ELECTRONIC IMPRESSION TRAY FOR OBTAINING DENTAL INFORMATION

CROSS-REFERENCE TO RELATED APPLICATIONS

See Application Data Sheet.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not applicable.

THE NAMES OF PARTIES TO A JOINT RESEARCH AGREEMENT

Not applicable.

INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC OR AS A TEXT FILE VIA THE OFFICE ELECTRONIC FILING SYSTEM (EFS-WEB)

Not applicable.

STATEMENT REGARDING PRIOR DISCLOSURES BY THE INVENTOR OR A JOINT INVENTOR

Not applicable.

BACKGROUND OF THE INVENTION

1. Field of the Invention

[01] The present invention relates to an electronic impression system for obtaining a three-dimensional view of all or part of a dental arch, for obtaining dental information.

ABSTRACT OF THE DISCLOSURE

Electronic impression tray (1) that can be used to obtain three-dimensional and temporal measurements in dentistry, consisting of a device comprising optical measurement sensor systems (C), an electronic system including a central management unit capable of collecting, storing and ordering the data obtained by said sensors, the said sensors being distributed over all or part of said impression tray so as to allow an optical impression of all or part of a dental arch to be obtained with a single or multiple impressions.

It consists of a part (2, 21) having the shape of all or part of a dental arch, and having a design that can change by virtue of its ability to deform and/or a structure formed by multiple elements that are hinged to one another and/or reversibly assembled and secured to one another, such as to provide the optimal shape.

Abstract fig: Figures 1a, 1b, 1c and 1d

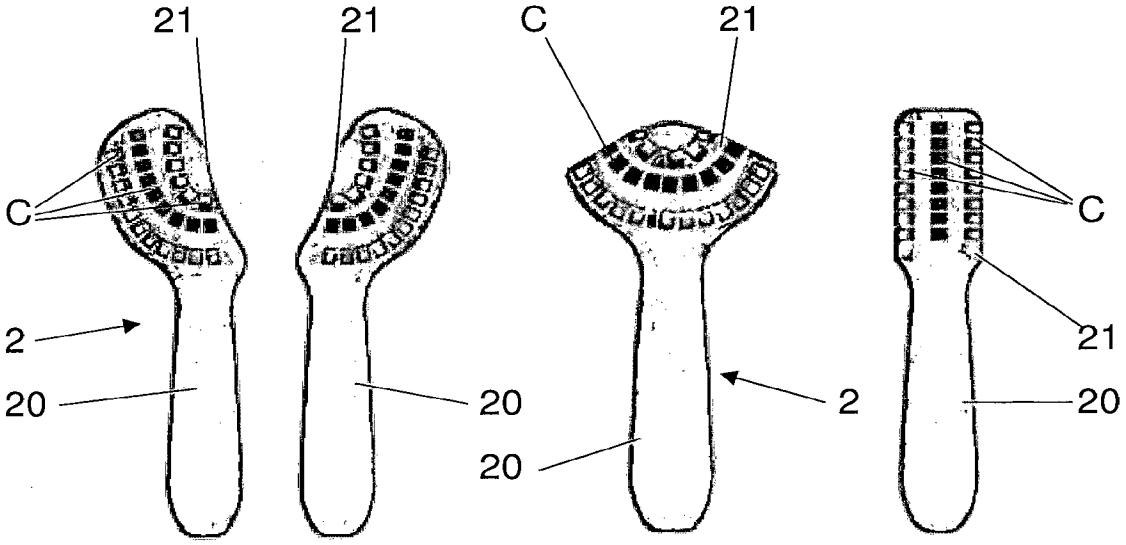


Fig 1a Fig 1b Fig 1c Fig 1d

Fig 2a

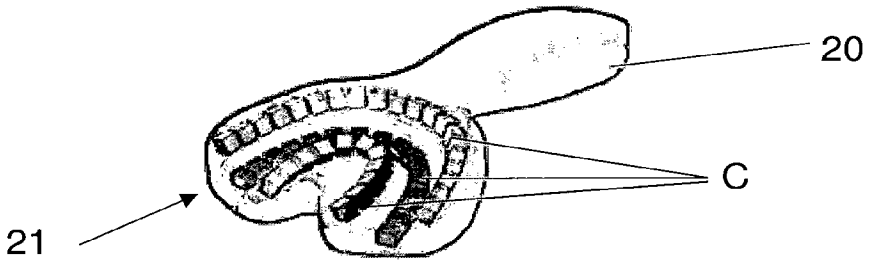


Fig 2b

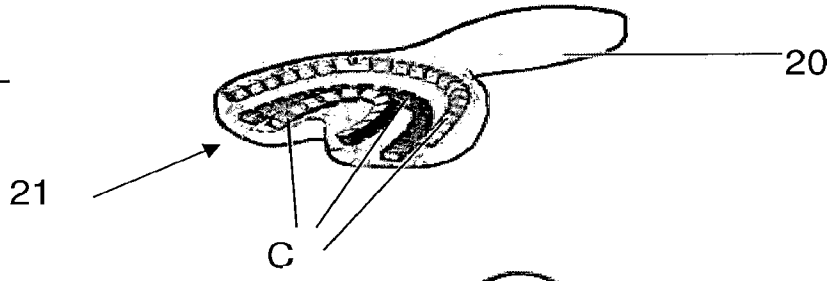
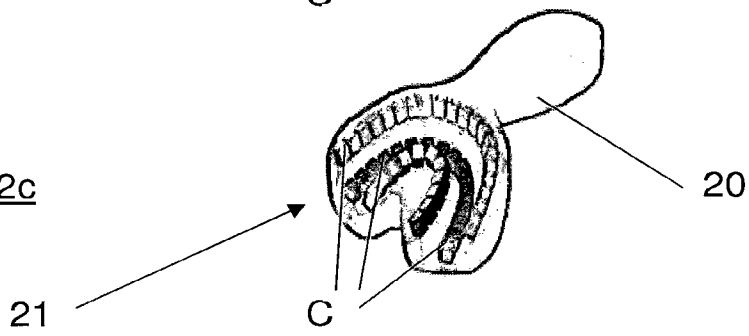


Fig 2c



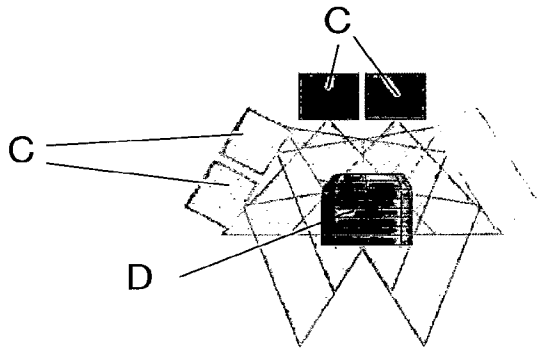


Fig 3a

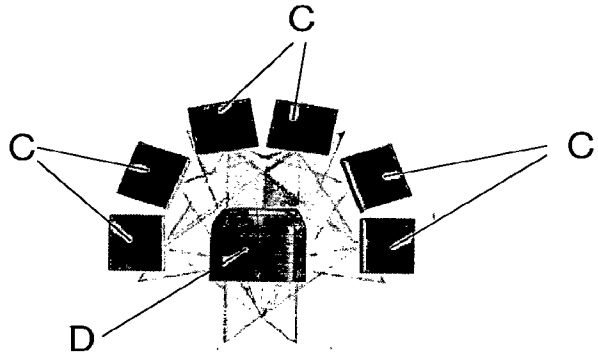


Fig 3b

Fig 4

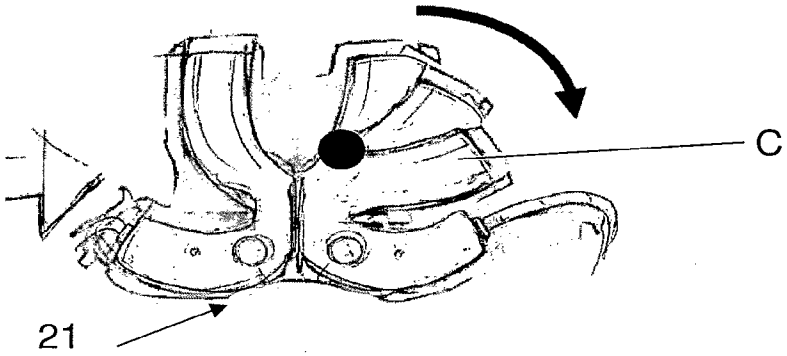
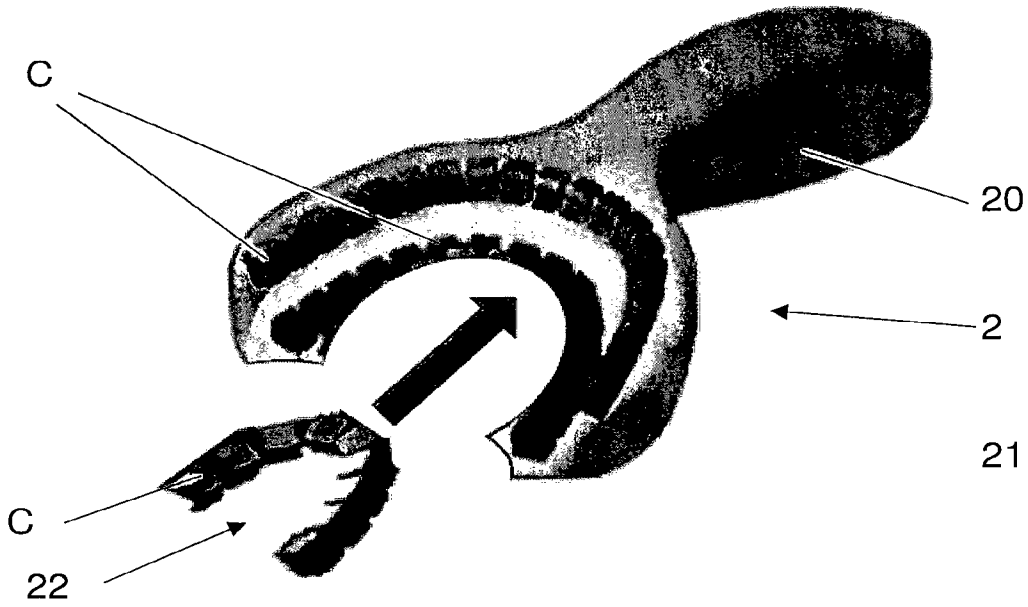


Fig 5



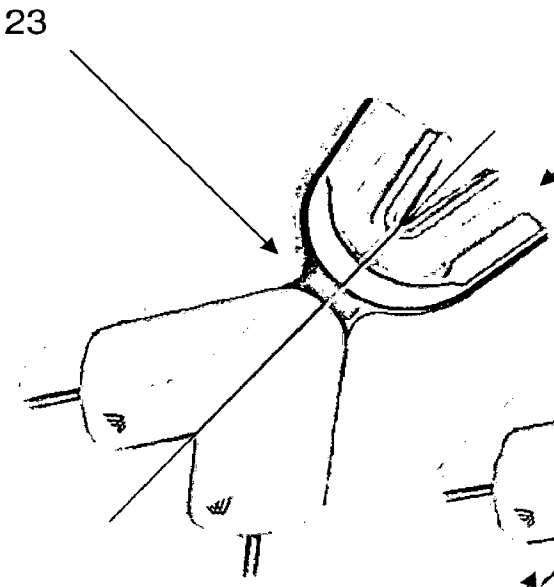


Fig 6a

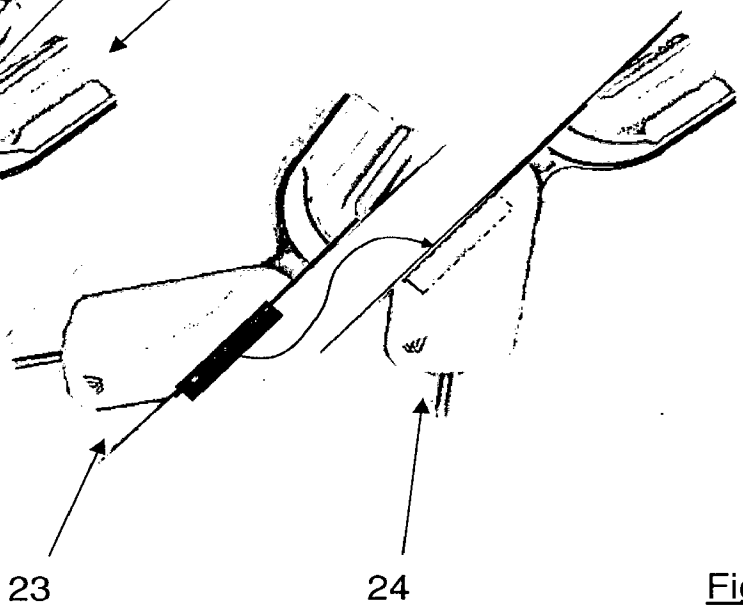


Fig 6b

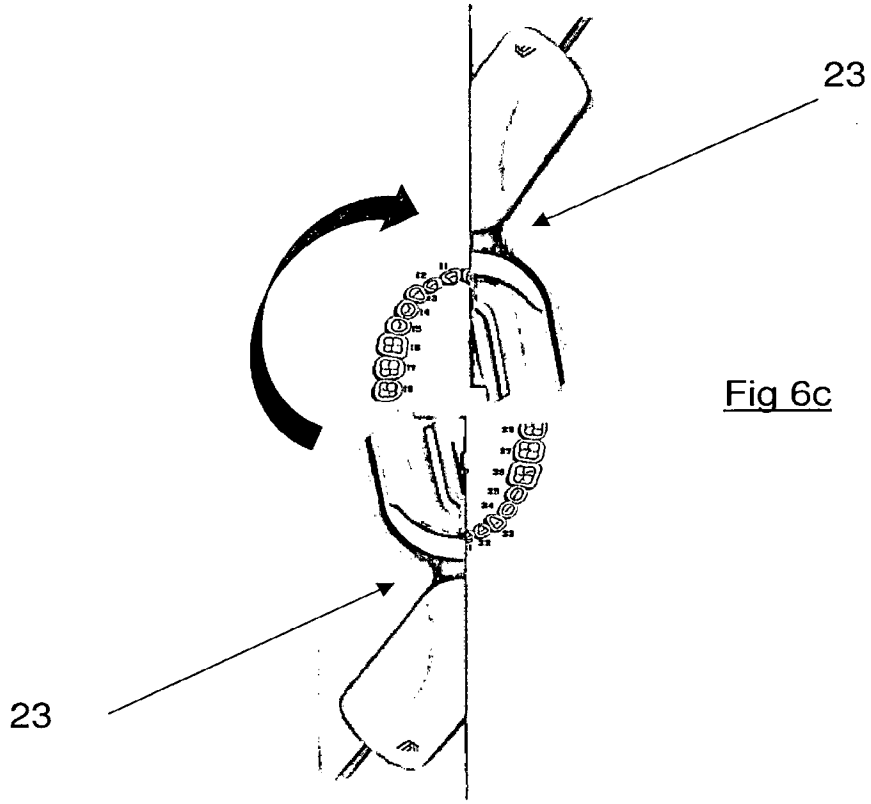
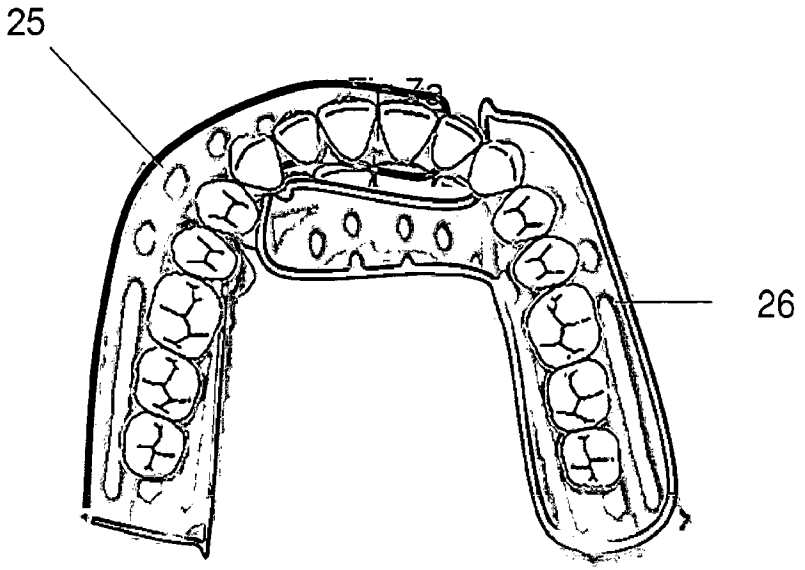


Fig 6c

Fig 7a



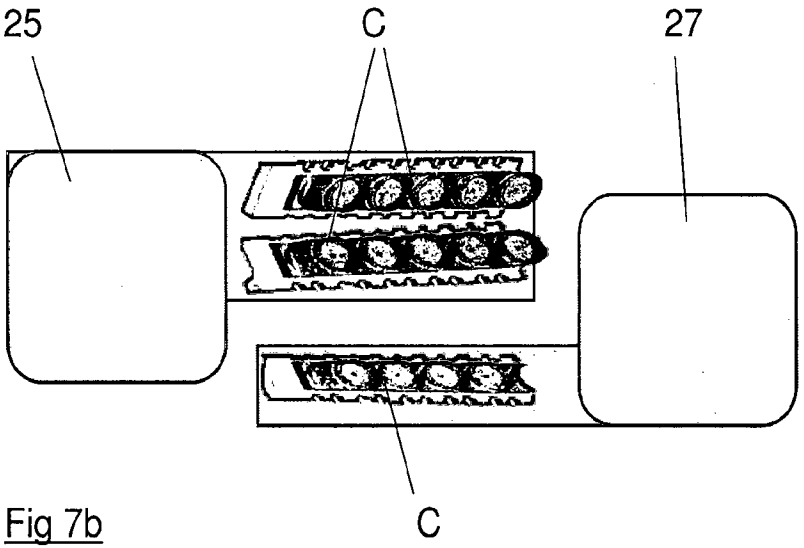


Fig 7b

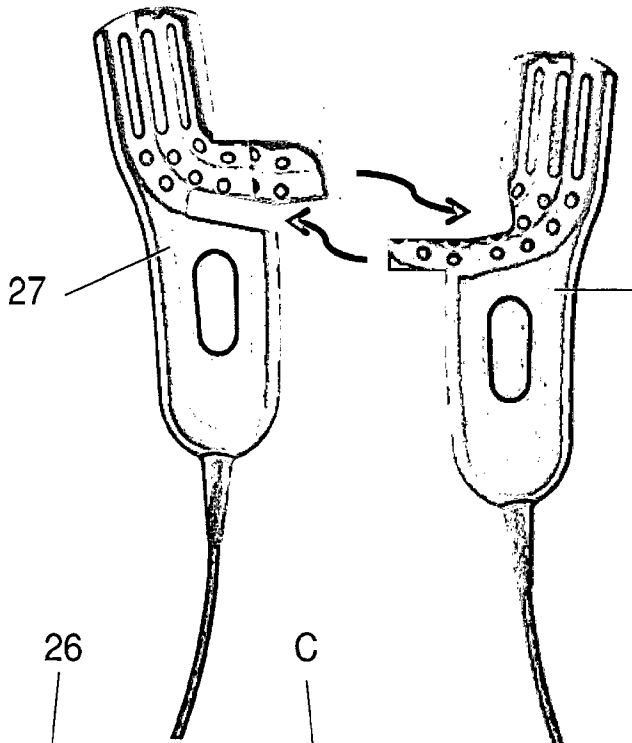


Fig 8a

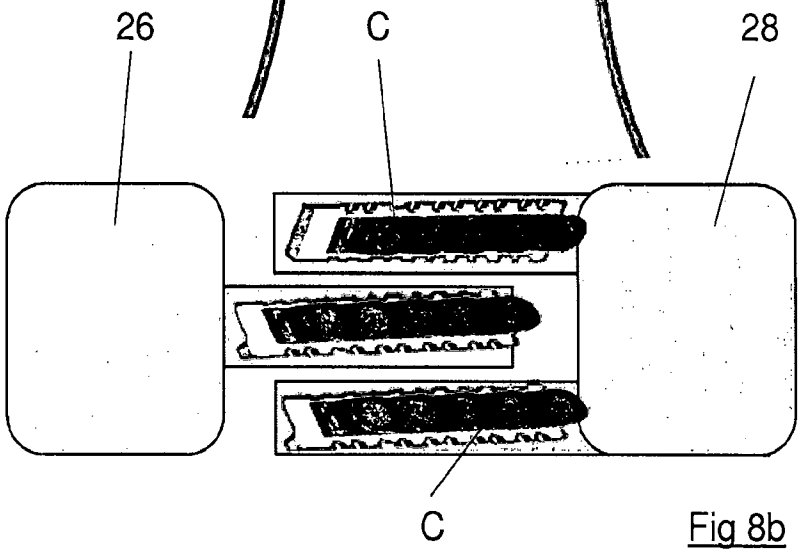


Fig 8b

Fig 9b

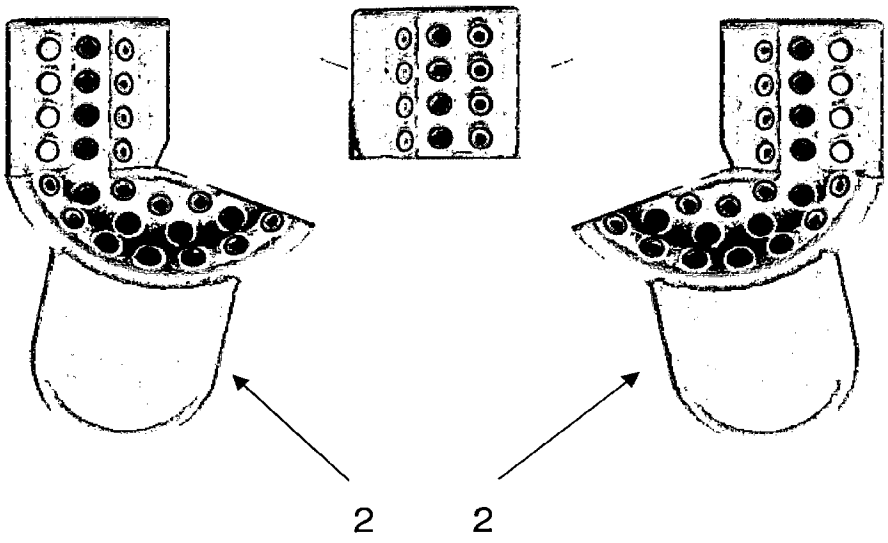


Fig 9a

Fig 9c

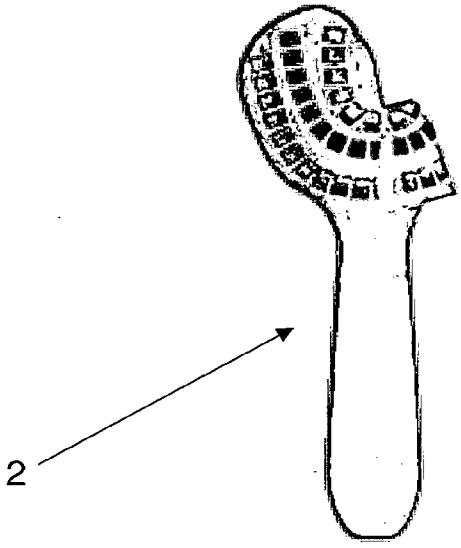


Fig 10a

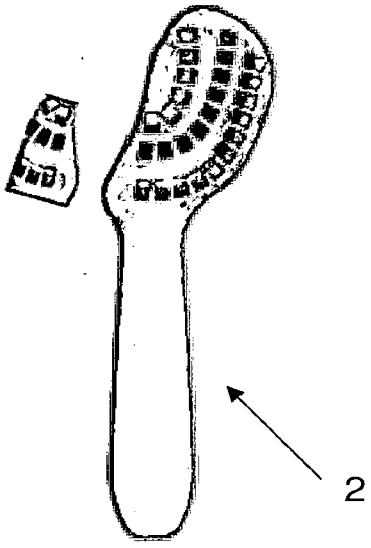


Fig 10b

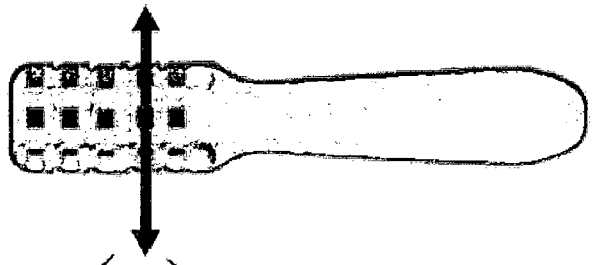


Fig 11a

Fig 11b

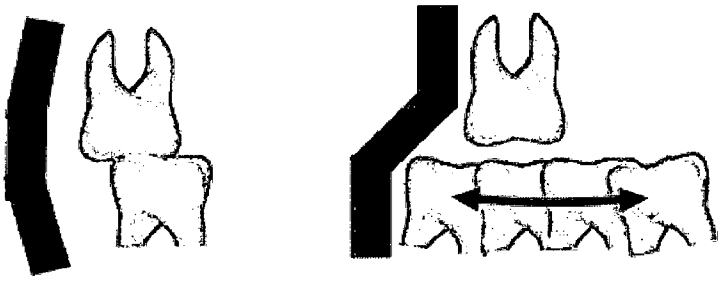


Fig 11c

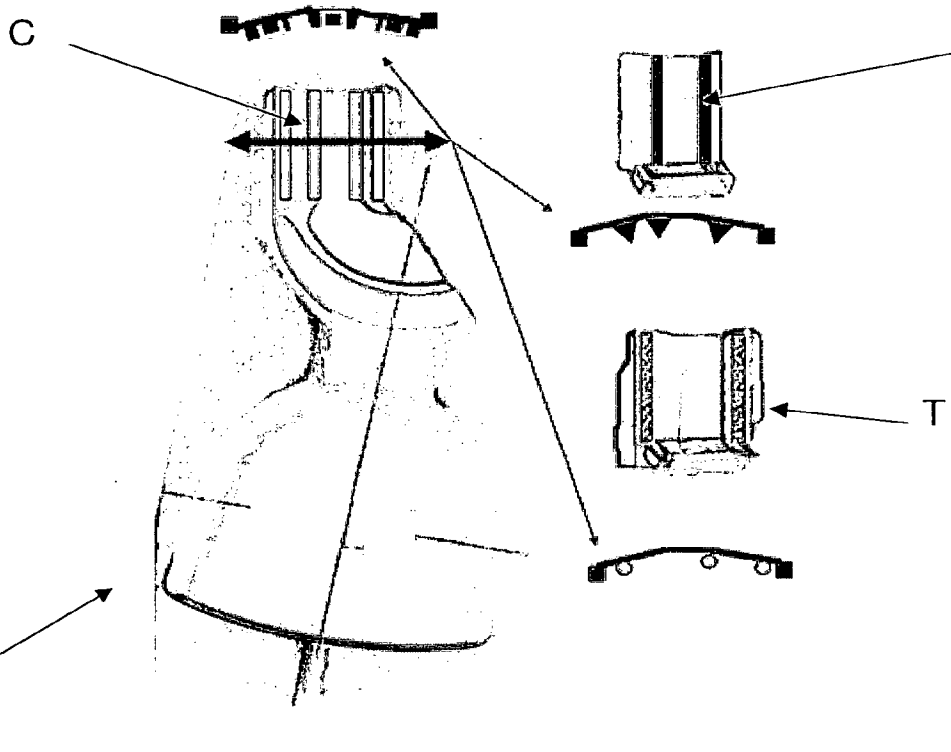


Fig 12a

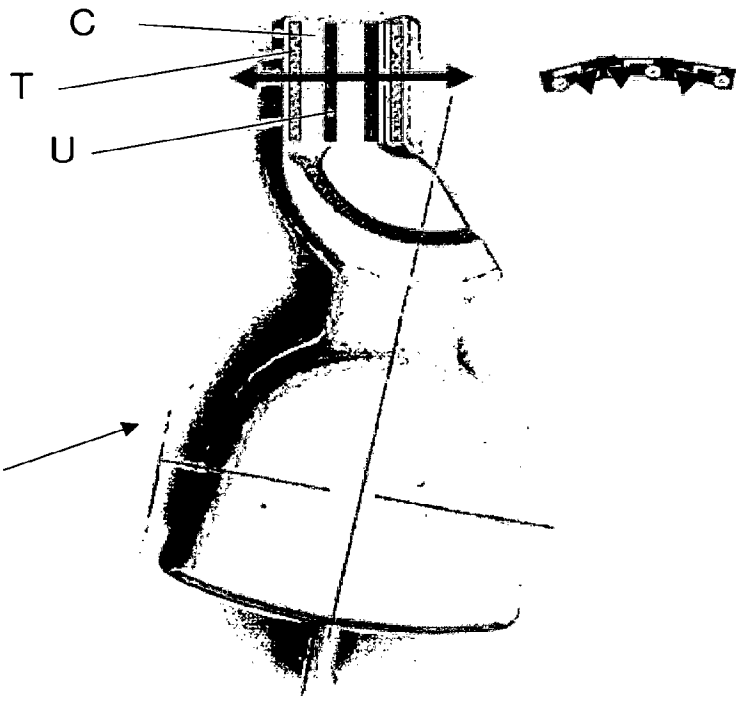


Fig 12b

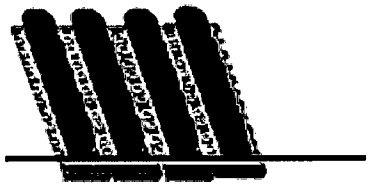


Fig 13a

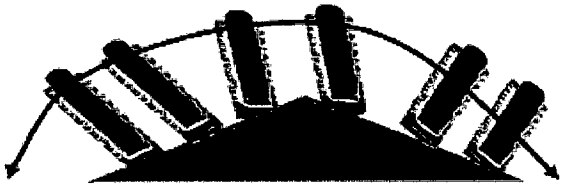


Fig 13b

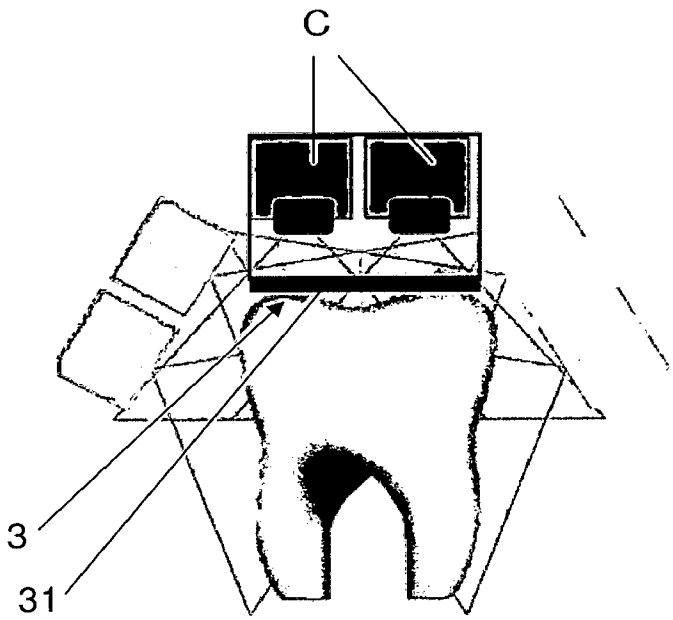


Fig 14 a

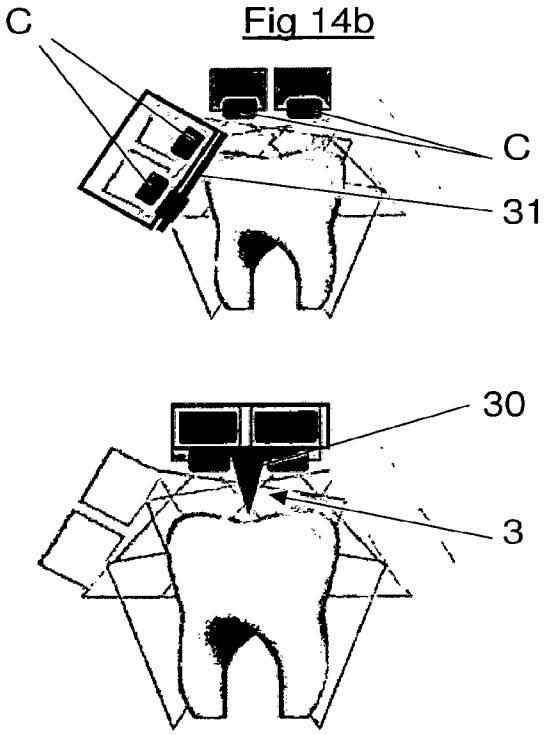


Fig 14b

Fig 14c

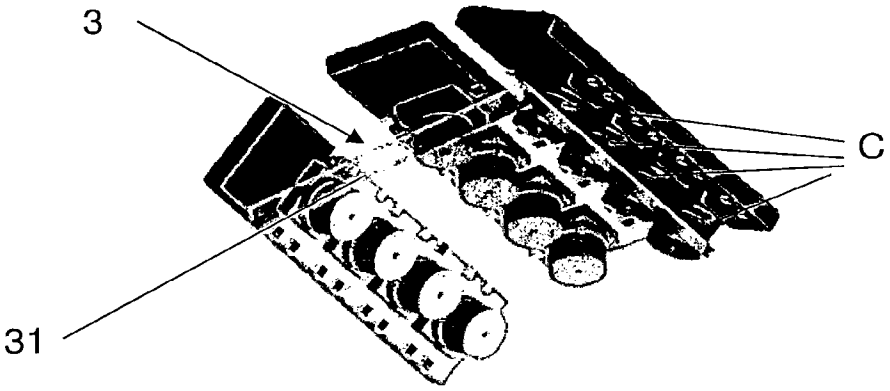


Fig 15

Fig 16a

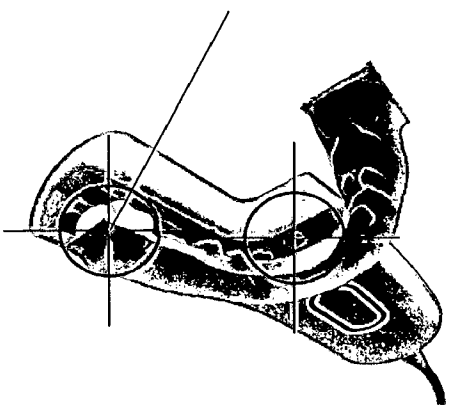
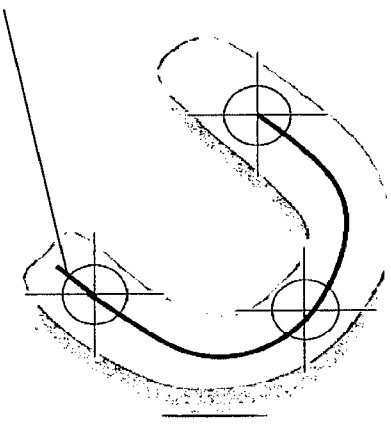


Fig 16b



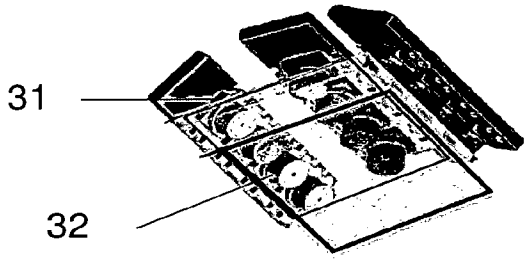


Fig 17a

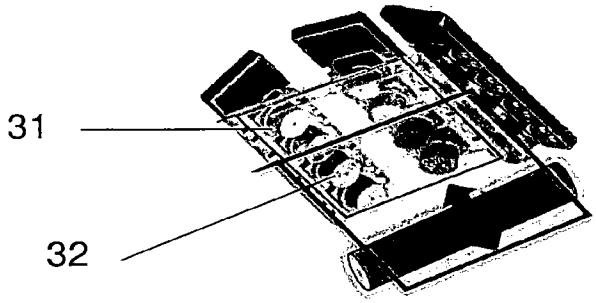


Fig 17b

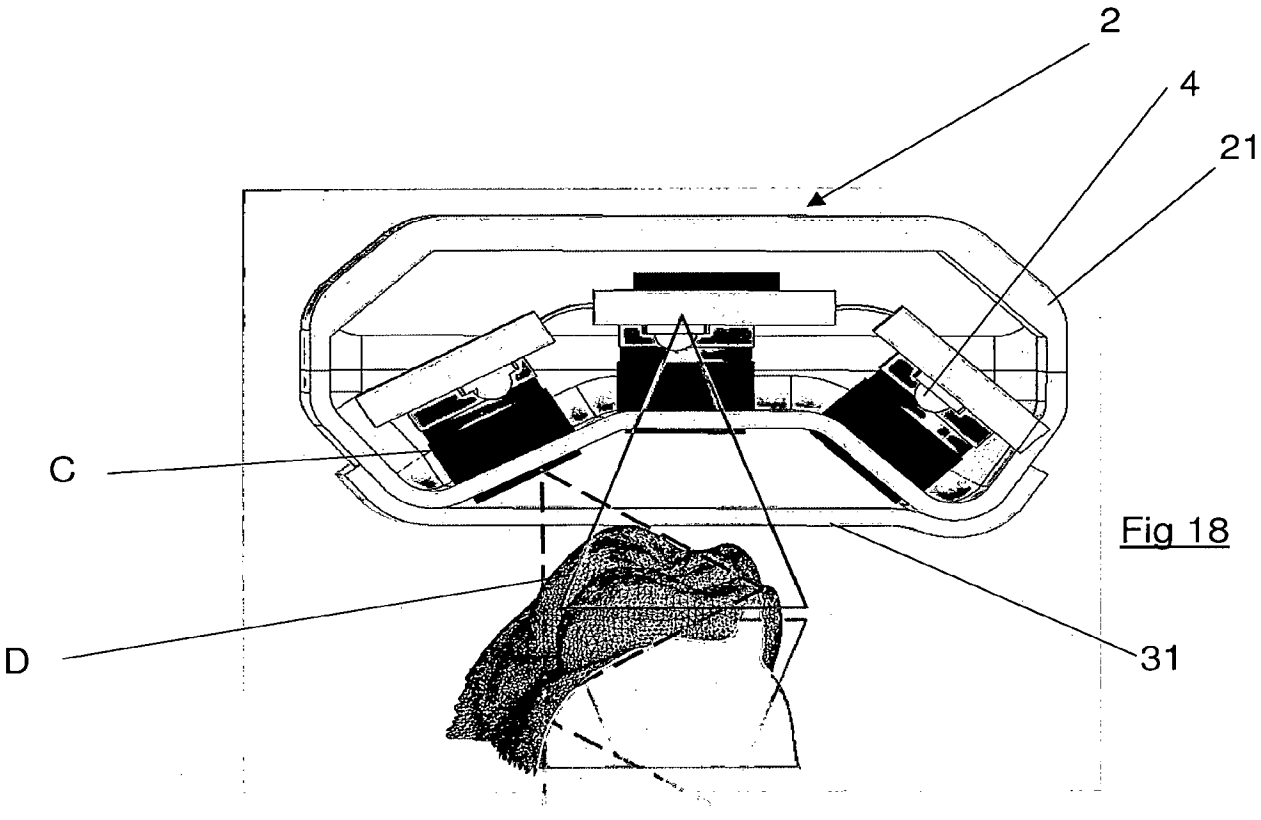


Fig 18

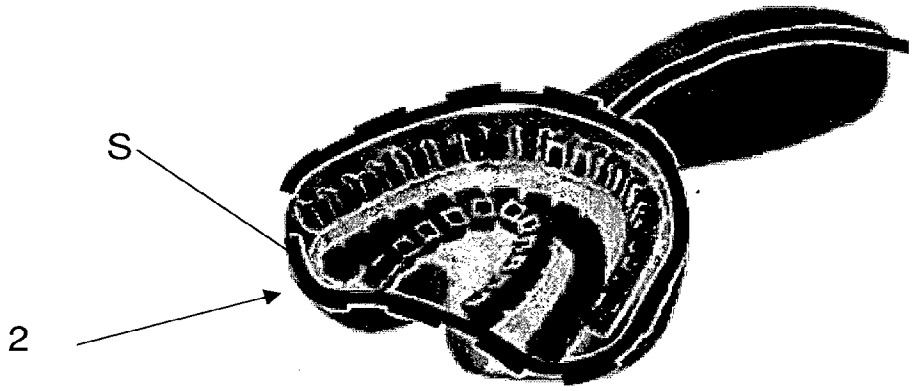
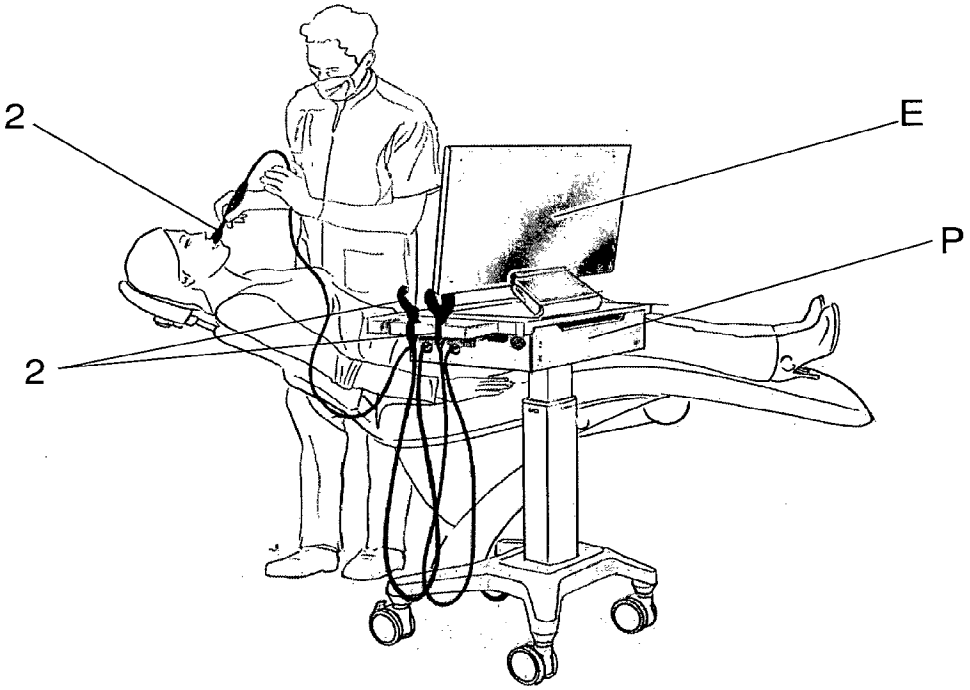


Fig 19

Fig 20



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: DURET, François

SERIAL NO.: (PCT/FR19/50184) ART UNIT:

FILING DATE: (2019-01-29) EXAMINER:

TITLE: ELECTRONIC IMPRESSION TRAY FOR OBTAINING DENTAL INFORMATION

PRELIMINARY AMENDMENT

Director of the U.S. Patent
And Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Prior to an initial Official Action on this matter, please consider the following remarks regarding the above-identified application as follows:

The Abstract is amended.

The claims have been amended.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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CERTIFICATE OF MAILING UNDER 37 CFR 1.8(a)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I hereby certify that the attached correspondence comprising:

PRELIMINARY AMENDMENT

Is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

or by electronic filing on 2020-07-29.

Respectfully submitted:

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8667077596 fax
Date: 2020-07-29

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: DURET, François

SERIAL NO.: (PCT/FR19/50184) ART UNIT:

FILING DATE: (2019-01-29) EXAMINER:

TITLE: ELECTRONIC IMPRESSION TRAY FOR OBTAINING DENTAL INFORMATION

Preliminary Amendment: Abstract Amendments

Please amend the Abstract as follows:

Marked Up Copy

ABSTRACT OF THE DISCLOSURE

~~Electronic~~ An electronic impression tray ~~(1) that~~ can be used to obtain three-dimensional and temporal measurements in dentistry~~, consisting of~~ . There is a device ~~comprising~~ having optical measurement sensor systems ~~(C)~~, and an electronic system including a central management unit capable of collecting, storing and ordering the data obtained by ~~said sensors, the said sensors being~~ the sensor systems distributed over all or part of ~~said~~ the impression tray ~~so as to allow an~~ . An optical impression of all or part of a dental arch ~~to~~ can be obtained with a single or multiple impressions. The tray includes

~~It consists of~~ a part ~~(2, 21)~~ having the shape of all or part of a dental arch, and ~~having a design that~~ the part can change by virtue of its ability to deform and/or a structure formed by multiple elements that are hinged to one another and/or reversibly assembled and secured to one another, such as to provide the optimal shape.

~~Abstract fig: Figures 1a, 1b, 1c and 1d~~

Substitute Copy

ABSTRACT OF THE DISCLOSURE

An electronic impression tray can be used to obtain three-dimensional and temporal measurements in dentistry. There is a device having optical measurement sensor system, and an electronic system including a central management unit capable of collecting, storing and ordering the data obtained by the sensor systems distributed over all or part of the impression tray. An optical impression of all or part of a dental arch can be obtained with a single or multiple impressions. The tray includes a part having the shape of all or part of a dental arch, and the part can change by virtue of its ability to deform and/or a structure formed by multiple elements that are hinged to one another and/or reversibly assembled and secured to one another, such as to provide the optimal shape.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: DURET, François

SERIAL NO.: (PCT/FR19/50184) ART UNIT:

FILING DATE: (2019-01-29) EXAMINER:

TITLE: ELECTRONIC IMPRESSION TRAY FOR OBTAINING DENTAL INFORMATION

Preliminary Amendment: Claim Amendments

1. (Currently amended) ~~Electronic~~ An electronic impression tray ~~(1)~~ that can be used to obtain three-dimensional and temporal measurements in dentistry, ~~consisting of~~ for a device comprising optical measurement sensor systems ~~(C)~~, and an electronic system which comprises a central management unit capable of collecting, storing and ordering the data obtained by said sensors, the said sensors being distributed over all or part of said impression tray so as to allow an optical impression of all or part of a dental arch to be obtained with a single or multiple impressions, ~~characterized in that it consists of~~ the tray comprising:

a part ~~(2, 21)~~ having the shape of all or part of a dental arch, and having a design that can change by virtue of its ability to deform and/or a structure formed by multiple elements ~~(34, 24; 25, 26; 27, 28)~~ that are hinged to one another and/or reversibly assembled and secured to one another, such as to provide the optimal shape.

2. (Currently amended) The electronic ~~Electronic~~ impression tray ~~(1)~~ according to claim 1, ~~characterized in that~~ wherein the optical measurement

sensors are associated with ultrasonic sensors ~~(U)~~ and/or OCT (coherent tomographic optics) ~~(T)~~.

3. (Currently amended) The electronic ~~Electronic~~ impression tray ~~(1)~~ according to claim 1 ~~or claim 2~~, ~~characterized in that it is made~~ being comprised of a deformable material such as a thermoplastic or a flexible resin, not returning to the original shape after adaptation in the patient's mouth.

4. (Currently amended) The electronic ~~Electronic~~ impression tray ~~(1)~~ according to claim 1 ~~or claim 2, characterized in that~~ , wherein its active part ~~(21)~~, equipped with sensors ~~(C)~~, has a shape adapted or adaptable by deformation, to the particularities of the occlusion.

5. (Currently amended) The electronic ~~Electronic~~ impression tray ~~(1)~~ according to claim 1 ~~or claim 2, characterized in that it is made~~ , being comprised of at least two interlockable elements ~~(23, 24; 25, 26; 27, 28)~~, each adapted to obtaining the impression of at least part of an arch, and ~~in that~~ wherein said at least two elements ~~(23, 24; 25, 26; 27, 28)~~ are configured so that sensors ~~(C)~~ at least one of which is associated with sensors of another element, so that the optical impression of at least part of the arch is made with sensors of said at least two elements ~~(23, 24; 25, 26; 27, 28)~~.

6. (Currently amended) The electronic ~~Electronic~~ impression tray ~~(1)~~ according to claim 5, ~~characterized in that the~~ wherein at least two interlockable elements ~~(23, 24; 25, 26; 27, 28)~~, are shaped to be joined, reversibly, by interlocking.

7. (Currently amended) The electronic ~~Electronic~~ impression tray ~~(1)~~ according to claim 5, ~~characterized in that the~~ wherein at least two interlockable elements ~~(23, 24; 25, 26; 27, 28)~~, are shaped to be joined magnetically.

8. (Currently amended) The electronic ~~Electronic~~ impression tray ~~(1)~~ according to claim 1 ~~or claim 2, characterized in that it comprises~~ , further comprising: means ~~(3)~~ for depth adjustment consisting of means for taking support on the teeth ~~(D)~~.

9. (Currently amended) The electronic ~~Electronic~~ impression tray ~~(1)~~ according to claim 8, ~~characterized in that~~ wherein the means ~~(3)~~ for taking support on the teeth ~~(D) consist~~ being comprised of at least one blade ~~(30)~~, rod or the like, projecting between the sensors ~~(C)~~.

10. (Currently amended) The electronic ~~Electronic~~ impression tray ~~(1)~~ according to claim 8, ~~characterized in that~~ wherein the means ~~(3)~~ for taking support on the teeth ~~(D) consist~~ is comprised of at least one transparent wall ~~(31; 32)~~, extending beyond above the sensors ~~(C)~~.

11. (Currently amended) The electronic ~~Electronic~~ impression tray ~~(1)~~ according to claim 10, ~~characterized in that~~ wherein the transparent wall ~~(31; 32)~~ has marks ~~(G)~~.

12. (Currently amended) The electronic ~~Electronic~~ impression tray ~~(1)~~ according to claim 10 ~~or claim 11, characterized in that~~ , wherein the transparent wall ~~(31; 32)~~ is deformable.

13. (Currently amended) The electronic ~~Electronic~~ impression tray ~~(1)~~ according to ~~any one of claims 10 to 12, characterized in that~~ claim 10, wherein

the transparent wall ~~(31)~~ is associated in sliding contact with another transparent wall ~~(32)~~, which cooperates with means, motorized or not, capable of generating a friction movement between said transparent walls ~~(31, 32)~~.

14. (Currently amended) The electronic ~~Electronic~~ impression tray ~~(1)~~ according to ~~any one of claims 1 to 13, characterized in that it comprises~~ claim 1, further comprises a peripheral and/or central suction system ~~(S)~~, and or a water jet and/or air jet system.

15. (Currently amended) The electronic ~~Electronic~~ impression tray ~~(1)~~ according to ~~any one of claims 1 to14, characterized in that it comprises~~ claim 1, further comprising: means for projecting passive light, unstructured, to illuminate the interior of the mouth.

16. (Currently amended) The electronic ~~Electronic~~ impression tray ~~(1)~~ according to ~~any one of claims 1 to 15, characterized in that it is~~ claim 1, being black in color so as not to hinder the obtaining of information.

17. (Currently amended) The electronic ~~Electronic~~ impression tray ~~(1)~~ according to ~~any one of claims 1 to 16, characterized in that its~~ claim 1, wherein the part ~~(21) comprising~~ comprises the sensors ~~(C)~~, is separated from the rest of the impression tray ~~(2)~~ and connected to the latter through wired means ~~(F)~~ or a wireless communication system.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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FILING DATE: (2019-01-29) EXAMINER:

TITLE: ELECTRONIC IMPRESSION TRAY FOR OBTAINING DENTAL INFORMATION

Preliminary Amendment: Remarks

The present Preliminary Amendment has been entered for the purpose of placing the application into a more proper U.S. format. In particular, certain grammatical and idiomatic inconsistencies have been corrected by amendment, and the application is correct for certain typographical errors found in the originally submitted application. No new matter has been added by these amendments. The application is an English language translation of an originally French language priority document.

Please use the attached substitution specification, claims, and Abstract. This substitute copy includes all of the U.S. formatting and formalities. The text is directly from the translation of the PCT document. No new matter has been added by the substitute specification for U.S. filing.

The abstract has been amended to conform to U.S. formality requirements. No new matter is added.

The Claims have been amended so as to conform to U.S. formalities and so as to remove multiple dependent claims. No new matter is added.

The present preliminary amendment is concurrent with the Petition to Revive and the request for entry into PCT national stage US.

Applicant respectfully requests that the present Amendment be entered prior to an initial Official Action on the present application.

Respectfully submitted:

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1204 Heights Boulevard
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8667077596 fax
Date: 2020-07-29

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	ELECTRONIC IMPRESSION TRAY FOR OBTAINING DENTAL INFORMATION
First Named Inventor/Applicant Name:	Francois DURET
Filer:	Andrew W. Chu
Attorney Docket Number:	159/498

Filed as Small Entity

Filing Fees for U.S. National Stage under 35 USC 371

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
BASIC NATIONAL STAGE FEE	2631	1	150	150
NATL STAGE SEARCH FEE - REPORT PROVIDED	2642	1	260	260
NATL STAGE EXAM FEE - ALL OTHER CASES	2633	1	380	380
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**790**

Electronic Acknowledgement Receipt

EFS ID:	40143722
Application Number:	16965958
International Application Number:	PCT/FR19/50184
Confirmation Number:	8962
Title of Invention:	ELECTRONIC IMPRESSION TRAY FOR OBTAINING DENTAL INFORMATION
First Named Inventor/Applicant Name:	Francois DURET
Customer Number:	91209
Filer:	Andrew W. Chu
Filer Authorized By:	
Attorney Docket Number:	159/498
Receipt Date:	29-JUL-2020
Filing Date:	
Time Stamp:	19:46:44
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$790
RAM confirmation Number	E20207SJ47071064
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 of New Application	159498xtal.pdf	275480 f9492d5e5396412c81182b3a161ac8e0af33368a	no	4
Warnings:					
Information:					
2	Application Data Sheet	159498ads1.pdf	2528572 15c34904b8ea5291162bc6a09671081d66c55571	no	9
Warnings:					
Information:					
3	Documents submitted with 371 Applications	159498pctdocuments1.pdf	2125987 4935f2e1ed825f52eebb588bdedbe58e2426f976	no	34
Warnings:					
Information:					
4	Translation of Foreign Priority Documents	159498pcttranslation1.pdf	155234 a611f9a91daac6085e0be930bca789b75a372e72	no	16
Warnings:					
Information:					
5		159498application.pdf	145064 292d91acc981e97c0ed9cfb31aec7d33b346fdf2	yes	20

Multipart Description/PDF files in .zip description

Document Description	Start	End
Specification	1	16
Claims	17	19
Abstract	20	20

Warnings:					
Information:					
6	Drawings-only black and white line drawings	159498drawings1.pdf	384414 34f897d847597333eeb25acb173c061ae31b1093	no	10
Warnings:					
Information:					
7		159498preliminary.pdf	108027 c5ac2cfbd1b82bcbf4f1e6ec3417e7d0c855380f	yes	11

Multipart Description/PDF files in .zip description

Document Description	Start	End
Preliminary Amendment	1	2
Abstract	3	5
Claims	6	9
Applicant Arguments/Remarks Made in an Amendment	10	11

Warnings:					
Information:					
8	Fee Worksheet (SB06)	fee-info.pdf	35344 d4235ffa62d78efa3fbce55e1362aa4b990e6213	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	5758122	

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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.