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(54) CABINET STRUCTURE OF HOME APPLIANCE

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(57) **ABSTRACT**

A cabinet structure of a home appliance, which can increase a structural strength of the cabinet and can facilitate cabinet assembly, is disclosed. The cabinet structure includes a flange of a predetermined width, forming a front surface of a cabinet, a panel frame piece for reinforcing a structural strength of the cabinet by being coupled to the flange, the panel frame piece having a rear surface opposing the front surface of the flange, and at least one hook assembly for maintaining a coupling position of the panel frame piece with respect to the flange.

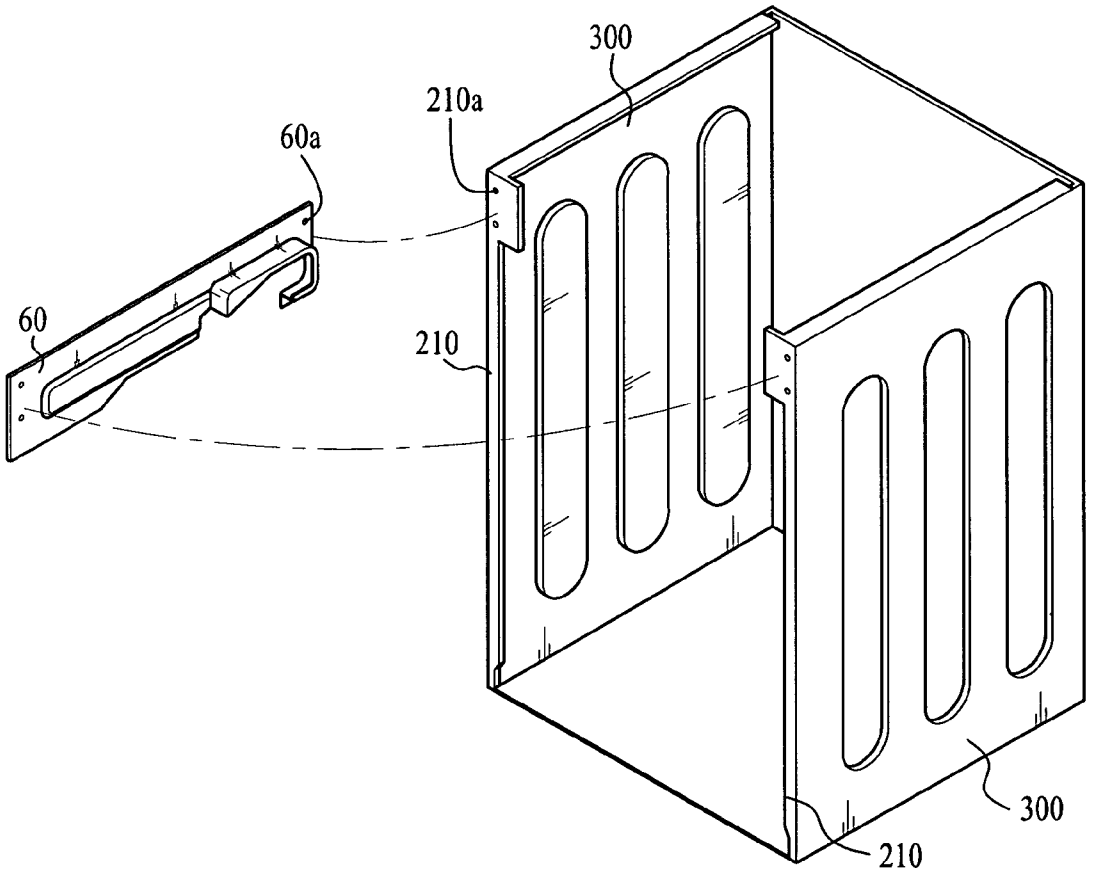


FIG. 1
Related Art

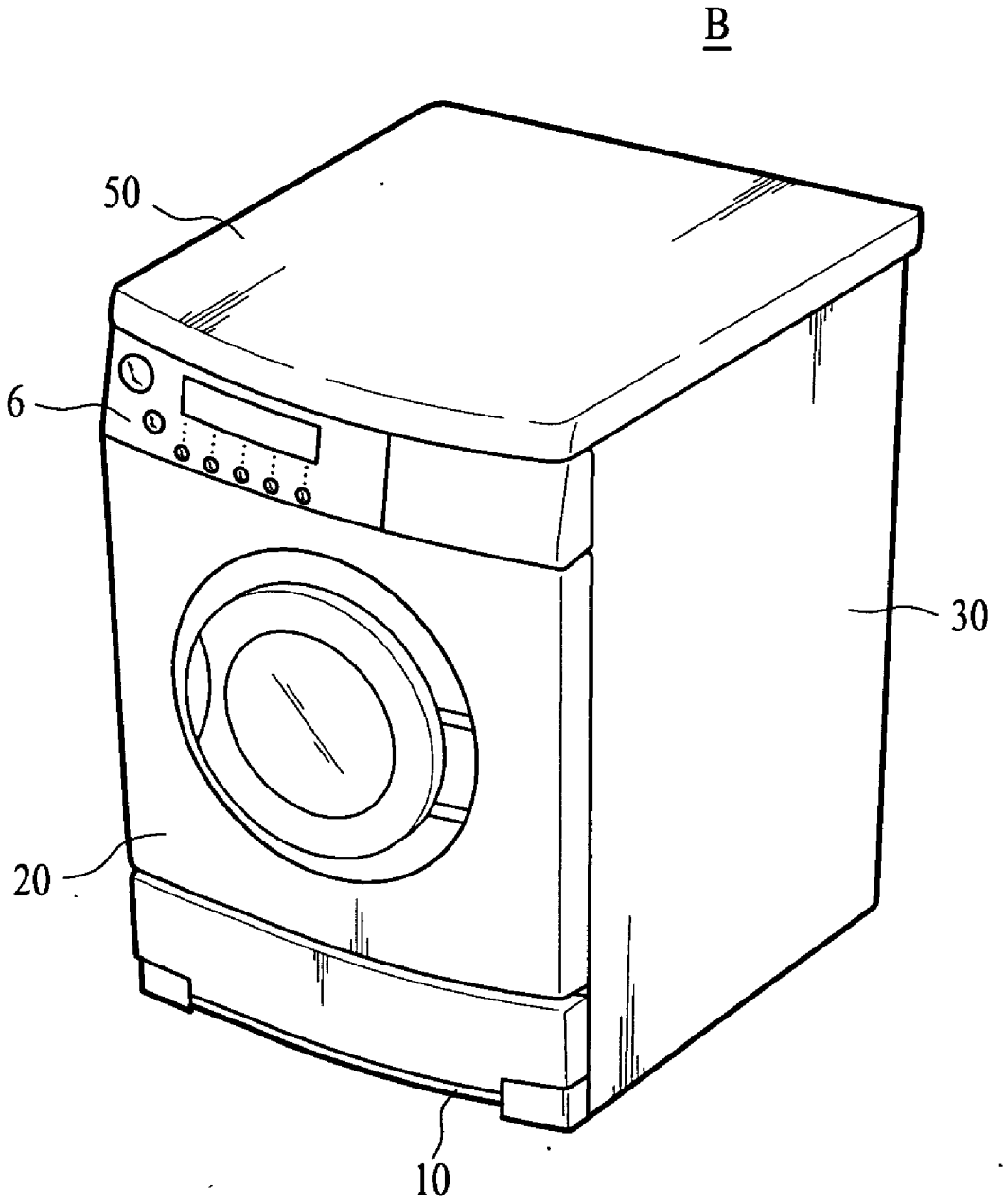


FIG. 2

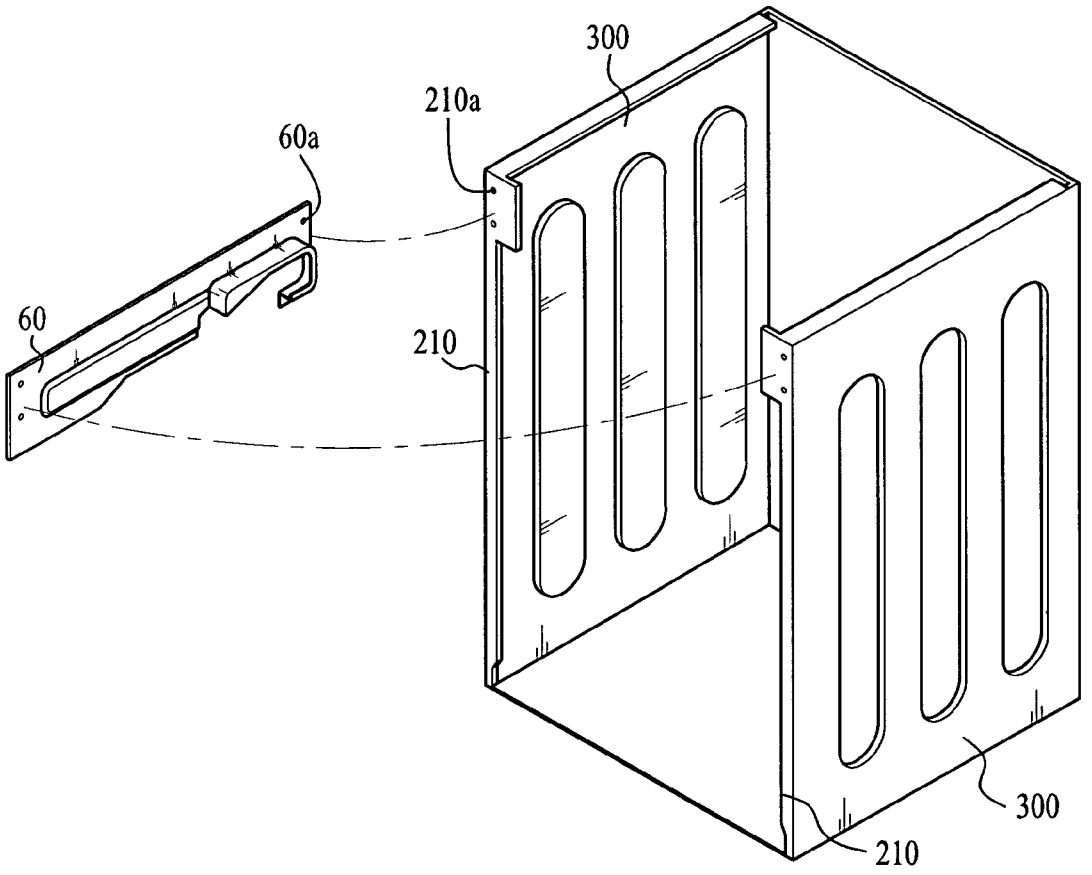


FIG. 3

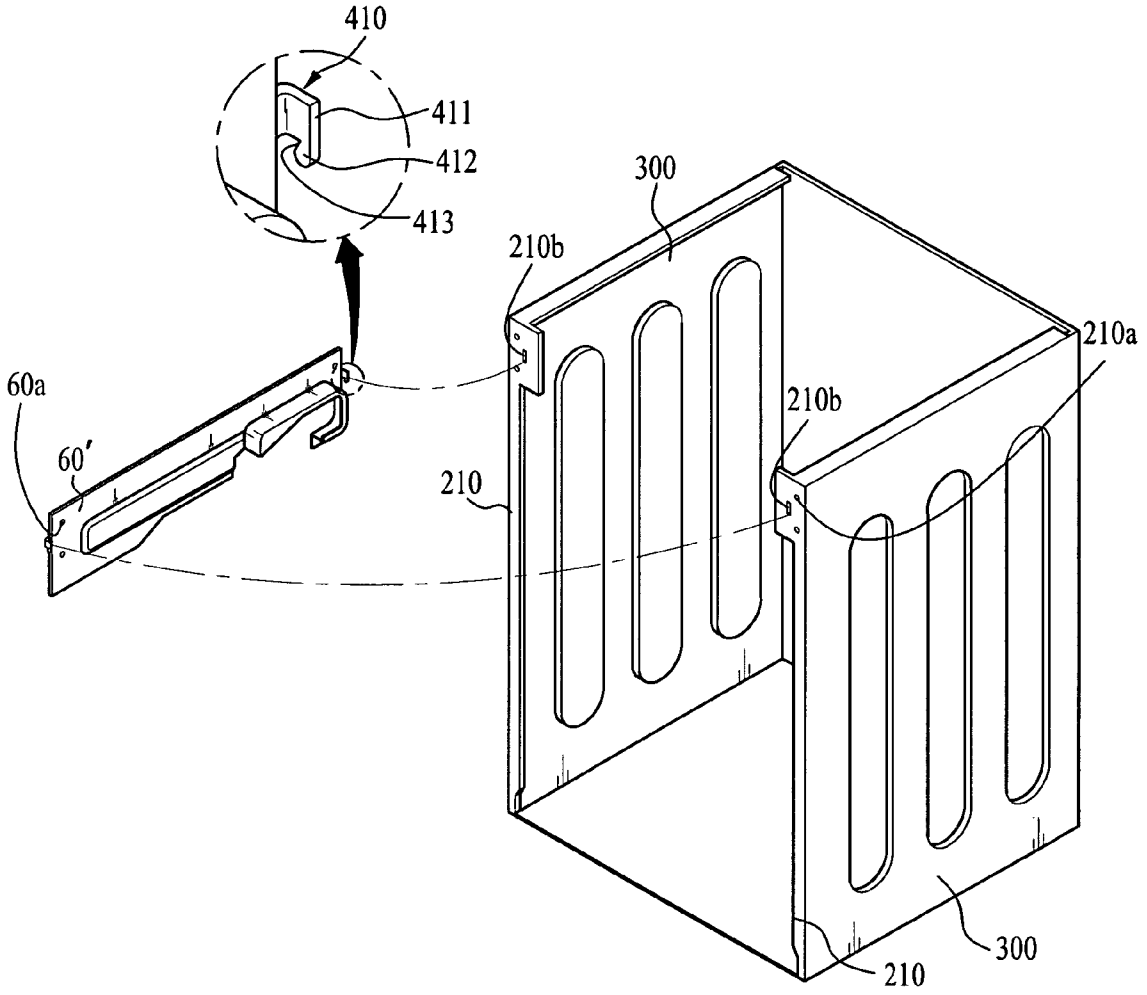
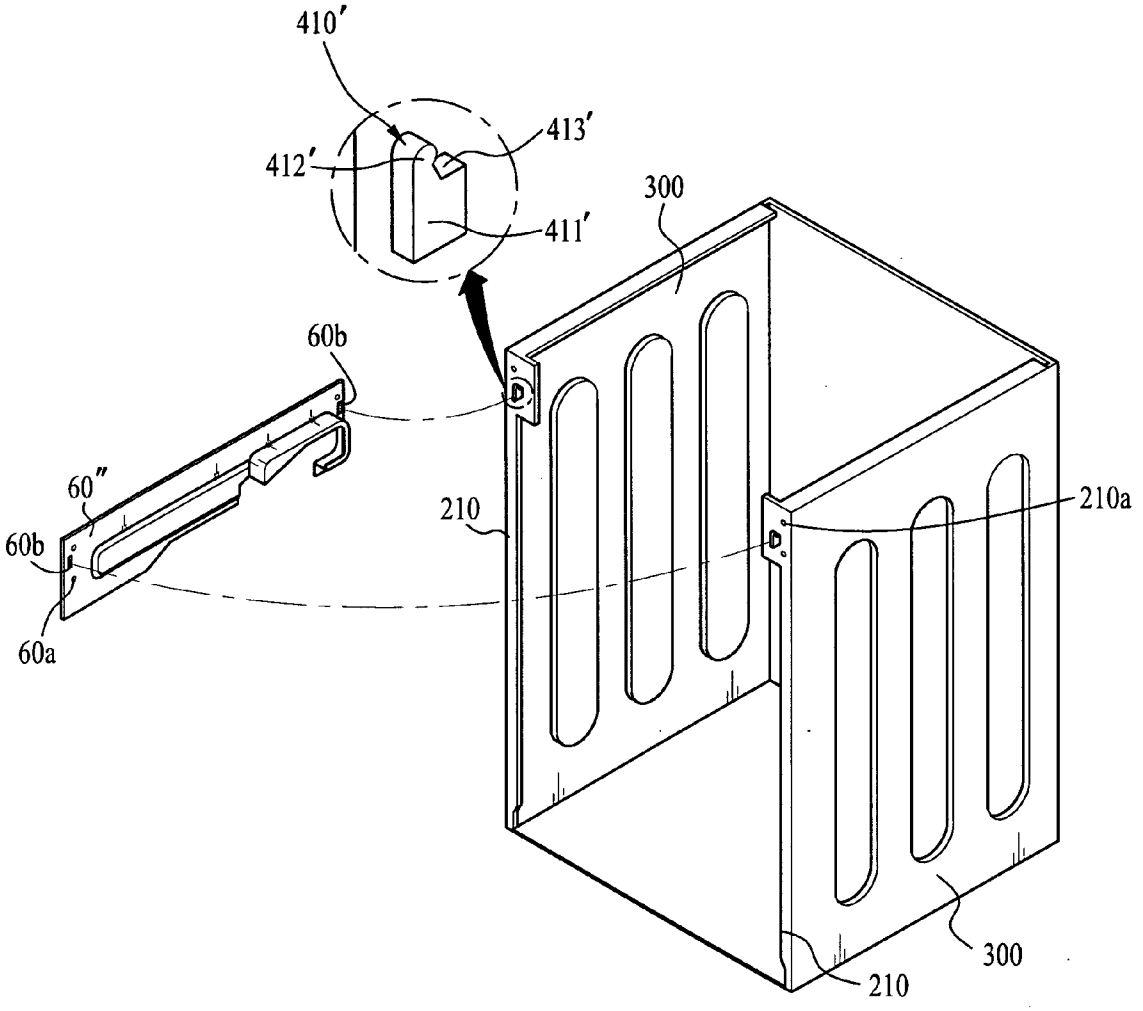


FIG. 4



CABINET STRUCTURE OF HOME APPLIANCE

[0001] This application claims the benefit of Korean Application No. P2003-087543, filed on Dec. 4, 2003, which is hereby incorporated by reference.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention relates to a home appliance, and more particularly, to a cabinet structure of a home appliance, such as a dryer in which a hook assembly is employed to increase the structural strength of the cabinet.

[0004] 2. Discussion of the Related Art

[0005] Generally, dryers are used for automatically drying wet laundry after washing has been completed. The outer case (or cabinet) of a conventional dryer is shown in **FIG. 1**. Referring to **FIG. 1**, a cabinet B of the dryer includes a base **10**, a front panel **20**, side panels **30**, a back cover (not shown), a top cover **50**, and an upper front panel piece **6** on which a control panel is provided. The base **10** is disposed at a bottom of the dryer, and the upper front panel piece **6** is disposed at a front side of the dryer. The pair of side panels **30** is disposed at both sides of the dryer, and the back cover is disposed at a rear side of the dryer. The top cover **50** is disposed at an upper side of the dryer, and the upper front panel piece **6** is disposed above the front panel **20** below a forward edge of the top cover **50**.

[0006] A typical home appliance includes large internal components, such as motors and drums, which are mounted inside the cabinet and are set in motion by operating the home appliance, and a normal amount of resulting vibration generated by, for example, a rotating drum mounted inside a dryer, may over the life of the apparatus loosen a fixing structure for joining cabinet panels. Such loosening may in turn produce more forceful vibrations an undue shaking during routine operation. Also, in the event that such a home appliance is relocated, a junction between the front and side panels of the cabinet often becomes fractured and/or loosened. At the same time, one or more of the panels may be provided with delicate components, such as electronic controls and displays, whereby a fracture with respect to the associated panel may result in a catastrophic failure of the entire apparatus.

SUMMARY OF THE INVENTION

[0007] Accordingly, the present invention is directed to a cabinet structure of a home appliance that substantially obviates one or more problems due to limitations and disadvantages of the related art.

[0008] An object of the present invention is to provide a cabinet structure of a home appliance that increases a structural strength of the cabinet.

[0009] Another object of the present invention is to provide a cabinet structure of a home appliance that can facilitate cabinet assembly.

[0010] Additional advantages, objects, and features of the invention will be set forth in part in the description which follows and in part will become apparent to those having ordinary skill in the art upon examination of the following or may be learned from practice of the invention. The objectives and other advantages of the invention may be realized and attained by the structure particularly pointed out in the written description and claims hereof as well as the appended drawings.

[0011] To achieve these objects and other advantages and in accordance with the purpose of the invention, as embodied and broadly described herein, a cabinet structure of a home appliance includes a flange of a predetermined width, forming a front surface of a cabinet, a panel frame piece for reinforcing a structural strength of the cabinet by being coupled to the flange, the panel frame piece having a rear surface opposing the front surface of the flange, and at least one hook assembly for maintaining a coupling position of the panel frame piece with respect to the flange.

[0012] The cabinet structure may include a control panel mounted on the panel frame piece. Herein, the panel frame piece connects the side panels at an upper point, and the predetermined width of the flange is greater at the upper point of the side panels.

[0013] The at least one hook assembly comprises at least one hook, formed on one of the front surface of the flange and the rear surface of the flange, for being inserted into at least one fixing hole formed in the other surface in opposition to the at least one hook. Herein, the at least one hook may include a support protruding from the one surface, and a retainer, extending from one end of the support, for being caught in the at least one fixing hole. An interval between the retainer and the one surface is nearly equal to a thickness of the flange at the fixing hole. And, the retainer is integrally formed with the support.

[0014] The flange has at least one coupling hole for receiving a coupling member and the panel frame piece has at least one through hole though which the coupling member passes. Herein, when the coupling position of the flange and the panel frame piece is maintained using the hook assembly, the at least one coupling hole is aligned with the at least one through hole.

[0015] Herein, the retainer extends downward from the support, the at least one hook is formed on the rear surface of the panel frame piece, and the at least one fixing hole is formed in the flange. And, the retainer extends upward from the support, the at least one hook is formed on the flange, and the at least one fixing hole is formed in the rear surface of the panel frame piece. Herein, the home appliance is a dryer.

[0016] In another aspect of the present invention, a dryer includes a flange of a predetermined width, forming a front surface of a cabinet, a panel frame piece for reinforcing a structural strength of the cabinet by being coupled to the flange, the panel frame piece having a rear surface opposing the front surface of the flange, at least one hook, formed on the rear surface of the panel frame piece, for being inserted into at least one fixing hole formed in the flange in opposition to the at least one hook, to maintain a coupling position of the panel frame piece with respect to the flange, and a control panel mounted on the panel frame piece.

[0017] Herein, the hook includes a support protruding from the rear surface of the panel frame piece, and a retainer, extending downward from one end of the support, for being caught in the at least one fixing hole. An interval between the retainer and the rear surface of the panel frame piece is nearly equal to a thickness of the flange at the fixing hole.

[0018] In a further aspect of the present invention, a dryer includes a flange of a predetermined width, forming a front surface of a cabinet, a panel frame piece for reinforcing a structural strength of the cabinet by being coupled to the flange, the panel frame piece having a rear surface opposing the front surface of the flange, at least one hook, formed on the front surface of the flange, for being inserted into at least one fixing hole formed in the panel frame piece in opposition to the at least one hook, to maintain a coupling position of the panel frame piece with respect to the flange, and a control panel mounted on the panel frame piece.

[0019] Herein, the hook includes a support protruding from the front surface of the flange, and a retainer, extending upward from one end of the support, for being caught in the at least one fixing hole. An interval between the retainer and the front surface of the flange is nearly equal to a thickness of the panel frame piece at the fixing hole.

[0020] It is to be understood that both the foregoing general description and the following detailed description of the present invention are exemplary and explanatory and are intended to provide further explanation of the invention as claimed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a part of this application, illustrate embodiments of the invention and together with the description serve to explain the principle of the invention. In the drawings:

[0022] **FIG. 1** is a perspective view of a general dryer;

[0023] **FIG. 2** is a breakaway perspective view illustrating a structure to reinforce a front of a dryer;

[0024] **FIG. 3** is a breakaway perspective view illustrating a structure to reinforce a front of a dryer according to a preferred embodiment of the present invention; and

[0025] **FIG. 4** is a breakaway perspective view illustrating a structure to reinforce a front of a dryer according to another preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0026] Reference will now be made in detail to the preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings. Wherever possible, the same reference numbers will be used throughout the drawings to refer to the same or like parts.

[0027] **FIG. 2** illustrates a structure of a home appliance, such as a dryer, according to the present invention. Referring to **FIG. 2**, a pair of side panels **300** is disposed at both sides of an outer case of the home appliance, forming a cabinet of the dryer. A pair of flanges **210**, each of which being inwardly bent at a right angle, is formed at front ends of the pair of side panels **300**. The flanges **210** have a predetermined width and include at least one coupling hole **210***a*. Preferably, a portion of the flanges **210** has an increased width to accommodate the coupling holes **210***a*.

[0028] A panel frame piece **60** is disposed at a front side of the flanges **210**. Through holes **60***a* corresponding to the coupling holes **210***a* are formed at both edges of the panel frame piece **60**. The panel frame piece **60** and the flanges **210** are coupled together using screws, which are passed through the through holes **60***a* and inserted into the coupling holes **210***a*. The panel frame piece **60** is to reinforce the structural strength of the side panels **300**.

[0029] A control panel (not shown) is installed in the panel frame piece **60**. The control panel includes circuitry for controlling operations of the dryer and is, therefore, sensitive to deformation of the outer case of the dryer and to external impacts. The panel frame piece **60** reinforces the support structure of the control panel, thereby preventing the control panel from fracturing. The side panels **300** are assembled with the panel frame piece **60** by a screw coupling, which should be manipulated while the panel frame piece **60** is supported. Therefore, in order to facilitate the cabinet assembly, the preferred embodiment of the present invention employs a hook assembly.

[0030] In the embodiment shown in **FIG. 3**, the cabinet of the home appliance further includes a hook assembly for coupling a panel frame piece **60'** to the side panels **300**. The hook assembly keeps the panel frame piece **60'** precisely positioned when the panel frame piece is coupled to the side panels **300**.

[0031] The hook assembly includes a pair of hooks **410** and a pair of fixing holes **210***b*, which are respectively provided to the front surface of each flange **210** or at both rear sides of the panel frame piece **60'**. The present embodiment may employ fixing grooves instead of the fixing holes **420**. Each of the hook **410** includes a support **411** and a retainer **412**. The support **411** extends from a surface where the hook **410** is formed and is thus directed toward the flange **210** of the side panels **300**. The retainer **412** extends from one end of the support **411**, so as to be caught in the fixing hole **420**.

[0032] It is preferable that the retainer **412** protrudes downward from a lower end of a distal edge of the support **411**. Also, an interval between the retainer **412** and the surface having the hook **410** formed therein is nearly equal to a thickness of the flange **210** at the fixing hole **420**. Accordingly, if the hook **410** is inserted into the fixing hole **420** and then pressed downward, the retainer **412** is elastically deformed, slides along a surface of the flange **210** below the fixing hole **420**, and becomes seated. Accordingly, the panel frame piece **60'** is pre-assembled to the side panels **300**, such that the through holes **60***a* are aligned with the coupling holes **210***a*, allowing the insertion of the screws.

[0033] A recess **413** is formed at the junction of the support **411** and the retainer **412**. The lower edge of the fixing hole **420** resets the recess **413** and becomes clamped between the retainer **412** and the surface on which the hook is formed. The portion of the retainer **412** in contact with the edge of the fixing hole **420** is rounded. Accordingly, the retainer **412** is smoothly slid along the surface of the edge. Also, the rounded portion facilitates the insertion of the hook **410** into the fixing hole **420** and prevents surface scratching. Preferably, the retainer **412** is integrally formed with the support **411**.

[0034] **FIG. 4** illustrates an assembly structure according to another preferred embodiment of the present invention. In the embodiment shown in **FIG. 4**, a pair of hooks **410'** is

formed on the front sides of the flanges **210**, and a pair of fixing holes **60***b* are formed in the rear surface of a panel frame piece **60**". Each hook **410**' includes a support **411**' and a retainer **412**'. The support **411**' protrudes forward from a front surface of the flange **210**, and the retainer **412**' extends from one end of the support **411**'.

[**0035**] In assembling the panel frame piece **60**" to the side panels **300**, the hooks **410**' are inserted into the fixing holes **420**', and then, the panel frame piece **60**" is pressed downward. At this time, recesses **413**' formed at the junctions of the supports **411**' and the retainers **412**' are seated in the fixing holes **420**'. Accordingly, the upper edge of the fixing holes **420**' are fixedly inserted between the front edges of the retainers **412**' and a front surface of the flange **210**. In this manner, the panel frame piece **60**" is pre-assembled to the side panels **300**, such that the through holes **60***a* are aligned with the coupling holes **210***a* allowing the insertion of the screws.

[**0036**] As described above, the hook assembly can prevent the coupling of the panel frame piece to the side panels from becoming loose during a normal operation or relocation of a home appliance adopting the cabinet of the present invention. Also, since the hook assembly enables a pre-assembly of the panel frame piece with respect to the front of the side panels, the panel frame piece can be assembled to the side panels more conveniently. The damage to a control panel can be prevented by reinforcing the structural strength of the mounting surface of the control panel. When the hooks of the hook assembly are inserted into the fixing holes, the panel frame piece is temporarily fixed, and the holes for receiving the screws are aligned, thereby shortening the assembly time.

[**0037**] It will be apparent to those skilled in the art that various modifications and variations can be made in the present invention. Thus, it is intended that the present invention covers the modifications and variations of this invention provided they come within the scope of the appended claims and their equivalents.

What is claimed is:

1. A cabinet structure of a home appliance, comprising:

a flange of a predetermined width, forming a front surface of a cabinet;

a panel frame piece for reinforcing a structural strength of the cabinet by being coupled to the flange, the panel frame piece having a rear surface opposing the front surface of the flange; and

at least one hook assembly for maintaining a coupling position of the panel frame piece with respect to the flange.

2. The cabinet structure as claimed in claim 1, wherein the at least one hook assembly comprises at least one hook, formed on one of the front surface of the flange and the rear surface of the flange, for being inserted into at least one fixing hole formed in the other surface in opposition to the at least one hook.

3. The cabinet structure as claimed in claim 2, wherein the at least one hook comprises:

a support protruding from the one surface; and

a retainer, extending from one end of the support, for being caught in the at least one fixing hole.

4. The cabinet structure as claimed in claim 3, wherein an interval between the retainer and the one surface is nearly equal to a thickness of the flange at the fixing hole.

5. The cabinet structure as claimed in claim 3, wherein the retainer is integrally formed with the support.

6. The cabinet structure as claimed in claim 1, wherein the flange has at least one coupling hole for receiving a coupling member and the panel frame piece has at least one through hole though which the coupling member passes.

7. The cabinet structure as claimed in claim 6, wherein, when the coupling position of the flange and the panel frame piece is maintained using the hook assembly, the at least one coupling hole is aligned with the at least one through hole.

8. The cabinet structure as claimed in claim 1, further comprising a control panel mounted on the panel frame piece.

9. The cabinet structure as claimed in claim 1, wherein the panel frame piece connects the side panels at an upper point.

10. The cabinet structure as claimed in claim 9, wherein the predetermined width of the flange is greater at the upper point of the side panels.

11. The cabinet structure as claimed in claim 3, wherein the retainer extends downward from the support, the at least one hook is formed on the rear surface of the panel frame piece, and the at least one fixing hole is formed in the flange.

12. The cabinet structure as claimed in claim 3, wherein the retainer extends upward from the support, the at least one hook is formed on the flange, and the at least one fixing hole is formed in the rear surface of the panel frame piece.

13. The cabinet structure as claimed in claim 3, wherein the home appliance is a dryer.

14. A dryer, comprising:

a flange of a predetermined width, forming a front surface of a cabinet;

a panel frame piece for reinforcing a structural strength of the cabinet by being coupled to the flange, the panel frame piece having a rear surface opposing the front surface of the flange;

at least one hook, formed on the rear surface of the panel frame piece, for being inserted into at least one fixing hole formed in the flange in opposition to the at least one hook, to maintain a coupling position of the panel frame piece with respect to the flange; and

a control panel mounted on the panel frame piece.

15. The dryer as claimed in claim 14, wherein the hook comprises:

a support protruding from the rear surface of the panel frame piece; and

a retainer, extending downward from one end of the support, for being caught in the at least one fixing hole.

16. The dryer as claimed in claim 15, wherein an interval between the retainer and the rear surface of the panel frame piece is nearly equal to a thickness of the flange at the fixing hole.

17. A dryer, comprising:

a flange of a predetermined width, forming a front surface of a cabinet;

a panel frame piece for reinforcing a structural strength of the cabinet by being coupled to the flange, the panel frame piece having a rear surface opposing the front surface of the flange;

at least one hook, formed on the front surface of the flange, for being inserted into at least one fixing hole formed in the panel frame piece in opposition to the at least one hook, to maintain a coupling position of the panel frame piece with respect to the flange; and

a control panel mounted on the panel frame piece.

18. The dryer as claimed in claim 17, wherein the hook comprises:

a support protruding from the front surface of the flange; and

a retainer, extending upward from one end of the support, for being caught in the at least one fixing hole.

19. The dryer as claimed in claim 18, wherein an interval between the retainer and the front surface of the flange is nearly equal to a thickness of the panel frame piece at the fixing hole.

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