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D E C I S I O N
of 22 March 2000

Case Number: T 1060/98 - 3.5.1

Application Number: 90309125.4

Publication Number: 0414479

IPC: H04R 1/10

Language of the proceedings: EN

Title of invention:
High compliance headphone driving

Patentee:
BOSE CORPORATION

Opponent:
Sennheiser electronic GmbH & Co. KG

Headword:
High compliance headphone driving/BOSE

Relevant legal provisions:
EPC Art. 56, 52(1)

Keyword:
"Inventive step (no)"

Decisions cited:
-

Catchword:
-



Case Number: T 1060/98 - 3.5.1

D E C I S I O N
of the Technical Board of Appeal 3.5.1
of 22 March 2000

Appellant: Sennheiser electronic GmbH & Co. KG
(Opponent) Am Labor 1
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Representative: Eisenführ, Speiser & Partner
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Respondent: BOSE CORPORATION
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 5 October 1998
rejecting the opposition filed against European
patent No. 0 414 479 pursuant to Article 102(2)
EPC.

Composition of the Board:

Chairman: P. K. J. van den Berg

Members: R. Randes
S. C. Perryman

Summary of Facts and Submissions

I. This appeal is against the decision of the opposition division to reject the opposition because the ground for opposition invoked under Article 100(a) EPC, lack of inventive step, did not prejudice the maintenance of the patent unamended.

II. Claim 1 as granted reads as follows:

"A headset comprising:

at least one earcup having a front and rear cavity, each cavity having a respective compliance;

a baffle (11) separating the front and rear cavities;

a driver (13) having a diaphragm (14) joined to a voice coil normally residing in a gap mounted on the baffle (11); and,

an active noise reduction system;

characterised in that:

the driver (13) is a high compliance driver with a compliance (Cd) that is greater than the compliance (Cr) of the rear cavity."

III. The following documents were inter alia cited in the decision:

D1: Details concerning the Hör/Sprechgarnitur "HME210" of Co. Sennheiser KG, DE marketed in Germany since 1987. The appellant (then opponent) had indicated in the opposition proceedings that he proposed to prove the facts concerning marketing and technical construction by witnesses giving evidence at the oral proceedings before the opposition division.

The patentee conceded these facts without asking that they be proved by witnesses.

D2: US-A-4 455 675

D3: GB-A-2 187 361

- IV. On 30 October 1998 the appellant lodged an appeal against the decision and paid the fee on the same day. On 3 February 1999 a statement of grounds of appeal was filed. A request for oral proceedings was also filed.
- V. After a letter by the respondent, who also auxiliarily requested oral proceedings, the Board summoned the parties to oral proceedings to be held on 22 March 2000.
- VI. With a letter before the oral proceedings, filed on 22 February 2000, the appellant filed a new document D5 (DE-A-38 43 292), which was said to correspond to US-A-4 922 542 which latter had been mentioned in the opposition proceedings, but which however had been published after the priority date of the present invention. D5 was according to the appellant considered to be very relevant.
- VII. At the beginning of the oral proceedings the Board deliberated on the relevance of **document D5** and arrived at the result that this document **was not sufficiently relevant** and, therefore, should not be considered in the oral proceedings.

The **appellant in the oral proceedings** restricted its argumentation to the teaching of document D1 and to the interpretation of this document in the light of the

common general knowledge in the art. According to the appellant it would have been obvious for a skilled man to transform the headset disclosed in D1 into a headset having an active noise reduction system and so arrive at the present invention. The only feature of the subject-matter of claim 1 which D1 did not disclose was the active noise reduction system since it disclosed a headset of the passive type. It would, however, have been self-evident for a skilled person to add an active noise suppressing system to the passive headset, if the noise reduction of the prior art headset was not effective. In particular, it was known that the low frequency noise, where passive noise reduction measures were barely effective, could be effectively reduced by an active system. The appellant, moreover, pointed out that compliance was an intrinsic property of both the driver and the rear cavity of the headset, and some ratio between their compliances had inevitably to exist. The ratio had no necessary link to the quality of a headset with noise reduction. To get a good quality headset with active noise reduction, the skilled person would have started from a good quality headset with passive noise reduction, such as that in D1, and added active noise reduction to improve the signal/noise ratio at low frequencies. The appellant in fact did exactly this, starting from D1, to make an active noise reduction headset, though this was not publicly available until after the priority date. D1 had a much higher compliance driver and a higher ratio between the compliance of the driver to compliance of the rear cavity than even the example in the patent. Adding active noise reduction to D1 would inevitably lead the skilled person to something within the patent claim whether or not he was consciously considering compliance values or ratios. The claim covered half the

ratios that were possible. If the patentee in another patent had claimed all headsets with the compliance of the rear cavity greater than that of the driver he would have covered all technical possibilities. The fact that the respondent had discovered a parameter to measure was not an invention, and amounted to no contribution to the art. It certainly did not entitle him to a patent covering half the possibilities including the inevitable line of development of existing passive noise reduction headsets into active noise reduction headsets. The marketing of active noise reduction headsets at the priority date had been delayed because the real major problems were in the positioning of the sensing microphone and the production of a chip small and fast enough to be used for noise reduction, which at the priority date was not yet available.

The **respondent** argued that a person skilled in the art might "probably have stumbled upon a solution" merely by experimenting with the device. However, the appellant had not been able to provide evidence that a skilled person had ever considered the headset disclosed in D1 to be relevant. Document D1 identified a headset which was a non-active noise suppression headset. The appellant had not proved that a skilled person would have tried to transform a passive headset into a headset with active noise reduction system. The pages D1(14) and D1(15) of document D1 were produced by the appellant after the priority date. Although those pages disclosed the ratio between the compliances of the driver and the rear cavity as claimed by claim 1, they were produced after the priority date which showed that the argumentation of the appellant was totally relying on an ex post factum analysis. The compliance

ratio given in the claim had never been considered before the priority date of the present patent. Moreover, although the electronics necessary for an active noise suppression headset had been known, as had been confirmed by the appellant, since the beginning of the eighties; there were no hints, whatsoever, that a non-active headset like the one of D1 could be used for an active suppression. Since the invention resulted in higher system efficiency, the electrical power to generate sound pressure needed to cancel high levels of low frequency noise was reduced.

VIII. The appellant requested that the decision under appeal be set aside and that the patent be revoked.

The respondent requested that the appeal be dismissed and that the patent be maintained.

Reasons for the Decision

1. The appeal is admissible.
2. The only issue to be dealt with in this case is the assessment of inventive step.

Document D1 is presented essentially not as a prior published document (though parts of it may be prior published) but as a description and technical report of the characteristics of a passive noise attenuation headset marketed by the appellant before the priority date. That this headset was so marketed and had the technical characteristics set out in D1 (including the compliances of the driver and rear cavity as there calculated) was something that the appellant had

offered to prove by witnesses before the Opposition Division. The respondent conceded the facts to be proved without requiring witnesses to be heard. The opposition division and both parties then proceeded on the basis of this concession. This concession is not something from which the respondent can resile during the appeal proceedings, on some argument that the witnesses did not actually give evidence to prove the facts concerned. If the respondent had doubts he should have required the witnesses to be heard before the opposition division. On appeal the facts so conceded must be taken as proved.

To the Board it appears, therefore, that document D1 (with pages 14 and 15) shows that at the priority date a headset existed that had all the features of claim 1 with the exception of the feature that the headset comprised an active noise reduction system. The Board is of the opinion that this prior use represents the closest prior art. Comparing this prior art with the invention it appears that the objective problem to be solved could be seen therein that,

the characteristics of noise reduction of the prior art headset should be improved with respect to the lower frequencies.

As was argued by the appellant, since cushion materials of different kinds and air cavities can be used in headsets for passively attenuating noise components of high frequencies, but since noise within the low frequency range cannot be effectively attenuated by such measures, it appears that it is self-evident, for a skilled man to use an active noise reduction system, which attenuates noise spectral components of low

frequencies (cf. D2 which discloses an active noise reduction system) and, therefore, in a straight-forward way arrive at the invention according to claim 1 of the patent.

The Board is of the opinion that the driver in the device described in D1 must be considered to be a high compliance driver in the sense of claim 1. In the patent claims no precise definition has been given for such a driver. In respect of "high compliance" it is stated in the patent that "high compliance herein means the driver compliance is greater than the rear cavity compliance" (column 2, lines 51, 52 in the patent specification). Since the ratio between the compliances of the driver and the rear cavity in the headset of D1 has been shown to be 114 it appears that the driver of the device of D1 meets this requirement mentioned in claim 1.

The respondent argued that, if the skilled person arrives at the invention in the above way he or she could only do so by accident - without being aware of the design of the claimed invention, i.e. the claimed compliance ratio. But this is irrelevant. Here the principle that it is not legitimate to use hindsight when adopting the problem/solution approach goes against the respondent. It is not legitimate to state the problem as being what does the prior art tell the skilled person to choose as regards the ratio of the compliances of driver to rear cavity for an active noise reduction headset. This is to put too much of the solution claimed into the formulation of the problem. The appellant's approach on the other hand starts from a convincing real life problem, how to improve passive noise reduction headsets already on the market. There

is no evidence that active noise reduction headsets are a quite different category from passive noise reduction headsets. There is evidence that passive noise reduction headsets were already on the market. There is also evidence that active noise suppression system is efficient against low frequency noise. The first step towards a solution to the problem of improving the passive noise reduction headsets would, therefore, be to add active noise reduction, and already this step leads to something falling within the patent.

The appellant has put forward convincing arguments why there was not already something on the market that destroyed novelty, despite active noise reduction principles having been known for some ten years, namely the problem of developing a suitable chip. This is not a problem which the patent in suit does anything to solve.

Thus it appears that the skilled person in this case would arrive at the claimed solution without having consciously to consider the question of compliance ratios. The evidence persuades the Board, however, that the skilled man in reality would take into account the compliance of the driver as well as that of the rear cavity, since this is necessary when designing a headset. In D3, for example, an acoustic operating circuit for an "earphone 10" is shown in Figure 2, wherein the compliance C_d of the driver unit as well as the compliance C_b of the rear cavity have been depicted in the figure and the signification of these has been discussed in the description of D3. Thus in the prior art it has been common practice to design a headset properly by using the parameter "compliance" for its vibrating parts or air volumes in its cavities in the

necessary calculations. In fact, it appears that it is normally necessary for a skilled man to be aware of those parameters in order to design a headset.

The Board thus takes the view of the appellant, that at the time of the priority date it would have been obvious for the skilled person to take a traditional passive headset, transform it into a headset having an active noise reducing system and arrive at something within the claim.

The respondent referred also in its argumentation to the description of the patent (cf. the paragraph bridging columns 2 and 3), wherein it is stated that higher driver compliance results in higher system efficiency. It is further stated in the same paragraph: "This increase in efficiency reduces the electrical power required to generate sound pressures needed to cancel high levels of low frequency noise. This feature is particularly advantageous in battery-powered active noise reduction headsets and hearing protectors." Apparently the respondent by quoting this passage wanted to point out that the invention could only be derived from a headset having an active noise suppression system. To the Board, however, it appears that the message of this quotation does not contradict the proposal that the skilled man would use the device of D1 as the starting point of the invention. Moreover, the skilled person would arrive at the same advantage as proposed in the patent specification, since the prior art device of D1 has a driver with high compliance.

3. The subject-matter of claim 1 of the present patent, therefore, does not meet the requirements of

Articles 52(1) and 56 EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:

M. Kiehl

P. K. J. van den Berg