



(11) **EP 2 184 394 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
12.05.2010 Bulletin 2010/19

(51) Int Cl.:
D06F 39/12 ^(2006.01) **A47L 15/42** ^(2006.01)
D06F 39/14 ^(2006.01) **D06F 37/42** ^(2006.01)
D06F 37/28 ^(2006.01) **D06F 39/00** ^(2006.01)

(21) Application number: **09174949.9**

(22) Date of filing: **03.11.2009**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR
Designated Extension States:
AL BA RS

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(30) Priority: **05.11.2008 KR 20080109544**
05.11.2008 KR 20080109546
06.11.2008 US 112058 P
06.11.2008 US 112070 P

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(54) **Home appliance and washing machine**

(57) A home appliance or a washing machine (100) including a pattern unit (160) having a pattern formed by photo-etching, and a casing member (113) defining an external shape of said home appliance (100) and having

a coupling part to which said pattern unit (160) is detachably coupled.

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Description

[0001] The present application claims priority to US Patent Application no. 61/112,058 and 61/112,070 filed on November 6, 2008 in US and Korean Application No. 10-2008-0109544 and No. 10-2008-0109546 filed in Korea on November 5, 2008, the entire contents of which are hereby incorporated by reference in their entirety.

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0002] The present invention relates to a home appliance and a washing machine, and more particularly, to a home appliance and a washing machine capable of assuring easy exchange of a pattern unit.

2. Discussion of the Related Art

[0003] Generally, home appliances refer to apparatuses for performing housework using energy, and washing machines refer to apparatuses for washing or drying an object. Examples of home appliances include a microwave oven, cleaner, laundry treating machine, drier, and dish washer. Examples of washing machines include a laundry treating machine, drier, and dish washer. All the home appliances and washing machines are generally printed, at an external appearance thereof, with various designs of patterns to stimulate the customers' interest. These patterns have been conventionally formed using silk screen printing, etc. After completely silk screen printing a pattern on a home appliance or a washing machine, a transparent member has been affixed to the entire surface of the pattern, to aid realization of the pattern.

SUMMARY OF THE INVENTION

[0004] An object of the present invention is to provide a home appliance and a washing machine, in which a pattern unit can be easily coupled to a casing member.

[0005] Another object of the present invention is to provide a home appliance and a washing machine, in which a colored adhesive member is used to arouse a user's aesthetic appreciation and to provide a pattern formed on a photo-etched member with a desired color.

[0006] The objects of the present invention are not limited to the above-mentioned object and other objects that have not mentioned above will become evident to those skilled in the art from the following description.

[0007] To achieve the above objects, there is provided a home appliance according to an exemplary embodiment of the present invention, including a pattern unit having a pattern formed by photo-etching, and a casing member defining an external shape of the home appliance and having a coupling part to which the pattern unit is detachably coupled.

[0008] To achieve the above objects, there is provided

a washing machine according to another exemplary embodiment of the present invention, including a pattern unit having a pattern formed by photo-etching, and a casing member defining an external shape of the washing machine and having a coupling part to which the pattern unit is detachably coupled.

BRIEF DESCRIPTION OF THE DRAWINGS

10 [0009]

FIG. 1 is a perspective view showing a laundry treating machine according to an embodiment of the present invention;

15 FIG. 2 is an enlarged perspective view of the partially cut-way portion A shown in FIG. 1;

FIG. 3 is a sectional view showing a configuration of a pattern unit;

20 FIG. 4 is a sectional view showing an embodiment of a coupling configuration of a casing member and the pattern unit;

FIG. 5 is a sectional view showing an alternative embodiment of the coupling configuration of the casing member and the pattern unit shown in FIG. 4;

25 FIG. 6 is a sectional view showing another alternative embodiment of the coupling configuration of the casing member and the pattern unit shown in FIG. 4; and
30 FIG. 7 is a sectional view showing another embodiment of the coupling configuration of the casing member and the pattern unit.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

35 [0010] The advantages and features of the present invention, and the way of attaining them, will become apparent with reference to embodiments described below in conjunction with the accompanying drawings. However, the present invention is not limited to the embodiments disclosed below and will be embodied in a variety of different forms; rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the present invention to those skilled in the art, and the scope of the present invention will be defined by the appended claims. Like reference numerals refer to like elements throughout the specification.

40 [0011] A home appliance of the present invention refers to an electric appliance used at home, such as a laundry treating machine, refrigerator, television, or the like. In particular, a washing machine is designed to wash an object via preliminary-washing, main-washing, rinsing, spin-drying, and drying operations. Based on the kind of an object to be washed, for example, washing machines may be classified into various kinds including a laundry treating machine and a dish washing machine. The laundry treating machine may include a washer, a dryer, a combined washing/drying machine, a spin-drier,

and the like.

[0012] Although the following embodiments of the present invention describe a laundry treating machine falling under the category of a washing machine, the present invention is not limited thereto and is applicable to a variety of washing machines. Furthermore, it is noted that the present invention is applicable to a variety of home appliances.

[0013] FIG. 1 is a perspective view showing a laundry treating machine according to an embodiment of the present invention. FIG. 2 is an enlarged perspective view of the partially cut-way portion A shown in FIG. 1, and FIG. 3 is a sectional view showing a configuration of a pattern unit.

[0014] The laundry treating machine 100 includes a cabinet 110, a tub (not shown) arranged in the cabinet 110 to store wash water introduced from an external source, a drum (not shown) rotatably arranged in the tub to receive laundry therein, a drive device (not shown) to drive the drum so as to transmit rotating force, a wash water supply device (not shown) to supply wash water from an external source at the outside of the cabinet 110, and a drain device (not shown) to discharge the wash water stored in the tub to the outside.

[0015] The cabinet 110 includes a cabinet body 111, a control panel 115, and a top plate 116 coupled to an upper side of the cabinet body 111. A receptacle 120 may be provided in a lower region of the cabinet body 111 to perform, e.g., drying, deodorization, and sterilization of shoes received therein.

[0016] A shape defining part of a home appliance, called a body, case, cabinet, or the like, (hereinafter, referred to as a "casing member") is generally fabricated through injection molding. An injection molded article may allow an exterior panel to be attached to an outer surface thereof. In this case, to arouse a user's aesthetic appreciation, the exterior panel may be formed with an image, in the form of a figure, pattern, or the like, by printing or etching.

[0017] It is noted that the casing member does not essentially take the form of a single body to realize a shape of the home appliance, and may include a plurality of casing members, such as, e.g., a casing member, a door casing member, and a receptacle casing member, which are coupled to each other so as to realize the overall shape of the home appliance. The following description is given under the assumption that a casing member 113 defines an external appearance of a door 114 that is rotatably coupled to a front surface of the cabinet 110 and defines an external shape of the cabinet 110.

[0018] The pattern unit 160 is coupled to an outer surface of the casing member 113 to decorate an external appearance of the casing member 113. The pattern unit 160 includes a transparent member 161, a photo-etched member 170 formed with a pattern by photo-etching, and an adhesive member 162 provided between the transparent member 161 and the photo-etched member 170 to couple the transparent member 161 and the photo-

etched member 170 to each other.

[0019] Here, photo-etching is an ultra-precision processing technology and includes coating a photo-resist film on a metal surface, exposing and developing a partial image by ultraviolet light, and then, etching the exposed metal surface. In more detail, photo-etching is a combination of photolithography and etching. Photolithography includes applying a photo-resist solution over a substrate to form a photo-resist film, and selectively exposing and developing a partial image on the film by ultraviolet light having passed through a photo-mask (i.e. a patterned film). Etching is a technology for selectively etching a material surface using a developed photo-resist film as a protective film. Specifically, etching is one kind of a recess forming technology for perforating and cutting a recess in a metal surface where no protective film is present via electrolytic etching or chemical etching using an acid or alkali solution, ferric chloride solution, or the like. Finally, a finishing process for removing the protective film using an alkali solution, organic solvent, or the like may be added. Accordingly, a surface of the photo-etched member 170 is formed with the pattern by etching.

[0020] The photo-etched member 170 includes a lined portion 172 on which hair lines are formed by a predetermined interval, and a patterned portion 171 on which the pattern is formed by photo-etching.

[0021] The lined portion 172 may be realized by a processing device that uses an abrasive sheet formed with appropriate sizes of particles. As the abrasive sheet is rotated at a high speed, the lined portion 172 of discontinuous pitches may be formed on the surface of the photo-etched member 170.

[0022] The lined portion 172 serves to enhance material texture of the photo-etched member 170. In particular, when the photo-etched member 170 is made of a metal, such as stainless steel (STS), the lined portion 172 has the effects of improving high gloss that is peculiar to a metal, preventing glare via scattered reflection of indoor light, and creating a luxurious external appearance.

[0023] The lined portion 172 may be formed at a partial region of a surface, or the entire surface of the photo-etched member 170. The patterned portion 171 may be formed at the surface of the photo-etched member 170 in a state wherein the lined portion 172 has been formed. The lined portion 172 and the patterned portion 171 may be formed so as not to overlap each other.

[0024] The transparent member 161 is made of various transparent materials, to allow the photo-etched member 170 to be seen from the outside. In one example, the transparent member 161 may be made of reinforced glass. The adhesive member 162 is inserted between the transparent member 161 and the photo-etched member 170 to attach the transparent member 161 and the photo-etched member 170 to each other. The adhesive member 162 may take the form of a desired adhesive film to closely attach the transparent member 161 and the photo-etched member 170 to each other. In one example, the adhesive film may include Pressure Sensitive

Adhesive (PSA).

[0025] In a state wherein PSA is interposed between two objects to be coupled, PSA acts to attach the two objects to each other upon receiving a predetermined pressure. PSA can achieve desired adhesive strength even under conditions of a room temperature and low pressure and therefore, has an advantage of realizing attachment of an object without deformation of the object. The adhesive member 162 is seated over the lined portion 172 of the photo-etched member 170, serving to attach the transparent member 161 and the photo-etched member 170 to each other.

[0026] After completion of the above described process, the pattern unit 160 is manually coupled to the casing member 113.

[0027] The PSA may have a single color or various colors. As occasion demands, only a part of the PSA may be colored. For this, the PSA may contain a colored material. The colored material may include a dye.

[0028] The PSA may be selected from various kinds of adhesives. In one example, the PSA may include an acryl-based adhesive. Assuming use of the acryl-based adhesive, the PSA has high transparency and light transmissivity. As occasion demands, a desired color of dye may be added into the PSA to provide the PSA with a color. The colored PSA is shaped into a sheet, serving to attach the transparent member 161 and the photo-etched member 170 to each other.

[0029] The PSA may be formed such that only a partial region thereof is colored to correspond to the pattern. In one example, when a flower-shaped pattern is formed on the photo-etched member 170, a partial region of the PSA may be red to express a color of a flower petal. The PSA is positioned to coincide with the pattern such that the red region of the PSA corresponds to the flower-shaped pattern of the photo-etched member 170. In a state wherein the transparent member 161 and the photo-etched member 170 are coupled to each other by use of the PSA, the red color of the flower-shaped pattern can be seen from the outside.

[0030] In another example, the entire PSA may be colored. When the pattern unit 160 is arranged on the cabinet 110 to decorate an external appearance of the cabinet 110, a color of the pattern unit 160 may be realized by the color of the PSA. Accordingly, controlling the color of the pattern unit 160 may arouse a user's aesthetic appreciation and purchase interest with respect to a product.

[0031] The PSA may be divided into a colorless portion and a colored portion. In other words, the PSA may include a colored portion (not shown) containing the dye, and a transparent portion (not shown) containing no dye. When the PSA is used to attach the transparent member 161 and the photo-etched member 170 to each other, the PSA is positioned such that the colored portion thereof corresponds to the pattern. As the colored portion of the PSA corresponds to the pattern, the pattern expresses the color of the PSA. The colored PSA may serve as

an aid to arouse a user's aesthetic appreciation and purchase interest with respect to a product.

[0032] FIG. 4 is a sectional view showing an embodiment of a coupling configuration of the casing member and the pattern unit.

[0033] Referring to FIG. 4, the pattern unit 160 is manually inserted into a coupling part 130 defined in the casing member 113 so as to be coupled to the casing member 113. The coupling part 130 and the casing member 113 may be formed as a single body.

[0034] Considering a method of coupling the pattern unit 160 to the casing member 113, the pattern unit 160 is manually inserted into an opening perforated in a surface of the casing member 113. In other words, the casing member 113 includes the coupling part 130 having an open front side corresponding to a front surface of the laundry treating machine 100. The pattern unit 160 is manually inserted into the coupling part 130 through the open front side of the coupling part 130.

[0035] The pattern unit 160 includes a coupling portion 173 to be coupled into the coupling part 130. The coupling portion 173 may be configured to extend outward from the photo-etched member 170. Of course, the coupling portion 173 is not essentially formed at the photo-etched member 170, and may extend from the transparent member 161 or may extend, respectively, from both the transparent member 161 and the photo-etched member 170.

[0036] In either case, the coupling portion 173 can be coupled into the coupling part 130 via sliding movement thereof, resulting in easy assembly and separation between the pattern unit 160 and the casing member 113. Accordingly, if an extra pattern unit 160 having a different design is provided, the pattern unit 160 may be easily exchanged in consideration of user's tastes or surrounding decor. In conclusion, the home appliance of the present invention is provided with the coupling part 130 in the form of a trim kit to enable exchange of the pattern unit 160.

[0037] The coupling of the pattern unit 160 and the casing member 113 is accomplished as the pattern unit 160 slides along the coupling part 130. Specifically, if the coupling portion 173 is forced to push the coupling part 130 while being inserted into the coupling part 130, the coupling portion 173 slides along the coupling part 130, allowing the pattern unit 160 to be coupled to the casing member 113.

[0038] Once the pattern unit 160 is completely coupled to the casing member 113, a cover (not shown) may be provided to cover the open side of the coupling part 130. Once the pattern unit 160 is fixedly inserted into the coupling part 130, the cover is coupled to the coupling part 130, serving to keep the pattern unit 160 at a fixed position in the casing member 113 without a risk of separation.

[0039] The laundry treating machine 100 according to the present invention may realize strong coupling of the pattern unit 160 and the coupling part 130. Accordingly, the pattern unit 160 can not only be firmly fixed to the casing member 113, but also be easily separated from

the laundry treating machine 100 through a manual operation. This has the effect of assuring easy exchange of the pattern unit 160. In this way, various designs of pattern units 160 can be utilized, resulting in enhanced aesthetics of a product.

[0040] Of course, a coupling object of the pattern unit 160 is not limited to the casing member 113. As described, the pattern unit 160 may be coupled to the casing member defining a shape of the control panel 115, the casing member defining a shape of the receptacle 120, or the cabinet body 111. That is, the pattern unit 160 simply serves as an ornament of the laundry treating machine 100 and thus, can be coupled to various casing members defining the external shape of the laundry treating machine 100.

[0041] A method of coupling the pattern unit 160 and the casing member 113 to each other can be realized in various manners that can be easily appreciated by those skilled in the art. In addition, contrary to the above description, the coupling part 130 may be formed in the pattern unit 160, and the coupling portion 173 may be formed at the casing member 113.

[0042] FIG. 5 is a sectional view showing an alternative embodiment of the coupling configuration of the casing member and the pattern unit shown in FIG. 4. The same reference numerals as those in the above described embodiment represent the same components and the following description is based only on differences from the above described embodiment.

[0043] Referring to FIG. 5, a casing member 113' includes a coupling part 130' so that a pattern unit 160' is fixedly inserted into the casing member 113'. The coupling part 130' includes a guide portion 131' formed in the casing member 113' to allow the pattern unit 160' to be coupled into the coupling part 130' via sliding movement thereof. The pattern unit 160' includes a coupling portion 173' having a shape corresponding to the guide portion 131'.

[0044] Considering a coupling operation of the pattern unit 160' and the coupling part 130', the pattern unit 160' is manually inserted into the coupling part 130' so that the coupling portion 173' corresponds to the guide portion 131'. Once the coupling portion 173' is positioned to correspond to the guide portion 131', the pattern unit 160' is manually slid in a coupling direction along the coupling part 130'. Thereby, as the coupling portion 173' slides along the guide portion 131', the pattern unit 160' is coupled into the coupling part 130'. The coupling portion 173' serves to prevent the pattern unit 160' from being deformed and unintentionally separated from the coupling part 130'.

[0045] Once the coupling portion 173' of the pattern unit 160' is fixedly coupled into the coupling part 130', the pattern unit 160' is not deformed and thus, has no risk of separation from the coupling part 130'. Furthermore, since the pattern unit 160' can be easily separated from or coupled into the casing member 113', a user can easily exchange the existing pattern unit 160' with a new

one suitable to the user's tastes.

[0046] Of course, a coupling object of the pattern unit 160' is not limited to the casing member 113'. As described, the pattern unit 160' may be coupled to the casing member of the control panel 115, the casing member of the receptacle 120, or the cabinet body 111. That is, the pattern unit 160' simply serves as an ornament of the laundry treating machine 100 and thus, can be coupled to various casing members defining the external shape of the laundry treating machine 100.

[0047] A method of coupling the pattern unit 160' and the casing member 113' to each other can be realized in various manners that can be easily appreciated by those skilled in the art. In addition, contrary to the above description, the coupling part 130' may be formed in the pattern unit 160', and the coupling portion 173' may be formed at the casing member 113'.

[0048] FIG. 6 is a sectional view showing another alternative embodiment of the coupling configuration of the casing member and the pattern unit shown in FIG. 4. The same reference numerals as those in the above described embodiment represent the same components and the following description is based only on differences from the above described embodiment.

[0049] Referring to FIG. 6, a casing member 113" includes a coupling part 130" so that a pattern unit 160" is coupled into the coupling part 130". The coupling part 130" includes a coupling recess 131" into which the pattern unit 160" is fixedly inserted. The pattern unit 160" is manually inserted into the coupling recess 131". The coupling recess 131" has approximately the same width as the pattern unit 160" for insertion of the pattern unit 160". After the pattern unit 160" is inserted into the casing member 113" in a given direction, a cover (not shown) is inserted to keep the pattern unit 160" at a fixed position. In this way, the pattern unit 160" can be easily inserted into and coupled to the casing member 113" through a manual operation.

[0050] Of course, a coupling object of the pattern unit 160" is not limited to the casing member 113". As described, the pattern unit 160" may be coupled to the casing member of the control panel 115, the casing member of the receptacle 120, or the cabinet body 111. That is, the pattern unit 160" simply serves as an ornament of the laundry treating machine 100 and thus, can be coupled to various casing members defining the external shape of the laundry treating machine 100.

[0051] A method of coupling the pattern unit 160" and the casing member 113" to each other can be realized in various manners that can be easily appreciated by those skilled in the art. In addition, contrary to the above description, the coupling part 130" may be formed in the pattern unit 160", and the coupling portion 173" may be formed at the casing member 113".

[0052] FIG. 7 is a sectional view showing another embodiment of the coupling configuration of the casing member and the pattern unit. The same reference numerals as those in the above described embodiment rep-

resent the same components and the following description is based only on differences from the above described embodiment.

[0053] Referring to FIG. 7, a pattern unit 260 includes retention protrusions 230 to be caught by a casing member 213. The casing member 213 includes fixing recesses 220 for insertion of the retention protrusion 230.

[0054] Specifically, a plurality of the retention protrusions 230 may be formed at a surface of the pattern unit 260. Considering a method of coupling the retention protrusion 230 into the fixing recess 220, the pattern unit 260 is first placed on a front surface of the casing member 213. Thereafter, a position of the pattern unit 260 is manually adjusted such that the retention protrusions 230 correspond to the respective fixing recesses 220. Then, the pattern unit 260 is forced, causing the retention protrusions 230 to be press-fitted into and fixed in the fixing recesses 220.

[0055] In this case, although it is preferable that the retention protrusion 230 and the fixing recess 220 have approximately the same width so as to achieve interference-fit between the retention protrusion 230 and the fixing recess 220, it is important that coupling strength between the retention protrusion 230 and the fixing recess 220 be suitable to assure smooth separation of the pattern unit 260. Accordingly, dimension tolerances of the retention protrusion 230 and the fixing recess 220 may be set to assure an appropriate coupling strength.

[0056] Of course, a coupling object of the pattern unit 260 is not limited to the casing member 213. As described, the pattern unit 260 may be coupled to the casing member of the control panel 115, the casing member of the receptacle 120, or the cabinet body 111. That is, the pattern unit 160 simply serves as an ornament of the laundry treating machine 100 and thus, can be coupled to various casing members defining the external shape of the laundry treating machine 100.

[0057] A method of coupling the pattern unit 260 and the casing member 213 to each other can be realized in various manners that can be easily appreciated by those skilled in the art. In addition, contrary to the above description, the retention protrusions 230 may be formed at the casing member 213, and the fixing recesses 220 may be formed in the pattern unit 260.

[0058] It will be understood by those skilled in the art that example embodiments can be implemented in other specific forms without changing the technical spirit or essential features of the present invention. Therefore, it should be noted that the forgoing embodiments are merely illustrative in all aspects and are not to be construed as limiting the invention. The scope of the invention is defined by the appended claims rather than the detailed description of the invention. All changes or modifications or their equivalents made within the meanings and scope of the claims should be construed as falling within the scope of the invention.

[0059] According to a home appliance and a washing machine of the present invention, one or more effects as

follows may be achieved.

[0060] First, coloring of a pattern formed on a photo-etched member is possible, arousing a user's aesthetic appreciation.

[0061] Second, the pattern unit can be easily coupled to a casing member and a cabinet body through a manual operation.

[0062] Third, the pattern unit can be selected based on the user's tastes, improving aesthetics of an external appearance of the home appliance.

[0063] The effects of the present invention are not limited to the above-mentioned effects, and other effects not mentioned above can be clearly understood from the definitions in the claims by one skilled in the art.

Claims

1. A home appliance comprising:

a pattern unit having a pattern formed by photo-etching; and
a casing member defining an external shape of the home appliance and having a coupling part to which the pattern unit is detachably coupled.

2. The home appliance of claim 1, wherein the coupling part takes the form of a trim kit for exchange of the pattern unit.

3. The home appliance of claim 1, wherein the pattern unit includes:

a transparent member;
a photo-etched member having the pattern formed by photo-etching; and
an adhesive member provided between the transparent member and the photo-etched member to couple the transparent member and the photo-etched member to each other.

4. The home appliance of claim 3, wherein the transparent member includes a glass member.

5. The home appliance of claim 3, wherein the adhesive member includes Pressure Sensitive Adhesive (PSA).

6. The home appliance of claim 3, wherein the adhesive member has a color.

7. The home appliance of claim 6, wherein the adhesive member has a color corresponding to the pattern.

8. The home appliance of claim 1, wherein the coupling part includes a guide portion for sliding movement of the pattern unit.

9. The home appliance of claim 8, wherein the guide portion and the casing member are formed as a single body.
10. The home appliance of claim 1, wherein: 5
 the pattern unit includes a retention protrusion;
 and
 the casing member includes a fixing recess for coupling of the retention protrusion. 10
11. The home appliance of claim 1, further comprising a door,
 wherein the casing member defines an external shape of the door. 15
12. A washing machine comprising:
 a pattern unit having a pattern formed by photo-etching; and 20
 a casing member defining an external shape of the home appliance and having a coupling part to which the pattern unit is detachably coupled.
13. The washing machine of claim 12, wherein the coupling part takes the form of a trim kit for exchange of the pattern unit. 25
14. The washing machine of claim 12, wherein the pattern unit includes: 30
 a transparent member;
 a photo-etched member having the pattern formed by photo-etching; and
 an adhesive member provided between the transparent member and the photo-etched member to couple the transparent member and the photo-etched member to each other. 35
15. The washing machine of claim 14, wherein the adhesive member has a color. 40

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FIG. 1

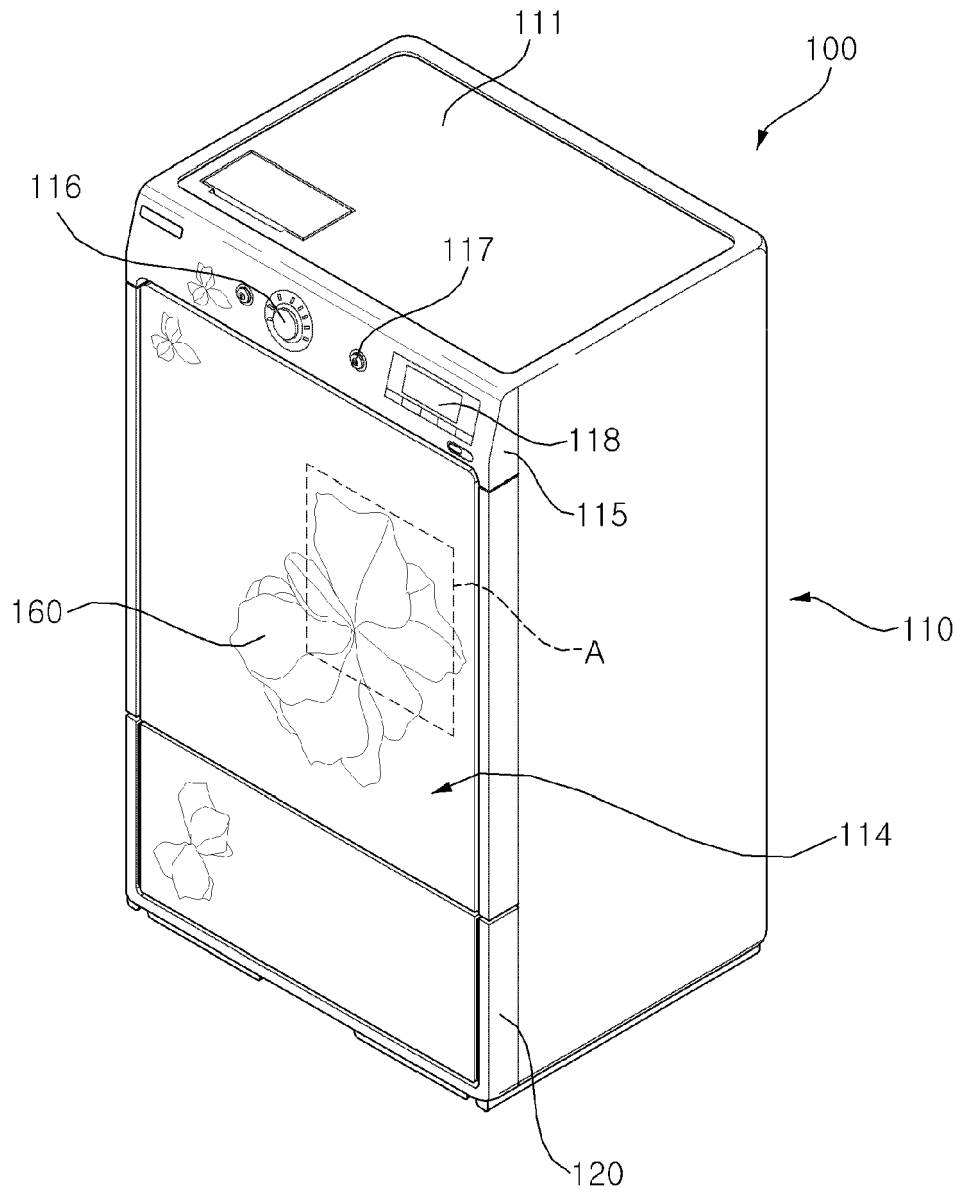


FIG. 2

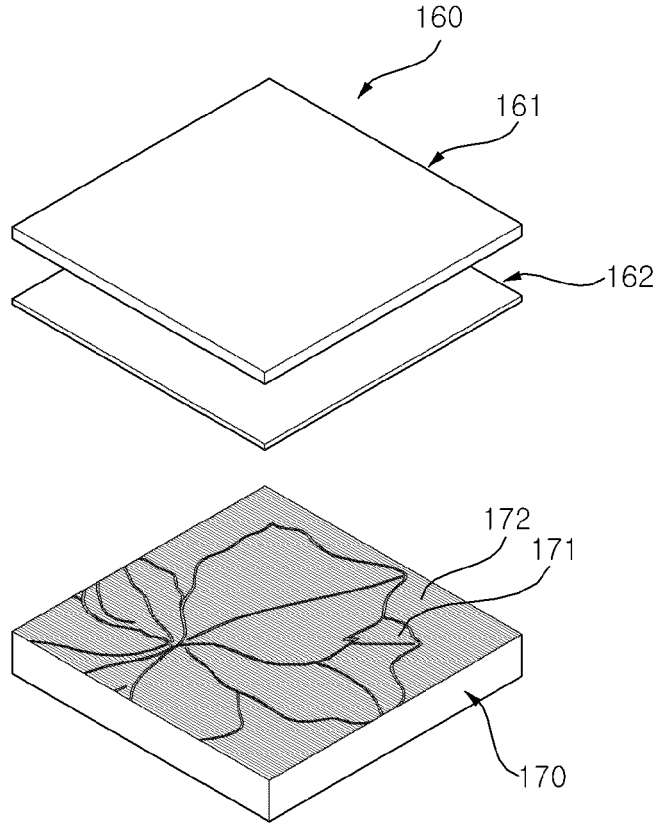


FIG. 3

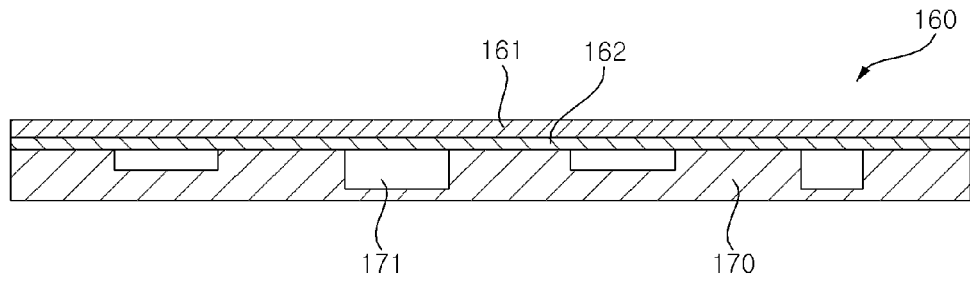


FIG. 4

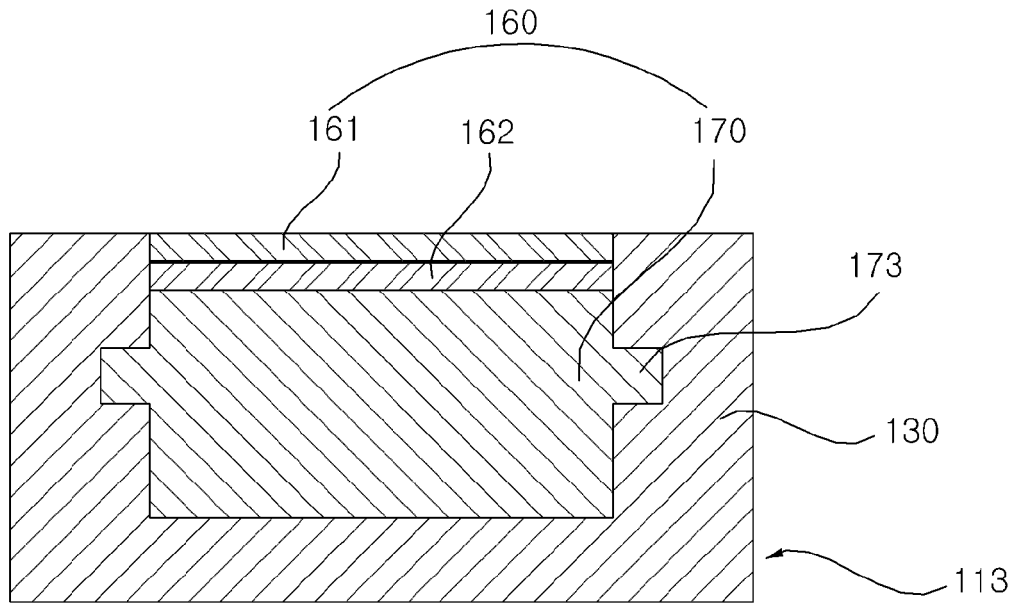


FIG. 5

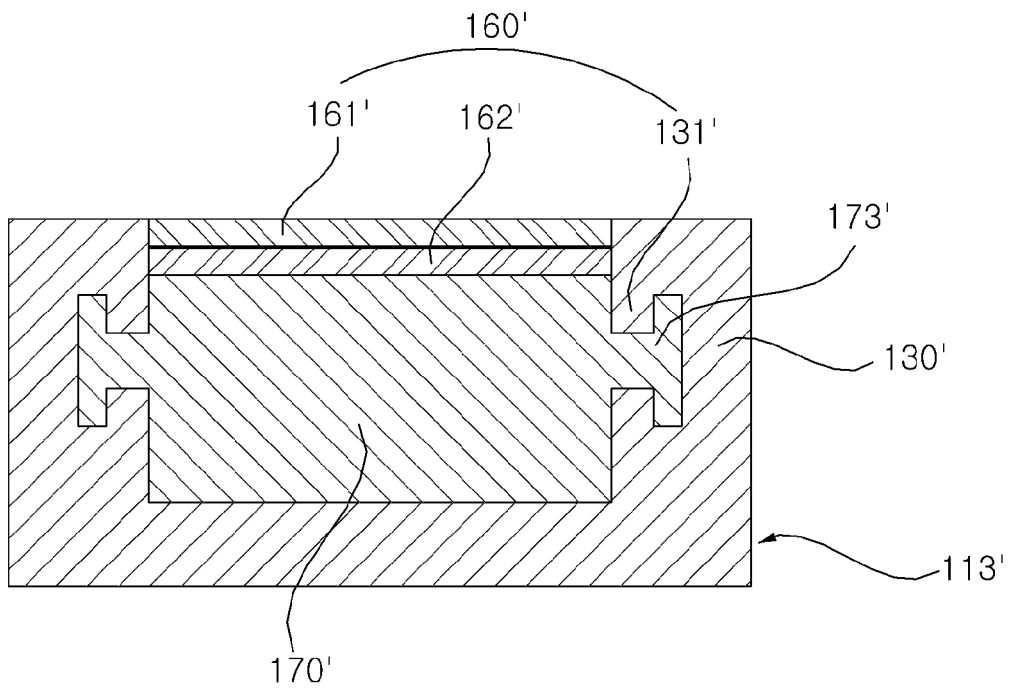


FIG. 6

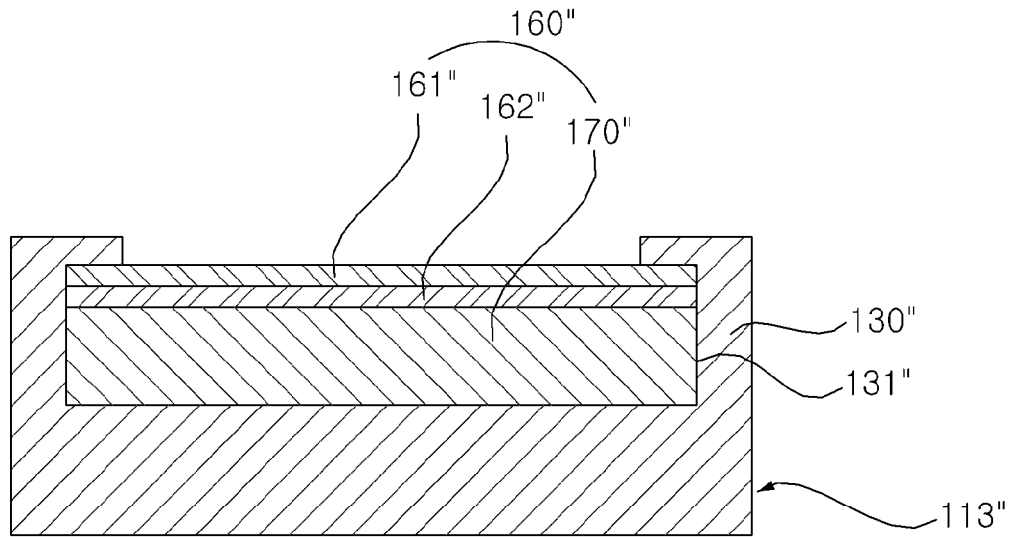
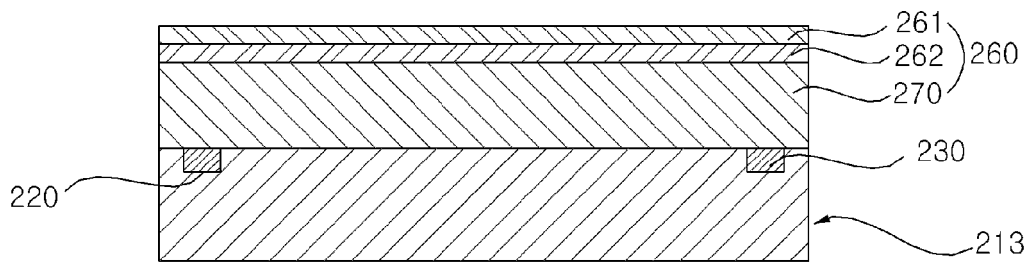


FIG. 7





EUROPEAN SEARCH REPORT

Application Number
EP 09 17 4949

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2002/129750 A1 (NELSON THOMAS J [US] ET AL) 19 September 2002 (2002-09-19)	1,10,12	INV. D06F39/12
Y	* paragraphs [0029] - [0038], [0049] - [0051]; claims; figures 1-3,8-14 *	2,8-9,13	A47L15/42
A		3-7,11, 14-15	D06F39/14 D06F37/42 D06F37/28
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A	* paragraphs [0001] - [0006], [0020], [0021], [0051] - [0069], [0089] - [0098], [0142] - [0153]; figures *	2-10, 13-15	

Y	US 5 806 942 A (JENKINS JR JOSEPH L [US] ET AL) 15 September 1998 (1998-09-15)	2,8-9,13	
A	* column 2, line 35 - column 4, line 50; claims; figures *	1,3-7, 10-12, 14-15	

A	GB 2 421 473 A (PERSONAL & ORIGINAL S L [ES]) 28 June 2006 (2006-06-28)	1-15	
	* page 5, line 14 - page 7, line 19 *		

			TECHNICAL FIELDS SEARCHED (IPC)
			A47L D06F
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
Munich		26 February 2010	Clivio, Eugenio
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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EPO FORM 1503 03.02 (P04C01)

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

EP 09 17 4949

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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26-02-2010

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