

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)	22.05.2018
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Applicant's or agent's file reference FJ2018-017PC	FOR FURTHER ACTION See paragraph 2 below
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International application No. PCT/JP2018/015036	International filing date (day/month/year) 10.04.2018	Priority date (day/month/year) 14.04.2017
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International Patent Classification (IPC) or both national classification and IPC
B41J29/377 (2006.01) i, B41J2/01 (2006.01) i, B41J29/38 (2006.01) i, B41J29/42 (2006.01) i, H05K7/20 (2006.01) i

Applicant
FUJIFILM CORPORATION

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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1. Statement			
Novelty (N)	Claims	1-18	YES
	Claims	_____	NO
Inventive step (IS)	Claims	12	YES
	Claims	1-11, 13-18	NO
Industrial applicability (IA)	Claims	1-18	YES
	Claims	_____	NO

2. Citations and explanations:	
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[Documents]

Document 1: JP 2005-198471 A (RICOH CO., LTD.) 21 July 2005, paragraphs [0037], [0043], [0050], [0055], [0058], [0076], [0078], [0084], fig. 5, 9 (Family: none)

Document 2: JP 9-319268 A (FUJI PHOTO FILM CO., LTD.) 12 December 1997, paragraphs [0039]-[0047], fig. 2 & US 5946078 A, column 7, line 55 to column 9, line 23, fig. 2 & EP 810489 A2

Document 3: JP 7-231194 A (NEC COMMUNICATION SYSTEM, LTD.) 29 August 1995, paragraph [0004] (Family: none)

Document 4: Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 84889/1982 (Laid-open No. 187152/1983) (FUJITSU TEN LIMITED) 12 December 1983, page 1, line 2 from the bottom to page 2, line 13 (Family: none)

Document 5: JP 2015-40996 A (FUJI XEROX CO., LTD.) 02 March 2015, paragraph [0023], fig. 1 (Family: none)

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- Document 6: JP 2017-32833 A (KONICA MINOLTA, INC.) 09 February 2017, paragraph [0039] (Family: none)
- Document 7: JP 2016-4947 A (FUJITSU LTD.) 12 January 2016, paragraphs [0042]-[0048] & US 2015/0373875 A1, paragraphs [0075]-[0081]
- Document 8: JP 2015-182229 A (SEIKO EPSON CORP.) 22 October 2015, paragraphs [0021], [0023]-[0024], [0037]& US 2015/0266309 A1 paragraphs [0039], [0057], [0083]-[0084] & EP 2921311 A2 & CN 104924760 A
- Document 9: JP 2005-186422 A (KONICA MINOLTA MEDICAL & GRAPHIC, INC.) 14 July 2005, paragraphs [0095]-[0096] (Family: none)
- Document 10: US 8857946 B2 (HEWLETT-PACKARD DEVELOPMENT COMPANY, L.P.) 14 October 2014, entire text, all drawings (Family: none)

[Examination]

I. Claims 1-5 and 13-18

The invention as in claims 1-5 and 13-18 would be obvious to a person in the art, and thus does not involve an inventive step in light of documents 1 and 2 cited in the ISR.

1. Invention as in claims 1, 2 and 13-18

(1) Prior art disclosed in document 1

It is recognized that document 1 discloses the following prior art.

"an image formation device 1,

in which a toner image carried on a photosensitive

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drum 2 is transferred while a sheet is conveyed by a transfer belt,

the image formation unit 1 comprising a power supply unit 1000 provided with a casing 110 on which a control substrate 100c is provided, wherein

fans 101, 101' provided to the power supply unit are driven and controlled according to the temperature inside the unit, and when the temperature from a temperature sensor 102 reaches a predetermined value, a control unit 1001 drives the fan 101 to cool the inside of the unit, and when the temperature exceeds the predetermined temperature, the control unit stops the operation of the fan 101 and also stops image formation processing, and the fan 101 is provided with a dustproof filter 102."

In addition, from document 1 (fig. 5 and 9), it can be understood that the fan 101' mounted on an exhaust port is provided at a higher position than the fan 101 mounted on an intake port.

(2) Comparison

The prior art disclosed in document 1 and the invention as in claims 1, 2, 13 and 18 are compared.

A. The "sheet," "transfer belt," "casing 110," "control substrate 100C," "fan 101," "fan 101,'" "control unit 1001," and "dustproof filter 102" of the prior art disclosed in document 1 respectively correspond to the "paper," "paper conveyance part," "housing," "electronic apparatus," "first fan," "second fan," "fan control unit," and "filter" of the invention as in claims 1, 2 and 13.

B. It can be said that the "image formation device 1" in the prior art disclosed in document 1 and the "inkjet recording device" in the invention as in claims

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1, 2 and 13 are identical in that both are "recording devices."

C. Thus, the prior art disclosed in document 1 and the invention as in claims 1, 2, 13 and 18 are different from each other with respect to the following points, and are otherwise identical.

• Difference 1:

The invention as in claims 1, 2 and 13 has the feature of an "inkjet recording device" in which the "recording device" is provided with an "inkjet head," and the invention as in claim 18 has the feature of a cooling method for cooling a housing that stores an electric apparatus in the "inkjet recording device" provided with the "inkjet head," whereas the "recording device" and the cooling method for cooling the "casing 110 (housing)" that stores the "control substrate 100C (electric apparatus)" in the "recording device" of the prior art disclosed in document 1 do not pertain to an inkjet recording device and do not have the above feature.

• Difference 2:

The "filter unit" in the invention as in claims 1, 2, 13 and 18 is provided with a "first filter that collects conductive materials and a second filter mounted on the intake-side position of the first filter," and has the feature in which "the second filter is different from the first filter with respect to at least any one among pressure loss and collection efficiency in an initial state," whereas the "dustproof filter 1002" of the prior art disclosed in document 1 is not configured as such, and does not have the above feature.

(3) Determination

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Differences 1 and 2 will now be examined.

A. Difference 1

(a) The recording device that uses an inkjet recording method is so well known that it is not necessary to cite an example.

(b) Thus, a person skilled in the art could obviously adopt the well-known inkjet recording method as the image formation method for the "image formation device 1 (recording device)" in the prior art disclosed in document 1, thereby deriving the feature required for specifying the invention as in claims 1, 2, 13 and 18 regarding difference 1.

B. Difference 2

(a) It is recognized that document 2 discloses the following prior art.

A "dustproof mechanism 60 for an image recording device, the dustproof mechanism 60 having: a fan 64; a filter 66a mounted downstream of the fan 64 with respect to air flow; and a filter 66b mounted upstream of the fan 64 with respect to air flow, wherein the filters 66a, 66b can be appropriately selected according to the use environment and the required characteristics, and an electrostatic filter having a comparatively fine mesh and an electrostatic filter having a comparatively rough mesh can be used."

(b) Both the prior art disclosed in document 1 and the prior art disclosed in document 2 belong to the common technical field of an image formation device provided with a dustproof mechanism.

(c) In addition, a person skilled in the art could easily understand that as long as a dustproof mechanism is provided, the prior art disclosed in document 1 also

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has the same problem of further enhancing dustproof properties as the prior art disclosed in document 2.

C. Thus, a person skilled in the art could obviously configure the "dustproof filter 1002" in the prior art disclosed in document 1 by providing two electrostatic filters having different mesh sizes on the upstream and downstream sides of air flow on the basis of the prior art disclosed in document 2, thereby deriving the feature required for specifying the invention as in claims 1, 2, 13 and 18 regarding difference 2.

(4) Summary

As described above, the invention as in claims 1, 2, 13 and 18 would be obvious to a person skilled in the art and does not involve an inventive step in light of the prior art disclosed in documents 1 and 2.

2. Invention as in claim 3

Refer to "I. 1" above.

Whether to use the filter mesh with a rough mesh on the upstream side or on the downstream side is a matter that could be appropriately designed by a person skilled in the art when configuring the "dustproof filter 1002" in the prior art disclosed in document 1 by providing two electrostatic filters having different mesh sizes on the upstream and downstream sides of air flow on the basis of the prior art disclosed in document 2.

Thus, the invention as in claim 3 would be obvious to a person skilled in the art in light of the prior art disclosed in documents 1 and 2, and thus does not involve an inventive step.

3. Invention as in claims 4 and 5

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Refer to "I. 1" and "I. 2" above.

In the prior art disclosed in document 1, the number of fans used for temperature adjustment and the blowing directions of the fans are matters that could be appropriately designed by a person skilled in the art considering the layout and the like of cooling targets.

Thus, the invention as in claims 4 and 5 would be obvious to a person skilled in the art in light of the prior art disclosed in documents 1 and 2, and thus does not involve an inventive step.

4. Invention as in claim 14

Refer to "I. 1" and "I. 3" above.

The "control means 1001 (fan control unit)" in the prior art disclosed in document 1 performs drive control for the "fans 101, 101'" according to temperature, and thus the specific method for performing the drive control is a matter that could be appropriately designed by a person skilled in the art.

Thus, the invention as in claim 14 would be obvious to a person skilled in the art in light of the prior art disclosed in documents 1 and 2, and thus does not involve an inventive step.

5. Invention as in claims 15 to 17

Refer to "I. 1" and "I. 4" above.

Where to install the "power supply unit 1000" in the prior art disclosed in document 1 is a matter that could be appropriately designed by a person skilled in the art.

Thus, the invention as in claims 15 to 17 would be obvious to a person skilled in the art in light of the prior art disclosed in documents 1 and 2, and thus does

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not involve an inventive step.

II. Invention as in claim 6

The invention as in claim 6 would be obvious to a person skilled in the art in light of the prior art disclosed in document 1 and the prior art disclosed in document 2, and documents 3 and 4 cited in the ISR, and thus does not involve an inventive step.

Refer to the above "I. 1" regarding the prior art disclosed in documents 1 and 2.

The "control substrate 100C (electric apparatus)" is provided inside the "power supply unit 1000" in the prior art disclosed in document 1.

Here, as disclosed in documents 3 and 4, the feature of protecting a substrate by using an insulating coating can be said to be a well-known feature.

Thus, a person skilled in the art could obviously protect the "control substrate 100C (electric apparatus)" in the prior art disclosed in document 1 by using an insulating coating on the basis of the well-known prior art disclosed in documents 3 and 4, thereby deriving the invention as in claim 6.

The invention as in claim 6 would be obvious to a person skilled in the art in light of the prior art disclosed in document 1 and the prior art disclosed in document 2, and documents 3 and 4 cited in the ISR, and thus does not involve an inventive step.

III. Invention as in claims 7 to 11

The invention as in claims 7 and 8 would be obvious

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to a person skilled in the art in light of the prior art disclosed in document 1 and the prior art disclosed in document 2, and the well-known prior art disclosed in documents 5 and 6 cited in the ISR, and thus does not involve an inventive step.

The invention as in claim 9 would be obvious to a person skilled in the art in light of the prior art disclosed in document 1, the prior art disclosed in document 2, and the well-known prior art disclosed in documents 5 and 6, and the prior art disclosed in document 7 cited in the ISR, and thus does not involve an inventive step.

The invention as in claim 10 would be obvious to a person skilled in the art in light of the prior art disclosed in document 1, the prior art disclosed in document 2, and the well-known prior art disclosed in documents 5 and 6, and the prior art disclosed in document 8 cited in the ISR, and thus does not involve an inventive step.

The invention as in claim 11 would be obvious to a person skilled in the art in light of the prior art disclosed in document 1, the prior art disclosed in document 2, and the well-known prior art disclosed in documents 5 and 6, and the prior art disclosed in document 9 cited in the ISR, and thus does not involve an inventive step.

1. Invention as in claims 7 and 8

Refer to the above "I. 1" regarding the prior arts disclosed in documents 1 and 2.

As disclosed in documents 5 and 6, an image formation device provided with a filter on an exhaust

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port can be said to be well-known prior art.

Thus, providing a filter on the "exhaust port" in the prior art disclosed in document 1 on the basis of the well-known prior art disclosed in documents 5 and 6 is a matter that could obviously be addressed by a person skilled in the art, and here, the characteristics of the filter provided on the exhaust port is a matter that could be appropriately designed by a person skilled in the art.

The invention as in claims 7 and 8 would be obvious to a person skilled in the art in light of the prior art disclosed in document 1, the prior art disclosed in document 2, and the well-known prior art disclosed in documents 5 and 6, and thus does not involve an inventive step.

2. Invention as in claim 9

Refer to "III. 1" above.

It is recognized that document 7 discloses the following prior art.

An "electronic apparatus having a fan unit 40 which cools an electronic component 24 by operating a cooling fan 48, the fan unit having a filter 60 that removes dirt and dust in the air, wherein the temperature of the electronic component 24 is obtained by a temperature sensor 88, and when the temperature of the electronic component 24 exceeds a threshold, the rotation speed of a fan motor of the cooling fan 48 is increased and a message and the like urging the replacement of the filter 60 is displayed."

Both the prior art disclosed in document 1 and the prior art disclosed in document 7 belong to the same

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technical field of electronic apparatuses provided with a cooling mechanism, and the "dustproof filter 1002 (filter unit)" in the prior art disclosed in document 1 and the "filter 60" in the prior art disclosed in document 7 share the common function and action of removing dirt and dust in the air. In addition, a person skilled in the art could obviously recognize that the "dustproof filter 1002" in the prior art disclosed in document 1 is required to be replaced when clogging or the like occurs.

Thus, on the basis of the prior art disclosed in document 7, in the prior art disclosed in document 1, a person skilled in the art could obviously measure the temperature inside the "casing 101 (housing)" and notify the replacement of the "dustproof filter 1002 (filter unit)" when the temperature reaches at least a threshold, thereby deriving the invention as in claim 9.

Thus, the invention as in claim 9 would be obvious to a person skilled in the art in light of the prior art disclosed in document 1, the prior art disclosed in document 2, the well-known prior art disclosed in documents 5 and 6, and the prior art disclosed in document 7, and thus does not involve an inventive step.

3. Invention as in claim 10

Refer to "III. 1" above.

It is recognized that document 8 discloses the following prior art.

A "recording device 1 in which a mist recovering unit 25 has a fan 26 and a filter 27, the recording device 1 being provided with a pressure detection unit between the filter 27 and the fan 26, wherein the replacement timing of the filter 27 is detected from the

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detection result of the pressure detection unit."

Both the prior art disclosed in document 1 and the prior art disclosed in document 8 belong to the same technical field of recording devices, and the "fans 101, 101'" and the "dustproof filter 1002" in the prior art disclosed in document 1, and the "fan 26" and the "filter 27" in the prior art disclosed in document 8 share the common function and action of removing, by the filter, unnecessary objects in the air flow generated by the fan. In addition, a person skilled in the art could obviously recognize that the "dustproof filter 1002" in the prior art disclosed in document 1 is required to be replaced when clogging or the like occurs.

Thus, on the basis of the prior art disclosed in document 8, a person skilled in the art could obviously add, to the prior art disclosed in document 1, the pressure detection unit inside the "casing 10 (housing)," and notify the replacement of the "dustproof filter 1002 (filter unit)" when the pressure reaches at least a threshold, thereby deriving the invention as in claim 10.

Thus, the invention as in claim 10 would be obvious to a person skilled in the art in light of the prior art disclosed in document 1, the prior art disclosed in document 2, the well-known prior arts disclosed in documents 5 and 6, and the prior art disclosed in document 8, and thus does not involve an inventive step.

4. Invention as in claim 11

Refer to "III. 1" above.

It is recognized that document 9 discloses the following prior art.

An "image recording device 1 in which suction

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devices 11, 11 are provided with filters 15, 15, the image recording device 1 using the filters 15, 15 to remove ink mist suctioned by suctioning fans 14, 14, wherein, when clogging or the like occurs in the filters 15, 15, flow rate sensors 16, 16 detect the clogging or the like and it is displayed on a display unit 30 that the filters 15, 15 should be replaced."

Both the prior art disclosed in document 1 and the prior art disclosed in document 9 belong to the same technical field of image recording devices, and the "fans 101, 101'" and the "dustproof filter 1002" in the prior art disclosed in document 1, and the "suctioning fans 14, 14" and the "filters 15, 15" in the prior art disclosed in document 9 share the common function and action of removing unnecessary objects in the air flow generated by the fan. In addition, a person skilled in the art could obviously recognize that the "dustproof filter 1002" in the prior art disclosed in document 1 is required to be replaced when clogging or the like occurs.

Thus, on the basis of the prior art disclosed in document 9, a person skilled in the art could obviously add, to the prior art disclosed in document 1, the flow rate sensor for measuring the flow rate of air and notify the replacement of the "dustproof filter 1002 (filter unit)" when the flow rate is no higher than a threshold, thereby deriving the invention as in claim 11.

Thus, the invention as in claim 11 would be obvious to a person skilled in the art in light of the prior art disclosed in document 1, the prior art disclosed in document 2, the well-known prior art disclosed in documents 5 and 6, and the prior art disclosed in document 9, and thus does not involve an inventive step.

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IV. Invention as in claim 12

The invention as in claim 12 is novel and involves an inventive step in relation to the prior art disclosed in documents 1 to 9 and the prior art disclosed in document 10 cited in the ISR.

1. Documents 1 to 10 all indicate prior art in the related technical field, and disclose prior art pertaining to electric apparatuses such as a recording device that performs cooling or dustproofing using a fan or a filter. However, none of the documents discloses or suggests the feature of the invention as in claim 12 of a "fan replacement timing notification unit that notifies the replacement timing of a first fan when the air amount measured using an air amount measuring unit is no higher than a second threshold which is lower than a first threshold."

2. In addition, due to having said feature, the invention as in claim 12 exhibits the remarkable effect of "suppressing the degradation in cooling efficiency inside the housing caused by failure of the first fan."

3. Thus, the invention as in claim 12 is not considered to be an invention that could have been easily derived by a person skilled in the art, even considering the prior art disclosed in documents 1 to 10 and the technical common knowledge in the related technical field at the time of filing. That is, the invention as in claim 12 is novel and involves an inventive step.