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**Datasheet for the decision
of 12 December 2008**

Case Number: T 1171/05 - 3.5.04

Application Number: 01114663.6

Publication Number: 1168812

IPC: H04N 1/06

Language of the proceedings: EN

Title of invention:

Internal-surface-scanning image recording apparatus

Applicant:

FUJIFILM Corporation

Opponent:

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Headword:

-

Relevant legal provisions:

-

Relevant legal provisions (EPC 1973):

EPC Art. 56

Keyword:

"Inventive step (yes) after amendment"

Decisions cited:

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Catchword:

-



Case Number: T 1171/05 - 3.5.04

D E C I S I O N
of the Technical Board of Appeal 3.5.04
of 12 December 2008

Appellant:

FUJIFILM Corporation
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Minato-ku
Tokyo (JP)

Representative:

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Decision under appeal:

Decision of the Examining Division of the
European Patent Office posted 28 April 2005
refusing European application No. 01114663.6
pursuant to Article 97(1) EPC 1973.

Composition of the Board:

Chairman: F. Edlinger
Members: C. Kunzelmann
B. Müller

Summary of Facts and Submissions

I. The appeal is against the decision of the examining division to refuse European patent application No. 01 114 663.6.

II. The application was refused on the ground that the subject-matter of claim 1 lacked an inventive step having regard to documents

D1: EP 0 701 158 A2 and

D2: US 5 363 217 A.

The reasons for the decision can be summarised as follows.

D1 disclosed an internal-surface-scanning image recording apparatus comprising light beam deflecting means and a spinner having a single mirror for reflecting a plurality of light beams. A central light beam was always reflected at the point of incidence on the mirror, while the other light beams were deflected in dependence on the rotational displacement of the mirror to maintain the scanned loci of the reflected light beams on the recording sheet straight and parallel to each other. D2 disclosed an internal-surface-scanning image recording apparatus in which the throughput of the apparatus was increased by means of a spinner having multiple mirrors. It would have been obvious to a person skilled in the art to increase the throughput of the apparatus disclosed in D1 by using a spinner having multiple mirrors. In doing so it would have been clear that the optical axis of the light beam could not be the rotational axis of the cylindrical

drum and it would have become necessary, following the teaching of D1, to move the axis of the light beam of the apparatus of D1 in dependence on the rotational displacement of the mirror currently reflecting the light beam in order to maintain the scanned loci straight and parallel to each other. It would also have become necessary to move the optical axis of the light beam at the change-over from one mirror to the next to ensure proper alignment of the scanned loci at the sides of the recording sheet.

- III. The appellant requested in the notice of appeal that a patent be granted on the basis of the documents on file and as an auxiliary request that oral proceedings be scheduled. With the statement of grounds of appeal the appellant filed replacement claims 1 and 2.
- IV. In a communication accompanying the summons to oral proceedings the board raised doubts whether claim 1 complied with Article 84 EPC 1973 and Article 123(2) EPC.
- V. In reply to the communication the appellant filed replacement claims 1 to 10 with a letter dated 10 October 2008.
- VI. Following telephone conversations with members of the board the appellant, with a letter dated 6 November 2008, filed the final version of replacement claims 1 to 10 and made an auxiliary request that, if claim 10 were not allowed, claim 10 be cancelled.
- VII. The chairman then cancelled the oral proceedings.

VIII. Claim 1 reads as follows.

"An internal-surface-scanning image recording apparatus (30) for applying a light beam (L) modulated with image information to a photosensitive medium (S) mounted on an inner circumferential surface of a partly cylindrical drum (32) extending about an axis (36) thereof which is a Z direction to record an image on the photosensitive medium, comprising:
a spinner (40, 104, 108) and
light beam moving means disposed upstream of said spinner with respect to the direction of travel of the light beam;
characterized in that:
said spinner (40, 104, 108) has a plurality of reflecting mirrors (58, 60, 102a-102c, 106a-106d) disposed on one circumference around said axis (36), for reflecting the light beam with the reflecting mirrors which rotate about said axis (36) to the photosensitive medium for thereby scanning the photosensitive medium with the light beam, and
said light beam moving means are light beam shifting means (38, 110) and are adapted for translating the optical axis of the light beam both in first and second shifting directions in parallel with the axis (36), the first shifting direction along an X direction and the second shifting direction along an Y direction being perpendicular to the axis (36) and to each other, depending on the angular displacement of the mirror currently reflecting the light beam and for translating the optical axis of the light beam so that the light beam is reflected by the reflecting mirror at the same position thereon at all times and applied to the photosensitive medium (S)."

Claims 2 to 10 are dependent on claim 1.

IX. The appellant's arguments can be summarised as follows.

According to D1 a light beam was deflected to alter its angle of incidence to the mirror surface. In contrast, in the apparatus of the present invention the light beam was shifted parallel to the optical axis of the apparatus. This parallel shifting was such that the light beam was almost continuously applied to a photosensitive medium when a next following mirror of the multiple mirror spinner was to reflect the light beam. Even though a multiple mirror spinner was disclosed in D2 a person skilled in the art would not have replaced the single reflecting mirror spinner disclosed in D1 by a multiple mirror spinner because the apparatus disclosed in D1 was not suitable for almost continuously applying the light beam to a photosensitive medium.

Reasons for the Decision

1. The appeal is admissible.
2. It is clear from the file history that the appellant's main request is that the decision under appeal be set aside and that a patent be granted on the basis of claims 1 to 10 filed with the letter dated 6 November 2008 and the description and drawings as indicated in the decision under appeal, that is the documents as originally filed except for page 4a, which was filed

with the letter dated 5 February 2004. Oral proceedings were only requested on a subsidiary basis.

3. *Main request: amendments (Article 123(2) EPC)*

3.1 The appellant has amended claim 1 with respect to claim 1 on which the decision under appeal was based by more closely specifying the light beam moving means and the desired point of reflection on the mirrors. The subject-matter of present claim 1 is based on the disclosure of claims 1 and 4 as originally filed, with further features being disclosed in the application as originally filed as follows. The feature that the Z axis is the axis of the partly cylindrical drum is disclosed on page 8, lines 8 to 15. The feature that the light beam moving means are light beam shifting means for translating the light beam in parallel with the Z axis in the X and Y directions is disclosed on page 8, line 25, to page 9, line 20. The feature that the X, Y and Z directions are perpendicular to each other is disclosed in figures 2 and 3. The feature that the light beam is shifted depending on the angular displacement of the spinner, so that it is reflected by the reflecting mirror at the same position at all times, is disclosed on page 15, lines 13 to 21.

3.2 The subject-matter of claims 2 to 9 is disclosed in dependent claims 2, 3, and 5 to 10 of the application as originally filed, and the subject-matter of claim 10 is disclosed on page 19, lines 7 to 26, and in figure 11 of the application as originally filed.

3.3 The amendments made to the description only concern the acknowledgement of documents D1 and D2.

3.4 Hence the board judges that the amendments made to the application meet the requirements of Article 123(2) EPC.

4. *Main request: clarity (Article 84 EPC 1973)*

4.1 Claim 1 specifies the parallel translation of the light beam caused by the light beam shifting means and the functional relationship between the spinner having a plurality of reflecting mirrors and the light beam shifting means, namely that the light beam is shifted so that it is reflected by the currently reflecting mirror at the same position at all times. In the context of the application it is clear that each of the plurality of mirrors of the spinner reflecting the light beam has this functional relationship with the light beam shifting means. The board is satisfied that present claim 1 specifies the essential features for solving the problem underlying the invention, namely effectively utilizing the light beam of an internal-surface-scanning image recording apparatus having a photosensitive medium mounted on an inner circumferential surface of a partly cylindrical drum, without having to rotate the spinner at a high speed (see, for instance, page 5, lines 3 to 11).

4.2 The board does not see any other problems relating to Article 84 EPC 1973 in the application.

4.3 Hence the board judges that the requirements of Article 84 EPC 1973 are met.

5. *Main request: inventive step (Article 56 EPC 1973)*

5.1 Document D1

5.1.1 D1 discloses an internal-surface-scanning image recording apparatus whose recording speed may be increased by simultaneously scanning the recording sheet with a plurality of laser beams. But, as a consequence, a non-linear scanned locus on the recording sheet results (see page 2, lines 25 to 27). D1 teaches, as the solution to the problem of non-linearity, that a central light beam has to coincide with the rotation axis of the spinner (the Z axis), whereas two additional light beams are deflected by a certain angle in opposite directions from the Z axis (see, for instance, page 4, line 37, to page 5, line 14). For this reason the apparatus of D1 comprises light beam deflection means which deflect the additional laser beams by the appropriate angles with respect to the Z axis.

5.1.2 The above teaching is inconsistent with light beam shifting means which translate the light beam parallel to the Z axis instead of deflecting them from the Z axis. Thus replacing the light beam deflection means with light beam shifting means as specified in claim 1 of the present application would not have been obvious to a person skilled in the art having regard to D1.

5.2 Document D2

5.2.1 D2 (see figure 2) discloses an internal-surface-scanning image recording apparatus in which the light beam is parallel to the rotation axis of the spinner

(the Z axis) with an offset from the axis. The spinner has a plurality of reflecting mirrors for increased throughput (see column 4, lines 43 to 46). The number of mirrors, the offset, the diameter of the light beam and other parameters are all interrelated by the geometry of the system. These relationships were well known (see column 3, lines 48 to 67).

5.2.2 The teaching of D2 that the geometry of the system determines the fixed offset (dependent on *inter alia* the number of mirrors) is inconsistent with a light beam shifting means as specified in present claim 1. Thus it would not have been obvious to a person skilled in the art to provide a light beam shifting means as specified in claim 1 in the apparatus known from D2.

5.3 The decision under appeal has considered the possibility of improving the throughput of the internal-surface-scanning image recording apparatus disclosed in D1 by means of a spinner having a plurality of reflecting mirrors as disclosed in D2. However, as discussed in point 5.1.1. above, D1 teaches the use of three non-parallel light beams, none of which has a fixed offset to the Z axis. Thus none of the light beams disclosed in D1 would have been consistent with the geometry of the system and the number of reflecting mirrors of the spinner disclosed in D2. Moreover deflecting laser beams by appropriate angles with respect to the Z axis in accordance with the teaching of D1 is not directly applicable to a plurality of reflecting mirrors and would, in any case, not lead to parallel light beams. Hence improving the throughput of the internal-surface-scanning image recording apparatus disclosed in D1 by replacing the

- spinner having a single reflecting mirror with a spinner having a plurality of reflecting mirrors would only have been possible with further modifications. Such modifications are the subject of the present application, but are not derivable from D1 or D2.
- 5.4 In the judgment of the board an internal-surface-scanning image recording apparatus as specified in claim 1 was not obvious to a person skilled in the art having regard to the state of the art disclosed in D1 and D2.
- 5.5 The board does not see how the other available documents might have rendered the subject-matter of claim 1 obvious to a person skilled in the art.
- 5.6 Hence the board judges that the subject-matter of claim 1 according to the main request involves an inventive step (Article 56 EPC 1973).
6. Thus the board comes to the conclusion that the decision under appeal has to be set aside, and that a patent is to be granted in accordance with the appellant's main request.
7. Since the appellant's main request is allowable, there is no need to consider the auxiliary request and oral proceedings are not needed.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to grant a patent in the following version:

Description:

Pages 1 to 23 as originally filed.

Page 4a filed with the letter dated 5 February 2004.

Claims:

No. 1 to 10 filed with the letter dated 6 November 2008.

Drawings:

Sheets 1/18 to 18/18 as originally filed.

The Registrar:

The Chairman:

D. Sauter

F. Edllinger