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(54) **An oven with a front panel**

Ofen mit einer Frontplatte

Four équipé d'un panneau avant

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Description

[0001] The present invention relates to ovens and particularly relates to an oven comprising a flange with a front opening which forms the front wall of a body where the foodstuff to be cooked are placed and which front opening provides access into the body. A front panel is placed onto the front wall.

[0002] In oven body production, a front panel is assembled onto a flange which encircles the periphery of a cavity where the items to be cooked are to be placed. The front panel has a plurality of valve openings which provide a connection between control buttons and a shaft. The flange forms the front surface of the body and at the same time, the flange connects to the lateral panels and thereby the flange keeps the body together.

[0003] In order to connect the front panel to the flange, a bracket can be welded to the front panel. On the flange, there is a space where the front panel is to be assembled. The front panel is placed to the space. Thus, the bracket is seated to the arms of the flange, and the bracket is fixed to the flange by means of the connection members. The process of welding the bracket to the front panel leads to time loss in body production and said process increases the production costs.

[0004] In the prior art, pluralities of solutions are disclosed which provide a coupling without welding. For instance, in patent application KR20090063391, an assembly method of an oven case and of a control panel is disclosed. In KR20090063391, an integrated flange is provided, and a bracket can be dismantled in a separate manner. In more detail, there is a front panel forming a housing, an upper panel which is placed on the top of the front panel, a lower panel which is placed on the bottom of the front panel, and a flange which is at a lateral side of the front panel. The flange is curve-cut rearward and curve-cut inward again in relation to the front panel and the flange has a connection part.

[0005] DE 10 2009 000650 A1 discloses an oven with a front part including an appliance door. The appliance door and the front part are detachably and separately fastened at the appliance housing. A locking element is arranged between the front part and the housing, and an engaging element is locked in the locking element and arranged for adjusting the front part opposite to a front surface.

[0006] EP 2 141 416 A2 discloses a transparent panel element arranged on a supporting unit and forming a front surface. Another transparent panel element forms another front surface and is attached to a lower edge area of the panel element. The panel elements are directly coupled with one another in a force-fit manner. An adhesive film connects the supporting unit and the panel element.

[0007] It is an object of the present invention to facilitate front panel assembly to the oven body.

[0008] Another object of the present invention is to decrease the production costs of oven body.

[0009] Another object of the present invention is to pro-

vide the front panel to be assembled to the oven body in a substantially stable manner and without the need for welding.

[0010] Hence, this disclosure relates to an oven comprising a flange with a front opening which forms the front wall of a body wherein the foodstuff to be cooked are placed and which provides access into the body; a front panel which is fixed by being rested to the flange from a rear surface thereof; and at least one first flap which is formed by bending the front panel inwards the body so as to form a bracket. Said oven is further comprises a connection piece which is used for fixing the front panel to the flange and which has an upper channel where said first flap is accommodated; and which has a lower channel where at least one wall of said flange is accommodated. The upper channel of the connecting piece is adapted to restrict a movement of the first flap away from the flange.

[0011] In a preferred embodiment, said upper channel extends towards the ground so as to be in the same direction with the first flap and said upper channel has a width so as to accommodate the first flap with substantial tightness.

[0012] In another preferred embodiment, said lower channel extends towards the ground so as to be in the same direction with at least one wall and said lower channel has a width so as to accommodate the wall with substantial tightness.

[0013] In another preferred embodiment, the longitudinal extension directions of the lower and the upper channel are essentially parallel to each other and the transverse extension directions of said channels are essentially orthogonal to each other.

[0014] In another preferred embodiment, said at least one wall is a front wall of an arm which is provided on the flange and which extends orthogonally so as to correspond to at least one vertical edge of the front panel.

[0015] In another preferred embodiment, said connection piece further comprises at least one seating surface which is provided so as to extend essentially parallel to the ground at the end of the upper channel and so as to face the upper wing.

[0016] In another preferred embodiment, said connection piece further comprises at least one support part which extends between the lower part of the upper channel and the body of the connection piece.

[0017] In another preferred embodiment, said connection piece further comprises a handling part which is provided so as to extend from the body towards the front panel.

[0018] In another preferred embodiment, said connection piece is made of plastic.

[0019] The additional characteristics and advantages of the subject matter invention will be obtained from the exemplary embodiments with reference to the enclosed figures.

In Figure 1, a front view of the front panel and the

body of an oven embodiment is given.

In Figure 2a, a rear exploded view of the front panel of the embodiment as illustrated in Figure 1 is given.

In Figure 2b, a detailed view of Figure 2a is given.

In Figure 3a, an assembled view of the embodiment illustrated in Figure 2a is given.

In Figure 3b, a detailed view of Figure 3a is given.

In Figure 4a, a front view of the embodiment is given.

In Figure 4b, a B-B cross section of Figure 4a is given.

[0020] In Figure 1, the frontal view of an oven body 10 as a representative embodiment of the subject matter front panel 20 is used is given. The body 10 has a flange 30 which encircles and supports a cavity (not illustrated in the figure) so as to form the front face of the body; and a front panel 20 which is fixed at the flange 30. On the front surface 24 of the front panel 20 which is in sheet plate form, valve openings 22 are arranged which are in hole-form and which provide a connection to a tap shaft (not illustrated in the figure). Under the front panel 20, there is a front opening 36 which is surrounded by the flange 30 and through which items to be cooked will be passed. On both sides of the flange 30, the lateral panels 40 of the body 10 can be seen.

[0021] With reference to Figure 2a and 2b, wings are formed comprising a lower wing 26 and an upper wing 25 which are formed by bending a rectangular flat plate of the front panel 20 vertically about the horizontal axis B1 so as to leave a margin from the upper part and from the lower part along the mutual parallel long edges of the rectangular flat plate. The first flap 27 is formed at the upper wing 25 and the second flap 28 is formed at the lower wing 26 by bending two opposite ends of the upper and the lower wings 25, 26 vertically about the vertical axis B2 at a margin from the short edge thereof. The upper and the lower wings 25, 26 and the front panel 20 have the form of a U-cross section. As a result of the bending of the wings 25, 26, the upper and the lower wings 25, 26 obtain a U-like form. The first wings 27 are at two opposite ends of the upper wing 25 and they extend parallel to the lateral edge of the front panel 20. The second flaps 28 are at two opposite ends of the lower flap 26, and in the same manner, the second flaps 28 extend parallel to the lateral edge of the front panel 20. The first and the second flaps 27, 28 are adjacent to a rear surface 23 of the front panel 20. The first and the second flaps 27, 28 are aligned with respect to the lateral edge of the front panel 20 as inwardly as their lengths. The horizontal bending axis B1 corresponds to the long upper and lower edge of the front panel 20. The vertical bending axis B2 extends towards the body 10 so as to be normal to the horizontal bending axis B1 and to the lateral edge of the

front panel 20.

[0022] On the other hand, the first and the second flaps 27, 28 have a square-like or a rectangular form. There is a circular hole 29 in the middle part of the second flap 28. A connection member (not illustrated in the figure) can reach a lateral wall 32 through the hole 29. The lateral wall 32 can be a part of the arm 34 or it can be another extension of the body 10.

[0023] The subject matter front panel 20 is made of a rectangular sheet plate. The front panel 20 is first cut inwardly from a corner section of its short edge which is as wide as the width of the flap 27, 28. Afterwards, the parts cut in order to form the flaps 27, 28 are bent about the vertical bending axis B2. After this process, said parts are bent about the horizontal bending axis B1 so that there is a margin from the upper and lower long edges of the front panel 20. Prior to bending, by cutting the related parts of the front panel 20, the valve openings 22 and the hole 29 form existing in the front panel 20 are provided.

[0024] With reference to Figure 2b, the vertically extending arm 34 with respect to the flange 30 has a front wall 345 and two lateral walls 341, 342 provided so as to define a rectangular cross section whose one long edge is open. The end part of the front wall 345 realizes a slight recess inwardly, and on this part, a groove 343 is provided which extends partially towards the ground. In the embodiment, two arms 34, which correspond mutually to the vertical edges of the front panel 20, extend in the vertical direction upwardly from two ends of the flange 30. In Figure 2b, there is an embodiment of a connection piece 50 which is used for fixing of the front panel 20 to the flange 30 and which preferably comprises a plastic body 51. Accordingly, said connection piece 50 comprises an upper channel 53 which extends towards the ground in the same direction of the first flap 27 and which has a width so as to accommodate the first flap 27 with the desired tightness; and a lower channel 52 which extends towards the ground in the same direction as the front wall 345 and which has a width so as to accommodate the front wall 345 with the desired tightness. Accordingly, depending on the positions of the first flap 27 and of the front wall 345, the longitudinal extension directions of the lower and upper channel 52, 53 are essentially parallel to each other and the transversal extension directions thereof are essentially vertical to each other.

[0025] At the end of the upper channel 53, a couple of seating surfaces 55 are provided which are perpendicular to the extension direction of the channel 53 and in other words, which extend mutually and essentially parallel with respect to the ground. A support part 54, which is designed in order to provide resistance, extends between the body 51 and the lower part of the channel 53. Said support part 54 is preferably in the form of a bar. In a preferred embodiment, the support part 54, the seating surfaces 55 and the channel walls 531 defining the upper channel 53 define a Y-like form where the end part of the arms 34 is bent, when viewed frontally. The front part of

the body 51 defines a handling part 511 which is provided so as to extend in a substantially flat manner towards the front panel 20. The body 51 also has a tail part 512 which extends towards the ground at the continuation of the handling part 511. With reference to Figure 4a, the tail part 512 has a form similar to an elongated isosceles trapezoid form and accordingly, the tail part 512 extends so as to widen downwardly and so as to approach the lateral walls 342 of the arm 34. This provides a more stable connection. As can be seen from Figure 4b, the connection piece 50 has a lateral cross section similar to an inverse "d".

[0026] In this preferred embodiment of the subject matter invention, the connection piece 50 is made of plastic or it can be made of another flexible material or metal like rubber, silica.

[0027] Under the light of the structural details given above, the usage and the operation of the subject matter invention is as follows under the light of Figure 3a and 3b. The connection piece 50 is preferably held from the handling part 511; and afterwards, the connection piece 50 is set onto the flange 30 so that the lower channel thereof 52 will clasp around the front wall 345 of the arm 3 with respect to the flange 30. Thus, a forward and backward displacement of the front panel 20 with respect to the flange 30 is prevented. Afterwards, the front panel 20 is connected to the flange 30 so that the first flap 27 enters into the upper channel 53; and thus a vertical right and left movement of the front panel 20 with respect to the flange 30 is prevented. During assembly, the upper wing's lower surface contacts from above with the connection piece's 50 seating surface 55 facing the inside of the oven. On the other hand, the inclined surface 344, which is provided at the upper end of the arm's 34 lateral wall 342 facing outwardly, is aligned with the seating surface 55 on the other side.

REFERENCE NUMBERS

10 Body	344 Inclined surface
20 Front panel	345 Front wall
22 Valve opening	36 Front opening
23 Rear surface	40 Lateral panel
24 Front surface	50 Connection piece
25 Upper wing	51 Body
26 Lower wing	511 Handling part
27 First flap	512 Tail part
28 Second flap	52 Lower channel
29 Hole	53 Upper channel
30 Flange	531 Channel wall
32 Lateral wall	54 Support part
34 Arm	55 Seating surface
341 Lateral wall	B1 Lateral bending axis
342 Lateral wall	B2 Vertical bending axis
343 Groove	

Claims

1. An oven comprising a body (10) having a front wall (345) with a front opening (36) for providing access to a cooking compartment; a flange (30) forming the front wall (345); a front panel (20) being fixed to the flange (30), the front panel (20) having at least one first flap (27) which is formed by bending the front panel (20) towards the body (10) so as to form a bracket; and comprising a connection piece (50) for fixing the front panel (20) to the flange (30), the connection piece having an upper channel (53) for accommodating said first flap (27) and having a lower channel (52) for accommodating at least one wall (341, 342, 345) of said flange (30),
characterized in that
the upper channel (53) of the connecting piece (50) is adapted to restrict a movement of the first flap (27) away from the flange (30).
2. The oven according to claim 1, wherein said upper channel (53) extends vertically in the same direction of the first flap (27), and wherein said upper channel (53) has a predetermined width for accommodating the first flap (27) with substantial tightness.
3. The oven according to claim 1 or 2, wherein said lower channel (52) extends vertically in the same direction of at least one wall (341, 342, 345) of the flange (30), and said lower channel (52) has a predetermined width for accommodating the wall (341, 342, 345) of the flange (30) with substantial tightness.
4. The oven according to any one of the preceding claims, wherein the lower and the upper channel (52, 53) are essentially parallel to each other.
5. The oven according to any one of the preceding claims, wherein said at least one wall of the flange (30) is a front wall (345) of an arm (34) which is provided at the flange (30) and which is positioned in parallel to at least one vertical lateral edge of the front panel (20).
6. The oven according to any one of the preceding claims, wherein said connection piece (50) moreover comprises at least one seating surface (55) which is provided so as to extend essentially parallel to the ground at the end of the upper channel (53) and so as to face the upper wing (25).
7. The oven according to any one of the preceding claims, wherein said connection piece (50) further comprises at least one support part (54) which extends between the lower part of the upper channel (53) and the body (51) of the connection piece (50).

8. The oven according to any one of the preceding claims, wherein said connection piece (50) moreover comprises a handling part (511) which extends from the body (51) towards the front panel (20).

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9. The oven according to any one of the preceding claims, wherein said connection piece (50) is made of plastic.

10. The oven according to any one the preceding claims, wherein:

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the front panel (20) comprises an upper wing (25) bent horizontally towards the body (10);
the front panel (20) comprises two first flaps (27) at opposite edges of the upper wing (25) extending vertically downwards;

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the flange (30) comprises two arms (34) each arm (34) having a front wall (345) with a groove (343), the front walls (345) facing top the front panel (20);

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two connection pieces (50) couple the front panel (20) to the flange (30), the connection pieces (50) each having a ridge fitting into the groove (343) of the respective front wall (345) of the arm (34).

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11. The oven according to any one the preceding claims, wherein the lower channel (52) clamps around an edge of the front wall (345) of the arm (34)

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12. The oven according to any one the preceding claims, wherein the front panel (20) comprises openings (22) for a display or control elements.

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Patentansprüche

1. Ofen, der Folgendes umfasst: einen Körper (10) mit einer Vorderwand (345) mit einer vorderen Öffnung (36), die Zugang zu einem Kochraum gewährt, einen die Vorderwand (345) bildenden Flansch (30), eine an dem Flansch (30) befestigte Frontblende (20), die mindestens eine erste Lasche (27) aufweist, die dadurch ausgebildet ist, dass die Frontblende (20) so zu dem Körper (10) hin gebogen ist, dass ein Winkel entsteht, und ein Verbindungsstück (50) zum Befestigen der Frontblende (20) an dem Flansch (30), das eine obere Führung (53) zum Aufnehmen der ersten Lasche (27) und eine untere Führung (52) zum Aufnehmen mindestens einer Wand (341, 342, 345) des Flansches (30) aufweist,

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dadurch gekennzeichnet, dass

die obere Führung (53) des Verbindungsstücks (50) so ausgelegt ist, dass sie eine Bewegung der ersten Lasche (27) von dem Flansch (30) weg einschränkt.

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2. Ofen nach Anspruch 1, bei dem die obere Führung

(53) vertikal in die gleiche Richtung verläuft wie die erste Lasche (27) und zwecks eines sehr straffen Aufnehmens der ersten Lasche (27) eine vorgegebene Breite aufweist.

3. Ofen nach Anspruch 1 oder 2, bei dem die untere Führung (52) vertikal in die gleiche Richtung wie mindestens eine Wand (341, 342, 345) des Flansches (30) verläuft und zwecks eines sehr straffen Aufnehmens der Wand (341, 342, 345) des Flansches (30) eine vorgegebene Breite aufweist.

4. Ofen nach einem der vorhergehenden Ansprüche, bei dem die untere und die obere Führung (52, 53) im Wesentlichen parallel zueinander sind.

5. Ofen nach einem der vorhergehenden Ansprüche, bei dem es sich bei der mindestens einen Wand des Flansches (30) um eine Vorderwand (345) eines Arms (34) handelt, der an dem Flansch (30) vorgesehen und parallel zu mindestens einer vertikalen seitlichen Kante der Frontblende (20) positioniert ist.

6. Ofen nach einem der vorhergehenden Ansprüche, bei dem das Verbindungsstück (50) darüber hinaus mindestens eine Auflagefläche (55) umfasst, die so vorgesehen ist, dass sie am Ende der oberen Führung (53) im Wesentlichen parallel zum Boden verläuft und dem oberen Schenkel (25) zugewandt ist.

7. Ofen nach einem der vorhergehenden Ansprüche, bei dem das Verbindungsstück (50) ferner mindestens einen Trägerteil (54) umfasst, der zwischen dem unteren Teil der oberen Führung (53) und dem Körper (51) des Verbindungsstücks (50) verläuft.

8. Ofen nach einem der vorhergehenden Ansprüche, bei dem das Verbindungsstück (50) darüber hinaus einen Griffteil (511) umfasst, der von dem Körper (51) aus zu der Frontblende (20) hin verläuft.

9. Ofen nach einem der vorhergehenden Ansprüche, bei dem das Verbindungsstück (50) aus Kunststoff hergestellt ist.

10. Ofen nach einem der vorhergehenden Ansprüche, bei dem:

die Frontblende (20) einen oberen Schenkel (25) umfasst,
der horizontal zu dem Körper (10) hin gebogen ist,
die Frontblende (20) an gegenüberliegenden Kanten des oberen Schenkels (25) zwei erste Laschen (27) umfasst, die vertikal nach unten verlaufen,
der Flansch (30) zwei Arme (34) umfasst, die jeweils eine Vorderwand (345) mit einer Nut

(343) aufweisen, wobei die Vorderwände (345) dem Oberteil der Frontblende (20) zugewandt sind, zwei Verbindungsstücke (50) die Frontblende (20) mit dem Flansch (30) verbinden, wobei die Verbindungsstücke (50) jeweils eine Rippe aufweisen, die in die Nut (343) der jeweiligen Vorderwand (345) des Arms (34) passt.

11. Ofen nach einem der vorhergehenden Ansprüche, bei dem die untere Führung (52) um eine Kante der Vorderwand (345) des Arms (34) herum festgeklemmt ist.
12. Ofen nach einem der vorhergehenden Ansprüche, bei dem die Frontblende (20) Öffnungen (22) für ein Display oder Bedienelemente umfasst.

Revendications

1. Four comprenant un corps (10) présentant une paroi avant (345) avec une ouverture avant (36) permettant de fournir un accès à un compartiment de cuisson ; un entourage (30) formant la paroi avant (345) ; un panneau avant (20) étant fixé sur l'entourage (30), le panneau avant (20) présentant au moins un premier rabat (27) qui est formé par pliage du panneau avant (20) en direction du corps (10) de manière à former une équerre ; et comprenant une pièce de raccordement (50) permettant de fixer le panneau avant (20) sur l'entourage (30), la pièce de raccordement présentant un canal supérieur (53) permettant d'accueillir ledit premier rabat (27) et présentant un canal inférieur (52) permettant d'accueillir au moins une paroi (341, 342, 345) dudit entourage (30),
caractérisé en ce que
le canal supérieur (53) de la pièce de raccordement (50) est conçu pour restreindre un mouvement du premier rabat (27) dans une direction s'éloignant de l'entourage (30).
2. Four selon la revendication 1, dans lequel ledit canal supérieur (53) s'étend verticalement dans la même direction que le premier rabat (27), et dans lequel ledit canal supérieur (53) présente une largeur prédéterminée permettant d'accueillir le premier rabat (27) avec un resserrement important.
3. Four selon la revendication 1 ou 2, dans lequel ledit canal inférieur (52) s'étend verticalement dans la même direction qu'au moins une paroi (341, 342, 345) de l'entourage (30), et ledit canal inférieur (52) présente une largeur prédéterminée permettant d'accueillir la paroi (341, 342, 345) de l'entourage (30) avec un resserrement important.

4. Four selon l'une quelconque des revendications précédentes, dans lequel les canaux inférieur et supérieur (52, 53) sont essentiellement parallèles l'un à l'autre.

5. Four selon l'une quelconque des revendications précédentes, dans lequel ladite au moins une paroi de l'entourage (30) est une paroi avant (345) d'un bras (34) qui est fourni au niveau de l'entourage (30) et qui est positionné parallèlement à au moins un bord latéral vertical du panneau avant (20).

6. Four selon l'une quelconque des revendications précédentes, dans lequel ladite pièce de raccordement (50) comprend en outre au moins une surface d'assise (55) qui est formée de manière à s'étendre de manière essentiellement parallèle au sol au niveau de l'extrémité du canal supérieur (53) et de manière à faire face à l'aile supérieure (25).

7. Four selon l'une quelconque des revendications précédentes, dans lequel ladite pièce de raccordement (50) comprend en outre au moins une pièce de support (54) qui s'étend entre la partie inférieure du canal supérieur (53) et le corps (51) de la pièce de raccordement (50).

8. Four selon l'une quelconque des revendications précédentes, dans lequel ladite pièce de raccordement (50) comprend en outre une pièce de manipulation (511) qui s'étend à partir du corps (51) en direction du panneau avant (20).

9. Four selon l'une quelconque des revendications précédentes, dans lequel ladite pièce de raccordement (50) est réalisée en plastique.

10. Four selon l'une quelconque des revendications précédentes, dans lequel :

le panneau avant (20) comprend une aile supérieure (25) pliée horizontalement en direction du corps (10) ;

le panneau avant (20) comprend deux premiers rabats (27), au niveau de bords opposés de l'aile supérieure (25), s'étendant verticalement vers le bas ;

l'entourage (30) comprend deux bras (34), chaque bras (34) présentant une paroi avant (345) avec une rainure (343), les parois avant (345) faisant face au dessus du panneau avant (20) ; deux pièces de raccordement (50) couplent le panneau avant (20) à l'entourage (30), les pièces de raccordement (50) présentant respectivement une crête se logeant dans la rainure (343) de la paroi avant (345) respective du bras (34).

11. Four selon l'une quelconque des revendications précédentes, dans lequel le canal inférieur (52) se serre autour d'un bord de la paroi avant (345) du bras (34).
12. Four selon l'une quelconque des revendications précédentes, dans lequel le panneau avant (20) comprend des ouvertures (22) pour un affichage ou des éléments de commande.

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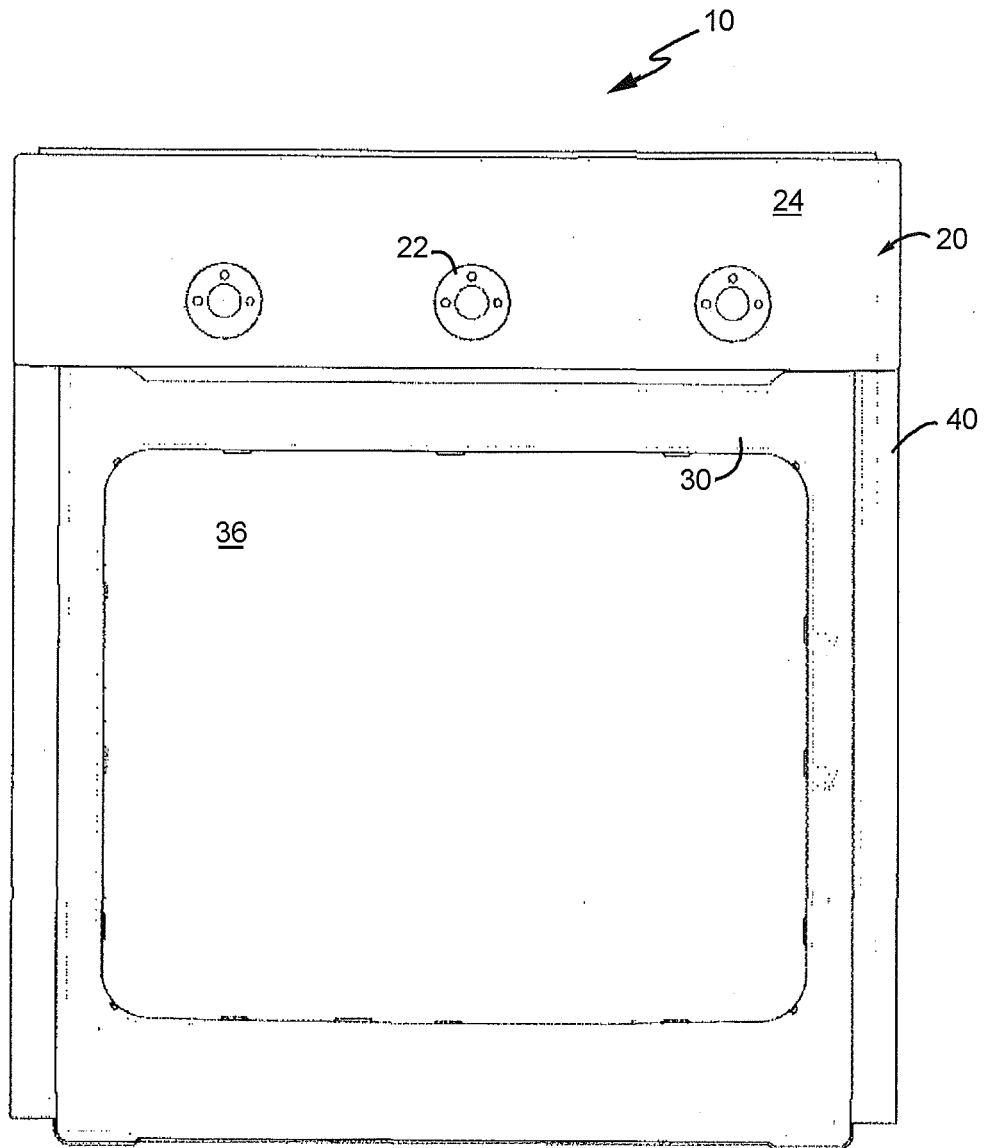
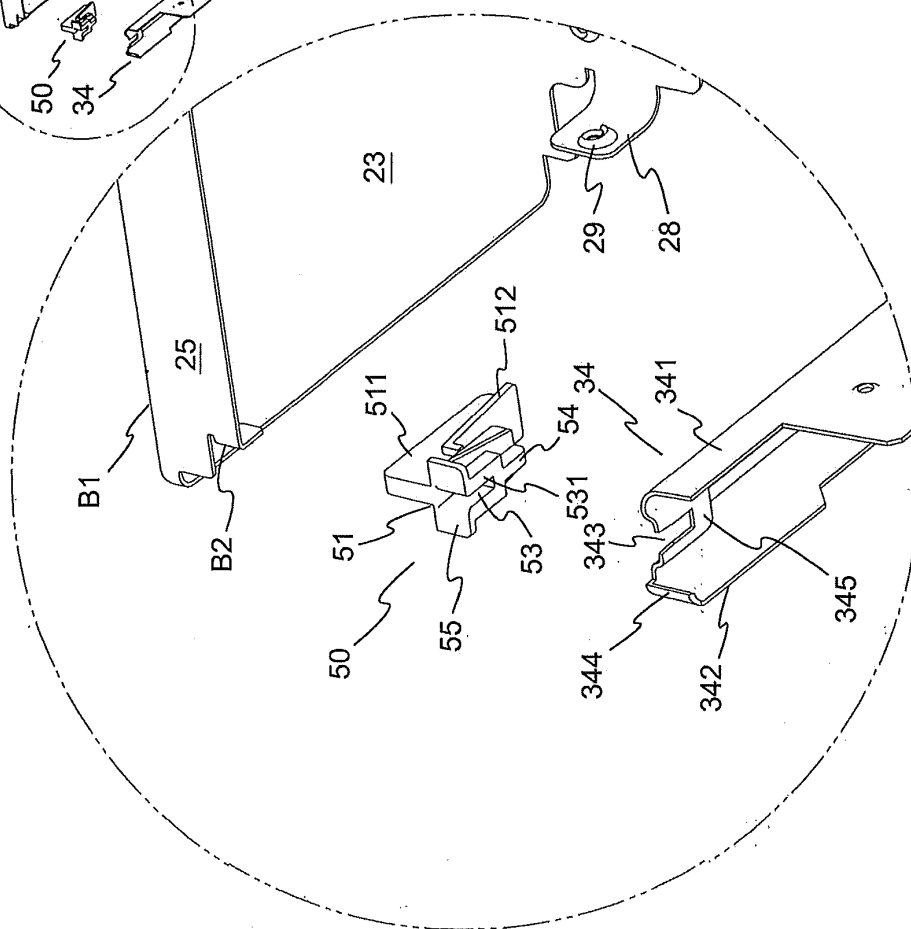
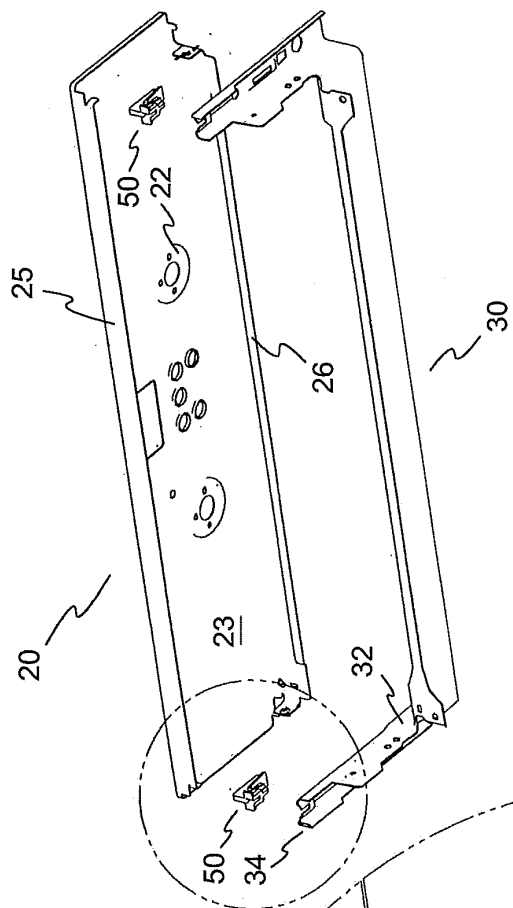


Figure 1



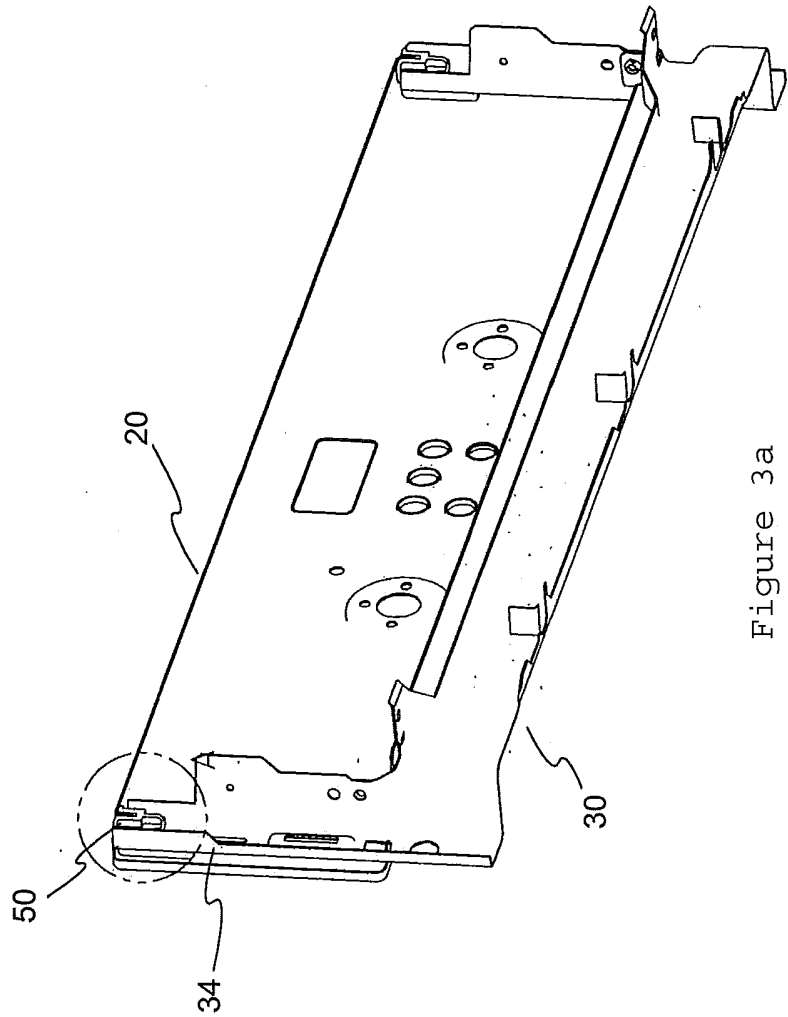


Figure 3a

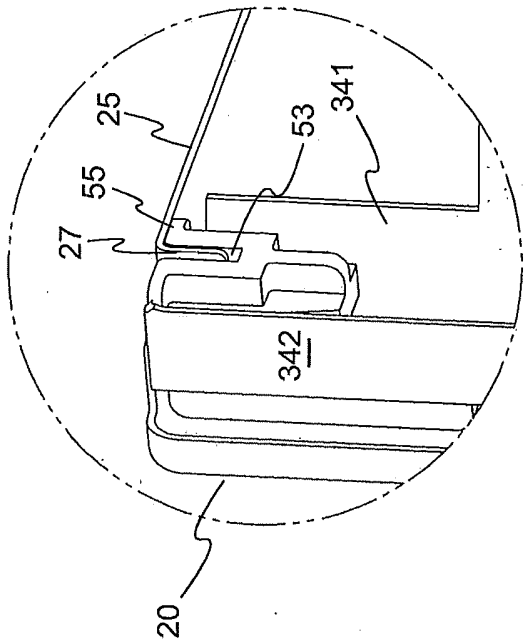


Figure 3b

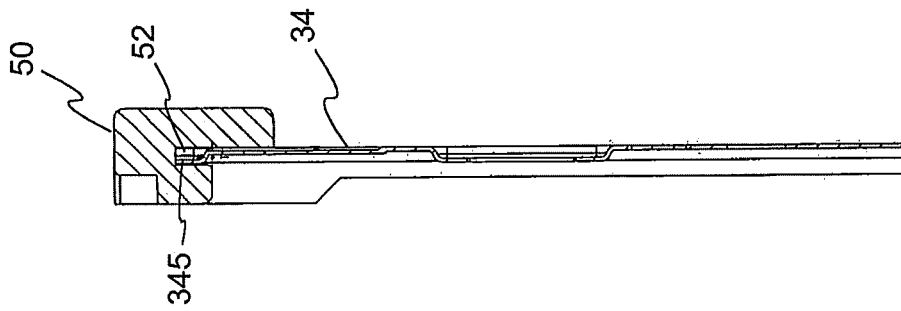


Figure 4b

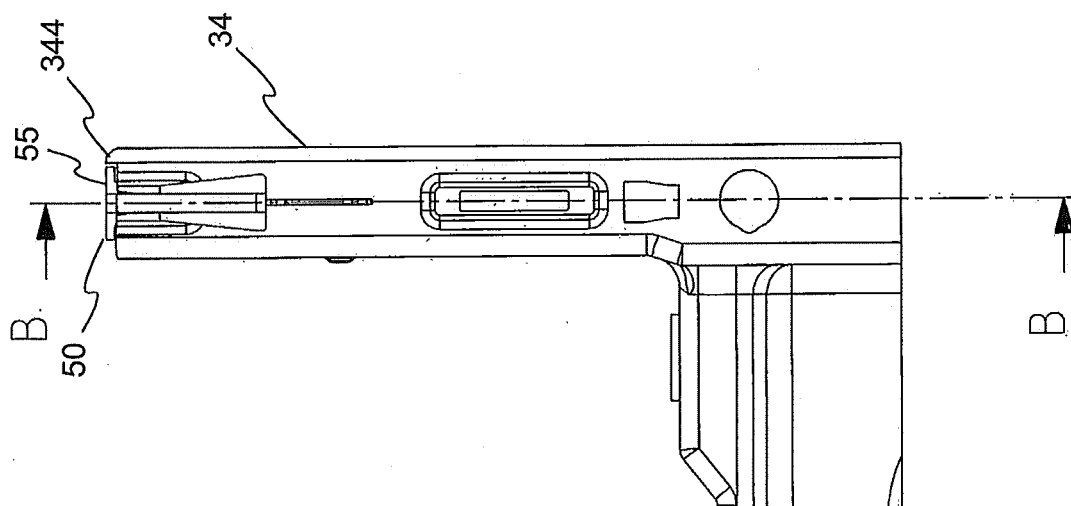


Figure 4a

REFERENCES CITED IN THE DESCRIPTION

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