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Datasheet for the decision of 7 May 2015

Case Number: T 2591/11 - 3.2.02

Application Number: 09001975.3

Publication Number: 2090220

IPC: A61B1/045

Language of the proceedings: EN

Title of invention:
Processor for endoscope

Applicant:
FUJIFILM Corporation

Headword:

Relevant legal provisions:
EPC Art. 54(1), 54(2), 56
EPC R. 115(2)
RPBA Art. 15(3)

Keyword:
Novelty - main request (no)
Inventive step - auxiliary request (no)
Oral proceedings - held in absence of appellant

Decisions cited:

Catchword:

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Case Number: T 2591/11 - 3.2.02

D E C I S I O N
of Technical Board of Appeal 3.2.02
of 7 May 2015

Appellant: (Applicant)	FUJIFILM Corporation 26-30, Nishiazabu 2-chome Minato-ku Tokyo (JP)
Representative:	Höhfeld, Jochen Klunker Schmitt-Nilson Hirsch Patentanwälte Destouchesstrasse 68 80796 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 27 July 2011 refusing European patent application No. 09001975.3 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	E. Dufrasne
Members:	D. Ceccarelli
	M. Stern

Summary of Facts and Submissions

I. The applicant has appealed the Examining Division's decision, dispatched on 27 July 2011, to refuse European patent application No. 09 001 975.3.

II. The impugned decision mentioned the following documents:

D1: US-B-6,313,868;
D3: US-A-5,967,969.

It was based on the grounds that the subject-matter of claim 1 of the main request lacked novelty over document D1 and that the subject-matter of claim 1 of the auxiliary request was not inventive over the combination of closest-prior-art document D1 with document D3.

III. The notice of appeal was received on 26 September 2011 and the appeal fee was paid on the same day. The statement setting out the grounds of appeal was received on 6 December 2011.

IV. The Board summoned the appellant to oral proceedings and set out its provisional opinion in a communication dated 9 February 2015.

V. By letter dated 18 February 2015 the appellant withdrew its request for oral proceedings and informed the Board that it would not attend the oral proceedings.

VI. The oral proceedings took place on 7 May 2015 in the appellant's absence.

VII. The appellant had requested in writing that the decision under appeal be set aside and that a patent be granted on the basis of the main request, filed with letter dated 5 August 2010 or, in the alternative, of the auxiliary request filed with letter dated 3 June 2011.

VIII. Claim 1 of the main request, which is also the main request on which the impugned decision was based, reads as follows:

"A processor (12) for an endoscope (10) to which said endoscope including an image sensor (30) is detachably connectable, said processor comprising:
a power supply circuit (5) for supplying various voltages,
a power control circuit (46) for controlling said power supply circuit based on power control information (62), characterised in that said power control circuit (46) and [*sic*] is adapted to make said power supply circuit supply each of said voltages in a sequence and at an interval corresponding to said power control information which includes a sequence and an interval for supplying each of said voltages to said image sensor."

Claim 1 of the auxiliary request, which is also the auxiliary request on which the impugned decision was based, reads as follows:

"An endoscope system comprising a processor (12) and an endoscope (10), which endoscope includes an image sensor (30) and is detachably connectable to said processor, the system comprising:
a power supply circuit (50) for supplying various voltages,

a power control circuit (46) for controlling said power supply circuit based on power control information (62), characterised in that said power control circuit (46) is adapted to make said power supply circuit supply each of said voltages in a sequence and at an interval corresponding to said power control information which includes a sequence and an interval for supplying each of said voltages to said image sensor, that said endoscope (10) has a memory (32) for storing said power control information, wherein said power control circuit (46) obtains said power control information corresponding to said image sensor (30) of the connected endoscope by retrieving said power control information stored in said memory (32), and that a detecting section (52) is provided for detecting connection of said endoscope (10) to said processor (12), and wherein
after the connection of said endoscope is detected, said power control circuit controls said power supply circuit to supply electric power to said memory (32) before supplying electric power to said imaging sensor (30)."

IX. The appellant's arguments may be summarised as follows:

a) Main request

Claim 1 taught that the power control circuit controlled the power circuit based on power control information. This was a technical feature inherent to the claimed processor.

Document D1 did not disclose the feature of claim 1 according to which the power control circuit was adapted to make the power supply circuit supply each of various voltages in a

sequence and at an interval corresponding to said power control information which included a sequence and an interval for supplying each of said voltages to the image sensor. There was disclosed only one parameter of voltages applied to the imager (CCD). According to column 4, lines 26 to 29, that was a +15 V signal transmitted to imager 32, amplifier 26 and other locations. It followed that the subject-matter of claim 1 was novel.

One could understand the overall disclosure of D1 as possibly suggesting applying various voltages to various components. However document D1 was silent about the above-recited feature of claim 1 and did not disclose the supply of various voltages to the image sensor based on power control information including a sequence and an interval for supplying power. There was nothing in document D1 which might have encouraged a person skilled in the art to provide the specific design of the claimed processor.

The Examining Division had provided no sufficient basis for its argument in the impugned decision that it was "basic knowledge of the person skilled in the field of imaging devices" that the supply of different voltages to a CCD followed a timing chart which was different for each CCD-type, wherein the timing chart specified during which period of time (interval), which voltages sequentially drove each of the electrodes of the CCD. Document D1 did not reflect such knowledge.

b) Auxiliary request

In the auxiliary request the subject-matter of claim 1 was defined in more detail. The arguments in favour of the main request also applied to claim 1 of the auxiliary request.

Moreover, there was no disclosure in document D1 which might support the Examining Division's assumption in the impugned decision that simultaneous supply of two voltages to the imager (CCD) was excluded in D1, since the skilled person was aware of the danger of supplying incorrect voltages to the CCD. It was only the present invention which taught in detail that and how such danger might be avoided by simple means.

With regard to the claimed detecting section and the Examining Division's reliance upon document D3, it was questionable whether a skilled person starting from document D1 would have any reason to search for a detecting section for detecting a connection of an endoscope to a processor. The claimed detecting section was to be understood as one of a plurality of features defined in claim 1 which interacted with one another.

Reasons for the Decision

1. The appeal is admissible.

2. The appellant, who had been duly summoned, informed the Board that it did not intend to attend the oral proceedings. The Board decided to continue the proceedings without the appellant under Rule 115(2) EPC

and Article 15(3) RPBA. Accordingly, the appellant is treated as relying on its written submissions.

3. The invention

The invention is in the field of endoscopes and is particularly concerned with a processor for an endoscope.

Typically, endoscopes comprise an elongated, flexible insertion portion used to take images inside body cavities by means of an image sensor. The image sensor can be a charge-coupled device (CCD) which, for its correct operation, needs to be driven by a specific supply of electrical power. Such a power supply is performed by dedicated circuitry, the so-called CCD controller.

In order to obtain and display an image from the CCD, a processor with a display is needed. In typical applications, the processor also acts as the CCD controller.

More particularly, the invention focuses on the provision of a kind of universal processor that can be connected with different types of endoscopes, possibly having different CCDs needing different specific power supplies. It proposes a processor comprising a power supply circuit for the endoscope, wherein the power supply to the endoscope is tailored to the specific need of the endoscope based on "power control information".

The power control information may be stored in the endoscope itself and then, upon connection, read out by the processor, which would adapt its power supply

accordingly.

According to the application, this would make it possible to use the same processor with different kinds of endoscopes, thereby improving "versatility" and enabling a reduction of the size and weight of the endoscopes which did not have to comprise any built-in CCD controller (column 3, lines 1 to 9 of the application as published).

4. Main request

Claim 1 is based on claim 1 as originally filed.

4.1 In the Board's view, document D1, which relates to the field of endoscopes (column 1, lines 24 to 26) and is concerned with the provision of a processor with improved versatility (column 2, lines 18 to 22) as in the present application, represents the most relevant prior art.

More particularly, document D1 discloses a processor (camera control unit 1 in figure 1) for an endoscope (endoscope 7 including cable 5 in figure 1) to which said endoscope including an image sensor (camera head 3, figure 1) is detachably connectable (column 3, lines 15 to 17), said processor comprising:

a power supply circuit (power supply 12 with timing generator 10 in figure 2) for supplying various voltages (the driving voltages corresponding to the timing signals as disclosed in column 3, lines 61 to 63),

a power control circuit (microprocessor 14 in figure 2) for controlling said power supply circuit based on

power control information (column 4, lines 42 to 47),

wherein said power control circuit is adapted to make said power supply circuit supply each of said voltages in a sequence and at an interval corresponding to said power control information which includes a sequence and an interval for supplying each of said voltages to said image sensor (column 4, lines 35 to 42).

4.2 The appellant's argument that the power supply circuit of document D1 does not supply various voltages in a sequence and at an interval corresponding to the power control information is not convincing.

In column 4, lines 35 to 40, document D1 explicitly discloses that the power control information, which may be stored in a non-volatile memory device (34 in figure 2) of the endoscope, reflects "the properties and operating parameters specific to a certain [..] CCD".

As generally known by the skilled person and also disclosed in the present application, in order to obtain images from a CCD it is necessary to "drive" it with a power sequence including positive and negative voltages (column 1, lines 30 to 31 of the present application). A sequence of these voltages is required to drive the electrons generated by light radiation under the array of capacitors constituting the CCD pixels through the whole array and transfer them to an output circuit, in order to generate an image. More particularly, a transfer between two adjacent capacitors is achieved by applying different voltages for a predetermined time to them, i.e. a positive and a negative voltage, so that the electrons move from the negatively charged capacitor to the positively charged one.

The different CCDs employed in the device of document D1, like all CCDs, will need this sequence of driving voltages. Document D1 deals with the latter in the context of horizontal (H) and vertical (V) driving signals provided by timing generator 10 (column 3, lines 33 to 35), which may pass directly to the CCD (column 3, lines 61 to 63). It follows that the power supply circuit of document D1, including timing generator 10, supplies a sequence of different voltages to the image sensor.

4.3 The sequence of the driving signals (voltage and time of application) is specific to the particular CCD in question. Hence it is necessarily included in the information stored in non-volatile memory device 34 of document D1. It follows that the sequence supplied by the power supply circuit corresponds to the power control information within the meaning of claim 1.

The fact that document D1 also discloses that a voltage of +15 V is transmitted to the imager (column 4, lines 27 to 29) as the appellant pointed out, is not in contradiction with the above conclusions.

4.4 It follows that document D1 discloses all the features of claim 1 of the main request.

Hence, the main request is not allowable for lack of novelty of the subject-matter of claim 1 (Article 52(1) EPC in conjunction with Article 54(1) and (2) EPC).

5. Auxiliary request

Claim 1 is based on claims 1, 4 and 5 as originally filed.

5.1 As regards the additional features of claim 1 compared to claim 1 of the main request, document D1 also discloses an endoscope system with the endoscope having a memory (non-volatile memory 34 in figure 2) for storing said power control information (column 4, lines 35 to 40), wherein said power control circuit obtains said power control information corresponding to said image sensor of the connected endoscope by retrieving said power control information stored in said memory (column 4, lines 41 to 43) before supplying electric power to said imaging sensor (column 4, lines 43 to 47 and column 5, lines 12 to 17).

5.2 The appellant's argument that there was no disclosure in document D1 that simultaneous supply of two voltages to the imager (CCD) was excluded is not relevant. As already explained in points 4.2 and 4.3 above, the skilled person in the field of CCDs knows that a particular sequence of driving voltages is required for a CCD to provide images correctly.

5.3 Even accepting the appellant's argument that a detecting section as claimed was not disclosed in document D1, the Board considers the provision of such a feature to be obvious.

A detecting section as claimed permits an automatisation of the set-up of the endoscope system.

The technical problem to be solved is therefore a way of facilitating the control and the operation of the

system.

Faced with this problem, the skilled person would search for a suitable solution for it and would duly consider the teaching of document D3, since the latter is also in the field of endoscopes detachably connectable to a control unit (abstract).

Document D3 shows a switch as a detecting section for automatically detecting the connection of the endoscope to the control unit (switch 45, figure 1 and column 3, lines 60 to 64). The switch therefore addresses the technical problem as formulated above.

As a result, the skilled person would implement such a switch in the device of document D1 without exercising any inventive activity.

Hence, the auxiliary request is not allowable for lack of inventive step of the subject-matter of claim 1 (Article 52(1) EPC in conjunction with Article 56 EPC).

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

D. Hampe E. Dufrasne

Decision electronically authenticated