

PATENT COOPERATION TREATY

TRANSLATION

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

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| Date of mailing (day/month/year) | 25.04.2017 |
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| Applicant's or agent's file reference B40561W001 | FOR FURTHER ACTION See paragraph 2 below |
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|---|---|---|
| International application No. PCT/JP2017/009881 | International filing date (day/month/year) 13.03.2017 | Priority date (day/month/year) 31.03.2016 |
|---|---|---|

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.

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|--|------------------------------------|--------------------|
| Name and mailing address of the ISA/JP | Date of completion of this opinion | Authorized officer |
| Facsimile No. | | Telephone No. |

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2017/009881

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:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

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| International application No. PCT/JP2017/009881 |
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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 |
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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 |

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| 2. Citations and explanations: | |
|--------------------------------|--|

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)

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2017/009881

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

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2017/009881

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

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

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2017/009881

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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.