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**Datasheet for the decision
of 8 June 2020**

Case Number: T 2330/15 - 3.5.03

Application Number: 12185789.0

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H04S3/00

Language of the proceedings: EN

Title of invention:
Tunable multichannel headphone and method for assembling the
same

Applicant:
Pan, Chien-Chuan

Headword:
Tunable multichannel headphone/PAN

Relevant legal provisions:
EPC Art. 123(2), 84, 111(1)
RPBA 2020 Art. 11

Keyword:

Added subject-matter - main request (no, after amendments)

Clarity - main request (yes, after amendments)

Remittal to the examining division - (yes): "special reasons" (ruling on novelty and inventive step for the first time on appeal would constitute an undue burden)



Beschwerdekammern
Boards of Appeal
Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 2330/15 - 3.5.03

D E C I S I O N
of Technical Board of Appeal 3.5.03
of 8 June 2020

Appellant: Pan, Chien-Chuan
(Applicant) No. 3, Ln. 52, Gongyuan Street
Banqiao District
New Taipei City 220 (TW)

Representative: Cabinet Chaillot
16/20, avenue de l'Agent Sarre
B.P. 74
92703 Colombes Cedex (FR)

Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 18 June 2015
refusing European patent application
No. 12185789.0 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chair K. Bengi-Akyürek
Members: J. Eraso Helguera
J. Geschwind

Summary of Facts and Submissions

- I. The appeal was lodged by the applicant against the decision of the examining division refusing the present European patent application for added subject-matter (Article 123(2) EPC) and lack of clarity (Article 84 EPC).
- II. The appellant requested, as its main request, that the decision under appeal be set aside and that a patent be granted on the basis of the set of claims on which the decision under appeal is based, or, in the alternative, on the basis of auxiliary requests I and II filed with the statement of grounds of appeal.
- III. In a communication under Article 15(1) RPBA 2020, the board gave its preliminary opinion that claim 1 of the main request contravened Articles 84 and 123(2) EPC.
- IV. In its submission dated 5 May 2020, the appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims of a new main request filed with this submission, or, in the alternative, on the basis of auxiliary requests I and II filed with the statement of grounds of appeal.
- V. With its submission dated 3 June 2020 in response to a telephone conversation, the appellant filed a new **main request**.
- VI. The oral proceedings were then cancelled.

VII. **Claim 1** of the main request reads as follows:

"A tunable multichannel headphone, comprising:

at least one main housing (2), comprising:

a speaker disk (21) including a cap (211), an outer ring (213) and a spacer (214) and defining a plurality of independent sound chambers therein;

wherein the cap (211) is formed with an annular cap slit (2112), an annular wall (2113) being proximate to the cap slit (2112), a plurality of curved slots (21131) formed on the annular wall (2113), and a plurality of tunnels (2114) disposed symmetrically along an outer edge of the annular wall (2113), each of the curved slots is formed with a through hole (21132), the spacer (214) is formed with an opening (2141) and has a plurality of secondary sound ducts (2143);

a set of driver unit (22) including a primary driver (221) and a plurality of secondary drivers (222) separately disposed in the independent sound chambers of the speaker disk (21);

a front acoustic module (23) including a sound effect tuning unit (231) and an audio output unit (232) coupled on the cap (211) opposite the secondary drivers (222), the sound effect tuning unit (231) including a channel switch (2311) and a field switch (2312) both being rotatable around a central axis (CA) of the speaker disk (21), wherein the channel switch (2311) has a channel outlet (23111), and a plurality of channel output apertures (23112) and a plurality of second channel output slits (23113) symmetrically formed on the channel switch (2311) and concentric to the channel outlet (23111); and

a rear acoustic module (24) coupled to the speaker disk (21) opposite to the front acoustic module (23), the rear acoustic module (24) including a timbre tuning unit (241) that has a first timbre switch (2411) and a

second timbre switch (2412) both being rotatable around the central axis (CA) of the speaker disk (21), wherein the first timbre switch (2411) is ring shaped, has a sound passage (24113) being annular, a plurality of shields (24111) and a plurality of sound outlets (24112) that is in air connection with the annular sound passage (24113), wherein each one of the plurality of secondary sound ducts (2143) has one duct opening (21431), the duct openings (21431) are arranged to face the secondary drivers (222) or the opening (2141), and when the first timbre switch (2411) is rotated along the central axis (CA), the shields (24111) of the first timbre switch (2411) are brought together to open or close the secondary sound ducts (2143)

wherein the tunnels (2114) of the cap (211) are in air communication with the second channel output slits (23113), the channel output apertures (23112) conform to the curved slots (21131) and are in air communication with the through holes (21132), and the channel outlet (23111) communicates with the cap slit (2112), for tuning different channel systems when the channel switch (2311) is rotated."

Dependent **claim 4** of the main request reads as follows:

"The tunable multichannel headphone according to claim 3, wherein the plurality of shields (24111) covers or is removed from the corresponding duct openings (21431)."

Dependent **claim 6** of the main request reads as follows:

"The tunable multichannel headphone according to claim 1, wherein the timbre tuning unit (241) further includes a positioning disk (2413) screwed on the

speaker disk (21) and flanked by the first and second timbre switches (2411, 2412), the positioning disk (2413) is formed with a substantially round recess (24131), a plurality of timbre ducts (24132) and a plurality of first apertures (24133), the plurality of timbre ducts (24132) is substantially parallel arranged in the recess (24131), the plurality of first apertures (24133) is formed around the recess (24131), and a plurality of cover tabs (24114) is symmetrically arranged on the first timbre switch (2411)."

Dependent **claim 8** of the main request reads as follows:

"The tunable multichannel headphone according to claim 3, wherein the cap (211) includes a plurality of driver cups (2111) connecting with the driver holder (2142) of the spacer (214) respectively to form the closed independent sound chambers, and the sound chambers are arranged at various levels."

Dependent **claim 9** of the main request reads as follows:

"The tunable multichannel headphone according to claim 2, wherein the connection portion (3) further includes two connectors (31), the main housings (2) further include two fastening members (25), the two connectors (31) are at the tail end of the connection portion (3), the speaker disk (21) is formed with a locking hole (215), each of the two connectors (31) has an extension (311) with a plurality of substantially symmetrical positioning tabs (3111), the extension (311) is inserted into the locking hole (215), and the positioning tabs (3111) alternatively engage with a plurality of fastening tabs (251) of the fastening member (25)."

Reasons for the Decision

1. MAIN REQUEST

Claim 1 of the main request comprises the following limiting features (outline introduced by the board):

- (a) A tunable multichannel headphone, comprising:
- (b) at least one main housing, comprising:
- (c) a speaker disk including a cap, an outer ring and a spacer and defining a plurality of independent sound chambers therein;
- (d) wherein the cap is formed with an annular cap slit, an annular wall being proximate to the cap slit, a plurality of curved slots formed on the annular wall, and a plurality of tunnels disposed symmetrically along an outer edge of the annular wall, each of the curved slots is formed with a through hole, the spacer is formed with an opening and has a plurality of secondary sound ducts;
- (e) a set of driver unit including a primary driver and a plurality of secondary drivers separately disposed in the independent sound chambers of the speaker disk;
- (f) a front acoustic module including a sound effect tuning unit and an audio output unit coupled on the cap opposite the secondary drivers, the sound effect tuning unit including a channel switch and a field switch both being rotatable around a central axis of the speaker disk, wherein the channel

switch has a channel outlet, and a plurality of channel output apertures and a plurality of second channel output slits symmetrically formed on the channel switch and concentric to the channel outlet;

- (g) a rear acoustic module coupled to the speaker disk opposite to the front acoustic module, the rear acoustic module including a timbre tuning unit that has a first timbre switch and a second timbre switch both being rotatable around the central axis of the speaker disk,
- (h) wherein the first timbre switch is ring shaped, has a sound passage being annular, a plurality of shields and a plurality of sound outlets that is in air connection with the annular sound passage,
- (i) wherein each one of the plurality of secondary sound ducts has one duct opening, the duct openings are arranged to face the secondary drivers or the opening, and when the first timbre switch is rotated along the central axis, the shields of the first timbre switch are brought together to open or close the secondary sound ducts
- (j) wherein the tunnels of the cap are in air communication with the second channel output slits, the channel output apertures conform to the curved slots and are in air communication with the through holes, and the channel outlet communicates with the cap slit, for tuning different channel systems when the channel switch is rotated.

1.1 *Claim 1 - Article 123(2) EPC*

1.1.1 In the annex to the summons to oral proceedings sent by the examining division, to which the impugned decision refers, the examining division held that the subject-matter of claims 1, 4, 6, 8 and 9 contravened Article 123(2) EPC.

1.1.2 In particular, the examining division held that the following expressions in former claim 1 had no basis:

- "the first timbre switch (2411) is substantially annular";
- "a plurality of shields (24111)",
- "a plurality of sound outlets (24112)";
- "wherein the secondary drivers (222) or the opening (2141) are arranged to face the secondary sound ducts (2143), when the first timber switch (2411) is rotated, the shields (24111) of the first timbre switch (2411) selectively open or close the secondary sound ducts (2143)";
- "tunnels" in the wording "wherein the air is communicable from the tunnels (2114)";
- "from the curved slots (21131) and the through holes (21132) to the channel output apertures (23112), and from the cap slit (2112) to the channel outlet (23111)" (point 1.1.6 of the annex to the summons);
- "for respectively tuning multiple channel systems when the channel switch (2311) is rotated".

1.1.3 In view of the further amendments made to claim 1 of the main request, the board considers that those objections are moot:

1.1.4 Re: feature (h)

The expression "substantially annular" has been replaced by "ring shaped", literally disclosed in paragraph [0069] of the present application as filed. Furthermore, paragraph [0067] of the application as filed states that (emphasis added) "... [t]he spacer 214 has a plurality of secondary sound ducts 2143 which are piled one over another". Paragraph [0068] of the application as filed states that "[e]ach of the secondary sound ducts 2143 has one duct opening 21431 ...". Paragraph [0070] of the application as filed discloses that "[w]hen the first timbre switch 2411 rotates along the central axis CA, the shields 24111 are brought together to open/close the secondary sound ducts 2143 ..." and that "... the shield 24111 covers the corresponding duct opening 21431 (refer to Fig. 21) and the tone becomes more closed ...".

It follows that there must be as many shields 24111 as there are ducts 2143 and corresponding duct openings 21431. Although the example starting in paragraph [0069] of the application as filed has only two ducts (and two openings), when read together with paragraph [0067] of the application as filed, the teaching of having "a plurality of shields (2411)" is directly and unambiguously derivable from the application as filed, all the more so if account is taken that original claim 4 literally mentions "... a plurality of shields (24111) corresponding to the duct openings (24113)" and original claim 5 "... a plurality of sound outlets (24112) ...". Hence, feature (h) of the present main request finds its basis in at least paragraphs [0067] to [0070] of the application as filed and original claims 4 and 5.

1.1.5 Re: feature (i)

The amendments in feature (i) find their basis in paragraphs [0068] and [0070] of the application as filed (bold added):

*"[0068] **Each of the secondary sound ducts 2143 has one duct opening 21431. The duct openings 21431 can be arranged** toward different direction, for example, **facing the secondary drivers 222 or the opening 2141.** The tails of the secondary sound ducts 2143 are substantially aligned with the edge of the spacer 214. In addition, the spacer 214 has four magnet holders 2144 substantially symmetrically disposed. The magnets ... are disposed in a magnetic repulsion manner in the magnet holders 2144. The members of the rear acoustic module 24 are described herein.*

...

*[0070] **When the first timbre switch 2411 rotates along the central axis CA, the shields 24111 are brought together to open/close the secondary sound ducts 2143** (as shown in Figs. 21 and 22) ..."*

1.1.6 Re: feature (j)

The amendments in feature (j) find their basis in paragraphs [0083] and [0084] and in Figures 7, 11 and 12 of the application as filed (bold added):

*"[0083] Please refer to Figs. 7, 11 and 12. **The channel switch 2311 has a channel outlet 23111 communicating with the cap slit 2112.** A plurality of channel output apertures 23112 and a plurality of curved channel output slits 23113 are symmetrically formed on the channel switch 2311 and concentric to the channel outlet 23111. **The channel output apertures 23112***

conform to the curved slots 21131 of the cap 211 and are in air communication with the through holes 21132. On the other hand, the channel output slits 23113 are in air communication with the tunnel 2114.

[0084] Specifically, for different channel systems, rotating (for example clockwise) the channel switch 2311 alone splits the channel information to different systems. In other words, **turning the channel switch 2311 is tuning for different channel systems** (for example, 5.1, 7.1 and 9.1 channel systems)."

1.2 Dependent claims 4, 6, 8 and 9 - Article 123(2) EPC

1.2.1 The examining division also held that the following expressions in dependent claims 4, 6, 8 and 9 had no basis:

- "the plurality of shields (24111) covers or is removed from the corresponding duct openings" (claim 4);
- "timbre apertures" (claim 6);
- "cap" instead of "caps" (claim 8);
- "each one" and "at least one" (claim 9).

1.2.2 The board considers that dependent claims 4, 6, 8 and 9 meet the requirements of Article 123(2) EPC for the following reasons:

1.2.3 Claim 4

The subject-matter of claim 4 finds its basis in paragraph [0070] of the application as filed, which discloses "... [w]hen the timbre switch 2411 rotates along the central axis CA, the shields 24111 are brought together to open/close the secondary sound

ducts 2143 (as shown in Figs. 21 and 22) ...", and in Figures 21 and 22. From these passages, the skilled person would directly and unambiguously derive that "the plurality of shields (24111) covers or is removed from the corresponding duct openings".

1.2.4 Claim 6

The wording of claim 6 now finds literal support in original claim 6. Thus, the board is satisfied that claim 6 as amended does not add further subject-matter to the original disclosure.

1.2.5 Claim 8

The subject-matter of claim 8 finds its basis in original claim 8. The skilled person reading the grammatically erroneous expression "the caps includes" of claim 8 as filed in its original context, i.e. with claim 8 being dependent on claim 3 and claim 1 ("... a speaker disk (21) including a cap (211) ..."), would directly and unambiguously derive that "the cap includes" must be the intended expression.

1.2.6 Claim 9

Original claim 9 was dependent on claim 1 but referred to "the connection portion (3)", which first appeared in original claim 2 ("... at least one connection portion (3)"). The skilled person would directly and unambiguously recognise that the dependence of claim 9 is to be corrected to refer to claim 2 instead of claim 1, as it is the case in present claim 9, which has otherwise the same wording as original claim 9.

1.3 *Claim 1 - clarity (Article 84 EPC)*

1.3.1 In point 2 of the annex to the summons sent by the examining division, to which the impugned decision refers, the examining division raised an objection under Article 84 EPC concerning claim 1, according to which the wording "the first timbre switch (2411) is substantially annular, has a sound passage (24113) being annular a plurality of shields (24111)" was syntactically unclear.

1.3.2 In view of the fact that the phrase "the first timbre switch (2411) is substantially annular, has a sound passage (24113) being annular, a plurality of shields (24111)" now includes a comma between "being annular" and "a plurality of shields", the board is satisfied that the above objection is overcome.

2. *Remittal of the case (Article 111(1) EPC)*

2.1 Claims 1, 4, 6, 8 and 9 of the main request now comply with Articles 84 and 123(2) EPC. Although the grounds for refusal are overcome, the main request has yet to be examined for compliance with the other requirements of the EPC, in particular novelty and inventive step, on which the examining division did not decide. Under the present circumstances, it is therefore not appropriate to take a final decision on novelty and inventive step for the first time in these appeal proceedings. The board considers that the above represents "special reasons" within the meaning of Article 11 RPBA 2020 for remittal of the case.

2.2 In view of the above, the board decides to remit the case to the examining division for further prosecution under Article 111(1) EPC, on the basis of the claims of

the main request on file.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the examining division for further prosecution.

The Registrar:

The Chair:



D. Grundner

K. Bengi-Akyürek

Decision electronically authenticated