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File Number: T 653/91 - 3.4.1

Application No.: 84 103 371.5

Publication No.: 0 121 216

Title of invention: X-ray television diagnostic apparatus

Classification: H05G 1/64

DECISION
of 24 September 1992

Proprietor of the patent: Kabushiki Kaisha Toshiba

Opponent: Siemens Aktiengesellschaft, Berlin und München

Headword:

EPC Article 56

Keyword: "Inventive step (denied)"
"Notification of non-attendance at oral proceedings should be made as early as possible in writing to the Board and other parties".
(Paragraph 8).



Case Number : T 653/91 - 3.4.1

D E C I S I O N
of the Technical Board of Appeal 3.4.1
of 24 September 1992

Appellant :
(Proprietor of the patent)

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Respondent :
(Opponent)

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Representative :

Decision under appeal :

Decision of Opposition Division of the European
Patent Office dated 25 June 1991 revoking
European patent No. 0 121 216 pursuant to
Article 102(1) EPC.

Composition of the Board :

Chairman : G.D. Paterson
Members : Y. van Henden
U.G. Himmler

Summary of Facts and Submissions

- I. The Appellant is proprietor of European patent No. 0 121 216.

Claims 1 and 5 of this patent are independent ones, the latter reading -

"5. An X-ray television diagnostic apparatus (200) for examining an object, comprising:

- a first source (1L) for generating first pulsatory X-rays delivered to the object to produce first pulsed X-ray images;
- first imaging means (4L) for receiving said first pulsatory X-ray images and converting said first X-ray images to corresponding first optical images;
- first television means (5L), including a television camera having a target that is scanned, for producing first analog video signals representative of said first optical images;
- a second source (1R) for generating second pulsatory X-rays delivered to the object to produce second pulsed X-ray images;
- second imaging means (4R) for receiving said second pulsatory X-ray images and converting said second X-ray images to corresponding second optical images;
- second television means (5R), including a television camera having a target that is scanned, for producing second analog video signals representative of said second optical images;
- synchronizing means (17) for generating field sync signals for synchronizing the scanning of said television cameras; and
- exposure control means (120, 110) responsive to said field sync signals for generating first and second X-ray control signals (SP-L, SP-R) so as to cause said sources

to emit said pulsatory X-rays with a predetermined exposure time; characterized by

- first imaging control means (130L) for generating first image blanking signals for said first imaging means (4L) so as to cause said corresponding first optical images to be delivered to said first television means (5L) only during the period in which said first X-ray control signal (SP-L) is being generated,
- second imaging control means (130R) for generating second image blanking signals for said second imaging means (4R) so as to cause said corresponding second optical images to be delivered to said second television means (5R) only during the period in which said second X-ray control signal (SP-R) is being generated;
- first television control means (6L) for generating first field blanking signals in correspondence to said first X-ray control signals so as to cause said first television means (5L) to be blanked out during emission of said first X-rays by said first X-ray source (1L),
- second television control means (6R) for generating second field blanking signals in correspondence to said second X-ray control signals so as to cause said second television means (5R) to be blanked out during emission of said second X-rays by said second X-ray source (1R), and
- video selecting means (140) for selecting first and second analogue video signals that are alternately derived from the first and second television means (5L;5R), respectively,"

a minor clerical error in the reference number of the first X-ray source being corrected here.

Claims 2 to 4 are appended to Claim 1 and Claims 6 to 8 are appended to Claim 5, whereas Claim 9 is appended to Claim 1 or 5.

II. The patent was opposed by the Respondent on the grounds mentioned in Article 100(a) EPC, referring inter alia to the prior art which can be derived from documents

D1: US-A-4 355 331 (already cited in the European patent) & DE-A-3 201 658;

D2: DE-A-1 920 003;

D3: DE-A-2 523 886.

III. Oral proceedings were held on 14 May 1991, at the end of which the Chairman of the Opposition Division announced the decision that the European patent was revoked. The written decision was issued on 25 June 1991.

IV. An appeal against this decision was lodged by the Appellant. With his Statement of grounds of appeal, the Appellant submitted on 28 October 1991 a new Claim 1 to replace Claim 1 according to his former main and auxiliary requests.

This new Claim 1 reads:

"1. An X-ray television diagnostic apparatus (100) for examining an object, comprising:

a source (1) for generating pulsatory X-rays delivered to the object to produce pulsed X-ray images;

imaging means (4) for receiving said pulsatory X-ray images and converting said X-ray images to corresponding optical images;

television means (5), including a television camera having a target that is scanned, for producing analog video signals representative of said optical images;

synchronizing means (17) for generating field sync signals for synchronizing the scanning of said television camera;

and

exposure control means (13, 14) responsive to said field sync signals for generating X-ray control signals (SP) so as to cause said source to emit said pulsatory X-rays with a predetermined exposure time;

characterized by

imaging control means (18) for generating image blanking signals for blanking an image intensifier (3) of said imaging means (3, 4) so as to cause said corresponding optical images to be delivered to said television means (5) only during the period in which said X-ray control signal (SP) is being generated; and

television control means (6) for generating field blanking signals in correspondence to said X-ray control signals (SP) so as to cause said television means (5) to be blanked out during emission of said X-rays by said X-ray source (1) and for starting the scanning of the television means after switching off the X-ray control signals (SP)."

- V. The Respondent substantially commented on the Appellant's submissions as follows:

An apparatus as defined in the pre-characterising part of Claim 1 is disclosed in (D1). According to that illustration of prior art, television control means (30) and synchronising means (23) allow camera target scanning after X-rays generation and image intensifier blanking. Therefore, the second characterising clause of Claim 1 too is known from (D1). Besides, the fact that the opening of the "obturator" is longer than the X-ray impulse in the known device is not important for it does not influence the formation of after images.

Document (D2) too describes a diagnostic apparatus according to the pre-characterising part of Claim 1. In that apparatus, the image intensifier can only be operated

during the emission of an X-ray pulse. Image fluctuations produced by the trailing edge of the fluorescent image or by cable capacity are thereby prevented. Therefore, the first characterising clause of Claim 1 is rendered obvious by document (D2).

Likewise, the characterising parts of Claims 2 and 3 are also rendered obvious by document (D2), whereas the features recited in Claim 4 are known from (D1). Consequently, none of the Claims 1 to 4 involves an inventive step.

Now, the provision of two imaging arrangements is known from document (D3). Claim 5, therefore, is not allowable in view of the prior art disclosed in documents (D1) to (D3). The same applies to Claims 6 and 8, which substantially correspond to Claims 2 and 4. The characterising features of Claim 7 are known from documents (D1) and (D2) and, finally, it is common practice to provide injector means in diagnostic apparatus for angiography. Therefore, Claims 5 to 9 too lack an inventive step.

VI. In a communication pursuant to Article 11(2) of the RPBA, the Board took the provisional view that, with consideration to the state of the art disclosed in documents (D1) to (D3), none of the independent claims submitted by the Appellant appeared to involve an inventive step.

VII. Both parties requested oral proceedings, which were duly appointed for 24 September 1992. Following telephone conversations shortly before that date, the Board was notified by fax on the day of the hearing that the Respondent's Representative would not attend the hearing.

During the hearing the Appellant requested that the decision under appeal be set aside and that the European patent be maintained in amended form according to his main request, i.e. on the basis of Claim 1 as submitted with his Statement of grounds of appeal, Claim 2 as amended during the oral proceedings of 14 May 1991 and Claims 3 to 9 as granted.

VIII. In support of his request, the Appellant substantially argued as follows:

In the claimed X-ray television diagnostic apparatus, the optical images are delivered to the television means (5) only when the X-ray control signal (SP) is generated, the television means (5) are blanked out during X-ray emission and scanning is performed after the X-ray control signal (SP) has been switched off. No afterglow image, therefore, is included in the X-ray image.

In the X-ray television diagnostic apparatus known from (D2), however, the camera (13) is operated continuously. Therefore, document (D2) does not disclose an apparatus in which an image intensifier is blanked out only during the generation of an X-ray control signal, and in which a television camera starts scanning after the control signal has been switched off. For this reason, combining the teachings of documents (D1) and (D2) does not lead to the present invention.

IX. At the end of the oral proceedings, the Chairman announced the decision that the decision of the Opposition Division was confirmed having regard to the main request filed on 28 October 1991, and that the appeal was dismissed.

Reasons for the Decision

1. The only matter at issue was that of inventive step.
2. The Appellant's terminology being kept, document (D1) pertains to

"an X-ray television diagnostic apparatus for examining an object - see: title; column 1, lines 5 to 13; column 2, lines 41 to 44 - comprising:

- a source (6) for generating pulsatory X-rays delivered to the object to produce pulsed X-ray images - see: column 4, lines 13 to 19 and 44 to 46; column 2, lines 67 and 68;
- imaging means including an image intensifier (3) for receiving said pulsatory X-ray images and converting said X-ray images to corresponding optical images - see column 4, lines 8 to 10 and 16 to 24;
- television means, including television cameras (1,2) having targets that are scanned, for producing analog video signals representative of said optical images - see: column 4, lines 6 to 8; column 5, lines 6 to 11, 26 to 29, 34 to 37 and 43 to 45;
- synchronising means (23) for generating field sync signals for synchronising the scanning of said television cameras - see column 5, lines 34 to 42;
- exposure control means (12) responsive to said field sync signals for generating X-ray control signals so as to cause said source (6) to emit said pulsatory X-rays with a predetermined exposure time - see: Figure 1; column 4, lines 44 to 46; column 5, lines 34 to 42 - and

- television control means (50) for generating field blanking signals in correspondence to said X-ray control signals so as to cause said television means to be blanked out during emission of said X-rays by said X-ray source (6) and for starting the scanning of the television means after switching off the X-ray control signals" - see: Figure 2; column 7, lines 52 to 67; column 8, lines 5 to 11; column 9, lines 1 to 8.

3. Therefore, the subject-matter of Claim 1 is distinguished over the prior art known from (D1) in that it comprises

imaging control means (18) for generating image blanking signals for blanking the image intensifier (3) of the imaging means so as to cause the optical images to be delivered to the television means (5) only during the period in which the X-ray control signal (SP) causing the source (6) to emit is being generated.

The Appellant did not contest this.

4. It cannot be inferred from the wording of Claim 1 that its subject-matter should be limited to an X-ray television diagnostic apparatus to be operated in the image subtraction mode. Nevertheless, the description of the patent in suit clearly shows that the actual object of the claimed invention is to alleviate the drop in image quality resulting from the afterglow in such an apparatus.

Now, when operating an X-ray television diagnostic apparatus in the image subtraction mode, successive images have to be formed and picked up at close time intervals - see, for instance, lines 20 and 21 in the second column of

(D1). Any technical problem resulting therefrom, however, is common to all X-ray television devices in which X-ray images have to be formed, converted and picked up at close time intervals. Therefore, such a problem, as well as its solution, may already be known from documents pertaining to X-ray television devices which do not work in the image subtraction mode but in which, nevertheless, the image acquisition rate is comparatively high. This means in turn that such documents belong to the neighbouring technical fields in which a skilled person attempting to improve an X-ray television diagnostic apparatus to be operated in the image subtraction mode is expected to look for suitable parallels and, consequently, that their teachings must be taken into account while assessing inventive step in the present case - cf. Decision T 176/84 (OJ EPO 1986, 50-56), point 5.3.1 of the grounds. This applies in particular to document (D2).

5. Document (D2) relates to an X-ray television diagnostic apparatus for carrying out X-ray stereography, which apparatus exhibits all the features recited in the pre-characterising part of Claim 1 - see: Figure 1; title; from page 2, last paragraph to the second paragraph of page 3. Furthermore, said document is concerned with the problem of alleviating the detrimental effects of afterglow in a device having to pick up X-ray images at times separated by short intervals - see page 1, second paragraph. To achieve this purpose, the image intensifier (8) which converts the X-ray images to corresponding optical images is normally blanked out and is made to deliver said optical images to the television camera (13) only during X-ray emission - see page 4, from line 2 of the first paragraph to the end of the second paragraph.

Document (D2) thus relates to a technical field neighbouring that of the invention, and furthermore

discloses both the problem that the invention has as its object to solve and the claimed solution of said problem. It may be admitted that, as the Appellant pointed out, said document does not suggest to start the scanning of the television means after the X-ray control signal has been switched off. Nevertheless, this lack of disclosure has no consequence, since it is known from (D1) to start the scanning at this moment.

In the Board's judgment, therefore, no display of inventive talent was necessary to provide, in an X-ray television diagnostic apparatus of the kind known from (D1), "imaging control means for generating image blanking signals for blanking the image intensifier of the imaging means so as to cause the optical images (corresponding to the X-ray images) to be delivered to the television means only during the period in which X-rays are emitted (hence: during which a suitable X-ray control signal causing the X-ray source to emit is being generated)".

6. Therefore, Claim 1 lacks an inventive step.
7. No exercise of inventive ingenuity either is required to dispose two imaging and pick up arrangements of the kind defined by Claim 1 in such a way as to take front and side views of an object. This is actually done with the arrangement known from (D3) and, there too, the first and second video signals are alternately derived from the first and second television means, respectively.

Therefore, in the Board's judgment, Claim 5, too, lacks an inventive step.

8. Non-attendance at oral proceedings

If, having been summoned to oral proceedings a party does not wish to attend such proceedings, both the Board (through its Registrar) and any other parties to the proceedings should be notified in writing of this fact as early as possible before the appointed day. Except in special circumstances, telephone communications concerning such matters are inappropriate, especially in inter partes proceedings.

Order

For these reasons, it is decided that:

1. The decision of the Opposition Division is confirmed having regard to the main request filed on 28 October 1991.
2. The appeal is dismissed.

The Registrar:

The Chairman:

M. Beer

G.D. Paterson