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(11)

EP 1 176 665 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
30.01.2002 Bulletin 2002/05

(51) Int Cl.7: **H01Q 1/44**

(21) Application number: **00116107.4**

(22) Date of filing: **28.07.2000**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE**
Designated Extension States:
AL LT LV MK RO SI

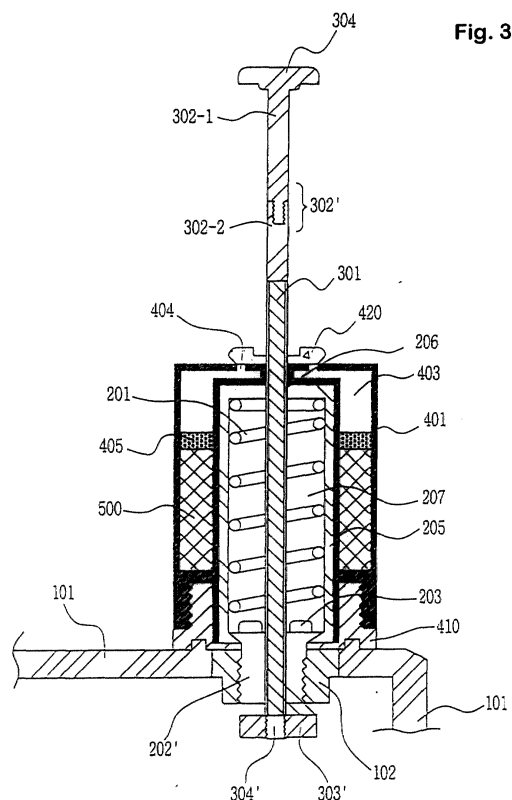
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(54) **Antenna assembly structure with perfume diffusion device to be used in a portable radiotelephone**

(57) The antenna assembly structure with a perfume diffuser in a portable radiotelephone comprises a helical antenna cover combined with and fixed to a main body housing, the helical antenna cover having a central hole in which a retractable antenna can be extended upwards from the main body housing and having an internal space isolated by a constant distance from the retractable antenna, wherein the internal space accepts a helical antenna and a perfume accepting part wrapping around the exterior of the helical antenna cover and having an inner space with perfume and a perfume diffusing aperture; a fixing part positioned between a lower portion of the perfume accepting part and the main body housing, for combinedly fixing the perfume accepting part to the main body housing; and a perfume diffusion on-off part installed on an upper portion of the perfume accepting part, for opening and closing the perfume diffusing aperture of the perfume accepting part according to a retraction and extension of the retractable antenna, thereby enabling to diffuse the perfume optimally in a desired direction without an influence upon obtaining a small size or upon a telephone conversion, together with a free attachment and detachment or a change thereof.



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Description

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates to a portable radiotelephone with an improved structure, and more particularly, to an antenna assembly structure of a portable radiotelephone with a function of perfume diffusion during a telephone conversation.

Discussion of Related Art

[0002] A portable radiotelephone generally named a handheld telephone or a portable telephone is getting gradually cheaper with a high function, thus is being widely spread as a personnel mobile communication unit. People living in rather various life patterns and busy social life according to an advanced and civilized society utilize a mobile telephone conversation or a data communication in radio through a portable radiotelephone. Such use for the portable radiotelephone is being gradually increased with a use of more long time.

[0003] A user mainly uses his mouth and ear during using the portable radiotelephone, namely, during his conversation is done through the portable radiotelephone based on the structure of Fig. 1. At this time, a nose of the user is near to the portable radiotelephone during using it, thus he may smell of the radiotelephone itself or its adjacent others. For example, in case the telephone is ringing on and its user opens its flip 14 of the instrumental main body 50 to converse with the other party through the radiotelephone, it may occur a case that the user feels a lower sensitivity during the telephone conversation and he may clarify a receipt sensitivity displaying bar. At this time, if the receipt sensitivity displaying bar represents a low state, the user may lengthen a rod antenna 302 at maximum to heighten the sensitivity in the telephone conversation. Herewith he may smell of the instrumental main body 50 through his nose. A general portable radiotelephone does not have the smell or has just petty smell from an internal electronic circuit board or its case. However, in case the radiotelephone is left for a long time in a place with some special smell, or a repulsive smell is stained on the instrumental main body 50 due to a careless, or the user himself eats food having a heavy smell such as garlic, pork, alcoholic drink, etc., the user may smell of an offensive odor from the portable radiotelephone, directly or indirectly. Therefore, it is difficult to done a pleasant telephone conversation between the user and his conversing person.

[0004] Furthermore, in case the other party is a special person for the user, not only there is some worry whether an imagination of the user himself may fall, but also it is difficult to impress a favorable imagination of the other party himself upon the user, thus it is undesirable for each other. The more the number and time of telephone conversations become, the more such undesirable phenomenon becomes serious. Accordingly some settlement for such problems is strongly required.

able for each other. The more the number and time of telephone conversations become, the more such undesirable phenomenon becomes serious. Accordingly some settlement for such problems is strongly required.

[0005] Meantime, the antenna assembly of the portable radiotelephone mostly depends upon an import, which brings about a rise of price and a disadvantage in a price competition thereof. Accordingly, a settlement for this problem is also required.

SUMMARY OF THE INVENTION

[0006] It is, therefore, a primary object of the present invention to provide a portable radiotelephone with an improved structure, in which problems causable in a conventional technique are settled.

[0007] Another object of the present invention is to provide an antenna assembly structure of a portable radiotelephone with a perfume diffusion function even without a burden for an excessive price.

[0008] A still another object of the present invention is to provide an antenna assembly structure and a method of diffusing perfume through an antenna assembly, in a portable radiotelephone, in which an attachment/detachment or an exchange of the assembly is free and perfume is diffused optimally without any influence upon obtaining an instrumental small size and a telephone conversation.

[0009] To achieve the above objects and advantages, in accordance with the present invention, an antenna assembly structure of a portable radiotelephone based on a first aspect comprises a helical antenna cover combined with and fixed to a main body housing, the helical antenna cover having a central hole into which a retractable antenna can be extended upwards from the main body housing and having an internal space isolated by a constant distance from the retractable antenna, wherein the internal space accepts a helical antenna wound thereon by the number determined in a helical type; a perfume accepting part wrapping around the exterior of the helical antenna cover and having an inner space with perfume and a perfume diffusing aperture; a fixing part positioned between a lower portion of the perfume accepting part and the main body housing, for fixing in a combination state the perfume accepting part to the main body housing; and a perfume diffusion on-off part installed on an upper portion of the perfume accepting part, for opening and closing the perfume diffusing aperture of the perfume accepting part according to a retraction and an extension of the retractable antenna, wherein the inner space of the perfume accepting part has preferably an installment of a perfume diffusion controlling film such as sponge etc. for preventing the perfume from being wasted excessively.

[0010] In accordance with an inventive second aspect, an antenna assembly structure of a portable radiotelephone includes a helical antenna cover combined with and fixed to a main body housing, the helical an-

tenna cover having a central hole in which a retractable antenna may be extended upwards from the main body housing, and having an internal space isolated by a constant distance from the retractable antenna, wherein the internal space accepts a helical antenna wound thereon by the number determined in a helical type; a perfume accepting part wrapping around the exterior of the helical antenna cover and having an inner space with perfume and a perfume diffusing aperture; a fixing connection part for performing a fixing connection between a lower portion of the perfume accepting part and the main body housing so that the perfume accepting part is fixed in a combination state to the main body housing; and a perfume diffusion controlling film positioned in the inner space of the perfume accepting part, for preventing perfume from being wasted excessively, wherein a knob of the retractable antenna opens and closes the perfume diffusing aperture of the perfume accepting part in an extension or retraction case of the retractable antenna.

[0011] In such constructive antenna assembly structure of the portable radiotelephone with a perfume diffusion function, perfume of a solid, liquid or gas state can be optimally diffused to the outside in a desired direction, with such an additional advantage that an attachment/detachment or an exchange of the antenna assembly is free without an influence upon gaining an instrumental small size and a telephone conversation.

BRIEF DESCRIPTION OF THE ATTACHED DRAWING

[0012] The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a part of this specification, illustrate embodiments of the invention and together with the description serve to explain the principles of the invention.

[0013] In the drawings:

Figs. 1 and 2 represent diagrams showing the structure of a portable radiotelephone and an antenna in a conventional technique;

Fig. 3 indicates a sectional view of an antenna assembly structure in accordance with one preferred embodiment of the present invention;

Fig. 4 depicts a plane view of the antenna assembly structure shown in Fig. 3; and

Fig. 5 illustrates a sectional view of an antenna assembly structure in another preferred embodiment of the present invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

[0014] Reference will now be made in detail to the preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings. The same or similar parts herein have the same or similar reference numbers as possible for the sake of a de-

scriptive and understanding convenience.

[0015] Fig. 3 sets forth a sectional view of an antenna assembly structure in one preferred embodiment of the present invention. The sectional structure of Fig. 3 just shows one example in case that an antenna assembling part 10 of Fig. 1 has the structure shown in Fig. 2. As shown in Fig. 2 it is usually used much an antenna assembly equipped with a rod antenna and with a helical antenna together, so it will be noted for reference that the inventive described embodiment is applied by one example for the structure shown in Fig. 2.

[0016] Before explaining Fig. 3, for understanding the invention more, the structure of the antenna assembly shown in Fig. 2 is described in brief in the following. Fig. 2 was disclosed in the conventional technique drawing of U.S. Patent Number 5,764,191 patented and published in U.S. on June 09, 1998. In Fig. 2, reference numbers, 101 represents a main body housing of a mobile radiotelephone, 102 a metal fitting, 103 an antenna clip, 104 a power supplying circuit, 105 a ground circuit board, 201 a helical antenna, 202 a first metal fitting, 203 a second metal fitting, 204 a snap-in recess, 205 a helical antenna cover. 301 a rod antenna, 302 a rod antenna cover, 303 a metal stopper, 304 a knob, and 305 a second snap-in protrusion. In case there is the helical antenna cover 205 based on the structure of Fig. 2, it can be provided as shown in Fig. 3 the construction that perfume is optimally diffused to the outside in a desired direction without an influence upon gaining an instrumental small size and a telephone conversation, with a free attachment/detachment or change thereof.

[0017] Referring to Figs. 3 and 4, constructive elements in diffusing perfume, and their connective relations, are described as follows. Fig. 4 indicates a plane view of the antenna assembly sectional structure shown in Fig. 3.

[0018] In Fig. 3, the helical antenna cover 205 has a formation of a central hole 206 in which the retractable antenna 301 can be extended upwards from the main body housing 101 and has a formation of an internal space 207 isolated by a constant distance from the retractable antenna 301, the internal space 207 accepting the helical antenna 201 wound thereon by the number determined in a helical type. The helical antenna cover 205 is combinedly fixed to the main body housing 101 through the metal fitting 102, 202'. The metal fitting 202' has the same thickness as its corresponding metal fitting 202 of Fig. 2 but a length of a screw unit thereof may be a bit longer than that of the metal fitting 202 so that the perfume accepting part 401 based on one embodiment of the invention is completely fixed to the main body 101.

[0019] The perfume accepting part 401 wraps around the exterior of the helical antenna cover 205 and includes an inner space with perfume 500 and a perfume diffusing aperture 404. The perfume accepting part 401 may be a receptacle of ABS, PP, PC or polyurethane material, into which perfume is put, and this perfume ac-

cepting part 401 may be manufactured by an injection molding method. The perfume accepting part 401 should be able to maintain a sealing state in case liquid perfume is put therein, and a perfume diffusion controlling film 405 made of sponge or cotton can be installed in the inner space of the perfume accepting part 401 to prevent the perfume from being wasted excessively, wherein the perfume may be one state out of solid, liquid or gas.

[0020] A fixing part 410 is positioned between a lower portion of the perfume accepting part 401 and the main body housing 101, to fix in a combination state the perfume accepting part 401 to the main body housing 101. Herewith a first inner diameter of the fixing part 410 having a jaw is formed as such a size that a screw outer diameter of the metal fitting 202' can be scarcely passed through it, and a second inner diameter is formed by a size enough to accept a lower outer diameter of the helical antenna cover 205. The fixing part 410 is closely fixed to the main body housing 101 through a fixing of the metal fitting 202', and its change and attachment/detachment are free since it is combined with the perfume accepting part 401 by screw.

[0021] A perfume diffusion on-off part 420 made of rubber packing etc. is set on an upper portion of the perfume accepting part 401 to open and close the perfume diffusing aperture 404 of the perfume accepting part 401 according to an extension and retraction of the retractable antenna 301. Thereby the perfume is diffused when a user extends the antenna upwards from the main body of the radiotelephone, and the diffusion of the perfume stops when he makes the antenna to be retracted into the main body of the radiotelephone. According to that, the desired perfume can be diffused by the optimal amount to the outside in a desired direction. In Fig. 4, four perfume diffusion apertures 404 are disposed, maintaining an interval of 90 degrees on a concentric circle.

[0022] To smoothly exchange the receptacle with another receptacle with perfume when the perfume was completely used up, a metal stopper 303' may be combined in screw with a screw unit 304' of the retractable antenna 301 so as to pull the retractable antenna from the perfume accepting part 401, or an upper retractable antenna cover 302-1 may be combined in screw with a lower retractable antenna cover 302-2 on the head portion of the retractable antenna 301 so as to provide a screw combination unit 302'.

[0023] For the sake of a descriptive convenience, in the above embodiment a case for the base loading type was herein disclosed in one example, namely, the case the helical antenna cover 205 has a fixing state to the main body housing 101 even when the retractable antenna 301 is extended, but it is natural that a perfume diffusion function can be obtained by a partial exchange of the concerned structure even in a case of a top loading type that all of the retractable antenna 301 and the helical antenna cover 205 can be extended upwards

from the main body housing 101. That is, there is herein a further advantage of protecting the human body from harmful electromagnetic wave during a telephone conversation when paint for the electromagnetic wave shielding is coated on the surface of the retractable antenna cover 302 and the helical antenna cover 205.

[0024] Herewith, it is not always need to mount the helical type antenna within the antenna cover 205, that is, it is valid to replace the helical antenna with a cylinder type cooper antenna made of a thin cooper layer different from the helical type antenna wound by coil spring thereon. It means in this case that the cylinder type cooper antenna is covered by the antenna cover 205. The cylinder type cooper antenna is manufactured by producing a thin cooper plate like a pattern of a printed circuit board then making it a round shape, namely, a cylinder shape, to thereby get an operational characteristic and good mass production thereof.

[0025] Another preferred embodiment of the invention is described in the following with reference to Fig. 5. Fig. 5 illustrates a sectional view of an antenna assembly structure in accordance with another embodiment of the present invention. The structure of Fig. 5 is similar to the basic structure of Fig. 3 but is partially distinguished from Fig. 3 in material and an assembling state. In Fig. 5, the helical antenna cover 205 has a formation of the central hole 206 in which the retractable antenna 301 can be extended upwards and has a formation of the internal space 207 isolated by a constant distance from the retractable antenna 301, wherein the internal space 207 accepts the helical antenna 201 wound thereon by the number determined in a helical type. The helical antenna cover 205 is closely installed between a concave flute formed on the metal fitting 202' and a cover 407 covering the perfume accepting part 401, wherein the metal fitting 202' includes first and second screw units 201-1, 202-2 to fix the perfume accepting part 401 to the main body housing in another embodiment of the invention. The first screw unit 201-1 is combined in screw with a lower portion of the perfume accepting part 401, and the second screw unit 202-2 is fastened in screw to a female screw formed in the main body housing. The perfume accepting part 401 is free in an attachment/detachment on/from the main body housing by using the first and second screw units 201-1, 202-2 of the metal fitting 202', thus its replacement is very easy.

[0026] The perfume accepting part 401 wraps around the exterior of the helical antenna cover 205 and includes the inner space with the perfume 500 and the perfume diffusing aperture 404. The perfume accepting part 401 may be a receptacle made of ABS, PP, PC or polyurethane material, into which the perfume is put, and this perfume accepting part 401 may be manufactured by an injection molding method. The perfume accepting part 401 should be able to maintain a sealing state in case liquid perfume is put thereinto. In a case of Fig. 5, the sealing state is maintained by a bonding or packing process in performing the combination by the

screw unit 201-1. Sponge or cotton etc. as the perfume diffusion controlling film 405' can be inserted into the inner space of the perfume accepting part 401 to prevent the perfume from being wasted excessively.

[0027] In Fig. 5, the knob 304 directly opens or closes the perfume diffusing aperture 404 of the perfume accepting part 401 according to an extension and retraction of the retractable antenna 301 without the perfume diffusion on-off part 420 shown in Fig. 3. That is, perfume is diffused when the user extends the antenna upwards from the main body of the radiotelephone, and the perfume is not diffused or its diffusion is minimized when the antenna is retracted into the main body of the radiotelephone. According to that, perfume having desired fragrance can be diffused to the outside suitably, wherein the perfume may be provided as one out of solid, liquid and gas state, and herewith it is desirable that the state of perfume is maintained as a gel state.

[0028] The metal stopper 303' is also provided, combined by screw with the screw unit 304' of the retractable antenna 301 so as to pull the retractable antenna from the perfume accepting part 401 so that the receptacle can be smoothly replaced with another when the perfume is used up.

[0029] Meantime, the metal fitting 202', the knob 304 on the upper portion of an insulation tube 306 for isolating the retractable antenna 301 therefrom and a conductive retractable antenna cover 308 on the lower portion thereof may be manufactured by brass material, so it can be gotten a graceful external appearance to thereby create a commercial demand therefor by an aesthetic sense. Of course, the perfume diffusion function can be smoothly obtained only by a partial change of the concerned structure even in the top loading type, though the case of the base loading type was described above as an example in the second embodiment for the sake of the descriptive convenience. An additional advantage of protecting the human body from harmful electromagnetic wave can be further gained during the telephone conversation in case that special paint for an electromagnetic wave shielding is formed on the surface of the retractable antenna cover 302 and the helical antenna cover 205.

[0030] Likewise, in this embodiment it is no always need to mount the helical type antenna within the antenna cover 205, that is, it is valid to replace the helical antenna with a cylinder type cooper antenna made of a thin cooper layer different from the helical type antenna wound by coil spring thereon. It means in this case that the cylinder type cooper antenna is covered by the antenna cover 205. The cylinder type cooper antenna is manufactured by producing a thin cooper plate like a pattern of a printed circuit board then making it a round shape, namely, a cylinder shape, to thereby get an operational characteristic and good mass production thereof.

[0031] As afore-mentioned, in accordance with the present invention, the antenna assembly structure of a

portable radiotelephone with perfume diffusing function can diffuse the desired perfume optimally to the outside in a required direction without an influence upon achieving an instrumental small size or upon a telephone conversation, together with its free attachment/detachment or replacement.

[0032] Although the invention has been shown and described with respect to the preferred embodiments, it will be understood by those skilled in the art that various changes and modifications may be made without departing from the spirit and scope of the invention as defined in the following claims. It is, of course, to use the radiotelephone by diffusing perfume whenever a flip of the radiotelephone is opened or optionally smelling of various perfume through a division of a receptacle if necessary, though an antenna cover in a portable radiotelephone was proposed above like the receptacle capable of absorbing radio wave and simultaneously with perfume, to thereby smell of perfume every using the phone, as one example.

Claims

1. An antenna assembly structure of a portable radiotelephone comprising:

a stage type antenna cover (205) fixed in a combined state to a main body housing (101), said stage type antenna cover having a central hole in which a retractable antenna (301) can be extended upwards from the main body housing and having an internal space (207) isolated by some distance from the retractable antenna, wherein said internal space accepts a stage type antenna (201);

a perfume accepting part (401) wrapping around the exterior of the stage type antenna cover and having an inner space with perfume (500) and a perfume diffusing aperture (404);

a fixing part (410) positioned between a lower portion of the perfume accepting part and the main body housing, for fixing in a combination state the perfume accepting part to the main body housing; and

a perfume diffusion control means for opening and closing the perfume diffusing aperture of the perfume accepting part according to a retraction and extension of the retractable antenna and/or for preventing perfume from being wasted excessively.

2. The structure of claim 1, wherein said perfume diffusion control means comprises a perfume diffusion controlling film (405) positioned in the inner space of the perfume accepting part, for preventing perfume from being wasted excessively.

3. The structure of claim 1 or 2, wherein said perfume diffusion control means comprises a knob (304) of said retractable antenna or a perfume diffusion on-off part (420) installed on an upper portion of the perfume accepting part for opening and closing the perfume diffusion aperture of the perfume accepting part according to a retraction and extension of the retractable antenna. 5
4. The structure of claim 3, wherein said perfume diffusion on-off part is rubber packing. 10
5. The structure of any of claims 1 to 4, wherein the material of said perfume accepting part and said fixing part is the same as that of said stage type antenna cover. 15
6. A method of diffusing perfume in a portable radiotelephone, comprising the steps of: 20
- installing fixedly a perfume accepting part on the exterior of a stage type antenna cover fixed to the radiotelephone, said perfume accepting part having an inner space with the perfume and a perfume diffusing aperture; and 25
- opening and closing the perfume diffusing aperture of the perfume accepting part according to an extension and retraction of a retractable antenna, to thereby discharge fragrance predetermined, to the outside. 30

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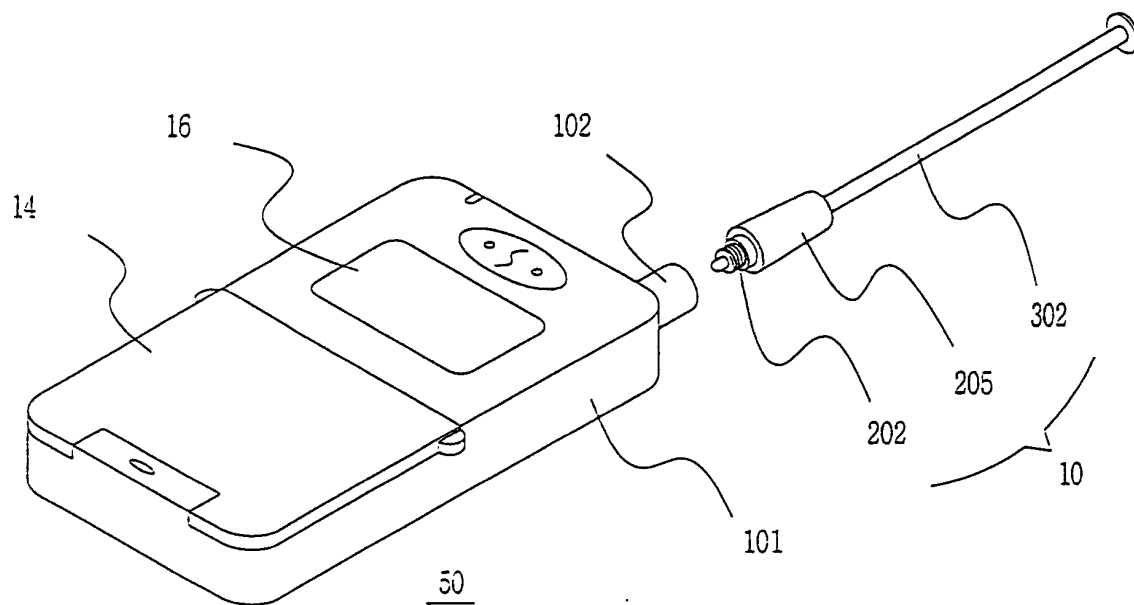


FIG. 1
(PRIOR ART)

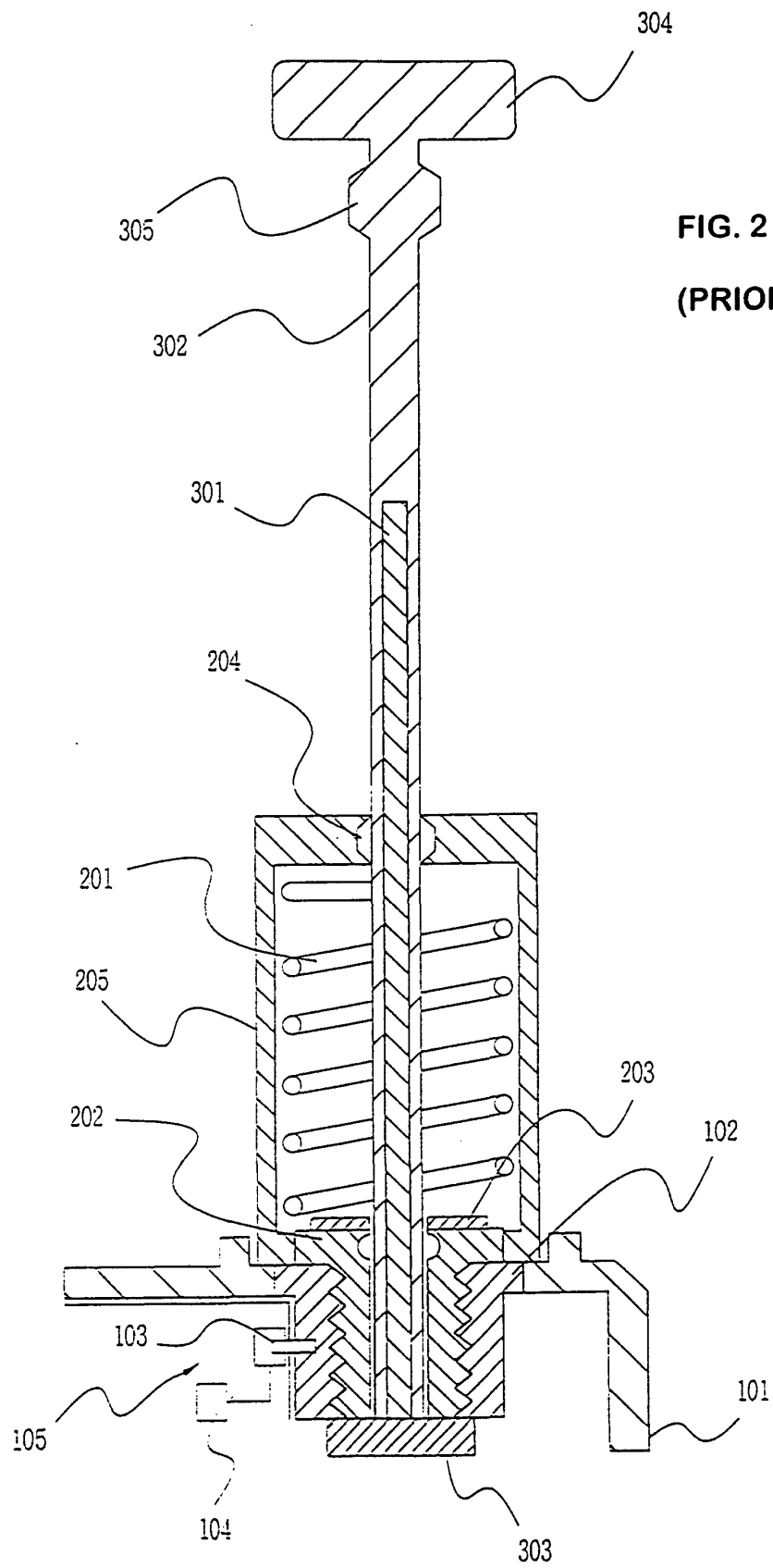
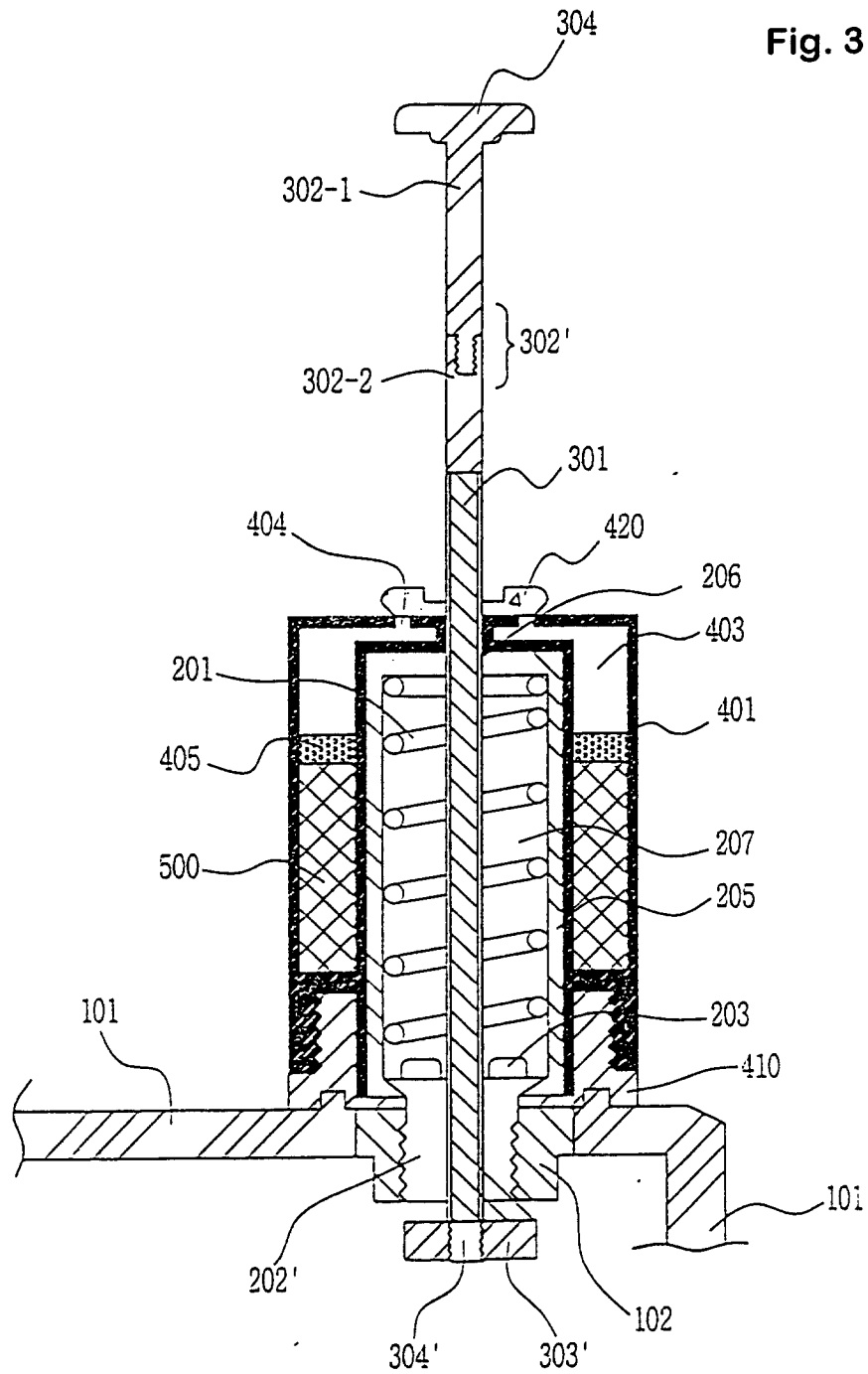


FIG. 2
(PRIOR ART)

Fig. 3



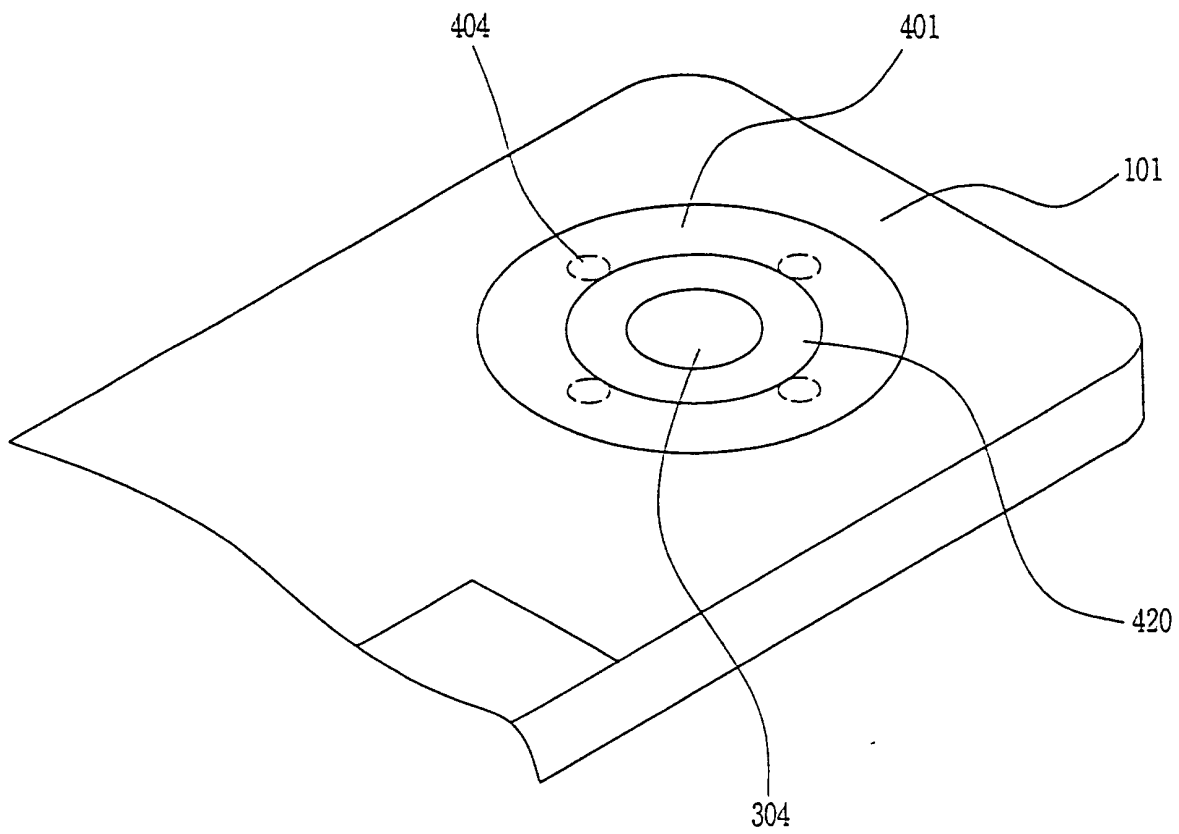
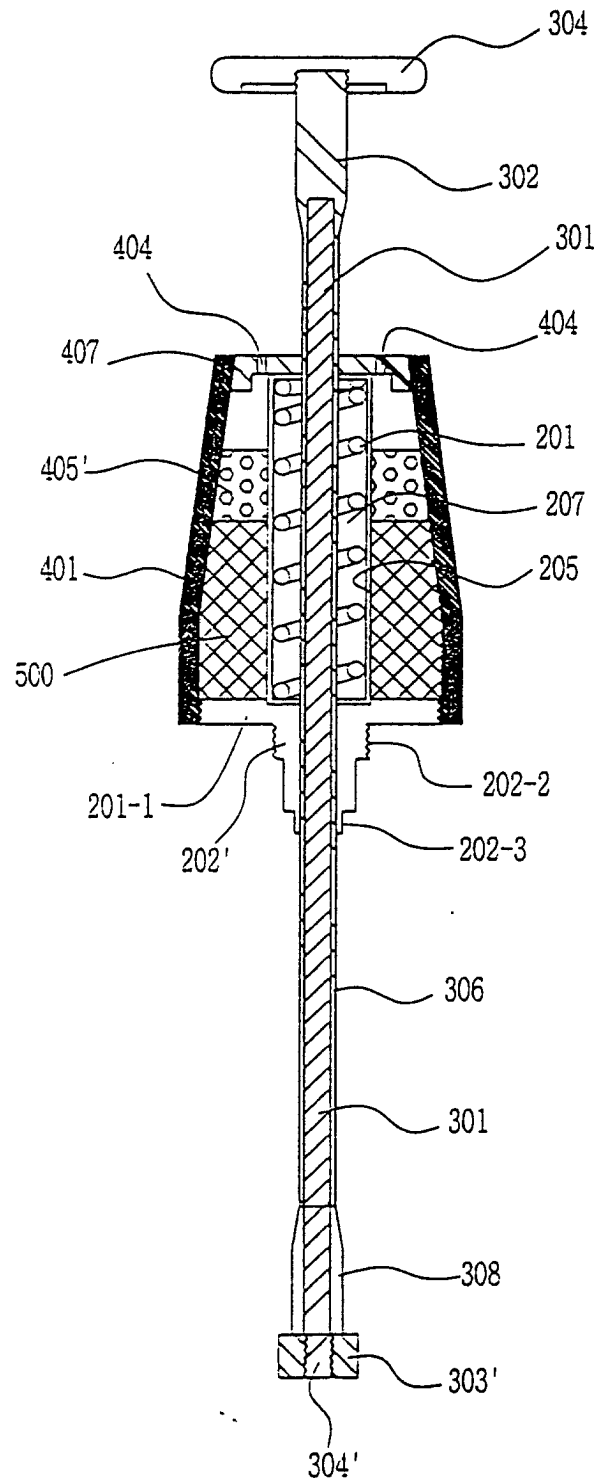


FIG. 4

FIG. 5





European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 00 11 6107

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	GB 2 292 271 A (HUNG CHIN KUO) 14 February 1996 (1996-02-14) * abstract *	1-6	H01Q1/44
A	--- PATENT ABSTRACTS OF JAPAN vol. 012, no. 094 (E-593), 26 March 1988 (1988-03-26) & JP 62 226749 A (SAN TEREHON KK), 5 October 1987 (1987-10-05) * abstract *	1-6	
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A	--- US 5 136 640 A (KIM YUN S) 4 August 1992 (1992-08-04) * column 1, line 8 - line 38 *	1-6	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 29 November 2000	Examiner Wattiaux, V
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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