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(54) **OUTDOOR UNIT FOR AIR CONDITIONER**

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(57)   **ABSTRACT**

An air conditioner outdoor unit including a box-shaped cas-
ing for accommodating at least a heat exchanger, an air
blower, and a compressor. The casing has a front wall with an
opening. A reinforcement rib is arranged near the opening of
the front wall to increase compressive strength in the vicinity
of the opening.

Fig.1

Fig.2

Fig.3

Fig.4

Fig.5

11F

P₂

E

10

P₁

9

Fig.6

11F

P₂

10b

10a

9

P₁
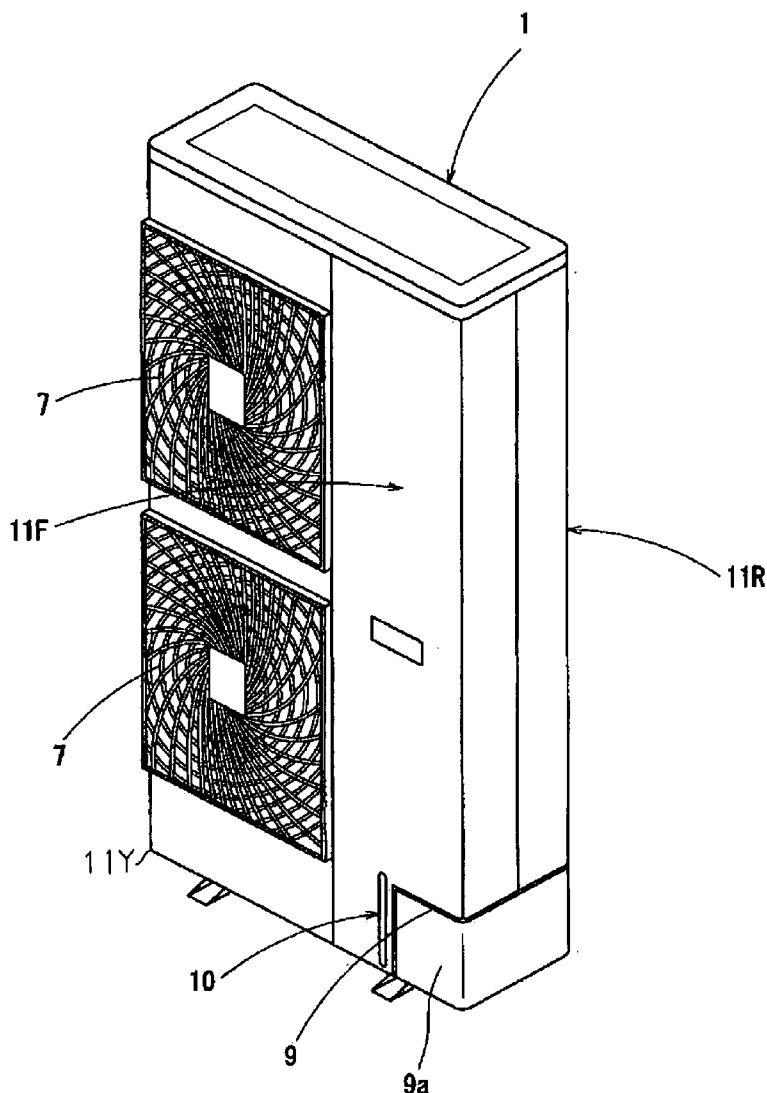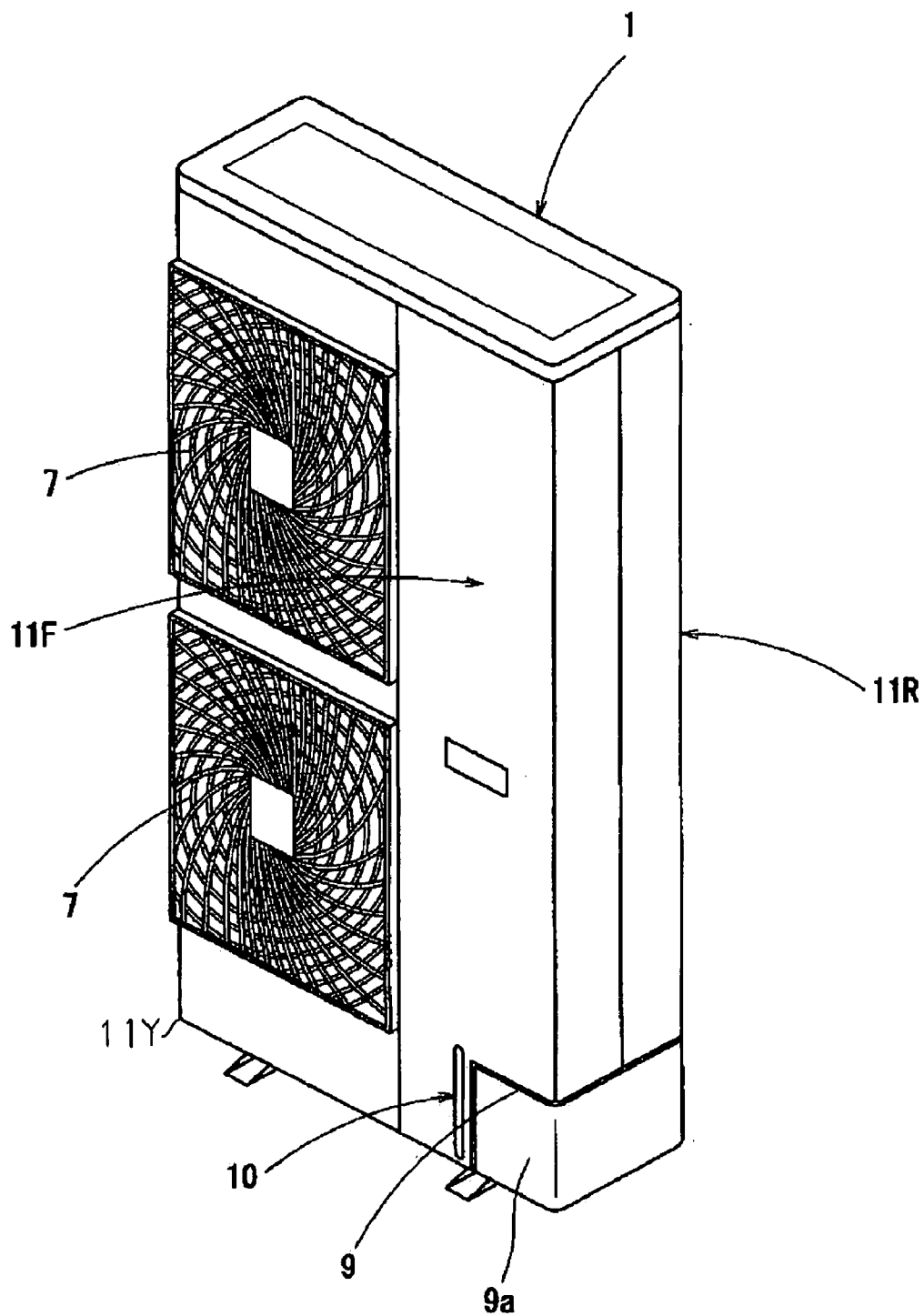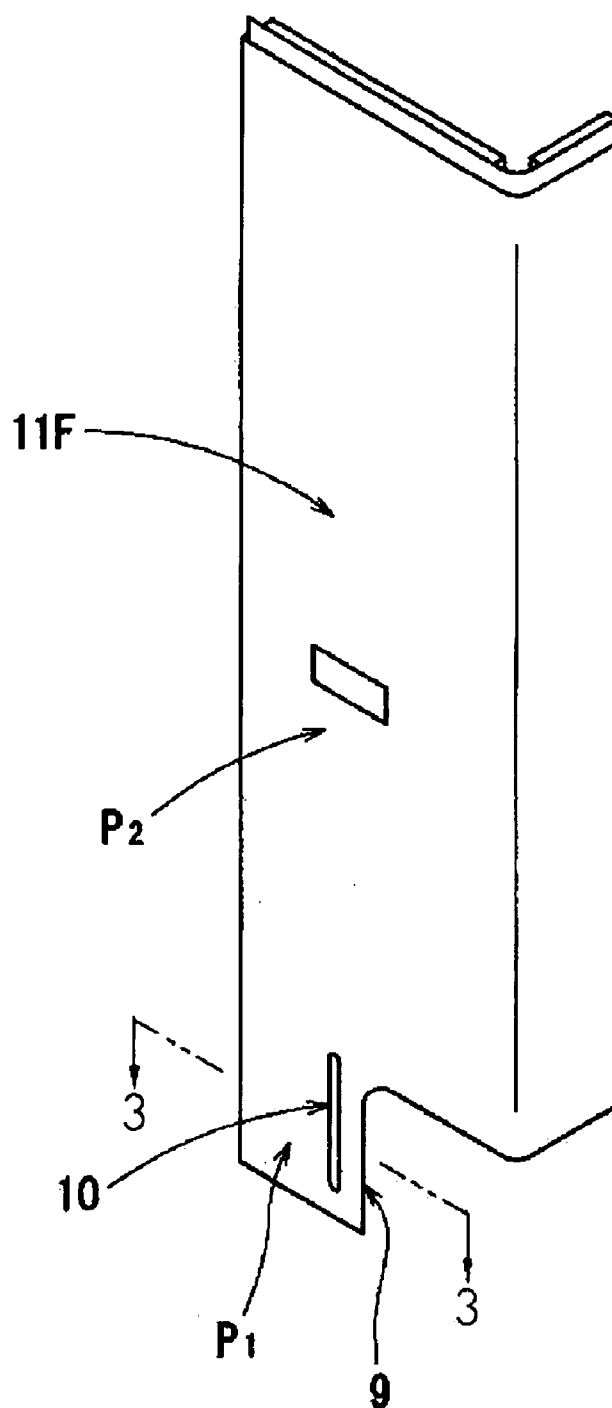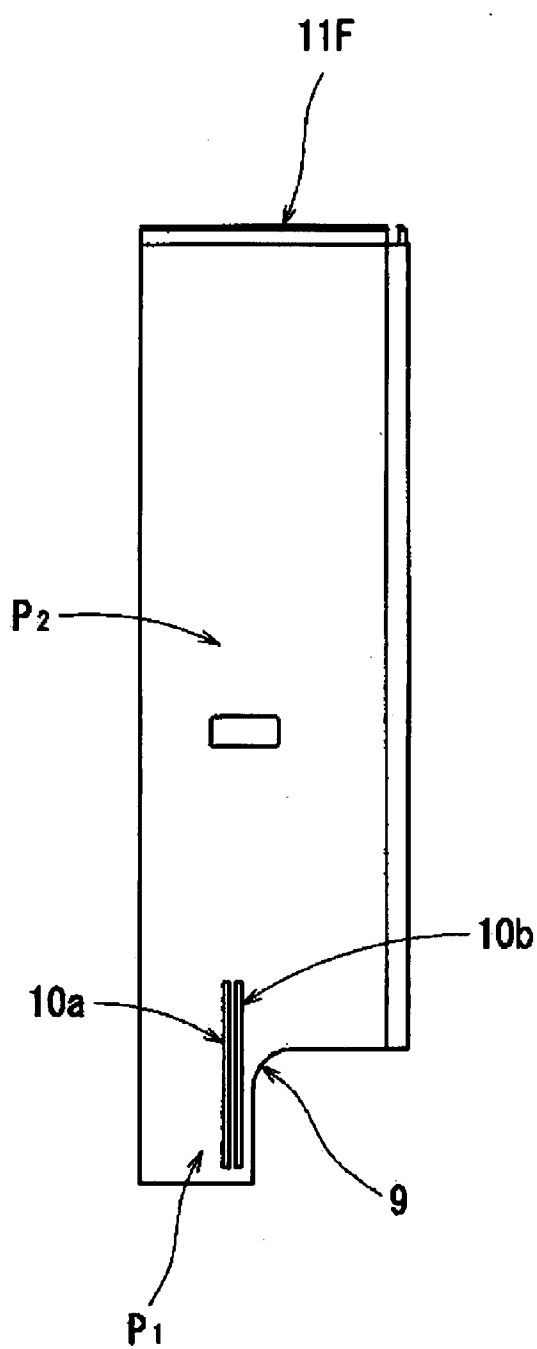
Fig.7
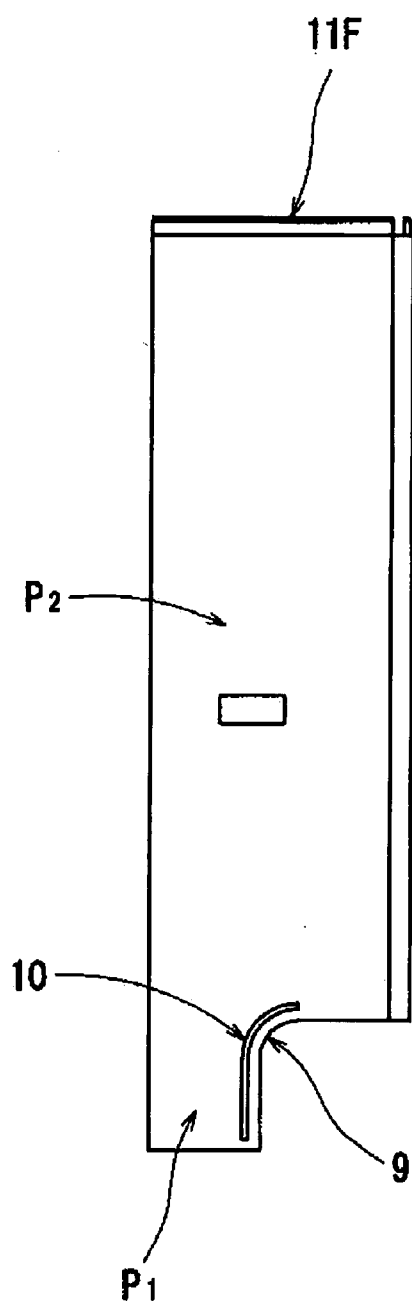
Fig.8

Fig.9

Fig.10

Fig.11

Fig.12

Predicted Value of
Operation Average···57.5051

Fig.13

Fig.14

Buckling Value (Kgf)

800
750
700
650
600
550
500

0% 10% 20% 30% 40% 50% 60% 70% 80%

Ratio of Distance from Opening of Reinforcement Rib and Widthe of Lower Part of Front Wall (D/G2)

●――― Width G_2=135mm, W=183mm
▦――― Width G_2=160mm, W=158mm
△――― Width G_2=185mm, W=133mm

Fig.15

Fig.16
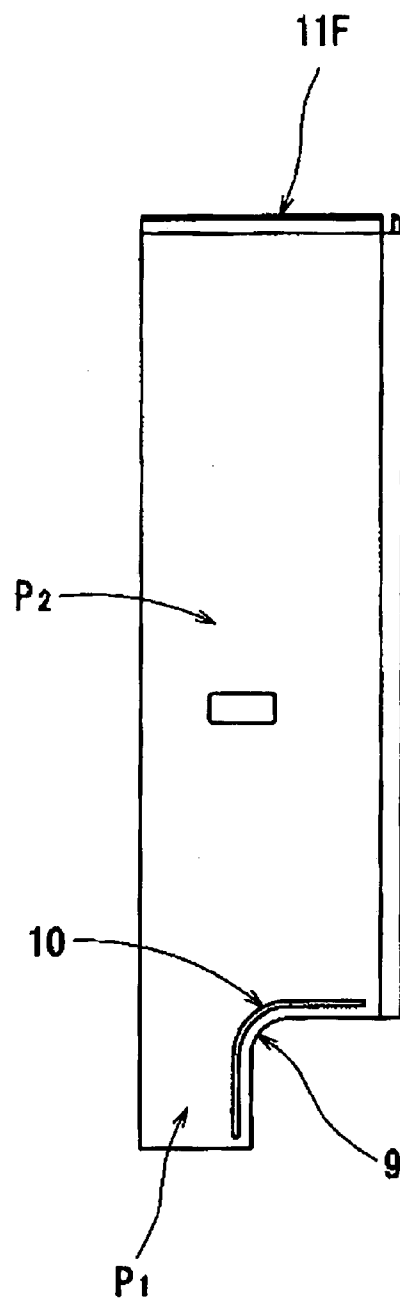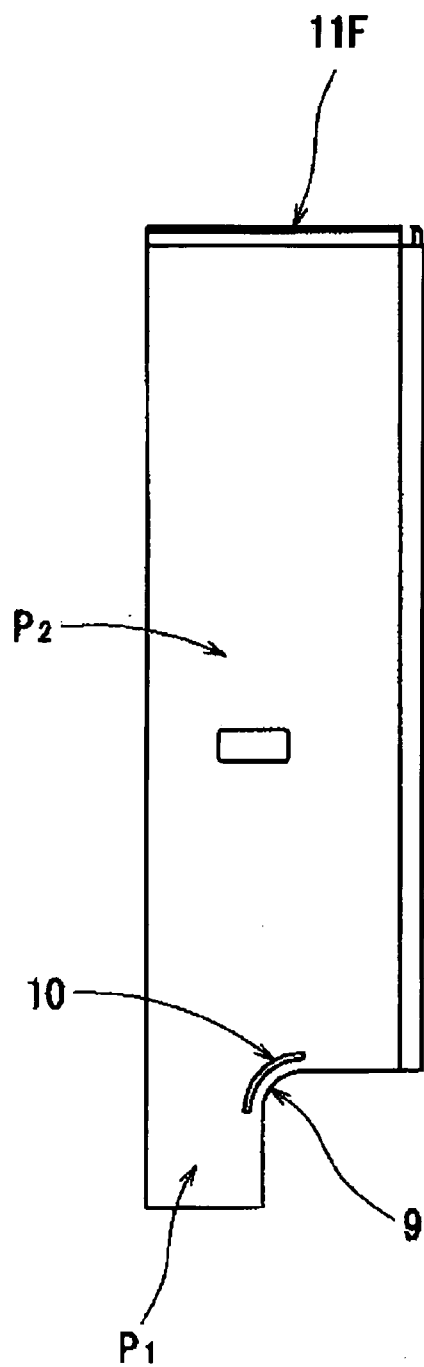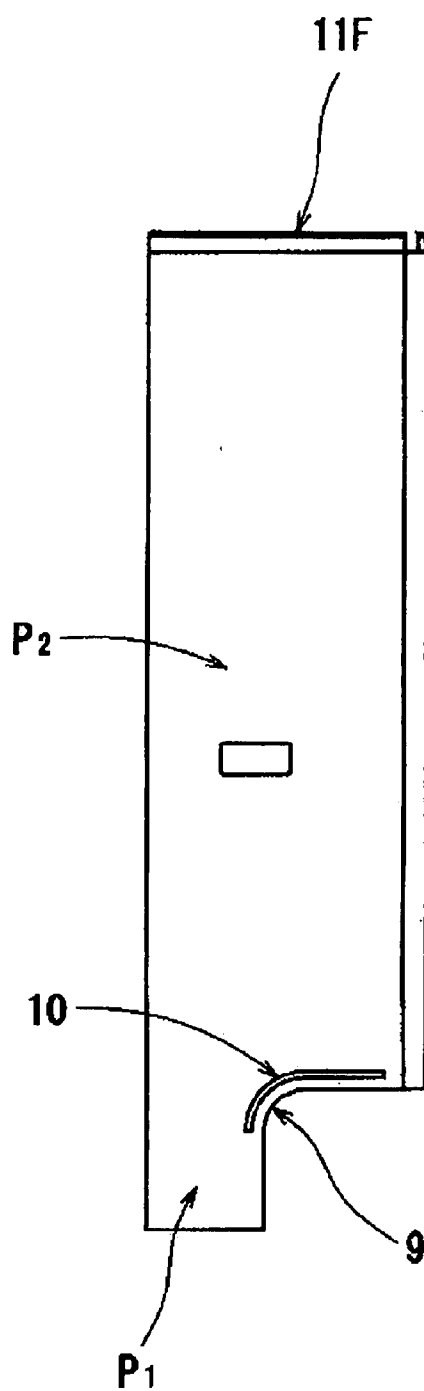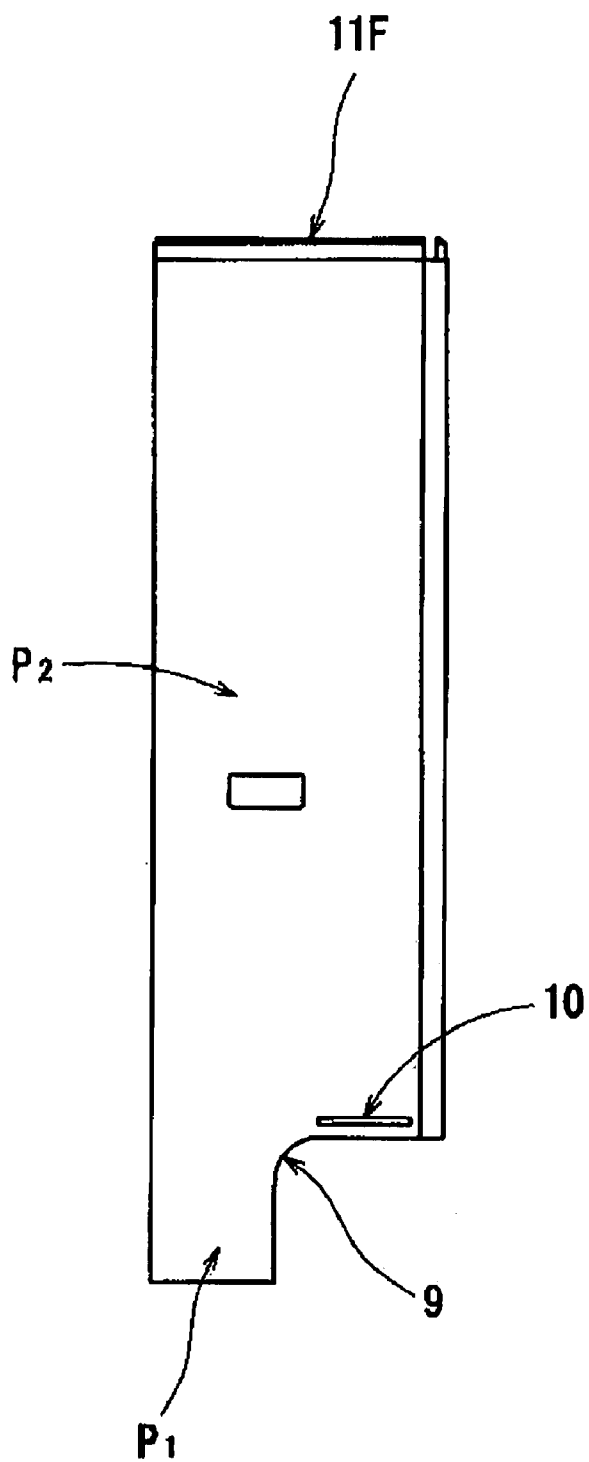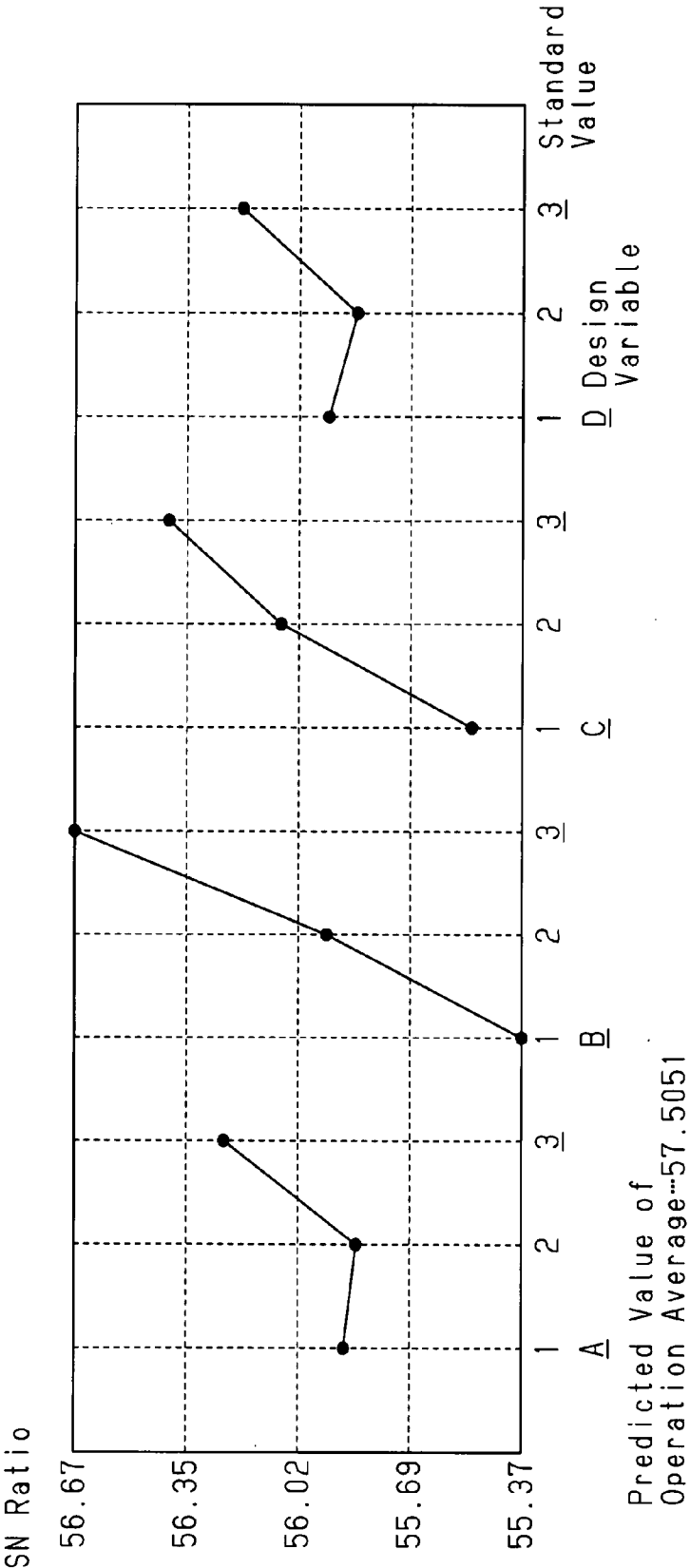
OUTDOOR UNIT FOR AIR CONDITIONER

TECHNICAL FIELD

[0001] The present invention relates to a casing structure for an outdoor unit for an air conditioner.

BACKGROUND ART

[0002] An air conditioner generally includes an indoor unit arranged inside a dwelling unit and an outdoor unit arranged outside the dwelling unit. As shown in FIGS. 15 and 16, the outdoor unit includes a box-shaped casing 1. A partition plate 2 partitions the space in the casing 1 into a machine compartment 1A and a fan compartment 1B. A compressor 3 and a receiver 4 are arranged in the machine compartment 1A, and a heat exchanger 5 and an air blower 6 are arranged in the fan compartment 1B.

[0003] Air inlets 7 are formed in the front and side surfaces of the casing 1. Air outlets 8 are formed in the rear surface of the casing 1. An opening 9 used for maintenance is formed in the lower end of the casing 1, and a cover 9a is attached to the casing 1 to cover the opening 9 (refer to, for example, patent document 1).

[Patent Document 1] Japanese Laid-Open Patent Publication No. 2003-106565

DISCLOSURE OF THE INVENTION

[0004] Prior to shipment, the outdoor unit is stored in a warehouse in a stacked state. Thus, impacts produced when stacking the outdoor units and the weight of the outdoor units result in a tendency of load being concentrated on the front wall 11F near the opening 9 (portion X shown in FIG. 15). As a result, buckling deformation may occur near the opening 9 of the front wall 11F when stacking outdoor units.

[0005] The front wall 11F is a component that is separate from a frame body 11R, which forms the rear surface of the casing 1, and a frame plate 11Y, which is arranged near the air inlets 7. The front wall 11F has an L-shaped cross-section and is partially narrowed near the opening 9. Thus, the rigidity of the front wall 11F is partially low near the opening 9. As a result, compressive load that is produced during stacking tends to cause buckling deformation occurring near the opening 9 of the front wall 11F. For the above reasons, it is required that compression rigidity be increased near the opening 9 of the front wall 11F so that buckling deformation does not occur when stacking the outdoor units.

[0006] However, patent document 1 only disclosed a structure for increasing the strength of a curved portion of the partition plate and does not disclose a structure for increasing the strength of the front wall of the casing.

[0007] It is an object of the present invention to provide an outdoor unit for air conditioner that increases the compression rigidity near the opening in the front wall with a reinforcement rib and minimizing buckling deformation caused by compressive load.

[0008] In order to solve the above problems, a first aspect of the present invention provides an air conditioner outdoor unit including a box-shaped casing for accommodating at least a heat exchanger, an air blower, and a compressor. The casing has a front wall with an opening. A reinforcement rib is arranged near the opening of the front wall to increase compressive strength in the vicinity of the opening.
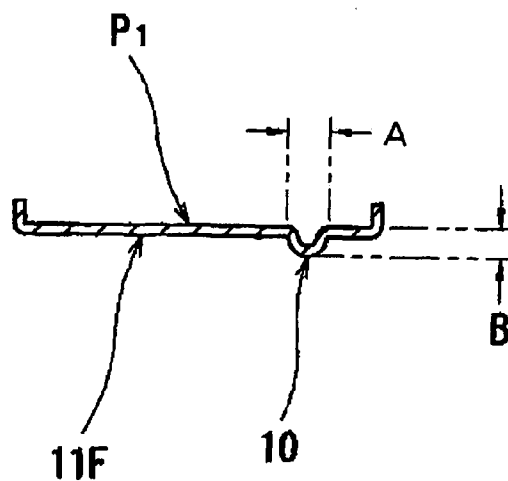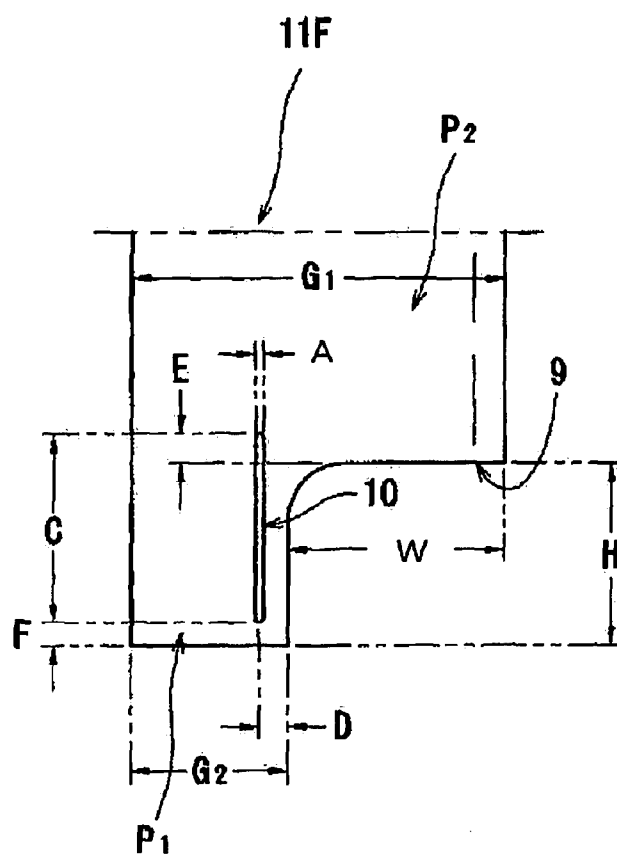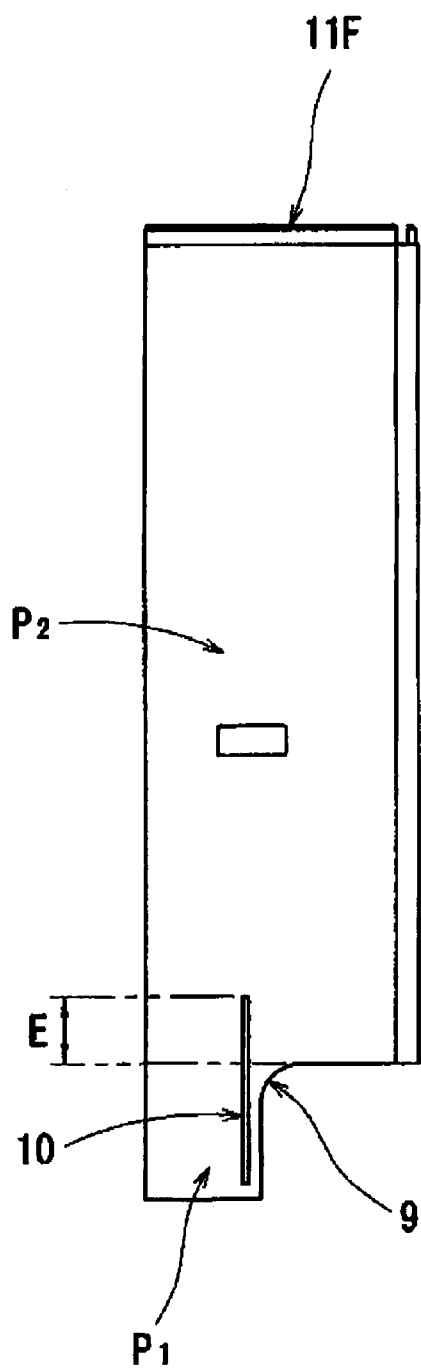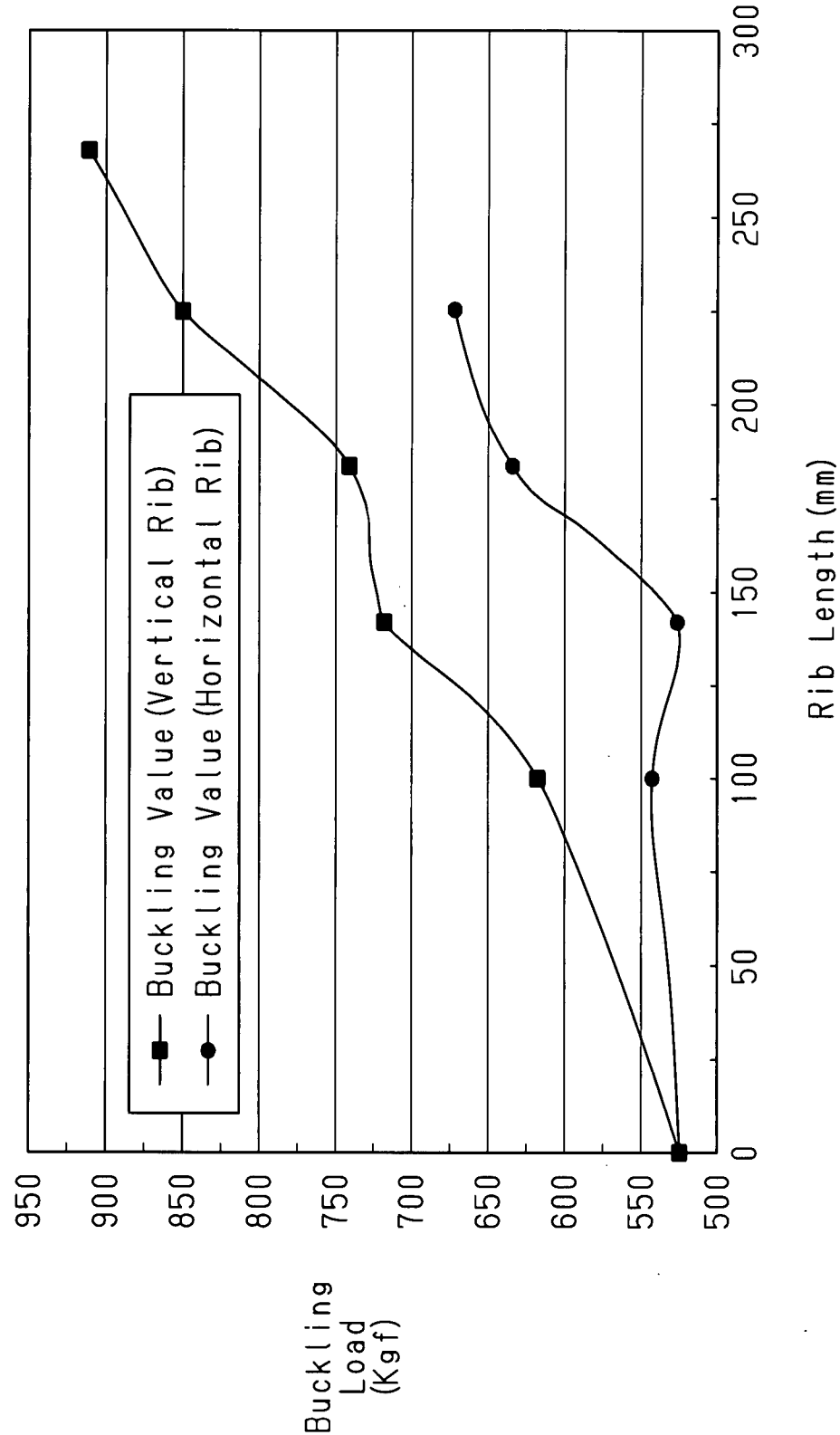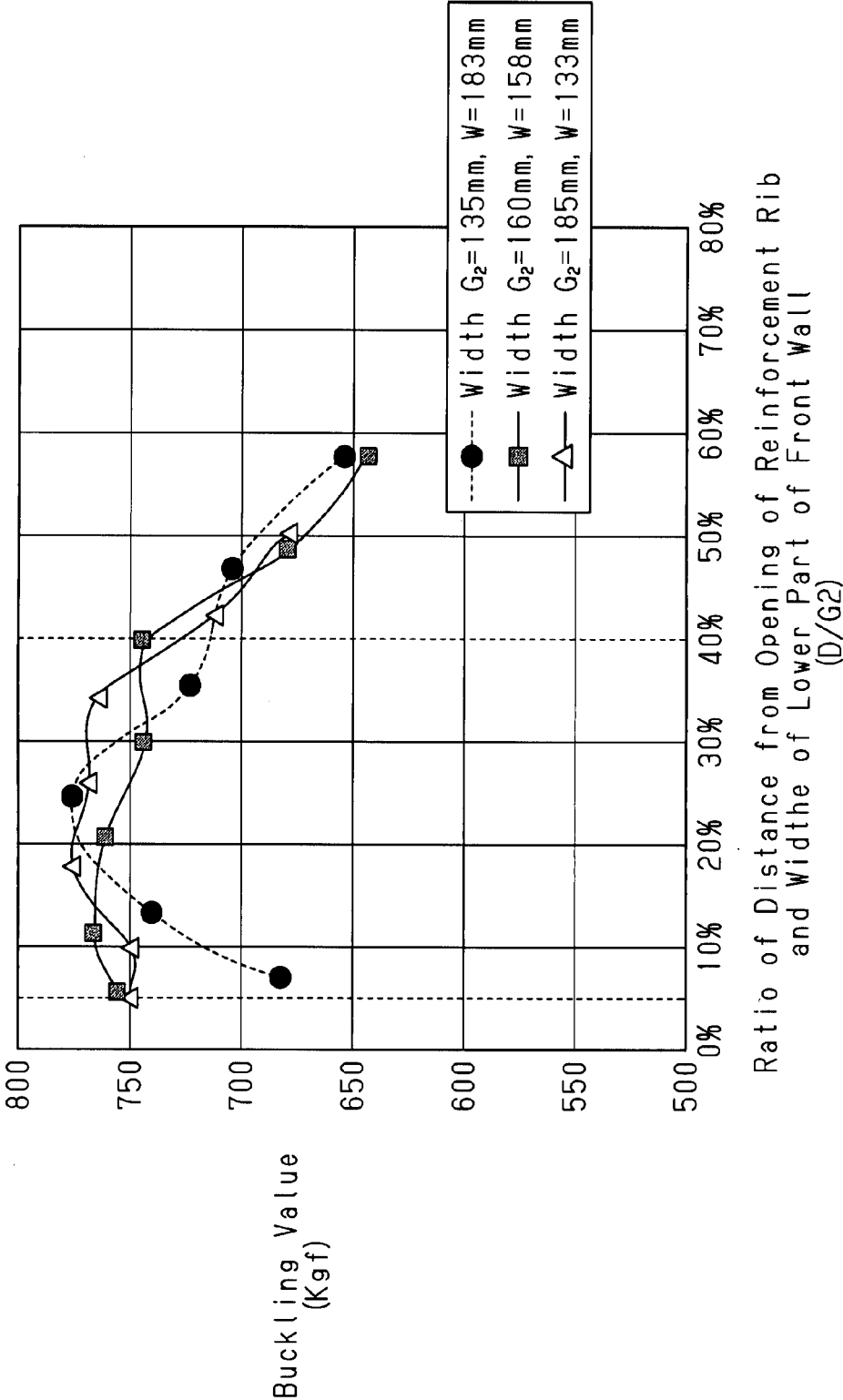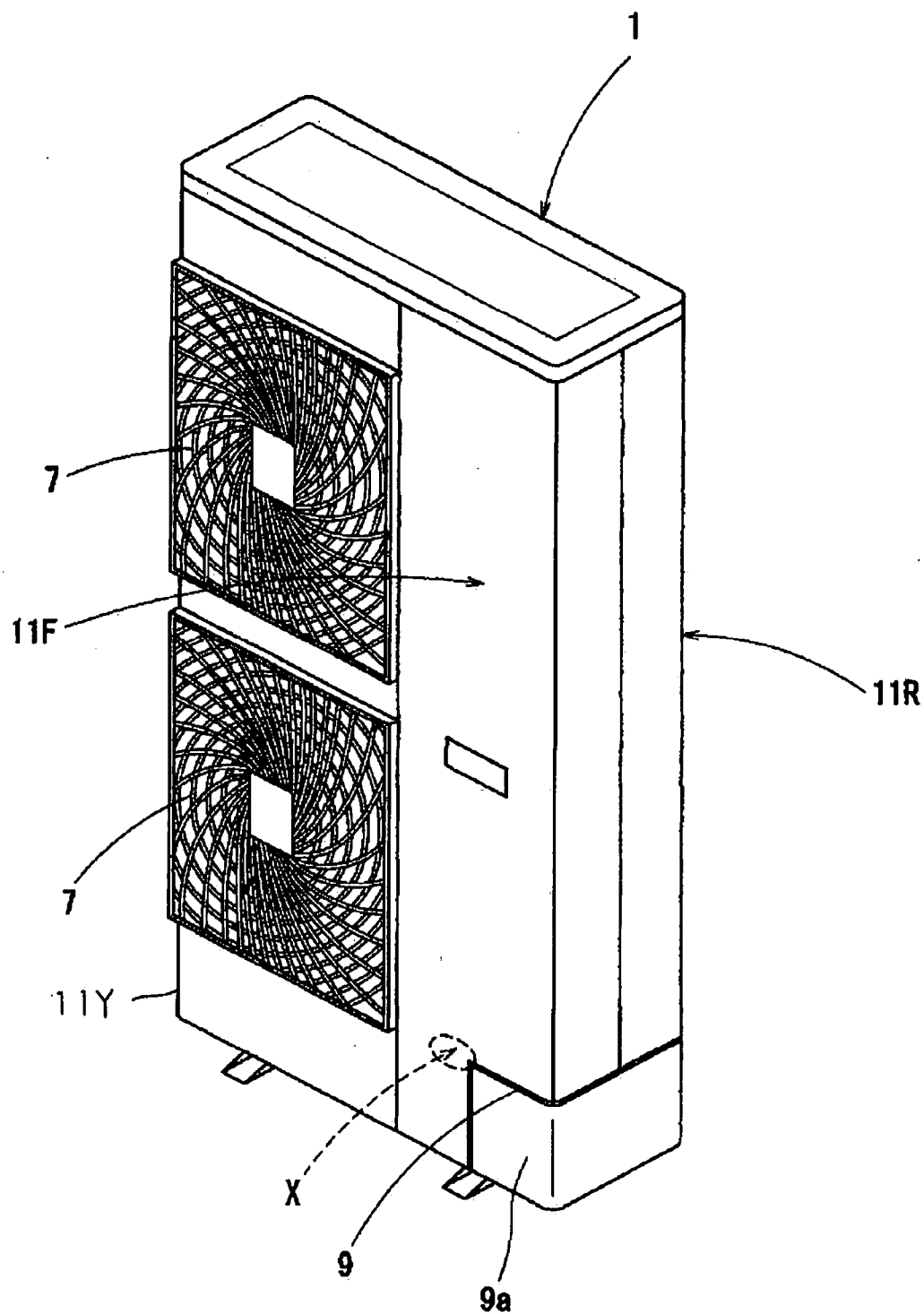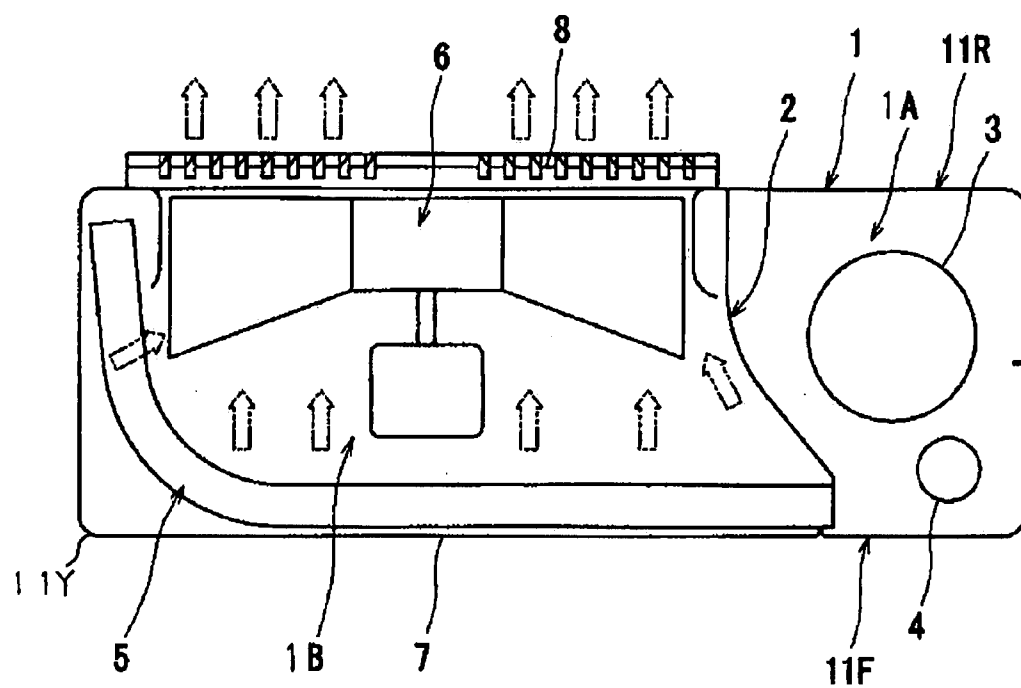
[0009] With such a structure, the reinforcement rib increases the compression rigidity of the front wall near the opening. Thus, deformation caused by compressive load is less likely to occur near the opening of the front wall when stacking outdoor units.

[0010] In the air conditioner outdoor unit, it is preferred that the reinforcement rib extend in the vertical direction. In this case, the reinforcement rib increases the compression rigidity of a thin plate that forms the casing. This effectively suppresses deformation caused by a compressive load.

[0011] In the air conditioner outdoor unit, it is preferred that the reinforcement rib extends upward from the side of the opening and along the edge of the opening. This entirely and effectively reinforces the vicinity of the opening. Thus, the compression rigidity near the opening of the front wall increases, and deformation caused by compressive load is further suppressed.

[0012] In the air conditioner outdoor unit, it is preferred that the length of the reinforcement rib be set in accordance with the height of the opening. In this case, the reinforcement rib moves the area in which buckling stress concentrates to above the opening of the front wall. Thus, concentration of buckling stress in the front wall at the vicinity of the opening is avoided, and deformation caused by compressive load is further suppressed.

[0013] In the air conditioner outdoor unit, it is preferred that a plurality of reinforcement ribs are arranged parallel to each other. In this case, each reinforcement rib increases the reinforcement effect near the opening of the front wall. Thus, compression rigidity of the front wall near the opening further increases, and deformation caused by compressive load is further suppressed.

[0014] In the air conditioner outdoor unit, it is preferred that the reinforcement rib is formed by pressing part of the front wall so as to have a U-shaped cross-section. This simultaneously and easily forms the reinforcement rib with the front wall when manufacturing the casing. This lowers the manufacturing cost of the product.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] FIG. 1 is a perspective view showing the entire structure of an air conditioner outdoor unit according to a first embodiment;

[0016] FIG. 2 is a perspective view showing a front wall of a casing;

[0017] FIG. 3 is a cross-sectional view taken along line 3-3 in FIG. 2;

[0018] FIG. 4 is a partial plan view showing the vicinity of an opening in the front wall;

[0019] FIG. 5 is a front view showing the front wall;

[0020] FIG. 6 is a front view showing the front wall with a plurality of reinforcement ribs;

[0021] FIG. 7 is a front view showing a front wall for an air conditioner outdoor unit according to a second embodiment;

[0022] FIG. 8 is a front view showing a modification of the reinforcement rib;

[0023] FIG. 9 is a front view showing a first sample (first analysis example) of the front wall;

[0024] FIG. 10 is a front view showing a second sample (second analysis example) of the front wall;

[0025] FIG. 11 is a front view showing a third sample (third analysis example) of the front wall;

[0026] FIG. 12 is a factor effect diagram for analyzing the reinforcement effects of the reinforcement ribs in the first and the second embodiments;

[0027] FIG. 13 is a graph showing the relationship between the rib length and the buckling load;

[0028] FIG. 14 is a graph showing the relationship between the rib position and the buckling value;

[0029] FIG. 15 is a perspective view showing the entire structure of an outdoor unit for an air conditioner in the prior art; and

[0030] FIG. 16 is a cross-sectional view showing the internal structure of the outdoor unit.

BEST MODE FOR CARRYING OUT THE INVENTION

FIRST EMBODIMENT

[0031] An air conditioner outdoor unit according to a first embodiment of the present invention will now be described with reference to FIGS. 1 to 6.

[0032] As shown in FIG. 1, the air conditioner outdoor unit includes a generally box-shaped casing 1. A pair of air inlets 7 are formed in the front surface of the casing 1, and air outlets (not shown) are formed in the rear surface. The inlets 7 are respectively formed at an upper part and a lower part of the casing 1.

[0033] The front surface of the casing 1 includes a frame plate 11Y arranged near the air inlets 7, and a front wall 11F having an L-shaped cross-section. A frame body 11R having a U-shaped cross-section and forming the rear surface of the casing 1 is attached to the rear part of the frame plate 11Y and the front wall 11F. An opening 9 used for maintenance is formed at the lower end of the casing 1, and a cover 9a is attached to the casing 1 so as to cover the opening 9. The opening 9 is formed by cutting out a corner of the front wall 11F and the frame body 11R. Thus, the front wall 11F is defined into a lower part P1 and an upper part P2, which is wider than the lower part P1, as shown in FIG. 2. In the following description, the lower part P1 has a width of G2, and the upper part P2 has a width of G1, as shown in FIG. 4.

[0034] The lower part P1 of the front wall 11F is narrow and planar. Thus, the strength (compressive strength) is low against compressive load. Thus, buckling deformation is likely to occur near the opening 9 of the lower part P1 of the front wall 11F, in particular, at portion X shown in FIG. 15 due to the impact produced during stacking and the weight of the outdoor unit (about 90 kg in a case of trunk type).

[0035] In the present invention, a reinforcement rib 10 for increasing the compressive strength is arranged at the lower part P1 of the front wall 11F. The reinforcement rib 10 is extending linearly in the vertical direction along the side edge of the opening 9. As shown in FIGS. 3 and 4, the reinforcement rib 10 has a U-shaped cross-section and projects toward the front from the front wall 11F. The reinforcement rib 10 increases the bending rigidity of the front wall 11F near the opening 9. In the following description, the reinforcement rib 10 has a width of A, a depth of B, and a length of C.

[0036] The reinforcement rib 10 is spaced laterally from the side edge of the opening 9 by distance D. The length C of the reinforcement rib 10 corresponds to the height H of the opening 9. The length C, which corresponds to the height H of the opening 9, is a value obtained by adding the length of distance E from the upper end of the opening 9 to the length from a position separated upward by distance F from the lower end

of the opening 9 to the upper end of the opening 9. The length C corresponding to the height H of the opening 9 may be the length from a position separated upward by distance F to the upper end of the opening 9.

[0037] The reinforcement rib 10 moves the region of stress concentration, which results from compressive load, from the lower part P1 to the upper part P2 of the front wall 11F. Thus, the concentration of stress at the vicinity of the opening 9 of the front wall 11F is avoided. As a result, buckling deformation caused by compressive load is less likely to occur near the opening 9 of the front wall 11F even when stacking outdoor units.

[0038] As shown in FIG. 5, it is preferred that the distance E from the upper end of the opening 9 to the upper end of the reinforcement rib 10 be set to be longer than as shown in FIG. 4. In this case, the compressive strength is increased not only at location X (see FIG. 15) at which buckling deformation is likely to occur but also in a wide range near the opening 9 of the front wall 11F.

[0039] The reinforcement rib 10 is formed to have a U-shaped cross-section by pressing part of the front wall 11F of the casing 1. In this case, the reinforcement rib 10 is easily formed at the same time as when forming the front wall 11F when manufacturing the casing 1.

[0040] The first embodiment has the advantages described below.

[0041] (1) The compressive strength near the opening 9 of the front wall 11F is greatly increased.

[0042] (2) Since the compressive strength near the opening 9 of the front wall 11F is increased, more products may be stacked together for storage. This increases the efficiency of a warehouse. Further, buckling deformation resulting from compressive load is less likely to occur near the opening 9 of the casing 1 when delivering the products.

[0043] (3) The compressive strength near the opening 9 of the front wall 11F is increased. Thus, the plate thickness of the front wall 11F may be decreased to 0.7 mm to 0.6 mm. This reduces the used material and lowers the material cost reduces. Furthermore, the formation quality of the product may be improved.

[0044] (4) Since the compressive strength near the opening 9 of the front wall 11F is increased, the used amount of material for packaging the product may be reduced.

SECOND EMBODIMENT

[0045] An air conditioner outdoor unit according to a second embodiment of the present invention will now be described with reference to FIG. 7 and FIG. 8. Detailed description of portions in the second embodiment that are similar to the first embodiment will be omitted.

[0046] As shown in FIGS. 7 and 8, a reinforcement rib 10, which extends along the side edge of the opening 9, includes an upper end portion extending along the corner of the opening 9. The reinforcement rib 10 increases the bending rigidity of the front wall 11F near the opening 9.

[0047] Unlike the first embodiment, in the reinforcement rib 10 shown in FIG. 7, the upper end portion of the reinforcement rib 10 is curved along the corner of the opening 9. In the reinforcement rib 10 shown in FIG. 8, the upper end portion of the curved reinforcement rib 10 extends laterally along the upper side edge of the opening 9. The reinforcement rib 10 reinforces most of the opening 9 in the front wall 11F.

[0048] The reinforcement effect in the case of FIG. 7 is assumed to be the same as the first embodiment, and the

reinforcement effect in the case of FIG. **8** is assumed to be higher than in the case of FIG. **7**.

(Study of Reinforcement Effect)

[0049] In relation to the reinforcement rib **10** of the first embodiment (see FIGS. **1** to **6**) and the reinforcement rib **10** of the second embodiment (see FIGS. **7** and **8**), an arcuate reinforcement rib **10** arranged only at the corner of the opening **9** as shown in FIG. **9** was used as a first sample. That in which the upper end of A reinforcement rib **10** that laterally extends the upper end of the reinforcement rib **10** of FIG. **9** along the upper side edge of the opening **9** as shown in FIG. **10** used as a second sample. Furthermore, a reinforcement rib **10** (lateral rib) extending in the lateral direction along the upper side edge of the opening **9** as shown in FIG. **11** was used as a third sample. The reinforcement effects by the reinforcement rib **10** of the first and the second embodiments were studied from the standpoint of quality engineering including comparison among first to third samples.

(Influence of Dimension and Position of the Reinforcement Rib **10** on the Compressive Strength)

[0050] First, the reinforcement effect of the reinforcement rib **10** of the first embodiment was studied.

[0051] During the study, the dimensions (width A, depth B, length C of FIG. **3** and FIG. **4**) and the position (distance D in FIG. **4**) of the reinforcement rib **10** were assumed as design variables (evaluation parameters), and three patterns (standard values **1** to **3**) were set for standard values of each design variable. The design variable and each standard value are shown in table **1**. The standard values **1**, **2**, **3** of each design variable A to D were allocated to an L9 orthogonal experiment table of table **2**. The buckling load (kgf) for when stacking the outdoor units were obtained for analyses No. **1** to No. **9** in which the standard values were combined. The results are shown in table **2**.

TABLE 1

Rib Dimension and	Standard value		
Position (mm)	1	2	3
A (Width)	4.0	5.0	6.0
B (Depth)	1.0	1.5	2.0
C (Length)	100.0	142.0	184.0
D (Distance)	48.0	33.0	18.0

TABLE 2

Analysis	Combination of Standards				Buckling
No.	A	B	C	D	Load (kgf)
1	1	1	1	1	545.3
2	1	2	2	2	616.0
3	1	3	3	3	721.2
4	2	1	2	3	595.9
5	2	2	3	1	642.4
6	2	3	1	2	624.1
7	3	1	3	2	621.3
8	3	2	1	3	624.1
9	3	3	2	1	703.6
			No Ribs		524.2

[0052] Table 3 is a dispersion analysis table for the calculation results of table 2. Table 4 is a dispersion analysis table for a residual group.

TABLE 3

Source	S	f	V	F0	S'	P (%)
A	0.2678	2	0.1339		0.2678	6.38
B	2.5585	2	1.2793		2.5585	60.92
C	1.1931	2	0.5966		1.1931	28.41
D	0.1805	2	0.0903		0.1805	4.30
e	0	0	0	—	0	0
T	4.1999	8			4.1999	100.00

TABLE 4

Source	S	f	V	F0	S'	P (%)
A	0.2678	2	0.1339	1.48	0.0873	2.08
B	2.5585	2	1.2793	14.17	2.378	56.62
C	1.1931	2	0.5966	6.61	1.0126	24.11
e	0.1805	2	0.0903	—	0.722	17.19
T	4.1999	8			4.1999	100.00

[0053] FIG. **12** is a factor effect diagram of each design variable A to D. In FIG. **12**, the vertical axis indicates the SN ratio, and the horizontal axis indicates the design variable (A(width), B(depth), C(length), D(distance) from the left). In the factor effect diagram, the reinforcement effect increases as the SN ratio increases, and the degree of contribution to the reinforcement effect increases as the inclination of the design variable increases. Table 5 shows the SN ratio corresponding to each standard value (**1-3**) of each design variable.

TABLE 5

Design Variable	Standard value		
(Factor) Title	1	2	3
A (Width)	55.8956	55.8548	56.2394
B (Depth)	55.3576	55.9510	56.6712
C (Length)	55.5146	56.0808	56.3945
D (Distance)	55.9454	55.8546	56.1899

[0054] From the factor effect diagram of FIG. **12**, the predicted value of the SN ratio is 57.5051 dB, or 749.9 kgf when converted to the buckling load value, under the optimum condition in which the standard values of each design variable at which the SN ratio becomes maximum are combined. The calculated value (analytic value) of the buckling load when the optimum standard values are combined is 741.3 kgf, which is substantially the same as the predicted value of the SN ratio. According to this result, the result obtained using the orthogonal table was verified as being correct and reliable. The predicted value and the analytic value are shown in table 6.

TABLE 6

Predicted value		Analytic Value (Study)
SN Ratio (dB)	Load Value (kgf)	Load Value (kgf)
57.5051	749.9	741.3

[0055] The followings are apparent from the above result.

[0056] (1) A large reinforcement effect is obtained by the reinforcement rib (vertical rib) extending in the vertical direction.

[0057] (2) The depth B of the reinforcement rib 10 contributes the most, and the length C of the reinforcement rib 10 contributes the next most to the reinforcement effect. The contribution to the reinforcement strength of the width A and the spaced distance D of the reinforcement rib 10 are both small. However, if the reinforcement rib 10 is too deep, the formation quality and the outer appearance quality of the product may be decreased. Due to such reasons, the depth B of the reinforcement rib 10 is preferably between 1.0 mm and 3.0 mm, and the width A of the reinforcement rib 10 is preferably between 4.0 mm and 6.0 mm.

[0058] (3) Since the length C of the reinforcement rib 10 also greatly contributes to the reinforcement effect, a large reinforcement effect is obtained by elongating the reinforcement rib 10.

[0059] According to such results, the reinforcement rib 10 shown in FIGS. 1 to 4 of the first embodiment is effective in increasing the compressive strength, and the reinforcement rib 10 shown in FIG. 5 is further effective in increasing the compressive strength. Furthermore, it can be easily assumed that a greater reinforcement effect is obtained by arranging two reinforcement ribs 10 in parallel as shown in FIG. 6.

[0060] The reinforcement effect of one vertical rib and the reinforcement effect of two vertical ribs were then compared. A case in which there was only one vertical rib is represented by (S1) (see FIG. 1 to FIG. 5), a case in which there are two vertical ribs is represented by (S2) (see FIG. 6), and a case in which there is only the horizontal rib is represented by (S3) (see FIG. 11). The buckling load (kgf) of when the length C of each reinforcement rib 10 was 0 mm, 100 mm, 142 mm, 184 mm, 226 mm, and 268 mm was respectively obtained for (S1) to (S3). The results are shown in table 7.

TABLE 7

		Length of rib (mm)					
		0.0	100.0	142.0	184.0	226.0	268.0
Buckling	S1	524.2	618.9	675.0	741.0	848.8	852.6
Load	S2	524.2	—	—	—	1002.4	—
(kgf)	S3	524.2	542.0	580.0	634.5	672.2	—

[0061] The relationship between the length of the rib and the buckling load was respectively obtained for (S1) and (S3). The results are shown in the graph of FIG. 13.

[0062] From the graph of FIG. 13, the reinforcement effect of the vertical rib was found to be higher than the reinforcement effect of the horizontal rib. Furthermore, the reinforcement effect of two vertical ribs was found to be higher than the reinforcement effect of one vertical rib from the result of table 7. Moreover, the reinforcement effect was found to increase as the length of the rib increases in the case of the vertical rib. The reinforcement effect of the horizontal rib was found to be higher, although slightly, when the rib length became greater than or equal to a predetermined dimension.

[0063] Similar effects are obtained by the reinforcement rib 10 of FIG. 9 and the reinforcement rib 10 of FIG. 10. In the case of the reinforcement rib 10 of FIG. 11, the reinforcement effect was found to become higher as the rib became longer, or the rib portion corresponding to the lower part P1 of the front wall 11F became longer.

[0064] From the above results, the bending rigidity in the vertical direction and the horizontal direction are both increased, and thus the compressive strength is further effectively increased by the reinforcement rib 10 of FIG. 7 that combines the reinforcement rib 10 of FIG. 1 to FIG. 5 and the reinforcement rib 10 of FIG. 9 or the reinforcement rib 10 of FIG. 8 that combines the reinforcement rib 10 of FIGS. 1 to 5 and the reinforcement rib 10 of FIG. 10.

[0065] The reinforcement rib 10 of FIG. 7 shown in the second embodiment is represented by (S4), the reinforcement rib 10 of FIG. 8 is represented by (S5), the reinforcement rib 10 of FIG. 9 is represented by (S6), and the reinforcement rib 10 of FIG. 10 is represented by (S7). The buckling loads (kgf) for (S4) to (S7) were respectively obtained. The results are shown in table 8 along with the case for no ribs.

TABLE 8

	Rib Arrangement				
	None	S6	S4	S7	S5
Buckling Load (kgf)	524.2	543.6	706.7	562.9	831.7

[0066] From the results of table 8, a large reinforcement effect was obtained for (S4) and (S5). Although small, a reinforcement effect was obtained for (S7). However, sufficient reinforcement effect was not obtained for (S6).

[0067] With regarding to the reinforcement ribs 10, 10a, 10b of FIG. 1 to FIG. 6 and the reinforcement rib 10 of FIG. 7 and FIG. 8, the distance D from the opening 9 is set to an appropriate dimension from the ratio with respect to the width G2 of the lower part P1 of the front wall 11F so as to obtain compressive strength that is greater than or equal to a predetermined value.

[0068] FIG. 14 is a graph showing a relationship between the width G2 of the lower part P1 of the front wall 11F and the spaced distance D from the opening 9 of the reinforcement rib. From the graph of FIG. 14, sufficient compressive strength was found to be obtained by setting the distance D in the range of 5% to 40% of the width G2 of the lower part P1 of the front wall 11F.

[0069] Furthermore, when the width G2 of the lower part P1 of the front wall 11F is narrower than the width A of the opening 9 (black circle in FIG. 14), the range of the ratio (D/G2) of the width G2 and the distance D at which the reinforcement effect is sufficient was found to be narrower than when the width G2 is the same or greater than the width W of the opening 9 (square or triangle of FIG. 14). The reinforcement effect was also found to significantly lower when the width G2 is constant and the spaced distance D is reduced.

[0070] If the reinforcement effect is small, the buckling position exists at the lower part P1 of the front wall 11F adjacent to the opening 9 in the same manner as the case of no rib shown in FIG. 15. However, if the reinforcement effect is large, the buckling position moves above the reinforcement

rib **10**, that is, to the upper part P**2** of the front wall **11**F having a width that is wider than the lower part P**1**.

(General Overview of the Results of the Study)

[0071] (1) The reinforcement effect of the horizontal rib is extremely limited compared to the reinforcement effect of the vertical rib in the reinforcement ribs **10**, **10***a*, and **10***b*. Thus, the reinforcement effect further increases by combining the horizontal rib and the vertical rib.

[0072] (2) When the length of the vertical rib is greater than or equal to the height H of the opening **9**, deformation due to the compressive load is effectively suppressed compared to when the length is less than the height H of the opening **9**. Therefore, it is preferable that the length of the vertical rib be longer than the height H of the opening **9**.

[0073] (3) The reinforcement effect is barely obtained when the length of the horizontal rib is the same as the width W of the opening **9**. However, the reinforcement effect further increases if the length of the horizontal rib is longer than the width W of the opening **9**. Thus, the length of the horizontal rib is preferably longer than the width W of the opening **9**.

[0074] (4) The reinforcement effect is barely obtained even if an arcuate reinforcement rib is arranged at the corner of the opening **9**. However, the reinforcement effect further increases by combining the reinforcement rib and the vertical rib.

[0075] (5) The compressive strength during stacking is greatly increased when a plurality of vertical ribs are arranged under the above conditions.

1. An air conditioner outdoor unit including a box-shaped casing (**1**) for accommodating at least a heat exchanger (**5**), an air blower (**6**), and a compressor (**3**), wherein the casing (**1**) has a front wall (**11**F) with an opening (**9**), the outdoor unit being characterized by:

a reinforcement rib (**10**), (**10***a*), (**10***b*) arranged near the opening (**9**) of the front wall (**11**F) to increase compressive strength in the vicinity of the opening (**9**).

2. The air conditioner outdoor unit according to claim **1**, characterized in that the reinforcement rib (**10**), (**10***a*), (**10***b*) extends in a vertical direction.

3. The air conditioner outdoor unit according to claim **1** or **2**, characterized in that the reinforcement rib (**10**), (**10***a*), (**10***b*) extends upward from a side of the opening (**9**) and along an edge of the opening (**9**).

4. The air conditioner outdoor unit according to claim **2**, characterized in that the reinforcement rib (**10**), (**10***a*), (**10***b*) has a length set in accordance with height of the opening (**9**).

5. The air conditioner outdoor unit according to claim **1**, characterized by:

a plurality of reinforcement ribs (**10***a*, **10***b*) arranged parallel to each other.

6. The air conditioner outdoor unit according to claim **1**, characterized in that the reinforcement rib (**10**), (**10***a*), (**10***b*) is formed by pressing part of the front wall (**11**F) so as to have a U-shaped cross-section.

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