

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

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

To:

see form PCT/ISA/220

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/US2017/051269

International filing date (day/month/year)
13.09.2017

Priority date (day/month/year)
26.09.2016

International Patent Classification (IPC) or both national classification and IPC
INV. F16J15/34

Applicant
CATERPILLAR INC

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 43bis.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 66.1bis(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:



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Date of completion of this opinion

see form
PCT/ISA/210

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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	<u>5, 6, 8-10</u>
	No: Claims	<u>1-4, 7</u>
Inventive step (IS)	Yes: Claims	
	No: Claims	<u>1-10</u>
Industrial applicability (IA)	Yes: Claims	<u>1-10</u>
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

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

1 Reference is made to the following documents:

D1 US 2012/155953 A1 (KHARE ROOPAM [US] ET AL) 21 June 2012
(2012-06-21)

D2 WO 89/00523 A1 (CATERPILLAR INC [US]) 26 January 1989
(1989-01-26)

D3 US 4 457 521 A (MORLEY JAMES P [US]) 3 July 1984 (1984-07-03)

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

D1 discloses:

*A seal assembly, for use in a dynamic pin joint defining axial (A) and radial directions (R), the seal assembly comprising:
a counterface seal ring subassembly including:
a counterface seal ring member (50) that includes a radially extending planar seal face (82) and a first contoured load ring interface (112); and
a first load ring (54).*

3 The present application does not meet the criteria of Article 33(2) PCT, because the subject-matter of claim 7 is not new.

3.1 D1 discloses:

*A pin joint (10) for a machine comprising:
a pin (12) defining an axial direction (A) and a radial direction (R);
a first member that defines a first seal groove;
a second member that defines a second seal groove;
a seal assembly including:
a counterface seal ring subassembly disposed in the first seal groove of the first member, the counterface seal ring subassembly including:
a counterface seal ring member (50) that includes a radially extending planar seal face (82) and a first contoured load ring interface (112), and
a first load ring (54); and
a lip seal ring subassembly disposed in the second seal groove of the second member, the lip seal ring subassembly including:*

a lip seal ring member (48) that includes a lip sealing feature (83) and a second contoured load ring interface (112), and a second load ring (52);

wherein the first and second members rotate relative to each other and the first load ring (54) engages the first contoured load ring interface (112) of the counterface seal ring member (50) and the second load ring (52) engages the second contoured load ring interface (112) of the lip seal ring member (48).

- 4 Dependent claims 2-5, 8-10 do not contain any 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 D2-D3.