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Filter for air conditioner and device for mounting the same

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(71) Applicant(s)
LG Electronics Inc.

(72) Inventor(s)
In Ho Park; Young Jun Jang

(74) Agent/Attorney
DAVIES COLLISON CAVE,1 Little Collins Street,MELBOURNE VIC 3000

(56) Related Art
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JP 10-151942
JP 11-287512

A 10x10 grid of dots. The first four columns contain the letter 'B' formed by dots. The last four columns contain the letter 'E' formed by dots.

**FILTER FOR AIR CONDITIONER AND
DEVICE FOR MOUNTING THE SAME**



The present invention relates to an air conditioner, and more particularly, to a filter for an indoor unit of an air conditioner and a device for easily mounting the filter.

In general, a split air conditioner has an outdoor unit for placing outside of a room and an indoor unit for placing inside of the room. The indoor unit has a heat exchanger inside thereof for heat exchange of room air, to cool down to a desired temperature. Recently, various filters have been fitted to the indoor unit for cleaning room air.

FIG. 1 illustrates a perspective disassembled view of an indoor unit of a related art air conditioner, and FIG. 2 illustrates a section of the indoor unit in FIG. 1, referring to which a structure of the indoor unit of the related art air conditioner having a filter fitted thereto will be explained.



There is a fan assembly 3 in a body 1 of the indoor unit for drawing indoor air, and a heat exchanger 4 in front of the fan assembly 3. The heat exchanger 4 is provided with a refrigerant pipe, heat exchange fins on the refrigerant pipe, and end plates 4a on opposite sides of the heat exchange fins. And, there is a front panel 2 in a front portion of the body 1, and a suction grill 5 rotatably fitted in front of the front panel 2 for drawing indoor air. There is a discharge opening 9 in a bottom portion of the front panel 2, with an open/closing louvre fitted thereto. In the meantime, there are various filters fitted inside of the indoor unit for cleaning circulating air. For example, there is a pre-filter 6 fitted to the front panel 2, and in general another kind of filter 7 is fitted to the rear of the pre-filter 6. The prefilter 6 is made of a mesh form fabric and is provided for filtering comparatively large particles. Though there are different kinds of filters 7, such as a deodorizing filter of active carbon or a filter employing plasma discharge for collecting fine particles (called "electrostatic filter"), the deodorizing filter is generally used. That is, when the air conditioner is put into operation, room air flows into



the indoor unit through the suction grill 5, is cleaned as it passes through the prefilter 6, and has odours and smells removed as it passes through the filter 7, for example, the deodorizing filter. Then, the cleaned air is heat exchanged in the heat exchanger 4 into a low temperature state and is discharged through the discharge opening 9.

A related art filter mounting structure will be explained, with reference to FIGS. 1 and 2.

There are an upper fixing member 12 and a lower fixing member 14 formed on the middle frame 2a and a side frame 2b of the front panel 2, to which the prefilter 6 and the filter 7 are fitted. Since the deodorizing filter is generally used as the filter 7, the fixing members 12 and 14 are also designed to fit the deodorizing filter thereto. That is, as shown in FIG. 2, the prefilter 6 is supported on a top surface of the upper fixing member 12, and the filter 7 is mounted between the upper fixing member 12 and the lower fixing member 14. The filter 7 is kept in place by means of the projection 14a formed at a fore end of the lower fixing member 14.

However, the related art device for mounting a filter has the following problems.

First, the mounting of filter 7 in the related art is not firm or securely held, because the filter 7 is merely caught at the projection 14a on a fixing member 14 and only this projection 14a is used to prevent the filter from falling off the air conditioner. However, there are no means for holding the filter firmly. This results in noise being generated as the filter 7 is shaken during operation of the air conditioner.

Second, the close mounting of the prefilter 6 and the filter 7 in the related art leads to small spaces being formed between the prefilter 6 and the filter 7, and between the filter 7 and the heat exchanger 4. This reduces suction air quantity, causes a drop in heat exchange



efficiency and generates noise as the air moves in the small spaces.

Third, the related art filter mounting structure is only suitable for mounting a simple structure deodorizing filter, and is not suitable for mounting a high functional filter, such as an electrostatic filter, which has recently become popular. This is because the prefilter should be mounted at a location spaced sufficiently far from the electrostatic filter for safe operation of the prefilter and without causing electrical hindrance to components around the electrostatic filter, particularly as the electrostatic filter has a high voltage. In addition, it is preferable in view of a variety of requirements for the air conditioner that the deodorizing filter and/or the electrostatic filter can be mounted selectively or at the same place where required. For example, where an environment requires that a deodorizing filter be fitted, the deodorizing filter can be selectively mounted, and where an environment requires the fitting of an electrostatic filter, the electrostatic filter can be selectively mounted in the air conditioner. This has not been possible in the related art.

Accordingly, the present invention provides a device for mounting a filter in an air conditioner, the air conditioner having a body, a front panel fastened to a front surface of the body, and a heat exchanger mounted in the body; the device comprising:

a filter holder mounted to an opening in the front panel for accommodating the filter, wherein the filter holder has one side fastened to an end plate of the heat exchanger and the other side is fastened to a refrigerant pipe of the heat exchanger.

The filter holder preferably includes an accommodating part for accommodating the filter, a first fastening part extended outwardly from one end of the accommodating part for fastening to an end plate of the air conditioner, and a second fastening part extended outwardly from another end of the accommodating part for fastening to a refrigerant pipe in the air



conditioner.

The filter preferably includes an upper case, and a lower case detachably coupled to the upper case, thereby forming a space inside of the upper and lower case for accommodating the filter.

A device for easily mounting of the filter in an air conditioner according to preferred embodiments of the present invention facilitates a firm mounting of the filter, and smooth flow of the air, thereby improving a heat exchange efficiency, and selective employment of a deodorizing filter or an electrostatic filter.

Accordingly, preferred embodiments of the present invention are directed to a filter for an indoor unit of an air conditioner and a device for mounting of a filter that substantially obviates one or more of the problems due to limitations and disadvantages of the related art.

An object of preferred embodiments of the present invention is to provide a device for mounting a filter, which permits an easy and firm mounting of the filter.

Another object of preferred embodiments of the present invention is to provide a device for mounting a filter, which can minimize an air quantity reduction by the filter, for improving a heat exchange efficiency.

A further object of preferred embodiments of the present invention is to provide a device for mounting a filter, which facilitates selective employment of a deodorizing filter and an electrostatic filter.

Additional features and advantages of the invention will be set forth in the description which follows, and in part will be apparent from the description, or may be learned by practice of the invention. The objectives and other advantages of preferred embodiments of the invention will be realized and attained by the structure particularly pointed out in the written



description and claims hereof as well as the appended drawings.

It is to be understood that both the foregoing general description and the following detailed description are exemplary and explanatory and are intended to provide further explanation of the invention as claimed.

Preferred embodiments of the invention will now be described, by way of example only, with reference to the drawings, of which:

FIG. 1 illustrates perspective disassembled view of an indoor unit of a related art split type air conditioner,

FIG. 2 illustrates a section of the indoor unit in FIG. 1;

FIG. 3 illustrates a perspective disassembled view of a filter and a device for mounting the filter in accordance with a preferred embodiment of the present invention;

FIG. 4 illustrates a frontal perspective view of a filter holder in FIG. 3;

FIG. 5 illustrates a rear perspective view of a filter holder in FIG. 3;

FIG. 6 illustrates a section across line I-I in FIG. 3;

FIG. 7 illustrates a plan view showing assembly of the filter holder and the heat exchanger in FIG. 3;

FIG. 8 illustrates a section across line II-II in FIG. 3;

FIG. 9 illustrates a plan view and a side view each showing the filter in FIG. 3;

FIG. 10 illustrates a front view of the filter in FIG. 11;

FIG. 11 illustrates a section across line III-III in FIG. 11;

FIG. 12 illustrates a section across line IV-IV in FIG. 11;

FIG. 13 illustrates a bottom view of the upper case in FIG. 11;

FIG. 14A illustrates an enlarged perspective view of "A" part in FIG. 11;



FIG. 14B illustrates an enlarged perspective view of "B" part in FIG. 15;

FIG. 15 illustrates a section showing the filter assembled to the filter holder according to the embodiment of the present invention;

FIG. 16 illustrates a section showing the filter assembled to the filter holder according to the embodiment of the present invention;

FIG. 17 illustrates a front view showing a front panel in accordance with a preferred embodiment of the present invention;

FIG. 18 illustrates a section across V-V in FIG. 17; and,

FIG. 19 illustrates a section across VI-VI in FIG. 17.

Reference will now be made in detail to the preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings. Components of the preferred embodiments of present invention which are the same as the related art will be given the same symbols, and detailed explanations of which will be omitted.

A filter and a device for mounting the filter in accordance with a preferred embodiment of the present invention will be explained, with reference to FIG. 3. FIG. 3 illustrates a perspective disassembled view of a filter and a device for mounting the filter in accordance with the preferred embodiment of the present invention.

A basic principle of this embodiment is that, in contrast to the related art, the filter is mounted not to a front panel 2, but taking the filter holder 20 as a medium to accommodate the filter 7. This embodiment provides a firmer mounting of the filter holder and mounting of different filters more effectively. As shown in FIG. 3, the filter holder 100 is assembled as follows. The filter holder 100 in this embodiment is fastened to an end plate 4a of the heat exchanger and to a refrigerant pipe. That is, the filter holder 100 is mounted to the heat



exchanger 4 at first, and then, as the front panel 2 is mounted, one side of the filter holder 100 is fastened to the front panel 2.

A filter holder in accordance with this embodiment will be explained with reference to FIGS. 3 ~ 5.

The filter holder 100 includes an accommodating part 110 for accommodating the filter 200, a fastening part 130 for fastening to the heat exchanger, and a fastening part 120 for fastening to the heat exchanger 4 and the front panel 2. The accommodating part 110 receives and holds the filter 200, and is formed taking air flow into consideration. That is, the accommodating part 110 includes one pair of sidewalls 111a and 111b, an upper horizontal member 113 and a lower horizontal member for connecting the sidewalls 111a and 111b, and a rear wall 112, with a top side and a bottom side opened for air flow. Accordingly, there are one pair of vertical guides 116a and 116b at front and rear of the sidewalls 111a and 111b for guiding insertion of the filter 200 and holding filter 200 after insertion, such that the filter 200 is held between the one pair of guides 116a and 116b. That is, the filter 200, being inserted between the upper horizontal member 113 and the lower horizontal member 114, is held by the sidewalls 111a and 111b, the rear wall 112, and the guides 116a and 116b of the accommodating part. Preferably, there is a projection 252 inside the lower guide 116b, and there is a groove 250 fit to the projection 252 in a bottom of the filter 200, for effectively preventing the filter 200 from falling off or dislodging from filter holder 100 (see FIG. 16) (In FIG. 4, the projection 252 is not shown as the projection 252 is shaded by the ribs 115). It is preferable that the filter holder 100 is formed such that air flow through the suction grill is not impeded. Therefore, a plurality of air openings 112a are provided in the rear wall 112, and a plurality of air openings 114a are provided in the lower horizontal member 114. A plurality



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of ribs 115 are provided between the rear wall 112 and the upper horizontal member 113 of the accommodating part 110. It is preferable that the ribs 115 project outward from the filter holder 100. The ribs 115 reinforce the filter holder 100 and maintains a space between the prefilter 6 and the filter holder 100 (See FIG. 6). Accordingly, when an electrostatic filter is used as the filter, an adequate gap can be maintained between a high voltage discharge line in the electrostatic filter and the prefilter, reducing the danger from close proximity to the high voltage line. The adequate space between the prefilter and the filter is also favorable in terms of air flow. It is preferable that a plurality of wire fastening members 140 are provided on an outside surface of the rear wall 112 of the filter holder 100. The wire fastening members 140 may be, for example, "L" formed members fitted in opposite directions, alternatively, for fastening wires for supply of current to the wire fastening members 140 where an electrostatic filter is used.

The fastening parts of the filter holder 100 will be explained with reference to FIGS. 4 ~ 8. The fastening parts include first fastening part 130 and second fastening part 120, which is on an opposite side of the filter holder 100 to the side having the first fastening part 130. As shown in FIG. 5, the first fastening part 130 has a plurality of screw holes 132a for fastening to the end plate 4a of the heat exchanger with screws. A connecting piece 124 in the form of a plate is located on the bottom of the second fastening part 120, having a slot 124a at its center and a circular cut away portion 124b so as to correspond to the form of the refrigerant pipe on both sides. That is, once the connecting piece 124 is inserted between one pair of refrigerant pipes 4b, the connecting piece 124 is pressed between the cooling fins 4c, and the cut away portions 124b of the connecting piece 124 detachably engage or connect the refrigerant pipes 4b at both sides, to prevent dislodgment from refrigerant pipes 4b. The



connecting piece 124 is not limited to the one shown and explained embodiment, but there may be variations as far as the connecting piece 124 is detachably engaged or connected to the refrigerant pipe 4b and/or refrigerant fins 4c in the heat exchanger 4. For example, the connecting piece 124 may be formed to detachably engage or connect to one refrigerant pipe when the connecting piece 124 is provided with one semicircular cut away portion. Thus, one side of the filter holder 100 is fastened to the end plate 4a of the heat exchanger with screws, and the other side thereof is fitted to the refrigerant pipe 4b and the cooling fins 4c. However, additionally, it is preferable that one side of the filter holder 100 is fastened to the front panel 2, for firmer fastening. According to this, the front panel 2 may be provided with a fastening piece 32 and a positioning piece 34 having slot 34a, and the second fastening part 120 is provided with a fastening projection 126 and a positioning projection 127 on a top surface thereof. The positioning projection 127 is provided for easy positioning when the filter holder 100 is assembled with the front panel 2, and the fastening projection 126 helps to maintain a firm fastening of the filter holder 100. Accordingly, the filter holder 100 of this embodiment of the present invention facilitates an easy assembly as the filter holder 100 can be fastened only to the heat exchanger. Moreover, since not only the connecting piece 124 on one side of the filter holder 100 can be forcedly inserted and fastened between the cooling fin 4c and the refrigerant pipe 4b of the heat exchanger, but also the fastening piece 32 of the front panel 2 can be fastened to the fastening projection 126 of the filter holder 100, a firm assembly can be achieved. According to this, vibration and noise occurred during operation of the indoor unit can be effectively reduced or prevented.

The filter used with the preferred embodiment of the present invention will be explained with reference to FIGS. 9 ~ 13. The filter 200 has a form in which a high voltage



discharge wire 232b and a dust collecting unit 232a is provided, and includes an upper case 230 and a lower case 240 for coupling to the upper case 230. The upper case 230 has a plurality of openings 231b for air flow in a top surface 231a thereof (Referring to FIG. 9), and there are front and rear walls 239a and 239b and sidewalls 239c extending downwardly from edges of the top surface 231a (Referring to FIG. 13). There are a plurality of snap hooks 230a on the front and rear walls 239a and 239b for coupling the upper case and the lower case (Referring to FIG. 13). The upper case 230 has a handle 232 for conveniently handling the filter 200 in fitting the filter 200 to the filter holder 100.

An inside structure of the upper case will be explained with reference to FIGs. 13 and 14B.

The inside structure has a partition wall 236 spaced from the sidewall 239c of the upper case 230, and there is a high voltage discharge wire 232b and a dust collecting unit 232a of a metallic material for collecting charged dust in a space between the partition walls. A plurality of guide projections 236a and 236b are provided on the partition wall 236, and a fixing projection 237 is provided on an inner side of the partition wall 236. That is, one end of the discharge wire 232b is fixed to the fixing projection 237, and wound around the guide projections 236a, 236b in left and right directions. There is a connection terminal 300 in a space between the partition wall 236 and the sidewall 239c for electrical connection to the discharge wire 232b. The connection terminal has a projection 310 in a form of an elastic plate spring extending from the sidewall.

A plurality of holes 231c are provided on both sides of top surface of the upper case 230 for effectively draining water in the filter 200 where the filter 200 is washed with water (Referring to FIG. 9). An end of the discharge wire 232b is fixed to the fixing projection 237



via a spring 238, and the guide projections 236a and 236b are formed to a required curvature.

As shown in FIGS. 14A and 14B, stops 236a-1, 236a-2, and 236b-1 are provided on top of the guide projections 236a and 236b for preventing the discharge wire 232b from being loosened. The aforementioned structure can prevent the discharge wire 232b from being brought into contact with the dust collecting unit 232a because the tension spring 238 keeps the discharge wire 232b at tension, even if the discharge wire 232b is elongated as the discharge wire 232b is heated by the high voltage applied thereto. In addition, since contact surfaces of the guiding projections 236a and 236b with the discharge wire 232b are curved, the elastic force of the spring is smoothly transmitted to the discharge wire 232b.

The lower case 240 will be explained with reference to FIG. 9 to FIG. 12.

A basic structure of the lower case 240 is similar to the upper case 230. That is, the lower case 240 has a top portion having openings and front and rear walls and side walls, except that the lower case 240 has no partition wall formed therein. A projection 242 extends upward from the rear wall of the lower case 240 for preventing coupling of the lower case 240 in the wrong direction, and projections 244 extend downwardly from a bottom surface in left and right thereof for preventing insertion of the lower case 240 in the wrong direction. This structure can prevent incorrect coupling of the upper case 230 and the lower case 240 since the projection 242 and the handle 232 interfere if coupling the rear wall of the lower case 240 to the front wall of the upper case 230 is attempted by mistake in assembly of the upper case 230 to the lower case 240. Accordingly, mis-alignment of polarities of the discharge wire 232b caused by the incorrect coupling can be prevented. Additionally, incorrect insertion also can be prevented as the projection 244 and the front lower horizontal member 114 on the filter holder 100 interfere when the filter 200 is inserted in the filter holder 100 with the filter 200



held upside down.

As shown in FIG. 15, the first and second fastening parts on the filter holder 100 have contact terminals 320 for contact to the connection terminals 300. Therefore, if the filter 200 is inserted into the guides 116a and 116b on the filter holder 100, the contact terminals 320 and one protruded part of projection 310 of the connection terminal are brought into contact. In this instance, since the projection 310 of the connection terminal is elastic to provide a good contact, a stable electrical path is formed.

As shown in FIG. 16, the groove 250 in the filter 200 and the projection 252 on the guide 116b prevent the filter 200 from dislodging when the filter 200 is inserted inside the filter holder 100, to permit a stable supply of electricity. Though an electrostatic filter is shown and explained in the aforementioned embodiment, the filter holder according to preferred embodiments of the present invention may be a filter other than the electrostatic filter. For example, when a mesh coated with activated carbon is provided in the upper case and the lower case constituting the filter 200 instead of the discharge wire and the dust collecting unit, the filter may be used as a deodorizing filter. It is preferable that no power is applied to the electrostatic filter once the suction grill is opened upward, because an exposed electrostatic filter is dangerous.

A structure for cutting off a power applied to the electrostatic filter automatically when the suction grill is opened will be explained with reference to FIGS. 17 ~ 19.

There is a micro switch 408 in one side of the front panel 2 and a projection on the suction grill for operating on/off of the micro switch (not shown), so that the projection is brought into contact with the switch when the suction grill is closed, and vice versa. In detail, a switch fitting part has a fitting slot 402, a supporting rib 406 formed upwardly in the fitting



slot, and a micro switch 408 in the fitting slot 402. Since the supporting rib 406 supports bottom and side of the micro switch 408, and a supporting guide 404 supports the other side of the switch, the micro switch 408 is firmly held. That is, there is a stopper 406a at a fore end of the supporting rib 406 for supporting one side of the micro switch 408. It is preferable that a portion of the front panel 2 is cut to form a hook shaped catch 420, and electric wire 500 which supplies a current to the electrostatic filter is placed therein, for a neat layout of the wire.

A supplementary device for mounting a general deodorizing filter can be additionally formed where an electrostatic filter is mounted to the filter holder 100. The supplementary device includes one pair of fixing members 12 and 14 provided opposite to the middle frame 2a and the side frame 2b. That is, the supplementary device includes a lower fixing member 14 above the fastening piece 32 and positioning piece 34 and an upper fixing member 12 formed above and spaced apart some distance from the lower fixing member 14. Thus, the deodorizing filter is mounted between the upper fixing member 14 and the lower fixing member 12.

Accordingly, the present invention permits to mounting of a deodorizing filter and an electrostatic filter selectively or in combination.

A filter for an indoor unit of an air conditioner and a device for easy mounting of the filter according to the preferred embodiments of the present invention, have the following advantages additional to those already described above.

First, according to the first and second embodiments, the mounting of the filter holder which can accommodate the filter before mounting of the filter in the filter holder facilitates easy mounting/dismounting of the filter. The direct mounting of the filter holder on the heat



exchanger facilitates simple assembly and improves productivity. The supplementary fastening of the filter holder to the front panel, thus mounting the filter holder more firmly, can reduce vibration caused during operation of the indoor unit.

Second, according to the second embodiment, the adequate space secured between the prefilter and the filter by the ribs 115 of the filter holder can solve electrical problems caused when an electrostatic filter is used. The adequate space secured in front of the filter holder by the ribs 115 also permits smooth air flow.

Third, according to the second embodiment, incorrect assembly of the filter as well as incorrect insertion of the filter into the filter holder can be prevented. According to the second embodiment, the application of a high voltage to the discharge wire using connection terminals and the contact terminals permits a simple structure and stable application of a high voltage. The selective mounting of the deodorizing filter and/or the electrostatic filter to the filter holder improves convenience of use of the air conditioner.

It will be apparent to those skilled in the art that various modifications and variations can be made in the filter for an indoor unit of an air conditioner and device for easy mounting of the filter of the present invention without departing from the spirit or scope of the invention. Thus, it is intended that the present invention cover the modifications and variations of this invention provided they come within the scope of the appended claims and their equivalents.

Throughout this specification and the claims which follow, unless the context requires otherwise, the word "comprise", and variations such as "comprises" and "comprising", will be understood to imply the inclusion of a stated integer or step or group of integers or steps but not the exclusion of any other integer or step or group of integers or steps.

The reference to any prior art in this specification is not, and should not be taken as,



an acknowledgment or any form of suggestion that that prior art forms part of the common general knowledge in Australia.

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THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A device for mounting a filter in an air conditioner, the air conditioner having a body, a front panel fastened to a front surface of the body, and a heat exchanger mounted in the body; the device comprising:

a filter holder mounted to an opening in the front panel for accommodating the filter, wherein the filter holder has one side fastened to an end plate of the heat exchanger and the other side is fastened to a refrigerant pipe of the heat exchanger.

2. A device as claimed in claim 1, wherein an upper surface of the filter holder is fastened to the heat exchanger and the front panel.

3. A device as claimed in claim 1, wherein the filter holder includes;
an accommodating part for accommodating the filter,
a first fastening part extended outwardly from one end of the accommodating part for fastening the filter holder to an end plate of the air conditioner, and

a second fastening part extended outwardly from another end of the accommodating part for fastening the filter holder to the refrigerant pipe in the air conditioner.

4. A device as claimed in claim 3, wherein the accommodating part has openings in a top surface and a bottom surface for smooth air flow, an opening in a front surface for inserting the filter, and at least one guide on its inside wall for supporting the filter.



5. A device as claimed in claim 4, wherein the accommodating part has a plurality of air openings in a rear surface thereof.

6. A device as claimed in claim 5, wherein the accommodating part includes a plurality of ribs projecting outwardly from the top surface to maintain a gap between the front panel and the filter holder.

7. A device as claimed in claim 4, wherein said guide is provided with a projection and the filter is provided with a groove for receiving the projection, for firmly holding the filter in the filter holder.

8. A device as claimed in claim 3, wherein the front panel includes a fixing part and the second fastening part of the filter holder includes a projection for coupling with the fixing part.

9. A device as claimed in claim 8, wherein the front panel includes a positioning piece having a slot in a center portion thereof and the second fastening part includes a positioning projection which fits into said slot.

10. A device as claimed in claim 1, wherein the filter includes;

an upper case, and

a lower case detachably coupled to the upper case,

thereby forming a space inside of the upper and lower case for accommodating the



filter.

11. A device as claimed in claim 10, wherein the upper case includes a handle on a front surface.

12. A device as claimed in claim 10, wherein the lower case includes a projection at an opposite side of the handle on the upper case for preventing incorrect coupling of the lower case and the upper case.

13. A device as claimed in claim 10, wherein the lower case includes projections projected downwardly from a bottom surface thereof for preventing incorrect insertion of the filter in the filter holder.

14. A device as claimed in claim 10, wherein the upper case includes a fixing projection for fixing a discharge wire thereto, and a guide projection for supporting the discharge wire inside and both sides of the upper case.

15. A device as claimed in claim 14, wherein the guide projection is curved.

16. A device as claimed in claim 15, wherein the discharge wire is fixed to the fixing projection via a spring.



17. A device as claimed in claim 1, wherein the filter holder includes a contact terminal on both sides thereof having a portion elastically exposed to the inside of the filter holder, and the filter includes a connection terminal on both sides thereof for being brought into contact with the contact terminal.

18. A device as claimed in claim 10, wherein the upper case of the filter, on a rear wall thereof, includes a plurality of wire guiding projections for accommodating discharge wires.

19. A device as claimed in claim 1, wherein a middle frame on the front panel includes fixing members for mounting a deodorizing filter.

20. A device as claimed in claim 1, wherein said one side includes screw holes for fastening to said heat exchanger, and said other side includes a connecting piece having a slot in a center thereof and at least one arc shaped cut away portion at a side edge of said connecting piece for detachably connecting to said refrigerant pipe.

21. A device for mounting a filter in an air conditioner, substantially as described with reference to Figures 3-19 and/or examples.

DATED this 25th day of February, 2002

LG Electronics Inc.

By DAVIES COLLISON CAVE
Patent Attorneys for the Applicant



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FIG. 1
RELATED ART

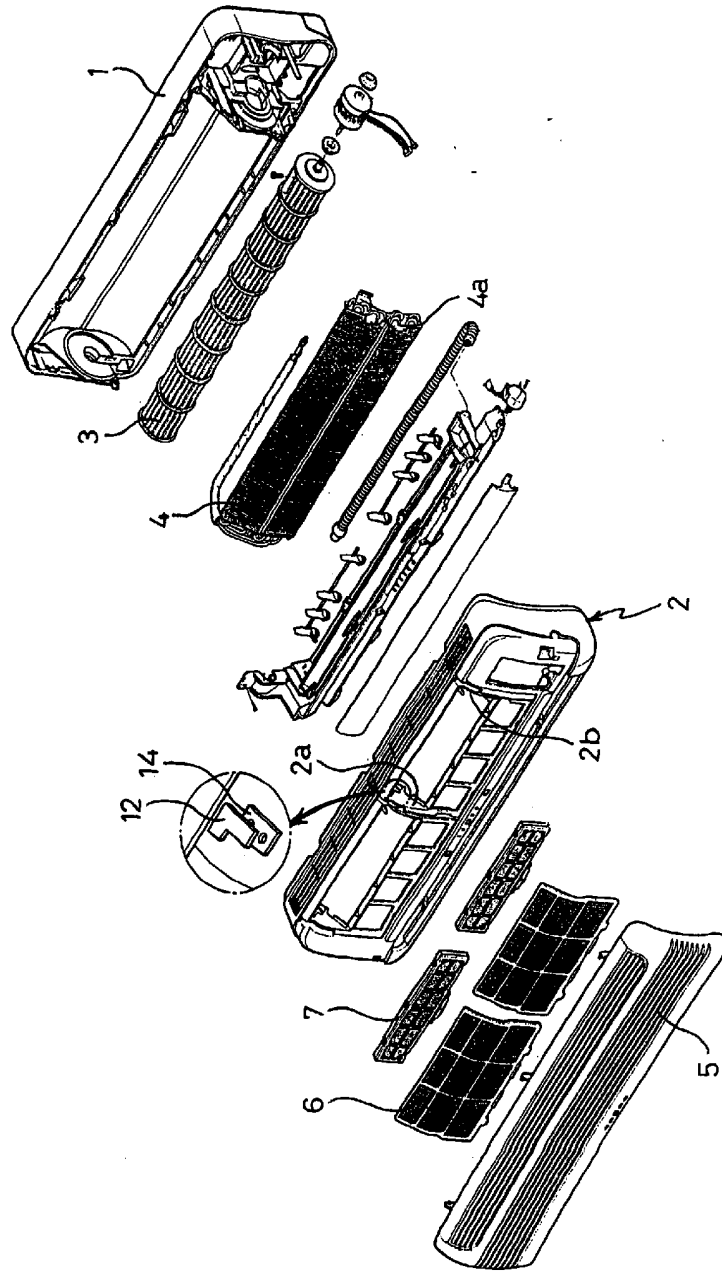


FIG. 2
Related Art

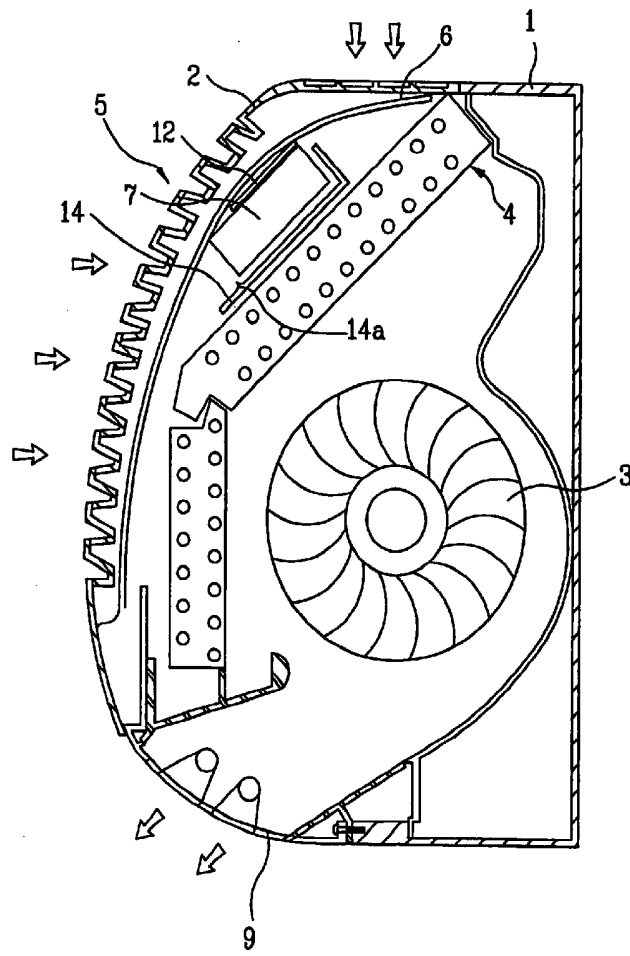


FIG. 4

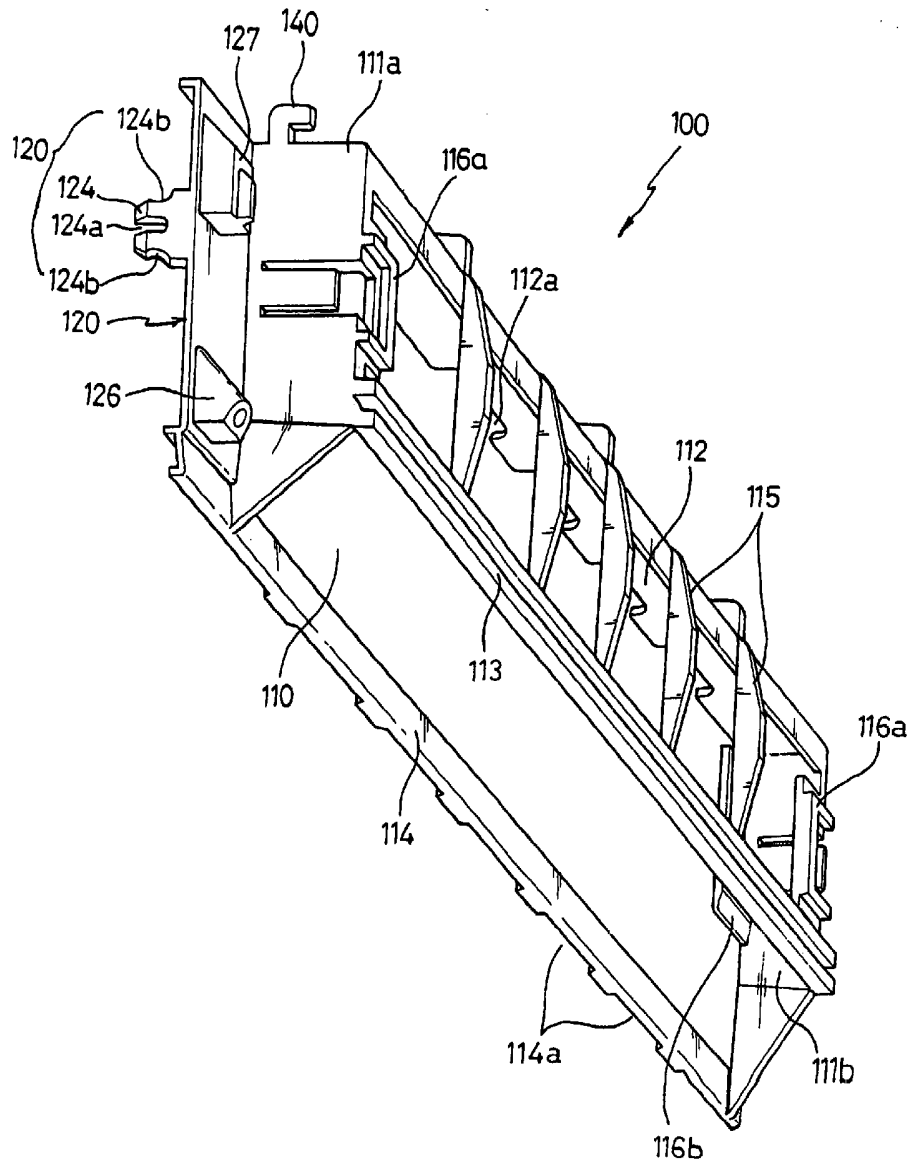


FIG. 5

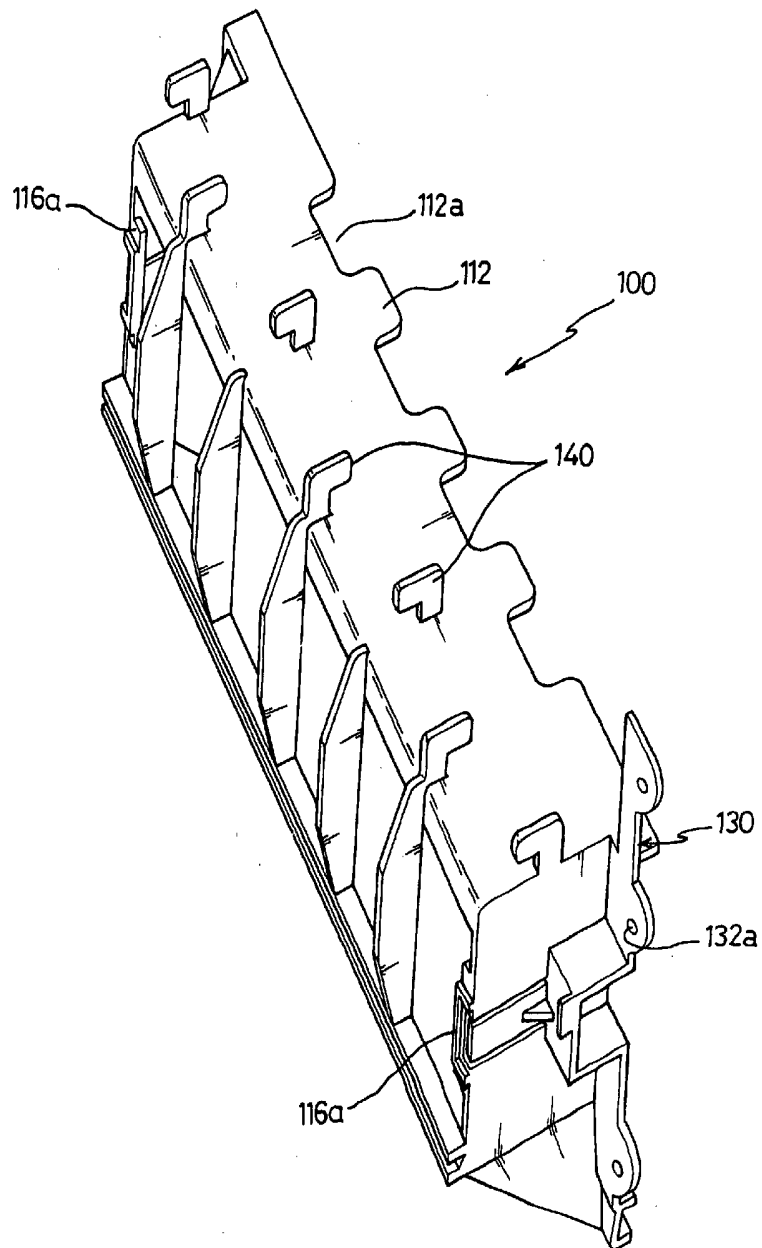


FIG. 5

FIG. 6

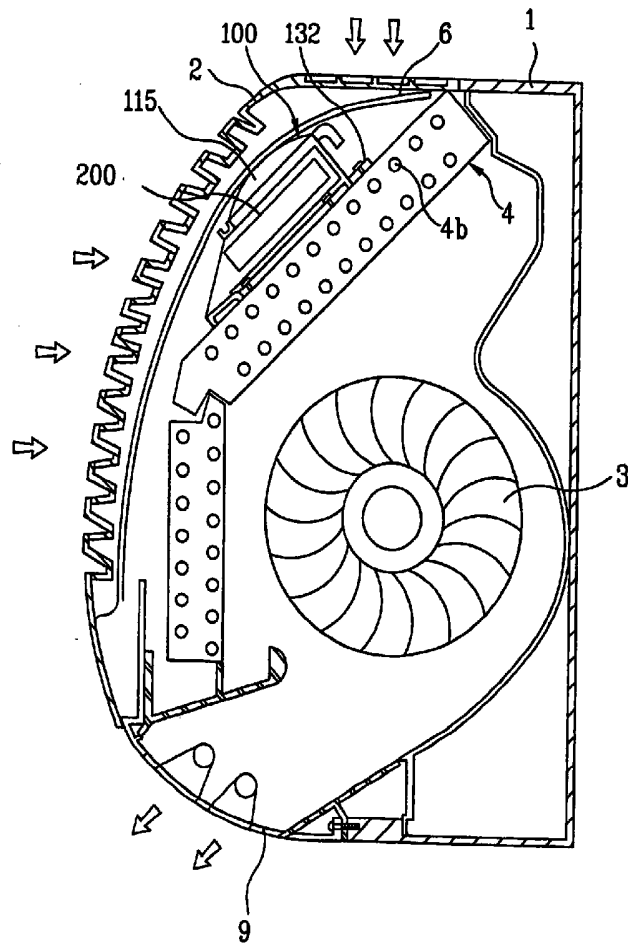


FIG. 7

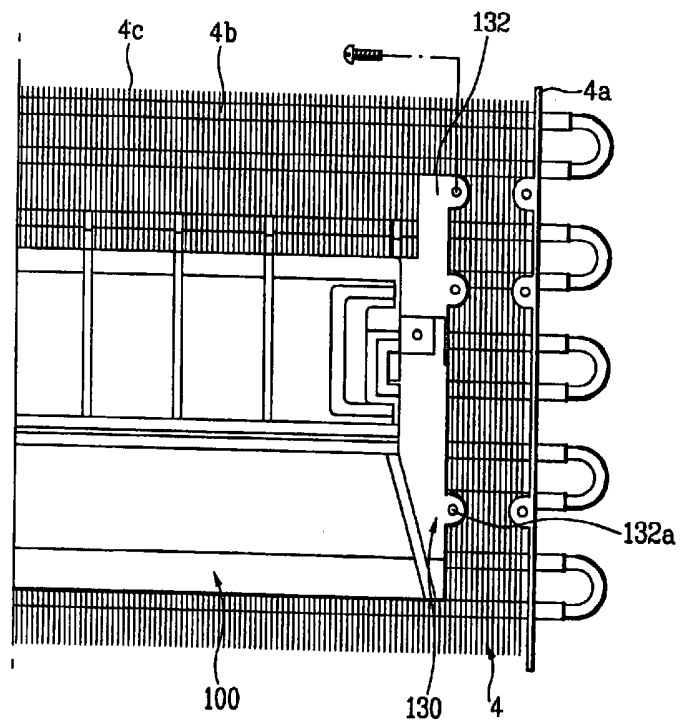
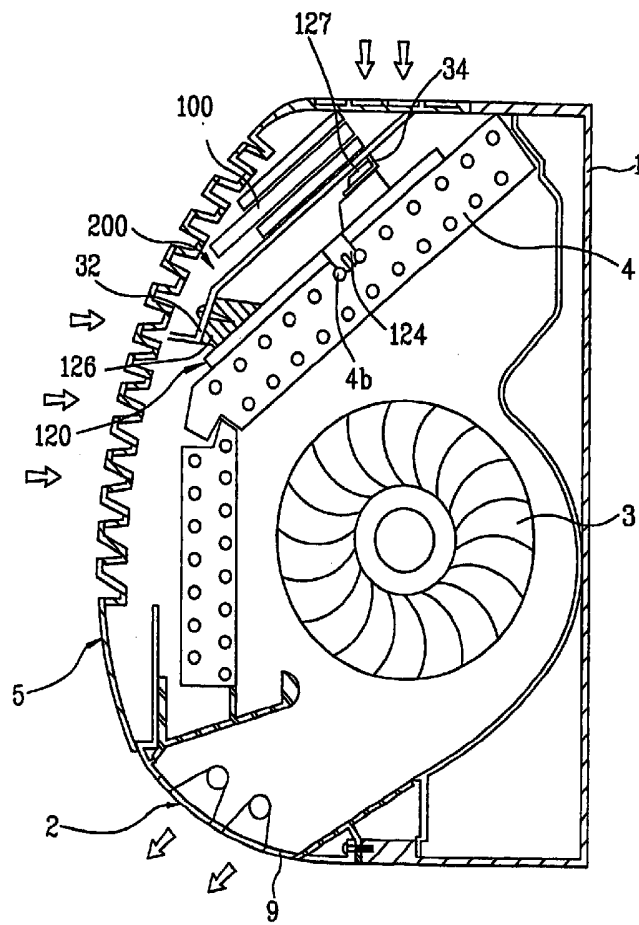


FIG. 8



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FIG. 9

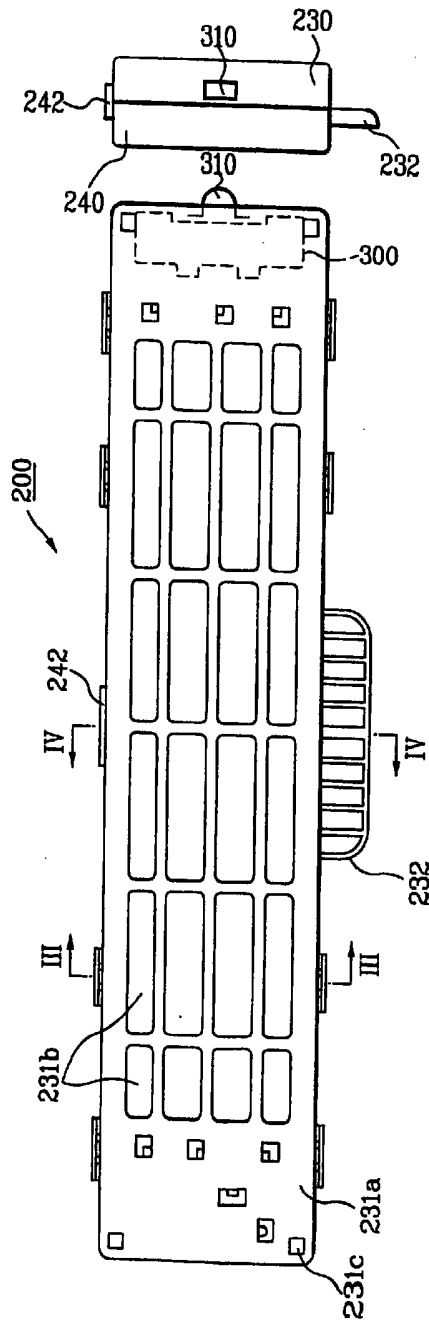


FIG. 10

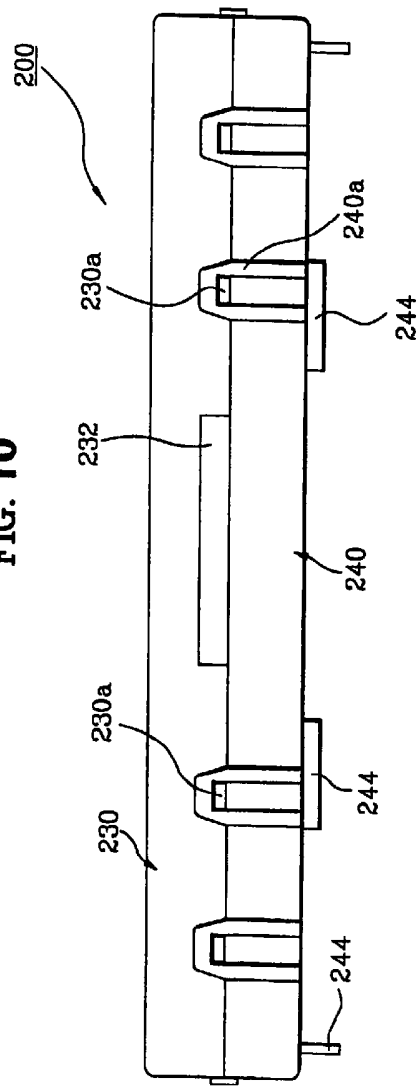


FIG. 11

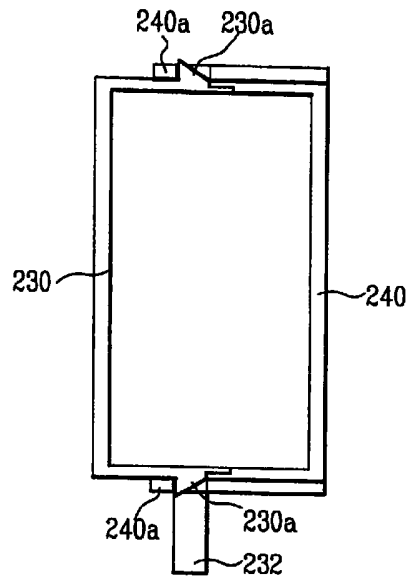
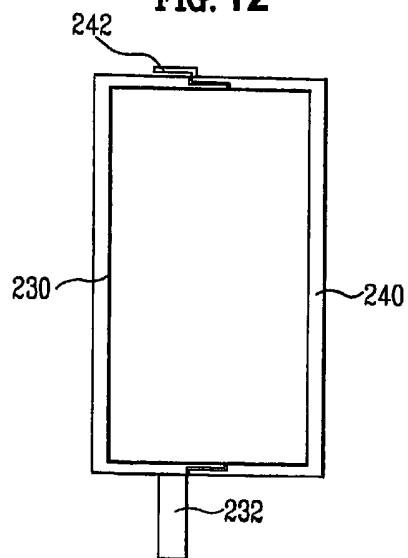


FIG. 12



36000 3433

FIG. 13

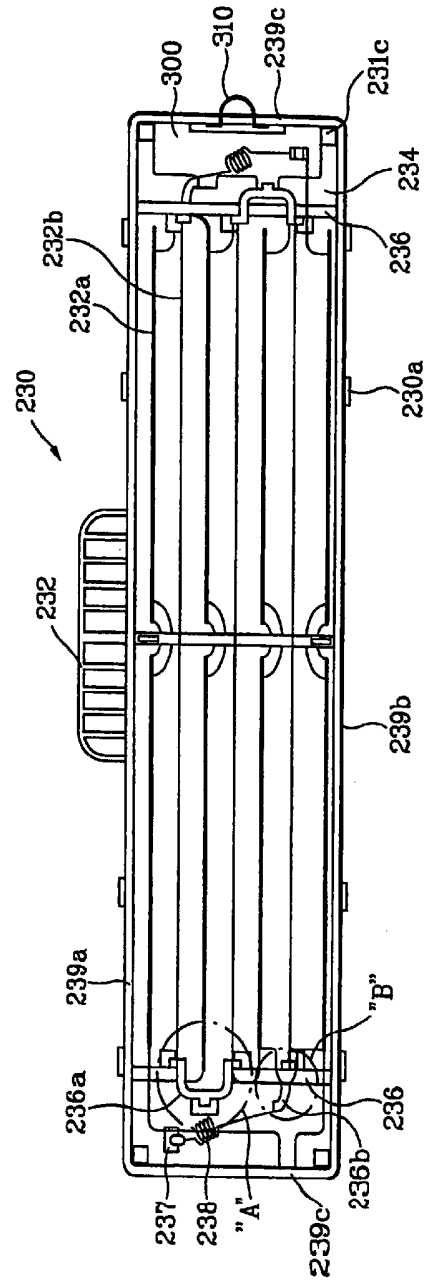


FIG. 14A

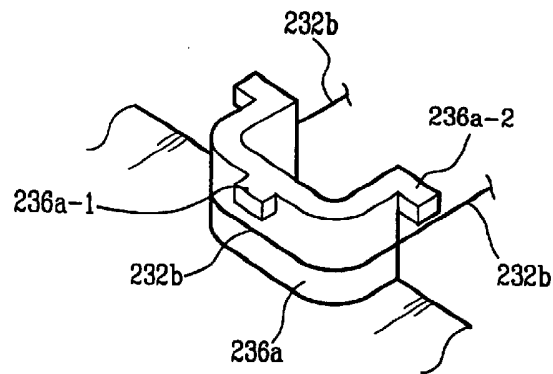


FIG. 14B

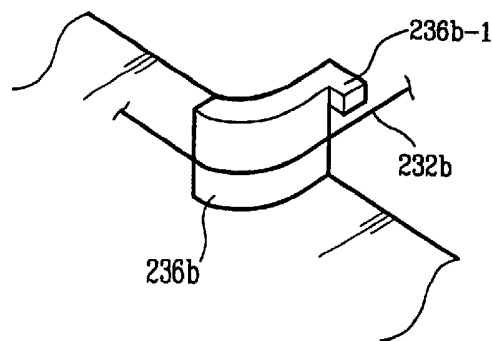


FIG. 14A

FIG. 15

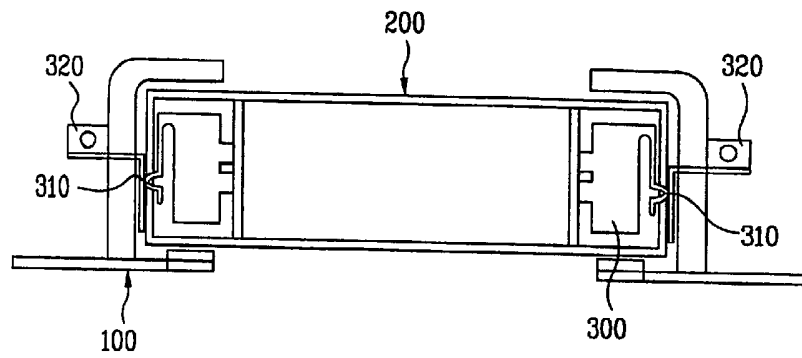


FIG. 16

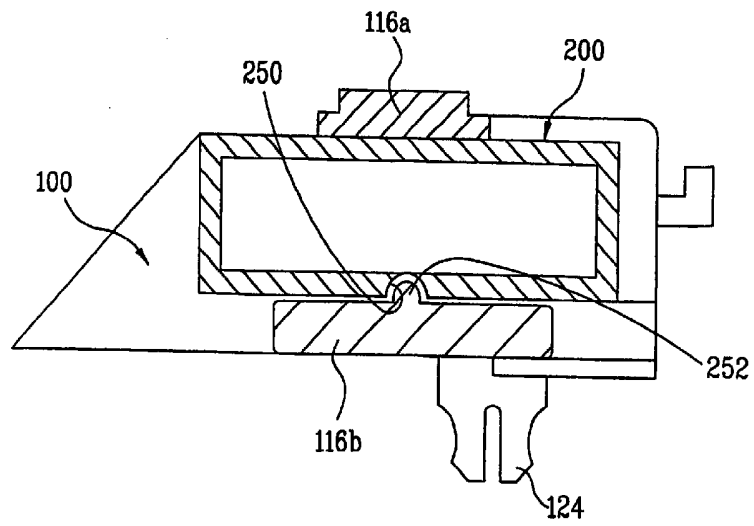


FIG. 17

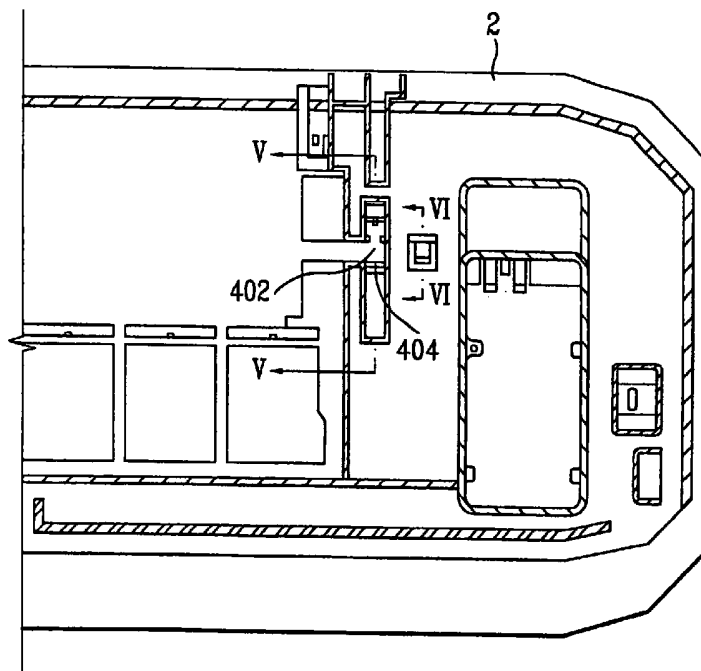


FIG. 17

FIG. 18

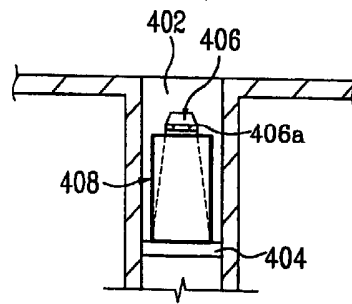


FIG. 19

