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(54) **Speaker system with automatic sound channel switching**

Lautsprechersystem mit automatischer Tonkanälumschaltung

Système de haut-parleurs à commutation de canaux audio automatique

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Description**BACKGROUND OF THE INVENTION****Field of Invention**

[0001] This present invention relates to a multiple channel speaker system, and more particularly to a multiple channel speaker system which switches different sound channels without any manual switch.

Related Art

[0002] Nowadays, due to progress of computer technology and internet, much audio and video broadcasting is realized on the computer via the internet. Therefore, many peripheral multimedia apparatuses are highly needed, and more and more high-level speakers are sold, which are 2.0, 5.1 or 7.1 sound channels speakers. Nevertheless, the performances of such 5.1 or 7.1 sound channels speakers are not always needed in any time. That is, in case of phoning internet call, it merely needs single sound channel or dual sound channels speakers, but in case of watching TV/movie or playing electronic games, the single sound channel or dual sound channels speakers should be switched to 5.1 or 7.1 sound channels speakers correspondingly. Even though many speakers capable of switching different sound channels are sold, but a press button is still needed specially to control the different sound channels switching.

[0003] Please refer to Japan published patent no. 2006/033077. The speaker unit comprises a body having a wireless communication section for transmitting acoustic signals of a plurality of channels outputted from a sound source section to speakers corresponding to respective channels while converting them into wireless signals, and a plurality of speakers outputting the wireless signals received from the body section while converting them into voice signals. The body comprises a speaker arrangement position determining section generating arrangement information indicative of the arranging position of each speaker detected with reference to the arranging position of a center speaker, and a section for generating channel set information assigning the channel of acoustic information corresponding to the arranging position of each speaker indicated by the arrangement information wherein the wireless communication section transmits the channel of the acoustic signal to each speaker based on the channel set information.

[0004] Please also refer to US issued patent no. 4,151,470. An acoustic apparatus comprising a detachable combination of a stereophonic radio set and monaural tape recorder is disclosed. The tape recorder operates as a monaural element when decoupled from the stereophonic radio but includes a stereophonic head which cooperates with stereophonic elements in the stereophonic radio to produce a stereophonic output when the tape recorder and radio are coupled together.

[0005] However, the different sound channels are unable to be switched rapidly by utilizing the press button. Therefore, this disclosure discloses a multiple channel speaker system which switches different sound channels rapidly and instinct to overcome the prior art defect.

SUMMARY OF THE INVENTION

[0006] In view of the foregoing prior art defect, the objective of this disclosure is to provide a multiple channel speaker system capable of switching different sound channels without any press button. Further, another objective of this disclosure is to provide a multiple channel speaker system capable of switching different sound channels rapidly and instinct

[0007] Accordingly, the multiple channel speaker system provided comprises a first speaker, a second speaker, a sensing switch and an audio decoder, wherein the second speaker is adjacent to the first speaker, the sensing switch is disposed between the first speaker and the second speaker, and the audio decoder is electrically connected to the sensing switch. When the first speaker is separated from the second speaker, the sensing switch will output a signal to the audio decoder so as to switch sound channels correspondingly.

[0008] In another embodiment, the multiple channel speaker system provided further comprises a first speaker, a second speaker, a third speaker, at least two sensing switches and an audio decoder, wherein the second speaker is adjacent to the first speaker, the third speaker is adjacent to the second speaker, the sensing switches are disposed between the first speaker and the second speaker, and between the second speaker and the third speaker respectively, and the audio decoder is electrically connected to the sensing switch. When the first speaker is separated from the second speaker, or when the second speaker is separated from the third speaker, the sensing switch outputs a signal to the audio decoder, so as to switch sound channels correspondingly.

[0009] A detailed description is given in the following embodiments with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] This disclosure can be more fully understood by referring to the following detailed description and examples with references made to the accompanying drawings, wherein:

Fig. 1a and 1b is the schematic diagram of a preferred embodiment of a multiple channel speaker system according to this disclosure.

Fig. 2a and 2b is the schematic diagram of another embodiment of a multiple channel speaker system according to this disclosure.

DETAIL DESCRIPTION OF THE INVENTION

[0011] The following description is of the best-contemplated mode of carrying out this disclosure. This description is made for the purpose of illustrating the general principles of this disclosure and should not be taken in a limiting sense. The scope of this disclosure is best determined by reference to the appended claims.

[0012] Fig.1a is the schematic diagram of a preferred embodiment of a multiple channel speaker system according to this disclosure. As shown in Fig.1a, the multiple channel speaker system 100 is an integrally multiple channel speaker system 100, which essentially comprises a first speaker 102, at least one second speaker 104, a plurality of sensing switches 106 and an audio decoder 108. The first speaker 102 is adjacent to the second speaker 104, and the first speaker 102 is wired connected to the second speaker 104, or the first speaker 102 is wirelessly connected to the second speaker 104. The sensing switch 106 is disposed between the first speaker 102 and the second speaker 104, wherein the sensing switch 106 is a mechanical trigger device or a touched sensing device, and to be emphasized is that this disclosure is not limited to the disclosed embodiments. The audio decoder (Audio Codec IC) 108, electrically connected to the sensing switch 106, is used for judging switching condition of the sound channels by means of receiving an output signal from the sensing switch 106. Generally, the first speaker 102 and the second speaker 104 are connected together to form a single sound channel or dual sound channels speaker. As shown in Fig.1b, when the first speaker 102 is separated from the second speaker 104, the sensing switch 106, disposed between the first speaker 102 and the second speaker 104, outputs a signal to the audio decoder 108. Therefore, the audio decoder 108 switches the multiple channel speaker system 100 from a single sound channel or dual sound channels speaker to a 2.1 sound channels speaker, and switches the two second speakers 104 to left and right sound channels speakers respectively, and further switches the first speaker 102 to a low-sounding speaker.

[0013] Fig.2a is the schematic diagram of another embodiment of a multiple channel speaker system according to this disclosure. As shown in Fig.2A, the multiple channel speaker system 200 essentially comprises at least one first speaker 202, at least one second speaker 204, at least one third speaker 206, a plurality of sensing switches 208 and an audio decoder 210. The first speaker 202 is adjacent to the second speaker 204, and the second speaker 204 is adjacent to the third speaker 206, hence the first speaker 202, the second speaker 204 and the third speaker 206 are wired connected or wirelessly connected to each other. For instance, the wireless transmitted technologies include but not limited to infrared wireless transmission or blue tooth wireless transmission. The sensing switches 208 are disposed between the first speaker 202 and the second speaker 204, and between the second speaker 204 and the third speaker

206 respectively, wherein the sensing switches 208 are mechanical trigger devices or touched sensing devices, and to be emphasized is that this disclosure is not limited to the disclosed embodiments. The audio decoder 210, electrically connected to the sensing switches 208, is used for judging switching condition of the sound channels by means of receiving output signals from the sensing switches 208. Generally, the first speaker 202, the second speaker 204 and the third speaker 206 are connected together. Besides, when the second speaker 204 is separated from the third speaker 206, the sensing switch 208, disposed between the second speaker 204 and the third speaker 206, outputs a signal to the audio decoder 210. Therefore, the audio decoder 210 switches the multiple channel speaker system 200 from a single sound channel or dual sound channels speaker to a 2.1 sound channels speaker, and switches two third speakers 206 to left and right sound channels speakers respectively, and further switches the first speaker 202 and second speaker 204 to low-sounding speakers.

[0014] In addition, as shown in Fig.2B, when the second speaker 204 is separated from the first speaker 202, the sensing switch 208, disposed between the first speaker 202 and the second speaker 204, also outputs a signal to the audio decoder 210. Thus, the multiple channel speaker system 200 switches from a 2.1 to 5.0 sound channels speaker, wherein the first speaker 202 is the main sound channel speaker, the second speakers 204 are the left-front and right-front sound channels speakers, and the third speakers 206 are the left-rear and right-rear sound channels speakers correspondingly. Accordingly, when the above mentioned speakers are separated from each other, the sensing switches 208, disposed among those speakers, drive the audio decoder 210 to switch sound channels correspondingly, so as to use no any press button. In detail, the above mentioned embodiments of this disclosure does not limit to merely switch a single sound channel speaker to a 2.1 or 5.0 sound channels speaker, said single sound channel or dual sound channels speakers can be further switched to 2.0, 5.0 or 7.1 sound channels speakers by adding or removing the speakers correspondingly. On the other hand, the switching sequence of those speakers is to separate the first speaker 202 from the second speaker 204 first, then separate the second speaker 204 from the third speaker 206, such that the purpose of switching a dual channel speaker system to a multiple channel speaker system could be achieved on the same way.

[0015] In sum, one of the objectives of this disclosure can be achieved to switch sound channels directly and instinct when said speakers are separated from each other by means of the sensing switches, which is convenient and efficient because it is not necessary for the user to switch the sound channels by utilizing a manual switch.

[0016] While the invention has been described by way of example and in terms of the preferred embodiments, it is to be understood that the invention is not limited to the disclosed embodiments. To the contrary, it is intend-

ed to cover various modifications and similar arrangements. Therefore, the scope of the appended claims should be accorded the broadest interpretation so as to encompass all such modifications and similar arrangements.

Claims

1. A multiple channel speaker system (100) comprising:

a first speaker (102);
at least one second speaker (104) adjacent to the first speaker (102); and
an audio decoder (108);

characterized by:

a sensing switch (106) disposed between the first speaker (102) and the second speaker (104), and electrically connected to the audio decoder (108); wherein:
the sensing switch (106) is adapted to output a signal to the audio decoder (108) when the first speaker (102) is separated from the second speaker (104); and the audio decoder (108) is adapted to switch sound channels in response to the signal provided by the sensing switch.

2. The multiple channel speaker system as claimed in claim 1, further comprising at least one third speaker (206), wherein the third speaker (206) is adjacent to the second speaker (104).

3. The multiple channel speaker system as claimed in claim 1, wherein the first speaker (102) is wired connected to the second speaker (104).

4. The multiple channel speaker system as claimed in claim 1, wherein the first speaker (102) is wirelessly connected to the second speaker (104).

5. The multiple channel speaker system as claimed in claim 1, wherein the sensing switch (106) is a mechanical trigger device.

6. The multiple channel speaker system as claimed in claim 1, wherein the sensing switch (106) is a touched sensing device.

7. The multiple channel speaker system according to claim 2, further comprising at least a further sensing switch (208) disposed between the second speaker (104) and the third speaker (206), and electrically connected to the audio decoder (108) wherein:

the further sensing switch (208) is adapted to output a signal to the audio decoder (108) when the second speaker (104) is separated from the

third speaker (206);

and the audio decoder (108) is adapted to switch sound channels in response to the signal provided by the further sensing switch.

8. The multiple channel speaker system as claimed in claim 7, wherein the first speaker (102), the second speaker (104) and the third speaker (206) are wired connected or wirelessly connected to each other.

9. The multiple channel speaker system as claimed in claim 7, wherein the sensing switch (208) is a mechanical trigger device.

10. The multiple channel speaker system as claimed in claim 7, wherein the sensing switch (208) is a touched sensing device.

Patentansprüche

1. Ein Mehrkanal-Lautsprechersystem (100) mit:

einem ersten Lautsprecher (102);
mindestens einem zweiten Lautsprecher (104) angrenzend an den ersten Lautsprecher (102);
und

einen Audiodecoder (108);

gekennzeichnet durch:

einen Sensorschalter (106), der zwischen dem ersten Lautsprecher (102) und dem zweiten Lautsprecher (104) angeordnet und elektrisch mit dem Audiodecoder (108) verbunden ist, angeordnet ist, wobei:

der Sensorschalter (106) so eingerichtet ist, ein Signal an den Audio-Decodierer (108) abzugeben, wenn der erste Lautsprecher (102) von dem zweiten Lautsprecher (104) getrennt wird; und der Audiodecoder (108) ist so eingerichtet, dass er Audiokanäle in Reaktion auf das von dem Sensorschalter gelieferte Signal wechselt.

2. Das Mehrkanal-Lautsprechersystem nach Anspruch 1, ferner umfassend mindestens einen dritten Lautsprecher (206), wobei der dritte Lautsprecher (206) angrenzend an den zweiten Lautsprecher (104) liegt.

3. Das Mehrkanal-Lautsprechersystem nach Anspruch 1, wobei der erste Lautsprecher (102) verdrahtet mit dem zweiten Lautsprecher (104) verbunden ist.

4. Das Mehrkanal-Lautsprechersystem nach Anspruch 1, wobei der erste Lautsprecher (102) drahtlos mit dem zweiten Lautsprecher (104) verbunden

ist.

5. Das Mehrkanal-Lautsprechersystem nach Anspruch 1, wobei der Sensorschalter (106) eine mechanische Auslösevorrichtung ist.

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6. Das Mehrkanal-Lautsprechersystem nach Anspruch 1, wobei der Sensorschalter (106) ein berührte Erfassungsvorrichtung ist.

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7. Das Mehrkanal-Lautsprechersystem nach Anspruch 2, ferner umfassend mindestens einen weitere Sensorschalter (208) zwischen dem zweiten Lautsprecher (104) und dem dritten Lautsprecher (206) angeordnet und elektrisch mit dem Audiodecoder (108) verbunden, wobei:

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der weitere Sensorschalter (208) zur Ausgabe eines Signals an den Audio-Decodierer (108) eingerichtet ist, wenn der zweite Lautsprecher (104) von dem dritten Lautsprecher (206) getrennt wird; und der Audiodecoder (108) ist dazu eingerichtet, Audiokanäle in Antwort auf die durch den weiteren Sensorschalter gelieferten Signale zu wechseln.

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8. Das Mehrkanal-Lautsprechersystem nach Anspruch 7, wobei der erste Lautsprecher (102), der zweite Lautsprecher (104) und der dritte Lautsprecher (206) in verdrahteter Weise oder drahtlos miteinander verbunden sind.

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9. Das Mehrkanal-Lautsprechersystem nach Anspruch 7, wobei der Sensorschalter (208) eine mechanische Auslösevorrichtung ist.

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10. Das Mehrkanal-Lautsprechersystem nach Anspruch 7, wobei der Sensorschalter (208) eine berührte Erfassungsvorrichtung ist.

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Revendications

1. Un système de haut-parleurs multicanaux (100) comprenant :

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un premier haut-parleur (102) ;
au moins un deuxième haut-parleur (104) à côté du premier haut-parleur (102) ; et
un décodeur audio (108) ;

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caractérisé par :

un commutateur de détection (106) placé entre le premier haut-parleur (102) et le deuxième haut-parleur (104), et qui est connecté électriquement au décodeur audio (108) ; où :

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le commutateur de détection (106) est adapté pour émettre un signal au décodeur audio (108) lorsque le premier haut-parleur (102) est séparé du deuxième haut-parleur (104) ; et le décodeur audio (108) est adapté pour se commuter aux canaux sonores en réponse au signal fourni par le commutateur de détection.

2. Le système de haut-parleurs multicanaux selon la déclaration 1, comporte en outre au moins un troisième haut-parleur (206), où le troisième haut-parleur (206) est à côté du deuxième haut-parleur (104).

3. Le système de haut-parleurs multicanaux selon la déclaration 1, où le premier haut-parleur (102) est connecté par câble au deuxième haut-parleur (104).

4. Le système de haut-parleurs multicanaux selon la déclaration 1, où le premier haut-parleur (102) est connecté sans fils au deuxième haut-parleur (104).

5. Le système de haut-parleurs multicanaux selon la déclaration 1, où le commutateur de détection (106) est un dispositif mécanique de déclenchement

6. Le système de haut-parleurs multicanaux selon la déclaration 1, où le commutateur de détection (106) est un dispositif de détection tactile.

7. Le système de haut-parleurs multicanaux selon la déclaration 2, comporte au moins encore un autre commutateur de détection (208) placé entre le deuxième haut-parleur (104) et le troisième haut-parleur (206), et est connecté électriquement au décodeur audio (108) où :

Le commutateur de détection additionnel (208) est adapté pour émettre un signal au décodeur audio (108) lorsque le deuxième haut-parleur (102) est séparé du troisième haut-parleur (104) ; et le décodeur audio (108) est adapté pour se commuter aux canaux sonores en réponse au signal fourni par le commutateur de détection additionnel.

8. Le système de haut-parleurs multicanaux selon la déclaration 7, où le premier haut-parleur (102), le deuxième haut-parleur (104) et le troisième haut-parleur (206) sont connectés par câble ou sans fil entre eux.

9. Le système de haut-parleurs multicanaux selon la déclaration 7, où le commutateur de détection (208) est un dispositif mécanique de déclenchement.

10. Le système de haut-parleurs multicanaux selon la

déclaration 7, où le commutateur de détection (208)
est un dispositif de détection tactile.

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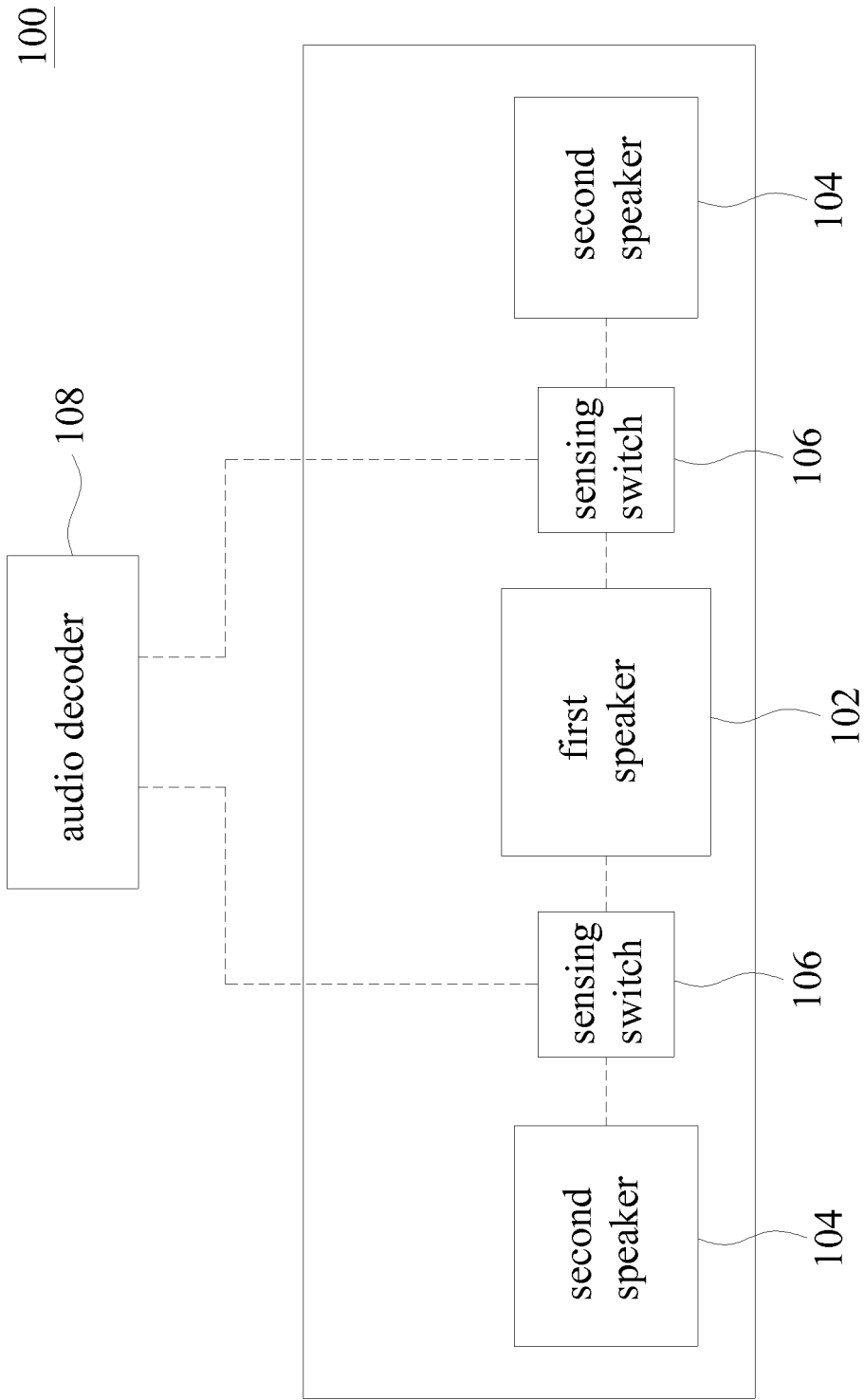


FIG. 1a

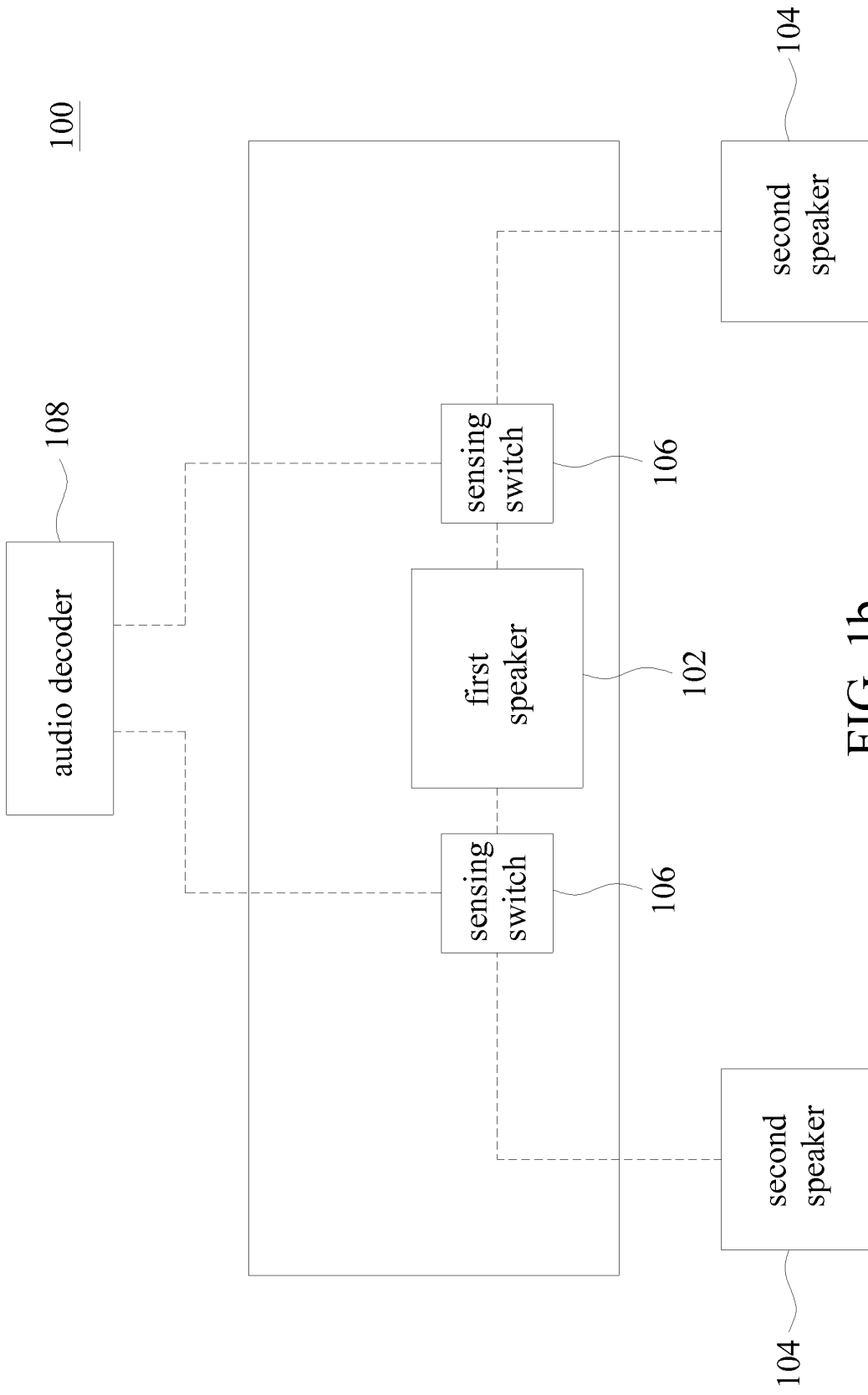


FIG. 1b

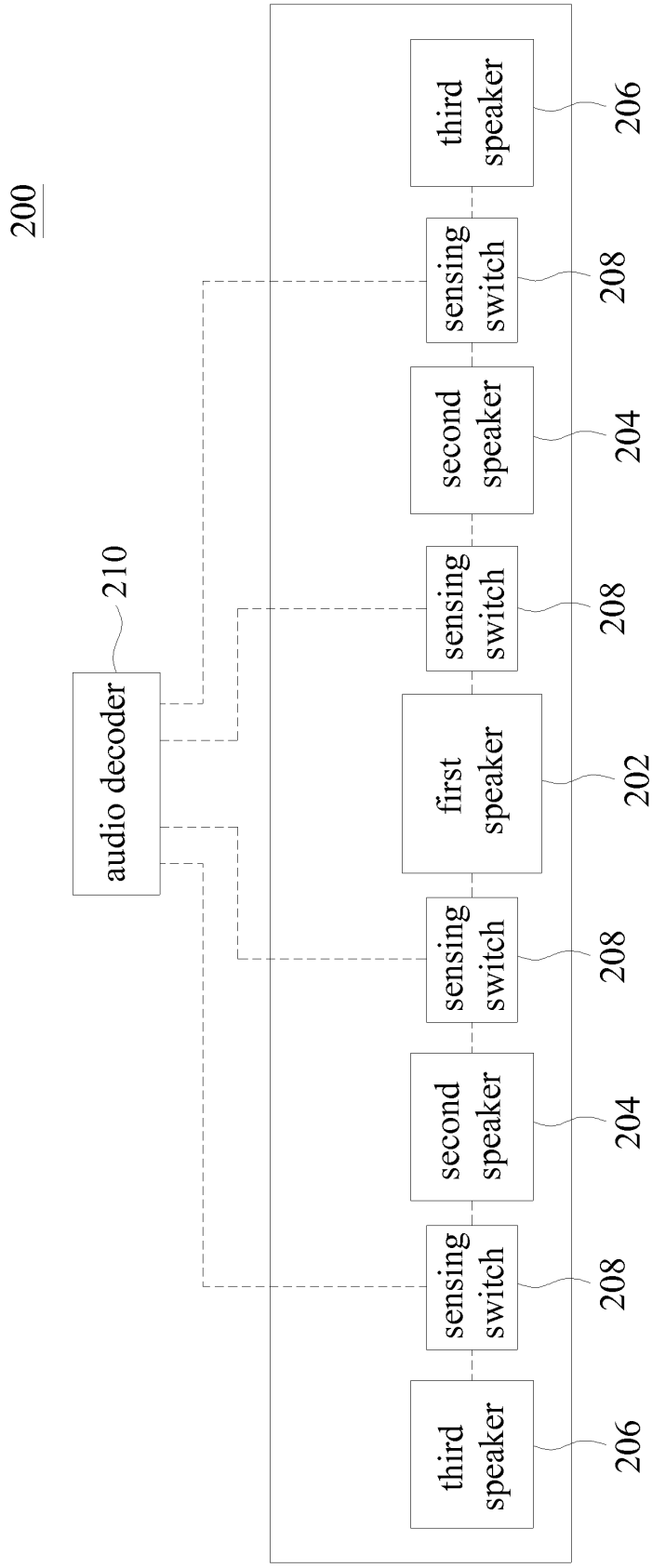


FIG. 2a

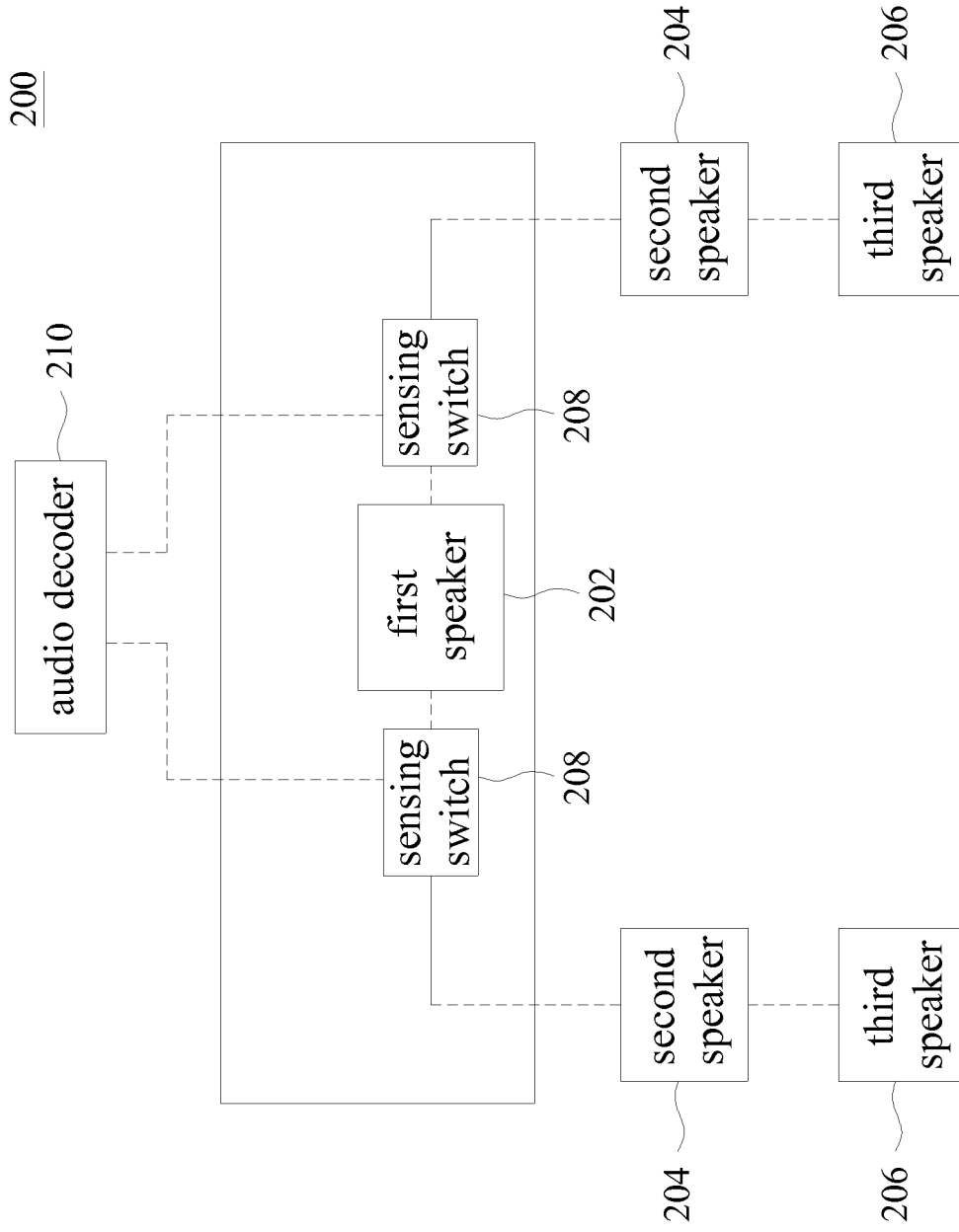


FIG. 2b

REFERENCES CITED IN THE DESCRIPTION

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