

**PATENT COOPERATION TREATY**

**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference <b>B40561WO01</b>	<b>FOR FURTHER ACTION</b>		See item 4 below
International application No. <b>PCT/JP2017/009881</b>	International filing date ( <i>day/month/year</i> ) <b>13 March 2017 (13.03.2017)</b>	Priority date ( <i>day/month/year</i> ) <b>31 March 2016 (31.03.2016)</b>	
International Patent Classification (8th edition unless older edition indicated) <b>See relevant information in Form PCT/ISA/237</b>			
Applicant <b>KONICA MINOLTA, INC.</b>			

<p>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).</p> <p>2. This REPORT consists of a total of 7 sheets, including this cover sheet.</p> <p>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.</p>																								
<p>3. This report contains indications relating to the following items:</p> <table> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table> <p>4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.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 44bis .2).</p>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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	Date of issuance of this report <b>02 October 2018 (02.10.2018)</b>
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**PATENT COOPERATION TREATY**

**TRANSLATION**

From the  
INTERNATIONAL SEARCHING AUTHORITY

**PCT**

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing (day/month/year)	<b>25.04.2017</b>
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Applicant's or agent's file reference <b>B40561W001</b>	<b>FOR FURTHER ACTION</b> See paragraph 2 below
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International application No. <b>PCT/JP2017/009881</b>	International filing date (day/month/year) <b>13.03.2017</b>	Priority date (day/month/year) <b>31.03.2016</b>
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International Patent Classification (IPC) or both national classification and IPC  
**B41J2/14 (2006.01) i, B41J2/18 (2006.01) i**

Applicant  
**KONICA MINOLTA, 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 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

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 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/JP	Date of completion of this opinion	Authorized officer
Facsimile No.		Telephone No.

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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 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:

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<b>Box No. V</b>	<b>Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</b>
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1. Statement			
Novelty (N)	Claims	3-4, 6, 9	YES
	Claims	1-2, 5, 7-8	NO
Inventive step (IS)	Claims	6	YES
	Claims	1-5, 7-9	NO
Industrial applicability (IA)	Claims	1-9	YES
	Claims	_____	NO

2. Citations and explanations:	
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Document 1: JP 2015-77736 A (SII PRINTEK INC.) 23 April 2015, paragraphs [0047], [0050], [0051]-[0054], fig. 6, 7 & US 2015/0109374 A1, paragraphs [0062], [0065]-[0069], fig. 6A, 6B, 7A, 7B

Document 2: JP 5381915 B2 (KONICA MINOLTA, INC.) 08 January 2014, paragraphs [0013]-[0039], [0063]-[0066], fig. 1, 4-7, 10 & JP 2012-11678 A, paragraphs [0013]-[0039], [0063]-[0066], fig. 1, 4-7, 10

(1) The invention as in claims 1-2, 5, and 7-8 lacks novelty and does not involve an inventive step in the light of document 1 cited in the ISR.

Regarding claims 1 and 8, document 1 (description on a side flow path 5 in paragraph [0047], fifth embodiment in paragraphs [0050], [0051], and fig. 6) discloses a shear mode inkjet head (1), comprising: a head chip having a nozzle layer (9) in which a plurality of nozzles (10) for ejecting ink are formed, and a pressure chamber layer (2) in which a plurality of pressure chambers (3)

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**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

communicating with the plurality of nozzles (10), respectively, are formed; and a manifold (7) for storing ink to be supplied to the plurality of pressure chambers (3), wherein the head chip includes: a plurality of individual communication flow paths (5) communicating with the plurality of pressure chambers (3), respectively, and capable of discharging ink in the pressure chambers (3); and a common communication flow path (12a) which is provided in a part of the pressure chamber layer (2) that faces the nozzle layer (9), which is connected to the plurality of individual communication flow paths (5), and to which ink discharged from the plurality of individual communication flow paths (5) merges.

Regarding claim 2, in document 1, it would be obvious from fig. 6 that the width of the common communication flow path (12a) in the ejection direction of ink is larger than the thickness of the nozzle layer (9).

Regarding claim 5, document 1 (paragraphs [0052]-[0054] and fig. 7) indicates that a sealing member (11) is provided at an end portion of the common communication flow path (12a) in the longitudinal direction of the head chip.

Regarding claim 7, in document 1, the manifold (7) is provided at an upper part of the pressure chamber (3).

(2) The invention as in claims 3-4 and 9 does not involve an inventive step in the light of documents 1 and 2 cited in the ISR.

Regarding claims 3-4, document 2 (paragraphs [0013]-[0039] and [0063]-[0066], fig. 1, 4-7, and 10, etc.) discloses an inkjet head (100), comprising: a head chip

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having: a nozzle layer (11) in which a plurality of nozzles (11a) for ejecting ink are formed; and a pressure chamber layer (1) in which a plurality of pressure chambers (13A) communicating with the plurality of nozzles (11a), respectively, are formed; and a manifold (5) for storing ink to be supplied to the plurality of pressure chambers (13A), wherein the head chip has: a plurality of individual communication flow paths (19b) communicating with the plurality of pressure chambers (13A), respectively, and capable of discharging ink in the pressure chambers (13A); and a common communication flow path (19) which is connected to the plurality of individual communication flow paths (19b) and to which ink discharged from the plurality of individual communication flow paths (19b) merges, the individual communication flow path (19b) is provided in a part of the pressure chamber layer (1) that faces the nozzle layer (11), and the pressure chamber layer (1) has a discharge flow path (13B) communicating with the common communication flow path (19) and capable of discharging ink to a side opposite to the nozzle layer (11).

Document 2 does not indicate that the common communication flow path (19) is provided in a part of the pressure chamber layer (1) that faces the nozzle layer (11), but in document 2, a person skilled in the art could have easily conceived of employing the feature described in document 1 wherein the common communication flow path is provided in a part of the pressure chamber layer that faces the nozzle layer to provide the common communication flow path (19) in a part of the pressure chamber layer (1) that faces the nozzle layer (11).

Regarding claim 9, in document 2 (see fig. 10), it

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citations and explanations supporting such statement

is obvious from the description in paragraphs [0063]-  
[0066] that an ink circulation means for generating a  
circulation flow from the pressure chamber (13A) to the  
individual communication flow path (19b) is provided in  
an inkjet recording device.

(3) The invention as in claim 6 is not disclosed in  
any of the documents cited in the ISR, and is novel and  
involves an inventive step.