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 P 10-0671 /NÅA	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/SE2010/051452	International filing date *(day/month/year)* 21 December 2010 (21.12.2010)	Priority date *(day/month/year)* 22 December 2009 (22.12.2009)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant CASSANDRA OIL AB.		

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 11 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 26 June 2012 (26.06.2012)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Nora Lindner e-mail: pt03.pct@wipo.int

Form PCT/IB/373 (January 2004)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
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SE-102 32 Stockholm
Sverige

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)* 09-05-2011

Applicant's or agent's file reference
P 10-0671

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/SE2010/051452	21-12-2010	22-12-2009

International Patent Classification (IPC) or both national classification and IPC
See Supplemental Box

Applicant
OLSSON, Anders

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

- [x] 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
- [x] Box No. IV Lack of unity of invention
- [x] Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- [ ] Box No. VI Certain documents cited
- [ ] Box No. VII Certain defects in the international application
- [x] 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 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 opinions, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/SE	Date of completion of this opinion	Authorized officer
Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86	06-05-2011	Bengt Christensson / JAA Telephone No. +46 8 782 25 00

Form PCT/ISA/237 (cover sheet) (July 2009)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/SE2010/051452

Supplemental Box

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

International patent classification (IPC)

B01J 8/10 (2006.01)
B01J 19/18 (2006.01)
B02C 13/04 (2006.01)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/SE2010/051452

Box No. I Basis of this opinion

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

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

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

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

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

   a. (means)

   ☐ on paper

   ☐ in electronic form

   b. (time)

   ☐ in the international application as filed.

   ☐ together with the international application in electronic form.

   ☐ subsequently to this Authority for the purposes of search.

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

5. Additional comments:

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
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Box No. IV Lack of unity of invention

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees the applicant has, within the applicable time limit:

   ☒ paid additional fees

   ☐ paid additional fees under protest and, where applicable, the protest fee

   ☐ paid additional fees under protest but the applicable protest fee was not paid

   ☐ not paid additional fees

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is

   ☐ complied with

   ☒ not complied with for the following reasons:

The following separate inventions were identified:

1: Claims 1-18 directed to a reactor comprising an axle, extending through a housing and the housing with at least one part which is dismantable.

2: Claims 19-23 directed to a rotor comprising a hammer.

4. Consequently, this opinion has been established in respect of the following parts of the international application:

   ☒ all parts

   ☐ the parts relating to claims Nos. _____

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/SE2010/051452

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

1. Statement

Novelty (N)	Claims	2-7, 9-18,	YES
	Claims	1,8, 19-23	NO
Inventive step (IS)	Claims	9-11,13-18	YES
	Claims	1-8, 12, 19-23	NO
Industrial applicability (IA)	Claims	1-23	YES
	Claims		NO

2. Citations and explanations:

The invention

The claimed invention concerns a reactor comprising a reaction chamber and a rotor. The reaction chamber comprises a sealed housing that has an inlet opening an outlet opening. The object of the invention is to provide a reactor that, with a minimum of dismounting work, allows access to the rotor including vanes and wear surfaces, for service. The object of the invention is met in that a shaft extends in only one direction through and out of the housing and that the housing with at least one part is dismantable.

The documents

The following documents are cited in the International Search Report:

D1) US3538067 A
D2) US2002193558 A1
D3) US3279895 A
D4) US6165349 A

A reaction chamber (1) in which a rotating mechanism (2) is located is already known from D4 (figs 1, 5, 8, 11 & column 11, line 36-column 12, line 11). The reaction chamber (1) consists of a shaft (3) with vanes (5) attached to the shaft

.../...

Supplemental Box

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

(3) by means of driving discs (4). Solid particles preheated in a heat-exchanger (9), are fed by a screw conveyer into the reaction chamber (1) in which the rotation mechanism (2) is quickly rotating. An integral part of the reaction chamber (1) is an outlet pipe (11) for taking off solid particles. The reaction products in the gaseous state and in the state of an aerodisperse fog, are led away through an outlet flange (10) into a dust excluder (12). Furthermore, the vanes can be attached to the discs swingingly (column 3, lines 40-41). The vanes or rows of vanes of especially rugged construction act by impacts and friction on larger particles than those forming the whirling bed, in a way similar to the action of hammers in a hammer mill on the substance being ground, and cause their mechanical disintegration—grinding (column 6, lines 19-24). A part of the rotation mechanism, located in the reaction chamber, is separated from the surrounding exterior by a sealing system, ensuring the tightness of the reaction chamber (column 3, lines 49-51). According to the figures, the shaft (3) extends through and out of the reactor chamber.

D2 describes a reactor that is similar to that in D4, except for the hammer and that it is not cylindrical shaped.

Reactors that are similar to those according to D4 or D2 is already known from D1 (fig.1 & column 4, line 74-column 5, line 52) and D3 (fig. 1 & column 3, lines 37-49). A shaft is supported by bearings. The respective reactors are cylindrical shaped, but have no hammers.

Novelty

In view of D4

Claims 1, 8

The rotor and shaft in present claim 1 are considered to correspond to the shaft (3) according to D4.

The content of claims 1 and 8 lacks novelty in light of the information given in D4.

.../...

Supplemental Box

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

Claims 19-21

The rotor and shaft in present claim 1 are considered to correspond to the shaft (3) according to D4.

The content of claims 19-21 lacks novelty in light of the information given in D4.

Claims 22-23

Claims 22-23 do not seem to contain any constructional features, which distinguish the claimed reactor as such from the reactor in D4.

Also, it can be assumed that a force as defined in claim 23 affects the hammers in D4 as well.

Thus, the invention in claims 22-23 lack novelty.

In view of D2

Claim 1

The rotor and shaft in present claim 1 are considered to correspond to the shaft (16) in D2.

The content of claim 1 lacks novelty in light of the information given in D2.

Inventive step

In view of D4

Claims 1, 8

Since the invention according to claims 1, 8 lacks novelty in view of the content of D4, it also lacks an inventive step.

.../...

Supplemental Box

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

Claims 19-23

Since the invention according to claims 19-23 lacks novelty in view of the content of D4, it also lacks an inventive step.

Claims 2-7, 12

Furthermore, the support device and stand referred to in claims 2-7 and 12 are not considered to differ essentially from what is known from D4. Reference is also made to D1 and D3, where bearings are described. If it can be shown that some aspect covered by the claims provides unexpected effects and the claims are restricted accordingly, the judgement may be reconsidered. Until these conditions are met, the claims are not considered to involve an inventive step.

In view of D2

Claim 1

Since the invention according to claim 1 lacks novelty in view of the content of D2, it also lacks an inventive step.

Claims 2-8, 12

Furthermore, the support device, bearings, cylindrical shape and stand referred to in claims 2-8 and 12 are not considered to differ essentially from what is known from D2. Reference is also made to D1 and D3, where bearings are described. If it can be shown that some aspect covered by the claims provides unexpected effects and the claims are restricted accordingly, the judgement may be reconsidered. Until these conditions are met, the claims are not considered to involve an inventive step.

Remaining claims

Claims 9-11,13-18

The invention according to claims 9-11, 13-18 is novel and considered to involve an inventive step.

Supplemental Box

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

Industrial applicability

Claims 1-23

The claimed invention in claims 1-23 is considered to have industrial applicability.

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/SE2010/051452

Box No. VIII Certain observations on the international application

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

Unclear claims/description

Since independent claim 1 does not clearly describe what parts in the reactor give rise to separation, the phrasing of the claim does not meet the requirement following from Article 6 PCT taken in combination with Rule 6.3(b) PCT that any independent claim must contain all the technical features essential to the definition of the invention.

Furthermore, it is not clear from the description, what problem is solved by claims 1-8 and 12 (Article 6 PCT). According to the present description the invention is aimed at providing a reactor that, with a minimum of dismounting work, allows access to the rotor including vanes and wear surfaces for service. This solution appears to be described in claims 9-11, 13-18. It is unclear how the shaft that extends through and out of the housing, described in claims 1-8 and 12, solves this problem.