

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

see form PCT/ISA/220

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**
(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/EP2018/076417

International filing date (day/month/year)
28.09.2018

Priority date (day/month/year)
29.09.2017

International Patent Classification (IPC) or both national classification and IPC
INV. A61M16/06 G06K9/00 G06T17/00 G16H20/00 ADD. B29C64/00 B33Y50/00

Applicant
KONINKLIJKE PHILIPS N.V.

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 usually 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:



European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0
Fax: +49 89 2399 - 4465


Date of completion of this opinion

see form
PCT/ISA/210

Authorized Officer

Aguado, Miguel

Telephone No. +49 89 2399-0



Box No. I Basis of the 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 43bis.1(a))
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:
 - 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 13ter.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 13ter.1(a)).
 - on paper or in the form of an image file (Rule 13ter.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:

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

1. Statement

Novelty (N)	Yes: Claims	
	No: Claims	<u>1-15</u>
Inventive step (IS)	Yes: Claims	
	No: Claims	<u>1-15</u>
Industrial applicability (IA)	Yes: Claims	<u>1-15</u>
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

1 **Re Item V**

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1.1 The application does not meet the requirements of Article 6 PCT, because claims 1-13 are not clear.

1.1.1 Method claims 1-13 are unclear, because the means by which the different claimed method steps are carried out are not defined.

In the absence of a proper definition of said means, it cannot be excluded that the following method steps are carried out mentally, in particular by the patient herself:

- in claim 1, the steps of receiving, analyzing, determining, and identifying;
and

- all method steps defined in each of claims 2-13.

It is remarked that these purely mental acts are not searched by the European Patent Office acting as International Searching Authority, and on the other hand cannot contribute to inventive step in the assessment of obviousness adopted by the European Patent Office acting as International Searching Authority (see the Guidelines for Search and Examination at the European Patent Office as PCT Authority, G-VII, 5.4).

For the sake of expediency, the international search report has been carried out, and the statement with regard to novelty, inventive step or industrial applicability given below has been drafted, under the assumption that each of the method steps in each of claims 1-13 is carried out by appropriate technical means, in such a way that they do not constitute purely mental acts.

1.2 Reference is made to the following documents:

D1 JP 2010 131091 A (UNIV NIIGATA) 17 June 2010 (2010-06-17)

D2 US 2017/128686 A1 (MARGARIA ELIZABETH POWELL [US] ET AL) 11 May 2017 (2017-05-11)

D3 WO 2016/000040 A1 (RESMED LTD [AU]) 7 January 2016 (2016-01-07)

- D4 US 2017/173289 A1 (LUCEY SIMON MICHAEL [US] ET AL) 22 June 2017 (2017-06-22)
- D5 US 2016/070851 A1 (WANG XIAOLI [CN] ET AL) 10 March 2016 (2016-03-10)
- D6 US 2010/189342 A1 (PARR TIMOTHY C [GB] ET AL) 29 July 2010 (2010-07-29)
- D7 US 2005/256686 A1 (STABELFELDT SARA JANE W [US] ET AL) 17 November 2005 (2005-11-17)
- D8 US 2017/068121 A1 (FONTE TIMOTHY A [US] ET AL) 9 March 2017 (2017-03-09)

1.3 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1, account taken of the deficiency identified under item 1.1.1 above and of the interpretation set out therein, is not new in the sense of Article 33(2) PCT.

1.3.1 D1 discloses (references in parentheses applying to this document):

A method for identifying a mask (M; see paragraph [0020] and Fig. 1) for a patient, the method comprising:

receiving (by computer 4) a plurality of images (from laser imaging device 1 and from ultrasonic wave imaging device 2) of a patient's face (F; see paragraphs [0020]-[0023] and Fig. 1);

analyzing (by computer 4) the plurality of images to generate a temporal model of the patient's face (see paragraphs [0022]-[0027] and Fig. 1, wherein the temporal model is anticipated by the individual face model generated by individual model generation means 7, see paragraph [0024] and [0036]-[0044] and Fig. 6-13, together with the deformed face models obtained by the nose mask initial shape determination means 8 and the nose mask optimum shape determination means 9 by using the finite element method, see paragraphs [0026]-[0027] and [0045]-[0056] and Fig. 6 and 14-18);

determining (by computer 4) a mask (the optimal nose mask, as determined by the nose mask optimum shape determination means 9 on the basis of the temporal model) for the patient using the temporal model of the patient's face (see paragraphs [0026], [0036], [0050] and [0063]-[0064]); and

identifying the mask to the patient (via the display device or output device disclosed in paragraphs [0022] and [0026]).

For the sake of definiteness, it is remarked that the model anticipated by the ensemble of the individual face model generated by individual model generation means 7 and the deformed face models obtained by the nose mask initial shape determination means 8 and the nose mask optimum shape determination means 9 is a temporal model in that it models the behaviour of the face F upon donning the mask M, which is a temporal process (see further the formulation of paragraphs [0046] and [0048]). On the other hand, said temporal model accounts for ranges of facial dimensions due to said deformation, in the same sense as the temporal model of the international application (cf., for instance, claim 5 of the international application).

As D1 discloses all the features of claim 1 in combination, the subject-matter of claim 1 is not new.

1.3.2 The subject-matter of claim 1 also lack novelty over the disclosure of each of the following documents:

- D2: see Fig. 2, 6 and 7 and the corresponding passages of the description, in particular paragraphs [0028]-[0041] and [0043]-[0055], disclosing *a method for identifying a mask for a patient, the method comprising:*

receiving (by compilation unit 24) a plurality of images (3-D models generated by face scanning unit 22 or 50) of a patient's face (see paragraphs [0030]-[0031] and [0052]-[0053]);

analyzing (by compilation unit 24) the plurality of images to generate a temporal model of the patient's face (see paragraph [0033]-[0034], [0049] and [0053]; the temporal model is anticipated by the ensemble of the 3-D models received from face scanning unit 22 or 50, in view of the temporal processes described in paragraphs [0032], [0040]-[0041], [0044]-[0045] and [0050]);

determining a mask for the patient using the temporal model of the patient's face (see paragraph [0038]); and

identifying the mask to the patient (see paragraphs [0037]-[0039] and [0053] in view of paragraph [0055]).

- D3: see Fig. 4 and paragraphs [0493]-[0664], wherein the temporal model is anticipated by the ensemble of the face data in the relaxed and deformed states.

1.4 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1, account taken of the deficiency identified under item 1.1.1 above and of the interpretation set out therein, does not involve an inventive step in the sense of Article 33(3) PCT.

1.4.1 The subject-matter of claim 1 is rendered obvious by the combination of D4 as the closest prior art, disclosing (see Fig. 2-11J and paragraphs [0072]-[0169]) a method with all the features of claim 1 in combination, except for the feature that the model is a temporal model, with any of the following documents disclosing said differentiating feature with its corresponding advantages:

- D1-D3: see items 1.3.1 and 1.3.2 above.

- D5: see Fig. 3 and the corresponding passages of the description, in particular paragraphs [0041]-[0045].

- D6: see paragraphs [0024]-[0026], [0374]-[0398] and [0462]-[0464].

- D7: see Fig. 1, 2, 8 and 10-12 and the corresponding passages of the description, in particular paragraphs [0055]-[0065], [0073]-[0078] and [0084]-[0108].

- D8: see Fig. 1A-2 and the corresponding passages of the description, in particular paragraphs [0215]-[0216], [0245] and [0253].a

1.5 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 14 is not new in the sense of Article 33(2) PCT.

1.5.1 D1 discloses, in view of the analysis under item 1.3.1 above, all the features of the system defined in claim 14 in combination (in particular, the processing unit is anticipated by computer 4, and the output device is disclosed in paragraphs [0022] and [0026]).

- 1.5.2 D2 discloses, in view of the analysis under item 1.3.2 above, all the features of the system defined in claim 14 in combination (in particular, the processing unit is anticipated by compilation unit 24, and the output device being implicitly disclosed in paragraphs [0038]-[0039] and [0055]).
- 1.5.3 The subject-matter of claim 14 also lacks novelty over the disclosure of D3 (see Fig. 4 and the corresponding passages of the description, in view of the remarks under item 1.3.2 above).
- 1.5.4 The subject-matter of claim 14 also lacks novelty over the disclosure of D5 (see Fig. 3 and the corresponding passages of the description, in particular paragraphs [0041]-[0045]; since claim 14 does not specify the relation of the mask with the condition of the patient, it follows that the system of Fig. 3 of D5 is suitable to identify at least a half-mask respirator to an arbitrary user, in particular a patient).
- 1.6 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 14 does not involve an inventive step in the sense of Article 33(3) PCT.
- 1.6.1 The objection raised under item 1.4.1 above concerning the method defined in claim 1 applies, mutatis mutandis, to the system underlying said method. Accordingly, the subject-matter of claim 14 lacks an inventive step in view of the combination of D4, taken as the closest prior art, with any of D1-D3 and D5-D8.
- 1.7 Dependent claims 2-13 and 15 do not contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step, see the relevant passages of the documents identified in the international search report. In particular:
- 1.7.1 D1 discloses or renders obvious the additional features of the following dependent claims:
- Claim 2: the specification of the mask being anticipated by the information stored in a storage device of the computer 4, displayed on a display device, or printed by an output device, as disclosed in paragraph [0026].

- Claims 3-5, 7-9, 10-11, 12 and 13: each of these claims defines processes of receiving and analyzing a plurality of images which are either disclosed in D1 (claims 10-11 and 13) or represent well-known alternative processes in the field of face imaging for mask identification and provision (claims 3-5, 7-9 and 12) which the skilled person would apply depending on the circumstances without exerting an inventive activity.
 - Claim 6: The range of facial dimensions and geometries of the patient's face is comprised in the temporal model generated by the computer 4, see the remarks to this effect under item 1.3.1 above.
 - Claim 15: The imaging capture device being anticipated by 1 with 2.
- 1.7.2 D2 discloses or renders obvious the additional features of the following dependent claims:
- Claim 2: provision of the mask to the patient being implicitly disclosed in paragraphs [0038]-[0039] and [0055].
 - Claims 3-5, 7-9, 10-11, 12 and 13: each of these claims defines processes of receiving and analyzing a plurality of images which are either disclosed in D2 (claims 3-5) or represent well-known alternative processes in the field of face imaging for mask identification and provision (claims 7-9, 10-11, 12 and 13) which the skilled person would apply depending on the circumstances without exerting an inventive activity.
 - Claim 6: The range of facial dimensions and geometries of the patient's face is comprised in the face manipulation processes described in paragraphs [0032], [0040]-[0041], [0044]-[0045] and [0050].
 - Claim 15: The imaging capture device being anticipated by 22 or 50.
- 1.7.3 D3 discloses or renders obvious the additional features of claims 2-13 and 15 (see Fig. 4 and paragraphs [0493]-[0664]).
- 1.7.4 D4 discloses or renders obvious the additional features of claims 2-13 and 15 (see Fig. 2-11J and paragraphs [0072]-[0169]).
- 1.7.5 D5 discloses or renders obvious the additional features of claims 2-13 and 15 (see Fig. 3 and paragraphs [0026]-[0120]).
- 1.7.6 D6 discloses or renders obvious the additional features of claims 2-13 and 15 (see paragraphs [0024]-[0026], [0374]-[0398] and [0462]-[0464]).

- 1.7.7 D7 discloses or renders obvious the additional features of claims 2-13 and 15 (see Fig. 1, 2, 8 and 10-12 and the corresponding passages of the description).
- 1.7.8 D8 discloses or renders obvious the additional features of claims 2-13 and 15 (see Fig. 1A-2 and the corresponding passages of the description).

2 **Re Item VII**

Certain defects in the international application

- 2.1 The features of claims 2, 3, 5-8 and 10-15 are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
- 2.2 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in D1-D8 is not mentioned in the description, nor are these documents identified therein.