(12) UK Patent Application (19) GB (11) 2 328 580 (13) A

(43) Date of A Publication 24.02.1999

(21) Application No 9717690.3

(22) Date of Filing 22.08.1997

(71) Applicant(s)
E. Lead Electronic Co., Ltd.
(Incorporated in Taiwan)
52 Lane 563 Chang Chao Road, Chung Hua, Taiwan

(72) Inventor(s)
Tonny Chen

(74) Agent and/or Address for Service
Alpha & Omega
Chine Croft, East Hill, OTTERY ST. MARY, Devon,
EX11 1PJ, United Kingdom

(51) INT CL^6
H04M 1/15 , H01R 13/72

(52) UK CL (Edition Q)
H4J JDS JL
H2E EDCL

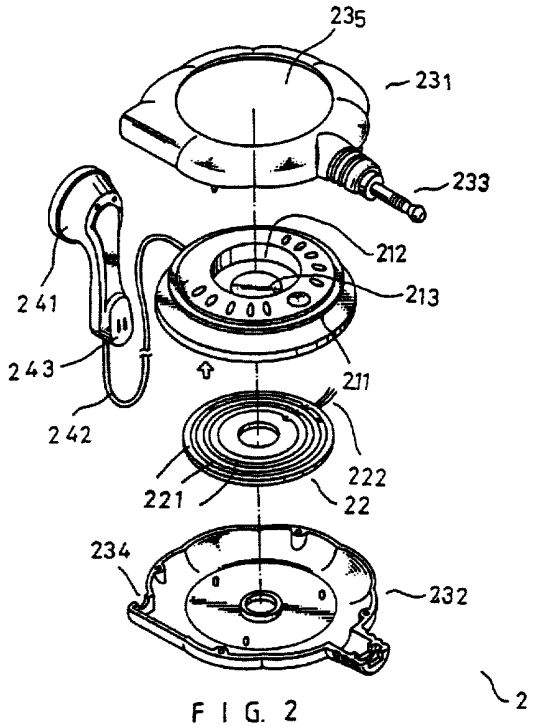
(56) Documents Cited
US 5482607 A US 5422957 A US 5339461 A
US 5241593 A US 4989805 A DE 29621717 U1

(58) Field of Search
UK CL (Edition O) H2E EDCL , H4J JA JAAX JDS JL
INT CL^6 H01R 13/72 , H02G 11/00 11/02 , H04M 1/05 1/15 , H04R 1/10 5/033
ONLINE: WPI, JAPIO, CLAIMS

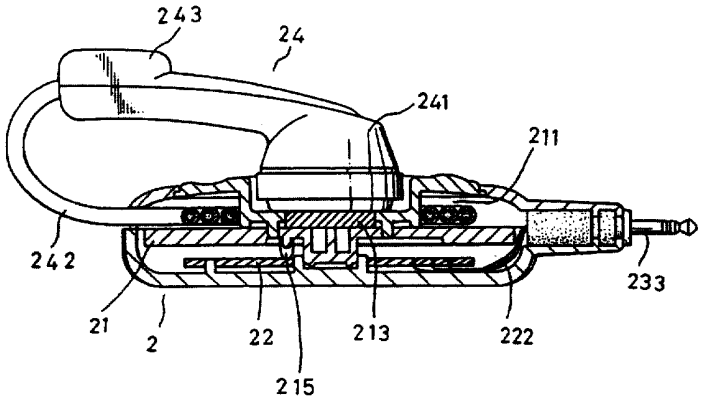
(54) Abstract Title

A plug/cable reel assembly for use with an earphone/microphone assembly

(57) A plug/cable reel assembly has a main body 2 connected to an earphone/microphone union device (fig.1, 24) by a connection wire 242. The main body has a base seat 232 in which is disposed a wire receiving disk 22 formed with a plurality of annular bosses 221. A reel disk 21, disposed on the bottom side with a plurality of connection reeds 215, covers the wire receiving disk. An end of the connection wire 242 is connected to one of the reeds. The reel disk is formed with a centre recess hole 212 in which a magnet 213 is disposed. A hollow casing 231, with a through hole 235, covers the base seat assembly. A plug 233 is disposed on the hollow casing although it may also be connected by means of a flexible pipe (fig.7 and 8, 5a, 61b,) with, or without, a pivot joint (fig.8A, 61b, 62b). The plug assembly can be used with a mobile phone for example (see fig.6).



F I G. 2



F I G. 3

GB 2 328 580 A

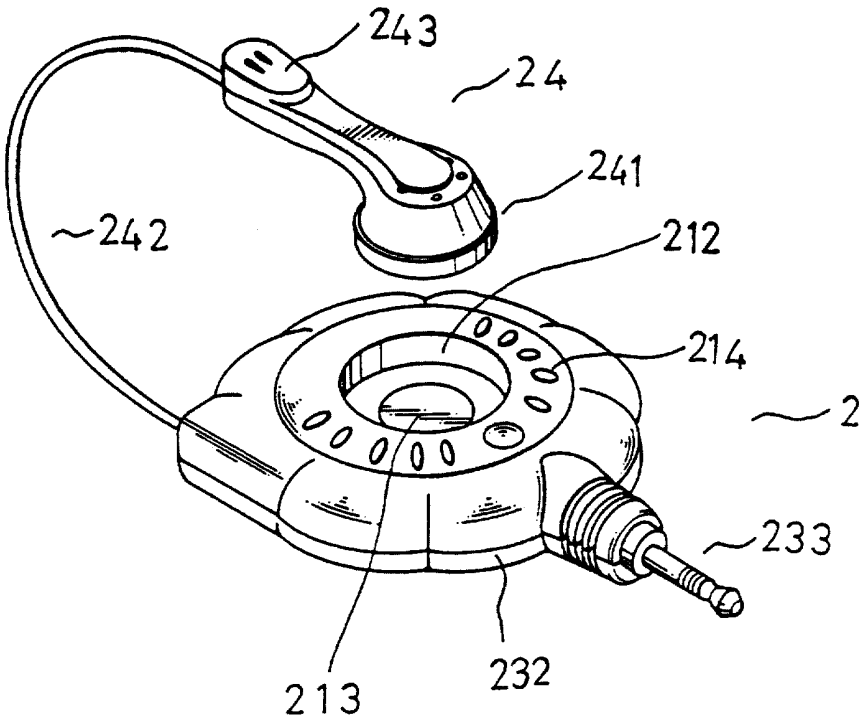
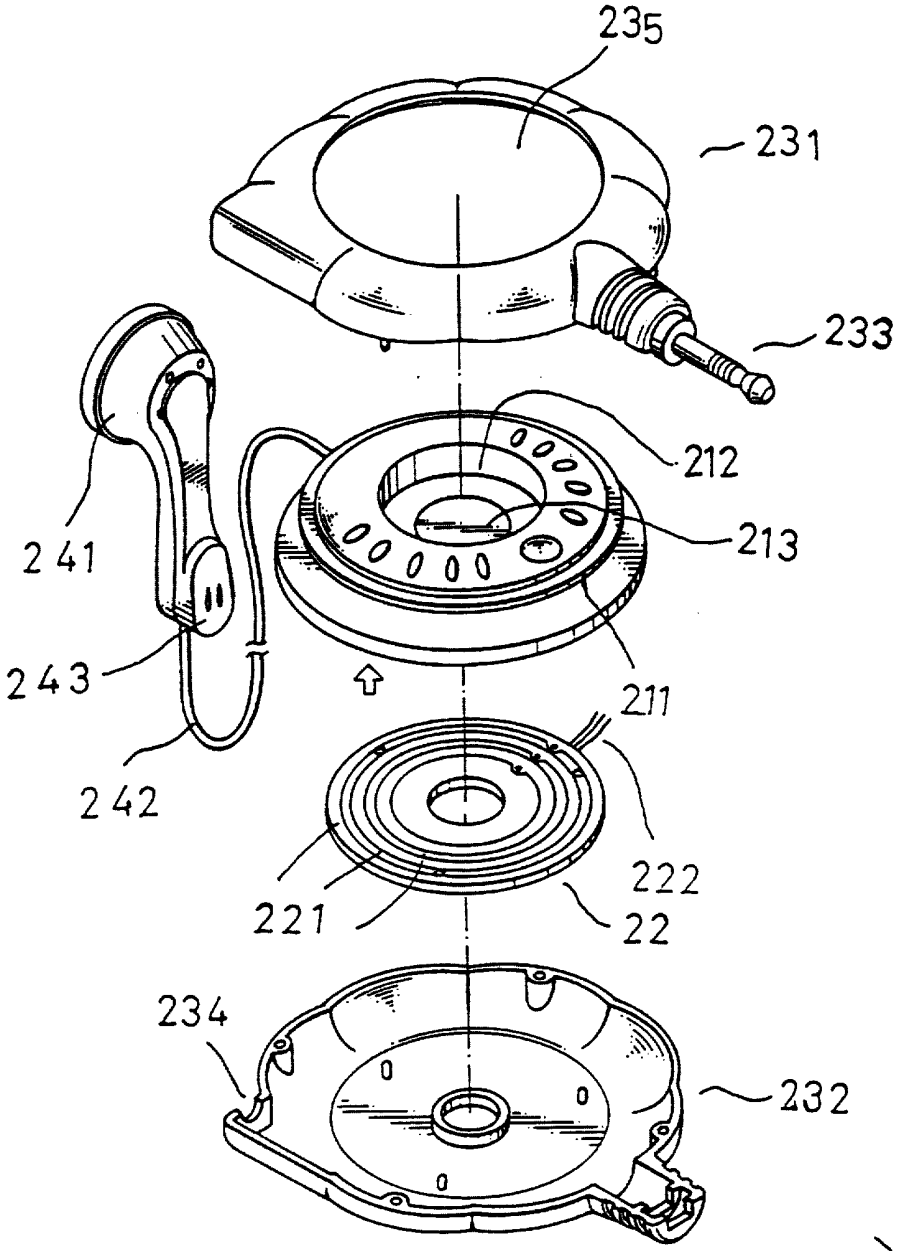
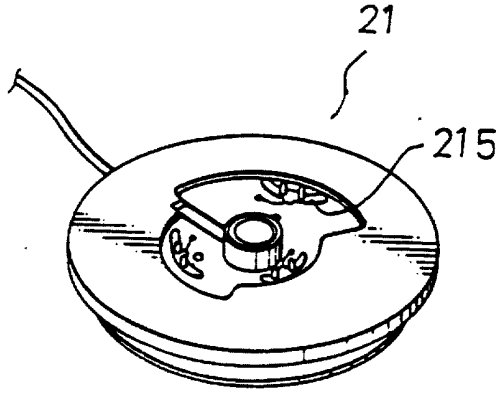


FIG. 1



F I G. 2



F I G. 2A

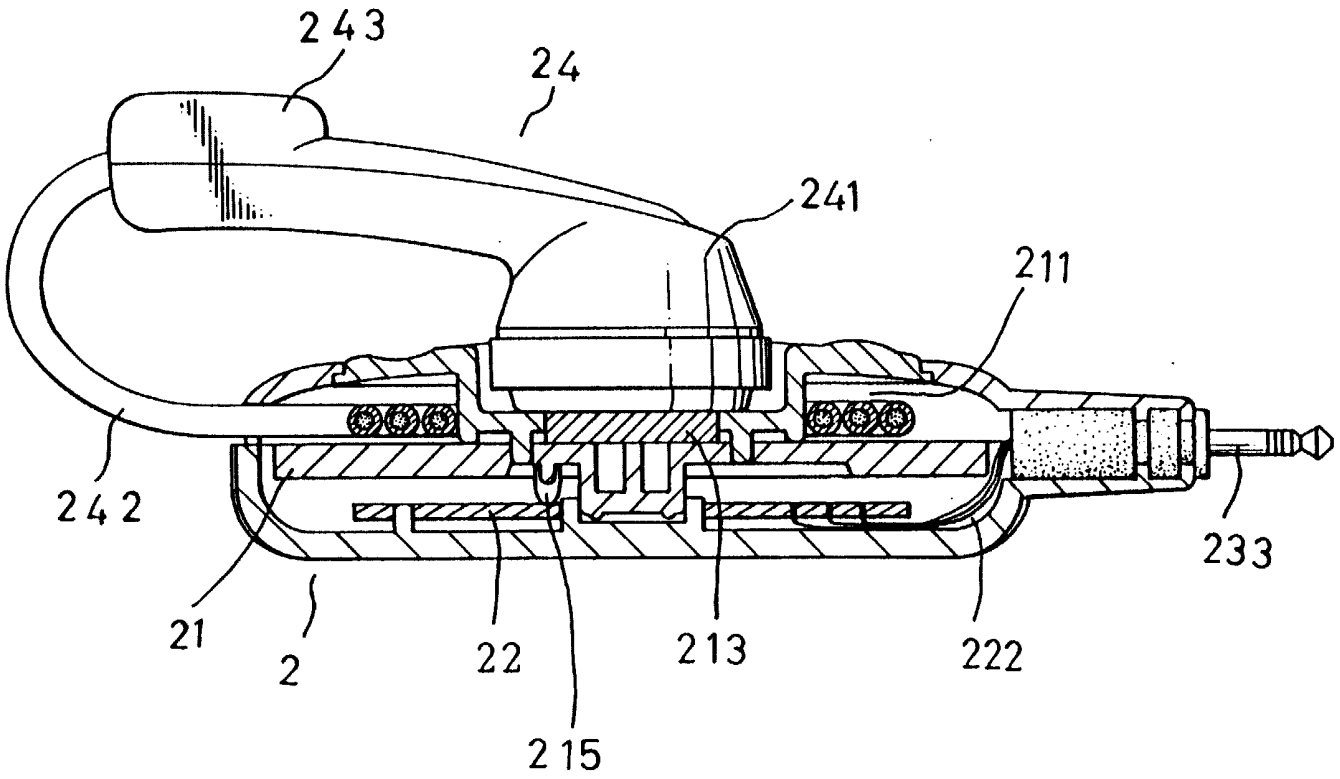


FIG. 3

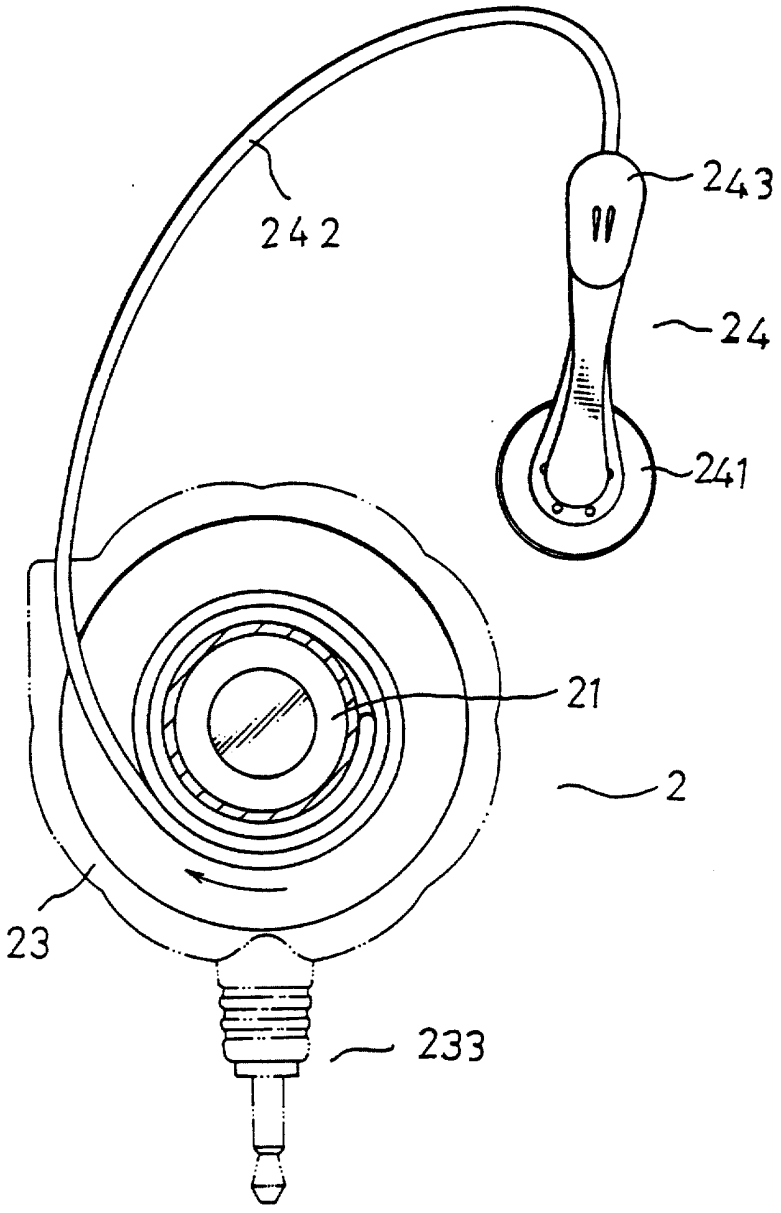


FIG. 4

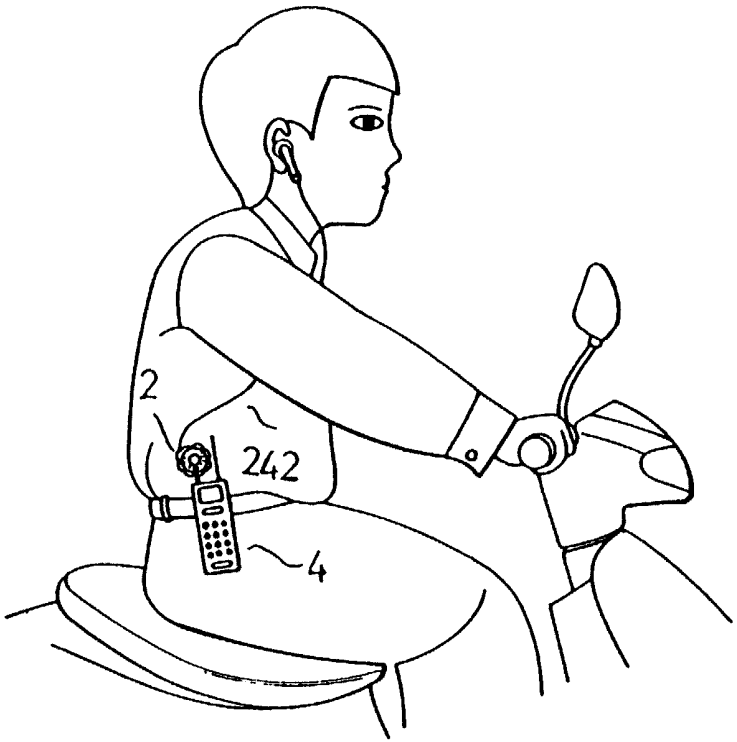


FIG. 5

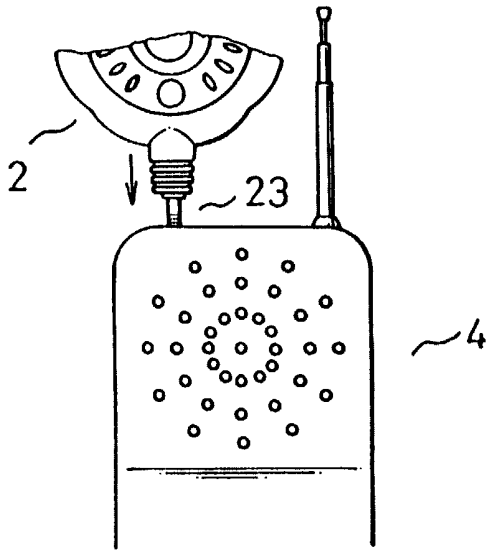


FIG. 6

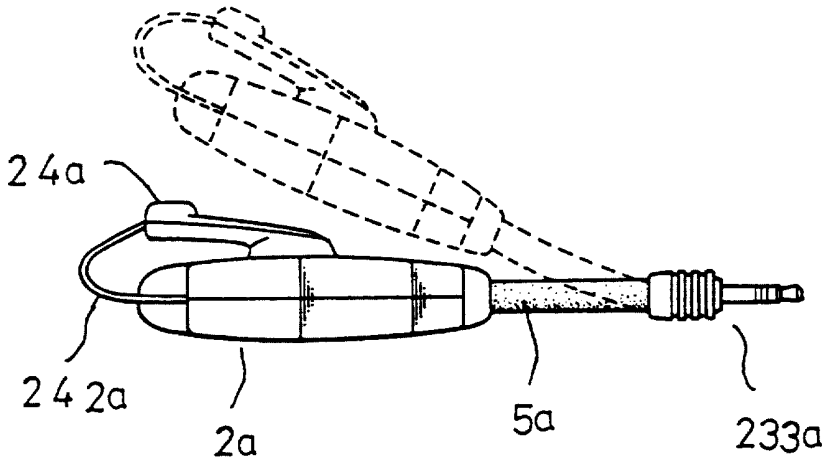


FIG. 7

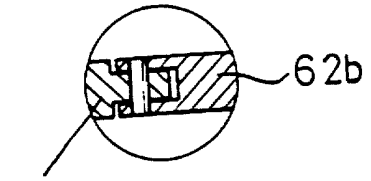


FIG. 8A

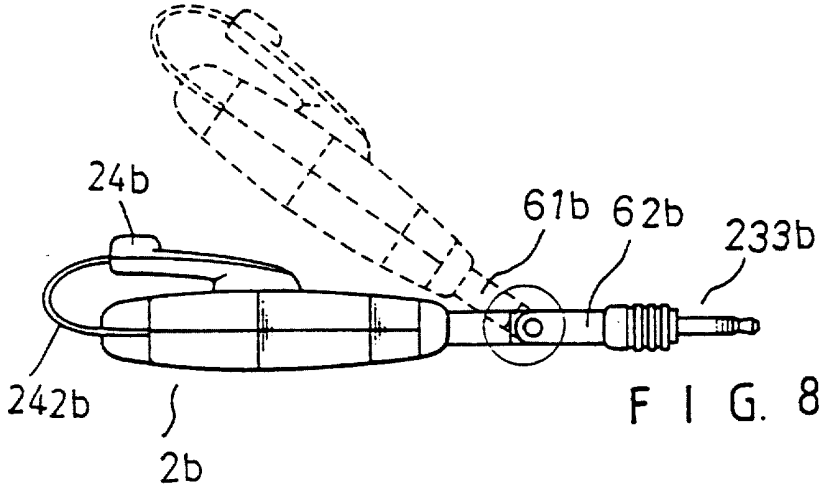


FIG. 8

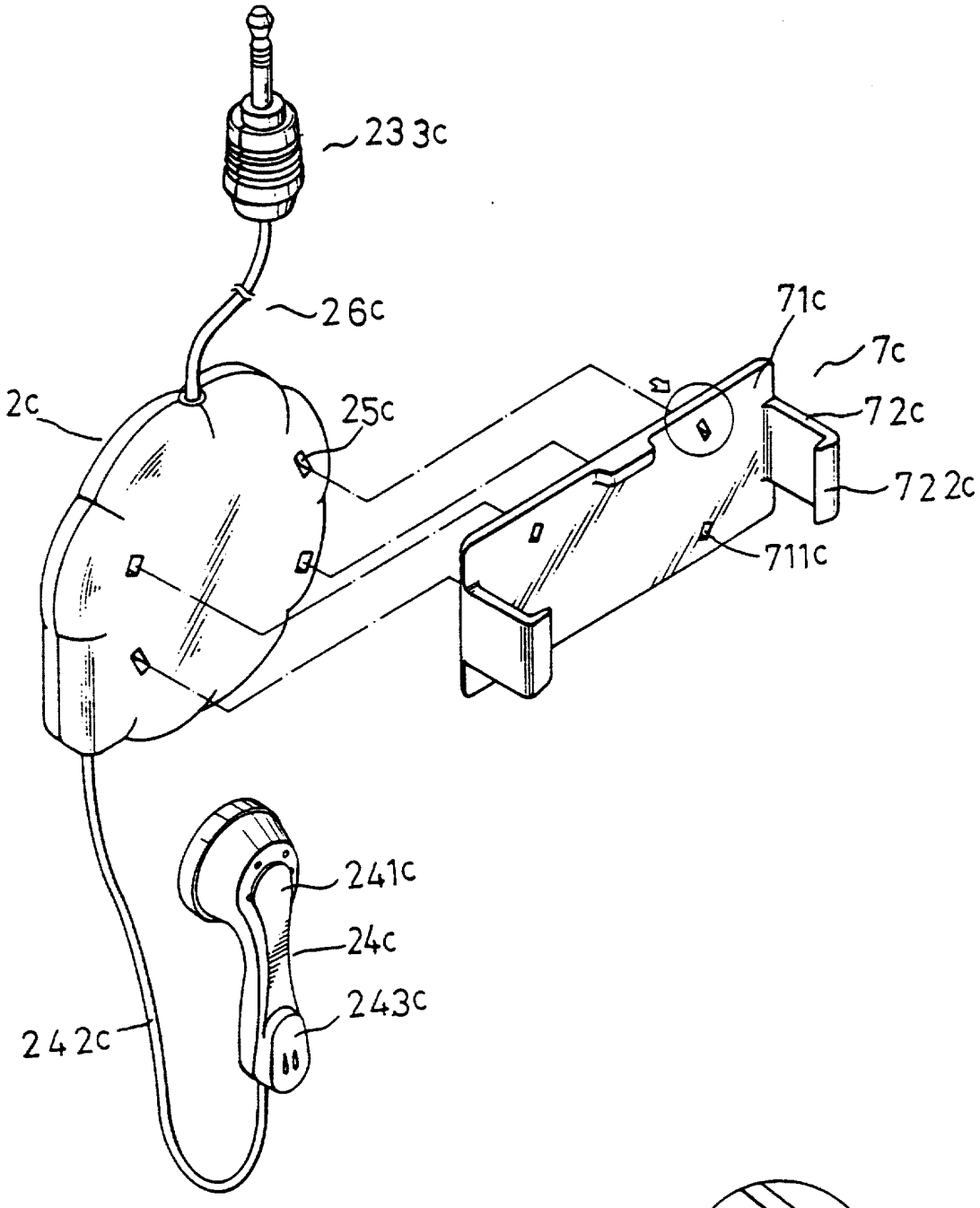

233c
26c
71c
7c
2c
25c
72c
722c
711c
241c
24c
243c
242c

FIG. 9

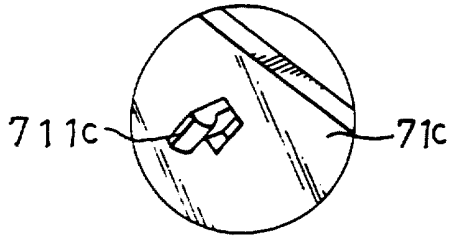

711c
71c

FIG. 9A

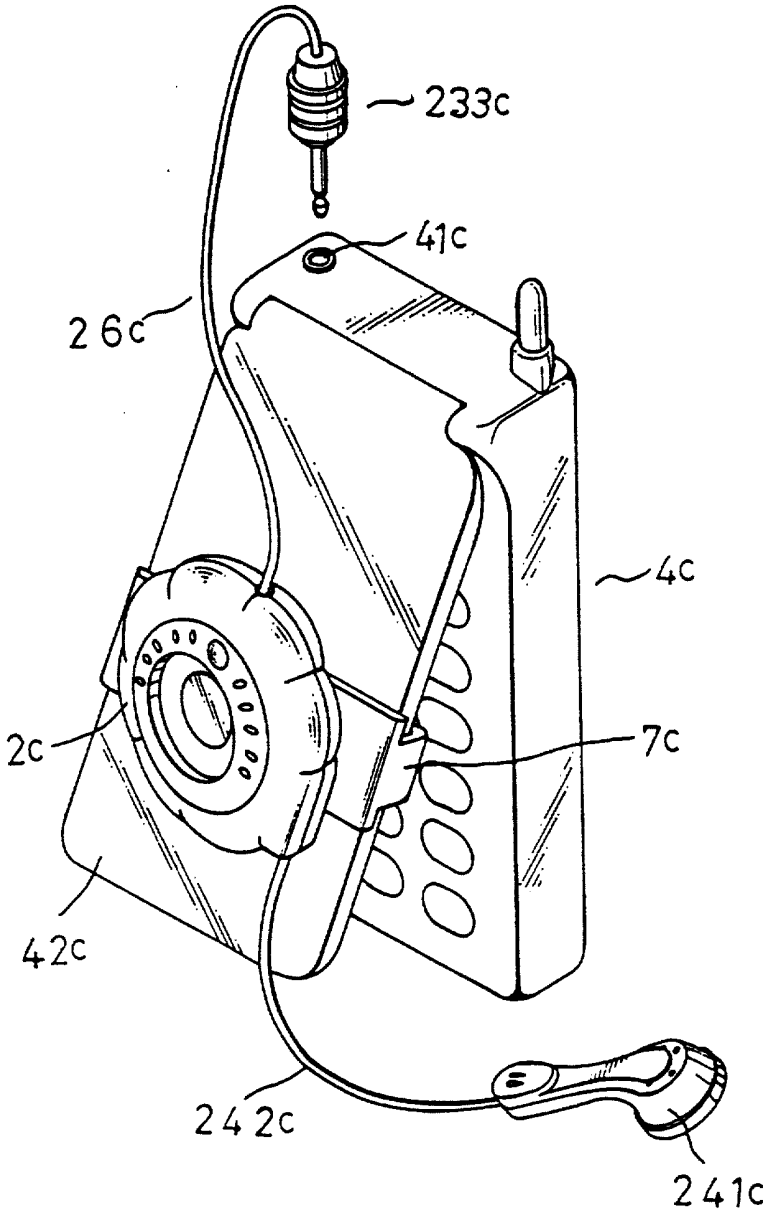
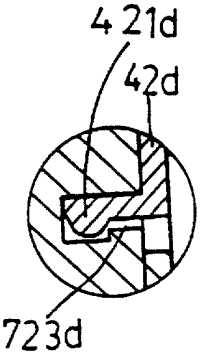
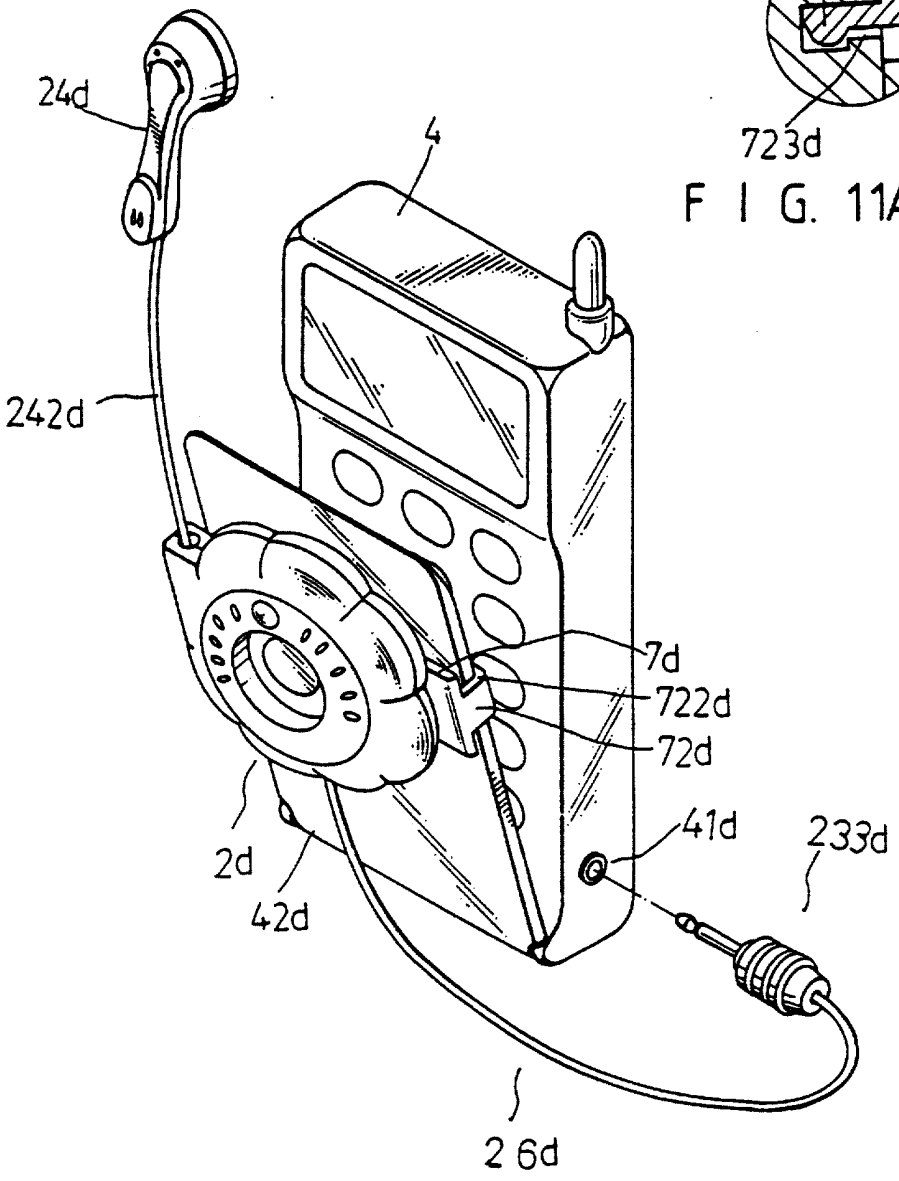


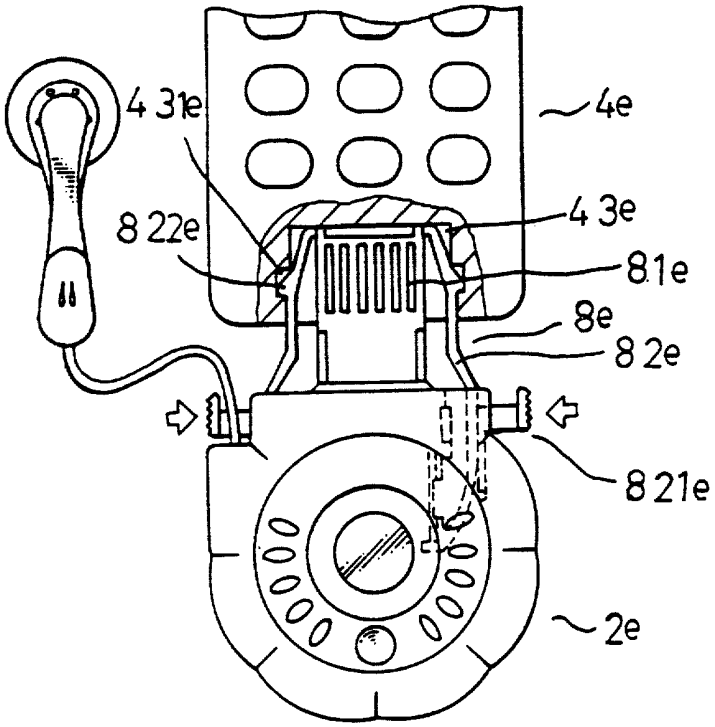
FIG. 10



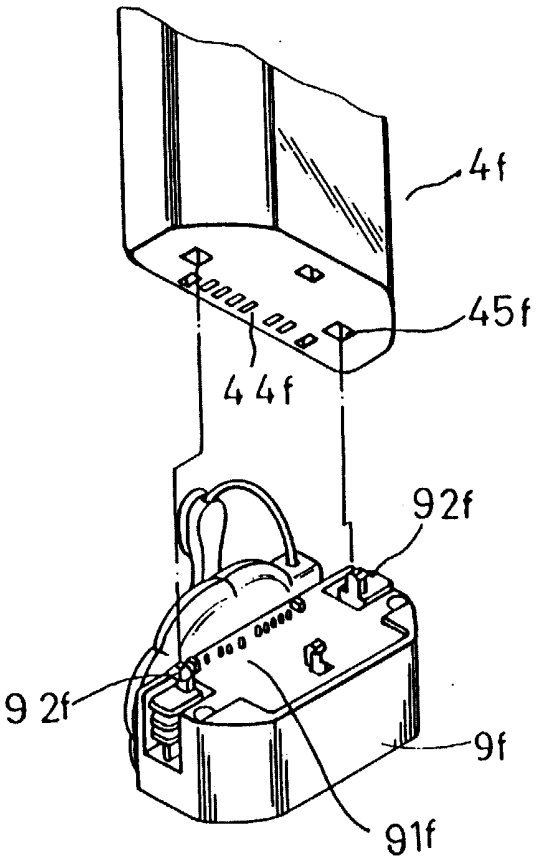
F I G. 11A



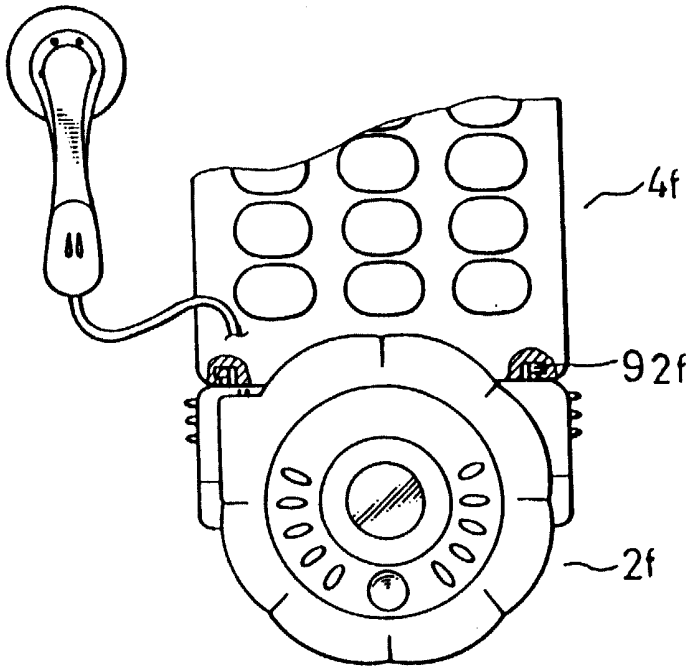
F I G. 11



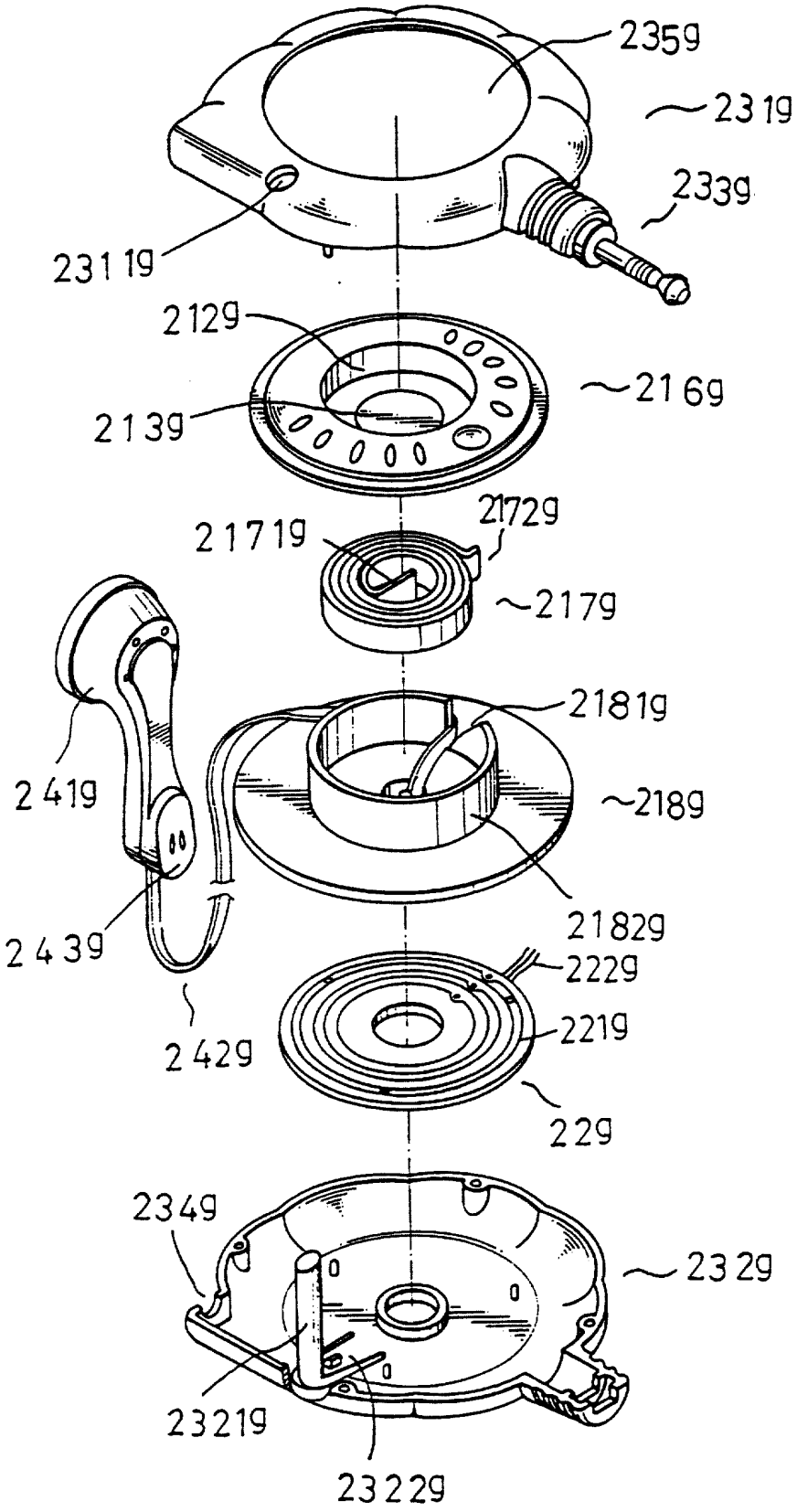
F I G. 12



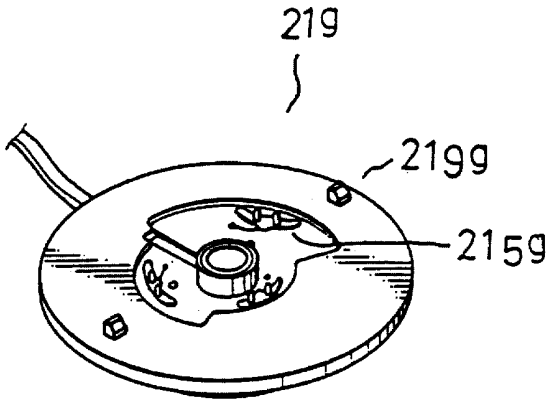
F I G. 13



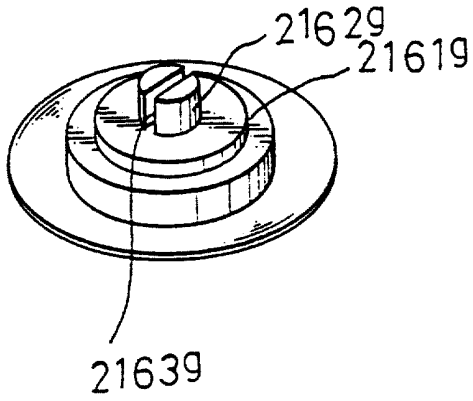
F I G. 14


235g
231g
233g
2311g
212g
216g
213g
2172g
2171g
217g
2181g
241g
218g
2182g
243g
222g
221g
242g
22g
234g
232g
2321g
2322g

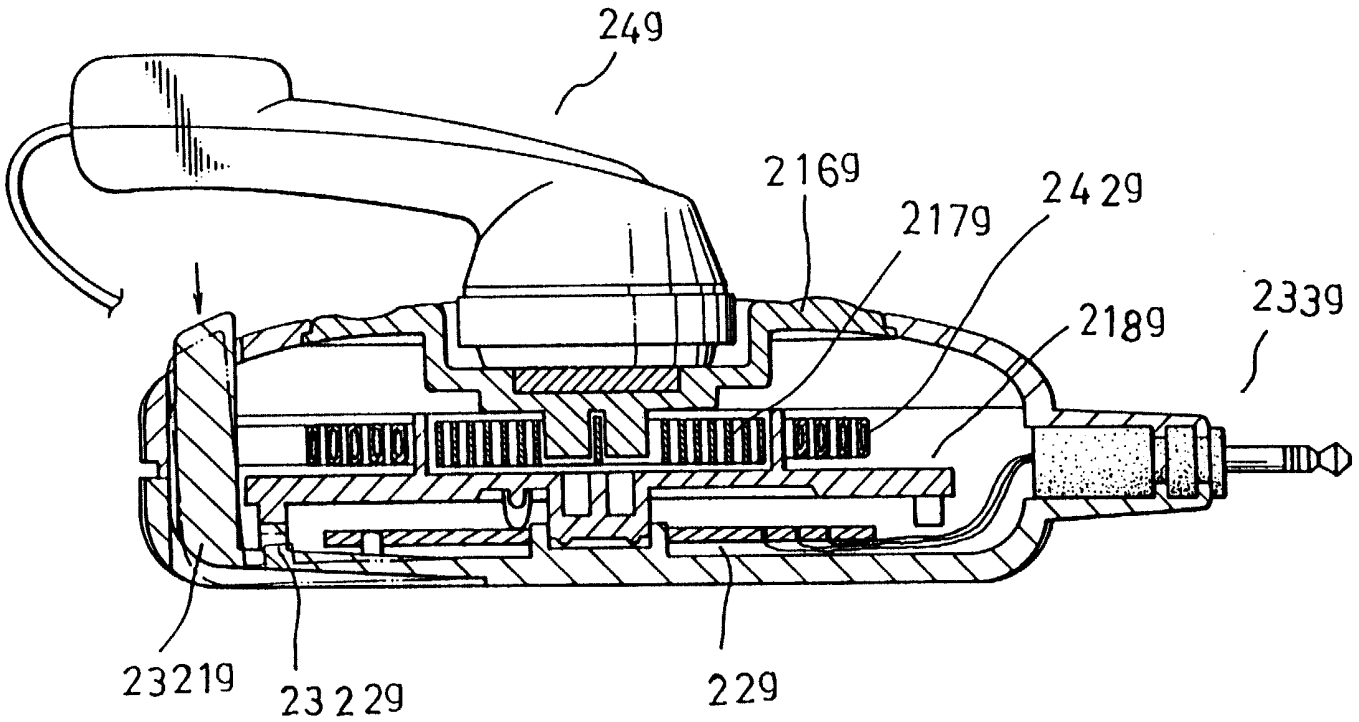
F I G. 15



F I G. 15B



F I G. 15A



F I G. 16

TITLE:EARPHONE/MICROPHONE ASSEMBLY

BACKGROUND OF THE INVENTION

The present invention relates to an earphone/microphone assembly. More particularly, the present invention relates to an earphone/microphone assembly which can receive a wire of an earphone/microphone so that the wire will not be tangled.

A conventional earphone/microphone device comprises a long wire. However, the long wire is easily tangled.

SUMMARY OF THE INVENTION

An object of the present invention is to provide an earphone/microphone assembly which can receive a wire of an earphone/microphone so that the wire will not be tangled.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective assembly view of an earphone/microphone assembly of a first preferred embodiment in accordance with the present invention;

FIG. 2 is a perspective exploded view of an earphone/microphone assembly of a first preferred embodiment in accordance with the present invention;

FIG. 2A is a perspective view of a reel disk;

FIG. 3 is a partially sectional view of FIG. 1;

FIG. 4 is a schematic view illustrating an operation of an earphone/microphone assembly of a first preferred

embodiment in accordance with the present invention;

FIG. 5 is a schematic view illustrating an application of an earphone/microphone assembly of a first preferred embodiment in accordance with the present invention;

FIG. 6 is a partially enlarged view of FIG. 5;

FIG. 7 is a perspective assembly view of an earphone/microphone assembly of a second preferred embodiment in accordance with the present invention;

FIG. 8 is a perspective assembly view of an earphone/microphone assembly of a third preferred embodiment in accordance with the present invention;

FIG. 8A is a partially sectional view of FIG. 8;

FIG. 9 is a perspective exploded view of an earphone/microphone assembly of a fourth preferred embodiment in accordance with the present invention;

FIG. 9A is a partially enlarged view of a clamp plate in FIG. 9;

FIG. 10 is a schematic view illustrating an application of an earphone/microphone assembly of a fourth preferred embodiment in accordance with the present invention;

FIG. 11 is a schematic view illustrating an application of an earphone/microphone assembly of a fifth preferred embodiment in accordance with the present invention;

FIG. 11A is a partially sectional view of FIG. 11;

FIG. 12 is a schematic view illustrating an application of an earphone/microphone assembly of a sixth preferred embodiment in accordance with the present invention;

FIG. 13 is a perspective exploded view of an earphone/microphone assembly of a seventh preferred embodiment in accordance with the present invention;

FIG. 14 is a perspective assembly view of an earphone/microphone assembly of a seventh preferred embodiment in accordance with the present invention;

FIG. 15 is a perspective exploded view of an earphone/microphone assembly of an eighth preferred embodiment in accordance with the present invention;

FIG. 15A is a perspective view of an upper disk;

FIG. 15B is a perspective view of a lower disk; and

FIG. 16 is a sectional assembly view of an earphone/microphone assembly of an eighth preferred embodiment in accordance with the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Referring to FIGS. 1 to 4, a first earphone/microphone assembly comprises a main body 2, an earphone/microphone union device 24, and a connection wire 242 connected to the main body 2 and the earphone/microphone union device 24. The main body 2 has a base seat 232, the

base seat 232 having a lead hole 234, a wire receiving disk 22 disposed in the base seat 232, a plurality of annular bosses 221 formed on the wire receiving disk 22, a reel disk 21 disposed in the base seat 232 to cover the wire receiving disk 22, a plurality of reeds 215 disposed on a bottom of the reel disk 21, a center recess hole 212 formed on the reel disk 21, a magnet 213 disposed in the reel disk 21, an annular groove 211 formed on the reel disk 21, and a hollow casing 231 covering the base seat 232. The hollow casing 231 has a through hole 235. A plug 233 is disposed on the hollow casing 231. A lead wire 222 surrounds the annular bosses 221. An end of the connection wire 242 is connected to one of the reeds 215. The connection wire 242 winds the annular groove 211. The earphone/microphone union device 24 has an earphone 241 and a microphone 243.

Referring to FIGS. 5 and 6, the plug 233 is inserted in a mobile phone 4.

Referring to FIG. 7, a second earphone/microphone assembly comprises a main body 2a, an earphone/microphone union device 24a, a connection wire 242a connected to the main body 2a and the earphone/microphone union device 24a, and a flexible pipe 5a connected to the main body 2a and a plug 233a. Therefore, the angle between the flexible pipe 5a and the plug 233a can be adjusted.

Referring to FIGS. 8 and 8A, a third earphone/microphone assembly comprises a main body 2b, an earphone/microphone union device 24b, a connection wire 242b connected to the main body 2b and the earphone/microphone union device 24b, a first flexible pipe 61b connected to the main body 2b and a second flexible pipe 62b, and the second flexible pipe 5b connected to the main body 2b and a plug 233b. Since the first flexible pipe 61b and the second flexible pipe 62b are connected pivotally, the angle between the first flexible pipe 61b and the second flexible pipe 62b can be adjusted.

Referring to FIGS. 9 and 9A, a fourth earphone/microphone assembly comprises a main body 2c, an earphone/microphone union device 24c, a first connection wire 242c connected to the main body 2c and the earphone/microphone union device 24c, a second connection wire 26c connected to the main body 2c and a plug 233c, a plurality of insertion holes 25c formed on a bottom of the main body 2c, and a base plate 7c disposed on the bottom of the main body 2c. The base plate 7c has a flat plate 71c, two arm plates 72c disposed on the flat plate 71c, and a plurality of clamp hooks 711c disposed on the flat plate 71c. The clamp hooks 711c are inserted in the corresponding insertion holes 25c respectively. Each arm plate 72c has a clamp flange end 722c. Referring

to FIG. 10, a mobile phone 4c has a jack 41c receiving the plug 233c, and a movable plate 42c. Each clamp flange end 722c clamps the movable plate 42c. The earphone/microphone union device 24c has an earphone 241c and a microphone 243c.

Referring to FIGS. 11 and 11A, a fifth earphone/microphone assembly comprises a main body 2d, an earphone/microphone union device 24d, a first connection wire 242d connected to the main body 2d and the earphone/microphone union device 24d, a second connection wire 26d connected to the main body 2d and a plug 233d, and a base plate 7d disposed on the bottom of the main body 2d. The base plate 7d has two arm plates 72d. Each arm plate 72d has a clamp flange end 722d and a recess hole 723d. A mobile phone 4d has a jack 41d receiving the plug 233d, and a movable plate 42d. The movable plate 42d has two lateral protrusions 421d disposed on two laterals of the movable plate 42d to be inserted in the corresponding recess holes 723d respectively. Each clamp flange end 722d clamps the movable plate 42d.

Referring to FIG. 12, a sixth earphone/microphone assembly comprises a main body 2e and a plug 8e disposed on the main body 2e. A mobile phone 4e has a blind hole 43e receiving the plug 8e. Two clip holes 431e are formed in the mobile phone 4e to communicate with

the blind hole 43e. The plug 8e has a plurality of conductors 81e and two elastic clamps 82e. Each elastic clamp 82e has a clip protrusion 822e inserted in each respective clip hole 431e. Two press plates 821e are connected to the corresponding elastic clamps 82e respectively.

Referring to FIGS. 13 and 14, a seventh earphone/microphone assembly comprises a main body 2f and a plug seat 9f disposed on the main body 2f. A mobile phone 4f has two blind holes 45f and a plurality of electrode plates 44f. The plug seat 9f has two elastic hooks 92f inserted in the corresponding blind holes 45f respectively and a plurality of probes 91f contacting the electrode plates 44f.

Referring to FIGS. 15, 15A, 15B and 16, an eighth earphone/microphone assembly comprises a main body 2g, an earphone/microphone union device 24g, and a connection wire 242g connected to the main body 2g and the earphone/microphone union device 24g. The main body 2g has a base seat 232g, a wire receiving disk 22g disposed in the base seat 232g, a plurality of annular bosses 221g formed on the wire receiving disk 22g, a reel disk 21g disposed in the base seat 232g to cover the wire receiving disk 22g, and a hollow casing 231g covering the base seat 232g. The base seat 232g has a lead hole 234g, a

press rod 2321g and a plurality of protrusions 2322g. The reel disk 21g has a lower disk 218g and an upper disk 216g disposed on the lower disk 218g. The lower disk 218g has a plurality of protruded blocks 219g disposed on a bottom of the lower disk 218g, a plurality of reeds 215g disposed on the bottom of the lower disk 218g, a ring 2182g disposed on the lower disk 218g, and a notch 2181g formed on the ring 2181g. The upper disk 216g has a center recess hole 212g formed on the upper disk 216g, a magnet 213g disposed in the upper disk 216g, a round plate 2161g disposed on a bottom of the upper disk 216g, two posts 2162g disposed on a bottom of the round plate 2161g, and a spacing 2163g defined between two posts 2162g. A spiral spring 217g is disposed in the ring 2182g. The spiral spring 217g has a first end 2171g and a second end 2172g. The hollow casing 231g has a through hole 235g and a round hole 2311g. A plug 233g is disposed on the hollow casing 231g. A lead wire 222g surrounds the annular bosses 221g. An end of the connection wire 242g is connected to one of the reeds 215g. The connection wire 242g winds the annular groove 211g. The press rod 2321g passes through the round hole 2311g. The first end 2171g of the spiral spring 217g is inserted in the spacing 2163g. The earphone/microphone union device 24g has an earphone 241g and a microphone 243g.

CLAIMS

1. An earphone/micro phone assembly comprises a main body 2, an earphone/microphone union device 24, and a connection wire 242 connected to the main body 2 and the earphone/microphone union device 24, characterized in that:

the main body 2 having a base seat 232,

the base seat 232 having a lead hole 234,

a wire receiving disk 22 disposed in the base seat 232,

a plurality of annular bosses 221 formed on the wire receiving disk 22,

a reel disk 21 disposed in the base seat 232 to cover the wire receiving disk 22,

a plurality of reeds 215 disposed on a bottom of the reel disk 21,

a center recess hole 212 formed on the reel disk 21,

a magnet 213 disposed in the reel disk 21,

an annular groove 211 formed on the reel disk 21,

a hollow casing 231 covering the base seat 232,

the hollow casing 231 having a through hole 235,

a plug 233 disposed on the hollow casing 231,

a lead wire 222 surrounding the annular bosses 221,

an end of the connection wire 242 connected to one of the reeds 215, and

the connection wire 242 winding the annular groove

211.

2. An earphone/micro phone assembly comprises a main body 2g, an earphone/microphone union device 24g, and a connection wire 242g connected to the main body 2g and the earphone/microphone union device 24, characterized in that:

the main body 2g having a base seat 232g, a wire receiving disk 22g disposed in the base seat 232g, a plurality of annular bosses 221g formed on the wire receiving disk 22g, a reel disk 21g disposed in the base seat 232g to cover the wire receiving disk 22g, and a hollow casing 231g covering the base seat 232g,

the base seat 232g having a lead hole 234g, a press rod 2321g and a plurality of protrusions 2322g,

the reel disk 21g having a lower disk 218g and an upper disk 216g disposed on the lower disk 218g,

the lower disk 218g having a plurality of protruded blocks 219g disposed on a bottom of the lower disk 218g, a plurality of reeds 215g disposed on the bottom of the lower disk 218g, a ring 2182g disposed on the lower disk 218g, and a notch 2181g formed on the ring 2181g,

the upper disk 216g having a center recess hole 212g formed on the upper disk 216g, a magnet 213g disposed in the upper disk 216g, a round plate 2161g disposed on a bottom of the upper disk 216g, two posts 2162g disposed on

a bottom of the round plate 2161g, and a spacing 2163g defined between two posts 2162g,

a spiral spring 217g disposed in the ring,

the spiral spring 217g having a first end 2171g and a second end 2172g,

the hollow casing 231g having a through hole 235g and a round hole 2311g,

a plug 233g disposed on the hollow casing 231g,

a lead wire 222g surrounding the annular bosses 221g,

an end of the connection wire 242g connected to one of the reeds 215g,

the connection wire 242g winding the annular groove 211g,

the press rod 2321g passing through the round hole 2311g, and

the first end 2171g of the spiral spring 217g inserted in the spacing 2163g.

3. An earphone/micro phone assembly substantially as herein described and illustrated with reference to the accompanying drawings.

Patent Office

Ω

Application No: GB 9717690.3
Claims searched: 1&2

Examiner: Ruth Patterson
Date of search: 4 November 1997

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): H4J (JA, JAAX, JDS, JL), H2E (EDCL)

Int Cl (Ed.6): H01R 13/72; H02G 11/00, 11/02; H04M 1/05, 1/15; H04R 1/10, 5/033.

Other: Online: WPI, JAPIO, CLAIMS

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
A	US 5482607 A	(HSIAO) see whole document.	1,2
A	US 5422957 A	(CUMMINS) see whole document	1,2
A	US 5339461 A	(LUPLOW) see whole document	1,2
A	US 5241593 A	(WAGNER) see whole document	1,2
A	US 4989805 A	(BURKE) see whole document	1,2
A	DE 29621717 U1	(E. LEAD ELECTRONIC) see whole doc.	1,2

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.