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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIVISION DE NUEVAS CREACIONES
E. _____ S. _____ D. _____

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



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Ref.: Patente de Invención

Expediente No. **06 – 059.696**

Solicitante: SHIN, JOUNG-YOUL

Asunto: Solicitud de Patente para **"ALTAVOZ PLANO QUE TIENE DISPOSITIVO DE GUIA DE PLACA DE BOBINA"**

Obrando en mi condición de apoderada del solicitante de la Patente de la referencia, por medio del presente escrito solicito a ese Despacho proceder a practicar el examen de patentabilidad de la invención de conformidad con lo dispuesto en el Artículo 44 de la Decisión 486 de Comisión de la Comunidad Andina.

Para tal fin adjunto a la presente el recibo correspondiente al pago de la tasa que causa la presente petición, por la suma de \$420.000.00.

Atentamente,


LUZ HELENA VILLAMIL JIMÉNEZ

C.C. No. 41.750.053 de Bogotá

T.P. 29.882 del Consejo Superior de la Judicatura

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INDUSTRIA Y COMERCIO
No. 06-050000-0000-0000

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 800176089-2

RECIBO OFICIAL DE CAJA : 08 - 32,500
JHA : ABRIL 22 DE 2008

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
LUZ HELENA VILLAMIL JIMEN	CONSIGNACION	BANCO DE BOGOTA	062754387	1483104	21/04/2008	420,000.00

***** CONCEPTO *****

NT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-01	SOLICITUDES	85 EXAMEN DE PATENTABILIDAD DE INVEN
			TOTAL : \$ 420,000.00

SON: CUATROCIENTOS VEINTE MIL PESOS

RESPONSABLE : 

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

DIVISIÓN DE NUEVAS CREACIONES

RADICACIÓN EXPEDIENTE No. 06-59696

EL EXTRACTO DE LA PRESENTE SOLICITUD DE **PATENTE DE INVENCION**

FUE PUBLICADO EN LA GACETA DE PROPIEDAD INDUSTRIAL No **581** DE

FECHA **31 DE OCTUBRE DE 2007** EL TÉRMINO HÁBIL SEÑALADO POR LA

LEY EXPIRA EL **31 DE ENERO DE 2008**

NOTA: Dentro del plazo de los seis (6) meses siguientes a partir de la fecha de publicación en la gaceta de Propiedad Industrial, deberá solicitar y cancelar el examen de patentabilidad so pena de que la solicitud caiga en abandono, de acuerdo con lo establecido en el Artículo 44 de la Decisión 486/2000.

SE PRESENTARON OPOSICIONES POR PARTE DE TERCEROS.

SI _____

NO X



US006526151B1

(12) **United States Patent**
Peng

(10) **Patent No.:** **US 6,526,151 B1**
(45) **Date of Patent:** **Feb. 25, 2003**

(54) **HIGH STABILITY LOUDSPEAKER**

(75) **Inventor:** Jack Peng, Taipei (TW)

(73) **Assignee:** Melloon Industrial Co., Ltd., Taoyuan (TW)

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 216 days.

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(22) **Filed:** Jun. 29, 2000

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(52) **U.S. Cl.** 381/403; 381/397; 381/400;
381/404; 381/420; 181/171; 181/172

(58) **Field of Search** 381/397, 398,
381/400, 407, 404, 412, 420, FOR 154,
FOR 159, 403, 405; 181/171, 172, 199

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Primary Examiner—Curtis Kuntz

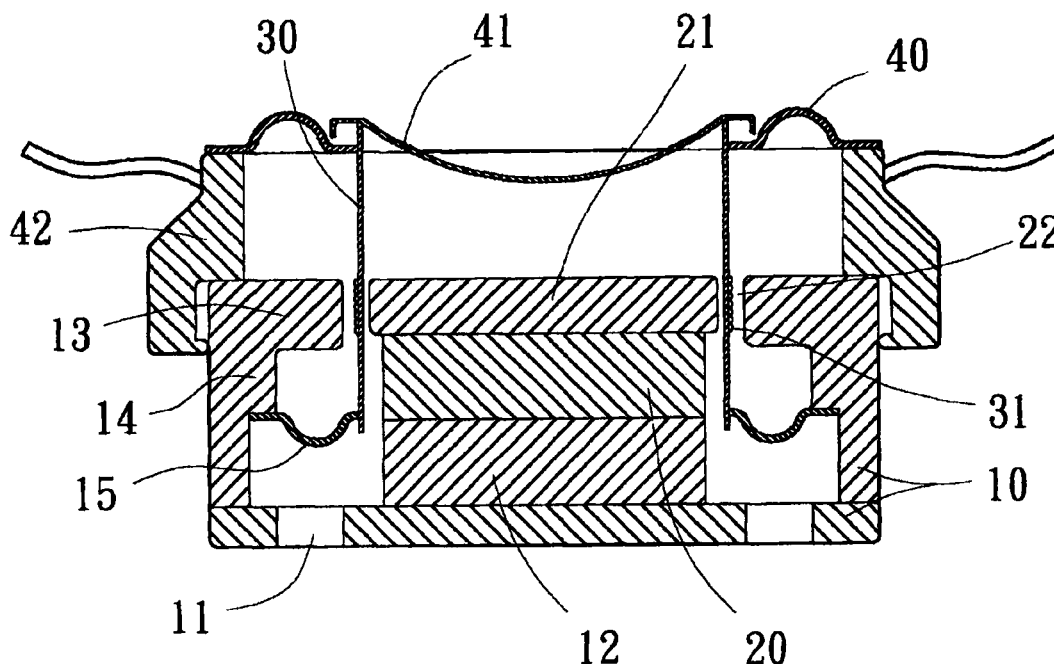
Assistant Examiner—Suhan Ni

(74) *Attorney, Agent, or Firm*—Bacon & Thomas

(57) **ABSTRACT**

A high stability loudspeaker has a yoke with a plurality of vents installed therein. The yoke is combined to a bottom of a frame of the loudspeaker. A magnet is placed in the yoke. A washer is arranged above the magnet. A periphery of the magnet is surrounded by a voice coil. A coil winding surrounds the voice coil. A combining portion is formed at a periphery of the yoke. The combining portion serves to be combined with a surround connected to a bottom of end of the voice coil. The voice coils is vertically installed in a gap between the portions of the yoke. The top of the voice coil is connected to another surround. Thereby, vibration of the voice coil is confined at the two ends. As a result, the gap between portions of the yoke structure into which the voice coil extends between portions of the yoke is reduced and therefore, the sensitivity of the loudspeaker is increased and the distortion is decreased.

6 Claims, 4 Drawing Sheets



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XB

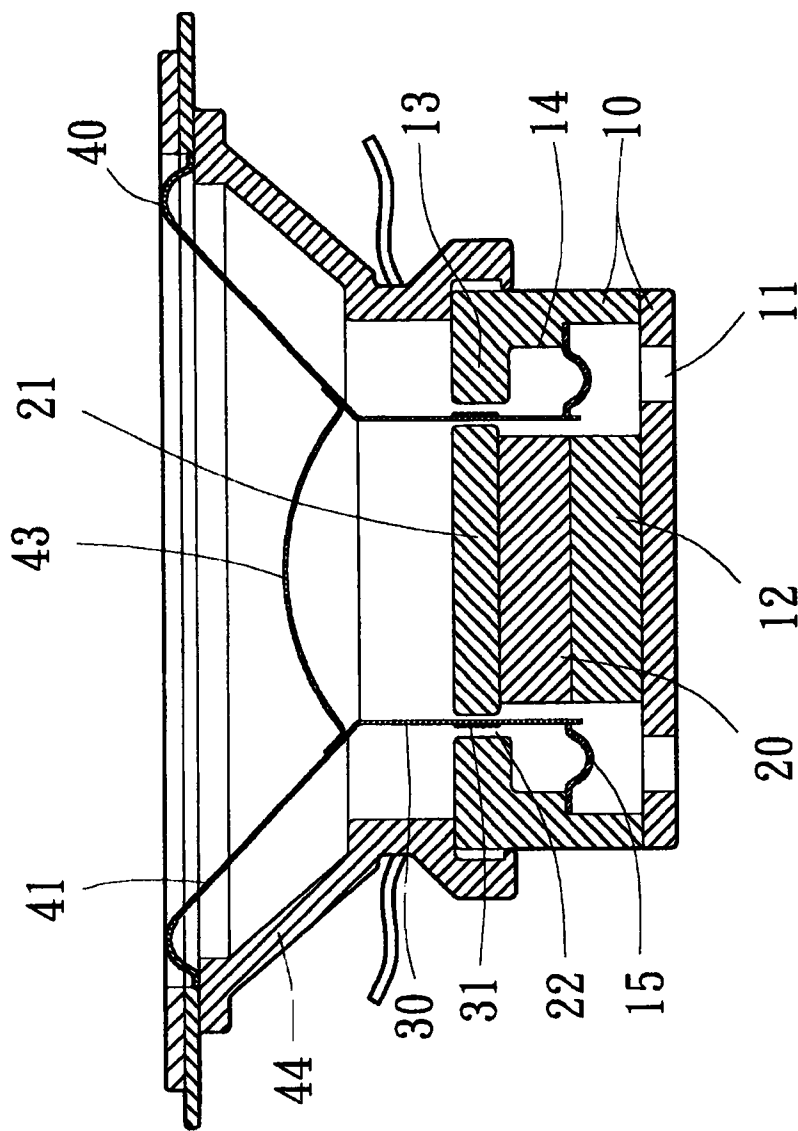


Fig. 4

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HIGH STABILITY LOUDSPEAKER**FIELD OF THE INVENTION**

The present invention relates to a high stability loudspeaker, which can effectively reduce the vibration of the voice coil in the lateral direction, and thus has a small distortion.

BACKGROUND OF THE INVENTION

As shown in FIG. 1, a prior art loudspeaker includes a frame A, a magnet B, a voice coil C, a damper D, a diaphragm E, a dust cover F, a yoke G, a washer H, a surround I and other components. The voice coil C surrounds the central post of the yoke G. Coils C1 wind around the voice coil C. Similarly, the damper D and diaphragm E cover the voice coil C by the central holes thereof. The top of the voice coil C is firmly secured with a dust cover F. The voice coil C and the diaphragm E are suspended between other components by the damper D and surround I. Thus, a loudspeaker is formed.

From the above, it will be appreciated that the voice coil C is connected to the diaphragm E, damper D and dust cover F by one end thereof. It suspends from the periphery of the central post of the yoke. When power is conducted, the coils C1 on the voice coil C are attracted and then vibrate so that the voice coil C moves upwards and downwards. Then the diaphragm E connected to the voice coil C transfers the vibration to air so as to form a sound capable of being heard by human's ears.

Since the material is not uniform, some errors occur. As the voice coil C is attracted, it will move laterally. Because the voice coil is suspended from the top end, the bottom of the voice coil C has a large vibration. Once the voice coil C collides with the washer H or the yoke G, noises occur. In order to prevent the voice coil C from colliding with the washer and yoke, the gap between the central post of the yoke G and the washer H must be enlarged. If the volume is increased, this gap J must be increased further. However, the larger the gap, the worse the sensitivity of the loudspeaker. Therefore, how to reduce the gap J between the yoke G and washer H is a primary problem in design of a loudspeaker.

SUMMARY OF THE INVENTION

Accordingly, the primary object of the present invention is to provide a high stability loudspeaker, in which the gap between the magnet and magnet groove is reduced.

Another object of the present invention is to provide a high stability loudspeaker with a reduced distortion.

In order to achieve the aforesaid objects, the present invention provides a high stability loudspeaker having a yoke with a plurality of vents installed therein. The yoke is combined to a bottom of a frame of the loudspeaker. A magnet is placed in the yoke and a washer is arranged above the magnet to form a yoke structure. A periphery of the magnet is surrounded by a voice coil. A coil winding surrounds the voice coil. A combining portion is formed at a periphery of the yoke. The combining portion serves to be combined with a surround connected to a bottom of the voice coil. The voice coil is vertically installed between the periphery of the yoke and the magnet. The top of the voice coil is connected to another surround. Thereby, the vibration of the voice coil is confined at the two ends. As a result, the gap between portions of the yoke structure into which the voice coil extends is reduced and therefore, the sensitivity of the loudspeaker is increased.

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The various objects and advantages of the present invention will be more readily understood from the following detailed description when read in conjunction with the appended drawing.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a cross sectional view showing a prior art loudspeaker.

FIG. 2 is a perspective view showing one embodiment of the present invention.

FIG. 3 is a cross sectional view showing the embodiment according to the present invention.

FIG. 4 is a cross sectional view showing another embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 2 shows a perspective view of the high stability loudspeaker of the present invention, embodied by a small power loudspeaker. The high stability loudspeaker of the present invention mainly includes a yoke 10 with a small vent 11 at the bottom thereof. The top end of the yoke 10 is combined with a tooth shape frame 42. The frame 42 has a diaphragm 41 at the center thereof. The periphery of the diaphragm 41 is installed with a first surround 40 to be combined to the frame 42.

An inner cross sectional view of an embodiment according to the present invention is shown in FIG. 3. The periphery of the yoke 10 is formed with a combining portion 13. The combining portion 13 is a lip portion extending inwards through a predetermined length. The lower end of the lip is installed with a stepped portion 14. The stepped portion 14 is combined to a second surround 15. A short post 12 is installed at the center of the yoke 10. A magnet is formed on the short post 12. A washer 21 is disposed at the upper side of the magnet 20. A small gap 22 is formed between the washer 21 and the lip of the combining portion 13. A voice coil 13 curled from a thin piece is placed in the gap 22 so that the bottom of the voice coil 30 is combined with the surround 15. The top end thereof is further connected to the surround 40. A coil winding 31 surrounds the voice coil 30, which is exactly positioned in the small gap 22. The top of the voice coil 30 is combined to the diaphragm 41 so as to form, within yoke 10, a voice coil which has fulcrums at two ends.

FIG. 4 is a cross sectional view showing second embodiment of the present invention in the form of a large power loudspeaker. The top of the yoke 10 is combined to a frame 44 with a tapered expansion form (the interior of the frame is identical to that shown in FIG. 3, thus, the details will not be described herein). The surround 40 at the top edge of the frame 44 is connected to the diaphragm 41. The bottom of the diaphragm 41 is combined to a voice coil 30. The top of the voice coil 30 is combined to a dust cover 43. Similarly, two ends of the voice coils 30 have a fulcrum. When the loudspeaker conducts, the coil 31 is attracted by the magnetic field of the magnet so that the voice coil 30 begins to vibrate. The top and bottom of the voice coil 30 are confined by the surrounds 40 and 15. Therefore, the leftwards and rightwards vibration of the voice coil 31 has a very small possibility to be in contact with washer 21, which forms a portion of the yoke and is positioned on the magnet 20, and the lip of the combining portion 13. Therefore, the possibility of generating noise and distortion is also very small. As a consequence, the gap 22 between the washer 21 and the

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lip of the combining portion 13 is reduced greatly, and therefore, the sensitivity of the loudspeaker is effectively improved.

As a result, according to aforesaid description, the present invention can achieve the predetermined object. In the present invention, the voice coil has two supporting fulcrums and thus, the vibration of the voice coil is reduced greatly. Consequently, the gap between the washer and the yoke is decreased. The sensitivity of the loudspeaker is improved effectively and meanwhile the distortion of the loudspeaker is also reduced.

Although the present invention has been described with reference to the preferred embodiments, it will be understood that the invention is not limited to the details described thereof. Various substitutions and modifications have been suggested in the foregoing description, and others will occur to those of ordinary skill in the art. Therefore, all such substitutions and modifications are intended to be embraced within the scope of the invention as defined in the appended claims.

What is claimed is:

1. A high stability loudspeaker having a yoke structure with a plurality of vents installed therein, the yoke structure being combined with a bottom of a frame of the loudspeaker; a short post being installed in a center of the yoke structure; a magnet being formed on the short post, wherein
 a periphery of the magnet is surrounded by a voice coil having a first end and a second end, said voice coil extending into a gap between portions of said yoke structure;
 a coil winding surrounds the voice coil;
 the first end of the voice coil is connected to a diaphragm and to a first surround, said first surround being connected to said frame; and
 the second end of the voice coil is connected to a second surround, said second surround being connected to a combining portion formed at a periphery of said yoke structure.

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2. The high stability loudspeaker as claimed in claim 1, wherein the combining portion at the periphery of the yoke structure is a lip extending inwards by a predetermined distance.

3. The high stability loudspeaker as claimed in claim 1, wherein a lower edge of a lip of the combining portion in the yoke structure is installed with a stepped portion connected with the second surround.

4. A high stability loudspeaker having a yoke structure with a plurality of vents installed therein, the yoke structure being combined with a bottom of a frame of the loudspeaker; a short post being installed in a center of the yoke structure; a magnet being formed on the short post, wherein

a periphery of the magnet is surrounded by a voice coil having a first end and a second end, said voice coil extending into a gap between portions of said yoke structure;

a coil winding surrounds the voice coil;

the first end of the voice coil is connected to a diaphragm and said diaphragm is connected to a first surround, said first surround being connected to said frame; and
 the second end of the voice coil is connected to a second surround, said second surround being connected to a combining portion formed at a periphery of said yoke structure.

5. The high stability loudspeaker as claimed in claim 4, wherein the combining portion at the periphery of the yoke structure is a lip extending inwards by a predetermined distance.

6. The high stability loudspeaker as claimed in claim 4, wherein a lower edge of a lip of the combining portion in the yoke structure is installed with a stepped portion connected with the second surround.

* * * * *

United States Patent [19]
Sawafuji

[11] **Patent Number:** 4,544,805
[45] **Date of Patent:** Oct. 1, 1985

[54] **PLANE SPEAKER**

[76] **Inventor:** Tadashi Sawafuji, No. 9-15,
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[21] **Appl. No.:** 419,378

[22] **Filed:** Sep. 17, 1982

[30] **Foreign Application Priority Data**

Sep. 25, 1981 [JP] Japan 56-142775[U]
Sep. 25, 1981 [JP] Japan 56-142776[U]
Dec. 14, 1981 [JP] Japan 56-185989[U]

[51] **Int. Cl.⁴** H04R 7/02

[52] **U.S. Cl.** 179/115.5 PV; 181/173

[58] **Field of Search** 179/115.5 PV, 115.5 ES,
179/115 V, 115.5 VC; 181/161, 164, 173

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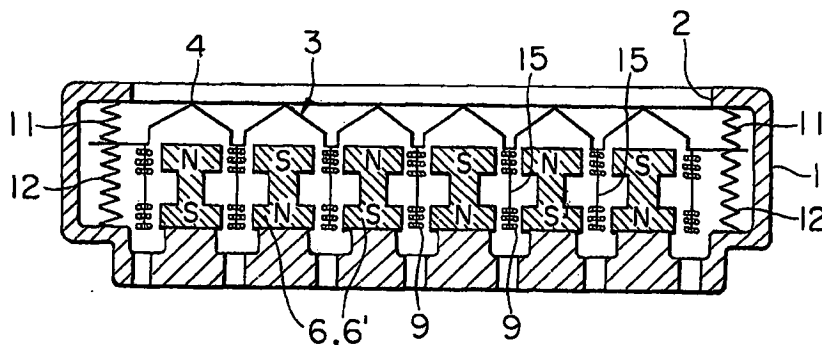
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Primary Examiner—Thomas W. Brown
Assistant Examiner—L. C. Schroeder
Attorney, Agent, or Firm—Fulbright & Jaworski

[57] **ABSTRACT**

A plane speaker comprises a frame having an opening; a diaphragm facing said opening and having secured its peripheral edge portion to the frame; an actuating plate attached perpendicularly to the back of said diaphragm; a coil mounted on the surface of said actuating plate; and magnets attached to the frame opposite to each other in relation to said coil.

1 Claim, 10 Drawing Figures



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82

FIG. 1

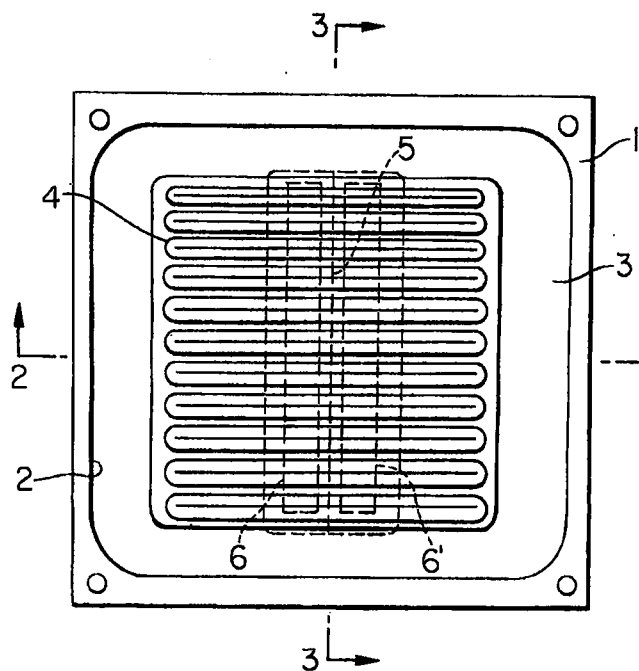


FIG. 3

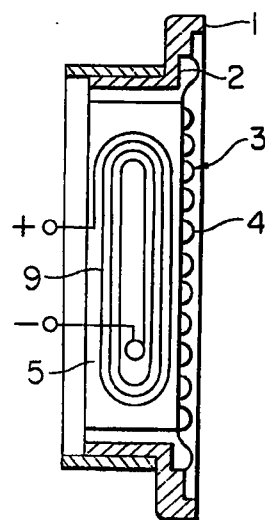
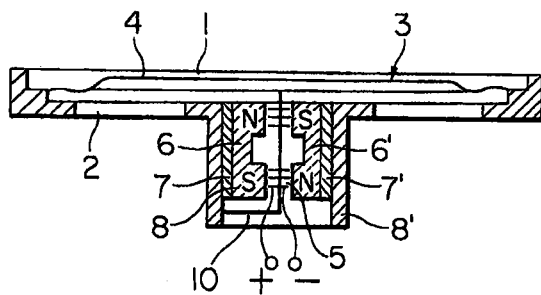


FIG. 2



83
8

FIG. 4

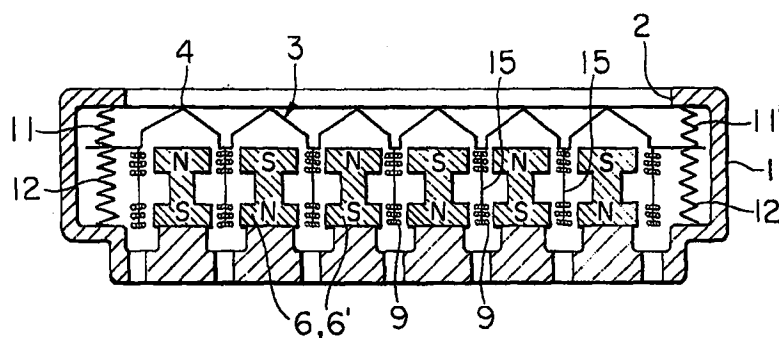
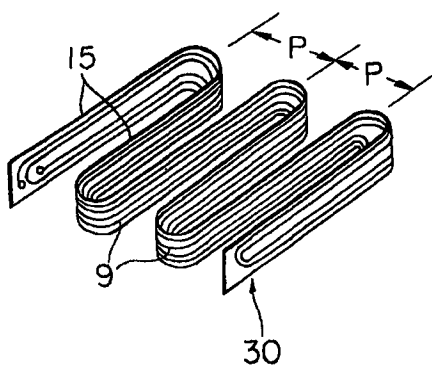


FIG. 5



84
8u

FIG. 9

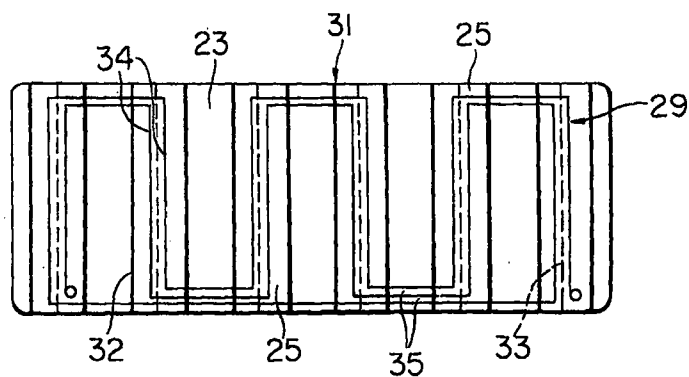
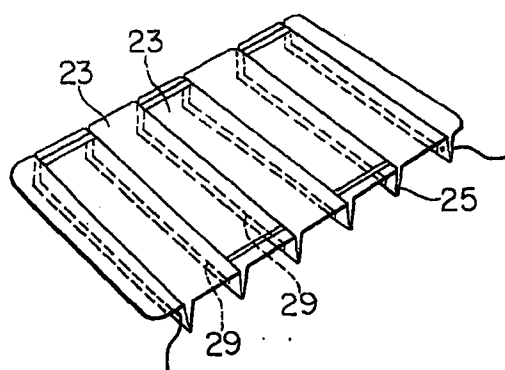


FIG. 10



PLANE SPEAKER

BACKGROUND OF THE INVENTION

This invention relates to a plane speaker.

In comparison with the conventional corn speaker constructed so that a voice coil is disposed at the rear edge part of a corn-shaped diaphragm and actuated by application of magnetic field generated by a cylindrical magnet, the so-called plane speaker constructed so that voice is emitted by a before and behind reciprocal displacement of a flat diaphragm is advantageous in that it is usable for instance as car speaker and the like because its whole thickness can be made compact in the direction of vibration. However, the conventional plane speaker is disadvantageous in that the means for actuating the diaphragm is complicated in construction and consequently the production cost becomes high; localized vibration is caused on the diaphragm so that it becomes difficult to obtain a high quality voice extending through the whole frequency range; and the like.

SUMMARY OF THE INVENTION

It is an object of this invention to provide a plane speaker capable of eliminating the inherent drawbacks in the above prior art plane speaker as well as exhibiting its inherent advantages as they are, that is a plane speaker capable of simplifying the construction of the means for actuating the diaphragm and reducing the production cost.

According to this invention, the aforesaid object can be achieved by providing a plane speaker comprising a frame having an opening; a diaphragm facing said opening and having secured its peripheral edge portion to the frame; an actuating plate attached perpendicularly to the back of said diaphragm; a coil mounted on the surface of said actuating plate; and magnets attached to the frame opposite to each other in relation to said coil.

According to this invention, furthermore, the aforesaid object can be achieved more profitably by providing a modification in which a coil is formed of a printed wiring printed on a diaphragm; said diaphragm is formed by folding a piece of flexible plate zigzag repeatedly; further both a diaphragm and an actuating plate are formed on a piece of flexible plate; and this flexible plate is folded onesidedly at regular intervals to form the actuating plate by adjacent longitudinal wall portions, the remainder forming the flat diaphragm.

It is another object of this invention to provide a plane speaker capable of preventing the occurrence of localized vibration on a diaphragm efficiently and obtaining a high quality voice extending through the whole frequency range.

According to this invention, the aforesaid object can be achieved by providing a modification in which a wave-like portion is formed on the upper surface of a piece of flexible plate.

It is a further object of this invention to provide a plane speaker designed so that leakage of magnetic flux to the outside is little, a high magnetic flux density-magnetic line of force is applied to a coil, and further the same directional driving force is applied to every place of the coil without causing any possibility that the reverse directional driving force is generated depending on places, whereby the diaphragm can be actuated efficiently with a small amount of electric current.

According to this invention, the aforesaid object can be achieved by providing a modification in which a coil

is provided on both sides of a diaphragm, a pair of magnets are disposed on both sides of said diaphragm interposed therebetween, both magnets each has polarities on the upper and lower parts respectively, and the upper parts and lower parts of both magnets confronting in the horizontal direction are different in polarity respectively.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a plan view of the first embodiment of the plane speaker according to this invention.

FIG. 2 is a sectional view taken in the direction of the arrows substantially along the lines 2—2 of FIG. 1.

FIG. 3 is a sectional view taken in the direction of the arrows substantially along the lines 3—3 of FIG. 1.

FIG. 4 is a longitudinal elevation of the second embodiment of the plane speaker according to this invention.

FIG. 5 is a slant view of the diaphragm and coil of the plane speaker illustrated in FIG. 4.

FIG. 6 is a plan view illustrating the third embodiment of the plane speaker according to this invention.

FIG. 7 is a sectional view taken in the direction of the arrows substantially along the lines 7—7 of FIG. 6.

FIG. 8 is a sectional view taken in the direction of the arrows substantially along the lines 8—8 of FIG. 6.

FIG. 9 is a developed plan view of the diaphragm, actuating plate and coil illustrated in FIG. 6.

FIG. 10 is a slant view of the assembly of diaphragm, actuating plate and coil illustrated in FIG. 9, said actuating plate being formed by folding the diaphragm.

DETAILED DESCRIPTION OF THE INVENTION

FIGS. 1 to 3 each illustrates the first embodiment of the plane speaker according to this invention.

In these figures, reference numeral 1 denotes a main frame having an opening 2, the peripheral edge of a diaphragm 3 is secured to the circumference of this opening 2, and circular arc cone-shaped projections are formed on this diaphragm 3.

A pair of auxiliary frames 8 and 8' are attached leaving a space therebetween to the middle portion of the back of the frame 1 making a right angle with the projection 4, magnetic materials 7 and 7' are provided on the confronting inner surfaces of said frames 8 and 8' respectively, and a pair of magnets 6 and 6' are mounted in the confronting manner on the surfaces of these magnetic materials 7 and 7'. These magnets 6 and 6' are horizontal horseshoe-shaped, and the upper and lower parts of one magnet are arranged to have the magnetic pole S or N opposite to the magnetic pole N or S of the other confronting magnet.

An actuating plate 5 is disposed so as to locate between both magnets 6 and 6', the upper edge of said actuating plate being attached to the back of the diaphragm 3, the lower edge thereof being supported elastically by a supporting means 10 attached to the auxiliary frame 8. On both sides of the actuating plate 5, as seen from FIG. 3, there is provided an oval spiral coil 9 in the manner of confronting the poles of magnets 6 and 6'.

In the case of aforesaid embodiment, it is preferable that the diaphragm 3 should be made from a film material for instance such as synthetic resin or the like, the projection 4 should be formed by vacuum forming or the like, and the actuating plate 5 should be formed by

etching the coil 9 in a printed wiring plate. This makes it possible to manufacture the diaphragm 3 and coil 9 with ease and thus provide them cheaply. However, it is needless to say that the resultant advantages should not be limited thereto alone.

In the operation of the speaker like this, when a signal electric current is applied to the coil 9 of the actuating plate 5, an electromagnetic driving force right-angled to the direction of electric current exerts on the coil 9, according to Fleming's left-hand rule, depending on the intensity of a signal electric current generated in the magnetic field formed by magnets 6 and 6', and consequently the actuating plate 5 vibrates before and behind along the direction of its surface together with the diaphragm 3, whereby a voice is emitted. In the case of this embodiment, there is no possibility that the localized vibration of the diaphragm 3 is caused because projections 4 are formed on the diaphragm 3 in order to stiffen it. Further, leakage of magnetic flux to the outside is very little because a strong magnetic line of force is applied to the magnetic path connecting magnets 6 and 6' mutually, and still further the diaphragm 3 can be actuated efficiently with a small amount of electric current because a high magnetic flux density-magnetic line of force is applied to the coil 9 of the actuating plate 5.

In FIGS. 4 and 5 there is shown the second embodiment of the plane speaker according to this invention. In this connection, it is to be noted that the same symbols as those in the first embodiment will be affixed to the same parts of this embodiment as those in the first embodiment, and explanation will be made mainly on the different parts.

In this embodiment, the diaphragm 3 takes the shape of a suspension edge formed by supporting the peripheral edge of the diaphragm elastically with resilient supporting means 11, 11'; 12, 12', a plural number of actuating plates 15 are provided, and plural sets of magnets 6, 6' are installed with these actuating plates 15 interposed therebetween.

This actuating plate 15, as is evident from FIG. 5, is made of a piece of flexible web 30 that has on both sides continuous coils 9 as shown in the first embodiment, and the same is longitudinally folded repeatedly leaving a fixed pitch therebetween into the zigzag shape as well as one side edge thereof is attached to the level portion of the back of the diaphragm 3 as shown in FIG. 4. Accordingly, this embodiment is different from the first embodiment in that the direction of the actuating plate 5 becomes parallel to that of the projection 4.

Although the vibration operation in this embodiment is effected according to the exactly same principle as the first embodiment, this embodiment permits the so-called over-all vibration wherein the actuating plate 5 vibrates covering substantially the whole back surface of the diaphragm 3, whereby a higher quality voice can be obtained.

FIGS. 7 to 10 each shows the third embodiment of the plane speaker according to this invention. This embodiment will be explained in the same manner as the second embodiment.

In this embodiment, a diaphragm 23 and an actuating plate 25 are made of a flexible web 31 such as Mylar film or the like to define horizontal top folding lines 32 (shown with solid lines in FIG. 9) leaving a fixed distance therebetween. In the centers of alternate sections separated by these folding lines 32 there are defined bottom folding lines 33 (shown with dotted lines in FIG. 9). Transverse coil portions 34 are disposed on both sides of this folding line 33 as well as parallel

thereto. This coil portion 34 is connected alternately with its adjacent coil portion 34 by means of a vertical coil portion 35 making a right angle thereto. Thus, there is prepared a zigzag-shaped whole coil 29.

When folding the side portions of this flexible web 31 adjacent to the bottom folding lines 33 downward, the actuating plate 25 is formed by these folded portions and the diaphragm 23 is formed of the remaining top plate portions defined between top folding lines 32.

In this connection, it is to be noted that in the case of this embodiment the projection 4 used in the first embodiment for the purpose of preventing the occurrence of localized vibration is not provided on the diaphragm 25, and in stead of this a plate with projection 24 is attached to the diaphragm 25. However, it is applicable to this embodiment to fold the diaphragm 25 as done in the second embodiment without attaching said plate with projection to the diaphragm.

Although this embodiment is operated in the same manner as the second embodiment, if the coil 29 has previously been printed at the predetermined place of the flexible web 31 and the same web 31 is folded in the manner as aforesaid, the product becomes easy to manufacture and consequently can be provided cheaply because the preparation of diaphragm 23 and actuating plate 25 is finished at a stroke, during which the wiring work is easy and the folding work can be done automatically using a forming machine. Further, there is no necessity of selecting the material for the flexible web 31 strictly because said forming work can be conducted at normal temperatures. On folding, still further, when adjacent transverse coil portions 34 are folded so as to locate on the outside of the actuating plate 25 (on the side opposite to FIG. 10) said coil portions are to be separated from each other by the actuating plate 25 with the result that the occurrence of short trouble may be prevented and further when transverse coil portions 34 are mutually located on the inside of the actuating plate 25 as shown in FIG. 10 the occurrence of short trouble can be prevented likewise by leaving a space therebetween so that the inside surfaces of adjacent actuating plate 25 do not adhere to each other.

The coil 29 is illustrated in the form of two parallel, zigzag lines being identical in the direction of electric supply. However, it is to be understood that even if the direction of electric supply is identical, the number of parallel lines should not be limited to 2, namely may be increased in suitable plural lines such as 4, 6 or the like.

Although a particular preferred embodiment of the invention has been disclosed in detail for illustrative purposes, it will be recognized that variations or modifications of the disclosed apparatus, including the rearrangement of parts, lie within the scope of the present invention.

What is claimed is:

1. A plane speaker comprises a frame having an opening portion; a plane diaphragm which has its peripheral edge portion secured to said frame facing said opening portion of the frame and has been provided with a number of parallel cone-shaped projections; a folded actuating plate which is formed separately from said diaphragm and attached perpendicularly to the back only of said diaphragm; a coil printed on both surfaces of the actuating plate; and a magnet disposed on the frame oppositely to said coil, said actuating plate made by repeatedly folding a piece of flexible web zigzag in the longitudinal direction and attaching one edge thereof to the back of the diaphragm.

* * * *

6x

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIVISIÓN DE NUEVAS CREACIONES

2020
Bogotá, D.C.,

Abogado (a)
LUZ HELENA VILLAMIL JIMÉNEZ

ASUNTO	Radicación	06-59696
	Trámite	011
	Evento	378
	Actuación	430
	Oficio	
	Folios	015

Patente de Invención ☒ Patente de Modelo de Utilidad ☐Vía Nacional ☐

Vía PCT (fase nacional) ☒ Cap. I ☒ Cap. II ☐

No. Sol. Internacional	PCT/KR2004/003156
Fecha de Presentación Internac.	2004-12-02

Como resultado del examen de fondo, realizado con fundamento en el artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le comunica:

1. Documentos estudiados

Descripción: Folios: 5 a 33 como se radicó inicialmente

Reivindicaciones: Folios: 34 a 37 como se radicó inicialmente

Dibujos: Folios: 39 a 54 como se radicó inicialmente

Prioridad: Folio: 1
(2003-12-05, KR, N° 10-2003-0088157).

2. Objeto de la invención

La presente solicitud se titula "ALTAVOZ PLANO QUE TIENE DISPOSITIVO DE GUIA DE PLACA DE BOBINA". Folio N° 1.

El objeto de la presente solicitud se trata de un altavoz con un diafragma plano construido para guiar la vibración de la placa de la bobina de manera que no entre en contacto con la estructura magnética formada por placas superiores e inferiores e imanes permanentes.

De otra parte, el pliego reclama: un altavoz tipo placa en las reivindicaciones 1 a 11.

El objeto de la solicitud definido anteriormente se clasificó en la IPC: H04R 7/04

3. De la solicitud de Patente

3.1. Reivindicaciones (artículo 30 D 486)

Por claridad, se recomienda al solicitante colocar los números de referencia de los componentes del altavoz de manera que estén acordes a la materia descrita y a los dibujos. Por otra parte, la oficina encuentra las siguientes objeciones al pliego reivindicado:

La reivindicación 1 se refiere a un cuerpo magnético con polaridades opuestas, pero no especifica la estructura o cual es la conformación de tal cuerpo. Por otro lado se refiere a “una distancia predeterminada” término que por ser indeterminado, no es claro.

La reivindicación 1 debe especificar como es el acople del medio guía y si esté esta acoplado a la placa de bobina o a la estructura base.

La reivindicación 6 se refiere a la misma materia especificada en la reivindicación 1, lo cual afecta la concisión del pliego.

Finalmente, se debe especificar que se desea proteger en la reivindicación 11, ya que no queda claro si se trata de una modalidad, una conexión de las bobinas o la forma de acomodar la bobina del altavoz.

En conclusión, el pliego reivindicatorio calificado no cumple los requisitos de claridad y concisión exigidos en el Art. 30 de la Decisión.

4. Determinación del Estado de la Técnica

Considerando que la solicitud reclama prioridad a la fecha de 05 de Diciembre de 2003, se buscaron documentos del estado de la técnica relacionados, con fecha de publicación anterior a esta. Se realizo búsqueda de documentos relevantes dentro del estado de la técnica, entendiendo como estado de la técnica la definición provista en el Art. 16 D 486, y las excepciones fijadas en el Art. 17 de la misma.

Se encontró como anterioridades los documentos relacionados a continuación que afectan la patentabilidad del objeto de la presente solicitud

Nº	Documento*	Título	Fecha de publicación
D1	US6526151	HIGH STABILITY LOUDSPEAKER	2003-02-25
D2	US4544805	PLANE SPEAKER	1985-10-01

*El documento se anexa con el requerimiento.

5. Análisis de patentabilidad (artículo 14 D486)

En cumplimiento del Art. 14 D486 se procedió a evaluar los requisitos de novedad, nivel inventivo y aplicabilidad industrial, con el fin de establecer la patentabilidad de la invención reivindicada de la solicitud en estudio.

5.1. Novedad (artículo 16 D486)

El requisito de novedad se evaluó por comparación entre lo solicitado y los documentos encontrados en el estado de la técnica y que se relacionan con el objeto reivindicado

La reivindicación 1 de la solicitud en estudio se refiere a un altavoz tipo placa que comprende:

- Una estructura base
- Un cuerpo magnético acoplado a la estructura base
- Donde las polaridades opuestas del cuerpo magnético son proporcionadas en posiciones laterales adyacentes.
- Un diafragma
- Una placa de bobina formada con una bobina de voz enrollada sobre uno o ambos lados de la misma.
- Donde la placa de bobina se inserta verticalmente entre las polaridades opuestas del cuerpo magnético.
- Donde la placa de bobina esta conectada al diafragma.
- Un medio de guía de placa acoplado a la placa de bobina.

La anterioridad **D1** se refiere a un altavoz de alta estabilidad el cual puede reducir la vibración en dirección lateral de la bobina de voz y así reducir la distorsión. Este altavoz esta caracterizado por:

- Una estructura base conformada por un yugo **10** y un armazón **42, 44** (Figs. 3 y 4)
- Un cuerpo magnético **21, 12, 20** acoplado a la estructura base **10** (Figs. 3 y 4).
- Donde las polaridades opuestas del cuerpo están en posiciones laterales adyacentes (elementos **21** y **12**).
- Un diafragma **41**.
- Una placa de bobina **30** formada con una bobina **31** enrollada sobre el lado de la placa.
- Donde la placa de bobina **30** se inserta verticalmente sobre las polaridades opuestas del medio magnético (ver Figs. 3 y 4)
- Donde la parte superior de la placa de bobina **30** esta conectada al diafragma **41**.
- Un medio de guía **15** acoplado a la parte inferior de la placa de bobina **30**, para guiar la posición y vibración de la placa de bobina de tal forma que a placa vibra verticalmente.

Como se puede ver la anterioridad **D1** comprende todos los elementos característicos reclamados en la reivindicación 1, de manera que la materia especificada en esta reivindicación no es nueva.

La reivindicaciones 2 a 11 se refieren a elementos contenidos en la reivindicación 1, por lo cual la anterioridad **D1** también afecta la materia reclamada en estas reivindicaciones.

Por otra parte, el documento mencionado como **D2** se refiere a un altavoz plano capaz de prevenir la vibración localizada en el diafragma por lo cual se obtiene una alta calidad de voz a través de un amplio rango de frecuencias. Este dispositivo comprende las siguientes características comunes al objeto reclamado:

- Una estructura base **1** (Figs. 1 a 4)
- Un cuerpo magnético **6, 6'** acoplado a la estructura base **1**.
- Donde el cuerpo magnético **6, 6'** tiene polaridades opuestas proporcionadas en posiciones laterales adyacentes (ver figuras 2 y 4).
- Un diafragma **3**.
- Una placa de bobina **5** formada con una bobina de voz **9** enrollada sobre uno o ambos lados de la misma (Figs. 2 y 3).

- Donde la placa de bobina se inserta verticalmente entre las polaridades opuestas del cuerpo magnético (Figs. 2 y 4).
- Donde la placa de bobina **5** esta conectada al diafragma **3**.
- Un medio de guía de placa **10** acoplado a la parte inferior de la placa de bobina **5**, para guiar la posición y vibración de la placa.

Como se puede ver el documento **D2** también comprende todas las características reclamadas en la reivindicación 1 de la solicitud.

La reivindicaciones 2 a 11 se refieren a elementos contenidos en la reivindicación 1, por lo cual la anterioridad **D2** también afecta la materia reclamada en estas reivindicaciones.

Como se observa, al hacer la comparación elemento por elemento entre lo solicitado y el estado de la técnica, se encuentra que las características esenciales del objeto de la solicitud son idénticas a lo comprendido en los documento **D1** y **D2**, razón por la cual la solicitud no cumple con el requisito de novedad.

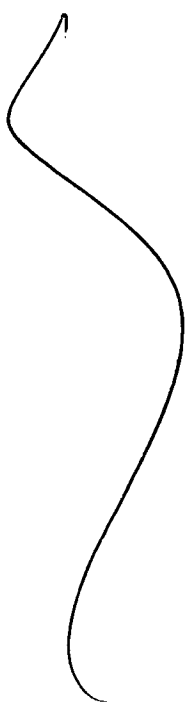
6. Conclusión:

Los requisitos de patentabilidad de la presente solicitud se encuentran afectados así:

N°	Documento N°	Reivindicaciones afectadas	Requisito que afecta
D1	US6526151	1 a 11	Novedad
D2	US4544805	1 a 11	Novedad

Se recomienda, que tenga en cuenta que el replanteamiento de esos apartes NO podrá implicar una ampliación de la protección que correspondería a la divulgación contenida en la solicitud inicial, de acuerdo a lo que establece el artículo 34 de la Decisión 486.

En cumplimiento del artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le indica que debe dar respuesta dentro del término de sesenta días contados a partir de la fecha de notificación de la presente comunicación. En caso de no dar respuesta al presente requerimiento, o si a pesar de la respuesta subsistieran los impedimentos para la concesión, se denegará la patente.



a'

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2, literal e), del capítulo quinto del título primero de la Circular Única N° 10 de 2001.



ALIX CARMENZA CÉSPEDES DE VERGEL
Jefe de División de Nuevas Creaciones

El anterior requerimiento fue notificado por fijación en lista, de fecha
4 JUL. 2009

CONCEPTO TÉCNICO No. 2132	EXAMINADOR TÉCNICO Código No. 202082
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