Abstract: An improved retractor comprising one or more cheek positioning members and one or more lip positioning members has been developed. This retractor makes it possible to conduct X-ray CT or similar scans of the jaw and to construct anatomically accurate models of bone, teeth and gingival tissue. What is provided is an improved retractor useful when conducting CT scans of the jaw of an individual requiring a dental implant and models to be constructed that are anatomically accurate with respect to bone, teeth and gingival (soft) tissue. Drill guides, and prostheses are constructed with the jaw models.
before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:
28 June 2007

For two-letter codes and other abbreviations, refer to the “Guidance Notes on Codes and Abbreviations” appearing at the beginning of each regular issue of the PCT Gazette.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

IPC: A61B 1/02 (2006.01);A61C 5/00 (2006.01)

USPC: 600/239;433/140

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S.: 600/239,238,242,433/140

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

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claims No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>US 4,053,984 A (MOSS) 15 October 1977, see entire document.</td>
<td>1,5</td>
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<td>X</td>
<td>US 5,037,298 A (Hickman) 06 August 1991, see entire document.</td>
<td>1,3,5</td>
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<td>Y</td>
<td>US 6,743,017 B2 (O'NEILL) 01 June 2004 see column 3, lines 63-67</td>
<td>2</td>
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</table>

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
* "B" earlier application or patent published on or after the international filing date
* "L" document which may throw doubt 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 discussion, use, exhibition or other event
* "P" document published prior to the international filing date but later than the priority data claimed

Date of the actual completion of the international search

02 January 2007 (02.01.2007)

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
Facsimile No. (571) 273-3201

Authorized Officer

Cory E. O'Connor

Telephone No. 703-308-0858

Form PCT/ISA/210 (second sheet) (April 2003)
<table>
<thead>
<tr>
<th>Box No. II</th>
<th>Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)</th>
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<tbody>
<tr>
<td>This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>□ Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:</td>
</tr>
<tr>
<td>2.</td>
<td>□ Claims Nos.: because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:</td>
</tr>
<tr>
<td>3.</td>
<td>□ Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Box No. III</th>
<th>Observations where unity of invention is lacking (Continuation of item 3 of first sheet)</th>
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</thead>
<tbody>
<tr>
<td>This International Searching Authority found multiple inventions in this international application, as follows:</td>
<td></td>
</tr>
<tr>
<td>Please See Continuation Sheet</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>□ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.</td>
</tr>
<tr>
<td>2.</td>
<td>□ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of any additional fees.</td>
</tr>
<tr>
<td>3.</td>
<td>□ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:</td>
</tr>
<tr>
<td>4.</td>
<td>☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-6</td>
</tr>
</tbody>
</table>

**Remark on Protest**
- □ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- □ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- □ No protest accompanied the payment of additional search fees.
BOX III. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1-6, drawn to a retractor.

Group II, claim(s) 7-15, 33-37, drawn to a method and apparatus for locating and surgically position a hole for an implant.

Group II, claim(s) 16-32, 38-45 drawn to a method of creating a jaw model and a jaw model.

Group IV, claim(s) 46-51, drawn to a method for planning and fabricating a dental restoration.

The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the retractor lacks any of the method steps for locating a hole for an implant.

The inventions listed as Groups I and III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the retractor lacks any of the method steps for creating a jaw model and the method of creating a jaw model and the jaw model created thereby do not include the retractor.

The inventions listed as Groups I and IV do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the retractor lacks any method steps for planning and fabricating a dental restoration.

The inventions listed as Groups II and III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the method for locating a hole for an implant is not required to form the jaw model.

The inventions listed as Groups II and IV do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the method for planning and fabricating a dental restoration is not required to locate and position a hole for an implant.

Applicant has not paid, under Rule 40.2, the additional fee for additional inventions. Accordingly, the International Searching Authority established the international search report on those parts of the international application which relate to the invention first mentioned in claims 1-6.

Form PCT/ISA/210 (extra sheet) (April 2005)