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**Datasheet for the decision
of 27 September 2013**

Case Number: T 0250/12 - 3.2.05

Application Number: 06256540.3

Publication Number: 1800872

IPC: B41J2/175

Language of the proceedings: EN

Title of invention:

Printing material container and board mounted on printing material container

Patent Proprietor:

Seiko Epson Corporation

Opponent:

Pelikan Hardcopy Production AG

Headword:

Relevant legal provisions:

EPC 1973 Art. 54(2), 56, 84, 87(1)
EPC Art. 100(a), 100(c)
RPBA Art. 12(4), 13(1)

Keyword:

Amendments - added subject-matter (no)
Clarity of claims (yes)
Priority - basis in priority document (no)
Late-filed evidence - admitted (no)
Novelty - (yes)
Inventive step - (yes)

Decisions cited:

G 0002/98

Catchword:



**Beschwerdekammern
Boards of Appeal
Chambres de recours**

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Case Number: T 0250/12 - 3.2.05

D E C I S I O N
of Technical Board of Appeal 3.2.05
of 27 September 2013

Appellant I:
(Patent Proprietor)

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Decision under appeal:

**Interlocutory decision of the Opposition
Division of the European Patent Office posted on
29 November 2011 concerning maintenance of the
European Patent No. 1800872 in amended form.**

Composition of the Board:

Chairman: M. Poock
Members: P. Lanz
G. Weiss

Summary of Facts and Submissions

- I. The appeals by appellants I (patent proprietor) and II (opponent) are against the interlocutory decision of the opposition division holding that the opposed European patent EP-B-1 800 872 met the requirements of the European Patent Convention on the basis of the amended first auxiliary request.
- II. The opposition against the patent as a whole was based on the grounds set out in Articles 100(a) (lack of novelty, Article 54(2) EPC 1973, lack of inventive step, Article 56 EPC 1973), 100(b) and 100(c) EPC.
- III. With respect to the patent proprietor's main request, the opposition division held that claim 1 had been amended in such a way that it contained subject-matter which extended beyond the content of the application as filed, contrary to the provisions of Article 123(2) EPC.
- IV. Oral proceedings were held before the board of appeal on 26 and 27 September 2013.
- V. Appellant I requested that the decision under appeal be set aside and that the patent be maintained on the basis of the main or of auxiliary requests 1 to 11, all requests received on 16 September 2013 with letter dated 23 August 2013 and corrected to 16 September 2013.

Appellant II requested that the decision under appeal be set aside and that European patent No. 1 800 872 be revoked.

VI. The documents referred to in the appeal proceedings included the following:

(a) Documents submitted within the opposition period:

L6: US-A-5 646 660;
L7: WO-A-2006/025578;
L8: EP-A-1 155 864;
L9: EP-A-1 219 437;
L10: EP-A-1 314 565.

(b) Document filed after the expiry of the opposition period and admitted by the opposition division:

HL14: US-A-2002/0024559.

(c) Document filed after the expiry of the opposition period but not admitted by the opposition division:

HL16: EP-A-0 997 297.

(d) Documents filed with the statement of grounds of appeal:

HL22: WO-A-2006/104258;

HL23: User manual of Canon bubble jet printer
BJC-7000, published in 1997;

Evidence relating to an alleged public prior use
of printing material container "Epson
T0714", the evidence comprising

- HL24: Eidesstattliche Versicherung by Daniel Sulser;
- HL25: Internet article "Epson Stylus D120", allegedly published on 14 December 2007;
- HL26: Internet article "NEWS: Epson Stylus D78 und D88 plus" by Ronny Budzinske, allegedly published on 21 August 2006;
- HL27: Enlarged photograph from H26;

- HL28: Eidesstattliche Versicherung by
Joachim Kretschmer;
HL29: DE-A-10 2006 060705.

(e) Document filed during appeal proceedings with
letter of 26 August 2013:
HL31: US-A-6 039 428.

VII. The independent claims of the main request read as
follows:

"1. A printing material container (100) detachably
attachable to a printing apparatus (1000) having a
print head (5) and a plurality of apparatus-side
terminals, the printing material container comprising:
a first device (203) and a terminal group that includes
a plurality of first terminals (220, 230, 260, 270,
280), wherein the plurality of first terminals are
connected to the first device and respectively include
a first contact portion (cp) for contacting a
corresponding terminal among the plurality of
apparatus-side terminals, and wherein the first device
is a memory;
characterised by further comprising:
a second device (104); and
a plurality of second terminals (250, 290) and at least
one third terminal (210, 240) in the terminal group,
wherein:
the plurality of second terminals are connected to the
second device and respectively include a second contact
portion for contacting a corresponding terminal among
the plurality of apparatus-side terminals,
the plurality of second terminals are arranged to have
a higher voltage externally applied thereto than the
plurality of first terminals,

the second device is operated by a higher voltage than the first device,
the at least one third terminal is a short detection terminal to detect shorting between a said second terminal and the at least one third terminal and includes a third contact portion to contact a corresponding short detection terminal among the plurality of apparatus-side terminals,
the second contact portions are arranged with a part of the plurality of the first contact portions so as to form a first row,
the second contact portions are respectively arranged at each end of the first row, and
the at least one third contact portion and the remaining part of the plurality of the first contact portions are arranged so as to form a second row, and
the at least one third contact portion is arranged at one of the two ends of the second row."

"32. A board (200) mountable on a printing material container (100) detachably attachable to a printing apparatus (1000) that has a print head (5) and a plurality of apparatus-side terminals, wherein the printing material container has a second device (104), the board comprising:

a first device (203), which is a memory; and
a terminal group that includes a plurality of first terminals (220, 230, 260, 270, 280), a plurality of second terminals (250, 290) and at least one third terminal (210, 240), wherein:
the plurality of first terminals are connected to the first device and respectively include a first contact portion for contacting a corresponding terminal among the plurality of apparatus-side terminals,
the plurality of second terminals are connectable to the second device and respectively include a second

contact portion for contacting a corresponding terminal among the plurality of apparatus-side terminals, the plurality of second terminals are arranged to have a higher voltage externally applied thereto than the plurality of first terminals, the second device is operated by a higher voltage than the first device, the at least one third terminal is a short detection terminal to detect shorting between a said second terminal and the at least one third terminal and includes a third contact portion to contact a corresponding short detection terminal among the plurality of apparatus-side terminals, the second contact portions are arranged with a part of the plurality of the first contact portions so as to form a first row, the second contact portions are respectively arranged at each end of the first row, and the at least one third contact portion and the remaining part of the plurality of the first contact portions are arranged so as to form a second row, and the at least one third contact portion is arranged at one of the two ends of the second row."

"58. A board (200) mountable on a printing material container (100) detachably attachable to a printing apparatus (1000) that has a print head (5) and a plurality of apparatus-side terminals, wherein the printing material container has a second device (104), the board comprising:
a first device (203), which is a memory; and
a terminal group that includes at least a plurality of first terminals (220, 230, 260, 270, 280), a plurality of cut-out portions (NT1, NT2) into which respective second terminals (150, 190) mounted on the printing

material container can be inserted and at least one third terminal (210, 240), wherein:
the plurality of first terminals are connected to the first device and
respectively include a first contact portion for contacting a corresponding terminal among the plurality of apparatus-side terminals,
the plurality of second terminals are connectable to the second device and respectively include a second contact portion for contacting a corresponding terminal among the plurality of apparatus-side-terminals,
the plurality of second terminals are arranged to have a higher voltage externally applied thereto than the plurality of first terminals,
the second device is operated by a higher voltage than the first device,
the at least one third terminal is a short detection terminal to detect shorting between a said second terminal and the at least one third terminal and includes a third contact portion to contact a corresponding short detection terminal among the plurality of apparatus-side terminals,
when mounted on the printing material container, the second contact portions are arranged with a part of the plurality of the first contact portions so as to form a first row,
the second contact portions are respectively arranged at each end of the first row, and
the at least one third contact portion and the remaining part of the plurality of the first contact portions are arranged so as to form a second row, and
the at least one third contact portion is arranged at one of the two ends of the second row."

"62. A method of preparing a printing material container, the method comprising: mounting a board

according to any one of claims 32 to 58 to a printing material container."

"63. A method of preparing a printing material container comprising: filling a printing material container according to any one of claims 1 to 31 and 59 with printing material, whereby the second device is able to detect the printing material in the printing material container."

VIII. The arguments of appellant I regarding the present main request, in writing and during the oral proceedings, can be summarised as follows:

With reference to Article 100(c) EPC, appellant I submits that the independent claims contained the limitation "*the second device is operated by a higher voltage than the first device*", which had its basis in original claim 26, paragraphs [0047], [0056], [0059] to [0063] and Figures 3A, 3B and 6B of the published application as filed. In view of this feature, the wording "*voltage applied*" did not generalise the subject-matter claimed. The combination of the terminology "*board mountable on a printing material container*" with the further features of claim 58 had a clear basis in claim 46, Figures 1, 2, 3A, 3B and the corresponding parts of the description of the application as originally filed.

Appellant I considers both priority claims valid. First, the fact that the feature "*the third contact portion being located adjacently to one of the second contact portions*" was present in this or an equivalent wording in all independent claims of the earlier of the two priority applications but not in the independent claims of the patent in suit could not render the

priority claims invalid, since the feature in question was not essential for the invention claimed and could thus be omitted following decisions T 809/95, T 515/00 and T 321/06. Moreover, the definition of the relative position of the second and third contact portions was more restricted in the patent in suit than in the priority application JP 2005372028. Second, the amendment of the feature "*second terminal being connected to the second device*" present in the claims of the priority applications to "*second terminal being connectable to the second device*" as used in claims 32 and 58 of the main request arose from claiming the board separately, for which both priority applications provided a sufficient basis, e.g. in paragraph [0037] and Figure 3 of the earlier of the two priority applications.

The late filed document HL31 should not be admitted because it did not disclose the contact arrangement as defined in the independent claims according to the main request. Moreover, the opposition division was right in not admitting document HL16 since its content was fundamentally different from the subject-matter of the patent in suit. A combination of documents HL16 and HL31 could not lead to the claimed invention, hence there was *prima facie* no reason to introduce these documents into the proceedings.

Turning to the wording of independent claim 1 "*a printing material container detachably attachable to a printing apparatus having a print head*", there was no ambiguity for a person skilled in the art. It implied the structural limitation that the printing material container was not equipped with a print head and that the print head was located on the printer. Moreover, the contested feature did not extend the subject-matter

claimed beyond the content of the application as filed. Even the fictitious arrangement mentioned by appellant II with a first printing material container carrying a first print head and a second print head provided on the printer for cooperation with a second printing material container would have fallen within the scope of the claims as filed.

For a person skilled in the field of ink jet printers also the references to the second device and the second terminals, in the context of the respective claim as a whole, clearly implied that the second terminals were connectable to a second device operating at a higher voltage than the memory.

The term "*short detection terminal*" used in independent claim 1 implied a clear functional limitation of the claimed terminal.

Regarding claims 32 and 58, the structural limitations of the claimed board implied by the reference to the printer having a print head and to the second device were clear: the board had to be suitable for use on a printing material container having no print head, while the second terminals had to be connectable to a second device operating at a higher voltage than a memory. Moreover, dependent claim 54 was not in contradiction to independent claim 32 since the short circuit detection circuit could be used for cartridge detection as shown in Figure 8 of the patent in suit.

Based on the above interpretation, the subject-matter of the independent claims was novel over document HL14, in particular due to the following features:

- *"the printing apparatus having a print head"*: the printing material container needed to be designed for use with the corresponding print head on the printer, thereby excluding the presence of a print head on the printing material container. The skilled person would not interpret the print head of the claims as being any other print head, unconnected with the printing material container that was the subject of the claims. Such considerations were purely hypothetical. In fact, the printing material container of document HL14 was not suitable for cooperation with a print head on the printing apparatus.

- *"the at least one third terminal is a short detection terminal to detect shorting between a said second terminal and the at least one third terminal and includes a third contact portion to contact a corresponding short detection terminal among the plurality of apparatus-side terminals"*: document HL14 did not disclose a short detection functionality as implied by the above feature. In particular, there was no teaching in document HL14 that the ground terminals 90 and 106 could be used to detect shorting.

- *"the second contact portions are arranged with a part of the plurality of the first contact portions so as to form a first row"*: in view of Figure 5 of document L6 a skilled person would realise that Figure 5 of document HL14 did not contain a clear and unambiguous disclosure of a connection between the 5 Volt contact 104 and the memory 48.

The subject-matter of independent claims 1, 32, 58, 62 and 63 was thus novel over document HL14.

Since none of documents L7, L8, L9 or L10 disclosed a board with the claimed contact portion layout in two rows, the subject-matter of the patent in suit was also new in view of these documents.

Furthermore, the subject-matter of all independent claims was based on an inventive step. The contested claims differed from the content of document HL14 at least in the features of *"the second contact portions are arranged with a part of the plurality of the first contact portions so as to form a first row"* and *"the printing apparatus having a print head"*. The presence of these features in the independent claims was not obvious. There was no implicit or explicit teaching in document HL14 to connect the memory 48 to the 5 Volt terminal 104. Moreover, the technical problem to be solved by the second differing feature was to reduce the operating costs of the printer by avoiding unnecessary exchange of the print head. If the skilled person considered modifying the cartridge of HL14 to be suitable for cooperation with a printer having the print head on the printer side, he would obviously leave away the jet plate assembly including the heating elements and the 15 Volt power supply via the contacts 92 and 108. If he nevertheless thought of implementing the ink sensor of document L8 in the printer of document HL14, he would choose the contact layout as suggested in document L8, which was not according to the disputed claims. When starting from document HL14, a person skilled in the art would thus not arrive at the claimed solution. The arguments of appellant II, including its formulation of the technical problem, were based on hindsight.

In case document L7 was seen as the closest prior art, the subject-matter claimed differed at least in that a

part of the contact portions of the terminals for the low voltage device was in the first row between the second contact portions. The technical problem to be solved was to provide an alternative arrangement of the terminals. The claimed solution was not obvious in view of the fact that document L7 taught away from it by explicitly presenting its terminal arrangement as particularly advantageous for preventing shorting between the terminals to which different voltages were applied. The skilled person had no motivation to act against this teaching and would thus not have arrived at the subject-matter claimed, which was based on an inventive step.

IX. The arguments of appellant II regarding the main request, presented in writing and during the oral proceedings, were essentially as follows:

With respect to the provisions of Article 100(c) EPC, appellant II puts forward that the wording of the feature *"the plurality of second terminals are arranged to have a higher voltage externally applied thereto than the plurality of first terminals"* in independent claim 1 constituted an unallowable generalisation since the terminology "applied voltage" was broader than the originally used wording "operation voltage". Moreover, the claim also covered fictitious arrangements with a first printing material container carrying a first print head and a second print head provided on the printer for cooperation with a second printing material container. The patent application as originally filed did not provide a basis for such a configuration. Also the combination of the terminology *"board mountable on a printing material container"* with the further features of claim 58 had no basis in the application as originally filed.

The post-grant modification of the feature *"one third terminal is for the detection of shorting"* to *"one third terminal is a short detection terminal"* did not limit the claim. The feature *"short detection terminal"* had to be interpreted as a terminal suitable for use by a printer for detecting shorting. Appellant I's interpretation caused a lack of clarity because it was not specified what further structural limitation was implied by the newly introduced functional feature. In fact, the detection of shorting took place in the printer and not at the terminals. Since the core of the invention lay in the arrangement of the terminals, the interaction between the printing material container and the short detection circuit of the printer was neither essential for the invention nor necessary to define the subject-matter claimed. The amendment as interpreted by appellant I thus caused a lack of clarity under Article 84 EPC 1973.

The earlier of the two priority claims was not valid regarding all independent claims of the main request. In particular, the feature of *"the third contact portion being located adjacently to one of the second contact portions"* present in this or an equivalent wording in all independent claims of the priority application JP 2005372028 was missing in the independent claims of the patent in suit. Moreover, with respect to claims 32 and 58 of the main request, both priority claims were invalid. The feature of the *"second terminal being connected to the second device"* was present in both priority documents, while in the patent in suit it was amended to *"second terminal being connectable to the second device"*, thereby generalising the subject-matter disclosed in the priority applications. The requirements of Article 87(1) EPC

1973 as set out in decision G 2/98 were thus not met and the claimed priorities were invalid.

Documents HL16 and HL31 should be introduced into the proceedings since they were *prima facie* highly relevant for the issue of inventive step of the independent claims. In particular, document HL31 was directed to short detection which was implemented using the same contact arrangement as in the patent in suit. Providing this contact arrangement on the printing material container of documents L7 or HL16, which were both suitable for short circuit detection, would *prima facie* render the subject-matter of the claims of the main request obvious. Consequently, not only late-filed document HL31 should be considered but also document HL16, which had not been admitted by the opposition division.

The wording of independent claim 1 "*a printing material container detachably attachable to a printing apparatus having a print head*" was directed to a printing material container but comprised a reference to a different entity, namely a printer having a print head. The location of the print head on the printer had no effect on the prevention of short circuits, which was the problem allegedly solved by the patent in suit. Moreover, such a functional limitation of a claim was only allowable if the intended limitation was clear and if there was no other way of defining the subject-matter claimed. However, for the present claim wording none of these requirements was fulfilled. The same was true for the feature "*the plurality of second terminals are arranged to have a higher voltage externally applied thereto than the plurality of first terminals*". Additionally, the latter feature was inconsistent with

the limitation that the second device was operated by a higher voltage than the first device.

In claims 32 and 58 one could not see what limitation of the claimed board was implied by the reference to the printer having a print head or the second device, since neither of them formed part of the board. Furthermore, dependent claim 54 was in contradiction to independent claim 32 regarding the function of the third terminals.

The subject-matter of independent claims 1 and 63 was not novel in view of the content of document HL14. Appellant II made particular reference to the disclosure of the following features in document HL14:

- *"the printing apparatus having a print head"*: this feature merely described the suitability of the claimed printing material container for use with a printer having a print head. The container of document HL14 was equipped with a print head but could be used with a conceivable printer having a second print head provided on the printer for cooperation with a second printing material container.

- *"the at least one third terminal is a short detection terminal to detect shorting between a said second terminal and the at least one third terminal and includes a third contact portion to contact a corresponding short detection terminal among the plurality of apparatus-side terminals"*: the ground terminals 90 and 106 of Figure 6 of document HL 14 were suitable for detecting shorting by an appropriate printer. In general, any electrically conductive terminal could be a third terminal used to detect shorting with a neighbouring terminal having a higher

voltage applied to it by simply checking whether the higher voltage could be measured at the third terminal.

- *"the second contact portions are arranged with a part of the plurality of the first contact portions so as to form a first row"*: in Figure 5 of document HL14 the 5 Volt line 104 was indirectly connected to the memory 48 via logic 86. Therefore, the 5 Volt contact in the lower row of contacts of Figure 6 was a first contact, thereby anticipating the claimed contact arrangement. Appellant I's reference to document L6 could not alter this teaching.

In view of the above, the subject-matter of independent claim 1 was not novel over document HL14. The same reasoning applied to the subject-matter of independent claim 63. Additionally, the subject-matter of independent claim 1 was not novel in view of the prior sale (cf. documents HL24 to HL28).

The subject-matter of claims 32, 58 and 62 lacked novelty since the features of the printer having a print head, the voltages applied to the first and second terminals and the voltage at which the second device was operated did not structurally limit the claimed board and could therefore not be taken into account for the assessment of novelty. Each of documents HL14, L7, L8, L9 and L10 disclosed a board having a memory as well as electrical contacts arranged in two rows and comprising first, second and third terminals, wherein the second terminals were suitable for connection to a second device. Furthermore, each of the terminals was suitable for detecting shorting. The subject-matter of claims 32, 58 and 62 was thus not novel over the documents mentioned above. In addition, the subject-matter of independent claim 32 lacked

novelty in view of the prior sale substantiated in documents HL24 to HL28.

Besides that, the subject-matter of all independent claims was not based on an inventive step. Compared to the content of document HL14, the contested claims differed in the features of *"the second contact portions are arranged with a part of the plurality of the first contact portions so as to form a first row"* and *"the printing apparatus having a print head"*. Regarding the first differing feature, there was no inventive contribution apparent since it was obvious for a skilled person that the memory 48 in Figure 5 of document HL14 was operated at 5 Volt and was thus connected to terminal 104. The technical problem solved by the second feature was to provide a printing material container with alternative electrical equipment. A possible reduction of the operating costs of the printer could not be considered for the formulation of the technical problem because these were also influenced by the type of second device chosen.

The claimed solution was obvious since it was generally known at the priority date that the print head could be on the printer side and that the printing material container could be equipped with a high voltage circuit for an ink level sensor, see e.g. documents L7, Figure 3, document L8, paragraph [0183] and Figure 34A, document L10, column 6, line 10 and document HL23, page 54. The layout of the electrical terminals needed no modification; it hence required no inventive activity to position the print head on the printer side and to provide for an ink level sensor using the existing high voltage circuit.

Alternatively, document L7 could be used as a starting point for an inventive step assessment. The subject-matter of claim 1 differed from the teaching of document L7 in that the low voltage device was a memory instead of the cartridge detection device of document L7. Furthermore, in document L7 the contact portions of the terminals for the low voltage device were not in the first row between the second contact portions. However, both features were rendered obvious by document HL14, which showed a memory and the claimed contact portion arrangement.

Finally, the skilled person could also start from the prior sale according to documents HL24 to HL28 and combine this disclosure with his common general knowledge, thereby arriving at the subject-matter of the independent claims.

In view of the above, the subject-matter of independent claims 1, 32, 58, 62 and 63 was not based on an inventive step.

Reasons for the Decision

1. Added subject-matter

Appellant II argues that the wording "*voltage applied*" in "*the plurality of second terminals are arranged to have a higher voltage externally applied thereto than the plurality of first terminals*" in independent claims 1, 32 and 58 constituted an unallowable generalisation of the originally used wording "*operation voltage*" which had to be objected to under Article 100(c) EPC. According to appellant II, the features "*the printer having a print head*", "*board mountable on a printing material container*" and "*the plurality of second*

terminals are connectable to the second device" also went beyond the content of the patent application as filed.

The board considers that the examination under the provisions of Article 100(c) EPC (or Article 123(2) EPC) is not to be limited to the wording of a specific feature taken in isolation but relates to the combination of features constituting "the subject-matter of the European patent" referred to in the aforementioned articles of the Convention. In general, an amendment should be regarded as introducing subject-matter which extends beyond the content of the patent application as filed, and therefore as unallowable, if the overall change in the content of the opposed patent results in the skilled person being presented with information which is not directly and unambiguously derivable from that previously presented by the application, even when account is taken of matter which is implicit to a person skilled in the art. When applying this standard to the contested term "*voltage applied*" in its context of the respective claim, and in particular of the further limitation that the second device is operated by a higher voltage than the first device, the skilled person will not be confronted with any new technical information, compared, for example, with the subject-matter of original claim 26.

The same holds true for the feature "*the printer having a print head*" in independent claims 1, 32 and 58, which is clearly and unambiguously derivable from Figure 1 in combination with paragraph [0027] of the published patent application. Moreover, the addition of the above feature does not cause a broadening of the scope of the claims compared with the patent application as filed, as submitted by appellant II, since the fictitious

arrangement mentioned by appellant II would have fallen within the (broader) scope of the claims as filed.

Finally, the features "*board mountable on a printing material container*" and "*the plurality of second terminals are connectable to the second device*" are explicitly disclosed in claim 46 of the patent application as filed, which, when taken in combination with Figures 1, 2, 3A, 3B and the corresponding parts of the description, provides a clear and unambiguous basis in the patent application as filed for the subject-matter of claim 58 of the main request.

Hence, the board is satisfied that the subject-matter of the claims of the main request does not go beyond the content of the patent application as filed.

2. *Clarity*

Regarding the parties' differences about the clarity of the limitation implied by the post-grant introduction of the wording "*short detection terminal*" into independent claim 1, the board judges that the above amendment, as such, does not change the scope of the claim and, based on the original wording, interprets the contested feature as meaning "*terminal suitable for detecting shorting*". Thus, no lack of clarity in the sense of Article 84 EPC 1973 arises from this post-grant modification.

3. *Entitlement to priority*

- 3.1 The application on which the patent in suit is based was filed on 22 December 2006. A first priority of 26 December 2005 by virtue of Japanese patent application JP 2005372028 is claimed in respect of the

patent in suit. In addition, a second priority of 11 August 2006 by virtue of Japanese patent application JP 2006220751 is claimed in respect of the patent in suit.

3.2 Omission of the feature *"the third contact portion being located adjacently to one of the second contact portions"*

Appellant I submits that the feature *"the third contact portion being located adjacently to one of the second contact portions"*, although present in this or an equivalent wording in the independent claims of the first priority application, was not essential for the invention claimed and could thus be omitted without loss of entitlement to priority.

In the judgement of the board, following decision G 2/98 (OJ EPO 2001, 413, see points 8.3 and 9), the essentiality of a feature is not *per se* an appropriate criterion for judging the validity of a priority claim. Rather, the requirement for validly claiming a priority for "the same invention", referred to in Article 87(1) EPC 1973, is met only if the skilled person can derive the subject-matter of the claim directly and unambiguously, using common general knowledge, from the previous application as a whole. Applying this standard to the present case, it is noted that each of the independent claims 1, 6, 25, 28 and 33 of the first priority application JP 2005372028 contains the contested feature relating to the adjacent location of the third and second contact portions (or their corresponding terminals or apparatus side terminals). Moreover, the priority application as a whole does not provide any basis for considering the

above feature as being optional, but presents it as an essential part of the proposed solution:

"Additionally, since the third contact portion of third terminal for detecting shorting to second terminals are arranged adjacently to the second contact portions of the second terminals, in the event that a drop of ink or foreign matter should infiltrate from the end and cause a shorting between a second contact portion of a second terminal and a third contact portion of a third terminal, the malfunction by shorting will be detected the moment it occurs. As a result, damage to the printing material container or printing apparatus caused by shorting can be prevented or reduced." (see translation of the priority application JP 2005372028, page 18, first paragraph).

Thus, a person skilled in the art would immediately deduce from the first priority application that the feature relating to the adjacent location of third and second contact portions (or their corresponding terminals or apparatus side terminals) forms part of the invention disclosed therein. Since this feature is deleted from the present independent claims according to the main request, the subject-matter of those claims cannot be clearly and unambiguously derived from the first of the two priority applications, contrary to the requirements of Article 87(1) EPC 1973. The priority claimed on the basis of the first priority application JP 2005372028 is thus not valid for the subject-matter of the independent claims according to the main request.

The board is, however, satisfied that, in that respect, the claims have a clear and unambiguous basis in the second priority application JP 2006220751.

3.3 Generalisation of the feature *"second terminal being connected to the second device"*

With respect to claims 32 and 58 of the main request, appellant II argues that the first and second priority claims were invalid. Reference was made to the feature of the *"second terminal being connected to the second device"*, which was present in both priority documents, while it was amended to *"second terminal being connectable to the second device"* in the patent in suit, thereby unduly generalising the subject-matter disclosed in the priority applications.

The board cannot endorse this view. Already the first priority application JP 2005372028 as a whole contains a clear and unambiguous basis for claiming the board as such. Reference is made to Figures 3(a) and 3(b) as well as paragraphs [0037] and [0039] to [0046]. Considering further that in that priority application the second device is disclosed as being a sensor not located on the board but on the printing material container, a person skilled in the art would immediately derive the contested wording "connectable" of present claims 32 and 58 of the main request from the first priority application JP 2005372028 as a whole.

3.4 In view of the above, the relevant date of all independent claims 1, 32, 58, 62 and 63 of the main request is the second priority date claimed, i.e. 11 August 2006.

3.5 Implications for the prior art status of the cited documents

The purported prior sale (cf. documents HL24 to HL28) allegedly took place "on or before 10 August 2006". However, article HL26 was published on 21 August 2006, i.e. between the second priority date and the filing date, while document HL24 seems to suggest a sale of a printing material container in September 2006. Contrary to the assertion of appellant II, there is no evidence on file of a disclosure before 11 August 2006. Since the second priority date is validly claimed, documents HL24 to HL28 are not to be considered in the present proceedings.

Document L7, which entered the European phase, belongs to the state of the art under Article 54(2) EPC 1973.

Document HL22 entered the European phase and the board is satisfied that the priorities claimed for it are valid. This has not been contested. It is prior art under Article 54(3) EPC and Article 54(4) EPC 1973 (which continues to apply in the present case, see Article 1 of the Decision of the Administrative Council of 28 June 2001 on the transitional provisions of the Act revising the EPC of 29 November 2000, Special Edition No. 1, OJ EPO 2007, 197) with respect to the commonly designated states DE and FR. The board observes that the subject-matter of the independent claims in dispute is novel over the content of document HL22. This has not been contested. Taking into account further that this prior art under Article 54(3) EPC and Article 54(4) EPC 1973 was cited by appellant II only against inventive step of the subject-matter of claims 32 and 58 of the main request, it is not to be considered in the present proceedings.

Finally, it is noted that document HL29 is a post-published parallel German patent application. It does not, as such, belong to the state of the art as defined in Articles 54(2) EPC 1973 and 54(3) EPC.

4. *Admission of documents HL16 and HL31*

4.1 According to appellant II, documents HL16 and HL31 should be introduced into the proceedings since they were *prima facie* highly relevant for the issue of inventive step of the independent claims of the main request. Appellant II makes particular reference to the arrangement of contacts as disclosed in Figure 4A and column 8, lines 50 to 58 of document HL31 with contacts "a" and "c" at the end of the upper row being for the power supply. This corresponded to the arrangement of the contacts in the patent in suit.

4.2 As regards the latter argument, the board notes that in Figure 4A of document HL31, contact "a" at the one end of the upper row of contacts is a power supply contact corresponding to a 2nd terminal in the terminology of the contested patent, while contact "c" at the other end of the upper row has the different function of a ground contact. Thus, the arrangement of Figure 4A of document HL31 does not disclose a plurality of 2nd terminals as required in the contested claims and as alleged by appellant II. Document HL31, which was filed at a late stage in the appeal proceedings, therefore does not render the subject-matter of the contested claims obvious when considered in combination with document HL16. Document HL31 is not admitted into the proceedings (Articles 12(4) and 13(1) of the Rules of Procedure of the Boards of Appeal (RPBA)).

4.3 Turning to document HL16, the board notes that this document was filed late during first instance proceedings in support of an inventive step argument based on the combination of documents HL14 and HL16. The opposition division, however, did not consider document HL16 *prima facie* relevant and decided not to admit it into the proceedings. Following the established case law (cf. Case Law of the Boards of Appeal of the European Patent Office, 7th edition, September 2013, Chapter IV.E.3.6), a board of appeal should only overrule the way in which a department of first instance has exercised its discretion if the board concludes that it has done so according to the wrong principles, or without taking into account the right principles, or in an unreasonable way. In the present case, none of these reasons has been invoked, and the board likewise does not see any reason to overrule the discretionary decision of the opposition division not to admit document HL16.

In the discussion of the present main request during the appeal proceedings, document HL16 was relied upon only in combination with document HL31. As explained above, that document is not admitted into the proceedings by the board, thereby also rendering the admission of document HL16 groundless.

For the reasons set out above, document HL16 is not admitted into the proceedings (Articles 12(4) and 13(1) RPBA).

5. *Novelty*

5.1 Independent claims 1 and 63 of the main request

Appellant II contests the novelty of the subject-matter of independent claim 1 of the main request in view of document HL14. In particular, the disclosure of the following features in document HL14 is in dispute between the parties:

- *"the printing apparatus having a print head"*: in the board's judgement, the meaning of terms in a patent claim has to be determined from the point of view of the skilled person, who reads the claim in the context of the patent in suit and against the background of his common general knowledge. A person skilled in the art would thus not, as suggested by appellant II, interpret the above feature on the basis of a hypothetical printer design, for the feasibility of which no evidence is provided. Rather, the clear structural limitation of the printing material container is that it is not equipped with a print head, but is suitable for cooperation with a print head located on the printing apparatus. Document HL14 does not provide any disclosure of a print head on the printer side or of a printing material container suitable for use with a printer equipped with a print head on the printer side.

- *"the plurality of second terminals are connected to the second device and respectively include a second contact portion for contacting a corresponding terminal among the plurality of apparatus-side terminals, the plurality of second terminals are arranged to have a higher voltage externally applied thereto than the plurality of first terminals, the second device is operated by a higher voltage than the first device"*:

for a person skilled in the field of ink jet printers, the mentioned references to the second device and the second terminals clearly imply that the second terminals are connectable to a second device operating at a higher voltage than the first device, i.e. the memory. This structural limitation is anticipated by the 15 Volt terminals 92 and 108 connected to the heating elements 72 in Figures 4 and 5 of document HL14 (cf. paragraph [0038]).

- *"the at least one third terminal is a short detection terminal to detect shorting between a said second terminal and the at least one third terminal and includes a third contact portion to contact a corresponding short detection terminal among the plurality of apparatus-side terminals"*: the board notes that, in both document HL14 and the patent in suit, short detection is done by the printer and not by the printing material container. The disputed independent claim 1 is directed to a printing material container, but not to a combination of a printer with a printing material container. The fact that the third terminal is labelled as a short detection terminal does not imply any structural limitations of the terminal provided on the printing material container apart from its connectability to a respective printer-side terminal. Thus, the board interprets the feature in question in the sense of *"the at least one third terminal is a short detection terminal suitable for detecting shorting between a said second terminal and the at least one third terminal and includes a third contact portion suitable for contacting a corresponding short detection terminal among the plurality of apparatus-side terminals"*. The ground terminals 90 and 106 of document HL14 fall under this interpretation.

- *"the second contact portions are arranged with a part of the plurality of the first contact portions so as to form a first row"*: document HL14 clearly discloses a connection of the 15 Volt terminals 92 and 108 to the heating elements 72 for ink ejection (see paragraph [0038]). However, the document does not explicitly indicate to which device the 5 Volt terminal 104 in the first (lower) row is connected. Although it could be connected to the memory 48 via the logic 86, as suggested by appellant II, this is not unambiguously disclosed in document HL14.

In summary, the subject-matter of independent claim 1 according to the main request differs from the content of document HL14 in the features of *"the printing apparatus having a print head"* and *"the second contact portions are arranged with a part of the plurality of the first contact portions so as to form a first row"*. It is thus novel (Article 54(2) EPC 1973). This reasoning applies *mutatis mutandis* to the subject-matter of the independent method claim 63 of the main request.

5.2 Independent claims 32, 58 and 62

Appellant II essentially challenges the novelty of the subject-matter of independent claims 32, 58 and 62 on the basis of documents HL14, L7, L8, L9 and L10 and the argument that the features of the printer having a print head, the voltages applied to the first and second terminals and the voltage at which the second device was operated did not structurally limit the claimed board and could therefore not be taken into account for the assessment of novelty.

This assertion is not convincing. In line with the reasoning of paragraph 5.1 above, a person skilled in the art would understand the claimed *"board mountable on a printing material container detachably attachable to a printing apparatus that has a print head"* as a board suitable for mounting on a printing material container which is suitable for cooperation with a print head on the printing apparatus. The disputed feature hence structurally limits the board. It is again noted that document HL14 does not provide any disclosure of a print head on the printer side or of a printing material container suitable for use with a printer being itself equipped with a print head. Thus, board 46 of document HL14, in particular its driver circuit 47 specifically designed for the jet plate assembly 44 positioned on the printing material container, is not suitable for cooperation with a printer having the print head positioned not on the printing material container but on the printer itself.

Moreover, the claim wording explicitly requires the board to comprise a memory to which a part of the plurality of first contact portions in the first row is connected. As established above, document HL14 does not unambiguously disclose to which device the 5 Volt terminal 104 in the first (lower) row of contact portions is connected.

Thus, the subject-matter of independent claim 32 according to the main request differs from the content of document HL14 in the features of *"board mountable on a printing material container detachably attachable to a printing apparatus that has a print head"* and *"the second contact portions are arranged with a part of the plurality of the first contact portions so as to form a first row"*. It is thus novel over document HL14. This

reasoning also applies to the subject-matter of the independent claims 58 and 62.

Furthermore, none of documents L7, L8, L9 and L10 discloses the claimed contact portion layout in two rows, in particular that second contact portions connectable to a second device operated at a higher voltage than a memory are respectively arranged at each end of a first row, which also comprises a part of the first contact portions connected to a memory provided on the board, whereby the remaining part of the first contact portions are arranged in a second row.

Consequently, the subject-matter of independent claims 32, 58 and 62 of the main request is new (Article 54(2) EPC 1973).

Finally, the board notes that a skilled person would not see any ambiguity either with respect to the reference to the second device and terminals, or when reading the feature relating to the at least one third terminal of claim 32 in view of dependent claim 54, as asserted by appellant II. The skilled person would clearly understand the reference to the second device and terminals and the feature relating to the third terminal as explained in the context of claim 1 in paragraph 5.1. With respect to the allegedly contradictory function of the third terminal, the board additionally observes that Figure 8 of the patent in suit shows that the circuit connected to the third terminals can be used both for short circuit detection and cartridge detection. Besides that, as already discussed for claim 1, neither of these two disputed features is decisive for the assessment of novelty.

6. *Inventive step*

6.1 Starting from document HL14

6.1.1 As established in paragraph 5.1 above, the subject-matter of independent claim 1 according to the main request differs from the content of document HL14 in the features of

- *"the second contact portions are arranged with a part of the plurality of the first contact portions so as to form a first row"* and
- *"the printing apparatus having a print head"*.

6.1.2 The board considers these distinguishing features to be functionally independent of each other without any apparent synergistic or combinative effect. Thus, according to the established case law, a possible inventive contribution has to be assessed independently for each of them (see Case Law of the Boards of Appeal of the European Patent Office, 7th edition, 2013, I.D. 9.2.2).

The partial technical problem to be solved by the first differing feature is to provide an appropriate power source to the memory.

The partial technical problem to be solved by the second differing feature is to reduce the operating costs of the printer by avoiding any unnecessary exchange of the print head.

6.1.3 Regarding the first partial technical problem, document HL14 generally provides two power sources, 5 Volt and 15 Volt. In view of the limited number of options it

does not require an inventive activity to select the voltage of 5 Volt, which seems to be the most suitable for operating memories. For a person skilled in the art it would be obvious from document HL14 to connect the memory 48 to the 5 Volt terminal 104 via the logic 86. The solution to the first partial technical problem is thus not based on an inventive step.

6.1.4 Turning to the solution to the second partial technical problem, it could, as such, seem obvious that the print head can either be integrated into the printing material container (as shown in document HL14) or form part of the printing apparatus (as shown in document L7). However, if the skilled person considered modifying the printing material container of document HL14 to be suitable for cooperation with a printer having the print head on the printer side, he would leave away the jet plate assembly including its heating elements. Without the heating elements there would be no need for the 15 Volt power supply via contacts 92 and 108. Such a modification would not lead to the claimed solution to the second partial problem but to a printing material container without a second device or second terminals and with only one voltage applied to the container. Consequently, for a person skilled in the art starting from document HL14 and combining it with common general knowledge and/or the teaching of documents L7 or L8, the subject-matter of claim 1 of the main request would not be rendered obvious.

6.1.5 Appellant II does not agree with the second partial technical problem as formulated above, since the operating costs were also influenced by the type of second device. Instead, the second partial technical problem to be solved was to provide a printing material container with alternative electrical equipment.

The board cannot follow this line of argument. When applying the "problem and solution approach" the formulation of the objective technical problem is regularly based on the technical effect achieved by the features establishing the difference over the prior art as objectively recognised by the skilled person. This avoids the inclusion of a part of the solution offered by an invention in the statement of the problem which would necessarily result in an *ex post facto* view on the question of inventive step (see Case Law of the Boards of Appeal of the European Patent Office, 7th edition, 2013, I.D.4.3.1).

Applying this principle to the formulation of the second partial technical problem, the effect of providing the print head on the printer (and not on the printing material container) is to avoid any unnecessary exchange of the print head leading to reduced operating costs of the printer. By contrast, the second partial technical problem as suggested by appellant II is not linked to a technical effect to be achieved but is based on an embodiment of the solution (cf. Figure 2 of the patent in suit), namely that the second device is not the jet plate assembly including its heating elements as in document HL14 but a sensor for determining an amount of printing material in the printing material container. Hence, the second partial technical problem as formulated by appellant II inevitably already contains a pointer to the solution which is not permissible when applying the "problem and solution approach".

Regarding the obviousness of the claimed solution, appellant II further submits that it was generally known at the priority date that the print head could be

on the printer side and that the cartridge could be equipped with a high voltage circuit for an ink level sensor, see e.g. document L7, Figure 3, document L8, paragraph [0183] and Figure 34A, document L10, column 6, line 10 and document HL23, page 54. Since the layout of the electrical terminals needed no modification, it required no inventive activity to position the print head on the printer side and to provide on the printing material container an ink level sensor using the existing high voltage circuit.

In the board's judgement, even in the light of appellant II's biased formulation of the second partial technical problem, there is no reason why the skilled person should consider a combination of the fundamentally different printer designs of document HL14 on the one hand and of documents L7, L8, L10 or HL23 on the other. In particular, when starting from document HL14, he would have no motivation to position the print head on the printer side and to provide an ink level sensor as shown in document L8 using the existing high voltage circuit. Moreover, if the skilled person considered this possibility he would also think about taking over the contact portion arrangement of document L8, which diverges from the disputed claim, and would not necessarily arrange the contact portions as in document HL14. Therefore, appellant II's reasoning is based on an *ex post facto* analysis.

6.2 Starting from document L7

6.2.1 Additionally, appellant II challenges the presence of an inventive step of the subject-matter claimed using document L7 as a starting point. The subject-matter of the independent claims differed from the teaching of document L7 in that the low voltage device was a memory instead of the detection device of document L7 and in that a part of the contact portions of the terminals for the low voltage device was in the first row between the second contact portions. However, both features were rendered obvious by document HL14, which showed a memory and the claimed contact portion arrangement.

6.2.2 The board agrees that document L7 does not disclose a memory as the first device.

Moreover, in contrast to the patent in suit, the terminal board of document L7 (see Figures 4 or 5) has only second (higher voltage) contact portions in the first (lower) row and all the first (lower voltage) contact portions in the second (upper) row.

6.2.3 Also these differing features seem to be independent of each other without any apparent synergistic or combinative effect so that the inventive step analysis has to be done independently for each of them.

The partial technical problem to be solved by the first differing feature is seen in storing relevant data on the printing material container.

The partial technical problem to be solved by the second differing feature is to provide an alternative arrangement of the terminals.

6.2.4 The solution to the first partial technical problem is an obvious possibility. Even document L7 itself mentions in the introductory portion that providing a data storage medium on a printing material container was known (see paragraph [0002]).

Regarding the second partial technical problem, document HL14 discloses the terminal arrangement according to the present claim, however, without mentioning any advantage provided thereby (see paragraph [0046]). In contrast, document L7 is specifically directed to a terminal arrangement presented as particularly advantageous for preventing shorting between the terminals to which different voltages are applied (see paragraph [0006]). Therefore, the skilled person would have no motivation to depart from this known advantageous arrangement and to replace it with that of document HL14. The combination of documents L7 and HL14 can thus not render obvious the subject-matter of claim 1, which is therefore based on an inventive step (Article 56 EPC 1973).

6.3 The reasoning on inventive step of the subject-matter of claim 1 of the main request is applicable *mutatis mutandis* to the subject-matter of the independent claims 32, 58, 62 and 63 of the main request. This subject-matter is hence also based on an inventive step (Article 56 EPC 1973).

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance with the order to maintain the patent as amended in the following version:
 - claims 1 to 64 of the main request received on 16 September 2013 with letter dated 23 August 2013 and corrected to 16 September 2013;
 - description, pages 2 to 16 of the patent specification;
 - drawings of the patent specification.

The Registrar:

The Chairman:



D. Meyfarth

M. Poock

Decision electronically authenticated