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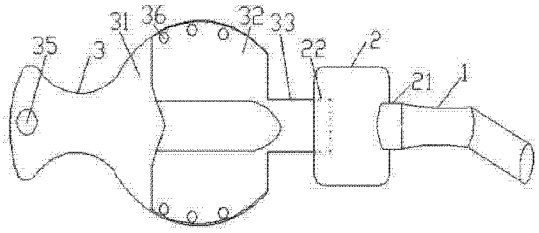
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(54)发明名称

自助式口腔吸唾液分离装置

(57)摘要

自助式口腔吸唾液分离装置，包括吸管、支撑器和吸唾垫，支撑器两侧分别设置一个牙托，支撑器内部设置一个上下连通的吸唾管，吸唾垫包括下垫、上垫和出口管，下垫和上垫分别与出口管连接形成一体式结构，下垫和上垫之间通过若干连接垫连接并在下垫和上垫之间形成一定的吸唾空间，吸管连接在吸唾管的顶部，吸唾垫通过出口管连接在吸唾管底部的进口处。本发明通过柔性的吸唾垫与具备牙托的支撑器连接，再通过吸管将口腔内的液体吸出，吸管、支撑器和吸唾垫之间可自由旋转，不但提高了口腔手术的吸唾效果，同时也提高了患者的手术舒适性，有效地提高了诊疗效率、减少了诊疗时间，降低了患者的痛苦。



CN 104490483 A

EX1016
Petitioner Ascentcare ('217 Patent)

1. 一种自助式口腔吸唾液分离装置，其特征是包括吸管、支撑器和吸唾垫，支撑器两侧分别设置一个牙托，支撑器内部设置一个上下连通的吸唾管，吸唾垫包括下垫、上垫和出口管，下垫和上垫分别与出口管连接形成一体式结构，下垫和上垫之间通过若干连接垫连接并在下垫和上垫之间形成一定的吸唾空间，吸管连接在吸唾管的顶部，吸唾垫通过出口管连接在吸唾管底部的进口处。

2. 根据权利要求 1 所述的自助式口腔吸唾液分离装置，其特征是支撑器两侧的牙托的上下分别设置若干弧形凸棱。

3. 根据权利要求 1 所述的自助式口腔吸唾液分离装置，其特征是吸唾垫的下垫尾部设置一个勾取孔，下垫和上垫两侧分别设置若干吸液孔。

自助式口腔吸唾液分离装置

技术领域

[0001] 本发明涉及医疗器械技术领域，具体涉及一种自助式口腔吸唾液分离装置。

背景技术

[0002] 吸唾器是口腔科常用的医疗器械，其作用是在手术过程中及时吸出口腔内的唾液、血液，提供清晰的医疗视野。目前的医疗用的自助式口腔吸唾液分离装置大多是一次性塑料单管，手术时间过久容易出现堵塞现象，需要更换新的自助式口腔吸唾液分离装置，影响手术进度。

[0003]

发明内容

[0004] 针对现有技术存在的不足，本发明提供了一种结构新颖、使用方便、不易堵塞的自助式口腔吸唾液分离装置。

[0005] 本发明解决其技术问题所采用的技术方案是：

一种自助式口腔吸唾液分离装置，包括吸管、支撑器和吸唾垫，支撑器两侧分别设置一个牙托，支撑器内部设置一个上下连通的吸唾管，吸唾垫包括下垫、上垫和出口管，下垫和上垫分别与出口管连接形成一体式结构，下垫和上垫之间通过若干连接垫连接并在下垫和上垫之间形成一定的吸唾空间，吸管连接在吸唾管的顶部，吸唾垫通过出口管连接在吸唾管底部的进口处。

[0006] 上述支撑器两侧的牙托的上下分别设置若干弧形凸棱。

[0007] 上述吸唾垫的下垫尾部设置一个勾取孔，下垫和上垫两侧分别设置若干吸液孔。

[0008] 本发明的工作原理是，通过两侧的牙托将支撑器固定在患者口腔的牙齿上，与支撑器连接的吸唾垫置于口腔内部，吸管与外部的吸取动力机构相连，手术过程中，口腔内部的唾液和血液进入吸唾垫内部，经由吸唾垫的出口管进入支撑器的吸唾管中，最后通过吸管吸出。

[0009] 本发明通过柔性的吸唾垫与具备牙托的支撑器连接，再通过吸管将口腔内的液体吸出，吸管、支撑器和吸唾垫之间可自由旋转，不但提高了口腔手术的吸唾效果，同时也提高了患者的手术舒适性，有效地提高了诊疗效率、减少了诊疗时间，降低了患者的痛苦。

附图说明

[0010] 下面结合附图和实施例对本发明进一步说明。

[0011] 图 1 是本发明的结构示总图；

图 2 是本发明支撑器的结构示意图；

图 3 是本发明支撑器的侧视示意图；

图 4 是本发明吸唾垫的结构示意图。

[0012] 图中 1 吸管、2 支撑器、3 吸唾垫、21 吸唾管、22 进口、23 牙托、24 弧形凸棱、31 下

垫、32 上垫、33 出口管、34 连接垫、35 勾取孔、36 吸液孔。

具体实施方式

[0013] 如图 1、图 2、图 3 和图 4 所示，一种自助式口腔吸唾液分离装置，包括吸管 1、支撑器 2 和吸唾垫 3，支撑器 2 两侧分别设置一个牙托 23，支撑器 2 内部设置一个上下连通的吸唾管 21，吸唾垫 3 包括下垫 31、上垫 32 和出口管 33，下垫 31 和上垫 32 分别与出口管 33 连接形成一体式结构，下垫 31 和上垫 32 之间通过若干连接垫 34 连接并在下垫 31 和上垫 32 之间形成一定的吸唾空间，吸管 1 连接在吸唾管 21 的顶部，吸唾垫 3 通过出口管 33 连接在吸唾管 21 底部的进口 22 处，支撑器 2 两侧的牙托 23 的上下分别设置若干弧形凸棱 24，吸唾垫 3 的下垫 31 尾部设置一个勾取孔 35，下垫 31 和上垫 32 两侧分别设置若干吸液孔 36。

[0014] 本发明的工作原理是，通过两侧的牙托 23 将支撑器 2 固定在患者口腔的牙齿上，与支撑器 2 连接的吸唾垫 3 置于口腔内部，吸管 1 与外部的吸取动力机构相连，手术过程中，口腔内部的唾液和血液进入吸唾垫 3 内部，经由吸唾垫 3 的出口管 33 进入支撑器 2 的吸唾管 21 中，最后通过吸管 1 吸出。

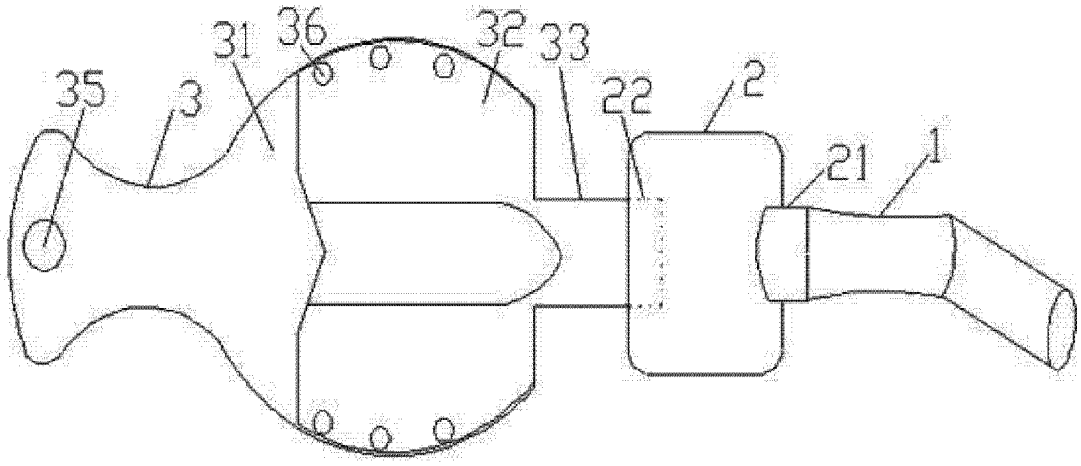


图 1

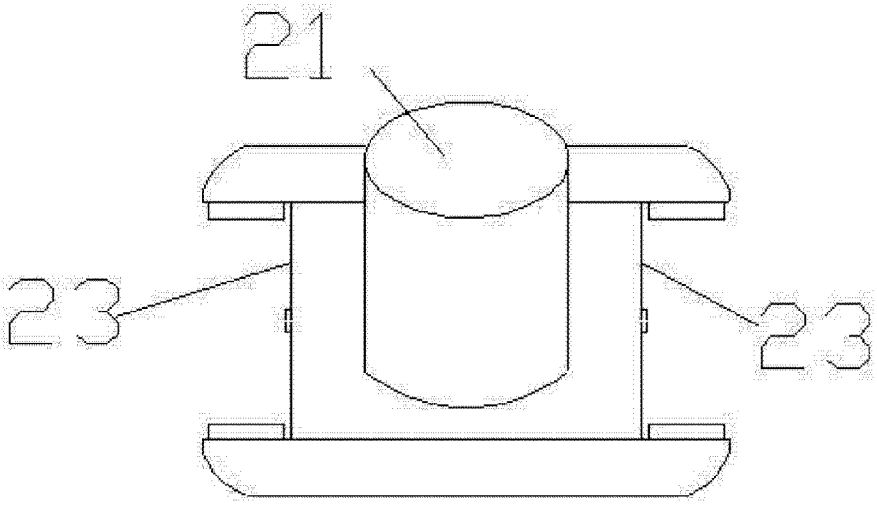


图 2

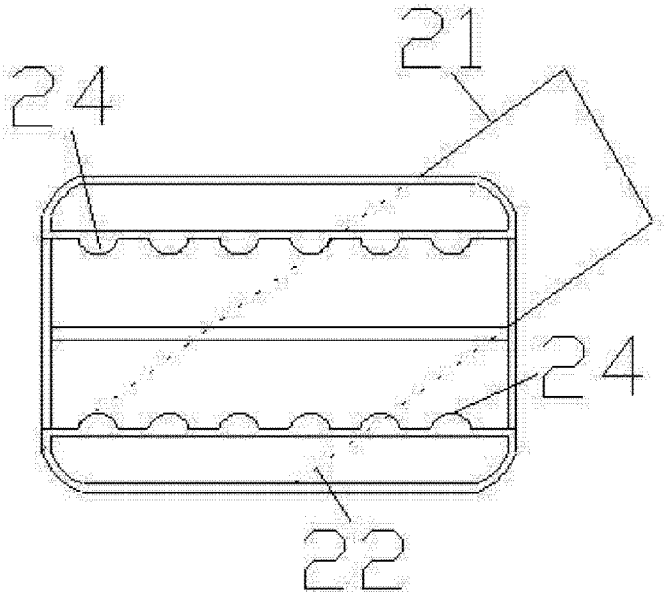


图 3

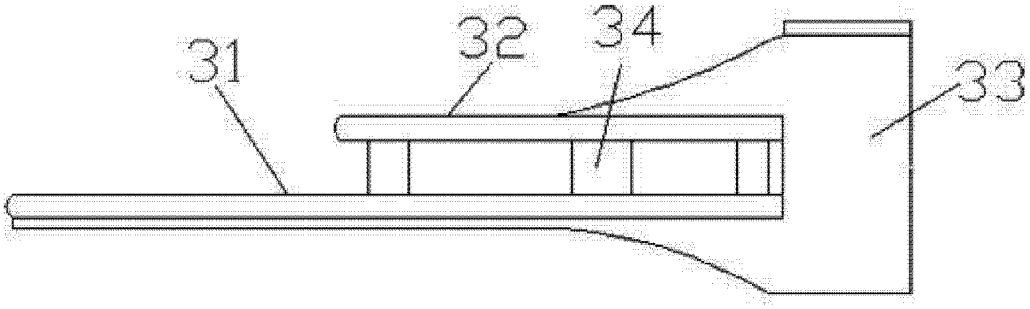


图 4

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
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(Not for submission under 37 CFR 1.99)

Application Number	16870745
Filing Date	2020-05-08
First Named Inventor	NGUYEN; Thien
Art Unit	3772
Examiner Name	TO, HOLLY T
Attorney Docket Number	084892-INCEP-005

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16870745
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	Examiner Name	TO, HOLLY T
	Attorney Docket Number	084892-INCEP-005

	1	Docket No. INCEP-001COC U.S. Patent Application 14/228,054; Final Office Action mailed 1-3-22.
	2	Docket No. INCEP-001COE U.S. Patent Application 14/228,061; Non-Final Office Action mailed 12-8-21.

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Art Unit	3772
Examiner Name	TO, HOLLY T
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The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

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Signature	/Tam Thanh Pham/	Date (YYYY-MM-DD)	2022-03-02
Name/Print	Tam Thanh Pham	Registration Number	50565

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PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
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L12	1	("2020/0352680").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/11/26 06:01 AM
L13	0	("2021/0068922").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/11/26 06:32 AM
L14	13	("5203320" | "5720275" | "6309218" | "6672305" | "7261560" | "8012141" | "8221316" | "8852169" | "9044293" | "20030017433" | "20080166684" | "20100121152").pn. OR ("10390916").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/11/26 06:37 AM
L15	6	("5078603" | "5520651" | "20080318183" | "20090123886").pn. OR ("9044293").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/11/26 06:37 AM
L16	2	(US "9788924" B2).pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 06:05 AM
L17	57	((US-11179225-B2 OR US-D809660-S OR US-9788924-B2 OR US-	(USPAT; US-PGPUB; FPRS; USOCR; IBM_TDB; EPO; JPO;	OR	ON	ON	2021/11/29 06:10 AM

		10390916-B1 OR US-9044293-B2 OR US-9956062-B2 OR US-8852169-B2 OR US-8221316-B2 OR US-8012141-B2 OR US-6672305-B2 OR US-5720275-A OR US-D615203-S OR US-5460524-A OR US-10952831-B1).did. AND USPT.dbnm.) OR ((US-20140212841-A1 OR US-20140162209-A1 OR US-20160067022-A1 OR US-20210068922-A1 OR US-20200046478-A1 OR US-20090123886-A1 OR US-20080166684-A1 OR US-20030017433-A1 OR US-20180228643-A1 OR US-20170156833-A1 OR US-20170156831-A1 OR US-20170156832-A1 OR US-20160175067-A1 OR US-20150335409-A1 OR US-20060234187-A1 OR US-20060063129-A1 OR US-20210346125-A1 OR US-20210085438-A1 OR US-20200155284-A1 OR US-20190298163-A1 OR US-20170245843-A1 OR US-20160375183-A1 OR US-20140349249-A1 OR US-20130288196-A1 OR US-20120199135-A1 OR US-20120015317-A1 OR US-20090274991-A1 OR US-20090204065-A1).did. AND PGPB.dbnm.) OR ((GB-2581794-A OR WO-2018126150-A1 OR WO-2017192676-A1 OR FR-2992161-A1 OR KR-100654392-B1 OR WO-2006052756-A1 OR WO-0061031-A1 OR WO-0042939-	DERWENT; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN))				

		A1 OR FR-3073137-A1 OR FR-3043906-A1 OR DE-102013110302-A1 OR WO-2014209504-A1 OR FR-2989267-A1 OR EP-1543791-A1).did. AND FTDB.dbnm.) OR ((CA-2851861-A1).did. AND DWPI.dbnm.)					
L18	20	(((US-11179225-B2 OR US-D809660-S OR US-9788924-B2 OR US-10390916-B1 OR US-9044293-B2 OR US-9956062-B2 OR US-8852169-B2 OR US-8221316-B2 OR US-8012141-B2 OR US-6672305-B2 OR US-5720275-A OR US-D615203-S OR US-5460524-A OR US-10952831-B1).did. AND USPT.dbnm.) OR ((US-20140212841-A1 OR US-20140162209-A1 OR US-20160067022-A1 OR US-20210068922-A1 OR US-20200046478-A1 OR US-20090123886-A1 OR US-20080166684-A1 OR US-20030017433-A1 OR US-20180228643-A1 OR US-20170156833-A1 OR US-20170156831-A1 OR US-20170156832-A1 OR US-20160175067-A1 OR US-20150335409-A1 OR US-20060234187-A1 OR US-20060063129-A1 OR US-20210346125-A1 OR US-20210085438-A1 OR US-20200155284-A1 OR US-20190298163-A1 OR US-20170245843-A1 OR US-20160375183-A1 OR US-20140349249-A1 OR US-20130288196-A1 OR US-20120199135-A1 OR	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 06:10 AM

		US-20120015317-A1 OR US-20090274991-A1 OR US-20090204065-A1).did. AND PGPB.dbnm.) OR ((GB-2581794-A OR WO-2018126150-A1 OR WO-2017192676-A1 OR FR-2992161-A1 OR KR-100654392-B1 OR WO-2006052756-A1 OR WO-0061031-A1 OR WO-0042939-A1 OR FR-3073137-A1 OR FR-3043906-A1 OR DE-102013110302-A1 OR WO-2014209504-A1 OR FR-2989267-A1 OR EP-1543791-A1).did. AND FTDB.dbnm.) OR ((CA-2851861-A1).did. AND DWPI.dbnm.)) AND connector					
L19	4	(((US-11179225-B2 OR US-D809660-S OR US-9788924-B2 OR US-10390916-B1 OR US-9044293-B2 OR US-9956062-B2 OR US-8852169-B2 OR US-8221316-B2 OR US-8012141-B2 OR US-6672305-B2 OR US-5720275-A OR US-D615203-S OR US-5460524-A OR US-10952831-B1).did. AND USPT.dbnm.) OR ((US-20140212841-A1 OR US-20140162209-A1 OR US-20160067022-A1 OR US-20210068922-A1 OR US-20200046478-A1 OR US-20090123886-A1 OR US-20080166684-A1 OR US-20030017433-A1 OR US-20180228643-A1 OR US-20170156833-A1 OR US-20170156831-A1 OR US-20170156832-A1 OR US-20160175067-A1 OR US-20150335409-A1 OR US-20060234187-	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 06:13 AM

		A1 OR US-20060063129-A1 OR US-20210346125-A1 OR US-20210085438-A1 OR US-20200155284-A1 OR US-20190298163-A1 OR US-20170245843-A1 OR US-20160375183-A1 OR US-20140349249-A1 OR US-20130288196-A1 OR US-20120199135-A1 OR US-20120015317-A1 OR US-20090274991-A1 OR US-20090204065-A1).did. AND PGPB.dbnm.) OR ((GB-2581794-A OR WO-2018126150-A1 OR WO-2017192676-A1 OR FR-2992161-A1 OR KR-100654392-B1 OR WO-2006052756-A1 OR WO-0061031-A1 OR WO-0042939-A1 OR FR-3073137-A1 OR FR-3043906-A1 OR DE-102013110302-A1 OR WO-2014209504-A1 OR FR-2989267-A1 OR EP-1543791-A1).did. AND FTDB.dbnm.) OR ((CA-2851861-A1).did. AND DWPI.dbnm.)) AND (connector SAME (stability ADJ bar))					
L20	4	(((US-11179225-B2 OR US-D809660-S OR US-9788924-B2 OR US-10390916-B1 OR US-9044293-B2 OR US-9956062-B2 OR US-8852169-B2 OR US-8221316-B2 OR US-8012141-B2 OR US-6672305-B2 OR US-5720275-A OR US-D615203-S OR US-5460524-A OR US-10952831-B1).did. AND USPT.dbnm.) OR ((US-20140212841-A1 OR US-20140162209-A1 OR US-20160067022-A1 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 06:18 AM

		20210068922-A1 OR US-20200046478-A1 OR US-20090123886-A1 OR US-20080166684-A1 OR US-20030017433-A1 OR US-20180228643-A1 OR US-20170156833-A1 OR US-20170156831-A1 OR US-20170156832-A1 OR US-20160175067-A1 OR US-20150335409-A1 OR US-20060234187-A1 OR US-20060063129-A1 OR US-20210346125-A1 OR US-20210085438-A1 OR US-20200155284-A1 OR US-20190298163-A1 OR US-20170245843-A1 OR US-20160375183-A1 OR US-20140349249-A1 OR US-20130288196-A1 OR US-20120199135-A1 OR US-20120015317-A1 OR US-20090274991-A1 OR US-20090204065-A1).did. AND PGPB.dbnm.) OR ((GB-2581794-A OR WO-2018126150-A1 OR WO-2017192676-A1 OR FR-2992161-A1 OR KR-100654392-B1 OR WO-2006052756-A1 OR WO-0061031-A1 OR WO-0042939-A1 OR FR-3073137-A1 OR FR-3043906-A1 OR DE-102013110302-A1 OR WO-2014209504-A1 OR FR-2989267-A1 OR EP-1543791-A1).did. AND FTDB.dbnm.) OR ((CA-2851861-A1).did. AND DWPI.dbnm.)) AND ((reinforcement OR stability) ADJ bar)					
L21	4	(((US-11179225-B2 OR US-D809660-S OR US-9788924-B2 OR US-10390916-B1 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU,	OR	ON	ON	2021/11/29 06:19 AM

		9044293-B2 OR US-9956062-B2 OR US-8852169-B2 OR US-8221316-B2 OR US-8012141-B2 OR US-6672305-B2 OR US-5720275-A OR US-D615203-S OR US-5460524-A OR US-10952831-B1).did. AND USPT.dbnm.) OR ((US-20140212841-A1 OR US-20140162209-A1 OR US-20160067022-A1 OR US-20210068922-A1 OR US-20200046478-A1 OR US-20090123886-A1 OR US-20080166684-A1 OR US-20030017433-A1 OR US-20180228643-A1 OR US-20170156833-A1 OR US-20170156831-A1 OR US-20170156832-A1 OR US-20160175067-A1 OR US-20150335409-A1 OR US-20060234187-A1 OR US-20060063129-A1 OR US-20210346125-A1 OR US-20210085438-A1 OR US-20200155284-A1 OR US-20190298163-A1 OR US-20170245843-A1 OR US-20160375183-A1 OR US-20140349249-A1 OR US-20130288196-A1 OR US-20120199135-A1 OR US-20120015317-A1 OR US-20090274991-A1 OR US-20090204065-A1).did. AND PGPB.dbnm.) OR ((GB-2581794-A OR WO-2018126150-A1 OR WO-2017192676-A1 OR FR-2992161-A1 OR KR-100654392-B1 OR WO-2006052756-A1 OR WO-0061031-A1 OR WO-0042939-A1 OR FR-3073137-A1	CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				

		OR FR-3043906-A1 OR DE-102013110302-A1 OR WO-2014209504-A1 OR FR-2989267-A1 OR EP-1543791-A1).did. AND FTDB.dbnm.) OR ((CA-2851861-A1).did. AND DWPI.dbnm.)) AND ((reinforc$5 OR stability) ADJ bar)					
L22	4	(((US-11179225-B2 OR US-D809660-S OR US-9788924-B2 OR US-10390916-B1 OR US-9044293-B2 OR US-9956062-B2 OR US-8852169-B2 OR US-8221316-B2 OR US-8012141-B2 OR US-6672305-B2 OR US-5720275-A OR US-D615203-S OR US-5460524-A OR US-10952831-B1).did. AND USPT.dbnm.) OR ((US-20140212841-A1 OR US-20140162209-A1 OR US-20160067022-A1 OR US-20210068922-A1 OR US-20200046478-A1 OR US-20090123886-A1 OR US-20080166684-A1 OR US-20030017433-A1 OR US-20180228643-A1 OR US-20170156833-A1 OR US-20170156831-A1 OR US-20170156832-A1 OR US-20160175067-A1 OR US-20150335409-A1 OR US-20060234187-A1 OR US-20060063129-A1 OR US-20210346125-A1 OR US-20210085438-A1 OR US-20200155284-A1 OR US-20190298163-A1 OR US-20170245843-A1 OR US-20160375183-A1 OR US-20140349249-A1 OR US-20130288196-A1 OR US-	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 06:19 AM

		20120199135-A1 OR US-20120015317-A1 OR US-20090274991-A1 OR US-20090204065-A1).did. AND PGPB.dbnm.) OR ((GB-2581794-A OR WO-2018126150-A1 OR WO-2017192676-A1 OR FR-2992161-A1 OR KR-100654392-B1 OR WO-2006052756-A1 OR WO-0061031-A1 OR WO-0042939-A1 OR FR-3073137-A1 OR FR-3043906-A1 OR DE-102013110302-A1 OR WO-2014209504-A1 OR FR-2989267-A1 OR EP-1543791-A1).did. AND FTDB.dbnm.) OR ((CA-2851861-A1).did. AND DWPI.dbnm.)) AND ((reinforc$5 OR stability OR stabilizer) ADJ bar)					
L23	40	(((US-11179225-B2 OR US-D809660-S OR US-9788924-B2 OR US-10390916-B1 OR US-9044293-B2 OR US-9956062-B2 OR US-8852169-B2 OR US-8221316-B2 OR US-8012141-B2 OR US-6672305-B2 OR US-5720275-A OR US-D615203-S OR US-5460524-A OR US-10952831-B1).did. AND USPT.dbnm.) OR ((US-20140212841-A1 OR US-20140162209-A1 OR US-20160067022-A1 OR US-20210068922-A1 OR US-20200046478-A1 OR US-20090123886-A1 OR US-20080166684-A1 OR US-20030017433-A1 OR US-20180228643-A1 OR US-20170156833-A1 OR US-20170156831-A1 OR US-20170156832-A1 OR US-20160175067-A1 OR	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 06:22 AM

		US-20150335409-A1 OR US-20060234187-A1 OR US-20060063129-A1 OR US-20210346125-A1 OR US-20210085438-A1 OR US-20200155284-A1 OR US-20190298163-A1 OR US-20170245843-A1 OR US-20160375183-A1 OR US-20140349249-A1 OR US-20130288196-A1 OR US-20120199135-A1 OR US-20120015317-A1 OR US-20090274991-A1 OR US-20090204065-A1).did. AND PGPB.dbnm.) OR ((GB-2581794-A OR WO-2018126150-A1 OR WO-2017192676-A1 OR FR-2992161-A1 OR KR-100654392-B1 OR WO-2006052756-A1 OR WO-0061031-A1 OR WO-0042939-A1 OR FR-3073137-A1 OR FR-3043906-A1 OR DE-102013110302-A1 OR WO-2014209504-A1 OR FR-2989267-A1 OR EP-1543791-A1).did. AND FTDB.dbnm.) OR ((CA-2851861-A1).did. AND DWPI.dbnm.)) AND (stability OR support OR assist)					
L26	1	(US "D364456").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 06:43 AM

L27	1	(US D663831).pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 06:44 AM
L28	8	(US "3453735").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 06:44 AM
L29	11	(US "3516160").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 06:44 AM
L30	4	(US "20040033468").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO,	OR	ON	ON	2021/11/29 06:45 AM

			MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L31	2	(US "20140349249").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 06:46 AM
L32	1	(US "D666726").pn.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 06:46 AM
L33	1	(US "D735858").pn.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 06:47 AM
L34	1	(US "D737964").pn.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT,	OR	ON	ON	2021/11/29 06:47 AM

			AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L35	1	(US "D782047").pn.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 06:49 AM
L36	1	(US "D782048").pn.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 06:49 AM
L37	1	(US "D787069").pn.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE,	OR	ON	ON	2021/11/29 06:49 AM

			SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L38	1	(US "D787070").pn.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 06:50 AM
L39	17	(US "1731322").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 06:50 AM
L40	1	(US "D868958").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 06:50 AM
L41	6	(US "3758950").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU,	OR	ON	ON	2021/11/29 06:51 AM

			CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L42	7	(US "5009595").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 06:51 AM
L43	5	(US "5588836").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 06:51 AM
L44	5	(US "6241521").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA,	OR	ON	ON	2021/11/29 06:52 AM

			VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L45	2	(US "9968341").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 06:52 AM
L46	3	(WO "2020231864").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 06:52 AM
L47	4	(US "20010008752").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:01 AM
L49	2	(US "20170156832").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB,	OR	ON	ON	2021/11/29 07:01 AM

			HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L50	1	(US D495799).pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:02 AM
L51	1	(US D497426).pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:02 AM
L52	1	(US D615203).pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT;	OR	ON	ON	2021/11/29 07:03 AM

			IBM_TDB)				
L53	1	(US D696779).pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:03 AM
L54	1	(US D734851).pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:03 AM
L55	1	(US D809660).pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:03 AM
L56	1	(US D876627).pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV,	OR	ON	ON	2021/11/29 07:04 AM

			MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L57	25	(US "50461").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:04 AM
L58	20	(US "1471207").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:04 AM
L59	24	(US "2019612").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:04 AM
L60	18	(US "2937445").pn.	(US-PGPUB; USPAT;	OR	ON	ON	2021/11/29

			USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				07:05 AM
L61	16	(US "3090122").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:05 AM
L62	8	(US "3768477").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:05 AM
L63	10	(US "3802081").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO,	OR	ON	ON	2021/11/29 07:05 AM

			NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L64	6	(US "3857181").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:05 AM
L65	6	(US "3877691").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:06 AM
L66	18	(US "392433").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:06 AM
L67	11	(US "4017975").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY,	OR	ON	ON	2021/11/29 07:06 AM

			CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L68	12	(US "4024642").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:06 AM
L69	5	(US "4083115").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:07 AM
L70	5	(US "4167814").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK,	OR	ON	ON	2021/11/29 07:08 AM

			TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L71	9	(US "4192071").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:08 AM
L72	5	(US "4511329").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:08 AM
L73	5	(US "4718622").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:08 AM
L74	5	(US "4802851").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA,	OR	ON	ON	2021/11/29 07:09 AM

			EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L75	5	(US "4822278").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:09 AM
L76	8	(US "5037298").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:09 AM
L77	6	(US "5078602").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO;	OR	ON	ON	2021/11/29 07:09 AM

			JPO; DERWENT; IBM_TDB)				
L78	5	(US "5460524").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:10 AM
L79	5	(US "5516286").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:10 AM
L80	5	(US "5762496").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:10 AM
L81	6	(US "5890899").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS,	OR	ON	ON	2021/11/29 07:11 AM

			IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L82	7	(US "6022214").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:13 AM
L83	5	(US "6213772").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:13 AM
L84	16	(US "627591").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:13 AM

L85	5	(US "6338627").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:14 AM
L86	5	(US "6575746").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:14 AM
L87	6	(US "6908308").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:14 AM
L88	3	(US "7287981").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO,	OR	ON	ON	2021/11/29 07:14 AM

			MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L89	2	(US "7293990").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:14 AM
L90	5	(US "7611354").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:14 AM
L91	3	(US "7748981").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:15 AM
L92	4	(US "8029280").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP,	OR	ON	ON	2021/11/29 07:15 AM

			AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L93	2	(US "8057227").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:15 AM
L94	2	(US "8057228").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:15 AM
L95	2	(US "8075310").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO,	OR	ON	ON	2021/11/29 07:15 AM

			RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L96	2	(US "8297973").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:15 AM
L97	2	(US "8529256").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:15 AM
L98	2	(US "8535056").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:16 AM
L99	6	(US "8911232").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU,	OR	ON	ON	2021/11/29 07:16 AM

			CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L100	2	(US "9084656").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:16 AM
L101	2	(US "9089389").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:16 AM
L102	2	(US "9358086").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA,	OR	ON	ON	2021/11/29 07:16 AM

			VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L103	2	(US "9788924").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:16 AM
L104	2	(US "20030134253").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:17 AM
L105	4	(US "20060063126").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:17 AM
L106	4	(US "20060063129").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA,	OR	ON	ON	2021/11/29 07:17 AM

			EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L107	4	(US "20060084031").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:17 AM
L108	2	(US "20080166684").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:17 AM
L109	2	(US "20080318183").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO;	OR	ON	ON	2021/11/29 07:17 AM

			JPO; DERWENT; IBM_TDB)				
L110	4	(US "20090123886").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:18 AM
L111	2	(US "20090274911").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:18 AM
L112	2	(US "20110207076").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:18 AM
L113	2	(US "20110311942").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS,	OR	ON	ON	2021/11/29 07:18 AM

			IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L114	4	(US "20120015320").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:18 AM
L115	2	(US "20120237894").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:19 AM
L116	4	(US "20130095450").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:20 AM

L117	2	(US "20130252193").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:20 AM
L118	6	(US "20140004478").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:21 AM
L119	2	(US "20140162209").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:21 AM
L120	2	(US "20140212837").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO,	OR	ON	ON	2021/11/29 07:21 AM

			MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L121	2	(US "20140212838").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:21 AM
L122	2	(US "20140212839").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:21 AM
L123	2	(US "20140212840").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:22 AM
L124	2	(US "20140212841").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP,	OR	ON	ON	2021/11/29 07:22 AM

			AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L125	2	(US "20140212842").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:22 AM
L126	2	(US "20140305842").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:22 AM
L127	2	(US "20150335409").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO,	OR	ON	ON	2021/11/29 07:22 AM

			RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L129	19	(CA "2851861").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:25 AM
L130	4	(CN "102026587").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:25 AM
L131	3	(CN "102247140").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:25 AM
L132	0	(CN "105578986 A").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU,	OR	ON	ON	2021/11/29 07:25 AM

			CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L133	27	(EP "2903557").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:26 AM
L134	13	(EP "3184076").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:26 AM
L135	26	(GB "2170106").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA,	OR	ON	ON	2021/11/29 07:26 AM

			VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L136	0	(WO "1999037238").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:26 AM
L137	7	(WO "2011014952").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:27 AM
L138	7	(WO "2015088577").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:27 AM
L140	2	(US "20170156832" A1).pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB,	OR	ON	ON	2021/11/29 07:38 AM

			HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L141	56	((US-11179225-B2 OR US-D809660-S OR US-9788924-B2 OR US-10390916-B1 OR US-9044293-B2 OR US-9956062-B2 OR US-8852169-B2 OR US-8221316-B2 OR US-8012141-B2 OR US-6672305-B2 OR US-5720275-A OR US-D615203-S OR US-5460524-A OR US-10952831-B1).did. AND USPT.dbnm.) OR ((US-20140212841-A1 OR US-20140162209-A1 OR US-20160067022-A1 OR US-20210068922-A1 OR US-20200046478-A1 OR US-20090123886-A1 OR US-20080166684-A1 OR US-20030017433-A1 OR US-20180228643-A1 OR US-20170156833-A1 OR US-20170156831-A1 OR US-20170156832-A1 OR US-20160175067-A1 OR US-20150335409-A1 OR US-20060234187-A1 OR US-20060063129-A1 OR US-20210346125-A1 OR US-20210085438-A1 OR US-20200155284-A1 OR US-20190298163-A1 OR US-20170245843-A1 OR US-20160375183-A1 OR US-20140349249-A1 OR US-20130288196-A1 OR US-20120199135-A1 OR	(USPAT; US-PGPUB; FPRS; USOCR; IBM_TDB; EPO; JPO; DERWENT; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN))	OR	ON	ON	2021/11/29 07:40 AM

		US-20120015317-A1 OR US-20090274991-A1 OR US-20090204065-A1).did. AND PGPB.dbnm.) OR ((GB-2581794-A OR WO-2018126150-A1 OR WO-2017192676-A1 OR FR-2992161-A1 OR KR-100654392-B1 OR WO-2006052756-A1 OR WO-0061031-A1 OR WO-0042939-A1 OR FR-3073137-A1 OR FR-3043906-A1 OR DE-102013110302-A1 OR WO-2014209504-A1 OR FR-2989267-A1 OR EP-1543791-A1).did. AND FTDB.dbnm.)					
L142	2	(US "20140212838" A1).pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/29 07:42 AM
L143	1	("2017/0156832").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/11/29 09:07 AM
L144	10	("2014/0212838").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/11/29 09:08 AM
L145	55	("2937445" | "3090122" | "3768477" | "3802081" | "3877691" | "3924333" | "4017975" | "4024642" | "4192071" | "4718662" | "4802851" | "5078602" | "5890899" | "6022214" | "6213772" | "6338627" | "6575746" | "D495799" | "D497426" | "6908308" | "6974321" | "7287981" | "7293990" | "7611354" | "D615203" | "7748981" | "8029280" | "8057227"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2021/11/29 09:09 AM

		| "8057228" | "8075310" | "8297973" | "8529256" | "D696779" | "20060063129" | "20080166684" | "20080318183" | "20090123886" | "20090274991" | "20110207076" | "20110311942" | "20140212837" | "20140212838" | "20140212839" | "20140212840" | "20140212841").pn. OR ("8911232").urpn. AND (PGPB | USPT | USOC).dbnm.					
L146	62	("10390734"|"3877691"|"3924333"|"6974321"|"000None"|"20060063129"|"20140162209"|"20150335409"|"20120015317"|"20140349249"|"20090274991"|"20170156832"|"6672305"|"20170156831"|"20200155284"|"10390916"|"D615203"|"20140212841"|"20170156833"|"5720275"|"D495799").PN.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/04 11:28 AM
L147	382	("6908308"|"4822278"|"4511329"|"20130095450"|"20150305842"|"6672305"|"20090123886"|"20110311942"|"4192071"|"5890899"|"6575746"|"7611354"|"7748981"|"20140212838"|"20140212840"|"D734851"|"10390916"|"20110207076"|"3802081"|"8297973"|"D497426"|"20140162209"|"20140212839"|"3768477"|"4024642"|"5516286"|"5037298"|"9089389"|"20150335409"|"20200155284"|"20080318183"|"20090274991"|"6022214"|"6974321"|"8075310"|"2937445"|"6267591"|"20170156831"|"4017975"|"7287981"|"7293990"|"6213772"|"20	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/04 11:30 AM

		060084031"|"20130252193"|"8535056"|"1471207"|"5762496"|"20120015317"|"5078602"|"8529256"|"D696779"|"3924333"|"8911232"|"0050461"|"20060063126"|"20140004478"|"3090122"|"3877691"|"4718662"|"6338627"|"8057227"|"8057228"|"D495799"|"D615203"|"20140212837"|"8029280"|"2019612"|"20170156833"|"5720275"|"20080166684"|"4802851"|"20060063129"|"5460524"|"3857181"|"4167814"|"4083115"|"3758950"|"10390734").PN.					
L148	6	(US "3758950").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/03/04 11:32 AM
L150	4	(US "20010008752").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/04/21 06:15 AM
L151	671	(A61C17/06).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB,	OR	ON	ON	2022/04/21 11:59 AM

			HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L152	3376	(A61C17/04,043,0208).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/04/21 12:08 PM
L153	2459	(433/91,93,136,138,140,20).ccls.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/04/21 12:08 PM
L154	2	((((("DRYSHIELD") near3 ("LLC"))).AS,AANM.) AND @pd>"20211203"	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT;	OR	ON	ON	2022/04/21 01:14 PM

			IBM_TDB)				
L155	24	((((("NGUYEN") near3 ("Thien")) OR (("PHAM") near3 ("Tam") near3 ("Thanh")) OR (("NGUYEN") near3 ("Ethan")) OR (("NGUYEN") near3 ("Lauren"))).INV.) AND @pd>"20211203"	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/04/21 01:14 PM
L156	0	(433/92).ccls. AND @pd>"20211203"	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/04/21 01:14 PM
L157	50	(A61C5/90).cpc. AND @pd>"20211203"	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/04/21 01:15 PM
L158	61	(A61C17/08).cpc. NOT (A61C5/90).cpc. AND @pd>"20211203"	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV,	OR	ON	ON	2022/04/21 01:15 PM

			MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L159	237	(A61B1/24).cpc. NOT ((A61C17/08).cpc. OR (A61C5/90).cpc.) AND @pd>"20211203"	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/04/21 01:16 PM
L160	56	(A61C17/06).cpc. AND @pd>"20211203"	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/04/21 01:18 PM
L161	856	(A61C17/10-12).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/04/27 08:24 AM
L162	5904	(A61B1/0094).cpc. OR	(US-PGPUB; USPAT;	OR	ON	ON	2022/05/02

		(A61B2017/22079).cpc.	USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				01:58 PM
L164	52	(A61M1/$).cpc. AND (paddle OR tool OR conduit) AND crest AND trough AND curve$1	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/05/02 02:01 PM
L165	72	(A61M1/$).cpc. AND (paddle OR tool OR conduit) AND crest AND trough	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/05/02 02:01 PM
L166	15873	(A61M1/$).cpc. AND (paddle OR tool OR conduit) AND curve$1	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO,	OR	ON	ON	2022/05/02 02:02 PM

			NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L168	62	(A61M1/$).cpc. AND (side OR sidewall OR (intervening ADJ wall)) AND (posterior ADJ wall) AND (anterior ADJ wall)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/05/03 06:24 AM
L169	1710226	suction$3 WITH (hollow OR channel OR void OR interior$2 OR inside OR within)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/05/04 11:38 AM
L173	31765	(A61M1/$).cpc. AND (suction$3 SAME (hollow OR channel OR void OR interior$2 OR inside OR within))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/05/04 11:40 AM
L174	4	("20170028113").pn.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY,	OR	ON	ON	2022/05/04 11:59 AM

			CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L175	7	("2018015367").pn.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/05/04 12:00 PM
L176	2	("20180153637").pn.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/05/04 12:00 PM
L177	869	(A61M$).cpc. AND (suction$4 WITH (hollow OR channel OR void) WITH (interior$2 OR inside OR inner OR within) WITH (plurality OR multiple OR many))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH,	OR	ON	ON	2022/05/05 09:10 AM

			TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

Substitute for Form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Complete if Known	
Application Number	16/870,745
Filing Date	May 8, 2020
First Named Inventor:	Thien Nguyen
Art Unit	3772
Examiner Name	Holly T. To
Attorney Docket Number	INCEP-005

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-	D267,586	1/11/1983	Hatlen	
		US-	4,975,057	12/4/1990	Dyfvermark	
		US-	5,730,599	3/24/1998	Pak	
		US-	6,652,276	11/25/2003	Fischer et al.	
		US-	6,655,960	12/2/2003	Fischer	
		US-	6,716,029	4/6/2004	Fischer et al.	
		US-	10,939,979	3/9/2021	Lombardi	
		US-	2020/0383560	12/10/2020	Day	
		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)

Substitute for Form 1449/PTO	*Complete if Known*	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*	Application Number	16/870,745
	Filing Date	May 8, 2020
	First Named Inventor:	Thien Nguyen
	Art Unit	3772
	Examiner Name	Holly T. To
Sheet 2 **of** 2	Attorney Docket Number	INCEP-005

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-009D U.S. Patent Application 29/782,644 Final Office Action mailed 5/11/22	
		Docket No. INCEP-010D U.S. Patent Application 29/782,643 Final Office Action mailed 5/11/22	

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 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/08B (08-03)

Electronic Acknowledgement Receipt

EFS ID:	45739063
Application Number:	16870745
International Application Number:	
Confirmation Number:	7491
Title of Invention:	DENTAL MOUTHPIECE
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	138718
Filer:	TamThanh Thi Pham/Lea Fong
Filer Authorized By:	TamThanh Thi Pham
Attorney Docket Number:	INCEP-005
Receipt Date:	24-MAY-2022
Filing Date:	08-MAY-2020
Time Stamp:	12:47:00
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-005_IDS_Statement_5-20-22.pdf	95887 4119a530eb78b6693b2f27cd73ff046fff139c19	no	2

Warnings:

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	INCEP-005_IDS_1449_5-20-22.pdf	222676 43a7e0d80e2acc38d6a5477c06fb1a5707926a07	no	2
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
			Total Files Size (in bytes):	318563	

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: 3772 | Examiner: Holly T. To

Serial No.: 16/870,745 | Filed: May 8, 2020

In re Application of: Thien Nguyen

Confirmation No.: 7491 | Customer No.: 138718

Title: DENTAL MOUTHPIECE

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 Applicant's 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.

Respectfully submitted,
POLSINELLI LLP

Dated: May 20, 2022

By: _____/Tam Thanh Pham/_____
Tam Thanh Pham (Reg. No. 50,565)
Polsinelli LLP
Three Embarcadero Center, Suite 2400
San Francisco, CA 94111
415-248-2100 (Main)
patentdocketing@polsinelli.com

Substitute for Form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet	1	**of**	1		

Complete if Known	
Application Number	16/870,745
Filing Date	May 8, 2020
First Named Inventor:	Thien Nguyen
Art Unit	3772
Examiner Name	Holly T. To
Attorney Docket Number	INCEP-005

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
		EP 3965637 (corresponds to WO 2020/231864)	3/16/2022	Dryshield, LLC		

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

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Espacenet

EP3965637A1 DENTAL MOUTHPIECE

Applicants: DRYSHIELD LLC [US]

Inventors: NGUYEN THIEN [US],PHAM TAM THANH [US],NGUYEN ETHAN [US],NGUYEN LAUREN [US]

Classifications:
IPC ***A61B1/24; A61C17/00; A61C17/06; A61C17/10;***

CPC **A61B1/24 (US); A61C17/08 (EP,US); A61C17/092 (EP); A61C5/90 (US);**

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DENTAL MOUTHPIECE

Abstract

Abstract not available for EP3965637A1 -- abstract of corresponding document: WO2020231864A1

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 an embodiment, the main body portion, cheek retractor portion, and suction connector portion may be molded in one piece, preferably by injection molding. The main body portion has an anterior wall inside the curve and a posterior wall outside the curve, and an at least one connector connecting the anterior wall and the posterior wall. The main body portion has an anterior intervening wall and the posterior intervening wall in between the anterior and posterior walls. The anterior intervening wall and the posterior intervening walls have alternating crests and troughs.

Electronic Acknowledgement Receipt

EFS ID:	45739075
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First Named Inventor/Applicant Name:	Thien Nguyen
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Filer:	TamThanh Thi Pham/Lea Fong
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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	INCEP-005_IDS_Statement-2_5-20-22.pdf	95233 871a03ce7bb5887d67aa8ba7bed1827742133649	no	2

Warnings:

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2	Information Disclosure Statement (IDS) Form (SB08)	INCEP-005_IDS_1449-2_5-20-22.pdf	177661 6d3564be72886d9a7ab65ab17e9041e938e1a940	no	1
Warnings:					
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3	Foreign Reference	EP_3965637.pdf	279485 b6facaed01b2b5b281800cdb7c2f1522b3f481fa	no	1
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			Total Files Size (in bytes):	552379	

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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.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit: 3772	Examiner: Holly T. To
Serial No.: 16/870,745	Filed: May 8, 2020
In re Application of: Thien Nguyen	
Confirmation No.: 7491	Customer No.: 138718
Title: DENTAL MOUTHPIECE	

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 Applicant's 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.

Respectfully submitted,
POLSINELLI LLP

Dated: May 20, 2022

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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	16/870,745
				Filing Date	May 8, 2020
				First Named Inventor:	Thien Nguyen
				Art Unit	3772
				Examiner Name	Holly T. To
Sheet	**1**	**of**	**2**	Attorney Docket Number	INCEP-005

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 3,139,689	11/19/2020	Dryshield, LLC		
		TW 202108088	3/1/2021	Dryshield, LLC		

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	16/870,745
	Filing Date	May 8, 2020
	First Named Inventor:	Thien Nguyen
	Art Unit	3772
	Examiner Name	Holly T. To
Sheet 2 **of** 2	Attorney Docket Number	INCEP-005

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
		PCT Application No. PCT/US2020/032228 International Preliminary Report on Patentability dated 11/16/21	

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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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(71) Demandeur/Applicant:
DRYSHIELD, LLC, US

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NGUYEN, LAUREN, US

(74) Agent: RICHES, MCKENZIE & HERBERT LLP

(54) Titre : EMBOUT BUCCAL DENTAIRE
(54) Title: DENTAL MOUTHPIECE

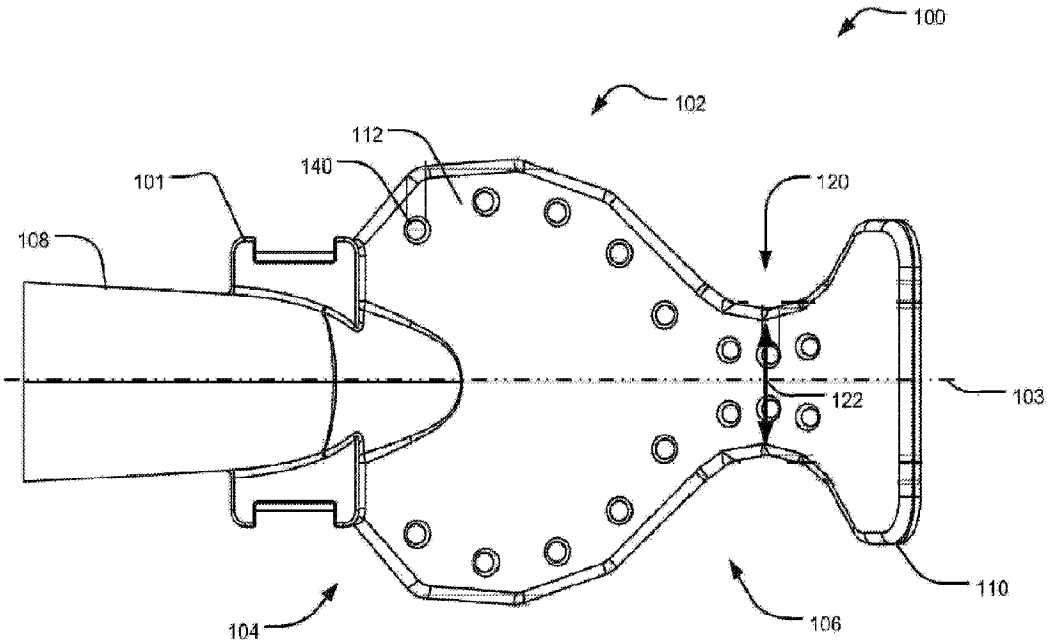


FIG. 1

(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 portion, a cheek retractor portion, and a suction connector portion. In an embodiment, the main body portion, cheek retractor portion, and suction connector portion may be molded in one piece, preferably by injection molding. The main body portion has an anterior wall inside the curve and a posterior wall outside the curve, and an at least one connector connecting the anterior wall and the posterior wall. The main body portion has an anterior intervening wall and the posterior intervening wall in between the anterior and posterior walls. The anterior intervening wall and the posterior intervening walls have alternating crests and troughs.

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(71) Applicant: **DRYSHIELD, LLC** [US/US]; 11230 Grace Avenue, Suite B, Fountain Valley, CA 92708 (US).

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(74) Agent: **CHUNG, Ruby** et al.; Polsinelli LLP, Three Embarcadero Center, Suite 2400, San Francisco, CA 94111 (US).

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(54) Title: DENTAL MOUTHPIECE

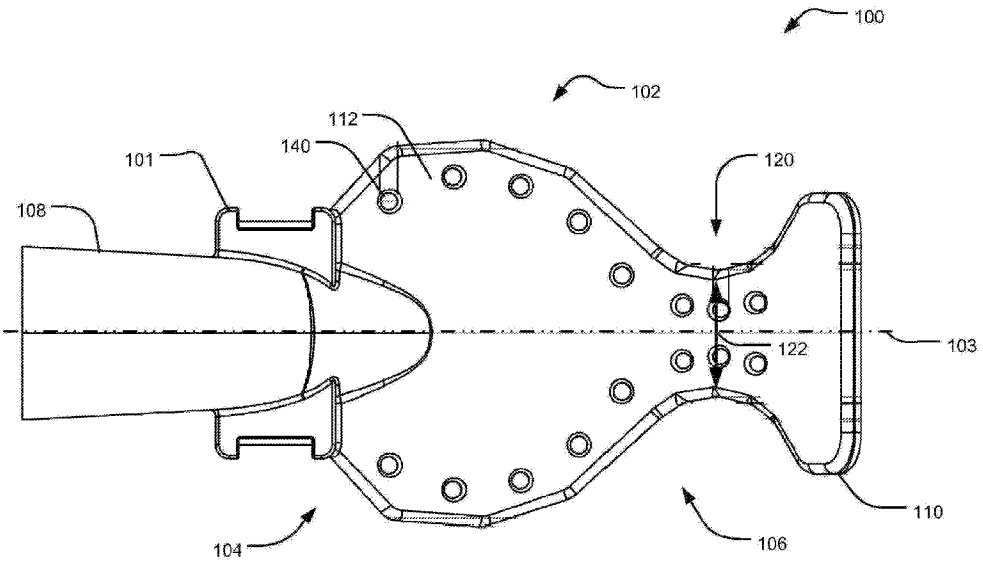


FIG. 1

(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 an embodiment, the main body portion, cheek retractor portion, and suction connector portion may be molded in one piece, preferably by injection molding. The main body portion has an anterior wall inside the curve and a posterior wall outside the curve, and an at least one connector connecting the anterior wall and the posterior wall. The main body portion has an anterior intervening wall and the posterior intervening wall in between the anterior and posterior walls. The anterior intervening wall and the posterior intervening walls have alternating crests and troughs.

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OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

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DENTAL MOUTHPIECE

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] The present application claims the priority benefit of U.S. Provisional Patent Application Serial No. 62/846,353 filed May 10, 2019 entitled, "Dental Mouthpiece," the disclosures of which are 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 a dental mouthpiece formed in a curve are disclosed. Such a mouthpiece may comprise of a main body portion at a central part of the curve having a first end and a second end, a suction connector portion connected to the main body portion at the first end, and a cheek retractor portion connected to the main body portion at the second end.

[0006] In some embodiments, the main body portion, the suction connector portion, and the cheek retractor portion 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, conductive 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.

[0007] The main body portion may comprise of an anterior wall inside the curve and a posterior wall outside the curve. The anterior wall and the posterior wall may define an interior space, within which at least one connector connects the anterior wall to the posterior wall. At least one anterior intervening wall extends from the anterior wall partially towards the posterior wall, and at least one posterior intervening wall extends from the posterior wall partially towards the anterior wall. The anterior intervening walls and the posterior intervening walls each has alternating crests and troughs.

BRIEF DESCRIPTION OF THE FIGURES

[0008] FIG. 1 is a top view of the dental mouthpiece;

[0009] FIG. 2 is an isometric view of a dental mouthpiece shown in FIG. 1;

[0010] FIG. 3 is a rear view of the dental mouthpiece shown in FIG. 1;

[0011] FIG. 4 is a bottom view of the dental mouthpiece shown in FIG. 1;

[0012] FIG. 5 is a coronal top cross section view of the dental mouthpiece shown in FIG. 1; and

[0013] FIG. 6 is a side view of the dental mouthpiece shown in FIG. 1;

[0014] FIG. 7 is a side of the dental mouthpiece shown in FIG. 1 with an anterior wall of the mouthpiece pulled away from a posterior wall of the mouthpiece;

[0015] FIG. 8 is a transverse cross section view of the dental mouthpiece shown in FIG. 1 at the intersection between the suction connector and the main body.

[0016] FIG. 9 is a transverse cross section view of the dental mouthpiece shown in FIG. 1 at the intersection between the suction connector and the main body.

[0017] FIG. 10 is a longitudinal cross section view of an embodiment of the dental mouthpiece shown in FIG. 1 with a wall connector.

[0018] FIG. 11 is a longitudinal cross section view of an embodiment of the dental mouthpiece shown in FIG. 1 with column connectors.

DETAILED DESCRIPTION

[0019] 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, a suction connector portion, a stability bar, and a bite block. In some embodiments, any combination of the main body portion, cheek retractor portion, suction connector portion, a stability bar and bite block (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, resilient, at least translucent, and conducive to injection molding. Such a material may include thermoplastic elastomers known in the art.

[0020] FIG. 1 is a top view of the dental mouthpiece. A dental mouthpiece 100 includes a main body portion 102 having a first end 104 and a second end 106 opposite the first end 104. A longitudinal axis 103 may extend from the first end 104 to the second end 106. In the illustrated embodiment, a suction connector portion 108 may be coupled to the first end 104 and a cheek retractor portion 110 may be coupled to the second end 106, though in other examples the mouthpiece 100 may not have a suction connector portion 108 and/or a cheek retractor portion 110. A bite block 101 may also be integrated to the suction connector portion 108 near the first end 104 of the main body portion 102, though the bite block 101 may be positioned anywhere on the suction connector portion 108.

[0021] The main body portion 101 may include a neck 120 extending from the second end 106 to the cheek retractor portion 110. The neck 120 may have a width 122 that is less than a width of the main body portion 102, a width of the cheek retractor portion 110, and/or a width of the suction connector portion 108, though the width 122 may be greater than the width of the main body portion 102, the cheek retractor portion 110, and/or the suction connector portion 108 in other examples.

[0022] In the illustrated embodiment, the suction connector portion 108, the cheek retractor portion 110, the bite block 101, and the main body portion 102 are constructed as one piece,

though in other examples each of the suction connector portion 108, the cheek retractor portion 110, the bite block 101, and/or the main body 102 may be separate pieces. For example, in some embodiments, the main body portion 102, the cheek retractor portion 110, and the suction connector portion 108 (and sub-portions thereof) may be molded as one-piece, preferably by injection molding and the bite block 101 may be a separate piece attachable to the suction connector portion 108. In an exemplary embodiment, the mouthpiece 100 may be made of a material that is flexible, resilient, translucent, and conducive to injection molding. Such a material may include thermoplastic elastomer.

[0023] FIG. 2 is an isometric view of a dental mouthpiece shown in FIG. 1. As illustrated in FIG. 2, the main body portion 102 may be shaped in a curve. Because the mouthpiece 100 is made of a flexible and resilient material (e.g., thermoplastic elastomer), the mouthpiece 100 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 108 may protrude from one side of the patient's mouth, while the main body portion 102 lies against the back of the patient's mouth, and the cheek retractor portion 110 presses against the patient's cheek on the opposite side of the patient's mouth.

[0024] The cheek retractor portion 110 may be configured to press against and retract a patient's cheek away from the patient's teeth on an opposite side of the patient's mouth than the side from which the connection portion 108 extends. The flexibility of the material used to form the mouthpiece 100 allows for some bending when placed in the patient's mouth, but the resilience of the material further allows the mouthpiece 100 to apply pressure against a part of the patient's mouth when the mouthpiece 100 is released from bending. The material is resilient enough, for example, to allow the cheek retractor portion 110 to press against the inside of the patient's cheek with such pressure being sufficient to move the cheek away from the patient's teeth. The cheek retractor portion 110 is illustrated as a hammerhead distal region, which may be attached to the main body portion 102. The cheek retractor portion 110 may be solid in some examples, though may be hollow in other examples.

[0025] The main body portion 102 may comprise an anterior wall 112 on an inner part of the curve and a posterior wall 114 (also seen in FIG. 4) on an outer part of the curve. The

anterior wall 112 may face a front of the patient's mouth and the posterior wall 114 may face a back of the patient's mouth. The anterior wall 112 and the posterior wall 114 of the main body portion 102 may be configured in parallel to each other. The anterior wall 112 has a defined shape that may correspond to the defined shape of the posterior wall 114, though the anterior wall 112 may be a different shape than the posterior wall 114 in other examples. The defined shape may be wider at the first end 104 and narrower at the second end 106. In some embodiments, the shape corresponds to a shield shape though the shape may be, for example, a square, a straight line arrow, a rectangle, a star, an oval, a circle, or a shape that generally conforms to the intraoral shape of the patient's mouth. Differently-sized mouthpieces may be provided for differently-sized mouths of adults and children. Part of the shape at the first end 104 may be formed with thicker walls than the rest of the main body portion 102. Such thickening may provide additional stability at the first end 104. When positioned within the mouth of a patient, the anterior wall 112 and the posterior wall 114 are capable of blocking an airway of the patient, while the bite block 101 is positioned between the patient's teeth, the suction connector portion 108 extends from one side of the patient's mouth, and the cheek retractor portion 110 presses against the cheek on the opposite side of the patient's mouth.

[0026] The main body portion 102 may also include openings 140 located on the anterior wall 112 and/or the posterior wall 114. Such openings 140 (e.g., perforations, slit, aperture, etc.) allow for suction of air, fluids, and small debris from the patient's mouth through the openings 140 and into the interior space 126, and into the suction connector portion 108 towards a suction source. The openings 140 may be positioned on a perimeter of the shape of the anterior wall 112 and/or the posterior wall 114. In the same example, the openings 140 may be positioned on either side of the neck 120 on the anterior wall 112 and/or the posterior wall 114. In another example, the openings 140 are apertures. In the same example, the apertures are each the same size, though in other examples some or all of the apertures may be different sizes.

[0027] FIG. 3 is a rear view of the dental mouthpiece shown in FIG 1. As visible in FIG. 3, the suction connector portion 108 may be oval-shaped and also attached to the main body portion 102. The suction connector portion 108 may be formed with thicker walls than the main body portion 102 and configured to attach to a high-suction vacuum adapter and to assist in

transferring water, saliva, and debris from the interior space 126 to the external adapter for removal. The suction connector portion 108 may also include an internal stop to assist in sliding the mouthpiece onto the adapter to a desired depth.

[0028] The superior wall 116 in FIG. 3 may be used herein to refer to the side that rests against a roof of a patient's mouth when placed therein, and the inferior wall 118 may be used to refer to the side that rests against the floor of the patient's mouth. The superior wall 116 and inferior wall 118 may be formed identically, which may allow for the mouthpiece to change orientation such that the superior wall 116 may appear as the inferior wall 118 and vice versa, in the new orientation. When in use, the superior wall 116 and the inferior wall 118 of the main body portion 101 may serve to protect and separate the top of the mouth and the bottom of the mouth/tongue. In addition, the main body portion 101 may also serve to protect the back of the mouth (e.g., throat and airway) from falling debris.

[0029] FIG. 4 is a bottom view of the dental mouthpiece shown in FIG 1. The anterior wall 112 and the posterior wall 114 may be connected to each other at by at least one connector 124. In some embodiments, the suction connector portion 108 may have a cutout 142 (e.g., which may be shaped as a logo, a rectangular notch, a square notch, or a circular notch, or any shaped notch) providing extra interlocking with a corresponding protrusion (e.g., which may also be shaped as a logo, a rectangular protrusion, a square protrusion, or a circular protrusion, or any shaped protrusion) on an external high-suction vacuum adapter.

[0030] The bite block 101 may be reinforced by bite block openings 141 to create cavities in the bite block to result in a more stable bite block. In an embodiment, the bite block openings 141 may be two parallel rectangular openings that open at the bottom of the bite block. The bite block openings 141 may extend up to the suction connector portion 108 but not extending past the thickness of the suction connector portion 108.

[0031] FIG. 5 is a coronal top cross section view of the dental mouthpiece shown in FIG. 1. The main body portion 102 may include the bridge structure 136 that protrudes from the interior surface 135 of the posterior wall 114, as shown in FIG. 5 and also visible in FIGS. 7 and 8. In some embodiments, the bridge structure 136 may follow the shape of a logo (e.g., an arrowhead or shield). The bridge structure may have a gap at the tip of the arrowhead shape,

creating an open arc instead of a point of an arrow. In some embodiments, the bridge structure 136 may be centrally-located in the main body portion 110 of the mouthpiece 100. In some examples, such bridge structure 136 may protrude from the interior surface 135 in a wave shape with bridge crests 137 and bridge troughs 138. In other embodiments, the bridge structure 136 may protrude in the shape of battlements or trapezoids. The bridge crests 137 provide a plurality of contact points that are generally separate from the anterior wall 112. The bridge crests 137 near the opening 146 of the suction connector portion 108 may have a greater height than the bridge crests 137 further from the opening 146, as visible in FIGS. 7 and 8. The bridge crests 137 near the opening 146 of the suction connection portion 108 may also be longer than the bridge crests 137 further away from the suction connection portion 108 as shown later in FIG. 8. The bridge troughs 138 may be substantially flush or extend above the interior surface 135. The bridge crests 137 contact the anterior wall 112 during suction to keep the anterior wall 112 spaced away from the posterior wall 114 during suction, thereby preventing collapse of the anterior wall 112 or the posterior wall 114 into the interior space 126 so that debris and/or water can be evacuated through the interior space 126. Meanwhile, the bridge troughs 138 provide gaps that allow for suction of air, fluids, and small debris through the bridge structure 136. In other examples, the bridge structure 136 may be smooth, may include sharp crests and sharp troughs, circular crests and circular troughs, square crests and square troughs, or shape or combination of shapes of crests and troughs.

[0032] The main body portion 102 may further include a stability bar 143, shown in FIG. 5 and also visible in FIG. 7, that extends from approximately the center of the main body portion 102 toward the cheek retractor portion 110. Such stability bar 143 may protrude from the interior surface 135 of the posterior wall 114 along the longitudinal axis 103. In an embodiment, the stability bar 143 begins from the open arc of the bridge structure 136 and continue along the longitudinal axis 103 towards the second end 106 past the neck 120 and ends before reaching the cheek retractor portion 110. The stability bar 143 may protrude from the interior surface 135 of the posterior wall 114 towards the interior surface 113 of the anterior wall 112. The stability bar 143 may be of any height ranging from the height of the interior space 126 or any height less than the interior space 126. In an embodiment, the stability bar 143 may have attached

connectors 124 at specific locations that may attach the anterior wall 112 to the posterior wall 114. The connectors 124 on the stability bar 143 may assist with retraction, stability, support and curvature of the mouthpiece 100 during suction. In an exemplary embodiment, there may be multiple connectors 124 aligned with the stability bar 143 the stability bar 143, though the stability bar 143 may not be aligned with the at least one connector 124 in other examples.

[0033] FIG. 6 is a side view of the dental mouthpiece shown in FIG. 1. FIG. 6 illustrates the view of the inferior side that rests against the floor of the patient's mouth. The anterior wall 112 and the posterior wall 114 are spaced from each other and define the interior space 126. Other than the at least one connector 124, a stability bar 143, and a bridge structure 136, the interior space 126 is generally open and unobstructed, thereby allowing for suction to flow throughout the interior space 126. The interior space 126 between the anterior wall 112 and the posterior wall 114 generally follows the same defined shape of the anterior wall 112 and the posterior wall 114. In one example, the interior space 126 extends through the neck 120, though in other examples the interior space 126 may not extend through the neck 120. In yet other examples, the interior space 126 extends through the neck 120 and into the cheek retractor portion 120.

[0034] At least one anterior intervening wall 127 may extend from at least one edge 128 of the anterior wall 112 partially towards the posterior wall 114 and may have a thickness that extends from the at least one edge 128 to a mid-point between the anterior wall 112 and the posterior wall 114. The span of such anterior intervening wall 127 therefore may not extend the entire distance between the anterior wall 112 and the posterior wall 114. The thickness of such anterior intervening wall 127 may increase from the cheek retractor portion 110, through the neck 120, and to the first end 104. Such increasing depth may provide for increased rigidity at the first end 104. Such anterior intervening wall 127 may further be ridged in some embodiments, or have a smooth edge in other embodiments. In one example, the anterior intervening wall 127 includes an alternating crest 130 and trough 132. In the illustrated embodiment, the crests 130 are a flat surface and the troughs 132 are a cylindrical cutout surface, though the crests 130 and the troughs 132 may be any shape. In some examples, the crests 130 and the troughs 132 extend the entire depth of the anterior intervening wall 127, though in other examples the crests 130 and/or the troughs 132 may extend partially along the

anterior intervening wall 127. The crests 130 and the troughs 132 may provide further retraction, stability, support and curvature to the mouthpiece 100.

[0035] The posterior wall 114 may have a corresponding at least one posterior intervening wall 134 that extends from at least one edge 133 of the posterior wall 114 and partially extends towards the anterior wall 112. The posterior intervening wall 134 may likewise exhibit ridges that are the same, a mirror image, or different from the anterior intervening wall 127. In one example, the ridges of the anterior intervening wall 127 may be aligned with the ridges of the posterior intervening wall 134, as shown in FIG. 6. In combination, the anterior intervening wall 127 and the posterior intervening wall 134 and their respective aligned ridges may form an open mesh between the anterior wall 112 and the posterior wall 114. Such open mesh may follow the edges 128, 133 of each of the anterior wall 112 and the posterior wall 114 from the first end 104 to the second end 106. The open mesh between the anterior intervening wall 127 and the posterior intervening wall 134 allows for suction of air, fluids, and small debris from patient's mouth, through the mesh into the interior space 126 and into the suction connector portion 108 towards a suction source.

[0036] The anterior intervening wall 127 may join with the posterior intervening wall 134 at the superior wall 116 and the inferior wall 118 at near the suction connector portion 108 of the main body at the first end 104. The anterior intervening wall 127 may also join with the posterior intervening wall 134 at the superior wall 116 and the inferior wall 118 near the cheek retractor portion 110 at the second end 106. In some embodiments, the anterior intervening wall 127 may join with the posterior intervening wall 134 at the cheek retractor portion 110.

[0037] FIG. 7 is a side of the dental mouthpiece shown in FIG. 1 with an anterior wall of the mouthpiece pulled away from a posterior wall of the mouthpiece. The at least one connector 124 may span the distance between the anterior wall 112 and the posterior wall 114 within the interior space 126. In other words, the connector 124 may be attached to an interior surface 135 of the posterior wall 114 and to an interior surface 113 of the anterior wall 112. The at least one connector 124 may provide structural rigidity to the mouthpiece 100 and may be a pillar, column, wall, or the like. In the illustrated example, the at least one connector 124 includes three connectors, each in the shape of a pillar and linearly spaced from each other.

[0038] FIG. 8 is a transverse cross section view of the dental mouthpiece shown in FIG. 1. The bridge crests 137 near the opening 146 of the suction connector portion 108 may have a greater height than the bridge crests 137 further from the opening 146. The bridge crests 137 near the opening 146 of the suction connection portion 108 may also be longer than the bridge crests 137 further away from the suction connection portion 108.

[0039] FIG. 9 is a transverse cross section view of the dental mouthpiece in FIG. 1. FIG 9 illustrates where the suction connector attaches to the main body. As visible in FIG. 9, the suction connector portion 108 may be oval-shaped and also attached to the main body portion 102 in a seamless transition until the main body reaches the bridge structure 136, where the bridge crests 137 and the bridge troughs 138 may partially block the opening of the main body portion 102 near the suction connector portion 108. The bite block 101 is attached on the outside of the suction connector portion 108 such a manner that the bite block does not interrupt the opening of the suction connector potion 108.

[0040] The suction connector portion 108 may include an opening 146 (also shown in FIG. 5), that opens into an interior space 126 of the main body portion 102 to allow for fluid communication between the interior space 126 and the suction connector portion 108. At least one suction connector portion wall 144 may extend from the anterior wall 112 to the posterior wall 114 near the opening 146 of the suction connector portion 108 to prevent collapse of the anterior wall 112 and the posterior wall 114 during suctioning. The at least one suction connector portion wall 144 includes a pair of walls positioned on either side of the opening 146 of the suction connector portion 108.

[0041] The bite block 101 may include bite block crests 147 and bite block troughs 148 on either sides of the bite block to create greater traction and support for the bite block. In an embodiment, the bite block crests 147 and bite block troughs 148 may create jagged shape or wave shape on either sides of the bite block, although the bite block crests 147 and bite block troughs 148 may be in any shape.

[0042] FIG. 10 is a cross section view of an embodiment of the dental mouthpiece shown in FIG. 1 with a wall connector. In this embodiment, the connector 124 connects the anterior wall 112 with the posterior wall 114 at the longitudinal axis 103 as a solid wall. The connector 124

extends from the neck 120 at the second end 106 some distance away from the cheek retractor portion 110 towards the first end 104 along the longitudinal axis 103 and stops near the opening of the bridge structure 136 around the mid-point of the main body portion 102. In other embodiment, the connector 124 may extend along the longitudinal axis 103 and stop anywhere within the interior space 126 of the main body portion.

[0043] FIG. 11 is a longitudinal cross section view of an embodiment of the dental mouthpiece shown in FIG. 1 with column connectors. In this embodiment, the connector 124 connects the anterior wall 112 with the posterior wall 114 at the longitudinal axis 103 as three evenly spaced cylindrical pillars in line with the stability bar 143. A first connector is positioned in the main body portion 102, a second connector is positioned near the neck 120, and a third connector is spaced near the cheek retractor portion 110. The linear spacing of the three connectors may provide additional rigidity to the neck 120, while maintaining a narrow width 122 of the neck 120. In other examples, such connectors 124 may be located in the area where a positioned mouthpiece 100 begins to wrap from one side of the mouth, to the back of the mouth, then to the other side of the mouth, thereby assisting in shaping the mouthpiece 100 to the general intraoral shape of a patient's mouth. In other examples, the at least one connector 124 may include one connector, two connectors, or more than two connectors and each connector may be positioned anywhere on the mouthpiece 100. In one example, the at least one connector 124 is a rib that extends from the main body portion 102, through the neck 120, and to the cheek retractor portion 110.

[0044] 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.

[0045] 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:

1. A dental mouthpiece formed in a curve, the dental mouthpiece comprising:

a main body portion at a central part of the curve having a first end and a second end, the main body portion having an anterior wall inside the curve and a posterior wall outside the curve, the anterior wall and the posterior wall defining an interior space, at least one connector connecting the anterior wall to the posterior wall, at least one anterior intervening wall extending from the anterior wall partially towards the posterior wall, and at least one posterior intervening wall extending from the posterior wall partially towards the anterior wall, the at least one anterior intervening wall and the at least one posterior intervening wall each having alternating crests and troughs;

a suction connector portion connected to the first end, the connector portion connecting the interior space to a vacuum suction source; and

a cheek retractor portion connected to the second end.

2. The mouthpiece of claim 1, wherein the at least one connector is a cylindrical shaped pillar.

3. The mouthpiece of claim 1, wherein the at least one connector is a wall spanning longitudinally in the main body portion in the interior space.

4. The mouthpiece of claim 1, further comprising a bridge structure in the interior space protruding from the posterior wall, wherein the protrusions are battlement-shaped, with spaced crests.

5. The mouthpiece of claim 4, wherein the protrusions near the suction connector is in greater height and length.

6. The mouthpiece of claim 4, wherein spaces between the crests are troughs of the battlement-shape.

7. The mouthpiece of claim 1, wherein the alternating crests and troughs on the anterior intervening wall and the posterior intervening wall are semi-circle shaped.

8. The mouthpiece of claim 1, wherein the anterior intervening wall and the posterior intervening wall have varying heights to maintain integrity of the main body portion.

9. The mouthpiece of claim 1, wherein the troughs of the anterior intervening wall and the posterior intervening wall decrease in size as the troughs approach the cheek retractor portion.

10. The mouthpiece of claim 1, wherein the anterior intervening wall and the posterior intervening wall meet at a point where the suction connector meets the main body.

11. The mouthpiece of claim 1, wherein the anterior intervening wall and the posterior intervening wall meet at a point where the main body meets the cheek retractor portion.

12. The mouthpiece of claim 1, further comprising a bite block integrated to the suction connector portion, wherein the bite block provide additional crush-resistance and decreased compressibility during biting by a patient.

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

14. The mouthpiece of claim 1, wherein a material that forms the main body, the suction connector portion, and the cheek retractor portion is a flexible, translucent, high heat-resistant, autoclavable silicon-based material.

15. The mouthpiece of claim 1, wherein the posterior wall further includes a stability bar protruding from an interior surface of the posterior wall and along a longitudinal axis of the main body.

16. The mouthpiece of claim 15, wherein the at least one connector lies evenly spaced along the stability bar.

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

18. The mouthpiece of claim 1, where in the suction connector portion connects to a vacuum source, wherein activation of the vacuum source provides suction of fluids from the interior space of the main body.

19. The mouthpiece of claim 18, wherein the activation of the vacuum source draws fluids from an exterior of the main body through the crests and troughs of the anterior intervening wall and the posterior intervening wall, into the interior space of the main body.

20. The mouthpiece of claim 1, wherein the cheek retractor portion includes a surface that applies pressure based on resilience of the cheek retractor portion.

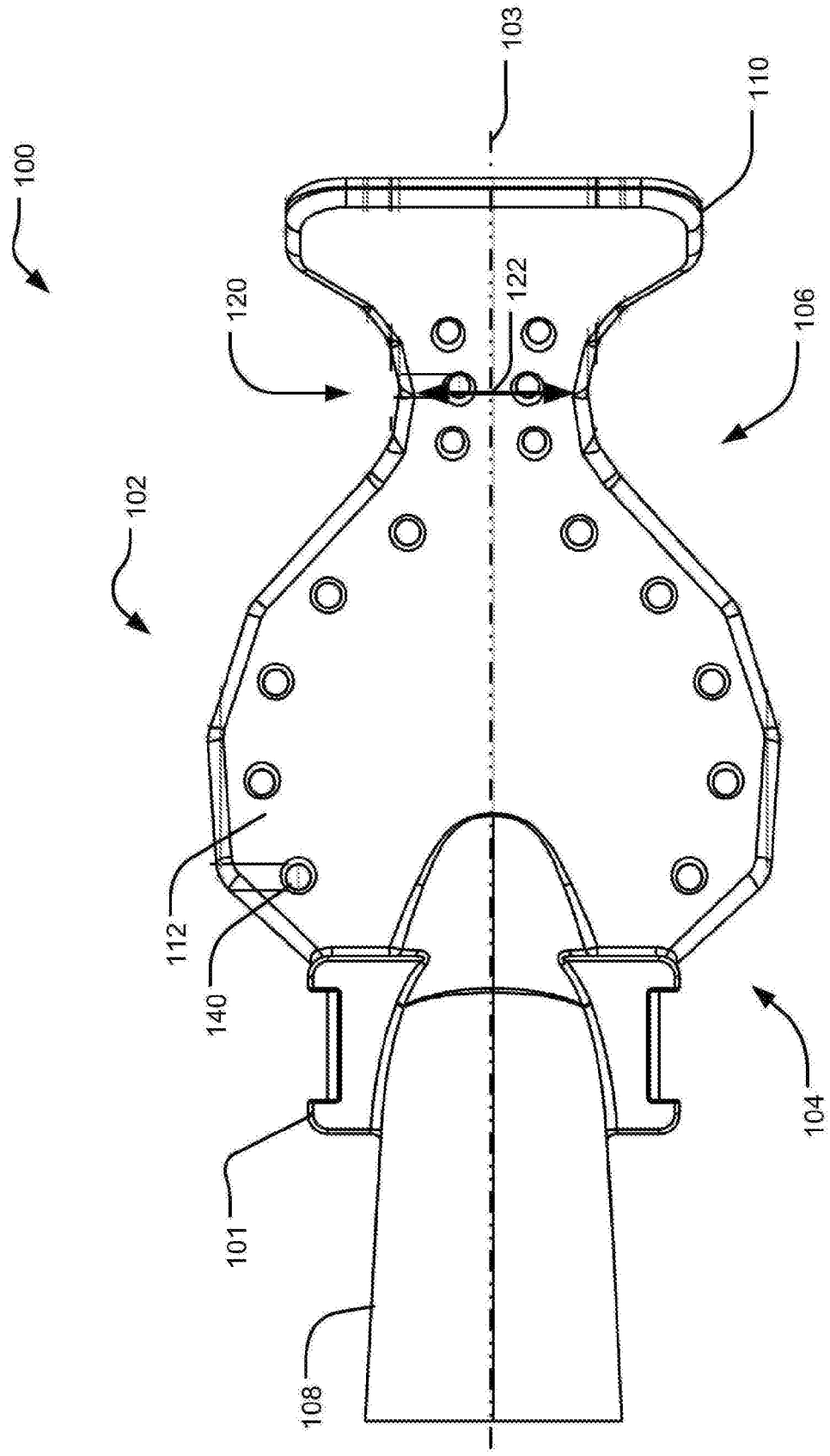


FIG. 1

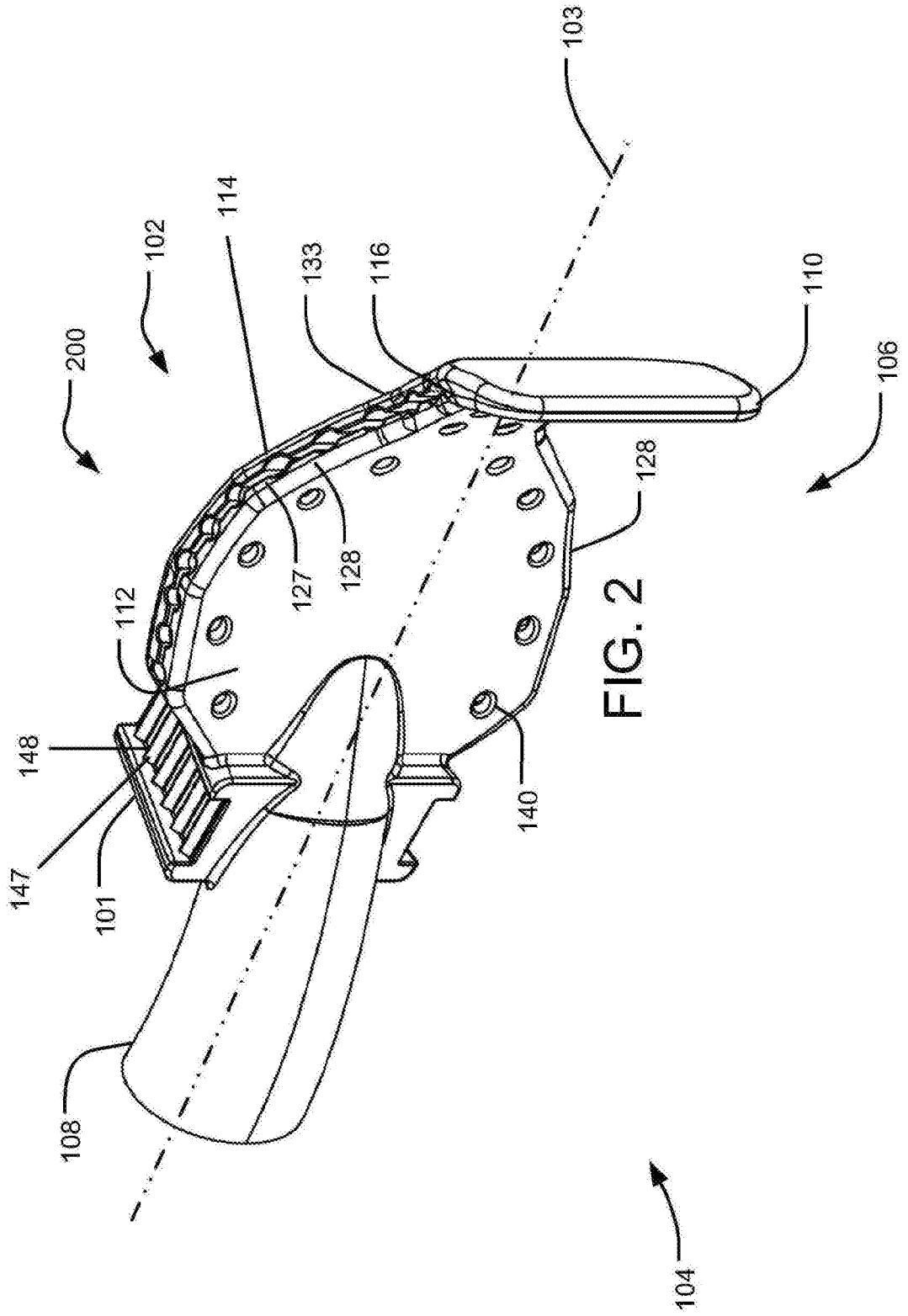

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FIG. 2

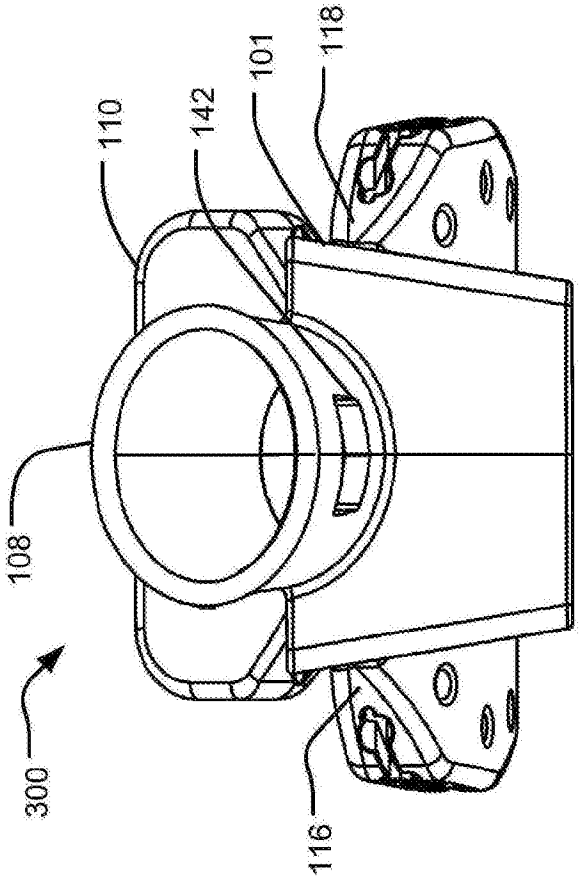


FIG. 3

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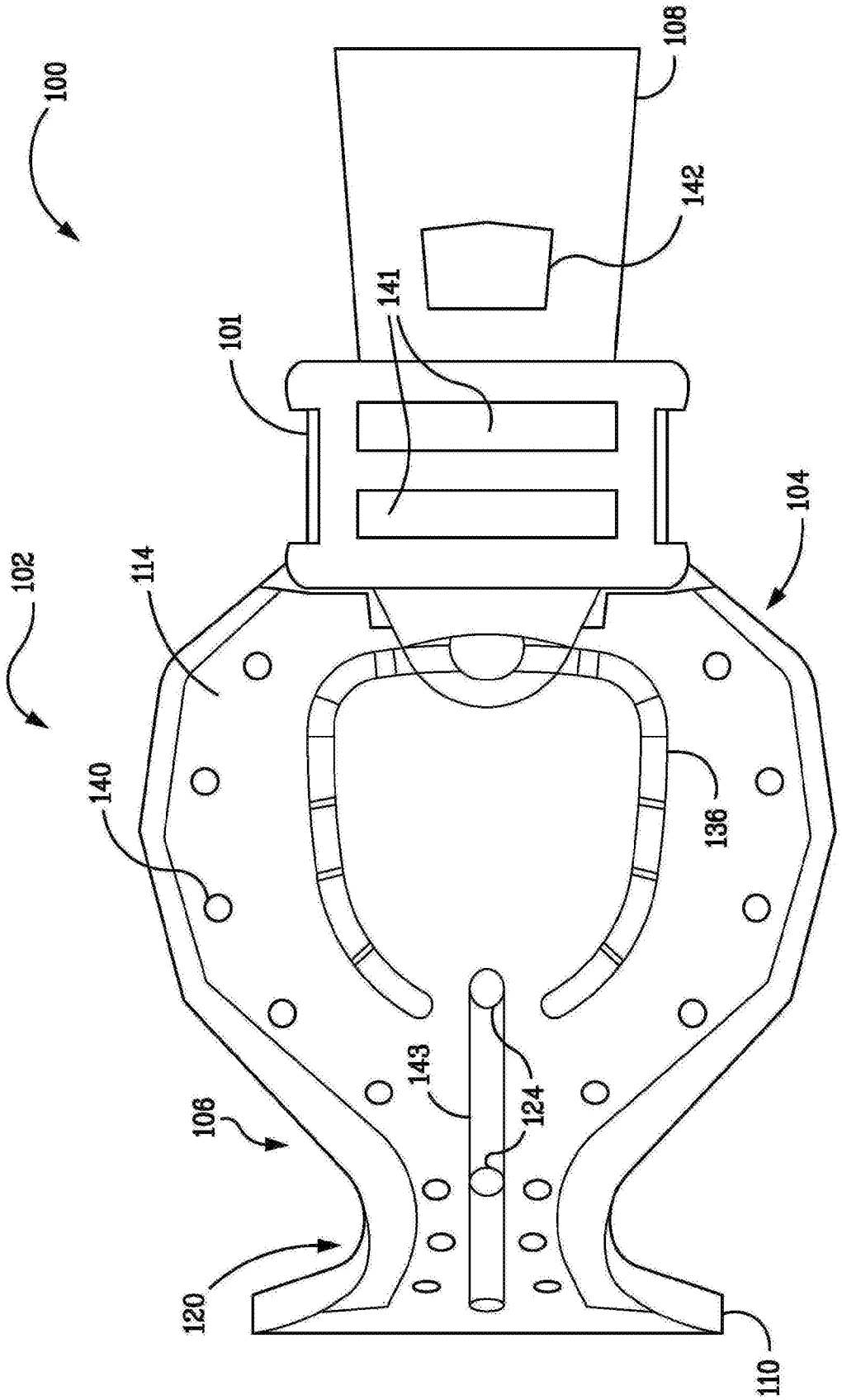


FIG. 4

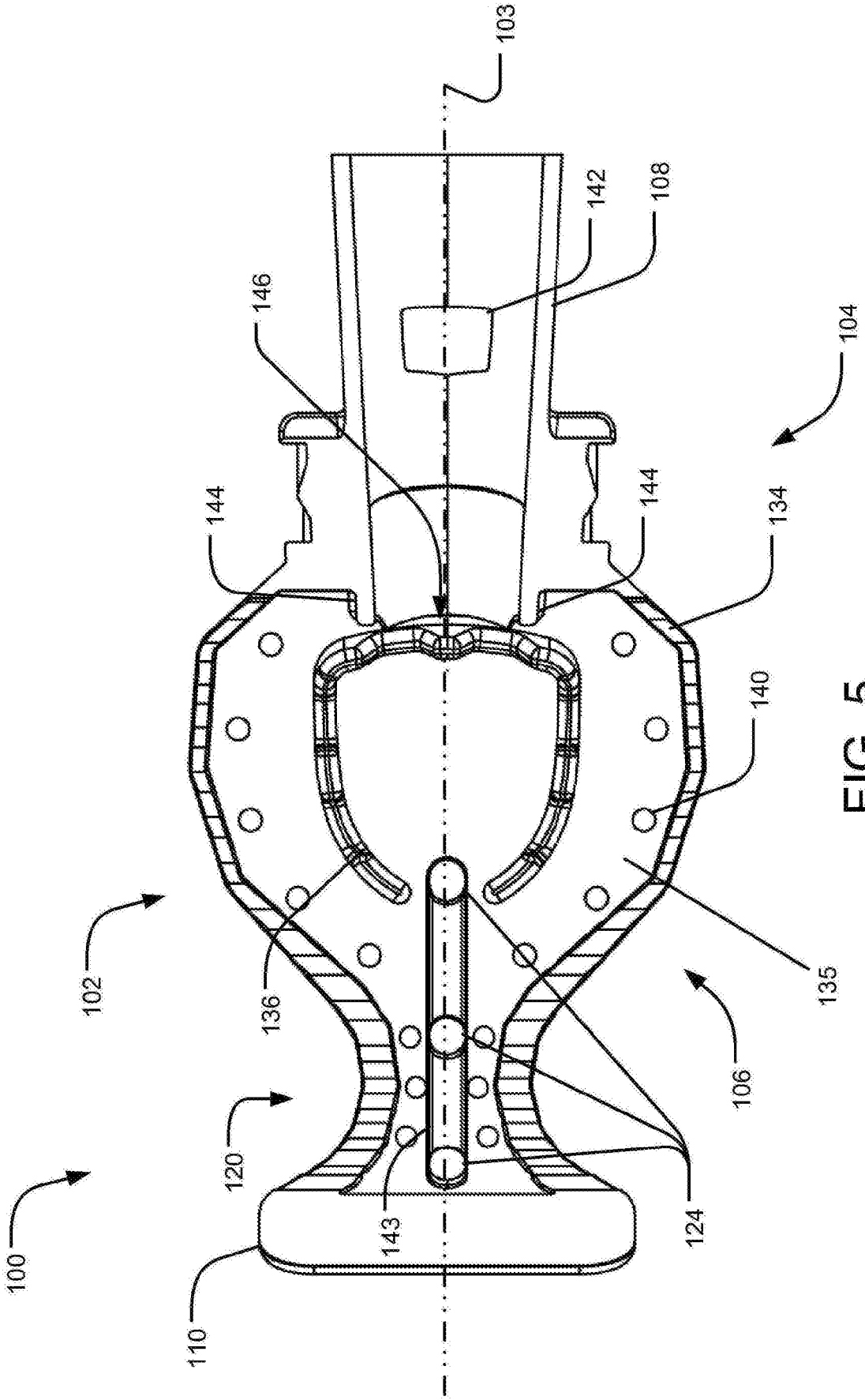

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FIG. 5

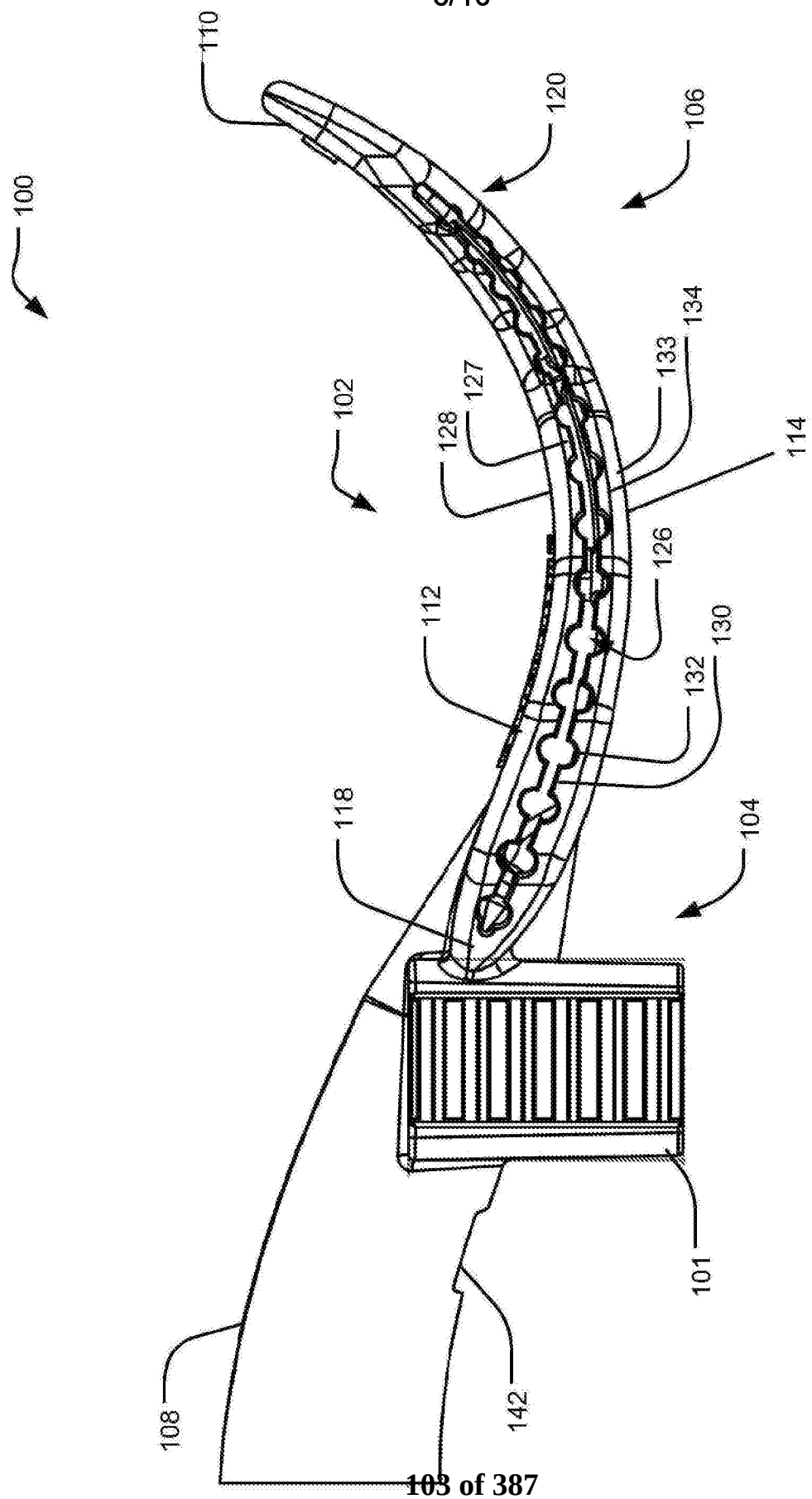

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FIG. 6

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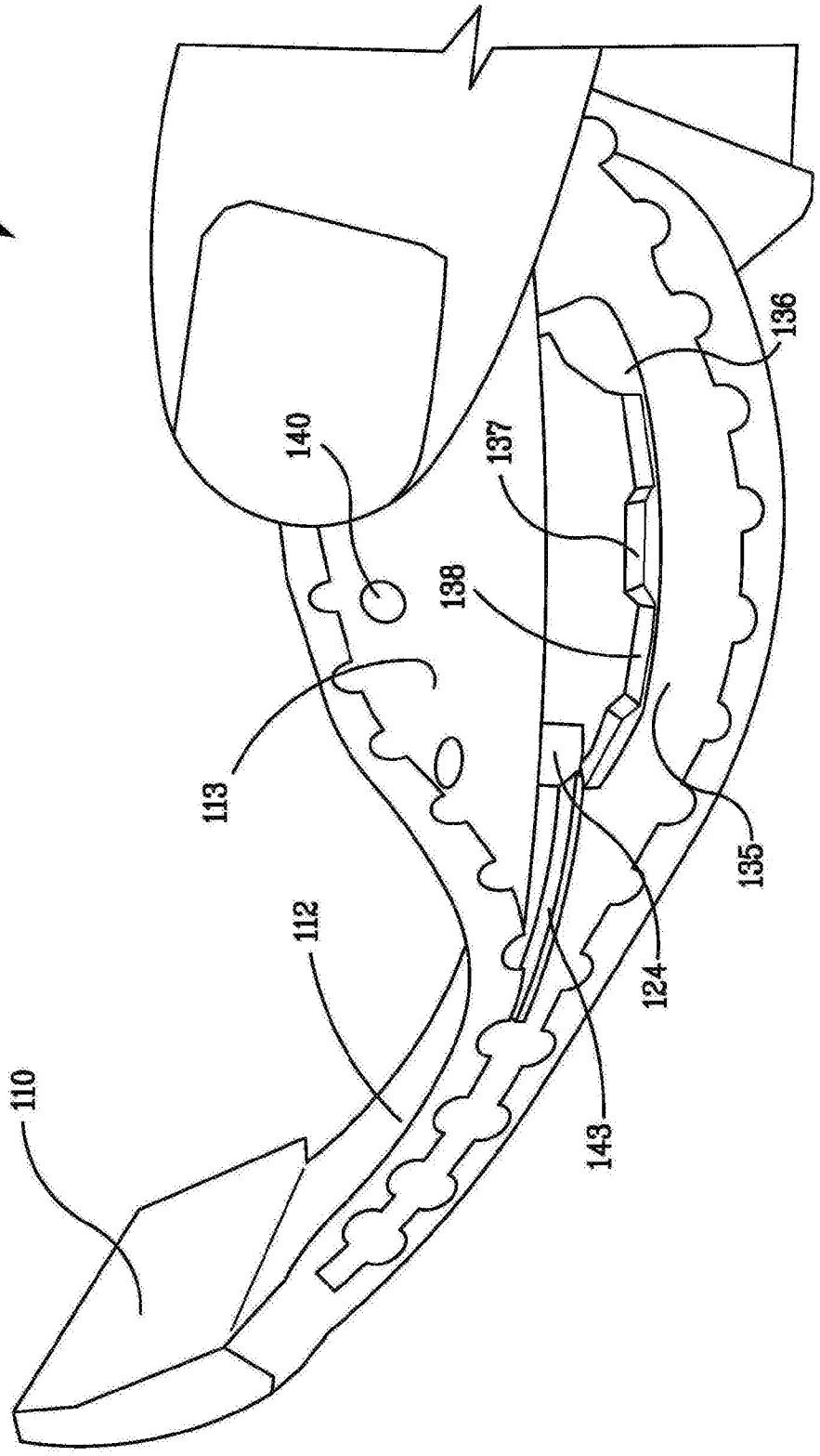


FIG. 7

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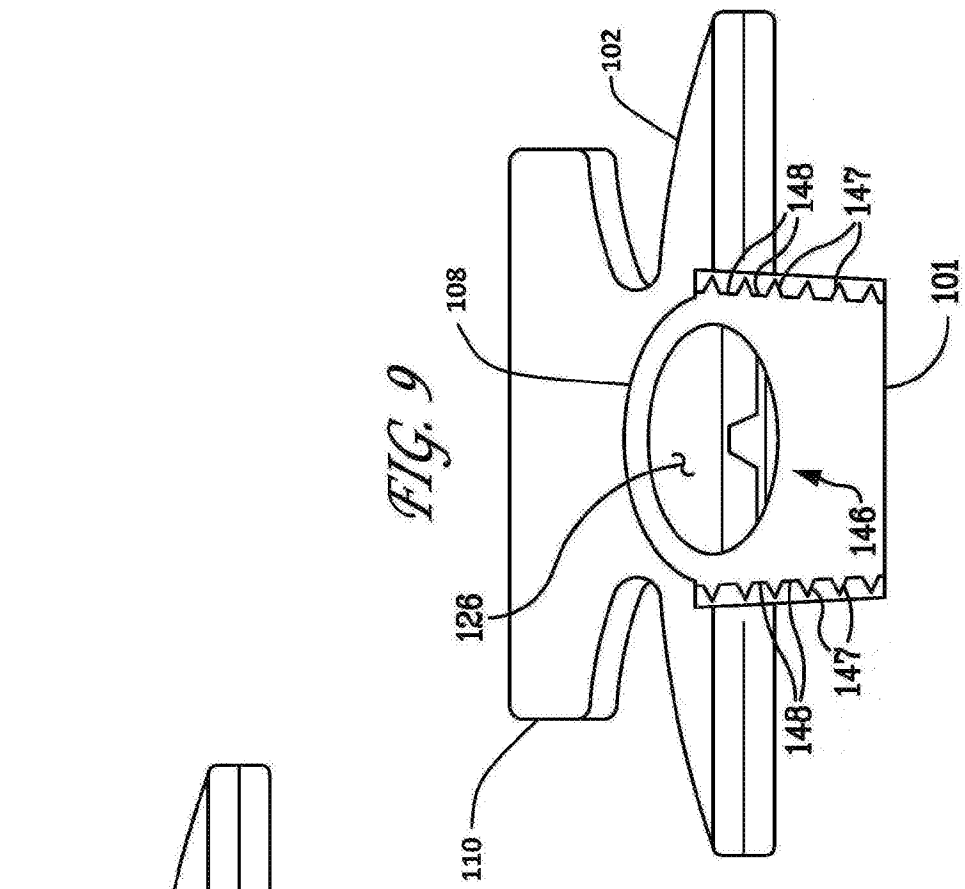


FIG. 9

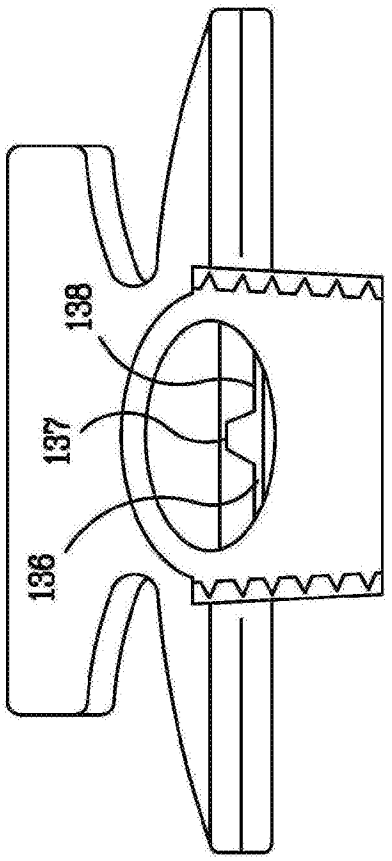


FIG. 8

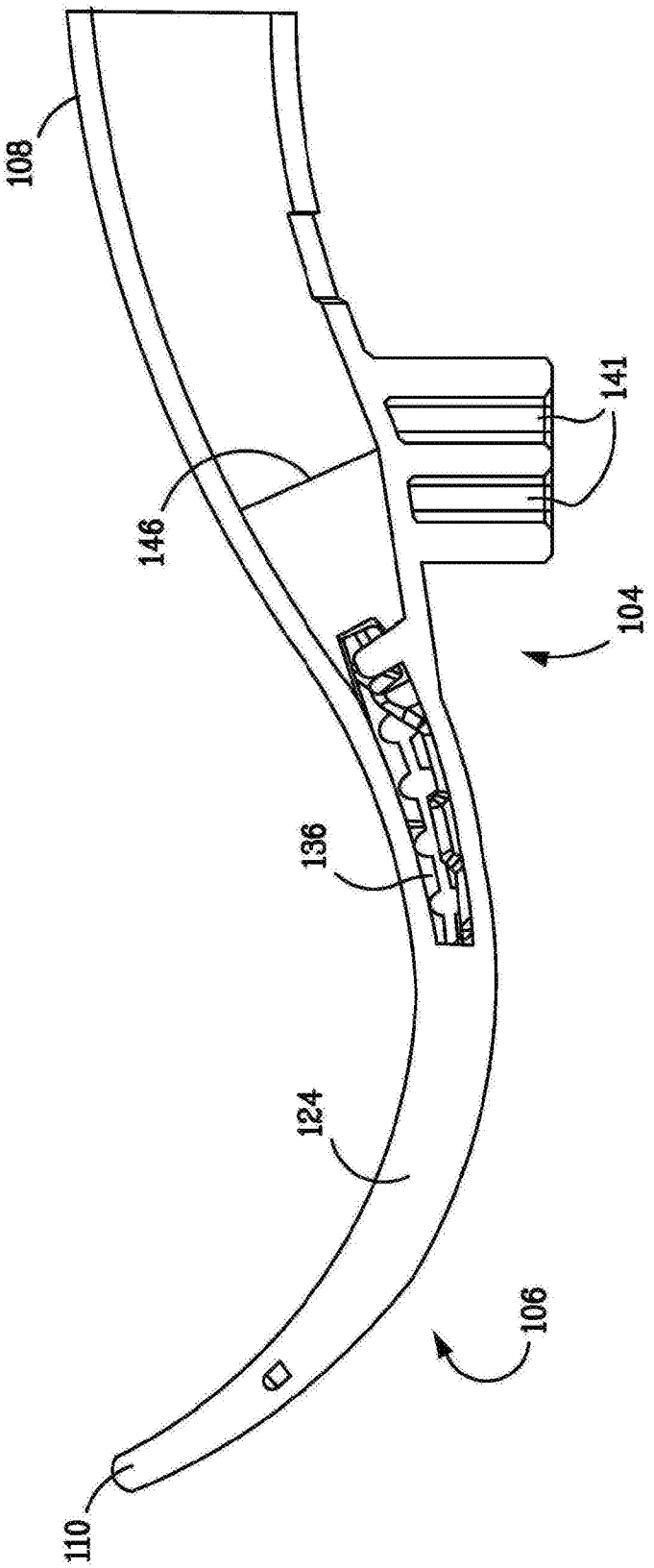


FIG. 10

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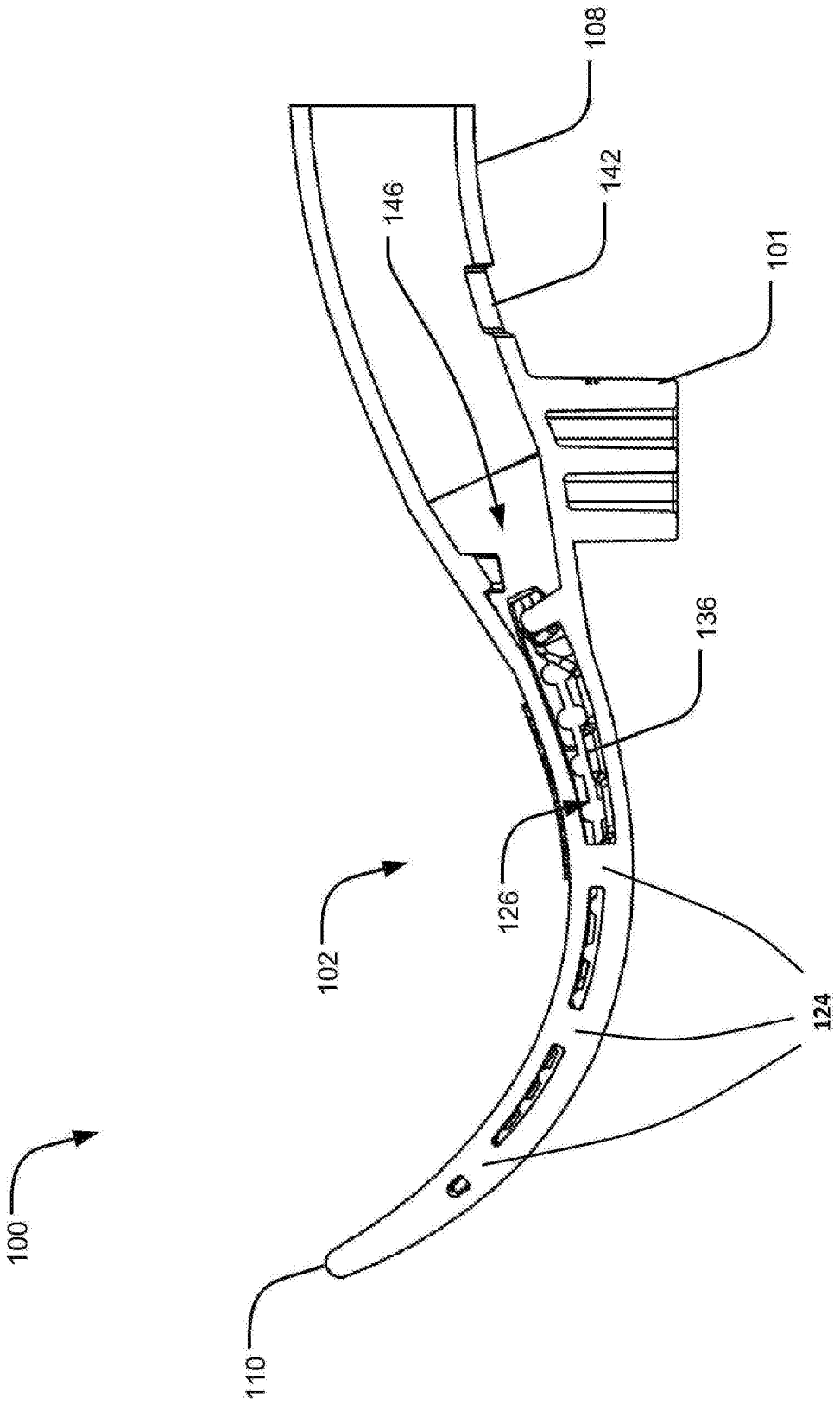


FIG. 11

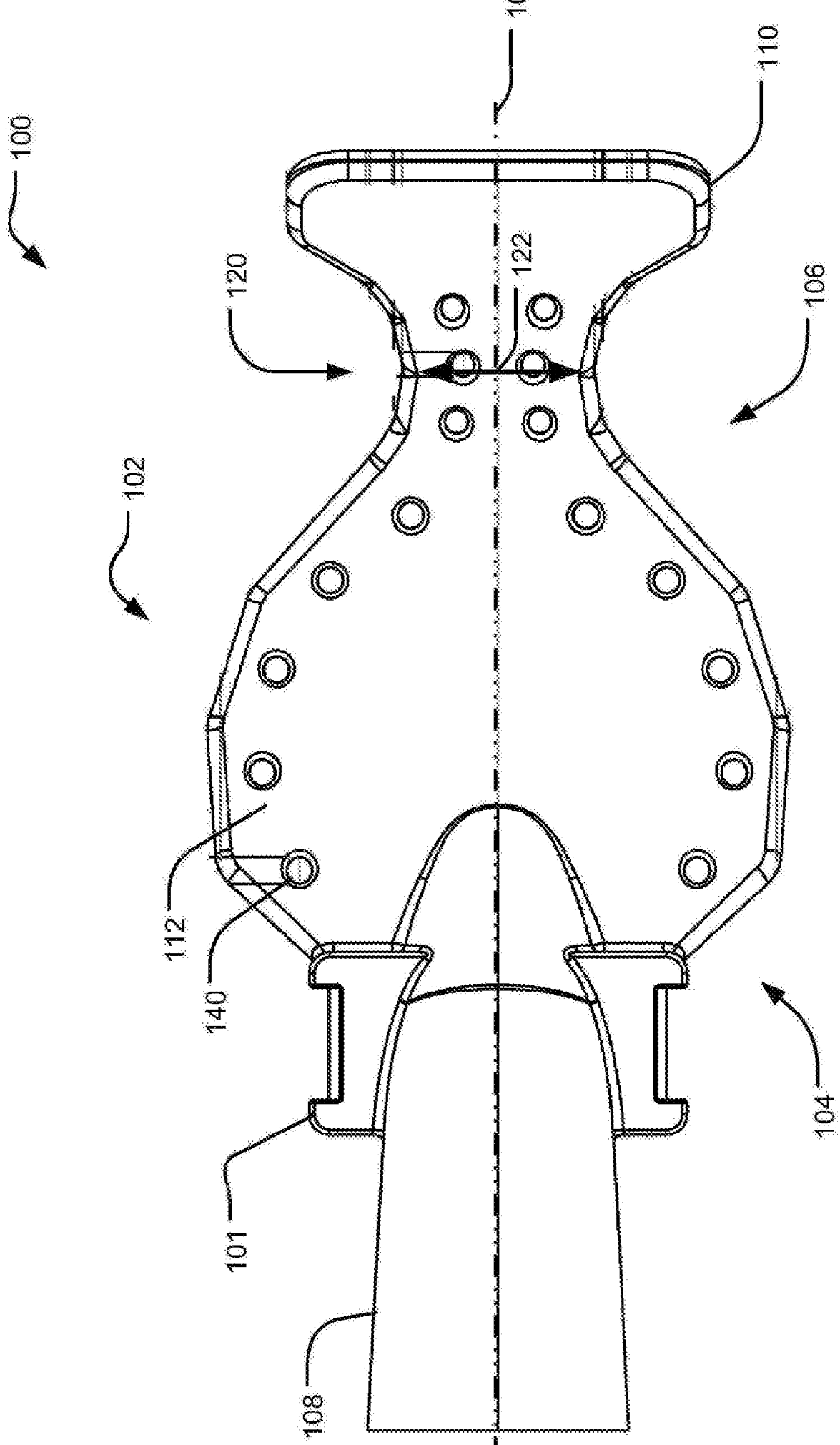


FIG. 1

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(30)優先權：2019/05/10 美國 62/846,353
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(54)名稱

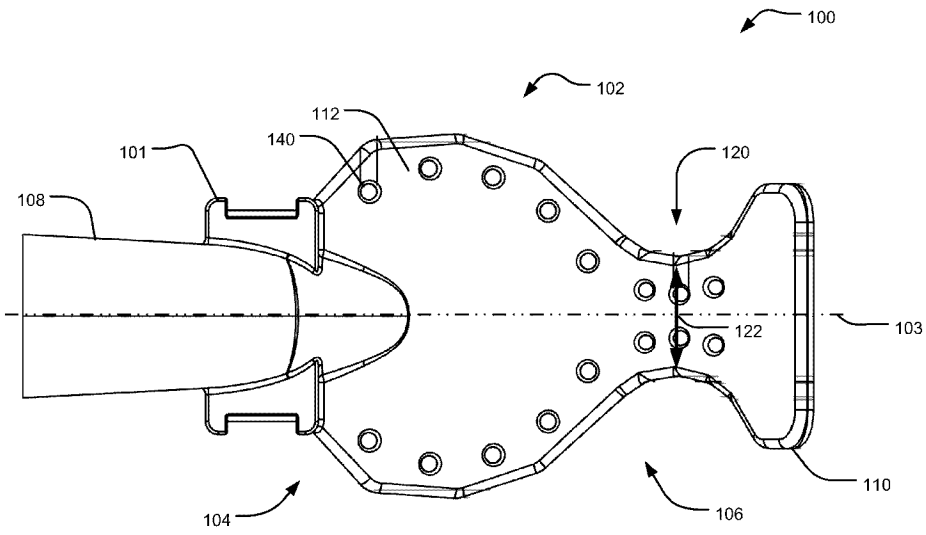
牙科用口腔件

(57)摘要

本發明提供一種牙科用口腔件，其可附接至一高吸力牙科接頭用於在牙科手術期間透過椅側免持式抽吸及隔離來協助牙科工作人員。此一口腔件可包括一主體部分、一頰牽開器部分及一抽吸連接器部分。在一實施例中，該主體部分、該頰牽開器部分及該抽吸連接器部分可較佳地藉由注射模製而模製成一單件。該主體部分具有曲線內部之一前壁及曲線外部之一後壁，且一至少一個連接器連接該前壁及該後壁。該主體部分在該前壁與該後壁之間具有一前中介壁及後中介壁。該前中介壁及該等後中介壁具有交替峰及谷。

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 an embodiment, the main body portion, cheek retractor portion, and suction connector portion may be molded in one piece, preferably by injection molding. The main body portion has an anterior wall inside the curve and a posterior wall outside the curve, and an at least one connector connecting the anterior wall and the posterior wall. The main body portion has an anterior intervening wall and the posterior intervening wall in between the anterior and posterior walls. The anterior intervening wall and the posterior intervening walls have alternating crests and troughs.

指定代表圖：



【圖1】

符號簡單說明：

100:牙科用口腔件

101:咬塊

102:主體部分

103:縱向軸

104:第一端

106:第二端

108:抽吸連接器部分

110:頰牽開器部分

112:前壁

120:頸部

122:寬度

140:開口

【發明說明書】

【中文發明名稱】

牙科用口腔件

【英文發明名稱】

DENTAL MOUTHPIECE

【技術領域】

【0001】 本發明大體上係關於牙科用口腔件之領域。更特定言之，本發明係關於口內牙科抽吸及隔離口腔件。

【先前技術】

【0002】 當前，牙科領域中之牙科健康專業人員、潔牙師及牙科助理使用各種口腔件。在過去，一牙科病人已由包括一牙科專業人員及一牙科助理之一傳統兩人團隊治療。此外，牙科治療可由團隊使用許多不同類型之牙科設備及材料提供。此等牙科設備及材料可包含諸如一口內鏡、一咬塊、一低速抽吸噴射器、一高速抽吸噴射器、紗布、棉卷及三角吸唾片(dry angle)之物品。牙科設備之各物品可用於不同目的，但一些可組合地用於一些類型之牙科服務。因而，尋求提供此等牙科服務之一牙科專業人員可需使用此牙科設備之多個物品。因此，牙科助理之一重要作用係協助牙科專業人員協調不同設備及材料之此多個物品之使用。

【0003】 因此，此項技術中需要以一更高效、舒適且安全之方式將牙科服務提供給牙科病人之改良系統及方法。

【發明內容】

【0004】 本發明揭示一種形成為一曲線之牙科用口腔件之實施例。此一口腔件可包括：一主體部分，其在曲線之一中心部分處，具有一第一

端及一第二端；一抽吸連接器部分，其在該第一端處連接至該主體部分；及一頰牽開器部分，其在該第二端處連接至該主體部分。

【0005】 在一些實施例中，該主體部分、該抽吸連接器部分及該頰牽開器部分可較佳地藉由注射模製而模製成一單件。在一例示性實施例中，該口腔件可由撓性、半透明、有利於注射模製、高耐熱且可熱壓之一材料製成。此一材料可包含聚矽氧。由於該口腔件可由一高耐熱且可熱壓之材料製成，所以此一口腔件可再用。

【0006】 該主體部分可包括該曲線內部之一前壁及該曲線外部之一後壁。該前壁及該後壁可界定一內部空間，在該內部空間內至少一個連接器將該前壁連接至該後壁。至少一個前中介壁從該前壁部分地朝向該後壁延伸，且至少一個後中介壁從該後壁部分地朝向該前壁延伸。該等前中介壁及該等後中介壁各具有交替峰及谷。

【圖式簡單說明】

【0007】 圖1係牙科用口腔件之一俯視圖；

【0008】 圖2係圖1中展示之一牙科用口腔件之一等角視圖；

【0009】 圖3係圖1中展示之牙科用口腔件之一後視圖；

【0010】 圖4係圖1中展示之牙科用口腔件之一仰視圖；

【0011】 圖5係圖1中展示之牙科用口腔件之一冠狀頂部橫截面視圖；及

【0012】 圖6係圖1中展示之牙科用口腔件之一側視圖；

【0013】 圖7係圖1中展示之牙科用口腔件之一側，其中口腔件之一前壁從口腔件之一後壁拉離；

【0014】 圖8係圖1中展示之牙科用口腔件在抽吸連接器與主體之間

的交叉點處之一橫向橫截面視圖。

【0015】 圖9係圖1中展示之牙科用口腔件在抽吸連接器與主體之間的交叉點處之一橫向橫截面視圖。

【0016】 圖10係具有一壁連接器之圖1中展示之牙科用口腔件之一實施例之一縱向橫截面視圖。

【0017】 圖11係具有柱連接器之圖1中展示之牙科用口腔件之一實施例之一縱向橫截面視圖。

【實施方式】

相關申請案之交叉參考

【0018】 本申請案主張2019年5月10日申請之標題為「Dental Mouthpiece」之美國臨時專利申請案第62/846,353號之優先權利，該案之揭示內容以引用的方式併入本文中。

【0019】 本發明之實施例可包含一種口腔件，其可附接至一高吸力牙科接頭以用於在牙科手術期間透過椅側免持式抽吸及隔離來協助牙科工作人員的目的。此一口腔件可包括一主體部分、一頰牽開器部分、一抽吸連接器部分、一穩定桿及一咬塊。在一些實施例中，主體部分、頰牽開器部分、抽吸連接器部分、一穩定桿及咬塊(及其子部分)之任何組合可較佳地藉由注射模製而模製成一單件。在一例示性實施例中，口腔件可由撓性、彈性、至少半透明且有利於注射模製之一材料製成。此一材料可包含此項技術中已知的熱塑性彈性體。

【0020】 圖1係牙科用口腔件之一俯視圖。一牙科用口腔件100包含具有一第一端104及與第一端104相對之一第二端106之一主體部分102。一縱向軸103可從第一端104延伸至第二端106。在所繪示實施例中，一抽

吸連接器部分108可耦合至第一端104且一頰牽開器部分110可耦合至第二端106，但在其他實例中，口腔件100可不具有一抽吸連接器部分108及/或一頰牽開器部分110。一咬塊101亦可在主體部分102之第一端104附近整合至抽吸連接器部分108，但咬塊101可定位於抽吸連接器部分108上之任何處。

【0021】 主體部分102可包含從第二端106延伸至頰牽開器部分110之一頸部120。頸部120可具有小於主體部分102之一寬度、頰牽開器部分110之一寬度及/或抽吸連接器部分108之一寬度之一寬度122，但在其他實例中，寬度122可大於主體部分102、頰牽開器部分110及/或抽吸連接器部分108之寬度。

【0022】 在所繪示實施例中，抽吸連接器部分108、頰牽開器部分110、咬塊101及主體部分102被建構為單件，但在其他實例中，抽吸連接器部分108、頰牽開器部分110、咬塊101及/或主體102之各者可為單獨件。例如，在一些實施例中，主體部分102、頰牽開器部分110及抽吸連接器部分108 (及其子部分)可較佳地藉由注射模製而模製為單件且咬塊101可為可附接至抽吸連接器部分108之一單獨件。在一例示性實施例中，口腔件100可由撓性、彈性、半透明且有利於注射模製之一材料製成。此一材料可包含熱塑性彈性體。

【0023】 圖2係圖1中展示之一牙科用口腔件之一等角視圖。如圖2中繪示，主體部分102可塑形為一曲線。由於口腔件100由一撓性且彈性之材料(例如，熱塑性彈性體)製成，所以口腔件100可在放置於一病人之口腔中時彎曲以符合口腔之形狀。當適當定位時，抽吸連接器部分108可從病人口腔之一個側突出，而主體部分102抵靠病人口腔之後部，且頰牽

開器部分110在病人口腔之相對側上壓抵於病人之面頰。

【0024】 頰牽開器部分110可經構形以在病人口腔之與連接部分108自其延伸之側相對之一側上壓抵於一病人之面頰且將病人之面頰遠離病人之牙齒牽開。用於形成口腔件100之材料之撓性容許在放置於病人口腔中時有些彎曲，但材料之彈性進一步容許口腔件100在口腔件100從彎曲釋放時對病人口腔之一部分施加壓力。例如，材料具有足夠彈性以容許頰牽開器部分110以足以使面頰移動遠離病人之牙齒之此壓力壓抵於病人之面頰內部。頰牽開器部分110被繪示為一錘頭遠端區，其可附接至主體部分102。頰牽開器部分110在一些實例中可為實心的，但在其他實例中可為中空的。

【0025】 主體部分102可包括曲線之一內部分上之一前壁112及曲線之一外部分上之一後壁114 (亦在圖4中所見)。前壁112可面向病人口腔之一前部且後壁114可面向病人口腔之一後部。主體部分102之前壁112及後壁114可經構形為彼此平行。前壁112具有可對應於後壁114之界定形狀之一界定形狀，但在其他實例中，前壁112可為不同於後壁114之一形狀。界定形狀可在第一端104處較寬且在第二端106處較窄。在一些實施例中，該形狀對應於一盾形，但該形狀可為例如一方形、一直線箭頭、一矩形、一星形、一橢圓形、一圓形或大體上符合病人口腔之口內形狀之一形狀。可針對成人及兒童之不同大小口腔提供不同大小之口腔件。第一端104處之形狀之部分可形成為具有比主體部分102之其餘部分更厚之壁。此增厚可在第一端104處提供額外穩定性。當定位於一病人之口腔內時，前壁112及後壁114能夠阻塞病人之一氣道，而咬塊101定位於病人牙齒之間，抽吸連接器部分108從病人口腔之一個側延伸，且頰牽開器部分110

在病人口腔之相對側上壓抵於面頰。

【0026】 主體部分102亦可包含定位於前壁112及/或後壁114上之開口140。此等開口140 (例如，穿孔、狹縫、孔隙等)容許將來自病人口腔之空氣、流體及小碎屑抽吸通過開口140且進入至內部空間126中且朝向一抽吸源進入至抽吸連接器部分108中。開口140可定位於前壁112及/或後壁114之形狀之一周邊上。在相同實例中，開口140可定位於前壁112及/或後壁114上之頸部120之任一側上。在另一實例中，開口140係孔隙。在相同實例中，孔隙各具有相同大小，但在其他實例中，一些或全部孔隙可具有不同大小。

【0027】 圖3係圖1中展示之牙科用口腔件之一後視圖。如圖3中可見，抽吸連接器部分108可為橢圓形且亦附接至主體部分102。抽吸連接器部分108可形成為具有比主體部分102更厚之壁且經構形以附接至一高吸力真空接頭且協助將水、唾液及碎屑從內部空間126轉移至外部接頭以進行移除。抽吸連接器部分108亦可包含一內部止檔以協助口腔件滑動至接頭上至一所要深度。

【0028】 圖3中之上壁116可在本文中用於指代當放置於一病人口腔中時靠置於病人口腔頂之側，且下壁118可用於指代靠置於病人口腔底之側。上壁116及下壁118可相同地形成，此可容許口腔件改變定向，使得上壁116可在新定向中表現為下壁118且反之亦然。在使用時，主體部分102之上壁116及下壁118可用於保護且分離口腔頂及口腔底/舌底。另外，主體部分102亦可用於保護口腔後部(例如，咽喉及氣道)以免受掉落碎屑之影響。

【0029】 圖4係圖1中展示之牙科用口腔件之一仰視圖。前壁112及

後壁114可藉由至少一個連接器124彼此連接。在一些實施例中，抽吸連接器部分108可具有一切口142 (例如，其可塑形為一標識、一矩形凹口、一方形凹口或一圓形凹口或任何形狀之凹口)，從而提供與一外部高吸力真空接頭上之一對應突部(例如，其亦可塑形為一標識、一矩形突部、一方形突部或一圓形突部或任何形狀之突部)之額外互鎖。

【0030】 咬塊101可由咬塊開口141強化以在咬塊中產生腔以導致一更穩定咬塊。在一實施例中，咬塊開口141可為在咬塊之底部處敞開之兩個平行矩形開口。咬塊開口141可向上延伸至抽吸連接器部分108但不延伸過抽吸連接器部分108之厚度。

【0031】 圖5係圖1中展示之牙科用口腔件之一冠狀頂部橫截面視圖。主體部分102可包含從外壁114之內表面135突出之橋結構136，如圖5中展示且在圖7及圖8中亦可見。在一些實施例中，橋結構136可遵循一標識(例如，一箭頭或盾)之形狀。橋結構可在箭頭形狀之尖端處具有一間隙，從而產生一開弧而非一箭頭之一點。在一些實施例中，橋結構136可中心地定位於口腔件100之主體部分110中。在一些實例中，此橋結構136可以具有橋峰137及橋谷138之一波形從內表面135突出。在其他實施例中，橋結構136可以城垛或梯形之形狀突出。橋峰137提供大體上與前壁112分離之複數個接觸點。抽吸連接器部分108之開口146附近之橋峰137可具有大於較遠離於開口146之橋峰137之一高度，如圖7及圖8中可見。抽吸連接部分108之開口146附近之橋峰137亦可長於較遠離於抽吸連接部分108之橋峰137，如圖8中隨後展示。橋谷138可為實質上齊平的或在內表面135上方延伸。橋峰137在抽吸期間接觸前壁112以使前壁112在抽吸期間保持與後壁114隔開，藉此防止前壁112或後壁114塌陷至內部空間

126中，使得可透過內部空間126排空碎屑及/或水。同時，橋谷138提供間隙，該等間隙容許透過橋結構136抽吸空氣、流體及小碎屑。在其他實例中，橋結構136可為平滑的、可包含尖峰及尖谷、圓形峰及圓形谷、方形峰及方形谷或峰及谷之形狀或形狀組合。

【0032】 主體部分102可進一步包含一穩定桿143 (在圖5中展示且在圖7中亦可見)，該穩定桿143從主體部分102之大致中心朝向頰牽開器部分110延伸。此穩定桿143可從後壁114之內表面135沿縱向軸103突出。在一實施例中，穩定桿143開始於橋結構136之開弧且沿縱向軸103繼續朝向第二端106經過頸部120且在到達頰牽開器部分110之前終止。穩定桿143可從後壁114之內表面135朝向前壁112之內表面113突出。穩定桿143可具有內部空間126之高度範圍內之任何高度或小於內部空間126之任何高度。在一實施例中，穩定桿143可在特定位置處具有經附接連接器124，該等經附接連接器124可將前壁112附接至後壁114。穩定桿143上之連接器124可在抽吸期間協助口腔件100之牽開、穩定、支撐及彎曲。在一例示性實施例中，多個連接器124可與穩定桿143對準，但在其他實例中，穩定桿143可不與至少一個連接器124對準。

【0033】 圖6係圖1中展示之牙科用口腔件之一側視圖。圖6繪示靠置於病人口腔底之下側之視圖。前壁112及後壁114彼此間隔且界定內部空間126。除至少一個連接器124、一穩定桿143及一橋結構136以外，內部空間126大體上敞開且無障礙，藉此容許吸力流動遍及內部空間126。前壁112與後壁114之間的內部空間126大體上遵循前壁112及後壁114之相同界定形狀。在一個實例中，內部空間126延伸穿過頸部120，但在其他實例中，內部空間126可不延伸穿過頸部120。在又其他實例中，內部空

間126延伸穿過頸部120且進入至頰牽開器部分120中。

【0034】 至少一個前中介壁127可從前壁112之至少一個邊緣128部分地朝向後壁114延伸且可具有從至少一個邊緣128延伸至前壁112與後壁114之間的一中點之一厚度。因此，此前中介壁127之跨度可不延伸前壁112與後壁114之間的整個距離。此前中介壁127之厚度可從頰牽開器部分110通過頸部120增加至第一端104。此增加深度可在第一端104處提供增加剛性。此前中介壁127可在一些實施例中進一步成脊狀或在其他實施例中具有一平滑邊緣。在一個實例中，前中介壁127包含一交替峰130及谷132。在所繪示實施例中，峰130係一平坦表面且谷132係一圓柱形切口表面，但峰130及谷132可為任何形狀。在一些實例中，峰130及谷132延伸前中介壁127之整個深度，但在其他實例中，峰130及/或谷132可部分地沿前中介壁127延伸。峰130及谷132可為口腔件100提供進一步牽開、穩定、支撐及彎曲。

【0035】 後壁114可具有從後壁114之至少一個邊緣133延伸且部分地朝向前壁112延伸之一對應至少一個後中介壁134。後中介壁134可同樣展現與前中介壁127相同、一鏡像或不同之脊。在一個實例中，前中介壁127之脊可與後中介壁134之脊對準，如圖6中展示。組合地，前中介壁127及後中介壁134及其等各自對準脊可在前壁112與後壁114之間形成一開孔網眼(open mesh)。此開孔網眼可跟隨前壁112及後壁114之各者之邊緣128、133從第一端104至第二端106。前中介壁127與後中介壁134之間的開孔網眼容許將來自病人口腔之空氣、流體及小碎屑抽吸通過網眼至內部空間126中且朝向一抽吸源進入至抽吸連接器部分108中。

【0036】 前中介壁127可在第一端104處之主體之抽吸連接器部分

108附近之上壁116及下壁118處與後中介壁134接合。前中介壁127亦可在第二端106處之頰牽開器部分110附近之上壁116及下壁118處與後中介壁134接合。在一些實施例中，前中介壁127可在頰牽開器部分110處與後中介壁134接合。

【0037】 圖7係圖1中展示之牙科用口腔件之一側，其中口腔件之一前壁從口腔件之一後壁拉離。至少一個連接器124可橫跨內部空間126內之前壁112與後壁114之間的距離。換言之，連接器124可附接至後壁114之一內表面135及前壁112之一內表面113。至少一個連接器124可為口腔件100提供結構剛性且可為一支柱、柱、壁或類似物。在所繪示實例中，至少一個連接器124包含三個連接器，各具有一支柱之形狀且彼此線性地間隔。

【0038】 圖8係圖1中展示之牙科用口腔件之一橫向橫截面視圖。抽吸連接器部分108之開口146附近之橋峰137可具有大於較遠離於開口146之橋峰137之一高度。抽吸連接部分108之開口146附近之橋峰137亦可長於較遠離於抽吸連接部分108之橋峰137。

【0039】 圖9係圖1中之牙科用口腔件之一橫向橫截面視圖。圖9繪示抽吸連接器附接至主體之處。如圖9中可見，抽吸連接器部分108可為橢圓形且亦以一無縫過渡附接至主體部分102直至主體到達橋結構136，其中橋峰137及橋谷138可部分地阻擋抽吸連接器部分108附近之主體部分102之開口。咬塊101附接在抽吸連接器部分108之外部上，使得咬塊並不中斷抽吸連接器部分108之開口。

【0040】 抽吸連接器部分108可包含一開口146 (圖5中亦展示)，該開口146通向主體部分102之一內部空間126以容許內部空間126與抽吸連

接器部分108之間的流體連通。至少一個抽吸連接器部分壁144可在抽吸連接器部分108之開口146附近從前壁112延伸至後壁114以防止前壁112及後壁114在抽吸期間塌陷。至少一個抽吸連接器部分壁144包含定位於抽吸連接器部分108之開口146之任一側上之一對壁。

【0041】 咬塊101可包含咬塊之任一側上之咬塊峰147及咬塊谷148以為咬塊產生較大牽引力及支撐。在一實施例中，咬塊峰147及咬塊谷148可在咬塊之任一側上產生鋸齒形或波形，但咬塊峰147及咬塊谷148可具有任何形狀。

【0042】 圖10係具有一壁連接器之圖1中展示之牙科用口腔件之一實施例之一橫截面視圖。在此實施例中，連接器124在縱向軸103處連接前壁112與後壁114作為一實心壁。連接器124沿縱向軸103從第二端106處之頸部120遠離於頰牽開器部分110朝向第一端104延伸一段距離且在圍繞主體部分102之中點之橋結構136之開口附近停止。在另一實施例中，連接器124可沿縱向軸103延伸且在主體部分之內部空間126內之任何處停止。

【0043】 圖11係具有柱連接器之圖1中展示之牙科用口腔件之一實施例之一縱向橫截面視圖。在此實施例中，連接器124在縱向軸103處連接前壁112與後壁114作為與穩定桿143成一線之三個均勻間隔圓柱形支柱。一第一連接器定位於主體部分102中，一第二連接器定位於頸部120附近，且一第三連接器間隔在頰牽開器部分110附近。三個連接器之線性間隔可為頸部120提供額外剛性，同時維持頸部120之一窄寬度122。在其他實例中，此等連接器124可定位於其中一經定位口腔件100開始從口腔之一個側繞至口腔後部，接著繞至口腔之另一側，藉此協助將口腔件100

塑形為一病人口腔之一大致口內形狀之區域中。在其他實例中，至少一個連接器124可包含一個連接器、兩個連接器或兩個以上連接器且各連接器可定位於口腔件100上之任何處。在一個實例中，至少一個連接器124係從主體部分102延伸穿過頸部120至頰牽開器部分110之一肋部。

【0044】 如本文中描述之口腔件可與一單件式可熱壓高吸力真空接頭一起使用。此一高吸力真空體接頭可由一單一均質材料製成。在具有一單桿設計的情況下，此一真空接頭可以相同於所有當前高吸力真空抽吸器及排涎器之方式運作以控制將來自口腔之水、唾液及碎屑移除至外部真空源。單桿可經設計以控制將水、唾液及碎屑從至少部分地圍封之主體透過抽吸連接器部分內之一單一大排空導管移除。

【0045】 雖然上文已描述各種實施例，但應理解，其等僅藉由實例呈現且非限制性。該等描述不旨在將本發明之範疇限於本文中闡述之特定形式。因此，一較佳實施例之範圍及範疇不應限於上文描述之例示性實施例之任一者。應理解，上述描述係闡釋性且非限制性。相反地，本描述旨在涵蓋如可包含於由隨附發明申請專利範圍定義且以其他方式由一般技術者瞭解之本發明之精神及範疇內之此等替代方案、修改及等效物。因此，本發明之範疇不應參考上文描述來判定，而代替地應參考隨附發明申請專利範圍連同其等之等效物之完整範疇來判定。

【符號說明】

【0046】

100: 牙科用口腔件

101: 咬塊

102: 主體部分

103: 縱向軸

104: 第一端

106: 第二端

108: 抽吸連接器部分

110: 頰牽開器部分

112: 前壁

113: 內表面

114: 後壁

116: 上壁

118: 下壁

120: 頸部

122: 寬度

124: 連接器

126: 內部空間

127: 前中介壁

128: 邊緣

130: 峰

132: 谷

133: 邊緣

134: 後中介壁

135: 內表面

136: 橋結構

137: 橋峰

138: 橋谷

140: 開口

141: 咬塊開口

142: 切口

143: 穩定桿

144: 抽吸連接器部分壁

146: 開口

147: 咬塊峰

148: 咬塊谷

202108088

【發明摘要】

【中文發明名稱】

牙科用口腔件

【英文發明名稱】

DENTAL MOUTHPIECE

【中文】

本發明提供一種牙科用口腔件，其可附接至一高吸力牙科接頭用於在牙科手術期間透過椅側免持式抽吸及隔離來協助牙科工作人員。此一口腔件可包括一主體部分、一頰牽開器部分及一抽吸連接器部分。在一實施例中，該主體部分、該頰牽開器部分及該抽吸連接器部分可較佳地藉由注射模製而模製成一單件。該主體部分具有曲線內部之一前壁及曲線外部之一後壁，且一至少一個連接器連接該前壁及該後壁。該主體部分在該前壁與該後壁之間具有一前中介壁及後中介壁。該前中介壁及該等後中介壁具有交替峰及谷。

【英文】

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 an embodiment, the main body portion, cheek retractor portion, and suction connector portion may be molded in one piece, preferably by injection molding. The main body portion has an anterior wall inside the curve and a posterior wall outside

the curve, and an at least one connector connecting the anterior wall and the posterior wall. The main body portion has an anterior intervening wall and the posterior intervening wall in between the anterior and posterior walls. The anterior intervening wall and the posterior intervening walls have alternating crests and troughs.

【指定代表圖】

圖1

【代表圖之符號簡單說明】

100: 牙科用口腔件

101: 咬塊

102: 主體部分

103: 縱向軸

104: 第一端

106: 第二端

108: 抽吸連接器部分

110: 頰牽開器部分

112: 前壁

120: 頸部

122: 寬度

140: 開口

【發明申請專利範圍】

【請求項1】

一種形成為一曲線之牙科用口腔件，該牙科用口腔件包括：

一主體部分，其在該曲線之一中心部分處，具有一第一端及一第二端，該主體部分具有該曲線內部之一前壁及該曲線外部之一後壁，該前壁及該後壁界定一內部空間，至少一個連接器將該前壁連接至該後壁，至少一個前中介壁從該前壁部分地朝向該後壁延伸，且至少一個後中介壁從該後壁部分地朝向該前壁延伸，該至少一個前中介壁及該至少一個後中介壁各具有交替峰及谷；

一抽吸連接器部分，其連接至該第一端，該連接器部分將該內部空間連接至一真空抽吸源；及

一頰牽開器部分，其連接至該第二端。

【請求項2】

如請求項1之口腔件，其中該至少一個連接器係一圓柱形支柱。

【請求項3】

如請求項1之口腔件，其中該至少一個連接器係在該內部空間中之該主體部分中縱向橫跨之一壁。

【請求項4】

如請求項1之口腔件，其進一步包括從該後壁突出之該內部空間中之一橋結構，其中該等突部係具有間隔峰之城垛形。

【請求項5】

如請求項4之口腔件，其中該抽吸連接器附近之該等突部具有較大高度及長度。

【請求項6】

如請求項4之口腔件，其中該等峰之間的空間係該城垛形之谷。

【請求項7】

如請求項1之口腔件，其中該前中介壁及該後中介壁上之該等交替峰及谷係半圓形的。

【請求項8】

如請求項1之口腔件，其中該前中介壁及該後中介壁具有變化高度以維持該主體部分之完整性。

【請求項9】

如請求項1之口腔件，其中該前中介壁及該後中介壁之該等谷在該等谷接近該頰牽開器部分時大小減小。

【請求項10】

如請求項1之口腔件，其中該前中介壁及該後中介壁在其中該抽吸連接器與該主體相接之一點處相接。

【請求項11】

如請求項1之口腔件，其中該前中介壁及該後中介壁在其中該主體與該頰牽開器部分相接之一點處相接。

【請求項12】

如請求項1之口腔件，其進一步包括整合至該抽吸連接器部分之一咬塊，其中該咬塊在由一病人咬住期間提供額外抗壓性及減小壓縮性。

【請求項13】

如請求項1之口腔件，其中該主體部分、該抽吸連接器部分及該頰牽開器部分藉由注射模製形成為一單件。

【請求項14】

如請求項1之口腔件，其中形成該主體、該抽吸連接器部分及該頰牽開器部分之一材料係一撓性半透明高耐熱可熱壓矽基材料。

【請求項15】

如請求項1之口腔件，其中該後壁進一步包含從該後壁之一內表面突出且沿該主體之一縱向軸之一穩定桿。

【請求項16】

如請求項15之口腔件，其中該至少一個連接器沿該穩定桿均勻地間隔。

【請求項17】

如請求項1之口腔件，其中該抽吸連接器部分包括對應於一真空接頭互鎖配合上之一突部之一切口。

【請求項18】

如請求項1之口腔件，其中該抽吸連接器部分連接至一真空源，其中該真空源之啟動提供從該主體之該內部空間之流體抽吸。

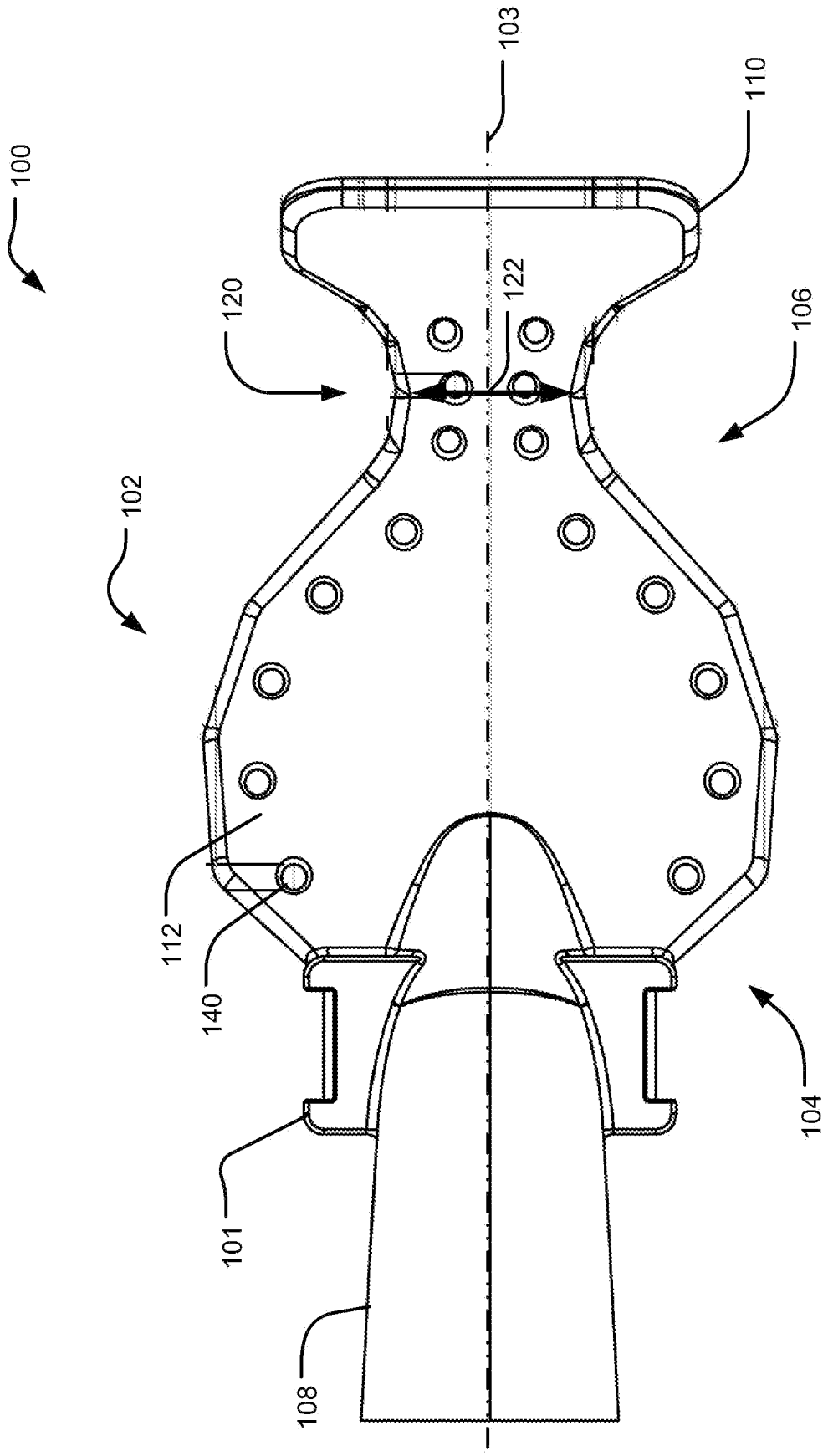
【請求項19】

如請求項18之口腔件，其中該真空源之該啟動將流體從該主體之一外部通過該前中介壁及該後中介壁之該等峰及谷抽取至該主體之該內部空間中。

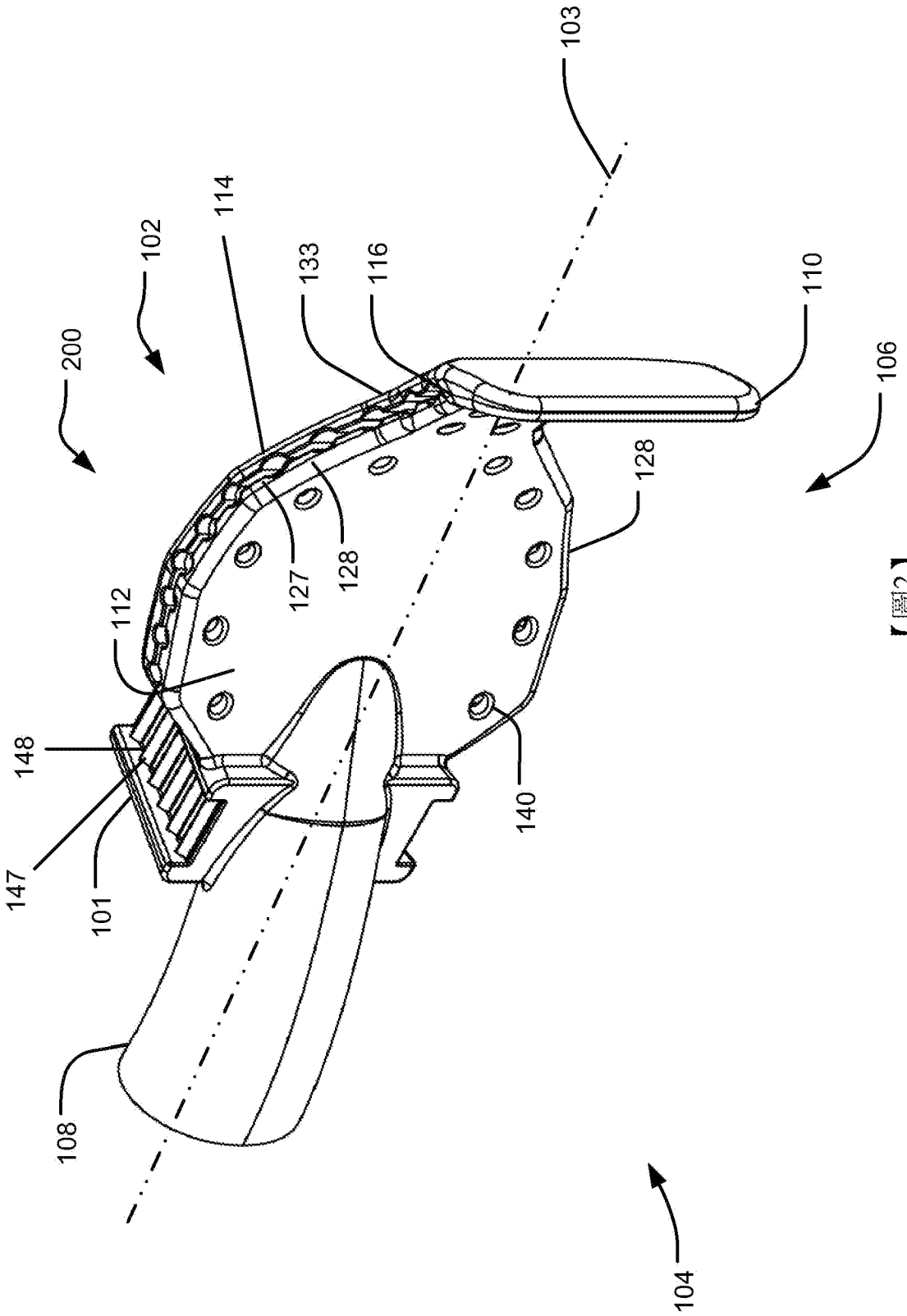
【請求項20】

如請求項1之口腔件，其中該頰牽開器部分包含基於該頰牽開器部分之彈性施加壓力之一表面。

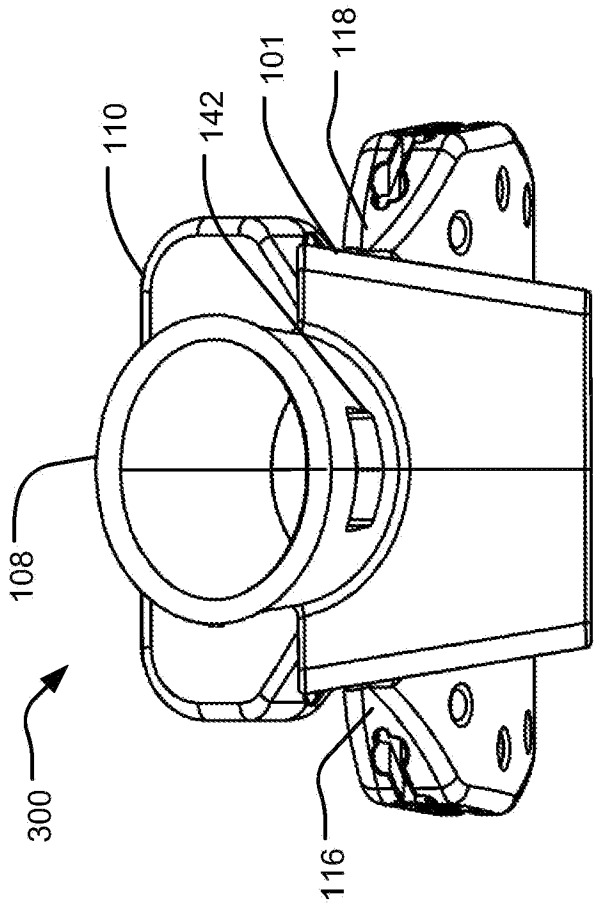
【發明圖式】



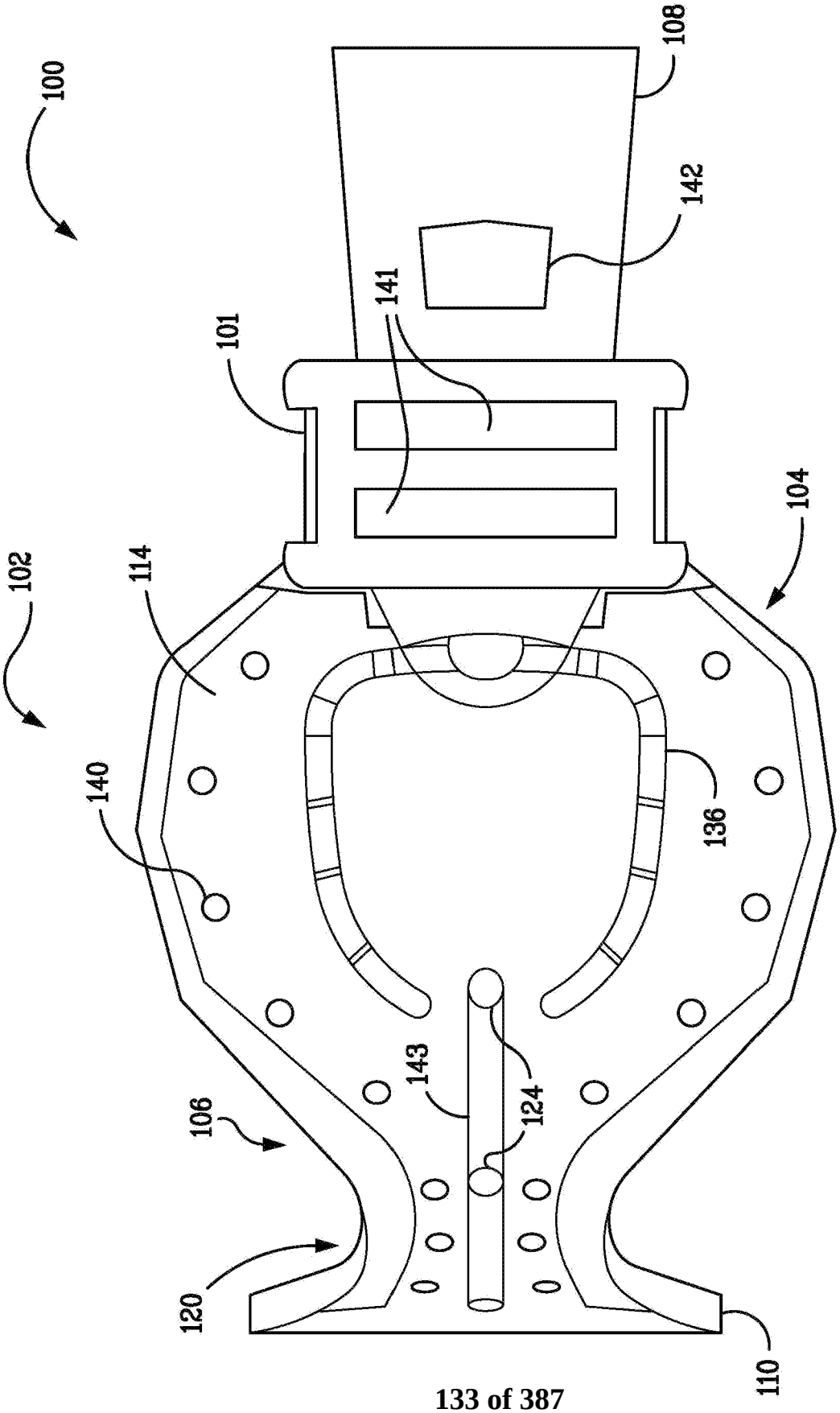
【圖1】


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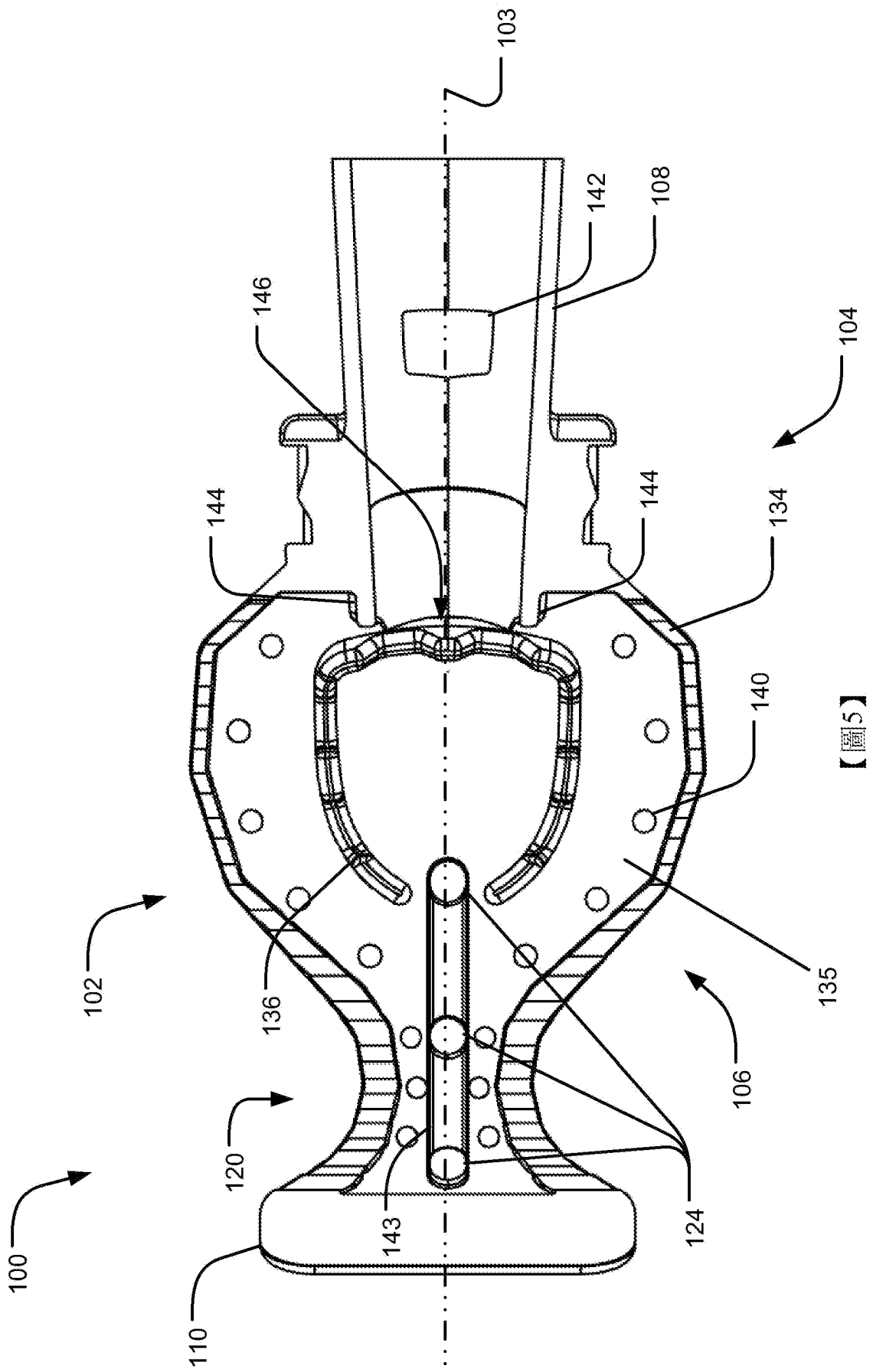
【圖2】



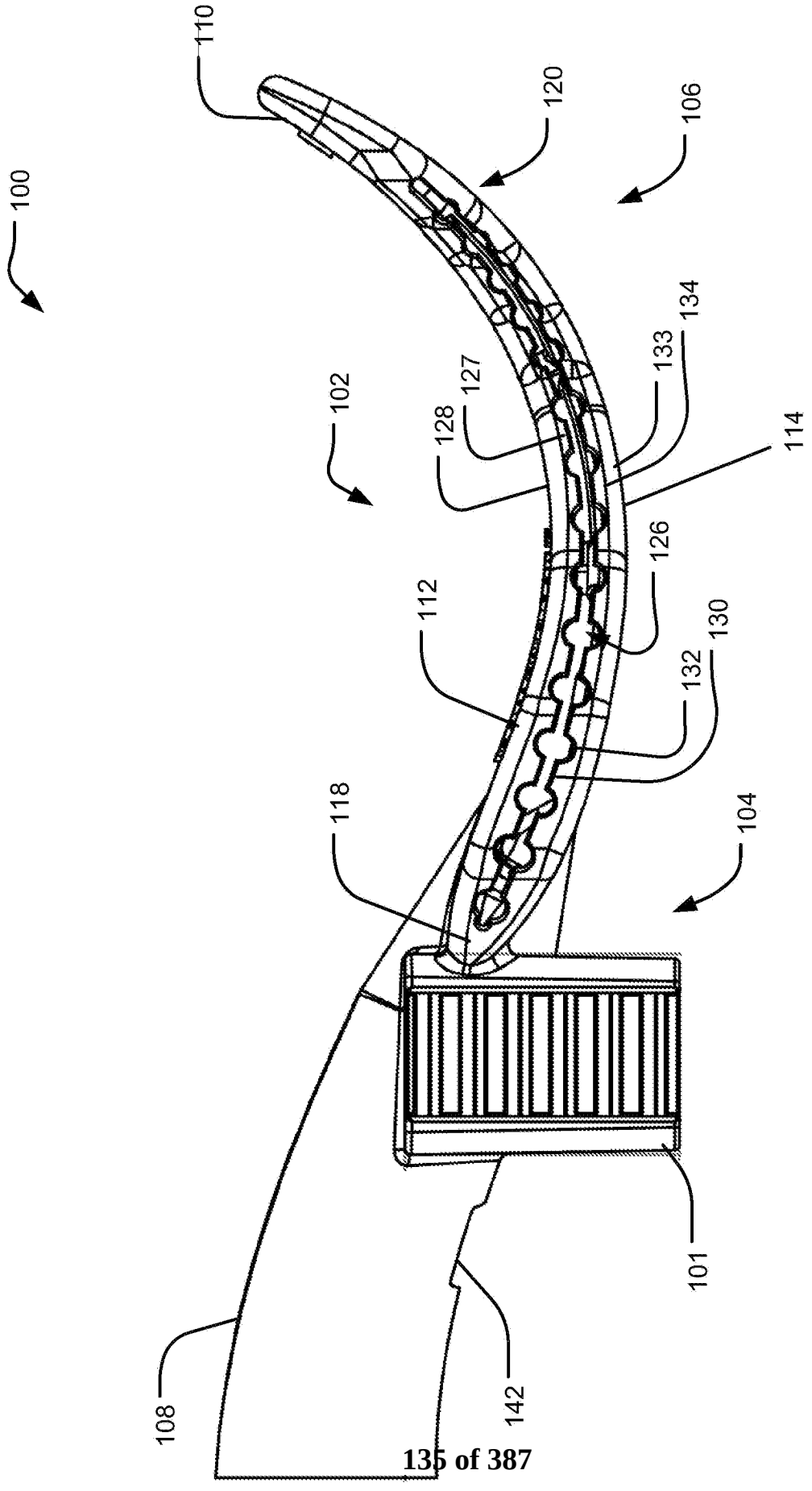
【圖3】



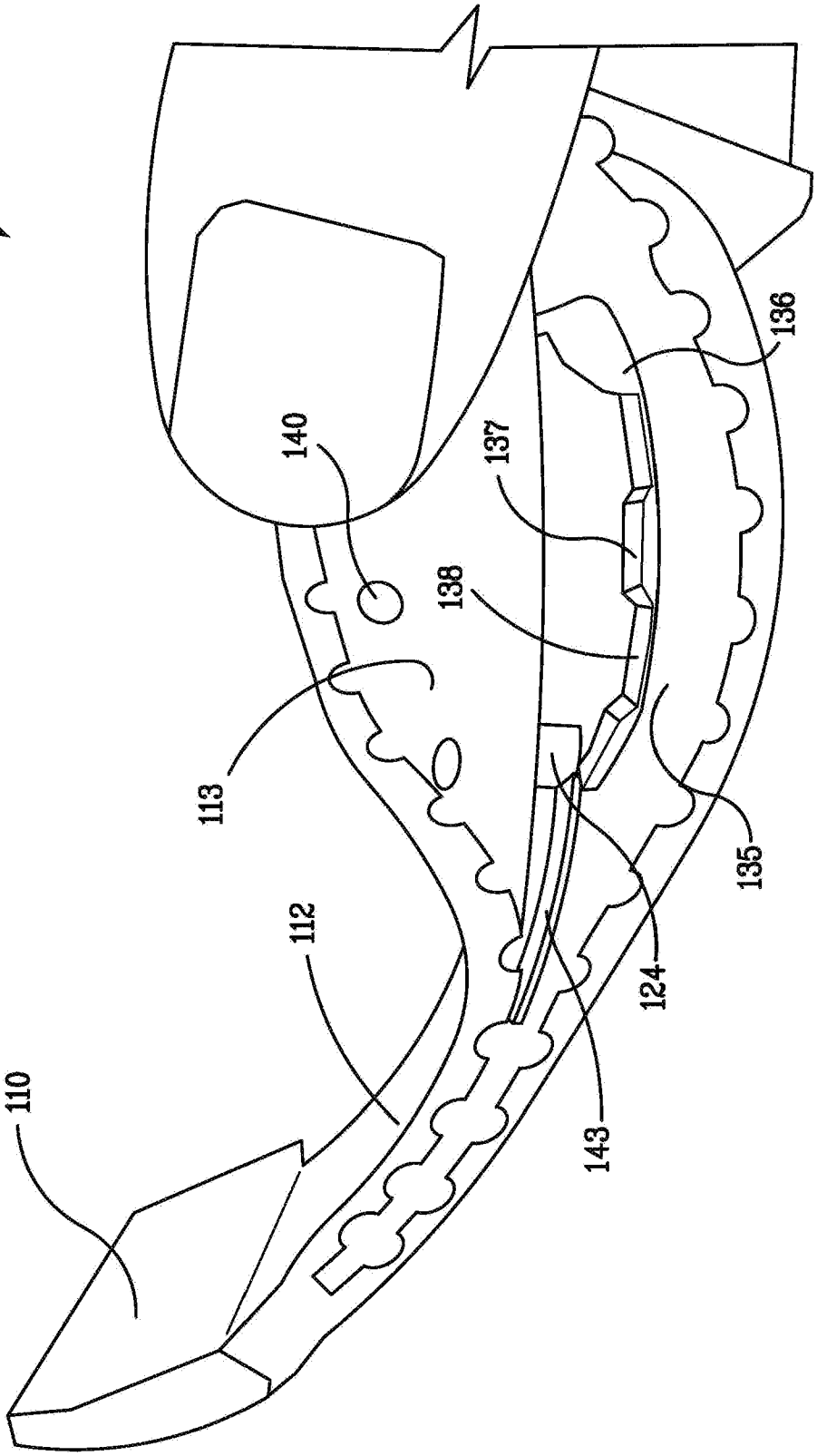
【圖4】


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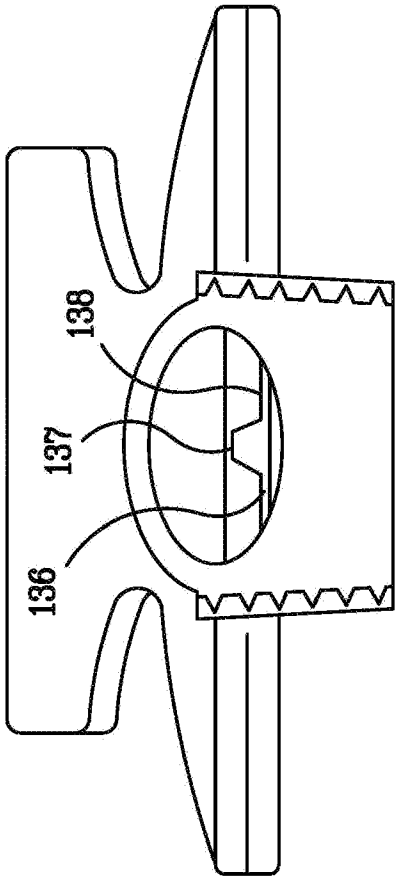
【圖5】


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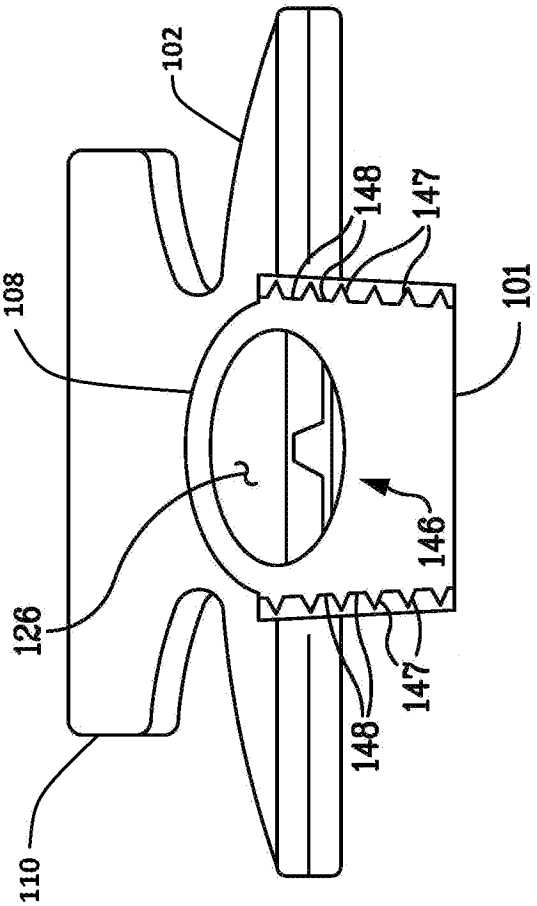
【圖6】



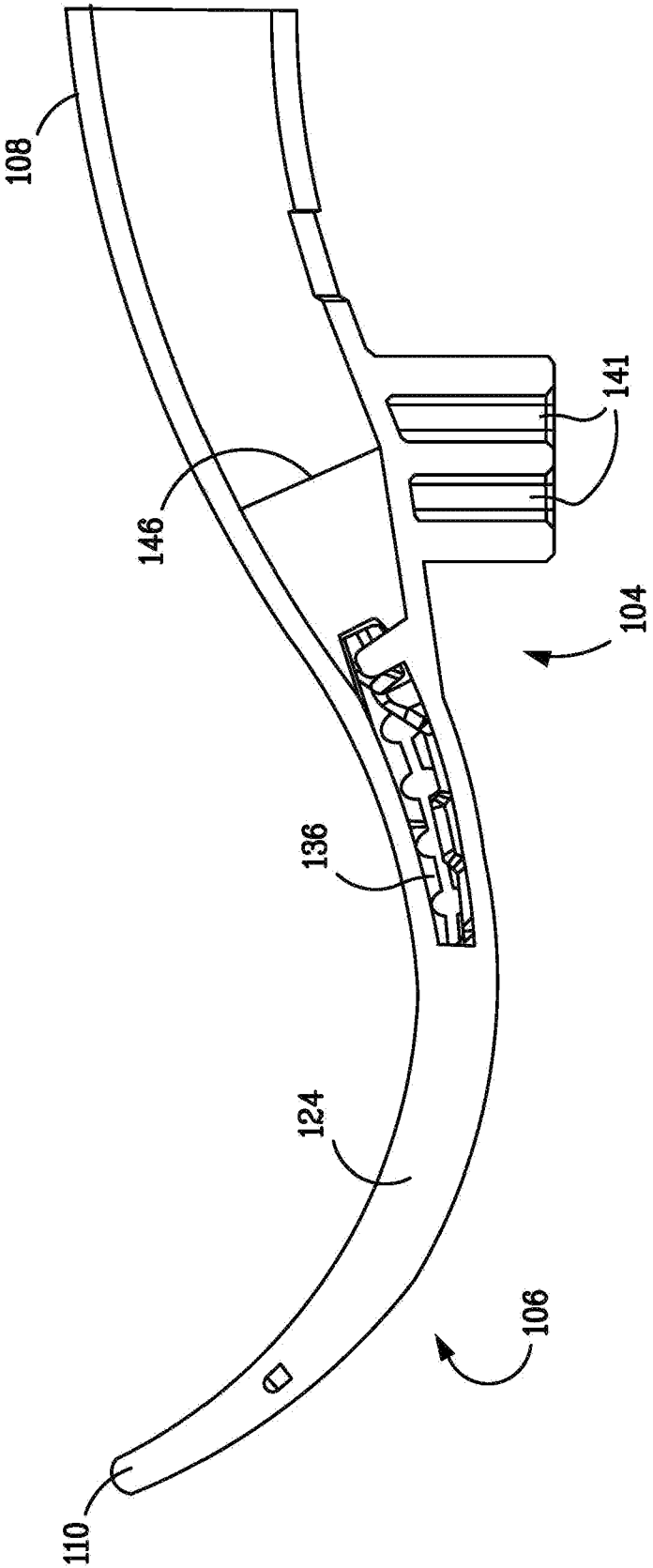
【圖7】



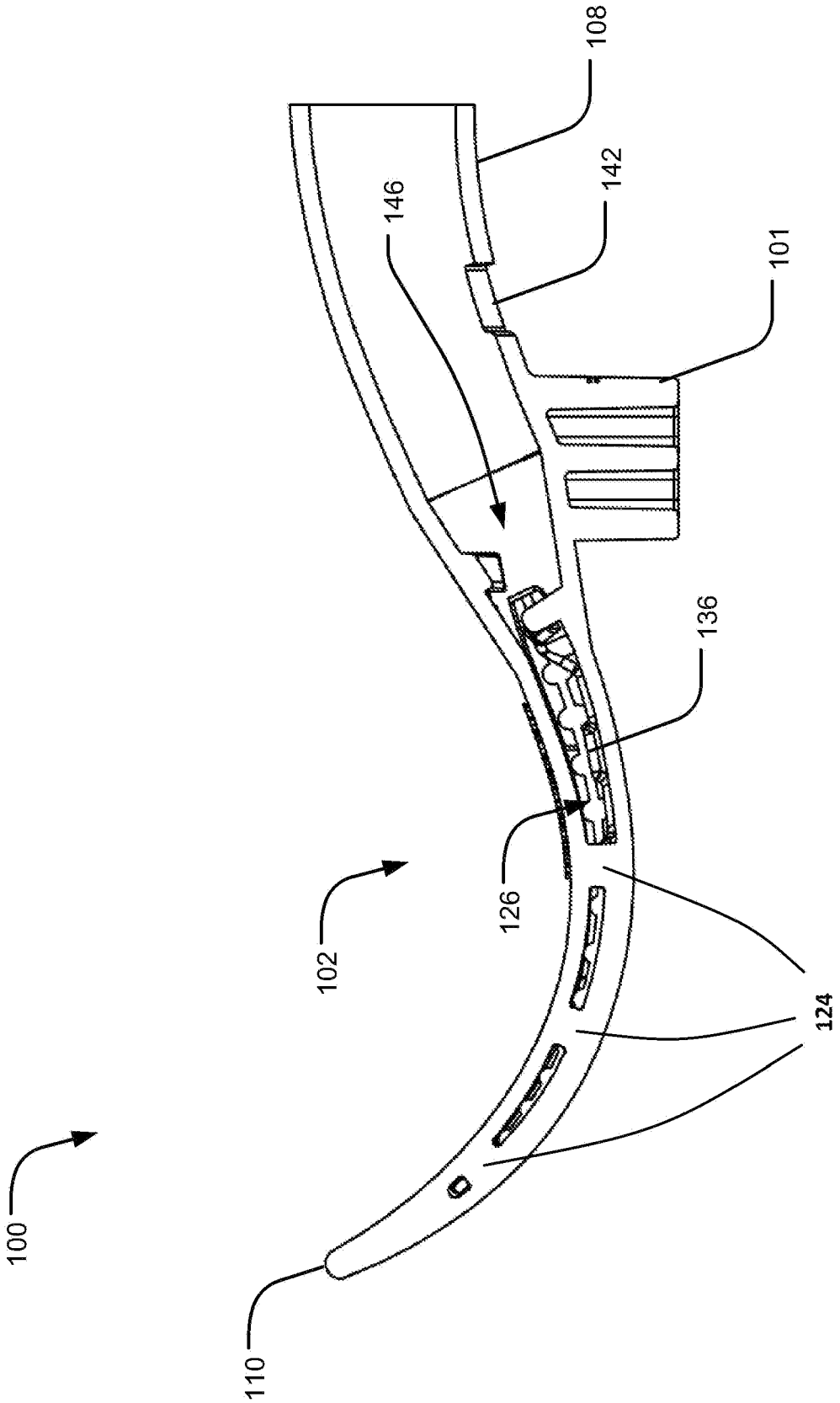
【圖8】



【圖9】



【圖10】



【圖11】

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference INCEP-005PCT	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/US2020/032228	International filing date *(day/month/year)* 08 May 2020 (08.05.2020)	Priority date *(day/month/year)* 10 May 2019 (10.05.2019)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant DRYSHIELD, LLC		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

   In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	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 Article 35(2) 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

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44*bis* .2).

	Date of issuance of this report 16 November 2021 (16.11.2021)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Nora Lindner e-mail pct.team5@wipo.int

Form PCT/IB/373 (revised January 2020)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: JACEK MAREK WNUK
POLSINELLI LLP
THREE EMBARCADERO CENTER, SUITE 2400
SAN FRANCISCO, CA 94111

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	12 AUG 2020
Applicant's or agent's file reference: INCEP-005PCT	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US 20/32228	08 May 2020 (08.05.2020)	10 May 2019 (10.05.2019)

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

IPC - A61B 1/24, A61C 17/00, A61C 17/06, A61C 17/10, A61C 5/14 (2020.01)

CPC - A61B 1/24, A61C 17/00, A61C 17/06, A61C 17/10, A61C 5/14, A61C 5/90

Applicant DRYSHIELD, LLC

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 and 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 Form 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. 571-273-8300	27 JULY 2020	Lee Young PCT Help Desk Telephone No. 571-272-4300

Form PCT/ISA/237 (cover sheet) (revised January 2019)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 20/32228

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(b)).

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:

   a. ☐ forming part of the international application as filed:

      ☐ in the form of an Annex C/ST.25 text file.

      ☐ on paper or in the form of an image file.

   b. ☐ furnished together with the international application under PCT Rule 13*ter*.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.

   c. ☐ furnished subsequent to the international filing date for the purposes of international search only:

      ☐ in the form of an Annex C/ST.25 text file (Rule 13*ter*.1(a)).

      ☐ on paper or in the form of an image file (Rule 13*ter*.1(b) and Administrative Instructions, Section 713).

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 forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

Form PCT/ISA/237 (Box No. I) (revised January 2019)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 20/32228

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

1. Statement

Novelty (N)	Claims	1-20	YES
	Claims	none	NO
Inventive step (IS)	Claims	none	YES
	Claims	1-20	NO
Industrial applicability (IA)	Claims	1-20	YES
	Claims	none	NO

2. Citations and explanations:
Claims 1-20 lack an inventive step under PCT Article 33(3) as being obvious over US 2017/0156832 A1 to Reyes in view of US 2014/0212838 A1 to Incept, Inc. (hereinafter Incept).

Regarding claim 1, Reyes teaches a dental mouthpiece (see fig. 1-9; para [0022]) the dental mouthpiece comprising: a main body portion at a central part of the mouthpiece having a first end and a second end (fig. 3 see in closed configuration the dental mouthpiece comprises a main body portion which is centrally circular with ends at suction piece 28 and the opposite, tapered distal end; para [0022]; para [0031]), the main body portion having an anterior wall (fig. 3, 5 see anterior wall 32; para [0028]) and a posterior wall (fig. 3, 5 see posterior wall 34; para [0028]), the anterior wall and the posterior wall defining an interior space (fig. 3, 5 see walls 32, 34 define space therebetween when the mouthpiece is closed), at least one connector connecting the anterior wall to the posterior wall (fig. 1 see connector 36/38 on trough 18/20; para [0028]; para [0032]), at least one anterior intervening wall extending from the anterior wall partially towards the posterior wall (fig. 1-5 see anterior intervening wall 8; para [0024]-[0025]), and at least one posterior intervening wall extending from the posterior wall partially towards the anterior wall (fig. 1-5 see posterior intervening wall 10; para [0024]-[0025]), the at least one anterior intervening wall and the at least one posterior intervening wall each having alternating crests and troughs (fig. 1-5 see crests 12 and troughs between crests 12; para [0034]; para [0027]); a suction connector portion connected to the first end (fig. 1-7 see suction connector portion 26; para [0031]), the connector portion connecting the interior space to a vacuum suction source (para [0029]; para [0031]); and a cheek retractor portion connected to the second end (fig. 1-3 see tapered distal end; para [0036]), but does not explicitly teach the dental mouthpiece formed in a curve, the main body at a central part of the curve, the anterior wall inside the curve nor the posterior wall outside the curve. However, in similar art, Incept teaches a dental mouthpiece formed in a curve (see fig. 1A, 1D-E; para [0033]) comprising a main body portion at a central part of the curve (fig. 1E see main body portion at the center of the curve between the left open channel and the right distal tip), the main body portion having an anterior wall inside the curve (fig. 1A-1D see anterior wall inside curve) and a posterior wall outside the curve (fig. 1A-1D see posterior wall outside the curve). Curved shaped of dental mouthpieces are well known in the art for improved fit within the mouth for retracting a cheek. Accordingly, it would have been obvious to a person having ordinary skill in in the art to have shaped the mouthpiece taught by Reyes in a curve as taught by Incept, such that the main body is at a central part of the curve, the anterior wall is inside the curve, and the posterior wall in outside the curve, in order to optimize the shape of the mouthpiece to improve fit in mouth of a patient.

Regarding claim 2, Reyes in view of Incept teach the mouthpiece of claim 1, and Reyes modified by Incept further teaches wherein the at least one connector is a cylindrical shaped pillar (Reyes fig. 1 see connector includes cylindrical shaped pillar 36; para [0032]).

Regarding claim 3, Reyes in view of Incept teach the mouthpiece of claim 1, and Reyes modified by Incept further teaches wherein the at least one connector is a wall spanning longitudinally in the main body portion in the interior space (Reyes fig. 1 see connector includes wall 18/20; para [0028]).

Regarding claim 4, Reyes in view of Incept teach the mouthpiece of claim 1, but Reyes modified by Incept does not explicitly teach the mouthpiece further comprising a bridge structure in the interior space protruding from the posterior wall, wherein the bridge comprises protrusions, wherein the protrusions are battlement-shaped, with spaced crests. However, Incept teaches a mouthpiece comprising a bridge structure in an interior space (fig. 1E see bridge 180; para [0042]), wherein the bridge comprises protrusions (fig. 1E see protruding crests of bridge 180), wherein the protrusions are battlement-shaped, with spaced crests (fig. 1E see spaced crests form a battlement-shape; para [0042]). It would have been obvious to a person having ordinary skill in the art to have included a bridge structure as taught by Incept in the mouthpiece taught by Reyes in order to improve the transfer of fluids to the vacuum connection (see Incept para [0042]), thus improving the suction capabilities of the mouthpiece.

Regarding claim 5, Reyes in view of Incept teach the mouthpiece of claim 4, but Reyes modified by Incept does not explicitly teach wherein the protrusions near the suction connector is in greater height and length. However, Incpet teaches wherein the protrusions near the suction connector are greater in size (see fig. 1E; para [0042]). Furthermore, Incpet teaches the protrusions are shaped to improve the suction of fluids through the interior space (para [0042]). Accordingly, it would have been obvious to a person having ordinary skill in the art to have increased both the height and length of the protrusions near the suction connector in order to improve the suction of fluids through the interior space and thus improve the suction capabilities of the device.

-*-Continued in Supplemental Box-*-

WRITTEN OPINION OF THE
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Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Claim 4: Regarding claim 4, the claim language is confusing and lacks clarity. Specifically, the recitation "protrusions" lacks proper antecedent basis. In order to give meaning to this claim such that an opinion may be rendered, it has been interpreted to read "The mouthpiece of claim 1, further comprising a bridge structure in the interior space protruding from the posterior wall, wherein the bridge comprises protrusions, wherein the protrusions are battlement-shaped, with spaced crests," which gives proper antecedent basis.

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 20/32228

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:
-*-Box V.2 - Citations and Explanations-*-

Regarding claim 6, Reyes in view of Incept teach the mouthpiece of claim 4, and Reyes modified by Incept further teaches wherein spaces between the crests are troughs of the battlement shape (see Incept fig. 1A spaces between crests are battlement-shaped troughs; para [0042]).

Regarding claim 7, Reyes in view of Incept teach the mouthpiece of claim 1, but Reyes modified by Incept does not explicitly teach wherein the alternating crests and troughs on the anterior intervening wall and the posterior intervening wall are semi-circle shaped. However, optimization of shape is within the ordinary skill of a person with the art. Furthermore, Reyes teaches the crests and troughs comprise sharp corners (see fig. 1-3; para [0034]; para [0025]-[0027]), but it is well known it the art that sharp corners are difficult and expensive to manufacture. Accordingly, it would have been obvious to a person having ordinary skill in the art to have optimized the shape of the crests and troughs to a semi-circle in order to prevent the presence of sharp corners to improve ease of manufacturing.

Regarding claim 8, Reyes in view of Incept teach the mouthpiece of claim 1, and Reyes modified by Incept further teaches wherein the anterior intervening wall and the posterior intervening wall have varying heights to maintain integrity of the main body portion (Reyes fig. 1-3 see presence of crests 12 and troughs therebetween varies the heights of intervening walls 8, 10 in order to provide integrity to the structure of the interior space; para [0034]).

Regarding claim 9, Reyes in view of Incept teach the mouthpiece of claim 1, and Reyes modified by Incept further teaches wherein the troughs of the anterior intervening wall and the posterior intervening wall decrease in size as the troughs approach the cheek retractor portion (Reyes fig. 1 see troughs between crests 12 become smaller in length as they approach the cheek retractor portion at the distal end).

Regarding claim 10, Reyes in view of Incept teach the mouthpiece of claim 1, and Reyes modified by Incept further teaches wherein the anterior intervening wall and the posterior intervening wall meet at a point where the suction connector meets the main body (Reyes fig. 1-3; para [0034]).

Regarding claim 11, Reyes in view of Incept teach the mouthpiece of claim 1, and Reyes modified by Incept further teaches wherein the anterior intervening wall and the posterior intervening wall meet at a point where the main body meets the cheek retractor portion (Reyes fig. 1-3; para [0034]).

Regarding claim 12, Reyes in view of Incept teach the mouthpiece of claim 1, but Reyes modified by Incept does not explicitly teach further comprising a bite block integrated to the suction connector portion, wherein the bite block provide additional crush-resistance and decreased compressibility during biting by a patient. However, Incept teaches the mouthpiece may provide a bite block (see claim 18-19). Bite blocks are well known in the art to prevent compression of a device entering the mouth cavity and to ensure that the mouth or airway remains open during a procedure. Accordingly, it would have been obvious to a person having ordinary skill in the art to have provided a bite block in the mouthpiece to protect the suction tube and maintain the mouth in an open position during a procedure.

Regarding claim 13, Reyes in view of Incept teach the mouthpiece of claim 1, but Reyes modified by Incept does not explicitly teach wherein the main body portion, the suction connector portion, and the cheek retractor portion are formed by injection-molding as one piece. However, Reyes teaches the device may be manufactured by any simplified process (para [0010]). Furthermore, Incept teaches the mouthpiece may be formed by injection-molding (para [0032]). Injection molding is well known in the art for easy and inexpensive manufacturing of a one-piece polymer. Accordingly, it would have been obvious to a person having ordinary skill in the art to have manufactured the mouthpiece by injection-molding in order to provide a cost-effective production of the device.

Regarding claim 14, Reyes in view of Incept teach the mouthpiece of claim 1, but Reyes modified by Incept does not explicitly teach wherein a material that forms the main body, the suction connector portion, and the cheek retractor portion is a flexible, translucent, high heat-resistant, autoclavable silicon-based material. However, Reyes teaches wherein the material of the mouthpiece is a suitable, flexible polymer (para [0023]). Furthermore, Incept teaches a mouthpiece formed of a flexible, translucent, high heat-resistant, autoclavable silicon -based material (para [0032]). It would have been obvious to a person having ordinary skill in the art to have provided a a flexible, translucent, high heat-resistant, autoclavable silicon-based material to construct the mouthpiece in order to optimize the mouthpiece for strength and manufacturing properties.

Regarding claim 15, Reyes in view of Incept teach the mouthpiece of claim 1, and Reyes modified by Incept further teaches wherein the posterior wall further includes a stability bar protruding from an interior surface of the posterior wall and along a longitudinal axis of the main body (Reyes fig. 1-5 see stability bar 18/20 comprises connector 36/38; para [0028]; para [0032]).

Regarding claim 16, Reyes in view of Incept teach the mouthpiece of claim 15, and Reyes modified by Incept further teaches wherein the at least one connector lies evenly spaced along the stability bar (Reyes fig. 1-5 see stability bar 18/20 comprises connector 36/38; para [0028]; para [0032]).

Regarding claim 17, Reyes in view of Incept teach the mouthpiece of claim 1, but Reyes modified by Incept does not explicitly teach wherein the suction connector portion comprises a cutout corresponding to a protrusion on a vacuum adapter interlocking fit. However, Incept teaches wherein the dental mouthpiece comprises a suction connector (Incept fig. 2A-E see connector 120; para [0045]) which connects to a vacuum source with an interlocking fit by a cutout (Incept see fig. 2A-E cutout 230; para [0045]). It would have been obvious to a person having ordinary skill in the art to have included a interlocking fit to a vacuum source as taught by Incept in the connector portion taught by Reyes in order to improve the integrity of the connector and prevent failure during use.

-*-Continued in next Supplemental Box-*-

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

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PCT/US 20/32228

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:
-*-Supplemental Box - Box V.2 - Citations and Explanations-*-

Regarding claim 18, Reyes in view of Incept teach the mouthpiece of claim 1, and Reyes modified by Incept further teaches where in the suction connector portion connects to a vacuum source (Reyes para [0030]-[0031]; para [0036]-[0038]), wherein activation of the vacuum source provides suction of fluids from the interior space of the main body (Reyes para [0036]-[0038]).

Regarding claim 19, Reyes in view of Incept teach the mouthpiece of claim 18, and Reyes modified by Incept further teaches wherein the activation of the vacuum source draws fluids from an exterior of the main body through the crests and troughs of the anterior intervening wall and the posterior intervening wall, into the interior space of the main body (Reyes para [0036]-[0038]).

Regarding claim 20, Reyes in view of Incept teach the mouthpiece of claim 1, and Reyes modified by Incept further teaches wherein the cheek retractor portion includes a surface that applies pressure based on resilience of the cheek retractor portion (Reyes fig. 1-5 see outer surface of cheek retractor portion at distal end; para [0036]; para [0023] device is flexible).

Claims 1-20 have industrial applicability as defined by PCT Article 33(4) because the subject matter can be made or used by industry.

Electronic Acknowledgement Receipt

EFS ID:	45788890
Application Number:	16870745
International Application Number:	
Confirmation Number:	7491
Title of Invention:	DENTAL MOUTHPIECE
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	138718
Filer:	TamThanh Thi Pham/Lea Fong
Filer Authorized By:	TamThanh Thi Pham
Attorney Docket Number:	INCEP-005
Receipt Date:	24-MAY-2022
Filing Date:	08-MAY-2020
Time Stamp:	13:06:31
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-005_IDS_Statement-3_5-20-22.pdf	94632 7234b193025bdee3c7e64713ea9fa4f41364ece0	no	2

Warnings:

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	INCEP-005_IDS_1449-3_5-20-22.pdf	222285 df46fd705e53834cf9805caf668dbb316e2ad1fe	no	2
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Foreign Reference	CA_3139689.pdf	1273768 21dfe6b855712d8541bfca291de73ced66f8bcde	no	30
Warnings:					
Information:					
4	Foreign Reference	TW_202108088.pdf	5674108 13bd9b2eca6486b7b9441df641f913a246edc7a0	no	31
Warnings:					
Information:					
5	Non Patent Literature	PCTUS2020032228_InternationalPreliminaryReportOnPatentability_11-16-21.pdf	351747 4388434d3d0945d8683b19e6cf8b7bc55ed1101a	no	7
Warnings:					
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		Total Files Size (in bytes):	7616540		

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: 3772	Examiner: Holly T. To
Serial No.: 16/870,745	Filed: May 8, 2020
In re Application of: Thien Nguyen	
Confirmation No.: 7491	Customer No.: 138718
Title: DENTAL MOUTHPIECE	

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 Applicant's 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.

Respectfully submitted,
POLSINELLI LLP

Dated: May 20, 2022

By: _____/Tam Thanh Pham/_____
Tam Thanh Pham (Reg. No. 50,565)
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Substitute for Form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet	1	**of**	1		

Complete if Known	
Application Number	16/870,745
Filing Date	May 8, 2020
First Named Inventor:	Thien Nguyen
Art Unit	3772
Examiner Name	Holly T. To
Attorney Docket Number	INCEP-005

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
		JP 2022-533276	7/21/2022	Dryshield, LLC		

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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ABSTRACT JP2022533276A

[0001]

13 A curved dental mouthpiece includes a main body portion positioned at the center of the curve and having a first end and a second end, and a suction connector portion connected to the first end. and a corner hook connected to the second end. The main body portion has a front wall on the inside of the curve and a rear wall on the outside of the curve. The front and rear walls define an interior space. At least one connector connects the front wall to the back wall. At least one front intermediate wall extends from the front wall partially toward the rear wall. At least one rear intermediate wall extends from the rear wall partially toward the front wall. At least one front intermediate wall and at least one rear intermediate wall each have alternating peaks and valleys. [Selection drawing] Fig. 1

(19)日本国特許庁(JP)　(12)公表特許公報(A)　(11)特許出願公表番号
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(P2022-533276A)
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(51)Int.Cl.		F I		テーマコード（参考）
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A61C 17/08	*(2006.01)*	A61C 17/08		

審査請求 未請求　予備審査請求 未請求　（全 15 頁）

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最終頁に続く

(54)【発明の名称】歯科用マウスピース

(57)【要約】
【解決手段】曲線で構成された歯科用マウスピースは、曲線の中心部に位置し、第１端部および第２端部を有するメインボディ部と、第１端部に接続された吸引コネクター部と、第２端部に接続された口角鉤部と、を備える。メインボディ部は、曲線の内側に前壁と、曲線の外側に後壁と、を備える。前壁および後壁は、内部空間を定義する。少なくとも１つのコネクターが、前壁を後壁に接続する。少なくとも１つの前側中間壁が、前壁から、部分的に後壁に向けて延びる。少なくとも１つの後側中間壁が、後壁から、部分的に前壁に向けて延びる。少なくとも１つの前側中間壁および少なくとも１つの後側中間壁は、それぞれ、交代する山および谷を有する。
【選択図】図１

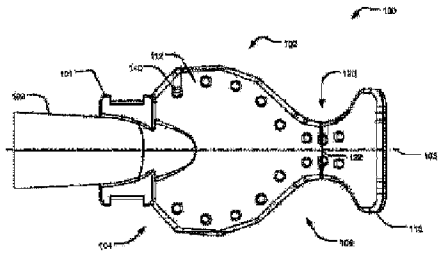


FIG. 1

【特許請求の範囲】
【請求項１】
曲線で構成された歯科用マウスピースであって、
前記曲線の中心部に位置し、第１端部および第２端部を有するメインボディ部と、
前記第１端部に接続された吸引コネクター部と、
前記第２端部に接続された口角鉤部と、
を備え、
前記メインボディ部は、前記曲線の内側に前壁と、前記曲線の外側に後壁と、を備え、
前記前壁および前記後壁は、内部空間を定義し、
少なくとも１つのコネクターが、前記前壁を前記後壁に接続し、
少なくとも１つの前側中間壁が、前記前壁から、部分的に前記後壁に向けて延び、
少なくとも１つの後側中間壁が、前記後壁から、部分的に前記前壁に向けて延び、
前記少なくとも１つの前側中間壁および前記少なくとも１つの後側中間壁は、それぞれ、交代する山および谷を有し、
前記吸引コネクター部は、前記内部空間を真空吸引源に接続することを特徴とする歯科用マウスピース。
【請求項２】
前記吸引コネクター部の少なくとも１つは、円柱状の柱であることを特徴とする請求項１に記載の歯科用マウスピース。
【請求項３】
前記吸引コネクター部の少なくとも１つは、前記内部空間内で、前記メインボディ部の縦方向に広がる壁であることを特徴とする請求項１に記載の歯科用マウスピース。
【請求項４】
前記内部空間内に、前記後壁から突出するブリッジ構造をさらに備え、
この突出は、間隔を空けた山を備えた胸壁状であることを特徴とする請求項１に記載の歯科用マウスピース。
【請求項５】
前記吸引コネクター部の近くの突出は、より高い高さと、より長い長さとを持つことを特徴とする請求項４に記載の歯科用マウスピース。
【請求項６】
前記山の間の空間は、胸壁状の谷であることを特徴とする請求項４に記載の歯科用マウスピース。
【請求項７】
前記前側中間壁および前記後側中間壁の上で交代する山および谷は、半円状であることを特徴とする請求項１に記載の歯科用マウスピース。
【請求項８】
前記前側中間壁および前記後側中間壁は、前記メインボディ部の一体性を維持するために、高さが変化することを特徴とする請求項１に記載の歯科用マウスピース。
【請求項９】
前記前側中間壁および前記後側中間壁の谷の大きさは、当該谷が前記口角鉤部に近づくに従って、小さくなることを特徴とする請求項１に記載の歯科用マウスピース。
【請求項１０】
前記前側中間壁および前記後側中間壁は、前記吸引コネクター部が前記メインボディ部と接触する場所で接触することを特徴とする請求項１に記載の歯科用マウスピース。
【請求項１１】
前記前側中間壁および前記後側中間壁は、前記メインボディ部が前記口角鉤部と接触する場所で接触することを特徴とする請求項１に記載の歯科用マウスピース。
【請求項１２】
前記吸引コネクター部と一体化された咬合阻止器をさらに備え、
前記咬合阻止器は、患者の咬合中、さらなる圧縮抵抗および減少した圧縮性を与えるこ

とを特徴とする請求項１に記載の歯科用マウスピース。
【請求項１３】
前記メインボディ部、前記吸引コネクター部および前記口角鉤部は、単一の部品として射出成形により形成されることを特徴とする請求項１に記載の歯科用マウスピース。
【請求項１４】
前記メインボディ部、前記吸引コネクター部および前記口角鉤部を形成する材料は、柔軟で、半透明で、高耐熱で、オートクレーブ可能な、シリコーンベースの材料であることを特徴とする請求項１に記載の歯科用マウスピース。
【請求項１５】
前記後壁は、前記後壁の内側表面から、前記メインボディ部の縦軸に沿って突出する安定バーをさらに含むことを特徴とする請求項１に記載の歯科用マウスピース。
【請求項１６】
前記コネクターの少なくとも１つは、前記安定バーに沿って、等間隔に配置されることを特徴とする請求項１５に記載の歯科用マウスピース。
【請求項１７】
前記吸引コネクター部は、真空アダプタの連結用突起に対応する切り抜きを備えることを特徴とする請求項１に記載の歯科用マウスピース。
【請求項１８】
前記吸引コネクター部は真空源に接続し、
前記真空源の起動により、前記メインボディ部の内部空間からの流体の吸引が行われることを特徴とする請求項１に記載の歯科用マウスピース。
【請求項１９】
前記真空源の起動は、流体を、前記メインボディ部の外側から、前記前側中間壁および前記後側中間壁の山および谷を通して、前記メインボディ部の内部空間内に引き込むことを特徴とする請求項１８に記載の歯科用マウスピース。
【請求項２０】
前記口角鉤部は、前記口角鉤部の弾性に基づいて圧力を与える面を含むことを特徴とする請求項１に記載の歯科用マウスピース。
【発明の詳細な説明】
【技術分野】
【０００１】
［関連出願への相互参照］
本出願は、２０１９年５月１０日出願の米国仮特許出願第６２／８４６，３５３号「歯科用マウスピース」に基づく優先権を主張する。当該仮特許出願の開示内容は、参照として本明細書に組み込まれる。
【０００２】
本発明は、一般に歯科用マウスピースの分野に関する。より具体的には、本発明は、口腔内歯科用吸引器および分離型マウスピースに関する。
【背景技術】
【０００３】
現在歯科の分野では、歯科専門医、歯科衛生士、歯科助手などが様々なマウスピースを使用する。かつては歯科患者は、歯科専門医および歯科助手を含む従来型の２名のチームから治療を受けていた。さらに歯科治療には、多くの異なる歯科機器および材料が使われていた。こうした歯科機器および材料は、口腔内鏡、咬合阻止器、低速吸引エジェクター、高速吸引エジェクター、ガーゼ、コットンロール、ドライアングルなどを含む。こうした歯科機器のそれぞれは、異なる目的ごとに使われてもよく、歯科処置の目的に応じて組み合わされてもよい。このように歯科処置を行う歯科専門医は、これら複数の歯科機器を使う必要があるだろう。従って歯科助手の重要な役割は、複数の異なる歯科機器および材料の使用に合わせて、歯科専門医を補助することにある。
【発明の概要】

【発明が解決しようとする課題】
【０００４】
従ってこの分野では、より効率的で、快適で、安全な歯科処置サービスの提供を可能とするシステムおよび方法が必要とされる。
【課題を解決するための手段】
【０００５】
曲線で構成された歯科用マウスピースの実施の形態が開示される。このような歯科用マウスピースは、曲線の中心部に位置し、第１端部および第２端部を有するメインボディ部と、第１端部に接続された吸引コネクター部と、第２端部に接続された口角鉤部と、を備えてもよい。
【０００６】
ある実施の形態では、メインボディ部、吸引コネクター部および口角鉤部は、射出成形により、一体成形されてもよい。ある実施の形態では、マウスピースは、柔軟で、半透明で、射出成形に有利な、高耐熱で、オートクレーブ可能な材料で作られてもよい。このような材料は、シリコーンを含んでもよい。こうしたマウスピースは、高耐熱で、オートクレーブ可能な材料で作られるので、再生可能である。
【０００７】
メインボディ部は、曲線の内側に前壁と、曲線の外側に後壁と、を備える。前壁および後壁は、内部空間を定義する。少なくとも１つのコネクターが、内部空間内で前壁を後壁に接続する。少なくとも１つの前側中間壁が、前壁から、部分的に後壁に向けて延び、少なくとも１つの後側中間壁が、後壁から、部分的に前壁に向けて延びる。少なくとも１つの前側中間壁および少なくとも１つの後側中間壁は、それぞれ、交代する山および谷を有する。
【図面の簡単な説明】
【０００８】
【図１】歯科用マウスピースの上面図である。
【０００９】
【図２】図１の歯科用マウスピースの等角図である。
【００１０】
【図３】図１の歯科用マウスピースの後面図である。
【００１１】
【図４】図１の歯科用マウスピースの底面図である。
【００１２】
【図５】図１の歯科用マウスピースの頂部環状断面図である。
【００１３】
【図６】図１の歯科用マウスピースの側面図である。
【００１４】
【図７】後壁から引き離された前壁を備える図1の歯科用マウスピースの側面図である。
【００１５】
【図８】吸引コネクターとメインボディとが交差するところでの、図１の歯科用マウスピースの横断面図である。
【００１６】
【図９】吸引コネクターとメインボディとが交差するところでの、図１の歯科用マウスピースの横断面図である。
【００１７】
【図１０】壁状コネクターを備える図１の歯科用マウスピースの縦断面図である。
【００１８】
【図１１】柱状コネクターを備える図１の歯科用マウスピースの縦断面図である。
【発明を実施するための形態】
【００１９】

本発明の実施の形態は、高吸引歯科用アダプタに取り付け可能なマウスピースであって、椅子の横での単独のハンズフリー吸引を実現することにより歯科スタッフを援助するものを含んでもよい。このようなマウスピースは、メインボディ部と、口角鉤部と、吸引コネクター部と、安定バーと、咬合阻止器と、を備える。いくつかの実施の形態では、メインボディ部、口角鉤部、吸引コネクター部、安定バーおよび咬合阻止器（およびそれらの一部）が、好ましくは射出成形により、一体成形されてもよい。ある典型的な実施の形態では、マウスピースは、柔軟で、弾力があり、少なくとも半透明で、射出成形に有利な材料で作られる。このような材料は、既知の熱可塑性エラストマーを含んでもよい。

【００２０】

図１は、歯科用マウスピースの上面図である。歯科用マウスピース１００は、第１端部１０４、および第１端部１０４の反対側に第２端部１０６を持つメインボディ部１０２を含む。図示された実施の形態では、吸引コネクター部１０８が第１端部１０４に結合されており、口角鉤部１１０が第２端部１０６に結合されている。しかし別の実施の形態では、マウスピース１００は、吸引コネクター部１０８および／または口角鉤部１１０を持たなくてもよい。さらに咬合阻止器１０１が、メインボディ部１０２の第１端部１０４の近くで吸引コネクター部１０８に一体化されている。しかし咬合阻止器１０１は、吸引コネクター部１０８のどこに配置されてもよい。

【００２１】

メインボディ部１０２は、第２端部１０６から口角鉤部１１０に延びる頸部１２０を含んでもよい。頸部１２０は、メインボディ部１０２の幅、口角鉤部１１０の幅および吸引コネクター部１０８の幅より狭い幅１２２を持ってもよい。しかし別の例では、幅１２２は、メインボディ部１０２の幅、口角鉤部１１０の幅および吸引コネクター部１０８の幅より広くてもよい。

【００２２】

図示された実施の形態では、吸引コネクター部１０８、口角鉤部１１０、咬合阻止器１０１およびメインボディ部１０２は、１つの部品で構成されてもよい。しかし他の例では、吸引コネクター部１０８、口角鉤部１１０、咬合阻止器１０１および／またはメインボディ部１０２の各々は、別個の部品で構成されてもよい。例えばいくつかの実施の形態では、メインボディ部１０２、口角鉤部１１０および吸引コネクター部１０８（およびそれらの一部）が、好ましくは射出成形により、一体成形されている。咬合阻止器１０１は、別個の部品で構成され、吸引コネクター部１０８に取り付け可能であってもよい。ある典型的な実施の形態では、マウスピース１００は、柔軟で、弾力があり、少なくとも半透明で、射出成形に有利な材料で作られてもよい。このような材料は、熱可塑性エラストマーを含んでもよい。

【００２３】

図２は、図１の歯科用マウスピースの等角図である。図２に示されるように、メインボディ部１０２は、曲線形状をしてもよい。マウスピース１００は柔軟で弾力のある材料（例えば、熱可塑性エラストマー）で作られるので、患者の口内に置かれると、患者の口の形に一致するような曲線となることができる。吸引コネクター部１０８は、適切に配置されたとき、患者の口の片側から突出してもよい。一方このとき、メインボディ部１０２は、患者の口の後部にもたれて置かれ、口角鉤部１１０は、患者の口と反対側の頬を圧迫する。

【００２４】

口角鉤部１１０は、患者の頬を圧迫し、吸引コネクター部１０８が延びる方と反対側で、患者の頬を患者の歯から引っ込ませるように構成されてもよい。マウスピース１００を形成する材料が柔軟であるため、マウスピース１００は、患者の口内に置かれるとある程度曲がる。しかしこの材料の持つ弾力性により、マウスピース１００は、曲げから開放されると、患者の口の一部に圧力を加えることができる。例えばマウスピース１００の材料は、口角鉤部１１０が、患者の頬を歯から遠ざけるのに十分な圧力で患者の頬を圧迫する程度の弾力性を持つ。口角鉤部１１０は、メインボディ部１０２に取り付けられるハンマ

一ヘッド状の遠位領域を持つものとして図示されている。口角鉤部１１０は、ある例では中身の詰まったものであってもよく、別の例では空洞のあるものであってもよい。

【００２５】

メインボディ部１０２は、曲線の内側部分に前壁１１２を備え、曲線の外側部分に後壁１１４（図４にも示される）を備えてもよい。前壁１１２は、患者の口の前方に対向してもよい。後壁１１４は、患者の口の後方に対向してもよい。メインボディ部１０２の前壁１１２および後壁１１４は、互いに平行であるように構成されてもよい。前壁１１２は、後壁１１４の所定形状に対応する所定形状をしてもよい。しかし別の例では、前壁１１２は、後壁１１４と異なる形状をしてもよい。所定形状は、第１端部１０４においてはより幅が広く、第２端部１０６においてはより幅が狭いものであってもよい。いくつかの実施の形態では、所定形状は盾状に相当するものであってもよい。しかし所定形状は、例えば、正方形状、直線矢印状、長方形状、星状、楕円状、円状、その他の患者の口腔形状に一般に合致するものであってもよい。大人と子供の口のサイズが異なることに対応して、異なるサイズのマウスピースが与えられてもよい。第１端部１０４の部分は、メインボディ部１０２のその他の部分より厚い壁で形成されてもよい。このような厚さを与えることにより、第１端部１０４においてさらなる安定性を得ることができる。前壁１１２および後壁１１４は、患者の口内に置かれると、患者の気道を封鎖することができる。このとき、咬合阻止器１０１は、患者の歯と歯の間に置かれる。吸引コネクター部１０８は、患者の口の一方の側から延びる。口角鉤部１１０は、患者の口内の他方側の頬を圧迫する。

【００２６】

メインボディ部１０２は、前壁１１２の上および／または後壁１１４の上に位置づけられた開口１４０を含んでもよい。このような開口１４０（例えば、穿孔、スリット、アパーチャ等）により、当該開口１４０を通して空気、液体および小さなゴミ等を、患者の口から内部空間１２６内に吸引し、吸引コネクター部１０８を通して吸引源に送ることができる。開口１４０は、前壁１１２および／または後壁１１４の周辺に配置されてもよい。いくつかの例では、開口１４０は、前壁１１２および／または後壁１１４の頸部１２０のいずれかの側に配置されてもよい。別の例では、開口１４０は複数のアパーチャである。このとき、すべてのアパーチャが同じサイズであってもよいし、アパーチャの一部または全部が異なるサイズであってもよい。

【００２７】

図３は、図１の歯科用マウスピースの後面図である。図３に示されるように、吸引コネクター部１０８は、楕円状であってもよく、メインボディ部１０２に取り付けられてもよい。吸引コネクター部１０８は、メインボディ部１０２より厚い壁で形成されてもよく、高吸引真空アダプタに取り付けられるように構成されてもよい。吸引コネクター部１０８は、水、唾液およびゴミ等を、内部空間１２６から除去用外部アダプタへ送ることを補助してもよい。吸引コネクター部１０８は、スライド中のマウスピースを、所望の深さのアダプタ位置で停止させるための内部ストッパを含んでもよい。

【００２８】

以下、図３に示されるように、患者の口内に置かれたとき口内の上顎にもたれる側を意味するものとして、上壁１１６という用語が使われてもよい。同様に、以下、患者の口内に置かれたときに、口内の底にもたれる側を意味するものとして、下壁１１８という用語が使われてもよい。上壁１１６および下壁１１８は、同一に形成されてもよい。この場合、マウスピースの向きを変えることができる。このとき、新しい向きにでは、上壁１１６は、下壁１１８のように見える（逆もまた同様である）。使用中、メインボディ部１０２の上壁１１６および下壁１１８は、口内の頂部、ならびに、口内の底部および／または舌を保護し分離するものとして機能してもよい。さらにメインボディ部１０２は、口内の後部（例えば、喉や気道）を、落下するゴミからを保護し分離するものとして機能してもよい。

【００２９】

図４は、図１の歯科用マウスピースの底面図である。前壁１１２および後壁１１４は、

少なくとも１つのコネクター１２４を用いて、互いに接続されてもよい。いくつかの実施の形態では、吸引コネクター部１０８は、切り抜き１４２（例えば、ロゴ、長方形の切り目、正方形の切り目、円形の切り目、その他の任意の形の切り目といった形状）を有してもよい。これにより、外部の高吸引真空アダプタ上の対応する突起（これもまた、例えば、ロゴ、長方形の切り目、正方形の切り目、円形の切り目、その他の任意の形の切り目といった形状であってよい）とのさらなる連結が可能となる。

【００３０】

咬合阻止器１０１は、咬合阻止器１０１内に空洞を形成するための咬合阻止開口１４１により補強されてもよい。これにより、咬合阻止は、一層安定的となる。ある実施の形態では、咬合阻止開口１４１は、咬合阻止器１０１の底部で開口する、２つの平行な長方形の開口であってもよい。咬合阻止開口１４１は、吸引コネクター部１０８に向けて延びているが、その延びは吸引コネクター部１０８の厚さを越えていなくてもよい。

【００３１】

図５は、図１の歯科用マウスピースの頂部環状断面図である。図５、７および８に示されるように、メインボディ部１０２は、後壁１１４の内側表面１３５から突出するブリッジ構造１３６を含んでもよい。いくつかの実施の形態では、ブリッジ構造１３６は、ロゴの形状（例えば、矢じり状または盾状）を持つ。ブリッジ構造は、矢じりの先端にギャップを有してもよい。これにより矢じりは、頂点ではなく、開いた弧を有する。いくつかの実施の形態では、ブリッジ構造１３６は、マウスピース１００のメインボディ部１０２の中心部に配置されてもよい。いくつかの例では、こうしたブリッジ構造１３６は、ブリッジ山１３７およびブリッジ谷１３８を持つ波の形で、内側表面１３５から突出してもよい。別の実施の形態では、ブリッジ構造１３６は、胸壁または台形の形で突出してもよい。ブリッジ山１３７により、複数の接触点（これは、一般に後壁１１４から分離されている）が与えられる。図７および８に示されるように、吸引コネクター部１０８の開口１４６の近くにあるブリッジ山１３７の高さは、開口１４６の遠くにあるブリッジ山１３７の高さより高くてもよい。図８に示されるように、吸引コネクター部１０８の開口１４６の近くにあるブリッジ山１３７の長さは、開口１４６の遠くにあるブリッジ山１３７の長さより長くてもよい。ブリッジ谷１３８は、内側表面１３５と実質的に同じ高さか、または内側表面１３５の上方に延びていてもよい。吸引中、前壁１１２を後壁１１４から分離しておくために、ブリッジ谷１３８は前壁１１２と接触する。これにより、前壁１１２または後壁１１４が内部空間１２６内に落ち込むことが防止される。従って、ゴミおよび／または水は、内部空間１２６を通って廃棄される。一方、ブリッジ谷１３８により、ギャップが与えられる。これにより、ブリッジ構造１３６を通して、空気、流体および小さなゴミ等を吸引することができる。別の例では、ブリッジ構造１３６は滑らかであってもよい。あるいはブリッジ構造１３６は、鋭利な山および鋭利な谷、円状の山および円状の谷、正方形の山および正方形の谷、またはこれらの形状を組み合わせた形状の山および谷を含んでもよい。

【００３２】

図５および７に示されるように、メインボディ部１０２は、メインボディ部１０２のほぼ中央部から口角鉤部１１０に向けて延びる安定バー１４３をさらに含んでもよい。このような安定バー１４３は、後壁１１４の内側表面１３５から縦軸１０３に沿って突出してもよい。ある実施の形態では、安定バー１４３は、ブリッジ構造１３６の開いた弧から開始し、縦軸１０３に沿って頸部１２０の第２端部１０６に向けて続き、口角鉤部１１０に到達する前に終了する。安定バー１４３は、後壁１１４の内側表面１３５から、前壁１１２の内側表面１１３に向けて突出してもよい。安定バー１４３は、内部空間１２６の高さ以下の任意の高さであってもよい。ある実施の形態では、安定バー１４３の特定の箇所に、前壁１１２を後壁１１４に取り付けるためのコネクター１２４が取り付けられてもよい。安定バー１４３の上のコネクター１２４は、吸引中に、マウスピース１００の引っ込み、安定、支持および曲げを補助してもよい。ある典型的な実施の形態では、安定バー１４３に位置調整された複数のコネクター１２４が与えられてもよい。しかし別の例では、安

定バー１４３は、少なくとも１つのコネクター１２４に位置調整されなくてもよい。

【００３３】

図６は、図１の歯科用マウスピースの側面図である。図６は、患者の口の底にもたれる下側を示す。前壁１１２および後壁１１４は、互いに間隔を空けて配置され、内部空間１２６を定義する。コネクター１２４、安定バー１４３およびブリッジ構造１３６のうちの少なくとも１つ以外、一般に内部空間１２６は開いており非閉塞である。これにより、吸引は内部空間１２６を通って流れることができる。前壁１１２と後壁１１４との間の内部空間１２６は、一般に、前壁１１２および後壁１１４と同じ所定形状を持つ。ある例では、内部空間１２６は、頸部１２０を通って延びる。しかし別の例では、内部空間１２６は、頸部１２０を通って延びない。さらに別の例では、内部空間１２６は、頸部１２０を通って、口角鉤部１１０まで延びる。

【００３４】

少なくとも１つの前側中間壁１２７が、前壁１１２の少なくとも１つの端部１２８から、部分的に後壁１１４に向けて延びていてもよい。前側中間壁１２７は、少なくとも１つの端部１２８から、前壁１１２と後壁１１４との間の中点に延びる厚さを持っていてもよい。従って、このような前側中間壁１２７の全長は、前壁１１２と後壁１１４との間隔全体の長さを越えなくてもよい。このような前側中間壁１２７の厚さは、口角鉤部１１０から、頸部１２０を通って、第１端部１０４まで漸次増加していてもよい。このような厚さの増加によって、第１端部１０４における剛性が強化されてもよい。いくつかの実施の形態では、このような前側中間壁１２７は、さらにうねを立てられてもよい。別の実施の形態では、このような前側中間壁１２７は、滑らかな端部を持ってもよい。いくつかの例では、前側中間壁１２７は、交代する山１３０および谷１３２を含む。図示された実施の形態では、山１３０は平坦な面であり、谷１３２は円柱状の切り取り面である。しかし、山１３０および谷１３２は、任意の形状であってもよい。いくつかの例では、山１３０および谷１３２は、前側中間壁１２７の深さ全体にわたって延びる。しかし別の例では、山１３０および／または谷１３２は、前側中間壁１２７の一部に沿って延びてもよい。山１３０および谷１３２は、マウスピース１００に、さらなる引っ込み、安定、支持および曲げを与えてもよい。

【００３５】

後壁１１４は、少なくとも１つの対応する中間壁１３４（これは、後壁１１４の少なくとも１つの端部１３３から延び、前壁１１２に向けて部分的に延びる）を有してもよい。後側中間壁１３４は、前側中間壁１２７と同じ強さのうねを持つ鏡像であってもよいし、前側中間壁１２７と異なるものであってもよい。図６に示されるように、ある例では、前側中間壁１２７のうねは、後側中間壁１３４のうねと位置調整されてもよい。組み合わせを考えると、前側中間壁１２７、後側中間壁１３４およびそれぞれの位置調整されたうねは、前壁１１２と後壁１１４との間に、開いた網目を形成してもよい。このような開いた網目は、第１端部１０４から第２端部１０６までの間、前壁１１２および後壁１１４の各々の端部１２８、１３３に続いてもよい。前側中間壁１２７と後側中間壁１３４との間の開いた網目を設けることにより、空気、流体および小さなゴミ等を、患者の口から、この網目を通って、内部空間１２６に吸引し、さらに吸引源に向けて吸引コネクター部１０８に送ることができる。

【００３６】

前側中間壁１２７は、第１端部１０４におけるメインボディの吸引コネクター部１０８の近くで、上壁１１６および下壁１１８で、後側中間壁１３４に接続されてもよい。あるいは前側中間壁１２７は、第２端部１０６における口角鉤部１１０の近くで、上壁１１６および下壁１１８で、後側中間壁１３４に接続されてもよい。いくつかの実施の形態では、前側中間壁１２７は、口角鉤部１１０で、後側中間壁１３４に接続されてもよい。

【００３７】

図７は、後壁から引き離された前壁を備える図1の歯科用マウスピースの側面図である。少なくとも１つのコネクター１２４は、内部空間１２６内で、前壁１１２と後壁１１４

との間の距離全体にわたって広がっていてもよい。言い換えれば、コネクター１２４は、後壁１１４の内側表面１３５および前壁１１２の内側表面１１３に取り付けられてもよい。少なくとも１つのコネクター１２４は、マウスピース１００に構造的剛性を与えてもよく、ピラー、柱、壁等であってもよい。図示された例では、少なくとも１つのこのようなコネクター１２４は、３つのコネクターを含む。これら３つのコネクターの各々は、柱状であり、互いに直線的に分離される。

【００３８】

図８は、図１の歯科用マウスピースの横断面図である。吸引コネクター部１０８の開口１４６の近くにあるブリッジ山１３７の高さは、開口１４６の遠くにあるブリッジ山１３７の高さより高くてもよい。また、吸引コネクター部１０８の開口１４６の近くにあるブリッジ山１３７の長さは、開口１４６の遠くにあるブリッジ山１３７の長さより長くてもよい。

【００３９】

図９は、図１の歯科用マウスピースの横断面図である。図９は、吸引コネクターがメインボディに取り付けられるところでの歯科用マウスピースを示す。図９に示されるように、吸引コネクター部１０８は、楕円形をしていてよい。さらに吸引コネクター部１０８は、メインボディ部１０２がブリッジ構造１３６（ここでは、ブリッジ山１３７およびブリッジ谷１３８が、吸引コネクター部１０８の近くでのメインボディ部１０２の開口を部分的に遮断してもよい）に到達するまでシームレスに移動して、メインボディ部１０２に取り付けられてもよい。咬合阻止器１０１が、吸引コネクター部１０８の開口に干渉しないように、吸引コネクター部１０８の外側に取り付けられる。

【００４０】

（やはり図５に示されるように）吸引コネクター部１０８は、開口１４６を含んでもよい。開口１４６は、メインボディ部１０２の内部空間１２６内に向けて開口する。これにより、内部空間１２６と吸引コネクター部１０８とが流体連通する。吸引コネクター部１０８の開口の近くで、少なくとも１つの吸引コネクター壁１４４が、前壁１１２から後壁１１４に延びてもよい。これにより、吸引中に、前壁１１２または後壁１１４が落ち込むことが防止される。少なくとも１つの吸引コネクター壁１４４は、吸引コネクター部１０８の開口１４６のいずれかの側に配置された１対の壁を含む。

【００４１】

咬合阻止器１０１は、咬合阻止器１０１をより強く牽引し支持するために、咬合阻止器１０１のいずれかの側に、咬合阻止山１４７と、咬合阻止谷１４８と、を含んでもよい。ある実施の形態では、咬合阻止山１４７および咬合阻止谷１４８は、咬合阻止器１０１のいずれかの側で、ぎざぎざの形状または波の形状を取る。しかし、咬合阻止山１４７および咬合阻止谷１４８は、任意の形状を取ってもよい。

【００４２】

図１０は、壁状コネクターを備える図１の歯科用マウスピースの縦断面図である。この実施の形態では、コネクター１２４は、縦軸１０３で、強固な壁として、前壁１１２を後壁１１４に接続する。コネクター１２４は、口角鉤部１１０からいくらか離れたところにある第２端部１０６で頸部１２０から、縦軸１０３に沿って、第１端部１０４に向けて延びる。そしてコネクター１２４は、メインボディ部１０２の中点を取り巻くブリッジ構造１３６の開口部近くで終端する。別の実施の形態では、コネクター１２４は、縦軸１０３に沿って延び、メインボディ部１０２の内部空間１２６内の任意の場所で終端する。

【００４３】

図１１は、柱状コネクターを備える図１の歯科用マウスピースの縦断面図である。この実施の形態では、コネクター１２４は、安定バー１４３を有する、縦軸１０３で等間隔で隔てられた３つの円柱状の柱として、前壁１１２を後壁１１４に接続する。第１のコネクターは、メインボディ部１０２に配置される。第２のコネクターは、頸部１２０の近くに配置される。そして第３のコネクターは、口角鉤部１１０の近くに隔てられる。３つのコネクターが直線的に分離されることにより、頸部１２０を狭い幅１２２に保ったまま、頸

部１２０にさらなる剛性を持たせることができる。別の実施の形態では、このようなコネクター１２４は、設置されたマウスピース１００が口の一方から後方を通って他方まで巻き始める場所に配置されてもよい。これにより、マウスピース１００は、患者の口の一般的な口腔内形状に合致することができる。別の例では、少なくとも１つのコネクター１２４は、１つのコネクター、２つのコネクター、あるいは３つ以上のコネクターを含んでもよい。このとき、各コネクターは、マウスピース１００の任意の場所に配置されてもよい。ある例では、少なくとも１つのコネクター１２４は、メインボディ部１０２から、頸部１２０を通って、口角鉤部１１０まで延びるリブであってもよい。

【００４４】

ここで説明したマウスピースは、一体型のオートクレーブ可能な高吸引真空アダプタとともに使われてもよい。このような高吸引真空アダプタは、単一の均質な材料で作られてもよい。こうした真空アダプタは、シングルレバーのデザインを持ちながら、水、唾液およびゴミ等を口腔から吸引源に制御可能に除去できる、現行のすべての高吸引真空エバキュエーターおよび唾液エジェクターと同様に機能することができる。シングルレバーは、少なくとも部分的に囲い込まれたメインボディから、吸引コネクター内の単一かつ大型の除去導管を通して、水、唾液およびゴミ等を制御可能に除去するようにデザインされてよい。

【００４５】

以上、様々な実施の形態を説明したが、これらは限定でなく例示を目的とすることに留意されたい。本明細書の説明は、本発明の範囲を特定の実施の形態に限定しない。従って、好ましい実施の形態の範囲およびスコープは、前述の典型的な実施の形態に限定されない。本明細書の説明は、模式的であり限定的ではないことに留意されたい。一方、本開示は、添付の請求項で定義されるものの他、当業者に理解可能な本発明の範囲に含まれるすべての変形、改良、均等物をカバーする。従って、本発明の範囲は、本明細書の説明によってではなく、すべての均等の範囲を含む請求項によって決定されなければならない。

【図１】

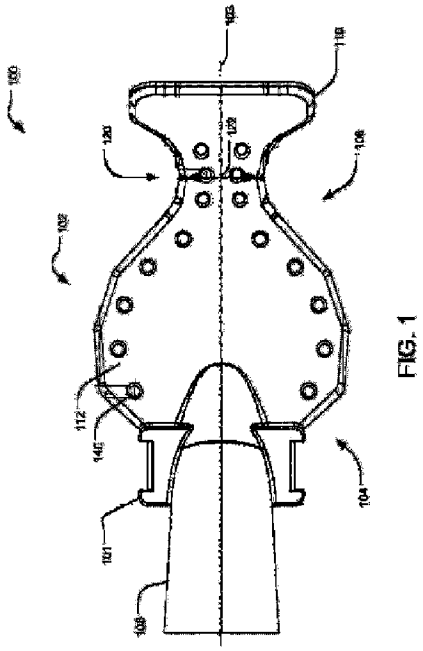


FIG. 1

【図２】

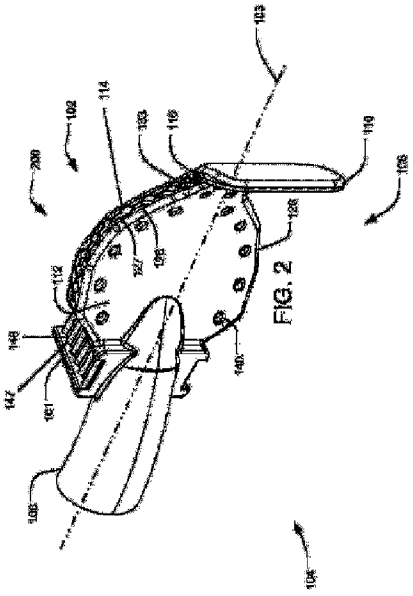


FIG. 2

【図３】

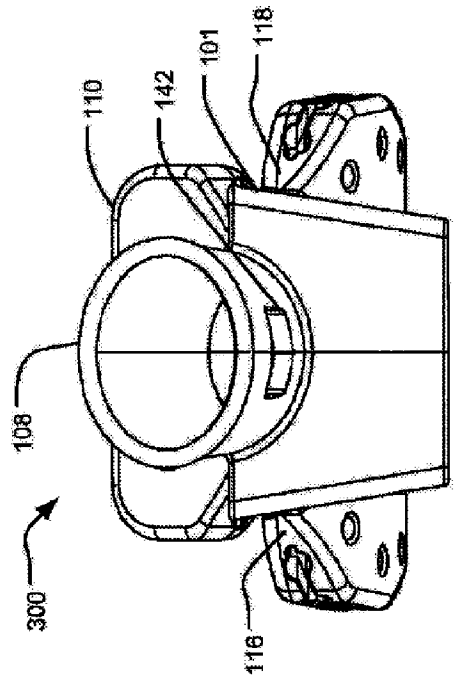


FIG. 3

【図４】

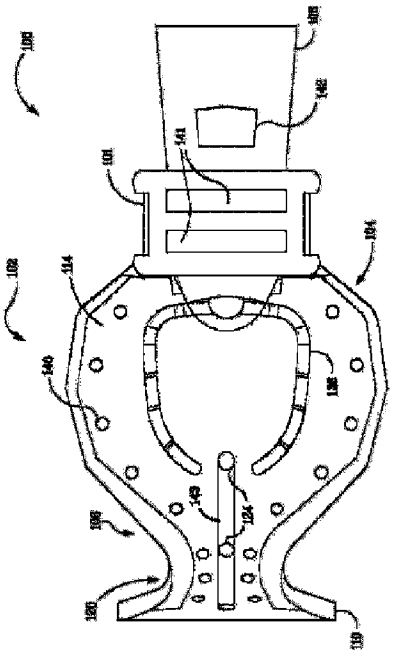


FIG. 4

【図５】

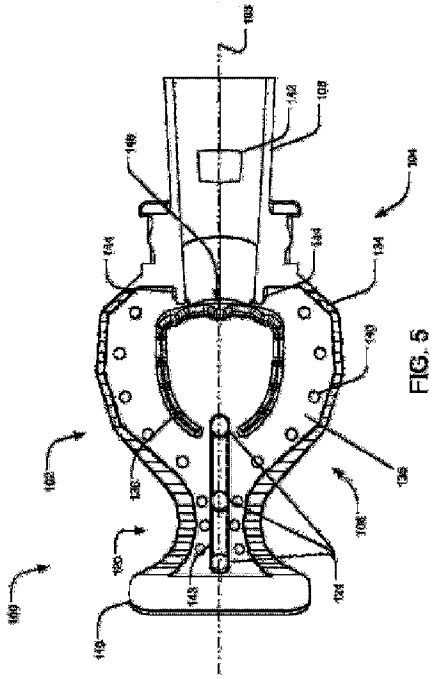


FIG. 5

【図６】

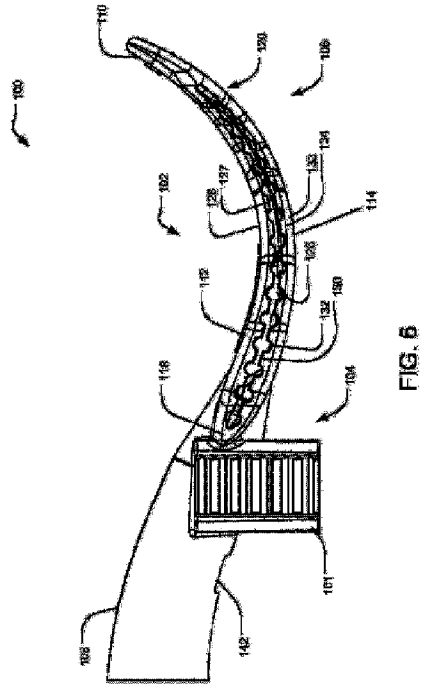


FIG. 6

【図７】

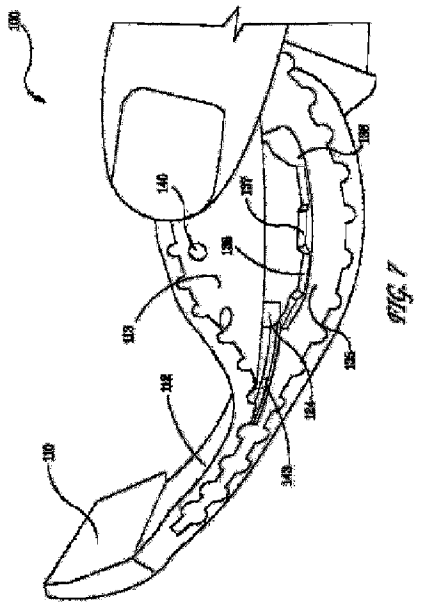


FIG. 7

【図８】

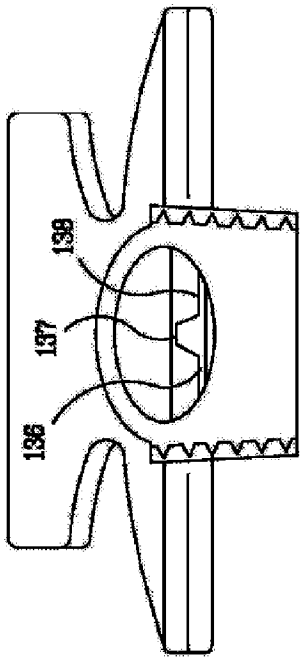


FIG. 8

【図９】

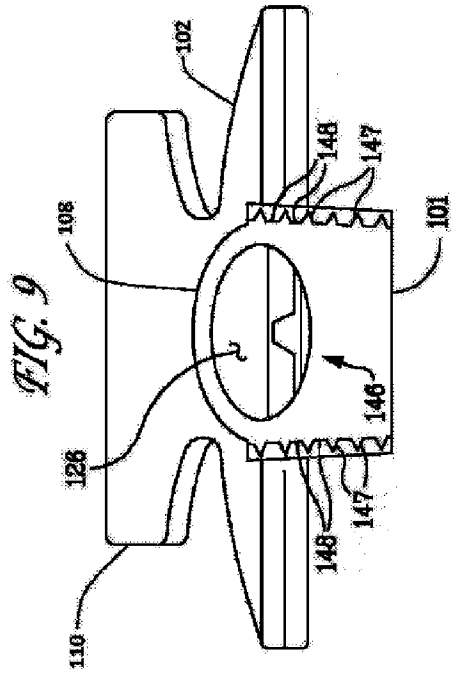


FIG. 9

【図１０】

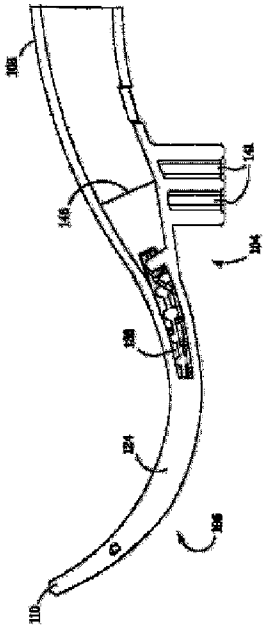


FIG. 10

【図１１】

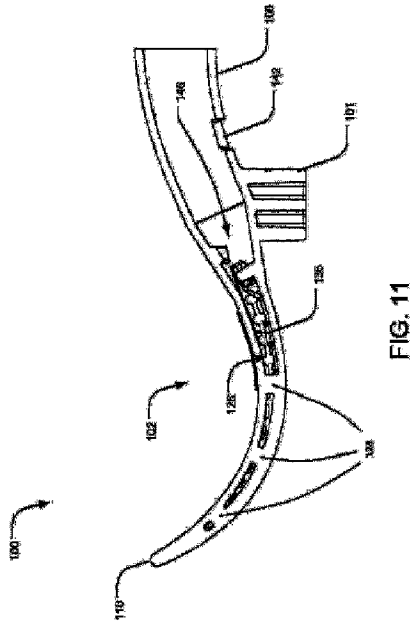


FIG. 11

【国際調査報告】

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 20/32228

A. CLASSIFICATION OF SUBJECT MATTER
IPC - A61B 1/24, A61C 17/00, A61C 17/06, A61C 17/10, A61C 5/14 (2020.01)
CPC - A61B 1/24, A61C 17/00, A61C 17/06, A61C 17/10, A61C 5/14, A61C 5/90

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)
See Search History document

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
See Search History document

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2017/0156832 A1 (Reyes) 8 June 2017 (08.06.2017), entire document	1-20
Y	US 2014/0212838 A1 (Incept, Inc.) 31 July 2014 (31.07.2014), entire document	1-20
A	US 2015/0335409 A1 (Innerlite, Inc.) 26 Novemebr 2015 (26.11.2015), entire document	1-20
A	US 2009/0274991 A1 (Black et al.) 5 November 2009 (05.11.2009), entire document	1-20
A	US 2001/0008752 A1 (Hirsch et al.) 19 July 2001 (19.07.2001), entire document	1-20

☐ 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
"D" document cited by the applicant in the international application
"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
27 JULY 2020	12 AUG 2020
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. 571-273-8300	Authorized officer Lee Young Telephone No. PCT Helpdesk: 571-272-4300

Form PCT/ISA/210 (second sheet) (July 2019)

フロントページの続き

(81)指定国・地域 AP(BW,BW,GH,GH,GM,GM,KE,KE,LR,LR,LS,LS,MW,MW,MZ,MZ,NA,NA,RW,RW,SD,SD,SL,SL,ST,ST,SZ,TZ,TZ,UG,UG,ZM,ZM,ZW,ZW),EA(AM,AM,AZ,AZ,BY,BY,KG,KG,KZ,KZ,RU,RU,TJ,TJ,TM,TM),EP(AL,AL,AT,AT,BE,BG,BG,CH,CH,CY,CZ,CZ,DE,DE,DK,DK,EE,EE,ES,ES,FI,FI,FR,GB,GB,GR,HR,HR,HU,HU,IE,IS,IS,IT,LT,LU,LU,LV,MC,MK,MK,MT,NL,NO,NO,PL,PL,PT,PT,RO,RO,RS,RS,SE,SE,SI,SK,SK,SM,TR,TR),OA(BF,BJ,CF,CG,CI,CM,GA,GN,GQ,GW,KM,ML,MR,NE,SN,TD,TG),AE,AG,AO,AU,BA,BB,BH,BN,BR,BZ,CA,CL,CN,CO,CR,CU,DJ,DM,DO,DZ,EC,EG,GD,GE,GT,HN,ID,IL,IN,IR,JO,JP,KH,KN,KP,KR,KW,LA,LC,LK,LY,MA,MD,ME,MG,MN,MX,MY,NG,NI,NZ,OM,PA,PE,PG,PH,QA,SA,SC,SG,SV,SY,TH,TN,TT,UA,US,UZ,VC,VN,WS,ZA

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Ｆターム(参考) 4C052 AA06 FF07

Electronic Acknowledgement Receipt

EFS ID:	46844031
Application Number:	16870745
International Application Number:	
Confirmation Number:	7491
Title of Invention:	DENTAL MOUTHPIECE
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	138718
Filer:	Ruby Lim Chung/Lea Fong
Filer Authorized By:	Ruby Lim Chung
Attorney Docket Number:	INCEP-005
Receipt Date:	19-OCT-2022
Filing Date:	08-MAY-2020
Time Stamp:	20:20:39
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-005_IDS_Statement-2_10-19-22.pdf	95232 80c896ca43304293bc4aebfa8eb7984a746cf3c3	no	2

Warnings:

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	INCEP-005_IDS_1449-2_10-19-22.pdf	177571 d5968d269ac3e986855bde00f38806869f0bf069	no	1
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3	Foreign Reference	JP_2022533276.pdf	592057 eeb467770b348a058ce66d73eb493a79d0b959e1	no	16
Warnings:					
Information:					
			Total Files Size (in bytes):	864860	

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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.

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: 3772	Examiner: Holly T. To
Serial No.: 16/870,745	Filed: May 8, 2020
In re Application of: Thien Nguyen	
Confirmation No.: 7491	Customer No.: 138718
Title: DENTAL MOUTHPIECE	

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 Applicant's 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.

Respectfully submitted,
POLSINELLI LLP

Dated: October 19, 2022

By: _____/Ruby L. Chung/_____
Ruby L. Chung (Reg. No. 76,809)
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San Francisco, CA 94111
415-248-2100 (Main)
patentdocketing@polsinelli.com

Substitute for Form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*				Application Number	16/870,745
				Filing Date	May 8, 2020
				First Named Inventor:	Thien Nguyen
				Art Unit	3772
				Examiner Name	Holly T. To
Sheet	**1**	**of**	**2**	Attorney Docket Number	INCEP-005

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-	D962,438	8/30/2022	Nguyen	
		US-	D962,439	8/30/2022	Nguyen	
		US-				
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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)

Substitute for Form 1449/PTO	*Complete if Known*	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*	Application Number	16/870,745
	Filing Date	May 8, 2020
	First Named Inventor:	Thien Nguyen
	Art Unit	3772
	Examiner Name	Holly T. To
Sheet 2 **of** 2	Attorney Docket Number	INCEP-005

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-001COD U.S. Patent Application 14/228,057; Office Action mailed 9/2/22	

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

Electronic Acknowledgement Receipt

EFS ID:	46844021
Application Number:	16870745
International Application Number:	
Confirmation Number:	7491
Title of Invention:	DENTAL MOUTHPIECE
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	138718
Filer:	Ruby Lim Chung/Lea Fong
Filer Authorized By:	Ruby Lim Chung
Attorney Docket Number:	INCEP-005
Receipt Date:	19-OCT-2022
Filing Date:	08-MAY-2020
Time Stamp:	20:18:14
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-005_IDS_Statement_10-19-22.pdf	95890 533716027bf36c0956fcb4edf490bafed2189062	no	2

Warnings:

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	INCEP-005_IDS_1449_10-19-22.pdf	222197 9422e2801b230e4c953432f2e33d9a543a93d814	no	2
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Information:					
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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.

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: 3772	Examiner: Holly T. To
Serial No.: 16/870,745	Filed: May 8, 2020
In re Application of: Thien Nguyen	
Confirmation No.: 7491	Customer No.: 138718
Title: DENTAL MOUTHPIECE	

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 Applicant's 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.

Respectfully submitted,
POLSINELLI LLP

Dated: October 19, 2022

By: _____/Tam Thanh Pham/_____
Tam Thanh Pham (Reg. No. 50,565)
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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 16/870,745	Filing Date 05/08/2020	☐ 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 $50 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $230 =	
☐ 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)			
AMENDMENT	11/11/2022	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 22	Minus	** 22	= 0		x $50 =	0
	Independent (37 CFR 1.16(h))	* 2	Minus	*** 3	= 0		x $240 =	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)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ 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.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/DAWN BREWER/
*** 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.	

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.

PTO/SB/30EFS (01-22)
Approved for use through 05/31/2024. 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	16/870,745	Filing Date	2020-05-08	Docket Number (if applicable)	INCEP-005	Art Unit	3772
First Named Inventor	Thien Nguyen			Examiner Name	TO, HOLLY T		

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, 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

PTO/SB/30EFS (01-22)
Approved for use through 05/31/2024. 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	/Ruby Chung/	Date (YYYY-MM-DD)	2022-11-11
Name	Ruby Chung	Registration Number	76809

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.

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 the Freedom of Information Act requires disclosure of these records.

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 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.

Electronic Patent Application Fee Transmittal

Application Number:	16870745
Filing Date:	08-May-2020
Title of Invention:	DENTAL MOUTHPIECE
First Named Inventor/Applicant Name:	Thien Nguyen
Filer:	Ruby Lim Chung/Bindi Patel
Attorney Docket Number:	INCEP-005

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:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 3 months with $0 paid	2253	1	740	740
Miscellaneous:				
RCE- 1ST REQUEST	2801	1	680	680
		Total in USD ($)		**1420**

Electronic Acknowledgement Receipt

EFS ID:	47011165
Application Number:	16870745
International Application Number:	
Confirmation Number:	7491
Title of Invention:	DENTAL MOUTHPIECE
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	138718
Filer:	Ruby Lim Chung/Bindi Patel
Filer Authorized By:	Ruby Lim Chung
Attorney Docket Number:	INCEP-005
Receipt Date:	11-NOV-2022
Filing Date:	08-MAY-2020
Time Stamp:	20:45:15
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$1420
RAM confirmation Number	E2022AAK45520411
Deposit Account	501662
Authorized User	Bindi Patel

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

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

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		INCEP-005_Response_11-11-2022.pdf	352456 23de75b9ae037774a16f61fa6e755f18b78bda47	yes	12

Multipart Description/PDF files in .zip description

Document Description	Start	End
Response After Final Action	1	1
Claims	2	6
Applicant Arguments/Remarks Made in an Amendment	7	12

Warnings:

Information:

2	Request for Continued Examination (RCE)	INCEP-005_RCE_11-11-2022.pdf	1667101 c788dde9a9534beb2361d19bee29f8af4357edfc	no	3

Warnings:

Information:

3	Fee Worksheet (SB06)	fee-info.pdf	40418 89d2cf2d8944defaed30a5c955af45b4211568e1	no	2

Warnings:

Information:

Total Files Size (in bytes):	2059975

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

INVENTOR(S):	*Nguyen* et al.
APPLICATION NO.:	16/870,745
FILING DATE:	May 8, 2020
TITLE:	Dental Mouthpiece
EXAMINER:	Holly T. To
ART UNIT:	3772
CONFIRM. NO.:	7491
ATTY.DKT.NO.:	INCEP-005

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

RESPONSE B and
Request for Continued Examination (RCE)

Examiner To,

In response to the office action dated May 12, 2022 (*Office Action*), please enter the following **amendments** to the **claims,** which commence on **page two**. The **remarks** appear beginning on **page seven**, and the **conclusion** appears on **page twelve**. This response is submitted with a request for continued examination (RCE).

IN THE CLAIMS

PLEASE AMEND THE CLAIMS AS FOLLOWS:

1. (currently amended) A dental mouthpiece formed in a curve, the dental mouthpiece comprising:

a main body portion at a central part of the curve having a first end and a second end, the main body portion having an anterior wall inside the curve and a posterior wall outside the curve, the anterior wall and the posterior wall defining an interior space corresponding to a distance between the anterior wall and the posterior wall, at least one connector connecting the anterior wall to the posterior wall, at least one anterior intervening wall extending along an edge of the anterior wall partially across the distance towards the posterior wall, and at least one posterior intervening wall extending along an edge of the posterior wall partially across the distance towards the anterior wall, the at least one anterior intervening wall ~~and the at least one posterior intervening wall each~~ having alternating crests and troughs <u>that extend partially towards the at least one posterior intervening wall</u>;

a suction connector portion connected to the first end, the connector portion connecting the interior space to a vacuum suction source; and

a cheek retractor portion connected to the second end.

2. (cancelled)

3. (previously presented) The mouthpiece of claim 1, wherein the at least one connector includes at least one of a wall spanning longitudinally in the main body portion in the interior space or a pillar.

4. (previously presented) The mouthpiece of claim 1, further comprising a bridge structure that includes one or more protrusions protruding from the posterior wall within the interior space, wherein the protrusions include spaced crests and troughs.

5. (previously presented) The mouthpiece of claim 4, wherein the protrusions vary in height and length.

6. - 7. (cancelled)

8. (previously presented) The mouthpiece of claim 1, wherein at least one of the anterior intervening wall and the posterior intervening wall includes a plurality of portions of varying heights or sizes.

9. (cancelled)

10. (previously presented) The mouthpiece of claim 1, wherein the anterior intervening wall and the posterior intervening wall meet at a point where the suction connector meets the main body portion.

11. (previously presented) The mouthpiece of claim 1, wherein the anterior intervening wall and the posterior intervening wall meet at a point where the main body portion meets the cheek retractor portion.

12. (previously presented) The mouthpiece of claim 1, further comprising a bite block integrated to the suction connector portion, wherein the bite block provides crush-resistance during biting by a patient.

13. (original) The mouthpiece of claim 1, wherein the main body portion, the suction connector portion, and the cheek retractor portion are formed by injection-molding as one piece.

14. (previously presented) The mouthpiece of claim 1, wherein a material that forms the main body, the suction connector portion, and the cheek retractor portion is a flexible, translucent, high heat-resistant, autoclavable silicone-based material.

15. (previously presented) The mouthpiece of claim 1, wherein the posterior wall further includes a stability bar protruding from an interior surface of the posterior wall and along a longitudinal axis of the main body portion.

16. (previously presented) The mouthpiece of claim 15, wherein the at least one connector includes a plurality of evenly spaced connectors located along the stability bar.

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

18. (previously presented) The mouthpiece of claim 1, where in the suction connector portion connects to the vacuum suction source, wherein activation of the vacuum suction source provides suction of fluids from the interior space of the main body portion.

19. (previously presented) The mouthpiece of claim 18, wherein the activation of the vacuum suction source draws fluids from an exterior of the main body portion into the interior space of the main body portion.

20. (cancelled)

21. (currently amended) A dental mouthpiece comprising:

a main body portion having a first end and a second end, the main body portion comprising:

an anterior wall,

a posterior wall spaced at a distance from the anterior wall, wherein an interior space corresponding to the distance between the anterior wall and the posterior wall is defined by the anterior wall and the posterior wall,

at least one connector that connects the anterior wall to the posterior wall within the interior space,

at least one intervening wall extending at least partially across the distance and along an edge of the anterior wall or the posterior wall, wherein the at least one intervening wall has a plurality of alternating crests and troughs that extend partially towards the at least one posterior intervening wall, and

a neck extending from the second end of the main body, wherein a width of the neck is less than a width of the main body portion at the first end;

a suction connector portion connected to the first end of the main body, the suction connector portion further configured to connect the interior space to a vacuum suction source; and

a cheek retractor portion connected to the neck at the second end of the main body, wherein the width of the neck is less than a width of the cheek retractor portion.

22. (currently amended) The mouthpiece of claim 21, wherein the at least one intervening wall includes a plurality of spaced portions.

23. (previously presented) The mouthpiece of claim 21, further comprising a bite block integrated to the suction connector portion, wherein the bite block provides crush-resistance during biting by a patient.

24. (previously presented) The mouthpiece of claim 21, wherein the main body portion, the suction connector portion, and the cheek retractor portion are formed by injection-molding as one piece.

25. (previously presented) The mouthpiece of claim 21, wherein the suction connector portion comprises a cutout corresponding to a protrusion on a vacuum adapter to provide an interlocking fit.

26. (previously presented) The mouthpiece of claim 21, where in the suction connector portion connects to the vacuum suction source, wherein activation of the vacuum suction source provides suction of fluids from the interior space of the main body portion.

27. (previously presented) The mouthpiece of claim 26, wherein the activation of the vacuum suction source further draws fluids from an exterior of the main body portion into the interior space of the main body portion.

REMARKS

Amendments to the Claims

Claims 1, 3-5, 8, 10-19, and 21-27 are presently pending, of which claims 1 and 21 are independent. Claims 1, 21, and 22 are currently amended. The claims concern subject matter fully supported by the *Specification* and as such, no new matter has been added. Entry and consideration of the same is respectfully requested.

Claim Objections

The *Office Action* objects to claim 22 for informalities relating to inconsistency in antecedent basis. *Office Action*, 2. As amended, claim 21 no longer exhibits the purported informalities, thereby rendering the objection moot. The Applicant therefore respectfully requests withdrawal of the same.

Rejections under 35 U.S.C. §103

Claims 1, 3-5, 8, 10-14, 17-19 and 21-27 are rejected as purportedly being unpatentable over U.S. patent application number 2014/0212841 (hereinafter *Nguyen*) in view of U.S. patent application number 2018/0153637 (hereinafter *Al-Shawi*) and Chinese patent application number CN104490483 (hereinafter *He*). *Id.*

Independent claims 1 and 21 presently recite an 'intervening wall' that extends 'partially across the distance' between the anterior and posterior walls 'along an edge.' *See e.g.*, FIGs. 2, 6 (provided below). FIGs. 2 and 6 of the present *Specification* illustrates, for example, "anterior intervening wall 127" and "posterior intervening wall 134," both of which extend from a respective 'edge' at least partially across the interior space between the main anterior and posterior body walls.

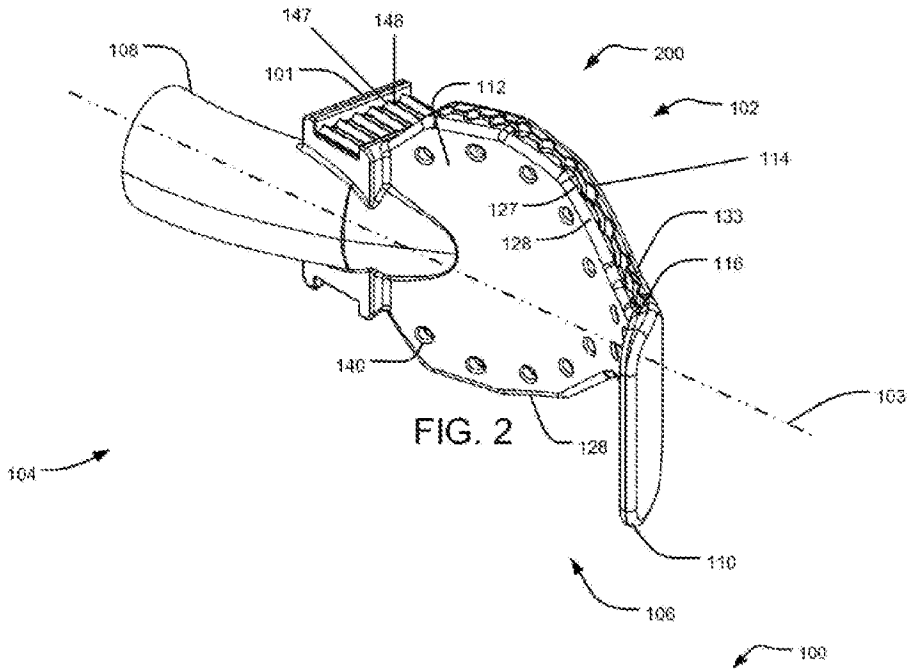


FIG. 2

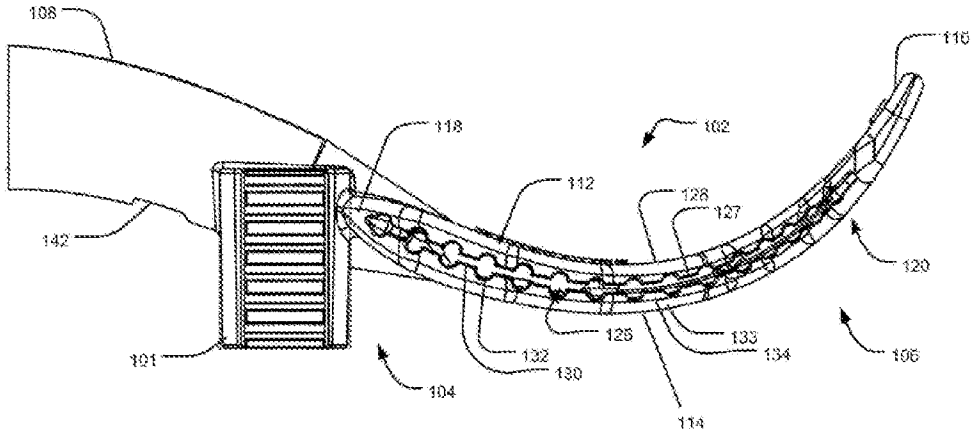


FIG. 6

See also Specification at [0034] (noting that "[a]t least one anterior intervening wall 127 may extend from at least one edge 128 of the anterior wall 112 partially towards the posterior wall 114," and "[t]he span of such anterior intervening wall 127 therefore may not extend the entire distance between the anterior wall 112 and the posterior wall 114"); [0035] ("The posterior wall 114 may have a corresponding at least one posterior intervening wall 134 that extends from at least one edge 133 of the posterior wall 114 and partially extends towards the anterior wall 112").

Such an 'intervening wall' may include "an alternating crest 130 and trough 132," and the troughs "may extend partially along the anterior intervening wall 127." *Id.*

The *Office Action* notes that "*Nguyen* is silent to the sidewall being made from an 'at least one anterior intervening wall extending along an edge of the anterior wall partially across the distance towards the posterior wall, and at least one posterior intervening wall extending along an edge of the posterior wall partially across the distance towards the anterior wall," 'the at least one anterior intervening wall having alternating crests and troughs that extend partially towards the at least one posterior intervening wall' and therefore argues that it is specifically *Al-Shawi* that teaches this element. *Office Action* at 3-4.

Al-Shawi relates to a "surgical gas shield device … secured to an incision site at an area of the body" such as "a breast, knee, neck, leg, or arm," rather than a 'dental mouthpiece' as claimed. *Al-Shawi*, [0095]. First, the device of *Al-Shawi* is neither 'dental' nor a 'mouthpiece.' Further, the "arcuate/shaped/arched projections 422" of *Al-Shawi* are taught as being located on the device's "***inner sides*** so that, when assembled with the inner sides facing each other, the projections 422 on the opposite halves abut and complement each other to form one or more flow channels." *Id.* at [0096]. Thus, projections 422 of *Al-Shawi* are not part of a wall ('anterior intervening wall') that is 'extending ***along an edge*** of the anterior wall' as claimed. See *id.* at FIG. 4C (provided below).

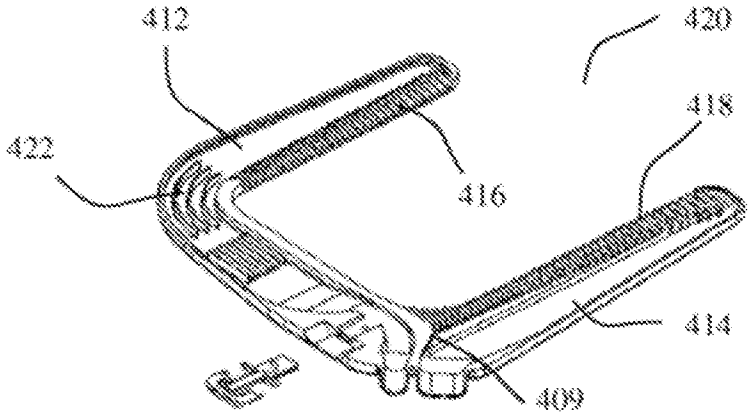


FIG. 4C

Thus, because *Al-Shawi* fails to disclose any structure that extends along an edge ('at least one anterior intervening wall ***extending along an edge*** of the anterior wall partially across the distance towards the posterior wall'), *Al-Shawi* fails to teach the claimed 'anterior intervening wall' that is specifically defined as a wall extending from an edge. In failing to teach any 'anterior intervening wall,' therefore, *Al-Shawi*'s "projections 422" are insufficient to teach the claimed 'anterior intervening wall having alternating crests and troughs.' *Al-Shawi* therefore fails to teach the claimed 'intervening wall' that extends 'partially across the distance' between the anterior and posterior walls 'along an edge.'

Moreover, Applicant notes that because *Al-Shawi* is directed to a different field of endeavor ('surgical gas shield') than *Nguyen*, there is no motivation that would have led a person having ordinary skill in the art to combine the teachings of *Al-Shawi* with *Nguyen* to arrive at the claimed 'dental mouthpiece.'

He similarly fails to cure the deficiency of *Nguyen* and *Al-Shawi*. *He* discusses "lower pad 31 and upper pad 32" that are completely connected as shown in Fig. 4 below. *He*, [013]. *He* is therefore silent regarding 'at least one anterior intervening wall extending along an edge of the anterior wall partially across the distance towards the posterior wall' and 'at least one anterior intervening wall having alternating crests and that partially extend towards the at least one posterior intervening wall' as claimed.

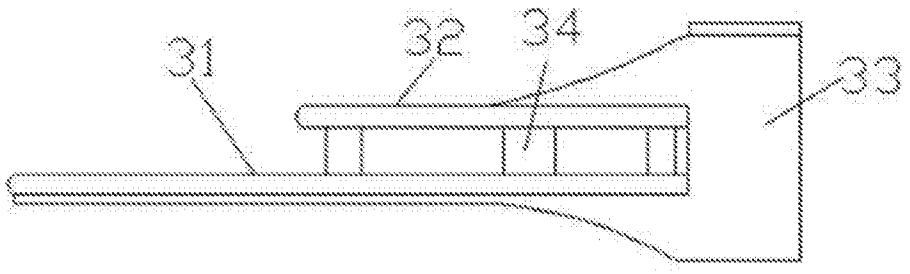


图 4

The independent claims therefore are patentable over the cited references. Furthermore, 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. The Applicant therefore respectfully requests that the rejections of the claims under 35 U.S.C. § 103 be withdrawn.

CONCLUSION

Based on the foregoing, it is believed that the present application overcomes the current rejections of record and is now in conditions for allowance.

The Examiner is invited to contact Applicant's undersigned representation with any questions regarding the present submission.

Respectfully submitted,

November 11, 2022

/Ruby Chung/

Ruby Chung (Reg. No. 76,809)
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San Francisco, CA 94111
Phone: (415) 248-2102
PatentDocketing@Polsinelli.com

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
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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/870,745	05/08/2020	Thien Nguyen	INCEP-005	7491

138718 7590 11/21/2022

Polsinelli LLP
PO Box 140310
Kansas City, MO 64114-0310

EXAMINER
TO, HOLLY T

ART UNIT	PAPER NUMBER
3772	

NOTIFICATION DATE	DELIVERY MODE
11/21/2022	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):

patentdocketing@polsinelli.com
sfpatent@polsinelli.com

Applicant-Initiated Interview Summary	**Application No.** 16/870,745	**Applicant(s)** Nguyen et al.		
	Examiner HOLLY T TO	**Art Unit** 3772	**AIA (First Inventor to File) Status** Yes	**Page** 1 of 1

All Participants (applicant, applicants representative, PTO personnel)	**Title**	**Type**
HOLLY T TO	Examiner	Telephonic
Heidi Eide	Primary Examiner	
Ruby Chung	Attorney of Record	

Date of Interview: 15 November 2022

Issues Discussed:

Other

Applicant presented arguments and new claim amendments that have been filed on 11/11/2022. It is informed to the applicant that the current 103 rejection is overcome as the arguments were found to be persuasive. Further, it should be noted that the newly amended claims would also overcome the current 103 rejection.

/HOLLY T. TO/ Examiner, Art Unit 3772	/HEIDI M EIDE/ Primary Examiner, Art Unit 3772

Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04
Please further see:
MPEP 713.04
Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b)
37 CFR § 1.2 Business to be transacted in writing

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.

Substitute for Form 1449/PTO	*Complete if Known*	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*	Application Number	16/870,745
	Filing Date	May 8, 2020
	First Named Inventor:	Thien Nguyen
	Art Unit	3772
	Examiner Name	Holly T. To
Sheet 1 of 1	Attorney Docket Number	INCEP-005

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-001COD U.S. Patent Application 14/228,057; Final Office Action mailed 1/5/23	

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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Electronic Acknowledgement Receipt

EFS ID:	47418909
Application Number:	16870745
International Application Number:	
Confirmation Number:	7491
Title of Invention:	DENTAL MOUTHPIECE
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	138718
Filer:	Ruby Lim Chung/Lea Fong
Filer Authorized By:	Ruby Lim Chung
Attorney Docket Number:	INCEP-005
Receipt Date:	25-JAN-2023
Filing Date:	08-MAY-2020
Time Stamp:	13:05:18
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-005_IDS_Statement_1-25-23.pdf	94877 340b6b10b7cbd27b0e6704edc635958e08a6d2b5	no	2

Warnings:

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	INCEP-005_IDS_1449_1-25-23.pdf	186594 ad65d1f427093392745f05d5e17088a4e11de7f3	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
			Total Files Size (in bytes):	281471	

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: 3772 | Examiner: Holly T. To

Serial No.: 16/870,745 | Filed: May 8, 2020

In re Application of: Thien Nguyen

Confirmation No.: 7491 | Customer No.: 138718

Title: DENTAL MOUTHPIECE

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 Applicant's 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.

Respectfully submitted,
POLSINELLI LLP

Dated: January 25, 2023

By: _____/Ruby L. Chung/_____
Ruby L. Chung (Reg. No. 76,809)
Polsinelli LLP
Three Embarcadero Center, Suite 2400
San Francisco, CA 94111
415-248-2100 (Main)
patentdocketing@polsinelli.com



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Sale Accounting Date:01/26/2023

Sale Item Reference Number	Effective Date
16870745	10/19/2022

Document Number	Fee Code	Fee Code Description	Amount Paid	Payment Method
I20231PI01041678	2806	SUBMISSION- INFORMATION DISCLOSURE STMT	$260.00	Deposit Account

Notice of References Cited	Application/Control No. 16/870,745	Applicant(s)/Patent Under Reexamination Nguyen et al.	
	Examiner HOLLY T TO	Art Unit 3772	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-20220378563-A1	12-2022	Cao; Densen B.	A61C17/084	1/1
	B					
	C					
	D					
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

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)
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	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.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/870,745	Nguyen et al.
	Examiner	Art Unit
	HOLLY T TO	3772

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	11/29/2021	05/05/2022	02/01/2023						
	1	✓	✓	✓						
	2	✓	-	-						
	3	✓	✓	✓						
	4	✓	✓	✓						
	5	✓	✓	✓						
	6	✓	-	-						
	7	✓	-	-						
	8	✓	✓	✓						
	9	✓	-	-						
	10	✓	✓	✓						
	11	✓	✓	✓						
	12	✓	✓	✓						
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	20	✓	-	-						
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	22		✓	✓						
	23		✓	✓						
	24		✓	✓						
	25		✓	✓						
	26		✓	✓						
	27		✓	✓						

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/870,745	Nguyen et al.
	Examiner	Art Unit
	HOLLY T TO	3772

CPC - Searched*		
Symbol	**Date**	**Examiner**
A61C5/90	11/22/2021	HT
A61C17/08	11/22/2021	HT
A61B1/24	11/22/2021	HT
A61C17/06	04/21/2022	HT
A61C17/04,043,0208	04/21/2022	HT
A61B1/0094	05/02/2022	HT
A61B2017/22079	05/02/2022	HT
A61C17/10	02/01/2023	HT

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**
433	92	11/22/2021	HT
433	91,93,136,138,140 ,20	04/21/2022	HT

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

/HOLLY T. TO/ Examiner, Art Unit 3772	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/870,745	Nguyen et al.
	Examiner	Art Unit
	HOLLY T TO	3772

Search Notes		
Search Notes	**Date**	**Examiner**
Conducted Inventor, Assignee, USPC and CPC search (with text in PE2E); *denotes cursory review of the search areas listed above	11/22/2021	HT
Consulted With Home SPE Jacqueline Johanas in Dentistry (Class 433)	11/29/2021	HT
Conducted updated Inventor, Assignee, USPC and CPC search (with text in PE2E); *denotes cursory review of the search areas listed above	04/21/2022	HT
Consulted Heidi Eide in Dentistry (Class 433)	04/26/2022	HT
Conducted updated Inventor, Assignee, USPC and CPC search (with text in PE2E); *denotes cursory review of the search areas listed above	01/25/2023	HT
Consulted Heidi Eide in Dentistry (Class 433)	02/01/2023	HT
Conducted cpcs search and reviewed IDs	02/01/2023	HT

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**

/HOLLY T. TO/
Examiner, Art Unit 3772

Substitute for Form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	16/870,745
Filing Date	May 8, 2020
First Named Inventor:	Thien Nguyen
Art Unit	3772
Examiner Name	Holly T. To
Attorney Docket Number	INCEP-005

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-001COD U.S. Patent Application 14/228,057; Final Office Action mailed 1/5/23	

Examiner Signature	/HOLLY T. TO/	Date Considered	02/01/2023

*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 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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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /HTT/

Substitute for Form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Complete if Known	
Application Number	16/870,745
Filing Date	May 8, 2020
First Named Inventor:	Thien Nguyen
Art Unit	3772
Examiner Name	Holly T. To
Attorney Docket Number	INCEP-005

Sheet	1	of	1

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-			
		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
		EP 3965637 (corresponds to WO 2020/231864)	3/16/2022	Dryshield, LLC		

Examiner Signature	/HOLLY T. TO/	Date Considered	02/01/2023

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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	16/870,745
				Filing Date	May 8, 2020
				First Named Inventor:	Thien Nguyen
				Art Unit	3772
				Examiner Name	Holly T. To
Sheet	**1**	**of**	**2**	Attorney Docket Number	INCEP-005

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-	D962,438	8/30/2022	Nguyen	
		US-	D962,439	8/30/2022	Nguyen	
		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	/HOLLY T. TO/	Date Considered	02/01/2023

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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /HTT/

Substitute for Form 1449/PTO	Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*	Application Number	16/870,745
	Filing Date	May 8, 2020
	First Named Inventor:	Thien Nguyen
	Art Unit	3772
	Examiner Name	Holly T. To
Sheet 2 of 2	Attorney Docket Number	INCEP-005

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-001COD U.S. Patent Application 14/228,057; Office Action mailed 9/2/22	

Examiner Signature	/HOLLY T. TO/	Date Considered	02/01/2023

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

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /HTT/

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L178	19	((("DRYSHIELD") near3 ("LLC"))).AS,AANM.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT)	OR	ON	ON	2023/01/25 09:25 AM
L179	1498	((("NGUYEN") near3 ("Thien")) OR (("PHAM") near3 ("Tam") near3 ("Thanh")) OR (("NGUYEN") near3 ("Ethan")) OR (("NGUYEN") near3 ("Lauren"))).INV.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/25 09:29 AM
L180	381	(433/92).ccls.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT)	OR	ON	ON	2023/01/25 09:30 AM
L181	2916	(A61C5/90).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB,	OR	ON	ON	2023/01/25 09:30 AM

			HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT)				
L182	3689	(A61C17/08).cpc. NOT (A61C5/90).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT)	OR	ON	ON	2023/01/25 09:32 AM
L183	11933	(A61B1/24).cpc. NOT ((A61C17/08).cpc. OR (A61C5/90).cpc.)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT)	OR	ON	ON	2023/01/25 09:34 AM
L184	985	(A61C17/06).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT)	OR	ON	ON	2023/01/25 09:46 AM
L185	3713	(A61C17/04,043,0208). cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY,	OR	ON	ON	2023/01/25 09:48 AM

			CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT)				
L186	2460	(433/91,93,136,138,140,20).ccls.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT)	OR	ON	ON	2023/01/25 09:55 AM
L187	1143	(A61C17/10-12).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT)	OR	ON	ON	2023/01/25 09:56 AM
L188	7228	(A61B1/0094).cpc. OR (A61B2017/22079).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT)	OR	ON	ON	2023/01/25 09:57 AM

L189	78	(A61M1/$).cpc. AND (paddle OR tool OR conduit) AND crest AND trough	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT)	OR	ON	ON	2023/01/25 10:23 AM
L190	969	(A61M$).cpc. AND (suction$4 WITH (hollow OR channel OR void) WITH (interior$2 OR inside OR inner OR within) WITH (plurality OR multiple OR many))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT)	OR	ON	ON	2023/01/25 10:23 AM
L191	35	(L188 L187 L186 L185 L184 L183 L182 L181 L180) AND (section$1 segment$1) AND crest AND trough	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/01/25 10:31 AM
L192	3730	(L188 L187 L186 L185 L184 L183 L182 L181 L180) AND (section$1 segment$1) AND ((crest AND trough) fluctuation (up AND down))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO,	OR	ON	ON	2023/01/25 10:33 AM

			RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L194	708	(A61C17/10).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/02/01 02:45 PM
L195	2	(JP "2022533276").pn.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/02/01 03:15 PM
L196	1	(D962438).pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/02/01 03:15 PM
L197	1	(D962439).pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU,	OR	ON	ON	2023/02/01 03:15 PM

			CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L198	2	("20200383560" OR "4975057").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/02/01 03:16 PM
L199	2	("D737964" OR "D868958").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/02/01 03:17 PM
L200	8	(D267586 "4975057" "5730599" "6652276" "6655960" "6716029" "10939979" "20200383560").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/02/01 03:18 PM
L201	7	(EP "3965637").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/02/01 03:19 PM
L202	3	(WO "2020231864").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/02/01 03:19 PM
L203	19	(CA "3139689").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY,	OR	ON	ON	2023/02/01 03:20 PM

			CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L204	5	(TW "202108088").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/02/01 03:20 PM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

Substitute for Form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Complete if Known	
Application Number	16/870,745
Filing Date	May 8, 2020
First Named Inventor:	Thien Nguyen
Art Unit	3772
Examiner Name	Holly T. To
Attorney Docket Number	INCEP-005

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-	D267,586	1/11/1983	Hatlen	
		US-	4,975,057	12/4/1990	Dyfvermark	
		US-	5,730,599	3/24/1998	Pak	
		US-	6,652,276	11/25/2003	Fischer et al.	
		US-	6,655,960	12/2/2003	Fischer	
		US-	6,716,029	4/6/2004	Fischer et al.	
		US-	10,939,979	3/9/2021	Lombardi	
		US-	2020/0383560	12/10/2020	Day	
		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	/HOLLY T. TO/	Date Considered	02/01/2023

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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. **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)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /HTT/

Substitute for Form 1449/PTO	Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*	Application Number	16/870,745
	Filing Date	May 8, 2020
	First Named Inventor:	Thien Nguyen
	Art Unit	3772
	Examiner Name	Holly T. To
Sheet 2 of 2	Attorney Docket Number	INCEP-005

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-009D U.S. Patent Application 29/782,644 Final Office Action mailed 5/11/22	
		Docket No. INCEP-010D U.S. Patent Application 29/782,643 Final Office Action mailed 5/11/22	

Examiner Signature	/HOLLY T. TO/	Date Considered	02/01/2023

*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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(use as many sheets as necessary)

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Examiner Name	Holly T. To
Attorney Docket Number	INCEP-005

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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		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
		CA 3,139,689	11/19/2020	Dryshield, LLC		
		TW 202108088	3/1/2021	Dryshield, LLC		

Examiner Signature		Date Considered	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*	Application Number	16/870,745
	Filing Date	May 8, 2020
	First Named Inventor:	Thien Nguyen
	Art Unit	3772
	Examiner Name	Holly T. To
Sheet 2 of 2	Attorney Docket Number	INCEP-005

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		PCT Application No. PCT/US2020/032228 International Preliminary Report on Patentability dated 11/16/21	

Examiner Signature	/HOLLY T. TO/	Date Considered	02/01/2023

*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 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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Substitute for Form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Complete if Known	
Application Number	16/870,745
Filing Date	May 8, 2020
First Named Inventor:	Thien Nguyen
Art Unit	3772
Examiner Name	Holly T. To
Attorney Docket Number	INCEP-005

Sheet	1	of	1

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
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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
		JP 2022-533276	7/21/2022	Dryshield, LLC		

Examiner Signature	/HOLLY T. TO/	Date Considered	02/01/2023

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

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/870,745	05/08/2020	Thien Nguyen	INCEP-005	7491

138718 7590 02/17/2023

Polsinelli LLP
PO Box 140310
Kansas City, MO 64114-0310

EXAMINER
TO, HOLLY T

ART UNIT	PAPER NUMBER
3772	

NOTIFICATION DATE	DELIVERY MODE
02/17/2023	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):

patentdocketing@polsinelli.com
sfpatent@polsinelli.com

Office Action Summary	Application No. 16/870,745	Applicant(s) Nguyen et al.	
	Examiner HOLLY T TO	Art Unit 3772	AIA (FITF) Status Yes

-- 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 11/11/2022.

☐ 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) 1,3-5,8,10-19 and 21-27 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) 1,3-5,8,10-15,17-19 and 21-27 is/are rejected.

8) ☑ Claim(s) 16 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: _____.

DETAILED ACTION

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Continued Examination Under 37 CFR 1.114

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 11/11/2022 has been entered.

Claim Rejections - 35 USC § 112

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.

Claims 21-27 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph.

Claim **21** is 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 applications subject to pre-AIA 35 U.S.C. 112, the applicant), regards as the invention. Claim 11 recites “that extend partially towards the at least one posterior intervening wall” in lines 12-13 wherein it is unclear if the “at least one posterior intervening wall” is the at least one intervening wall found to be extending from the posterior wall or if it is a different intervening wall. For

examination purposes, it will be interpreted as being the at least one intervening wall extending at least partially across the distance and along an edge of the posterior wall.

Claim Rejections - 35 USC § 102

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 –
>
> (a)(1) the claimed invention was patented, described in a printed publication, or in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention.

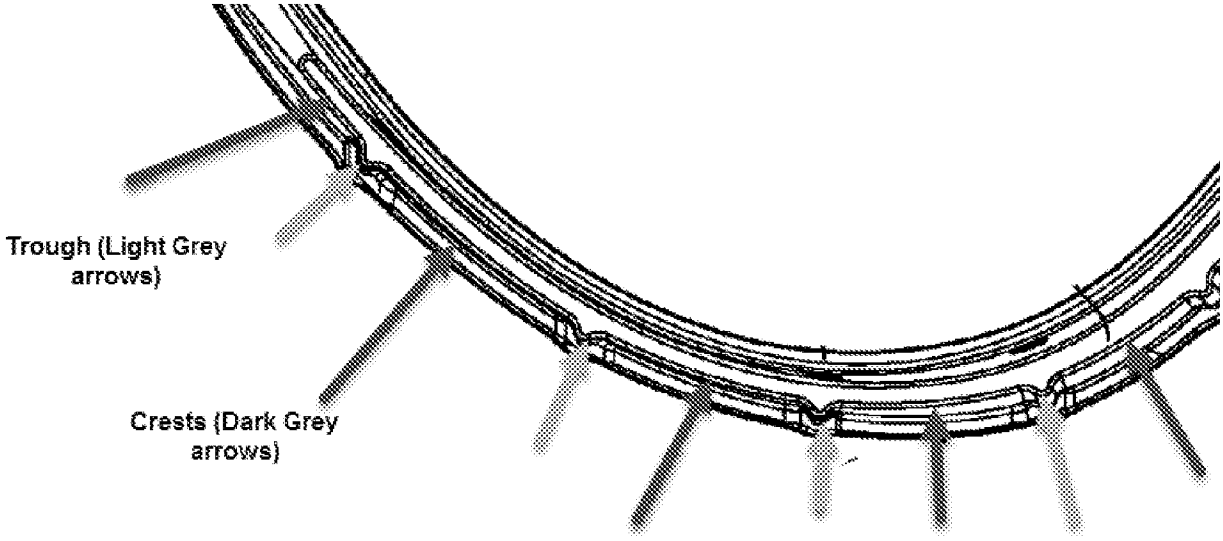
Claim(s) 1, 3, 8, 10-13, 15, 18-19, 21-23, and 26-27 is/are rejected under 35 U.S.C. 102(a)(1) as being anticipated by Hirsch (US 20150335409 A1).

Re. Claim **1**, Hirsch discloses a dental mouthpiece (Abstract, Fig. 2) formed in a curve (Fig. 2), the dental mouth piece comprising:

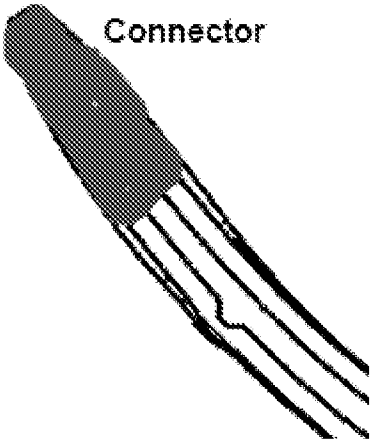
- A main body portion (280) at a central part of the curve (Fig. 2) having a first end (end where component 250 is located) and a second end (end where the component 290 is located), the main body (280) having an anterior wall (310) inside the curve (Fig. 4) and a posterior wall (340) outside the curve (Fig. 4), the anterior wall and the posterior wall defining an interior space (360) corresponding to a distance between the anterior wall and the posterior wall (Fig. 6), at least one connector (Annotated Figure B of Fig. 10) connecting the anterior wall to the posterior wall (Fig. 14), at least one anterior intervening wall (390) extending along an edge of the anterior wall (Fig. 6) partially across the distance towards the posterior wall (Fig. 6), and at least one posterior intervening wall (400) extending along an edge of the posterior wall (Fig. 6) partially across the distance towards the anterior wall (Fig. 6), the at least one anterior intervening wall having alternating crests and troughs that extend partially towards the at least

one posterior intervening wall (Par. [0027] discloses that the troughs (414) can be found on one of the side walls or both; Annotated Figure A of Fig. 6 shows crests and troughs identification)

- A suction connector portion (570) connected to the first end (Fig. 2), the connector portion connecting the interior space to a vacuum suction source (Par. [0036]); and
- A cheek retractor portion (290; Par. [0025]) connected to the second end (Fig. 4).



Annotated Figure A

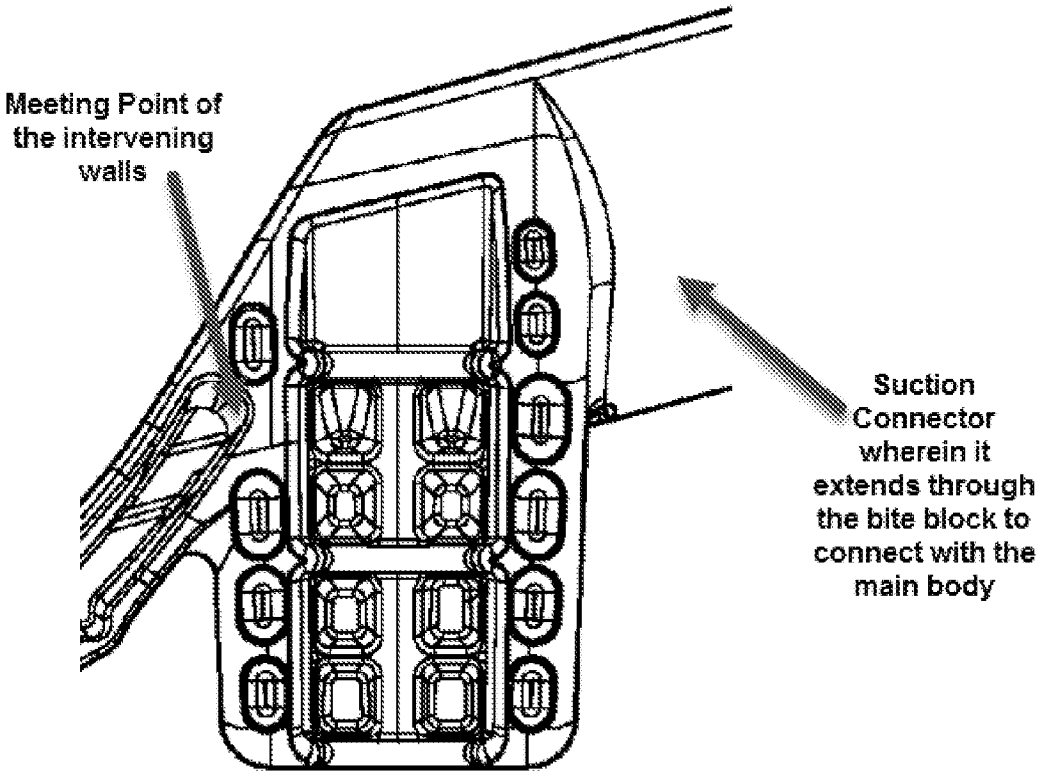


Annotated Figure B

Re. Claim **3**, Hirsch discloses the mouthpiece of claim 1 and further discloses the at least one connector includes at least one of a wall spanning longitudinally in the main body portion in the interior space (Fig. 14 shows that the connector spans longitudinally in the main body and would span through the interior space).

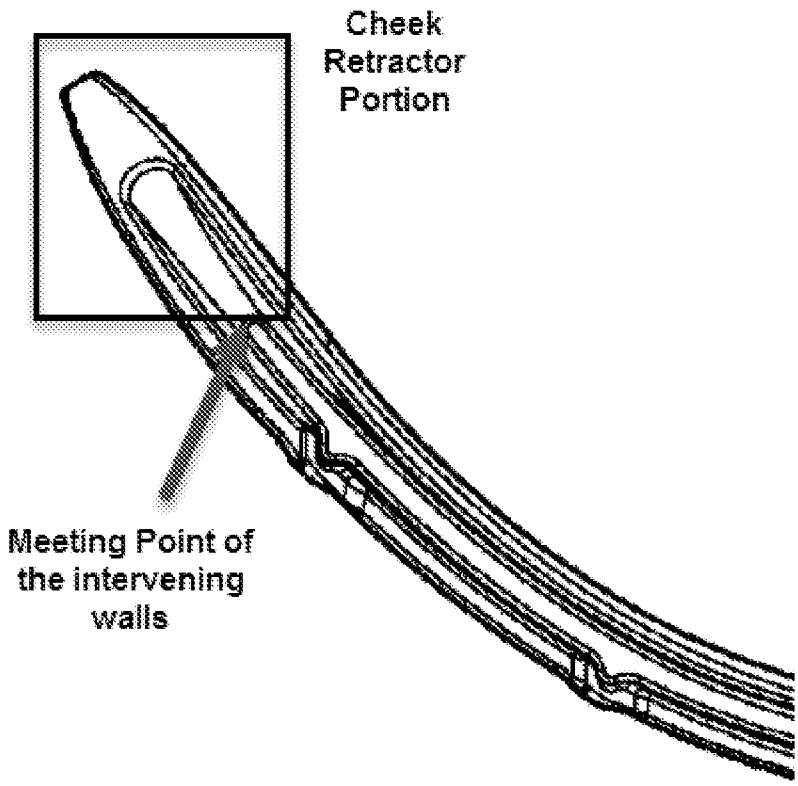
Re. Claim **8**, Hirsch discloses the mouthpiece of claim 1 and further discloses at least one of the anterior intervening wall and the posterior intervening wall includes a plurality of varying heights and sizes (Fig. 6 wherein it shows the varying heights and sizes can be found throughout the walls due to the varying size and height difference between the troughs and crests).

Re. Claim **10**, Hirsch discloses the mouthpiece of claim 1 and further discloses the anterior intervening wall and the posterior intervening wall meet at a point where the suction connector meets the main body portion (Annotated Figure C of Fig. 6).



Annotated Figure C

Re. Claim **11**, Hirsch discloses the mouthpiece of claim 1 and further discloses the anterior intervening wall and the posterior intervening wall meet at a point where the main body portion meets the cheek retractor portion (Annotated Figure D of Fig. 6).



Annotated Figure D

Re. Claim **12**, Hirsch discloses the mouthpiece of claim 1 and further discloses a bite block (250) integrated to the suction connector portion (Fig. 6), wherein the bite block provides crush-resistance during biting by a patient (Par. [0035]).

Re. Claim **13**, Hirsch discloses the mouthpiece of claim 1 and further discloses the main body portion, the suction connector portion, and the cheek retractor portion are formed by injection-molding as one piece (Par. [0023]).

Re. Claim **15**, Hirsch discloses the mouthpiece of claim 1 but Hirsch further discloses the posterior wall further includes a stability bar (365) protruding from an interior surface of the posterior wall and along a longitudinal axis of the main body portion (Fig. 14).

Re. Claim **18**, Hirsch discloses the mouthpiece of claim 1 and further discloses in the suction connector portion connects to the vacuum suction source, wherein activation of the vacuum suction source provides suction of fluids from the interior space of the main body portion (Par. [0036]).

Re. Claim **19**, Hirsch discloses the mouthpiece of claim 1 and further discloses the activation of the vacuum suction source further draws fluid from an exterior of the main body portion into the interior space of the main body potion (Par. [0036]).

(As Best Understood) Re. Claim **21**, Hirsch discloses Hirsch discloses a dental mouthpiece (Abstract, Fig. 2) formed in a curve (Fig. 2), the dental mouth piece comprising:

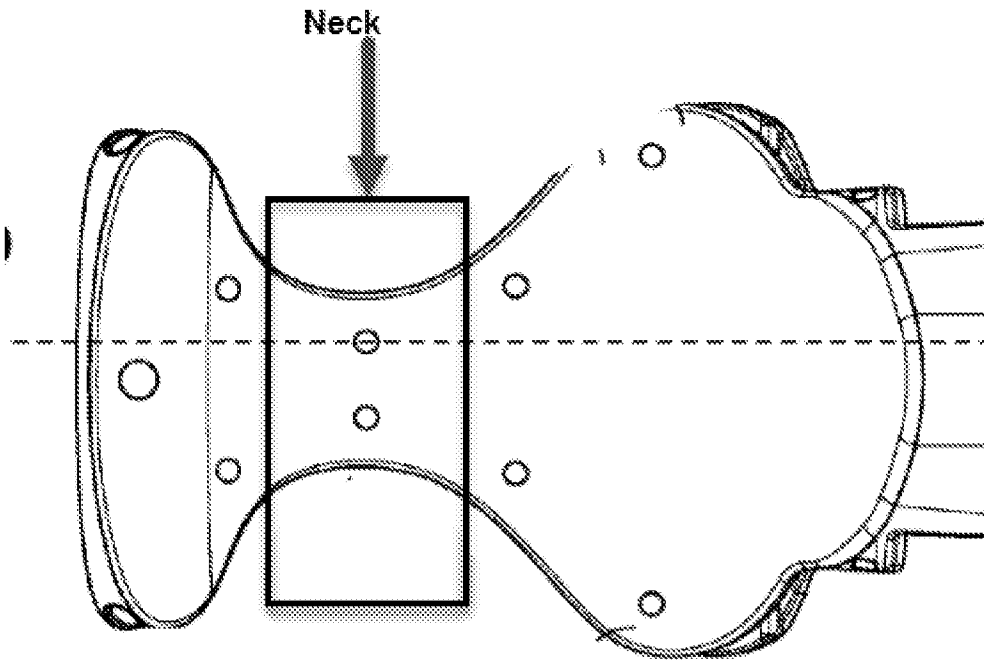
- A main body portion (280) having a first end (end where component 250 is located) and a second end (end where the component 290 is located), the main body comprising:
    - An anterior wall (310),
    - A posterior wall (340) spaced at a distance from the anterior wall (Fig. 6), wherein an interior space (360) corresponding to the distance between the anterior wall and the posterior wall is defined by the anterior wall and the posterior wall (Fig. 4 and 6).,
    - At least one connector (Annotated Figure B of Fig. 10) that connects the anterior wall to the posterior wall in the interior space (Fig. 14),
    - At least one intervening wall (390 and 400) extending at least partially across the distance and along an edge of the anterior wall or the posterior wall (Fig. 6), wherein the at least one intervening wall has a plurality of alternating crests and troughs that extend partially towards the at least one posterior intervening wall (Par. [0027] discloses

that the troughs (414) can be found on one of the side walls or both; Annotated Figure A of Fig. 6 shows crests and troughs identification), and

- A neck (Annotated Figure E of Fig. 4) extending from the second end of the main body (Annotated Figure E of Fig. 4), wherein a width of the neck is less than a width of the main body portion at the first end (Annotated Figure E of Fig. 4);
- A suction connector portion (570) connected to the first end of the main body (Fig. 2), the suction connector portion further configured to connect the interior space to a vacuum suction source (Par. [0036]); and
- A cheek retractor portion (290; Par. [0025]) connected to the neck at the second end wherein the width of the neck is less than a width of the cheek retractor portion (Fig. 4; Annotated Figure E of Fig. 4).

Re. Claim **22**, Hirsh discloses the mouthpiece of claim 21 and further discloses the at least one intervening wall includes a plurality of spaced portions (Fig. 6 wherein the portions of space can be seen made by the troughs 414).

Re. Claim **23**, Hirsch discloses the mouthpiece of claim 21 and further discloses a bite block (250) integrated to the suction connector portion (Fig. 6), wherein the bite block provides crush-resistance during biting by a patient (Par. [0035]).



Annotated Figure E

Re. Claim **26**, Hirsch discloses the mouthpiece of claim 21 and further discloses in the suction connector portion connects to the vacuum suction source, wherein activation of the vacuum suction source provides suction of fluids from the interior space of the main body portion (Par. [0036]).

Re. Claim **27**, Hirsch discloses the mouthpiece of claim 26 and further discloses the activation of the vacuum suction source further draws fluid from an exterior of the main body portion into the interior space of the main body potion (Par. [0036]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim(s) 4-5, 14, 17, and 24-25 is/are rejected under 35 U.S.C. 103 as being unpatentable over Hirsch (US 20150335409 A1) in view of Nguyen (US 20140162209 A1).

Re. Claim **4**, Hirsch discloses the mouthpiece of claim 1 but is silent to a bridge structure that includes one or more protrusions protruding from the posterior wall within the interior space, wherein the protrusions include spaced crests and troughs.

Nguyen discloses a dental mouthpiece (Abstract) in the same field of endeavor and further discloses a bridge structure that includes one or more protrusions protruding from the posterior wall within the interior space, wherein the protrusions include spaced crests and troughs to allow separation of the anterior wall and posterior wall as well as allow for further suction of fluid and debris within the gaps formed by the troughs (Par. [0009]).

It would have been obvious to someone of ordinary skill in the art before the effective filing date of the claimed invention to have modified the dental mouth piece of Hirsch to have a bridge structure as taught by Nguyen to allow separation of the anterior wall and posterior wall as well as allow for further suction of fluid and debris within the gaps formed by the troughs.

Re. Claim **5**, Hirsch and Nguyen discloses the mouthpiece of claim 4 and Nguyen further discloses the protrusions vary in height and length (Par. [0042], Fig. 5).

Re. Claims **14**, Hirsch discloses the mouthpiece of claim 1 and further discloses a material that forms the main body, suction connector portion, and the cheek retractor portion is flexible, and translucent (Par. [0023]). However, Hirsch is silent to a material that forms the main body, the suction connector portion, and the cheek retractor portion is a high heat-resistant, autoclavable silicone-based material.

Nguyen discloses a dental mouthpiece (Abstract) in the same field of endeavor and further discloses a material that forms the main body, suction connector portion, and the cheek retractor

portion is flexible, translucent, high heat-resistant, autoclavable silicone-based material to allow it to be reusable (Abstract).

It would have been obvious to someone of ordinary skill in the art before the effective filing date of the claimed invention to have modified the dental mouth piece of Hirsch to have a material that forms the main body, suction connector portion, and the cheek retractor portion is flexible, translucent, high heat-resistant, autoclavable silicone-based material as taught by Nguyen to allow the device to be reusable.

Re. Claim **24**, Hirsch discloses the mouthpiece of claim 21 and further discloses the main body, the suction connector portion, and the cheek retractor portion are formed by injection-molding as one piece.

Nguyen discloses a dental mouthpiece (Abstract) in the same field of endeavor and further discloses a material that forms the main body, suction connector portion, and the cheek retractor portion is formed by injection-molding to reduce manufacturing cost.

It would have been obvious to someone of ordinary skill in the art before the effective filing date of the claimed invention to have modified the dental mouth piece of Hirsch to have the main body, the suction connector portion, and the cheek retractor portion are formed by injection-molding as one piece as taught by Nguyen to reduce manufacturing cost.

Re. Claims **17 and 25**, Hirsch discloses the mouthpiece of claim 1/21 but is silent to the suction connector portion comprises a cutout corresponding to a protrusion on a vacuum adapter to provide an interlocking fit.

Nguyen discloses a dental mouthpiece (Abstract) in the same field of endeavor and further discloses the suction connector portion comprises a cutout corresponding to a protrusion on a vacuum adapter to provide an interlocking fit (Par. [0045]).

It would have been obvious to someone of ordinary skill in the art before the effective filing date of the claimed invention to have modified the suction connector portion as taught by Nguyen as it is a design choice to provide a connecting means between the vacuum adapter and suction connector portion.

Allowable Subject Matter

Claim **16** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Hirsch (US 20150335409 A1) is found to be the best prior art wherein Hirsch discloses a dental mouth piece comprising a main body at a central part having a first end and second end, the main body having an anterior wall inside a curve and a posterior wall outside a curve. Further, Hirsch discloses the intervening walls having alternating crests and troughs that extend partially towards each wall. However, Hirsh is silent to at least one connector includes a plurality of evenly spaced connected **located along the stability bar**.

Response to Arguments

Applicant's arguments with respect to the claim(s) have been considered but are moot because the new ground of rejection does not rely on any reference applied in the prior rejection of record for any teaching or matter specifically challenged in the argument.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOLLY T TO whose telephone number is (571)272-0719. The examiner can normally be reached Monday - Thursday 6:30 - 4:30.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jacqueline Johanas can be reached on (571)270-5085. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit https://www.uspto.gov/patents/apply/patent-center for more information about Patent Center and https://www.uspto.gov/patents/docx for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/HOLLY T. TO/
Examiner, Art Unit 3772

/HEIDI M EIDE/
Primary Examiner, Art Unit 3772
2/13/2023

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Polsinelli LLP
PO Box 140310
Kansas City, MO 64114-0310

Courtesy Reminder for
Application Serial No: 16/870,745

Attorney Docket No: INCEP-005
Customer Number: 138718
Date of Electronic Notification: 02/23/2023

This is a courtesy reminder that new correspondence is available for this application. If you have not done so already, please review the correspondence. The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

An email notification regarding the correspondence was sent to the following email address(es) associated with your customer number:
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Substitute for Form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet	1	**of**	1		

Complete if Known	
Application Number	16/870,745
Filing Date	May 8, 2020
First Named Inventor:	Thien Nguyen
Art Unit	3772
Examiner Name	Holly T. To
Attorney Docket Number	INCEP-005

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.'	Document Number		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
			Number-Kind Code[2](If known)			
		US-	11,576,764	2/14/2023	Nguyen	
		US-	11,589,969	2/28/2023	Nguyen	
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		Country Code[3] Number[4] Kind Codes (if known)				

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*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)

Electronic Acknowledgement Receipt

EFS ID:	47871374
Application Number:	16870745
International Application Number:	
Confirmation Number:	7491
Title of Invention:	DENTAL MOUTHPIECE
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	138718
Filer:	Ruby Lim Chung/Lea Fong
Filer Authorized By:	Ruby Lim Chung
Attorney Docket Number:	INCEP-005
Receipt Date:	20-APR-2023
Filing Date:	08-MAY-2020
Time Stamp:	21:17:21
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-005_IDS_Statement_4-20-23.pdf	98649 f37fc606d416533b08a8cfc703ddcdb672d4fcb1	no	2

Warnings:

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	INCEP-005_IDS_1449_4-20-23.pdf	184070 f62408019075c893aad366d7480e9130920275e7	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
			Total Files Size (in bytes):	282719	

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: 3772 | Examiner: Holly T. To

Serial No.: 16/870,745 | Filed: May 8, 2020

In re Application of: Thien Nguyen

Confirmation No.: 7491 | Customer No.: 138718

Title: DENTAL MOUTHPIECE

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 Applicant's 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.

Respectfully submitted,
POLSINELLI LLP

Dated: April 20, 2023

By: _____/Ruby L. Chung/_____
Ruby L. Chung (Reg. No. 76,809)
Polsinelli LLP
Three Embarcadero Center, Suite 2400
San Francisco, CA 94111
415-248-2100 (Main)
patentdocketing@polsinelli.com

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/870,745	05/08/2020	Thien Nguyen	INCEP-005	7491

138718 7590 05/16/2023

Polsinelli LLP
PO Box 140310
Kansas City, MO 64114-0310

EXAMINER
TO, HOLLY T

ART UNIT	PAPER NUMBER
3772	

NOTIFICATION DATE	DELIVERY MODE
05/16/2023	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):

patentdocketing@polsinelli.com
sfpatent@polsinelli.com

Applicant-Initiated Interview Summary	**Application No.** 16/870,745	**Applicant(s)** Nguyen et al.		
	Examiner HOLLY T TO	**Art Unit** 3772	**AIA (First Inventor to File) Status** Yes	**Page** 1 of 2

All Participants (applicant, applicants representative, PTO personnel)	**Title**	**Type**
HOLLY T TO	Examiner	Telephonic
Heidi Eide	Primary Examiner	
Ruby Chung	Attorney of Record	

Date of Interview: 10 May 2023

Issues Discussed:

Other

An interview was held on 5/10/2023 wherein claim amendments were discussed. It is expressed that the current rejection is not overcome by the new amendments wherein Hirsch teaches the anterior wall edge can be seen as the horizontal edge of the anterior wall as seen in Fig. 4 wherein the Anterior intervening wall can be seen in Fig. 6 which is a vertical edge of the anterior wall. It is expressed to applicant that it is understood that applicant is claiming the edge of the vertical edge overhanging shown in Fig. 6 of applicant's drawings and the anterior intervening wall extends from such. It is suggested to define the overhang shown in Fig. 6 in more detail (see attachment of annotated figures as what is being considered the overhang/edge for clarification purposes). For example, it was suggested to clarify how the anterior intervening wall extends horizontally from the anterior wall. It is also expressed that a call may be made to make amendments if the amended claims were not based on suggestions provided. Applicant will take the suggestion in consideration and will file a response accordingly.

☑ Attachment

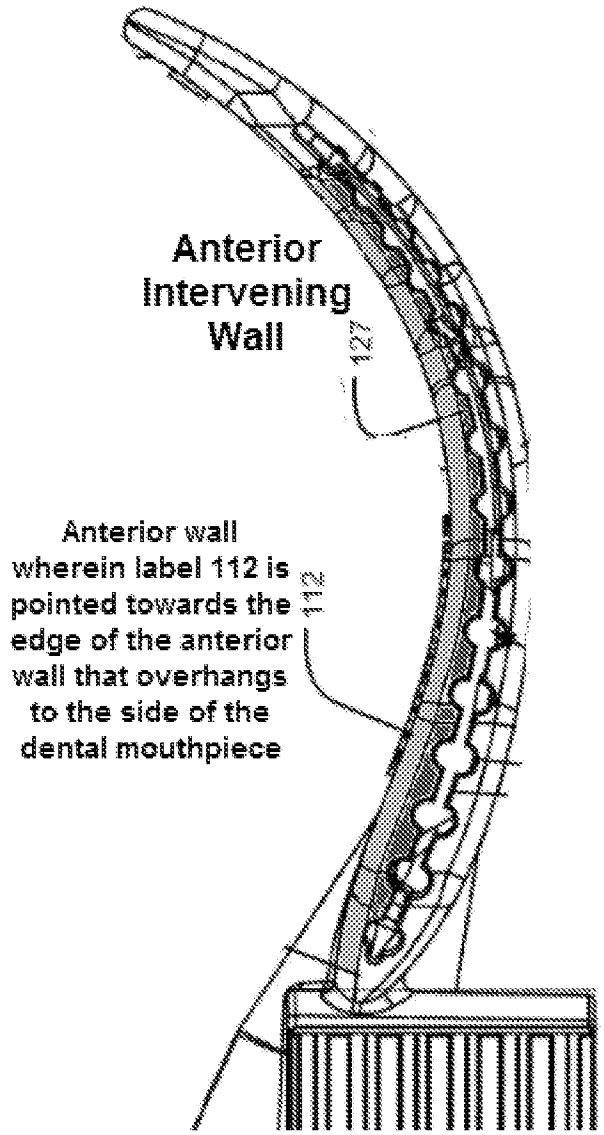
/HOLLY T. TO/ Examiner, Art Unit 3772	/HEIDI M EIDE/ Primary Examiner, Art Unit 3772

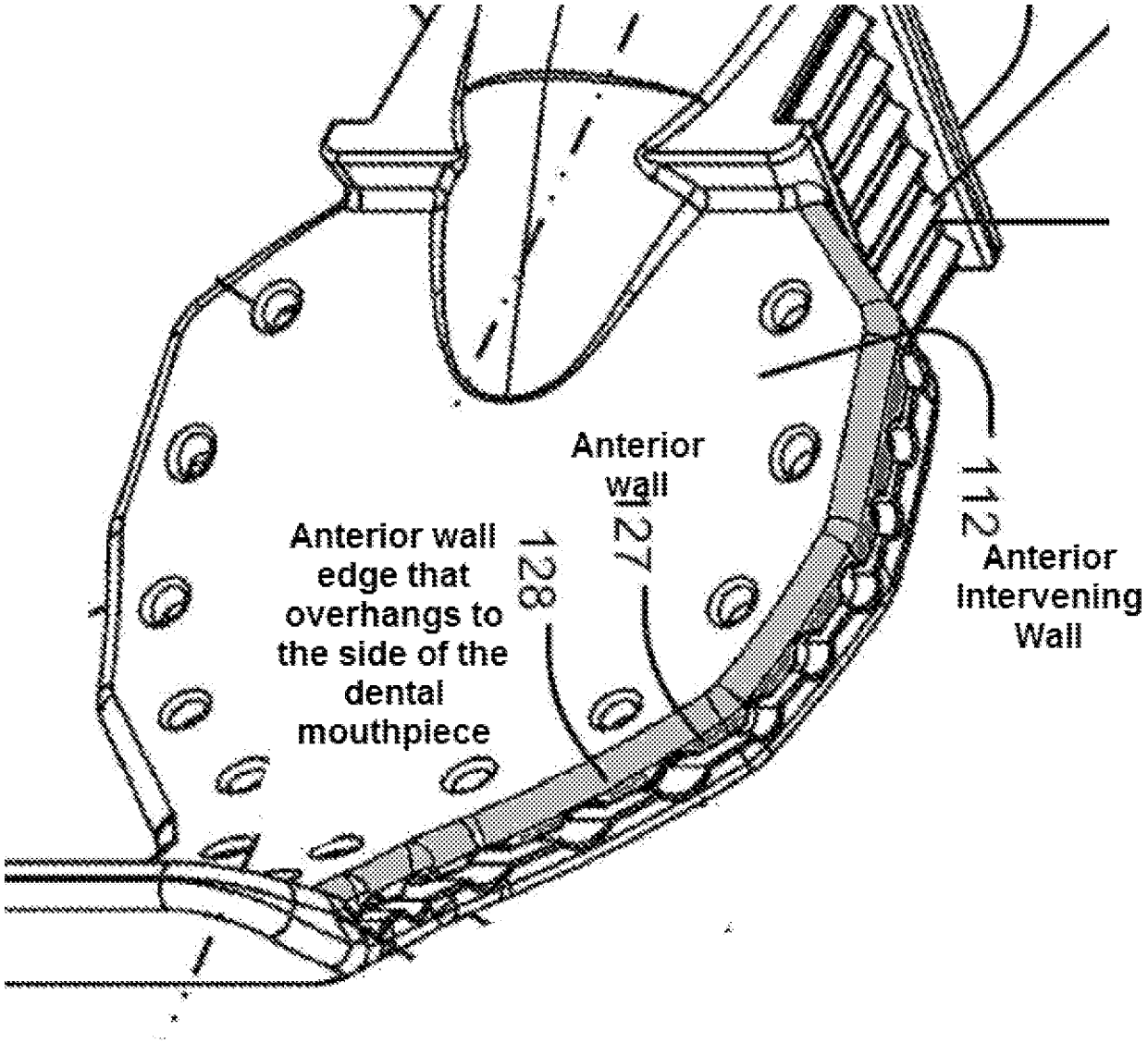
Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04
Please further see:
MPEP 713.04
Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b)
37 CFR § 1.2 Business to be transacted in writing

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.


Anterior Intervening Wall
127
Anterior wall wherein label 112 is pointed towards the edge of the anterior wall that overhangs to the side of the dental mouthpiece
112


Anterior wall edge that overhangs to the side of the dental mouthpiece
128
Anterior wall
127
112
Anterior Intervening Wall

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTOR(S):	*Nguyen* et al.
APPLICATION NO.:	16/870,745
FILING DATE:	May 8, 2020
TITLE:	Dental Mouthpiece
EXAMINER:	Holly T. To
ART UNIT:	3772
CONFIRM. NO.:	7491
ATTY.DKT.NO.:	INCEP-005

ATTN: Examiner To <holly.to @uspto.gov>
Interview: Wednesday, May 10, 2023

AGENDA FOR INTERVIEW

Dear Examiner To,

An agenda is provided herein for telephonic Examiner Interview scheduled for Wednesday, May 10, 2023 at 2:30 PM EST (11:30 AM PST). Ruby Chung will call Examiner To at 571-272-0719.

I. Proposed Amendment to the Claims

1. (currently amended) A dental mouthpiece formed in a curve, the dental mouthpiece comprising:

a main body portion at a central part of the curve having a first end and a second end, the main body portion having an anterior wall inside the curve and a posterior wall outside the curve, the anterior wall and the posterior wall defining an interior space corresponding to a distance between the anterior wall and the posterior wall, at least one connector connecting the anterior wall to the posterior wall, at least one anterior intervening wall extending along an edge of the anterior wall partially across the distance towards the posterior wall, wherein the anterior intervening wall has a thickness extending from the edge of the anterior wall, and at least one posterior intervening wall extending along an edge of the posterior wall partially across the distance towards the anterior wall, the at least one anterior intervening wall having alternating crests and troughs that extend partially towards the at least one posterior intervening wall;

a suction connector portion connected to the first end, the connector portion connecting the interior space to a vacuum suction source; and

a cheek retractor portion connected to the second end.

The proposed claim amendment is supported by the filed *Specification* in at least paragraph [0034], which describes that "[a]t least one anterior intervening wall 127 may extend from at least one edge 128 of the anterior wall 112 partially towards the posterior wall 114 and may have a thickness that extends from the at least one edge 128 to a mid-point between the anterior wall 112 and the posterior wall 114."

II. Claim Rejections Under 35 U.S.C. 102 and 103

The Applicant would like to discuss how the claims are distinct from the cited references, *Hirsch* (2015/0335409) and *Nguyen* (2014/0162209).

The Applicant thanks the Examiner for granting the Interview. The Examiner is invited to contact the Applicant's undersigned representative with any questions.

Respectfully submitted,

May 9, 2023

By: / Ruby Chung /

Ruby Chung (76,809)
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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 16/870,745	Filing Date 05/08/2020	☐ 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 $50 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $230 =	
☐ 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)			
AMENDMENT	05/17/2023	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 23	Minus	** 22	= 1		x $40 =	40
	Independent (37 CFR 1.16(h))	* 2	Minus	*** 3	= 0		x $192 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	40

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ 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.	PSS
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/FIKIRTE A GEREMEW/
*** 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.	

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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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTOR(S):	*Nguyen* et al.
APPLICATION NO.:	16/870,745
FILING DATE:	May 8, 2020
TITLE:	Dental Mouthpiece
EXAMINER:	Holly T. To
ART UNIT:	3772
CONFIRM. NO.:	7491
ATTY.DKT.NO.:	INCEP-005

MAIL STOP AMENDMENT
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P.O. BOX 1450
ALEXANDRIA, VA 22313-1450

RESPONSE C

Examiner To,

In response to the office action dated February 17, 2023 (*Office Action*), please enter the following **amendments** to the **claims,** which commence on **page two**. The Applicant's summary of the examiner interview begins on page seven. The **remarks** appear beginning on **page eight**, and the **conclusion** appears on **page twelve**.

IN THE CLAIMS

PLEASE AMEND THE CLAIMS AS FOLLOWS:

1. (currently amended) A dental mouthpiece formed in a curve, the dental mouthpiece comprising:

a main body portion at a central part of the curve having a first end and a second end, the main body portion having an anterior wall inside the curve and a posterior wall outside the curve, the anterior wall and the posterior wall defining an interior space corresponding to a distance between the anterior wall and the posterior wall, at least one connector connecting the anterior wall to the posterior wall, at least one anterior intervening wall protruding from and extending along an edge of the anterior wall, the anterior intervening wall having a span that extends partially across the distance of the interior space towards the posterior wall, and at least one posterior intervening wall extending along an edge of the posterior wall partially across the distance towards the anterior wall, and wherein an edge of the span of the at least one anterior intervening wall ~~having~~ has alternating crests and troughs that extend different distances partially across the interior space towards the at least one posterior intervening wall;

a suction connector portion connected to the first end, the connector portion connecting the interior space to a vacuum suction source; and

a cheek retractor portion connected to the second end.

2. (cancelled)

3. (previously presented) The mouthpiece of claim 1, wherein the at least one connector includes at least one of a wall spanning longitudinally in the main body portion in the interior space or a pillar.

4. (previously presented) The mouthpiece of claim 1, further comprising a bridge structure that includes one or more protrusions protruding from the posterior wall within the interior space, wherein the protrusions include spaced crests and troughs.

5. (previously presented) The mouthpiece of claim 4, wherein the protrusions vary in height and length.

6. - 7. (cancelled)

8. (previously presented) The mouthpiece of claim 1, wherein at least one of the anterior intervening wall and the posterior intervening wall includes a plurality of portions of varying heights or sizes.

9. (cancelled)

10. (previously presented) The mouthpiece of claim 1, wherein the anterior intervening wall and the posterior intervening wall meet at a point where the suction connector meets the main body portion.

11. (previously presented) The mouthpiece of claim 1, wherein the anterior intervening wall and the posterior intervening wall meet at a point where the main body portion meets the cheek retractor portion.

12. (previously presented) The mouthpiece of claim 1, further comprising a bite block integrated to the suction connector portion, wherein the bite block provides crush-resistance during biting by a patient.

13. (original) The mouthpiece of claim 1, wherein the main body portion, the suction connector portion, and the cheek retractor portion are formed by injection-molding as one piece.

14. (previously presented) The mouthpiece of claim 1, wherein a material that forms the main body, the suction connector portion, and the cheek retractor portion is a flexible, translucent, high heat-resistant, autoclavable silicone-based material.

15. (previously presented) The mouthpiece of claim 1, wherein the posterior wall further includes a stability bar protruding from an interior surface of the posterior wall and along a longitudinal axis of the main body portion.

16. (previously presented) The mouthpiece of claim 15, wherein the at least one connector includes a plurality of evenly spaced connectors located along the stability bar.

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

18. (previously presented) The mouthpiece of claim 1, where in the suction connector portion connects to the vacuum suction source, wherein activation of the vacuum suction source provides suction of fluids from the interior space of the main body portion.

19. (previously presented) The mouthpiece of claim 18, wherein the activation of the vacuum suction source draws fluids from an exterior of the main body portion into the interior space of the main body portion.

20. (cancelled)

21. (currently amended) A dental mouthpiece comprising:

a main body portion having a first end and a second end, the main body portion comprising:

an anterior wall,

a posterior wall spaced at a distance from the anterior wall, wherein an interior space corresponding to the distance between the anterior wall and the posterior wall is defined by the anterior wall and the posterior wall,

at least one connector that connects the anterior wall to the posterior wall within the interior space,

at least one intervening wall protruding from and extending ~~at least partially across the distance and~~ along an edge of the anterior wall or the posterior wall, the intervening wall having a span that extends partially across the distance of the interior space, and wherein an edge of the span of the at least one intervening wall has a plurality of alternating crests and troughs that extend different distances partially ~~towards the at least one posterior intervening wall~~ across the interior space, and

a neck extending from the second end of the main body, wherein a width of the neck is less than a width of the main body portion at the first end;

a suction connector portion connected to the first end of the main body, the suction connector portion further configured to connect the interior space to a vacuum suction source; and

a cheek retractor portion connected to the neck at the second end of the main body, wherein the width of the neck is less than a width of the cheek retractor portion.

22. (previously presented) The mouthpiece of claim 21, wherein the at least one intervening wall includes a plurality of spaced portions.

23. (previously presented) The mouthpiece of claim 21, further comprising a bite block integrated to the suction connector portion, wherein the bite block provides crush-resistance during biting by a patient.

24. (previously presented) The mouthpiece of claim 21, wherein the main body portion, the suction connector portion, and the cheek retractor portion are formed by injection-molding as one piece.

25. (previously presented) The mouthpiece of claim 21, wherein the suction connector portion comprises a cutout corresponding to a protrusion on a vacuum adapter to provide an interlocking fit.

26. (previously presented) The mouthpiece of claim 21, where in the suction connector portion connects to the vacuum suction source, wherein activation of the vacuum suction source provides suction of fluids from the interior space of the main body portion.

27. (previously presented) The mouthpiece of claim 26, wherein the activation of the vacuum suction source further draws fluids from an exterior of the main body portion into the interior space of the main body portion.

28. (new) The mouthpiece of claim 1, wherein the span of the anterior intervening wall extends from the edge of the anterior wall to at least a mid-point of the interior space between the anterior wall and the posterior wall.

APPLICANT'S SUMMARY OF THE EXAMINER INTERVIEW

The Applicant's representative held a telephonic interview with Examiner To and Primary Examiner Eide on May 10, 2022 ("*Examiner Interview*") regarding the 35 U.S.C. 103 rejections of the *Office Action*. During the *Examiner Interview*, the Applicant's representative discussed how the proposed amendment distinguishes the claims from the cited references. The examiners suggested amendments to further define the claimed intervening wall and agreed that further defining the claimed intervening wall as suggested would appear to overcome the rejections of the office action.

The Applicant and the Applicant's representative thank the Examiners for their time and courtesy during the *Examiner Interview*. The Examiners are invited to contact the Applicant's undersigned representative with any questions or comments regarding allowability of the present claims.

REMARKS

Amendments to the Claims

Claims 1, 3-5, 8, 10-19, and 21-28 are presently pending, of which claims 1 and 21 are independent. Claims 1 and 21 are currently amended. Claim 28 is newly added. The claims concern subject matter fully supported by the *Specification* and as such, no new matter has been added. Entry and consideration of the same is respectfully requested.

Rejections under 35 U.S.C. §112

Claim 21 is rejected under 35 U.S.C. 112(b) as being indefinite due to the previous recitation, 'that extends partially towards the at least one posterior intervening wall' in lines 12-13 of claim 21. *Office Action*, 2. As amended, claim 21 no longer exhibits the purported indefiniteness, thereby rendering the rejection moot. The Applicant therefore respectfully requests withdrawal of the 35 U.S.C. 112(b) rejection in light of the current amendment.

Rejections under 35 U.S.C. §§ 102, 103

Claims 1, 3, 8, 10-13, 15, 18-19 and 26-27 are rejected as purportedly being anticipated by U.S. patent application number 2015/0335409 (hereinafter *Hirsch*). *Id.* at 3. Claims 1, 3, 8, 10-13, 15, 18-19 and 26-27 are rejected as purportedly being unpatentable over *Hirsch* in view of U.S. patent application number 2014/0212841 (hereinafter *Nguyen*). *Id.* at 10. The applicant respectfully disagrees.

Independent claims 1 and 21 presently recite an 'intervening wall protruding from and extending along an edge of the anterior wall, in which the 'intervening wall' has 'a span that extends partially across the distance of the interior space' and ;' 'an edge of the span of the at least one intervening wall has a plurality of alternating crests and troughs that extend different distances partially across the interior space.' *See e.g.*, FIGs. 2, 6 (provided below).

FIGs. 2 and 6 of the present *Specification* illustrates, for example, "anterior intervening wall 127" and "posterior intervening wall 134," both of which extend from a respective 'edge' partially across the interior space between the main anterior and posterior body walls.

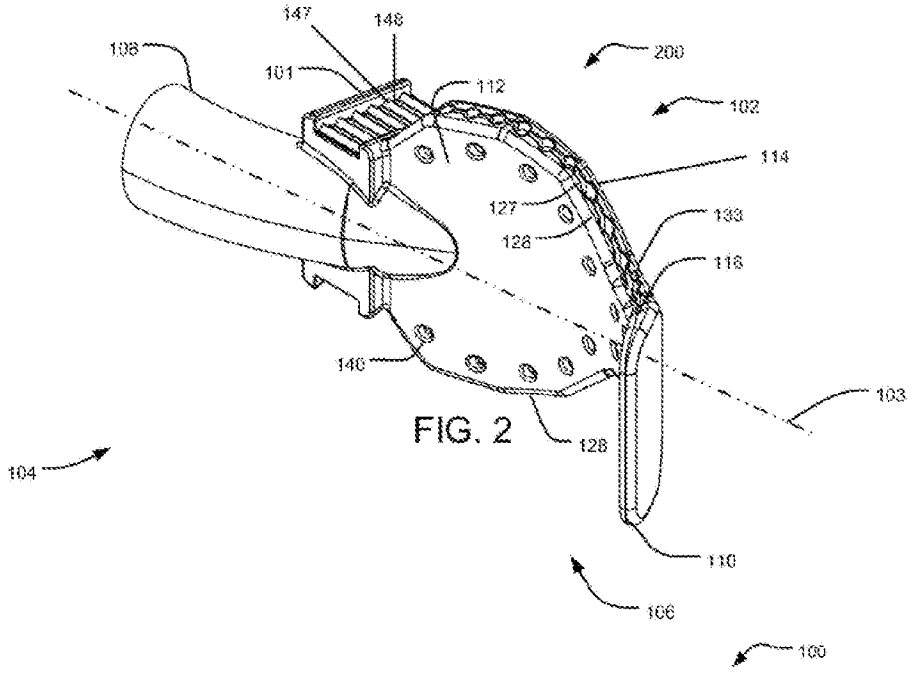


FIG. 2

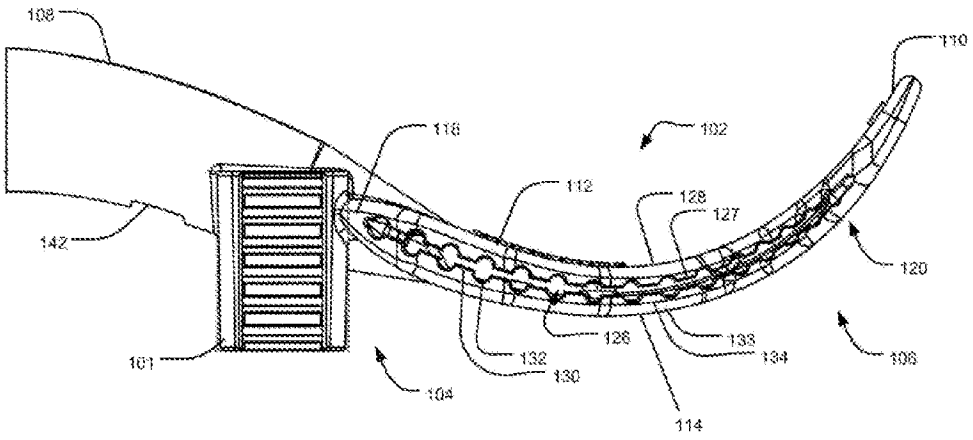


FIG. 6

See also Specification at [0034] (noting that "[a]t least one anterior intervening wall 127 may extend from at least one edge 128 of the anterior wall 112 partially towards the posterior wall 114," and "[t]he span of such anterior intervening wall 127 therefore may not extend

the entire distance between the anterior wall 112 and the posterior wall 114"); [0035] ("The posterior wall 114 may have a corresponding at least one posterior intervening wall 134 that extends from at least one edge 133 of the posterior wall 114 and partially extends towards the anterior wall 112"). Such an 'intervening wall' may include "an alternating crest 130 and trough 132," and the troughs "may extend partially along the anterior intervening wall 127." *Id.*

The *Office Action* argues that element 390 of *Hirsch* teaches the claimed 'at least one anterior intervening wall.' *Office Action* at 3. Elements 390 and 400 of *Hirsch*, however, relate to "lower edges" of the retractor as illustrated in FIG. 6 below. *Hirsch*, [0032].

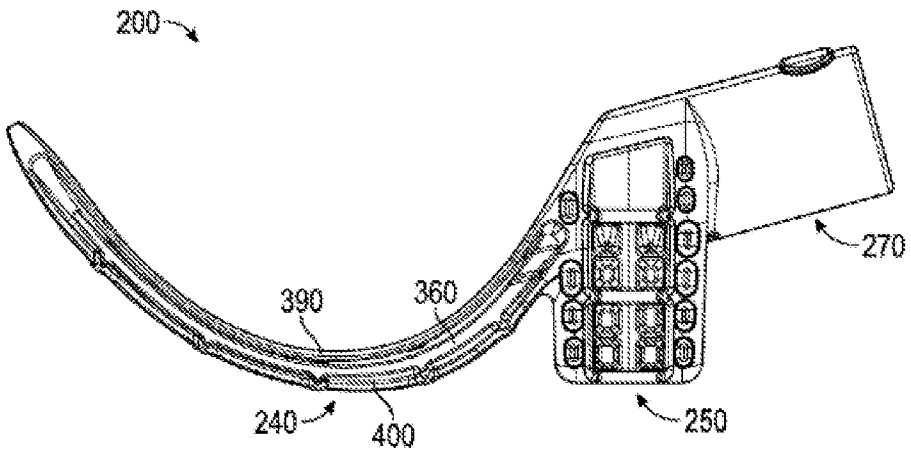
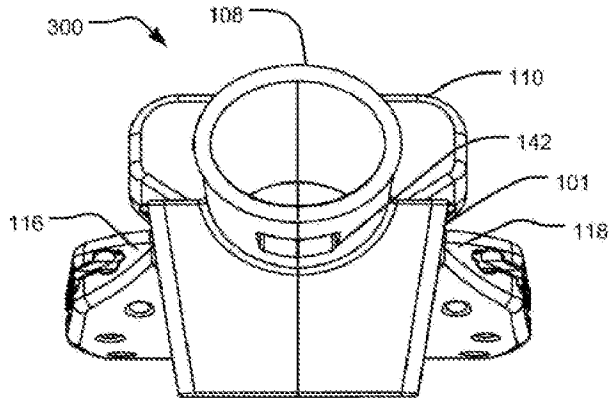
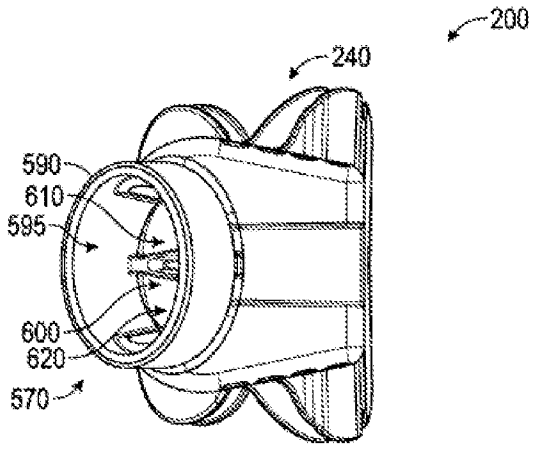


FIG. 6

In other words, element 390 of *Hirsch* is simply another side to element 330 or an anterior wall, rather than an intervening wall 'protruding from and extending along an edge of the anterior wall,' 'having a span that extends partially across the distance of the interior space towards the posterior wall, and at least one posterior intervening wall extending along an edge of the posterior wall partially across the distance towards the anterior wall' as claimed. Such distinction between the claimed intervening wall and element 390 may be seen from another angle, as illustrated below.

Application 16/870,745	*Hirsch*
 FIG. 3	 FIG. 7

Thus, *Hirsch* fails to disclose 'anterior intervening wall protruding from and extending along an edge of the anterior wall, the anterior intervening wall having a span that extends partially across the distance of the interior space towards the posterior wall, and at least one posterior intervening wall extending along an edge of the posterior wall partially across the distance towards the anterior wall' or 'an edge of the span of the at least one intervening wall has a plurality of alternating crests and troughs that extend different distances partially across the interior space' as claimed. *Nguyen* is cited only in relation to dependent claims and does not cure the deficiencies of *Hirsch* in relation the present independent claims. *Office Action* at 10.

The independent claims therefore are patentable over the cited references. Furthermore, 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. The Applicant therefore respectfully requests that the rejections of the claims under 35 U.S.C. §102 and §103 be withdrawn.

CONCLUSION

Based on the foregoing, it is believed that the present application overcomes the current rejections of record and is now in conditions for allowance.

The Examiner is invited to contact Applicant's undersigned representation with any questions regarding the present submission.

Respectfully submitted,

May 17, 2023

/Ruby Chung/

Ruby Chung (Reg. No. 76,809)
POLSINELLI *LLP*
3 Embarcadero Center, Suite 2400
San Francisco, CA 94111
Phone: (415) 248-2102
PatentDocketing@Polsinelli.com

Electronic Patent Application Fee Transmittal

Application Number:	16870745
Filing Date:	08-May-2020
Title of Invention:	DENTAL MOUTHPIECE
First Named Inventor/Applicant Name:	Thien Nguyen
Filer:	Ruby Lim Chung
Attorney Docket Number:	INCEP-005

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:				
CLAIMS IN EXCESS OF 20	2202	1	40	40
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**40**

Electronic Acknowledgement Receipt

EFS ID:	48020549
Application Number:	16870745
International Application Number:	
Confirmation Number:	7491
Title of Invention:	DENTAL MOUTHPIECE
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	138718
Filer:	Ruby Lim Chung
Filer Authorized By:	
Attorney Docket Number:	INCEP-005
Receipt Date:	17-MAY-2023
Filing Date:	08-MAY-2020
Time Stamp:	22:18:23
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$40
RAM confirmation Number	E20235GM18555100
Deposit Account	
Authorized User	

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

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		INCEP-005_Response_C.pdf	670496 3d5e8e04c0d788735e195ddc6ddec6c503318d76	yes	12

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Request for Reconsideration-After Non-Final Rejection	1	1
	Claims	2	6
	Applicant summary of interview with examiner	7	7
	Applicant Arguments/Remarks Made in an Amendment	8	12

Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	37395 8972e84658d5ad59cd122372b9a280f2adf2888e	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	707891		

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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.

Substitute for Form 1449/PTO	*Complete if Known*	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*	Application Number	16/870,745
	Filing Date	May 8, 2020
	First Named Inventor:	Thien Nguyen
	Art Unit	3772
	Examiner Name	TO, HOLLY T
Sheet 2 **of** 2	Attorney Docket Number	INCEP-005

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. 20804801.7; Extended European Search Report dated 4/20/23	
		European Patent Application No. 20804801.7; Supplementary European Search Report dated 5/10/23	

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 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.

Electronic Acknowledgement Receipt

EFS ID:	48111256
Application Number:	16870745
International Application Number:	
Confirmation Number:	7491
Title of Invention:	DENTAL MOUTHPIECE
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	138718
Filer:	Ruby Lim Chung/Jasmine Han
Filer Authorized By:	Ruby Lim Chung
Attorney Docket Number:	INCEP-005
Receipt Date:	06-JUN-2023
Filing Date:	08-MAY-2020
Time Stamp:	19:07:45
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-005_IDS_Transmittal_6-6-23.pdf	98278 722f47568235079e9c135ab4ebd575c3d3ca057b	no	2

Warnings:

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	INCEP-005_IDS_1449_6-6-23.pdf	196444 31dae68f45984b76616e148283c8e4ca54a18466	no	1
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Information:					
This is not an USPTO supplied IDS fillable form					
3	Non Patent Literature	N1_EESR_4-20-23.pdf	3512905 187e2f789109184e3f57dbc146f3841a2dd80526	no	7
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Information:					
4	Non Patent Literature	N2_Supp_EESR_5-10-23.pdf	44458 47dc29b4c7c6e87c54ed55aff771f8495a54db8f	no	1
Warnings:					
Information:					
		Total Files Size (in bytes):	3852085		

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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

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: 3772	Examiner: Holly T. To
Serial No.: 16/870,745	Filed: May 8, 2020
In re Application of: Thien Nguyen	
Confirmation No.: 7491	Customer No.: 138718
Title: DENTAL MOUTHPIECE	

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 Applicant's 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.

Respectfully submitted,
POLSINELLI LLP

Dated: June 6, 2023

By: _____/Ruby L. Chung/_____
Ruby L. Chung (Reg. No. 76,809)
Polsinelli LLP
Three Embarcadero Center, Suite 2400
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patentdocketing@polsinelli.com

PTO/SB/08a (01-22)
Approved for use through 05/31/2024. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16870745
Filing Date	2020-05-08
First Named Inventor	Thien Nguyen
Art Unit	3772
Examiner Name	TO, HOLLY T
Attorney Docket Number	INCEP-005

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	11744686		2023-09-05	Nguyen et al.	

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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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16870745
	Filing Date	2020-05-08
	First Named Inventor	Thien Nguyen
	Art Unit	3772
	Examiner Name	TO, HOLLY T
	Attorney Docket Number	INCEP-005

	1	

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EXAMINER SIGNATURE

Examiner Signature		Date Considered	

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

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16870745
	Filing Date	2020-05-08
	First Named Inventor	Thien Nguyen
	Art Unit	3772
	Examiner Name	TO, HOLLY T
	Attorney Docket Number	INCEP-005

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

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. See 37 CFR 1.97(e)(1).

OR

☒ 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 making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Tam Thanh Pham/	Date (YYYY-MM-DD)	2023-09-01
Name/Print	Tam Thanh Pham	Registration Number	43548

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 1 hour 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.**

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 the Freedom of Information Act requires disclosure of these record s.

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 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.

Electronic Acknowledgement Receipt

EFS ID:	48526550
Application Number:	16870745
International Application Number:	
Confirmation Number:	7491
Title of Invention:	DENTAL MOUTHPIECE
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	138718
Filer:	TamThanh Thi Pham/Jasmine Han
Filer Authorized By:	TamThanh Thi Pham
Attorney Docket Number:	INCEP-005
Receipt Date:	01-SEP-2023
Filing Date:	08-MAY-2020
Time Stamp:	17:13:38
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-005_IDS_Transmittal.pdf	106042 0f1091e561465708e4beba439eeabcb9e3bd1cbe	no	3

Warnings:

Information:					
2	Miscellaneous Incoming Letter	INCEP-005_List_of_Copending_Apps.pdf	102121 4573c7f803dec46d0981f2fc91ab86589eb2065c	no	1
Warnings:					
Information:					
3	Information Disclosure Statement (IDS) Form (SB08)	INCEP-005_IDS_9-1-23.pdf	1282281 406243d806ec1aaedb3b9c22201c16a1dfd3be7a	no	4
Warnings:					
Information:					
		Total Files Size (in bytes):	1490444		

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New Applications Under 35 U.S.C. 111

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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

In re application of

Thien Nguyen et al. Confirmation No. 7491

Application No. 16/870,745

Filed: May 8, 2020

For: **DENTAL MOUTHPIECE**

Group Art Unit: 3772

Examiner: TO, HOLLY T

Attorney Docket No. INCEP-005

INFORMATION DISCLOSURE STATEMENT

TO THE COMMISSIONER FOR PATENTS:

1. Documents listed on the accompanying Form PTO/SB/08a (or equivalent) are presented for the Examiner's consideration.

☒ Copies of listed U.S. patents and U.S. patent application publications are not required for submission. (37 C.F.R. § 1.98(a)(2)(ii))

☐ Copies of listed foreign patent documents and/or non-patent literature are enclosed. (37 C.F.R. § 1.98(a)(2))

☐ Copies of the documents listed at sheet/cite nos. _____ of the attached Form PTO/SB/08a (or equivalent) are omitted because (1) they are already of record in U.S. Patent Application No. 16/542,267, filed August 15, 2019, on which this application relies for an earlier filing date under 35 U.S.C. § 120; and (2) any information disclosure statement filed in the prosecution of Application No. 17/986,726, complies with 37 CFR §§ 1.98(a) through (c). (37 C.F.R. § 1.98(d))

☐ A copy of copending U.S. Patent Application No., filed _____, for _____, listed at (sheet/cite no.) of the attached Form PTO-1449 (or equivalent), ☐ is enclosed / ☐ is omitted. (Copy not required if available via IFW. 1287 OG 162 (Oct. 19, 2004).).

2. This information disclosure statement is being submitted (check box a., b., or c.):

a. ☐ Within three months of the filing date of a national application or entry of the national stage in an international application; or before the mailing of a first Office action on the merits; or before the mailing of a first Office action after the filing of a request for continued examination under 37 CFR 1.114. (No statement under 37 CFR 1.97(e) is required.); or

b. ☒ After the period set forth in paragraph 2a, but before the mailing date of either a final action, a notice of allowance, or an action that otherwise closes prosecution in the application. (Check box i. or ii.)

i. ☐ The information disclosure statement submission fee set forth in 37 CFR 1.17(p) is paid herewith, or

ii. ☒ A statement specified by 37 CFR 1.97(e) is set forth below; or

c. ☐ After the mailing date of a final action or notice of allowance and on or before payment of the issue fee. A statement specified by 37 CFR 1.97(e) is set forth below. Enclosed is the information disclosure statement processing fee set forth in 37 CFR 1.17(p).

3. Fee Payment

a. ☐ A check in the amount of $_____ is enclosed.

b. ☐ Payment by credit card.

c. ☐ Please charge our Deposit Account No. 50-1662 in the amount of $_____.

d. ☐ The Commissioner is hereby authorized to charge any additional fees which may be required in connection with filing of these papers, or credit overpayment to Deposit Account No. 50-1662.

4. If a statement specified by 37 CFR 1.97(e) is required, the attorney or agent signing below hereby states that (check box a. or b.):

a. ☐ Each item of information contained in this 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 this information disclosure statement

☐ Such communication was not received by any individual designated in 37 CFR 1.56(c) more than thirty days prior to the filing of this information disclosure statement. (37 C.F.R. § 1.97(e))

b. ☒ No item of information contained in this 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 making reasonable inquiry, no item of information contained in this information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of this information disclosure statement.

5. ☐ A concise explanation of the relevance of each document not in the English language and/or selected documents in the English language is set forth below.

Respectfully submitted,

Date: September 1, 2023

By: /Tam Thanh Pham/
Tam Thanh Pham
Registration No. 50,565

Polsinelli LLP
Three Embarcadero Center
Suite 2400
San Francisco, CA 94111
(415) 248-2100

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit: 3772

Examiner: TO, HOLLY T

Serial No.: 16/870,745

Filed: May 8, 2020

In re Application of: Thien Nguyen et al.

Confirmation No.: 7491

Customer No.: 138718

Title: DENTAL MOUTHPIECE

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
	18/217,304	INCEP-001COF	Thien Nguyen	INTRAORAL DEVICE	06-30-2023
	29/893,986	INCEP-011D	Thien Nguyen	MOUTHPIECE	06-05-2023
Examiner's Signature:					Date:

Respectfully submitted,

Polsinelli LLP

Date: September 1, 2023

By: /Tam Thanh Pham/

Tam Thanh Pham, Reg. No. 50,565
Three Embarcadero Center
Suite 2400
San Francisco, CA 94111
Phone: (415) 248-2100
Email: patentdocketing@polsinelli.com

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
16/870,745	**09/11/2023 06:19:53 PM ET**	**INCEP-005**

Title of Invention

DENTAL MOUTHPIECE

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	7491	FILED BY	Cheri Houle
PATENT CENTER #	62775674	FILING DATE	05/08/2020
CUSTOMER #	138718	FIRST NAMED INVENTOR	Thien Nguyen
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	TAM THANH PHAM

Documents

TOTAL DOCUMENTS: 3

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
INCEP-005_UPDATED_ADS_9-11-23.pdf	9	Application Data Sheet	485 KB
Warning: This is not a USPTO supplied ADS fillable form. Data in the form cannot be automatically loaded to other USPTO systems.			
INCEP-005_POA_9-11-23.pdf	2	Power of Attorney	667 KB
INCEP-005_373_STMT_9-11-23.pdf	3	Assignee showing of ownership per 37 CFR 3.73	133 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
INCEP-005_UPDATED_ADS_9-11-23.pdf	664B041B519B3471A918A277C5AB008095DD94CDA6BEF089A79BB9FBD44E13B16A69DE5E68AEA15DDEA517E8F103A3A91D1B49B261018E646190FA0823FDC1D9
INCEP-005_POA_9-11-23.pdf	ED91517B34BEECCD3840ABEA47F338DEAAA2EF69C0F49BF08E6D66A9E9F3209A34893585D14A548275357EFF219793FF75F865833D0FAAEAA1F784F8F8024C7D
INCEP-005_373_STMT_9-11-23.pdf	275C77E652BAD104A9261F980A3726B55A9B94DA29A91329392F8E570952D9464E10A35C92EC9930AD3C0440F5BD78857BD0AB2BA0B808ADFBDBE7B2D5E1E41C

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 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.

DocuSign Envelope ID: 62B39B6A-07A0-4143-A1DB-459099E3CD42

PTO/AIA/80 (07-17)
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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:

[X] 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 assignment 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:

[X] The address associated with Customer Number: 138718

OR

[ ]

Firm or individual name		
Address		
City	State	Zip
Country		
Telephone	Email	

Assignee name and address: Solmetex, LLC
50 Bearfoot Rd.
Northborough, MA 01532

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 DocuSigned by: Lauren Nagel	Date 1/10/2023
Name Lauren Nagel	Telephone
Title Chief Operating Officer	

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 update (and by the USPTO to process) the file of a patent or reexamination proceeding. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 18 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.

DocuSign Envelope ID: 62B39B6A-07A0-4143-A1DB-459099E3CD42

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.

PTO/AIA/14 (02-18)
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	INCEP-005
	Application Number	16/870,745
Title of Invention	DENTAL MOUTHPIECE	

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 Avenue, Suite B~~ 50 Bearfoot Road		
Address 2			
City	~~Fountain Valley~~ Northborough	State/Province	~~CA~~ MA
Postal Code	~~92708~~ 01532	Country	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 Avenue, Suite B~~ 50 Bearfoot Road		
Address 2			
City	~~Fountain Valley~~ Northborough	State/Province	~~CA~~ MA
Postal Code	~~92708~~ 01532	Country	US

Inventor 3 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Ethan		Nguyen	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

PTO/AIA/14 (02-18)
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	INCEP-005
	Application Number	
Title of Invention	DENTAL MOUTHPIECE	

City	Santa Ana	State/Province	CA	Country of Residence	US

Mailing Address of Inventor:

Address 1	~~11230 Grace Avenue, Suite B~~ 50 Bearfoot Road		
Address 2			
City	~~Fountain Valley~~ Northborough	State/Province	~~CA~~ MA
Postal Code	~~92708~~ 01532	Country	US

Inventor 4 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Lauren		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 Avenue, Suite B~~ 50 Bearfoot Road		
Address 2			
City	~~Fountain Valley~~ Northborough	State/Province	~~CA~~ MA
Postal Code	~~92708~~ 01532	Country	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).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	138718		
Email Address		Add Email	Remove Email

Application Information:

Title of the Invention	DENTAL MOUTHPIECE		
Attorney Docket Number	INCEP-005	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	10	Suggested Figure for Publication (if any)	

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	INCEP-005
	Application Number	
Title of Invention	DENTAL MOUTHPIECE	

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		

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	~~Pending~~ Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
16/870,745	Claims benefit of provisional	62846353	2019-05-10

Additional Domestic Benefit/National Stage 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-005
	Application Number	
Title of Invention	DENTAL MOUTHPIECE	

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)[i] 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[ii]	Filing Date (YYYY-MM-DD)	Access Code[i] (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.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	INCEP-005
	Application Number	
Title of Invention	DENTAL MOUTHPIECE	

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-005
	Application Number	
Title of Invention	DENTAL MOUTHPIECE	

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. [x]

Organization Name	~~DryShield, LLC~~ Solmetex, LLC

Mailing Address Information For Applicant:

Address 1	~~11230 Grace Avenue, Suite B~~ 50 Bearfoot Road		
Address 2			
City	~~Fountain Valley~~ Northborough	**State/Province**	~~CA~~ MA
Country	US	Postal Code	~~92708~~ 01532
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.

PTO/AIA/14 (02-18)
Approved for use through 11/30/2020. OMB 0651-0032
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-005
	Application Number	
Title of Invention	DENTAL MOUTHPIECE	

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. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country		Postal Code	
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	~~/Ruby Chung/~~ /Tam Thanh Pham/			Date (YYYY-MM-DD)	2023-09-11 ~~2020-05-08~~
First Name	~~Ruby~~ Tam Thanh	Last Name	~~Chung~~ Pham	Registration Number	~~76809~~ 50565

Additional Signature may be generated within this form by selecting the Add button.

PTO/AIA/14 (02-18)
Approved for use through 11/30/2020. OMB 0651-0032
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-005
	Application Number	
Title of Invention	DENTAL MOUTHPIECE	

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.**

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 the Freedom of Information Act requires disclosure of these records.

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 CooperationTreaty.

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.

PTO/AIA/96 (08-12)
Approved for use through 11/30/2020. 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: SOLMETEX, LLC

Application No./Patent No.: 16/870,745 Filed/Issue Date: 05-08-2020

Titled: DENTAL MOUTHPIECE

SOLMETEX, 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: Inventors To: DRYSHIELD, LLC

   The document was recorded in the United States Patent and Trademark Office at
   Reel 053020, Frame 0505, or for which a copy thereof is attached.

2. From: DRYSHIELD, LLC To: SOLMETEX, LLC

   The document was recorded in the United States Patent and Trademark Office at
   Reel 063440, Frame 0118, 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.**

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 11/30/2020. 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/	September 11, 2023
Signature	Date
Tam Thanh Pham	50565
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.

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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).
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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.

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
16/870,745	05/08/2020	Thien Nguyen	INCEP-005

CONFIRMATION NO. 7491

138718
Polsinelli LLP
PO Box 140310
Kansas City, MO 64114-0310

POA ACCEPTANCE LETTER

OC000000061853469

Date Mailed: 09/14/2023

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 09/11/2023.

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**.

/sleutchit/

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
16/870,745	05/08/2020	3772	1005	INCEP-005	20	1

CONFIRMATION NO. 7491

REPLACEMENT FILING RECEIPT

138718
Polsinelli LLP
PO Box 140310
Kansas City, MO 64114-0310

OC00000061853510

Date Mailed: 09/14/2023

Receipt is acknowledged of this non-provisional utility 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 FIRST INVENTOR, 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 corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction 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 provided that the request is grantable.

Inventor(s)

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

Applicant(s)

Solmetex, LLC., Northborough, MA;

Power of Attorney: The patent practitioners associated with Customer Number 138718

Domestic Priority data as claimed by applicant

This appln claims benefit of 62/846,353 05/10/2019

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: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 05/15/2020

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/870,745**

Projected Publication Date: 11/12/2020

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****
Title

DENTAL MOUTHPIECE

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).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

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.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop

technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

Examiner-Initiated Interview Summary	**Application No.** 16/870,745	**Applicant(s)** Nguyen, Thien		
	Examiner HOLLY T TO	**Art Unit** 3772	**AIA (First Inventor to File) Status** Yes	**Page** 1 of 1

All Participants (applicant, applicants representative, PTO personnel)	**Title**	**Type**
HOLLY T TO	Examiner	Telephonic
Tam Thanh Pham	Attorney of Record	

Date of Interview: 08 September 2023

Issues Discussed:

Proposed Amendment(s)

A call was made to discuss possible amendments to claim 8 and 22 to overcome 112 issues and make them allowable. The examiner amendments were approved by applicant.

/HOLLY T. TO/ Examiner, Art Unit 3772	/HEIDI M EIDE/ Primary Examiner, Art Unit 3772

Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04
Please further see:
MPEP 713.04
Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b)
37 CFR § 1.2 Business to be transacted in writing

Applicant recordation instructions: It is not necessary for applicant to provide a separate record of the substance of 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.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/870,745	Nguyen et al.
	Examiner	Art Unit
	HOLLY T TO	3772

CPC - Searched*		
Symbol	**Date**	**Examiner**
A61C5/90	11/22/2021	HT
A61C17/08	11/22/2021	HT
A61B1/24	11/22/2021	HT
A61C17/06	04/21/2022	HT
A61C17/04,043,0208	04/21/2022	HT
A61B1/0094	05/02/2022	HT
A61B2017/22079	05/02/2022	HT
A61C17/10	02/01/2023	HT

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**
433	92	11/22/2021	HT
433	91,93,136,138,140 ,20	04/21/2022	HT

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

/HOLLY T. TO/ Examiner, Art Unit 3772	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/870,745	Nguyen et al.
	Examiner	Art Unit
	HOLLY T TO	3772

Search Notes		
Search Notes	**Date**	**Examiner**
Conducted Inventor, Assignee, USPC and CPC search (with text in PE2E); *denotes cursory review of the search areas listed above	11/22/2021	HT
Consulted With Home SPE Jacqueline Johanas in Dentistry (Class 433)	11/29/2021	HT
Conducted updated Inventor, Assignee, USPC and CPC search (with text in PE2E); *denotes cursory review of the search areas listed above	04/21/2022	HT
Consulted Heidi Eide in Dentistry (Class 433)	04/26/2022	HT
Conducted updated Inventor, Assignee, USPC and CPC search (with text in PE2E); *denotes cursory review of the search areas listed above	01/25/2023	HT
Consulted Heidi Eide in Dentistry (Class 433)	02/01/2023	HT
Conducted cpcs search and reviewed IDs	02/01/2023	HT
Conducted updated Inventor, Assignee, USPC and CPC search (with text in PE2E); *denotes cursory review of the search areas listed above	08/16/2023	HT
Consulted Heidi Eide in Class 433	08/30/2023	HT
Conducted Facet Search	08/31/2023	HT
Consulted IDS	09/07/2023	HT

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**
	PGPUB data, see search history	08/31/2023	HT

/HOLLY T. TO/ Examiner, Art Unit 3772	

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/870,745	Nguyen, Thien
	Examiner	**Art Unit**
	HOLLY T TO	3772

CPC						
Symbol					**Type**	**Version**
A61C	/	5	/	90	F	2017-02-01
A61B	/	1	/	24	I	2013-01-01
A61C	/	17	/	08	I	2019-05-01

CPC Combination Sets								
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

/HOLLY T. TO/ Examiner, Art Unit 3772	31 August 2023	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	23	
/HEIDI M EIDE/ Primary Examiner, Art Unit 3772	08 September 2023	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2

U.S. Patent and Trademark Office — Part of Paper No.: 20230824

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/870,745	Nguyen, Thien
	Examiner	**Art Unit**
	HOLLY T TO	3772

INTERNATIONAL CLASSIFICATION				
CLAIMED				
A61C5/90	/	5	/	90
A61B1/24	/	1	/	24
A61C17/08	/	17	/	08

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**
433	92

CROSS REFERENCES(S)						
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**					

/HOLLY T. TO/ Examiner, Art Unit 3772 (Assistant Examiner)	31 August 2023 (Date)	**Total Claims Allowed:** 23	
/HEIDI M EIDE/ Primary Examiner, Art Unit 3772 (Primary Examiner)	08 September 2023 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 2

U.S. Patent and Trademark Office — Part of Paper No.: 20230824

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/870,745	Nguyen, Thien
	Examiner	**Art Unit**
	HOLLY T TO	3772

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	6	10	15	19	16	28								
	2	7	11		20										
2	3	8	12	17	21										
3	4	9	13	18	22										
4	5	10	14	19	23										
	6	11	15	20	24										
	7	12	16	21	25										
5	8	13	17	22	26										
	9	14	18	23	27										

/HOLLY T. TO/ Examiner, Art Unit 3772	31 August 2023	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	23	
/HEIDI M EIDE/ Primary Examiner, Art Unit 3772	08 September 2023	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2

U.S. Patent and Trademark Office Part of Paper No.: 20230824

Substitute for Form 1449/PTO	Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(use as many sheets as necessary)*	Application Number	16/870,745
	Filing Date	May 8, 2020
	First Named Inventor:	Thien Nguyen
	Art Unit	3772
	Examiner Name	TO, HOLLY T
Sheet 2 of 2	Attorney Docket Number	INCEP-005

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. 20804801.7; Extended European Search Report dated 4/20/23	
		European Patent Application No. 20804801.7; Supplementary European Search Report dated 5/10/23	

Examiner Signature	/HOLLY T. TO/	Date Considered	08/16/2023

*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 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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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /HTT/

PATENT
INCEP-005

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit: 3772

Examiner: Not Yet Assigned

Serial No.: 16/870,745

Filed: May 8, 2020

In re Application of: Thien Nguyen

Confirmation No.: 7491

Customer No.: 138718

Title: DENTAL MOUTHPIECE

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
	29/782,645	INCEP-006D	Thien Nguyen	MOUTHPIECE	May 7, 2021
	29/780,960	INCEP-007D	Thien Nguyen	MOUTHPIECE MOUTH PROP	April 27, 2021
	29/782,638	INCEP-008D	Thien Nguyen	MOUTHPIECE	May 7, 2021
	29/782,644	INCEP-009D	Thien Nguyen	MOUTHPIECE	May 7, 2021
	29/782,643	INCEP-010D	Thien Nguyen	MOUTHPIECE	May 7, 2021
Examiner's Signature:	/HOLLY T. TO/				Date: 08/31/2023

Respectfully submitted,
POLSINELLI LLP

Dated: May 12, 2021

By: _____/Ruby L. Chung/_____
Ruby L. Chung (Reg. No. 76,809)
Polsinelli LLP
Three Embarcadero Center, Suite 2400
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415-248-2100 (Main)
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Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-22)
Approved for use through 05/31/2024. 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.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16870745
Filing Date	2020-05-08
First Named Inventor	Thien Nguyen
Art Unit	3772
Examiner Name	TO, HOLLY T
Attorney Docket Number	INCEP-005

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	11744686		2023-09-05	Nguyen et al.	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

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NON-PATENT LITERATURE DOCUMENTS Remove

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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /HTT/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16870745
	Filing Date	2020-05-08
	First Named Inventor	Thien Nguyen
	Art Unit	3772
	Examiner Name	TO, HOLLY T
	Attorney Docket Number	INCEP-005

	1	

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature	/HOLLY T. TO/	Date Considered	09/07/2023

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

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /HTT/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16870745
Filing Date	2020-05-08
First Named Inventor	Thien Nguyen
Art Unit	3772
Examiner Name	TO, HOLLY T
Attorney Docket Number	INCEP-005

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

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. See 37 CFR 1.97(e)(1).

OR

☒ 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 making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Tam Thanh Pham/	Date (YYYY-MM-DD)	2023-09-01
Name/Print	Tam Thanh Pham	Registration Number	43548

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 1 hour 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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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:

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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.

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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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Substitute for Form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Complete if Known	
Application Number	16/870,745
Filing Date	May 8, 2020
First Named Inventor:	Thien Nguyen
Art Unit	3772
Examiner Name	Holly T. To
Attorney Docket Number	INCEP-005

Sheet	1	of	1

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-	11,576,764	2/14/2023	Nguyen	
		US-	11,589,969	2/28/2023	Nguyen	
		US-	11,589,970	2/28/2023	Nguyen	
		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	/HOLLY T. TO/	Date Considered	08/16/2023

*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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PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L206	25	((("DRYSHIELD") near3 ("LLC"))).AS,AANM.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/16 09:45 AM
L207	1536	((("NGUYEN") near3 ("Thien")) OR (("PHAM") near3 ("Tam") near3 ("Thanh")) OR (("NGUYEN") near3 ("Ethan")) OR (("NGUYEN") near3 ("Lauren"))).INV.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT)	OR	ON	ON	2023/08/16 09:45 AM
L208	385	(433/92).ccls.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/16 09:45 AM
L209	3028	(A61C5/90).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA,	OR	ON	ON	2023/08/16 09:46 AM

			EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L210	3784	(A61C17/08).cpc. NOT (A61C5/90).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/16 09:55 AM
L211	12461	(A61B1/24).cpc. NOT ((A61C17/08).cpc. OR (A61C5/90).cpc.)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/16 09:57 AM
L212	1071	(A61C17/06).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO;	OR	ON	ON	2023/08/16 10:05 AM

			JPO; DERWENT; IBM_TDB)				
L213	3818	(A61C17/04,043,0208).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/16 10:05 AM
L214	1228	(A61C17/10-12).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/16 10:07 AM
L215	7862	(A61B1/0094).cpc. OR (A61B2017/22079).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/16 10:08 AM
L216	1034	(A61M$).cpc. AND (suction$4 WITH (hollow OR channel OR void) WITH (interior$2 OR inside OR inner OR within) WITH (plurality OR multiple OR many))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS,	OR	ON	ON	2023/08/16 10:21 AM

			IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L217	4040	(L188 L187 L186 L185 L184 L183 L182 L181 L180) AND (section$1 segment$1) AND ((crest AND trough) fluctuation (up AND down))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT)	OR	ON	ON	2023/08/16 10:24 AM
L218	129	("0050461" | "1471207" | "1731322" | "2019612" | "2937445" | "3090122" | "3453735" | "3516160" | "3758950" | "3768477" | "3802081" | "3857181" | "3877691" | "3924333" | "4017975" | "4024642" | "4083115" | "4167814" | "4192071" | "D267586" | "4511329" | "4718662" | "4802851" | "4822278" | "4975057" | "5009595" | "5037298" | "5078602" | "5460524" | "D364456" | "5516286" | "5588836" | "5720275" | "5730599" | "5762496" | "5890899" | "6022214" | "6213772" | "6241521" | "6267591" | "6338627" | "6575746" | "6652276" | "6655960" | "6672305" | "6716029" | "D495799" | "D497426" | "6908308" | "6974321" | "7287981" | "7293990" | "7611354" | "D615203" | "7748981" | "8029280" | "8057227" | "8057228" | "8075310" | "D663831" | "D666726" | "8297973" | "8529256" | "8535056" | "D696779"	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/08/16 10:25 AM

		| "8911232" | "D734851" | "9084656" | "9089389" | "D735858" | "D737964" | "9358086" | "D782047" | "D782048" | "D787069" | "D787070" | "9788924" | "D809660" | "9968341" | "10390734" | "10390916" | "D868958" | "D876627" | "10939979" | "D962438" | "D962439" | "20010008752" | "20030134253" | "20040033468" | "20060063126" | "20060063129" | "20060084031" | "20080166684" | "20080318183" | "20090123886" | "20090274991" | "20110207076" | "20110311942" | "20120015317" | "20120015320" | "20120237894" | "20130095450" | "20130252193" | "20140004478" | "20140162209" | "20140212837" | "20140212838" | "20140212839" | "20140212840" | "20140349249" | "20150305842" | "20150335409" | "20170156831" | "20170156832" | "20170156833" | "20180153637" | "20200155284" | "20200352680" | "20200383560").pn. OR ("11589970").urpn. AND (PGPB | USPT | USOC).dbnm.					
L219	3	("11576764" OR "11589969" OR "11589970").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/08/16 10:28 AM
L223	2	(US "20170156832" A1).pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA,	OR	ON	ON	2023/08/16 10:34 AM

			EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L224	3	(US "2014212838" A1).pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/16 10:34 AM
L225	2	(US "20140212838" A1).pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/16 10:35 AM
L226	2	(US "20150335409" A1).pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO;	OR	ON	ON	2023/08/16 10:35 AM

			JPO; DERWENT; IBM_TDB)				
L227	4	(US "20100119989" A1).pn.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/16 11:19 AM
L228	8	("2014/0162209").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/08/16 11:24 AM
L229	32	(Artificial Intelligence) More like doc: US-20140162209-A1 Text: (AU-2014202637-A1 OR EP-2903557-A1 OR WO-2015088577-A1 OR US-20140212839-A1 OR US-20140212837-A1 OR US-20140212838-A1 OR US-20140212841-A1 OR CA-2919142-A1 OR EP-2903557-B1 OR AU-2014202637-B2 OR US-20140212840-A1 OR CA-2851861-A1 OR CA-2851861-C OR US-8911232-B2 OR US-9788924-B2 OR CA-2919142-C OR AU-2016200275-A1 OR US-11576764-B2 OR US-11589970-B2 OR US-11589969-B2).did.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/16 11:25 AM
L230	6438	(A61C17/08,0208).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL,	OR	ON	ON	2023/08/16 11:25 AM

			PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L231	70	((US-11179225-B2 OR US-D809660-S OR US-9788924-B2 OR US-10390916-B1 OR US-9044293-B2 OR US-9956062-B2 OR US-8852169-B2 OR US-8221316-B2 OR US-8012141-B2 OR US-6672305-B2 OR US-5720275-A OR US-D615203-S OR US-5460524-A OR US-10952831-B1 OR US-10390734-B2 OR US-3877691-A OR US-3924333-A OR US-6974321-B2 OR US-9358086-B2 OR US-D495799-S OR US-11589970-B2).did. AND USPT.dbnm.) OR ((US-20140212841-A1 OR US-20140162209-A1 OR US-20160067022-A1 OR US-20210068922-A1 OR US-20200046478-A1 OR US-20090123886-A1 OR US-20080166684-A1 OR US-20030017433-A1 OR US-20180228643-A1 OR US-20170156833-A1 OR US-20170156831-A1 OR US-20170156832-A1 OR US-20160175067-A1 OR US-20150335409-A1 OR US-20060234187-A1 OR US-20060063129-A1 OR US-20210346125-A1 OR US-20210085438-A1 OR US-20200155284-A1 OR US-20190298163-A1 OR US-20170245843-A1 OR US-20160375183-A1 OR US-20140349249-A1	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/16 04:55 PM

		OR US-20130288196-A1 OR US-20120199135-A1 OR US-20120015317-A1 OR US-20090274991-A1 OR US-20090204065-A1 OR US-20140212838-A1 OR US-20180153637-A1 OR US-20220378563-A1 OR US-20100119989-A1).did. AND PGPB.dbnm.) OR ((GB-2581794-A OR WO-2018126150-A1 OR WO-2017192676-A1 OR FR-2992161-A1 OR KR-100654392-B1 OR WO-2006052756-A1 OR WO-0061031-A1 OR WO-0042939-A1 OR FR-3073137-A1 OR FR-3043906-A1 OR DE-102013110302-A1 OR WO-2014209504-A1 OR FR-2989267-A1 OR EP-1543791-A1 OR CN-104490483-A OR WO-2018016529-A1 OR WO-2023034578-A1).did. AND FTDB.dbnm.)					
L232	769	(A61C17/10).cpc.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/19 08:29 AM
L233	2	(us "20200352680").pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV,	OR	ON	ON	2023/08/24 05:23 PM

			MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L234	33	(Artificial Intelligence) More like doc: US-20200352680-A1 Text: (AU-2020274979-A1 OR EP-3965637-A1 OR WO-2020231864-A1 OR CA-3139689-A1 OR KR-20220103035-A OR US-20140212837-A1 OR US-20140212838-A1 OR US-20140212839-A1 OR TW-202108088-A OR CN-114302667-A OR US-9788924-B2 OR US-20140212840-A1 OR US-20140212841-A1 OR WO-2015088577-A1 OR EP-2903557-A1 OR US-20140162209-A1 OR US-8911232-B2 OR JP-2022533276-A OR US-11576764-B2 OR US-11589970-B2).did.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/24 05:23 PM
L235	5	((US-11589970-B2 OR US-10959820-B1).did. AND USPT.dbnm.) OR ((US-20100119989-A1).did. AND PGPB.dbnm.) OR ((US-10959820-B1).did. AND DWPI.dbnm.) OR ((WO-2023034578-A1).did. AND FTDB.dbnm.)	(USPAT; US-PGPUB; DERWENT; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN))	OR	ON	ON	2023/08/24 07:38 PM
L239	12	((KR-200369800-Y1 OR KR-20160063940-A OR KR-102256621-B1 OR KR-200416531-Y1).did. AND FTDB.dbnm.) OR ((US-20130051894-A1 OR US-20050019084-A1 OR US-20100224212-A1 OR	(FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO,	OR	ON	ON	2023/08/29 07:05 AM

		US-20150359314-A1).did. AND PGPB.dbnm.) OR ((US-0866970-A OR US-0206791-A OR US-2491980-A OR US-1013238-A).did. AND USOC.dbnm.)	NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); US-PGPUB; USOCR)				
L240	72	((US-11179225-B2 OR US-D809660-S OR US-9788924-B2 OR US-10390916-B1 OR US-9044293-B2 OR US-9956062-B2 OR US-8852169-B2 OR US-8221316-B2 OR US-8012141-B2 OR US-6672305-B2 OR US-5720275-A OR US-D615203-S OR US-5460524-A OR US-10952831-B1 OR US-10390734-B2 OR US-3877691-A OR US-3924333-A OR US-6974321-B2 OR US-9358086-B2 OR US-D495799-S OR US-11589970-B2 OR US-10959820-B1).did. AND USPT.dbnm.) OR ((US-20140212841-A1 OR US-20140162209-A1 OR US-20160067022-A1 OR US-20210068922-A1 OR US-20200046478-A1 OR US-20090123886-A1 OR US-20080166684-A1 OR US-20030017433-A1 OR US-20180228643-A1 OR US-20170156833-A1 OR US-20170156831-A1 OR US-20170156832-A1 OR US-20160175067-A1 OR US-20150335409-A1 OR US-20060234187-A1 OR US-20060063129-A1 OR US-20210346125-A1 OR US-20210085438-A1 OR US-20200155284-A1 OR US-20190298163-A1 OR US-20170245843-	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/08/30 12:19 PM

		A1 OR US-20160375183-A1 OR US-20140349249-A1 OR US-20130288196-A1 OR US-20120199135-A1 OR US-20120015317-A1 OR US-20090274991-A1 OR US-20090204065-A1 OR US-20140212838-A1 OR US-20180153637-A1 OR US-20220378563-A1 OR US-20100119989-A1).did. AND PGPB.dbnm.) OR ((GB-2581794-A OR WO-2018126150-A1 OR WO-2017192676-A1 OR FR-2992161-A1 OR KR-100654392-B1 OR WO-2006052756-A1 OR WO-0061031-A1 OR WO-0042939-A1 OR FR-3073137-A1 OR FR-3043906-A1 OR DE-102013110302-A1 OR WO-2014209504-A1 OR FR-2989267-A1 OR EP-1543791-A1 OR CN-104490483-A OR WO-2018016529-A1 OR WO-2023034578-A1).did. AND FTDB.dbnm.) OR ((US-10959820-B1).did. AND DWPI.dbnm.)					
L241	1	("11744686").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2023/09/07 04:24 PM

PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N1	0	((anterior ADJ intervening ADJ wall) AND (poster ADJ intervening ADJ wall)).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/08/31 07:51 AM
N2	1	((anterior ADJ intervening ADJ wall)).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/08/31 07:51 AM
N3	0	((anterior ADJ intervening ADJ wall) AND span AND extends	(US-PGPUB; USPAT)	OR	ON	ON	2023/08/31 07:51 AM

		AND partially).clm.					
N4	0	((anterior AND intervening AND wall) AND span AND extends AND partially).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/08/31 07:52 AM
N5	0	((anterior AND intervening AND wall) AND (poster AND intervening AND wall)).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/08/31 07:52 AM
N6	0	(intervening AND wall AND has AND alternating AND crests AND troughs).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/08/31 07:53 AM
N7	1	(intervening AND wall AND has AND alternating AND crests).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/08/31 07:53 AM
N9	1	(dental AND mouthpiece AND alternating AND intervening AND wall).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/08/31 07:53 AM
N10	1	(dental AND mouthpiece AND alternating AND intervening AND wall AND crests AND troughs).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/08/31 07:55 AM
N11	0	(dental AND mouthpiece AND alternating AND intervening AND wall AND extends AND partially).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2023/08/31 07:56 AM

Bibliographic Data

Application No: 16/870,745

Foreign Priority claimed: ○ Yes ◉ No

35 USC 119 (a-d) conditions met: ☐ Yes ☑ No ☐ Met After Allowance

Verified and Acknowledged: /HOLLY T. TO/ (Examiner's Signature) | HT (Initials)

Title: DENTAL MOUTHPIECE

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
05/08/2020	433	3772	
RULE			

APPLICANTS

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Tam Thanh Pham, San Francisco, CA, UNITED STATES

Ethan Nguyen, Santa Ana, CA, UNITED STATES

Lauren Nguyen, Santa Ana, CA, UNITED STATES

CONTINUING DATA

This application has PRO of 62846353 05/10/2019

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

05/15/2020

**** SMALL ENTITY ****

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NOTICE OF ALLOWANCE AND FEE(S) DUE

138718 7590 09/18/2023

Polsinelli LLP
PO Box 140310
Kansas City, MO 64114-0310

EXAMINER	
TO, HOLLY T	
ART UNIT	PAPER NUMBER
3772	

DATE MAILED: 09/18/2023

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/870,745	05/08/2020	Thien Nguyen	INCEP-005	7491

TITLE OF INVENTION: DENTAL MOUTHPIECE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0.00	$0.00	$480	12/18/2023

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 40% the amount of undiscounted fees, and micro entity fees are 20% the amount of undiscounted fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications. **Because electronic patent issuance may occur shortly after issue fee payment, any desired continuing application should preferably be filed prior to payment of this issue fee in order not to jeopardize copendency.**

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138718 7590 09/18/2023
Polsinelli LLP
PO Box 140310
Kansas City, MO 64114-0310

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I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/870,745	05/08/2020	Thien Nguyen	INCEP-005	7491

TITLE OF INVENTION: DENTAL MOUTHPIECE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0.00	$0.00	$480	12/18/2023

EXAMINER	ART UNIT	CLASS-SUBCLASS
TO, HOLLY T	3772	433-092000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/AIA/122 or PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. Fees submitted: ❑ Issue Fee ❑ Publication Fee (if required)

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

❑ Electronic Payment via Patent Center or EFS-Web ❑ Enclosed check ❑ Non-electronic payment by credit card (Attach form PTO-2038)

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

❑ Applicant asserting small entity status. See 37 CFR 1.27

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

❑ Applicant changing to regular undiscounted fee status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/870,745	05/08/2020	Thien Nguyen	INCEP-005	7491

138718 7590 09/18/2023

Polsinelli LLP
PO Box 140310
Kansas City, MO 64114-0310

EXAMINER	
TO, HOLLY T	
ART UNIT	PAPER NUMBER
3772	

DATE MAILED: 09/18/2023

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. 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 30 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, Virginia 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. 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.

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.

Notice of Allowability	Application No. 16/870,745	Applicant(s) Nguyen, Thien	
	Examiner HOLLY T TO	Art Unit 3772	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☑ This communication is responsive to applicant's arguments/response and amendments filed on 5/17/2023.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ 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.

3. ☑ The allowed claim(s) is/are 1,3-5,8,10-19 and 21-28 . As a result of the allowed claim(s), 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.**

4. ☐ 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)).

   * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☑ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☑ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☑ Examiner's Amendment/Comment
6. ☑ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/HOLLY T. TO/ Examiner, Art Unit 3772	/HEIDI M EIDE/ Primary Examiner, Art Unit 3772

DETAILED ACTION

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

EXAMINER'S AMENDMENT

Authorization for this examiner's amendment was given in an interview with Tam Thanh Pham (Reg No. 50565) on 9/8/2023.

The application has been amended as follows:

Claim 8, lines 2-3: "includes a plurality of portions of varying heights or sizes."

Is replaced with

--includes a plurality of portions of varying heights relative to a longitudinal axis of the mouthpiece.--

Claim 22, line 2: "a plurality of spaced portions."

Is replaced with

--a plurality of portions of varying heights relative to a longitudinal axis of the mouthpiece.--

Allowable Subject Matter

Claims **1, 3-5, 8, 10-19, and 21-28** are allowed.

The following is an examiner's statement of reasons for allowance:

Hirsch (US 20150335409 A1) was found to be the best art wherein it is found to teach dental mouthpiece comprising a curved main body comprising two ends, an anterior wall curved inwardly, a posterior wall curved outwardly, an anterior intervening wall extending partially across the distance, an posterior intervening wall extending along an edge of the posterior wall, a suction connector portion and a cheek retractor portion. However, the amendment now reads that the "anterior intervening wall protruding from and extending along the edge of the anterior wall, the anterior intervening wall having

a span that extends partially across the distance of the interior space towards the posterior wall" in lines 7-10 which Hirsch is silent to. Further, the independent claims are now read to have the "an edge of the span of the at least one anterior intervening wall has alternating crests and troughs that extend different distances partially across the interior space towards the at least one posterior intervening wall" in lines 12-14 which is also silent to.

It is found that the limitation reading "anterior intervening wall **protruding from and extending along** the edge of the anterior wall, the anterior intervening wall having a **span that extends partially across the distance** of the interior space towards the posterior wall" in lines 7-10 and "an edge of the span of the at least one anterior intervening wall has alternating crests and troughs that **extend different distances partially across the interior space** towards the at least one posterior intervening wall" in lines 12-14 are found to make it allowable when in combination with the other claimed limitation.

It should be noted that claimed limitation found allowable is found to be both in independent claim 1 and 21 wherein the combination of the other claimed limitation in each independent claim still makes it allowable. As independent claims 1 and 21 are found allowable, dependent claims are also found allowable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOLLY T TO whose telephone number is (571)272-0719. The examiner can normally be reached Monday - Thursday 6:30 - 4:30.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jacqueline Johanas can be reached on (571)270-5085. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit https://www.uspto.gov/patents/apply/patent-center for more information about Patent Center and https://www.uspto.gov/patents/docx for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/HOLLY T. TO/
Examiner, Art Unit 3772

/HEIDI M EIDE/
Primary Examiner, Art Unit 3772

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTOR(S):	Nguyen et al.
APPLICATION NO.:	16/870,745
FILING DATE:	May 8, 2020
TITLE:	Dental Mouthpiece
EXAMINER:	Holly T. To
ART UNIT:	3772
CONFIRM. NO.:	7491
ATTY.DKT.NO.:	INCEP-005

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AMENDMENT AFTER NOTICE OF ALLOWANCE

UNDER 37 C.F.R. § 1.312

Examiner To,

In response to the notice of allowance on September 18, 2023 (*Notice of Allowance*), the Applicant provides the following **amendments to the claims**, beginning on page **two**. The **remarks** begin on page **seven**.

IN THE CLAIMS

PLEASE AMEND THE CLAIMS AS FOLLOWS:

1. (currently amended) A dental mouthpiece formed in a curve, the dental mouthpiece comprising:

a main body portion at a central part of the curve having a first end and a second end, the main body portion having an anterior wall inside the curve and a posterior wall outside the curve, the anterior wall and the posterior wall defining an interior space corresponding to a distance between the anterior wall and the posterior wall, at least one connector connecting the anterior wall to the posterior wall, ~~at least one~~ an anterior intervening wall protruding from and extending along an edge of the anterior wall, the anterior intervening wall having a span that extends partially across the distance of the interior space towards the posterior wall, and ~~at least one~~ a posterior intervening wall extending along an edge of the posterior wall partially across the distance towards the anterior wall, and wherein an edge of the span of the ~~at least one~~ anterior intervening wall has alternating crests and troughs that extend different distances partially across the interior space towards the ~~at least one~~ posterior intervening wall;

a suction connector portion connected to the first end, the suction connector portion connecting the interior space to a vacuum suction source; and

a cheek retractor portion connected to the second end.

2. (cancelled)

3. (previously presented) The mouthpiece of claim 1, wherein the at least one connector includes at least one of a wall spanning longitudinally in the main body portion in the interior space or a pillar.

4. (previously presented) The mouthpiece of claim 1, further comprising a bridge structure that includes one or more protrusions protruding from the posterior wall within the interior space, wherein the protrusions include spaced crests and troughs.

5. (previously presented) The mouthpiece of claim 4, wherein the protrusions vary in height and length.

6. - 7. (cancelled)

8. (previously presented) The mouthpiece of claim 1, wherein at least one of the anterior intervening wall and the posterior intervening wall includes a plurality of portions of varying heights relative to a longitudinal axis of the mouthpiece.

9. (cancelled)

10. (previously presented) The mouthpiece of claim 1, wherein the anterior intervening wall and the posterior intervening wall meet at a point where the suction connector meets the main body portion.

11. (previously presented) The mouthpiece of claim 1, wherein the anterior intervening wall and the posterior intervening wall meet at a point where the main body portion meets the cheek retractor portion.

12. (previously presented) The mouthpiece of claim 1, further comprising a bite block integrated to the suction connector portion, wherein the bite block provides crush-resistance during biting by a patient.

13. (original) The mouthpiece of claim 1, wherein the main body portion, the suction connector portion, and the cheek retractor portion are formed by injection-molding as one piece.

14. (currently amended) The mouthpiece of claim 1, wherein a material that forms the main body portion, the suction connector portion, and the cheek retractor portion is a flexible, translucent, high heat-resistant, autoclavable silicone-based material.

15. (previously presented) The mouthpiece of claim 1, wherein the posterior wall further includes a stability bar protruding from an interior surface of the posterior wall and along a longitudinal axis of the main body portion.

16. (previously presented) The mouthpiece of claim 15, wherein the at least one connector includes a plurality of evenly spaced connectors located along the stability bar.

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

18. (previously presented) The mouthpiece of claim 1, where in the suction connector portion connects to the vacuum suction source, wherein activation of the vacuum suction source provides suction of fluids from the interior space of the main body portion.

19. (previously presented) The mouthpiece of claim 18, wherein the activation of the vacuum suction source draws fluids from an exterior of the main body portion into the interior space of the main body portion.

20. (cancelled)

21. (currently amended) A dental mouthpiece comprising:

a main body portion having a first end and a second end, the main body portion comprising:

an anterior wall,

a posterior wall spaced at a distance from the anterior wall, wherein an interior space corresponding to the distance between the anterior wall and the posterior wall is defined by the anterior wall and the posterior wall,

at least one connector that connects the anterior wall to the posterior wall within the interior space,

at least one intervening wall protruding from and extending along an edge of the anterior wall or the posterior wall, the at least one intervening wall having a span that extends partially across the distance of the interior space, and wherein an edge of the span of the at least one intervening wall has a plurality of alternating crests and troughs that extend different distances partially across the interior space, and

a neck extending from the second end of the main body portion, wherein a width of the neck is less than a width of the main body portion at the first end;

a suction connector portion connected to the first end of the main body portion, the suction connector portion further configured to connect the interior space to a vacuum suction source; and

a cheek retractor portion connected to the neck [[at]] that extends from the second end of the main body portion, wherein the width of the neck is less than a width of the cheek retractor portion.

22. (previously presented) The mouthpiece of claim 21, wherein the at least one intervening wall includes a plurality of portions of varying heights relative to a longitudinal axis of the mouthpiece.

23. (previously presented) The mouthpiece of claim 21, further comprising a bite block integrated to the suction connector portion, wherein the bite block provides crush-resistance during biting by a patient.

24. (previously presented) The mouthpiece of claim 21, wherein the main body portion, the suction connector portion, and the cheek retractor portion are formed by injection-molding as one piece.

25. (previously presented) The mouthpiece of claim 21, wherein the suction connector portion comprises a cutout corresponding to a protrusion on a vacuum adapter to provide an interlocking fit.

26. (previously presented) The mouthpiece of claim 21, where in the suction connector portion connects to the vacuum suction source, wherein activation of the vacuum suction source provides suction of fluids from the interior space of the main body portion.

27. (previously presented) The mouthpiece of claim 26, wherein the activation of the vacuum suction source further draws fluids from an exterior of the main body portion into the interior space of the main body portion.

28. (previously presented) The mouthpiece of claim 1, wherein the span of the anterior intervening wall extends from the edge of the anterior wall to at least a mid-point of the interior space between the anterior wall and the posterior wall.

REMARKS

Claims 1, 14, and 21 are amended to improve consistency in antecedent basis, which pertain purely to matters of form. No new matter has been added, and an additional search or examination is not necessitated by this amendment.

The Examiner is invited to contact Applicant's undersigned representation with any questions regarding the present submission.

Respectfully submitted,

September 26, 2023

/Tam Thanh Pham/

Tam Thanh Pham, Reg. No. 50,565
POLSINELLI *LLP*
3 Embarcadero Center, Suite 2400
San Francisco, CA 94111
Phone: (415) 248-2116
PatentDocketing@Polsinelli.com

Electronic Acknowledgement Receipt

EFS ID:	48642011
Application Number:	16870745
International Application Number:	
Confirmation Number:	7491
Title of Invention:	DENTAL MOUTHPIECE
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	138718
Filer:	TamThanh Thi Pham/Cheri Houle
Filer Authorized By:	TamThanh Thi Pham
Attorney Docket Number:	INCEP-005
Receipt Date:	26-SEP-2023
Filing Date:	08-MAY-2020
Time Stamp:	17:44:52
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		INCEP-005_312_AMEND_9-26-23.pdf	145949 5d1cd6de938e17d0bb03cccc8c92be7e89e6b382	yes	7

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment after Notice of Allowance (Rule 312)	1	1
	Claims	2	6
	Applicant Arguments/Remarks Made in an Amendment	7	7
Warnings:			
Information:			
	Total Files Size (in bytes):	145949	

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/08a (01-22)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16870745
Filing Date	2020-05-08
First Named Inventor	Thien Nguyen
Art Unit	3772
Examiner Name	TO, HOLLY T
Attorney Docket Number	INCEP-005

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16870745
	Filing Date	2020-05-08
	First Named Inventor	Thien Nguyen
	Art Unit	3772
	Examiner Name	TO, HOLLY T
	Attorney Docket Number	INCEP-005

	1	U.S. Patent Application No. 29/893,986 Ex Parte Quayle mailed 8/15/2023
	2	U.S. Patent Application No. 18/217,304 Office Action mailed 9/29/2023

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

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

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16870745
	Filing Date	2020-05-08
	First Named Inventor	Thien Nguyen
	Art Unit	3772
	Examiner Name	TO, HOLLY T
	Attorney Docket Number	INCEP-005

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

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. See 37 CFR 1.97(e)(1).

OR

☒ 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 making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Tam Thanh Pham/	Date (YYYY-MM-DD)	2023-10-02
Name/Print	Tam Thanh Pham	Registration Number	50565

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 1 hour 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.**

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 the Freedom of Information Act requires disclosure of these record s.

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 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.

Electronic Patent Application Fee Transmittal

Application Number:	16870745
Filing Date:	08-May-2020
Title of Invention:	DENTAL MOUTHPIECE
First Named Inventor/Applicant Name:	Thien Nguyen
Filer:	TamThanh Thi Pham/Jasmine Han
Attorney Docket Number:	INCEP-005

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:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
SUBMISSION- INFORMATION DISCLOSURE STMT	2806	1	104	104
		Total in USD ($)		**104**

Electronic Acknowledgement Receipt

EFS ID:	48664022
Application Number:	16870745
International Application Number:	
Confirmation Number:	7491
Title of Invention:	DENTAL MOUTHPIECE
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	138718
Filer:	TamThanh Thi Pham/Jasmine Han
Filer Authorized By:	TamThanh Thi Pham
Attorney Docket Number:	INCEP-005
Receipt Date:	02-OCT-2023
Filing Date:	08-MAY-2020
Time Stamp:	19:10:27
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$104
RAM confirmation Number	E202302J11039419
Deposit Account	
Authorized User	

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

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	INCEP-005_IDS_Transmittal.pdf	105975 5cb514b1e7c1a7d80b805171421dd87de17b7520	no	3
Warnings:					
Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	INCEP-005_IDS_10-2-23.pdf	1363938 23170bf474243f94d9965bfe5141c9ce21825aac	no	4
Warnings:					
Information:					
A U.S. Patent Number Citation or a U.S. Publication Number Citation is required in the Information Disclosure Statement (IDS) form for autoloading of data into USPTO systems. You may remove the form to add the required data in order to correct the Informational Message if you are citing U.S. References. If you chose not to include U.S. References, the image of the form will be processed and be made available within the Image File Wrapper (IFW) system. However, no data will be extracted from this form. Any additional data such as Foreign Patent Documents or Non Patent Literature will be manually reviewed and keyed into USPTO systems.					
3	Fee Worksheet (SB06)	fee-info.pdf	37411 042cb1b8f0fba3712ea1873115b07523bd7ed7e9	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1507324		

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

In re application of

Thien Nguyen et al. Confirmation No. 7491

Application No. 18/217,304

Filed: May 8, 2020

For: **DENTAL MOUTHPIECE**

Group Art Unit: 3772

Examiner: TO, HOLLY T

Attorney Docket No. INCEP-005

INFORMATION DISCLOSURE STATEMENT

TO THE COMMISSIONER FOR PATENTS:

1. Documents listed on the accompanying Form PTO/SB/08a (or equivalent) are presented for the Examiner's consideration.

☒ Copies of listed U.S. patents and U.S. patent application publications are not required for submission. (37 C.F.R. § 1.98(a)(2)(ii))

☐ Copies of listed foreign patent documents and/or non-patent literature are enclosed. (37 C.F.R. § 1.98(a)(2))

☐ Copies of the documents listed at sheet/cite nos. _____of the attached Form PTO/SB/08a (or equivalent) are omitted because (1) they are already of record in U.S. Patent Application No. _____, filed _____, on which this application relies for an earlier filing date under 35 U.S.C. § 120; and (2) any information disclosure statement filed in the prosecution of Application No. _____, complies with 37 CFR §§ 1.98(a) through (c). (37 C.F.R. § 1.98(d))

☐ A copy of copending U.S. Patent Application No., filed _____, for _____, listed at (sheet/cite no.) of the attached Form PTO-1449 (or equivalent), ☐ is enclosed / ☐ is omitted. (Copy not required if available via IFW. 1287 OG 162 (Oct. 19, 2004).).

2. This information disclosure statement is being submitted (check box a., b., or c.):

a. ☐ Within three months of the filing date of a national application or entry of the national stage in an international application; or before the mailing of a first Office action on the merits; or before the mailing of a first Office action after the filing of a request for continued examination under 37 CFR 1.114. (No statement under 37 CFR 1.97(e) is required.); or

b. ☐ After the period set forth in paragraph 2a, but before the mailing date of either a final action, a notice of allowance, or an action that otherwise closes prosecution in the application. (Check box i. or ii.)

i. ☐ The information disclosure statement submission fee set forth in 37 CFR 1.17(p) is paid herewith, or

ii. ☐ A statement specified by 37 CFR 1.97(e) is set forth below; or

c. ☒ After the mailing date of a final action or notice of allowance and on or before payment of the issue fee. A statement specified by 37 CFR 1.97(e) is set forth below. Enclosed is the information disclosure statement processing fee set forth in 37 CFR 1.17(p).

3. Fee Payment

a. ☐ A check in the amount of $_____ is enclosed.

b. ☐ Payment by credit card.

c. ☒ Please charge our Deposit Account No. 50-1662 in the amount of $104.00.

d. ☐ The Commissioner is hereby authorized to charge any additional fees which may be required in connection with filing of these papers, or credit overpayment to Deposit Account No. 50-1662.

4. If a statement specified by 37 CFR 1.97(e) is required, the attorney or agent signing below hereby states that (check box a. or b.):

a. ☐ Each item of information contained in this 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 this information disclosure statement

☐ Such communication was not received by any individual designated in 37 CFR 1.56(c) more than thirty days prior to the filing of this information disclosure statement. (37 C.F.R. § 1.97(e))

b. ☒ No item of information contained in this 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 making reasonable inquiry, no item of information contained in this information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of this information disclosure statement.

5. ☐ A concise explanation of the relevance of each document not in the English language and/or selected documents in the English language is set forth below.

Respectfully submitted,

Date: October 2, 2023

By: /Tam Thanh Pham
Tam Thanh Pham
Registration No. 50,565

Polsinelli LLP
Three Embarcadero Center
Suite 2400
San Francisco, CA 94111
(415) 248-2100

FEE ADDRESS INDICATION FORM

Application Number	16870745	Art Unit	3772
Filing Date	08-May-2020	Examiner Name	HOLLY TO
First Name Inventor	Thien Nguyen	Attorney Doc. Number	INCEP-005

INSTRUCTIONS: In order for the fee address identified on this form to be effective, the issue fee must have been paid for the application listed on this form. Only an address represented by a customer number can be established as the fee address for maintenance fee purposes (hereafter, fee address). A fee address should be established when correspondence related to maintenance fees should be mailed to a different address than the correspondence address for the application. For more information on customer numbers, see the Manual of Patent Examining Procedure (MPEP) § 403.

Please recognize as the Fee Address under the provisions of 37 CFR 1.363 the address associated with:

Customer Number:	138718 Polsinelli LLP PO Box 140310 Kansas City MO 64114-0310 UNITED STATES 4152482116 sfpatent@polsinelli.com

Signature :

I certify, in accordance with 37 CFR 1.4(d)(4) that I am an attorney or agent registered to practice before the Patent and Trademark Office who has filed and has been granted power of attorney in this application.

Signature	/Tam Thanh Pham/	**Date**	10-03-2023
Name	TamThanh Thi Pham	**Registration Number**	50565

Electronic Patent Application Fee Transmittal

Application Number:	16870745
Filing Date:	08-May-2020
Title of Invention:	DENTAL MOUTHPIECE
First Named Inventor/Applicant Name:	Thien Nguyen
Filer:	TamThanh Thi Pham/Cheri Houle
Attorney Docket Number:	INCEP-005

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY APPL ISSUE FEE	2501	1	480	480
PUBL. FEE- EARLY, VOLUNTARY, OR NORMAL	1504	1	0	0
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**480**

Electronic Acknowledgement Receipt

EFS ID:	48674979
Application Number:	16870745
International Application Number:	
Confirmation Number:	7491
Title of Invention:	DENTAL MOUTHPIECE
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	138718
Filer:	TamThanh Thi Pham/Cheri Houle
Filer Authorized By:	TamThanh Thi Pham
Attorney Docket Number:	INCEP-005
Receipt Date:	03-OCT-2023
Filing Date:	08-MAY-2020
Time Stamp:	17:12:48
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$480
RAM confirmation Number	E202303H12475002
Deposit Account	501662
Authorized User	Cheri Houle

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

37 CFR 1.20 (Post Issuance fees)

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	Issue Fee Payment (PTO-85B)	Web85b.pdf	60745 95e653629f0d9d2546e59b83adb169bdf7e805d3	no	2
Warnings:					
Information:					
2	Maintenance Fee Address Change	web85feeaddress.pdf	42197 7841f7a3bdd8548a660d77c7a10d111a905297ce	no	1
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	39977 c6111bc374bfc623bbe5ce9fa9712431647ac2f2	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	142919		

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 Description: Issue Fee Payment (PTO-85B)

Issue Fee Transmittal Form

Application Number	Filing Date	First Named Inventor	Atty. Docket No.	Confirmation No.
16870745	08-May-2020	Thien Nguyen	INCEP-005	7491

TITLE OF INVENTION :

DENTAL MOUTHPIECE

Entity Status	Application Type	Art Unit	Class - Subclass	EXAMINER
Small	Utility under 35 USC 111(a)	3772	092000	HOLLY TO

Issue Fee Due	Publication Due	Total Fee(s) Due	Date Due	Prev. Paid Fee
$480	$0	$480	18-Dec-2023	$0

1.Change of Correspondence Address and/or Indication Of Fee Address (37 CFR 1.33 & 1.363)

Current Correspondence Address:	Current Indicated Fee Address :
138718 Polsinelli LLP PO Box 140310 Kansas City MO 64114-0310 UNITED STATES 4152482116 patentdocketing@polsinelli.com	
☐ Change of correspondence address requested, system generated AIA/122-EFS form attached	☒ Fee Address indication requested, system generated SB/47-EFS form attached

2.Entity Status

Change in Entity Status

○ Applicant certifying micro entity status; system generated Micro Entity certification form attached. See 37 CFR 1.29.
Note: Absent a valid certification of micro entity status, issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment. If this box is checked, you will be prompted to choose a micro entity status on the gross income basis (37 CFR 1.29(a)) or the institution of higher education basis (37 CFR 1.29(d)), and make the applicable certification online.

◉ Applicant asserting small entity status. See 37 CFR 1.27.
Note: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

○ Applicant changing to regular undiscounted fee status.
Note: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

Document Description: Issue Fee Payment (PTO-85B)

3.The Following Fee(s) Are Submitted:

☒ Issue Fee

☐ I authorize USPTO to apply my previously paid issue fee to the current fees due

☐ Publication Fee

☐ The Director is hereby authorized to apply my previously paid issue fee to the current fee due and to charge deficient fees to Deposit Account Number _____

☒ If **in addition to** the payment of the issue fee amount submitted with this form, there are any discrepancies in any amount(s) due, the Director is authorized to charge any deficiency or credit any overpayment, to Deposit Account Number 501662 . The **issue fee must be submitted** with this form. **If payment of the issue fee does not accompany this form, checking this box and providing a deposit account number will NOT be effective to satisfy full payment of the fee(s) due.**

4.Firm and/or Attorney Names To Be Printed

NOTE: If no name is listed, no name will be printed
For printing on the patent front page, list to be displayed as entered

1. POLSINELLI LLP
2.
3.

5.Assignee Name(s) and Residence Data To Be Printed

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

Name	City	State	Country	Category
Solmetex, LLC.	Northborough	MASSACHUSETTS	UNITED STATES	corporation

6.Signature

I certify, in accordance with 37 CFR 1.4(d)(4) that I am an attorney or agent registered to practice before the Patent and Trademark Office who has filed and has been granted power of attorney in this application. I also certify that this Fee(s) Transmittal form is being transmitted to the USPTO via EFS-WEB on the date indicated below.

Signature	/Tam Thanh Pham/	**Date**	10-03-2023
Name	TamThanh Thi Pham	**Registration Number**	50565

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit: 3772 | Examiner: Holly T. To

Serial No.: 16/870,745 | Filed: May 8, 2020

In re Application of: Thien Nguyen

Confirmation No.: 7491 | Customer No.: 138718

Title: DENTAL MOUTHPIECE

Mail Stop Issue Fee
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

APPLICANT'S COMMENTS ON REASONS FOR ALLOWANCE

Examiner To:

These comments are responsive to the Notice of Allowance mailed on September 18, 2023, which sets forth the Examiner's statement of reasons for allowance.

The Examiner is thanked for the kind allowance of all pending claims. Applicant acknowledges the Examiner's statement of reasons for allowance as set forth in the Notice of Allowance. However, Applicant points out that the reasons for allowablity of the above referenced claims are not limited to the reasons for allowance as set forth in the Notice of Allowance, and that additional reasons for allowablity may exist, each of which may be independently sufficient to establish the patentability of one or more pending claims.

Applicant respectfully reserves the right to introduce, articulate, or otherwise comment on any such additional reasons for allowance as may be appropriate in any future proceedings concerning the claimed invention.

Respectfully submitted,
POLSINELLI LLP

Dated: October 3, 2023

By: /Tam Thanh Pham/
Tam Thanh Pham (Reg. No. 50565)
POLSINELLI LLP
Three Embarcadero Center, Suite 2400
San Francisco, CA 94111
415-248-2100 (Main)
patentdocketing@polsinelli.com

Electronic Acknowledgement Receipt

EFS ID:	48675007
Application Number:	16870745
International Application Number:	
Confirmation Number:	7491
Title of Invention:	DENTAL MOUTHPIECE
First Named Inventor/Applicant Name:	Thien Nguyen
Customer Number:	138718
Filer:	TamThanh Thi Pham/Cheri Houle
Filer Authorized By:	TamThanh Thi Pham
Attorney Docket Number:	INCEP-005
Receipt Date:	03-OCT-2023
Filing Date:	08-MAY-2020
Time Stamp:	17:13:57
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	Post Allowance Communication - Incoming	INCEP-005_COMMENTS_10-3-23.pdf	109075 e731fb15cd394f735e0da36481811edd00458bb1	no	2

Warnings:

Information:	
Total Files Size (in bytes):	109075

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 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.
16/870,745	05/08/2020	Thien Nguyen	INCEP-005	7491

138718 7590 10/26/2023

Polsinelli LLP
PO Box 140310
Kansas City, MO 64114-0310

EXAMINER
TO, HOLLY T

ART UNIT	PAPER NUMBER
3772	

NOTIFICATION DATE	DELIVERY MODE
10/26/2023	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):

patentdocketing@polsinelli.com
sfpatent@polsinelli.com

Corrected ***Notice of Allowability***	**Application No.** 16/870,745	**Applicant(s)** Nguyen et al.	
	Examiner HOLLY T TO	**Art Unit** 3772	**AIA (FITF) Status** Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☑ This communication is responsive to IDS filed on 10/02/2023.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ 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.

3. ☑ The allowed claim(s) is/are See Continuation Sheet . As a result of the allowed claim(s), 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.**

4. ☐ 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)).

   * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☑ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☐ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☑ Other PTO-271 Response to 312 Amendment.

/HOLLY T. TO/ Examiner, Art Unit 3772	/HEIDI M EIDE/ Primary Examiner, Art Unit 3772

Continuation of 3. The allowed claim(s) is/are: 1,3-5,8,10-19 and 21-28

Response to Rule 312 Communication	Application No.	Applicant(s)	
	16/870,745	Nguyen et al.	
	Examiner	Art Unit	AIA (FITF) Status
	HOLLY T TO	3772	Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

1. ☑ The amendment filed on 26 September 2023 under 37 CFR 1.312 has been considered, and has been:

a) ☐ entered.

b) ☑ entered as directed to matters of form not affecting the scope of the invention.

c) ☐ disapproved because the amendment was filed after the payment of the issue fee.

Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue.

d) ☐ disapproved. See explanation below.

e) ☐ entered in part. See explanation below.

f) ☐ not entered because the supplemental or corrected Application Data sheet (ADS)

☐ was not accompanied by a petition to accept an unintentionally delayed claim under 37 CFR 1.55 or 27 CFR 1.78;

☐ did not identify the information being changed in accordance with 37 CFR 1.76(c)(2);

☐ was not properly signed in accordance with 37 CFR 1.76(e) (or 37 CFR 1.33(b) for applications filed prior to September 16, 2012).

/HOLLY T. TO/ Examiner, Art Unit 3772	/HEIDI M EIDE/ Primary Examiner, Art Unit 3772

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-22)
Approved for use through 05/31/2024. 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.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16870745
Filing Date	2020-05-08
First Named Inventor	Thien Nguyen
Art Unit	3772
Examiner Name	TO, HOLLY T
Attorney Docket Number	INCEP-005

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /HTT/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16870745
	Filing Date	2020-05-08
	First Named Inventor	Thien Nguyen
	Art Unit	3772
	Examiner Name	TO, HOLLY T
	Attorney Docket Number	INCEP-005

	1	U.S. Patent Application No. 29/893,986 Ex Parte Quayle mailed 8/15/2023
	2	U.S. Patent Application No. 18/217,304 Office Action mailed 9/29/2023

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature	/HOLLY T. TO/	Date Considered	10/11/2023

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

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /HTT/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16870745
Filing Date	2020-05-08
First Named Inventor	Thien Nguyen
Art Unit	3772
Examiner Name	TO, HOLLY T
Attorney Docket Number	INCEP-005

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

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. See 37 CFR 1.97(e)(1).

OR

☒ 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 making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Tam Thanh Pham/	Date (YYYY-MM-DD)	2023-10-02
Name/Print	Tam Thanh Pham	Registration Number	50565

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 1 hour 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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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 the Freedom of Information Act requires disclosure of these record s.

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 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.

EFS Web 2.1.18

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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	16/870,745
				Filing Date	May 8, 2020
				First Named Inventor:	Thien Nguyen
				Art Unit	3772
				Examiner Name	Not Yet Assigned
Sheet	**1**	**of**	**2**	Attorney Docket Number	INCEP-005

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-	D666,726	9/4/2012	Davis et al.	
		US-	D735,858	8/4/2015	Hirsch et al.	
		US-	D737,964	9/1/2015	Jessop et al.	
		US-	D782,047	3/21/2017	Ritter	
		US-	D782,048	3/21/2017	Ritter	
		US-	D787,069	5/16/2017	Ritter	
Change(s) applied		US-	D787,070	5/16/2017	Ritter	
to document,		US-	1,731,322	~~10/15/2029~~	Riddle 10/1929	
/C.C.B./		US-	D868,958	12/3/2019	Reyes	
3/24/2023		US-	3,758,950	9/18/1973	Krouzian	
		US-	5,009,595	4/23/1991	Osborn	
		US-	5,588,836	12/31/1996	Landis et al.	
		US-	6,241,521	6/5/2001	Garrison	
		US-	9,968,341	5/15/2018	Ritter	

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
		WO 2020/231864	11/19/2020	Dryshield, LLC		

Examiner Signature	/HOLLY T. TO/	Date Considered	11/29/2021

*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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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/870,745	11/28/2023	11826217	INCEP-005	7491

138718 7590 11/08/2023

Polsinelli LLP
PO Box 140310
Kansas City, MO 64114-0310

ISSUE NOTIFICATION

The projected patent number and issue date are specified above. The patent will issue electronically. The electronically issued patent is the official patent grant pursuant to 35 U.S.C. § 153. The patent may be accessed on or after the issue date through Patent Center at https://patentcenter.uspto.gov/. The patent will be available in both the public and the private sides of Patent Center. Further assistance in electronically accessing the patent, or about Patent Center, is available by calling the Patent Electronic Business Center at 1-888-217-9197.

The USPTO is implementing electronic patent issuance with a transition period, during which period the USPTO will mail a ceremonial paper copy of the electronic patent grant to the correspondence address of record. Additional copies of the patent (i.e., certified and presentation copies) may be ordered for a fee from the USPTO's Certified Copy Center at https://certifiedcopycenter.uspto.gov/index.html. The Certified Copy Center may be reached at (800)972-6382.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Center (https://patentcenter.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Patents Stakeholder Experience (OPSE), Stakeholder Support Division (SSD) at (571)-272-4200.

INVENTOR(s) (Please see PATENT CENTER site https://patentcenter.uspto.gov for additional inventors):

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

APPLICANT(s) (Please see PATENT CENTER site https://patentcenter.uspto.gov for additional applicants):

Solmetex, LLC., Northborough, MA;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/870,745	05/08/2020	Thien Nguyen	INCEP-005	7491

138718 7590 11/28/2023

Polsinelli LLP
PO Box 140310
Kansas City, MO 64114-0310

EXAMINER
TO, HOLLY T

ART UNIT	PAPER NUMBER
3772	

NOTIFICATION DATE	DELIVERY MODE
11/28/2023	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):

patentdocketing@polsinelli.com
sfpatent@polsinelli.com

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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Alexandria, Virginia 22313-1450
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APPLICATION NO.	ISSUE DATE	PATENT NO.
16/870,745	28-Nov-2023	11826217

Polsinelli LLP
PO Box 140310
Kansas City, MO 64114-0310

EGRANT NOTIFICATION

Your electronic patent grant (eGrant) is now available, which can be accessed via Patent Center at https://patentcenter.uspto.gov

The electronic patent grant is the official patent grant under 35 U.S.C. 153. For more information, please visit https://www.uspto.gov/electronicgrants