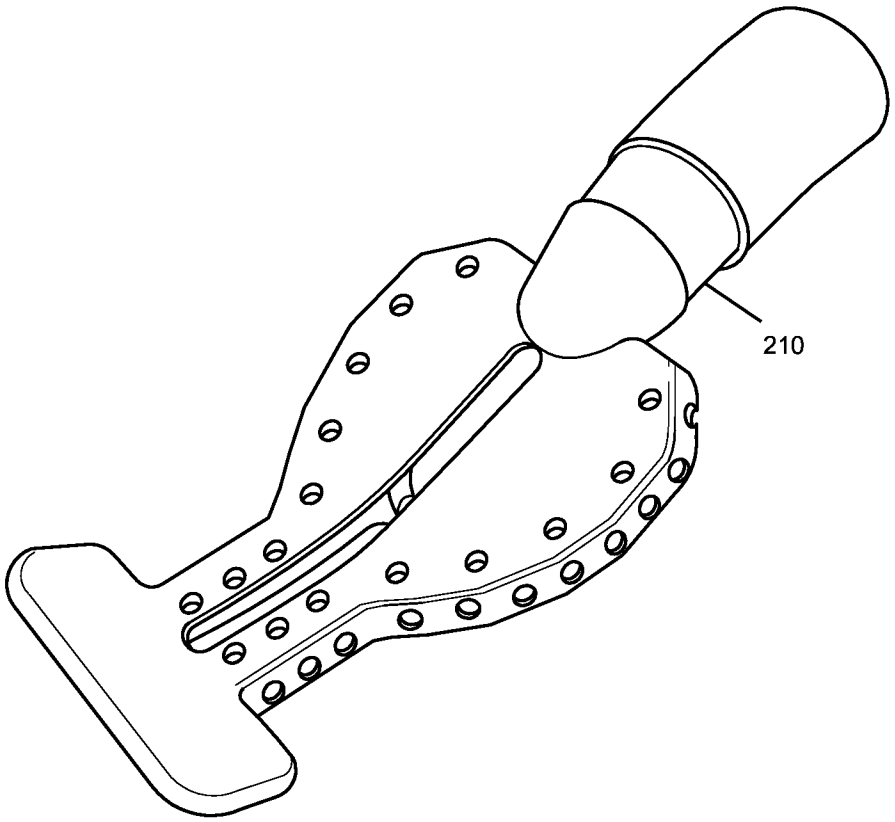

FIG. 2A

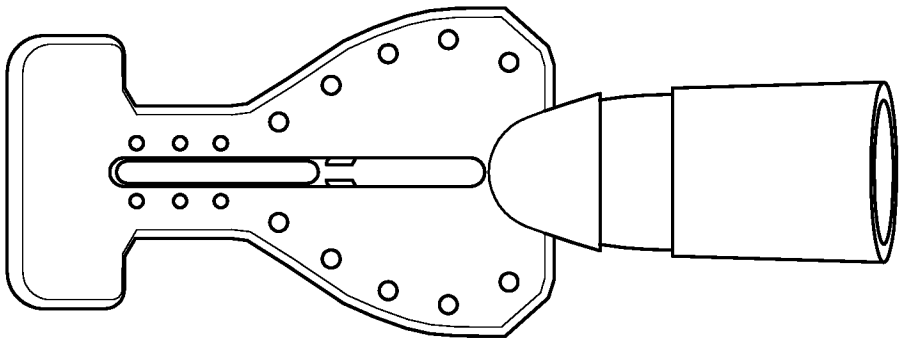

FIG. 2B

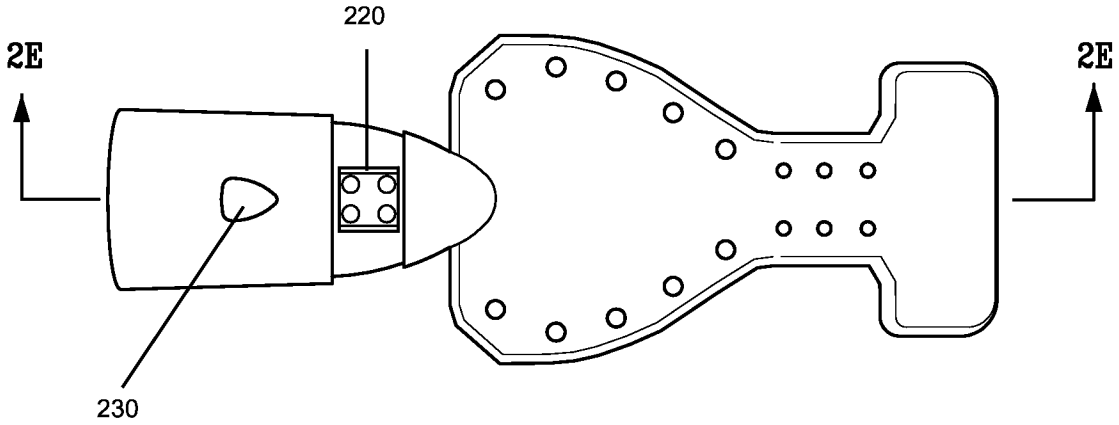

FIG. 2C

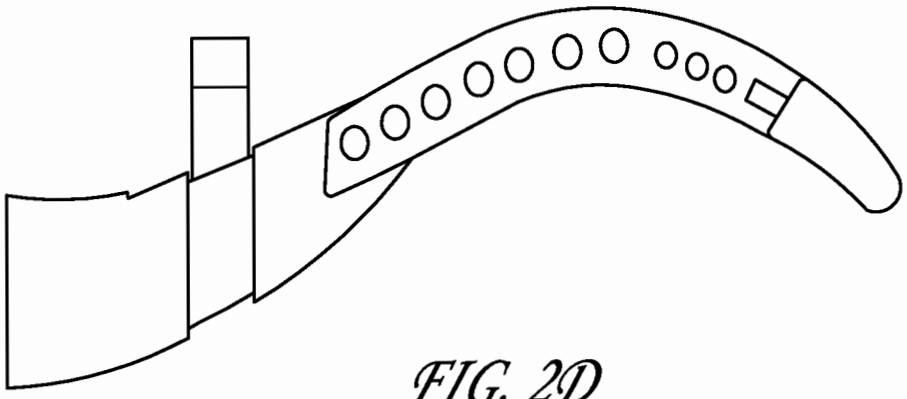

FIG. 2D

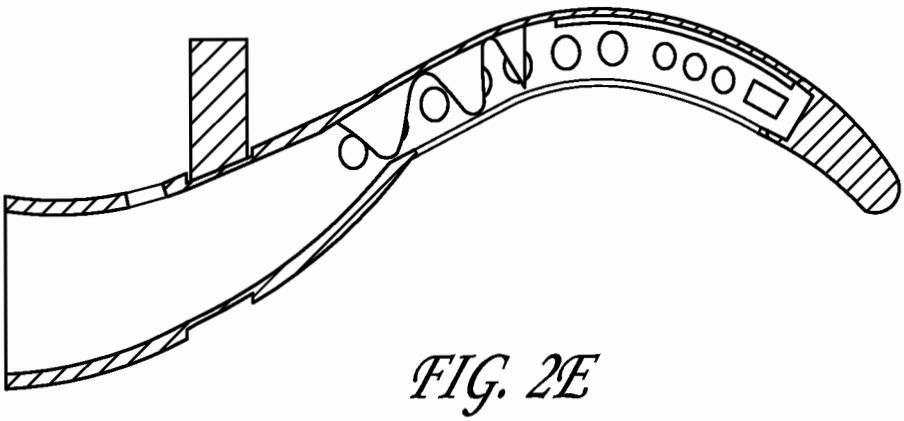

FIG. 2E

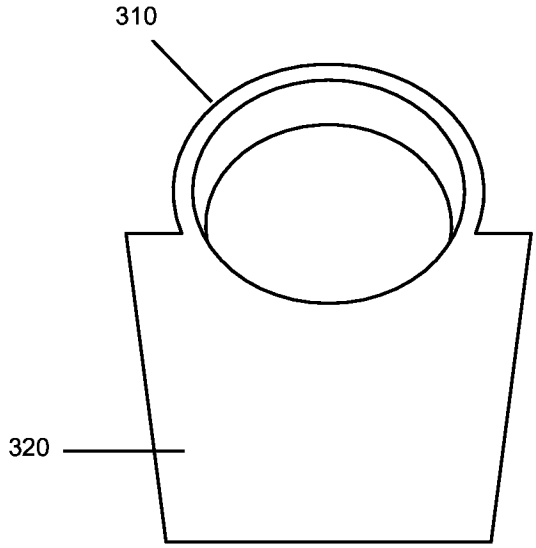

FIG. 3A

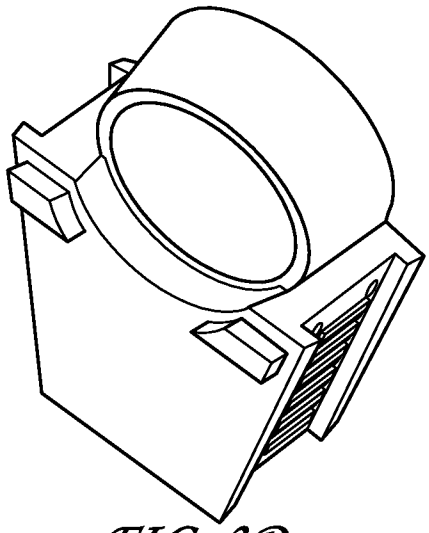

FIG. 3D

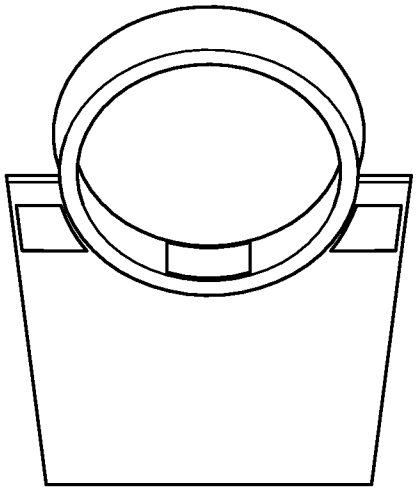

FIG. 3B

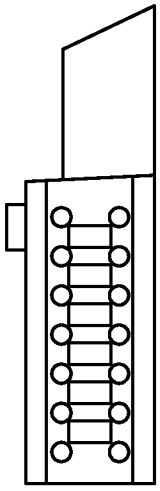

FIG. 3E

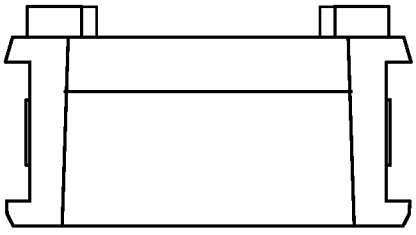

FIG. 3C

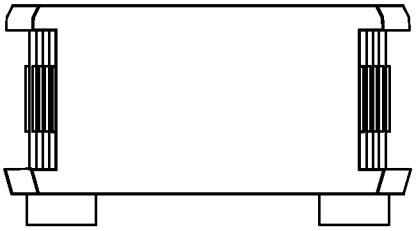

FIG. 3F

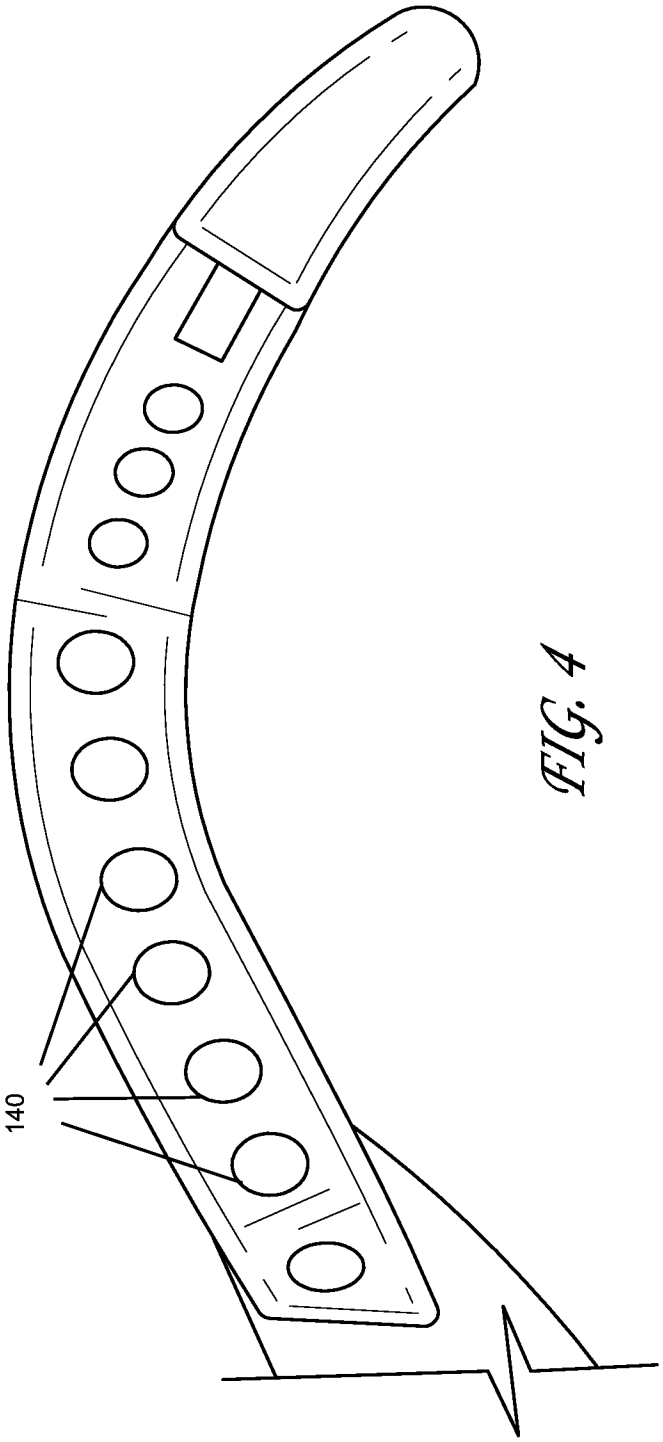

FIG. 4

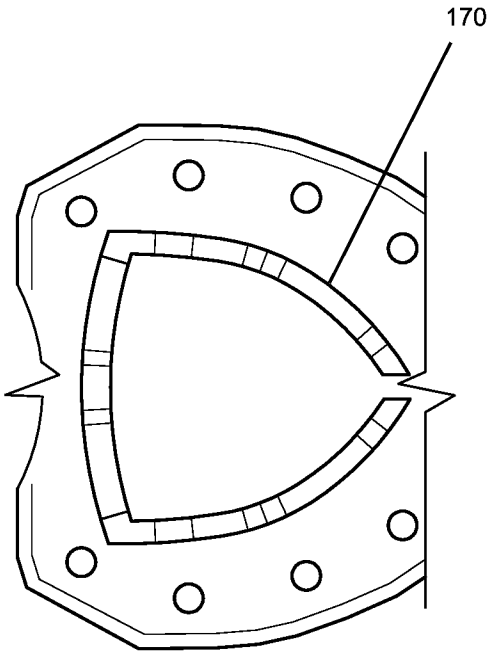

FIG. 5

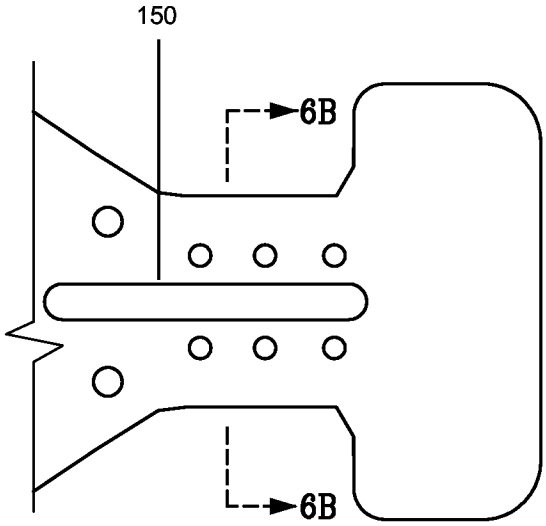

FIG. 6A

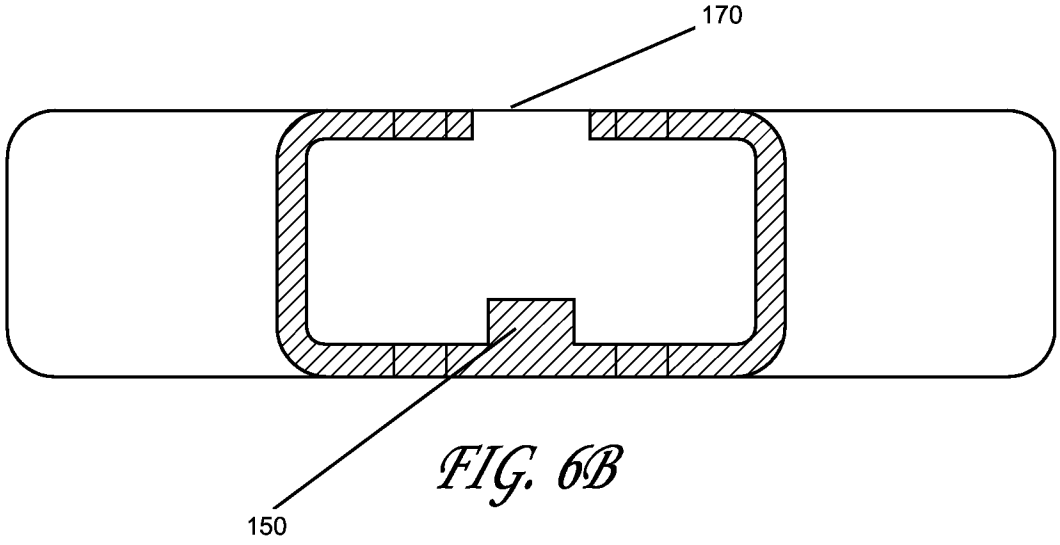

FIG. 6B

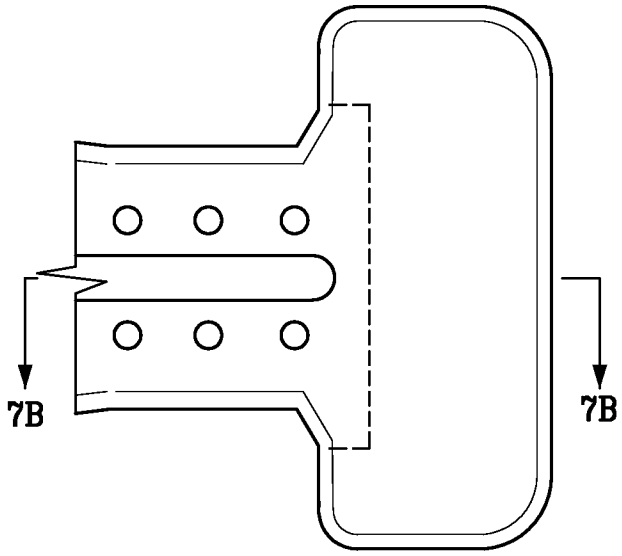

FIG. 7A

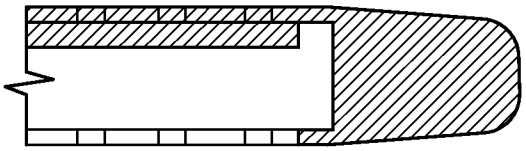

FIG. 7B

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	INTRAORAL DEVICE WITH MESH
First Named Inventor/Applicant Name:	Thien Nguyen
Filer:	TamThanh Thi Pham
Attorney Docket Number:	INCEP-001COA

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility filing Fee (Electronic filing)	4011	1	70	70
Utility Search Fee	2111	1	300	300
Utility Examination Fee	2311	1	360	360
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

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Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**730**

Electronic Acknowledgement Receipt

EFS ID:	18598138
Application Number:	14228046
International Application Number:	
Confirmation Number:	7700
Title of Invention:	INTRAORAL DEVICE WITH MESH
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	28661
Filer:	TamThanh Thi Pham/Adriena Garcia
Filer Authorized By:	TamThanh Thi Pham
Attorney Docket Number:	INCEP-001COA
Receipt Date:	27-MAR-2014
Filing Date:	
Time Stamp:	19:03:57
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$730
RAM confirmation Number	7632
Deposit Account	500612
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

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Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	WebADS.pdf	112452 e2de32667bc5c7a341039e33c3f4c30a13cebd9a	no	6
Warnings:					
Information:					
2		INCEP-001COA_Specification_3-27-14.pdf	127956 7dd5888d2d5ebc999a3994514725922efd5ed0ea	yes	16

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Specification	1	12
	Claims	13	15
	Abstract	16	16

Warnings:					
Information:					
3	Drawings-only black and white line drawings	INCEP-001_Figures.pdf	497577 621a958a570899df19147580d4736c278ea87fcb	no	11
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	32606 aabadd733bb767040c39bb918e9123f95ec02328	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	770591		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Document code: WFEE

United States Patent and Trademark Office
Sales Receipt for Accounting Date: 04/18/2014

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
14/228,046	03/27/2014	3732	800	INCEP-001COA	20	1

CONFIRMATION NO. 7700

28661
Lewis Roca Rothgerber LLP
2440 W. El Camino Real, 6th Floor
Mountain View, CA 94040

FILING RECEIPT

OC000000067894501

Date Mailed: 04/18/2014

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Thien Nguyen, Santa Ana, CA;
Tam Thanh Pham, San Francisco, CA;

Applicant(s)

Incept, Inc., Irvine, CA

Assignment For Published Patent Application

Incept, Inc., Irvine, CA

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 14/100,323 12/09/2013
which claims benefit of 61/734,939 12/07/2012

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

If Required, Foreign Filing License Granted: 04/18/2014
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/228,046**
Projected Publication Date: 07/31/2014
Non-Publication Request: No
Early Publication Request: No
** **SMALL ENTITY** **

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

Title

INTRAORAL DEVICE WITH MESH

Preliminary Class

433

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

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NOT GRANTED

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Ascentcare Dental Products v. Solmetex - IPR2025-01175

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 14/228,046

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	70		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	300		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	360		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	*	x 40 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	*	x 210 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	730		TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/228,046	03/27/2014	Thien Nguyen	INCEP-001COA

CONFIRMATION NO. 7700

28661
Lewis Roca Rothgerber LLP
2440 W. El Camino Real, 6th Floor
Mountain View, CA 94040

NOTICE

OC000000067894502

Date Mailed: 04/18/2014

INFORMATIONAL NOTICE TO APPLICANT

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

The item(s) indicated below are also required and should be submitted with any reply to this notice to avoid further processing delays.

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):
  Thien Nguyen
  Tam Thanh Pham

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

Substitute for Form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*				Application Number	14/228,046
				Filing Date	March 27, 2014
				First Named Inventor:	Thien Nguyen
				Art Unit	3732
				Examiner Name	Hao D. Mai
Sheet	1	**of**	3	Attorney Docket Number	INCEP-001COA

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (If known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-	D495,799	9/7/2004	Hirsch et al.	
		US-	D497,426	10/19/2004	Hirsch et al.	
		US-	D615,203	5/4/2010	Hirsch et al.	
		US-	D696,779	12/31/2013	Hirsch et al.	
		US-	3,090,122	5/21/1963	Erickson	
		US-	3,802,081	4/9/1974	Rogers	
		US-	3,877,691	4/15/1975	Foster	
		US-	4,017,975	4/19/1977	Johnson	
		US-	4,192,071	3/11/1980	Erickson	
		US-	4,718,662	1/12/1988	North	
		US-	4,802,851	2/7/1989	Rhoades	
		US-	5,078,602	1/7/1992	Honoshofsky	
		US-	5,890,899	4/6/1999	Sclafani	
		US-	6,022,214	2/8/2000	Hirsch et al.	
		US-	6,338,627	1/15/2002	Hirsch et al.	
		US-	6,575,746	6/10/2003	Hirsch et al.	
		US-	6,908,308	6/21/2005	Hirsch et al.	
		US-	6,974,321	12/13/2005	Hirsch et al.	
		US-	7,287,981	10/30/2007	Hirsch	
		US-	7,293,990	11/13/2007	Hirsch et al.	
		US-	7,611,354	11/3/2009	Hirsch et al.	
		US-	7,748,981	7/6/2010	Hirsch et al.	
		US-	8,057,227	11/15/2011	Hirsch et al.	
		US-	8,057,228	11/15/2011	Hirsch et al.	
		US-	8,075,310	12/13/2011	Hirsch et al.	
		US-	8,297,973	10/30/2012	Hirsch et al.	
		US-	8,529,256	9/10/2013	Hirsch et al.	
		US-	2008/0166684	7/10/2008	Kanas	
		US-	2008/0318183	12/25/2008	Suzman	
		US-	2009/0123886	5/14/2009	Vaska	

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1]Applicant's unique citation designation number (optional). [2]See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3]Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4]For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6]Applicant is to place a check mark here if English language translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SENT FEES OR COMPLETED FORMS TO THIS ADDRESS.

SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Based on Form PTO/SB/08A (08-03)

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

Substitute for Form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*				Application Number	14/228,046
				Filing Date	March 27, 2014
				First Named Inventor:	Thien Nguyen
				Art Unit	3732
				Examiner Name	Hao D. Mai
Sheet	2	**of**	3	Attorney Docket Number	INCEP-001COA

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (If known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-	2009/0274991	11/5/2009	Black et al.	
		US-	2011/0207076	8/25/2011	Hirsch et al.	
		US-	2011/0311942	12/22/2011	Black et al.	
		US-	2014/0004478	1/2/2014	Hirsch et al.	
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Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1]Applicant's unique citation designation number (optional). [2]See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3]Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4]For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6]Applicant is to place a check mark here if English language translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SENT FEES OR COMPLETED FORMS TO THIS ADDRESS.

SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

Substitute for Form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*				Application Number	14/228,046
				Filing Date	March 27, 2014
				First Named Inventor:	Thien Nguyen
				Art Unit	3732
				Examiner Name	Hao D. Mai
Sheet	3	**of**	3	Attorney Docket Number	INCEP-001COA

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T[2]
		Docket No. INCEP-001 U.S. Patent Application 14/100,323; Office Action mailed 5/6/14	

Examiner Signature		Date Considered	

*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1]Applicant's unique citation designation number (optional). [2]Applicant is to place a check mark here if English Translation is attached.

This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Ascendis Dental Products v. Solmetex - IPR2025-01175
Solmetex Ex. 2016

Electronic Acknowledgement Receipt

EFS ID:	18996132
Application Number:	14228046
International Application Number:	
Confirmation Number:	7700
Title of Invention:	INTRAORAL DEVICE WITH MESH
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	28661
Filer:	TamThanh Thi Pham/Lea Fong
Filer Authorized By:	TamThanh Thi Pham
Attorney Docket Number:	INCEP-001COA
Receipt Date:	13-MAY-2014
Filing Date:	27-MAR-2014
Time Stamp:	09:23:43
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	INCEP-001COA_IDS_Statement_5-12-14.pdf	19352 5eb7720f4a90fd7a6298a6df2a7e81bf63475168	no	2

Warnings:	
Information:	

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

2	Transmittal Letter	INCEP-001COA_IDS_List_of_Co pending_Apps_5-12-14.pdf	19941 de500d995d4a409d27dba9bbc2486398db 4ae1bf	no	2
Warnings:					
Information:					
3	Information Disclosure Statement (IDS) Form (SB08)	INCEP-001COA_IDS_1449_5-12 -14.pdf	63716 53f5ec2f23876f868682da451bcb742e2e05 cc4c	no	3
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
			Total Files Size (in bytes):	103009	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit: 3732 | Examiner: Hao D. Mai

Serial No.: 14/228,046 | Filed: March 27, 2014

In re Application of: Thien Nguyen

Confirmation No.: 7700 | Customer No.: 28661

Title: INTRAORAL DEVICE WITH MESH

INFORMATION DISCLOSURE STATEMENT

Under 37 C.F.R. § 1.56, and 1.97-1.98

SIR:

Pursuant to the provisions of 37 C.F.R. §§ 1.56 and 1.97-98 of the Rules of Practice in Patent Cases, enclosed herewith is form PTO-SB-08, listing several references. The Examiner is requested to make these references of official record in the application.

The references cited may be material to examination of the application and are submitted in compliance with the Applicants' duty of disclosure as defined by 37 C.F.R. § 1.56.

No representation is made or intended as to the completeness of this list, nor is the inclusion of any reference on this list an admission that it is prior art or pertinent to this application.

The Commissioner is hereby authorized to charge any necessary fee to Account Number 50-0612.

Respectfully submitted,
LEWIS ROCA ROTHGERBER LLP

Dated: May 12, 2014

/Tam Thanh Pham/
Tam Thanh Pham (50,565)
LEWIS ROCA ROTHGERBER LLP
2440 W. El Camino Real, 6th Floor
Mountain View, California 94040
TEL (650) 391-1380
ipdockets@lrrlaw.com

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit: 3732 Examiner: Hao D. Mai

Serial No.: 14/228,046 Filed: March 27, 2014

In re Application of: Thien Nguyen

Confirmation No.: 7700 Customer No.: 28661

Title: INTRAORAL DEVICE WITH MESH

List of Co-Pending Patents or Patent Applications That May Be Directed Towards Similar Subject Matter

Examiner's Initials	Application Number	Docket Number	First-Named Inventor	Title	Filing Date
	14/100,323	INCEP-001	Thien Nguyen	INTRAORAL DENTAL SUCTION AND ISOLATION SYSTEM	December 9, 2013
	14/228,050	INCEP-001COB	Thien Nguyen	INTRAORAL DEVICE WITH BRIDGE	March 27, 2014
	14/228,054	INCEP-001COC	Thien Nguyen	INTRAORAL DEVICE WITH STABILITY START	March 27, 2014
	14/228,057	INCEP-001COD	Thien Nguyen	INTRAORAL DEVICE WITH SLIT	March 27, 2014
	14/228,061	INCEP-001COE	Thien Nguyen	INTRAORAL DEVICE WITH DETACHABLE MOUTH PROP	March 27, 2014
Examiner's Signature:					Date:

The Commissioner is hereby authorized to charge any necessary fee to Account Number 50-0612.

Respectfully submitted,
LEWIS ROCA ROTHGERBER LLP

Dated: May 12, 2014

/Tam Thanh Pham/
Tam Thanh Pham (50,565)
LEWIS ROCA ROTHGERBER LLP
2440 W. El Camino Real, 6th Floor
Mountain View, California 94040
TEL (650) 391-1380
ipdockets@lrrlaw.com

PTO/AIA/80 (07-12)
Approved for use through 11/30/2014. OMB 0651-0035
U.S. Patent and Trademark Office; U.S DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:

☒ Practitioners associated with Customer Number: 28661

OR

☐ Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignments documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

☒ The address associated with Customer Number: 28661

OR

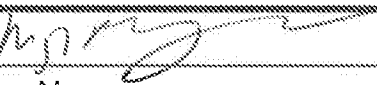
☐	Firm or Individual Name			
	Address			
	City		State	Zip
	Country			
	Telephone		Email	

Assignee Name and Address: Incept, inc.
92 Corporate Park
Suite C #818
Irvine, California 92606

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be Filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of The practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature		Date	5/14/14
Name	Thien Nguyen	Telephone	714-312-9959
Title			

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Ascentcare Dental Products v. Solmetex IPR2025-01175
Solmetex Ex. 2016

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Thien Nguyen

Application No./Patent No.: 14/228,046 Filed/Issue Date: March 27, 2014

Titled: Intraoral Device with Mesh

Incept, Inc., a Corporation

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. ☑ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel 032545, Frame 0891, or for which a copy thereof is attached.

B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

   1. From: _____ To: _____

      The document was recorded in the United States Patent and Trademark Office at

      Reel _____, Frame _____, or for which a copy thereof is attached.

   2. From: _____ To: _____

      The document was recorded in the United States Patent and Trademark Office at

      Reel _____, Frame _____, or for which a copy thereof is attached.

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Solmetex Ex. 2016
Ascendare Dental Products v. Solmetex - IPR2025-01175

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☑ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Tam Thanh Pham/	May 19, 2014
Signature	Date
Tam Thanh Pham	50565
Printed or Typed Name	Title or Registration Number

Electronic Acknowledgement Receipt

EFS ID:	19071527
Application Number:	14228046
International Application Number:	
Confirmation Number:	7700
Title of Invention:	INTRAORAL DEVICE WITH MESH
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	28661
Filer:	TamThanh Thi Pham/Adriena Garcia
Filer Authorized By:	TamThanh Thi Pham
Attorney Docket Number:	INCEP-001COA
Receipt Date:	19-MAY-2014
Filing Date:	27-MAR-2014
Time Stamp:	19:49:37
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Oath or Declaration filed	INCEP-001_Declaration-Nguyen.pdf	240154 13d3e44ba325737d25e5836004e8c505652f1b59	no	2

Warnings:	
Information:	

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

2	Oath or Declaration filed	INCEP-001_Declaration-Pham.pdf	46300 6fa3c1df4f54e80396687e9bb6a3db9a3e3fc146	no	2
Warnings:					
Information:					
3	Power of Attorney	INCEP-001COA_POA_5-19-14.pdf	311060 c29b30672525a990499f901c4fcc0003643f82d7	no	3
Warnings:					
Information:					
			Total Files Size (in bytes):	597514	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

DECLARATION FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am an original inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled **Intraoral Dental Suction and Isolation System** the specification of which was filed **December 9, 2013** and assigned U.S. patent application **14/100,323**.

I hereby state that the above-identified application was made or authorized to be made by me.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of inventor: **Thien Nguyen**

Citizenship: U.S. CITIZEN

Inventor's signature: _____

(Permanent ink only)

Dated (optional): _____

(Date)

Mailing Address: **92 Corporate Park**
Suite C, #818
Irvine, California 92606

Residence: Santa Ana, California

(Japan: prefecture, city, village, city ward, etc.; US: city and state)

37 CFR §1.56 Duty to disclose information material to patentability.

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is cancelled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is cancelled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

(1) Prior art cited in search reports of a foreign patent office in a counterpart application, and

(2) The closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and

(1) It establishes, by itself or in combination with other information, a *prima facie* case of unpatentability of a claim; or

(2) It refutes, or is inconsistent with, a position the applicant takes in:

(i) Opposing an argument of unpatentability relied on by the Office, or

(ii) Asserting an argument of patentability. A *prima facie* case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

(1) Each inventor named in the application;

(2) Each attorney or agent who prepares or prosecutes the application; and

(3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.

(e) In any continuation-in-part application, the duty under this section includes the duty to disclose to the Office all information known to the person to be material to patentability, as defined in paragraph (b) of this section, which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

DECLARATION FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

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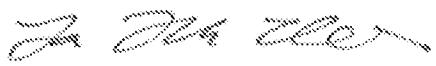
Full name of inventor: **Tam Thanh Pham**

Citizenship: USA



Inventor's signature: _____

(Permanent ink only)

Dated (optional): May 19, 2014

(Date)

Mailing Address: **92 Corporate Park**
Suite C, #818
Irvine, California 92606

Residence: San Francisco, California

(Japan: *prefecture, city, village, city ward, etc.*; US: *city and state)*

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(i) Opposing an argument of unpatentability relied on by the Office, or

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(1) Each inventor named in the application;

(2) Each attorney or agent who prepares or prosecutes the application; and

(3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.

(e) In any continuation-in-part application, the duty under this section includes the duty to disclose to the Office all information known to the person to be material to patentability, as defined in paragraph (b) of this section, which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/228,046	03/27/2014	Thien Nguyen	INCEP-001COA

CONFIRMATION NO. 7700

28661
Lewis Roca Rothgerber LLP
2440 W. El Camino Real, 6th Floor
Mountain View, CA 94040

POA ACCEPTANCE LETTER

OC000000068602743

Date Mailed: 05/27/2014

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 05/19/2014.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/hchristian/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/228,046	03/27/2014	Thien Nguyen	INCEP-001COA

CONFIRMATION NO. 7700

28661
Lewis Roca Rothgerber LLP
4300 Bohannon Drive
Suite 230
Menlo Park, CA 94025

PUBLICATION NOTICE

OC000000069928261

Title:INTRAORAL DEVICE WITH MESH

Publication No.US-2014-0212837-A1
Publication Date:07/31/2014

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

Substitute for Form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Complete if Known	
Application Number	14/228,046
Filing Date	March 27, 2014
First Named Inventor:	Thien Nguyen
Art Unit	3732
Examiner Name	Hao D. Mai
Attorney Docket Number	INCEP-001COA

Sheet	1	of	1

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (If known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-	2014/0162209	6/12/2014	Nguyen	
		US-	2014/0212838	7/31/2014	Nguyen	
		US-	2014/0212839	7/31/2014	Nguyen	
		US-	2014/0212840	7/31/2014	Nguyen	
		US-	2014/0212841	7/31/2014	Nguyen	
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3] Number[4] Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1]Applicant's unique citation designation number (optional). [2]See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3]Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4]For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6]Applicant is to place a check mark here if English language translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SENT FEES OR COMPLETED FORMS TO THIS ADDRESS.

SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Solmetex Ex. 2016
IPR2025-01175

Electronic Acknowledgement Receipt

EFS ID:	20016276
Application Number:	14228046
International Application Number:	
Confirmation Number:	7700
Title of Invention:	INTRAORAL DEVICE WITH MESH
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	28661
Filer:	Stephanie Simone Buntin/Lea Fong
Filer Authorized By:	Stephanie Simone Buntin
Attorney Docket Number:	INCEP-001COA
Receipt Date:	05-SEP-2014
Filing Date:	27-MAR-2014
Time Stamp:	17:48:14
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	INCEP-001COA_IDS_Statement_9-2-14.pdf	19301 8c5532e61c7a4effb3ed7bd89e83d8cf2a204ceb	no	2

Warnings:	
Information:	

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

2	Information Disclosure Statement (IDS) Form (SB08)	INCEP-001COA_IDS_1449_9-2-14.pdf	54153 9fca3a0b13fee97799ec3befe8542e0df1848f2a	no	1

Warnings:	
Information:	
This is not an USPTO supplied IDS fillable form	
Total Files Size (in bytes):	73454

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit: 3732 | Examiner: Thien Nguyen

Serial No.: 14/228,046 | Filed: March 27, 2014

In re Application of: Hao D. Mai

Confirmation No.: 7700 | Customer No.: 28661

Title: INTRAORAL DEVICE WITH MESH

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT
Under 37 C.F.R. § 1.56, and 1.97-1.98

SIR:

Pursuant to the provisions of 37 C.F.R. §§ 1.56 and 1.97-98 of the Rules of Practice in Patent Cases, enclosed herewith is form PTO-SB-08, listing several references. The Examiner is requested to make these references of official record in the application.

The references cited may be material to examination of the application and are submitted in compliance with the Applicants' duty of disclosure as defined by 37 C.F.R. § 1.56.

No representation is made or intended as to the completeness of this list, nor is the inclusion of any reference on this list an admission that it is prior art or pertinent to this application.

The Commissioner is hereby authorized to charge any necessary fee to Account Number 50-0612.

Respectfully submitted,
LEWIS ROCA ROTHGERBER LLP

Dated: September 2, 2014

/Stephanie S. Buntin/
Stephanie S. Buntin (69,614)
LEWIS ROCA ROTHGERBER LLP
4300 Bohannon Drive, Suite 230
Menlo Park, CA 94025
TEL (650) 391-1380
ipdockets@lrrlaw.com

Substitute for Form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Complete if Known	
Application Number	14/228,046
Filing Date	March 27, 2014
First Named Inventor:	Thien Nguyen
Art Unit	3732
Examiner Name	Hao D. Mai
Attorney Docket Number	INCEP-001COA

Sheet	1	of	2

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (If known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-	2,937,445	5/24/1960	Erickson	
		US-	3,768,477	10/30/1973	Anders et al.	
		US-	3,924,333	12/9/1975	Erickson	
		US-	4,024,642	5/24/1977	Zorovich	
		US-	6,213,772	4/10/2001	Costello	
		US-	8,029,280	10/4/2011	Black et al.	
		US-	2006/0063129	3/23/2006	Hirsch	
		US-				
		US-				
		US-				
		US-				
		US-				

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3] Number[4] Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1]Applicant's unique citation designation number (optional). [2]See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3]Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4]For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6]Applicant is to place a check mark here if English language translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SENT FEES OR COMPLETED FORMS TO THIS ADDRESS.

SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Solmetex Ex. 2016
IPR2025-01175

Substitute for Form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*				Application Number	14/228,046
				Filing Date	March 27, 2014
				First Named Inventor:	Thien Nguyen
				Art Unit	3732
				Examiner Name	Hao D. Mai
Sheet	2	**of**	2	Attorney Docket Number	INCEP-001COA

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T[2]
		Docket No. INCEP-001 U.S. Patent Application 14/100,323; Final Office Action mailed 10/24/14	

Examiner Signature		Date Considered	

*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1]Applicant's unique citation designation number (optional). [2]Applicant is to place a check mark here if English Translation is attached.

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Straumann Dental Products v. Solmetex - IPR2025-01175 Solmetex Ex. 2016

Electronic Acknowledgement Receipt

EFS ID:	20671177
Application Number:	14228046
International Application Number:	
Confirmation Number:	7700
Title of Invention:	INTRAORAL DEVICE WITH MESH
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	28661
Filer:	Stephanie Simone Buntin/Lea Fong
Filer Authorized By:	Stephanie Simone Buntin
Attorney Docket Number:	INCEP-001COA
Receipt Date:	19-NOV-2014
Filing Date:	27-MAR-2014
Time Stamp:	10:09:08
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	INCEP-001COA_IDS_Statement_11-12-14.pdf	19309 8b58cb7f5697d7b319e401a9d2d590c41234bc2a	no	2

Warnings:	
Information:	

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

2	Information Disclosure Statement (IDS) Form (SB08)	INCEP-001COA_IDS_1449_11-12-14.pdf	63187 38a33348c9c6fe3f7f46a5c23cb1eaad442bb320	no	2

Warnings:	
Information:	
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Total Files Size (in bytes):	82496

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

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If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit: 3732 Examiner: Hao D. Mai

Serial No.: 14/228,046 Filed: March 27, 2014

In re Application of: Thien Nguyen

Confirmation No.: 7700 Customer No.: 28661

Title: INTRAORAL DEVICE WITH MESH

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT
Under 37 C.F.R. § 1.56, and 1.97-1.98

SIR:

Pursuant to the provisions of 37 C.F.R. §§ 1.56 and 1.97-98 of the Rules of Practice in Patent Cases, enclosed herewith is form PTO-SB-08, listing several references. The Examiner is requested to make these references of official record in the application.

The references cited may be material to examination of the application and are submitted in compliance with the Applicants' duty of disclosure as defined by 37 C.F.R. § 1.56.

No representation is made or intended as to the completeness of this list, nor is the inclusion of any reference on this list an admission that it is prior art or pertinent to this application.

The Commissioner is hereby authorized to charge any necessary fee to Account Number 50-0612.

Respectfully submitted,
LEWIS ROCA ROTHGERBER LLP

Dated: November 12, 2014

/Stephanie S. Buntin/
Stephanie S. Buntin (69,614)
LEWIS ROCA ROTHGERBER LLP
4300 Bohannon Drive, Suite 230
Menlo Park, CA 94025
TEL (650) 391-1380
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTOR(S):	Thien Nguyen et al.
APPLICATION NO.:	14/228,046
FILING DATE:	March 27, 2014
TITLE:	Intraoral Device with Mesh
ART UNIT:	3732
EXAMINER:	Hao D. Mai
CONFIRM. NO.:	7700
ATTY.DKT.NO.:	INCEP-001COA

COMMISSIONER FOR PATENTS
P.O. BOX 1450
ALEXANDRIA, VA 22313-1450

PRELIMINARY AMENDMENT

Examiner Mai:

Prior to examination of the present application, please enter the following **amendments** to the **claims,** which commence on **page two**. The Applicants' **remarks** appear beginning on **page five**.

IN THE CLAIMS

PLEASE AMEND THE CLAIMS AS FOLLOWS:

1. (currently amended) A dental mouthpiece comprising:

a main body portion configured as a pocket having an interior defined by:

an anterior wall <u>having a shape defined by an exterior edge</u>,

a posterior wall <u>having a shape corresponding to the defined shape of the anterior wall, wherein an exterior edge of the posterior wall shape corresponds to the exterior edge of the anterior wall</u>, and

a side wall connecting [[an]] <u>the exterior</u> edge of the anterior wall to [[an]] <u>the corresponding exterior</u> edge of the posterior wall, and wherein at least part of the side wall comprises a plurality of perforations.

2. (original) The dental mouthpiece of claim 1, wherein the perforations on the side wall are spaced to comprise a mesh.

3. (original) The dental mouthpiece of claim 1, wherein the anterior wall further comprises one or more perforations.

4. (original) The dental mouthpiece of claim 3, wherein the perforations on the anterior wall are spaced to comprise a mesh.

5. (original) The dental mouthpiece of claim 1, wherein the posterior wall further comprises one or more perforations.

6. (original) The dental mouthpiece of claim 5, wherein the perforations on the posterior wall are spaced to comprise a mesh.

7. (original) The dental mouthpiece of claim 1, wherein the anterior wall further includes a slit along a longitudinal axis of the main body.

8. (currently amended) The dental mouthpiece of claim 1, further comprising a suction connector portion that connects the interior ~~portion~~ of the pocket to a vacuum source, wherein activation of the vacuum source provides suction of fluids through the perforations in the side wall into the interior of the pocket.

9. (currently amended) The dental mouthpiece of claim [[8]] 1, further comprising a bridge structure protruding from an interior surface of the posterior wall and unattached to the anterior wall, the protruding bridge structure comprising a plurality of protrusions collectively providing spaced contact points that keep the anterior wall separated from the posterior wall during suction.

10. (currently amended) The dental mouthpiece of claim 9, wherein the provided suction further draws fluids through spaces between the ~~contact points~~ protrusions of the bridge structure towards the vacuum source.

11. (currently amended) The dental mouthpiece of claim 1, further comprising a cheek retractor portion ~~configured to press against a cheek of a patient~~ connected to the main body portion and having a surface that applies pressure when ~~placed in a mouth of the patient~~ the dental mouthpiece is bent, wherein the pressure is based on resilience of [[the]] a material ~~causes~~ from which the cheek retractor ~~portion to retract a cheek of the patient away from the teeth of the patient~~ is formed.

12. (currently amended) The dental mouthpiece of claim 11, wherein the cheek retractor portion ~~is connected to the main body portion and includes~~ comprises an extension of the pocket, wherein a side wall of the extension comprises one or more perforations.

13. (currently amended) The dental mouthpiece of claim [[1]] 11, further comprising a stability bar protruding from an interior surface of the posterior wall along a longitudinal axis of the main body and extending through at least part of the cheek retractor, wherein a thickness of the stability bar ~~increases~~ corresponds to resilience [[of]] by which the cheek retractor portion applies pressure during bending.

14. (original) The dental mouthpiece of claim 1, wherein the main body portion is formed by injection-molding as one piece.

15. (currently amended) The dental mouthpiece of claim 1, wherein a material ~~used in the injection molding~~ from which the main body is formed is a flexible, translucent, high heat-resistant, autoclavable silicone-based material.

16. (original) The dental mouthpiece of claim 1, wherein the anterior wall and the posterior wall have different thicknesses.

17. (original) The dental mouthpiece of claim 1, further comprising a detachable mouth prop.

18. (original) The dental mouthpiece of claim 17, wherein the detachable mouth prop comprises a bite block portion and a strap portion.

19. (currently amended) The dental mouthpiece of claim 18, wherein the bite block portion and the strap portion are injection-molded in one piece.

20. (original) The dental mouthpiece of claim 18, wherein the bite block portion comprises an opening corresponding to a plug connected to the main body.

REMARKS

The Applicants submit that the amended claims concern subject matter fully supported by the specification and to which the Applicants believe that they are entitled to claim. As such, no new matter has been added, and entry and consideration of the same is respectfully requested.

The Examiner is invited to contact the Applicants' undersigned representative with any questions concerning the present amendment.

The Director is authorized to charge any fees associated with or required by this filing to Deposit Account No. 500612.

Respectfully submitted,
Thien Nguyen et al.

November 25, 2014

By: /Tam Thanh Pham/

Tam Thanh Pham, Reg. No. 50,565
Lewis Roca Rothgerber *LLP*
4300 Bohannon Drive, Suite 230
Menlo Park, CA 94025
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Electronic Acknowledgement Receipt

EFS ID:	20801326
Application Number:	14228046
International Application Number:	
Confirmation Number:	7700
Title of Invention:	INTRAORAL DEVICE WITH MESH
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	28661
Filer:	TamThanh Thi Pham/Nicole Villanueva
Filer Authorized By:	TamThanh Thi Pham
Attorney Docket Number:	INCEP-001COA
Receipt Date:	25-NOV-2014
Filing Date:	27-MAR-2014
Time Stamp:	17:12:41
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		INCEP-001COA_Preliminary_Amendment_11-25-14.pdf	87175 69d866b99492177817b0964ce4dce12f10c405e4	yes	5

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Preliminary Amendment	1	1
	Claims	2	4
	Applicant Arguments/Remarks Made in an Amendment	5	5
Warnings:			
Information:			
	Total Files Size (in bytes):	87175	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/228,046	Filing Date 03/27/2014	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	11/25/2014	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0	X $40 =	0
	Independent (37 CFR 1.16(h))	* 1	Minus	***3	= 0	X $210 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	**0**

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/DAWN BREWER/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Solmetex Ex. 2016
Ascensiare Dental Products v. Solmetex - IPR2025-01175

Substitute for Form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Complete if Known	
Application Number	14/228,046
Filing Date	March 27, 2014
First Named Inventor:	Thien Nguyen
Art Unit	3732
Examiner Name	Hao D. Mai
Attorney Docket Number	INCEP-001COA

Sheet 1 **of** 2

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (If known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-	4,822,278	4/18/1989	Oliva et al.	
		US-	8,911,232	12/16/2014	Nguyen	
		US-	2006/0084031	4/20/2006	Hirsch et al.	
		US-	2013/0252193	9/26/2013	Bowman et al.	
		US-				
		US-				
		US-				
		US-				
		US-				
		US-				
		US-				
		US-				

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3] Number[4] Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1]Applicant's unique citation designation number (optional). [2]See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3]Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4]For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6]Applicant is to place a check mark here if English language translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SENT FEES OR COMPLETED FORMS TO THIS ADDRESS.

SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Solmetex Ex. 2016
IPR2025-01175

Substitute for Form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*				Application Number	14/228,046
				Filing Date	March 27, 2014
				First Named Inventor:	Thien Nguyen
				Art Unit	3732
				Examiner Name	Hao D. Mai
Sheet	2	**of**	2	Attorney Docket Number	INCEP-001COA

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T[2]
		PCT Application No. PCT/US2014/032892 International Search Report and Written Opinion dated 9/4/14	
		Australian Patent Application No. 2014202637; AU Examination Report dated 1/23/15	

Examiner Signature		Date Considered	

*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1]Applicant's unique citation designation number (optional). [2]Applicant is to place a check mark here if English Translation is attached.

This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Ascendis Dental Products v. Solmetex - IPR2025-01175
Solmetex Ex. 2016

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference INCEP-001PCT	FOR FURTHER ACTION	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US2014/032892	International filing date *(day/month/year)* 03 April 2014	(Earliest) Priority Date *(day/month/year)* 09 December 2013
Applicant INCEPT, INC.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of:

☒ the international application in the language in which it was filed.

☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (see Box No. II).

3. ☐ **Unity of invention is lacking** (see Box No. III).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

a. the figure of the **drawings** to be published with the abstract is Figure No. 4

☐ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☒ as selected by this Authority, because this figure better characterizes the invention.

b. ☐ none of the figures is to be published with the abstract.

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2014/032892

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - A41C 17/00, 17/06 (2014.01)
CPC - A41C 17/00 (2014.07)
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8) - A41C 17/00, 17/06 (2014.01)
CPC - A41C 17/00 (2014.07)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC - 433/91, 92, 93, 140

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Orbit, Google Patents, Google Scholar, PiubMed

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2006/0084031 A1 (HIRSCH et al) 20 April 2006 (20.04.2006) entire document	1-6, 12, 17, 18
Y		7-11, 13-16
Y	US 2013/0252193 A1 (BOWMAN et al) 26 September 2013 (26.09.2013) entire document	7
Y	US 2011/0311942 A1 (BLACK et al) 22 December 2011 (22.12.2011) entire document	8-10, 13-16
Y	US 4,822,278 A (OLIVA et al) 18 April 1989 (18.04.1989) entire document	11

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
22 August 2014	04 SEP 2014

Name and mailing address of the ISA/US	Authorized officer:
Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: TAM THANH PHAM
LEWIS ROCA ROTHGERBER LLP
2440 W EL CAMINO REAL, 6TH FLOOR
MOUNTAIN VIEW, CA 94040

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	04 SEP 2014
Applicant's or agent's file reference INCEP-001PCT	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2014/032892	03 April 2014	09 December 2013

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - A41C 17/00, 17/06 (2014.01)
CPC - A41C 17/00 (2014.07)

Applicant INCEPT, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1 *bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Fom PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/US	Date of completion of this opinion	Authorized officer:
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	22 August 2014	Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (July 2011)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2014/032892

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed.

   ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:

   a. (means)

      ☐ on paper

      ☐ in electronic form

   b. (time)

      ☐ in the international application as filed

      ☐ together with the international application in electronic form

      ☐ subsequently to this Authority for the purposes of search

4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

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Ascentcare Dental Products v. Solmetex - IPR2025-01175

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2014/032892

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	5-11, 13-18	YES
	Claims	1-4, 12	NO
Inventive step (IS)	Claims	None	YES
	Claims	1-18	NO
Industrial applicability (IA)	Claims	1-18	YES
	Claims	None	NO

2. Citations and explanations:

Claims 1-4 and 12 lack novelty under PCT Article 33(2) as being anticipated by Hirsch et al hereinafter referred to as Hirsch.
Regarding claim 1, Hirsch teaches a dental mouthpiece (intraoral device 20; Fig. 2; para [0042]) composed of a material (Abstract), the dental mouthpiece comprising:
a main body portion (main body portion 50; Fig. 2; para [0047]) comprising a defined pocket (main receiving channel 62; Fig. 2; para [0047]) having an anterior wall (shown in Fig. 3), a posterior wall (shown in Fig. 4), and a side wall (shown in Figs. 5 and 8A-8B) in between the anterior wall and the posterior wall, wherein the anterior wall, the posterior wall, and the side wall define an interior portion of the defined pocket;
a cheek retractor portion (cheek retractor portion 52 of retractor 22; Fig. 2; para [0046]) configured to press against a cheek of a patient when placed in a mouth of the patient (para [0043]), wherein resilience of the material causes the cheek retractor portion to retract a cheek of the patient away from the teeth of the patient (para [0043]); and
a suction connector portion (exit port 108; Fig. 3; para[0058]) for connecting the interior portion of the main body to a vacuum suction source (vacuum source 110; Fig. 1; para [0062]).

Regarding claim 2, Hirsch teaches the mouthpiece of claim 1, wherein the side wall includes a plurality of perforations (evacuation holes 60; Figs. 3-4; para [0047]).

Regarding claim 3, Hirsch teaches the mouthpiece of claim 1, wherein the anterior wall and the posterior wall each includes a plurality of perforations (evacuation holes 60; Figs. 3-4).

Regarding claim 4, Hirsch teaches the mouthpiece of claim 1, wherein the anterior wall further includes a slit along a central axis (shown in Fig. 2 near channels 66).

Regarding claim 12, Hirsch teaches the mouthpiece of claim 1, further comprising a detachable (via pivot pins 92; para [0055]) mouth prop (bite block 26; Fig. 2).

Claims 5, 6, 17 and 18 lack an inventive step under PCT Article 33(3) as being obvious over Hirsch.
Regarding claim 5, Hirsch teaches the mouthpiece of claim 1, further comprising a stability bar (dispersion piece 24; Fig. 3).
Hirsch fails to teach the stability bar protruding from an interior surface of the posterior wall. In Fig. 3, Hirsch shows the stability bar protruding from an interior of the anterior wall.
It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the intraoral device of Hirsch to include the stability bar protruding from the interior wall of the posterior wall, since a mere reversal of essential working parts of a device involves only routine skill in the art. The motivation for doing so would be to provide a mouthpiece that would come in two different configurations, depending on the side of the mouth being examined (para [0045]).
Hirsch further fails to teach wherein a thickness of the stability bar increases resilience of the cheek retractor portion during bending. However, Hirsch teaches a combined thickness when the stability bar is connected to the mouthpiece (using pivot pins 92) (see Figs. 2 and 3 which shows the main body 50 before and after attachment of the stability bar).
Further, Hirsch teaches both the stability bar (dispersion piece 24) and the cheek retractor portion (cheek retractor portion 52) are made of flexible material and are in pivot connection (para [0045]; [0049]).
Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the intraoral device of Hirsh with increased resilience of the cheek retractor portion during bending in order to provide a mouthpiece to better accommodate different mouth sizes and shapes.

(Continued in Supplemental Boxes)

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Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:
Box V

Regarding claim 6, Hirsch teaches the mouthpiece of claim 1, wherein the main body portion, the cheek retractor portion, and the suction connector portion, but lacks the teaching that they are formed by injection-molded as one piece.
However, in an alternate embodiment shown in Fig. 18A, Hirsch teaches intraoral device (200) preferably has a single-piece, integrated homogenous-material, injection-molded construction (para [0074]).
Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the intraoral device of Hirsch, as taught in the alternate embodiment, for the purpose of minimize the cost of construction of each device, thus eliminating the need for reuse.

Regarding claim 17, Hirsch teaches the mouthpiece of claim 1, but lacks the teaching of the suction connector portion comprises a cutout corresponding to a protrusion on a vacuum adapter for an interlocking fit.
However, in alternate embodiment shown in Fig. 18B, Hirsch teaches the suction connector portion (connection section 570) comprises a cutout (slots 630) corresponding to a protrusion (barbs 690) on a vacuum adapter (vacuum-only adapter 230 by way of plug portion 640; Fig. 18B; para [0092]) for an interlocking fit (para [0092]).
Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the intraoral device of Hirsch, as taught in the alternate embodiment, for the purpose of providing a more secure connection between the suction connection portion and the vacuum.

Regarding claim 18, Hirsch teaches the mouthpiece of claim 1, but lacks the teaching of the anterior wall and the posterior wall having different thicknesses.
However, Hirsch teaches the intraoral device "may also come in different sizes...to accommodate different mouth sizes and shapes" (para [0056]). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the intraoral device of Hirsch to include an anterior wall and posterior wall having different thicknesses, for the purpose of providing a device that may accommodate a variety of patients' mouths.

Claim 7 lacks an inventive step under PCT Article 33(3) as being obvious over Hirsch in view of Bowman et al hereinafter referred to as Bowman.
Regarding claim 7, Hirsch teaches the mouthpiece of claim 1, wherein the material used in the injection molding is autoclavable.
Hirsch teaches "the bite piece 26 and dispersion piece 24 are autoclaved" (para [0060]). However, Hirsch lacks the teaching wherein the material used in the injection-molding is a flexible, translucent material.
However, in an alternate embodiment shown in Figs. 18A-18B, Hirsch teaches the "intraoral device is preferably injection molded out of a translucent, flexible...elastomer" (para [0074]).
Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the intraoral device, as taught by the alternate embodiment for the purpose of minimizing construction costs a provide a device that may accommodate many different patients mouths.
Hirsch also fails to teach the mouthpiece wherein the material used in the injection molding is a high heat-resistant, silicone-based material.
Bowman teaches dental positioners where the use of "silicone became very acceptable because of its...resistance to heat" (para [0018]).
It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the intraoral device of Hirsch to include a heat resistant silicone-based material, as taught by Bowman, since selection of a known material on the basis of its suitability for an intended use involves only routine skill in the art. The motivation for doing so would be to provide a device with enhanced efficacy and patient comfort.

Claims 8-10 and 13-16 lack an inventive step under PCT Article 33(3) as being obvious over Hirsch in view Black et al hereinafter referred to as Black.
Regarding claim 8, Hirsch teaches the mouthpiece of claim 1, but lacks the teaching of the mouthpiece further comprising a bridge structure protruding from an interior surface of the posterior wall, the protruding bridge structure comprising a plurality of spaced contact points that keep the anterior wall separated from the posterior wall during suction.
Black teaches an intraoral device comprising a bridge structure (transverse walls 348c; Figs. 23A and 23C) protruding from an interior surface of the posterior wall (posterior layer 348a), the protruding bridge structure comprising a plurality of spaced contact points that keep the anterior wall (anterior layer 348b) separated from the posterior wall during suction (para [0122]).
It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the intraoral device of Hirsch, as taught by Black, for the purpose of providing enhanced efficacy during suction.

Regarding claim 9, Hirsch and Black teach the mouthpiece of claim 8, but lack the teaching wherein the bridge structure protrudes from the interior surface of the posterior wall in a wave shape, and wherein the contact points are at crests of the wave shape.
It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the intraoral device of Hirsch to include bridge structures with the contact points are at crests of the wave shape, since a change in shape of an element involves only routine skill in the art. The motivation for doing so would be to provide enhanced efficacy during suction.

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Supplemental Box

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Continuation of:

Regarding claim 10, Hirsch and Black teach the mouthpiece of claim 9, wherein troughs are configured to allow suction through the bridge structure. Black teaches "in this way the channels 342,343 (troughs)...thereby allowing for simultaneous aspiration of debris and fluid" para [0122]). However, Hirsch and Black lack the teaching wherein the bridge structure protrudes from the interior surface of the posterior wall in a wave shape, and wherein the contact points are at crests of the wave shape.
However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the intraoral device of Hirsch to include bridge structures with the contact points are at crests of the wave shape, since a change in shape of an element involves only routine skill in the art. The motivation for doing so would be to provide enhanced efficacy during suction.

Regarding claim 13, Hirsch teaches the mouthpiece of claim 12, but lacks the teaching of wherein the detachable mouth prop comprises a strap configured to fit around the suction connector portion, wherein an external surface of the suction connector portion comprises a notch region corresponding to the strap, and wherein an external surface of the strap is substantially flush with a remaining external surface of the suction connector portion when the strap sits in the notch region.
Hirsch does teache a notch region (plug portion 640) for matingly corresponding to connection section 570 of tube 590; Fig. 18B; para [0092]).
Black teaches an intraoral device comprising a strap (conduit 312; Fig. 20B; para [0114]) configured to fit around the suction connector portion ("neck of tongue..."; para [0114]) wherein an external surface of the suction connector portion (Figs. 23B-23C; neck 346; para [0126]), comprises a region corresponding to the strap, and wherein an external surface of the strap is substantially flush with a remaining external surface of the suction connector portion when the strap sits in the region (para [0126]).
It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the intraoral device of Hirsch, as taught by Black, for the purpose of providing a more secure connection between the mouth prop and suction connection portion.

Regarding claim 14, Hirsch and Black teach the mouthpiece of claim 13, but lack the teaching wherein the strap is injection-molded in a single piece with the mouth prop.
Hirsch teaches the use of injection molding for the intraoral device ("one piece, flexible injection-molded body; Abstract).
It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the Hirsch device, since the use of a one piece construction instead of the structure disclosed in the prior art would have required only routine skill in the art. The motivation for doing so would be to provide enhanced efficacy during suction.

Regarding claim 15, Hirsch teaches the mouthpiece of claim 1, but lacks the teaching wherein the suction connector portion further comprises an external plug protrusion corresponding to an opening in a mouth prop associated with the strap.
Black teaches an intraoral device wherein the suction connector portion further comprises an external plug protrusion (longitudinal projection 344; para [0126]) corresponding to an opening (groove 311; Fig. 20D; para [0126]) in a mouth prop associated with the strap (para [0126]). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Hirsch, with the intraoral device as taught by Black, in order to provide a more secure connection at the suction connection portion.

Regarding claim 16, Hirsch and Black teach the mouthpiece of claim 15, wherein the plug protrusion fits into the opening to provide additional crush-resistance and decreased compressibility during biting by the patient.
Hirsch does teach, when adding plug 640 into connection section 570, "the plug...helps keep bite piece 250 from collapsing; para [0092]).
Specifically, Black teaches the plug protrusion (longitudinal projection 344) fits into the opening (groove 311).
It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Hirsch, with the plug protrusion as taught by Black, for the purpose of providing a more secure connection at the suction connection portion.

Claims 11 lacks an inventive step under PCT Article 33(3) as being obvious over Hirsch in view of Oliva et al hereinafter referred to as Oliva.
Regarding claim 11, Hirsch teaches the mouthpiece of claim 1, but lacks the teaching wherein the suction connector portion comprises an internal stop to assist in positioning of a vacuum suction source or a vacuum adaptor.
Oliva teaches a dental instrument that comprises an internal stop (spring-loaded valve stem 239; Fig. 14; col.8, lns. 15-22).
It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the intraoral device of Hirsch to include an internal stop, as taught by Oliva, for the purpose of manually stopping the suctioning during positioning of the vacuum source.

Claims 1-18 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry

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Electronic Acknowledgement Receipt

EFS ID:	21517494
Application Number:	14228046
International Application Number:	
Confirmation Number:	7700
Title of Invention:	INTRAORAL DEVICE WITH MESH
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	28661
Filer:	TamThanh Thi Pham/Lea Fong
Filer Authorized By:	TamThanh Thi Pham
Attorney Docket Number:	INCEP-001COA
Receipt Date:	17-FEB-2015
Filing Date:	27-MAR-2014
Time Stamp:	17:57:14
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	INCEP-001COA_IDS_Statement_2-17-15.pdf	19309 4491b41a8cd4787cba55b0077689407b2cd3742c	no	2

Warnings:	
Information:	

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2	Information Disclosure Statement (IDS) Form (SB08)	INCEP-001COA_IDS_1449_2-17-15.pdf	63220 3d3e2be888ac82a294625c0f0a432b61afb2fb24	no	2
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Non Patent Literature	PCTUS2014032892_Search_Report_and_Written_Opinion_9-4-14.pdf	1110300 1b6014c34a755c80cc143dadf2c600e57e1631ba	no	7
Warnings:					
Information:					
4	Non Patent Literature	AU_2014202637_Examination_Report_1-23-15.pdf	187736 3885a6c11663416b7d5ff1b6de55a7a76f860277	no	2
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		Total Files Size (in bytes):	1380565		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit: 3732 Examiner: Hao D. Mai

Serial No.: 14/228,046 Filed: March 27, 2014

In re Application of: Thien Nguyen

Confirmation No.: 7700 Customer No.: 28661

Title: INTRAORAL DEVICE WITH MESH

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT
Under 37 C.F.R. § 1.56, and 1.97-1.98

SIR:

Pursuant to the provisions of 37 C.F.R. §§ 1.56 and 1.97-98 of the Rules of Practice in Patent Cases, enclosed herewith is form PTO-SB-08, listing several references. The Examiner is requested to make these references of official record in the application.

The references cited may be material to examination of the application and are submitted in compliance with the Applicants' duty of disclosure as defined by 37 C.F.R. § 1.56.

No representation is made or intended as to the completeness of this list, nor is the inclusion of any reference on this list an admission that it is prior art or pertinent to this application.

The Commissioner is hereby authorized to charge any necessary fee to Account Number 50-0612.

Respectfully submitted,
LEWIS ROCA ROTHGERBER LLP

Dated: February 17, 2015

/Tam Thanh Pham/
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Substitute for Form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Complete if Known	
Application Number	14/228,046
Filing Date	March 27, 2014
First Named Inventor:	Thien Nguyen
Art Unit	3732
Examiner Name	Hao D. Mai
Attorney Docket Number	INCEP-001COA

Sheet 1 **of** 2

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (If known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-	50,461	10/17/1865	Dibble	
		US-	4,511,329	4/16/1985	Diamond	
		US-	5,037,298	8/6/1991	Hickham	
		US-	5,460,524	10/24/1995	Anderson	
		US-	5,516,286	5/14/1996	Kushner	
		US-	6,267,591	7/31/2001	Barstow	
		US-	8,535,056	9/17/2013	Dragan et al.	
		US-				
		US-				
		US-				
		US-				
		US-				

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3] Number[4] Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]
		GB 2 170 106	7/30/1986	Liegner		
		WO 1999/037238	7/29/1999	Ohguchi		

Examiner Signature		Date Considered	

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This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SENT FEES OR COMPLETED FORMS TO THIS ADDRESS.

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Based on Form PTO/SB/08A (08-03)

Substitute for Form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)				Application Number	14/228,046
				Filing Date	March 27, 2014
				First Named Inventor:	Thien Nguyen
				Art Unit	3732
				Examiner Name	Hao D. Mai
Sheet	2	**of**	2	Attorney Docket Number	INCEP-001COA

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T[2]
		Docket No. INCEP-002DCOA U.S. Patent Application 29/491,367 Final Office Action mailed 3/4/15	
		Docket No. INCEP-002DCOA U.S. Patent Application 29/491,367 Office Action mailed 11/14/14	
		Docket No. INCEP-003DCOA U.S. Patent Application 29/477,887 Final Office Action mailed 5/1/15	
		Docket No. INCEP-003DCOA U.S. Patent Application 29/477,887 Office Action mailed 11/14/14	
		Docket No. INCEP-004DCOA U.S. Patent Application 29/477,888 Final Office Action mailed 5/1/15	
		Docket No. INCEP-004DCOA U.S. Patent Application 29/477,888 Office Action mailed 11/14/14	

Examiner Signature		Date Considered	

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[1]Applicant's unique citation designation number (optional). [2]Applicant is to place a check mark here if English Translation is attached.

This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SENT FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.**

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(12) UK Patent Application (19) GB (11) 2 170 106 A

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(21) Application No 8502037

(22) Date of filing 28 Jan 1985

(51) INT CL[4]
A61B 1/24 // A61M 16/00

(52) Domestic classification (Edition H):
A5R DMB EG

(56) Documents cited
GB 1566020
GB 0699950
GB 0698570
GB 0299457

(58) Field of search
A5R

(71) Applicant
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8 Barnard Road, Armonk, New York 10504, United States of America

(72) Inventor
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(54) **Bite block**

(57) A bite block which is usefully employed in conjunction with endoscopy, bronchoscopy, endotracheal intubation and like medical-surgical procedures comprises a U shape plate (12) having grooves (18) which engage the upper and lower teeth keeping them apart and a ridge piece (60) attached to the bottom of the U shaped to engage the upper and lower lips and at least one bore hole (70, 72, 74) passing through the plate and the ridge capable of passing an endoscope, bronchoscope or endrotracheal tube into the mouth of the patient. The device prevents the patient from biting through the tube inserted through the mouth and from displacing the tube.

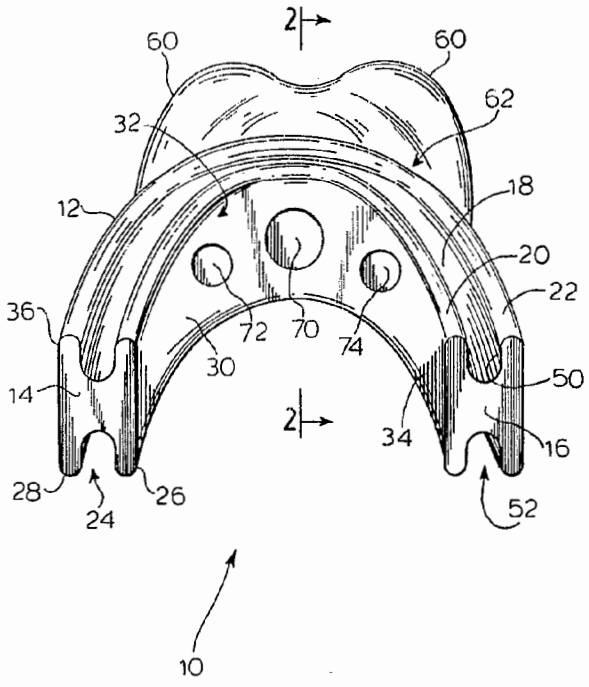

FIG.1

GB 2 170 106 A

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The drawings originally filed were informal and the print here reproduced is taken from a later filed formal copy.
This print embodies corrections made under Section 117(1) of the Patents Act 1977.

2173106

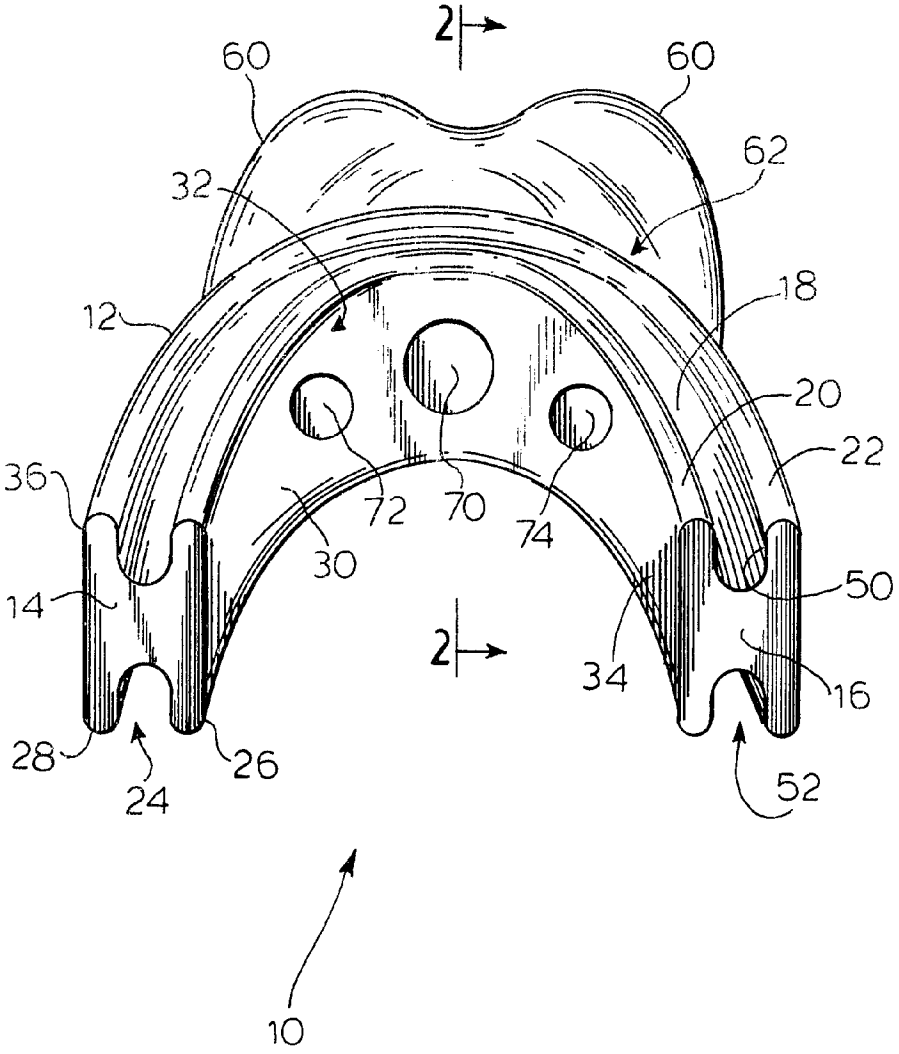

FIG.1

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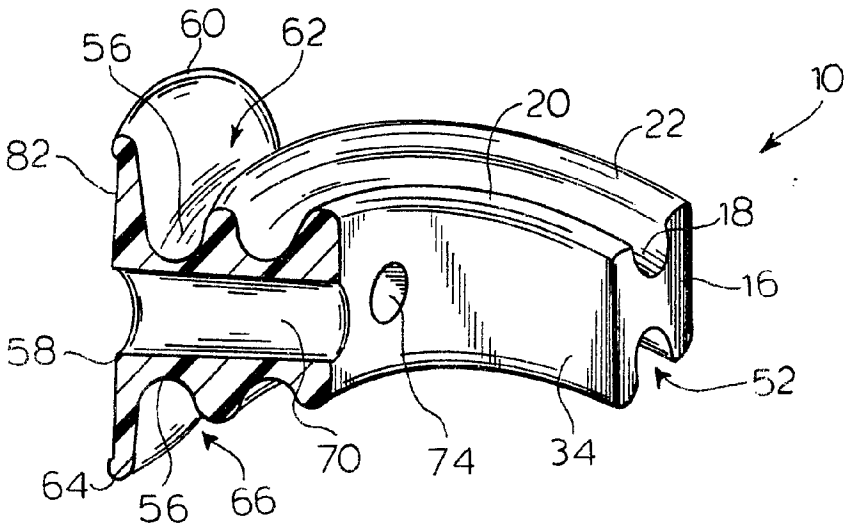
FIG.2



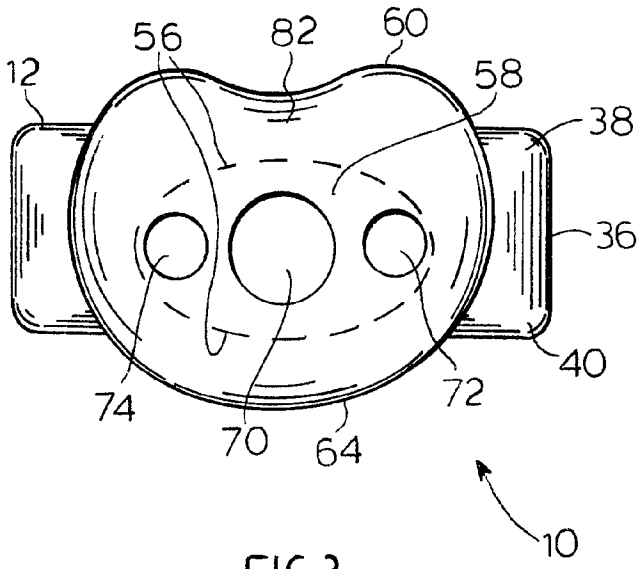


FIG.3

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SPECIFICATION

Bite block

The invention relates to a bite block and more particularly relates to a bite block which is usefully employed in conjunction with endoscopy, bronchoscopy, endotracheal intubation and like medical-surgical procedures.

Not infrequently, patients in hospital emergency rooms and intensive care units require endotracheal intubation for mechanical ventillatory support during acute respiratory failure. Endotracheal tubes are formed of cylindrical pliable plastic, ranging in internal diameter from 4 to 9 millimeters.

Such patients are often unresponsive initially, but frequently struggle against both the endotracheal tube and the ventillator as their condition is stabilized and improves. Often they bite down with their teeth against the endotracheal tube such that necessary suctioning of pulmonary secretions is made difficult or impossible or occasionally the endotracheal tube or its pilot balloon is bitten in two, leading to potentially life threatening loss of control of the airway.

Small bite blocks or oropharyngeal airways that are now commercially available are unstable in maintaining position and are readily displaced by the patient's tongue or jaw movements. The present invention provides a bite block molded to fit the teeth, gums, jaw, palate, and lips in such a way that expulsion by the patient is unlikely. Structure is provided to permit stabilization of the endotracheal tube and allow catheter suctioning of oropharyngeal secretions or regurgitated gastric contents and drainage of gastric contents. The bite block prevents the patient from biting down on the endotracheal tube or suction catheters.

Other uses of the invention include assisting fiberoptic endoscopy and prevent the patient from biting down on the scopes thereby preventing costly damage to the fiberoptic components.

The invention comprises a bite block which is useful in conjunction with endoscopy, bronchoscopy, endotracheal intubation and like procedures, which comprises;

(a) a "U" shaped plate having first and second ends, each end being at the terminus of a separate upright leg of the "U", said plate comprising a plate body intermediate between and joining the first and second ends, said plate body having

(1) an upper surface delineated by the ends and inner and outer marginal zones;

(2) a lower surface delineated by the ends and inner and outer marginal zones;

(3) an inner side delineated by the ends and upper and lower marginal zones; and

(4) an outer side delineated by the ends and upper and lower marginal zones; the inner side joining at its upper marginal zone with the inner marginal zone of the upper surface and at its lower marginal zone with the inner marginal zone of the lower surface; the outer side joining at its upper marginal zone with the outer marginal zone of the upper surface and at its lower marginal zone with the outer marginal zone of the lower surface; said plate body further having

(5) a groove in the upper surface, between the inner and the outer marginal zones of the upper surface adapted by size and configuration to receive therein the upper teeth (or, in the absence of teeth, the associated gums) of a human being; and

(6) a groove in the lower surface, between the inner and the outer marginal zones of the lower surface, adapted by size and configuration to receive therein the lower teeth (or in the absence of teeth, the associated gums) of human being; whereby the plate is inserted into the vestibulum oris of a human being, the upper teeth or gums will be received in the upper surface groove and held apart by the plate body from the lower teeth or gums which are received in the lower surface groove;

(b) a ridge on the outer side of the plate body, positioned between the upper and and lower marginal zones of the outer side at the bottom of the "U" and extending outwardly from the outer side to a ridge terminus;

(c) an upper flange on and projecting upwardly from the ridge terminus, providing an open space between the upper flange, the upper marginal zone of the outer side and the upper side of the ridge, said space being of a size and configuration to receive the labium superiori oris of a human in sealing engagement with said flange, outer side and ridge;

(d) a lower flange on and projecting downwardly from the ridge terminus, providing an open space between the lower flange, the lower marginal zone of the outer side and the lower side of the ridge, said space being of a size and configuration to receive the labium inferiori oris of a human in sealing engagement with said lower flange, outer side and ridge;

(e) a bore traversing the plate and ridge at the bottom of the "U", communicating between the inner side of the plate and the ridge terminus, said bore being of a dimension to pass an edoscope, a bronchoscope, an endotracheal tube or the like; and

(f) optionally at least one additional bore traversing the plate and ridge adjacent the bottom of the "U", communicating between the inner side of the plate and the ridge terminus, said additional bore being of a dimension to pass an oropharyngeal endotracheal, or orogastric tube; said bite block being of a size and configuration permitting insertion of the "U" shaped plate component into the vestibulum oris of a human as described above and whereby the bridge and flange components sealingly engage the labium oris so that the oral cavity is restricted to communication to the exterior through the bore and optional bore.

A bite block constructed in accordance with the invention will now be described by way of example only with reference to the accompanying drawings, in which:

Figure 1 is an elevational view of an embodiment bite block of the invention, showing the inner

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or posterior structure.

Figure 2 is a cross-sectional view along lines 2-2 of Figure 1.

Figure 3 is a front view of the embodiment of Figure 1.

Referring first to Figure 1, there is seen an elevational view of an embodiment bite block 10 of the invention, showing the inner or posterior structure. The bite block 10 is a generally "U" shaped plate 12 having a first end 14 and a second end 16. Each of the ends 14, 16 are at the terminus of a separate upright leg of the "U", and represents the end of plate 12 which will be inserted first into the vestibulum oris of a human being during use. The plate 12, intermediate between and joining ends 14, 16, has an upper surface 18 delineated by the ends and inner marginal zone 20 and outer marginal zone 22. The lower surface 24 of plate 12 is also delineated by the ends 14, 16 and by an inner margin 26 and an outer margin 28. The plate 12 is also bounded by an inner side 30 which has an upper 32 and a lower 34 marginal zone. An outer side 36 of the plate 12 is delineated by corresponding upper and lower marginal zones 38, 40 respectively (not seen in Figure 1; see Figure 3). The outer side 36 joins at the upper marginal zone 38 with the outer marginal zone 22 of upper surface 18 and at the lower marginal zone 40 with the outer marginal zone 28 of lower surface 24. The inner side 30 joins at its upper marginal zone 32 with the inner marginal zone 20 of upper surface 18 and at its lower margin zone 34 with the inner marginal zone 26 of lower surface 24.

The plate 12 further has a groove 50 in the upper surface 18 between the inner and outer marginal zones 20, 22 of the upper surface 18, said groove 50 being adapted by size and configuration to receive therein the upper teeth, or in the absence of teeth, the associated gums of a human being. A similar groove 52 is in the lower surface 24, between inner and outer marginal zones 26, 28 of the lower surface 24. The groove 52, like groove 50 is adapted by size and configuration to receive therein the lower teeth or associated gums of a human being when plate 12 is inserted in the vestibulum oris of the human being. When the plate 12 is so inserted, the upper teeth or gums of the human being will be received in the upper surface groove 50 and held apart by the plate body from the lower teeth or gums which are received in the lower surface 24 groove 52.

Referring now to Figure 2, there is seen a cross-sectional side elevation along lines 2-2 of Figure 1. As shown in the Figure 2, there is a ridge 56 on the outer side 36 of plate 12, positioned between the upper outside marginal zone 38 and the lower outside marginal zone 40, at the bottom of the "U" and extending outwardly from the outer side 36 to a ridge terminus 58. An upper flange 60 on and projecting upwardly from the ridge terminus 58 provides an open space 62 between the upper flange 60 and the upper marginal zone 38 of the outer side 36 and the upper side of ridge 56. The space 62 is of a size and configuration to receive the labium superiori oris of a human in sealing engagement with said flange 60, outer side 36 and ridge 56. A lower flange 64 on and projecting downwardly from the ridge terminus 58 provides an open space 66 between the lower flange 64, the lower marginal zone 40 of the outer side 36 and the lower side of the ridge 56. Space 66 is of a size and configuration to receive the labium inferiori oris of a human in sealing engagement with said lower flange 64, outer side 36 and ridge 56. A bore 70 traverses plate 12 and ridge 56 at the bottom of the "U", communicating between the inner side 30 of plate 12 and the ridge terminus 58, the bore 70 being of a dimension to pass an endoscope, a bronchoscope, an endotracheal tube or the like. In the preferred embodiment of bit block 10, there are additionally bores 72 and 74 tranversing the body of plate 12 and ridge 56 at the bottom of the "U", communicating between the inner side 30 of plate 12 and the ridge terminus 58. The bores 72, 74 are of a dimension to pass endotracheal, oropharyngeal, or orogastric tubes and also provide airways into the oral cavity of a patient when the bite block 10 is inserted therein. The entire bit block 10 is of a size and configuration permitting its use by insertion of ends 14, 16 into the mouth of a human as described above, leaving the ridge 56 and flanges 60, 64 external to the mouth. When bite block 10 is so inserted into the vestibulum oris of a patient, the ridge 56 and flanges 60, 64 cooperate to sealingly engage the labium oris so that the oral cavity of the patient is restricted in communication to the exterior, through the bores 70, 72 and 74. The bite block 10 may be fabricated in a range of standard sizes, selected to fit a range of humans, i.e.; children through adults.

Figure 3 is a front view of the embodiment bite block 10 shown in Figure 1 and shows further details of the bite block 10. The front surface 82 on terminus 58 may be used to hold an adhesive tape, for securing tubes passing through the bores 70, 72 or 74. A length of such tape passing around the back of the patient's neck and adhering in front to surface 82 would prevent voluntary expulsion of bite block 10.

The bite block 10 is employed when desired by insertion into the vestibulum oris of a human being. Secured in place by the patient's natural reflex to bite down on it, the patient is prevented from injury to self by the biting reflex. Since the bite block 10 fully conforms to the shape of the maxillary and mandibular arcades, it will not shift in position and is securely maintained in the vestibulum oris. The bite block 10 is stable in regard to movement and comfortable to the wearer. While stably maintained in place, such medical-surgical procedures as endoscopy or bronchoscopy, and the like may be carried out by insertion of the appropriate instrument through the bore hole 70. The proximal end of a previously placed endotracheal tube may be passed through bores 70, 72 or 74 as the bite block is inserted. When required, oral-pharyngeal or gastric suctioning of natural secretions may be carried out through the bores 72, 74. All of these procedures may be carried out without interference from the patient biting down upon the in-

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strument, tubing or the like. Upon termination of a particular procedure, the bite block may be maintained in place to function as an airway and/o9r it may be removed as desired.

The bite block 10 may be fabricated from any conventional materials, preferably a polymeric resin which has sufficient strength to resist a patient biting through but which is resilient enough that injury to the patient's teeth and/or gums goes not occur. Preferably, the bite block 10 is fabricated from polyethylene, polypropylene and like polymeric resins.

In one example of the invention, the bite block 10 may be fabricated from an ethylene-vinyl acetate or like material which softens at a temperature of about 45 to 100°C. This bite block 10 may be made to conform and mold to the exact configuration of a particular patient's maxillary and mandibular arches, including the teeth and gums, by softening the bite block 10 in a hot water immersion. After removing the bite block 10 with its softened ethylene-vinyl acetate surface, from the immersion, it may be inserted into the vestibulum oris of a particular human individual (allowing it to cool first as necessary to avoid a burn injury to the individual). The human then brings his jaws together in a normal closing manner to displace softened thermoplastic material. In this way, the grooves 50 and 52 are made to conform to the anatomical structure of the individual's teeth and/or gums. The bite block 10 is then removed and allowed to reharden. It may then be used subsequently in the above described medical-surgical procedures wherein the bite block 10 will fit perfectly in the vestibulum oris of the individual patient.

CLAIMS

1. A bite block which is useful in conjunction with endoscopy, bronchoscopy, endotracheal intubation and like procedures, which comprises;

(a) a "U" shaped plate having first and second ends, each end being at the terminus of a separate upright leg of the "U", said plate comprising a plate body intermediate between and joining the first and second ends, said plate body having

(1) an upper surface delineated by the ends and inner and outer marginal zones;

(2) a lower surface delineated by the ends and inner and outer marginal zones;

(3) an inner side delineated by the ends and upper and lower marginal zones; and

(4) an outer side delineated by the ends and upper and lower marginal zones;

the inner side joining its upper marginal zone with the inner marginal zone of the upper surface and at its lower marginal zone with the inner marginal zone of the lower surface; the outer side joining at its upper marginal zone with the outer marginal zone of the upper surface and at its lower marginal zone with the outer marginal zone of the lower surface; said plate body further having

(5) a groove in the upper surface, between the inner and the outer marginal zones of the upper surface suited by size and configuration to receive therein the upper teeth (or, in the absence of teeth, the associated gums) of a human being; and

(6) a groove in the lower surface, between the inner and and the outer marginal zones of the lower surface, suited by size and configuration to receive therein the lower teeth (or in the absence of teeth, the associated gums) of a human being; whereby when the plate is inserted into the vestibulum oris of a human being, the upper teeth or gums will be received in the upper surface groove and held apart by the plate body from the lower teeth or gums which are received in the lower surface groove;

(b) a ridge on the outer side of the plate body positioned between the upper and the lower marginal zones of the outer side at the bottom of the "U" and extending outwardly from the outer side to a ridge terminus;

(c) an upper flange on and projecting upwardly from the ridge terminus, providing an open space between the upper flange, the upper marginal zone of the outer side and the upper side of the ridge, said space being of a size and configuration to receive the labium superiori oris of a human in sealing engagement with said flange, outer side and ridge;

(d) a lower flange on and projecting downwardly from the ridge terminus, providing an open space between the lower flange, the lower marginal zone of the outer side and the lower side of the ridge, said space being of a size and configuration to receive the labium inferiori oris of a human in sealing engagement with said lower flange, outer side and ridge;

(e) a bore traversing the plate and ridge at the bottom of the "U", communicating between the inner side of the plate and the ridge terminus, said bore being of a dimension to pass an endoscope, a bronchoscope, an endotracheal tube or the like; and

(f) optionally at least one additional bore traversing the plate and ridge adjacent to the bottom of the "U", communicating between the inner side of the plate and the ridge terminus, said additional bore being of a dimension to pass an endotracheal tube, oropharyngeal or orogastric tube; said bite block being of a size and configuration permitting insertion of the "U" shaped plate component into the vertibulum oris of a human as described above and whereby the ridge and flange components sealingly engage the labium oris so that the oral cavity is restricted to communication to the exterior through the bore and optional bores.

2. A block as claimed in claim having at least two additional bores as defined in paragraph (f) of claim 1.

3. A bite block substantially as herein described with reference to, and as illustrated by, the accompanying drawings.

4. A block as claimed in claim 3, wherein the block is fabricated from a material which softens at a temperature in the range 45 to 100°C.

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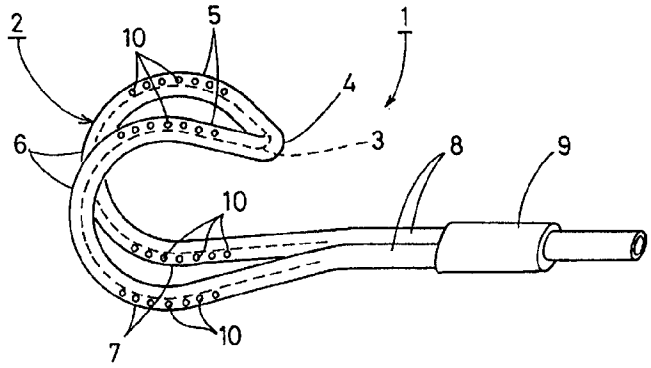
(54)Title: SALIVA ASPIRATOR FOR DENTAL TREATMENT

(54)発明の名称　歯科医療用唾液吸引具



(57) Abstract

A saliva aspirator for dental treatment which can suck and discharge saliva and dirty water and at the same time can separate the tongue, the buccal mucosa and the like from the teeth as a treatment site merely by setting the aspirator within the mouth. An aspirator (1) is set in an opened oral cavity (22), and a vacuum pump (28) is turned on. This permits the interior of the aspirator (1) to be put under negative pressure, ensuring the suction and discharge, through a plurality of saliva suction holes (10) provided in a deep section (5) and a front returning section (7), of the saliva secreted from the submandibullar gland, parotid gland, and sublingual gland during dental treatment, dirty water within the oral cavity created during the treatment, and cooling water injected into the oral cavity when a rotary cutting tool (29) is used at the time of cutting the tooth. In this case, the patient's intraoral organs, such as the tongue (30) and the buccal mucosa, are impeded by the deep section (5), a curved continuous section (6), and the front returning section (7), thus permitting the organs to be prevented from approaching the tooth portion to be treated.

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(57)要約

口腔内に装着するだけで唾液や汚水を吸引排出するとともに、治療部位の歯牙から舌や頬粘膜等を隔離できる歯料医療用唾液吸引具を提供する。

開口した口腔２２内に吸引具１を装着して、バキュームポンプ２８をオンすると、吸引具１内が負圧になって奥行き部５及び前方帰還部７に設けた複数の唾液吸引孔１０から、歯科治療中に顎下腺、耳下腺及び舌下腺から生じる唾液や、治療中に生じる口腔内の汚水及び歯牙切削時に回転切削具２９の使用で注水される冷却水を確実に吸引排出できる。このとき、患者の舌３０や頬粘膜の口腔内器官が、奥行き部５、湾曲連続部６及び前方帰還部７に妨げられて、治療を施こす歯牙部分に近づかないように隔離できる。

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明細書

歯科医療用唾液吸引具

技術分野

本発明は、歯科医療用唾液吸引具に関するものである。

背景技術

歯科医療においては、治療中に口腔内に生じる唾液や汚水を吸引排出するとともに、治療部位の歯牙から舌や頬粘膜等を隔離する必要がある。このため従来は、歯科用ユニットのフレキシブルアームに取り付けたバキュームチップを用いて行ったり、アシスタントや衛生士が歯科用バキュームチップを用いて行っていた。

しかしながら、口腔内におけるバキュームチップの固定性や安定性が悪いため、歯科治療中に予期せぬ動きをする舌等の口腔内器官を、確実に治療部位の歯牙から隔離させておくことはできなかった。また、歯科医師の治療に応じて、バキュームチップを操作することは、アシスタントや衛生士にとって極めて熟練を要する作業であった。

本発明は上記に鑑みてなされたものであり、口腔内に装着するだけで唾液や汚水を吸引排出するとともに、治療部位の歯牙から舌や頬粘膜等を隔離できる歯科医療用唾液吸引具を提供することを目的とする。

発明の開示

上記の目的を達成するため請求項１に記載された本発明の歯科医療用唾液吸引具は、保形用の線材により保形される一本のチューブを用いて、該チューブの略中央部に上顎歯若しくは下顎歯の何れかに係止する略Ｕ字形の係止部と、該係止部から上顎堤若しくは下顎堤の両側に沿わせて口腔奥部に向かって略平行に延び

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る奥行き部と、該奥行き部から前記下顎堤若しくは上顎堤の両側に沿って口腔の外方に向かって略平行に延びる前方帰還部と、該前方帰還部の前端から口腔外部に延びる吸引用連結部とを形成するとともに、少なくとも前記奥行き部若しくは前方帰還部に複数の唾液吸引孔を設けたことを特徴とする歯科医療用唾液吸引具。

また、請求項２に記載された本発明の歯科医療用唾液吸引具は、請求項１に記載の構成において、前記保形用の線材を前記奥行き部から前方帰還部に至る部位においてコイル状に巻回したことを特徴とする。

請求項３に記載された本発明の歯科医療用唾液吸引具は、請求項１及び請求項２に記載の構成において、前記保形用の線材に弾力性の線材を用いて、可撓性を付与したことを特徴とする。

請求項４に記載された本発明の歯科医療用唾液吸引具は、請求項１乃至請求項３に記載の構成において、前記保形用の線材に可撓性若しくは弾力性が異なる部位を設けたことを特徴とする。

請求項５に記載された本発明の歯科医療用唾液吸引具は、請求項１乃至請求項４に記載の構成において、前記保形用の線材に金属線を用いて熱処理により可撓性若しくは弾力性を付与したことを特徴とする。

請求項６に記載された本発明の歯科医療用唾液吸引具は、請求項１乃至請求項５に記載の構成において、前記保形用の線材にステンレス合金線材を用いたことを特徴とする。

請求項７に記載された本発明の歯科医療用唾液吸引具は、請求項１乃至請求項５に記載の構成において、前記保形用の線材にニッケル・チタン合金線材を用いたことを特徴とする。

請求項８に記載された本発明の歯科医療用唾液吸引具は、請求項１乃至請求項７に記載の構成において、前記係止部位で前記チューブを切断して前記略Ｕ字形に屈曲させた保形用の線材を露出させるとともに、前記チューブの切断端部を気

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密に封止したことを特徴とする。

請求項９に記載された本発明の歯科医療用唾液吸引具は、請求項１乃至請求項８に記載の構成において、前記保形用の線材の露出部を軟質部材により被覆したことを特徴とする。

請求項１０に記載された本発明の歯科医療用唾液吸引具は、可撓性及び保形性を有するパイプ材を用いて、上顎歯若しくは下顎歯の何れかに係止する略Ｕ字形の係止部と、該係止部から上顎堤若しくは下顎堤の両側に沿わせて口腔奥部に向かって略平行に延びる奥行き部と、該奥行き部から前記下顎堤若しくは上顎堤の両側に沿って口腔の外方に向かって略平行に延びる前方帰還部と、該前方帰還部の前端に吸引用連結部とを形成するとともに、少なくとも前記下顎堤に沿う前記奥行き部若しくは前方帰還部に複数の唾液吸引孔を設けたことを特徴とする歯料医療用唾液吸引具。

請求項１１に記載された本発明の歯科医療用唾液吸引具は、請求項１乃至請求項１０に記載の構成において、前記前方帰還部の何れか一方の前端を気密に封止して、何れか他方の前端に前記吸引用連結部を形成したことを特徴とする。

請求項１２に記載された本発明の歯科医療用唾液吸引具は、請求項１乃至請求項１１に記載の構成において、前記前方帰還部の何れか一方の前端を気密に封止するとともに、該封止部から突出させた線材により略Ｕ字形の屈曲部を形成して、何れか他方の前記前方帰還部の前端部に掛け渡すとともに、該前端部に前記吸引用連結部を形成したことを特徴とする。

請求項１３に記載された本発明の歯科医療用唾液吸引具は、請求項１乃至請求項１０に記載の構成において、前記前方帰還部の何れか一方の前端部に屈曲部を形成して、前記上顎歯若しくは下顎歯の何れかを跨がせるとともに、前記前方帰還部の何れか他方に吸引可能に連結したことを特徴とする。

請求項１４に記載された本発明の歯科医療用唾液吸引具は、請求項１乃至請求項１３に記載の構成において、前記前方帰還部若しくは奥行き部の何れか一方に

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咽喉部を塞ぐネット若しくはスクリーンを設けたことを特徴とする。

請求項１５に記載された本発明の歯科医療用唾液吸引具は、請求項１乃至請求項１４に記載の構成において、片側若しくは両側の前記奥行き部と前方帰還部間に口腔内器官を隔離する隔離部材を差し渡したことを特徴とする。

図面の簡単な説明

第１図は吸引具１の斜視図である。

第２図は吸引具１の口腔２２内への装着状態を示した斜視図である。

第３図は変形例を示した吸引具１の斜視図である。

第４図は他の変形例を示した吸引具１の斜視図である。

第５図は吸引具１変形例を示す一部切欠斜視図である。

第６図は吸引具１の下向き湾曲部６を撓ませた状態の斜視図である。

第７図は吸引具３１の斜視図である。

第８図は吸引具３１の変形例を示した要部の斜視図である。

第９図は吸引具４１の斜視図である。

第１０図は吸引具５１の口腔２２内への装着状態を示した斜視図である。

第１１図は吸引具５１の変形例を示した斜視図である。

第１２図は吸引具６１の口腔２２内への装着状態を示した斜視図である。

第１３図はネット７１の平面図である。

第１４図は吸引具８１の斜視図である。

第１５図はネット状の隔離部材９１を張設した吸引具８１の口腔２２内への装着状態を示した斜視図である。

第１６図は吸引具１０１の斜視図である。

第１７図は吸引具１（４１）の口腔２２内への装着例を示した斜視図である。

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発明を実施するための最良の形態

請求項１に記載の本発明の歯科医療用唾液吸引具によれば、係止部を上顎歯若しくは下顎歯の何れかに係止するとともに、開口した口腔内に装着することにより、該係止部から略平行に延びる奥行き部が上顎堤若しくは下顎堤の両側に沿い、口腔外部に向かって略平行に延びる前方帰還部が下顎堤若しくは上顎堤の両側に沿う。そして、前方帰還部の前端から口腔外部に延びる吸引用連結部に吸引チューブを連結して吸引することにより、少なくとも奥行き部若しくは前方帰還部に設けた複数の唾液吸引孔から、歯科治療中に耳下腺、顎下腺及び舌下腺から生じる唾液や、治療中に生じる口腔内の汚水を確実に吸引排出できる。また、奥行き部及び前方帰還部により、舌や頬粒膜の口腔内器官が治療を施こす歯牙部分に近づくのを妨げたり、治療器具等に触れないように隔離できるから、治療の安全性を確保できる。さらに、保形用の線材に保形される一本のチューブを用いて係止部及び全体形状を形成したことにより、口腔内への装着及び取り外しが容易となるとともに、上顎歯の何れかに係止部を係止し、開口状態の上下の歯牙若しくは顎堤で保持して安定させることができるから、アシスタントを必要とすることなく歯料医師１人で治療が可能となるとともに、天地を逆にしても装着できる等の効果を有する。

請求項２に記載の本発明の歯科医療用唾液吸引具は、奥行き部から前方帰還部に至る部位の保形用の線材をコイル状に巻回したから、巻径やコイルピッチ等を変えることにより撓み力を調整することができる。従って、装着したときに口腔に作用する撓み反力により、治療のため患者が開口状態を維持する際の疲労を軽減することができ長時間の治療が可能になる。

請求項３に記載された本発明の歯料医療用唾液吸引具は、保形用の線材に弾力性を有する線材を用いたから、奥行き部と前方帰還部とが互いに接近離間するように撓ませることができ、口腔内への装着及び取り外しを容易にできる。

請求項４に記載された本発明の歯科医療用唾液吸引具は、保形用の線材に弾力

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性が異なる部位を設けたから、歯科医師が患者の口腔部の大小や歯並び等に応じて形状を変化させることができ、口腔内への装着性を高めることができる。

請求項５に記載された本発明の歯科医療用唾液吸引具は、保形用の金属線に熱処理を施して弾力性を付与するもので、所定部位に所定の弾力性を持たせることができ、歯科医師が患者の口腔部の大小や歯並び等に応じて形状を変化させることが容易となり、より優れた装着性を実現できる。

請求項６に記載された本発明の歯科医療用唾液吸引具は、保形用の線材にステンレス合金線材を用いたから、熱処理条件や線径を調整することにより、部位に応じて容易に所定の弾力性を付与することができ、歯科医師が患者の口腔部の大小や歯並び等に応じて形状を変化させることが容易となり、より優れた装着性を実現できる。

請求項７に記載された本発明の歯科医療用唾液吸引具は、保形用の線材にニッケル・チタン合金線材を用いたもので、該ニッケル・チタン合金線材は成分比と焼鈍条件により使用温度領域において、超弾性特性、加工硬化型特性及び形状記憶特性等の好ましい特性を付与できる。従って、これらの特性を単独又は組み合わせて用いることにより、優れた使い勝手や装着性をもたらすことができる。

請求項８に記載された本発明の歯科医療用唾液吸引具は、係止部位で露出する略Ｕ字形に屈曲した保形用の線材を、上顎歯若しくは下顎歯の何れかに係止して口腔内に装着するようにしたから、係止部を容易かつ確実に係止できる。

請求項９に記載された本発明の歯科医療用唾液吸引具は、前記保形用の線材の露出部を軟質部材により被覆したから、露出した線材が直接上顎歯若しくは下顎歯に接触することがなく、装着時の患者の違和感を軽減できる。

請求項１０に記載された本発明の歯科医療用唾液吸引具は、可撓性及び保形性を有するパイプ材を用いて形成したものであり、前方帰還部の前端に形成した吸引連結部に吸引パイプを連結して用いる。パイプ内部に保形用の線材を有しないから、製作が容易であるとともに、洗浄や消毒が簡単にできる。

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請求項１１に記載された本発明の歯科医療用唾液吸引具は、前方帰還部の何れか一方の前端を封止して、何れか他方の前端に前記吸引用連結部を形成したもので、口腔外へ延びる吸引連結部、又は吸引用連結部に連結する吸引パイプが何れか一方のみとなるから、装着時の患者の違和感を軽減することができる。

請求項１２に記載された本発明の歯科医療用唾液吸引具は、前方帰還部の何れか一方の前端を気密に封止するとともに、該封止部から突出させた線材により略U字形の屈曲部を形成して、何れか他方の前記前方帰還部の前端部に掛け渡したもので、係止部とこの屈曲部とにより上顎歯と下顎歯の双方に係止することができ、口腔内で位置がずれることがない確実な装着を施こすことができる。

請求項１３に記載された本発明の歯科医療用唾液吸引具は、前方帰還部の何れか一方の前端部に屈曲部を形成して、上顎歯若しくは下顎歯の何れかを跨がせるとともに、前方帰還部の何れか他方に吸引可能に連結したものであり、口腔外へ延びる吸引連結部、又は吸引用連結部に連結する吸引パイプが何れか一方のみとなるから、装着時患者の違和感を軽減することができる。また、屈曲部を上顎歯若しくは下顎歯の何れかを跨がせているから、係止部とこの屈曲部とにより上顎歯と下顎歯の双方に係止することができ、口腔内で位置がずれることがない確実な装着を施こすことができる。

請求項１４に記載された本発明の歯科医療用唾液吸引具は、前方帰還部若しくは奥行き部の何れかに咽喉部を塞ぐネット若しくはスクリーンを設けたから、治療中に誤って治療用小器具等が口腔内に外れ落ちても、飲み込んでしまうことがない。

請求項１５に記載された本発明の歯科医療用唾液吸引具は、片側若しくは両側の奥行き部と前方帰還部間に、口腔内器官を隔離する隔離部材を差し渡したから、治療を施こす歯牙部分に舌や頬粘膜の口腔内器官が近づくことを防止できる。

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［実施例］

本発明の実施の形態を添付図面を参照して説明する。図１は、本発明に係る歯科医療用唾液吸引具（以下単に吸引具という）１の斜視図である。この吸引具１は、軟質のゴム、合成樹脂若しくは高分子樹脂製のチューブ２内に保形用の線材３を挿入して屈曲及び曲成することにより形成される。先ず、チューブ２の略中央部を二つ折状に屈曲して略Ｕ字形の係止部４が形成される。そして、該係止部４から略平行に連続させるとともに、上方に向かって膨らむように緩やかに湾曲させた奥行き部５と、該奥行き部５と略同じ曲率で湾曲させた湾曲連続部６と、該湾曲連続部６に続けて、下方に向かって膨らむように緩やかに湾曲させた前方帰還部７とが順次曲成される。チューブ２内の保形用の線材３は、該前方帰還部７まで挿入されていて、上記各部を保形している。前方帰還部７に続くチューブ２には、吸引用連結部８が形成され、その吸引用連結部８の二つの端部を合わせて連結する吸引用連結管９が接続されている。また、上記奥行き部５及び前方帰還部７には、所定の間隔を置いて複数個の唾液吸引孔１０が形成されている。

尚、上記吸引具１は、予め各部を屈曲成形した保形用の線材３の一端部から、チューブ２を挿し通すことによっても形成できる。また、保形用の線材３は、チューブ２の製造時に一体にインサートしたものであってもよい。さらに、チューブ２の外周面の形状は、円形の外に四角形、楕円形等任意の形状とすることができる。

上記吸引具１は図２に示すように、係止部４を上顎歯２１の何れかに係止して開口した口腔２２内に装着したとき、略平行な奥行き部５が上顎堤２３の両側に沿って口腔奥部に向かう。このとき、患者の頬側の奥行き部５の頂部５ａは、頬移行部（頬粘膜と歯肉の境界部）付近に位置し、舌側の奥行き部５の頂部５ｂは、口蓋と歯肉の境界部付近に位置する。そして、奥行き部５に連続する湾曲連続部６は、上顎堤２３に対向する下顎堤２４の奥部両側に向かって略平行に下がっている。湾曲連続部６に連続する前方帰還部７は、下顎堤２４の両側に沿って

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口腔の外方に向かう。このとき、患者の頬側の前方帰還部７の最低部７ａは、齦頬移行部に位置し、舌側の前方帰還部７の最低部７ｂは、口腔底と歯肉の境界部に位置する。下唇２５を越えて口腔２２外に導き出された頬側の吸引用連結部８と、下顎前歯２６を乗り越えて口腔２２外に導き出された舌側の吸引用連結部８の端部を連結した吸引用連結管９には、吸引チューブ２７を介してバキュームポンプ２８が接続されている。

上記したように開口した口腔２２内に吸引具１を装着して、バキュームポンプ２８をオンすると、吸引具１内が負圧になって奥行き部５及び前方帰還部７に設けた複数の唾液吸引孔１０から、歯科治療中に顎下腺、耳下腺及び舌下腺から生じる唾液や、治療中に生じる口腔内の汚水及び歯牙切削時に回転切削具２９の使用で注水される冷却水を確実に吸引排出できる。このとき、患者の舌３０や頬粘膜の口腔内器官が、奥行き部５、湾曲連続部６及び前方帰還部７に妨げられて、治療を施こす歯牙部分に近づかないように隔離できる。従って、治療の邪魔にならないばかりでなく、予期せぬ動きを生じる患者の舌３０が、回転切削具２９等に触れて傷付くようなこともない。また、口腔２２内では、上顎歯２１の何れかに係止部４を係止し、開口状態の上下の顎堤２３、２４が保持できるから、アシスタントを必要とすることなく歯科医師１人で治療が可能となる。

尚、バキュームポンプを用いない吸引排出装置を使用してもよい。

また、上記吸引具１は、係止部４を下顎歯の何れかに係止して、奥行き部５を下顎堤２４の両側に、前方帰還部７を上顎堤２３の両側とする天地を逆にした装着形態とすることもできる。そして、上顎堤２３に沿う奥行き部５若しくは前方帰還部７に、唾液吸引孔１０を設けないで、下顎堤２４に沿う奥行き部５若しくは前方帰還部７の唾液吸引孔１０から、下顎堤２４の付近に溜まる唾液や、治療中に生じる口腔内の汚水等を吸引排出するようにしてもよい。

本発明の吸引具１は、前方帰還部７だけ若しくは奥行き部５及び前方帰還部７の両方を湾曲しない直線形状にすることもできる（図３（ａ），（ｂ））。さら

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に、図４に示すように、直線状の奥行き部５と前方帰還部７を連続させて、唾液吸引孔１０を全体に亙って形成することもできる。

また、図５に示すように奥行き部５から前方帰還部７に至る湾曲連続部６のチューブ２内の位置に、保形用の線材３を巻回したコイル状部３ａを設けて可撓性を付与することもできる。これにより、該コイル状部３ａを撓ませて、図６に示すように奥行き都５と前方帰還部７とを互いに接近離間させることができ、口腔２２内への装着及び取り外しが容易にできる。また、巻径やコイルピッチ等を変化させて撓み力を調整することが可能となり、装着したときに作用する撓み反力により、治療のため患者が開口状態を維持する際の疲労を軽減することができる。

さらに、保形用の線材３として、全長に亙って小径のコイル状に巻回したものや、ピアノ線等の弾力性を有する線材を用いることにより、奥行き部５と前方帰還部７とが互いに接近離間するように大きく撓ませることができる。これにより、上記と同様な利点を生じさせることが可能になる。

図７に示す吸引具３１は、係止部３４でチューブ３２を切断して、略Ｕ字形に屈曲成形した保形用の線材３３を露出させ、上顎歯の何れかに係止するようにするとともに、チューブ３２の両切断端部３２ａを気密に封止したものである。露出した略Ｕ字形に屈曲した保形用の線材３３により、容易かつ確実に上顎歯２１の何れかに係止することができる。さらに、図８に示すように、保形用の線材３３が露出した係止部３４ａにゴムや合成樹脂等の軟質部材３５を被覆して、係止する際金属線が直接歯牙に当たる際の違和感を軽減することができる。その他、保形用の線材３に被覆線材を用いることもできる。

また、保形用の線材３の所定部位毎に可撓性を異ならせて、歯科医師が患者の口腔部の大小や歯並び等に応じて吸引具１，３１の形状を変化させて、装着性を高めることができる。構造的に弾力性を異ならせるには、所定部位を延伸加工などで線材径を変えたり、細い線材の外周にパイプを嵌めてかしめたりねじ込んで

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接続したり、或いはろう付け加工等を施して補強したりすることで弾力性を異ならせることが可能となる。さらに、保形用の線材の所定部位を合成樹脂製の線材により代用することもできる。又、金属線を用いる場合、予め所定部位を通電加熱急冷等の熱処理を施すことで弾力性を他の部位と異ならせることができる。

保形用の線材３にステンレス合金線材を用いて、所定部位毎に可撓性を異ならせることもできる。例えば、オーステナイト組織のステンレス鋼は、塑性加工によって一部マルテンサイト組織に変態し硬くなる。また、約１１００℃まで加熱し急冷する固溶化処理を施こすと、全体が完全なオーステナイト組織となり、極めて柔らかくなる。従って、所定の部位に必要な可撓性を付与でき、吸引具１を歯科医師が患者の口腔部の大小や歯並び等に応じて変形させることができ、優れた装着性を実現することができる。そして、ステンレス合金線材は、保形用の線材３の特定の部位のみに用いることもできる

保形用の線材３にニッケル・チタン合金線材を用いてもよい。ニッケル・チタン合金には、超弾性特性や加工硬化型特性、或いは形状記憶特性を示すものが知られている。これらの特性を単独又は組み合わせて用いることにより、優れた使い勝手や装着性を実現できる。ニッケル・チタン合金線材はその組成比にもよるが、３５０℃～４００℃近傍で長時間熱処理することにより超弾性特性を示すが、短時間の熱処理では加工硬化特性を示す。従って、熱処理条件や線径を調整することにより、簡単に弾力性を変化させることができる。従って、保形用の線材３の特に奥行き部５及び前方帰還部７に相当する部位を、固溶化処理などの熱処理により柔軟にして、患者の上顎堤２３若しくは下顎堤２４の高さに合わせて吸引具１，３１を形作ることができるから、口腔内への装着がより確実となり、使い勝手が向上するとともに、装着時の患者の違和感を軽減することができる。

尚ニッケル・チタン合金の他に、例えば形状記憶合金等の銅－アルミニウム－ニッケル系合金、銅－亜鉛－アルミニウム系合金等も保形用の線材に用いることができる。そして、該ニッケル・チタン合金線材等は、保形用の線材３の特定の

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部位のみに用いることもできる。

図９に示す吸引具４１は、可撓性及び保形用を有する金属製或いは高分子樹脂製パイプ４２を用いて、係止部４４、奥行き部４５、湾曲連続部４６、前方帰還部４７及び口腔内で終わる吸引用連結部４８を曲成するとともに、奥行き部４５及び前方帰還部４７に複数の唾液吸引孔５０を形成したものである。そして、吸引用連結部４８に、下唇２５や下顎前歯２６を乗り越える吸引用チューブ４９を連結する。素材を可撓性を有する合成樹脂製とした場合は、ソフトな装着感を感得でき患者に違和感を与えることがない。また、金属製或いは合成樹脂製のパイプ４２内に保形用の線材を通していないから、洗浄、消毒等が容易となる。

上記吸引具４１も、奥行き部４５を下顎堤２４の両側に、前方帰還部４７を上顎堤２３の両側とする天地を逆にした装着形態とすることもできる。そして、上顎堤２３に沿う奥行き部４５若しくは前方帰還部４７に、唾液吸引孔５０を設けないで、下顎堤２４に沿う奥行き部４５若しくは前方帰還部４７の唾液吸引孔５０のみから、下顎堤２４部分に溜まる唾液や、治療中に生じる口腔内の汚水等を吸引排出するようにしてもよい。また、前記図３（ａ），（ｂ）で示したのと同様に、奥行き部４５及び前方帰還部４７の両方若しくは前方帰還部４７のみを湾曲しない直線形状にすることもできる。さらに、図４に示したのと同様に、直線状の奥行き部４５と前方帰還部４７を連続させた形状とすることもできる。その他、左右一対の吸引具１，３１，４１を、係止部どうし連結したり、吸引用連結部どうしを連結する等して、左右の上顎堤２１及び下顎堤２４に同時に装着して用いることもできる。

また、図１０に示す吸引具５１は、上記各吸引具における頬側の前方帰還部５７を口腔２２内の位置で切断し、その切断端５７ａを気密に封止したものである。口腔２２外へ延びる吸引連結部５８が一方のみとなるから、患者の装着感を軽減することができる。切断する前方帰還部５７は、舌側のものでもよい。

図１１に示す吸引具５１の変形例は、切断端５７ａの封止部から突出する保形

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用の線材５３により略Ｕ字形の屈曲部５９を形成して、他方の前方帰還部５７の前端部に掛け渡したもので、この屈曲部５９を下顎歯の何れかに係止する。これにより、吸引具５１の係止位置が、係止部５４と屈曲部５９による２カ所となり、口腔内への装着をより確実に行うことができる。この場合も切断する前方帰還部５７は、舌側のものでもよい。また、屈曲部５９は保形用の線材ではなく、単に封止部の先端に固着した線材であってもよい。

図１２に示す吸引具６１は、略平行な湾曲連続部６６間に管軸部材７０を差し渡したもので、該管軸部材７０に図１３に示すネット７１の柄７２を挿し込んで固定することにより、該ネット７１により咽喉部を塞ぐことができる。これにより、治療中に誤って口腔２２内に外れ落ちた治療小器具等を飲み込んでしまうことがない。ネット７１の代わりに通気性を有するスクリーンであってもよい。

図１４に示す吸引具８１は、頬側若しくは舌側となる奥行き部８５と前方帰還部８７間に、テープ状の隔離部材９０を張設したものである。この隔離部材９０を設けることにより、治療を施こす歯牙部分に舌や頬粘膜の口腔内器官が近づいて、治療器具等に触れてしまうのを防止できる。従って、歯科医師が治療に集中できるとともに、患者も治療の邪魔にならない位置に舌を移動させる等、気を使って緊張することもない。また、図１５に示すように、ネット状の隔離部材９１を張設してもよい。テープやネット等の伸縮他の隔離部材を用いることにより、吸引具８１の装着時に隔離部材を緊張させることができ、確実に舌や頬粘膜の口腔内器官を治療部位から隔離することができる。

図１６に示す吸引具１０１は、上記各吸引具における頬側の前方帰還部９７を口腔２２内の位置で切断し、その端部に屈曲部１０７ａを形成して下顎歯の何れかに跨がせるとともに、舌側の前方帰還部１０７に吸引可能に連結したものである。口腔２２外へ延びる吸引連結部１０８が一方のみとなるから、患者の装着感を軽減することができる。また、屈曲部１０７ａを下顎歯の何れかに跨がせているから、吸引具１０１の係止位置が、係止部１０４と屈曲部１０７ａによる２カ

所となり、口腔内への装着をより確実に行うことができる。この場合、切断する前方帰還部１０７は、舌側のものでもよい。係止部１０４は図５及び図６に示したように、保形用の線材を露出した形態であってもよい。

尚、図１７は上記吸引具１（４１）の口腔２２内への他の装着例を示し、口腔奥部において前方帰還部７（４７）を交差させて装着したものである。

また、上記各吸引具５１、６１、８１及び９１も、吸引具１、３１、４１と同様天地を逆にした形態で、口腔内へ装着できる。

また、上記したチューブ３やパイプ４２の素材である高分子樹脂材料としては、ポリ塩化ビニル樹脂、シリコン樹脂、ラテックスゴム、ポリアミド樹脂、ポリアミドエラストマー、ポリエステル樹脂、ポリエステルエラストマー、ポリプロピレン樹脂、ポリプロピレンエラストマー、ポリエチレン樹脂、ＦＥＰ（四フッ化エチレン六フッ化プロピレン共重合樹脂）、ＰＦＡ（パーフルオロアルコキシ樹脂）、ＰＴＦＥ（ポリ四フッ化エチレン樹脂）、ＰＶＤＦ（ポリビニルフルオロライド）等のフッ素樹脂、形状記憶樹脂、ＡＢＳ樹脂、ポリカーボネート樹脂、ポリアセタール樹脂、ポリアクリレート樹脂等を用いることができる。

また、これらの材料を用いて発泡成形にすることで、より違和感を軽減することもできる。

そして、保形性を有する線材を併用する場合は、柔軟性に優れた樹脂材料が好ましい。比較的硬質な樹脂材料により、保形性及び可撓性を有するパイプ材を形成してもよい。これらのチューブやパイプ材を形成する素材は多層構造であったり、２種類以上の素材を組み合わせたものでもよく、内部に金属やエンプラなどによる編組若しくは補強線、コイル線等の補強材が設けられていても良い。

尚、本唾液吸引具に適用可能な高分子樹脂材料は、上記に例示した樹脂材料に限定されるものではない。

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産業上の利用可能性

本発明の歯科医療用唾液吸引具によれば、係止部を上顎歯若しくは下顎歯の何れかに係止するとともに、開口した口腔内に装着することにより、該係止部から略平行に延びる奥行き部が上顎堤若しくは下顎堤の両側に沿い、口腔外部に向かって略平行に延びる前方帰還部が下顎堤若しくは上顎堤の両側に沿う。そして、前方帰還部の前端から口腔外部に延びる吸引用連結部に吸引チューブを連結して吸引することにより、少なくとも奥行き部若しくは前方帰還部に設けた複数の唾液吸引孔から、歯科治療中に耳下腺、顎下腺及び舌下腺から生じる唾液や、治療中に生じる口腔内の汚水を確実に吸引排出できる。また、奥行き部及び前方帰還部により、舌や頬粒膜の口腔内器官が治療を施こす歯牙部分に近づくのを妨げたり、治療器具等に触れないように隔離できるから、治療の安全性を確保できる。さらに、保形用の線材に保形される一本のチューブを用いて係止部及び全体形状を形成したことにより、口腔内への装着及び取り外しが容易となるとともに、上顎歯の何れかに係止部を係止し、開口状態の上下の歯牙若しくは顎堤で保持して安定させることができるから、アシスタントを必要とすることなく歯料医師１人で治療が可能となるとともに、天地を逆にしても装着できる等の効果を有する。

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請求の範囲

1．保形用の線材により保形される一本のチューブを用いて、

該チューブの略中央部に上顎歯若しくは下顎歯の何れかに係止する略U字形の係止部と、

該係止部から上顎堤若しくは下顎堤の両側に沿わせて口腔奥部に向かって略平行に延びる奥行き部と、

該奥行き部から前記下顎堤若しくは上顎堤の両側に沿って口腔の外方に向かって略平行に延びる前方帰還部と、

該前方帰還部の前端から口腔外部に延びる吸引用連結部と、

を形成するとともに、

少なくとも前記奥行き部若しくは前方帰還部に複数の唾液吸引孔を設けたことを特徴とする歯科医療用唾液吸引具。

2．前記保形用の線材を前記奥行き部から前方帰還部に至る部位においてコイル状に巻回したことを特徴とする請求項1に記載の歯科医療用唾液吸引具。

3．前記保形用の線材に弾力性を有する線材を用いて、可撓性を付与したことを特徴とする請求項1及び請求項2に記載の歯科医療用唾液吸引具。

4．前記保形用の線材に可撓性若しくは弾力性が異なる部位を設けたことを特徴とする請求項1乃至請求項3に記載の歯科医療用唾液吸引具。

5．前記保形用の線材に金属線を用いて熱処理により可撓性若しくは弾力性を付与したことを特徴とする請求項1乃至請求項4に記載の歯科医療用唾液吸引具。

６．前記保形用の線材にステンレス合金線材を用いたことを特徴とする請求項１乃至請求項５に記載の歯科医療用唾液吸引具。

７．前記保形用の線材にニッケル・チタン合金線材を用いたことを特徴とする請求項１乃至請求項５に記載の歯科医療用唾液吸引具。

８．前記係止部位で前記チューブを切断して前記略Ｕ字形に屈曲させた保形用の線材を露出させるとともに、前記チューブの切断端部を気密に封止したことを特徴とする請求項１乃至請求項７に記載の歯科医療用唾液吸引具。

９．前記保形用の線材の露出部を軟質部材により被覆したことを特徴とする請求項８に記載の歯科医療用唾液吸引具。

１０．可撓性及び保形性を有するパイプ材を用いて、

上顎歯若しくは下顎歯の何れかに係止する略Ｕ字形の係止部と、

該係止部から上顎堤若しくは下顎堤の両側に沿わせて口腔奥部に向かって略平行に延びる奥行き部と、

該奥行き部から前記下顎堤若しくは上顎堤の両側に沿って口腔の外方に向かって略平行に延びる前方帰還部と、

該前方帰還部の前端に吸引用連結部とを形成するとともに、

少なくとも前記奥行き部若しくは前方帰還部に複数の唾液吸引孔を設けたことを特徴とする歯料医療用唾液吸引具。

１１．前記前方帰還部の何れか一方の前端を気密に封止して、何れか他方の前端に前記吸引用連結部を形成したことを特徴とする請求項１乃至請求項１０の何れかに記載の歯科医療用唾液吸引具。

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１２．前記前方帰還部の何れか一方の前端を気密に封止するとともに、該封止部から突出させた線材により略Ｕ字形の屈曲部を形成して、何れか他方の前記前方帰還部の前端部に掛け渡すとともに、該前端部に前記吸引用連結部を形成したことを特徴とする請求項１乃至請求項１１に記載の歯科医療用唾液吸引具。

１３．前記前方帰還部の何れか一方の前端部に屈曲部を形成して、前記上顎歯若しくは下顎歯の何れかを跨がせるとともに、前記前方帰還部の何れか他方に吸引可能に連結したことを特徴とする請求項１乃至請求項１０の何れかに記載の歯科医療用唾液吸引具。

１４．前記前方帰還部若しくは奥行き部の何れか一方に咽喉部を塞ぐネット若しくはスクリーンを設けたことを特徴とする請求項１乃至請求項１３に記載の歯科医療用唾液吸引具。

１５．片側若しくは両側の前記奥行き部と前方帰還部間に口腔内器官を隔離する隔離部材を差し渡したことを特徴とする請求項１乃至請求項１４に記載の歯科医療用唾液吸引具。

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

Fig. 1

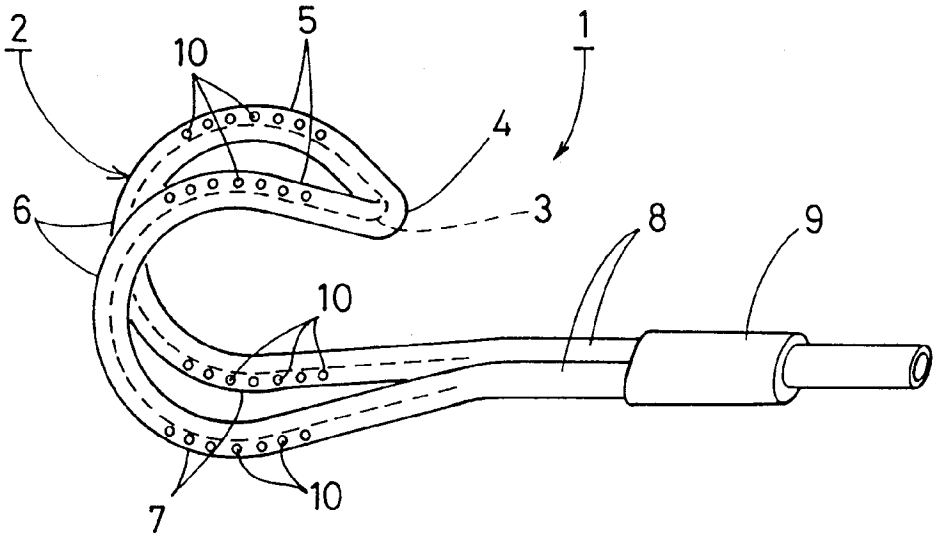


Fig. 2

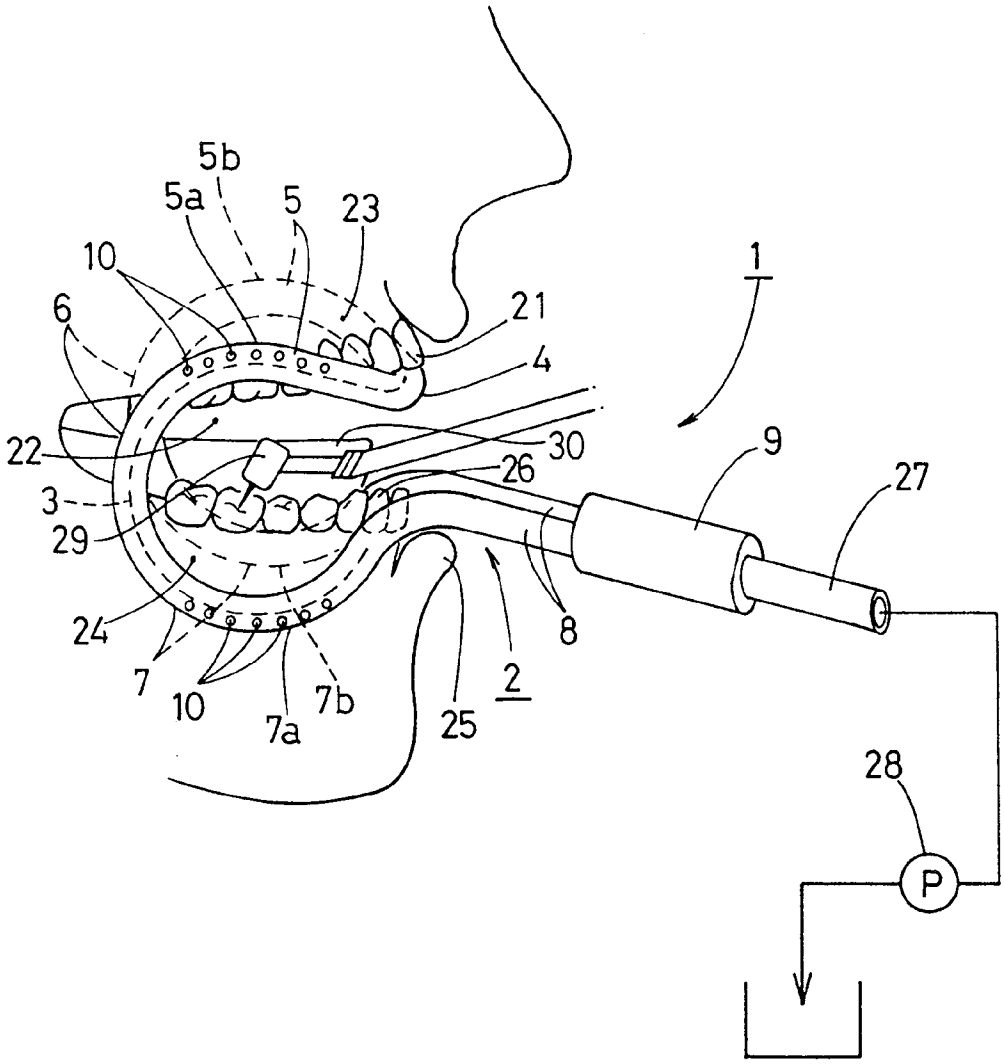
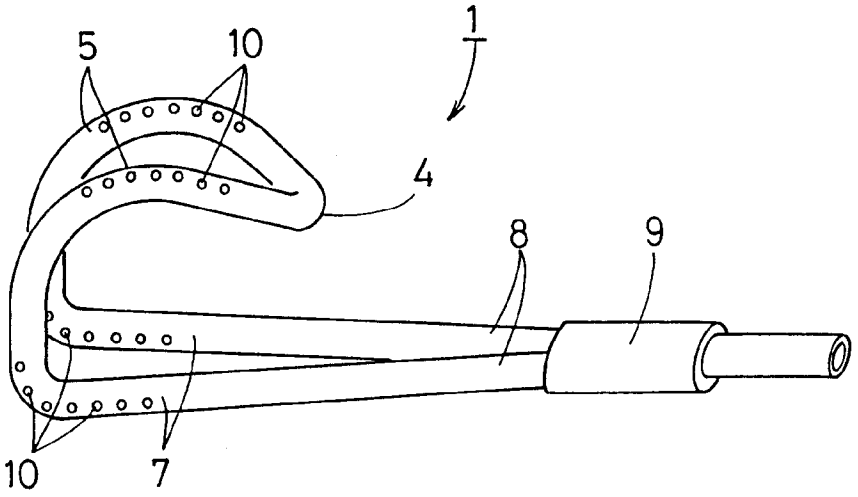


Fig. 3

(a)



(b)

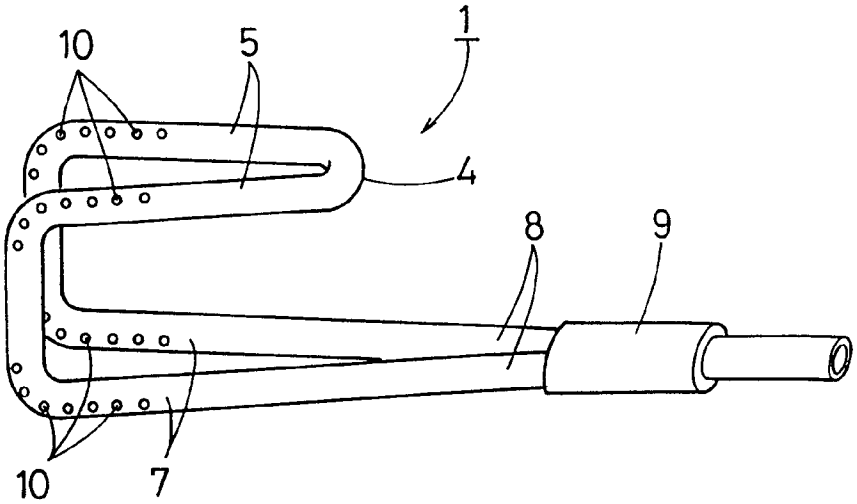


Fig. 4

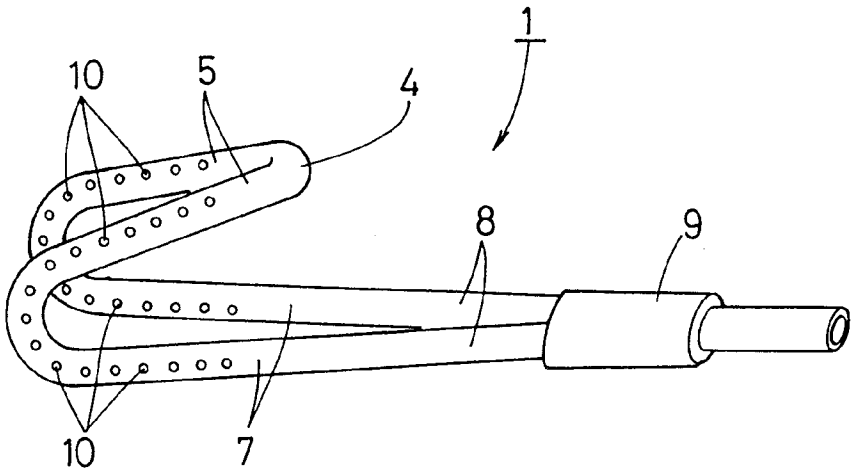


Fig. 5

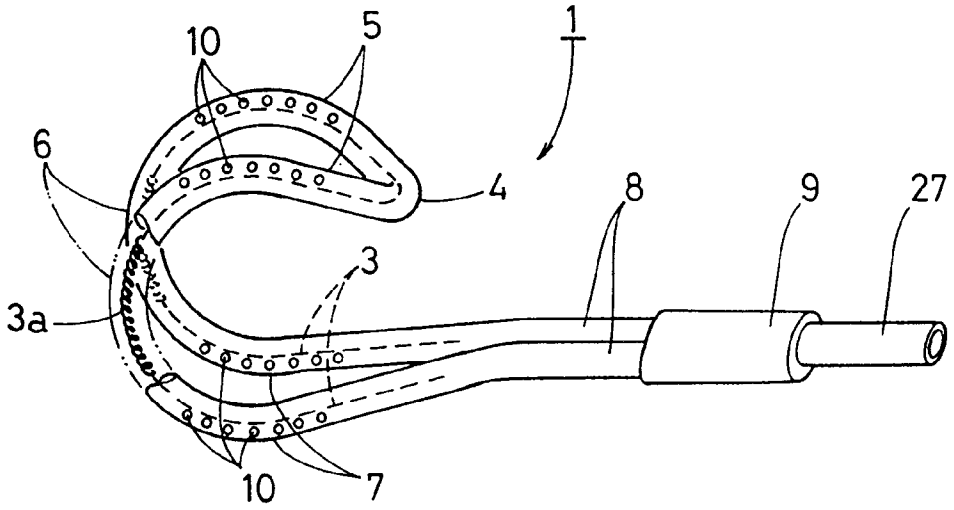


Fig. 6

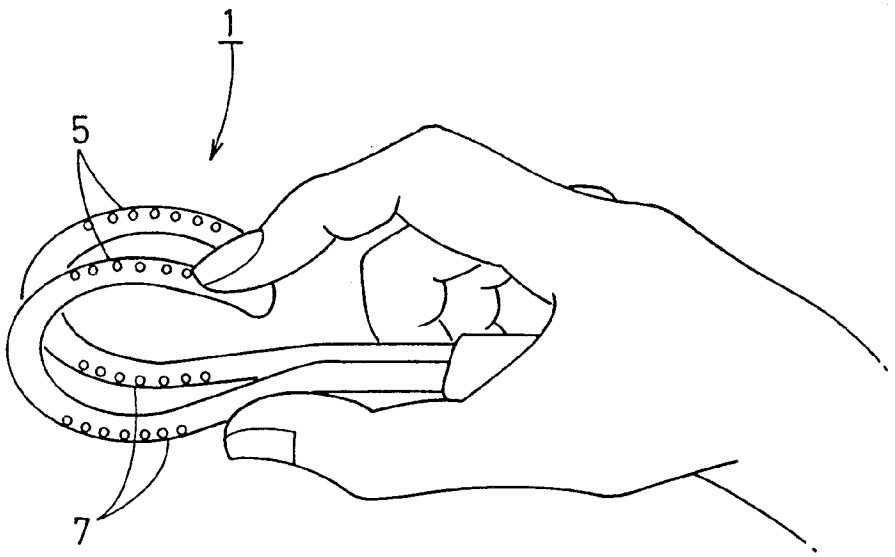


Fig. 7

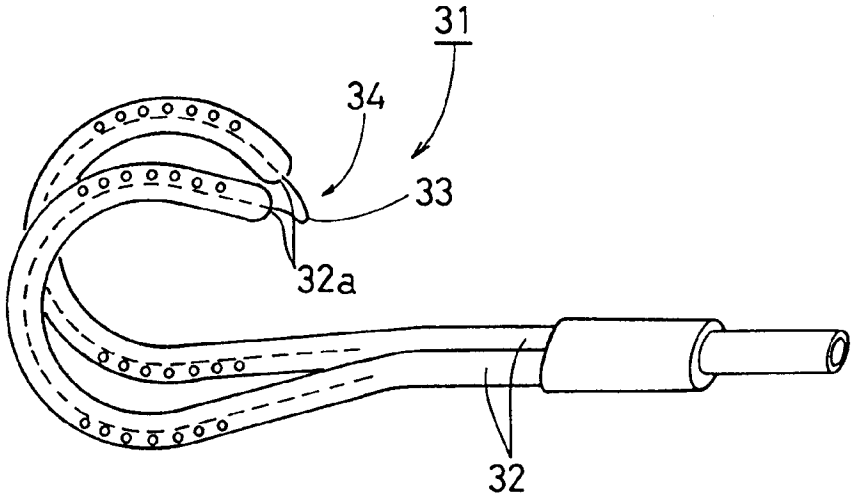


Fig. 8

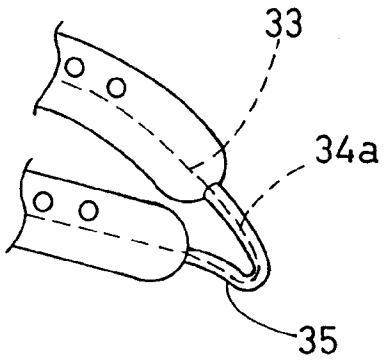


Fig. 9

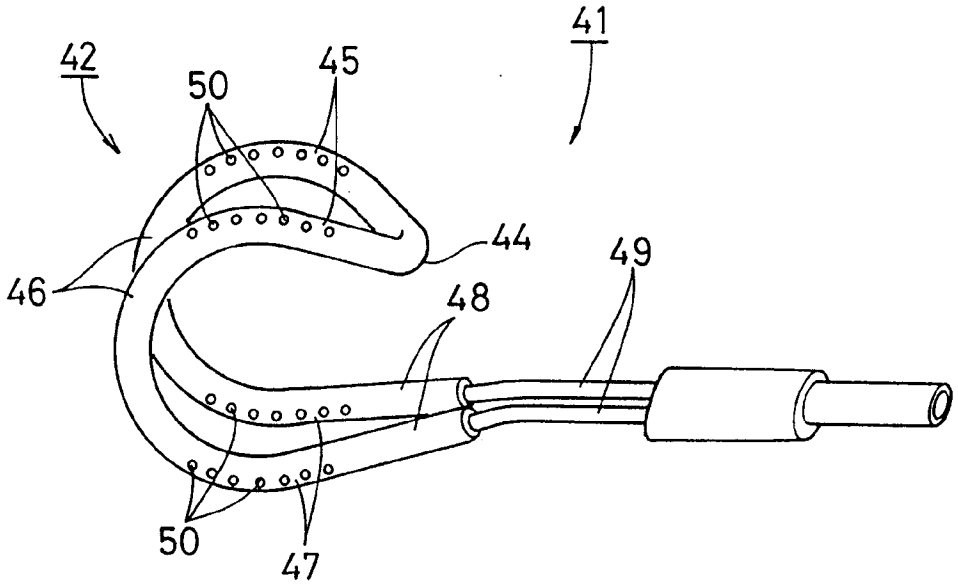


Fig. 10

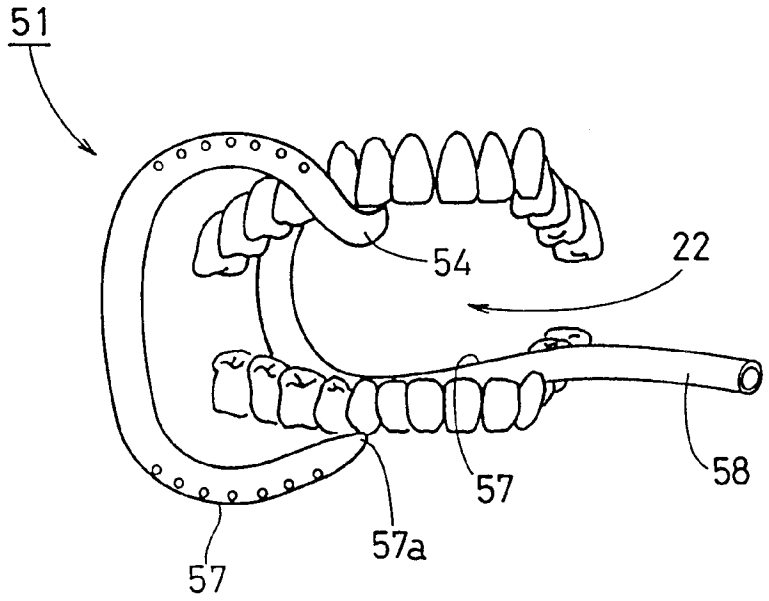


Fig. 11

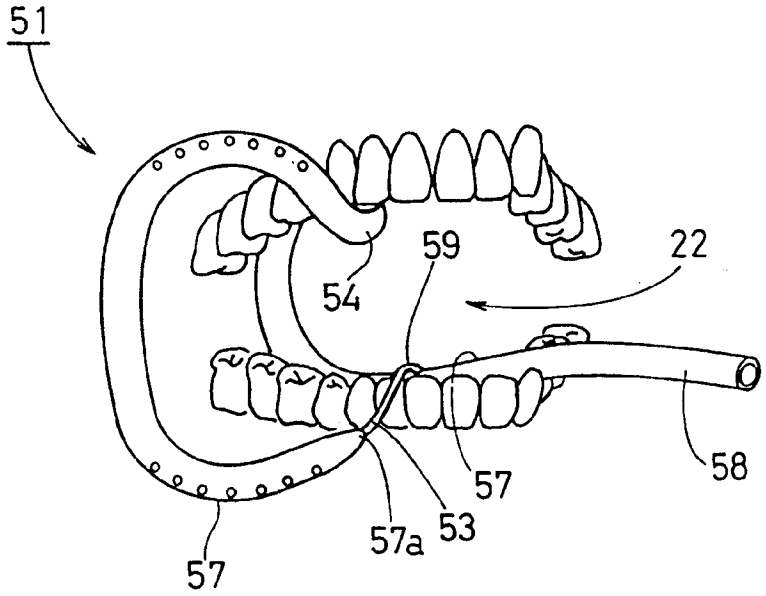


Fig. 12

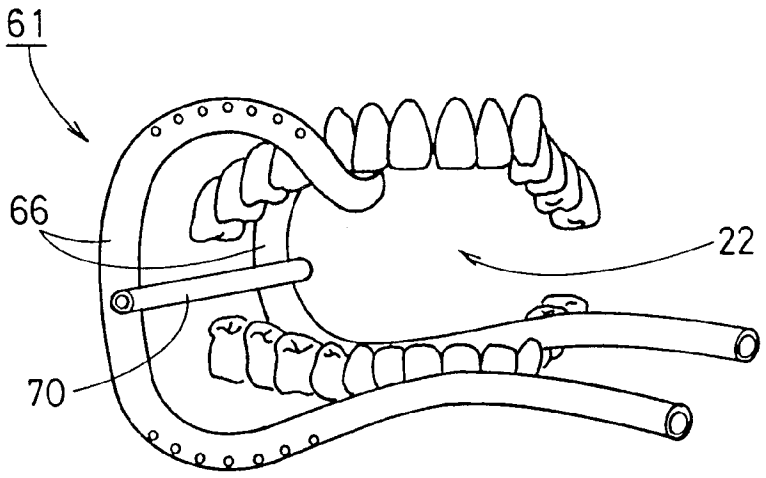


Fig. 13

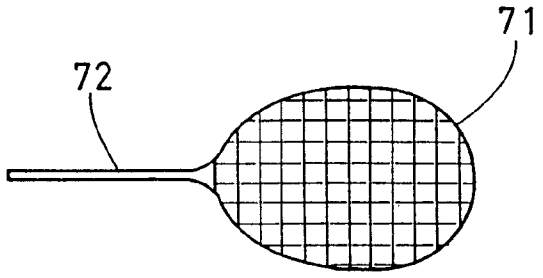


Fig. 14

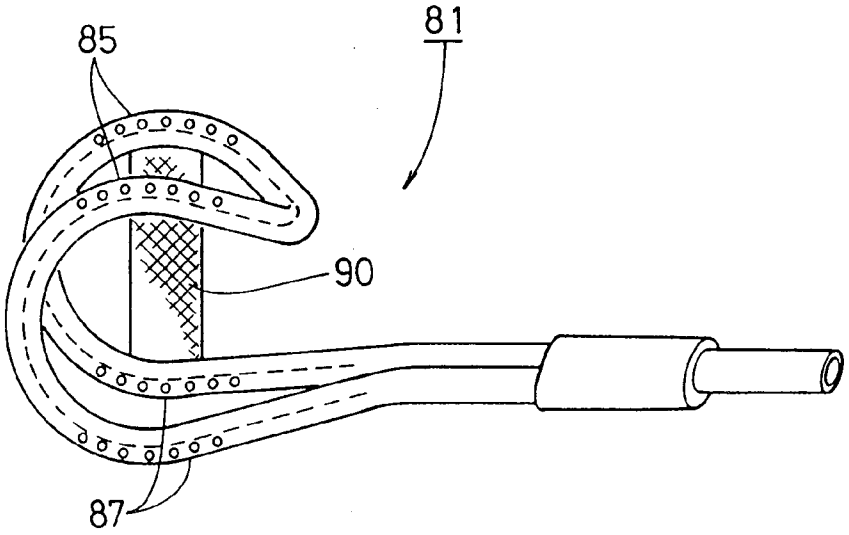


Fig. 15

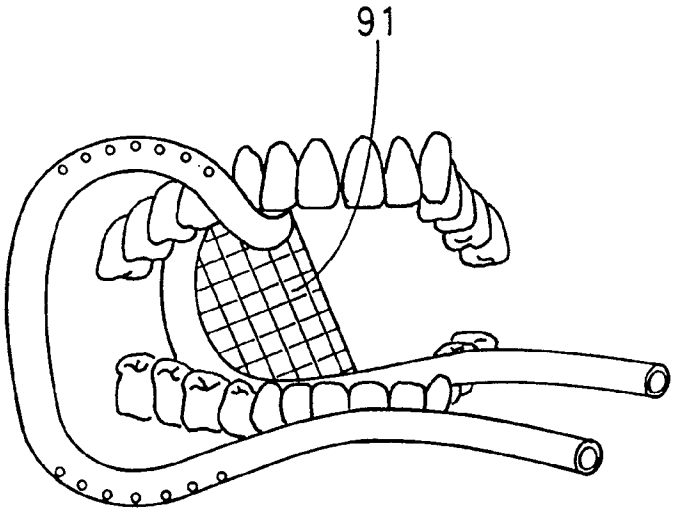


Fig. 16

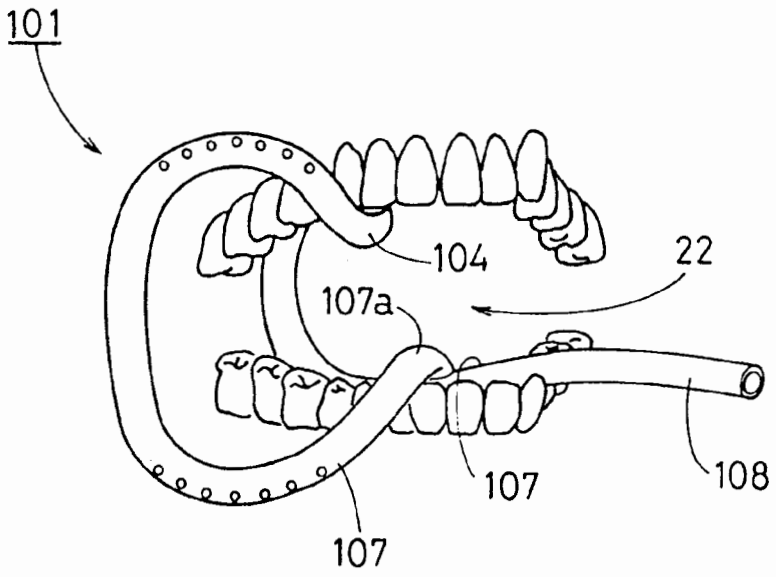
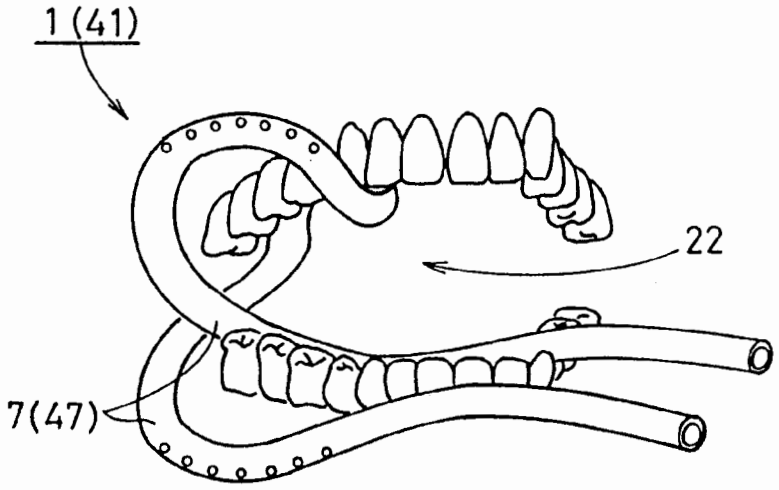


Fig. 17



INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP98/00316

A. CLASSIFICATION OF SUBJECT MATTER
Int.Cl[6] A61C17/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
Int.Cl[6] A61C17/08

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Jitsuyo Shinan Koho 1921-1998 Toroku Jitsuyo Shinan Koho 1994-1998
Kokai Jitsuyo Shinan Koho 1971-1998

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP, 07-204215, A (Takeshi Eiho), August 8, 1995 (08. 08. 95) (Family: none)	1-7, 10, 11
A		8, 9, 12-15
X	JP, 57-501463, A (Anderuson Bururu Akuseru Eringu), August 19, 1982 (19. 08. 82) & WO, 82/00764, A	10, 11
A		1-9, 12-15
A	JP, 57-33849, Y (Morita Seisakusho K.K.), July 26, 1982 (26. 07. 82) (Family: none)	1-15
A	JP, 56-34733, Y (Morita Seisakusho K.K.), August 17, 1981 (17. 08. 81) (Family: none)	1-15

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier document but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
April 16, 1998 (16. 04. 98)	April 28, 1998 (28. 04. 98)
Name and mailing address of the ISA/ Japanese Patent Office	Authorized officer
Facsimile No.	Telephone No.

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

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Ascentcare Dental Products v. Solmetex - IPR2025-01175

国際調査報告	国際出願番号　ＰＣＴ／ＪＰ９８／００３１６

A.　発明の属する分野の分類（国際特許分類（ＩＰＣ））

Ｉｎｔ．Ｃｌ⁶　　Ａ６１Ｃ　１７／０８

B.　調査を行った分野

調査を行った最小限資料（国際特許分類（ＩＰＣ））

Ｉｎｔ．Ｃｌ⁶　　Ａ６１Ｃ　１７／０８

最小限資料以外の資料で調査を行った分野に含まれるもの
日本国実用新案公報　　１９２１－１９９８年
日本国公開実用新案公報　　１９７１－１９９８年
日本国登録実用新案公報　　１９９４－１９９８年

国際調査で使用した電子データベース（データベースの名称、調査に使用した用語）

C.　関連すると認められる文献

引用文献のカテゴリー＊	引用文献名　及び一部の箇所が関連するときは、その関連する箇所の表示	関連する請求の範囲の番号
X	ＪＰ，０７－２０４２１５，Ａ　（英保　武志）　８．８月．１９９５（０８．０８．９５）　（ファミリなし）	１－７，１０，１１
A		８，９，１２－１５
X	ＪＰ，５７－５０１４６３，Ａ　（アンデルソン・ブルール・アクセル・エリング）　１９．８月．１９８２（１９．０８．８２）＆　ＷＯ，８２／００７６４，Ａ	１０、１１
A		１－９，１２－１５

☑ Ｃ欄の続きにも文献が列挙されている。　　☐ パテントファミリーに関する別紙を参照。

＊　引用文献のカテゴリー
「Ａ」特に関連のある文献ではなく、一般的技術水準を示すもの
「Ｅ」先行文献ではあるが、国際出願日以後に公表されたもの
「Ｌ」優先権主張に疑義を提起する文献又は他の文献の発行日若しくは他の特別な理由を確立するために引用する文献（理由を付す）
「Ｏ」口頭による開示、使用、展示等に言及する文献
「Ｐ」国際出願日前で、かつ優先権の主張の基礎となる出願の日の後に公表された文献
「Ｔ」国際出願日又は優先日後に公表された文献であって出願と矛盾するものではなく、発明の原理又は理論の理解のために引用するもの
「Ｘ」特に関連のある文献であって、当該文献のみで発明の新規性又は進歩性がないと考えられるもの
「Ｙ」特に関連のある文献であって、当該文献と他の１以上の文献との、当業者にとって自明である組合せによって進歩性がないと考えられるもの
「＆」同一パテントファミリー文献

国際調査を完了した日	国際調査報告の発送日
１６．０４．９８	28.04.98
国際調査機関の名称及びあて先 日本国特許庁（ＩＳＡ／ＪＰ） 郵便番号１００－８９１５ 東京都千代田区霞が関三丁目４番３号	特許庁審査官（権限のある職員）　４Ｃ　７１０８ 鈴木　寛治　印 電話番号　０３－３５８１－１１０１　内線　３４５３

様式ＰＣＴ／ＩＳＡ／２１０（第２ページ）（１９９２年７月）

国際調査報告

国際出願番号　ＰＣＴ／ＪＰ９８／００３１６

Ｃ（続き）．　関連すると認められる文献

引用文献のカテゴリー＊	引用文献名　及び一部の箇所が関連するときは、その関連する箇所の表示	関連する請求の範囲の番号
Ａ	ＪＰ，５７－３３８４９，Ｙ　（株式会社モリタ製作所）　２６．７月．１９８２（２６．０７．８２）　（ファミリなし）	１－１５
Ａ	ＪＰ，５６－３４７３３，Ｙ　（株式会社モリタ製作所）　１７．８月．１９８１（１７．０８．８１）　（ファミリなし）	１－１５

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

Electronic Acknowledgement Receipt

EFS ID:	22643516
Application Number:	14228046
International Application Number:	
Confirmation Number:	7700
Title of Invention:	INTRAORAL DEVICE WITH MESH
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	28661
Filer:	TamThanh Thi Pham/Lea Fong
Filer Authorized By:	TamThanh Thi Pham
Attorney Docket Number:	INCEP-001COA
Receipt Date:	16-JUN-2015
Filing Date:	27-MAR-2014
Time Stamp:	19:31:38
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	INCEP-001COA_IDS_Statement_6-16-15.pdf	19371 4ef75430439baadda18ab6c1dc83264e6d239414	no	2

Warnings:

Information:

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

2	Transmittal Letter	INCEP-001COA_IDS_List_of_Co pending_Apps_6-16-15.pdf	19177 93fb2d629d7bec69836e44878cfc02c2878a 90c4	no	2
Warnings:					
Information:					
3	Information Disclosure Statement (IDS) Form (SB08)	INCEP-001COA_IDS_1449_6-16 -15.pdf	63514 a5a058a6914e9d3c9a37fa3f03dffcbf5a821 952	no	2
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
4	Foreign Reference	GB_2170106.pdf	1113053 d6a7f7c815db00e2e5b3fd04da94c5fa3e36 ab9c	no	6
Warnings:					
Information:					
5	Foreign Reference	WO_1999037238.pdf	4188788 d687511c0f3f5e476197c11a68ef0e2aed9e da58	no	33
Warnings:					
Information:					
		Total Files Size (in bytes):	5403903		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit: 3732 Examiner: Hao D. Mai

Serial No.: 14/228,046 Filed: March 27, 2014

In re Application of: Thien Nguyen

Confirmation No.: 7700 Customer No.: 28661

Title: INTRAORAL DEVICE WITH MESH

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT
Under 37 C.F.R. § 1.56, and 1.97-1.98

SIR:

Pursuant to the provisions of 37 C.F.R. §§ 1.56 and 1.97-98 of the Rules of Practice in Patent Cases, enclosed herewith is form PTO-SB-08, listing several references. The Examiner is requested to make these references of official record in the application.

The references cited may be material to examination of the application and are submitted in compliance with the Applicants' duty of disclosure as defined by 37 C.F.R. § 1.56.

No representation is made or intended as to the completeness of this list, nor is the inclusion of any reference on this list an admission that it is prior art or pertinent to this application.

The Commissioner is hereby authorized to charge any necessary fee to Account Number 50-0612.

Respectfully submitted,
LEWIS ROCA ROTHGERBER LLP

Dated: June 16, 2015

/Tam Thanh Pham/
Tam Thanh Pham (50,565)
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TEL (650) 391-1380
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit: 3732 | Examiner: Hao D. Mai

Serial No.: 14/228,046 | Filed: March 27, 2014

In re Application of: Thien Nguyen

Confirmation No.: 7700 | Customer No.: 28661

Title: INTRAORAL DEVICE WITH MESH

List of Co-Pending Patents or Patent Applications That May Be Directed Towards Similar Subject Matter

Examiner's Initials	Application Number	Docket Number	First-Named Inventor	Title	Filing Date
	29/491,367	INCEP-002DCOA	Thien Nguyen	DENTAL MOUTHPIECE	May 20, 2014
	29/477,887	INCEP-003DCOA	Thien Nguyen	BRIDGE STRUCTURE FOR DENTAL MOUTHPIECE	December 27, 2013
	29/477.888	INCEP-004DCOA	Thien Nguyen	CHEEK RETRACTOR FOR DENTAL MOUTHPIECE	December 27, 2013
Examiner's Signature:					Date:

The Commissioner is hereby authorized to charge any necessary fee to Account Number 50-0612.

Respectfully submitted,
LEWIS ROCA ROTHGERBER LLP

Dated: June 16, 2015

/Tam Thanh Pham/
Tam Thanh Pham (50,565)
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TEL (650) 391-1380
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Substitute for Form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Complete if Known	
Application Number	14/228,046
Filing Date	March 27, 2014
First Named Inventor:	Thien Nguyen
Art Unit	3732
Examiner Name	Hao D. Mai
Attorney Docket Number	INCEP-001COA

Sheet	1	of	1

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (If known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-	D734,851	7/21/2015	Nguyen	
		US-				
		US-				
		US-				
		US-				
		US-				
		US-				
		US-				
		US-				
		US-				
		US-				

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3] Number[4] Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]
		WO 2015/088577	6/18/2015	Incept, Inc.		

Examiner Signature		Date Considered	

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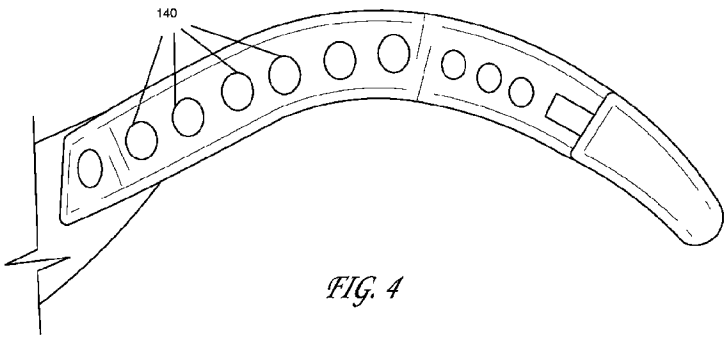

FIG. 4

(57) Abstract: A dental mouthpiece is provided that may be attached to a high-suction dental adapter for the purpose of assisting the dental staff during dental procedures through chair-side, hands-free suction, and isolation. Such a mouthpiece may comprise a main body portion, a cheek retractor portion, and a suction connector portion. In some embodiments, the main body portion, cheek retractor portion, and suction connector portion (and sub-portions thereof) may be molded in one piece, preferably by injection molding. In an exemplary embodiment, the mouthpiece may be made of a material that is flexible, translucent, conducive to injection molding, high heat-resistant, and autoclavable. Such a material may include silicone. Because the mouthpiece may be made of a high heat-resistant and autoclavable material, such a mouthpiece may be reusable.

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INTRAORAL DENTAL SUCTION AND ISOLATION SYSTEM

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention generally relates to the field of dental mouthpieces. More specifically, the present invention relates to intraoral dental suction and isolation mouthpieces.

2. Description of Related Art

Various mouthpieces are currently used by dental health professionals, dental hygienists, and dental assistants in the field of dentistry. In the past, a dental patient has been treated by a traditional two-person team that comprises a dental professional and a dental assistant. Further, dental treatment may be provided by the team using many different types of dental equipment and materials. Such dental equipment and materials may include such items as an intraoral mirror, a bite block, a slow speed suction ejector, a high speed suction ejector, gauzes, cotton rolls, and dry angles. Each item of dental equipment may be used for different purposes, though some may be used in combination for some types of dental services. As such, a dental professional seeking to provide such dental services may need to use multiple items of such dental equipment. An important role of the dental assistant is therefore to assist the dental professional in coordinating the use of these multiple items of different equipment and materials.

There is, therefore, a need in the art for improved systems and methods of providing dental services in a more efficient, comfortable, and safe manner to the dental patient.

SUMMARY OF THE CLAIMED INVENTION

Embodiments of the present invention may include a mouthpiece that may be attached to a high-suction dental adapter for the purpose of assisting the dental staff during dental procedures through chair-side, hands-free suction, and isolation. Such a mouthpiece may comprise a main body portion, a cheek retractor portion, and a suction connector portion. In some embodiments, the main body portion, cheek retractor portion, and suction connector portion (and sub-portions thereof) may be molded in one piece, preferably by injection molding. In an exemplary embodiment, the mouthpiece may be made of a material that is flexible, translucent, conducive to injection molding, high heat-resistant, and autoclavable. Such a material may include silicone. Because the mouthpiece may be made of a high heat-resistant and autoclavable material, such a mouthpiece may be reusable.

The main body portion may comprise an enclosed pocket made up of an anterior wall, a posterior wall, and a side wall in between the anterior and posterior walls. The side wall may be perforated with a plurality of perforations. Such perforations may constitute a mesh. Additional perforations may be located on the anterior and posterior walls. The main body portion may further include a slit along a longitudinal, central axis on the anterior wall. Such openings (*e.g.*, perforations and slit) allow for suction of air, fluids, and small debris from the patient's mouth, through the openings into the interior portion, and into the suction connector portion towards a suction source. Because the mouthpiece is made of a flexible and resilient material (*e.g.*, silicone), the mouthpiece may be bent when placed in a patient's mouth to conform to the shape of the mouth. When properly positioned, the suction connector portion may protrude from one side of the patient's mouth, while the main body lies against the back of the patient's mouth, and the cheek retractor presses against the patient's cheek on the opposite side of the patient's mouth.

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

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

BRIEF DESCRIPTION OF THE FIGURES

FIG. 1A is a perspective view of an exemplary mouthpiece with a detachable mouth prop.

FIG. 1B is a top view of the exemplary mouthpiece and detachable mouth prop of FIG. 1A.

FIG. 1C is a bottom view of the exemplary mouthpiece and detachable mouth prop of FIG. 1A.

FIG. 1D is a side view of the exemplary mouthpiece and detachable mouth prop of FIG. 1A.

FIG. 1E is a cross-sectional view of the exemplary mouthpiece and detachable mouth prop of FIG. 1A.

FIG. 2A is a perspective view of the exemplary mouthpiece of FIG. 1A where the detachable mouth prop has been detached.

FIG. 2B is a top view of the exemplary mouthpiece of FIG. 2A.

FIG. 2C is a bottom view of the exemplary mouthpiece of FIG. 2A.

FIG. 2D is a side view of the exemplary mouthpiece of FIG. 2A.

FIG. 2E is a cross-sectional view of the exemplary mouthpiece of FIG. 2A.

FIG. 3A is a front view of an exemplary mouth prop.

FIG. 3B is a back view of the exemplary mouth prop of FIG. 3A.

FIG. 3C is a bottom view of the exemplary mouth prop of FIG. 3A.

FIG. 3D is a perspective view of the exemplary mouth prop of FIG. 3A .

FIG. 3E is a side view of the exemplary mouth prop of FIG. 3A.

FIG. 3F is a top view of the exemplary mouth prop of FIG. 3A.

FIG. 4 is a close-up view of exemplary mesh sides in an exemplary mouthpiece.

FIG. 5 is a close-up view of an internal bridge in an exemplary mouthpiece.

FIG. 6A is a close-up view of an exemplary reinforcing bar in an exemplary mouthpiece.

FIG. 6B is a cross-sectional view of the exemplary reinforcing bar of FIG. 6A.

FIG. 7A is a close-up view of an exemplary cheek retractor portion in an

exemplary mouthpiece.

FIG. 7B is a cross-sectional view of the exemplary cheek retractor portion of FIG. 7A.

DETAILED DESCRIPTION

Embodiments of the present invention provide for a mouthpiece comprising a main body portion, a cheek retractor portion, and a suction connector portion. In some embodiments, the main body portion, cheek retractor portion, and suction connector portion (and sub-portions thereof) may be molded as one-piece, preferably by injection molding. In an exemplary embodiment, the mouthpiece may be made of a material that is flexible, translucent, conducive to injection molding, high heat-resistant, and autoclavable. Such a material may include silicone. Because the mouthpiece may be made of a high heat-resistant and autoclavable material, such a mouthpiece may be reusable.

FIGs. 1A-E are different views of an exemplary mouthpiece with an attachable mouth prop 160, while FIGs. 2A-E are different views of the exemplary mouthpiece of FIG. 1A where the attachable mouth prop 160 has been detached. Such a mouthpiece may include a main body portion 110, a suction connector portion 120, and a cheek retractor portion 130.

The main body portion 110 may include mesh or perforations140, a stability bar 150, an open slit 170, and an internal bridge 180. The main body potion 110 may connect to a suction connector portion 120 on one end and a cheek retractor portion 130 at the other end. Such a cheek retractor portion 130 may be configured to press against and retract a patient's cheek away from the patient's teeth. When placed in a patient's mouth, the suction connector portion 120 may protrude from one side of the patient's mouth, while the main body portion 110 lies against the back of the patient's mouth, and the cheek retractor portion 130 retracts the patient's cheek on the opposite side of the patient's mouth. The flexibility of the material used to form the mouthpiece allows for some bending when placed in the patient's mouth. The material is, however, resilient enough that the cheek retractor portion presses against the inside of the patient's cheek with such pressure being sufficient to move the cheek away from the patient's teeth.

An exemplary main body portion 110, when placed in a mouth, may include an anterior wall facing the front of the mouth (*e.g.*, the side with slit 170) and a posterior

wall facing the back of the mouth. The two walls may connect at a superior wall and an inferior wall forming a body that is at least partially enclosed.

Superior may be used herein to refer to the side that rests against a roof of a patient's mouth when placed therein, and inferior may be used to refer to the side that rests against the floor of the patient's mouth. The superior and inferior sides may be formed identically, which may allow for the mouthpiece to change orientation such that the superior side may appear as the inferior side and vice versa, in the new orientation. When in use, the respective sides of the main body portion 110 may serve to protect and separate the top of the mouth and the bottom of the mouth/tongue. In addition, the main body portion 110 may also serve to protect the back of the mouth (*e.g.*, throat and airway) from falling debris.

Much of the main body portion 110 of the mouthpiece may be shaped as a straight-line arrowhead or shield whose base generally conforms to the intraoral shape of a patient's mouth. Differently-sized mouthpieces may be provided for differently-sized mouths of adults and children. Part of the base side of the arrowhead may be formed with thicker walls than the rest of the main body. Such thickening may provide additional stability.

In addition, the main body portion 110 of the mouthpiece may include a plurality of holes 140 distributed along the superior and inferior sides of the anterior and posterior walls to assist in suctioning of water, saliva and debris from the oral cavity. In some embodiments, a set of holes may also form a mesh along the walls of the superior and inferior edges. FIG. 4 is a close-up view of an exemplary mesh wall in an exemplary mouthpiece.

At the narrow end of the arrowhead that connects to the cheek retractor portion 130, the main body portion 110 may include a rectangular portion. Narrower than the base of the arrowhead, the rectangle may additionally include a reinforcing bar (or stability bar) 150 (described in further detail below) and may be at least partially crossed by a slit 170 (described in further detail below) into the interior of the pocket of the main body portion 110.

Stability bar 150 may be a protrusion or otherwise a thickened area that reinforces the stability of the rectangular portion and assist in shaping this region to

the intraoral posterior shape of a patient's mouth. FIG. 6A is a close-up view of an exemplary stability bar 150 of an exemplary mouthpiece. FIG. 6B is a cross-sectional view of the exemplary reinforcing bar in the cheek retractor connector portion of FIG. 6A.

In some embodiments, the internal, rectangular-shaped reinforcing or stability bar 150 may be located distally to the internal wavelike bridge structure 180 and attached to both the interior side of the posterior surface of the main body and the rectangular portion. Such a stability bar 150 may be located in the area where a positioned mouthpiece begins to wrap from the lingual side of the most posterior mandibular tooth, around the distal side of the most posterior tooth, and to anterior side of the most posterior mandibular tooth, thereby assisting in shaping the mouthpiece to the general intraoral shape of a patient's mouth.

Various embodiments of the mouthpiece may further include a longitudinal, open slit 170 extending over approximately two-thirds of the main body on the anterior surface. Running along the center of the main body across the rectangle and most of the arrowhead, such a slit 170 may assist in capture and suction of water, saliva and debris, as well as assisting in cleaning and maintenance.

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

The suction connector portion 120 may be oval-shaped and also attached to the main body portion 110. The suction connector portion 120 may be formed with thicker walls than the main body portion 110 and configured to attach to a high-suction vacuum adapter and to assist in transferring water, saliva, and debris from the oral cavity to the external adapter for removal. The suction connector portion 120 may also include an internal stop to assist in sliding the mouthpiece onto the adapter to a desired depth. The suction connector portion 120 may additionally have an external, concave, notched region 210 that corresponds to a removable strap such that when the strap is in place, the external walls of the strap and the rest of the connector portion may be flush.

The cheek retractor portion 130 is illustrated as a hammerhead distal region, which may be attached to the main body portion 110. FIG. 7A is a close-up view of an exemplary cheek retractor portion 130 in an exemplary mouthpiece. FIG. 7B is a cross-sectional view of the exemplary cheek retractor portion 130 of FIG. 7A.

The mouthpiece may be used with a mouth prop 160, as illustrated in FIGs. 1 (with a mouth prop 160) and FIGs. 2 (illustrated without the mouth prop 160). FIGs. 3A-E provide different close-up views of an exemplary mouth prop 160. The removable strap 310 may be attached to mouth prop 160, which may be used to prop open a patient's mouth and teeth. In this regard, the suction connector portion 120 may additionally have an external plug 220 (FIG. 2C) protruding from the posterior side of the suction connector portion 120. Such a plug 220 may correspond to and serve to connect with an opening in the mouth prop 160. The mouth prop 160 may be reinforced by the presence of the plug 220 in the opening, thereby resulting in a more crush-resistant, nearly incompressible, and stable mouth prop 160. In some embodiments, the suction connector portion 120 may further have a cutout 230 (*e.g.*, which may be shaped as a logo) providing extra interlocking with a corresponding protrusion (*e.g.*, which may also be shaped as a logo) on an external high-suction vacuum adapter.

The mouth prop 160 may be made of thickened silicone material injection molded in a single piece with an elastic strap corresponding to the circumference of the suction connector portion. The mouth prop 160 has an internal, rectangular-

shaped female slot designed to fit snugly with the external, rectangular-shaped male plug 220 of the suction connector portion 120 of the mouthpiece. Mouth props may be made in different sizes for differently sized mouths. Because the mouth prop and mouthpiece are detachable from each other, different sizes of each may be mixed and matched as needed for a particular patient's mouth.

The mouthpiece as described herein may be used with a one-piece, autoclavable, high-suction vacuum adapter. Such a high-suction vacuum body adapter may be made of a single homogenous material. Having a single lever design, such a vacuum adapter may function in the same manner as all the current high-suction vacuum evacuators and saliva ejectors in controlling the removal of water, saliva, and debris from the oral cavity to the outside vacuum source. The single lever may be designed to control the removal of water, saliva, and debris from the at least partially enclosed so main body through a single, large evacuation conduit within the suction connector portion.

While various embodiments have been described above, it should be understood that they have been presented by way of example only, and not limitation. The descriptions are not intended to limit the scope of the invention to the particular forms set forth herein. Thus, the breadth and scope of a preferred embodiment should not be limited by any of the above-described exemplary embodiments. It should be understood that the above description is illustrative and not restrictive. To the contrary, the present descriptions are intended to cover such alternatives, modifications, and equivalents as may be included within the spirit and scope of the invention as defined by the appended claims and otherwise appreciated by one of ordinary skill in the art. The scope of the invention should, therefore, be determined not with reference to the above description, but instead should be determined with reference to the appended claims along with their full scope of equivalents.

CLAIMS

WHAT IS CLAIMED IS:

1. A dental mouthpiece composed of a material, the dental mouthpiece comprising:

a main body portion comprising a defined pocket having an anterior wall, a posterior wall, and a side wall in between the anterior wall and the posterior wall, wherein the anterior wall, the posterior wall, and the side wall define an interior portion of the defined pocket;

a cheek retractor portion configured to press against a cheek of a patient when placed in a mouth of the patient, wherein resilience of the material causes the cheek retractor portion to retract a cheek of the patient away from the teeth of the patient; and

a suction connector portion for connecting the interior portion of the main body to a vacuum suction source.

2. The mouthpiece of claim 1, wherein the side wall includes a plurality of perforations.

3. The mouthpiece of claim 1, wherein the anterior wall and the posterior wall each includes a plurality of perforations.

4. The mouthpiece of claim 1, wherein the anterior wall further includes a slit along a central axis.

5. The mouthpiece of claim 1, further comprising a stability bar protruding from an interior surface of the posterior wall, wherein a thickness of the stability bar increases resilience of the cheek retractor portion during bending.

6. The mouthpiece of claim 1, wherein the main body portion, the cheek retractor portion, and the suction connector portion are formed by injection-molded as one

piece.

7. The mouthpiece of claim 1, wherein the material used in the injection-molding is a flexible, translucent, high heat-resistant, autoclavable silicone-based material.

8. The mouthpiece of claim 1, further comprising a bridge structure protruding from an interior surface of the posterior wall, the protruding bridge structure comprising a plurality of spaced contact points that keep the anterior wall separated from the posterior wall during suction.

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

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

11. The mouthpiece of claim 1, wherein the suction connector portion comprises an internal stop to assist in positioning of a vacuum suction source or a vacuum adaptor.

12. The mouthpiece of claim 1, further comprising a detachable mouth prop.

13. The mouthpiece of claim 12, wherein the detachable mouth prop comprises a strap configured to fit around the suction connector portion, wherein an external surface of the suction connector portion comprises a notch region corresponding to the strap, and wherein an external surface of the strap is substantially flush with a remaining external surface of the suction connector portion when the strap sits in the notch region.

14. The mouthpiece of claim 13, wherein the strap is injection-molded in a single piece with the mouth prop.

15. The mouthpiece of claim 1, wherein the suction connector portion further comprises an external plug protrusion corresponding to an opening in a mouth prop associated with the strap.

16. The mouthpiece of claim 15, wherein the plug protrusion fits into the opening to provide additional crush-resistance and decreased compressibility during biting by the patient.

17. The mouthpiece of claim 1, wherein the suction connector portion comprises a cutout corresponding to a protrusion on a vacuum adapter for an interlocking fit.

18. The mouthpiece of claim 1, wherein the anterior wall and the posterior wall have different thicknesses.

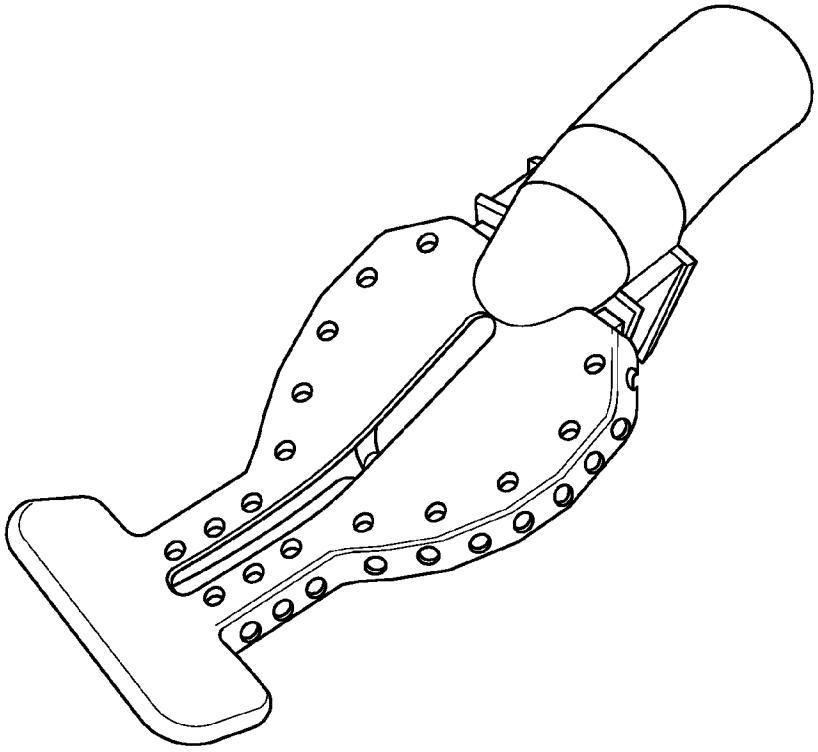

FIG. 1A

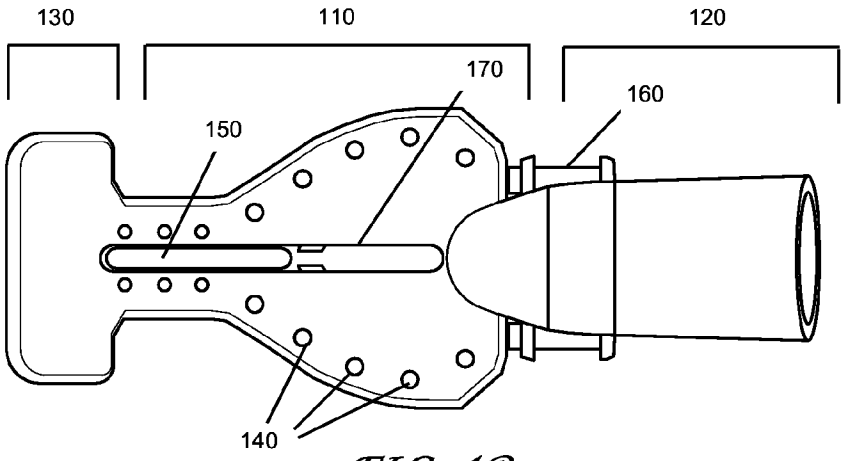

FIG. 1B

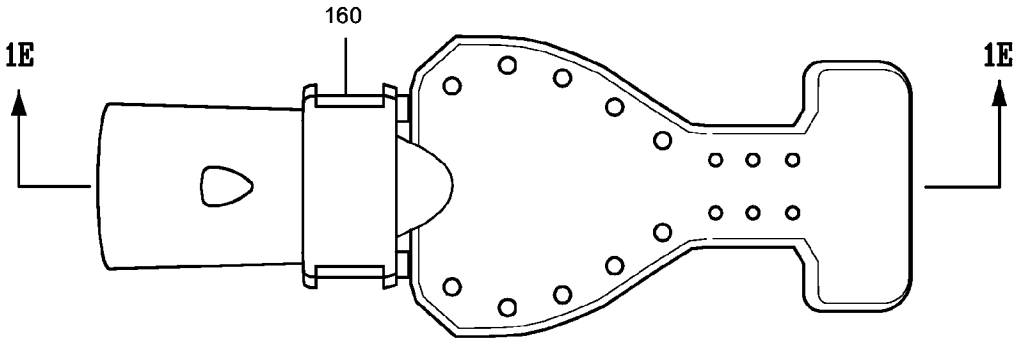

FIG. 1C

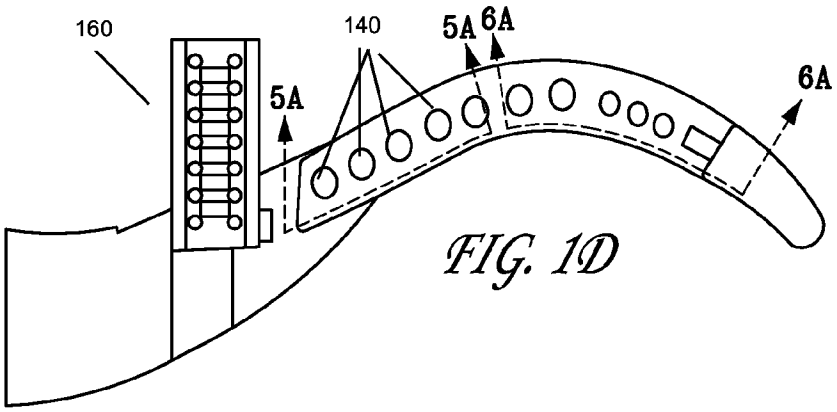

FIG. 1D

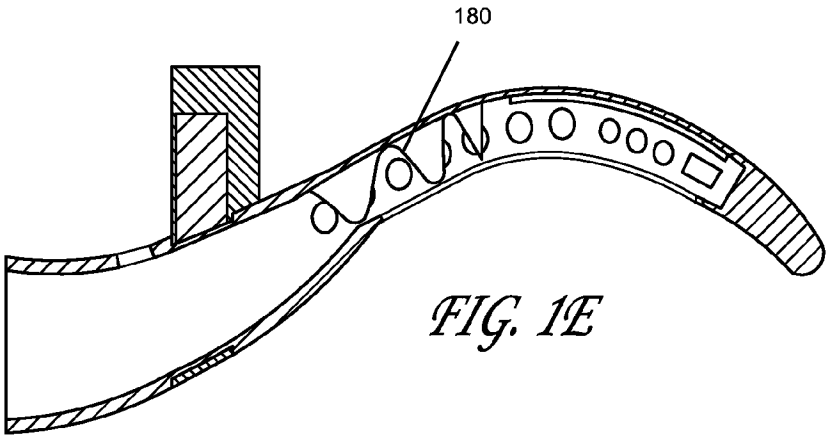

FIG. 1E

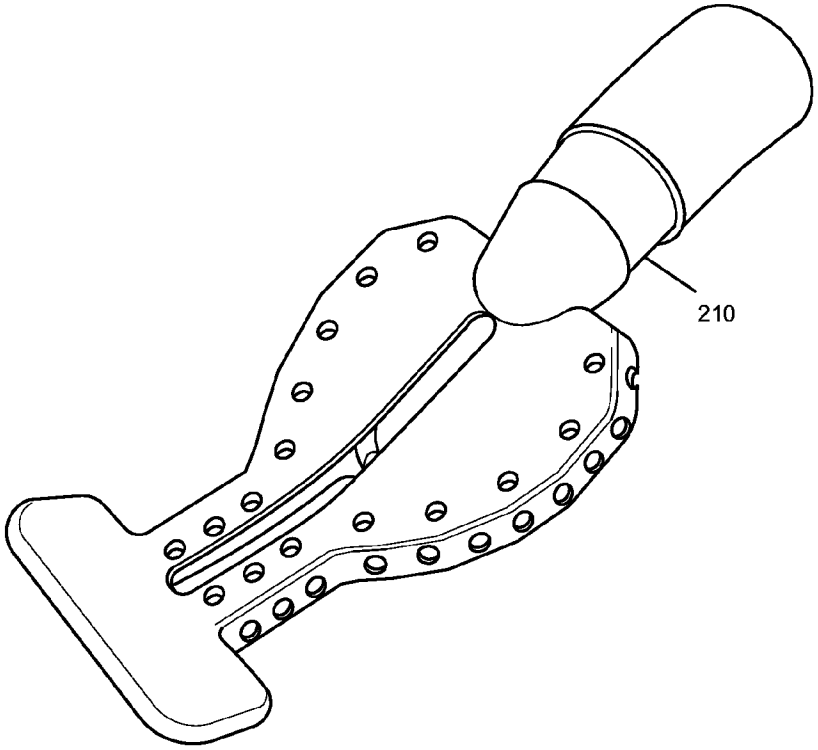

FIG. 2A

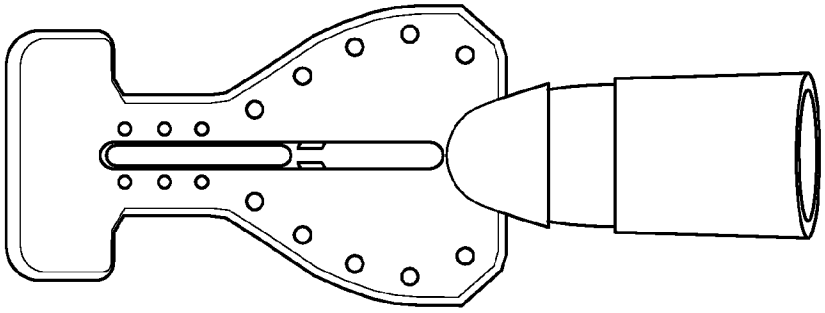

FIG. 2B

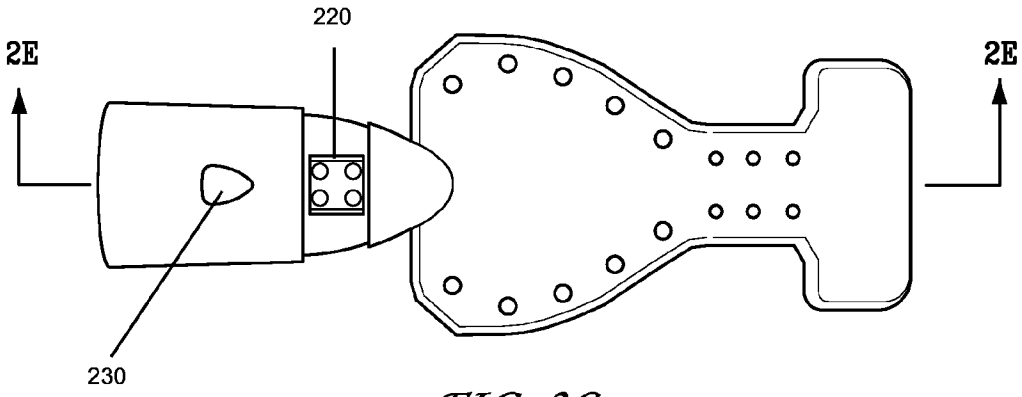

FIG. 2C

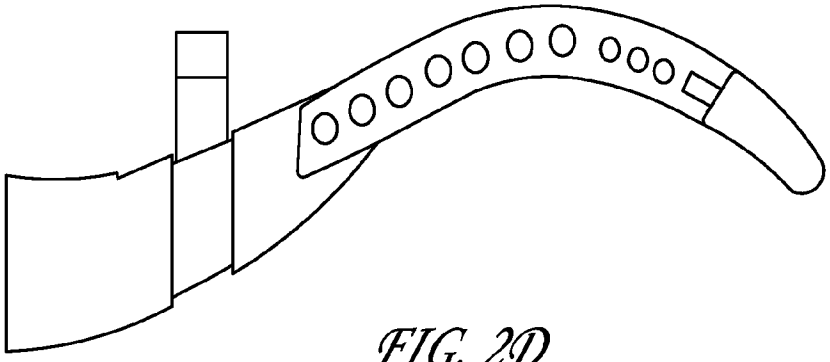

FIG. 2D

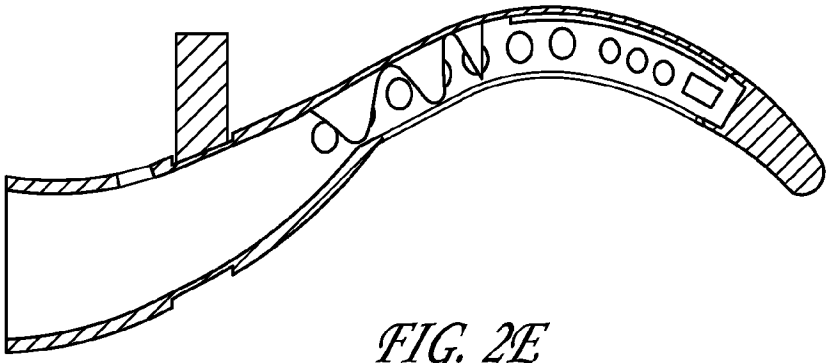

FIG. 2E

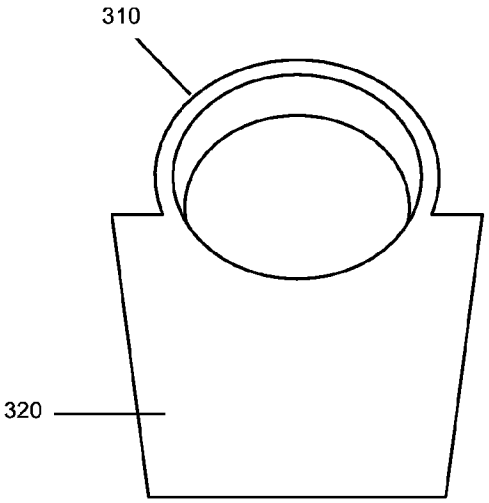

FIG. 3A

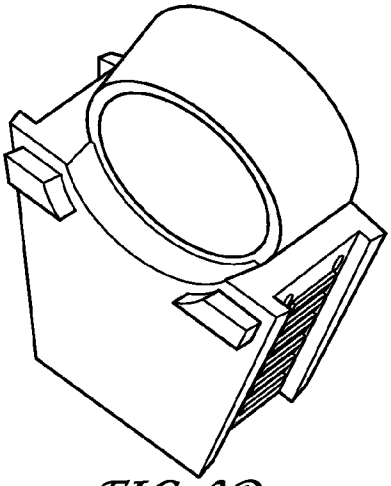

FIG. 3D

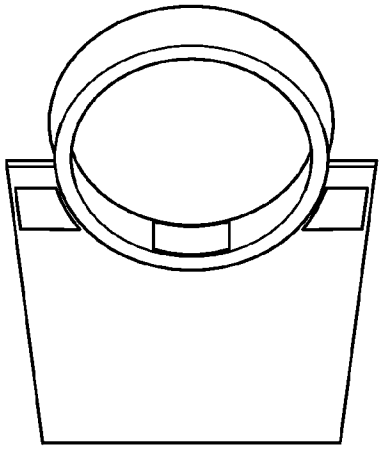

FIG. 3B

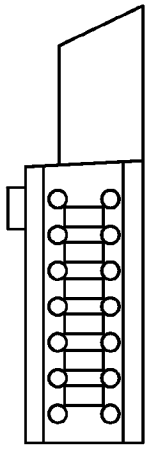

FIG. 3E

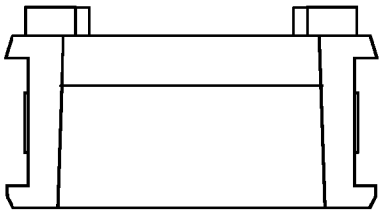

FIG. 3C

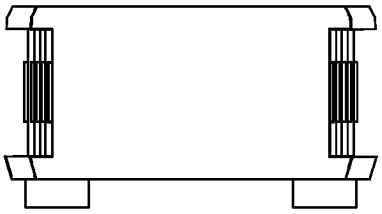

FIG. 3F

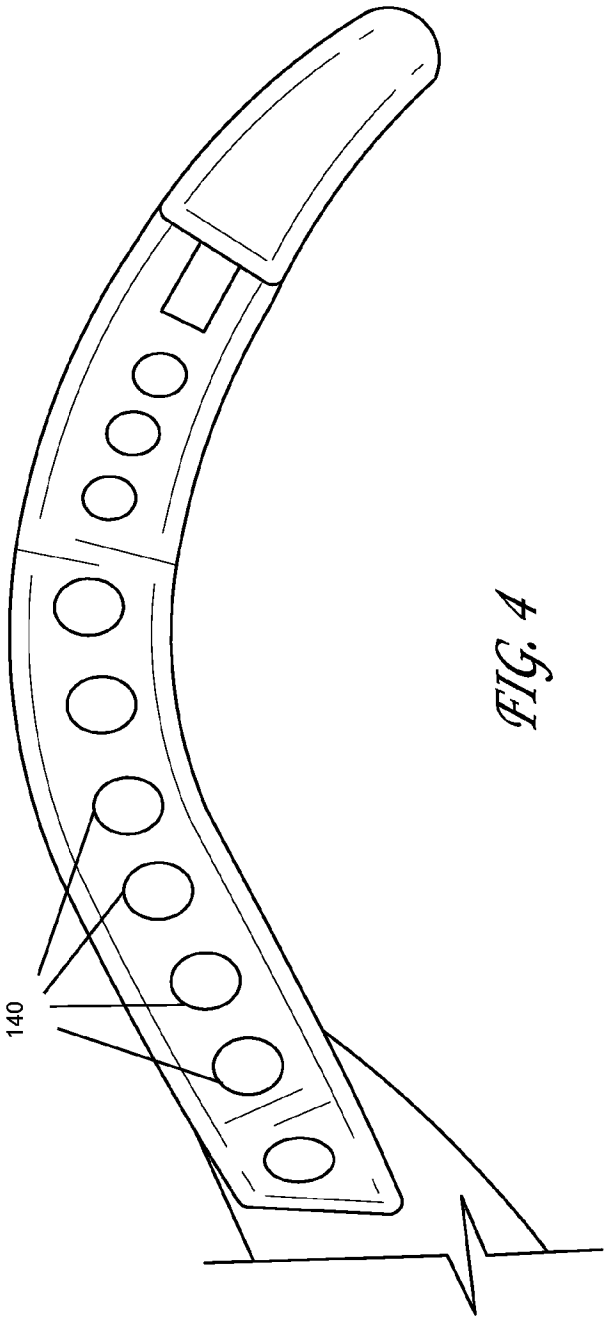

FIG. 4

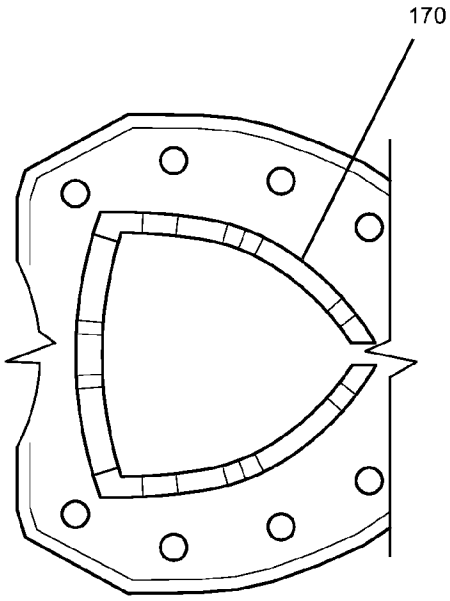

FIG. 5

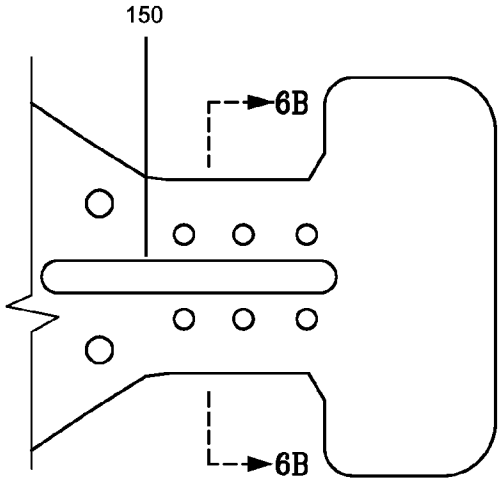

FIG. 6A

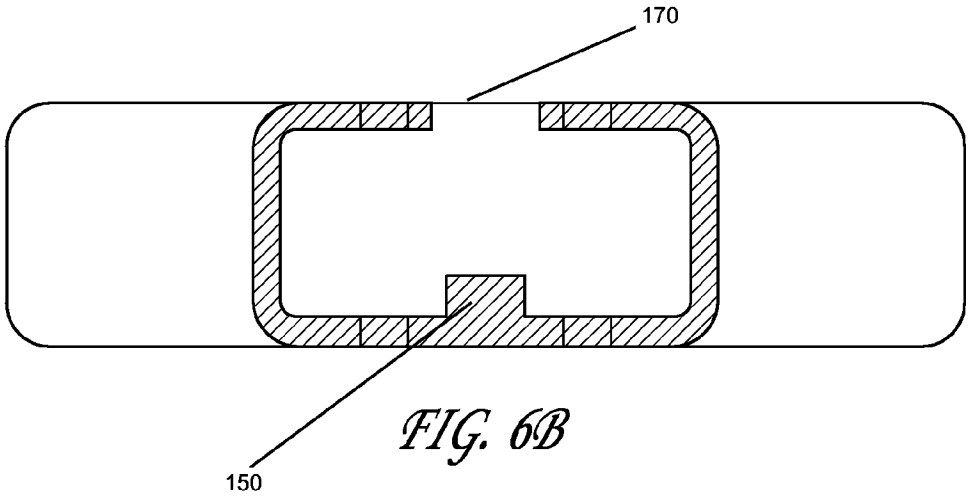

FIG. 6B

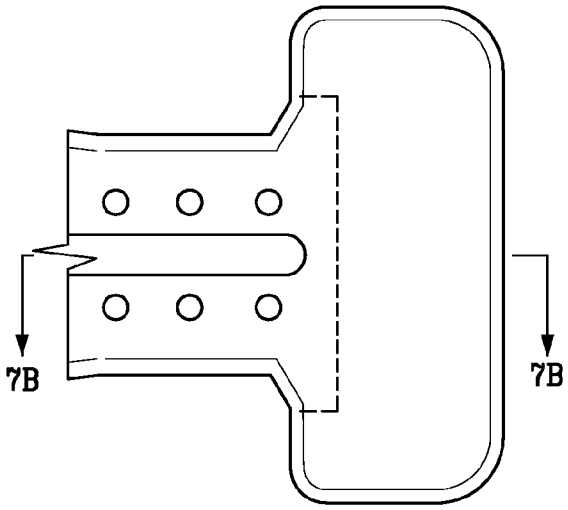

FIG. 7A

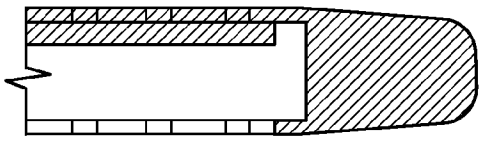

FIG. 7B

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2014/032892

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - A41C 17/00, 17/06 (2014.01)
CPC - A41C 17/00 (2014.07)
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8) - A41C 17/00, 17/06 (2014.01)
CPC - A41C 17/00 (2014.07)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC - 433/91, 92, 93, 140

Electronic data base consulted during the international search (name of data base and; where practicable, search terms used)
Orbit, Google Patents, Google Scholar, PiubMed

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2006/0084031 A1 (HIRSCH et al) 20 April 2006 (20.04.2006) entire document	1-6, 12, 17, 18
Y		7-11, 13-16
Y	US 2013/0252193 A1 (BOWMAN et al) 26 September 2013 (26.09.2013) entire document	7
Y	US 2011/0311942 A1 (BLACK et al) 22 December 2011 (22.12.2011) entire document	8-10, 13-16
Y	US 4,822,278 A (OLIVA et al) 18 April 1989 (18.04.1989) entire document	11

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
22 August 2014	04 SEP 2014
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)

Electronic Acknowledgement Receipt

EFS ID:	23058835
Application Number:	14228046
International Application Number:	
Confirmation Number:	7700
Title of Invention:	INTRAORAL DEVICE WITH MESH
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	28661
Filer:	Clara Kitting Chiu/Lea Fong
Filer Authorized By:	Clara Kitting Chiu
Attorney Docket Number:	INCEP-001COA
Receipt Date:	04-AUG-2015
Filing Date:	27-MAR-2014
Time Stamp:	12:13:40
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	INCEP-001COA_IDS_Statement_7-29-15.pdf	19382 4534a078c4863eb84495968fbd67bcf733c58305	no	2

Warnings:	
Information:	

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

2	Information Disclosure Statement (IDS) Form (SB08)	INCEP-001COA_IDS_1449_7-29-15.pdf	54224 2748df06ffd0bc65568b781b2383b580e56eba50	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Foreign Reference	WO_2015088577.pdf	1903577 68fa0ee992e29a138c5d3c1e60a51ab12c65b2a8	no	26
Warnings:					
Information:					
		Total Files Size (in bytes):	1977183		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit: 3732 Examiner: Hao D. Mai

Serial No.: 14/228,046 Filed: March 27, 2014

In re Application of: Thien Nguyen

Confirmation No.: 7700 Customer No.: 28661

Title: INTRAORAL DEVICE WITH MESH

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT
Under 37 C.F.R. § 1.56, and 1.97-1.98

SIR:

Pursuant to the provisions of 37 C.F.R. §§ 1.56 and 1.97-98 of the Rules of Practice in Patent Cases, enclosed herewith is form PTO-SB-08, listing several references. The Examiner is requested to make these references of official record in the application.

The references cited may be material to examination of the application and are submitted in compliance with the Applicants' duty of disclosure as defined by 37 C.F.R. § 1.56.

No representation is made or intended as to the completeness of this list, nor is the inclusion of any reference on this list an admission that it is prior art or pertinent to this application.

The Commissioner is hereby authorized to charge any necessary fee to Account Number 50-0612.

Respectfully submitted,
LEWIS ROCA ROTHGERBER LLP

Dated: July 29, 2015

/Clara K. Chiu/
Clara K. Chiu (73,809)
LEWIS ROCA ROTHGERBER LLP
4300 Bohannon Drive, Suite 230
Menlo Park, CA 94025
TEL (650) 391-1380
ipdockets@lrrlaw.com

Substitute for Form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Complete if Known	
Application Number	14/228,046
Filing Date	March 27, 2014
First Named Inventor:	Thien Nguyen
Art Unit	3732
Examiner Name	Hao D. Mai
Attorney Docket Number	INCEP-001COA

Sheet	1	of	1

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (If known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3] Number[4] Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]
		EP 2903557	8/12/2015	Incept, Inc.		

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1]Applicant's unique citation designation number (optional). [2]See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3]Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4]For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6]Applicant is to place a check mark here if English language translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS.

SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Sonnetex Ex. 2016
IPR2025-01175

Espacenet

Bibliographic data: EP2903557 (A1) — 2015-08-12

INTRAORAL DENTAL SUCTION AND ISOLATION SYSTEM

Inventor(s): NGUYEN THIEN [US]; PHAM TAM THANH [US] ± (NGUYEN, THIEN, ; PHAM, TAM, THANH)

Applicant(s): INCEPT INC [US] ± (INCEPT, INC)

Classification: **- international:** ***A61C17/00; A61C17/06***
- cooperative: **A61C17/0208**; **A61C17/04**; **A61C17/043**

Application number: EP20140721736 20140403

Priority number(s): US201314100323 20131209 ; WO2014US32892 20140403

Also published as: USD734851 (S1) AU2014202637 (A1)

Abstract not available for EP2903557 (A1)

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

Electronic Acknowledgement Receipt

EFS ID:	23825554
Application Number:	14228046
International Application Number:	
Confirmation Number:	7700
Title of Invention:	INTRAORAL DEVICE WITH MESH
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	28661
Filer:	Clara Kitting Chiu/Lea Fong
Filer Authorized By:	Clara Kitting Chiu
Attorney Docket Number:	INCEP-001COA
Receipt Date:	21-OCT-2015
Filing Date:	27-MAR-2014
Time Stamp:	10:30:15
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	INCEP-001COA_IDS_Statement_10-19-15.pdf	19303 8895a1a49b03346f7e24e04a1c7c390c227e2a3e	no	2

Warnings:	
Information:	

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

2	Information Disclosure Statement (IDS) Form (SB08)	INCEP-001COA_IDS_1449_10-19-15.pdf	54156 da06f13722b6f85fa2d303d776d08c91d8f43f64	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Foreign Reference	EP_2903557.pdf	38208 d434ee586a2e2d67d9411eb9830f8331c344672f	no	1
Warnings:					
Information:					
		Total Files Size (in bytes):	111667		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit: 3732 Examiner: Hao D. Mai

Serial No.: 14/228,046 Filed: March 27, 2014

In re Application of: Thien Nguyen

Confirmation No.: 7700 Customer No.: 28661

Title: INTRAORAL DEVICE WITH MESH

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT
Under 37 C.F.R. § 1.56, and 1.97-1.98

SIR:

Pursuant to the provisions of 37 C.F.R. §§ 1.56 and 1.97-98 of the Rules of Practice in Patent Cases, enclosed herewith is form PTO-SB-08, listing several references. The Examiner is requested to make these references of official record in the application.

The references cited may be material to examination of the application and are submitted in compliance with the Applicants' duty of disclosure as defined by 37 C.F.R. § 1.56.

No representation is made or intended as to the completeness of this list, nor is the inclusion of any reference on this list an admission that it is prior art or pertinent to this application.

The Commissioner is hereby authorized to charge any necessary fee to Account Number 50-0612.

Respectfully submitted,
LEWIS ROCA ROTHGERBER LLP

Dated: October 19, 2015

/Clara K. Chiu/
Clara K. Chiu (73,809)
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4300 Bohannon Drive, Suite 230
Menlo Park, CA 94025
TEL (650) 391-1380
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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/228,046	03/27/2014	Thien Nguyen	INCEP-001COA	7700

28661 7590 11/06/2015

Lewis Roca Rothgerber LLP
4300 Bohannon Drive
Suite 230
Menlo Park, CA 94025

EXAMINER
MAI, HAO D

ART UNIT	PAPER NUMBER
3732	

NOTIFICATION DATE	DELIVERY MODE
11/06/2015	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ipdockets@lrrlaw.com
KHo@LRRLaw.com

Office Action Summary	Application No. 14/228,046	Applicant(s) NGUYEN ET AL.	
	Examiner HAO D. MAI	Art Unit 3732	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/21/2015*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1-20* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-20* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☒ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

4) ☐ Other: _____.

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

2. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

Specification

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

> The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.
>
> The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

4. The abstract of the disclosure is objected to because it currently contains legal phraseologies, e.g. “comprising”. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. **Claim 1-14 and 16-20 are rejected under 35 U.S.C. 102(b) as anticipated by Rhoades (4,802,851).**

Regarding claim 1, Rhoades discloses a dental mouthpiece 50 configured as a pocket (i.e. interior of 50) defined by: an anterior/upper wall 58 having a shaped defined by an exterior edge (Figs. 1-4), a posterior/lower wall 60 having a shape corresponding to the defined shape of the anterior/upper wall 58, wherein an exterior edge of the posterior/lower wall 60 corresponds to the exterior edge of the anterior wall. The mouthpiece 50 further comprises a side wall 52 connecting the exterior edge of the anterior wall to the correspond exterior edge of the posterior wall, wherein the side wall comprises a plurality of perforations 54 (Figs. 1-4).

As to claim 2, the perforations 54 on the side wall are spaced, forming a mesh (Fig. 1). As to claims 3-6, the anterior and posterior walls are also disclosed to have a plurality of perforations 54, forming a mesh. As to claim 7, note the slit/channel (best pointed to by reference numberal 58 in Fig. 4) formed on anterior wall. Alternatively, the device has scallops, wherein the troughs between the scallops are considered to be the slits as claimed. As to claim 8-10, Rhoades disclsoes a suction connector portion 62 capable of connecting the interior portion of the main body to a vacuum suction source (Fig. 1; column 3 lines 35-37, 48-50). The studs 140 are alternatively considered to be equivalent to the claimed bridge structure protruding from an interior surface of the posterior wall having a plurality of contact points (i.e. pair of studs 140 are spaced apart), capable of keeping the anterior and posterior walls separated during suction.

As to claims 11-12, the mouthpiece 50 further comprises a cheek retractor portion, i.e. side scallops 56, capable of pressing against a cheek of a patient when placed in a mouth of the patient. Note that Rhoades discloses the mouthpiece 50 being formed of resilient elastomeric material (column 6 lines 21-27); therefore there is a resilience of such material which is capable

of causing the cheek retractor portion (side scallops 56) to retract a cheek of the patient away from the teeth of the patient. Note a suction connector portion 62 capable of connecting the interior portion of the main body to a vacuum suction source (Fig. 1; column 3 lines 35-37, 48-50). As to claim 13, note that stability bar (stud 140; Fig. 11; column 5 line 13-15) protruding from an interior surface of the posterior, wherein the thickness of the stability bar is capable increases resilience of the cheek retractor portion.

As to claim 14, note that the claim language "by injection-molded" is a product-by-process recitation in a product claim. Even though product-by-process recitation is limited by and defined by the recited process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe,* 777 F.2d 695, 227 USPQ 964 (Fed. Cir. 1985). In this case, Rhoades discloses the end product and the structures thereof as claimed as detailed above; the device shown comprised of the main body, cheek retractor portion, and suction connection portion, all of which are essential portions forming the device as one piece. The burden is shifted to applicant to show an unobvious difference between Rhoades' device and the invention that would have resulted from the injection molding process.

As to claim 16, the scallops 56 formed thereon the anterior and posterior walls make the walls having different thicknesses (Fig. 1). As to claim 17-20, note the detachable mouth prop 68 having a mouth prop 68 and a strap portion 73 cmoprising an opening 70 corresponding to a plug 62 connected to the main body 50 (Fig. 1).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. **Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rhoades in view of Sclafani (5,890,899).** Rhoades discloses the invention substantially as claimed including the material used to form the device being flexible, translucent, high heat-resistant, as evidenced by disclosure of sterilization for reuse (column 5 lines 20-21; column 6 lines 21-27). However, Rhoades fails to disclose the material being silicone-base. Sclafani discloses a dental suction isolator device formed of silicone-based material (Figs. 1-9, column 8 lines 10-15). It would have been obvious to one having ordinary skill in the art at the time the invention was made to make Rhoades' device from silicone-based material as taught by Sclafani to be a known alternative suitable known material while yielding the same and/or predictable results.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Hao D. Mai whose telephone number is (571) 270-3002. The examiner can normally be reached on Monday-Friday 8:00AM – 4:30PM. If attempts to reach the examiner by telephone are unsuccessful, please contact the examiner's supervisor, Cris Rodriguez, at (571) 272-4964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hao D Mai/
Examiner, Art Unit 3732

Receipt date: 11/19/2014

Substitute for Form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)				Application Number	14/228,046
				Filing Date	March 27, 2014
				First Named Inventor:	Thien Nguyen
				Art Unit	3732
				Examiner Name	Hao D. Mai
Sheet	1	of	2	Attorney Docket Number	INCEP-001COA

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number	Number-Kind Code[2] (If known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-	2,937,445	5/24/1960	Erickson	
		US-	3,768,477	10/30/1973	Anders et al.	
		US-	3,924,333	12/9/1975	Erickson	
		US-	4,024,642	5/24/1977	Zorovich	
		US-	6,213,772	4/10/2001	Costello	
		US-	8,029,280	10/4/2011	Black et al.	
		US-	2006/0063129	3/23/2006	Hirsch	
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		US-				
		US-				

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document: Country Code[3] Number[4] Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]

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Examiner Signature	/Hao D. Mai/	Date Considered	11/03/2015

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Solmetex Ex. 2016
Accessory Dental Product v. Solmetex - IPR2025-01175

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Receipt date: 11/19/2014

Substitute for Form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*				Application Number	14/228,046
				Filing Date	March 27, 2014
				First Named Inventor:	Thien Nguyen
				Art Unit	3732
				Examiner Name	Hao D. Mai
Sheet	2	**of**	2	Attorney Docket Number	INCEP-001COA

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T[2]
		Docket No. INCEP-001 U.S. Patent Application 14/100,323; Final Office Action mailed 10/24/14	

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Examiner Signature	/Hao D. Mai/	Date Considered	11/03/2015

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Assertgate Dental Products v. Solmetex - IPR2025-01175
Solmetex Ex. 2016

Substitute for Form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*				Application Number	14/228,046
				Filing Date	March 27, 2014
				First Named Inventor:	Thien Nguyen
				Art Unit	3732
				Examiner Name	Hao D. Mai
Sheet	1	**of**	3	Attorney Docket Number	INCEP-001COA

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (If known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-	D495,799	9/7/2004	Hirsch et al.	
		US-	D497,426	10/19/2004	Hirsch et al.	
		US-	D615,203	5/4/2010	Hirsch et al.	
		US-	D696,779	12/31/2013	Hirsch et al.	
		US-	3,090,122	5/21/1963	Erickson	
		US-	3,802,081	4/9/1974	Rogers	
		US-	3,877,691	4/15/1975	Foster	
		US-	4,017,975	4/19/1977	Johnson	
		US-	4,192,071	3/11/1980	Erickson	
		US-	4,718,662	1/12/1988	North	
		US-	4,802,851	2/7/1989	Rhoades	
		US-	5,078,602	1/7/1992	Honoshofsky	
		US-	5,890,899	4/6/1999	Sclafani	
		US-	6,022,214	2/8/2000	Hirsch et al.	
		US-	6,338,627	1/15/2002	Hirsch et al.	
		US-	6,575,746	6/10/2003	Hirsch et al.	
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		US-	7,287,981	10/30/2007	Hirsch	
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		US-	8,529,256	9/10/2013	Hirsch et al.	
		US-	2008/0166684	7/10/2008	Kanas	
		US-	2008/0318183	12/25/2008	Suzman	
		US-	2009/0123886	5/14/2009	Vaska	

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Examiner Signature	/Hao D. Mai/	Date Considered	11/03/2015

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Solmetex Ex. 2016
Ascencare Dental Products v. Solmetex - IPR2025-01175

Substitute for Form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*				Application Number	14/228,046
				Filing Date	March 27, 2014
				First Named Inventor:	Thien Nguyen
				Art Unit	3732
				Examiner Name	Hao D. Mai
Sheet	2	**of**	3	Attorney Docket Number	INCEP-001COA

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (If known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-	2009/0274991	11/5/2009	Black et al.	
		US-	2011/0207076	8/25/2011	Hirsch et al.	
		US-	2011/0311942	12/22/2011	Black et al.	
		US-	2014/0004478	1/2/2014	Hirsch et al.	
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Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

Receipt date: 05/13/2014

Substitute for Form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)				Application Number	14/228,046
				Filing Date	March 27, 2014
				First Named Inventor:	Thien Nguyen
				Art Unit	3732
				Examiner Name	Hao D. Mai
Sheet	3	**of**	3	Attorney Docket Number	INCEP-001COA

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T[2]
		Docket No. INCEP-001 U.S. Patent Application 14/100,323; Office Action mailed 5/6/14	

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Examiner Signature	/Hao D. Mai/	Date Considered	11/03/2015

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Ascenteare Dental Products v. Solmetex - IPR2025-01175

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Receipt date: 06/16/2015

PATENT
Docket No.: INCEP-001COA

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit: 3732 Examiner: Hao D. Mai

Serial No.: 14/228,046 Filed: March 27, 2014

In re Application of: Thien Nguyen

Confirmation No.: 7700 Customer No.: 28661

Title: INTRAORAL DEVICE WITH MESH

List of Co-Pending Patents or Patent Applications That May Be Directed Towards Similar Subject Matter

Examiner's Initials	Application Number	Docket Number	First-Named Inventor	Title	Filing Date
	29/491,367	INCEP-002DCOA	Thien Nguyen	DENTAL MOUTHPIECE	May 20, 2014
	29/477,887	INCEP-003DCOA	Thien Nguyen	BRIDGE STRUCTURE FOR DENTAL MOUTHPIECE	December 27, 2013
	29/477.888	INCEP-004DCOA	Thien Nguyen	CHEEK RETRACTOR FOR DENTAL MOUTHPIECE	December 27, 2013
Examiner's Signature:	/Hao D. Mai/				Date: 11/03/2015

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The Commissioner is hereby authorized to charge any necessary fee to Account Number 50-0612.

Respectfully submitted,
LEWIS ROCA ROTHGERBER LLP

Dated: June 16, 2015

/Tam Thanh Pham/
Tam Thanh Pham (50,565)
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Substitute for Form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*				Application Number	14/228,046
				Filing Date	March 27, 2014
				First Named Inventor:	Thien Nguyen
				Art Unit	3732
				Examiner Name	Hao D. Mai
Sheet	1	**of**	1	Attorney Docket Number	INCEP-001COA

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (If known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-	D734,851	7/21/2015	Nguyen	
		US-				
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		WO 2015/088577	6/18/2015	Incept, Inc.		

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Examiner Signature	/Hao D. Mai/	Date Considered	11/03/2015

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IPR2025-01175

Receipt date: 09/05/2014

Substitute for Form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Complete if Known	
Application Number	14/228,046
Filing Date	March 27, 2014
First Named Inventor:	Thien Nguyen
Art Unit	3732
Examiner Name	Hao D. Mai
Attorney Docket Number	INCEP-001COA

Sheet	1	**of**	1

U.S. PATENT DOCUMENTS

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		US-	2014/0162209	6/12/2014	Nguyen	
		US-	2014/0212838	7/31/2014	Nguyen	
		US-	2014/0212839	7/31/2014	Nguyen	
		US-	2014/0212840	7/31/2014	Nguyen	
		US-	2014/0212841	7/31/2014	Nguyen	
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3] Number[4] Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /H.D.M./

Examiner Signature	/Hao D. Mai/	Date Considered	11/03/2015

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1]Applicant's unique citation designation number (optional). [2]See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3]Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4]For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6]Applicant is to place a check mark here if English language translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SENT FEES OR COMPLETED FORMS TO THIS ADDRESS.

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IPR2025-01175

Based on Form PTO/SB/08A (08-03)

Receipt date: 10/21/2015

Substitute for Form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*				Application Number	14/228,046
				Filing Date	March 27, 2014
				First Named Inventor:	Thien Nguyen
				Art Unit	3732
				Examiner Name	Hao D. Mai
Sheet	1	**of**	1	Attorney Docket Number	INCEP-001COA

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (If known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-			
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3] Number[4] Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]
		EP 2903557	8/12/2015	Incept, Inc.		

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /H.D.M./

Examiner Signature	/Hao D. Mai/	Date Considered	11/03/2015

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1]Applicant's unique citation designation number (optional). [2]See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3]Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4]For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6]Applicant is to place a check mark here if English language translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS.

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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14228046	NGUYEN ET AL.
	Examiner	Art Unit
	HAO D MAI	3732

CPC- SEARCHED		
Symbol	Date	Examiner
A61C17/043,046	11/03/2015	HDM

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
433	93	11/03/2015	HDM

SEARCH NOTES		
Search Notes	Date	Examiner
Inventor Search	11/03/2015	HDM
Review searches of parent case 14/100323	11/03/2015	HDM

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14228046	NGUYEN ET AL.
	Examiner	**Art Unit**
	HAO D MAI	3732

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	11/03/2015								
	1	✓								
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	3	✓								
	4	✓								
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	20	✓								

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L2	50	(US-20080053434-$ or US-20080166684-$ or US-20080318183-$ or US-20090123886-$ or US-20110311942-$ or US-20060063129-$ or US-20090274991-$ or US-20010008752-$ or US-20140162209-$ or US-20140212841-$).did. or (US-3090122-$ or US-3802081-$ or US-3924333-$ or US-4192071-$ or US-4215984-$ or US-4259067-$ or US-5078602-$ or US-5094616-$ or US-5152686-$ or US-5232362-$ or US-5516286-$ or US-6974321-$ or US-7293990-$ or US-7611354-$ or US-7748981-$ or US-8029280-$ or US-8057228-$ or US-3171203-$ or US-6022214-$ or US-1122086-$ or US-4802851-$ or US-4017975-$ or US-4167814-$ or US-5513986-$ or US-D495799-$ or US-6267591-$).did. or (US-6338627-$ or US-6908308-$ or US-3768477-$ or US-3877691-$ or US-4718662-$ or US-6213772-$ or US-3396468-$ or US-2111859-$ or US-2937445-$ or US-4024642-$ or US-4425911-$ or US-6652276-$).did. or (US-2937445-$ or US-2250285-$).did.	US-PGPUB; USPAT; USOCR	ADJ	ON	2015/11/03 11:27
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L5	162	A61C17/046.cpc.	US-PGPUB; USPAT; USOCR	ADJ	ON	2015/11/03 11:28
S1	202	433/93.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2014/05/01 11:08
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		"3426430" | "3455024" | "3456348" | "3483619" | "3557456" | "3722101" | "3864831" | "3881254" | "3913231" | "3916880" | "4017975" | "4019255" | "4053984" | "4074435" | "4167814" | "4215984" | "4259067" | "4260378" | "4325695").PN. OR ("4802851").URPN.				
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S14	78	433/140.ccls. and suction	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2014/05/01 17:25
S15	31	("0674650" | "2482116" | "3090122").PN. OR ("3768477").URPN.	US-PGPUB; USPAT; USOCR	ADJ	ON	2014/05/02 13:00
S16	34	("0590460" | "1042133" | "1401646" | "2830371" | "3090122" | "3768477" | "4053984" | "4215984" | "4259067" | "4260378" | "4632093" | "4992046" | "5037298" | "5232362" | "5460524").PN. OR ("6213772").URPN.	US-PGPUB; USPAT; USOCR	ADJ	ON	2014/05/02 13:03
S17	34	("3090122").URPN.	USPAT	ADJ	ON	2014/05/02 13:04
S18	24	("1122086" | "2672143" | "3722101").PN. OR ("3924333").URPN.	US-PGPUB; USPAT; USOCR	ADJ	ON	2014/05/05 06:48
S19	43	(US-20080053434-$ or US-20080166684-$ or US-20080318183-$ or US-20090123886-$ or US-20110311942-$ or US-20060063129-$).did. or (US-3090122-$ or US-3802081-$ or US-3924333-$ or US-4053984-$ or US-4192071-$ or US-4215984-$ or US-4259067-$ or US-5078602-$ or US-5094616-$ or US-5152686-$ or US-5232362-$ or US-5516286-$ or US-6974321-$ or US-7293990-$ or US-7611354-$ or US-7748981-$ or US-8029280-$ or US-8057228-$ or US-8075310-$ or US-3171203-$ or US-6022214-$ or US-1122086-$ or US-4802851-$ or US-4017975-$ or US-4167814-$ or US-5513986-$).did. or (US-5890899-$ or US-6575746-$ or US-D495799-$ or US-6267591-$ or US-6338627-$ or US-6908308-$ or US-3768477-$ or US-	US-PGPUB; USPAT	ADJ	ON	2014/05/05 08:13

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S20	3	S19 and (silicone)	US-PGPUB; USPAT	ADJ	ON	2014/05/05 08:13
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S22	13	("2603870" | "2937445" | "3090122" | "3924333" | "4024642").PN. OR ("4192071").URPN.	US-PGPUB; USPAT; USOCR	ADJ	ON	2014/05/05 09:04
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S26	47	hirsch.in. and intraoral	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2014/10/15 12:51
S27	14	hirsch.in. and intraoral	US-PGPUB	ADJ	ON	2014/10/15 12:51
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S29	48	("1122086" | "2510125" | "2937445" | "3090122" | "3396468" | "3881254" | "4017975" | "4167814" | "4259067" | "4495945" | "4592344" | "4643172" | "4802851" | "4865545" | "4975057" | "4992046" | "4996976" | "5009595" | "5071347" | "5078602" | "5127411" | "5152686" | "5232362" | "5281134" | "5462435" | "5513986" | "5516286" | "5588836" | "5762496" | "5769635" | "5873718" | "6022214" | "6213772" | "6338627" | "6575746" | "6908308" | "6974321" | "7293990").PN. OR ("7748981").URPN.	US-PGPUB; USPAT; USOCR	ADJ	ON	2014/10/15 13:48
S30	36	("3090122").URPN.	USPAT	ADJ	ON	2014/10/15 13:49
S31	168	(bite or biteblock or intraoral or mouth or mouthpiece) same ((strap or opening or ring) with flush$3 with (groove or recess))	US-PGPUB; USPAT; USOCR;	ADJ	ON	2014/10/15 13:59

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			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S32	1	(12/284900).APP.	USPAT; USOCR	ADJ	ON	2014/10/20 07:32
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S34	18	(bite or biteblock or intraoral or mouth or mouthpiece) same (snap with flush$3 with (groove or recess))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/10/20 07:37
S35	7	"433".clas. and (snap with flush$3 with (groove or recess))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/10/20 07:38
S36	208	"433".clas. and (flush$3 with (groove or recess))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/10/20 07:39
S37	17	"433".clas. and ((flush$3 with (groove or recess)) same (handle or handpiece))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/10/20 07:39
S38	65	"433".clas. and (flush$3 with (groove or recess)) and (handle or handpiece)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/10/20 07:40
S39	71	"433".clas. and (flush$3 with (groove or recess or notch)) and (handle or handpiece)	US-PGPUB; USPAT; USOCR; FPRS;	ADJ	ON	2014/10/20 07:41

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			EPO; JPO; DERWENT; IBM_TDB			
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S41	14	"433".clas. and (flush$3 with (groove or recess or notch) with (ring or strap))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2014/10/20 07:44
S42	1	("20140162209").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2014/10/20 09:44
S43	54	(US-20080053434-$ or US-20080166684-$ or US-20080318183-$ or US-20090123886-$ or US-20110311942-$ or US-20060063129-$ or US-20090274991-$ or US-20010008752-$ or US-20140162209-$ or US-20140212841-$).did. or (US-3090122-$ or US-3802081-$ or US-3924333-$ or US-4053984-$ or US-4192071-$ or US-4215984-$ or US-4259067-$ or US-5078602-$ or US-5094616-$ or US-5152686-$ or US-5232362-$ or US-5516286-$ or US-6974321-$ or US-7293990-$ or US-7611354-$ or US-7748981-$ or US-8029280-$ or US-8057228-$ or US-3171203-$ or US-6022214-$ or US-1122086-$ or US-4802851-$ or US-4017975-$ or US-4167814-$ or US-5513986-$ or US-5890899-$).did. or (US-6575746-$ or US-D495799-$ or US-6267591-$ or US-6338627-$ or US-6908308-$ or US-3768477-$ or US-8297973-$ or US-3877691-$ or US-4718662-$ or US-6213772-$ or US-3396468-$ or US-2111859-$ or US-2937445-$ or US-4024642-$ or US-4425911-$ or US-6652276-$).did. or (US-2937445-$ or US-2250285-$).did.	US-PGPUB; USPAT; USOCR	ADJ	ON	2014/10/20 09:54
S44	10	S43 and transparent	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2014/10/20 09:54
S45	5	((14/228046) or (14/228050) or (14/228054) or (14/228057) or (14/228061)).APP.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2014/10/20 10:35
S46	5	(("20140212837") or ("20140212838") or ("20140212839") or ("20140212840") or	US-PGPUB; USPAT;	OR	OFF	2014/10/20 10:37

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

		("20140212841")).PN.	USOCR; FPRS; EPO; JPO			
S47	645	433/91-92.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2014/11/03 06:02
S48	33	433/91-92.ccls. and (wave or bridge)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2014/11/03 06:02
S49	67	433/91-92.ccls. and (flush$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2014/11/03 06:05
S50	9	433/91-92.ccls. and (flush$3 with surface)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2014/11/03 06:06
S51	368	433/140.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2014/11/03 06:07

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L3	4	"Term Removed"	USPAT	ADJ	ON	2015/11/03 11:27
S2	0	433/93.ccls.		ADJ	ON	2014/05/01 10:51
S3	0	nguyen.in. and intraoral.ti.		ADJ	ON	2014/05/01 10:52
S4	0	"Term Removed"		OR	OFF	2014/05/01 10:52
S52	5	433/91-93,136,140.ccls.		ADJ	ON	2014/11/03 06:11
S53	0	433/91-93,136,140.ccls. and (curv$5 cheek bridge wave).clm.	US-PGPUB; USPAT	WITH	ON	2014/11/03 06:18
S54	0	433/91-93,136,140.ccls. and (curv$5 cheek bridge).clm.	US-PGPUB; USPAT	WITH	ON	2014/11/03 06:18
S55	19	433/91-93,136,140.ccls. and (curv$5 cheek).clm.	US-PGPUB; USPAT	WITH	ON	2014/11/03 06:18
S56	0	(retractor curv$5 cheek bridge wave).clm.	US-PGPUB; USPAT	WITH	ON	2014/11/03 06:19
S57	0	433/91-93,136,140.ccls. and (curv$5 mouth notch strap flush$3).clm.	US-PGPUB; USPAT	WITH	ON	2014/11/03 06:19
S58	0	433/91-93,136,140.ccls. and (curv$5 mouth flush$3).clm.	US-PGPUB; USPAT	WITH	ON	2014/11/03 06:19
S59	0	433/91-93,136,140.ccls. and (curv$5 flush$3).clm.	US-PGPUB; USPAT	WITH	ON	2014/11/03 06:19

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

S60	0	(retractor suction curv$5 mouth notch strap flush$3).clm.	US-PGPUB; USPAT	WITH	ON	2014/11/03 06:19
S61	0	(curv$5 mouth notch strap flush$3).clm.	US-PGPUB; USPAT	WITH	ON	2014/11/03 06:19
S62	0	(curv$5 mouth retractor flush$3).clm.	US-PGPUB; USPAT	WITH	ON	2014/11/03 06:19

11/3/2015 11:30:29 AM
C:\Users\hmai1\Documents\EAST\Workspaces\14228046.wsp

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

Receipt date: 02/17/2015

Substitute for Form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*				Application Number	14/228,046
				Filing Date	March 27, 2014
				First Named Inventor:	Thien Nguyen
				Art Unit	3732
				Examiner Name	Hao D. Mai
Sheet	1	**of**	2	Attorney Docket Number	INCEP-001COA

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (If known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-	4,822,278	4/18/1989	Oliva et al.	
		US-	8,911,232	12/16/2014	Nguyen	
		US-	2006/0084031	4/20/2006	Hirsch et al.	
		US-	2013/0252193	9/26/2013	Bowman et al.	
		US-				
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		US-				

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3] Number[4] Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /H.D.M./

Examiner Signature	/Hao D. Mai/	Date Considered	11/03/2015

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1]Applicant's unique citation designation number (optional). [2]See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3]Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4]For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6]Applicant is to place a check mark here if English language translation is attached.

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SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

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IPR2025-01175

Based on Form PTO/SB/08A (08-03)

Receipt date: 02/17/2015

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				Filing Date	March 27, 2014
				First Named Inventor:	Thien Nguyen
				Art Unit	3732
				Examiner Name	Hao D. Mai
Sheet	2	**of**	2	Attorney Docket Number	INCEP-001COA

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T[2]
		PCT Application No. PCT/US2014/032892 International Search Report and Written Opinion dated 9/4/14	
		Australian Patent Application No. 2014202637; AU Examination Report dated 1/23/15	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /H.D.M./

Examiner Signature	/Hao D. Mai/	Date Considered	11/03/2015

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Ascendis Dental Products v. Solmetex - IPR2025-01175
Solmetex 2016

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*				Application Number	14/228,046
				Filing Date	March 27, 2014
				First Named Inventor:	Thien Nguyen
				Art Unit	3732
				Examiner Name	Hao D. Mai
Sheet	1	**of**	2	Attorney Docket Number	INCEP-001COA

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (If known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-	3,857,181	12/31/1974	Rappaport	
		US-				
		US-				
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		US-				
		US-				

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Examiner Signature		Date Considered	

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Sonnetex Ex. 2016
IPR2025-01175

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*				Application Number	14/228,046
				Filing Date	March 27, 2014
				First Named Inventor:	Thien Nguyen
				Art Unit	3732
				Examiner Name	Hao D. Mai
Sheet	2	**of**	2	Attorney Docket Number	INCEP-001COA

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T[2]
		Docket No. INCEP-001COB U.S. Patent Application 14/228,050; Office Action mailed 11/6/15	
		Docket No. INCEP-001COC U.S. Patent Application 14/228,054; Office Action mailed 12/3/15	
		Docket No. INCEP-001COD U.S. Patent Application 14/228,057; Office Action mailed 11/20/15	
		Docket No. INCEP-001COE U.S. Patent Application 14/228,061; Office Action mailed 12/4/15	
		Docket No. INCEP-003DCOA U.S. Patent Application 29/477,887 Office Action mailed 11/127/15	
		Docket No. INCEP-004DCOA U.S. Patent Application 29/477,888 Office Action mailed 12/2/15	

Examiner Signature		Date Considered	

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AscendTeare Dental Products v. Solmetex - IPR2025-01175
Solmetex 2016

Electronic Acknowledgement Receipt

EFS ID:	24538850
Application Number:	14228046
International Application Number:	
Confirmation Number:	7700
Title of Invention:	INTRAORAL DEVICE WITH MESH
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	28661
Filer:	Clara Kitting Chiu/Lea Fong
Filer Authorized By:	Clara Kitting Chiu
Attorney Docket Number:	INCEP-001COA
Receipt Date:	12-JAN-2016
Filing Date:	27-MAR-2014
Time Stamp:	10:15:24
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	INCEP-001COA_IDS_Statement_1-6-16.pdf	20338 22f8fd8868d12da9293cdca4a5d3ee05a99f30cf	no	2

Warnings:	
Information:	

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

2	Information Disclosure Statement (IDS) Form (SB08)	INCEP-001COA_IDS_1449_1-6-16.pdf	63046 564a2a1a1be4581c2fbbcf8c77874da7c7b1d171	no	2

Warnings:

Information:

This is not an USPTO supplied IDS fillable form

Total Files Size (in bytes):	83384

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit: 3732 | Examiner: Hao D. Mai

Serial No.: 14/228,046 | Filed: March 27, 2014

In re Application of: Thien Nguyen

Confirmation No.: 7700 | Customer No.: 28661

Title: INTRAORAL DEVICE WITH MESH

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Under 37 C.F.R. § 1.56, and 1.97-1.98

SIR:

Pursuant to the provisions of 37 C.F.R. §§ 1.56 and 1.97-98 of the Rules of Practice in Patent Cases, enclosed herewith is form PTO-SB-08, listing several references. The Examiner is requested to make these references of official record in the application.

The references cited may be material to examination of the application and are submitted in compliance with the Applicants' duty of disclosure as defined by 37 C.F.R. § 1.56.

Applicants hereby declare, pursuant to 37 C.F.R. §1.97(e)(2), that no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of the person signing the certification after having made a reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 C.F.R. §1.56(c) more than three months prior to the filing of the information disclosure statement.

No representation is made or intended as to the completeness of this list, nor is the inclusion of any reference on this list an admission that it is prior art or pertinent to this application.

The Commissioner is hereby authorized to charge any necessary fee to Account Number 50-0612.

Respectfully submitted,
LEWIS ROCA ROTHGERBER CHRISTIE LLP

Dated: January 6, 2016

/Clara C. Low/
Clara C. Low (73,809)
LEWIS ROCA ROTHGERBER CHRISTIE LLP
4300 Bohannon Drive, Suite 230
Menlo Park, CA 94025
TEL (650) 391-1380
ipdockets@lrrc.com

Substitute for Form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Complete if Known	
Application Number	14/228,046
Filing Date	March 27, 2014
First Named Inventor:	Thien Nguyen
Art Unit	3732
Examiner Name	Hao D. Mai
Attorney Docket Number	INCEP-001COA

Sheet	1	**of**	2

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (If known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-	2012/0015320	1/19/2012	Koo	
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3] Number[4] Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]

Examiner Signature		Date Considered	

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IPR2025-01175

Based on Form PTO/SB/08A (08-03)

Substitute for Form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*				Application Number	14/228,046
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				First Named Inventor:	Thien Nguyen
				Art Unit	3732
				Examiner Name	Hao D. Mai
Sheet	2	**of**	2	Attorney Docket Number	INCEP-001COA

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T[2]
		European Patent Application No. 14721736.8; Extended European Search Report dated 10/20/15	

Examiner Signature		Date Considered	

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Ascendent Dental Products v. Solmetex - IPR2025-01175
Solmetex Ex. 2016

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Group Art Unit: 3732 | Examiner: Hao D. Mai

Serial No.: 14/228,046 | Filed: March 27, 2014

In re Application of: Thien Nguyen

Confirmation No.: 7700 | Customer No.: 28661

Title: INTRAORAL DEVICE WITH MESH

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT
Under 37 C.F.R. § 1.56, and 1.97-1.98

SIR:

Pursuant to the provisions of 37 C.F.R. §§ 1.56 and 1.97-98 of the Rules of Practice in Patent Cases, enclosed herewith is form PTO-SB-08, listing several references. The Examiner is requested to make these references of official record in the application.

The references cited may be material to examination of the application and are submitted in compliance with the Applicants' duty of disclosure as defined by 37 C.F.R. § 1.56.

Applicants hereby declare, pursuant to 37 C.F.R. §1.97(e)(1), that each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement.

No representation is made or intended as to the completeness of this list, nor is the inclusion of any reference on this list an admission that it is prior art or pertinent to this application.

The Commissioner is hereby authorized to charge any necessary fee to Account Number 50-0612.

Respectfully submitted,
LEWIS ROCA ROTHGERBER CHRISTIE LLP

Dated: January 6, 2016

/Clara C. Low/
Clara C. Low (73,809)
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Electronic Acknowledgement Receipt

EFS ID:	24538862
Application Number:	14228046
International Application Number:	
Confirmation Number:	7700
Title of Invention:	INTRAORAL DEVICE WITH MESH
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	28661
Filer:	Clara Kitting Chiu/Lea Fong
Filer Authorized By:	Clara Kitting Chiu
Attorney Docket Number:	INCEP-001COA
Receipt Date:	12-JAN-2016
Filing Date:	27-MAR-2014
Time Stamp:	10:16:48
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	INCEP-001COA_IDS_1449-2_1-6-16.pdf	62775 ff3b139ee80bd466f3346c975390b16f65c7b303	no	2

Warnings:	
Information:	

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Ascentcare Dental Products v. Solmetex - IPR2025-01175

This is not an USPTO supplied IDS fillable form					
2	Non Patent Literature	EP_14721736_Extended_Search_Report_10-20-15.pdf	521139 53ce197f9b92864fd92e81ab5f1c8c92bb9766a4	no	6
Warnings:					
Information:					
3	Transmittal Letter	INCEP-001COA_IDS_Statement-2_1-6-16.pdf	20009 600393414000016db0233c418ce427f4c117d4ed4	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	603923		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTOR(S):	Nguyen et al.
APPLICATION NO.:	14/228,046
FILING DATE:	March 27, 2014
TITLE:	Intraoral Device with Mesh
ART UNIT:	3732
EXAMINER:	Hao D. Mai
CONFIRM. NO.:	7700
ATTY.DKT.NO.:	INCEP-001COA

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COMMISSIONER FOR PATENTS
P.O. BOX 1450
ALEXANDRIA, VA 22313-1450

AMENDMENT

Examiner Mai:

In response to the November 6, 2015 Office Action (*Office Action*), please enter the following amendments to the **specification** and **claims**, which commence on **pages two** and **three**, respectively. The Applicants' **remarks** and **conclusion** appear beginning on **pages six** and **nine**, respectively.

IN THE SPECIFICATION

PLEASE AMEND THE ABSTRACT AS FOLLOWS:

A dental mouthpiece is provided that may be attached to a high-suction dental adapter for the purpose of assisting the dental staff during dental procedures through chair-side, hands-free suction, and isolation. Such mouthpiece may ~~comprise~~ include a main body portion, a cheek retractor portion, and a suction connector portion. In some embodiments, the main body portion, cheek retractor portion, and suction connector portion (and sub-portions thereof) may be molded in one piece, preferably by injection molding. In an exemplary embodiment, the mouthpiece may be made of a material that is flexible, translucent, conducive to injection molding, high heat-resistant, and autoclavable. Such a material may include silicone. Because the mouthpiece may be made of high heat-resistant and autoclavable material, such a mouthpiece may be reusable.

IN THE CLAIMS

PLEASE AMEND THE CLAIMS AS FOLLOWS:

1. (currently amended) A dental mouthpiece comprising:

a main body portion configured as a pocket having an interior defined by:

an anterior wall having a shape defined by an exterior edge, wherein the anterior wall includes an opening to the interior of the pocket,

a posterior wall having a shape corresponding to the defined shape of the anterior wall, wherein an exterior edge of the posterior wall shape corresponds to the exterior edge of the anterior wall, and

a side wall connecting the exterior edge of the anterior wall to the corresponding exterior edge of the posterior wall, and wherein at least part of the side wall comprises a plurality of perforations.

2. (original) The dental mouthpiece of claim 1, wherein the perforations on the side wall are spaced to comprise a mesh.

3. (currently amended) The dental mouthpiece of claim 1, wherein the anterior wall further comprises ~~one or more~~ a plurality of perforations.

4. (original) The dental mouthpiece of claim 3, wherein the perforations on the anterior wall are spaced to comprise a mesh.

5. (original) The dental mouthpiece of claim 1, wherein the posterior wall further comprises one or more perforations.

6. (original) The dental mouthpiece of claim 5, wherein the perforations on the posterior wall are spaced to comprise a mesh.

7. (currently amended) The dental mouthpiece of claim 1, wherein the opening from the anterior wall ~~further~~ to the pocket includes a slit along a longitudinal axis of the main body.

8. (previously presented) The dental mouthpiece of claim 1, further comprising a suction connector portion that connects the interior of the pocket to a vacuum source, wherein activation of the vacuum source provides suction of fluids through the perforations in the side wall into the interior of the pocket.

9. (previously presented) The dental mouthpiece of claim 1 further comprising a bridge structure protruding from an interior surface of the posterior wall and unattached to the anterior wall, the protruding bridge structure comprising a plurality of protrusions collectively providing spaced contact points that keep the anterior wall separated from the posterior wall during suction.

10. (previously presented) The dental mouthpiece of claim 9, wherein the provided suction further draws fluids through spaces between the protrusions of the bridge structure towards the vacuum source.

11. (previously presented) The dental mouthpiece of claim 1, further comprising a cheek retractor portion connected to the main body portion and having a surface that applies pressure when the dental mouthpiece is bent, wherein the pressure is based on resilience of a material from which the cheek retractor is formed.

12. (previously presented) The dental mouthpiece of claim 11, wherein the cheek retractor portion comprises an extension of the pocket, wherein a side wall of the extension comprises one or more perforations.

13. (currently amended) The dental mouthpiece of claim 11, further comprising a stability bar protruding from an interior surface of the posterior wall along [[a]] the longitudinal axis of the main body and extending through at least part of the cheek retractor, wherein a thickness of the stability bar corresponds to resilience by which the cheek retractor portion applies pressure during bending.

14. (original) The dental mouthpiece of claim 1, wherein the main body portion is formed by injection-molding as one piece.

15. (previously presented) The dental mouthpiece of claim 1, wherein a material from which the main body is formed is a flexible, translucent, high heat-resistant, autoclavable silicone-based material.

16. (original) The dental mouthpiece of claim 1, wherein the anterior wall and the posterior wall have different thicknesses.

17. (original) The dental mouthpiece of claim 1, further comprising a detachable mouth prop.

18. (original) The dental mouthpiece of claim 17, wherein the detachable mouth prop comprises a bite block portion and a strap portion.

19. (previously presented) The dental mouthpiece of claim 18, wherein the bite block portion and the strap portion are injection-molded in one piece.

20. (original) The dental mouthpiece of claim 18, wherein the bite block portion comprises an opening corresponding to a plug connected to the main body.

REMARKS

Claim Amendments

Claims 1-20 were pending in this application. Claim 7 is cancelled. Claims 1 and 13 have been amended. Support for the amendments may be found at least in paragraph [0039] and FIG. 1A in Applicants' filed specification. No new matter has been added by way of these amendments.

Amendment to the Specification

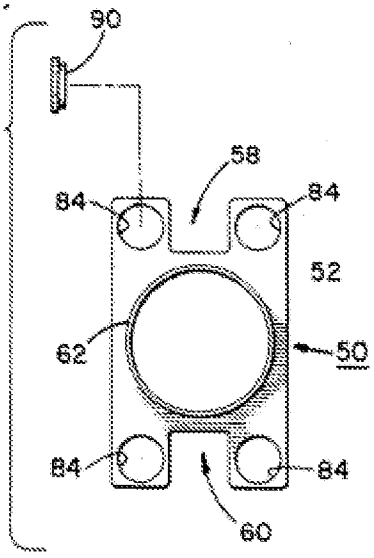
The Examiner objects to the user of the term "comprise" in the Abstract. *Office Action*, 2. The Applicants have amended the abstract to replay "comprise" with "include." As such, the Applicants submit that the objection to the specification has been overcome.

Rejection under 35 U.S.C. § 102

The Examiner stated that claims 1-14 and 16-20 are anticipated by U.S. patent number 4,802,851 (hereinafter *Rhoades*). *Office Action*, 3. The Applicants respectfully traverse the rejections.

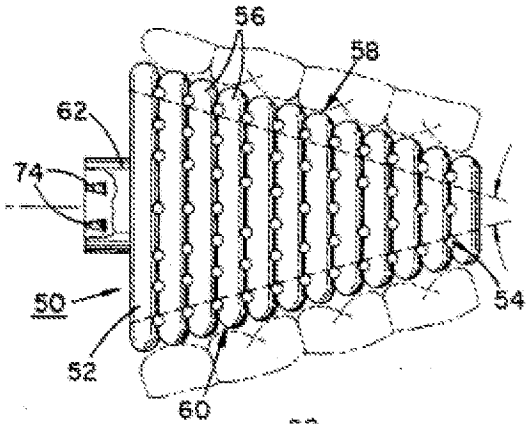
"Because the hallmark of anticipation is prior invention, the prior art reference—in order to anticipate under 35 U.S.C. § 102—must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements 'arranged as in the claim.'" *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1370 (Fed. Cir. 2008) (citations omitted). *Rhoades* fails to teach at least the claimed 'wherein the anterior wall includes an *opening to the interior of the pocket*.'

In contrast, the "tooth channel" (*e.g.*, channel 58) disclosed in *Rhoades* fails to teach any opening to the interior of a pocket. *Rhoades,* FIG. 4 (provided below); 3:29-33.



The *Office Action* contends that channel 58 teaches the claimed anterior wall. *Rhoades* fails, however, to teach any perforations in the wall of channel 58. That is because, as disclosed by *Rhoades*, the tooth channels are used to allow "several of the patient's teeth [to] removably rest when the body is inserted in the patient's mouth." *Rhoades*, 3:29-33. As such, usage of the *Rhoades* mouthpiece entails the patient's teeth rests against the surface of the channel, which would render useless perforations (which again, are absent from *Rhoades*' channel).

Perforations 54 are only taught by *Rhoades* as appearing on body 52, which the *Office Action* purports as teaching the side wall. The same perforations 54 on a single wall cannot teach the claimed perforations in three distinct walls (*e.g.*, anterior wall, posterior wall, side wall), as claimed. The parts of the *Rhoades* mouthpiece purported to teach the claimed anterior wall (*i.e.*, channel 58) and the posterior wall (*i.e.*, channel 60) are not taught as having any perforations.



Rather, their explicit purpose (*i.e.*, acting as a place for a patient to rest their teeth) teaches away from perforations, as such perforations would be blocked during usage. *Rhoades* not only fails to explicitly teach any perforations in its tooth channels, but *Rhoades* further teaches away from the claimed perforations and their respective placement on the anterior and posterior walls.

Rhoades therefore fails to disclose all the elements of the independent claim. Further, because each of the dependent claims incorporates by reference all the limitations of the independent claim from which it depends, the dependent claims are allowable for at least the same reasons.

Rejection under 35 U.S.C. § 103

Claim 15 is rejected under 35 U.S.C. § 103 as being unpatentable over *Rhoades* in view of U.S. patent number 5,890, 899 (hereinafter *Sclafani*). *Office Action*, 5. The Applicants respectfully traverse the rejections.

To support a conclusion that the claim would have been obvious requires that "**all** the claimed elements were known in the prior art and that one skilled in the art could have combined the elements as claimed." MPEP 2143.02 (citing *KSR v. Teleflex*, 127 S.Ct. 1727, 1739 (2007)). The Applicants respectfully submit that the cited references, taken alone or in combination, fail to teach each and every element of independent claim 1. *Sclafani* is silent regarding the Applicants' claimed 'wherein the anterior wall includes an *opening to the interior of the pocket*,' thereby failing to cure *Rhoades*' failure to teach the same.

Rhoades and *Sclafani*—individually or in combination—therefore fail to disclose all the elements of the independent claim. For at least the foregoing reasons, the independent claim is patentable. Further, because each of the dependent claims incorporates by reference all the limitations of the independent claim from which it depends, the dependent claims are allowable for at least the same reasons. Accordingly, the Applicants respectfully request the withdrawal of the § 103 rejections of the claims.

CONCLUSION

The Applicants have evidenced the failure of *Rhoades* and *Sclafani*—individually or in combination—to disclose all the limitations of the independent claim.

Any claim dependent upon the aforementioned independent claim—either directly or via an intermediate dependent claim—is allowable for at least the same reasons as the claim from which it depends.

As all rejections have been overcome, the Applicants contend the present application is in condition for allowance. The Examiner is invited to contact the Applicants' undersigned representative with any questions concerning the present amendment.

The Director is authorized to charge any fees associated with or required by this filing to Deposit Account No. 500612, including any extension of time fees required for replying to the Office Action up to the current date.

Respectfully submitted,
Nguyen et al.

January 29, 2016

By: /Tam Thanh Pham/

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Electronic Acknowledgement Receipt

EFS ID:	24767667
Application Number:	14228046
International Application Number:	
Confirmation Number:	7700
Title of Invention:	INTRAORAL DEVICE WITH MESH
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	28661
Filer:	TamThanh Thi Pham
Filer Authorized By:	
Attorney Docket Number:	INCEP-001COA
Receipt Date:	29-JAN-2016
Filing Date:	27-MAR-2014
Time Stamp:	15:12:07
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		INCEP-001COA_Response.pdf	160875 13425b2b474db7772b83bcd39c82a4774798100a	yes	9

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	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Abstract	2	2
	Claims	3	5
	Applicant Arguments/Remarks Made in an Amendment	6	9
Warnings:			
Information:			
	Total Files Size (in bytes):	160875	

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New International Application Filed with the USPTO as a Receiving Office
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PTO/SB/06 (09-11)
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/228,046	Filing Date 03/27/2014	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT 01/29/2016	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0	X $40 =	0
Independent (37 CFR 1.16(h))	* 1	Minus	***3	= 0	X $210 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

AMENDMENT	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/GYZELL JOHNSON SMITH/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
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POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:

■ Practitioners associated with Customer Number: 138718

OR

☐ Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number

Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignments documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

■ The address associated with Customer Number: 138718

OR

☐

Firm or Individual Name			
Address			
City		State	Zip
Country			
Telephone		Email	

Assignee Name and Address: Incept, Inc.
92 Corporate Park, Suite C #818
Irvine, CA 92606

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of the practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature		Date	2/11/2016
Name	Thien Nguyen	Telephone	949-825-5984
Title	CEO		

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Ascentcare Dental Products v. Solmetex - IPR2023-01175

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The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

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STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Incept, Inc.

Application No./Patent No.: 14/228,046 Filed/Issue Date: March 27, 2014

Titled: Intraoral Device with Mesh

Incept, Inc., a corporation

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. ☑ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel 032545, Frame 0891, or for which a copy thereof is attached.

B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

   1. From: _____ To: _____

      The document was recorded in the United States Patent and Trademark Office at

      Reel _____, Frame _____, or for which a copy thereof is attached.

   2. From: _____ To: _____

      The document was recorded in the United States Patent and Trademark Office at

      Reel _____, Frame _____, or for which a copy thereof is attached.

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
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STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

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4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☐ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Tam Thanh Pham/	February 11, 2016
Signature	Date
Tam Thanh Pham	50,565
Printed or Typed Name	Title or Registration Number

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	24895172
Application Number:	14228046
International Application Number:	
Confirmation Number:	7700
Title of Invention:	INTRAORAL DEVICE WITH MESH
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	28661
Filer:	TamThanh Thi Pham
Filer Authorized By:	
Attorney Docket Number:	INCEP-001COA
Receipt Date:	11-FEB-2016
Filing Date:	27-MAR-2014
Time Stamp:	18:11:40
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	INCEPT_POA.pdf	89110 2fe57627077dc0e78ae26d7b46cb17a358d b6dab	no	2

Warnings:

Information:

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2	Assignee showing of ownership per 37 CFR 3.73	INCEP-001COA_373C.pdf	739392 465f0cf3dd14f1a3229b2a377d6ec8b6a9526805	no	3

Warnings:	
Information:	
Total Files Size (in bytes):	828502

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/228,046	03/27/2014	Thien Nguyen	INCEP-001COA

CONFIRMATION NO. 7700

138718
Polsinelli LLP
3 Embarcadero Center
Suite 1350
San Francisco, CA 94111

POA ACCEPTANCE LETTER

OC00000080860012

Date Mailed: 02/25/2016

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 02/11/2016.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/vnguyen/

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UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/228,046	03/27/2014	Thien Nguyen	INCEP-001COA

CONFIRMATION NO. 7700

POWER OF ATTORNEY NOTICE

28661
Lewis Roca Rothgerber Christie LLP
4300 Bohannon Drive
Suite 230
Menlo Park, CA 94025

OC000000080859991

Date Mailed: 02/25/2016

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 02/11/2016.

- The Power of Attorney to you in this application has been revoked by the applicant. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/vnguyen/

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/228,046	03/27/2014	Thien Nguyen	INCEP-001COA	7700

138718 7590 06/06/2016

Polsinelli LLP
3 Embarcadero Center
Suite 1350
San Francisco, CA 94111

EXAMINER
MAI, HAO D

ART UNIT	PAPER NUMBER
3732	

NOTIFICATION DATE	DELIVERY MODE
06/06/2016	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspt@polsinelli.com
sfpatent@polsinelli.com

Office Action Summary	Application No. 14/228,046	Applicant(s) NGUYEN ET AL.	
	Examiner HAO D. MAI	Art Unit 3732	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01/29/2016*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1-20* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-20* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

4) ☐ Other: _____.

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DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of pre-AIA 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claim 1-8, 11-14, and 16-20 are rejected under pre-AIA 35 U.S.C. 102(b) as anticipated by Black et al. (2009/0274991 A1).**

Regarding claim 1, Black et al. discloses a dental mouthpiece comprising: a main body portion 40 configured as a pocket 41 having an interior defined by: an anterior wall 48b having a shape defined by an exterior edge, wherein the anterior wall includes an opening 47 to the interior of the pocket (paragraph 85), a posterior wall 48a having a shape corresponding to the defined shape of the anterior wall, wherein an exterior edge of the posterior wall shape corresponds to the exterior edge of the anterior wall, and a side wall connecting the exterior edge of the anterior wall to the corresponding exterior edge of the posterior wall (Figs. 6A-6C; paragraph 82), and wherein at least part of the side wall comprises a plurality of perforations 42 (Fig. 3B, paragraph 80).

As to claims 2-6, Fig. 4C shows the anterior and posterior walls comprising a plurality of perforations 242, 243, and the holes shown but unmarked; the side wall is shown having a mesh 64 (Fig. 6A), and the perforations on the anterior and posterior walls are spaced to

comprise a mesh (Fig. 4C). Alternatively, Black et al. also a mesh 44 on anterior and posterior walls 40a, 40b (Fig. 3A; paragraph 85). **As to claim 7**, the opening 47 is considered to be a slit along a longitudinal axis of the main body (Figs. 3A-3B). **As to claim 8**, note the suction connector portion 46 (Fig. 6A; abstract; paragraph 85, 88). **As to claims 11-12**, note the cheek retractor portion 45 having a surface that applies pressure when the mouthpiece is bent (Figs. 3A-3B); and an extension 241 of the pocket, the side wall of the extension comprising one more perforation forming valve 248 (Figs. 4A-4B; paragraphs 87-88).

As to claim 14, note that the claim language "by injection-molded" is a product-by-process recitation in a product claim. Even though product-by-process recitation is limited by and defined by the recited process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe,* 777 F.2d 695, 227 USPQ 964 (Fed. Cir. 1985). In this case, Black et al. discloses the end product and the structures thereof as claimed as detailed above; the device shown comprised of the main body, cheek retractor portion, and suction connection portion, all of which are essential portions forming the device as one piece. The burden is shifted to applicant to show an unobvious difference between Black et al.' device and the invention that would have resulted from the injection molding process.

As to claim 16, the embodiment of Fig. 24c shows the wall thickness being different due to the longitudinal stiffener 447 between the anterior and posterior walls (Fig. 24c).

As to claims 17-20, Black et al. discloses detachable mouth prop 10 having a bite block portion 10 and a strap portion 12 corresponding to a plug 65 of the main body (Fig. 6A).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. **Claims 9-10 rejected under 35 U.S.C. 103(a) as being unpatentable over Black et al. in view of Riddle (1,471,207).** Black et al. discloses the invention substantially as claimed except for a bridge structure. Riddle discloses a saliva ejector tube having a bridge structure 5 protruding from an interior surface of a wall thereof and unattached to the opposite wall. The protruding bridge comprises a plurality of protrusions (waved wire) to keep the walls separated from one another during suction (Fig. 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate such bridge into Black et al.' device in order to prevent collapse when under suction pressure as explicitly taught by Riddle.

6. **Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Black et al. in view of Sclafani (5,890,899).** Black et al. discloses the invention substantially as claimed except for the material being flexible, translucent, silicone-base. Sclafani discloses a dental suction isolator device formed of silicone-based material (Figs. 1-9, column 8 lines 10-15). It would have been obvious to one having ordinary skill in the art at the time the invention was made to make Black et al.' device from silicone-based material as taught by Sclafani to be a known alternative suitable known material while yielding the same and/or predictable results.

Response to Arguments

7. Applicant's arguments with respect to the amended claims have been considered and are persuasive as having overcome the previous ground(s) of rejection under Rhoades. However, upon further considerations, the claims are hereby rejected under Black et al. as detailed above.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Hao D. Mai whose telephone number is (571) 270-3002. The examiner can normally be reached on Monday-Friday 8:00AM – 4:30PM. If attempts to reach the examiner by telephone are unsuccessful, please contact the examiner's supervisor, Cris Rodriguez, at (571) 272-4964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

9. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hao D Mai/
Examiner, Art Unit 3732

/Cris L. Rodriguez/
Supervisory Patent Examiner, Art Unit 3732

Notice of References Cited	Application/Control No. 14/228,046	Applicant(s)/Patent Under Reexamination NGUYEN ET AL.	
	Examiner HAO D. MAI	Art Unit 3732	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-1,471,207 A	10-1923	RIDDLE NAPOLEON B	A61C17/043	138/109
	B	US-				
	C	US-				
	D	US-				
	E	US-				
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	76	(US-20080053434-$ or US-20080166684-$ or US-20080318183-$ or US-20090123886-$ or US-20110311942-$ or US-20060063129-$ or US-20090274991-$ or US-20010008752-$ or US-20140162209-$ or US-20140212841-$ or US-20140349249-$ or US-20140276494-$ or US-20030044604-$ or US-20040194787-$ or US-20120015320-$).did. or (US-3090122-$ or US-3802081-$ or US-3924333-$ or US-4192071-$ or US-4215984-$ or US-4259067-$ or US-5078602-$ or US-5094616-$ or US-5152686-$ or US-5232362-$ or US-5516286-$ or US-6974321-$ or US-7293990-$ or US-7611354-$ or US-7748981-$ or US-8029280-$ or US-8057228-$ or US-3171203-$ or US-6022214-$ or US-1122086-$ or US-4802851-$ or US-4017975-$ or US-4167814-$ or US-5513986-$ or US-6575746-$ or US-D495799-$).did. or (US-6267591-$ or US-6338627-$ or US-6908308-$ or US-3768477-$ or US-8297973-$ or US-3877691-$ or US-4718662-$ or US-6213772-$ or US-3396468-$ or US-2111859-$ or US-2937445-$ or US-4024642-$ or US-4425911-$ or US-6652276-$ or US-5762496-$ or US-3742607-$ or US-9044293-$ or US-3758950-$ or US-5547376-$ or US-8556872-$ or US-3857181-$).did. or (US-2937445-$ or US-2250285-$ or US-3101543-$ or US-1471207-$ or US-3256885-$).did.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2016/05/31 12:57
L2	4	("1471207").URPN.	USPAT	ADJ	ON	2016/05/31 13:02
S67	1	(14/228046).APP.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2016/05/31 10:51
S68	1	(12/284900).APP.	USPAT; USOCR	ADJ	ON	2016/05/31 11:37
S69	50	("20040033468" | "20060063129" | "20070231773" | "20070259307" | "20080318183" | "2111859" | "2937445" | "3090122" | "4024642" | "4167814" | "4259067" | "4425911" | "4583527" | "4802851" | "4906188" | "4975057" | "5152686" | "5232362" | "5366489" | "5438976" | "5496363" | "5513986" | "5516286" | "5588836" | "5725370" | "5762496" | "5873718" | "5924866" | "6022214" | "6149430" | "6213772" | "6244866" | "6338627" | "6379147" |	US-PGPUB; USPAT; USOCR	ADJ	ON	2016/05/31 11:37

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Ascentcare Dental Products v. Solmetex - IPR2025-01175

		"6575746" | "6634884" | "6652276" | "6655960" | "6939134" | "6974321" | "6981870" | "7293990").PN. OR ("8029280").URPN.				
S70	4	("3802081").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2016/05/31 12:23
S71	0	("suctionand(collapsewithprevent)").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2016/05/31 12:25
S72	3399	suction and (collapse with prevent)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2016/05/31 12:25
S73	0	A61C17/043.cpc. and suction and (collapse with prevent)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2016/05/31 12:25
S74	3	A61C17/043.cpc. and suction and (collapse with prevent$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2016/05/31 12:25
S75	2	A61C17/046.cpc. and suction and (collapse with prevent$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2016/05/31 12:26
S76	2	A61C17/046.cpc. and (collapse with prevent$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2016/05/31 12:27
S77	6	A61C17/043.cpc. and (collapse with prevent$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2016/05/31 12:27
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Ascentcare Dental Products v. Solmetex - IPR2025-01175

						12:28
S79	1	433/93.ccls. and (prevent$3 with collapse)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2016/05/31 12:36
S80	111	dental and suction and (prevent$3 with collapse)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2016/05/31 12:37
S81	72	dental and aspiration and (prevent$3 with collapse)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2016/05/31 12:51
S82	3	("20110040285" | "4204328" | "5509802").PN. OR ("8556872").URPN.	US-PGPUB; USPAT; USOCR	ADJ	ON	2016/05/31 12:51
S83	10	("2603870" | "2937445").PN. OR ("3802081").URPN.	US-PGPUB; USPAT; USOCR	ADJ	ON	2016/05/31 12:54

EAST Search History (Interference)

<This search history is empty>

5/31/2016 1:28:11 PM
C:\Users\hmai1\Documents\EAST\Workspaces\14228046.wsp

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14228046	NGUYEN ET AL.
	Examiner	**Art Unit**
	HAO D MAI	3732

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	11/03/2015	05/31/2016							
	1	✓	✓							
	2	✓	✓							
	3	✓	✓							
	4	✓	✓							
	5	✓	✓							
	6	✓	✓							
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	16	✓	✓							
	17	✓	✓							
	18	✓	✓							
	19	✓	✓							
	20	✓	✓							

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14228046	NGUYEN ET AL.
	Examiner	Art Unit
	HAO D MAI	3732

CPC- SEARCHED		
Symbol	Date	Examiner
A61C 17/043,046	11/03/2015	HDM
Update Search	05/31/2016	HDM

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
433	93	11/03/2015	HDM

SEARCH NOTES		
Search Notes	Date	Examiner
Inventor Search	11/03/2015	HDM
Review searches of parent case 14/100323	11/03/2015	HDM
Update Search	05/31/2016	HDM

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

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Substitute for Form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Complete if Known	
Application Number	14/228,046
Filing Date	March 27, 2014
First Named Inventor:	Thien Nguyen
Art Unit	3732
Examiner Name	Hao D. Mai
Attorney Docket Number	INCEP-001COA

Sheet	1	of	2

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.'	Document Number Number-Kind Code[2](If known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-	4,167,814	9/18/1979	Schubert	
		US-	9,089,389	7/28/2015	Hirsch et al.	
		US-	2006/0063126	3/23/2006	Aloise et al.	
		US-	2013/0095450	4/18/2013	Ames	
		US-	2015/0305842	10/29/2015	Hirsch et al.	
		US-	2015/0335409	11/26/2015	Hirsch	
		US-				
		US-				
		US-				
		US-				
		US-				
		US-				
		US-				
		US-				
		US-				

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.'	Foreign Patent Document Country Code[3] Number[4] Kind Codes (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T6

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 'Applicant's unique citation designation number (optional). [2]See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3]Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4]For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6]Applicant is to place a check mark here if English language translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SENT FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO:

Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Based on Form PTO/SB/08A (08-03)

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Ascentcare Dental Products v. Solmetex - IPR2025-01175

Substitute for Form 1449/PTO	Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*	Application Number	14/228,046
	Filing Date	March 27, 2014
	First Named Inventor:	Thien Nguyen
	Art Unit	3732
	Examiner Name	Hao D. Mai
Sheet 2 of 2	Attorney Docket Number	INCEP-001COA

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No'	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T^2
		Docket No. INCEP-001COB U.S. Patent Application 14/228,050; Final Office Action mailed 5/20/16	
		Docket No. INCEP-001COD U.S. Patent Application 14/228,057; Final Office Action mailed 6/7/16	
		Docket No. INCEP-001COE U.S. Patent Application 14/228,061; Final Office Action mailed 6/30/16	
		Docket No. INCEP-003DCOA U.S. Patent Application 29/477,887 Final Office Action mailed 6/1/16	
		Docket No. INCEP-004DCOA U.S. Patent Application 29/477,888 Final Office Action mailed 6/1/16	

Examiner Signature		Date Considered	

*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

'Applicant's unique citation designation number (optional). 'Applicant is to place a check mark here if English Translation is attached.

This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450 Alexandria, Virginia 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Ascencare Dental Products v. Solmetex - Solmetex Ex. 2016 IPR2025-01175

Electronic Acknowledgement Receipt

EFS ID:	26351212
Application Number:	14228046
International Application Number:	
Confirmation Number:	7700
Title of Invention:	INTRAORAL DEVICE WITH MESH
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	138718
Filer:	Elton Franklin Dean III/Lea Fong
Filer Authorized By:	Elton Franklin Dean III
Attorney Docket Number:	INCEP-001COA
Receipt Date:	18-JUL-2016
Filing Date:	27-MAR-2014
Time Stamp:	10:50:09
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	INCEP-001COA_IDS_Statement_7-14-16.pdf	81101 e3155ac2f0831b42f970c9f118cefbe93880f339	no	2

Warnings:

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Ascentcare Dental Products v. Solmetex - IPR2025-01175

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	INCEP-001COA_IDS_1449_7-14-16.pdf	187047 0d8ac568793d5adf813f7475295c55cb3d7d2fff	no	2
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
			Total Files Size (in bytes):	268148	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit: 3732 | Examiner: Hao D. Mai

Serial No.: 14/228,046 | Filed: March 27, 2014

In re Application of: Thien Nguyen

Confirmation No.: 7700 | Customer No.: 138718

Title: INTRAORAL DEVICE WITH MESH

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT
Under 37 C.F.R. § 1.56 and 1.97-1.98

SIR:

Pursuant to the provisions of 37 C.F.R. §§ 1.56 and 1.97-98 of the Rules of Practice in Patent Cases, enclosed herewith is form PTO-SB-08, listing several references. The Examiner is requested to make these references of official record in the application.

The reference cited may be material to examination of the application and are submitted in compliance with the Applicants' duty of disclosure as defined by 37 C.F.R. § 1.56.

Applicants hereby declare, pursuant to 37 C.F.R. §1.97(e)(2), that no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of the person signing the certification after having made a reasonable inquiry, no item of information contained in the information disclosure statement was

known to any individual designated in 37 C.F.R. §1.56(c) more than three months prior to the filing of the information disclosure statement.

No representation is made or intended as to the completeness of this list, nor is the inclusion of any reference an admission that it is prior art or pertinent to this application.

The Commissioner is hereby authorized to charge any necessary fee to Account Number 50-1662.

Respectfully submitted,
POLSINELLI LLP

Dated: July 14, 2016

By: _____/Elton F. Dean/_____
Elton F. Dean (Reg. No. 63,316)
Polsinelli LLP
Three Embarcadero Center, Suite 1350
San Francisco, CA 94111
415-248-2100 (Main)
ipdocket@polsinelli.com

Document Description: Application Data Sheet to update/correct info
Doc Code: ADS.CORR

CORRECTED ADS FORM

Application Number	14228046
Title of Invention	INTRAORAL DEVICE WITH MESH

Inventor Information

****If no data is shown, no data has been corrected****

	Data of Record	Updated Data
Order Number	1	
Name	Thien Nguyen	
Residence Information		
Residency	us-residency	
City	Santa Ana	
State	CA	
Country of Residence	US	
Mailing Address of Inventor		
Address 1	~~92 Corporate Park~~	11230 Grace Ave.
Address 2	~~Suite C, #818~~	Suite B
City,State/Province, Postal Code	~~Irvine CA 92606~~	Fountain Valley CA 92708
Country	US	

Document Description: Application Data Sheet to update/correct info
Doc Code: ADS.CORR

	Data of Record	Updated Data
Order Number	2	
Name	Tam Thanh Pham	

Residence Information

Residency	us-residency	
City	San Francisco	
State	CA	
Country of Residence	US	

Mailing Address of Inventor

Address 1	~~92 Corporate Park~~	11230 Grace Ave.
Address 2	~~Suite C, #818~~	Suite B
City,State/Province, Postal Code	~~Irvine CA 92606~~	Fountain Valley CA 92708
Country	US	

Application Information

	Data of Record	Updated Data
Title of Invention	INTRAORAL DEVICE WITH MESH	
Attorney Docket Number	INCEP-001COA	
Entity Type	Small	

Domestic Benefit/National Stage Information

****If no data is shown, no data has been corrected****

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121,365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S. C. 119(e) or 120, and 37 CFR 1.78(a).

Ascendant Dental Products v. Spotnitz - IPR2025-01175
Solmetex Ex. 2016

		Data of Record	Updated Data
	Prior Application Status		
	Application Number		
	Continuity Type		
	Prior Application Number		
	Filing Date (YYYY-MM-DD)		
	Patent Number		
	Issue Date (YYYY-MM-DD)		

Foreign Priority Information

****If no data is shown, no data has been corrected****

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

		Data of Record	Updated Data
	Application Number		
	Country		
	Filing Date		
	Access Code		

Applicant Information

****If no data is shown, no data has been corrected****
Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

	Data of Record	Updated Data
Applicant Type	ASG	

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is		
Name of the Deceased or Legally Incapacitated Inventor		
Applicant is an Organization	Yes	
Name		
Organization Name	Incept, Inc.	
Address 1		11230 Grace Ave.
Address 2		Suite B
City,State/Province,Postal Code	~~Irvine CA~~	Fountain Valley CA 92708
Country		US
Phone Number		
Fax Number		
Email Address		

Assignee Information including Non-Applicant Assignee Information

****If no data is shown, no data has been corrected****
Providing this information in the application data sheet does not substitute for compliance with any requirement of part 3 of Title 37 of the CFR to have an assignment recorded in the Office

	Data of Record	Updated Data
Order	1	
Applicant is an Organization	Yes	
Name		

Organization Name	Incept, Inc.	

Mailing Address

Address 1		11230 Grace Ave.
Address 2		
City,State/Province,Postal Code	~~Irvine CA~~	Fountain Valley CA 92708
Country		US
Phone Number		
Fax Number		
Email Address		

Signature

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b).

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Tam Thanh Pham/	Registration Number	50565
First Name	Tam Thanh	Last Name	Pham

Electronic Acknowledgement Receipt

EFS ID:	26526721
Application Number:	14228046
International Application Number:	
Confirmation Number:	7700
Title of Invention:	INTRAORAL DEVICE WITH MESH
First Named Inventor/Applicant Name:	
Customer Number:	138718
Filer:	TamThanh Thi Pham
Filer Authorized By:	
Attorney Docket Number:	INCEP-001COA
Receipt Date:	03-AUG-2016
Filing Date:	27-MAR-2014
Time Stamp:	16:04:52
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet to update/ correct info	CorrectedADS.pdf	75626 5fa765c22f4b73e1b816ebae06801d908de d0652	no	5

Warnings:

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

Information:	
Total Files Size (in bytes):	75626

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

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National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
14/228,046	03/27/2014	3732	800	INCEP-001COA	20	1

CONFIRMATION NO. 7700

CORRECTED FILING RECEIPT

138718
Polsinelli LLP
3 Embarcadero Center
Suite 1350
San Francisco, CA 94111

OC000000084987598

Date Mailed: 08/11/2016

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Thien Nguyen, Santa Ana, CA;
Tam Thanh Pham, San Francisco, CA;

Applicant(s)

Incept, Inc., Fountain Valley, CA;

Assignment For Published Patent Application

Incept, Inc., Fountain Valley, CA

Power of Attorney: The patent practitioners associated with Customer Number 138718

Domestic Priority data as claimed by applicant

This application is a CON of 14/100,323 12/09/2013 PAT 8911232
which claims benefit of 61/734,939 12/07/2012

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: No

Permission to Access Search Results: No

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

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If Required, Foreign Filing License Granted: 04/18/2014

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/228,046**

Projected Publication Date: Not Applicable

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****
Title

INTRAORAL DEVICE WITH MESH

Preliminary Class

433

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

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Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

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Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

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Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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Doc code: RCEX
Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (07-14)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	14228046	Filing Date	2014-03-27	Docket Number (if applicable)	084892-514253	Art Unit	3732
First Named Inventor	Thien Nguyen			Examiner Name	Hao D. Mai		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, to any international application that does not comply with the requirements of 35 U.S.C. 371, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV.

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☒ Amendment/Reply
- ☐ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 501662

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

Applicant Signature

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PTO/SB/30EFS (07-14)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Signature of Registered U.S. Patent Practitioner			
Signature	/Elton F. Dean III/	Date (YYYY-MM-DD)	2016-09-06
Name	Elton F. Dean III	Registration Number	63316

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

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1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

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3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s):	Thien Nguyen et al.	Examiner:	Hao D. Mai
Serial No.:	14/228,046	Group Art No.:	3732
Filed:	March 27, 2014	Conf. No.:	7700
Title:	INTRAORAL DEVICE WITH MESH	Dkt. No.:	INCEP- 001COA

Mail Stop RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT

In response to the Final Office Action mailed June 6, 2016 (*Office Action),* please amend the above-identified application as follows. Applicants make the following remarks.

Amendments to the Drawings begin on page 2 of this paper.

Amendments to the Claims begin on page 3 of this paper.

Remarks/Arguments begin on page 7 of this paper.

IN THE DRAWINGS

A replacement sheet containing a replacement Fig. 5 is submitted herewith. No new matter has been added.

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IN THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

1. (currently amended) A dental mouthpiece comprising:

a main body portion configured as a pocket having an interior defined by:

an anterior wall having a shape defined by an exterior edge, wherein the anterior wall includes an opening to the interior of the pocket,

a posterior wall having a shape corresponding to the defined shape of the anterior wall, wherein an exterior edge of the posterior wall shape corresponds to the exterior edge of the anterior wall, ~~and~~

a side wall connecting the exterior edge of the anterior wall to the corresponding exterior edge of the posterior wall, and wherein at least part of the side wall comprises a plurality of perforations,

a suction connector portion for connecting the interior portion of the main body portion to a vacuum suction source, and

a detachable mouth prop comprises a bite block portion and a strap portion configured to fit around the suction connector portion, wherein an external surface of the suction connector portion comprises a notch region corresponding to the strap, and wherein an external surface of the strap is substantially flush with a remaining external surface of the suction connector portion when the strap sits in the notch region.

2. (original) The dental mouthpiece of claim 1, wherein the perforations on the side wall are spaced to comprise a mesh.

3. (previously presented) The dental mouthpiece of claim 1, wherein the anterior wall further comprises a plurality of perforations.

4. (original) The dental mouthpiece of claim 3, wherein the perforations on the anterior wall are spaced to comprise a mesh.

5. (original) The dental mouthpiece of claim 1, wherein the posterior wall further comprises one or more perforations.

6. (original) The dental mouthpiece of claim 5, wherein the perforations on the posterior wall are spaced to comprise a mesh.

7. (previously presented) The dental mouthpiece of claim 1, wherein the opening from the anterior wall to the pocket includes a slit along a longitudinal axis of the main body.

8. (currently amended) The dental mouthpiece of claim 1, ~~further comprising a suction connector portion that connects the interior of the pocket to a vacuum source,~~ wherein activation of ~~the~~ a vacuum source provides suction of fluids through the perforations in the side wall into the interior of the pocket.

9. (previously presented) The dental mouthpiece of claim 1 further comprising a bridge structure protruding from an interior surface of the posterior wall and unattached to the anterior wall, the protruding bridge structure comprising a plurality of protrusions collectively providing spaced contact points that keep the anterior wall separated from the posterior wall during suction.

10. (previously presented) The dental mouthpiece of claim 9, wherein the provided suction further draws fluids through spaces between the protrusions of the bridge structure towards the vacuum source.

11. (previously presented) The dental mouthpiece of claim 1, further comprising a cheek retractor portion connected to the main body portion and having a surface that applies pressure when the dental mouthpiece is bent, wherein the pressure is based on resilience of a material from which the cheek retractor is formed.

12. (previously presented) The dental mouthpiece of claim 11, wherein the cheek retractor portion comprises an extension of the pocket, wherein a side wall of the extension comprises one or more perforations.

13. (previously presented) The dental mouthpiece of claim 11, further comprising a stability bar protruding from an interior surface of the posterior wall along the longitudinal axis of the main body and extending through at least part of the cheek retractor, wherein a thickness of the

stability bar corresponds to resilience by which the cheek retractor portion applies pressure during bending.

14. (original) The dental mouthpiece of claim 1, wherein the main body portion is formed by injection-molding as one piece.

15. (previously presented) The dental mouthpiece of claim 1, wherein a material from which the main body is formed is a flexible, translucent, high heat-resistant, autoclavable silicone-based material.

16. (original) The dental mouthpiece of claim 1, wherein the anterior wall and the posterior wall have different thicknesses.

17. (cancelled)

18. (cancelled)

19. (currently amended) The dental mouthpiece of claim ~~18~~ 1, wherein the bite block portion and the strap portion are injection-molded in one piece.

20. (currently amended) The dental mouthpiece of claim ~~18~~ 1, wherein the bite block portion comprises an opening corresponding to a plug connected to the main body.

21. (new) A dental mouthpiece comprising:

a main body portion configured as a pocket having an interior defined by:

an anterior wall having a shape defined by an exterior edge, wherein the anterior wall includes an opening to the interior of the pocket,

a posterior wall having a shape corresponding to the defined shape of the anterior wall, wherein an exterior edge of the posterior wall shape corresponds to the exterior edge of the anterior wall, and

a side wall connecting the exterior edge of the anterior wall to the corresponding exterior edge of the posterior wall, and wherein at least part of the side wall comprises a plurality of perforations into the interior of the pocket.

22. (new) A dental mouthpiece comprising:

a main body portion configured as a pocket having an interior defined by:

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an anterior wall having a shape defined by a smooth exterior edge, wherein the anterior wall includes an opening to the interior of the pocket,

a posterior wall having a shape corresponding to the defined shape of the anterior wall, wherein a smooth exterior edge of the posterior wall shape corresponds to the smooth exterior edge of the anterior wall, and

a side wall connecting the smooth exterior edge of the anterior wall to the corresponding smooth exterior edge of the posterior wall, and wherein at least part of the side wall comprises a plurality of perforations.

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REMARKS

Status of the Claims

The Applicants have amended claims 1, 8, 19, and 20, claims 17 and 18 have been cancelled, and new claims 21 and 22 have been added. No new matter has been added. In view of the following remarks, Applicants respectfully submit that the application is in condition for allowance.

Rejections Under 35 U.S.C. §102

Claims 1-8, 11-14, and 16-20 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent Application Publication No. 2009/0274991 by Black et al. ("*Black*"). Applicants respectfully disagree.

MPEP § 2131 states: "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." (*citing Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)*). "Moreover, unless a reference discloses within the four corners of the document not only all of the limitations claimed but also all of the limitations arranged or combined in the same way as recited in the claim, it cannot be said to prove prior invention of the thing claimed and, thus, cannot anticipate under 35 U.S.C. § 102. *Net MoneyIn, Inc. v. VeriSign, Inc. 545 F.3d 1359 (Fed Cir. 2008).*" Applicants submit that the limitations allegedly taught by *Black* are not arranged or combined in the same way as recited in the claims. Therefore, the claims are not anticipated under 35 U.S.C. § 102 by *Black*.

In particular, claim 1 has been amended to recite, in part, "a suction connector portion for connecting the interior portion of the main body portion to a vacuum suction source, and a detachable mouth prop comprises a bite block portion and a strap portion configured to fit around the suction connector portion, wherein an external surface of the suction connector

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portion comprises a notch region corresponding to the strap, and wherein an external surface of the strap is substantially flush with a remaining external surface of the suction connector portion when the strap sits in the notch region." Applicants submit that these features are not disclosed by *Black*. As *Black* does not teach all of the structural features of amended claim 1, as arranged or combined, *Black* does not anticipate claims 1-8, 11-14, 16, and 19-20. Withdrawal of the rejections is requested

Rejections under 35 U.S.C. §103

Claims 9-10 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Black* in view of U.S. Patent No. 1,471,207 to Riddle ("*Riddle*"), and claim 15 was rejected under 35 U.S.C. 103(a) as being unpatentable over *Black* in view of U.S. Patent No. 5,890,899 to Sclafani ("*Sclafani*"). Applicants respectfully disagree.

For at least the same reasons as amended claim 1, *Black* fails to teach all of the limitations as arranged. Applicants submit that *Riddle* and *Sclafani* fail to remedy the deficiencies of *Black*. As such, the combination of *Black* with *Riddle* and *Black* with *Sclafani*, fails to teach all of the limitations of dependent claims 9-10 and 15, respectively. Withdrawal of the rejection is respectfully requested. Not all reasons for allowability and distinctions over the asserted combination of prior art references of record have been discussed and no inference regarding such should be made.

CONCLUSION

Based on the foregoing, it is submitted that Applicants' invention as defined by the claims is patentable over the references of record. Issuance of a Notice of Allowance is solicited. Applicants' attorney welcomes the opportunity to discuss the case with the Examiner in the event that there are any questions or comments regarding the response or the application.

Applicants are submitting this response with a Request for Continued Examination.

The Commissioner is hereby authorized to withdraw any additional fees that may be required or credit any overpayment to Deposit Account 50-1662, referencing the docket number above.

September 6, 2016

Respectfully submitted,
POLSINELLI PC

/Elton F. Dean III/

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St. Louis, Missouri 63102
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Attorney for Applicants

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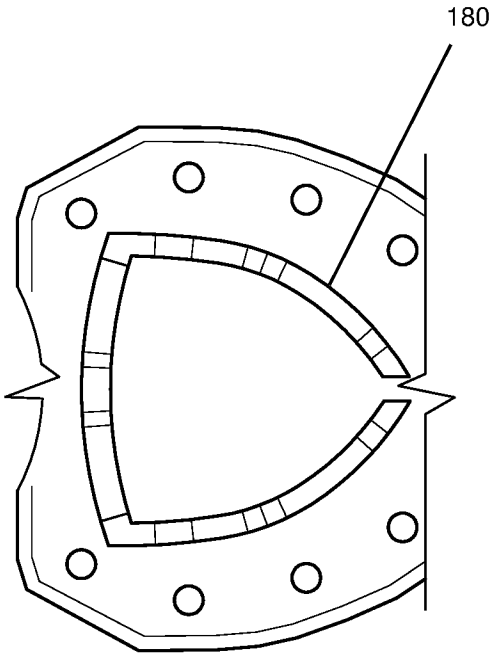

FIG. 5

Electronic Patent Application Fee Transmittal

Application Number:	14228046
Filing Date:	27-Mar-2014
Title of Invention:	INTRAORAL DEVICE WITH MESH
First Named Inventor/Applicant Name:	Thien Nguyen
Filer:	Elton Franklin Dean III/Lois Viera
Attorney Docket Number:	INCEP-001COA

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

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Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
RCE- 1st Request	2801	1	600	600
		Total in USD ($)		**600**

Electronic Acknowledgement Receipt

EFS ID:	26847344
Application Number:	14228046
International Application Number:	
Confirmation Number:	7700
Title of Invention:	INTRAORAL DEVICE WITH MESH
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	138718
Filer:	Elton Franklin Dean III/Lois Viera
Filer Authorized By:	Elton Franklin Dean III
Attorney Docket Number:	INCEP-001COA
Receipt Date:	06-SEP-2016
Filing Date:	27-MAR-2014
Time Stamp:	19:14:27
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$600
RAM confirmation Number	6510
Deposit Account	501662
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 CFR 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 CFR 1.17 (Patent application and reexamination processing fees)

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Charge any Additional Fees required under 37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Continued Examination (RCE)	514253_RCE.pdf	1349858 f8aba3a61834b45ae27bedaf08f884155743826b	no	3
Warnings:					
Information:					
2		514253_Amendment.pdf	226592 391510cf37059967af585a26987cf3b586374d85	yes	9

Multipart Description/PDF files in .zip description

Document Description	Start	End
Amendment Submitted/Entered with Filing of CPA/RCE	1	1
Drawings-only black and white line drawings	2	2
Claims	3	6
Applicant Arguments/Remarks Made in an Amendment	7	9

Warnings:					
Information:					
3	Drawings-only black and white line drawings	514253_Replacement_Fig_5.pdf	86504 e4434c4f37af00dea8c8e82f81c99265d9f29dcf	no	1
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	30058 5b392a119e64494a3458964feb77f9d931be9a45	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	1693012	

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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

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PTO/SB/06 (09-11)
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/228,046	Filing Date 03/27/2014	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT 09/06/2016	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0	X $40 =	0
Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $210 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

AMENDMENT	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

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Substitute for Form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

				Complete if Known	
				Application Number	14/228,046
				Filing Date	March 27, 2014
				First Named Inventor:	Thien Nguyen
				Art Unit	3732
				Examiner Name	Hao D. Mai
Sheet	**1**	**of**	**2**	Attorney Docket Number	INCEP-001COA

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.'	Document Number Number-Kind Code[2](If known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-				
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.'	Foreign Patent Document Country Code[3] Number[4] Kind Codes (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T6
		CA 2,851,861	2/9/2016	Incept, Inc.		
		CN 105578986A	5/11/2016	Incept, Inc.		

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 'Applicant's unique citation designation number (optional). [2]See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3]Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4]For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6]Applicant is to place a check mark here if English language translation is attached.

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Substitute for Form 1449/PTO	Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*	Application Number	14/228,046
	Filing Date	March 27, 2014
	First Named Inventor:	Thien Nguyen
	Art Unit	3732
	Examiner Name	Hao D. Mai
Sheet 2 of 2	Attorney Docket Number	INCEP-001COA

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No'	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T^2
		Canadian Patent Application No. 2,919,142; CA Examination Report dated 5/31/16	

Examiner Signature		Date Considered	

*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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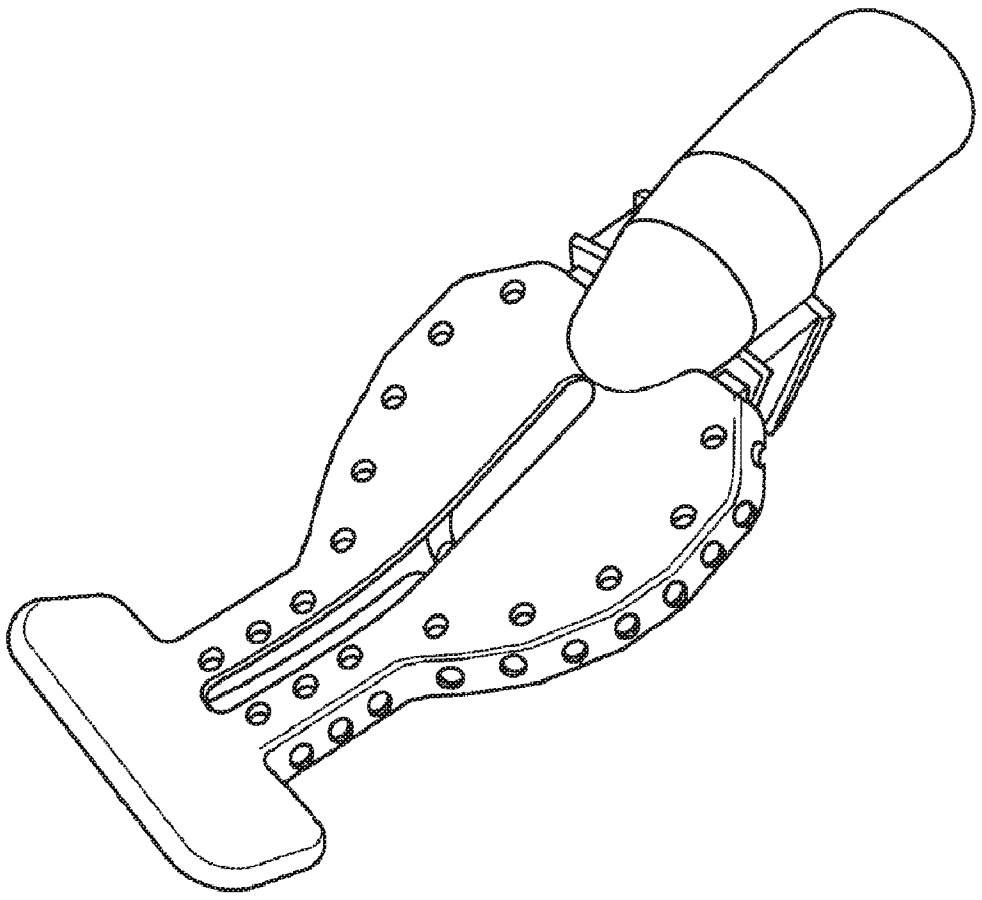
(54) **Titre : SYSTEME DENTAIRE D'ASPIRATION ET D'ISOLATION INTRA-ORAL**
(54) **Title: INTRAORAL DENTAL SUCTION AND ISOLATION SYSTEM**



(57) **Abrégé/Abstract:**
A dental mouthpiece is provided that may be attached to a high-suction dental adapter for the purpose of assisting the dental staff during dental procedures through chair-side, hands-free suction, and isolation. Such a mouthpiece may comprise a main body

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(57) **Abrégé(suite)/Abstract(continued):**
portion, a cheek retractor portion, and a suction connector portion. In some embodiments, the main body portion, cheek retractor portion, and suction connector portion (and sub-portions thereof) may be molded in one piece, preferably by injection molding. In an exemplary embodiment, the mouthpiece may be made of a material that is flexible, translucent, conducive to injection molding, high heat-resistant, and autoclavable. Such a material may include silicone. Because the mouthpiece may be made of a high heat-resistant and autoclavable material, such a mouthpiece may be reusable.

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ABSTRACT

A dental mouthpiece is provided that may be attached to a high-suction dental adapter for the purpose of assisting the dental staff during dental procedures through chair-side, hands-free suction, and isolation. Such a mouthpiece may comprise a main body portion, a cheek retractor portion, and a suction connector portion. In some embodiments, the main body portion, cheek retractor portion, and suction connector portion (and sub-portions thereof) may be molded in one piece, preferably by injection molding. In an exemplary embodiment, the mouthpiece may be made of a material that is flexible, translucent, conducive to injection molding, high heat-resistant, and autoclavable. Such a material may include silicone. Because the mouthpiece may be made of a high heat-resistant and autoclavable material, such a mouthpiece may be reusable.

INTRAORAL DENTAL SUCTION AND ISOLATION SYSTEM

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention generally relates to the field of dental mouthpieces. More specifically, the present invention relates to intraoral dental suction and isolation mouthpieces.

2. Description of Related Art

Various mouthpieces are currently used by dental health professionals, dental hygienists, and dental assistants in the field of dentistry. In the past, a dental patient has been treated by a traditional two-person team that comprises a dental professional and a dental assistant. Further, dental treatment may be provided by the team using many different types of dental equipment and materials. Such dental equipment and materials may include such items as an intraoral mirror, a bite block, a slow speed suction ejector, a high speed suction ejector, gauzes, cotton rolls, and dry angles. Each item of dental equipment may be used for different purposes, though some may be used in combination for some types of dental services. As such, a dental professional seeking to provide such dental services may need to use multiple items of such dental equipment. An important role of the dental assistant is therefore to assist the dental professional in coordinating the use of these multiple items of different equipment and materials.

There is, therefore, a need in the art for improved systems and methods of providing dental services in a more efficient, comfortable, and safe manner to the dental patient.

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SUMMARY OF THE CLAIMED INVENTION

Embodiments of the present invention may include a mouthpiece that may be attached to a high-suction dental adapter for the purpose of assisting the dental staff during dental procedures through chair-side, hands-free suction, and isolation. Such a mouthpiece may comprise a main body portion, a cheek retractor portion, and a suction connector portion. In some embodiments, the main body portion, cheek retractor portion, and suction connector portion (and sub-portions thereof) may be molded in one piece, preferably by injection molding. In an exemplary embodiment, the mouthpiece may be made of a material that is flexible, translucent, conducive to injection molding, high heat-resistant, and autoclavable. Such a material may include silicone. Because the mouthpiece may be made of a high heat-resistant and autoclavable material, such a mouthpiece may be reusable.

The main body portion may comprise an enclosed pocket made up of an anterior wall, a posterior wall, and a side wall in between the anterior and posterior walls. The side wall may be perforated with a plurality of perforations. Such perforations may constitute a mesh. Additional perforations may be located on the anterior and posterior walls. The main body portion may further include a slit along a longitudinal, central axis on the anterior wall. Such openings (*e.g.*, perforations and slit) allow for suction of air, fluids, and small debris from the patient's mouth, through the openings into the interior portion, and into the suction connector portion towards a suction source. Because the mouthpiece is made of a flexible and resilient material (*e.g.*, silicone), the mouthpiece may be bent when placed in a patient's mouth to conform to the shape of the mouth. When properly positioned, the suction connector portion may protrude from one side of the patient's mouth, while the main body lies against the back of the patient's mouth, and the cheek retractor presses against the patient's cheek on the opposite side of the patient's mouth.

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

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

Accordingly, in one aspect, the present invention resides in a dental mouthpiece composed of a bendable material, the dental mouthpiece formed in a curve and comprising: a main body portion at a central part of the curve and comprising a defined pocket having an anterior wall inside the curve, a posterior wall outside the curve, and a side wall in between the anterior wall and the posterior wall, wherein the anterior wall, the posterior wall, and the side wall define an interior portion of the defined pocket, wherein the posterior wall comprises a bridge structure protruding from an interior surface of the posterior wall in a wave shape, the protruding bridge structure comprising a plurality of spaced contact points that keep the anterior wall separated from the posterior wall during suction, wherein the spaced contact points are at crests of the wave shape, and wherein a plurality of troughs of the wave shape between the spaced contact points allow for suction through the bridge structure; a cheek retractor portion connected to the main body portion and having a surface that applies pressure when the dental mouthpiece is bent, wherein the pressure is based on resilience of the bendable material; and a suction connector portion for connecting the interior portion of the main body portion to a vacuum suction source, wherein the suction connector portion is connected to the main body portion on an end opposite the cheek retractor.

In another aspect, the present invention resides in a dental mouthpiece composed of a bendable material, the dental mouthpiece formed in a curve and comprising: a main body portion at a central part of the curve and comprising a defined pocket having an anterior wall inside the curve, a posterior wall outside the curve, and a side wall in between the anterior wall and the posterior wall, wherein the anterior wall, the posterior wall, and the side wall define an interior portion of the defined pocket; a cheek retractor portion connected to the main body portion and having a surface that applies pressure when the dental mouthpiece is bent, wherein the pressure is based on resilience of the bendable material; a suction connector portion for connecting the interior portion of the main body portion to a vacuum suction source, wherein the suction connector portion is connected to the main body portion on an end opposite the cheek retractor; and a detachable mouth prop comprising a strap configured to fit

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around the suction connector portion, wherein an external surface of the suction connector portion comprises a notch region corresponding to the strap, and wherein an external surface of the strap is substantially flush with a remaining external surface of the suction connector portion when the strap sits in the notch region.

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BRIEF DESCRIPTION OF THE FIGURES

FIG. 1A is a perspective view of an exemplary mouthpiece with a detachable mouth prop.

FIG. 1B is a top view of the exemplary mouthpiece and detachable mouth prop of FIG. 1A.

FIG. 1C is a bottom view of the exemplary mouthpiece and detachable mouth prop of FIG. 1A.

FIG. 1D is a side view of the exemplary mouthpiece and detachable mouth prop of FIG. 1A.

FIG. 1E is a cross-sectional view of the exemplary mouthpiece and detachable mouth prop of FIG. 1A.

FIG. 2A is a perspective view of the exemplary mouthpiece of FIG. 1A where the detachable mouth prop has been detached.

FIG. 2B is a top view of the exemplary mouthpiece of FIG. 2A.

FIG. 2C is a bottom view of the exemplary mouthpiece of FIG. 2A.

FIG. 2D is a side view of the exemplary mouthpiece of FIG. 2A.

FIG. 2E is a cross-sectional view of the exemplary mouthpiece of FIG. 2A.

FIG. 3A is a front view of an exemplary mouth prop.

FIG. 3B is a back view of the exemplary mouth prop of FIG. 3A.

FIG. 3C is a bottom view of the exemplary mouth prop of FIG. 3A.

FIG. 3D is a perspective view of the exemplary mouth prop of FIG. 3A .

FIG. 3E is a side view of the exemplary mouth prop of FIG. 3A.

FIG. 3F is a top view of the exemplary mouth prop of FIG. 3A.

FIG. 4 is a close-up view of exemplary mesh sides in an exemplary mouthpiece.

FIG. 5 is a close-up view of an internal bridge in an exemplary mouthpiece.

FIG. 6A is a close-up view of an exemplary reinforcing bar in an exemplary mouthpiece.

FIG. 6B is a cross-sectional view of the exemplary reinforcing bar of FIG. 6A.

FIG. 7A is a close-up view of an exemplary cheek retractor portion in an

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exemplary mouthpiece.

FIG. 7B is a cross-sectional view of the exemplary cheek retractor portion of FIG. 7A.

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DETAILED DESCRIPTION

Embodiments of the present invention provide for a mouthpiece comprising a main body portion, a cheek retractor portion, and a suction connector portion. In some embodiments, the main body portion, cheek retractor portion, and suction connector portion (and sub-portions thereof) may be molded as one-piece, preferably by injection molding. In an exemplary embodiment, the mouthpiece may be made of a material that is flexible, translucent, conducive to injection molding, high heat-resistant, and autoclavable. Such a material may include silicone. Because the mouthpiece may be made of a high heat-resistant and autoclavable material, such a mouthpiece may be reusable.

FIGs. 1A-E are different views of an exemplary mouthpiece with an attachable mouth prop 160, while FIGs. 2A-E are different views of the exemplary mouthpiece of FIG. 1A where the attachable mouth prop 160 has been detached. Such a mouthpiece may include a main body portion 110, a suction connector portion 120, and a cheek retractor portion 130.

The main body portion 110 may include mesh or perforations140, a stability bar 150, an open slit 170, and an internal bridge 180. The main body potion 110 may connect to a suction connector portion 120 on one end and a cheek retractor portion 130 at the other end. Such a cheek retractor portion 130 may be configured to press against and retract a patient's cheek away from the patient's teeth. When placed in a patient's mouth, the suction connector portion 120 may protrude from one side of the patient's mouth, while the main body portion 110 lies against the back of the patient's mouth, and the cheek retractor portion 130 retracts the patient's cheek on the opposite side of the patient's mouth. The flexibility of the material used to form the mouthpiece allows for some bending when placed in the patient's mouth. The material is, however, resilient enough that the cheek retractor portion presses against the inside of the patient's cheek with such pressure being sufficient to move the cheek away from the patient's teeth.

An exemplary main body portion 110, when placed in a mouth, may include an anterior wall facing the front of the mouth (*e.g.*, the side with slit 170) and a posterior

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wall facing the back of the mouth. The two walls may connect at a superior wall and an inferior wall forming a body that is at least partially enclosed.

Superior may be used herein to refer to the side that rests against a roof of a patient's mouth when placed therein, and inferior may be used to refer to the side that rests against the floor of the patient's mouth. The superior and inferior sides may be formed identically, which may allow for the mouthpiece to change orientation such that the superior side may appear as the inferior side and vice versa, in the new orientation. When in use, the respective sides of the main body portion 110 may serve to protect and separate the top of the mouth and the bottom of the mouth/tongue. In addition, the main body portion 110 may also serve to protect the back of the mouth (*e.g.*, throat and airway) from falling debris.

Much of the main body portion 110 of the mouthpiece may be shaped as a straight-line arrowhead or shield whose base generally conforms to the intraoral shape of a patient's mouth. Differently-sized mouthpieces may be provided for differently-sized mouths of adults and children. Part of the base side of the arrowhead may be formed with thicker walls than the rest of the main body. Such thickening may provide additional stability.

In addition, the main body portion 110 of the mouthpiece may include a plurality of holes 140 distributed along the superior and inferior sides of the anterior and posterior walls to assist in suctioning of water, saliva and debris from the oral cavity. In some embodiments, a set of holes may also form a mesh along the walls of the superior and inferior edges. FIG. 4 is a close-up view of an exemplary mesh wall in an exemplary mouthpiece.

At the narrow end of the arrowhead that connects to the cheek retractor portion 130, the main body portion 110 may include a rectangular portion. Narrower than the base of the arrowhead, the rectangle may additionally include a reinforcing bar (or stability bar) 150 (described in further detail below) and may be at least partially crossed by a slit 170 (described in further detail below) into the interior of the pocket of the main body portion 110.

Stability bar 150 may be a protrusion or otherwise a thickened area that reinforces the stability of the rectangular portion and assist in shaping this region to

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the intraoral posterior shape of a patient's mouth. FIG. 6A is a close-up view of an exemplary stability bar 150 of an exemplary mouthpiece. FIG. 6B is a cross-sectional view of the exemplary reinforcing bar in the cheek retractor connector portion of FIG. 6A.

In some embodiments, the internal, rectangular-shaped reinforcing or stability bar 150 may be located distally to the internal wavelike bridge structure 180 and attached to both the interior side of the posterior surface of the main body and the rectangular portion. Such a stability bar 150 may be located in the area where a positioned mouthpiece begins to wrap from the lingual side of the most posterior mandibular tooth, around the distal side of the most posterior tooth, and to anterior side of the most posterior mandibular tooth, thereby assisting in shaping the mouthpiece to the general intraoral shape of a patient's mouth.

Various embodiments of the mouthpiece may further include a longitudinal, open slit 170 extending over approximately two-thirds of the main body on the anterior surface. Running along the center of the main body across the rectangle and most of the arrowhead, such a slit 170 may assist in capture and suction of water, saliva and debris, as well as assisting in cleaning and maintenance.

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

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The suction connector portion 120 may be oval-shaped and also attached to the main body portion 110. The suction connector portion 120 may be formed with thicker walls than the main body portion 110 and configured to attach to a high-suction vacuum adapter and to assist in transferring water, saliva, and debris from the oral cavity to the external adapter for removal. The suction connector portion 120 may also include an internal stop to assist in sliding the mouthpiece onto the adapter to a desired depth. The suction connector portion 120 may additionally have an external, concave, notched region 210 that corresponds to a removable strap such that when the strap is in place, the external walls of the strap and the rest of the connector portion may be flush.

The cheek retractor portion 130 is illustrated as a hammerhead distal region, which may be attached to the main body portion 110. FIG. 7A is a close-up view of an exemplary cheek retractor portion 130 in an exemplary mouthpiece. FIG. 7B is a cross-sectional view of the exemplary cheek retractor portion 130 of FIG. 7A.

The mouthpiece may be used with a mouth prop 160, as illustrated in FIGs. 1 (with a mouth prop 160) and FIGs. 2 (illustrated without the mouth prop 160). FIGs. 3A-E provide different close-up views of an exemplary mouth prop 160. The removable strap 310 may be attached to mouth prop 160, which may be used to prop open a patient's mouth and teeth. In this regard, the suction connector portion 120 may additionally have an external plug 220 (FIG. 2C) protruding from the posterior side of the suction connector portion 120. Such a plug 220 may correspond to and serve to connect with an opening in the mouth prop 160. The mouth prop 160 may be reinforced by the presence of the plug 220 in the opening, thereby resulting in a more crush-resistant, nearly incompressible, and stable mouth prop 160. In some embodiments, the suction connector portion 120 may further have a cutout 230 (*e.g.*, which may be shaped as a logo) providing extra interlocking with a corresponding protrusion (*e.g.*, which may also be shaped as a logo) on an external high-suction vacuum adapter.

The mouth prop 160 may be made of thickened silicone material injection molded in a single piece with an elastic strap corresponding to the circumference of the suction connector portion. The mouth prop 160 has an internal, rectangular-

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shaped female slot designed to fit snugly with the external, rectangular-shaped male plug 220 of the suction connector portion 120 of the mouthpiece. Mouth props may be made in different sizes for differently sized mouths. Because the mouth prop and mouthpiece are detachable from each other, different sizes of each may be mixed and matched as needed for a particular patient's mouth.

The mouthpiece as described herein may be used with a one-piece, autoclavable, high-suction vacuum adapter. Such a high-suction vacuum body adapter may be made of a single homogenous material. Having a single lever design, such a vacuum adapter may function in the same manner as all the current high-suction vacuum evacuators and saliva ejectors in controlling the removal of water, saliva, and debris from the oral cavity to the outside vacuum source. The single lever may be designed to control the removal of water, saliva, and debris from the at least partially enclosed so main body through a single, large evacuation conduit within the suction connector portion.

While various embodiments have been described above, it should be understood that they have been presented by way of example only, and not limitation. The descriptions are not intended to limit the scope of the invention to the particular forms set forth herein. Thus, the breadth and scope of a preferred embodiment should not be limited by any of the above-described exemplary embodiments. It should be understood that the above description is illustrative and not restrictive. To the contrary, the present descriptions are intended to cover such alternatives, modifications, and equivalents as may be included within the scope of the invention as defined by the appended claims and otherwise appreciated by one of ordinary skill in the art. The scope of the invention should, therefore, be determined not with reference to the above description, but instead should be determined with reference to the appended claims along with their full scope of equivalents.

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What is claimed is:

1. A dental mouthpiece composed of a bendable material, the dental mouthpiece formed in a curve and comprising:

a main body portion at a central part of the curve and comprising a defined pocket having an anterior wall inside the curve, a posterior wall outside the curve, and a side wall in between the anterior wall and the posterior wall, wherein the anterior wall, the posterior wall, and the side wall define an interior portion of the defined pocket, wherein the posterior wall comprises a bridge structure protruding from an interior surface of the posterior wall in a wave shape, the protruding bridge structure comprising a plurality of spaced contact points that keep the anterior wall separated from the posterior wall during suction, wherein the spaced contact points are at crests of the wave shape, and wherein a plurality of troughs of the wave shape between the spaced contact points allow for suction through the bridge structure;

a cheek retractor portion connected to the main body portion and having a surface that applies pressure when the dental mouthpiece is bent, wherein the pressure is based on resilience of the bendable material; and a suction connector portion for connecting the interior portion of the main body portion to a vacuum suction source, wherein the suction connector portion is connected to the main body portion on an end opposite the cheek retractor.

2. The mouthpiece of claim 1, wherein the side wall includes a plurality of perforations.

3. The mouthpiece of claim 1, wherein the anterior wall and the posterior wall each includes a plurality of perforations.

4. The mouthpiece of claim 1, wherein the anterior wall further includes a slit along a central axis.

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5. The mouthpiece of claim 1, further comprising a stability bar protruding from an interior surface of the posterior wall, wherein a thickness of the stability bar reinforces stability during bending of the dental mouthpiece.

6. The mouthpiece of claim 1, wherein the main body portion, the cheek retractor portion, and the suction connector portion are injection-molded as one piece.

7. The mouthpiece of claim 1, wherein the material is a flexible, translucent, high heat-resistant, autoclavable silicone-based material.

8. The mouthpiece of claim 1, wherein the suction connector portion comprises an internal stop to assist in positioning of the vacuum suction source or a vacuum adaptor.

9. The mouthpiece of claim 1, further comprising a detachable mouth prop.

10. The mouthpiece of claim 9, wherein the detachable mouth prop comprises a strap configured to fit around the suction connector portion, wherein an external surface of the suction connector portion comprises a notch region corresponding to the strap, and wherein an external surface of the strap is substantially flush with a remaining external surface of the suction connector portion when the strap sits in the notch region.

11. The mouthpiece of claim 10, wherein the strap and other portions of the mouth prop are injection-molded as a single piece.

12. The mouthpiece of claim 9, wherein the suction connector portion further comprises an external plug protrusion corresponding to an opening in the mouth prop.

13. The mouthpiece of claim 12, wherein the plug protrusion fits into the opening to provide additional crush-resistance and decreased compressibility.

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14. The mouthpiece of claim 1, wherein the suction connector portion comprises a cutout corresponding to a protrusion on a vacuum adapter for an interlocking fit.

15. The mouthpiece of claim 1, wherein the anterior wall and the posterior wall have different thicknesses.

16. The mouthpiece of claim 1, wherein the main body portion comprises:

a base portion connected to the suction connector portion at a first end,

a cheek retractor connector portion connected to a second end of the base portion, the second end opposite the first end of the base portion, wherein the cheek retractor connector portion is narrower than the base portion, and the cheek retractor connects to main body portion at the cheek retractor connector portion.

17. The mouthpiece of claim 1, wherein one or more of the walls is a protective wall, and wherein debris external to mouthpiece is subject to being caught by suction and/or by the protective wall.

18. A dental mouthpiece composed of a bendable material, the dental mouthpiece formed in a curve and comprising:

a main body portion at a central part of the curve and comprising a defined pocket having an anterior wall inside the curve, a posterior wall outside the curve, and a side wall in between the anterior wall and the posterior wall, wherein the anterior wall, the posterior wall, and the side wall define an interior portion of the defined pocket;

a cheek retractor portion connected to the main body portion and having a surface that applies pressure when the dental mouthpiece is bent, wherein the pressure is based on resilience of the bendable material;

a suction connector portion for connecting the interior portion of the main body portion to a vacuum suction source, wherein the suction connector portion is connected to the main body portion on an end opposite the cheek retractor; and

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a detachable mouth prop comprising a strap configured to fit around the suction connector portion, wherein an external surface of the suction connector portion comprises a notch region corresponding to the strap, and wherein an external surface of the strap is substantially flush with a remaining external surface of the suction connector portion when the strap sits in the notch region.

19. The mouthpiece of claim 18, wherein the side wall includes a plurality of perforations.

20. The mouthpiece of claim 18, wherein the anterior wall and the posterior wall each includes a plurality of perforations.

21. The mouthpiece of claim 18, wherein the anterior wall further includes a slit along a central axis.

22. The mouthpiece of claim 18, further comprising a stability bar protruding from an interior surface of the posterior wall, wherein a thickness of the stability bar reinforces stability during bending of the dental mouthpiece.

23. The mouthpiece of claim 18, wherein the main body portion, the cheek retractor portion, and the suction connector portion are injection-molded as one piece.

24. The mouthpiece of claim 18, wherein the material is an autoclavable silicone-based material.

25. The mouthpiece of claim 18, further comprising a bridge structure protruding from an interior surface of the posterior wall, the protruding bridge structure comprising a plurality of spaced contact points that keep the anterior wall separated from the posterior wall during suction.

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26. The mouthpiece of claim 25, wherein the bridge structure protrudes from the interior surface of the posterior wall in a wave shape, and wherein the contact points are at crests of the wave shape.

27. The mouthpiece of claim 26, wherein troughs of the wave shape allow suction through the bridge structure.

28. The mouthpiece of claim 18, wherein the suction connector portion comprises an internal stop to assist in positioning of the vacuum suction source or a vacuum adaptor.

29. The mouthpiece of claim 18, wherein the strap and other portions of the mouth prop are injection-molded as a single piece.

30. The mouthpiece of claim 18, wherein the suction connector portion further comprises an external plug protrusion corresponding to an opening in the mouth prop.

31. The mouthpiece of claim 30, wherein the plug protrusion fits into the opening to provide additional crush-resistance and decreased compressibility.

32. The mouthpiece of claim 18, wherein the suction connector portion comprises a cut-out corresponding to a protrusion on a vacuum adapter for an interlocking fit.

33. The mouthpiece of claim 18, wherein the anterior wall and the posterior wall have different thicknesses.

34. The mouthpiece of claim 18, wherein the main body portion comprises:

a base portion connected to the suction connector portion at a first end,

a cheek retractor connector portion connected to a second end of the base portion, the second end opposite the first end of the base portion, wherein the cheek retractor connector portion is narrower than the base portion, and the cheek retractor connects to main body portion at the cheek retractor connector portion.

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35. The mouthpiece of claim 18, wherein one or more of the walls is a protective wall, and wherein debris external to mouthpiece is subject to being caught by suction and/or by the protective wall.

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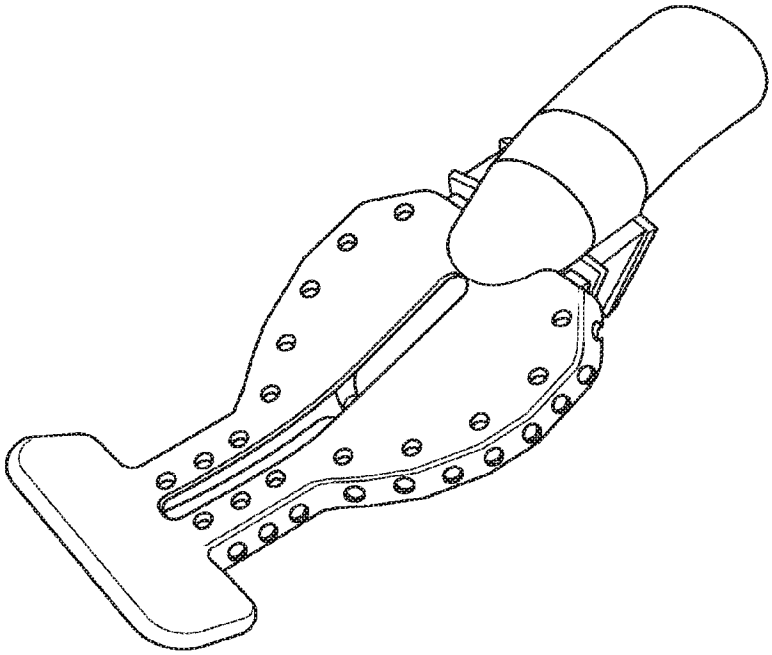


FIG. 1A

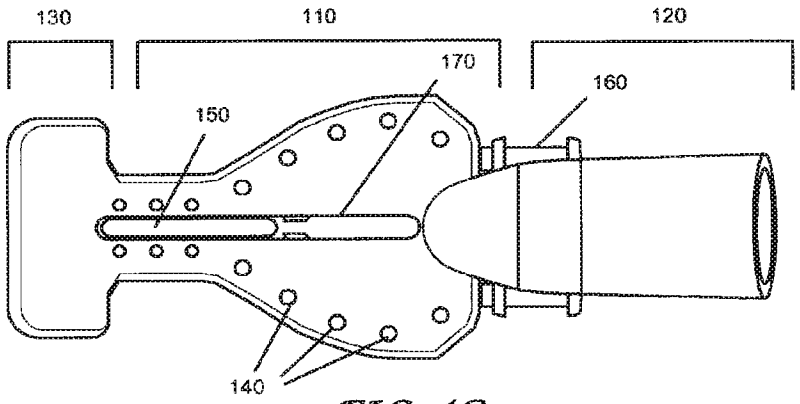


FIG. 1B

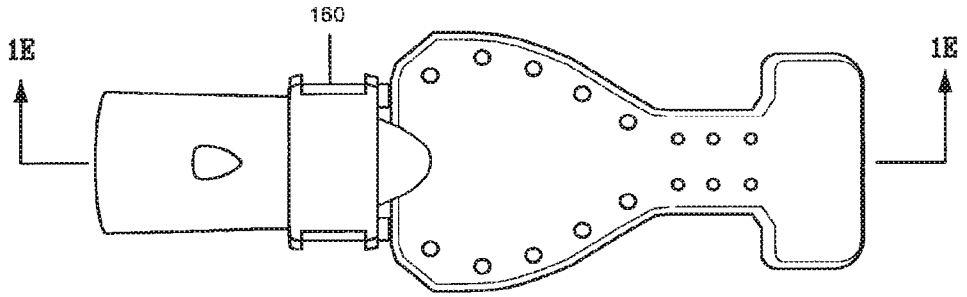


FIG. 1C

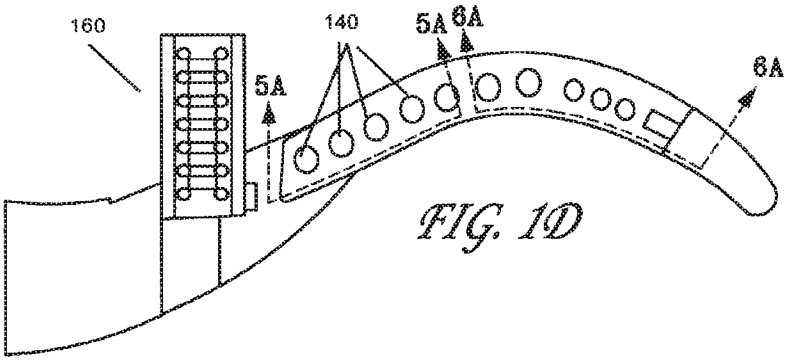


FIG. 1D

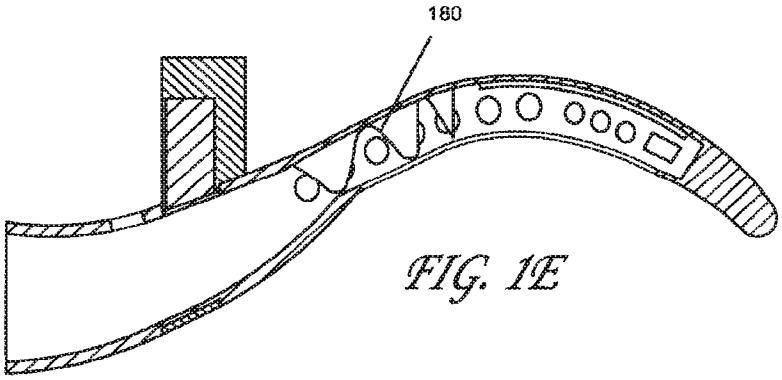


FIG. 1E

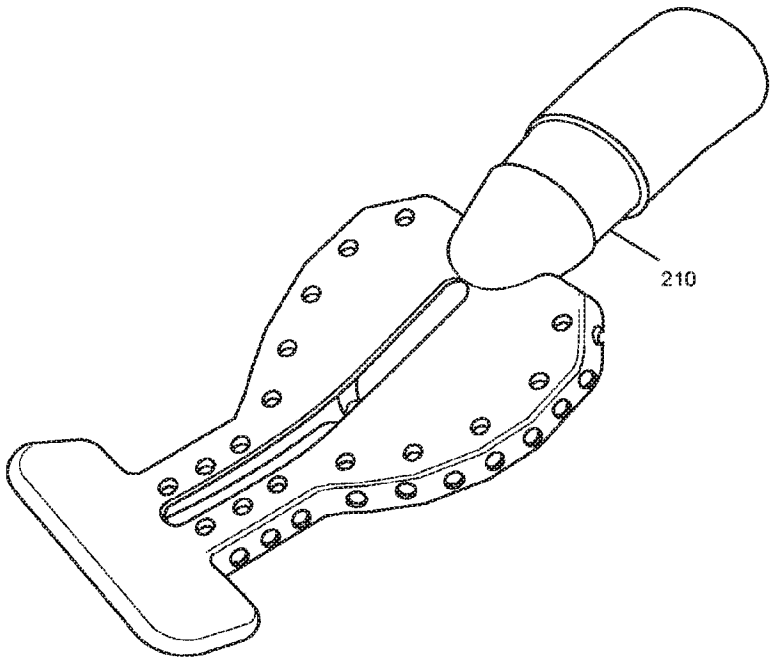


FIG. 2A

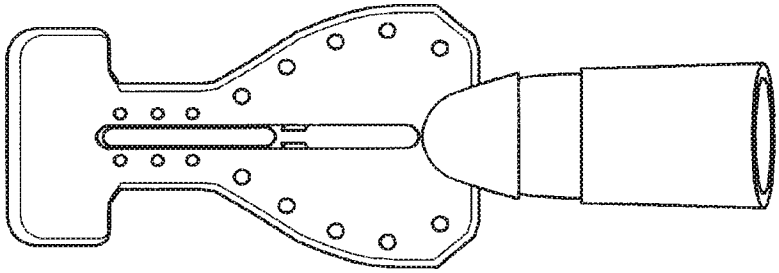


FIG. 2B

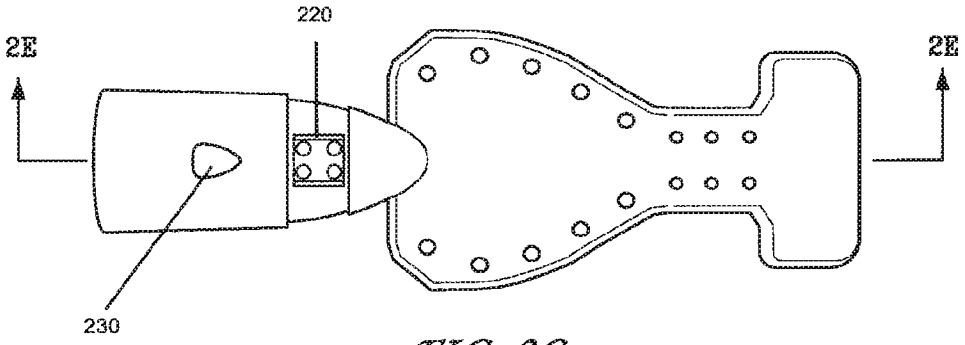


FIG. 2C

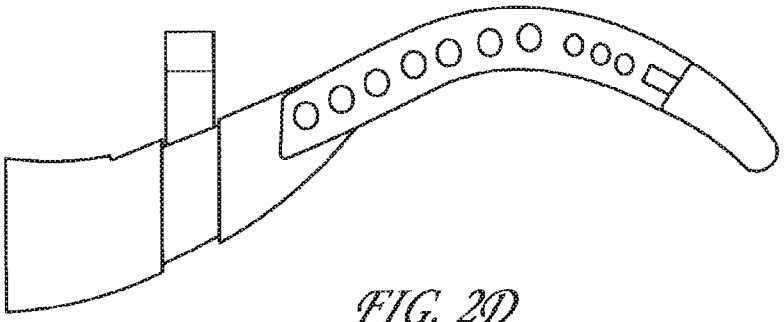


FIG. 2D

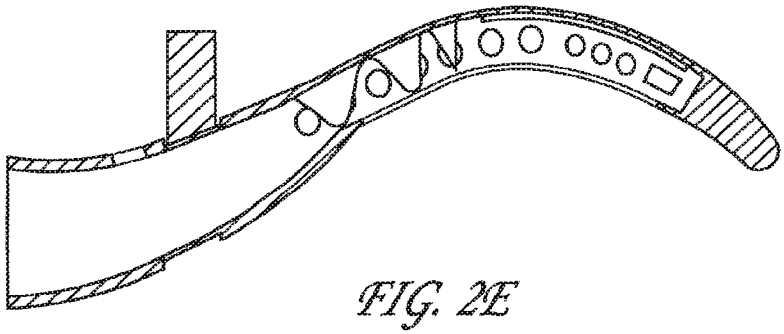


FIG. 2E

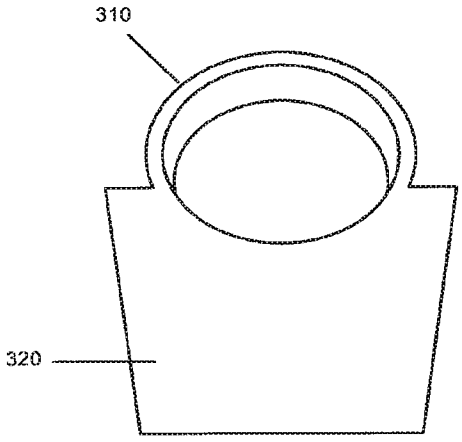


FIG. 3A

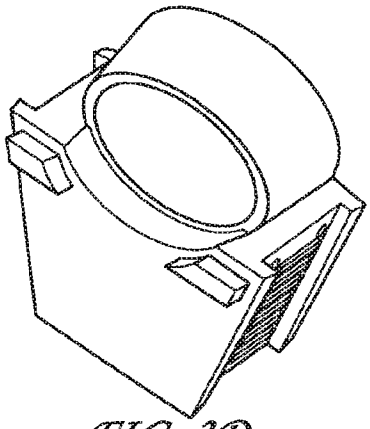


FIG. 3D

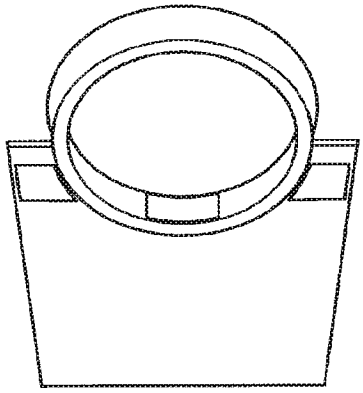


FIG. 3B

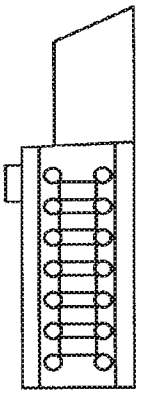


FIG. 3E

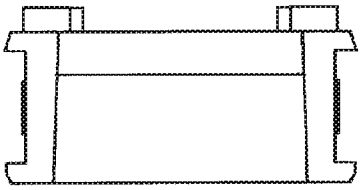


FIG. 3C

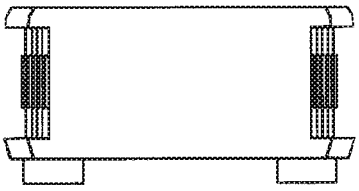


FIG. 3F

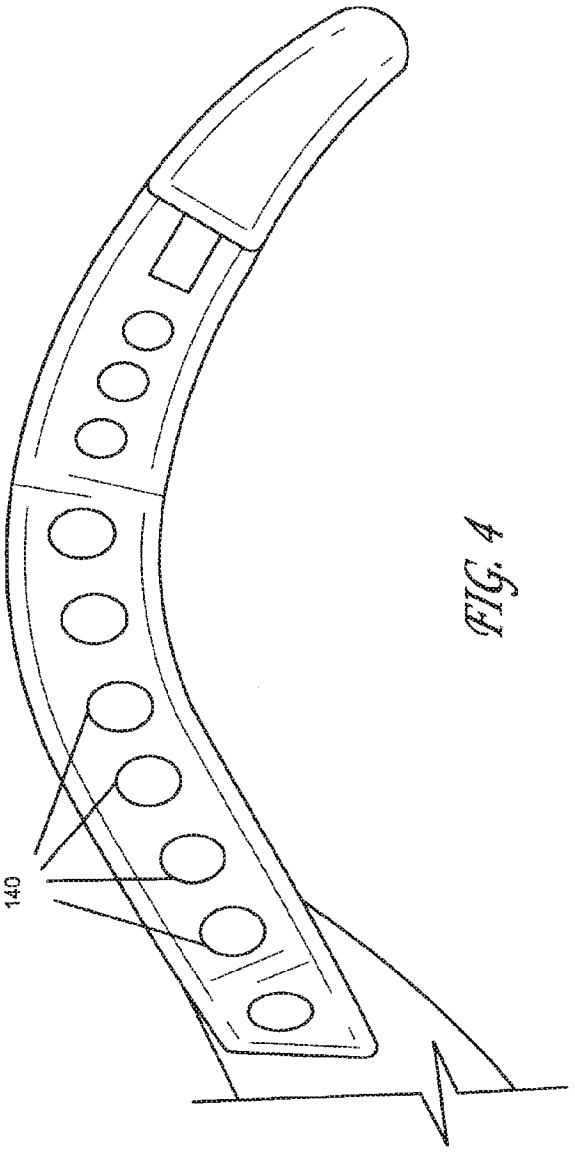


FIG. 4

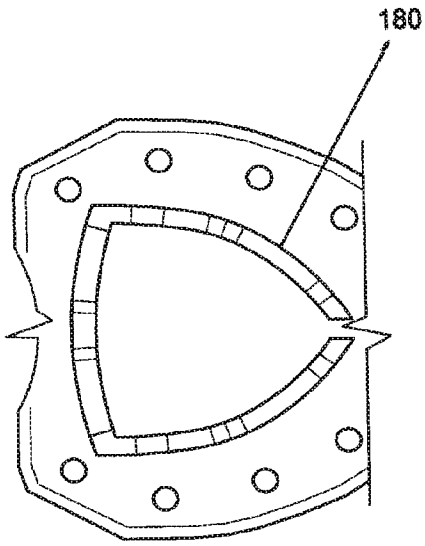


FIG. 5

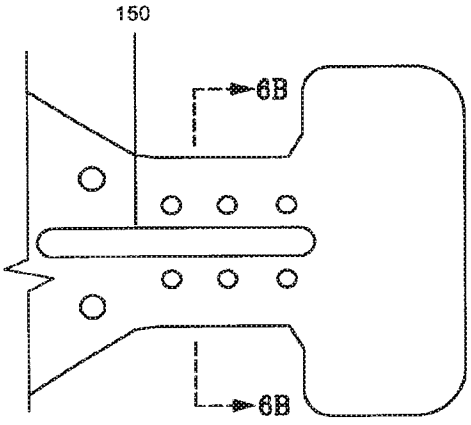


FIG. 6A

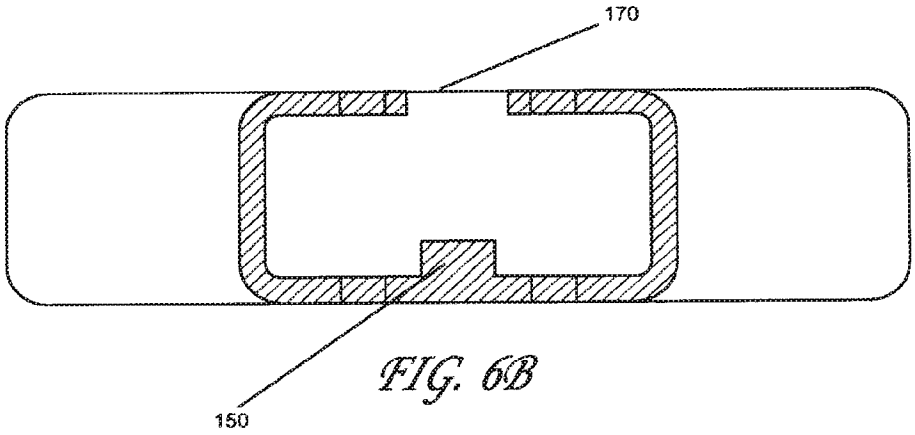


FIG. 6B

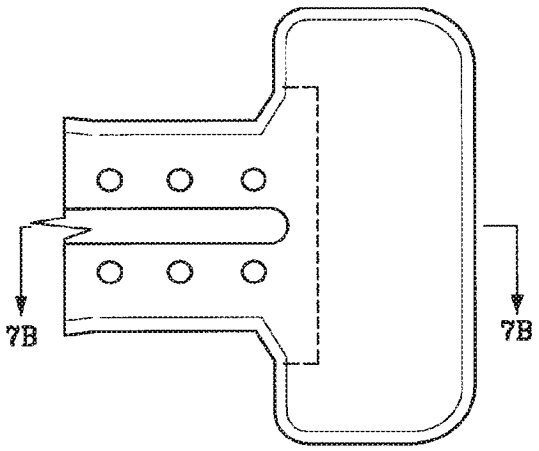


FIG. 7A

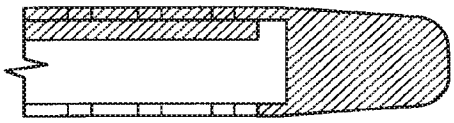
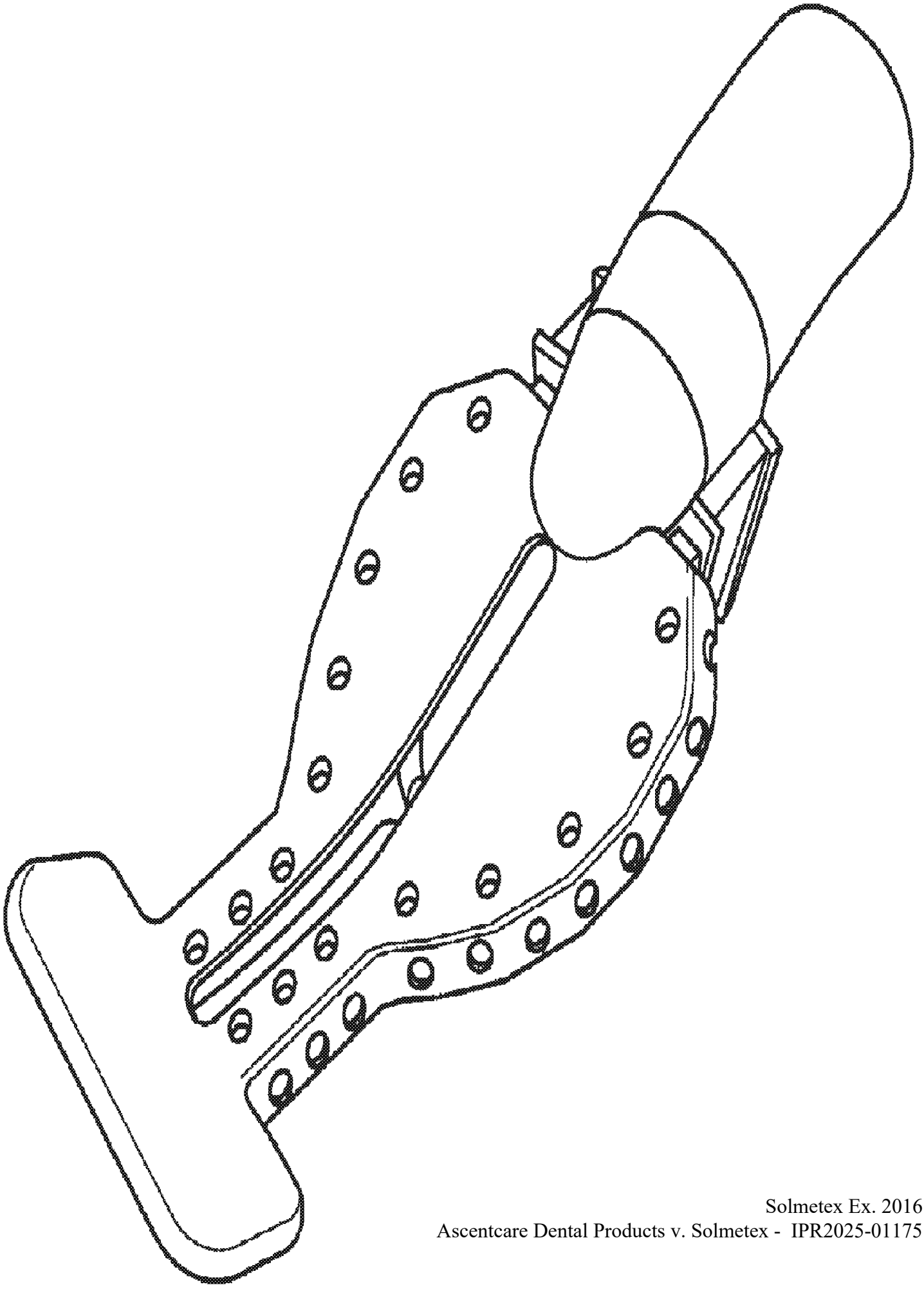


FIG. 7B



Intraoral dental suction and isolation system

Application Number	201480035991	Application Date	2014.04.03
Publication Number	105578986A	Publication Date	2016.05.11
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Applicant(s) Name	INCEPT INC		
Address			
Inventor(s) Name	NGUYEN THIEN;PHAM TAM THANH		
Patent Agency Code	11105	Patent Agent	

Abstract

A dental mouthpiece is provided that may be attached to a high-suction dental adapter for the purpose of assisting the dental staff during dental procedures through chair-side, hands-free suction, and isolation. Such a mouthpiece may comprise a main body portion, a cheek retractor portion, and a suction connector portion. In some embodiments, the main body portion, cheek retractor portion, and suction connector portion (and sub-portions thereof) may be molded in one piece, preferably by injection molding. In an exemplary embodiment, the mouthpiece may be made of a material that is flexible, translucent, conducive to injection molding, high heat-resistant, and autoclavable. Such a material may include silicone. Because the mouthpiece may be made of a high heat-resistant and autoclavable material, such a mouthpiece may be reusable.

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(51)Int.Cl.
A61C 17/00(2006.01)
A61C 17/06(2006.01)

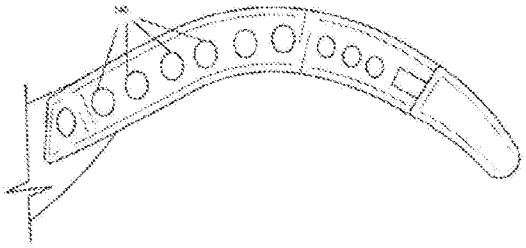
权利要求书1页 说明书4页 附图8页

(54)发明名称

口内牙科抽吸和隔离系统

(57)摘要

本发明提供了一种牙科口腔件，其可附接到高抽吸牙科转接器以便在牙科手术期间通过椅旁免提抽吸和隔离来帮助牙科工作人员。这种口腔件可包括主体部分、颊牵开器部分以及抽吸连接器部分。在一些实施方案中，所述主体部分、颊牵开器部分以及抽吸连接器部分（及其子部分）可优选通过注射成型模制成单件。在示例性实施方案中，所述口腔件可以由柔性、半透明、有助于注射成型、高耐热性且高压灭菌的材料制成。这种材料可包含硅酮。因为所述口腔件可以由高耐热且高压灭菌的材料制成，所以这种口腔件可以重复使用。



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1.一种由材料构成的牙科口腔件，所述牙科口腔件包括：

主体部分，所述主体部分包括具有前壁、后壁以及在所述前壁与所述后壁之间的侧壁的限定凹腔，其中所述前壁、所述后壁以及所述侧壁限定所述限定凹腔的内部部分；

颊牵开器部分，所述颊牵开器部分被配置来当被放置在患者的口腔中时压靠所述患者的脸颊，其中所述材料的弹性导致所述颊牵开器部分使所述患者的脸颊缩进而远离所述患者的牙齿；以及

抽吸连接器部分，所述抽吸连接器部分用于将所述主体部分的所述内部部分连接到真空抽吸源。

2.根据权利要求1所述的口腔件，其中所述侧壁包括多个穿孔。

3.根据权利要求1所述的口腔件，其中所述前壁和所述后壁各自包括多个穿孔。

4.根据权利要求1所述的口腔件，其中所述前壁还包括沿中心轴线的狭缝。

5.根据权利要求1所述的口腔件，其还包括从所述后壁的内表面突出的稳定杆，其中所述稳定杆的厚度使所述颊牵开器部分在弯曲过程中的弹性增加。

6.根据权利要求1所述的口腔件，其中所述主体部分、所述颊牵开器部分以及所述抽吸连接器部分注射成型为单件。

7.根据权利要求1所述的口腔件，其中在所述注射成型中使用的所述材料是柔性、半透明、高耐热、高压灭菌的硅酮基材料。

8.根据权利要求1所述的口腔件，其还包括从所述后壁的内表面突出的桥接结构，所述桥接结构包括在抽吸期间保持所述前壁与所述后壁分离的多个隔开的接触点。

9.根据权利要求8所述的口腔件，其中所述桥接结构从所述后壁的所述内表面以波形突出，并且其中所述接触点是在所述波形的波峰处。

10.根据权利要求9所述的口腔件，其中所述波形的波谷被配置成允许穿过所述桥接结构的抽吸。

11.根据权利要求1所述的口腔件，其中所述抽吸连接器部分包括有助于定位真空抽吸源或真空转接器的内部止挡件。

12.根据权利要求1所述的口腔件，其还包括可拆卸的口腔支撑件。

13.根据权利要求12所述的口腔件，其中所述可拆卸的口腔支撑件包括被配置来配合在所述抽吸连接器部分周围的绑带，其中所述抽吸连接器部分的外表面包括对应于所述绑带的缺口区，并且其中当所述绑带处于所述缺口区中时，所述绑带的外表面与所述抽吸连接器部分的剩余外表面基本上齐平。

14.根据权利要求13所述的口腔件，其中所述绑带与所述口腔支撑件注射成型为单件。

15.根据权利要求1所述的口腔件，其中所述抽吸连接器部分还包括对应于与所述绑带相关联的口腔支撑件中的开口的外部插塞凸起。

16.根据权利要求15所述的口腔件，其中所述插塞凸起配合到所述开口中以便在被所述患者咬住时提供附加的抗压性和减少的压缩性。

17.根据权利要求1所述的口腔件，其中所述抽吸连接器部分包括对应于真空转接器上的凸起的保险开关以用于联锁配合。

18.根据权利要求1所述的口腔件，其中所述前壁和所述后壁具有不同的厚度。

口内牙科抽吸和隔离系统

技术领域

[0001] 本发明总体上涉及牙科口腔件领域。更具体地说，本发明涉及口内牙科抽吸和隔离口腔件。

背景技术

[0002] 当前，牙科领域的牙科健康专业人员、牙科保健员以及牙科助理使用各种口腔件。在过去，由包括牙科专业人员和牙科助手的传统二人团队对牙科患者进行治疗。此外，所述团队可以使用许多不同类型的牙科设备和材料来提供牙科治疗。此类牙科设备和材料可包括以下物品：如口腔镜、牙垫、慢速抽吸喷射器、高速抽吸喷射器、纱布、棉卷和干燥角状物。牙科设备的每种物品可用于不同目的，但一些物品可以组合使用以用于一些类型的牙科服务。由此，试图提供此类牙科服务的牙科专业人员可能需要使用此类牙科设备的多种物品。因此，牙科助理的一个重要的任务是帮助牙科专业人员协调不同设备和材料的这些多个物品的使用。

[0003] 因此，本领域中需要以更高效、更舒适且更安全的方式为牙科患者提供牙科服务的改进的系统和方法。

发明内容

[0004] 本发明的实施方案可包括一种口腔件，所述口腔件可附接到高抽吸牙科转接器以便在牙科手术期间通过椅旁免提抽吸和隔离来帮助牙科工作人员。这种口腔件可包括主体部分、颊牵开器部分以及抽吸连接器部分。在一些实施方案中，所述主体部分、颊牵开器部分以及抽吸连接器部分(及其子部分)可优选通过注射成型模制成单件。在示例性实施方案中，所述口腔件可以由柔性、半透明、有助于注射成型、高耐热性且高压灭菌的材料制成。这种材料可包含硅酮。因为所述口腔件可以由高耐热且高压灭菌的材料制成，所以这种口腔件可以重复使用。

[0005] 所述主体部分可包括由前壁、后壁以及在前壁与后壁之间的侧壁构成的封闭凹腔。所述侧壁可以被穿透成具有多个穿孔。此类穿孔可构成筛孔。附加的穿孔可定位在前壁和后壁上。主体部分还可包括沿着前壁上的纵向中心轴线的狭缝。此类开口(例如，穿孔和狭缝)允许从患者口腔抽吸空气、流体以及小的杂物，穿过所述开口进入内部部分并且进入朝向抽吸源的抽吸连接器部分。因为所述口腔件是由柔性和弹性材料(例如，硅酮)制成，所以所述口腔件当被放置在患者的口腔中时可以弯曲以符合口腔的形状。当正确定位时，所述抽吸连接器部分可从患者口腔的一侧突出，同时主体抵靠患者口腔的后部，并且颊牵开器在患者口腔的相对侧上压靠患者的脸颊。

[0006] 主体部分还可包括在后壁的内表面上的突出桥接结构。这种桥接结构可以具有波峰和波谷的波形从所述内表面突出。所述波峰提供与前壁的多个接触点以便在抽吸期间保持前壁与后壁分离。同时，所述波谷提供允许穿过桥接结构抽吸空气、流体以及小的杂物的间隙。

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附图说明

[0007] 图1A是具有可拆卸的口腔支撑件的示例性口腔件的透视图。

[0008] 图1B是图1A的示例性口腔件和可拆卸的口腔支撑件的顶视图。

[0009] 图1C是图1A的示例性口腔件和可拆卸的口腔支撑件的底视图。

[0010] 图1D是图1A的示例性口腔件和可拆卸的口腔支撑件的侧视图。

[0011] 图1E是图1A的示例性口腔件和可拆卸的口腔支撑件的截面图。

[0012] 图2A是图1A的示例性口腔件的透视图，其中可拆卸的口腔支撑件已被拆除。

[0013] 图2B是图2A的示例性口腔件的顶视图。

[0014] 图2C是图2A的示例性口腔件的底视图。

[0015] 图2D是图2A的示例性口腔件的侧视图。

[0016] 图2E是图2A的示例性口腔件的截面图。

[0017] 图3A是示例性口腔支撑件的前视图。

[0018] 图3B是图3A的示例性口腔支撑件的后视图。

[0019] 图3C是图3A的示例性口腔支撑件的底视图。

[0020] 图3D是图3A的示例性口腔支撑件的透视图。

[0021] 图3E是图3A的示例性口腔支撑件的侧视图。

[0022] 图3F是图3A的示例性口腔支撑件的顶视图。

[0023] 图4是示例性口腔件中的示例性筛孔侧的近距离视图。

[0024] 图5是示例性口腔件中的内部桥接件的近距离视图。

[0025] 图6A是示例性口腔件中的示例性加强杆的近距离视图。

[0026] 图6B是图6A的示例性加强杆的截面图。

[0027] 图7A示例性口腔件中的示例性颊牵开器部分的近距离视图。

[0028] 图7B是图7A的示例性颊牵开器部分的截面图。

具体实施方式

[0029] 本发明的实施方案提供了一种口腔件，其包括主体部分、颊牵开器部分以及抽吸连接器部分。在一些实施方案中，主体部分、颊牵开器部分以及抽吸连接器部分(及其子部分)可优选地通过注射成型而模制成单件。在示例性实施方案中，所述口腔件可以由柔性、半透明、有助于注射成型、高耐热性且高压灭菌的材料制成。这种材料可包含硅酮。因为所述口腔件可以由高耐热的且高压灭菌的材料制成，所以这种口腔件可以重复使用。

[0030] 图1A-E是具有可附接的口腔支撑件160的示例性口腔件的不同视图，而图2A-E是图1A的示例性口腔件的不同视图，其中可附接的口腔支撑件160已被拆除。这种口腔件可包括主体部分110、抽吸连接器部分120以及颊牵开器部分130。

[0031] 主体部分110可包括筛孔或穿孔140、稳定杆150、开口狭缝170以及内部桥接件180。主体部分110可在一端连接到抽吸连接器部分120并且在另一端连接到颊牵开器部分130。这种颊牵开器部分130可被配置来压靠在患者的脸颊上并且使其缩进而远离患者的牙齿。当被放置在患者口腔中时，抽吸连接器部分120可以从患者口腔的一侧突出，同时主体部分110抵靠患者口腔的后部，并且颊牵开器部分130使在患者口腔的相对侧上的患者脸颊

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缩进。当所述口腔件被放置在患者口腔中时，用于形成所述口腔件的材料的柔韧性允许一定程度的弯曲。然而，所述材料具有足够弹性，以使得颊牵开器部分利用足以使患者脸颊远离患者牙齿移动的压力来压靠患者脸颊的内侧。

[0032] 当被放置在口腔中时，示例性主体部分110可包括面向口腔前部的前壁(例如，具有狭缝170的一侧)和面向口腔后部的后壁。两个壁可以在上壁和下壁处连接，从而形成至少部分地被封闭的本体。

[0033] 在本文中，上可用于指代当被放置在患者口腔中时抵靠患者口腔的顶部的一侧，并且下可用于指代抵靠患者口腔的底部的一侧。上侧和下侧可同样地形成，这允许所述口腔件改变方向，从而使得在新取向上上侧可以表现为下侧并且反之亦然。在使用时，主体部分110的相应侧可以用来保护口腔的顶部和口腔/舌头的底部并将它们分开。另外，主体部分110还可以用来保护口腔的后部(例如，咽喉和气道)避开掉落的杂物。

[0034] 所述口腔件的主体部分110的大部分可成形为直线形箭头或护盾，其基座大体符合患者口腔的口内形状。可提供不同尺寸的口腔件以用于成年人和儿童的不同大小的口腔。与主体的其余部分相比，所述箭头的基座侧的部分可形成为具有更厚的壁。这种增厚可提供附加的稳定性。

[0035] 另外，所述口腔件的主体部分110可包括沿前壁和后壁的上侧和下侧分布的多个孔140，以便有助于从口腔抽吸水、唾液以及杂物。在一些实施方案中，一组孔还可以沿上边缘和下边缘的壁形成筛孔。图4是示例性口腔件中的示例性筛孔壁的近距离视图。

[0036] 在所述箭头的连接到颊牵开器部分130的窄端处，主体部分110可包括矩形部分。所述矩形比所述箭头的基座更窄，可另外包括加强杆(或稳定杆)150(下文进一步详细进行描述)，并且可以至少部分地与进入主体部分110的凹腔内部的狭缝170(下文进一步详细进行描述)相交。

[0037] 稳定杆150可以是凸起或另外增厚区域，其加强矩形部分的稳定性并且有助于使这个区成形为患者口腔的口内后部形状。图6A是示例性口腔件的示例性稳定杆150的近距离视图。图6B是图6A的颊牵开器连接器部分中的示例性加强杆的截面图。

[0038] 在一些实施方案中，所述内部矩形加强杆或稳定杆150可定位在内部波形桥接结构180的远侧并且附接到主体和矩形部分的后表面内侧。这种稳定杆150可定位在以下区域：其中所定位的口腔件开始从最后部下颌颊齿的舌侧、围绕最后部牙齿的远极面到最后部下颌颊齿的前侧进行包裹，从而有助于使所述口腔件成形为患者口腔的大体口内形状。

[0039] 所述口腔件的各种实施方案还可包括在前表面上延伸超过主体的约三分之二的纵向开口狭缝170。沿着主体的中心延伸穿过所述矩形和所述箭头的大部分，这种狭缝170可有助于俘获并且抽吸水、唾液以及杂物，并且有助于清洗和维修。

[0040] 此外，所述口腔件的主体可包括在内表面上的桥接结构180以确保前表面和后表面在抽吸期间保持分离。图1E是所述口腔件的截面图，其中示出了桥接结构180。图5是桥接结构180的近距离视图，其中不具有主体部分的周壁。这种桥接结构180可形成为波状凸起，其大体上对应于前壁与后壁之间的距离，从而在其波峰处基本上(例如，在1mm内)延伸全部距离并且在其波谷处基本上与所述表面齐平。在一些实施方案中，桥接结构180可居中定位在所述口腔件的主体部分110中。桥接结构180的波形之间的间隙(或波谷)有助于将水和唾液抽吸驱动转移到抽吸连接器部分120并且最终进入中央抽吸真空室。在一些实施方案中，

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桥接结构180可遵循标志(例如,箭头或护盾)的形状。

[0041] 抽吸连接器部分120可以是卵形并且也可以附接到主体部分110。抽吸连接器部分120可以形成为具有比主体部分110更厚的壁并且被配置来附接到高抽吸真空转接器并且有助于将水、唾液以及杂物从口腔转移到外部转接器以便移除。抽吸连接器部分120还可包括有助于将所述口腔件滑动到转接器上达所期望深度的内部止挡件。抽吸连接器部分120可另外具有对应于可移除绑带(strap)的外部凹面缺口区210,以便当所述绑带处于适当位置时,所述绑带的外壁和连接器部的其余部分可以齐平。

[0042] 颊牵开器部分130被示出为锤头形远侧区,其可以附接到主体部分110。图7A是示例性口腔件中的示例性颊牵开器部分130的近距离视图。图7B是图7A的示例性颊牵开器部分130的截面图。

[0043] 所述口腔件可以与口腔支撑件160一起使用,如图1(具有口腔支撑件160)和图2(示出为不具有口腔支撑件160)所示。图3A-E提供了示例性口腔支撑件160的不同的近距离视图。可移除绑带310可以附接到口腔支撑件160,所述口腔支撑件160可用于撑开患者的口腔和牙齿。在这方面,抽吸连接器部分120可另外具有从抽吸连接器部分120的后侧突出的外部插塞220(图2C)。这种插塞220可对应于口腔支撑件160中的开口并且用于与所述开口连接。口腔支撑件160可由于开口中存在插塞220而得到加强,从而得到更抗压的、几乎不可压缩的且稳定的口腔支撑件160。在一些实施方案中,抽吸连接器部分120还可具有提供与外部高抽吸真空转接器上的对应凸起(例如,其也可成形为标志)额外联锁的保险开关230(例如,其可成形为标志)。

[0044] 口腔支撑件160可以由增厚的硅酮材料制成,所述硅酮材料与对应于抽吸连接器部分的圆周的弹性绑带注射成型为单件。口腔支撑件160具有内部矩形凹槽,其被设计成与所述口腔件的抽吸连接器部分120的外部矩形凸塞220紧密配合。口腔支撑件可以被制成具有不同尺寸以用于不同大小的口腔。因为口腔支撑件和口腔件是彼此可拆卸的,所以可以根据特定患者口腔的需要来配合和匹配每一个的不同尺寸。

[0045] 本文所述的口腔件可以与单件式可高压灭菌的高抽吸真空转接器一起使用。这种高抽吸真空体转接器可以由单一的均质材料制成。具有单杆设计的这种真空转接器可以与所有当前的高抽吸真空装置和吸涎器相同的方式作用来控制水、唾液以及杂物从口腔到外部真空源的移除。所述单杆可以被设计来控制水、唾液以及杂物穿过抽吸连接器部分内的单一大的排泄管道从至少部分地被这样封闭的主体移除。

[0046] 尽管上文已描述了各种实施方案,但应了解所述实施方案仅是以举例的方式呈现而不具限制性。本说明书并不意图将本发明的范围限制于本文所述的特定形式。因此,优选实施方案的广度和范围不应受任何上述示例性实施方案的限制。应了解以上描述是说明性的而不是限制性的。相反地,本说明书意图涵盖可包含在如所附权利要求限定的和以其他方式由本领域普通技术人员所理解的本发明的精神和范围内的此类替代、修改和等效物。因此,不应参照上面的描述来确定本发明的范围,而是应参照所附的权利要求和其等效物的全部范围来确定本发明的范围。

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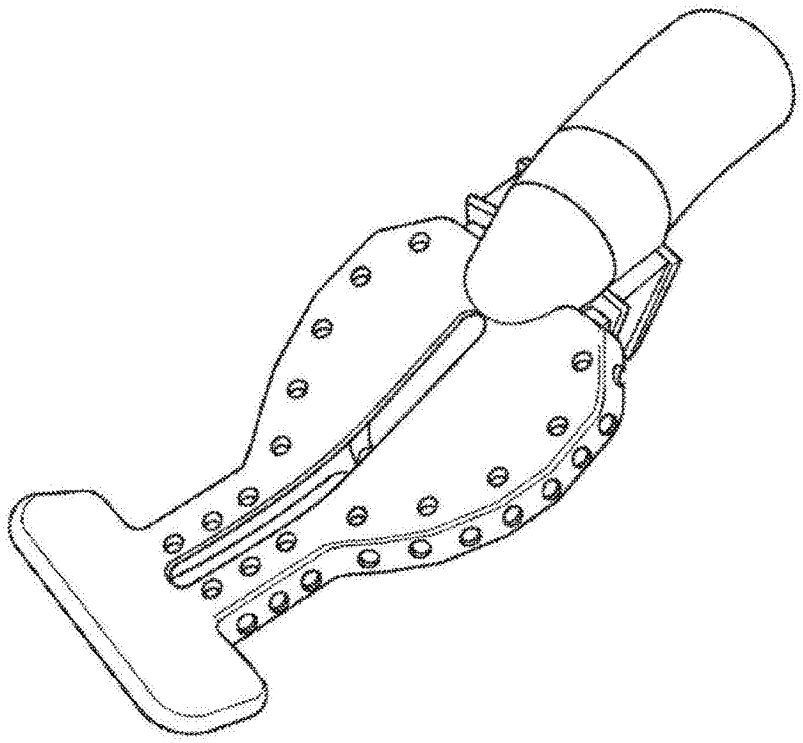

图1A

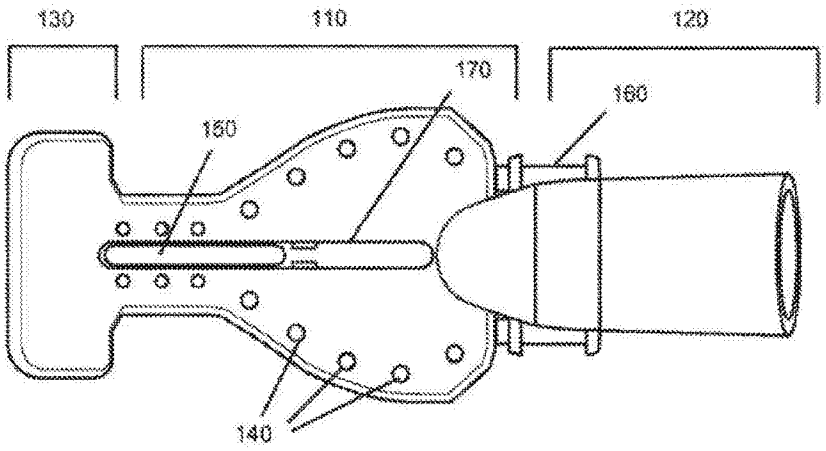

图1B

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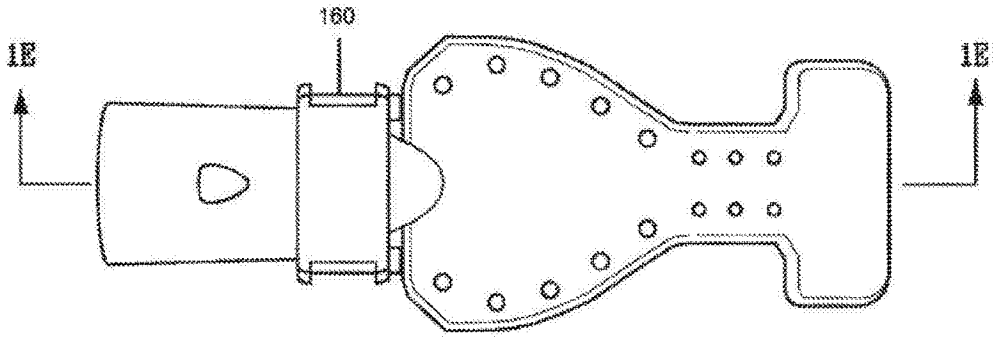

图1C

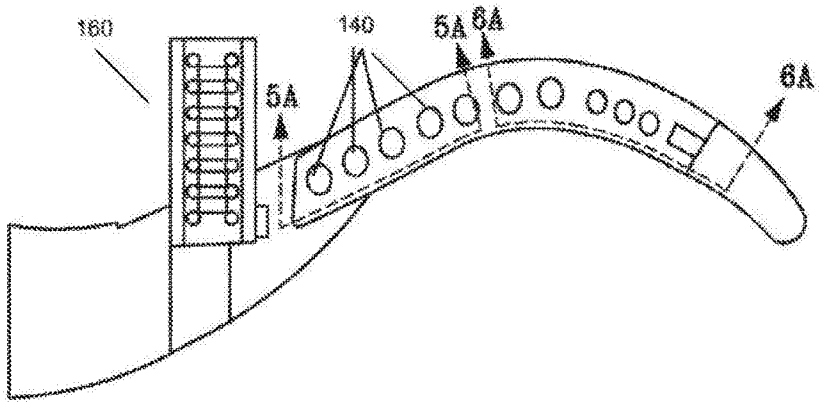

图1D

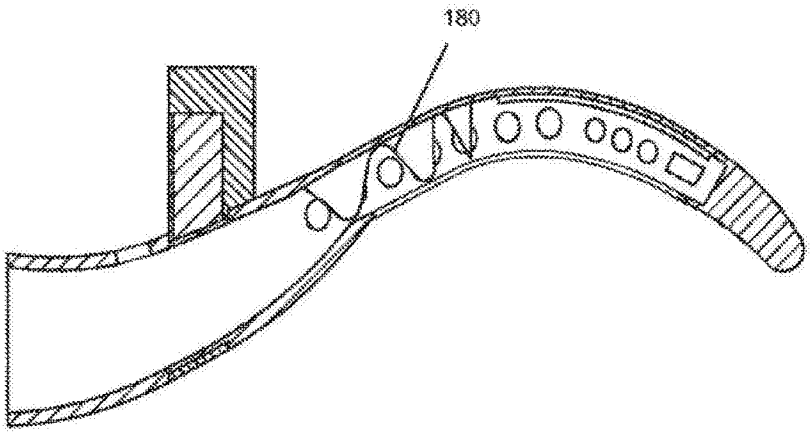

图1E

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

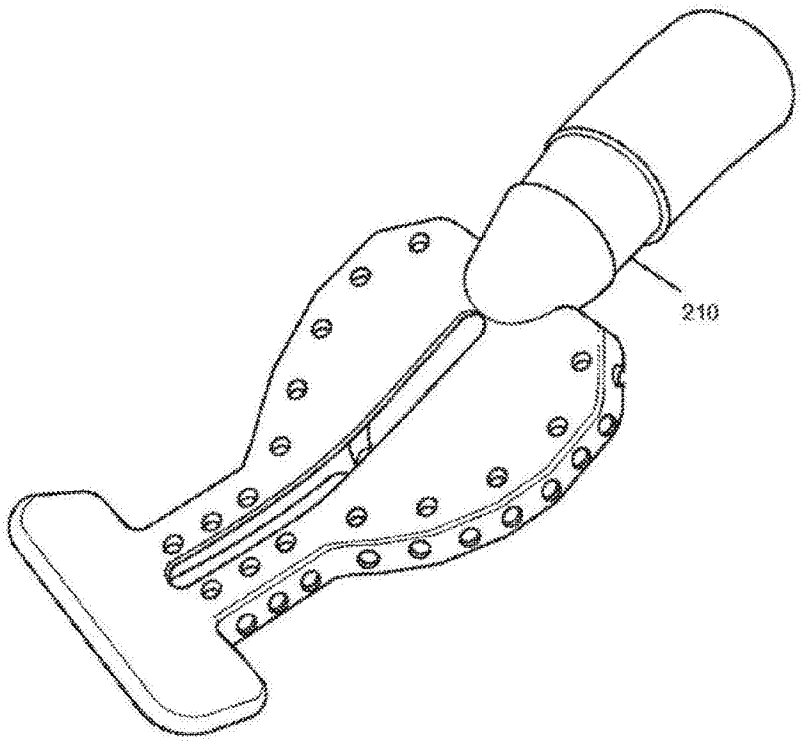

图2A

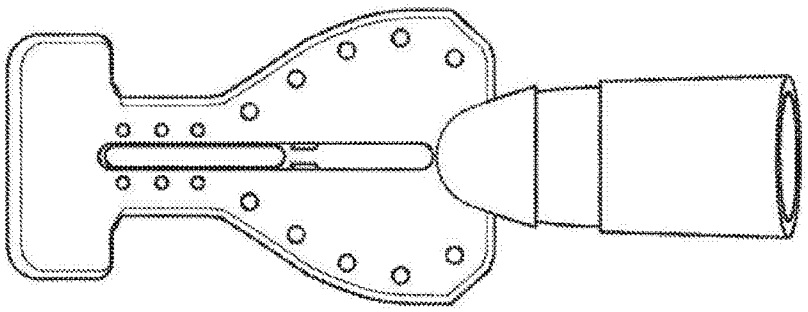

图2B

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

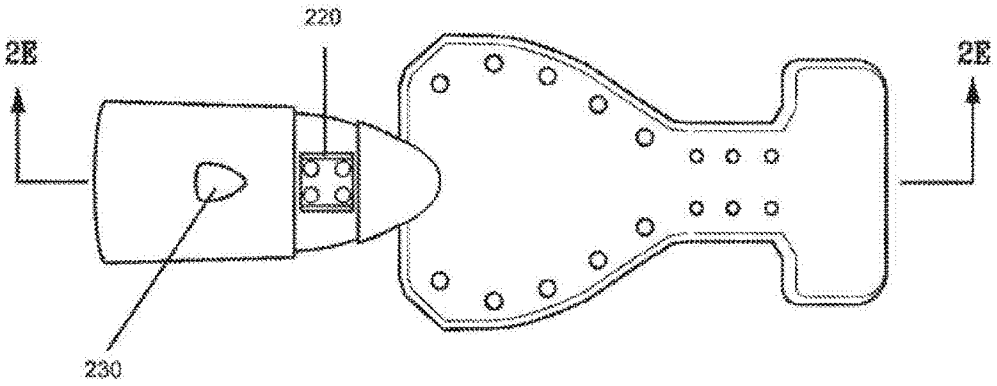

图2C

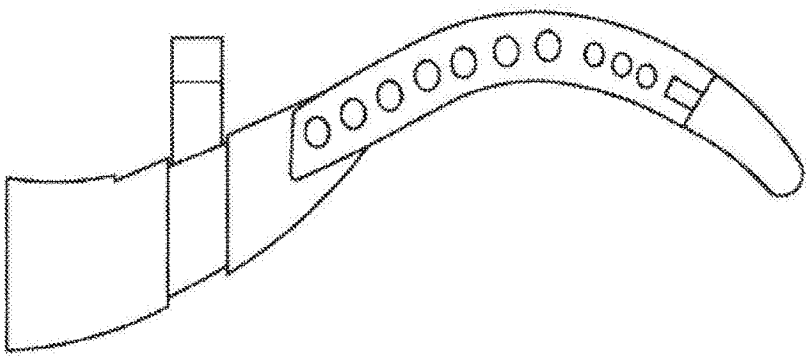

图2D

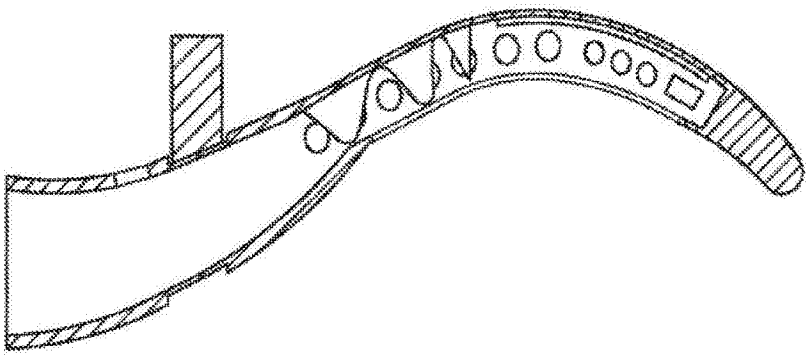

图2E

Solmetex Ex. 2016
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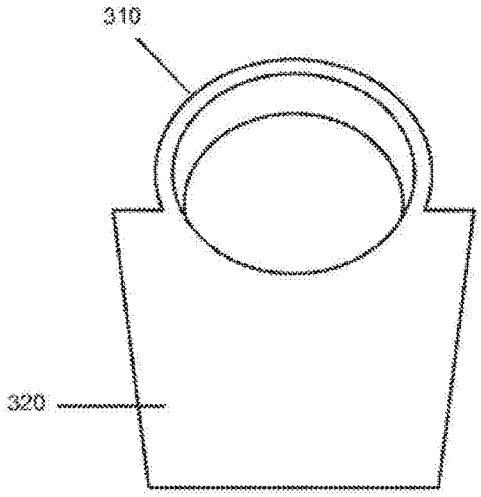

图3A

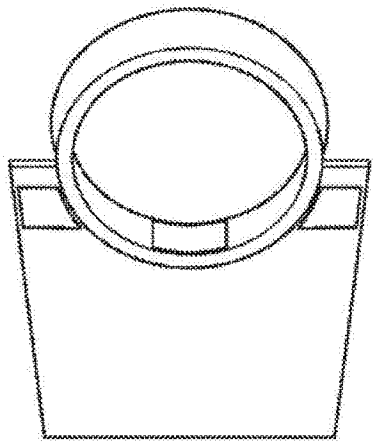

图3B

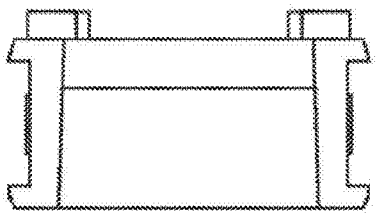

图3C

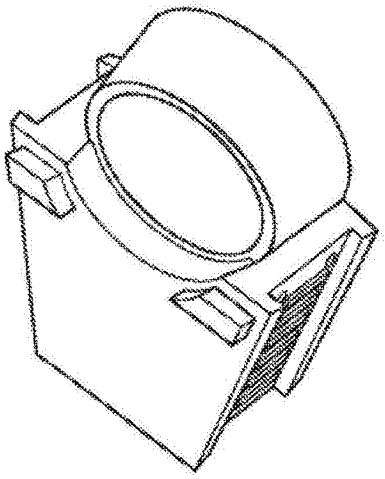

图3D

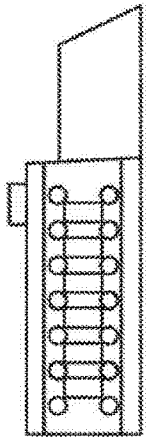

图3E

Solmetex Ex. 2016
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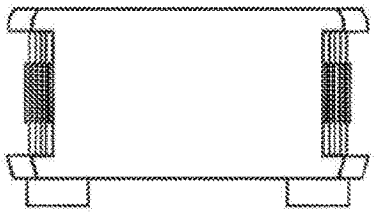

图3F

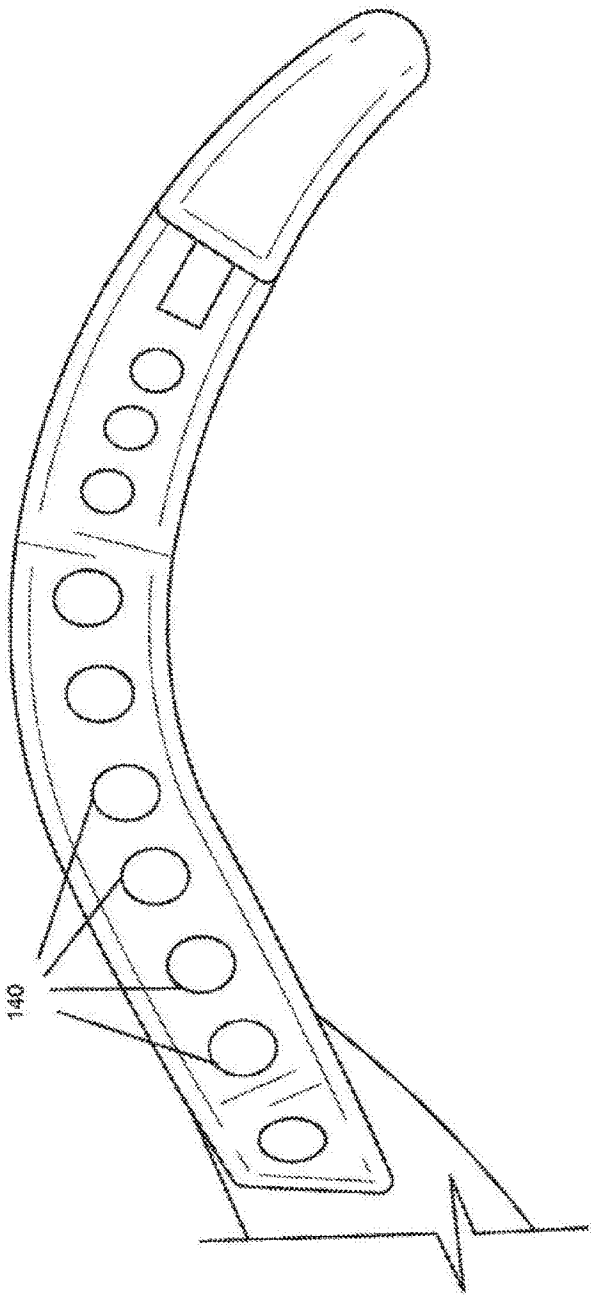

图4

Solmetex Ex. 2016
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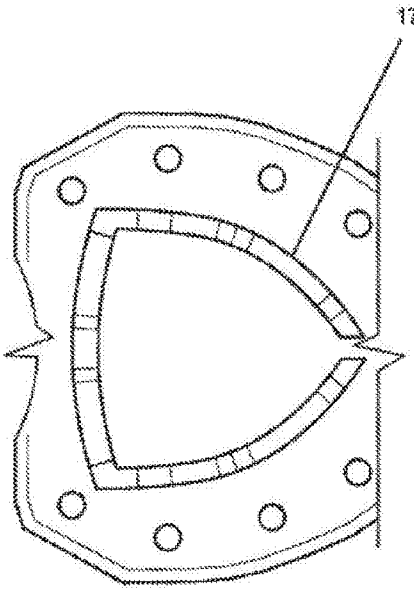

图5

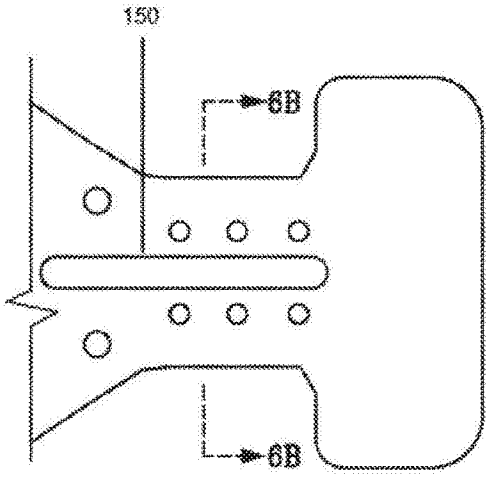

图6A

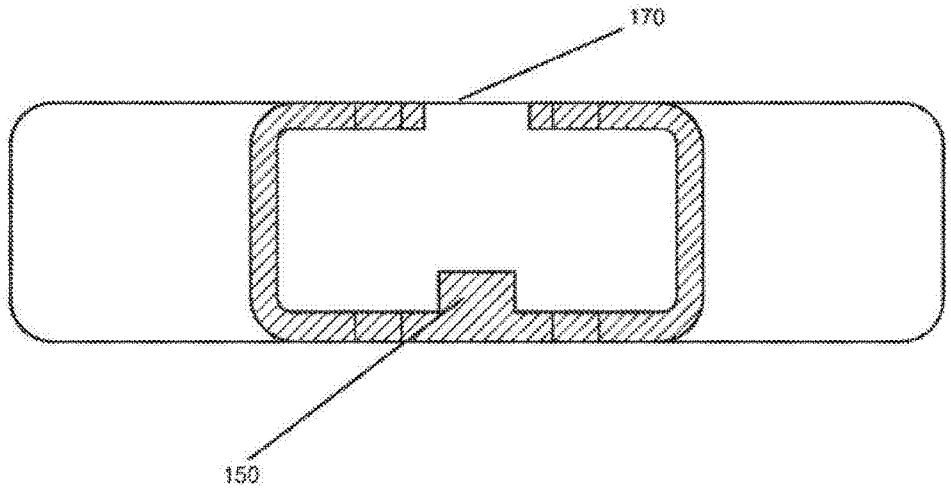

图6B

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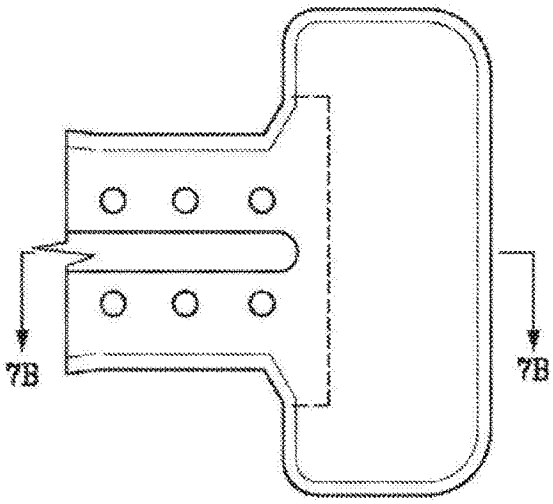

图7A

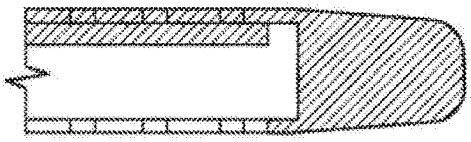

图7B

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Electronic Acknowledgement Receipt

EFS ID:	27101756
Application Number:	14228046
International Application Number:	
Confirmation Number:	7700
Title of Invention:	INTRAORAL DEVICE WITH MESH
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	138718
Filer:	Elton Franklin Dean III/Lea Fong
Filer Authorized By:	Elton Franklin Dean III
Attorney Docket Number:	INCEP-001COA
Receipt Date:	06-OCT-2016
Filing Date:	27-MAR-2014
Time Stamp:	11:02:27
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	INCEP-001COA_IDS_Statement_10-3-16.pdf	79948 3b0d36680bd83116ff181f6c40938755860dba0a1	no	2

Warnings:

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Ascentcare Dental Products v. Solmetex - IPR2025-01175

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	INCEP-001COA_IDS_1449_10-3-16.pdf	186580 6cb57d75a13db96cd88ccb00cedfba7cf5d45bc2	no	2
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Foreign Reference	CA_2851861.pdf	2424067 85366301decdd3125811177b5fe10e1ac2404fe2	no	32
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Warnings:					
Information:					
			Total Files Size (in bytes):	6184371	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit: 3732 | Examiner: Hao D. Mai

Serial No.: 14/228,046 | Filed: March 27, 2014

In re Application of: Thien Nguyen

Confirmation No.: 7700 | Customer No.: 138718

Title: INTRAORAL DEVICE WITH MESH

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT
Under 37 C.F.R. § 1.56 and 1.97-1.98

Examiner:

Pursuant to the provisions of 37 C.F.R. §§ 1.56 and 1.97-98 of the Rules of Practice in Patent Cases, enclosed herewith is form PTO-SB-08, listing several references. The Examiner is requested to make these references of official record in the application.

The reference cited may be material to examination of the application and are submitted in compliance with the Applicants' duty of disclosure as defined by 37 C.F.R. § 1.56.

No representation is made or intended as to the completeness of this list, nor is the inclusion of any reference an admission that it is prior art or pertinent to this application.

The Commissioner is hereby authorized to charge any necessary fee to Account Number 50-1662.

Respectfully submitted,
POLSINELLI LLP

Dated: October 3, 2016

By: _____/Elton Dean/_____
Elton Dean (Reg. No. 63,316)
Polsinelli LLP
Three Embarcadero Center, Suite 1350
San Francisco, CA 94111
415-248-2100 (Main)
ipdocket@polsinelli.com

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/228,046	03/27/2014	Thien Nguyen	INCEP-001COA	7700

138718 7590 11/07/2016

Polsinelli LLP
3 Embarcadero Center
Suite 1350
San Francisco, CA 94111

EXAMINER
MAI, HAO D

ART UNIT	PAPER NUMBER
3732	

NOTIFICATION DATE	DELIVERY MODE
11/07/2016	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspt@polsinelli.com
sfpatent@polsinelli.com

Office Action Summary	Application No. 14/228,046	Applicant(s) NGUYEN ET AL.	
	Examiner HAO D. MAI	Art Unit 3732	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/06/2016*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1-16 and 19-22* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-16, 19-22* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

4) ☐ Other: _____.

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Ascentcare Dental Products v. Solmetex - IPR2025-01175

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09/06/2016 has been entered.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of pre-AIA 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 21-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Black et al. (2009/0274991).**

Regarding claim 1, Black et al. discloses a dental mouthpiece (Figs. 6A-6C) comprising: a main body portion 60 configured as a pocket having an interior defined by: an anterior wall having a shape defined by an exterior edge, wherein the anterior wall includes an opening to the interior of the pocket (paragraph 85), a posterior wall having a shape corresponding to the defined shape of the anterior wall, wherein an exterior edge of the

posterior wall shape corresponds to the exterior edge of the anterior wall, and a side wall connecting the exterior edge of the anterior wall to the corresponding exterior edge of the posterior wall (Figs. 6A-6C; paragraph 82), and wherein at least part of the side wall comprises a plurality of perforations 62 (Fig. 6A, paragraph 80). Particularly to claim 22, note that Figs. 6A-6C show the smooth exterior edges of the anterior and posterior walls, the smooth exterior edges are connected to each other by the side wall (Figs. 6A-6C).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. **Claim 1-8, 11-14, 16, and 19-20, are rejected under 35 U.S.C. 103(a) as being unpatentable over Black et al. (2009/0274991) in view of McKelvey (4,083,115).**

Regarding claim 1, Black et al. discloses a dental mouthpiece comprising: a main body portion 40 configured as a pocket 41 having an interior defined by: an anterior wall 48b having a shape defined by an exterior edge, wherein the anterior wall includes an opening 47 to the interior of the pocket (paragraph 85), a posterior wall 48a having a shape corresponding to the defined shape of the anterior wall, wherein an exterior edge of the posterior wall shape corresponds to the exterior edge of the anterior wall, and a side wall connecting the exterior edge of the anterior wall to the corresponding exterior edge of the posterior wall (Figs. 6A-6C; paragraph 82), and wherein at least part of the side wall comprises a plurality of perforations 42 (Fig. 3B, paragraph 80). The mouthpiece further comprises a suction connector portion 30 (Fig.

2) for connecting the interior portion of the main body portion 40 to a vacuum suction source; and a detachable mouth prop 10 having a bit block portion 20 and a strap portion 11/13 (Fig. 2).

Black et al. discloses invention substantially as claimed except for a flush connection between the suction connector portion 30 with a notch region corresponding to the strap portion 11/13 of the mouth prop 10, as claimed. McKelvey discloses a suction mouthpiece having a connection between the strap portion 23/24 and the suction connector portion 9; wherein the suction connector portion 9 has a notch 15/16 corresponding to the strap 23/24, wherein an external surface 23 of the strap portion 23/24 is substantially flush with a remaining external surface of the suction connector portion 11 when the strap portion 24 sits in the notch region 15/16 (Figs. 4-5). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include such notch and strap connection in Black et al.'s device in order to achieve a smooth flushed connection between the strap 108 and a suction connector portion as taught by McKelvey.

As to claims 2-6, Black et al. shows in Fig. 4C the anterior and posterior walls comprising a plurality of perforations 242, 243, and the holes shown but unmarked; the side wall is shown having a mesh 64 (Fig. 6A), and the perforations on the anterior and posterior walls are spaced to comprise a mesh (Fig. 4C). Alternatively, Black et al. also a mesh 44 on anterior and posterior walls 40a, 40b (Fig. 3A; paragraph 85). **As to claim 7**, the opening 47 is considered to be a slit along a longitudinal axis of the main body (Figs. 3A-3B). **As to claim 8**, note the suction connector portion 46 (Fig. 6A; abstract; paragraph 85, 88). **As to claims 11-12**, note the cheek retractor portion 45 having a surface that applies pressure when the mouthpiece is bent (Figs. 3A-3B); and an extension 241 of the pocket, the side wall of the extension comprising one more perforation forming valve 248 (Figs. 4A-4B; paragraphs 87-88).

As to claim 14, note that the claim language "by injection-molded" is a product-by-process recitation in a product claim. Even though product-by-process recitation is limited by and defined by the recited process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe,* 777 F.2d 695, 227 USPQ 964 (Fed. Cir. 1985). In this case, Black et al. discloses the end product and the structures thereof as claimed as detailed above; the device shown comprised of the main body, cheek retractor portion, and suction connection portion, all of which are essential portions forming the device as one piece. The burden is shifted to applicant to show an unobvious difference between Black et al.' device and the invention that would have resulted from the injection molding process.

As to claim 16, the embodiment of Fig. 24c shows the wall thickness being different due to the longitudinal stiffener 447 between the anterior and posterior walls (Fig. 24c). **As to claims 19-20**, Black et al. discloses detachable mouth prop 10 having a bite block portion 10 and a strap portion 12 corresponding to a plug 65 of the main body (Fig. 6A).

7. **Claims 9-10 rejected under 35 U.S.C. 103(a) as being unpatentable over Black et al. in view of McKelvey as applied to claim 1 as detailed above, and further in view of Riddle (1,471,207).** Black et al. in view of McKelvey discloses the invention substantially as claimed except for a bridge structure. Riddle discloses a saliva ejector tube having a bridge structure 5 protruding from an interior surface of a wall thereof and unattached to the opposite wall. The protruding bridge comprises a plurality of protrusions (waved wire) to keep the walls separated from one another during suction (Fig. 1). It would have been obvious to one having ordinary

skill in the art at the time the invention was made to incorporate such bridge into Black et al.' device in order to prevent collapse when under suction pressure as explicitly taught by Riddle.

8. **Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Black et al. in view of McKelvey as applied to claim 1 as detailed above, and further in view of Sclafani (5,890,899).** Black et al. in view of McKelvey discloses the invention substantially as claimed except for the material being flexible, translucent, silicone-base. Sclafani discloses a dental suction isolator device formed of silicone-based material (Figs. 1-9, column 8 lines 10-15). It would have been obvious to one having ordinary skill in the art at the time the invention was made to make Black et al.' device from silicone-based material as taught by Sclafani to be a known alternative suitable known material while yielding the same and/or predictable results.

Response to Arguments

9. Applicant's arguments with respect to the amended claims have been considered and are persuasive as having overcome the previous 35 U.S.C. 102 ground(s) of rejection under Black et al. However, upon further considerations, the claims are hereby rejected under Black et al. in view of McKelvey as detailed above.

Black et al. discloses invention substantially as claimed except for a flush connection between the suction connector portion 30 with a notch region corresponding to the strap portion 11/13 of the mouth prop 10, as claimed. McKelvey discloses a suction mouthpiece having a connection between the strap portion 23/24 and the suction connector portion 9; wherein the suction connector portion 9 has a notch 15/16 corresponding to the strap 23/24, wherein an external surface 23 of the strap portion 23/24 is substantially flush with a remaining external surface of the suction connector portion 11 when the strap portion 24 sits in the notch region

15/16 (Figs. 4-5). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include such notch and strap connection in Black et al.'s device in order to achieve a smooth flushed connection between the strap 108 and a suction connector portion as taught by McKelvey.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Hao D. Mai whose telephone number is (571) 270-3002. The examiner can normally be reached on Monday-Friday 8:00AM – 4:30PM. If attempts to reach the examiner by telephone are unsuccessful, please contact the examiner's supervisor, Cris Rodriguez, at (571) 272-4964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

11. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hao D Mai/
Examiner, Art Unit 3732

Notice of References Cited	Application/Control No. 14/228,046	Applicant(s)/Patent Under Reexamination NGUYEN ET AL.	
	Examiner HAO D. MAI	Art Unit 3732	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-4,083,115 A	04-1978	McKelvey; Thomas H.	A61C17/043	433/96
	B	US-				
	C	US-				
	D	US-				
	E	US-				
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

Substitute for Form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Complete if Known	
Application Number	14/228,046
Filing Date	March 27, 2014
First Named Inventor:	Thien Nguyen
Art Unit	3732
Examiner Name	Hao D. Mai
Attorney Docket Number	INCEP-001COA

Sheet 1 **of** 2

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (If known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-	2012/0015320	1/19/2012	Koo	
		US-				
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3] Number[4] Kind Code[5] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]

Examiner Signature	/Hao D Mai/ (11/01/2016)	Date Considered	

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SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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Sonnetex Ex. 2016
IPR2025-01175

Based on Form PTO/SB/08A (08-03)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /HDM/

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				Filing Date	March 27, 2014
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				Art Unit	3732
				Examiner Name	Hao D. Mai
Sheet	2	**of**	2	Attorney Docket Number	INCEP-001COA

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T[2]
		European Patent Application No. 14721736.8; Extended European Search Report dated 10/20/15	

Examiner Signature	/Hao D Mai/ (11/01/2016)	Date Considered	

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Solutex Ex. 2016
AscendGate Dental Products v. Solutex - IPR2025-01175

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14228046	NGUYEN ET AL.
	Examiner	**Art Unit**
	HAO D MAI	3732

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	11/03/2015	05/31/2016	11/01/2016						
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	18	✓	✓	-						
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	20	✓	✓	✓						
	21			✓						
	22			✓						

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

Substitute for Form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*				Application Number	14/228,046
				Filing Date	March 27, 2014
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				Art Unit	3732
				Examiner Name	Hao D. Mai
Sheet	1	**of**	2	Attorney Docket Number	INCEP-001COA

U.S. PATENT DOCUMENTS

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		US-	3,857,181	12/31/1974	Rappaport	
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Sonnetex Ex. 2016
IPR2025-01175

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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /HDM/

Substitute for Form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*				Application Number	14/228,046
				Filing Date	March 27, 2014
				First Named Inventor:	Thien Nguyen
				Art Unit	3732
				Examiner Name	Hao D. Mai
Sheet	2	**of**	2	Attorney Docket Number	INCEP-001COA

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T[2]
		Docket No. INCEP-001COB U.S. Patent Application 14/228,050; Office Action mailed 11/6/15	
		Docket No. INCEP-001COC U.S. Patent Application 14/228,054; Office Action mailed 12/3/15	
		Docket No. INCEP-001COD U.S. Patent Application 14/228,057; Office Action mailed 11/20/15	
		Docket No. INCEP-001COE U.S. Patent Application 14/228,061; Office Action mailed 12/4/15	
		Docket No. INCEP-003DCOA U.S. Patent Application 29/477,887 Office Action mailed 11/127/15	
		Docket No. INCEP-004DCOA U.S. Patent Application 29/477,888 Office Action mailed 12/2/15	

Examiner Signature	/Hao D Mai/ (11/01/2016)	Date Considered	

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Associated Dental Products v. Solmetex - IPR2025-01175

Substitute for Form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Complete if Known	
Application Number	14/228,046
Filing Date	March 27, 2014
First Named Inventor:	Thien Nguyen
Art Unit	3732
Examiner Name	Hao D. Mai
Attorney Docket Number	INCEP-001COA

Sheet	1	of	2

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.'	Document Number Number-Kind Code[2](If known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-				
		US-				
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.'	Foreign Patent Document Country Code[3] Number[4] Kind Codes (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T6
		CA 2,851,861	2/9/2016	Incept, Inc.		
		CN 105578986A	5/11/2016	Incept, Inc.		

Examiner Signature	/Hao D Mai/ (11/01/2016)	Date Considered	

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Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

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Substitute for Form 1449/PTO	Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*	Application Number	14/228,046
	Filing Date	March 27, 2014
	First Named Inventor:	Thien Nguyen
	Art Unit	3732
	Examiner Name	Hao D. Mai
Sheet 2 of 2	Attorney Docket Number	INCEP-001COA

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		Canadian Patent Application No. 2,919,142; CA Examination Report dated 5/31/16	

Examiner Signature	/Hao D Mai/ (11/01/2016)	Date Considered	

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Solmetex Ex 2016
Ascencare Dental Products v. Solmetex - IPR2025-01175

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L2	3169	A61C17/04,0208,043.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2016/11/01 14:26
L3	63	A61C17/04,0208,043.cpc. and ((connect$3 or strap or notch) same (flush$3))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2016/11/01 14:26

EAST Search History (Interference)

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Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14228046	NGUYEN ET AL.
	Examiner	Art Unit
	HAO D MAI	3732

CPC- SEARCHED		
Symbol	Date	Examiner
A61C 17/043,046	11/03/2015	HDM
Update Search	05/31/2016	HDM
Update Search	10/03/2016	HDM
A61C 17/04, 0208	11/01/2016	HDM
Update Search	11/01/2016	HDM

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
433	93	11/03/2015	HDM

SEARCH NOTES		
Search Notes	Date	Examiner
Inventor Search	11/03/2015	HDM
Review searches of parent case 14/100323	11/03/2015	HDM
Update Search	05/31/2016	HDM
Update Search	10/03/2016	HDM
Update Search	11/01/2016	HDM

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

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		US-	D734,851	7/21/2015	Nguyen	
		US-				
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		WO 2015/088577	6/18/2015	Incept, Inc.		

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		US-	9,089,389	7/28/2015	Hirsch et al.	
		US-	2006/0063126	3/23/2006	Aloise et al.	
		US-	2013/0095450	4/18/2013	Ames	
		US-	2015/0305842	10/29/2015	Hirsch et al.	
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.'	Foreign Patent Document Country Code[3] Number[4] Kind Codes (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T6

Examiner Signature	/Hao D Mai/ (11/01/2016)	Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 'Applicant's unique citation designation number (optional). [2]See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3]Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4]For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6]Applicant is to place a check mark here if English language translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SENT FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: **Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Ascentcare Dental Products v. Solmetex - IPR2025-01175

Based on Form PTO/SB/08A (08-03)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /HDM/

Substitute for Form 1449/PTO	Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*	Application Number	14/228,046
	Filing Date	March 27, 2014
	First Named Inventor:	Thien Nguyen
	Art Unit	3732
	Examiner Name	Hao D. Mai
Sheet 2 of 2	Attorney Docket Number	INCEP-001COA

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No'	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T^2
		Docket No. INCEP-001COB U.S. Patent Application 14/228,050; Final Office Action mailed 5/20/16	
		Docket No. INCEP-001COD U.S. Patent Application 14/228,057; Final Office Action mailed 6/7/16	
		Docket No. INCEP-001COE U.S. Patent Application 14/228,061; Final Office Action mailed 6/30/16	
		Docket No. INCEP-003DCOA U.S. Patent Application 29/477,887 Final Office Action mailed 6/1/16	
		Docket No. INCEP-004DCOA U.S. Patent Application 29/477,888 Final Office Action mailed 6/1/16	

Examiner Signature	/Hao D Mai/ (11/01/2016)	Date Considered	

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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /HDM/

Ascencare Dental Products v. Solmetex - Solmetex Ex. 2016 IPR2025-01175

Substitute for Form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

				Complete if Known	
				Application Number	14/228,046
				Filing Date	March 27, 2014
				First Named Inventor:	Thein Nguyen
				Art Unit	3732
				Examiner Name	Hao D. Mai
Sheet	**1**	**of**	**2**	Attorney Docket Number	INCEP-001COA

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.'	Document Number Number-Kind Code[2](If known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-	5,762,496	6/9/1998	Albertsson et al.	
		US-				
		US-				
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.'	Foreign Patent Document Country Code[3] Number[4] Kind Codes (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T6

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 'Applicant's unique citation designation number (optional). [2]See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3]Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4]For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6]Applicant is to place a check mark here if English language translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SENT FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.**

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Based on Form PTO/SB/08A (08-03)

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

Substitute for Form 1449/PTO	Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*	Application Number	14/228,046
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NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No'	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T^2
		Docket No. INCEP-001COB U.S. Patent Application 14/228,050; Office Action mailed 11/4/16	

Examiner Signature		Date Considered	

*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Ascencare Dental Products v. Solmetex - Solmetex Ex 2016 IPR2025-01175

Electronic Acknowledgement Receipt

EFS ID:	27722190
Application Number:	14228046
International Application Number:	
Confirmation Number:	7700
Title of Invention:	INTRAORAL DEVICE WITH MESH
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	138718
Filer:	Elton Franklin Dean III/Lea Fong
Filer Authorized By:	Elton Franklin Dean III
Attorney Docket Number:	INCEP-001COA
Receipt Date:	12-DEC-2016
Filing Date:	27-MAR-2014
Time Stamp:	10:17:29
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	INCEP-001COA_IDS_Statement_12-7-16.pdf	80900 0eff64eb875f91baf8e66c20f48d97274ade3	no	2

Warnings:

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	INCEP-001COA_IDS_1449_12-7-16.pdf	186541 0881434033163b7455ccc272c8e5ccd207ade08a	no	2
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
			Total Files Size (in bytes):	267441	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit: 3732 | Examiner: Hao D. Mai

Serial No.: 14/228,046 | Filed: March 27, 2014

In re Application of: Thien Nguyen

Confirmation No.: 7700 | Customer No.: 138718

Title: INTRAORAL DEVICE WITH MESH

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT
Under 37 C.F.R. § 1.56 and 1.97-1.98

Examiner:

Pursuant to the provisions of 37 C.F.R. §§ 1.56 and 1.97-98 of the Rules of Practice in Patent Cases, enclosed herewith is form PTO-SB-08, listing several references. The Examiner is requested to make these references of official record in the application.

The reference cited may be material to examination of the application and are submitted in compliance with the Applicants' duty of disclosure as defined by 37 C.F.R. § 1.56.

Applicants hereby declare, pursuant to 37 C.F.R. §1.97(e)(2), that no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of the person signing the certification after having made a reasonable inquiry, no item of information contained in the information disclosure statement was

known to any individual designated in 37 C.F.R. §1.56(c) more than three months prior to the filing of the information disclosure statement.

No representation is made or intended as to the completeness of this list, nor is the inclusion of any reference an admission that it is prior art or pertinent to this application.

The Commissioner is hereby authorized to charge any necessary fee to Account Number 50-1662.

Respectfully submitted,
POLSINELLI LLP

Dated: December 7, 2016

By: _____/Elton Dean/_____
Elton Dean (Reg. No. 63,316)
Polsinelli LLP
Three Embarcadero Center, Suite 1350
San Francisco, CA 94111
415-248-2100 (Main)
ipdocket@polsinelli.com

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTOR(S):	Nguyen et al.
APPLICATION NO.:	14/228,046
FILING DATE:	March 27, 2014
TITLE:	Intraoral Device with Mesh
ART UNIT:	3732
CONFIRM. NO.:	7700
ATTY.DKT.NO.:	INCEP-001COA

MAIL STOP AMENDMENT
COMMISSIONER FOR PATENTS
P.O. BOX 1450
ALEXANDRIA, VA 22313-1450

AMENDMENT

Examiner Mai:

In response to the office action dated November 7, 2016 (*Office Action*), please enter the following **amendments** to the **claims**, which commence on **page two**. The Applicants' **remarks** and **conclusion** appear beginning on **pages six** and **eleven**, respectively.

IN THE CLAIMS

PLEASE AMEND THE CLAIMS AS FOLLOWS:

1. (cancelled)

2. (currently amended) The dental mouthpiece of claim [[1]] 21, wherein the perforations on the side wall are spaced to comprise a mesh.

3. (currently amended) The dental mouthpiece of claim [[1]] 21, wherein the anterior wall further comprises a plurality of perforations.

4. (original) The dental mouthpiece of claim 3, wherein the perforations on the anterior wall are spaced to comprise a mesh.

5. (currently amended) The dental mouthpiece of claim [[1]] 21, wherein the posterior wall further comprises one or more perforations.

6. (original) The dental mouthpiece of claim 5, wherein the perforations on the posterior wall are spaced to comprise a mesh.

7. (currently amended) The dental mouthpiece of claim [[1]] 21, wherein the opening from the anterior wall to the pocket includes a slit along a longitudinal axis of the main body.

8. (currently amended) The dental mouthpiece of claim [[1]] 21, wherein ~~activation of the vacuum source~~ suction provided at the suction connector within the interior of the pocket provides suction of fluids through the perforations in the side wall into the interior of the pocket towards the suction connector.

9. (currently amended) The dental mouthpiece of claim [[1]]21, further comprising a bridge structure protruding from an interior surface of the posterior wall and unattached to the anterior wall, the protruding bridge structure comprising a plurality of protrusions collectively providing spaced contact points that keep the anterior wall separated from the posterior wall during suction.

10. (currently amended) The dental mouthpiece of claim 9, wherein ~~the provided~~ suction ~~further~~ provided at the suction connector within the interior of the pocket draws fluids through spaces between the protrusions of the bridge structure towards the ~~vacuum source~~ suction connector.

11. (currently amended) The dental mouthpiece of claim [[1]] 21, further comprising [[a]] the cheek retractor portion ~~connected to the main body portion and~~, the cheek retractor having a surface that applies pressure when the dental mouthpiece is bent, wherein the pressure is based on resilience of a material from which the cheek retractor is formed.

12. (previously presented) The dental mouthpiece of claim 11, wherein the cheek retractor portion comprises an extension of the pocket, wherein a side wall of the extension comprises one or more perforations.

13. (previously presented) The dental mouthpiece of claim 11, further comprising a stability bar protruding from an interior surface of the posterior wall along the longitudinal axis of the main body and extending through at least part of the cheek retractor, wherein a thickness of the stability bar corresponds to resilience by which the cheek retractor portion applies pressure during bending.

14. (currently amended) The dental mouthpiece of claim [[1]] 21, wherein the main body portion is formed by injection-molding as one piece.

15. (currently amended) The dental mouthpiece of claim [[1]] 21, wherein a material from which the main body is formed is a flexible, translucent, high heat-resistant, autoclavable silicone-based material.

16. (currently amended) The dental mouthpiece of claim [[1]] 21, wherein the anterior wall and the posterior wall have different thicknesses.

17. - 18. (cancelled)

19. (currently amended) The dental mouthpiece of claim [[1]] 21, wherein the bite block portion and the strap portion are injection-molded in one piece.

20. (currently amended) The dental mouthpiece of claim [[1]] 21, wherein the bite block portion comprises an opening corresponding to a plug connected to the main body.

21. (previously presented) A dental mouthpiece comprising:

a main body portion configured as a pocket having an interior defined by:

an anterior wall having a shape defined by an exterior edge, wherein the anterior wall includes an opening to the interior of the pocket,

a posterior wall having a shape corresponding to the defined shape of the anterior wall, wherein an exterior edge of the posterior wall shape corresponds to the exterior edge of the anterior wall, and

a side wall connecting the exterior edge of the anterior wall to the corresponding exterior edge of the posterior wall, and wherein at least part of the side wall comprises a plurality of perforations into the interior of the pocket

.

22. (currently amended) A dental mouthpiece comprising:

a main body portion configured as a pocket having an interior defined by:

an anterior wall having a shape defined by a smooth exterior edge, wherein the anterior wall includes an opening to the interior of the pocket,

a posterior wall having a shape corresponding to the defined shape of the anterior wall, wherein a smooth exterior edge of the posterior wall shape corresponds to the smooth exterior edge of the anterior wall, and

a side wall connecting the smooth exterior edge of the anterior wall to the corresponding smooth exterior edge of the posterior wall, and wherein at least part of the side wall comprises a plurality of perforations;

a suction connector portion connected to one end of the main body portion, the suction connector connecting a vacuum source with the interior of the pocket within the main body portion;; and

a connection to a cheek retractor at another end of the main body portion, the other end opposite to the end of the main body portion.

REMARKS

Rejection under 35 U.S.C. §§ 102, 103

The Examiner stated that claims 21 and 22 are anticipated by U.S. patent application number 2009/0274991 (hereinafter *Black*). *Office Action*, 2. The Examiner also contends that the independent claims of the present application are rendered obvious by *Black* in view of U.S. patent number 4,083,115 (hereinafter *McKelvey*). *Office Action*, 3. The Applicants respectfully traverse.

Specific elements of the independent claims are discussed below:

1. ***'a main body portion configured as a pocket having an interior defined by:'***

The main body portion is described by the specification as follows:

> An exemplary main body portion 110, when placed in a mouth, may include an anterior wall facing the front of the mouth (e.g., the side with slit 170) and a posterior wall facing the back of the mouth. The two walls may connect at a superior wall and an inferior wall forming a body that is at least partially enclosed.

Specification, [0035]; see also FIG. 1B (provided below)

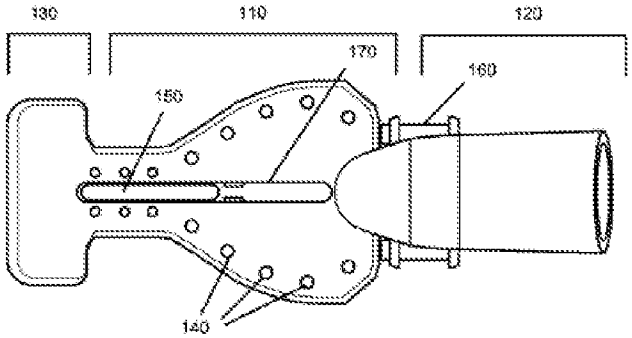

FIG. 1B

As described and illustrated, main body portion 110 is a partially enclosed body (*e.g.*, pocket) defined by several walls.

2. *'an anterior wall having a shape defined by an exterior edge, wherein the anterior wall includes an opening to the interior of the pocket'*

As illustrated in FIG. 1B provided above, the anterior wall (the wall facing the viewer in FIG. 1B) has a defined shape marked by an exterior edge and includes an opening into the interior of the body (*e.g.*, pocket).

3. *'a posterior wall having a shape corresponding to the defined shape of the anterior wall, wherein an exterior edge of the posterior wall shape corresponds to the exterior edge of the anterior wall'*

The posterior wall is illustrated in FIG. 1C as follows:

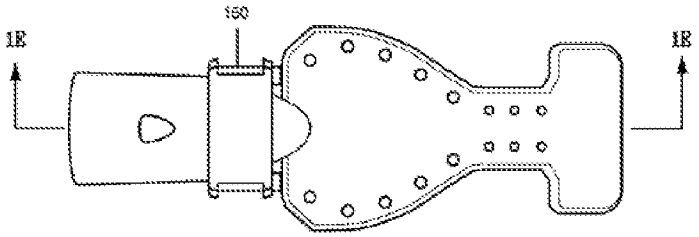

FIG. 1C

As illustrated, the posterior wall (the wall facing the viewer in FIG. 1C) has a defined shape that corresponds to the shape of the anterior wall. Similarly, the shape of the posterior wall is defined by a corresponding exterior edge.

4. *'a side wall connecting the exterior edge of the anterior wall to the corresponding exterior edge of the posterior wall, and wherein at least part of the side wall comprises a plurality of perforations into the interior of the pocket'*

The side wall is illustrated in FIGs. 1A, 1D, and 4 (provided below):

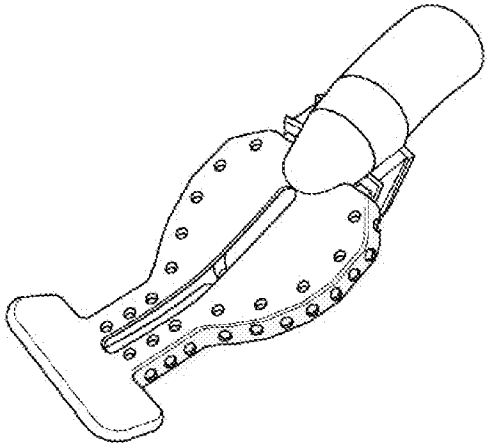

FIG. 1A

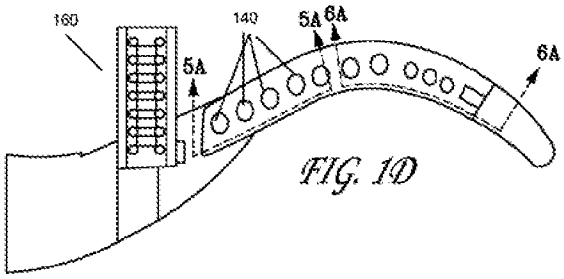

FIG. 1D

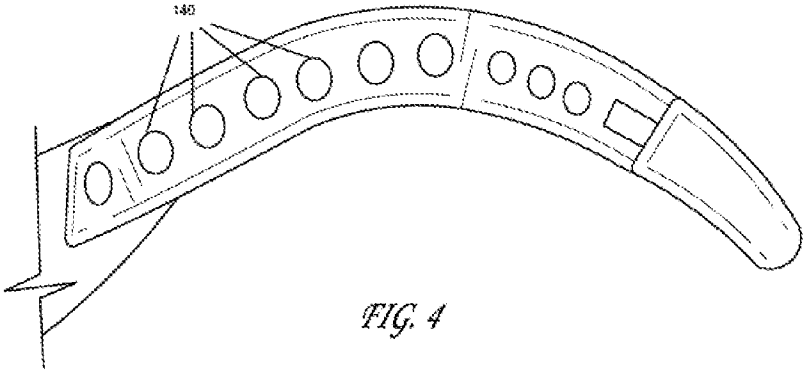

FIG. 4

As can be seen from the illustrations provided, the side wall connects the defined exterior edge of the anterior wall to the defined exterior edge of the posterior wall.

4. ***'a suction connector connected to one end of the main body portion, the suction connector connecting a vacuum source with the interior of the pocket within the main body portion; and a connection to a cheek retractor at another end of the main body portion, the other end opposite to the end of the main body portion'***

As can be seen from at least FIGs. 1A and 1B(provided above), the claimed mouthpiece has a suction connector connected to one of the main body and a cheek retractor connection at the opposite end of the main body.

Black

The mouthpiece of *Black* does not have each and every element discussed above with respect to the claimed mouthpiece. Exemplary mouthpieces disclosed by *Black* are provided below:

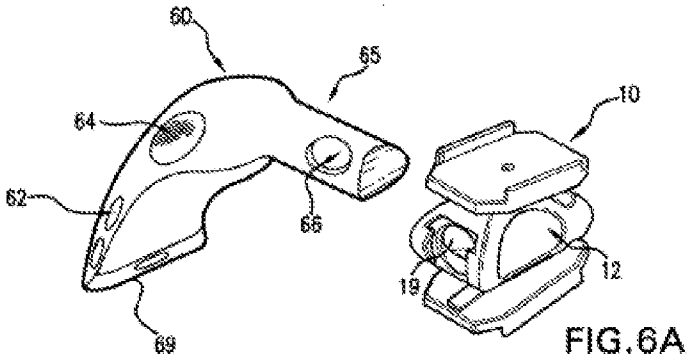

FIG.6A

The Examiner specifically refers to "tongue shield aspirator 60" as teaching the claimed 'main body.' *Office Action*, 2. The Examiner does not identify any anterior wall, any posterior wall, or side wall, however. Although the Examiner refers generally to paragraph 82 of *Black*, that paragraph refers to a different figure. And the "edges" referenced by paragraph 82 of *Black* are not disclosed as defining corresponding **shapes**, nor are there any teachings regarding a side wall that connects the edges.

On the contrary, paragraph 82 of *Black* indicates that there is no side wall. In particular, *Black* teaches that "top edge 40c of the proximal flap may be formed by the respective top edges of the posterior layer 48a and the anterior layer 48b," indicating that the edges are connected directly rather than via a distinct 'side wall,' as claimed. *Black* therefore fails to teach any 'side wall' (with perforations) that connects the anterior wall edge to the posterior wall edge.

McKelvey cannot cure *Black*'s failure to teach each any every element recited in the independent claims as *McKelvey* merely discloses a "dental saliva ejector" and wholly lacks

any of the features discussed above (*e.g.*, 'anterior wall,' 'posterior wall,' 'side wall,' etc.). *See McKelvey*, Abstract.

"Because the hallmark of anticipation is prior invention, the prior art reference—in order to anticipate under 35 U.S.C. § 102—must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements 'arranged as in the claim.'" *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1370 (Fed. Cir. 2008) (citations omitted). To support a conclusion that the claim would have been obvious requires that "**all** the claimed elements were known in the prior art and that one skilled in the art could have combined the elements as claimed." MPEP 2143.02 (citing *KSR v. Teleflex*, 127 S.Ct. 1727, 1739 (2007)).

As discussed above, *Black* and *McKelvey*—individually or in combination -- fail to teach all the elements of the independent claims. Further, because each of the dependent claims incorporates by reference all the limitations of the independent claim from which it depends, the dependent claims are allowable for at least the same reasons.

CONCLUSION

The Applicant has evidenced the failure of *Black* and *McKelvey*—individually or in combination -- to disclose all the limitations of the independent claims.

Any claim dependent upon one of the aforementioned independent claims—either directly or via an intermediate dependent claim—is allowable for at least the same reasons as the claim from which it depends.

As all rejections have been overcome, the Applicant contends the present application is in condition for allowance. The Examiner is invited to contact the Applicants' undersigned representative with any questions concerning the present amendment.

Respectfully submitted,

February 8, 2017

By: /Tam Thanh Pham/

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Electronic Patent Application Fee Transmittal

Application Number:	14228046
Filing Date:	27-Mar-2014
Title of Invention:	INTRAORAL DEVICE WITH MESH
First Named Inventor/Applicant Name:	Thien Nguyen
Filer:	TamThanh Thi Pham
Attorney Docket Number:	INCEP-001COA

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 1 month with $0 paid	2251	1	100	100
Miscellaneous:				
			Total in USD ($)	**100**

Electronic Acknowledgement Receipt

EFS ID:	28306521
Application Number:	14228046
International Application Number:	
Confirmation Number:	7700
Title of Invention:	INTRAORAL DEVICE WITH MESH
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	138718
Filer:	TamThanh Thi Pham
Filer Authorized By:	
Attorney Docket Number:	INCEP-001COA
Receipt Date:	08-FEB-2017
Filing Date:	27-MAR-2014
Time Stamp:	21:12:24
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		INCEP-001COA_Amendment.pdf	270094 4fcc96fcec13c664ae7d9b31741e56669e73	yes	11

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	5
	Applicant Arguments/Remarks Made in an Amendment	6	11

Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30323 c886e0b5e59ab273877e55983235bea114a2fef0	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	300417		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/228,046	Filing Date 03/27/2014	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)		
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

		(Column 1)		(Column 2)	(Column 3)		
	02/08/2017	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
AMENDMENT	Total (37 CFR 1.16(i))	* 19	Minus	** 20	= 0	X $40 =	0
	Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0	X $210 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	**0**

		(Column 1)		(Column 2)	(Column 3)		
		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
AMENDMENT	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
KIMBERLY PANNELL

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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Ascensiare Dental Products v. Solmetex - IPR2025-01175

Substitute for Form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

				Complete if Known	
				Application Number	14/228,046
				Filing Date	March 27, 2014
				First Named Inventor:	Thien Nguyen
				Art Unit	3732
				Examiner Name	Hao D. Mai
Sheet	**1**	**of**	**2**	Attorney Docket Number	INCEP-001COA

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.'	Document Number Number-Kind Code[2](If known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-	9,084,656	7/21/2015	Hirsch	
		US-	9,358,086	6/7/2016	Hirsch	
		US-	2003/0134253	7/17/2003	Hirsch et al.	
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		US-				

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.'	Foreign Patent Document Country Code[3] Number[4] Kind Codes (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T6

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 'Applicant's unique citation designation number (optional). [2]See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3]Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4]For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6]Applicant is to place a check mark here if English language translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SENT FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

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Ascentcare Dental Products v. Solmetex - IPR2025-01175

Substitute for Form 1449/PTO	Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*	Application Number	14/228,046
	Filing Date	March 27, 2014
	First Named Inventor:	Thien Nguyen
	Art Unit	3732
	Examiner Name	Hao D. Mai
Sheet 2 of 2	Attorney Docket Number	INCEP-001COA

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No'	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T^2
		Docket No. INCEP-001COC U.S. Patent Application 14/228,054; Final Office Action mailed 4/24/17	
		Docket No. INCEP-001COD U.S. Patent Application 14/228,057; Office Action mailed 4/13/17	
		Docket No. INCEP-001COE U.S. Patent Application 14/228,061; Office Action mailed 4/12/17	

Examiner Signature		Date Considered	

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'Applicant's unique citation designation number (optional). 'Applicant is to place a check mark here if English Translation is attached.

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Ascencare Dental Products v. Solmetex - IPR2025-01175
Solmetex Ex. 2016

Electronic Acknowledgement Receipt

EFS ID:	29108630
Application Number:	14228046
International Application Number:	
Confirmation Number:	7700
Title of Invention:	INTRAORAL DEVICE WITH MESH
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	138718
Filer:	Elton Franklin Dean III/Lea Fong
Filer Authorized By:	Elton Franklin Dean III
Attorney Docket Number:	INCEP-001COA
Receipt Date:	08-MAY-2017
Filing Date:	27-MAR-2014
Time Stamp:	13:11:24
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	INCEP-001COA_IDS_Statement_5-3-17.pdf	19428 845b9eabc37cea0cdadd873749fe7469107 3089	no	2

Warnings:

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Ascentcare Dental Products v. Solmetex - IPR2025-01175

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	INCEP-001COA_IDS_1449_5-3-17.pdf	55331 ca560550d2039ee87625b69a4ae3496e58bfb8ad	no	2
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
			Total Files Size (in bytes):	74759	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

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National Stage of an International Application under 35 U.S.C. 371

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New International Application Filed with the USPTO as a Receiving Office

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit: 3732 | Examiner: Hao D. Mai

Serial No.: 14/228,046 | Filed: March 27, 2014

In re Application of: Thien Nguyen

Confirmation No.: 7700 | Customer No.: 138718

Title: INTRAORAL DEVICE WITH MESH

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT
Under 37 C.F.R. § 1.56 and 1.97-1.98

Examiner:

Pursuant to the provisions of 37 C.F.R. §§ 1.56 and 1.97-98 of the Rules of Practice in Patent Cases, enclosed herewith is form PTO-SB-08, listing several references. The Examiner is requested to make these references of official record in the application.

The references cited may be material to examination of the application and are submitted in compliance with the Applicants' duty of disclosure as defined by 37 C.F.R. § 1.56.

Applicants hereby declare, pursuant to 37 C.F.R. §1.97(e)(2), that no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of the person signing the certification after having made a reasonable inquiry, no item of information contained in the information disclosure statement was

known to any individual designated in 37 C.F.R. §1.56(c) more than three months prior to the filing of the information disclosure statement.

No representation is made or intended as to the completeness of this list, nor is the inclusion of any reference an admission that it is prior art or pertinent to this application.

The Commissioner is hereby authorized to charge any necessary fee to Account Number 50-1662.

Respectfully submitted,
POLSINELLI LLP

Dated: May 3, 2017

By: _____/Elton Dean/_____
Elton Dean (Reg. No. 63,316)
Polsinelli LLP
Three Embarcadero Center, Suite 2400
San Francisco, CA 94111
415-248-2100 (Main)
ipdocket@polsinelli.com

Substitute for Form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Complete if Known	
Application Number	14/228,046
Filing Date	March 27, 2014
First Named Inventor:	Thien Nguyen
Art Unit	3732
Examiner Name	Hao D. Mai
Attorney Docket Number	INCEP-001COA

Sheet	1	of	2

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.'	Document Number Number-Kind Code[2](If known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-			
		US-			
		US-			
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.'	Foreign Patent Document Country Code[3] Number[4] Kind Codes (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T6
		CN 102026587	4/20/2011	Dentozone Co. Ltd.		
		CN 102247140	11/23/2011	Third Hospital Xinxiang Medical University		

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 'Applicant's unique citation designation number (optional). [2]See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3]Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4]For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6]Applicant is to place a check mark here if English language translation is attached.

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Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

Substitute for Form 1449/PTO	*Complete if Known*	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*	Application Number	14/228,046
	Filing Date	March 27, 2014
	First Named Inventor:	Thien Nguyen
	Art Unit	3732
	Examiner Name	Hao D. Mai
Sheet 2 of 2	Attorney Docket Number	INCEP-001COA

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No'	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T^2
		Chinese Patent Application No. 201480039991.2 First Office Action dated 12/29/16	

Examiner Signature		Date Considered	

*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

'Applicant's unique citation designation number (optional). 'Applicant is to place a check mark here if English Translation is attached.

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If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Ascencare Dental Products v. Solmetex - Solmetex Ex. 2016 IPR2025-01175

Espacenet

Bibliographic data: CN102026587 (A) — 2011-04-20

Tips for protecting the tongue, bite block, and intraoral illumination device having a saliva-sucking function

Inventor(s): HYOUNG KOO CHA ± (KOO CHA HYOUNG)

Applicant(s): DENTOZONE CO LTD ± (DENTOZONE CO., LTD)

Classification: **- international:*A61B1/24; A61C17/10***
- cooperative: A61B1/00105; A61B1/0676; A61B1/24; A61C5/90; A61B90/30; A61C1/088; A61C17/043

Application number: CN2010801473 20100303 Global Dossier

Priority number (s): WO2010KR01322 20100303 ; KR20090019328 20090306

Also published as: EP2404569 (A2) EP2404569 (A4) US2012015320 (A1) KR100936221 (B1) WO2010101407 (A2) more

Abstract of CN102026587 (A)

The present invention relates to a TIPS (Twist Isolated Plate of Suction) for protecting the tongue, to a bite block, and to an intraoral illumination device having a saliva-sucking function. More particularly, the present invention relates to a TIPS for protecting the tongue, to a bite block, and to an intraoral illumination device having a saliva-sucking function, which enables a dental patient to undergo examination and treatment with the tongue thereof comfortably protected, quickly removes saliva from the throat of the patient to minimize disagreeable feelings of irritation, and isolates the tongue of the patient to the side opposite the side of the mouth to be treated, and also lightens the oral cavity of the patient to enable a dentist to perform examination and treatment with ease.

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

(19)中华人民共和国国家知识产权局

(12)发明专利申请

(10)申请公布号 CN 102026587 A
(43)申请公布日 2011.04.20

(21)申请号 201080001473.3

(22)申请日 2010.03.03

(30)优先权数据
10-2009-0019328 2009.03.06 KR

(85)PCT申请进入国家阶段日
2010.11.04

(86)PCT申请的申请数据
PCT/KR2010/001322 2010.03.03

(87)PCT申请的公布数据
WO2010/101407 KO 2010.09.10

(71)申请人 登托施有限公司
地址 韩国首尔

(72)发明人 具滋亨

(74)专利代理机构 北京市盈科律师事务所 11344
代理人 赵成伟

(51)Int.Cl.
A61C 17/10(2006.01)
A61B 1/24(2006.01)

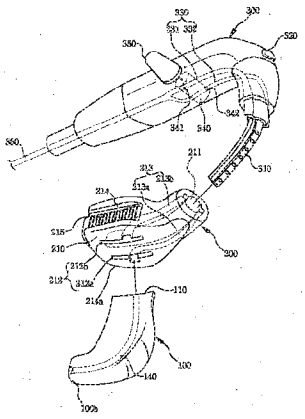
权利要求书 3 页 说明书 8 页 附图 5 页

(54)发明名称

具有吸除唾液功能的舌头保护装置、牙垫及口腔照明设备

(57)摘要

本发明公开一种具有唾液吸除功能的舌头保护装置、牙垫及口腔照明设备。具体来说，能使得患者的舌头得到安全保护的情况下进行牙科治疗；迅速吸除从咽喉涌来的唾液减少异物感；把舌头隔离在需要进行口腔治疗一侧的另一侧，确保治疗的空间；同时完全照亮患者的口腔内部，使医生的治疗能更容易进行的具有唾液吸除功能的舌头保护装置，牙垫和唾液吸除功能的口腔照明设备。



CN 102026587 A

Solmetex Ex. 2016
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1. 一种舌头保护装置，所述舌头保护装置安装在由口腔内一侧上下牙齿咬住并打开口腔的牙垫上，所述舌头保护装置一端与所述牙垫连接，另一端向口腔内另一侧舌根部延伸，在牙科治疗时保护舌头。

2. 根据权利要求 1 所述的舌头保护装置，其特征在于：包括与所述牙垫连接的牙垫连接部、从牙垫连接部向所述另一侧舌根部弯曲延长的装置主体和从所述装置主体的一侧由上向下延长保护舌头一侧的舌头保护部位。

3. 根据权利要求 2 所述的舌头保护装置，其特征在于：所述舌头保护部位保护舌尖部，使舌头与口腔内另一侧牙齿隔离。

4. 根据权利要求 1-3 中任何一项所述的舌头保护装置，其特征在于：所述舌头保护装置的另一端是以假想的延长轴为中心从所述舌头保护装置的一端延长，并以所述延长轴为中心以一定的角度弯曲延长，这样能保护舌头的一侧面。

5. 根据权利要求 1-3 中任何一项所述的舌头保护装置，其特征在于：所述舌头保护装置的一端到另一端设有通孔，且通孔中装有唾液吸管，用于吸除从咽侯涌到口腔内另一侧舌根处的唾液。

6. 根据权利要求 5 所述的舌头保护装置，其特征在于：所述唾液吸管为多数个。

7. 根据权利要求 4 所述的舌头保护装置，其特征在于：所述舌头保护装置的一端到另一端被穿孔打通，且孔中装有唾液吸管，用于吸除从咽侯涌到口腔内另一侧舌根处的唾液。

8. 根据权利要求 7 所述的舌头保护装置，其特征在于：所述唾液吸管为多数个。

9. 一种牙垫，包括由口腔内一侧的上下牙齿咬住并能打开口腔的牙垫主体，所述牙垫主体的一端被穿孔形成插入外部光源的光源插入孔；所述牙垫主体位于口腔内侧的部分设有装置连接孔；在所述牙垫主体上设有光源插入孔的一端设有唾液传递孔，唾液传递孔与所述光源插入孔相互分离，唾液传递孔与所述装置连接孔相连通，唾液传递孔中装有唾液传递管，唾液传递管与外部吸入排管连接，经所述装置连接孔流入的唾液通过唾液传递管传递到所述吸入排管。

10. 根据权利要求 9 所述的牙垫，其特征在于：所述装置连接孔是相互分离的多数个装置连接孔，所述唾液传递管分别穿过装置连接孔，所述唾液传递管是相互分离的多数个唾液传递管。

11. 根据权利要求 10 所述的牙垫，其特征在于：所述装置连接孔包括第 1 装置连接孔和第 2 装置连接孔；所述唾液传递管包括分别设置在第 1 唾液传递孔和第 2 唾液传递孔中的第 1 唾液传递管和第 2 唾液传递管。

12. 根据权利要求 9 所述的牙垫，其特征在于：所述装置连接孔是相互分离的多数个装置连接孔，所述唾液传递管在所述装置连接孔处分离，并能分别穿过多个装置连接孔。

13. 根据权利要求 12 所述的牙垫，其特征在于：所述装置连接孔是相互分离的第 1 装置连接孔和第 2 装置连接孔两个装置连接孔。

14. 根据权利要求 9-13 中任何一项所述的牙垫，其特征在于：所述的牙垫主体的上部和下部设有上下牙齿咬住的凹槽。

15. 根据权利要求 14 所述的牙垫，其特征在于：所述的凹槽处有防止上下牙齿打滑

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的突起。

16. 根据权利要求 14 所述的牙垫，其特征在于：所述的突起是在凹槽的底部。

17. 根据权利要求 9 所述的牙垫，其特征在于：所述牙垫主体是能使光源的光透过的透明牙垫主体。

18. 一种口腔照明设备，该设备包括设有光源的机头，所述机头上设有光源的一端与在口腔内一侧用上下牙齿咬住打开口腔的牙垫连接，使得所述光源的光传递到口腔内部，所述牙垫一侧面上连接保护舌头的一侧面并向口腔内另一侧舌根延长的舌头保护装置。

19. 根据权利要求 18 所述的口腔照明设备，其特征在于：所述的舌头保护装置包括与所述牙垫连接的牙垫连接部、从所述牙垫连接部向口腔内另一侧舌根弯曲延长的装置主体和从所述装置主体的一侧向下部延长保护舌头一侧面的舌头保护部位。

20. 根据权利要求 19 所述的口腔照明设备，其特征在于：所述舌头保护部位着重保护舌尖部，使舌头与口腔内另一侧牙齿隔离。

21. 根据权利要求 18-20 中任何一项所述的口腔照明设备，其特征在于：所述舌头保护装置的另一端是以假想的延长轴为中心从所述舌头保护装置的一侧延长，并以所述延长轴为中心以一定的角度弯曲延长，这样能保护舌头的一侧面。

22. 根据权利要求 18-20 中任何一项所述的口腔照明设备，其特征在于：所述舌头保护装置的一端到另一端被穿孔打通，且穿孔中装有吸除从咽喉涌到口腔内另一侧舌根处唾液的唾液吸管。

23. 根据权利要求 22 所述的口腔照明设备，其特征在于：所述唾液吸管为多数个。

24. 根据权利要求 21 所述的口腔照明设备，其特征在于：所述舌头保护装置的一端到另一端被穿孔打通，且穿孔中装有吸除从咽喉涌到口腔内另一侧舌根处唾液的唾液吸管。

25. 根据权利要求 24 所述的口腔照明设备，其特征在于：所述唾液吸管是多数个。

26. 根据权利要求 22 所述的口腔照明设备，其特征在于：所述牙垫位于口腔内一侧的是由上下牙齿咬住的牙垫主体，所述牙垫主体的一端被穿孔，成为光源插入的光源插入孔；所述牙垫主体在口腔内的部分有连接所述舌头保护装置的装置连接孔。

27. 根据权利要求 26 所述的口腔照明设备，其特征在于：所述机头的一端与另一端之间被打通，所述机头与连接吸入排管的外部吸入器连接，所述牙垫与所述吸入排管连接，由所述装置连接孔流入的唾液经唾液传递管传递到所述吸入排管。

28. 根据权利要求 27 所述的口腔照明设备，其特征在于：所述装置连接孔是相互分离的多数个装置连接孔，所上述唾液传递管是分别穿过所述装置连接孔的相互分离的多数个唾液传递管。

29. 根据权利要求 28 所述的口腔照明设备，其特征在于：所述吸入排管是相互分离的多数个吸入排管，所述唾液传递管分别连接所述吸入排管。

30. 根据权利要求 29 所述的口腔照明设备，其特征在于：所述吸入排管分为第 1 吸入排管和第 2 吸入排管两个吸入排管，所述装置连接孔分为第 1 连接孔和第 2 连接孔两个装置连接孔，所述唾液传递管分别连接第 1 吸入排管和第 2 吸入排管，第 1 唾液传递管和第 2 唾液传递管分别穿过所述第 1 装置连接孔和第 2 连接孔。

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31. 根据权利要求 27 所述的口腔照明设备，其特征在于：所述装置连接孔是相互分离的多数个装置连接孔，所述唾液传递管被所述装置连接孔分开，并穿过所述装置连接孔。

32. 根据权利要求 30 所述的口腔照明设备，其特征在于：所述牙垫主体的上部和下部有上下牙齿咬住时的凹槽。

33. 根据权利要求 32 所述的口腔照明设备，其特征在于：所述凹槽处有防止上下牙齿打滑的突起。

34. 根据权利要求 33 所述的口腔照明设备，其特征在于：所述突起是在所述凹槽的底部。

35. 根据权利要求 30 所述的口腔照明设备，其特征在于：所述机头包括控制所述吸入排管开闭的阀门。

36. 根据权利要求 35 所述的口腔照明设备，其特征在于：所述阀门位于所述机头的内部同时与所述吸入排管相连，阀门是能选择性的开闭所述吸入排管的开闭阀门。

37. 根据权利要求 35 所述的口腔照明设备，其特征在于：所述机头还包括驱动所述开闭阀门的阀门驱动杠杆。

38. 根据权利要求 37 所述的口腔照明设备，其特征在于：在所述机头上某特定部位设有光源的开关。

39. 根据权利要求 38 所述的口腔照明设备，其特征在于：所述光源开关是触摸开关。

40. 根据权利要求 18 所述的口腔照明设备，其特征在于：所述牙垫是能使所述光源的光透过的透明牙垫。

41. 根据权利要求 18 所述的口腔照明设备，其特征在于：所述光源是 LED 光源。

42. 根据权利要求 18-20 项中任何一项所述的口腔照明设备，其特征在于：在所述机头的某一特定部位上有向口腔内部照射紫外线的紫外线灯。

43. 根据权利要求 42 所述的口腔照明设备，其特征在于：所述紫外线灯在所述光源内。

44. 根据权利要求 18-20 项中任何一项所述的口腔照明设备，其特征在于：所述机头的某一特定部分上还包括了取得口腔内部治疗时影像的摄像头。

45. 根据权利要求 44 所述的口腔照明设备，其特征在于：所述摄像头设置在光源上。

具有吸除唾液功能的舌头保护装置、牙垫及口腔照明设备

技术领域

[0001] 本发明是具有唾液吸除功能的舌头保护装置、牙垫及口腔照明设备。具体来说，是一种能使患者的舌头在处于被保护的状态下进行牙科治疗，并能抽出咽喉部位涌出的唾液以减少异物感，把舌头隔离在需要进行治疗一侧的另一侧能够确保治疗的空间，同时为患者的口腔内部提供全方位的照明使医生的牙科治疗更便利的设备。

背景技术

[0002] 一般的牙科治疗为了对患者的口腔内部进行观察是利用外部光源对患者的口腔内部进行照明来确保医生和护士的视线。

[0003] 但即使是对于熟练的医生和护士来说，利用外部光源对口腔内部进行照明同时还要进行牙科治疗是非常困难的事情，利用外部光源对狭长口腔内部进行照明是不可能完全照亮口腔内部的。

[0004] 图 1 是传统的口腔照明设备的示意图，图 2 是传统的口腔照明设备在口腔内使用的示意图，图 3 是为了说明传统的口腔照明设备吸除唾液过程的示意图。

[0005] 参照这些示意图，传统的口腔照明设备包括一侧与光纤维结合的管子连接孔 11 形成管子连接部位 10，上下两侧的薄片 (21，22) 可以把舌头推向内侧，在中间形成舌头保护部分 20；还包括与上述管子连接部位 10 和上述舌头保护部分 20 之间形成的牙垫 30，患者可以用牙齿咬住牙垫 30 在口腔内起到固定作用。

[0006] 即传统的口腔照明设备是当患者在口腔内用一侧的上下牙齿咬住牙垫 30 时，舌头保护部分 20 从舌头的前方插入把舌头推向口腔内侧以确保医生实施手术的空间，并且，在管子连接部位 10 的光纤维连接孔 53 中插入光纤维对口腔内部进行照明。

[0007] 因此，上述光纤维在口腔内部发光，能产生对口腔内部所有部位均匀的照明的效果。

[0008] 并且，在牙垫 30 上设有突起 32 和凹槽 31，防止口腔照明设备在患者的牙齿间打滑脱落，另外，延长的分支部分 40 固定在口腔另一侧的上下牙齿间，使得口腔照明设备在患者口腔内牢牢的固定住。

[0009] 利用上述管子连接部位 10 处形成的第 1 吸入孔 51，第 2 吸入孔 52、牙垫吸入孔 54 和舌头保护部分 20 处的吸入细孔 23 吸收口腔内的唾液 1 并向外部排出。

[0010] 所述吸入细孔 23 虽然具有吸入口腔内各部位唾液的效果，但是它的缺点是因为没有直接与所述吸入孔 (51，52，54) 连接，导致吸力不强。

[0011] 另外，传统的口腔照明设备中的舌头保护部分 20 是从前方把舌头推向口腔内侧固定，因此患者可能感觉舌头受到压迫，只有在唾液从咽喉部位上涌到舌头前方时才能通过上述吸入细孔 23 吸出唾液 1，在次过程中因唾液引起的异物感也是一大缺点。

[0012] 并且，传统的口腔照明设备的管子连接部位 10、舌头保护部分 20 和牙垫 30 是制作成一体的，体积较大会对患者的心理上造成不安，而且清洗不便也是一个缺点。

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发明内容

[0013] 为了解决现有技术中存在的上述问题，本发明的目的是提供一种插入口腔内部进行口腔照明，并能吸除口腔内唾液的舌头保护装置、牙垫及口腔照明设备，能使得患者在牙科治疗时舌头得到保护，利用本发明口腔中的唾液能被迅速吸除，而且清洗方便，同时能对口腔内部各部位进行均匀照明，另外在使用过程中患者的舌头可以免受压迫，把舌头隔离在治疗一侧的另一侧，在保护舌头的同时能充分保证口腔内一侧的治疗空间。

[0014] 本发明是一种能使从咽喉涌出的唾液能被迅速吸除并排到外部，减少因唾液引起的异物感的舌头保护装置、牙垫及口腔照明的设备。

[0015] 本发明是利用患者口腔一侧的上下牙齿咬住牙垫使口腔张开，同时利用插入牙垫内部的光源对口腔内部直接照明的舌头保护装置、牙垫及口腔照明设备。

[0016] 本发明是一个舌头保护装置与牙垫相互分离的舌头保护装置、牙垫及口腔照明设备。

[0017] 本发明在治疗时能对口腔内部进行杀菌，可以为医生、患者提供拍摄治疗过程的舌头保护装置、牙垫及口腔照明设备。

[0018] 本发明的目的并不只限于上述提及的目的，未提及的其他目的通过以下内容本领域的技术人员将能够清楚理解。

[0019] 为了达到上述目的，本发明的技术方案是这样实现的：一种舌头保护装置、牙垫及口腔照明设备，包括由口腔内一侧的上下牙齿咬住并能打开口腔的牙垫和舌头保护装置，舌头保护装置一端与所述牙垫 连接，另一端护住舌头并向舌根部延伸，在牙科治疗时可以保护舌头。

[0020] 在实施过程中所述舌头保护装置包括牙垫连接部、装置主体和舌头保护部位，与所述牙垫相连接的部位为牙垫连接部，从所述牙垫连接部向口腔内舌头另一侧的舌根部弯曲延长构成装置主体，装置主体的一侧面由上向下延长护住舌头的一侧为舌头保护部位。

[0021] 在实施过程中所述舌头保护部位主要实现对舌尖部的保护，把舌头与口腔内部另一侧的牙齿分开，保护舌头。

[0022] 在实施过程中所述舌头保护装置的另一端是以假想的延长轴为中心护住舌头的一侧面并以一定的角度弯曲延长。

[0023] 在实施过程中所述舌头保护装置的一端到另一端设有通孔，且通孔中装有唾液吸管，用于吸除从咽侯涌到口腔内另一侧舌根处的唾液。

[0024] 在实施过程中所述唾液吸管可以是由几个唾液吸管组合而成。

[0025] 本发明中所述牙垫包括通过口腔内的一侧牙齿咬住打开口腔的牙垫主体，在所述牙垫主体一端穿孔成为插入外部光源的光源插入孔，所述牙垫主体位于口腔内部分的一侧面上设有装置连接孔，所述舌头保护装置通过装置连接孔与所述牙垫主体连接，所述牙垫主体上的装置连接孔与所述光源插入孔连通形成唾液传递孔，传递管从唾液传递孔中穿过，通过唾液吸管吸入的唾液经传递管传递到外部的吸入排管。

[0026] 在实施过程中所述牙垫的装置连接孔为多数个且相互分离，所述唾液传递管分别穿过装置连接孔，唾液传递管为多数个且相互分离。

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[0027] 在实施过程中所述装置连接孔分为第 1 连接孔和第 2 连接孔两个连接孔，所述唾液传递管包括分别连接所述第 1 装置连接孔和第 2 装置连接孔的第 1 唾液传递管和第 2 唾液传递管。

[0028] 在实施过程中所述舌头保护装置的装置连接孔为至少一个且相互分离，所述唾液传递管能同时被连接入所述装置连接孔。

[0029] 在实施过程中所述牙垫的装置连接孔是相互分离的，有第 1 装置连接孔和第 2 装置连接孔两个连接孔。

[0030] 在实施过程中所述牙垫主体的上部和下部设有依据牙齿咬住时的形状做成的凹凸状的凹槽。

[0031] 在实施过程中所述凹槽处有为了防止上下牙齿打滑形成的突起。

[0032] 在实施过程中所述突起是在凹槽的底部。

[0033] 在实施过程中所述牙垫主体是由能使光源透过的透明材料制成的。

[0034] 并且，本发明还包括具备光源的机头，光源连接在所述机头的一端，为了使所述光源的光传递到口腔内部，所述机头带光源的一端插入利用口腔内一侧牙齿咬住并打开口腔的牙垫中构成口腔照明器械，牙垫的另一侧面上是护住一侧舌头并向另一侧舌根部延长的舌头保护装置的。

[0035] 在实施过程中所述舌头保护装置包括与所述牙垫连接的牙垫连接部，从所述连接部位向口腔内部另一侧舌根弯曲延长的舌头保护装置主体和从舌头保护装置主体的一侧向下延长护住舌头的一侧面的舌头保护部位。

[0036] 在实施过程中所述舌头保护装置着重保护舌尖，把舌头与口腔内的另一侧牙齿隔开。

[0037] 在实施过程中所述舌头保护装置的另一端是以假想的延长轴为中心护住舌头的一侧面并以一定的角度弯曲延长。

[0038] 在实施过程中所述舌头保护装置的一端到另一端被穿孔打通，且孔中装有唾液吸管，用于吸除从咽侯涌到口腔内另一侧舌根处的唾液。

[0039] 在实施过程中所述唾液吸管可以是多数个唾液吸管。

[0040] 在实施过程中所述牙垫包括所述插入光源的光源插入孔和在所述牙垫主体的一侧穿孔形成的与所述舌头保护装置连接的装置连接孔。

[0041] 在实施过程中所述机头的一端与另一端之间被穿孔打通，通孔中装有与外部吸入器相连的吸入排管，所述吸入排管穿过所述牙垫上的装置连接孔，吸入的唾液经装置连接孔和传递管传递到吸入排管。

[0042] 在实施过程中所述装置连接孔是多数个装置连接孔，且是相互分离的，所述唾液传递管是通过装置连接孔相互分离的多数个唾液传递管。

[0043] 在实施过程中所述吸入排管可以多数个，并且是相互分离的，所述唾液传递管分别与所述吸入排管连接。

[0044] 在实施过程中所述吸入排管分为第 1 吸入排管和第 2 吸入排管两个吸入排管。所述装置连接孔分为第 1 装置连接孔和第 2 连接孔两个装置连接孔。 所述唾液传递管分别连接第 1 吸入排管和第 2 吸入排管， 第 1 唾液传递管和第 2 唾液传递管穿过所述第 1 装置连接孔和第 2 装置连接孔。

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[0045] 在实施过程中所述装置连接孔可以是多数个，并且是相互分离的，所述唾液传递管可以同时穿过装置连接孔。

[0046] 在实施过程中所述牙垫主体的上部和下部有所述得便于上下牙齿咬住的凹槽。

[0047] 在实施过程中所述凹槽上有为了防止上下牙齿打滑的突起。

[0048] 在实施过程中所述突起是在凹槽的底部。

[0049] 在实施过程中所述机头包括控制所述吸入排管开闭的阀门。

[0050] 在实施过程中所述阀门位于所述机头内部与所述吸入排管同时设置，并能对所述装置连接孔进行选择性的开闭。

[0051] 在实施过程中所述机头还包括了驱动所述开闭阀门的阀门驱动杠杆。

[0052] 在实施过程中所述机头的外部的某一特定部分上有控制光源的光源开关。

[0053] 在实施过程中所述光源的开关为触摸开关。

[0054] 在实施过程中所述牙垫是能使光源的光透过的透明的牙垫。

[0055] 在实施过程中所述光源是 LED 光源。

[0056] 在实施过程中所述机头的某一特定部分上设置了在口腔内部放射紫外线的紫外线灯。

[0057] 在实施过程中所述光源中包括所述紫外线灯。

[0058] 在实施过程中所述机头的某一特定部分上还包括了能取得口腔 内部治疗影像的摄像头。

[0059] 在实施过程中上述摄像头包括在上述光源中。

[0060] 本发明的有益效果：

[0061] 首先，有了本发明的舌头保护装置、牙垫和口腔照明设备使得患者的舌头不会再被向口腔后方挤压，舌头的侧面受到保护，把舌头与治疗部位分离，使患者的舌头在安全的状态下接受牙科治疗。

[0062] 本发明的舌头保护装置、牙垫和口腔照明设备可以利用舌头保护装置把患者的舌头隔离在需要治疗的口腔内的另一侧，充分保证口腔内牙齿治疗的空间，便于医生进行治疗。

[0063] 本发明舌头保护装置、牙垫和口腔照明设备中的舌头保护装置向一侧舌根延长，在唾液涌到舌头前部之前可以把从咽喉部涌向舌根的唾液吸除，减小因唾液产生的异物感。

[0064] 本发明的舌头保护装置、牙垫和口腔照明设备中舌头保护装置，牙垫和机头相互分离，利用洗涤剂可以使整个设备保持清洁，防止患者发生二次感染。

[0065] 本发明的舌头保护装置、牙垫和口腔照明设备中利用紫外线可以减少治疗时发生的细菌感染。

[0066] 本发明的舌头保护装置、牙垫和口腔照明设备中利用摄像头能取得治疗时的影像，能为医生和患者提供治疗的过程。

[0067] [77]

附图说明

[0068] 图 1 是传统口腔照明设备的示意图；

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[0069] 图 2 是传统口腔照明设备在口腔内使用的示意图；

[0070] 图 3 是传统口腔照明设备吸除唾液过程的示意图；

[0071] 图 4 是本发明使用时舌头保护装置上表面的示意图；

[0072] 图 5 是本发明使用时舌头保护装置下表面的示意图；

[0073] 图 6 是本发明使用时舌头保护装置吸除唾液过程的说明示意图；

[0074] 图 7 是本发明使用时口腔照明设备的示意图；

[0075] 图 8 是本发明使用时口腔照明设备的分解图；

[0076] 图 9 是本发明在口腔内使用的说明示意图；

[0077] 图中：100 舌头保护装置，110 牙垫连接部位，120 装置主体，130 舌头保护部位，140 唾液吸管，200 牙垫，210 牙垫主体，211 光源插入孔，212 舌头保护装置连接孔，213 唾液传递管，214 凹槽，215 突起，300 机头，310 光源，320 光源开关，330 吸入排管，331 第 1 吸入排管，332 第 2 吸入排管，340 阀门，341 第 1 阀门孔，342 第 2 阀门孔，350 阀门驱动杠杆，360 唾液排出管。

具体实施方式

[0078] 本发明中使用的用语尽可能选择现在广泛使用的一般用语，特定情况下有申请人任意选择使用的用语，但此种情况并非单纯的名称用语，而是为了详细说明发明的某部分或充分考虑了用语的语义。

[0079] 以下，参照附图对本发明的技术构成作详细的说明。

[0080] 但本发明并不局限于此处说明的用途，还可有其他具体化的形态。 在整个说明书中，相同的编号对应同一个部位。

[0081] 图 4 是本发明使用时舌头保护装置上面的示范图，图 5 是本发明 使用时舌头保护装置下面的示范图，图 6 是本发明使用时唾液吸除过程的说明图。

[0082] 参照示意图本发明实施时舌头保护装置 100 是安装在打开口腔的在口腔内用一侧上下牙齿咬住的牙垫 200 上，在治疗时起到保护舌头的作用。

[0083] 所述舌头保护装置 100 的一端 100a 连接所述牙垫 200，另一端 100b 护住舌头 2 的一个侧面 2a 向口腔内的另一侧舌根 2b 方向延长。

[0084] 即所述舌头保护装置 100 从口腔内的一侧牙齿向另一侧舌根 2b 方向呈流线型弯曲的形态。

[0085] 传统口腔照明设备中的舌头保护部分 20 是通过把舌头从上往下按，把舌头向后方压迫来是实现的，而本发明中的舌头保护装置 100 是通过护住舌头 2 的一个侧面 2a 同时向口腔内一侧靠拢并隔离，充分保证口腔内另一侧牙齿治疗的空间。

[0086] 这样，医生就能够更加方便的为患者进行口腔内部治疗，患者的舌头不再受到压迫能在安全舒适的状态下接受治疗。

[0087] 传统的口腔照明设备的舌头保护部分 20 是从上向下把舌头压迫向口腔后方，患者的舌头 2 不能活动，本发明在使用中舌头保护装置 100 护住舌头 2 的一侧面 2a 使得舌头 2 靠向另一侧能安全的活动。

[0088] 所述舌头保护装置 100 在一端 100a 形成与所述牙垫 200 连接的牙垫连接部 110，装置主体 120 从所述牙垫连接部 110 向口腔内的另一侧舌根 2b 弯曲延长，舌头保护部位

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130 是从所述装置主体 120 的一侧向下延长，护住舌头 2 的一侧面 2a。

[0089] 所述舌头保护部位 130 能着重保护舌头 2 的舌尖 2c，确保患者的门牙和口腔内另一侧牙齿的治疗空间。

[0090] 所述舌头保护装置 100 一端 100a 到另一端 100b 被打通穿孔，孔内装有吸除涌到上述口腔内的另一侧舌根 2b 处唾液的唾液吸管 140。

[0091] 所述唾液吸管 140 可以是多数个。

[0092] 所述唾液吸管 140 是从所述舌头保护装置 100 的另一端 100b 向所述舌头保护装置 100 的一端 100a 传递唾液。

[0093] 本发明中舌头保护装置 100 的使用如图 6 所示，能及时吸除涌到口腔内另一侧舌根 2b 处的唾液。

[0094] 因此，与传统的口腔照明设备的吸入细孔 23 比较，本发明中唾液吸管 140 由于直接吸入唾液 1 而没有吸力的损失，使得唾液 1 在涌到舌头 2 的前面之前在舌根处被迅速吸除，最大限度减少因唾液使患者产生的异物感。

[0095] 所述舌头保护装置 100 的另一端 110b 是以假想的延长轴 a 为中心护住上述舌头 2 的一侧面 2a 并以一定的角度 α 弯曲延长。

[0096] 因此所述舌头保护装置 100 能保护到上述舌头 2 的一侧面 2a 的下部。

[0097] 图 7 是本发明口腔照明设备的示意图，图 8 是本发明口腔照明设备的分解图，图 9 是本发明口腔照明设备在口腔内使用时的说明示意图。

[0098] 参照图示本发明的口腔照明设备是由机头 300，牙垫 200 和舌头保护装置 100 构成。

[0099] 所述机头 300 一端设有光源 310，所述光源 310 是从牙垫 200 的一端处插入固定的，能直接对口腔内部照明。

[0100] 在所述机头 300 上某一特定部位处装有所述光源 310 的光源开关 320。

[0101] 光源开关 320 是触摸开关，用手碰触一次光源开关 320 则所述光源 310 打开，再碰触一次光源开关 320 则所述光源 310 关闭。

[0102] 所述光源开关 320 可以是各种开关装置。

[0103] 所述光源 310 包含多数个 LED 光源，从所述牙垫 200 一端插入形成面光源，在口腔内部照明能减少阴影。

[0104] 所述光源 310 中还包含与 LED 光源连接的照射口腔内部可以对治疗时产生的细菌起到杀菌作用的紫外线灯（没有图示）。

[0105] 所述紫外线灯要能在口腔内部照射紫外线的话可以安装在所述机头 300 的任何部位。

[0106] 所述光源 310 中还包含取得口腔内部治疗影像的摄像头（没有图示），使得医生和患者能在事后看到治疗时的影像确保了对治疗的信赖。

[0107] 所述摄像头要能在口腔内部摄像可以设置在所述机头 300 的任何部位，本发明中所述机头 300 上的摄像头能有效的取得治疗影像。

[0108] 在所述机头 300 的一端到另一端被打通穿孔，通孔中装有吸入排管 330，吸入排管 330 是将唾液传递到外部的吸入机（没有图示）。

[0109] 所述机头 300 内部有控制所述吸入排管 330 开闭的阀门 340，在所述机头 300 的

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外部有驱动上述阀门 340 的阀门杠杆 350。

[0110] 具体来说，所述吸入排管 330 包括相互分离的第 1 吸入排管 (331) 和第 2 吸入排管 (332) 两个吸入排管，所述第 1、2 吸入排管 (331，332) 上同时设置上述阀门 340，阀门 340 是具有选择性的使上述第 1、2 吸入排管 (331，332) 单独开关的开关阀门。

[0111] 所述阀门 340 位于机头 300 上的穿孔内，阀门 340 分别与所述第 1 吸入排管 331 和第 2 吸入排管 332 连接并形成第 1 阀门孔 341 和第 2 阀门孔 342。

[0112] 即所述第 1 阀门孔 341 将所述第 1 吸入排管 331 打开时，所述第 2 吸入排管 332 关闭，所述第 2 阀门孔 342 将所述第 2 吸入排管 332 打开时，所述第 1 吸入排管 331 关闭，所述阀门 340 驱动杠杆 350 可以选择性的开关上述第 1、2 吸入排管 (331，332)。

[0113] 所述阀门 340 在第 1 吸入排管 331 和第 2 吸入排管 332 上分别设置一个阀门，所述阀门驱动杠杆 350 包括分别驱动上述两个阀门的两个驱动杠杆。

[0114] 所述吸入排管 (331，332) 在所述阀门 340 和所述外部的吸入器（没有图示）之间相互合并，使得所述外部的吸入器（没有图示）能有效的吸除唾液。

[0115] 但所述吸入排管 (331，332) 可以分别与所述外部的吸入器（没有图示）连接。

[0116] 所述牙垫 200 是通过口腔内一侧的上下牙齿咬住打开口腔的，口腔内一侧上下牙齿咬住的是牙垫主体 210。

[0117] 在所述牙垫主体 210 的一端上穿孔形成所述光源 310 插入的光源 插入孔 211。

[0118] 具体来说，所述光源插入孔 211 是在患者咬住所述牙垫主体时从口腔前方能看见的牙垫主体一端上的穿孔。

[0119] 所述牙垫主体 210 是用高透明材质制成，从所述光源插入孔 211 插入的光源 310 能向牙垫主体 210 外部透光。

[0120] 患者咬住所述牙垫主体 210 时口腔内侧是与所述舌头保护装置 100 连接的装置连接孔 212。

[0121] 所述牙垫主体 210 上与所述光源插入孔 211 位于同一端的并与所述光源插入孔 211 相分离的唾液传递孔与所述装置连接孔 212 相连通，唾液传递管 213 从上述唾液传递孔和装置连接孔 212 中穿过。

[0122] 所述装置连接孔 212 是相互分离的多数个装置连接孔，更具体的说是有可以分别与舌头保护装置 100 连接的第 1 装置连接孔 212a 和第 2 装置连接孔 212b 两个连接孔。

[0123] 所述唾液传递管 213 是相互分离的，包括穿过所述牙垫主体 210 的一端和所述装置连接孔 (212a，212b) 的两个唾液传递管 (213a，213b)。

[0124] 但其中一根上述唾液传递管 213 可以从所述装置连接孔 (212a，212b) 处分开连接。

[0125] 所述各唾液传递管 (213a，213b) 的一端是与所述机头 300 的吸入排管 (331，332) 相互咬合连接，另一端与所述舌头保护装置 100 的唾液吸入管 140 连接。

[0126] 即口腔内的唾液 1 由所述舌头保护装置 100 的唾液吸管 140 吸入，通过所述牙垫 200 的唾液传递管 213 向所述机头 300 的吸入排管传递，最后吸至外部的吸入器（没有图示）。

[0127] 具体来说，所述吸入排管 330 和所述外部的吸入器（没有图示）靠唾液排出管 360 连接，传递到所述吸入排管 330 的唾液经过唾液排出管 360，向外部吸入器（没有图

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示）排出。

[0128] 所述唾液排出管 360 和所述吸入排管 330 可以是相同的排管。

[0129] 所述牙垫主体 210 的上部和下部是患者上下牙齿咬住的凹槽 214，凹槽 214 的底部有防止上下牙齿打滑的突起 215。

[0130] 所述牙垫主体 210 在患者用上下牙齿咬住的状态下不能前后左右移动，不会从牙齿中脱落，所述光源 310 可以安全的在口腔内进行照明。

[0131] 所述舌头保护装置 100 参照图 4 至图 6 的说明，此处省略。

[0132] 以上是对本发明图示的说明，在上述说明的基础上在此技术领域的技术人员可以对本发明进行多种多样的变化和修改。

[0133] 生产利用的可能性

[0134] 本发明是具有唾液吸除功能的舌头保护装置、牙垫和口腔照明设备，在医疗领域特别是牙科和五官科对患者进行口腔内部治疗时可以使治疗安全有效的进行。

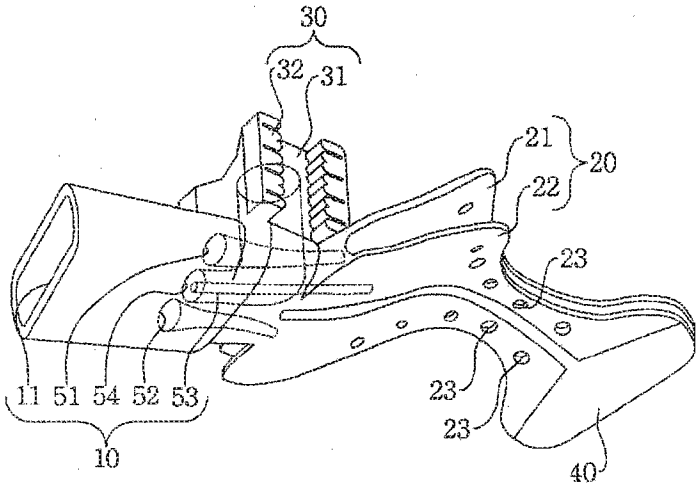
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图 1

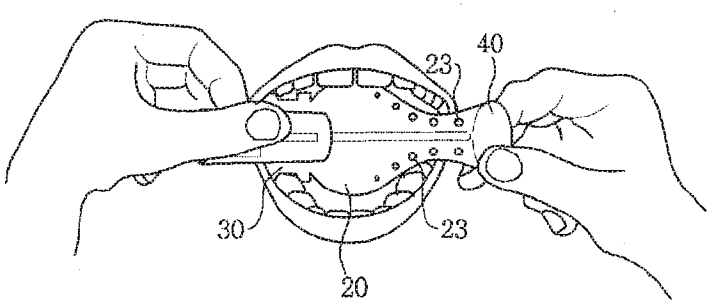
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图 2

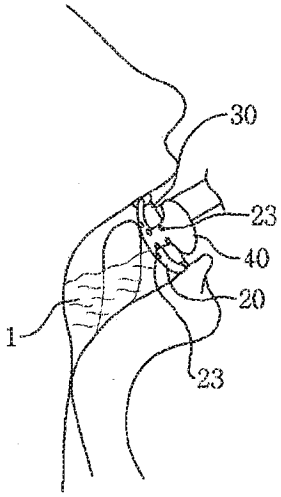
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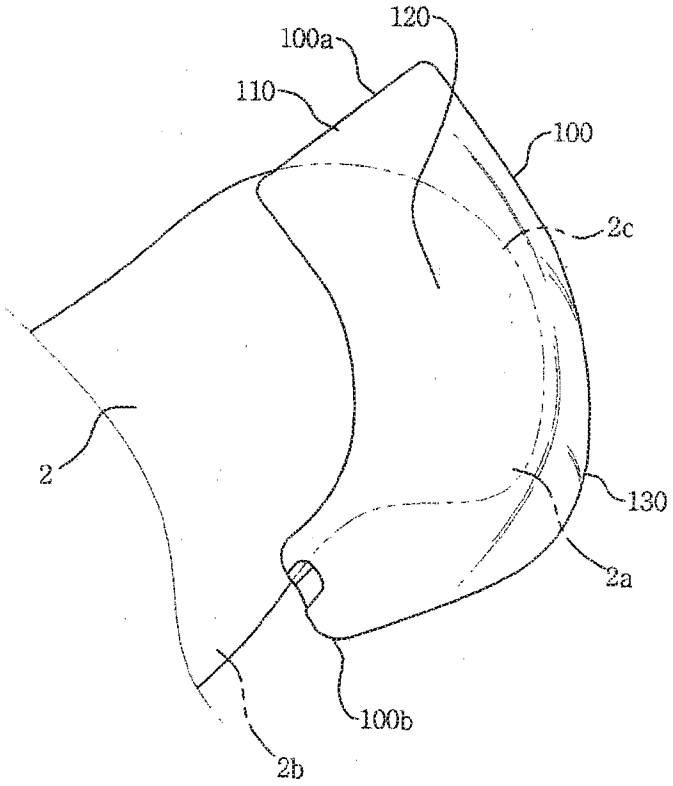
图 3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2c
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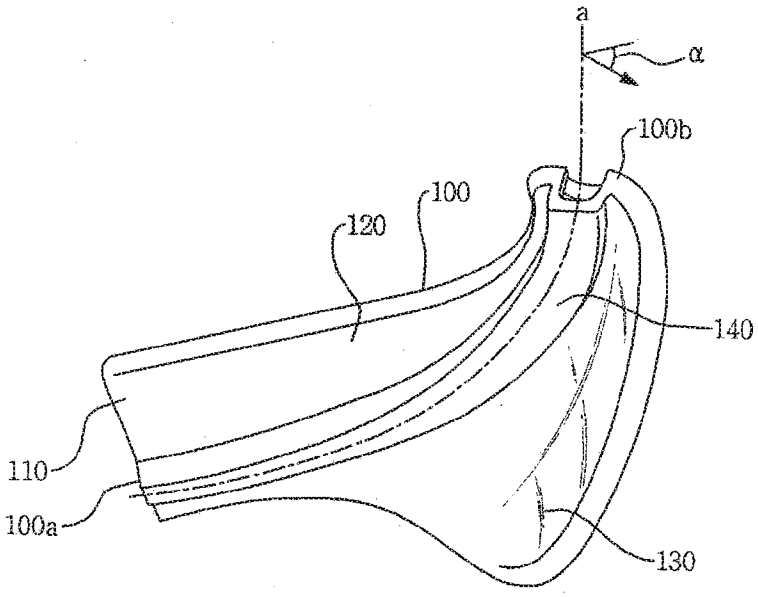
130
2a
100b
2b

图 4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100a
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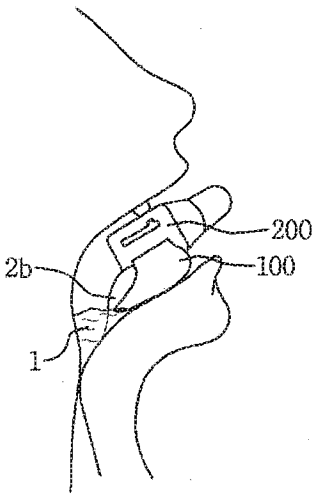
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图 6

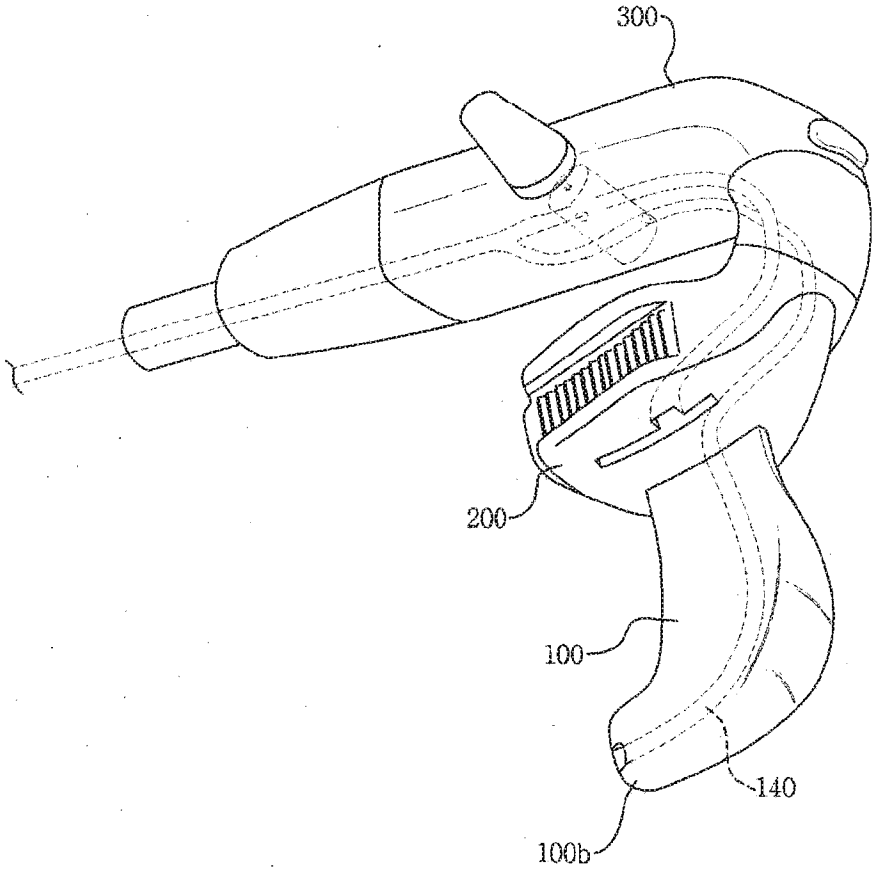
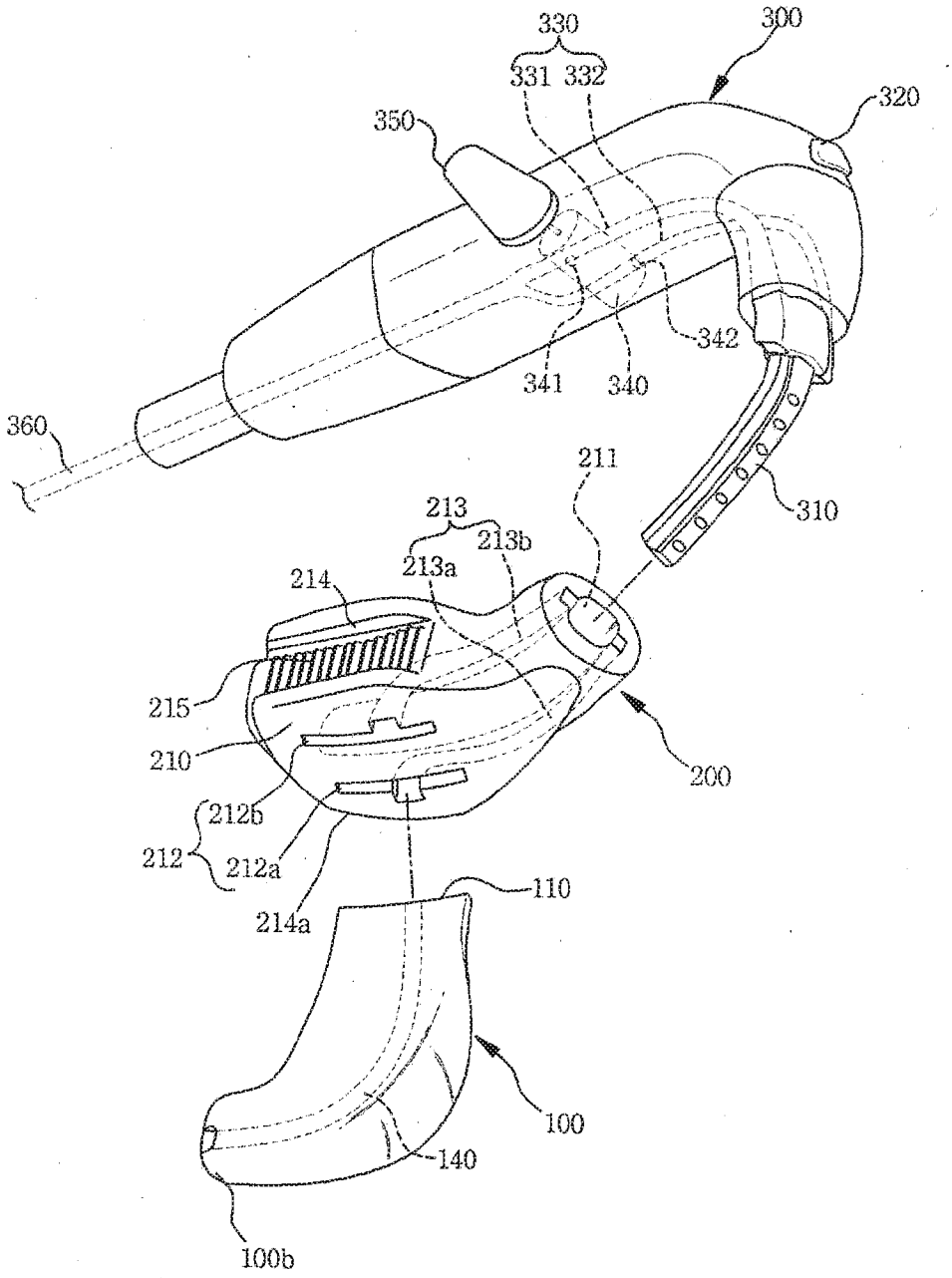


图 7


330
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300
320
350
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213b
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212a
214a
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100b

图 8

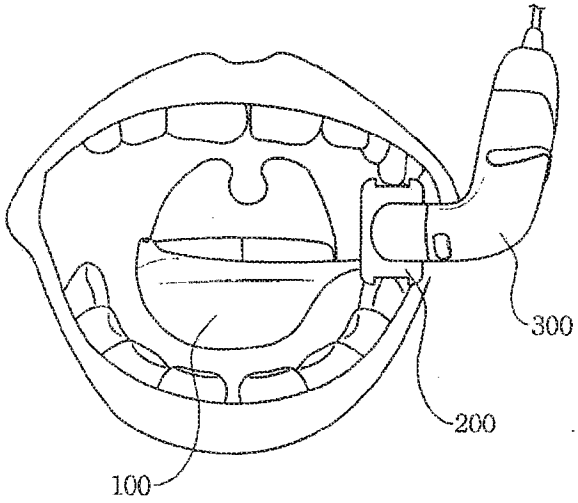

图 9

Espacenet

Bibliographic data: CN102247140 (A) — 2011-11-23

Multifunctional electrocardio examining table

Inventor(s): QUANYUN CAI; GUOTIAN YIN; RUOYI DONG; XIAOJING WANG ± (CAI QUANYUN, ; YIN GUOTIAN, ; DONG RUOYI, ; WANG XIAOJING)

Applicant(s): THIRD HOSPITAL XINXIANG MEDICAL UNIVERSITY ± (THE THIRD HOSPITAL XINXIANG MEDICAL UNIVERSITY)

Classification: **- international:** ***A61B5/0402***
- cooperative:

Application number: CN2011179077 20110324 Global Dossier

Priority number (s): CN2011179077 20110324

Abstract of CN102247140 (A)

The invention provides a multifunctional electrocardio examining table, aiming to provide a multifunctional electrocardio examining table with high examination efficiency and low labor intensity. The technical scheme of the invention is that: the multifunctional electrocardio examining table comprises a table board and a connected electrode, wherein a lower limb connected electrode plate exposed to the table board is arranged on the front and the back sides of the table board at the right end respectively; two connected electrode plates which are exposed to the table board and opposite to the lower part of the upper limb of an examined person are also arranged on the table board; four hollow screws penetrate through table board holes and are connected with upper and lower limb connected electrode plates respectively; four connected wires penetrate through the hollow screws and are connected with the upper and the lower limb connected electrode plates respectively; a stand is arranged on the front side at the left end of the table board, and two hanging hooks are arranged on the top of the stand; and the upper and the lower limb connected wires and a chest connected wire are arranged on the lower surface of the table board, and the chest connected wire is extracted from the front side at the left end of the table board and hung on the two hanging hooks on the top of the stand. The multifunctional electrocardio examining table is particularly suitable for physical examination of large sample crowds.

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(51)Int.Cl.
A61B 5/0402(2006.01)

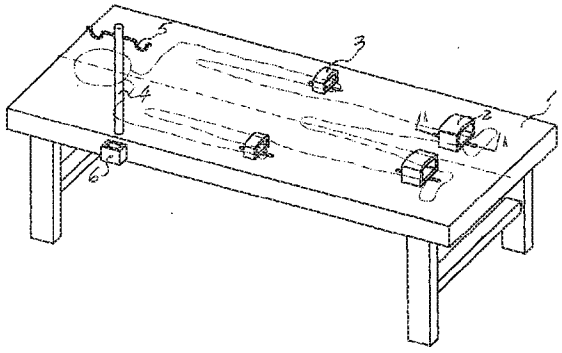
权利要求书 1 页 说明书 2 页 附图 1 页

(54)发明名称

一种心电多功能检查床

(57)摘要

一种心电多功能检查床，本发明目的是提供一种检查效率高、劳动强度低心电多功能检查床。实现发明目的的技术方案是，一种心电多功能检查床，包括床板和导联电极，在床板右端的前后床板上各设一个外露于床板的下肢导联电极板，在床板上还设有两个外露于床板且与受测人员上肢下部相对的导联电极板，四个空心螺钉穿于床板孔分别与上述的上、下肢导联电极板连接，四条导联线穿于所述空心螺钉中与所述上、下肢导联电极板连接，在床板左端的前侧设有一支架，支架的顶部设有两个挂钩；上、下肢导联线和胸部的导联线设在床板的下表面上，其中胸部导联线由床板左端前侧引出后挂在所述支架顶部的两挂钩上。本发明特别适合大样本人群的健康体检。



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1. 一种心电多功能检查床，包括床板和导联电极，其特征在于：在床板右端的前后床板上各设一个外露于床板的下肢导联电极板，在床板上还设有两个外露于床板且与受测人员上肢下部相对的导联电极板，四个空心螺钉穿于床板孔分别与上述的上、下肢导联电极板连接，四条导联线穿于所述空心螺钉中与所述上、下肢导联电极板连接，在床板左端的前侧设有一支架，支架的顶部设有两个挂钩；上、下肢导联线和胸部的导联线设在床板的下表面上，其中胸部导联线由床板左端前侧引出后挂在所述支架顶部的两挂钩上。

2. 如权利要求 1 所述的一种心电多功能检查床，其特征在于：所述上、下肢导联电极板为弧形面。

3. 如权利要求 1 或 3 所述的一种心电多功能检查床，其特征在于：在床板左端的前侧板上设有盛导电糊盒。

一种心电多功能检查床

技术领域：

[0001] 本发明涉及一种医用检查床，特别是一种心电多功能检查床。

背景技术：

[0002] 现有心电图检查床在检查心脏功能时，受检者躺在床上，检查医生将两个下肢导联电极夹分别夹在受检者的左、右下肢体上，再将两个上肢导连电极夹夹在其左、右上肢体上，最后将六个胸部导连电极吸盘分别吸到受检者胸部的指定位置上后，即可开机对受检者心脏的生物电信号进行采集并打印出心电图，由医生对受检者的心电信号进行分析作出结论。上述四个上下肢导联电极夹，每作一次需上夹和取夹八个动作，耗时长劳动强度大，特别是大样本人群健康体检时，其缺点尤为突出；此外，10 个导联电极板的导联连线较长，而且各个导联线极易发生缠绕，如果出现缠绕需进行整理，否则容易发生导联错误连接，出现误接误判现象。

发明内容：

[0003] 本发明目的是提供一种检查效率高、劳动强度低和导联线不易缠绕的一种心电多功能检查床。本发明实现发明目的的技术方案是，一种心电多功能检查床，包括床板和导联电极，其特征在于：在床板右端的前后床板上各设一个外露于床板的下肢导联电极板，在床板上还设有两个外露于床板且与受测人员上肢下部相对的导联电极板，四个空心螺钉穿于床板孔分别与上述的上、下肢导联电极板连接，四条导联线穿于所述空心螺钉中与所述上、下肢导联电极板连接，在床板左端的前侧设有一支架，支架的顶部设有两个挂钩；上、下肢导联线和胸部的导联线设在床板的下表面上，其中胸部导联线由床板左端前侧引出后挂在所述支架顶部的两挂钩上。一种心电多功能检查床，其特征在于：所述上、下肢导联电极板为弧形面。一种心电多功能检查床，其特征在于：在床板左端的前侧板上设有盛导电糊盒。本发明与现有技术比较具有效率高和劳动强度低及避免导联线错误连接，且导联线不易缠绕的显著优点。

附图说明：

[0004] 图 1 是本发明的立体结构示意图，图 2 是图 1 的 A-A 局部剖视图。

具体实施方式：

[0005] 结合以下实施例对本发明作详细说明，在床板 1 右端部的前后两侧各设有一外露于床板的下肢导联电极板 2，此电极板的表面呈弧形面，可避免电极板表面的棱角对受测人员产生的不舒服感，在床板的下肢导联电极板的上方设有两个与受测人员上肢相对的上肢导联电极板 3，此上肢导联电极板的上表面呈弧形面外露于床板的上表面，上述下肢导联电极板和上肢导联电极板与空心螺钉 7 连接，此空心螺钉穿于床板的孔内，在床板下表面下方的空心螺钉上套设有元宝螺帽 8，两条下肢导联线和两条上肢导联线分别穿在[illegible]

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空心螺钉的孔中与两个下肢导联电极板和两个上肢导联电极板连接。上述四个导联电极板用导电性能好的材料如铜合金制作，其表面上设有涂覆银层。为了适应个别身高特高或者过低人员进行检查，可将穿空心螺钉的床板孔制成长孔，以便于移动电极板，在床板的左部的前侧设有一支架 4，支架的顶部设有两个挂钩 5，三个胸部导联电极吸盘和三个左胸部导联电极吸盘的导联线分别挂在上述支架顶部的两个挂钩上。上述上、下肢导联线和左右胸部导联线设在床板的下表面上，其中左右胸部导联线从床板的左端前侧引出吊挂在支架的挂钩上。在床板左端的前侧板上设有盛导电糊盒 6，方便操作医生向四个肢体导联电极板以及受检测人员涂抹导电糊（或其它湿润液）。

[0006] 本发明的操作原理，受测人员从床板的后侧躺在床板上，直接将左、右上、下肢下部的裸露处置于各上、下肢导联电极板上，操作医生将六个左、右胸部导联电极吸盘吸在受测人员胸部的指定部位上后，即可启动仪器进行各种心电监测，检测结束时，只需将六个胸部导联电极吸盘从受测人员身上取下即可，省去了肢体电极夹的上、下动作，减轻了劳动强度，提高了效率。本发明检查床适用于检查常规心电图和检查心电向量图，还可以用于检查心率变异分析、高频心电检测和 Q-T 离散检测，本发明特别适合大样本人群的健康体检。

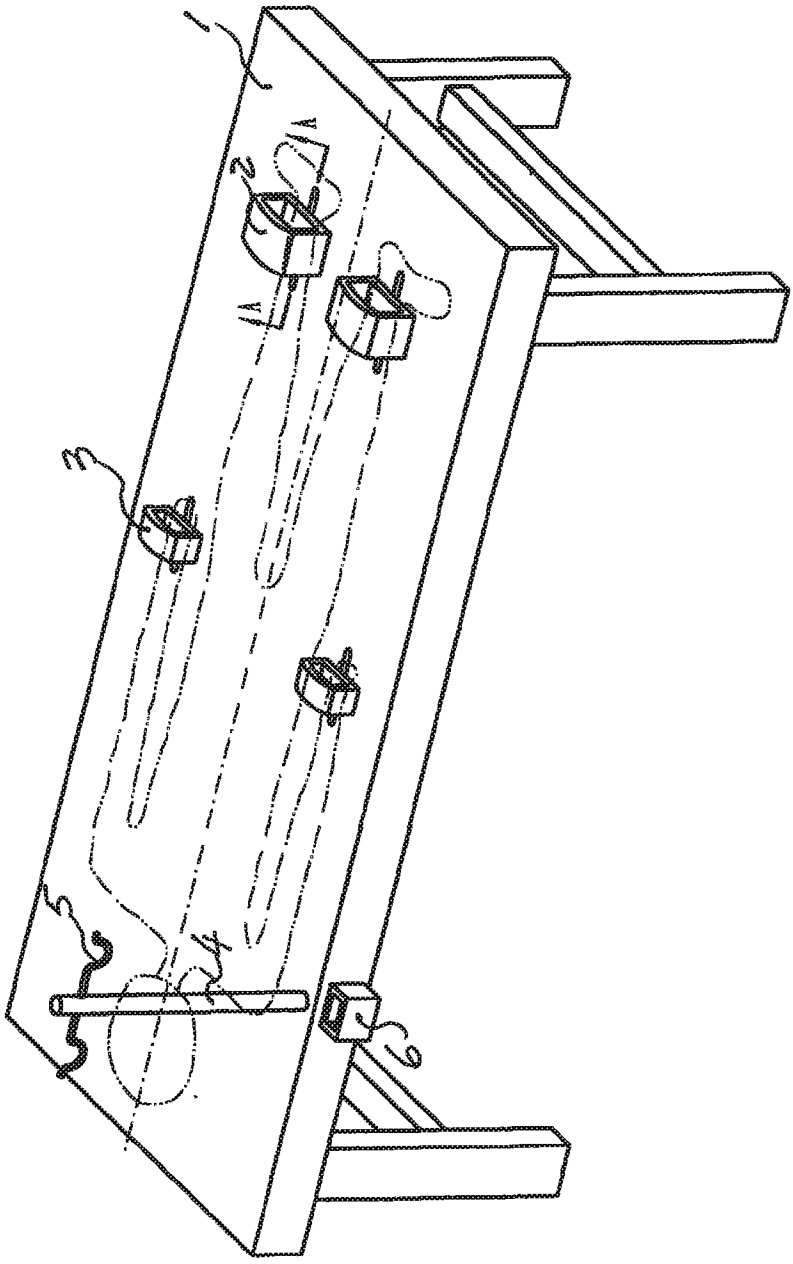

图 1

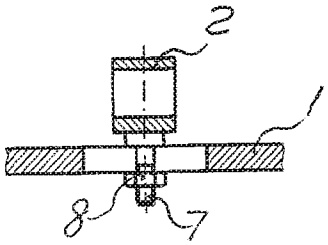

图 2

Electronic Acknowledgement Receipt

EFS ID:	29108661
Application Number:	14228046
International Application Number:	
Confirmation Number:	7700
Title of Invention:	INTRAORAL DEVICE WITH MESH
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	138718
Filer:	Elton Franklin Dean III/Lea Fong
Filer Authorized By:	Elton Franklin Dean III
Attorney Docket Number:	INCEP-001COA
Receipt Date:	08-MAY-2017
Filing Date:	27-MAR-2014
Time Stamp:	13:12:20
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	INCEP-001COA_IDS_Statement-2_5-3-17.pdf	18884 e1524d0dac24dc4f141d2177342374b45b6ea096	no	2

Warnings:

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Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	INCEP-001COA_IDS_1449-2_5-3-17.pdf	55044 7bca79d7135cdc3b59fc29b297f4d0aeb71b291f	no	2
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Information:					
This is not an USPTO supplied IDS fillable form					
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Warnings:					
Information:					
			Total Files Size (in bytes):	3189229	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit: 3732 | Examiner: Hao D. Mai

Serial No.: 14/228,046 | Filed: March 27, 2014

In re Application of: Thien Nguyen

Confirmation No.: 7700 | Customer No.: 138718

Title: INTRAORAL DEVICE WITH MESH

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT
Under 37 C.F.R. § 1.56 and 1.97-1.98

Examiner:

Pursuant to the provisions of 37 C.F.R. §§ 1.56 and 1.97-98 of the Rules of Practice in Patent Cases, enclosed herewith is form PTO-SB-08, listing several references. The Examiner is requested to make these references of official record in the application.

The references cited may be material to examination of the application and are submitted in compliance with the Applicants' duty of disclosure as defined by 37 C.F.R. § 1.56.

Applicants hereby declare, pursuant to 37 C.F.R. §1.97(e)(1), that each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement.

No representation is made or intended as to the completeness of this list, nor is the inclusion of any reference an admission that it is prior art or pertinent to this application.

The Commissioner is hereby authorized to charge any necessary fee to Account Number 50-1662.

Respectfully submitted,
POLSINELLI LLP

Dated: May 3, 2017

By: _____/Elton Dean/_____
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/228,046	03/27/2014	Thien Nguyen	INCEP-001COA	7700

138718 7590 06/05/2017

Polsinelli LLP
3 Embarcadero Center
Suite 2400
San Francisco, CA 94111

EXAMINER
MAI, HAO D

ART UNIT	PAPER NUMBER
3732	

NOTIFICATION DATE	DELIVERY MODE
06/05/2017	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspt@polsinelli.com
sfpatent@polsinelli.com

Office Action Summary	Application No. 14/228,046	Applicant(s) NGUYEN ET AL.	
	Examiner HAO D. MAI	Art Unit 3732	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02/08/2017*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *2-16 and 19-22* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *2-16 and 19-22* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

4) ☐ Other: _____.

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on nonstatutory double patenting provided the reference application or patent either is shown to be commonly owned with the examined application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. See MPEP § 717.02 for applications subject to examination under the first inventor to file provisions of the AIA as explained in MPEP § 2159. See MPEP §§ 706.02(l)(1) - 706.02(l)(3) for applications not subject to examination under the first inventor to file provisions of the AIA. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO Internet website contains terminal disclaimer forms which may be used. Please visit www.uspto.gov/patent/patents-forms. The filing date of the application in which the form is filed determines what form (e.g., PTO/SB/25, PTO/SB/26, PTO/AIA/25, or PTO/AIA/26) should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp.

3. Claims 2-16 and 19-22 are rejected on the ground of nonstatutory double patenting over claims 1-35 of U.S. Patent No. 8,911,232 since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows: The application claim 21 essentially claims the subject matter of the patent claims 1 and 3. The difference between the application claims and the patent claims lies in the fact that the patent claims include more elements and are thus much specific. Thus the invention of the patent claims are in effect a "species" of the "generic" invention of the application claims. It has

been held that the generic invention is "anticipated" by the "species". See *In re Goodman*, 29 USPQ2d 2010 (Fed. Cir. 1993). Since the application claims are anticipated by the patent claims, they are not patentably distinct from the patent claims. Likewise, the application claim 22 essentially claims the subject matter of the patent claims 1 and 2. Note that the recitation "a connection to a cheek retractor" allows for broadest reasonable interpretation that it is equivalent to the patent claim 1's recitation "a cheek retractor portion connected to the main body".

Claim Rejections - 35 USC § 112

4. The following is a quotation of 35 U.S.C. 112(b):
(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 8 and 22 rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention.

- Claim 8 recites "the suction connector" which lacks antecedent basis. Note that claim 8 is dependent on claim 21, which does not recite a suction connector.
- Claim 22 recites "the suction connector connecting a vacuum source with …" (claim 22 lines 11-12). It is unclear whether "a vacuum source" is positively claimed as an element of the invention.
- Claim 22 recites "a connection to a cheek retractor …" (claim 22 lines 14-15). It is unclear whether "a cheek retractor" is positively claimed as an element of the invention.
- Claim 22 recites "the end" (line 15), which lacks antecedent basis.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. **Claims 2-14, 16, and 19-22, are rejected under pre-AIA 35 U.S.C. 102(b) as anticipated by Hirsch et al. (2003/0134253).**

Regarding claim 21, Hirsch et al. discloses a dental mouthpiece (Fig. 2) comprising a main body portion 50 having a distal region (toward 52) and a proximal region (toward 62/64). The main body portion 50 is configured as a pocket (i.e. interior of 50) having an interior defined by: an anterior wall (convex face of 50 shown in Fig.4) defined by an exterior edge; and a posterior wall (concave face 50 shown in Fig. 3) defined by an exterior edge that corresponds to the exterior edge of the anterior/convex wall. The anterior/convex wall is shown having an opening 60 and/or 68 to the interior of the pocket (Fig. 4). The anterior/convex wall and the posterior/concave wall are connected at their corresponding exterior edges (best pointed to by reference numeral 54 in Figs. 6-7) by a side wall, i.e. any connecting material at edge 54. The side wall further comprises a plurality of perforations 58A into the interior of the pocket (Fig. 10; paragraph 47).

As to claim 2, the perforations 58A are shown being spaced apart, thereby forming a mesh. As to claims 3-6, Hirsch et al. further discloses the anterior and posterior walls comprising a plurality perforations 60A (Figs. 9-10), spaced apart from thereby forming a mesh as claimed. As to claim 7, the anterior/convex wall is shown having an opening 60 and/or 68 to the interior of the pocket (Fig. 4); such opening 60 and/or 68 itself is considered to be a slit along a longitudinal axis.

As to claim 8, there is a suction connector 74/84 engaged to the distal portion 64 of the main body portion, providing suction within the interior of the pocket to provide suction of fluids through the perforations in the side wall into the interior of the pocket towards the suction connector. As to claims 9-10, the posterior wall/concave wall (Fig. 3) comprises a bridge structure 24. Figure 8A shows the bridge structure 24 forms a part of the posterior/concave wall and protruding from an interior side thereof. The bridge structure 24 is shown touching the anterior/convex wall (Fig. 8A-B) but it is unattached to the anterior/convex wall since it is shown to be inserted into channel 66 from the posterior/concave wall (Fig. 2). The bridge structure 24 is shown having a plurality of spaced protrusions, i.e. extending flanges forming channels 80, 82 (Fig. 8A), unattached to the anterior wall and comprise a plurality of spaced contact points.

As to claim 11, the device further comprises a cheek retractor 52 connected to the distal region (toward 52) of the main body; the cheek retractor 52 extends away laterally from the distal region of the main body portion. The cheek retractor 52 is disclosed being formed of the same resilient/elastic material as the body 50 (Fig. 2, paragraph 46); therefore, it has a surface that applies pressure when bent, wherein the pressure is based on resilience of a material that forms the cheek retractor portion. As to claim 12, Figs. 2 and 4 show the retractor 52 comprising an extension of the pocket, and the side wall of the extension comprises perforation 68. As to claim 13, the posterior /concave wall 50 comprises an elongated stability bar 76 (distal portion 76 of 24) protruding from an interior surface of the posterior/concave wall 50 (Fig. 2). Note that Figure 8A shows the structure 24 forms a part of the posterior/concave wall and protruding from an interior side thereof.

As to claim 14, the claim language "by injection-molded" is a product-by-process recitation in a product claim. Even though product-by-process recitation is limited by and defined by the recited process, determination of patentability is based on the product itself. The

patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe,* 777 F.2d 695, 227 USPQ 964 (Fed. Cir. 1985). In this case, Hirsch discloses the end product and the structures thereof as claimed as detailed above with all the essential portions forming the device as one piece. The burden is shifted to applicant to show an unobvious difference between Hirsch' device and the invention that would have resulted from the injection molding process.

As to claim 16, Fig. 8A shows the anterior/convex wall and the posterior/concave wall having different thicknesses from one another. As to claims 19-20, the detachable mouth prop 26 comprises a bite block portion 94 and a strap portion 100 (to receive portion 86/90) which is formed as a single piece with bite block portion 94 (Fig. 2). The suction connector portion 74/84 comprises an external plug protrusion 88/90/86 corresponding to an opening 100 in the bite block portion.

Regarding claim 22, Hirsch et al. discloses the invention substantially as claimed as detailed above with respect to claim 21. Note the suction connector 74/84 engaged to the distal portion 64 of the main body portion, providing suction within the interior of the pocket to provide suction of fluids through the perforations in the side wall into the interior of the pocket towards the suction connector. Furthermore, Hirsch et al. shows a cheek retractor 52 connected to the distal region (toward 52) of the main body, thereby forming a connection therebetween the cheeck retractor 52 and the main body portion (Fig. 2; paragraph 46).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. **Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirsch in view of Sclafani (5,890,899).** Hirsch discloses the invention substantially as claimed including the material used to form the device being flexible, translucent, high heat-resistant, as evidenced by disclosure of sterilization for reuse (column 5 lines 20-21; column 6 lines 21-27). However, Hirsch fails to disclose the material being silicone-base. Sclafani discloses a dental suction isolator device formed of silicone-based material (Figs. 1-9, column 8 lines 10-15). It would have been obvious to one having ordinary skill in the art at the time the invention was made to make Hirsch' device from silicone-based material as taught by Sclafani to be a known alternative suitable known material while yielding the same and/or predictable results.

Response to Arguments

10. Applicant's arguments filed 02/08/2017 have been considered but are moot because the arguments do not apply to any of the references being used in the current rejection.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Hao D. Mai whose telephone number is (571) 270-3002. The examiner can normally be reached on Monday-Friday 8:00AM – 4:30PM. If attempts to reach

the examiner by telephone are unsuccessful, please contact the examiner's supervisor, Cris Rodriguez, at (571) 272-4964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hao D Mai/
Examiner, Art Unit 3732

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14228046	NGUYEN ET AL.
	Examiner	**Art Unit**
	HAO D MAI	3732

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	11/03/2015	05/31/2016	11/01/2016	05/30/2017					
	1	✓	✓	✓	-					
	2	✓	✓	✓	✓					
	3	✓	✓	✓	✓					
	4	✓	✓	✓	✓					
	5	✓	✓	✓	✓					
	6	✓	✓	✓	✓					
	7	✓	✓	✓	✓					
	8	✓	✓	✓	✓					
	9	✓	✓	✓	✓					
	10	✓	✓	✓	✓					
	11	✓	✓	✓	✓					
	12	✓	✓	✓	✓					
	13	✓	✓	✓	✓					
	14	✓	✓	✓	✓					
	15	✓	✓	✓	✓					
	16	✓	✓	✓	✓					
	17	✓	✓	-	-					
	18	✓	✓	-	-					
	19	✓	✓	✓	✓					
	20	✓	✓	✓	✓					
	21			✓	✓					
	22			✓	✓					

Substitute for Form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Complete if Known	
Application Number	14/228,046
Filing Date	March 27, 2014
First Named Inventor:	Thein Nguyen
Art Unit	3732
Examiner Name	Hao D. Mai
Attorney Docket Number	INCEP-001COA

Sheet	1	of	2

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.'	Document Number Number-Kind Code[2](If known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-	5,762,496	6/9/1998	Albertsson et al.	
		US-				
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.'	Foreign Patent Document Country Code[3] Number[4] Kind Codes (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T6

Examiner Signature	/Hao D. Mai/	Date Considered	05/30/2017

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 'Applicant's unique citation designation number (optional). [2]See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3]Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4]For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6]Applicant is to place a check mark here if English language translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SENT FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

Based on Form PTO/SB/08A (08-03)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /HDM/

Substitute for Form 1449/PTO	Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*	Application Number	14/228,046
	Filing Date	March 27, 2014
	First Named Inventor:	Thein Nguyen
	Art Unit	3732
	Examiner Name	Hao D. Mai
Sheet 2 of 2	Attorney Docket Number	INCEP-001COA

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No'	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T^2
		Docket No. INCEP-001COB U.S. Patent Application 14/228,050; Office Action mailed 11/4/16	

Examiner Signature	/Hao D Mai/ (05/30/2017)	Date Considered	

*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

'Applicant's unique citation designation number (optional). 'Applicant is to place a check mark here if English Translation is attached.

This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450 Alexandria, Virginia 22313-1450.**

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Based on Form PTO/SB/08B (08-03)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /HDM/

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L2	1	("8911232").PN.	USPAT	OR	OFF	2017/05/30 13:43
L7	1	("20030134253").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2017/05/30 13:58
S88	31	("2777248" | "3029513").PN. OR ("4017975").URPN.	US-PGPUB; USPAT; USOCR	ADJ	ON	2017/04/12 23:04
S89	94	("1122086" | "20040033468" | "20060063129" | "20070231773" | "20070259307" | "20080318183" | "20090246728" | "20110311942" | "20140212837" | "20140212838" | "20140212839" | "20140212840" | "20140212841" | "2510125" | "2937445" | "3090122" | "3396468" | "3881254" | "4017975" | "4024642" | "4167814" | "4259067" | "4425911" | "4495945" | "4583527" | "4592344" | "4643172" | "4802851" | "4865545" | "4906188" | "4975057" | "4992046" | "4996976" | "5009595" | "5071347" | "5078602" | "5127411" | "5152686" | "5232362" | "5281134" | "5366489" | "5438976" | "5462435" | "5496363" | "5513986" | "5516286" | "5588836" | "5725370" | "5762496" | "5769635" | "5827061" | "5873718" | "5890899" | "5924866" | "6022214" | "6149430" | "6193513" | "6213772" | "6244866" | "6267591" | "6338627" | "6379147" | "6575746" | "6634884" | "6652276" | "6655960" | "6716029" | "6743017" | "6908308" | "6939134" | "6974321" | "6981870" | "7077652" | "7293990" | "7611354" | "7748981" | "8029280" | "8057227" | "8057228" | "8075310" | "8297973" | "8911232" | "D210583" | "D303834" | "D491663" | "D495799" | "D556327" | "D734851").PN. OR ("9358086").URPN.	US-PGPUB; USPAT; USOCR	ADJ	ON	2017/04/12 23:08
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		"5516286").PN. OR ("5890899").URPN.				
S91	7	("20140212837" | "20140212838" | "6974321" | "8029280" | "D495799" | "D615203").PN. OR ("D734851").URPN.	US-PGPUB; USPAT; USOCR	ADJ	ON	2017/04/12 23:19
S92	20	nguyen.in. and intraoral.ti.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2017/04/12 23:22
S93	20	nguyen.in. and intraoral.ti.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	ADJ	ON	2017/04/12 23:22

EAST Search History (Interference)

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Substitute for Form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Complete if Known	
Application Number	14/228,046
Filing Date	March 27, 2014
First Named Inventor:	Thien Nguyen
Art Unit	3732
Examiner Name	Hao D. Mai
Attorney Docket Number	INCEP-001COA

Sheet	1	of	2

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.'	Document Number Number-Kind Code[2](If known)		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-	9,084,656	7/21/2015	Hirsch	
		US-	9,358,086	6/7/2016	Hirsch	
		US-	2003/0134253	7/17/2003	Hirsch et al.	
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.'	Foreign Patent Document Country Code[3] Number[4] Kind Codes (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T6

Examiner Signature	/Hao D Mai/ (05/30/2017)	Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 'Applicant's unique citation designation number (optional). [2]See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3]Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4]For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6]Applicant is to place a check mark here if English language translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SENT FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

Based on Form PTO/SB/08A (08-03)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /HDM/

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Sheet 2 of 2	Attorney Docket Number	INCEP-001COA

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No'	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T^2
		Docket No. INCEP-001COC U.S. Patent Application 14/228,054; Final Office Action mailed 4/24/17	
		Docket No. INCEP-001COD U.S. Patent Application 14/228,057; Office Action mailed 4/13/17	
		Docket No. INCEP-001COE U.S. Patent Application 14/228,061; Office Action mailed 4/12/17	

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		CN 102026587	4/20/2011	Dentozone Co. Ltd.		
		CN 102247140	11/23/2011	Third Hospital Xinxiang Medical University		

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Ascentcare Dental Products v. Solmetex - IPR2025-01175

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	Examiner Name	Hao D. Mai
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		Chinese Patent Application No. 201480039991.2 First Office Action dated 12/29/16	

Examiner Signature	/Hao D Mai/ (05/30/2017)	Date Considered	

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Ascencare Dental Products v. Solmetex - IPR2025-01175 Solmetex Ex. 2016

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /HDM/

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14228046	NGUYEN ET AL.
	Examiner	Art Unit
	HAO D MAI	3732

CPC- SEARCHED		
Symbol	Date	Examiner
A61C 17/043,046	11/03/2015	HDM
Update Search	05/31/2016	HDM
Update Search	10/03/2016	HDM
A61C 17/04, 0208	11/01/2016	HDM
Update Search	11/01/2016	HDM
Udpate Search	05/30/2017	HDM

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
433	93	11/03/2015	HDM

SEARCH NOTES		
Search Notes	Date	Examiner
Inventor Search	11/03/2015	HDM
Review searches of parent case 14/100323	11/03/2015	HDM
Update Search	05/31/2016	HDM
Update Search	10/03/2016	HDM
Update Search	11/01/2016	HDM
Update Search	05/30/2017	HDM

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/228,046	03/27/2014	Thien Nguyen	INCEP-001COA	7700

138718 7590 07/10/2017

Polsinelli LLP
3 Embarcadero Center
Suite 2400
San Francisco, CA 94111

EXAMINER
MAI, HAO D

ART UNIT	PAPER NUMBER
3732	

NOTIFICATION DATE	DELIVERY MODE
07/10/2017	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspt@polsinelli.com
sfpatent@polsinelli.com

Applicant-Initiated Interview Summary	Application No.	Applicant(s)	
	14/228,046	NGUYEN ET AL.	
	Examiner	Art Unit	
	HAO D. MAI	3732	

All participants (applicant, applicant's representative, PTO personnel):

(1) *Hao D. Mai*. (3)_____.

(2) *Stephanie Vu*. (4)_____.

Date of Interview: *30 June 2017*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☐103 ☒Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *21 and 22*.

Identification of prior art discussed: *Hirsch*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

Possible claim language to overcome the cited prior art was discussed. Further consideration and updated search will be conducted upon Applicant's filing of amendment.

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/HAO D MAI/
Examiner, Art Unit 3732

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews
Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

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4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
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If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

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Art Unit	3732
Examiner Name	Hao D. Mai
Attorney Docket Number	INCEP-001COA

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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.'	Foreign Patent Document Country Code[3] Number[4] Kind Codes (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T6
		EP 3184076	6/28/2017	Incept, Inc.		

Examiner Signature		Date Considered	

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Substitute for Form 1449/PTO	Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*	Application Number	14/228,046
	Filing Date	March 27, 2014
	First Named Inventor:	Thien Nguyen
	Art Unit	3732
	Examiner Name	Hao D. Mai
Sheet 2 of 2	Attorney Docket Number	INCEP-001COA

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No'	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T^2
		European Patent Application No. 17150671.0; Extended European Search Report dated 5/19/17	

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Remarks:
This application was filed on 09-01-2017 as a divisional application to the application mentioned under INID code 62.

(54) INTRAORAL DENTAL SUCTION AND ISOLATION SYSTEM

(57) A dental mouthpiece is provided that may be attached to a high-suction dental adapter for the purpose of assisting the dental staff during dental procedures through chair-side, hands-free suction, and isolation. Such a mouthpiece may comprise a main body portion (110), a cheek retractor portion (130), and a suction connector portion (120). In some embodiments, the main body portion (110), cheek retractor portion (130), and suction connector portion (120) (and sub-portions thereof) may be molded in one piece, preferably by injection molding. In an exemplary embodiment, the mouthpiece may be made of a material that is flexible, translucent, conducive to injection molding, high heat-resistant, and autoclavable. Such a material may include silicone. Because the mouthpiece may be made of a high heat-resistant and autoclavable material, such a mouthpiece may be reusable.

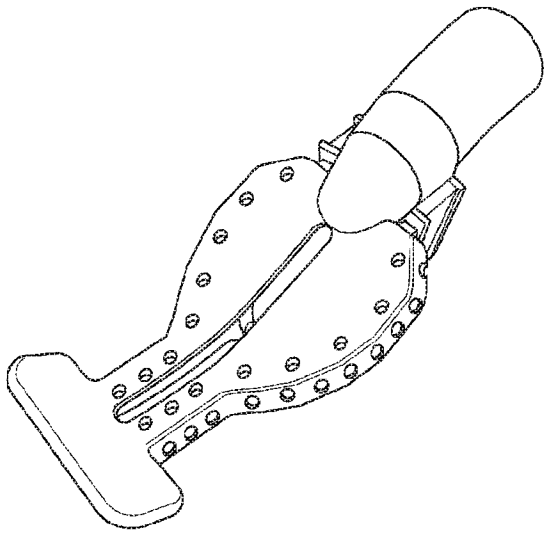

FIG. 1A

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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention generally relates to the field of dental mouthpieces. More specifically, the present invention relates to intraoral dental suction and isolation mouthpieces.

2. Description of Related Art

[0002] Various mouthpieces are currently used by dental health professionals, dental hygienists, and dental assistants in the field of dentistry. In the past, a dental patient has been treated by a traditional two-person team that comprises a dental professional and a dental assistant. Further, dental treatment may be provided by the team using many different types of dental equipment and materials. Such dental equipment and materials may include such items as an intraoral mirror, a bite block, a slow speed suction ejector, a high speed suction ejector, gauzes, cotton rolls, and dry angles. Each item of dental equipment may be used for different purposes, though some may be used in combination for some types of dental services. As such, a dental professional seeking to provide such dental services may need to use multiple items of such dental equipment. An important role of the dental assistant is therefore to assist the dental professional in coordinating the use of these multiple items of different equipment and materials.

[0003] There is, therefore, a need in the art for improved systems and methods of providing dental services in a more efficient, comfortable, and safe manner to the dental patient.

[0004] Different intraoral devices are known. For example, U.S. Patent Application Publication No. 2012/0015320 A1 discloses a bite block, an illumination device having a saliva suction function, and a TIPS (twist isolated plates of suction) for protecting the tongue of a patient. The described solution guides the tongue of the patient such that when dental treatment is performed, the tongue of the patient can be safely and comfortably protected. Furthermore, saliva collected around the throat of the patient can be rapidly removed so that the patient feels little foreign-body like sensations. In addition, the TIPS can isolate the tongue from one side of the mouth cavity to be treated so as to ensure space for treatment. Moreover, the entirety of the mouth cavity of the patient can be illuminated to enable a doctor to conveniently conduct the dental treatment.

[0005] Further, U.S. Patent No. 6,974,321 relates to dental appliances for illuminating and/or vacuum suction of the mouth of a dental patient for examination and/or operative purposes.

[0006] U.S. Patent Application Publication No. US 2009/0274991 A1 teaches devices and methods for providing intra-oral operative isolation, fluid and debris aspiration, and tongue and check retraction.

SUMMARY OF THE CLAIMED INVENTION

[0007] The invention is defined in claims 1 and 15, respectively. Particular embodiments are set out in the dependent claims.

[0008] In particular, a dental mouthpiece is described herein. The mouthpiece may be attached to a high-suction dental adapter for the purpose of assisting the dental staff during dental procedures through chair-side, hands-free suction, and isolation. Such a mouthpiece comprises a main body portion, a cheek retractor portion, and a suction connector portion. In some embodiments, the main body portion, cheek retractor portion, and suction connector portion (and sub-portions thereof) may be molded in one piece, preferably by injection molding. In an exemplary embodiment, the mouthpiece may be made of a material that is flexible, translucent, conducive to injection molding, high heat-resistant, and autoclavable. Such a material may include silicone. Because the mouthpiece may be made of a high heat-resistant and autoclavable material, such a mouthpiece may be reusable.

[0009] The main body portion comprises an enclosed pocket made up of an anterior wall, a posterior wall, and a side wall in between the anterior and posterior walls. The side wall may be perforated with a plurality of perforations. Such perforations may constitute a mesh. Additional perforations may be located on the anterior and posterior walls. The main body portion may further include a slit along a longitudinal, central axis on the anterior wall. Such openings (e.g., perforations and slit) allow for suction of air, fluids, and small debris from the patient's mouth, through the openings into the interior portion, and into the suction connector portion towards a suction source. Because the mouthpiece is made of a flexible and resilient material (*e.g.*, silicone), the mouthpiece is bendable when placed in a patient's mouth to conform to the shape of the mouth. When properly positioned, the suction connector portion may protrude from one side of the patient's mouth, while the main body lies against the back of the patient's mouth, and the cheek retractor presses against the patient's cheek on the opposite side of the patient's mouth.

[0010] The main body further includes an protruding bridge structure on the interior surface of the posterior wall. Such a bridge structure protrudes from the interior surface in a wave shape with crests and troughs. The crests provide a plurality of contact points with the anterior wall to keep the anterior wall separated from the posterior wall during suction. Meanwhile, the troughs provide gaps that allow for suction of air, fluids, and small debris through the bridge structure.

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BRIEF DESCRIPTION OF THE FIGURES

[0011]

FIG. 1A is a perspective view of an exemplary mouthpiece with a detachable mouth prop.
FIG. 1B is a top view of the exemplary mouthpiece and detachable mouth prop of FIG. 1A.
FIG. 1C is a bottom view of the exemplary mouthpiece and detachable mouth prop of FIG. 1A.
FIG. 1D is a side view of the exemplary mouthpiece and detachable mouth prop of FIG. 1A.
FIG. 1E is a cross-sectional view of the exemplary mouthpiece and detachable mouth prop of FIG. 1A.
FIG. 2A is a perspective view of the exemplary mouthpiece of FIG. 1A where the detachable mouth prop has been detached.
FIG. 2B is a top view of the exemplary mouthpiece of FIG. 2A.
FIG. 2C is a bottom view of the exemplary mouthpiece of FIG. 2A.
FIG. 2D is a side view of the exemplary mouthpiece of FIG. 2A.
FIG. 2E is a cross-sectional view of the exemplary mouthpiece of FIG. 2A.
FIG. 3A is a front view of an exemplary mouth prop.
FIG. 3B is a back view of the exemplary mouth prop of FIG. 3A.
FIG. 3C is a bottom view of the exemplary mouth prop of FIG. 3A.
FIG. 3D is a perspective view of the exemplary mouth prop of FIG. 3A.
FIG. 3E is a side view of the exemplary mouth prop of FIG. 3A.
FIG. 3F is a top view of the exemplary mouth prop of FIG. 3A.
FIG. 4 is a close-up view of exemplary mesh sides in an exemplary mouthpiece.
FIG. 5 is a close-up view of an internal bridge in an exemplary mouthpiece.
FIG. 6A is a close-up view of an exemplary reinforcing bar in an exemplary mouthpiece.
FIG. 6B is a cross-sectional view of the exemplary reinforcing bar of FIG. 6A.
FIG. 7A is a close-up view of an exemplary cheek retractor portion in an exemplary mouthpiece.
FIG. 7B is a cross-sectional view of the exemplary cheek retractor portion of FIG. 7A.

DETAILED DESCRIPTION

[0012] Embodiments of the present invention provide for a mouthpiece comprising a main body portion, a cheek retractor portion, and a suction connector portion. In some embodiments, the main body portion, cheek retractor portion, and suction connector portion (and subportions thereof) may be molded as one-piece, preferably by injection molding. In an exemplary embodiment, the mouthpiece may be made of a material that is flexible, translucent, conducive to injection molding, high heat-resistant, and autoclavable. Such a material may include silicone. Because the mouthpiece may be made of a high heat-resistant and autoclavable material, such a mouthpiece may be reusable.

[0013] FIGs. 1A-E are different views of an exemplary mouthpiece with an attachable mouth prop 160, while FIGs. 2A-E are different views of the exemplary mouthpiece of FIG. 1A where the attachable mouth prop 160 has been detached. Such a mouthpiece includes a main body portion 110, a suction connector portion 120, and a cheek retractor portion 130.

[0014] The main body portion 110 may include mesh or perforations 140, a stability bar 150, an open slit 170, and an internal bridge 180. The main body potion 110 connects to a suction connector portion 120 on one end and a cheek retractor portion 130 at the other end. Such a cheek retractor portion 130 may be configured to press against and retract a patient's cheek away from the patient's teeth. When placed in a patient's mouth, the suction connector portion 120 may protrude from one side of the patient's mouth, while the main body portion 110 lies against the back of the patient's mouth, and the cheek retractor portion 130 retracts the patient's cheek on the opposite side of the patient's mouth. The flexibility of the material used to form the mouthpiece allows for some bending when placed in the patient's mouth. The material is, however, resilient enough that the cheek retractor portion presses against the inside of the patient's cheek with such pressure being sufficient to move the cheek away from the patient's teeth.

An exemplary main body portion 110, when placed in a mouth, may include an anterior wall facing the front of the mouth (*e.g.*, the side with slit 170) and a posterior wall facing the back of the mouth. The two walls may connect at a superior wall and an inferior wall forming a body that is at least partially enclosed.

[0015] Superior may be used herein to refer to the side that rests against a roof of a patient's mouth when placed therein, and inferior may be used to refer to the side that rests against the floor of the patient's mouth. The superior and inferior sides may be formed identically, which may allow for the mouthpiece to change orientation such that the superior side may appear as the inferior side and vice versa, in the new orientation. When in use, the respective sides of the main body portion 110 may serve to protect and separate the top of the mouth and the bottom of the mouth/tongue. In addition, the main body portion 110 may also serve to protect the back of the mouth (e.g., throat and airway) from falling debris.

[0016] Much of the main body portion 110 of the mouthpiece may be shaped as a straight-line arrowhead or shield whose base generally conforms to the intraoral shape of a patient's mouth. Differently-sized mouthpieces may be provided for differently-sized mouths of adults and children. Part of the base side of the arrowhead may be formed with thicker walls than the rest of the main

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body. Such thickening may provide additional stability.

[0017] In addition, the main body portion 110 of the mouthpiece may include a plurality of holes 140 distributed along the superior and inferior sides of the anterior and posterior walls to assist in suctioning of water, saliva and debris from the oral cavity. In some embodiments, a set of holes may also form a mesh along the walls of the superior and inferior edges. FIG. 4 is a close-up view of an exemplary mesh wall in an exemplary mouthpiece.

[0018] At the narrow end of the arrowhead that connects to the cheek retractor portion 130, the main body portion 110 may include a rectangular portion. Narrower than the base of the arrowhead, the rectangular portion may additionally include a reinforcing bar (or stability bar) 150 (described in further detail below) and may be at least partially crossed by a slit 170 (described in further detail below) into the interior of the pocket of the main body portion 110.

[0019] Stability bar 150 may be a protrusion or otherwise a thickened area that reinforces the stability of the rectangular portion and assist in shaping this region to the intraoral posterior shape of a patient's mouth. FIG. 6A is a close-up view of an exemplary stability bar 150 of an exemplary mouthpiece. FIG. 6B is a cross-sectional view of the exemplary reinforcing bar in the cheek retractor connector portion of FIG. 6A.

[0020] In some embodiments, the internal, rectangular-shaped reinforcing or stability bar 150 may be located distally to the internal wavelike bridge structure 180 and attached to both the interior side of the posterior surface of the main body and the rectangular portion. Such a stability bar 150 may be located in the area where a positioned mouthpiece begins to wrap from the lingual side of the most posterior mandibular tooth, around the distal side of the most posterior tooth, and to anterior side of the most posterior mandibular tooth, thereby assisting in shaping the mouthpiece to the general intraoral shape of a patient's mouth.

[0021] Various embodiments of the mouthpiece may further include a longitudinal, open slit 170 extending over approximately two-thirds of the main body on the anterior surface. Running along the center of the main body across the rectangle and most of the arrowhead, such a slit 170 may assist in capture and suction of water, saliva and debris, as well as assisting in cleaning and maintenance.

[0022] Additionally, the main body of the mouthpiece may include a bridge structure 180 on an interior surface to ensure that the anterior and posterior surfaces remain separated during suction. FIG. 1E is a cross-sectional view of the mouthpiece in which the bridge structure 180 is illustrated. FIG. 5 is a close-up view of the bridge structure 180 without the surrounding walls of the main body portion. Such a bridge structure 180 may be formed as an wave-like protrusion that generally corresponds to the distance between the anterior and posterior walls extending substantially (e.g., within 1 mm) the full distance at its crest and substantially flush to the surface at its trough. In some embodiments, the bridge structure 180 may be centrally-located in the main body portion 110 of the mouthpiece. The gaps (or troughs) between the waves of the bridge structure 180 assist in the suction-driven transfer of water and saliva to the suction connector portion 120 and ultimately, into a central suction vacuum. In some embodiments, the bridge structure 180 may follow the shape of a logo (e.g., an arrowhead or shield).

[0023] The suction connector portion 120 may be oval-shaped and also attached to the main body portion 110. The suction connector portion 120 may be formed with thicker walls than the main body portion 110 and configured to attach to a high-suction vacuum adapter and to assist in transferring water, saliva, and debris from the oral cavity to the external adapter for removal. The suction connector portion 120 may also include an internal stop to assist in sliding the mouthpiece onto the adapter to a desired depth. The suction connector portion 120 may additionally have an external, concave, notched region 210 that corresponds to a removable strap such that when the strap is in place, the external walls of the strap and the rest of the connector portion may be flush.

The check retractor portion 130 is illustrated as a hammerhead distal region, which may be attached to the main body portion 110. FIG. 7A is a close-up view of an exemplary cheek retractor portion 130 in an exemplary mouthpiece. FIG. 7B is a cross-sectional view of the exemplary cheek retractor portion 130 of FIG. 7A.

[0024] The mouthpiece may be used with a mouth prop 160, as illustrated in FIGs. 1 (with a mouth prop 160) and FIGs. 2 (illustrated without the mouth prop 160). FIGs. 3A-E provide different close-up views of an exemplary mouth prop 160. The removable strap 310 may be attached to mouth prop 160, which may be used to prop open a patient's mouth and teeth. In this regard, the suction connector portion 120 may additionally have an external plug 220 (FIG. 2C) protruding from the posterior side of the suction connector portion 120. Such a plug 220 may correspond to and serve to connect with an opening in the mouth prop 160. The mouth prop 160 may be reinforced by the presence of the plug 220 in the opening, thereby resulting in a more crush-resistant, nearly incompressible, and stable mouth prop 160. In some embodiments, the suction connector portion 120 may further have a cutout 230 (*e.g.*, which may be shaped as a logo) providing extra interlocking with a corresponding protrusion (*e.g.*, which may also be shaped as a logo) on an external high-suction vacuum adapter.

[0025] The mouth prop 160 may be made of thickened silicone material injection molded in a single piece with an elastic strap corresponding to the circumference of the suction connector portion. The mouth prop 160 has an internal, rectangular-shaped female slot designed to fit snugly with the external, rectangular-shaped male plug 220 of the suction connector portion 120 of the mouthpiece. Mouth props may be made in different sizes for differently sized mouths. Because the mouth prop and mouthpiece are detachable from each other, different siz-

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es of each may be mixed and matched as needed for a particular patient's mouth.

[0026] The mouthpiece as described herein may be used with a one-piece, autoclavable, high-suction vacuum adapter. Such a high-suction vacuum body adapter may be made of a single homogenous material. Having a single lever design, such a vacuum adapter may function in the same manner as all the current high-suction vacuum evacuators and saliva ejectors in controlling the removal of water, saliva, and debris from the oral cavity to the outside vacuum source. The single lever may be designed to control the removal of water, saliva, and debris from the at least partially enclosed so main body through a single, large evacuation conduit within the suction connector portion.

[0027] Particular aspects of the present disclosure are set out in the following numbered clauses:

1. A dental mouthpiece composed of a material, the dental mouthpiece comprising: a main body portion comprising a defined pocket having an anterior wall, a posterior wall, and a side wall in between the anterior wall and the posterior wall, wherein the anterior wall, the posterior wall, and the side wall define an interior portion of the defined pocket; a cheek retractor portion configured to press against a cheek of a patient when placed in a mouth of the patient, wherein resilience of the material causes the cheek retractor portion to retract a cheek of the patient away from the teeth of the patient; and a suction connector portion for connecting the interior portion of the main body to a vacuum suction source.

2. The mouthpiece of clause 1, wherein the side wall includes a plurality of perforations.

3. The mouthpiece of clause 1, wherein the anterior wall and the posterior wall each includes a plurality of perforations.

4. The mouthpiece of clause 1, wherein the anterior wall further includes a slit along a central axis.

5. The mouthpiece of clause 1, further comprising a stability bar protruding from an interior surface of the posterior wall, wherein a thickness of the stability bar increases resilience of the cheek retractor portion during bending.

6. The mouthpiece of clause 1, wherein the main body portion, the cheek retractor portion, and the suction connector portion are formed by injection-molded as one piece.

7. The mouthpiece of clause 1, wherein the material used in the injection-molding is a flexible, translucent, high heat-resistant, autoclavable silicone-based material.

8. The mouthpiece of clause 1, further comprising a bridge structure protruding from an interior surface of the posterior wall, the protruding bridge struchue comprising a plurality of spaced contact points that keep the anterior wall separated from the posterior wall during suction.

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

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

11. The mouthpiece of clause 1, wherein the suction connector portion comprises an internal stop to assist in positioning of a vacuum suction source or a vacuum adaptor.

12. The mouthpiece of clause 1, further comprising a detachable mouth prop.

13. The mouthpiece of clause 12, wherein the detachable mouth prop comprises a strap configured to fit around the suction connector portion, wherein an external surface of the suction connector portion comprises a notch region corresponding to the strap, and wherein an external surface of the strap is substantially flush with a remaining external surface of the suction connector portion when the strap sits in the notch region.

14. The mouthpiece of clause 13, wherein the strap is injection-molded in a single piece with the mouth prop.

15. The mouthpiece of clause 1, wherein the suction connector portion further comprises an external plug protrusion corresponding to an opening in a mouth prop associated with the strap.

16. The mouthpiece of clause 15, wherein the plug protrusion fits into the opening to provide additional crush-resistance and decreased compressibility during biting by the patient.

17. The mouthpiece of clause 1, wherein the suction connector portion comprises a cutout corresponding to a protrusion on a vacuum adapter for an interlocking fit.

18. The mouthpiece of clause 1, wherein the anterior wall and the posterior wall have different thicknesses.

[0028] While various embodiments have been described above, it should be understood that they have been presented by way of example only, and not limitation. The descriptions are not intended to limit the scope of the invention to the particular forms set forth herein. Thus, the breadth and scope of a preferred embodiment should not be limited by any of the above-described exemplary embodiments. It should be understood that the above description is illustrative and not restrictive. To the contrary, the present descriptions are intended to cover such alternatives, modifications, and equivalents as may be included within the scope of the invention as defined by the appended claims.

[0029] The scope of the invention should, therefore, be determined not with reference to the above description, but instead should be determined with reference to the appended claims.

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Claims

1. A dental mouthpiece composed of a bendable material, the dental mouthpiece comprising:

   a main body portion (110) comprising a defined pocket having an anterior wall, a posterior wall, and a side wall in between the anterior wall and the posterior wall, wherein the anterior wall, the posterior wall, and the side wall define an interior portion of the defined pocket, wherein the posterior wall comprises a bridge structure protruding from an interior surface of the posterior wall in a wave shape, the protruding bridge structure comprising a plurality of spaced contact points that keep the anterior wall separated from the posterior wall during suction, wherein the spaced contact points are at crests of the wave shape, and wherein a plurality of troughs of the wave shape allow for suction through the bridge structure;
   a cheek retractor portion (130) connected to the main body portion (110); and
   a suction connector portion (120) configured to connect the interior portion of the main body portion (110) to a vacuum suction source, wherein the suction connector portion (120) is connected to the main body portion (110) on an end opposite the cheek retractor portion (130).

2. The mouthpiece of claim 1, wherein the side wall includes a plurality of perforations (140).

3. The mouthpiece of claim 1 or 2, wherein the anterior wall and the posterior wall each includes a plurality of perforations (140).

4. The mouthpiece of claim 1, 2 or 3, wherein the anterior wall further includes a slit (170) along a central axis.

5. The mouthpiece of any of the preceding claims, wherein the main body portion (110) is shaped as a straight-line arrowhead and includes a rectangular portion at a narrow end of the arrowhead, wherein the narrow end of the arrowhead is connected to the cheek retractor portion (130), wherein the mouthpiece further comprises a stability bar (150) protruding from an interior surface of the posterior wall, and wherein a thickness of the stability bar (150) is adapted to reinforce stability of the rectangular portion of the main body portion (110).

6. The mouthpiece of any of the preceding claims, wherein the main body portion (110), the cheek retractor portion (130), and the suction connector portion (120) are mold in one piece, preferably by injection molding.

7. The mouthpiece of any of the preceding claims, wherein the material is a flexible, translucent, high heat-resistant, autoclavable silicone-based material.

8. The mouthpiece of any of the preceding claims, wherein the suction connector portion (120) comprises an internal stop to assist in positioning of the vacuum suction source.

9. The mouthpiece of any of the preceding claims, further comprising a detachable mouth prop (160), wherein the detachable mouth prop (160) comprises a strap (310) configured to fit around the suction connector portion (120), wherein an external surface of the suction connector portion (120) comprises a notch region (210) corresponding to the strap (310), and wherein an external surface of the strap (310) is substantially flush with a remaining external surface of the suction connector portion (120) when the strap (310) sits in the notch region.

10. The mouthpiece of claim 9, wherein the strap (310) and other portions of the mouth prop (160) are injection-molded as a single piece.

11. The mouthpiece of claim 9 or 10, wherein the suction connector portion (120) further comprises an external plug protrusion (220) corresponding to an opening in the mouth prop (160).

12. The mouthpiece of claim 11, wherein the plug protrusion (220) fits into the opening to provide additional crush-resistance and decreased compressibility.

13. The mouthpiece of any of the preceding claims, wherein the anterior wall and the posterior wall have different thicknesses.

14. The mouthpiece of any of the preceding claims, wherein the cheek retractor portion (130) is configured to press against a cheek of a patient when placed in a mouth of the patient, wherein resilience of the material causes the cheek retractor portion (130) to retract a cheek of the patient away from the teeth of the patient.

15. A combination comprising:

   a mouthpiece according to any of the preceding claims; and
   a vacuum adapter;
   wherein the suction connector portion (120) of the mouthpiece comprises an internal stop to assist in positioning of the vacuum adapter; and/or
   wherein the suction connector portion (120) of the mouthpiece comprises a cutout (230) corre-

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sponding to a protrusion on the vacuum adapter for an interlocking fit.

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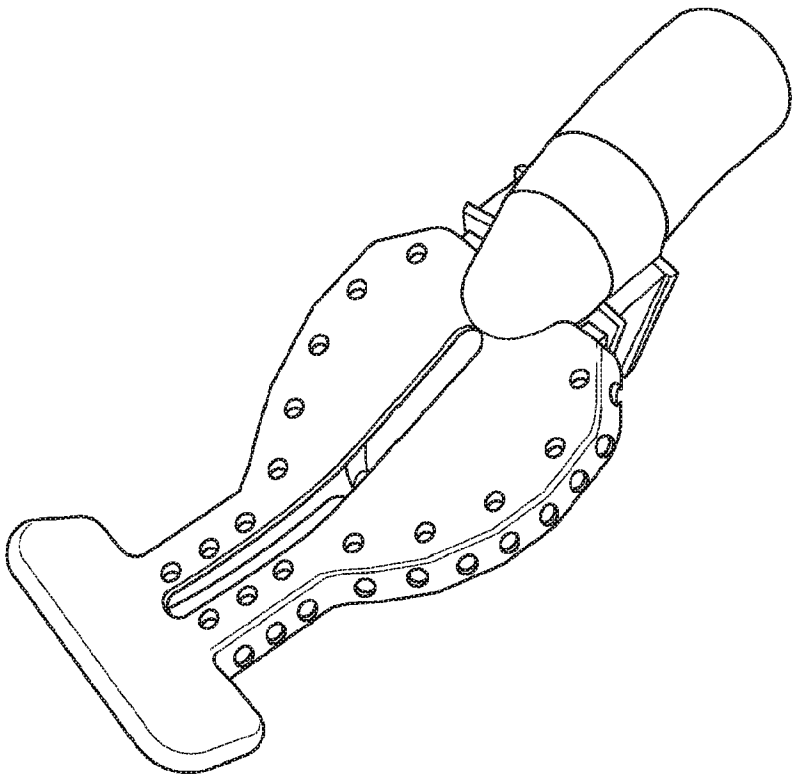

FIG. 1A

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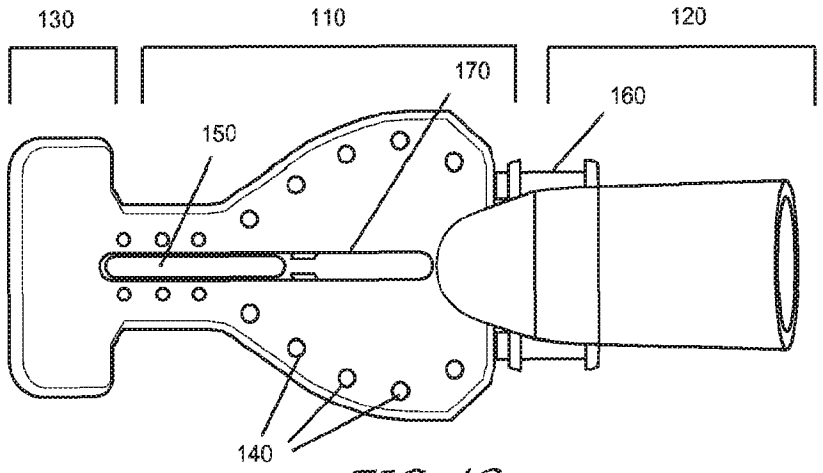

FIG. 1B

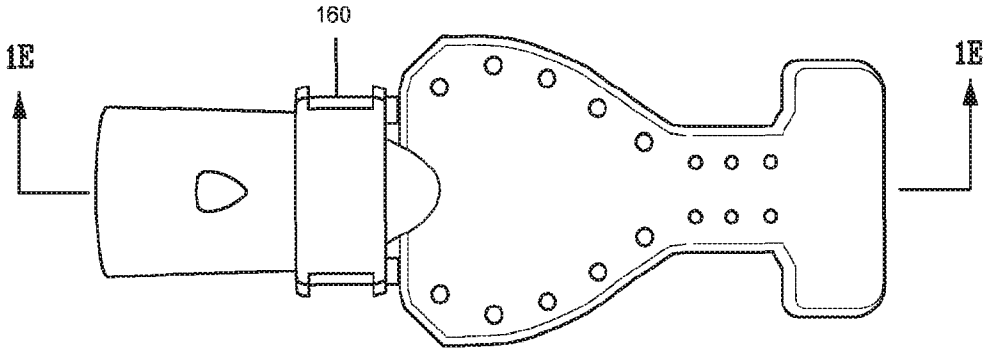

FIG. 1C

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

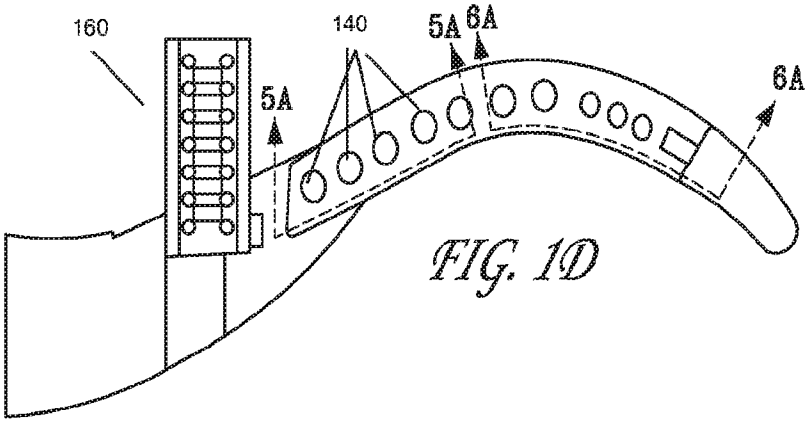

FIG. 1D

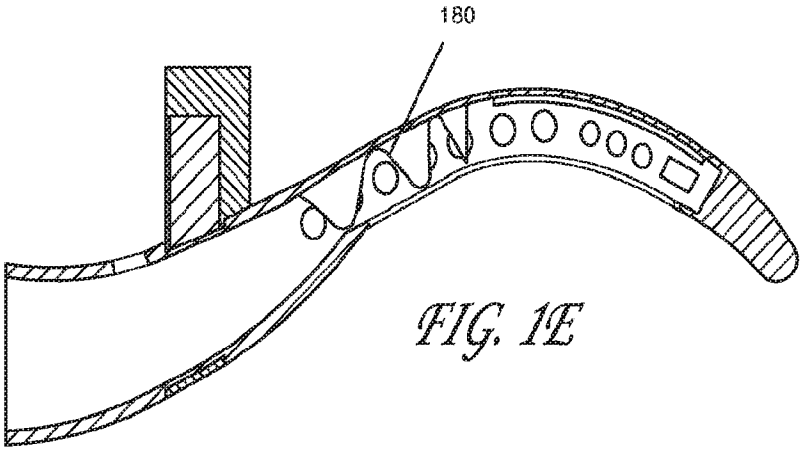

FIG. 1E

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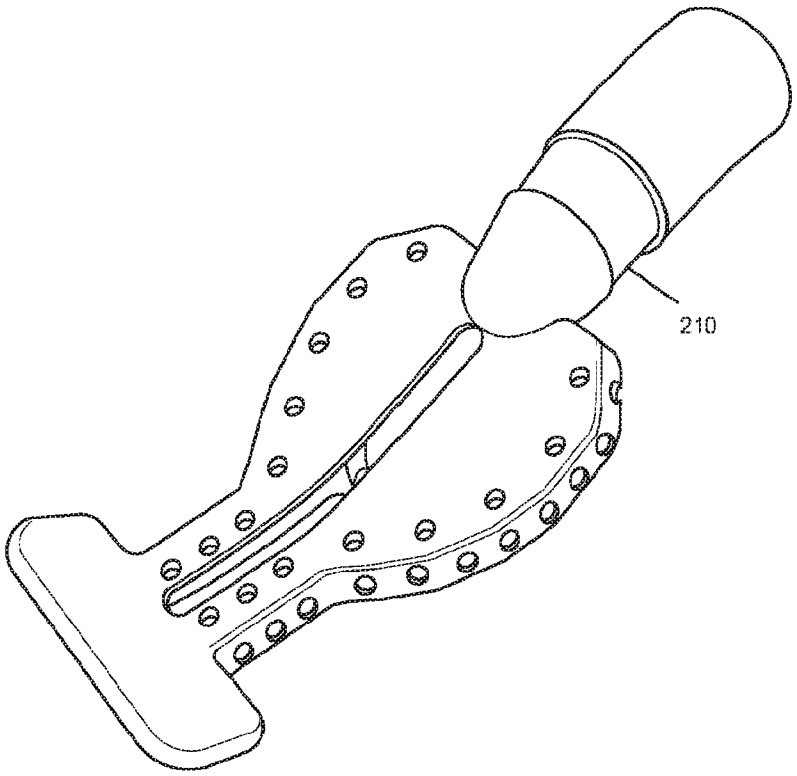

FIG. 2A

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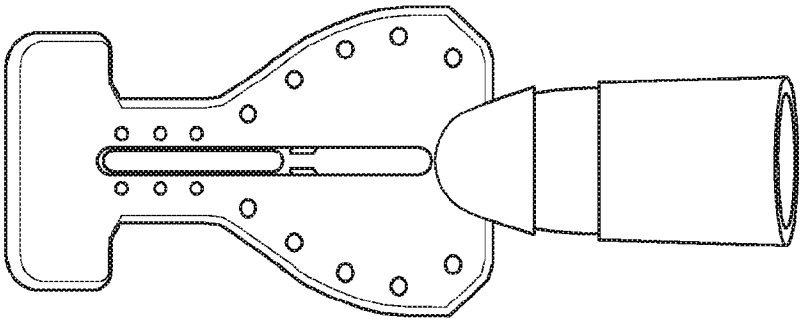

FIG. 2B

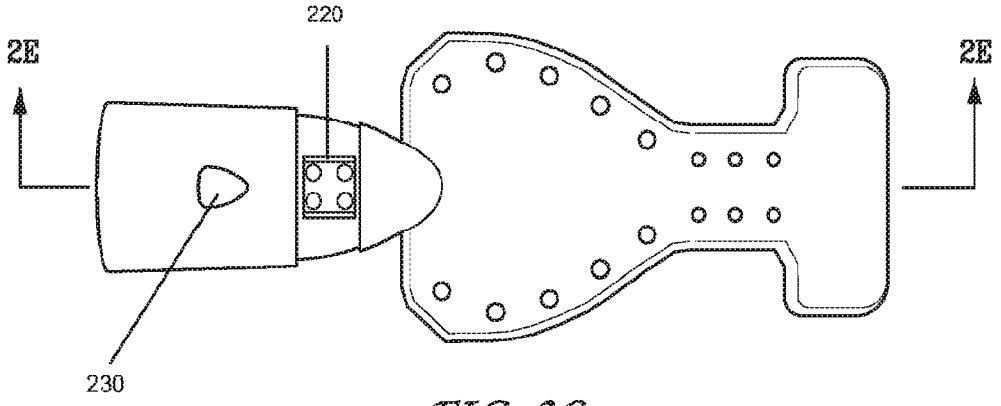

FIG. 2C

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FIG. 2E

FIG. 2D

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

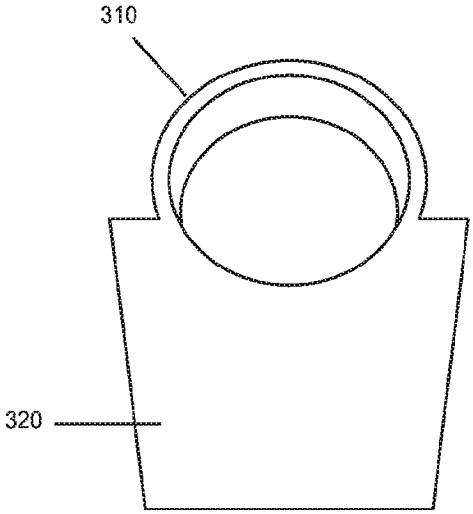

FIG. 3A

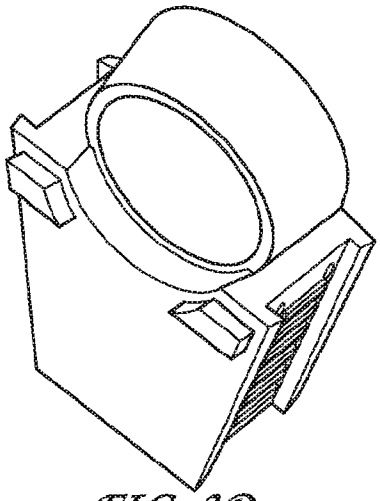

FIG. 3D

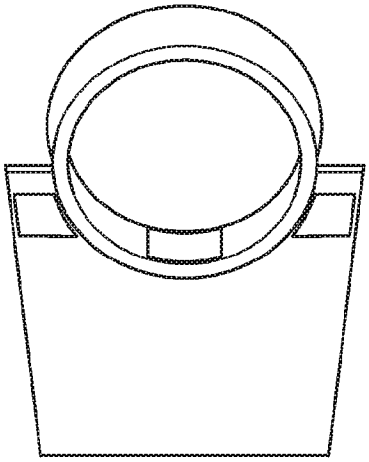

FIG. 3B

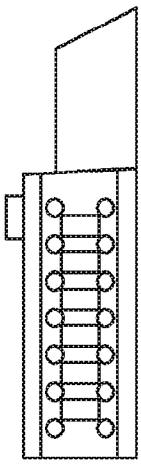

FIG. 3E

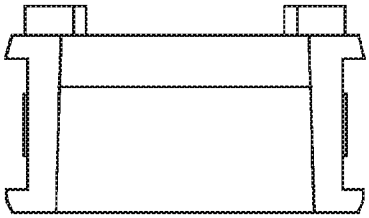

FIG. 3C

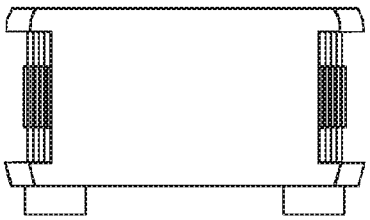

FIG. 3F

Solmetex Ex. 2016
Ascentcare Dental Products v. Solmetex - IPR2025-01175

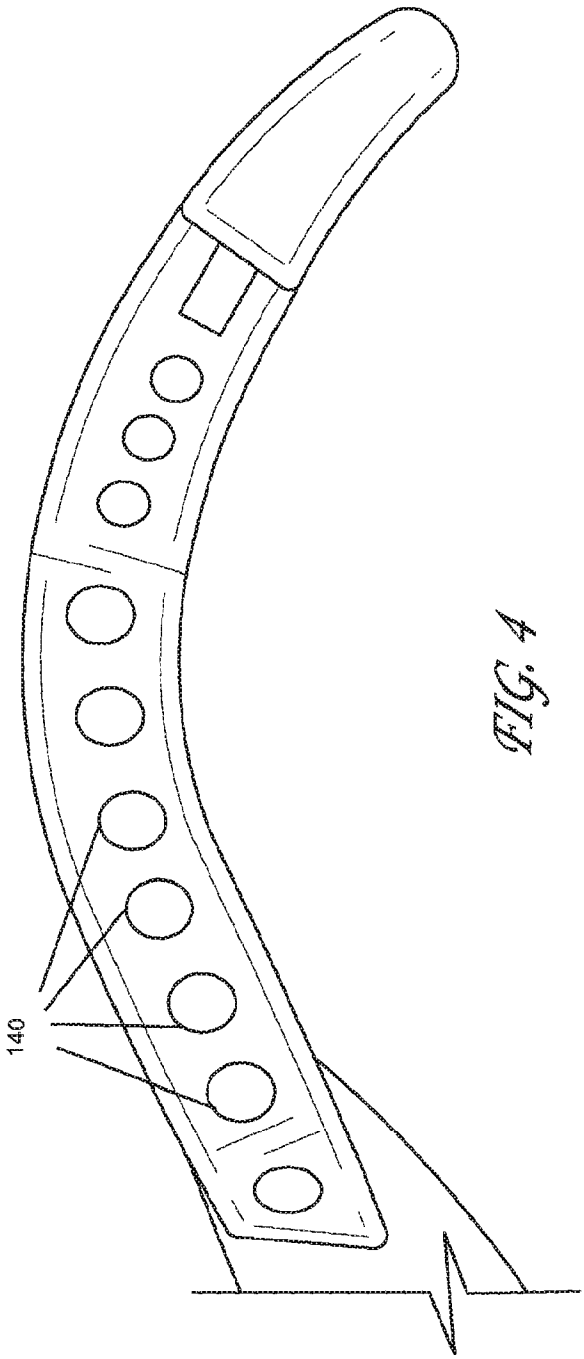

FIG. 4

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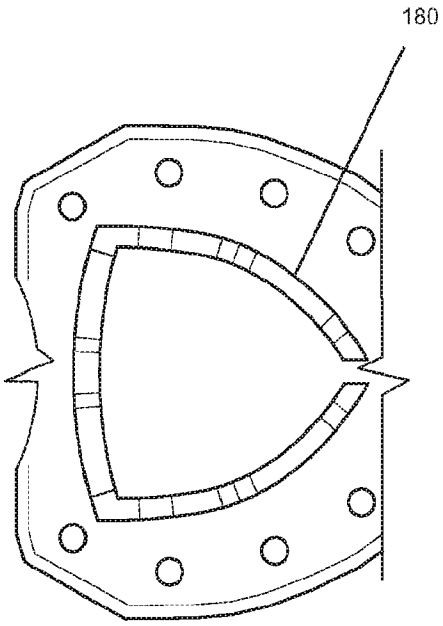

FIG. 5

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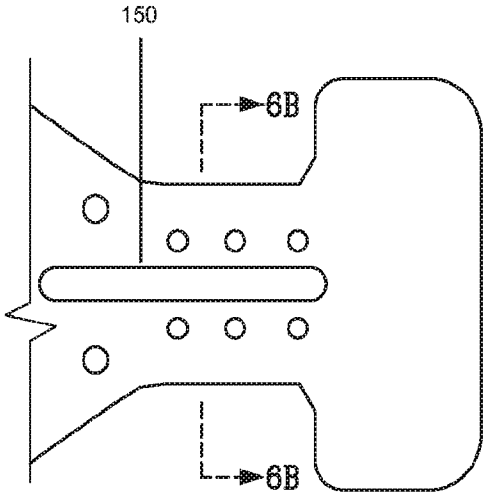

FIG. 6A

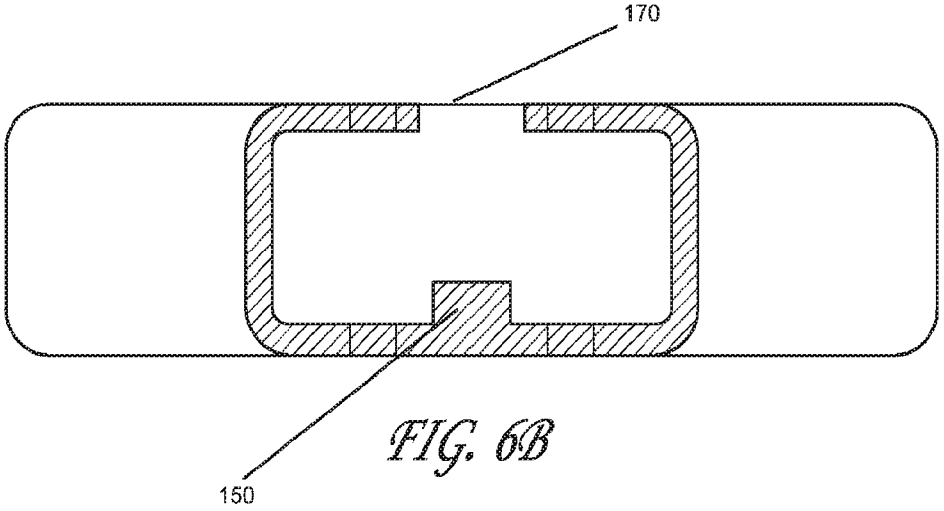

FIG. 6B

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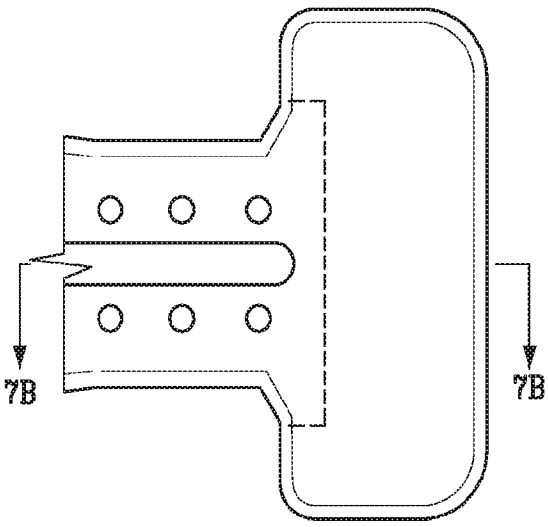

FIG. 7A

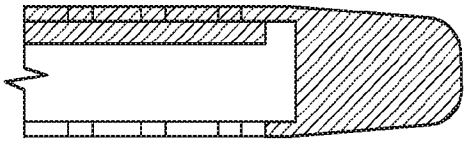

FIG. 7B

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Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 17 15 0671

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2009/274991 A1 (BLACK BRIAN P [US] ET AL) 5 November 2009 (2009-11-05) * paragraphs [0080], [0122], [0101]; figures 3b,23c * * the whole document *	1-3,5-8, 14,15	INV. A61C17/00 A61C17/06
A	US 6 213 772 B1 (COSTELLO WILLIAM J [US]) 10 April 2001 (2001-04-10)	1-15	
A	US 6 022 214 A (HIRSCH JAMES A [US] ET AL) 8 February 2000 (2000-02-08)	1-15	

TECHNICAL FIELDS SEARCHED (IPC)

A61C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	16 May 2017	Salvatore, Claudio

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 17 15 0671

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

16-05-2017

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2009274991 A1	05-11-2009	US 2009274991 A1	05-11-2009
		US 2011311942 A1	22-12-2011
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		US 2003143512 A1	31-07-2003
		WO 0028916 A1	25-05-2000

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 20120015320 A1 **[0004]**
- US 6974321 B **[0005]**
- US 20090274991 A1 **[0006]**

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Electronic Acknowledgement Receipt

EFS ID:	30175907
Application Number:	14228046
International Application Number:	
Confirmation Number:	7700
Title of Invention:	INTRAORAL DEVICE WITH MESH
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	138718
Filer:	Stephanie Thien Vu/Lea Fong
Filer Authorized By:	Stephanie Thien Vu
Attorney Docket Number:	INCEP-001COA
Receipt Date:	28-AUG-2017
Filing Date:	27-MAR-2014
Time Stamp:	16:53:50
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	INCEP-001COA_IDS_Statement_8-24-17.pdf	18908 a9aa57f8154806ac5aff488d7a40e50e3f46c	no	2

Warnings:

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Ascentcare Dental Products v. Solmetex - IPR2025-01175

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	INCEP-001COA_IDS_1449_8-24-17.pdf	54949 6a7f89e3d2e14e993fa48894777252a5d74b0520	no	2
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Foreign Reference	EP_3184076.pdf	1862059 7fc2233763ad1f02bf20136a540b4b7cb0741804	no	21
Warnings:					
Information:					
4	Non Patent Literature	EP_17150671_Extended_EP_Search_Report_5-29-17.pdf	769177 0e6bff63e4ca8ad044040074bc053ab7f10f5aea	no	8
Warnings:					
Information:					
		Total Files Size (in bytes):	2705093		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit: 3732 | Examiner: Hao D. Mai

Serial No.: 14/228,046 | Filed: March 27, 2014

In re Application of: Thien Nguyen

Confirmation No.: 7700 | Customer No.: 138718

Title: INTRAORAL DEVICE WITH MESH

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT
Under 37 C.F.R. § 1.56 and 1.97-1.98

Examiner:

Pursuant to the provisions of 37 C.F.R. §§ 1.56 and 1.97-98 of the Rules of Practice in Patent Cases, enclosed herewith is form PTO-SB-08, listing several references. The Examiner is requested to make these references of official record in the application.

The references cited may be material to examination of the application and are submitted in compliance with the Applicants' duty of disclosure as defined by 37 C.F.R. § 1.56.

Applicants hereby declare, pursuant to 37 C.F.R. §1.97(e)(1), that each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement.

No representation is made or intended as to the completeness of this list, nor is the inclusion of any reference an admission that it is prior art or pertinent to this application.

The Commissioner is hereby authorized to charge any necessary fee to Account Number 50-1662.

Respectfully submitted,
POLSINELLI LLP

Dated: August 24, 2017

By: _____/Stephanie Vu/_____
Stephanie Vu (Reg. No. 73,063)
Polsinelli LLP
Three Embarcadero Center, Suite 2400
San Francisco, CA 94111
415-248-2100 (Main)
ipdocket@polsinelli.com

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s):	Thien Nguyen et al.	Examiner:	Hao D. Mai
Serial No.:	14/228,046	Group Art No.:	3732
Filed:	March 27, 2014	Conf. No.:	7700
Title:	INTRAORAL DEVICE WITH MESH	Dkt. No.:	INCEP- 001COA

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT

In response to the non-final office action mailed June 5, 2017 (*Office Action)*, please amend the above-identified application as follows:

Amendments to the claims begin on page 2 of this paper.

Remarks/arguments begin on page 7 of this paper.

IN THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

1. (cancelled)

2. (previously presented) The dental mouthpiece of claim 21, wherein the perforations on the side wall are spaced to comprise a mesh.

3. (previously presented) The dental mouthpiece of claim 21, wherein the anterior wall further comprises a plurality of perforations.

4. (original) The dental mouthpiece of claim 3, wherein the perforations on the anterior wall are spaced to comprise a mesh.

5. (previously presented) The dental mouthpiece of claim 21, wherein the posterior wall further comprises one or more perforations.

6. (original) The dental mouthpiece of claim 5, wherein the perforations on the posterior wall are spaced to comprise a mesh.

7. (previously presented) The dental mouthpiece of claim 21, wherein the opening from the anterior wall to the pocket includes a slit along a longitudinal axis of the main body.

8. (currently amended) The dental mouthpiece of claim 21, wherein suction provided at [[the]] a suction connector within the interior of the pocket provides suction of fluids through the perforations in the side wall into the interior of the pocket towards the suction connector.

9. (previously presented) The dental mouthpiece of claim 21 further comprising a bridge structure protruding from an interior surface of the posterior wall and unattached to the anterior wall, the protruding bridge structure comprising a plurality of protrusions collectively providing spaced contact points that keep the anterior wall separated from the posterior wall during suction.

10. (previously presented) The dental mouthpiece of claim 9, wherein suction provided at the suction connector within the interior of the pocket draws fluids through spaces between the protrusions of the bridge structure towards the suction connector.

11. (previously presented) The dental mouthpiece of claim 21, further comprising the cheek retractor portion, the cheek retractor having a surface that applies pressure when the dental mouthpiece is bent, wherein the pressure is based on resilience of a material from which the cheek retractor is formed.

12. (previously presented) The dental mouthpiece of claim 11, wherein the cheek retractor portion comprises an extension of the pocket, wherein a side wall of the extension comprises one or more perforations.

13. (previously presented) The dental mouthpiece of claim 11, further comprising a stability bar protruding from an interior surface of the posterior wall along the longitudinal axis of the main body and extending through at least part of the cheek retractor, wherein a thickness of the stability bar corresponds to resilience by which the cheek retractor portion applies pressure during bending.

14. (previously presented) The dental mouthpiece of claim 21, wherein the main body portion is formed by injection-molding as one piece.

15. (previously presented) The dental mouthpiece of claim 21, wherein a material from which the main body is formed is a flexible, translucent, high heat-resistant, autoclavable silicone-based material.

16. (currently amneded) The dental mouthpiece of claim 21, wherein the anterior wall and the posterior wall have different thicknesses.

17. (cancelled)

18. (cancelled)

19. (previously presented) The dental mouthpiece of claim 21, wherein the bite block portion and the strap portion are injection-molded in one piece.

20. (previously presented) The dental mouthpiece of claim 21, wherein the bite block portion comprises an opening corresponding to a plug connected to the main body.

21. (currently amended) A dental mouthpiece comprising:

a main body portion, configured as a pocket having an interior defined by:

an anterior wall having a shape defined by an exterior edge, wherein the anterior wall includes an opening to the interior of the pocket,

a posterior wall having a shape corresponding to the defined shape of the anterior wall, wherein an exterior edge of the posterior wall shape corresponds to the exterior edge of the anterior wall, [[and]]

a [[side]] superior wall connecting the exterior edge of the anterior wall across a superior wall span to the corresponding exterior edge of the posterior wall on a first side, [[and]] wherein at least part of the [[side]] superior wall comprises a plurality of perforations into the interior of the pocket, and wherein the superior wall span between the anterior wall and the posterior wall is less than a width of the anterior wall, and[[;]]

an inferior wall connecting the exterior edge of the anterior wall across an inferior wall span to the corresponding exterior edge of the posterior wall on a second side, wherein at least part of the inferior wall comprises another plurality of perforations into the interior of the pocket, and wherein the inferior wall span between the anterior and the posterior wall is less than the width of the anterior wall.

22. (currently amended) A dental mouthpiece comprising:

a main body portion configured as a pocket having an interior defined by:

an anterior wall having a shape defined by a smooth exterior edge, wherein the anterior wall includes an opening to the interior of the pocket,

a posterior wall having a shape corresponding to the defined shape of the anterior wall, wherein a smooth exterior edge of the posterior wall shape corresponds to the smooth exterior edge of the anterior wall, [[and]]

a [[side]] superior wall connecting the smooth exterior edge of the anterior wall across a superior wall span to the corresponding smooth exterior edge of the posterior wall on a first side, ~~and~~ wherein at least part of the [[side]] superior wall comprises a plurality of perforations, wherein the superior wall is perpendicular to the anterior wall and the posterior wall, and wherein the superior wall span is less than a width of the anterior wall,[[;]]

an inferior wall connecting the exterior edge of the anterior wall across an inferior wall span to the corresponding exterior edge of the posterior wall on a second side, wherein at least part of the inferior wall comprises another plurality of perforations, wherein the inferior wall is perpendicular to the anterior wall and the posterior wall, and wherein the inferior wall span is less than the width of the anterior wall width,

a suction connector portion connected to one end of the main body portion, the suction connector ~~connecting~~ configured to connect a vacuum source with the interior of the pocket within the main body portion,[[;;]] and

a connection ~~to a cheek retractor at another end of~~ configured to connect the main body portion at a second end to a cheek retractor, wherein the ~~other~~ second end is opposite to the one end of the main body portion.

REMARKS

Interview Summary

Applicants thank the Examiner for the interview conducted with the Applicants' representative on June 30, 2017.

Applicant has incorporated claim language discussed into independent claims 21 and 22.

Status of the Claims

The Applicants have amended claims 8, 21, and 22. No new matter has been added. The claim amendments are supported by at least FIG. 1A-4 and in the *Specification*. In view of the following remarks, Applicants respectfully submit that the application is in condition for allowance.

Double Patenting

The Office Action rejected claims 2-16 and 19-22 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-35 of Patent No. 8,911,232. *Office Action*, 2. As the present claims are amended, the Applicant requests reconsideration of the modified claim scope and withdrawal of the double patenting rejection in light of the same.

Rejections under 35 U.S.C. §112

Claims 8 and 22 were rejected under 35 U.S.C. 112(b) as being indefinite for failing to particularly point out and distinctly claim the subject matter. *Office Action*, 3. Claim 8 has been amended to recite: 'wherein suction provided at **a suction connector.**' (emphasis added).

Claim 22 has been amended to recite: 'the suction connector **configured to connect a vacuum source**' and 'a connection **configured to connect** the main body portion at a second end **to a cheek retractor**.' Claim 22 has also been amended to recite, "a connection between the main body portion at **a second end** to a cheek retractor, wherein **the second end**" (emphasis added)."

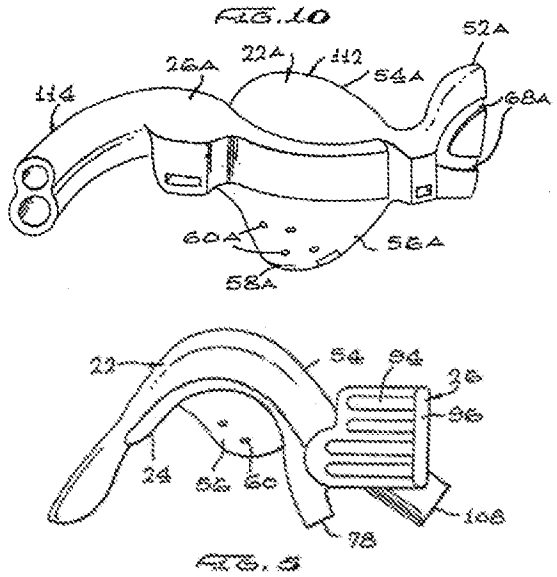
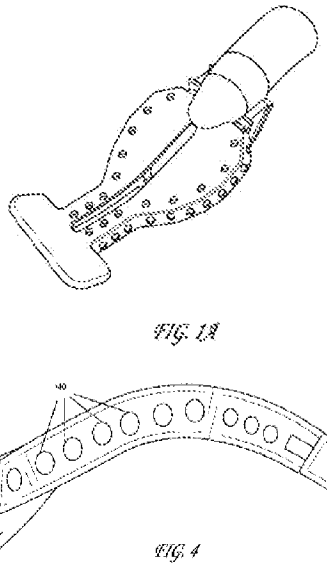
Withdrawal of the rejection and allowance of claims 8 and 22 are respectfully requested.

Rejections Under 35 U.S.C. §102

Claims 2-14, 16, and 19-22 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent Application Publication No. 2003/0134253 by Hirsch et al. ("Hirsch"). *Office Action*, 4-6. Applicants respectfully disagree. Applicants respectfully submit that *Hirsch* fails to teach at least the following limitations of the independent claims:

> a superior wall . . . wherein at least part of the superior wall **comprises a plurality of perforations** into the interior of the pocket, wherein the superior wall span **is less than a width of the anterior wall**,
>
> an inferior wall . . . wherein at least part of the inferior wall **comprises another plurality of perforations** into the interior of the pocket, and wherein the inferior wall span **is less than the width of the anterior wall**

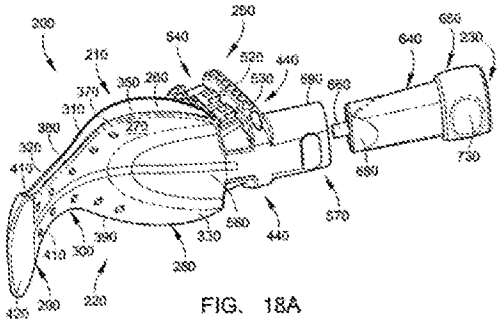
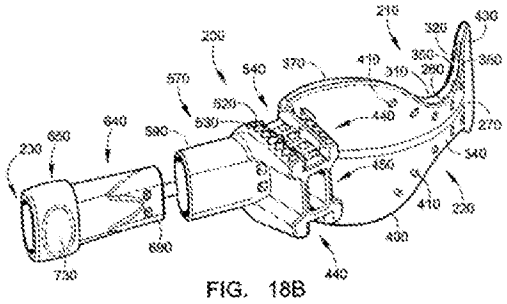
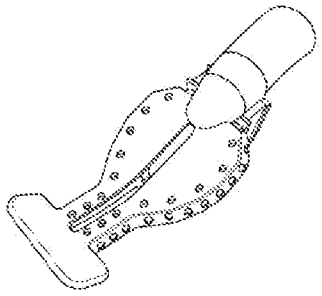
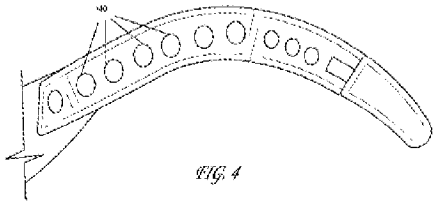
Exemplary superior wall and inferior walls are shown in Figures 1A and 4 (provided below). The *Office Action* points to *Hirsch*'s component "54" and "any connecting material at edge 54" as purportedly teaching the claimed side wall, now amended to superior wall and additionally an inferior wall, and component "58A" as purportedly teaching the claimed plurality of perforations, shown below in Figure 10 and Figure 5. *Office Action*, 4. *Hirsch* refers to component 54 as "an upper roof portion" and to component 58A as "internal evacuation channels." *Hirsch*, [0047].

HIRSCH	APPLICANT
	

As illustrated above, component 54 is not an edge of a specific wall that is attached to another edge of another specific wall, but rather an "upper roof portion", as more clearly shown in Figure 5. Thus, *Hirsch* does not disclose a **superior wall spanning a distance between the anterior wall and the posterior wall** and that **is less than the anterior wall width**. Nor does *Hirsch* disclose an **inferior wall spanning a distance between the anterior wall and the posterior wall on a second side** and that **is less than the anterior wall width**.

Also illustrated above in *Hirsch*'s Figure 10, component 58A is not a plurality of perforations into the interior as claimed, but rather evacuation channels. Furthermore, component 58A is not located on a superior or inferior wall as described above. Rather, component 58A is located on the face of the device on the tongue retractor portion 56. *Hirsch*, [0047].

Furthermore, Figures 18A and 18B, presented below, which were discussed with the Examiner during the Examiner Interview, also do not teach the claimed features.

HIRSCH	APPLICANT
 FIG. 18A  FIG. 18B	 FIG. 18  FIG. 4

As illustrated above, the evacuation holes 410 are located on the flaps 310, 320, 330, and 340. *Hirsch*, [0079]. In other words, the evacuation holes 410 are located on the face of the intraoral device 200. Nowhere does *Hirsch* teach or show a superior wall wherein at least part of the superior wall **comprises a plurality of perforations** into the interior of the pocket, wherein the superior wall span **is less than the anterior wall width**. Thus, *Hirsch* fails to disclose the claimed superior wall explicitly recited as comprising a plurality of perforations and having a superior wall span less than the anterior wall width.

Furthermore, nowhere does *Hirsch* teach or show an inferior wall wherein at least part of the inferior wall **comprises a plurality of perforations** into the interior of the pocket and that has an inferior wall span that **is less than the anterior wall width**. Thus, *Hirsch* fails to disclose the claimed inferior wall explicitly recited as comprising a plurality of perforations and having an inferior wall span less than the anterior wall width.

MPEP § 2131 states: "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." (*citing Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)*). "Moreover, unless a reference discloses within the four corners of the document not only all of the limitations claimed but also all of the limitations arranged or combined in the same way as recited in the claim, it cannot be said to prove prior invention of the thing claimed and, thus, cannot anticipate under 35 U.S.C. § 102. *Net MoneyIn, Inc. v. VeriSign, Inc. 545 F.3d 1359 (Fed Cir. 2008).*" Applicants submit that the limitations allegedly taught by *Hirsch* are not arranged or combined in the same way as recited in the claims. Therefore, the claims are not anticipated under 35 U.S.C. § 102 by *Hirsch*.

Claim 22 discloses essentially the same claimed features as claim 21. Thus, for at least the same reasons as discussed above, withdrawal of the rejections for claim 22 is respectfully requested. Claims 2-14, 16, and 19-20 depend from independent claim 21. Thus, for at least the same reasons as discussed above, withdrawal of the rejections for claims 2-14, 16, and 19-20 are respectfully requested.

Rejections under 35 U.S.C. §103

Claim 5 was rejected under 35 U.S.C. 103(a) as being unpatentable over *Hirsch* in view of U.S. Patent No. 5,890,899 to Sclafani ("*Sclafani*"). *Office Action*, 7. Applicants respectfully disagree.

Sclafani fails to cure *Hirsch*'s failure to teach the claimed superior and inferior walls. Because claim 15 depends from independent claim 21, claim 15 is allowable for at least the same reasons as claim 21. Withdrawal of the rejection is respectfully requested.

Not all reasons for allowability and distinctions over the asserted combination of prior art references of record have been discussed, and no inference regarding such should be made.

CONCLUSION

Based on the foregoing, it is submitted that Applicants' invention as defined by the claims is patentable over the references of record. Issuance of a Notice of Allowance is solicited. Applicants' attorney welcomes the opportunity to discuss the case with the Examiner in the event that there are any questions or comments regarding the response or the application.

The Commissioner is hereby authorized to withdraw any additional fees that may be required or credit any overpayment to Deposit Account 50-1662, referencing the docket number above.

September 5, 2017

Respectfully submitted,
POLSINELLI PC

/Stephanie T. Vu/

Stephanie T. Vu, Reg. No. 73,063
Three Embarcadero Center, Suite 2400
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Tel: (415) 248-2116
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Electronic Acknowledgement Receipt

EFS ID:	30276260
Application Number:	14228046
International Application Number:	
Confirmation Number:	7700
Title of Invention:	INTRAORAL DEVICE WITH MESH
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	138718
Filer:	Stephanie Thien Vu
Filer Authorized By:	
Attorney Docket Number:	INCEP-001COA
Receipt Date:	05-SEP-2017
Filing Date:	27-MAR-2014
Time Stamp:	20:45:42
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		INCEP-001COA_Amendment.pdf	811207 c017715262442d6a3afacbf933a744e7774f1972	yes	13

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	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Claims	1	6
	Applicant Arguments/Remarks Made in an Amendment	7	13
Warnings:			
Information:			
	Total Files Size (in bytes):	811207	

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New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:

☒ Practitioners associated with Customer Number: 138718

OR

☐ Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

	Name	Registration Number

Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignments documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

☒ The address associated with Customer Number: 138718

OR

☐

Firm or Individual Name			
Address			
City		State	Zip
Country			
Telephone		Email	

Assignee Name and Address: DryShield, LLC
11230 Grace Avenue, Suite B
Fountain Valley, CA 92708

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of the practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature		Date	7/11/2017
Name	Khien Nguyen	Telephone	714-617-5025
Title	CEO		

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Dryshield, LLC

Application No./Patent No.: 14/228,046 Filed/Issue Date: March 27, 2014

Titled: INTRAORAL DEVICE WITH MESH

Dryshield, LLC, a corporation

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. [✓] The assignee of the entire right, title, and interest.

2. [ ] An assignee of less than the entire right, title, and interest (check applicable box):

   [ ] The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   [ ] There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. [ ] The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. [ ] The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. [ ] An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

B. [✓] A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

   1. From: NGUYEN, THIEN To: INCEPT, INC.

      The document was recorded in the United States Patent and Trademark Office at

      Reel 032545, Frame 0891, or for which a copy thereof is attached.

   2. From: PHAM, THAM THANH To: INCEPT, INC.

      The document was recorded in the United States Patent and Trademark Office at

      Reel 032545, Frame 0891, or for which a copy thereof is attached.

This collection of information is required by 37 CFR 3.73(b). This information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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PTO/AIA/96 (08-12)
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STATEMENT UNDER 37 CFR 3.73(c)

3. From: INCEPT INCORPORATED To: DRYSHIELD, LLC

The document was recorded in the United States Patent and Trademark Office at
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4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
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☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☐ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Stephanie T. Vu/	9/5/2012
Signature	Date
Stephanie T. Vu	73063
Printed or Typed Name	Title or Registration Number

Electronic Acknowledgement Receipt

EFS ID:	30281215
Application Number:	14228046
International Application Number:	
Confirmation Number:	7700
Title of Invention:	INTRAORAL DEVICE WITH MESH
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	138718
Filer:	Stephanie Thien Vu/Kristine Goodman
Filer Authorized By:	Stephanie Thien Vu
Attorney Docket Number:	INCEP-001COA
Receipt Date:	06-SEP-2017
Filing Date:	27-MAR-2014
Time Stamp:	12:59:08
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	AmendedADS.pdf	612084 516d62f6f1d0eae4bf9900a6f11bcbf818991502	no	7

Warnings:

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Ascentcare Dental Products v. Solmetex - IPR2025-01175

Information:					
This is not an USPTO supplied ADS fillable form					
2	Power of Attorney	POA_07112017.pdf	251146 00aa50ab307671e455b90b9ecb135f736062ab94	no	1
Warnings:					
Information:					
3	Assignee showing of ownership per 37 CFR 3.73	Statement373.pdf	152074 91dff539c5f36b817d2d5cf72525f488281be59f	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1015304		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	INCEP-001COA
	Application Number	
Title of Invention	INTRAORAL DEVICE WITH MESH	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 — Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Thien		Nguyen	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Santa Ana	State/Province	CA	Country of Residence	US

Mailing Address of Inventor:

Address 1	11230 Grace Ave., Suite B		
Address 2			
City	Fountain Valley	State/Province	CA
Postal Code	92708	Country i	US

Inventor 2 — Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Tam	Thanh	Pham	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	San Francisco	State/Province	CA	Country of Residence	US

Mailing Address of Inventor:

Address 1	11230 Grace Ave., Suite B		
Address 2			
City	Fountain Valley	State/Province	CA
Postal Code	92708	Country i	US

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	INCEP-001COA
	Application Number	
Title of Invention	INTRAORAL DEVICE WITH MESH	

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	138718		
Email Address	uspt@polsinelli.com	Add Email	Remove Email

Application Information:

Title of the Invention	INTRAORAL DEVICE WITH MESH		
Attorney Docket Number	INCEP-001COA	**Small Entity Status Claimed**	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	11	**Suggested Figure for Publication (if any)**	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	138718		

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	INCEP-001COA
	Application Number	
Title of Invention	INTRAORAL DEVICE WITH MESH	

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Patented			Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
	Continuation of	14100323	2013-12-09	8911232	2014-12-16

Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
14100323	Claims benefit of provisional	61734939	2012-12-07

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[1] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Remove

Application Number	Country[1]	Filing Date (YYYY-MM-DD)	Access Code[1] (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

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PTO/AIA/14 (11-15)
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	INCEP-001COA
	Application Number	
Title of Invention	INTRAORAL DEVICE WITH MESH	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant must opt-out of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby grants the USPTO authority to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	INCEP-001COA
	Application Number	
Title of Invention	INTRAORAL DEVICE WITH MESH	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

(●) Assignee	( ) Legal Representative under 35 U.S.C. 117	( ) Joint Inventor
( ) Person to whom the inventor is obligated to assign.	( ) Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:	

If the Applicant is an Organization check here. ☒

Organization Name	~~Incept, Inc.~~

Mailing Address Information For Applicant:

Address 1	~~69 Corporate Park~~		
Address 2	~~Suite C #848~~		
City	~~Irvine~~	**State/Province**	~~CA~~
Country	~~US~~	Postal Code	~~92606~~
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	INCEP-001COA
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Applicant 2

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

(●) Assignee	( ) Legal Representative under 35 U.S.C. 117	( ) Joint Inventor
( ) Person to whom the inventor is obligated to assign.	( ) Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here. ☒

Organization Name	Dryshield, LLC		
Mailing Address Information For Applicant:			
Address 1	11230 Grace Ave.		
Address 2	Suite B		
City	Fountain Valley	**State/Province**	CA
Country	US	Postal Code	92708
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button.

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here. ☒

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	INCEP-001COA
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Organization Name	Dryshield, LLC		
Mailing Address Information For Assignee including Non-Applicant Assignee:			
Address 1	11230 Grace Ave.		
Address 2	Suite B		
City	Fountain Valley	**State/Province**	CA
Country i	US	Postal Code	92708
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.

Signature:

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Stephanie T. Vu/			Date (YYYY-MM-DD)	9/5/2017
First Name	Stephanie	Last Name	Vu	Registration Number	73063

Additional Signature may be generated within this form by selecting the Add button.

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**