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(71) Applicant: **BSH Hausgeräte GmbH**
81739 München (DE)

(72) Inventors:
• **Atay, Erdinc**
39750 KIRKLARELI (TR)
• **Eksat, Seniz**
34535 ISTANBUL (TR)
• **Kenar, Serdar**
59600 TEKIRDAG (TR)
• **Mert, Mustafa**
59600 TEKIRDAG (TR)

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(54) **A HOME APPLIANCE HAVING A COUPLING ELEMENT**

(57) The present invention relates to a home appliance (1) comprising a body (10), at least one flange (20) provided on said body (10), a connection piece (50) for providing connection between the flange (20) and at least one panel (30), said connection piece (50) having at least one connection channel (56) wherein the flange (20) is partially placed and an upper channel (52) wherein at least one engagement tab (34) of the panel (30) is placed, and a support piece (60) which at least partially fills the clearance provided between the flange (20) and a front wall (31) of the panel (30). As an improvement, there is at least one coupling element (40) comprising the connection piece (50) and the support piece (60) in one-piece manner.

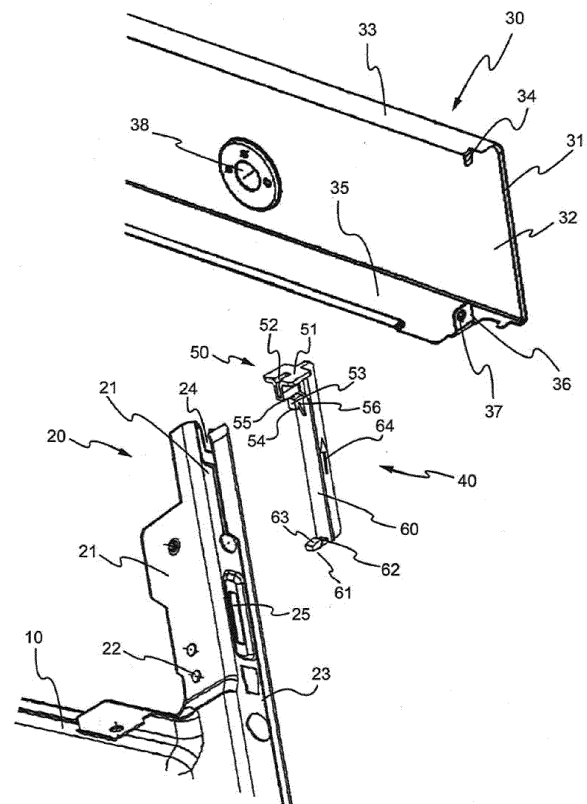


Figure 2

Description

[0001] The present invention relates to a home appliance having a coupling element provided between the panel and the body of the home appliance.

[0002] The front panels of cooking appliances such as ovens are connected to the flange piece in the body by providing a support element in between. In order to provide connection of the front panel to the flange, a tab, provided on the front panel, engages to an engagement tip provided on the flange. For realizing said connection, an additional piece, placed to the housing, is required. Therefore, assembly process steps and thus the cost increase.

[0003] In the application TR2014/15769, a home appliance, particularly an oven having a support element provided between the panel and the body is disclosed. The home appliance has a body, a flange provided on the body, and a panel connected to the flange. In the connection of the panel to the flange, there is a support element which at least partially fills the clearance provided between the flange and a front wall of the panel. After the support element is connected to the flange, an engagement tab, provided on the panel, is placed to an engagement tip provided on the flange, and the panel is fixed on the body.

[0004] The object of the present invention is to provide a home appliance where the assembly of the panel to the body is facilitated.

[0005] Another object of the present invention is to provide a home appliance where the production and assembly costs are reduced.

[0006] The present invention is a home appliance comprising a body, at least one flange provided on said body, a connection piece for providing connection between the flange and at least one panel, and having at least one connection channel wherein the flange is partially placed and an upper channel wherein at least one engagement tab of the panel is placed, and a support piece which at least partially fills the clearance provided between the flange and a front wall of the panel. Accordingly, the present invention comprises at least one coupling element comprising the connection piece and the support piece in a one-piece manner. Thus, the connection piece and the support piece are obtained while the connection piece is being manufactured. During the fixation of the coupling element to the flange, the connection piece and the support piece are mounted simultaneously. By means of this, the production and mounting costs are reduced. Moreover, by means of the created novel form, the risk of erroneous fixation of the support piece is eliminated, and assembly faults are prevented.

[0007] In a preferred embodiment of the present invention, an upper tab, whereon the connection channel is provided, is placed into a slit provided on the flange. Thus, when the upper tab is fixed on the flange, it is prevented from moving left and right.

[0008] In a preferred embodiment of the present invention, the upper channel is provided on a seating surface of the connection piece. Thus, when the engagement tab of the panel is placed into the upper channel, an upper wall of the panel where the engagement tab is provided presses onto the seating surface. By means of this, the connection piece is secured between the flange and the panel, and thus, the coupling element is fixed.

[0009] In a preferred embodiment of the present invention, the coupling element comprises at least one lower tab provided in the vicinity of one end of the support piece and placed to at least one housing provided on the flange. Thus, after the upper tab is fixed into the slit, the coupling element is pressed towards the flange, and the lower tab is fixed to the housing and the coupling element is fixed.

[0010] In a preferred embodiment of the present invention, at least one inclined surface is provided on the side of the lower tab facing the upper tab. Thus, when the support piece is pressed towards the flange, the lower tab is rested onto an edge of the housing, and it is bent so as to move away from the upper tab.

[0011] In a preferred embodiment of the present invention, at least one locking protrusion is provided at the end of the inclined surface. Thus, after the lower tab bends and it is inserted into the housing, the locking protrusion passes through the housing, and it provides the lower tab to be fixed to the housing. By means of this, the coupling element stays fixed on the flange.

[0012] In a preferred embodiment of the present invention, the support piece extends in the direction of the height of the panel. Thus, the panel is supported along at least one section of its height.

[0013] In a preferred embodiment of the present invention, said upper channel extends in the same direction as the engagement tab, and it has a width in a manner receiving the engagement tab with substantial firmness. Thus, the engagement tab can be fixed to the upper channel without deformation of the engagement tab, and the panel is fixed with substantial firmness.

[0014] In a preferred embodiment of the present invention, said coupling element is made of plastic. Thus, the coupling element can be produced in a one-piece manner with low costs.

Figure 1 is a representative view of the subject matter home appliance.

Figure 2 is a representative exploded view of the connection of the panel to the body of the subject matter home

appliance.

[0015] In this detailed description, the subject matter home appliance (1) is explained with references to examples without forming any restrictive effect only in order to make the subject more understandable.

[0016] With reference to Figure 1; a home appliance (1), particularly an oven, realizing the cooking process, has a body (10), and a panel (30) connected to said body (10). With reference to Figure 2; the panel (30) comprises a front wall (31), an upper wall (33) and a lower wall (35) extending towards the body (10) from two mutual edges of the front wall (31). The side of the front wall (31) facing the body (10) is defined as a rear face (32). A vertically provided engagement tab (34) is formed by means of partially bending one end of the upper wall (33) towards the lower wall (35). The edge of the lower wall (35), where the engagement tab (34) is provided, is partially bent towards the upper wall (33), and thereby a coupling flap (36) is formed. At least one opening (37) is provided on the coupling flap (36). On the panel (30), there are control knobs which control the functions of the home appliance (1), and there are sequential valve openings (38) providing connection of the control knobs to the shaft.

[0017] A flange (20) is provided on the body (10) of the home appliance (1). Said flange (20) is provided so as to stay behind the panel (30) provided on the front face of the home appliance (1). The flange (20) extends upwardly from the upper ends of the body (10) on two sides of the body (10). The flange (20) has a support edge (23) and a coupling edge (21) provided essentially vertically with respect to each other. While said support edge (23) extends in an essentially parallel manner with respect to each other, the coupling edge (21) extends in an essentially parallel manner with respect to the panel (30) and to the support edge (23). At least one coupling opening (22) is provided on the coupling edge (21). There is a slit (24) embodied in recess form on the upper end of the support edge (23). At least one housing (25) is provided on the support edge (23). Said housing (25) is provided in opening form. Moreover, the housing (25) is in the form of a channel extending in the extension direction of the flange (20). The engagement tab (34) is provided in the alignment of the upper wall (33) of the panel (30), and the housing (25) is preferably provided so as to be in the vicinity of the lower wall (35) of the panel (30).

[0018] There is a coupling element (40) provided between the panel (30) and the support edge (23). The coupling element (40) has a connection piece (50) and a support piece (60). The coupling element (40) comprises the connection piece (50) and the support piece (60) in a one-piece manner. The connection piece (50) is provided in a one-piece manner on the support piece (60). The connection piece (50) is embodied in a T-like form. There is a seating surface (51) provided horizontally at the upper section of the connection piece (50). At the same time, the seating surface (51) defines the upper face of the coupling element (40). There is an upper channel (52) provided in recess form extending from the seating surface (51) towards the support piece (60). An upper tab (53), extending outwardly, is embodied at the lower section of the upper channel (52). The upper tab (53) is provided in the vicinity of the section where the connection piece (50) and the support piece (60) are joined. A connection channel (56) is embodied on the upper tab (53). The connection channel (56) is embodied in recess form from the base (54) of the upper tab (53) towards the ceiling (55) thereof. The support piece (60) extends in the direction of the height of the panel (30). The support piece (60) has a form which is similar to a rectangular prism. At least one lower tab (61) is provided in the vicinity of an end of the support piece (60). In the preferred application, the lower tab (61) is positioned in the vicinity of the lower end of the support piece (60). The lower tab (61) has an inclined surface (63) provided on the side thereof facing the upper tab (53). At least one locking protrusion (62) is provided at the end of the inclined surface (63). At least one indicator (64), which indicates direction, is provided on the support piece (60).

[0019] The coupling element (40) is placed between the flange (20) and the panel (30). First of all, the coupling element (40) is connected to the flange (20) and afterwards, the panel (30) is fixed to the flange (20) and thus it is fixed to the body (10). The connection of the coupling element (40) onto the flange (20) is as follows. The indicator (64), provided on the support piece (60), indicates the direction of connection of the coupling element (40) to the flange (20). The upper tab (53), provided on the connection piece (50), is placed into the slit (24) provided on the support edge (23) of the flange (20). The support edge (23) and thus the flange (20) are partially placed into the connection channel (56). Thus, the rightward-leftward movement of the coupling element (40) is prevented. Afterwards, the coupling element (40) is pressed onto the flange (20), and the lower tab (61), provided at one end of the support piece (60), is inserted into the housing (25) provided on the support edge (23). By means of the inclined surface (63), when the coupling element (40) is pressed towards the flange (20), the lower tab (61) is rested to an edge of the housing (25), and it is bent so as to move away from the upper tab (53). When the lower tab (61) is bent and when it is inserted into the housing (25), the locking protrusion (62) passes through the housing (25), and it provides the lower tab (61) to be fixed to the housing (25). Thus, the coupling element (40) is fixed onto the flange (20), and the rotation or accidental movement of the coupling element (40) is prevented. Moreover, by means of the lower tab (61), the erroneous fixation of the coupling element (40) to the flange (20) is prevented. In case the coupling element (40) is fixed in an erroneous manner, the support edge (23) pushes the coupling element (40), and it indicates that the coupling element (40) is tried to be placed in an erroneous manner. Alternatively, the lower tab (61) can be positioned on the support edge (23), and the housing (25) can be positioned on the coupling element (40).

[0020] After the coupling element (40) is fixed to the flange (20), the panel (30) is fixed onto the body (10) of the home appliance (1). The engagement tab (34) embodied on the upper wall (33) engages to the upper channel (52) provided on the connection piece (50). The upper channel (52) extends in the same direction as the engagement tab (34). Moreover, the upper channel (52) has a width so as to receive the engagement tab (34) with substantial firmness. Thus, the engagement tab (34) can be fixed to the upper channel (52) without deformation, and the panel (30) can be fixed with substantial firmness. Since the upper channel (52) is provided on the seating surface (51) of the connection piece (50), the upper wall (33) of the panel (30) presses on the seating surface (51) when the engagement tab (34) is placed in the upper channel (52). By means of this, the connection piece (50) is tightened between the flange (20) and the panel (30), and thus, the coupling element (40) is fixed. Meanwhile, the coupling edge (21) and the coupling flap (36) provided on the lower wall (35) are aligned. A connection element is passed through the opening (37) provided at the coupling flap (36) and through the coupling opening (22) provided at the coupling edge (21). By means of this, the assembly of the panel (30) to the body (10) of the home appliance (1) is completed.

[0021] When the coupling element and the body (10) are connected to each other, the coupling element (40) is fixed to the flange (20), and as a result of this, the panel (30) is rested onto the support edge (23) from one side, and it is stopped onto the rear face (32) of the front wall (31) of the panel (30) from one side. Since the support piece (60) and thus the coupling element (40) extend in the direction of the height of the panel (30), the panel (30) is at least partially supported along the height thereof. In the preferred application, the coupling element (40) is made of a plastic based material, and the lower tab (61) can be obtained without the need for an additional process during the production. Moreover, the coupling element (40) can be produced in a one-piece manner with low costs, and the production of the connection piece (50) and of the support piece (60) is simultaneously realized during the production of the coupling element (40). During fixation of the coupling element (40) to the flange (20), the assembly of the connection piece (50) and the support piece (60) is simultaneously completed. By means of this, the production and assembly costs are reduced, and moreover, the assembly duration is also reduced. Moreover, since the connection piece (50) is provided on the support piece (60) in a one-piece manner, the erroneous fixation of the coupling element (40) on the flange (20) is prevented.

REFERENCE NUMBERS

1.	Home appliance	40.	Coupling element
10.	Body	50.	Connection piece
20.	Flange	51.	Seating surface
21.	Coupling edge	52.	Upper channel
22.	Coupling opening	53.	Upper tab
23.	Support edge	54.	Base
24.	Slit	55.	Ceiling
25.	Housing	56.	Connection channel
30.	Panel	60.	Support piece
31.	Front wall	61.	Lower tab
32.	Rear face	62.	Locking protrusion
33.	Upper wall	63.	Inclined surface
34.	Engagement tab	64.	Indicator
35.	Lower wall		
36.	Coupling flap		
37.	Opening		
38.	Valve opening		

Claims

1. A home appliance (1) comprising a body (10), at least one flange (20) provided on said body (10), a connection piece (50) for providing connection between the flange (20) and at least one panel (30), said connection piece (50) having at least one connection channel (56) wherein the flange (20) is partially placed and an upper channel (52) wherein at least one engagement tab (34) of the panel (30) is placed, and a support piece (60) which at least partially fills the clearance provided between the flange (20) and a front wall (31) of the panel (30), **characterized by** comprising at least one coupling element (40) comprising the connection piece (50) and the support piece (60) in

one-piece manner.

2. A home appliance (1) according to Claim 1, wherein an upper tab (53), said connection channel (56) is provided thereon, is placed into a slit (24) provided on the flange (20).
3. A home appliance (1) according to any one of the preceding claims, wherein the upper channel (52) is provided on a seating surface (51) of the connection piece (50).
4. A home appliance (1) according to any one of the preceding claims, wherein the coupling element (40) comprises at least one lower tab (61) provided in the vicinity of one end of the support piece (60) and placed to at least one housing (25) provided on the flange (20).
5. A home appliance (1) according to Claim 4, wherein at least one inclined surface (63) is provided on the side of the lower tab (61) facing the upper tab (53).
6. A home appliance (1) according to Claim 5, wherein at least one locking protrusion (62) is provided at the end of the inclined surface (63).
7. A home appliance (1) according to any one of the preceding claims, wherein the support piece (60) extends in the direction of the height of the panel (30).
8. A home appliance (1) according to any one of the preceding claims, wherein said upper channel (52) extends in the same direction as the engagement tab (34), and is dimensioned to receive the engagement tab (34) with substantial firmness.
9. A home appliance (1) according to any one of the preceding claims, wherein said coupling element (40) is made of plastic.

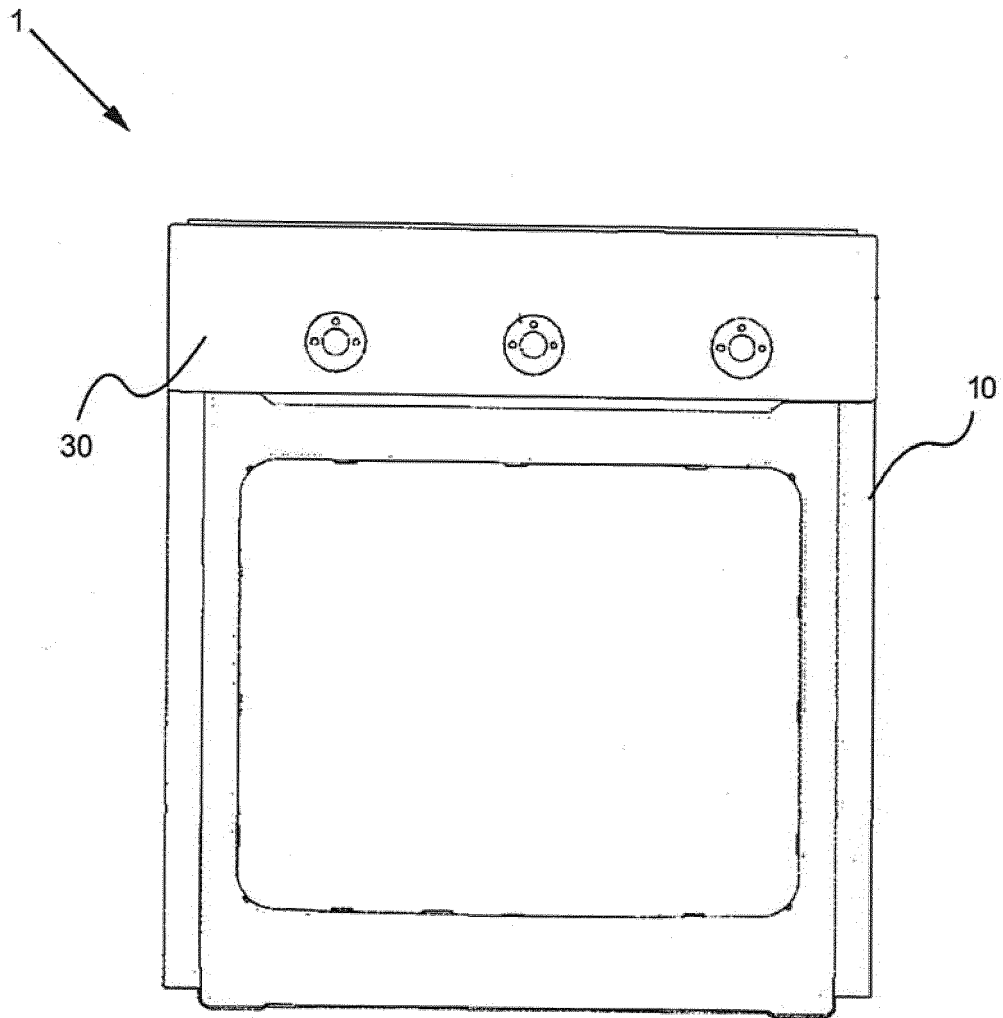


Figure 1

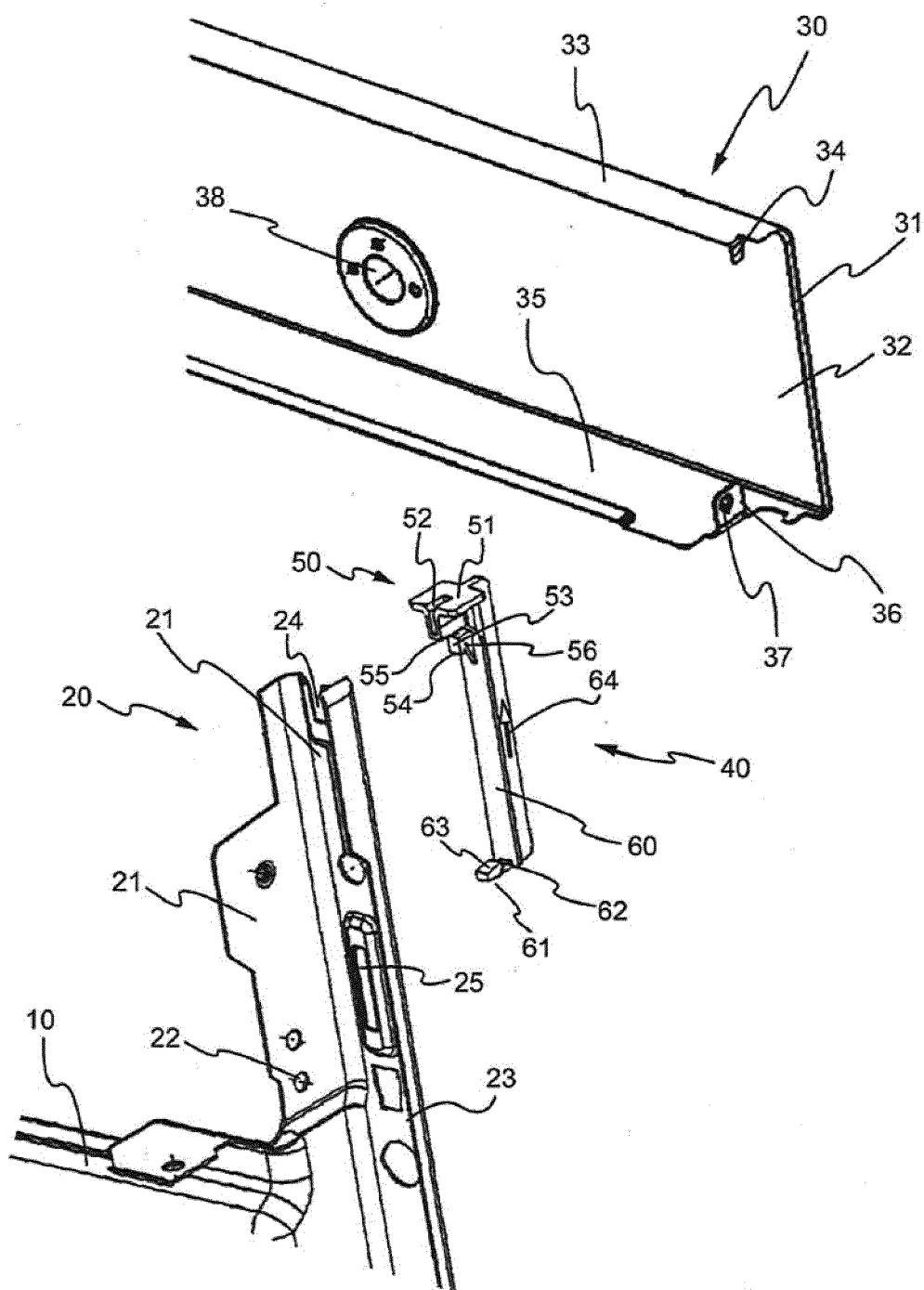


Figure 2



EUROPEAN SEARCH REPORT

Application Number
EP 15 19 9805

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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	EP 2 527 748 A1 (BSH BOSCH SIEMENS HAUSGERAETE [DE]) 28 November 2012 (2012-11-28) * figures 1,2A,2B,3A,3B * * figures 29-32 *	1-9	INV. F24C3/12 F24C15/06 F24C15/08
X	DE 10 2009 000650 A1 (BSH BOSCH SIEMENS HAUSGERAETE [DE]) 27 January 2011 (2011-01-27) * figures 1-3 * * paragraphs [0017], [0018] *	1-9	
A	WO 2011/128864 A1 (INDESIT CO SPA [IT]; MARAONE PIETRO [IT]; MARSILI ANDREA [IT]) 20 October 2011 (2011-10-20) * figures 1,2 *	1-9	
			TECHNICAL FIELDS SEARCHED (IPC)
			F24C
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 20 April 2016	Examiner Moreno Rey, Marcos
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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**ANNEX TO THE EUROPEAN SEARCH REPORT
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The members are as contained in the European Patent Office EDP file on
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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