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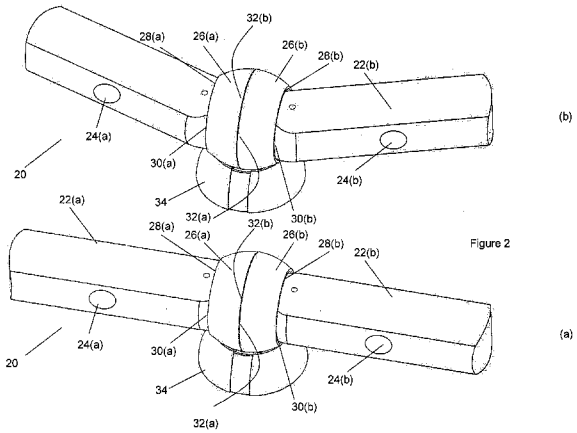


Figure 2

(57) Abstract: There is provided an apparatus for sound reproduction which is able to vary transmission of sound. The apparatus includes a plurality of speaker casings, with each of the plurality of speaker casings including at least one speaker driver; and a plurality of bases for each of the plurality of speaker casings, with a top portion of each base being for securable placement of a foot of one of the plurality of speaker casings, and a bottom face of each base being for securable attachment to the bottom face of another of the plurality of bases. In a first configuration of the apparatus, the plurality of speaker casings is securely placed on the top portion of each of the plurality of bases, and independently rests on the bottom face of each base. In a second configuration of the apparatus, the plurality of speaker casings is securely placed on the top portion of each of the plurality of bases, and is attached to one another at the bottom face of each base. A corresponding method of using a sound reproduction apparatus for varying sound transmission is also provided.

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A SOUND REPRODUCTION APPARATUS FOR VARYING SOUND TRANSMISSION AND A CORRESPONDING METHOD THEREOF

FIELD OF INVENTION

The present invention relates to an apparatus for reproduction of sound, where transmission of sound from the apparatus is able to be varied, and a corresponding method of varying transmission of sound from the sound reproduction apparatus.

BACKGROUND

In an age when multimedia devices are commonplace, it is inevitable that speaker systems are ubiquitous as broadcasting sound output to a particular region of space would be a likely endeavour. There are many types of speaker systems which are commonly available, such as, for example, multiple satellite speaker systems with a subwoofer, multiple satellite speaker systems without a subwoofer, multiple standalone speakers in various shapes/sizes, and so forth.

Currently, speakers may be physically positioned to affect how sound is transmitted from the speakers to a user. Similarly, an orientation of the speakers may also be varied to affect how sound is transmitted from the speakers to the user. However, the speakers are all in the form of separate units and may be difficult to arrange in a manner desired by the user due to location constraints where the speakers are deployed. Furthermore, the speakers in the form of separate units do not couple with each other, and forming a single speaker unit from the separate units may be done using securing mechanisms, for example, adhesives, cable ties, screws, rivets and so forth. Unfortunately, use of the aforementioned securing mechanisms typically either damage the separate units or are detrimental to the appearance of the separate units. This is undesirable.

In addition, an increasing popularity of flat screen display devices has led to the increasing popularity of the sound bar type of speaker system which visually matches the appearance of flat screen display devices. It should be noted that the sound bar type of speaker system does not allow variation in relation to how sound is transmitted. In this regard, the sound is transmitted from the sound bar type of speaker system in a manner dependent on how a sound driver(s) is positioned within a casing of the sound bar type speaker system. Thus, variation of how sound is transmitted is not possible since the sound driver(s) is not able to be re-positioned within the casing. This lack of adjustment is also undesirable.

SUMMARY

In a first aspect, there is provided an apparatus for sound reproduction which is able to vary transmission of sound. The apparatus includes a plurality of speaker casings, with each of the plurality of speaker casings including at least one speaker driver; and a plurality of bases for each of the plurality of speaker casings, with a top portion of each base being for securable placement of a foot of one of the plurality of speaker casings, and a bottom face of each base being for securable attachment to the bottom face of another of the plurality of bases. In a first configuration of the apparatus, the plurality of speaker casings is securely placed on the top portion of each of the plurality of bases, and independently rests on the bottom face of each base. In a second configuration of the apparatus, the plurality of speaker casings is securely placed on the top portion of each of the plurality of bases, and is attached to one another at the bottom face of each base.

It is preferable that the top portion of each base and the foot of one of the plurality of speaker casings are able to couple with one another. It is advantageous that coupling the foot of one of the plurality of speaker casings to the top portion of each base enables motion of the speaker casing about the base, the motion being, for example, all round swivel, side-to-side, front-

to-rear and so forth. It is advantageous that motion of the speaker casing about the base enables variation of sound transmission.

The bottom face of each base may be securably attachable to one another using either adhesives or a securing mechanism.

Each of the plurality of speaker casings and each of the plurality of bases may have respective regions of either identical or different cross-sectional shapes such as, for example, elliptical, circular, polygonal, any combination of the aforementioned and so forth. It is preferable that when each of the plurality of speaker casings and each of the plurality of bases have respective regions of identical cross-sectional areas and a circular cross-sectional shape, a stand is used in the second configuration to prevent rolling of the apparatus for sound reproduction. The stand may advantageously allow positioning of the apparatus for sound reproduction at a variety of either heights or vertical facings.

When each of the plurality of speaker casings and each of the plurality of bases have respective regions of identical cross-sectional areas and a polygonal cross-sectional shape, flat surfaces of each of the plurality of speaker casings and each of the plurality of bases may allow positioning of the apparatus for sound reproduction at a variety of vertical facings.

In a second aspect, there is provided a method for varying transmission of sound from a sound reproduction apparatus. The method includes joining two separate independent speakers at a base region of each of the speakers; and adjusting a facing of each of the two separate independent speakers. Advantageously, adjusting the facing enables variation of sound transmission from the sound reproduction apparatus. The facing of each of the two separate independent speakers may adjusted either vertically or horizontally.

It is preferable that the base of each of the speakers enables motion of a speaker casing of the speaker about the base, the motion being, for example, all round swivel, side-to-side, front-to-rear and so forth.

DESCRIPTION OF DRAWINGS

In order that the present invention may be fully understood and readily put into practical effect, there shall now be described by way of non-limitative example only preferred embodiments of the present invention, the description being with reference to the accompanying illustrative drawings.

Figure 1 shows a side view of a first embodiment of the apparatus in a first configuration.

Figure 2 shows a perspective view of the first embodiment of the apparatus in a second configuration.

Figure 3 shows cross-sectional shapes of regions of either a speaker casing or a base.

Figure 4 shows a perspective view of a second embodiment of the apparatus in the second configuration.

Figure 5 shows a perspective view of a third embodiment of the apparatus in the second configuration.

Figure 6 shows a perspective view of a fourth embodiment of the apparatus in the second configuration.

Figure 7 shows a process flow of a preferred embodiment of a method.

DESCRIPTION OF PREFERRED EMBODIMENTS

Referring to Figures 1 and 2, there is shown a first embodiment of an apparatus for sound reproduction 20. It is advantageous that the apparatus for sound reproduction 20 is able to vary transmission of sound. Figure 1 shows the first embodiment of the apparatus for sound reproduction 20 when in a first configuration, while Figure 2 shows the first embodiment of the apparatus for sound reproduction 20 when in a second configuration. The differences in

the first configuration and the second configuration of Figures 1 and 2 respectively will be evident from the description provided in the subsequent paragraphs.

The apparatus for sound reproduction 20 includes a plurality of speaker casings 22(a), 22(b), with each of the plurality of speaker casings 22(a), 22(b) including at least one speaker driver 24(a), 24(b) respectively. It should be appreciated that the at least one speaker driver 24(a), 24(b) in each of the plurality of speaker casings 22(a), 22(b) is able to function in a manner to generate sound output when the at least one speaker driver 24(a), 24(b) receives the requisite electrical signals. It may be preferable that the speaker casings 22(a), 22(b) are of identical shape and form, such that the apparatus for sound reproduction 20 has a symmetrical appearance. It can be seen from Figures 1 and 2 that the first embodiment of the apparatus for sound reproduction 20 includes two speaker casings 22(a), 22(b).

The apparatus for sound reproduction 20 may also include a plurality of bases 26(a), 26(b) for each of the plurality of speaker casings 22(a), 22(b). A top portion 28(a), 28(b) of each base 26(a), 26(b) respectively may be for securable placement of a foot 30(a), 30(b) of speaker casings 22(a), 22(b) respectively. Figure 1 shows the feet 30(a), 30(b) of the speaker casings 22(a), 22(b) being securely placed at the top portions 28(a), 28(b) of the bases 26(a), 26(b). The top portion 28(a), 28(b) of each base 26(a), 26(b) and the feet 30(a), 30(b) of the speaker casings 22(a), 22(b) may be able to couple with one another. The coupling of the feet 30(a), 30(b) of the speaker casings 22(a), 22(b) to the top portion 28(a), 28(b) of each base 26(a), 26(b) enables motion of the speaker casing 22 about the base, with the motion being, for example, all round swivel, side-to-side, front-to-rear and the like.

In the first configuration from a side view of the first embodiment of the apparatus for sound reproduction 20 as shown in Figure 1, the feet 30(a), 30(b) of each of the speaker casing 22(a), 22(b) is coupled to the top portion 28(a), 28(b) of each base 26(a), 26(b). Figure 1(A) shows the speaker casing

22(a) being tilted in a front-to-rear manner. Thus, it can be appreciated that moving the speaker casing 22(a) from front-to-rear enables a change in the transmission of sound from the speaker casing 22(a) as the speaker casing 22(a) is tilted in a front-to-rear manner. It should be appreciated that while front-to-rear motion is shown in Figure 1(A), other forms of motion of the speaker casing 22(a) such as, for example, all round swivel, side-to-side motion, and so forth may also enable the change in the transmission of sound from the speaker casing 22(a). It should also be noted that the speaker casing 22(b) as shown in Figure 1(B) may also undergo motion, although this is not shown in Figure 1(B).

A bottom face 32(a), 32(b) of each base 26(a), 26(b) may be for securable attachment to the bottom face 32(a), 32(b) of another base. The bottom face 32(a), 32(b) of each base 26(a), 26(b) is securably attachable to one another using either adhesives or a securing mechanism. The securing mechanism may include, for example, coupling pins, snap-fit assemblies, and so forth. It is preferable that the securing mechanism does not affect a stability of each base 26(a), 26(b), especially when the speaker casing 22(a), 22(b) is coupled to the top portion 28(a), 28(b) of each base 26(a), 26(b). When the bottom face 32(a), 32(b) of each base 26(a), 26(b) is securably attachable to one another, the apparatus for sound reproduction 20 may be in a second configuration as shown in Figure 2. It should be noted that the second configuration of the apparatus for sound reproduction 20 is similar to a "sound bar" type of speaker as the apparatus for sound reproduction 20 is in a substantially horizontal orientation.

Referring to Figure 2, when the bottom face 32(a), 32(b) of each base 26(a), 26(b) is securably attachable to one another, the speaker casing 22(a), 22(b) may still undergo motion about the respective base 26(a), 26(b), with the motion being, for example, all round swivel, side-to-side, front-to-rear and the like. An example of the aforementioned motion is shown in Figure 2(b). It should be noted that the motion of the speaker casings 22(a), 22(b) may also enable change in the transmission of sound from the apparatus for sound

reproduction 20. When the apparatus for sound reproduction 20 is arranged in a first manner as shown in Figure 2(a), it is evident that the transmission of sound will differ when the apparatus for sound reproduction 20 is arranged in a second manner as shown in Figure 2(b) as the speaker drivers 24(a), 24(b) point in different directions.

The speaker casings 22(a), 22(b) and the bases 26(a), 26(b) may have either identical or different cross-sectional areas. Figure 2 shows the bases 26(a), 26(b) with regions of larger cross-sectional areas compared to the cross-sectional area of the speaker casings 22(a), 22(b). While a cross-sectional shape of the speaker casings 22(a), 22(b) is shown to be substantially uniform in Figures 1 and 2, this is not a mandatory requirement for the speaker casings 22(a), 22(b). The speaker casings 22(a), 22(b) may be of a form with both non-uniform cross-sectional shape and non-uniform cross-sectional area. This is because of aesthetic considerations which may affect an appearance of the speaker casings 22(a), 22(b), and consequently, an appearance of the apparatus for sound reproduction 20. With reference to Figure 3, it should be appreciated that regions of both the speaker casings 22(a), 22(b) and the bases 26(a), 26(b) may have respective regions of cross-sectional shapes selected from, for example, elliptical (Figure 3(b)), circular (Figure 3(c)), polygonal (Figures 3(a), 3(d), 3(e)) and any combination of the aforementioned (Figure 3(f)).

Referring to Figure 2, it should be noted that when the bases 26(a), 26(b) have regions of larger cross-sectional areas compared to the speaker casings 22(a), 22(b), a stand 34 may be used to support the apparatus for sound reproduction 20 when the speaker casing 22(a), 22(b) coupled to the top portion 28(a), 28(b) of each base 26(a), 26(b) is securably attached to one another at the bottom face 32(a), 32(b) of each base 26(a), 26(b). The stand 34 as shown in Figure 2 allows placement of the secured bases 26(a), 26(b) when the apparatus for sound reproduction 20 is supported by the stand 34. It should be noted that more than one stand 34 may be used at any particular instance, and the stand 34 may not only be for placement of the secured

bases 26(a), 26(b) when the apparatus for sound reproduction 20 is supported by the stand 34. The stand 34 may allow positioning of the apparatus for sound reproduction 20 at a variety of either heights or vertical facings. This is because the stand 34 may have a height adjustability capability and at least one feature which enables the vertical facing of the apparatus for sound reproduction 20 to be varied. The at least one feature may be at a surface of contact between the apparatus for sound reproduction 20 and stand 34, where the surface of contact may either have a high coefficient of friction or stepped surfacing (assuming the apparatus for sound reproduction 20 has a corresponding stepped surface) to maintain different vertical facings of the apparatus for sound reproduction 20.

Referring to Figure 4, there is shown a second embodiment of an apparatus for sound reproduction 20 in the second configuration. In the second embodiment as shown in Figure 4, it should be noted that the speaker casings 22(a), 22(b) and their respective bases 26(a), 26(b) have identical cross-sectional areas and a circular cross-sectional shape. In such an instance, the apparatus for sound reproduction 20 takes the form of a substantially cylindrical object. It should be appreciated that the speaker casing 22(a), 22(b) may still undergo motion about the respective base 26(a), 26(b), with the motion being, for example, all round swivel, side-to-side, front-to-rear and the like. It should be noted that the motion of the speaker casings 22(a), 22(b) may also enable change in the transmission of sound from the apparatus for sound reproduction 20.

However, when the apparatus for sound reproduction 20 takes the form of a substantially cylindrical object, the stand 34 may be used in the second configuration to prevent rolling of the apparatus for sound reproduction 20. The apparatus for sound reproduction 20 may be placed on the stand 34 during use. It is preferable that the stand 34 matches the apparatus for sound reproduction 20 in relation to appearance.

Referring to Figure 5, there is shown a third embodiment of an apparatus for sound reproduction 20 in the second configuration. In the third embodiment as shown in Figure 5, it should be noted that the speaker casings 22(a), 22(b) and their respective bases 26(a), 26(b) have identical cross-sectional areas and an identical polygonal cross-sectional shape. The polygonal cross-sectional shape as shown in Figure 5 is an octagon. It should be noted that the speaker casings 22(a), 22(b) may have other polygonal cross-sectional shapes other than octagonal. In such an instance, the apparatus for sound reproduction 20 may have flat surfaces (of each of the speaker casings 22(a), 22(b) and each of the bases 26(a), 26(b)) which allow positioning of the apparatus for sound reproduction 20 at a variety of vertical facings. It should be appreciated that the speaker casing 22(a), 22(b) may still undergo motion about the respective base 26(a), 26(b), with the motion being, for example, all round swivel, side-to-side, front-to-rear and the like. It should be noted that the motion of the speaker casings 22(a), 22(b) may also enable change in the transmission of sound from the apparatus for sound reproduction 20.

When the apparatus for sound reproduction 20 has a substantially polygonal cross-sectional shape, usage of a stand may be unnecessary as the flat surfaces (of each of the speaker casings 22(a), 22(b) and each of the bases 26(a), 26(b)) ensure that the apparatus for sound reproduction 20 has a resting surface that allows stable placement of the apparatus for sound reproduction 20 on any flat surface.

Referring to Figure 6, there is shown a fourth embodiment of an apparatus for sound reproduction 20 in the second configuration. In the fourth embodiment as shown in Figure 6, it should be noted that the speaker casings 22(a), 22(b) and their respective bases 26(a), 26(b) have different cross-sectional areas and different cross-sectional shapes. In the fourth embodiment, the cross-sectional area of the bases 26(a), 26(b) is greater than the cross-sectional area of the speaker casings 22(a), 22(b). The cross-sectional shape of the bases 26(a), 26(b) is shown to be polygonal (octagonal), while the cross-sectional shape of the speaker casings 22(a), 22(b) is shown to be circular. In

such an instance, the apparatus for sound reproduction 20 may have flat surfaces (of each of the bases 26(a), 26(b)) which allow positioning of the apparatus for sound reproduction 20 at a variety of vertical facings. It should be appreciated that the speaker casing 22(a), 22(b) may still undergo motion about the respective base 26(a), 26(b), with the motion being, for example, all round swivel, side-to-side, front-to-rear and the like. It should be noted that the motion of the speaker casings 22(a), 22(b) may also enable change in the transmission of sound from the apparatus for sound reproduction 20.

Usage of a stand for the fourth embodiment of the apparatus for sound reproduction 20 may be unnecessary as the flat surfaces (of each of the bases 26(a), 26(b)) ensure that the apparatus for sound reproduction 20 has a resting surface that allows stable placement of the apparatus for sound reproduction 20 on any flat surface.

Referring to Figure 7, there is shown another aspect of the present invention. There is provided a method 50 for varying transmission of sound from a sound reproduction apparatus. It should be noted that the sound reproduction apparatus may be either similar or identical to the sound reproduction apparatus 20 mentioned in the preceding paragraphs.

The method 50 includes joining two separate independent speakers at a base region of each of the speakers (52). The two separate independent speakers may be standalone speakers which may be used either in an upright or horizontal manner. The two separate speakers may be joined at the base region using either adhesives or a securing mechanism. The securing mechanism may include, for example, coupling pins, snap-fit assemblies, and so forth. It is preferable that the securing mechanism does not affect a stability of the speakers when the speakers are used in a standalone manner.

The method 50 also includes adjusting a facing of each of the two separate independent speakers (54). It should be appreciated that adjusting the facing of each of the two separate speakers may enable variation of sound

transmission from the sound reproduction apparatus. Each of the two separate independent speakers may be adjusted with motion with respect to their respective base regions, such as, for example, all round swivel, side-to-side, front-to-rear and the like. The aforementioned motion may be enabled by the base of each of the speakers.

In the method 50, it is determined whether horizontal adjustment of the separate independent speakers causes transmission of a desired sound output (56). If the desired sound output is transmitted, no further adjustment of the separate independent speakers is required (58). It should be appreciated that the desired sound output may vary from person to person since it may be a subjective parameter.

If the desired sound output is not transmitted, it is subsequently determined whether vertical adjustment of the separate independent speakers causes transmission of the desired sound output (60). If the desired sound output is transmitted, no further adjustment of the separate independent speakers is required (58). It should be appreciated that the horizontal (56) and vertical (60) adjustment of the separate independent speakers may be performed in an opposite order, that is, performing vertical (60) adjustment of the separate independent speakers before performing horizontal (56) adjustment of the separate independent speakers.

Whilst there has been described in the foregoing description preferred embodiments of the present invention, it will be understood by those skilled in the technology concerned that many variations or modifications in details of design or construction may be made without departing from the present invention.

CLAIMS

1. An apparatus for sound reproduction which is able to vary transmission of sound, the apparatus including:

a plurality of speaker casings, with each of the plurality of speaker casings including at least one speaker driver; and

a plurality of bases for each of the plurality of speaker casings, with a top portion of each base being for securable placement of a foot of one of the plurality of speaker casings, and a bottom face of each base being for securable attachment to the bottom face of another of the plurality of bases;

wherein in a first configuration, the plurality of speaker casings securely placed on the top portion of each of the plurality of bases, independently rests on the bottom face of each base, while in a second configuration, the plurality of speaker casings securely placed on the top portion of each of the plurality of bases, is attached to one another at the bottom face of each base.

2. The apparatus of claim 1, wherein the top portion of each base and the foot of one of the plurality of speaker casings are able to couple with one another.

3. The apparatus of claim 2, wherein coupling the foot of one of the plurality of speaker casings to the top portion of each base enables motion of the speaker casing about the base, the motion being selected from a group comprising: all round swivel, side-to-side and front-to-rear.

4. The apparatus of claim 1, wherein the bottom face of each base is securably attachable to one another using either adhesives or a securing mechanism.

5. The apparatus of claim 1, wherein each of the plurality of speaker casings and each of the plurality of bases have respective regions of either identical or different cross-sectional shapes selected from a group comprising: elliptical, circular, polygonal and any combination of the aforementioned.

6. The apparatus of claim 5, wherein when each of the plurality of speaker casings and each of the plurality of bases have respective regions of identical cross-sectional areas and a circular cross-sectional shape, a stand is used in the second configuration to prevent rolling of the apparatus for sound reproduction.

7. The apparatus of claim 6, wherein the stand allows positioning of the apparatus for sound reproduction at a variety of either heights or vertical facings.

8. The apparatus of claim 5, wherein when each of the plurality of speaker casings and each of the plurality of bases have respective regions of identical cross-sectional areas and a polygonal cross-sectional shape, flat surfaces of each of the plurality of speaker casings and each of the plurality of bases allow positioning of the apparatus for sound reproduction at a variety of vertical facings.

9. The apparatus of claim 3, wherein motion of the speaker casing about the base enables variation of sound transmission.

10. A method for varying transmission of sound from a sound reproduction apparatus, the method including:

joining two separate independent speakers at a base region of each of the speakers; and

adjusting a facing of each of the two separate independent speakers,

wherein adjusting the facing enables variation of sound transmission from the sound reproduction apparatus.

11. The method of claim 10, wherein the base of each of the speakers enables motion of a speaker casing of the speaker about the base, the motion being selected from a group comprising: all round swivel, side-to-side and front-to-rear.

12. The method of claim 10, wherein the facing of each of the two separate independent speakers is adjusted by at least one of either vertically or horizontally.

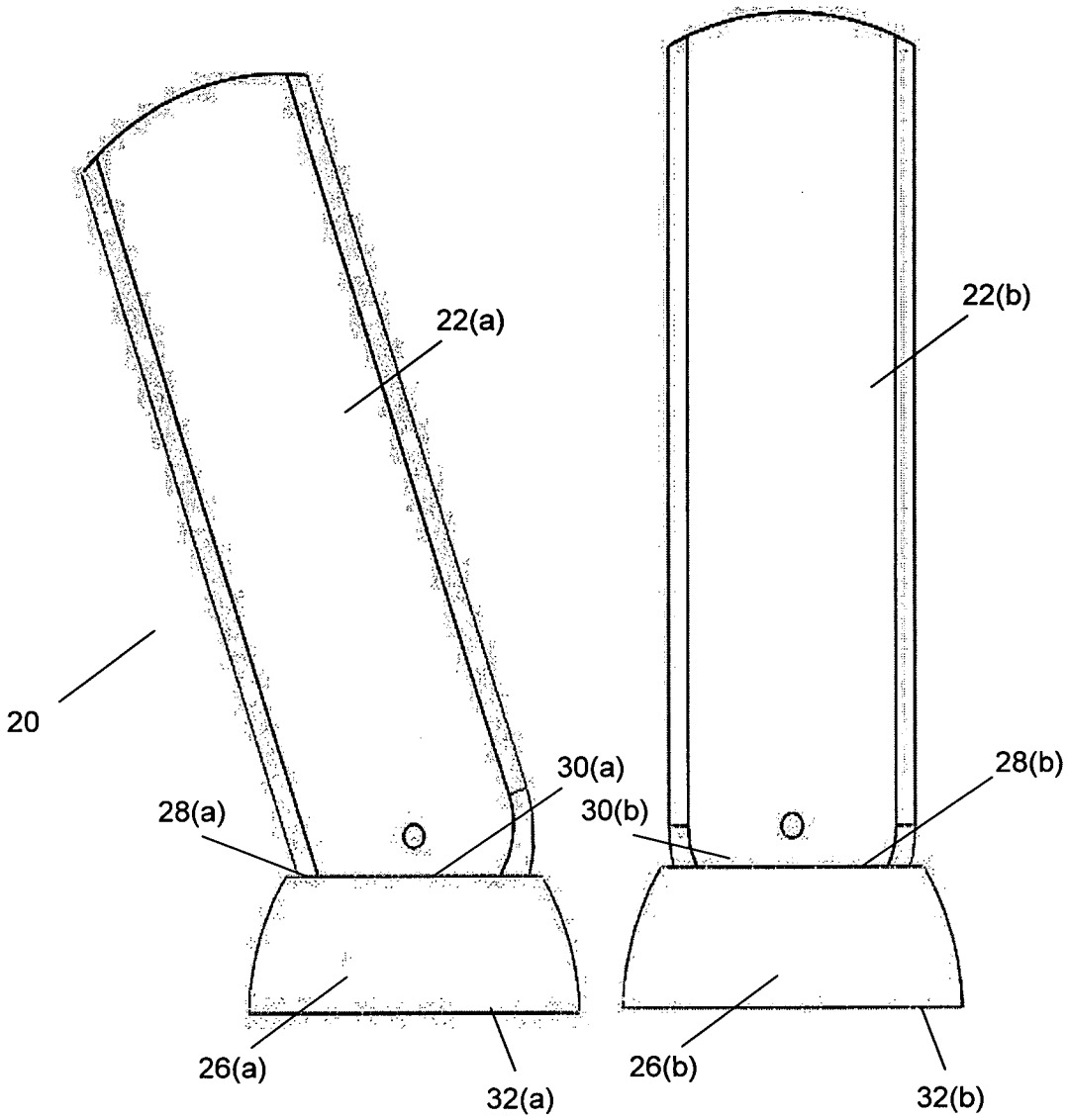


Figure 1

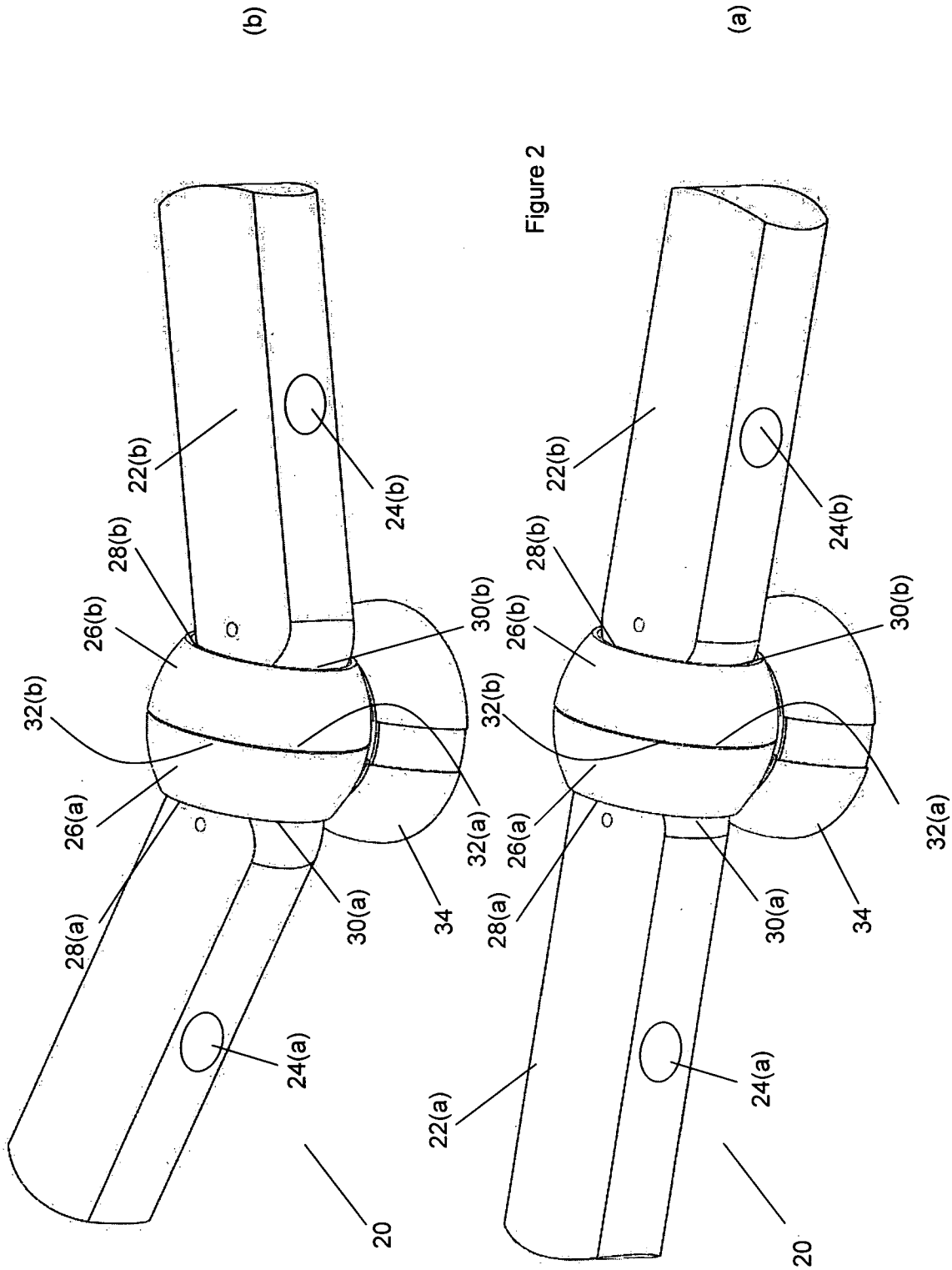


Figure 2

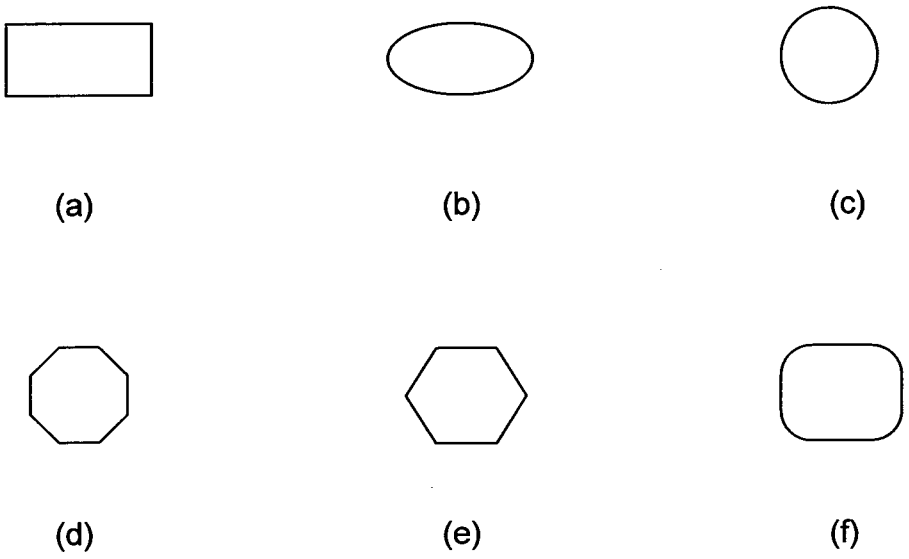


Figure 3

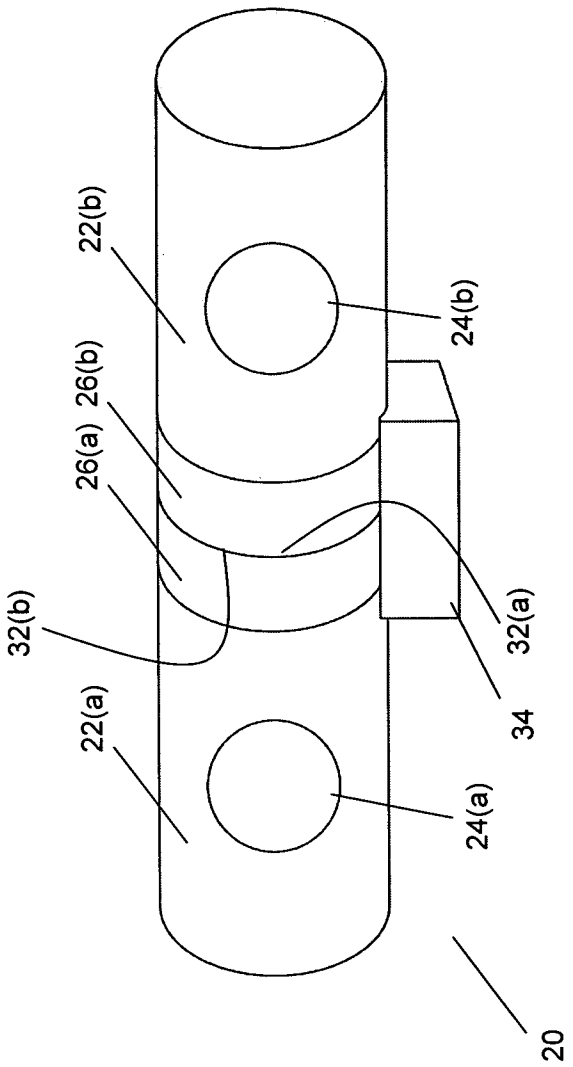


Figure 4

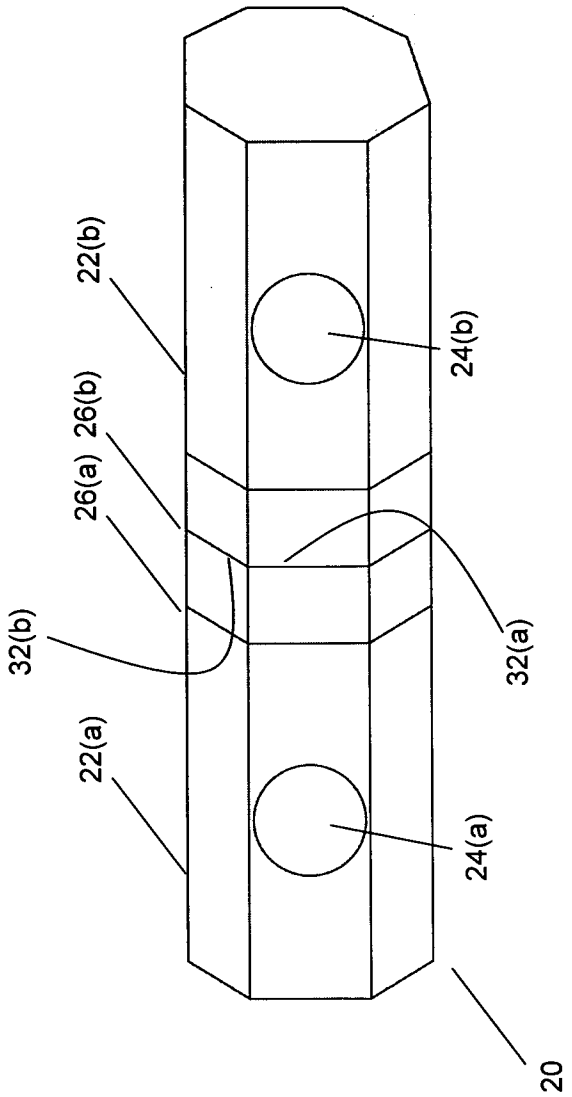


Figure 5

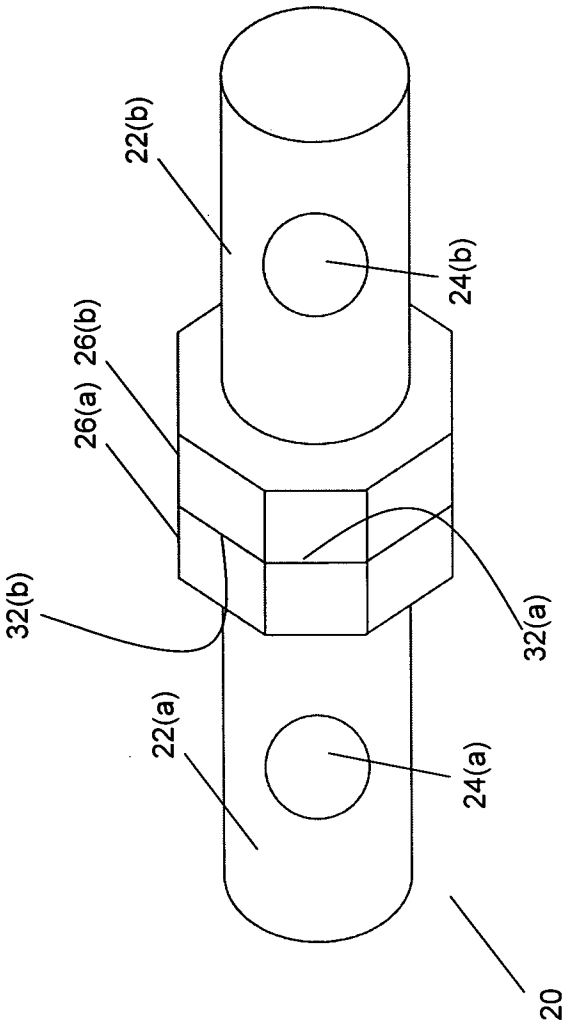


Figure 6

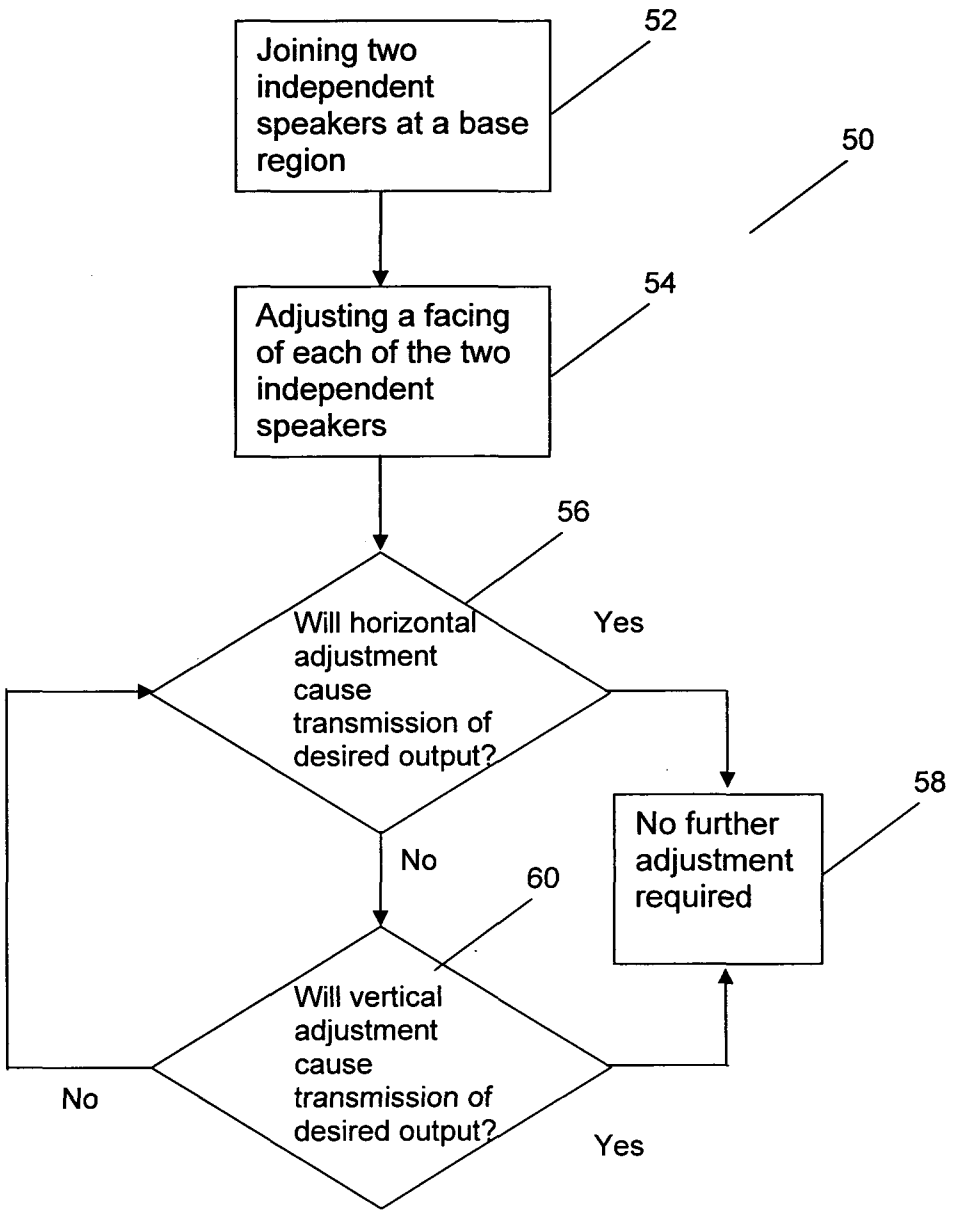

Joining two independent speakers at a base region
52
50
Adjusting a facing of each of the two independent speakers
54
56
Will horizontal adjustment cause transmission of desired output?
Yes
No
58
No further adjustment required
60
Will vertical adjustment cause transmission of desired output?
No
Yes

Figure 7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SG2010/000134

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl.

H04R 1/02 (2006.01) ***H04R 9/06*** (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPOQUE (WPI & EPODOC), Google patents & Google: speaker, casing, cover, enclosure, housing , base, stand, mount, attach, joint, cabinet, connect, couple, swivel, rotate and like terms..

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6891957 B2 (MANRIQUE et al.) 10 May 2005 (Figs 1, 5 & 6; Claim 3; Fig 6; Col 3, Lines 41-54; Col 1, Lines 58-61; Col 4, Lines 15-18)	1-12
L, Y	Bamboo Stereo by Soohyuk Im [retrieved on 18 May 2010] Retrieved from internet < URL: http://web.archive.org/web/20080217232554/http://www.topblogposts.com/2008/01/bamboo-stereo-by-soohyuk-im/> published on 17 February 2008 as per Wayback Engine (Whole Document - specifically the figs)	1-12
A	US 2004/0202346 A1 (PARK et al.) 14 October 2004 (Whole Document - specifically the figs 1, 4 & 5a)	

☐ Further documents are listed in the continuation of Box C ☒ See patent family annex

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
12 May 2010	24 MAY 2010
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. +61 2 6283 7999	Authorized officer **DEVANAND NAGARAJAN** AUSTRALIAN PATENT OFFICE (ISO 9001 Quality Certified Service) Telephone No : +61 2 6283 2698

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/SG2010/000134

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member					
US	6891857	AU	29243/01	AU	76222/00	AU	77343/00
		AU	77344/00	AU	77345/00	AU	77366/00
		AU	77368/00	EP	1216542	EP	1216544
		EP	1216545	EP	1216546	EP	1222777
		EP	1232607	EP	1243099	US	6600726
		US	6894988	US	6928266	US	6990082
		US	2003214961	US	7239615	US	2005078616
		US	7420936	WO	0124454	WO	0124455
		WO	0124456	WO	0124457	WO	0124458
		WO	0135540	WO	0135578		
US	2004202346	CN	1536928	KR	20040087605		

Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.

END OF ANNEX