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File Number: T 803/90 - 3.5.1
Application No.: 84 101 865.8
Publication No.: 116979
Title of invention: Ultrasonic diagnostic apparatus

Classification: G01S7/52

D E C I S I O N
of 21 October 1991

Proprietor of the patent: Kabushiki Kaisha Toshiba

Opponent: Siemens AG

Headword:

EPC Articles 56, 114(2)

Keyword: "Inventive step (yes)"
"Late-filed documents"

Headnote



Case Number : T 803/90 - 3.5.1

D E C I S I O N
of the Technical Board of Appeal 3.5.1
of 21 October 1991

Appellant :
(Opponent)

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Respondent :
(Proprietor of the patent)

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Representative :

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Decision under appeal :

Decision of Opposition Division of the European
Patent Office dated 22 August 1990 rejecting the
opposition filed against European patent
No. 116979 pursuant to Article 102(2) EPC.

Composition of the Board :

Chairman : P.K.J. van den Berg
Members : A.S. Clelland
E.M.C. Holtz

Summary of Facts and Submissions

- I. European patent No. 116979 was granted on patent application No. 84 101 865.8, filed on 22 February 1984 and claiming the priority of two applications in Japan respectively dated 22 February 1983 and 10 March 1983.

Notice of grant was published on 10 February 1988.

- II. On 8 November 1988 the Opponent (Appellant) filed an admissible notice of opposition, requesting revocation of the patent on the ground that its subject-matter was not patentable having regard to the provisions of Articles 52 and 56 EPC. The Opponent based his submissions on the following documents:

D1: DE-B-2 821 526

D2: DE-A-2 914 771.

In the course of the opposition proceedings the Opponent cited a further document which was admitted to the proceedings by the Opposition Division under Article 114(1) EPC:

D3: Ultrasonics, July 1968, pages 153-159.

- III. In oral proceedings on 6 July 1990 the Opposition Division rejected the opposition. The reasons for this were given in a decision dated 22 August 1990.
- IV. On 11 October 1990 the Appellant filed a notice of appeal and paid the appeal fee. A written statement setting out the grounds of appeal was filed on 20 December 1990. The Appellant requested that the contested decision be set aside and the patent revoked in its entirety. In the grounds of appeal the Appellant based his submissions on

D1 and D3, together with the following newly cited documents:

D4(a) Extract from maintenance manual 836661-01 for "Phased array ultrasonograph model V-3000" diagnostic unit from Varian Associates, Radiation Division, Palo Alto, California, USA

D4(b) Declaration from Mr Wayne Hillard, USA, dated 12 December 1990.

The Appellant argued that all the claims of the application lacked an inventive step having regard to the disclosures of D1 and D3.

The Appellant further argued that the ultrasonograph described in D4(a) was shown by the declaration of D4(b) to have been made available to the public before the priority dates claimed for the present application; the claims of the application each lacked an inventive step having regard to this alleged prior use.

The Appellant moreover requested that oral proceedings be appointed.

V. The Appellant essentially presented two independent arguments: first, he argued that the skilled man, seeking to carry out the disclosure of D1, would include depth focussing and would furthermore be led by D3 to compensate for the off-access reduction in sensitivity by a corresponding variation in the gain of the variable gain amplifier. Secondly, the Appellant argued that the circuit diagram supplied with D4(a) showed that it was known to vary the power supplied to transducer means in accordance with the value of the angle of deflection of the ultrasonic beam. This was equivalent to increasing the

amplification on reception. The subject-matter of Claim 1 accordingly lacked an inventive step.

- VI. In a letter received on 25 April 1991 the Respondent (Patentee) made a main request that the appeal be dismissed and an auxiliary request that the patent be maintained in an amended form on the basis of revised claims filed with the letter.
- VII. In a communication issued on 23 August 1991 the Board stated its provisional opinion that the Respondent had not given adequate reasons as to why the late-filed D4 should be admitted to the proceedings and that the arguments on the basis of D1 and D3 did not suffice to show that the subject-matter of Claim 1 lacked an inventive step.
- VIII. In a letter received on 1 October 1991 the Appellant withdrew his request for oral proceedings and in a subsequent letter received on 16 October 1991 announced that he would not be attending the oral proceedings. In a letter received on 8 October 1991 the Respondent withdrew his auxiliary request and maintained his request that the appeal be dismissed.
- IX. Oral proceedings took place on 21 October 1991. The Appellant, as previously announced, did not attend.
- X. Claim 1 of the patent reads as follows:

"An ultrasonic diagnostic apparatus (100) comprising:

transmitter means (10; 13) including electric pulse generation means (10) and transmission delay means (13) for controlling the phase positions of the pulses generated by the transmitter means;

transducer means (14) including an array of ultrasonic vibration elements (14-a to 14-n), at least two of which elements are excited by the said pulses whose phases are controlled so as to generate an ultrasonic beam focussed at a predetermined distance and deflected at a predetermined angle;

receiver means (15) including reception delay means (24) arranged to control the phases of the signals derived from the vibration elements, and combining means (25) for said signals the phases of which are controlled by said reception delay means so as to provide, at the output of the combining means

an echo signal associated with said predetermined distance and angle;

correction means (16, 26, 17, 18, 19) arranged to compensate for attenuation losses of the echo signal which means include a sensitivity control circuit (19; 70) having variable gain amplifier means (23-a - 23-n; 60, 90);

means (20, 21) for displaying a tomographic image of the object under investigation based upon the echo signal processed in the correction means (16, 26, 17, 18, 19); and

system control means (12) from which a rate signal is supplied to the transmitter means (10; 13), the receiver means (15) and the correction means (16, 26, 17, 18, 19) for purposes of the timing control thereof, the apparatus (100) being characterized in that:

the sensitivity control circuit (19; 70) comprises means (40-60, 82-86) arranged to vary the gain of the variable

gain amplifier means in response to the value of the angle of deflection of the ultrasonic beam."

Reasons for the Decision

1. The appeal complies with Articles 106 to 108 and Rule 64 EPC and is, therefore, admissible.

2. In the statement of grounds of appeal the Appellant raises a completely new allegation of prior use and alleges that in view of this prior use the subject-matter of Claim 1 lacks an inventive step. In support of the allegation D4(a) has been produced, showing the circuit diagram of a power supply reproduced from the maintenance manual for the Varian model V-3000 ultrasonograph. In a declaration by Mr Wayne Hillard, D4(b), it is stated that the contents of the maintenance manual were public knowledge after November 1976, the date on which the aforementioned ultrasonograph was first sold. Although not explicitly stated, the declaration conveys the idea that the power supply circuit was incorporated in the ultrasonograph machine as sold, several hundred having been sold before the priority dates of the patent.

It has repeatedly been made clear by the Boards of Appeal that an Opponent's case and his evidence in support of it should be fully set out at the earliest possible stage in the opposition, namely in the statement of grounds of opposition, and not developed piecemeal (e.g. T 122/84, OJ EPO 1987, 177, points 10.1 to 13; supplement to OJ EPO 6/1991, 53 to 55). The Appellant has given no good reason as to why the allegation of prior use was not raised within the opposition period and the Board takes the view that the citation of new documents at the appeal stage, raising a completely new allegation of prior use,

constitutes an abuse of procedure. In accordance with Article 114(2) EPC it is entitled to disregard this new allegation as not having been submitted in due time.

3. Nevertheless, because the EPO has a duty to the public not to maintain a patent which it is convinced is not legally valid (T 326/87, point 2, to be published) the Board, in accordance with Article 114(1) EPC, must consider the relevance of the prior use allegation supported by D4.

The circuit drawing of D4(a) merely shows a detail of the V-3000 ultrasonograph; it does not disclose any of the features of the preamble of claim 1 or indeed - so far as the Board have been able to ascertain - any of the features of the characterising part. The diagram includes the words "ANGLE COMPENSATION" and "TRANSMIT LEVEL" but it is not self-evident how the circuit operates. Declaration D4(b) states at point 6 that the purpose of the circuit is to increase the transmitted pulse power in proportion with increases of the angle of the steered beam. Even if this assertion is accepted all that has been shown is that an alternative solution to the same problem existed before the priority date. There is no indication that the skilled man would find it obvious to combine the disclosure of D4 with that of D1 or D3, or that - even if such a combination were obvious - the skilled man would take the final step of modifying the receiver as set forth in the characterising part of Claim 1 rather than increasing transmitted power as is apparently suggested in D4.

D4 is accordingly not admitted to the proceedings.

4. Turning now to the admissible prior art, D1 discloses all but one of the features of the preamble of Claim 1 as

granted, the feature not disclosed being control of the phases of the transducer elements so as to generate a beam focused at a predetermined distance. The Appellant has alleged that this feature was known at the priority date but has adduced no evidence in support of this contention. D1 does not mention the problem of the decline in sound pressure or sensitivity with respect to an off-axis scanning angle as illustrated at Fig. 4 of the patent. The subject-matter of Claim 1 is thus clearly both novel and inventive having regard to the disclosure of D1.

D3 relates to a system generally similar to that of D1. The document specifically does not disclose the provision of a focused beam: Fig. 2 shows a planar wave front whilst at page 154, left hand column, it is stated that "the near-field problem is not discussed here". The above comments on focusing in connection with D1 thus apply to D3 also. The subject-matter of Claim 1 is accordingly novel with respect to the disclosure of D3.

D3 does however disclose that for the particular transducer used the directional pattern of the individual elements is not wholly omnidirectional but dips off-axis, see Fig. 4. At page 155, left hand column, the text concerning Fig. 7 indicates that for an array the maxima at 45° are actually 4dB down on the on-axis maximum. The phenomenon of reduction in sensitivity with increasing deflection angle is thus disclosed in D3, but there is no indication in this document that it was recognised as a problem requiring a solution.

For a finding of lack of inventive step against Claim 1 of the patent it would be necessary to establish that the skilled man would be led by D3 to compensate for the above-mentioned off-axis reduction in sensitivity by a

corresponding variation in the gain of the variable gain amplifier (commonly referred to as the STC amplifier). This is not the case; the skilled man, would not infer from D3 that active measures can and should be taken. Furthermore, the discussion in D3 is in the context of sidelobe suppression by means of amplitude tapering, so that the obvious path for the skilled man to follow is to employ such tapering. The subject-matter of Claim 1 is accordingly also inventive with respect to the disclosure of D3.

Order

For these reasons, it is decided that:

The appeal is dismissed

The Registrar

The Chairman

M. Kiehl

P.K.J. van den Berg