



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
23.09.2015 Bulletin 2015/39

(51) Int Cl.:
F24C 15/02 (2006.01) E05B 65/00 (2006.01)

(21) Application number: **15157342.5**

(22) Date of filing: **03.03.2015**

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

(72) Inventors:
• **Atabay, Emrah**
59500 TEKIRDAG (TR)
• **Cetin, Tezcan**
59850 TEKIRDAG (TR)
• **Guldner, Florian**
47464 Kerken (DE)
• **Kocaman, Yusuf**
59850 TEKIRDAG (TR)
• **Marsch, Alexander**
83620 Feldkirchen-Westerham (DE)

(30) Priority: **17.03.2014 TR 201403076**

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

(54) **A domestic oven having a door lock mechanism**

(57) The invention is a domestic oven (1) having at least one cooking chamber (12) encircled by an outer body (10); a door (20) providing access to the cooking chamber (12) in an open position; and a lock mechanism (40) providing locking of said door (20) in a closed position. The lock mechanism (40) of the domestic oven (1)

comprises a triggering element (42) which activates a lock, which is in locked position, in a releasable manner, and which is placed on a door lever (30) in a hidden manner on an accessible side of an outer wall (21) of the door (20).

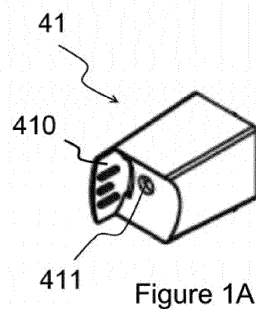


Figure 1A

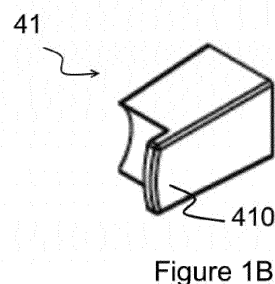


Figure 1B

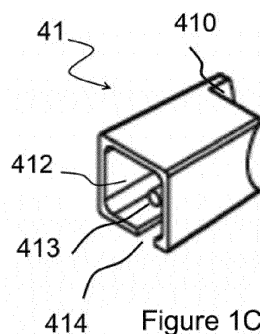


Figure 1C

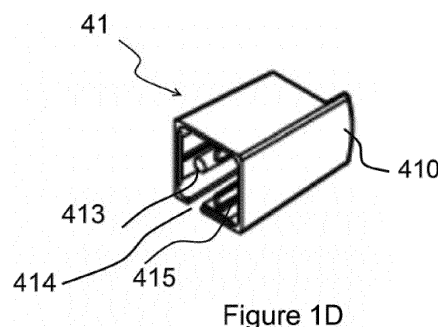


Figure 1D

Description

[0001] The present invention relates to cooking devices having a lock mechanism provided on the door of the cooking device in order to prevent opening of said door in undesired cases. The cooking device is particularly a domestic oven.

[0002] Cooking devices may have one or more than one cooking chamber. In order to reach an inner section of the cooking chambers, a door is hinged to the cooking chambers in an openable manner. By using the door, the foodstuff, which is to be cooked, is placed into the cooking chamber. Depending on the properties of some cooking devices, besides foodstuff drying, different processes can be applied inside the cooking device.

[0003] However, since the temperature inside the cooking chambers can reach a high temperature like 200 °C, an insulation is provided on the door. By means of said insulation, the door temperature has been reduced to temperature degrees which will not burn the hand of the user when the user touches the door from outside. However, temperatures like 60- 70 °C may burn the hand of the user. However, children or some old people may open the door in an unaware manner. This leads to an important safety problem for said children or old people. While the cooking device is operating, the child or the person may try to reach the inner side by opening the door in an unaware manner. In this case, the child or the person may be burnt or he/she may be subject to electric shock hazard.

[0004] In order to take precaution for these, door lock mechanisms, which provide safety, are provided in the related art.

[0005] One of these is a cooking device described in the patent document with publication number EP0678710. The oven door in the closed position is lockable by means of a manually operable and releasable locking device for child safety purposes. On the door outside is provided a manually displaceable push key parallel to the door panel, which is connected to a stop lever.

[0006] Another embodiment is a household appliance described in the patent document with publication number WO2004005653. There is an engaging means which is disposed on the door and a closure means which is arranged on the housing of the household appliance and is configured such that the engaging means engages in a non-positive manner with the closure means when the door is opened so as to prevent the door from being completely opened.

[0007] The object of the present invention is to provide hiding of a trigger of the door lock mechanism on a door lever.

[0008] In order to realize said object, the present invention is a domestic oven having at least one cooking chamber encircled by an outer body; a door providing access to the cooking chamber in an open position; and a lock mechanism providing locking of said door in a closed position. The lock mechanism of the domestic oven comprises a triggering element which activates a lock, which is in locked position, in a releasable manner, and which is placed on a door lever in a hidden manner on an accessible side of an outer wall of the door. Thus, since the triggering element, providing opening of the lock mechanism, is placed on the door lever, the risk of contact of the user to the high temperature door is prevented. The door lever is positioned in a manner providing a clearance between the triggering element and the outer wall, and thus, the user is protected from the high temperature of the door when he/she locks or unlocks the lock.

[0009] When the triggering element is moved in a triggering direction, it releases the lock. The triggering direction is changing depending on the assembling position of the lock mechanism on the door. The triggering element may be pushed towards the triggering direction for activating the trigger, or in another probable embodiment, the triggering element may be pulled.

[0010] In a probable embodiment of the present invention, the domestic oven comprises a groove formed on the outer wall of the door and through which an extension of the triggering element passes. Thus, the extension of the triggering element extends towards the inner side of the door in order to act on the lock.

[0011] In a probable embodiment of the present invention, the groove may be an opening sized so that the extension passes therethrough.

[0012] In another probable embodiment of the present invention, the triggering element comprises a trigger latch which can be accessed through the outer wall of the domestic oven. Thus, the lock is released by means of moving the trigger latch towards the triggering direction.

[0013] In another probable embodiment of the present invention, the lock mechanism comprises a locking lever fixed to a free end of the extension of the triggering element. Thus, the locking lever functions as a lock whereon the triggering element acts.

[0014] In another probable embodiment of the present invention, the lock mechanism comprises a housing element providing placement of the triggering element on an accessible side of the outer wall. Thus, the triggering element is housed.

[0015] In another probable embodiment of the present invention, the housing element comprises a groove formed so as to face the outer wall and wherein the triggering element is positioned. Thus, the triggering element, extending outwardly from the outer wall of the door, is hidden inside the groove.

[0016] In another probable embodiment of the present invention, the housing element comprises a bearing extension through which a channel of the triggering element passes so that the triggering element is fixed. Thus, the triggering element is fixed on the bearing extension in a manner moving in the triggering direction and in the inverse direction.

[0017] In another probable embodiment of the present invention, the housing element comprises a slit through which

the trigger latch of the triggering element passes. Thus, since the trigger latch extends outwardly from the slit for providing access to the trigger latch, the width of the slit provides a trigger movement clearance for the trigger latch.

[0018] In another probable embodiment of the present invention, the slit is formed on a bottom wall of the housing element. Thus, the trigger latch extending through the slit is substantially concealed.

[0019] In another probable embodiment of the present invention, the housing element comprises at least one rib formed in an inner section of the groove. Thus, the form of the housing element is reinforced.

[0020] In another probable embodiment of the present invention, there is a connection hole formed thereon in order to connect the housing element onto the door lever. Thus, the housing element is connected to the door lever.

[0021] In another probable embodiment of the present invention, the housing element has the same appearance as a connection element which provides connection of the door lever to the outer wall of the door. Thus, the housing element provided on the outer wall of the door cannot be distinguished, and it seems like another connection element.

[0022] In another probable embodiment of the present invention, the housing element comprises a stop section which is in the form of a stop section of the connection element. Thus, a similar appearance as the connection element of the housing element is provided and at the same time, the side sections of the door lever, which are in opening form, are covered.

[0023] In another probable embodiment of the present invention, the axis of assembly of the housing element to the door lever, and the axis of assembly of the triggering element to the outer wall are coaxial. Thus, the assembly of the lock mechanism in a coaxial manner is provided.

[0024] In Figure 1A, a frontal perspective view of a connection hole of a housing element of the subject matter lock mechanism is given.

[0025] In Figure 1B, a lateral perspective view of a stop section of a housing element is given.

[0026] In Figure 1C, a rear perspective view of a groove of a housing element is given.

[0027] In Figure 1D, a rear perspective view of a groove of a housing element is given.

[0028] In Figure 2, a rear perspective view of a housing element is given in a detailed manner.

[0029] In Figure 3, a lateral perspective view of a subject matter trigger is given.

[0030] In Figure 4, a frontal perspective view of the lock mechanism and of a door of the cooking device is given in dismantled form.

[0031] In Figure 4A, a frontal perspective view of the assembled form of a housing element to a door lever and the dismantled form to an outer wall of the door is given.

[0032] In Figure 5, a rear perspective view of the lock mechanism and of a door of the cooking device is given in dismantled form.

[0033] In Figure 6, a frontal perspective view of a cooking device having lock mechanism is given.

[0034] The present invention relates to a cooking device, and particularly relates to a domestic oven (1) having a lock mechanism (40) provided on a door (20) of the domestic oven (1) for safety purposes, and preventing opening of the door (20) in undesired cases, and providing opening of the door (20) only in an aware manner.

[0035] The domestic oven generally has the functions of cooking in oven and cooking on gas stove. For cooking in oven, there is at least one cooking chamber (12). The gas stove section has burners (13) placed on an upper plate thereof. The turn on/off functions of the burners (13) and the gas flow setting are realized through a setting button (15) provided on a front panel (14) of the cooking device.

[0036] The subject matter lock mechanism (40) essentially comprises a housing element (41); a triggering element (42) which is partially placed into the housing element (41); a spring (45) providing movement of the triggering element (42) in a triggering direction (b); a bearing piece (43) providing fixation of the lock mechanism (40) on the door (20) and through which the triggering element (42) passes; and a locking lever (40) fixed to the triggering element (42).

[0037] The perspective views of the housing element (41) of the subject matter lock mechanism (40) from pluralities of perspectives are given in Figure 1a, 1b, 1c and 1d. As can be seen in Figure 4, the housing element (41) is designed so as to have the same outer appearance with the form of a connection element (32) providing assembly of a door lever (30) of the door (20) to the door (20). Both elements have a stop section (320, 410) in a manner closing an opening (310) on the lateral side of the door lever (30), and a connection hole (321, 411) providing assembly to the door lever (30). The connection holes (321, 411) correspond to the holes (311) formed on a profile (31) of the door lever (30). The subject matter housing element (41) has a form providing the triggering element (42) to be positioned therein, and providing the triggering element (42) to be moved in a triggering direction (b). As can be seen in Figure 1c and 1d, a groove (412) is formed on an inner side of the housing element (41), and a slit (414) is formed on a wall of the housing element (41). The triggering element (42), which is to be positioned inside the groove (412) of the housing element (41), engages to a bearing extension (413) extending inside the housing element (41). The bearing extension (413) is a cylindrical extension. Accordingly, the triggering element (42) comprises a cylindrical channel (421). The width of the groove (414) provides a trigger movement clearance (a). The ribs (415), embodied inside the housing element (41), reinforce the resistance of the housing element (41). In Figure 2, the housing element (41) is illustrated, and in Figure 3, the triggering element (42) is illustrated in a detailed manner. The triggering element (42) has a trigger latch (420)

which will move within the trigger movement clearance (a). The trigger latch (420) extends in a vertical manner to a body of the triggering element (42), and it is in the form of an extension. The channel (421) is formed at one end of the body, and the other end thereof is in the form of an extension (422), and it has a "D" cross section. A step (423) is embodied at this end section. The locking lever (44) is locked on the triggering element (42) and thereby fixed from this section in a manner stopping onto the step (423).

[0038] In Figure 4, a frontal perspective view of the lock mechanism (40) and of a door (20) of the domestic oven (1) is given in dismantled form. The lock mechanism (40) is assembled to the door (20) in the direction of the assembly axis (c). In Figure 4a, only the members placed on an outer side (212) of an outer wall (21) of the door (20) are illustrated. These members are the door lever (30), the connection element (32) providing assembly of the door lever (30) to the outer wall (21), and the bearing piece (43) which is similar to the connection element (32) in terms of outer appearance. The bearing piece (43) has a form similar to "8" which can be engaged and fixed to a groove (211) of the outer wall (21) of the door (20). The locking lever (44) and a section of the extension (422) of the triggering element (42) where to the locking lever (44) is fixed remain on an inner side (213) of the outer wall (21). In Figure 4a, the connection element (32) is assembled to the outer wall (21) of the door (20) by means of a screw and a similar connection element. The housing element (41) is assembled to the outer wall (21) of the door (20) with the help of a bearing piece (43). At the same time, the bearing piece (43) is one of the points which provides supporting of the lock mechanism (40).

[0039] In Figure 5, a rear perspective view of the lock mechanism (40) and of a door (20) of the domestic oven (1) is given in dismantled form. As can be seen from the given figure, the door (20) of the domestic oven (1) comprises an outer wall (21) and an inner wall (22) in order to provide insulation of the door (20). The subject matter lock mechanism (40) extends between the door lever (30) and the inner wall (22).

[0040] As can be seen in Figure 4 and 5, the inner wall (22) and the outer wall (21) of the door (20) are assembled to each other. An opening (221), through which the latch section (442) of the lock mechanism (40) passes, is formed on a flange (220) of the inner wall (22) of the door (20) (Figure 4). A locking opening (110) is formed on a flange (11) of the body (10) of the domestic oven (1) in a manner corresponding to this opening (221) (Figure 6). The flange (11) of the body (10) extends in an orthogonal manner with respect to an outer wall (120) of a cooking chamber (12). When the door (20) of the domestic oven (1) is closed, the flange (11) of the body (10) and the flange (220) of the inner wall (22) of the door (20) correspond to each other mutually and in a parallel manner. As can be seen from the given figures, the spring (45) is engaged onto the triggering element (42) and fixed, and it stays inside the housing element (41). The spring (45) provides the triggering element (42) to be moved to a second position towards a triggering direction (b), and it provides the triggering element (42) to return to a first position when the triggering element (42) is released.

[0041] The bearing piece (43) provides the lock mechanism (40) to be fixed on the outer wall (21) of the door (20). Therefore, the bearing piece (43) is placed to the groove (211), provided on the outer wall (21), from a stepped section (432) thereof. The form of the groove (211) is such that the stepped section (432) of the bearing piece (43) is placed to the groove (211). In order for the bearing piece (43) to be fixed, a fixation element (not illustrated in the figures) like a screw, etc. is passed through a fixation opening (430) formed thereon. The screw which is passed through the fixation opening (430) extends up to the connection hole (411) of the housing element (41). The screw provides fixation of the housing element (41) to the door lever (30) through the connection hole (411). Thus, the screw provides fixation in two regions. Another opening, formed on the bearing piece (43), is a bearing opening (431). The triggering element (42) passes through the bearing opening (431). During the assembly, the triggering element (42) may advance until a stop protrusion (424) stops onto the bearing piece (43), and here, it reaches a fixed position. The bearing piece (43) is made of a flexible plastic material.

[0042] The locking lever (44) is a single piece which is fixed to the triggering element (42) from a fixation section (440). In this section, the locking lever (44) is fixed to the triggering element (42) from outside by means of a fixation element (not illustrated in the figures) like cover, etc. An opening (4401) is formed on the fixation section (440). The opening (4401) preferably has a form which is similar to letter "D". The extension (422) of the triggering element (42) passes through the opening (4401). The form having a shape similar to letter D provides the locking lever (44) to make a semi-circular movement. Thus, a latch section (442) can easily enter into and exit from the locking opening (110) of the flange (11). The locking lever (44) is essentially in the form of an extension, and an extension section (441) forms the intermediate section thereof. In this manner, the locking lever (44) extends in a direction which is orthogonal with respect to the assembly axis (c). The latch section (442) is formed at a free end of the extension section (441). The section of the latch section (442) which contacts the flange (11) during locking is curved. Some extension section (441) and the latch section (442) extend outwardly from the opening (221) of the flange (220) of the inner wall (22) of the door (20). During locking, the latch section (442) enters into the locking opening (110) of the body (10) flange (11) corresponding to the flange (220) of the inner wall (22).

[0043] In more details, the operation of the present invention is as follows. When a trigger latch (420), which is provided on a housing element (41) and which is not directly visible on the door lever (30), is pulled by the user in the triggering direction (b), the lock is released. Meanwhile, the door (20) of the domestic oven (1) is drawn frontally and it is opened. While the trigger latch (420) is released and while the door (20) is closed, the locking is realized by means of insertion

of the latch section (442) of the locking lever (44) into the locking opening (110) provided on the body (10). The form of the housing element (41) is the same as the form of the connection element (32) providing the connection of the door lever (30) to the door (20). Thus, it is difficult to be visually distinguished. Since the trigger latch (420) is positioned on a lower wall of the housing element (41), it is not distinguished at the first glance. However, it can be found by persons who know the presence of the lock mechanism (40). At the same time, when the domestic oven (1) is looked at from outside, the lock mechanism (40) cannot be seen. Thanks to this, children or persons cannot open the door (20) in an uncontrolled manner. Moreover, the door lever is positioned in a manner providing a clearance between the triggering element and the outer wall, and thus, the user is protected from temperature of the door which is around 60- 70 °C while he/she locks or unlocks the lock.

[0044] In the alternative embodiment of the present invention, the member whereon the triggering element (42) acts for releasing the lock may be a magnetic element. Sensors which facilitate operation of the magnetic sensor can be used. The magnetic element can be positioned at the rear side (213) of the outer wall (21) of the door (20) in a hidden manner.

[0045] The assembly axis (c) of the lock mechanism (40) is parallel with respect to an extension direction of the body (10) flange (11).

REFERENCE NUMBERS

[0046]

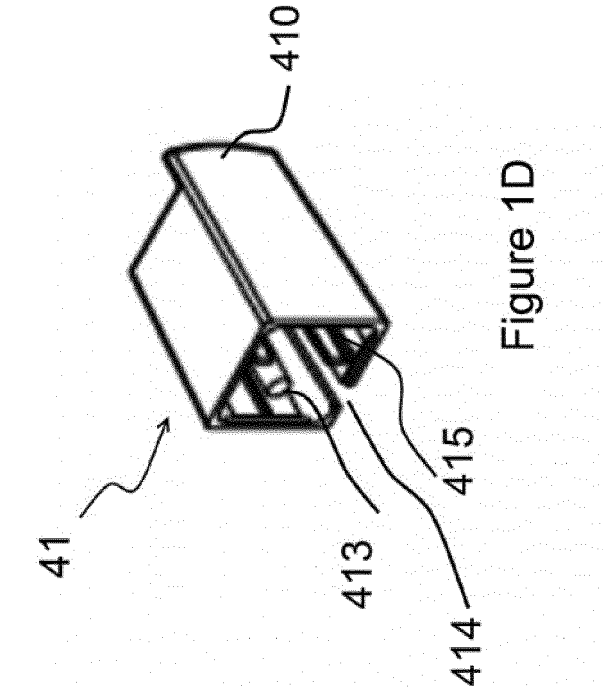
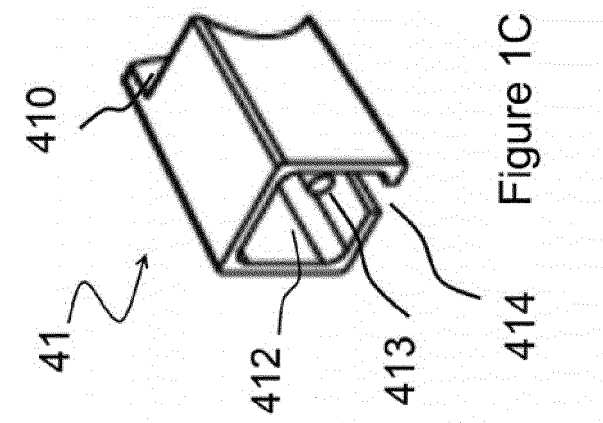
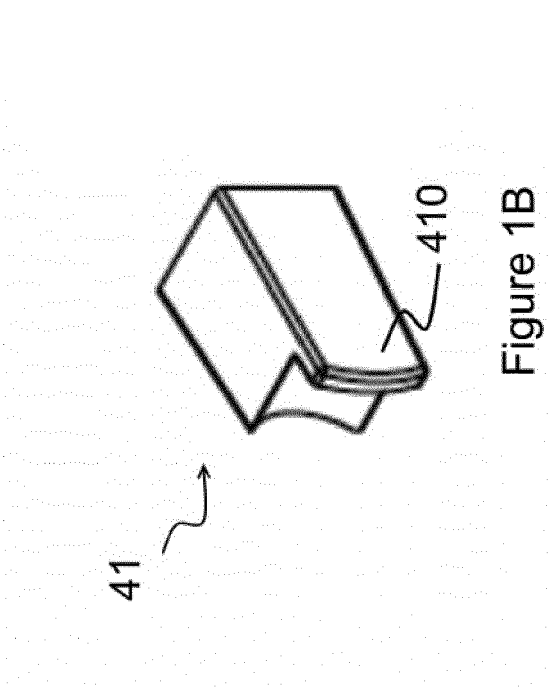
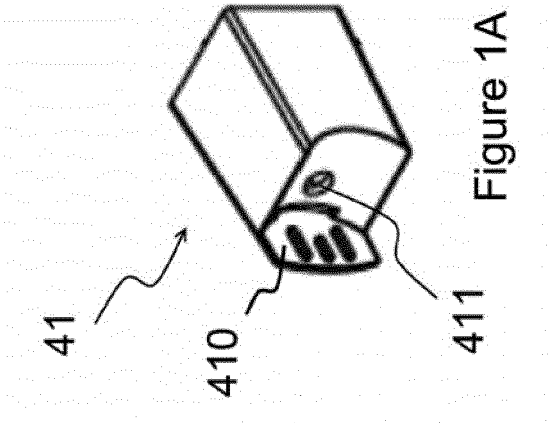
1.	Domestic oven	40.	Lock mechanism
10.	Body	41.	Housing element
11.	Flange	410.	Stop section
110.	Locking opening	411.	Connection hole
12.	Cooking chamber	412.	Groove
120.	Outer wall	413.	Bearing extension
13.	Burner	414.	Slit
14.	Front panel	415.	Rib
15.	Setting button	42.	Triggering element
20.	Door	420.	Trigger latch
21.	Outer wall	421.	Channel
211.	Groove	422.	Extension
212.	Outer side	423.	Step
213.	Inner side	424.	Stop protrusion
22.	Inner wall	43.	Bearing piece
220.	Flange	430.	Fixation opening
221.	Opening	431.	Bearing opening
30.	Door lever	432.	Stepped section
31.	Profile	44.	Locking lever
310.	Opening	440.	Fixation section
311.	Hole	4401.	Opening
32.	Connection element	441.	Extension section
320.	Stop section	442.	Latch section
321.	Connection hole	45.	Spring
a.	Trigger movement clearance		
b.	Triggering direction		
c.	Assembly axis		

Claims

1. A domestic oven (1) having at least one cooking chamber (12) encircled by an outer body (10); a door (20) providing access to the cooking chamber (12) in an open position; and a lock mechanism (40) providing locking of said door

(20) in a closed position, wherein the lock mechanism (40) of the domestic oven (1) comprises a triggering element (42) which activates a lock, which is in locked position, in a releasable manner, and which is placed on a door lever (30) in a hidden manner on an accessible side of an outer wall (21) of the door (20).

- 5 **2.** A domestic oven (1) according to claim 1; wherein the domestic oven (1) comprises a groove (211) formed on the outer wall (21) of the door (20) and through which an extension (422) of the triggering element (42) passes.
- 10 **3.** A domestic oven (1) according to claim 1; wherein the triggering element (42) comprises a trigger latch (420) which can be accessed through the outer wall (21) of the domestic oven (1).
- 15 **4.** A domestic oven (1) according to anyone of the preceding claims; wherein the lock mechanism (40) comprises a locking lever (44) fixed to a free end of the extension (422) of the triggering element (42).
- 20 **5.** A domestic oven (1) according to claim 1; wherein the lock mechanism (40) comprises a housing element (41) providing placement of the triggering element (42) on an accessible side of the outer wall (21).
- 25 **6.** A domestic oven (1) according to claim 5; wherein the housing element (41) comprises a groove (412) formed so as to face the outer wall (21) and wherein the triggering element (42) is positioned.
- 30 **7.** A domestic oven (1) according to anyone of the preceding claims; wherein the housing element (41) comprises a bearing extension (413) through which a channel (421) of the triggering element (42) passes so that the triggering element (42) is fixed.
- 35 **8.** A domestic oven (1) according to anyone of the preceding claims; wherein the housing element (41) comprises a slit (414) through which the trigger latch (420) of the triggering element (42) passes.
- 40 **9.** A domestic oven (1) according to claim 8; wherein the slit (414) is formed on a bottom wall of the housing element (41).
- 45 **10.** A domestic oven (1) according to anyone of the preceding claims; wherein the housing element (41) comprises at least one rib (415) formed in an inner section of the groove (412).
- 50 **11.** A domestic oven (1) according to anyone of the preceding claims; wherein a connection hole (411) is formed thereon in order to connect the housing element (41) onto the door lever (30).
- 55 **12.** A domestic oven (1) according to anyone of the preceding claims; wherein the housing element (41) has the same appearance as a connection element (32) which provides connection of the door lever (30) to the outer wall (21) of the door (20).
- 60 **13.** A domestic oven (1) according to claim 12; wherein the housing element (41) comprises a stop section (410) which is in the form of a stop section (320) of the connection element (32).
- 65 **14.** A domestic oven (1) according to anyone of the preceding claims; wherein the assembly axis (c) of the housing element (41), and the assembly axis (c) of the triggering element (42) are coaxial.



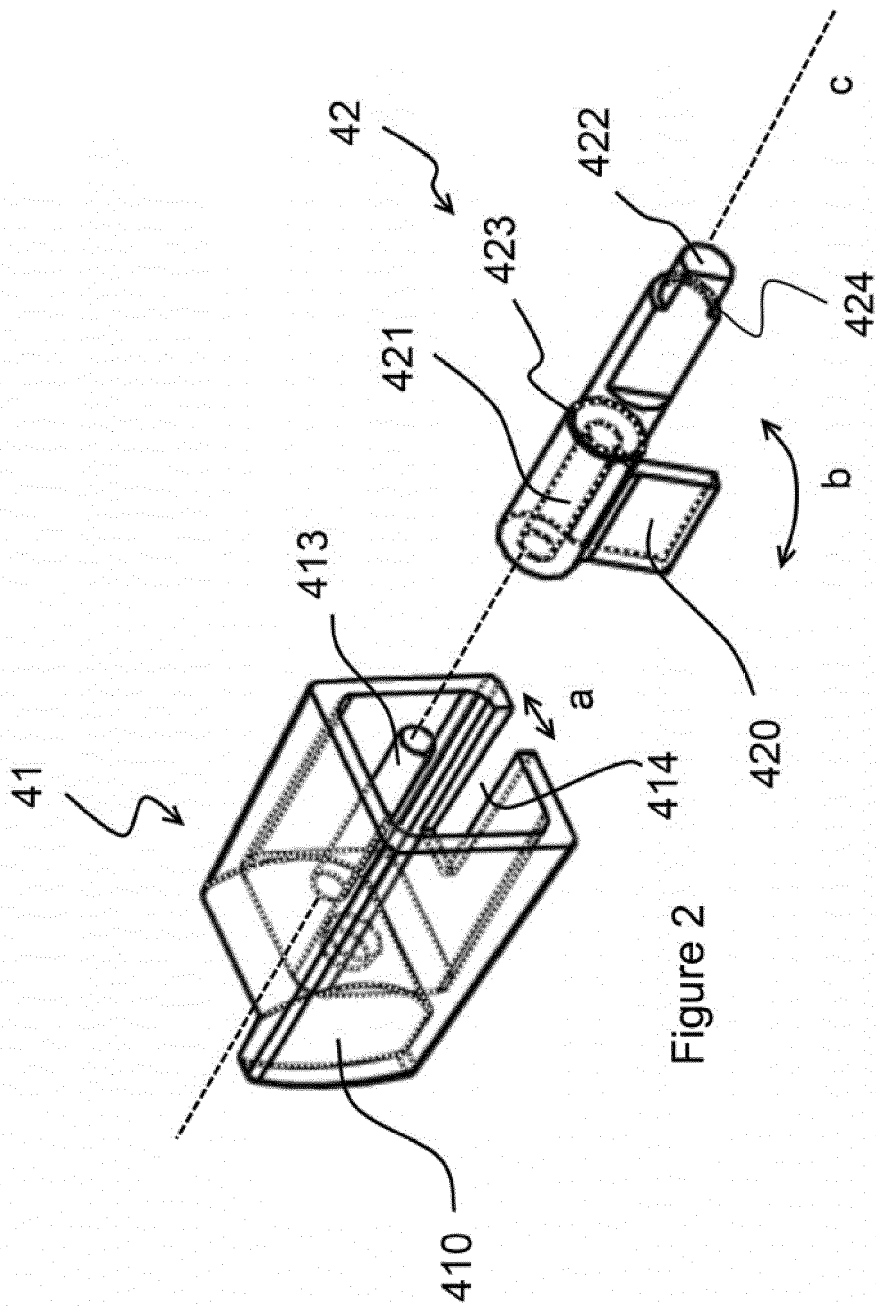


Figure 3

Figure 2

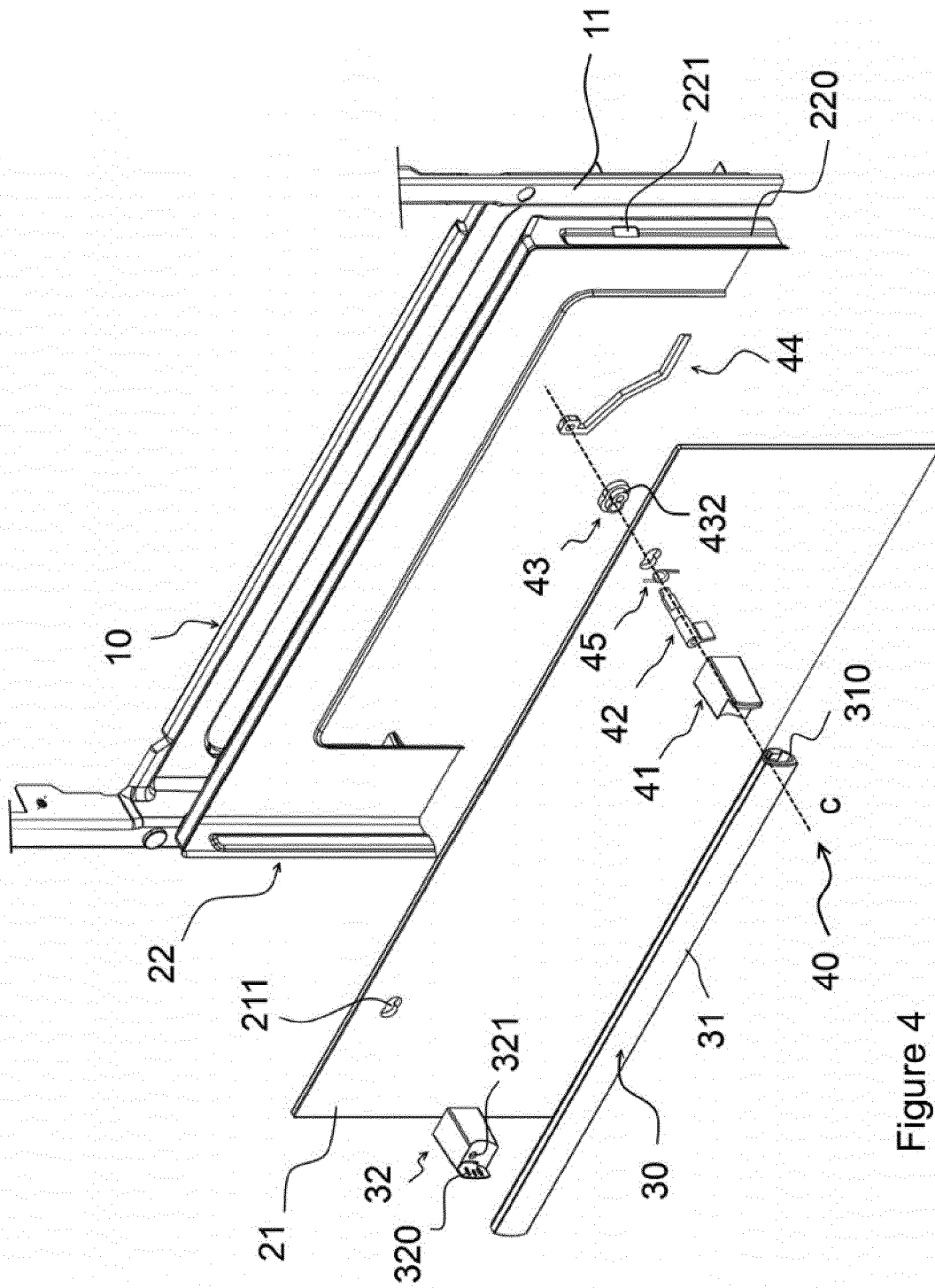


Figure 4

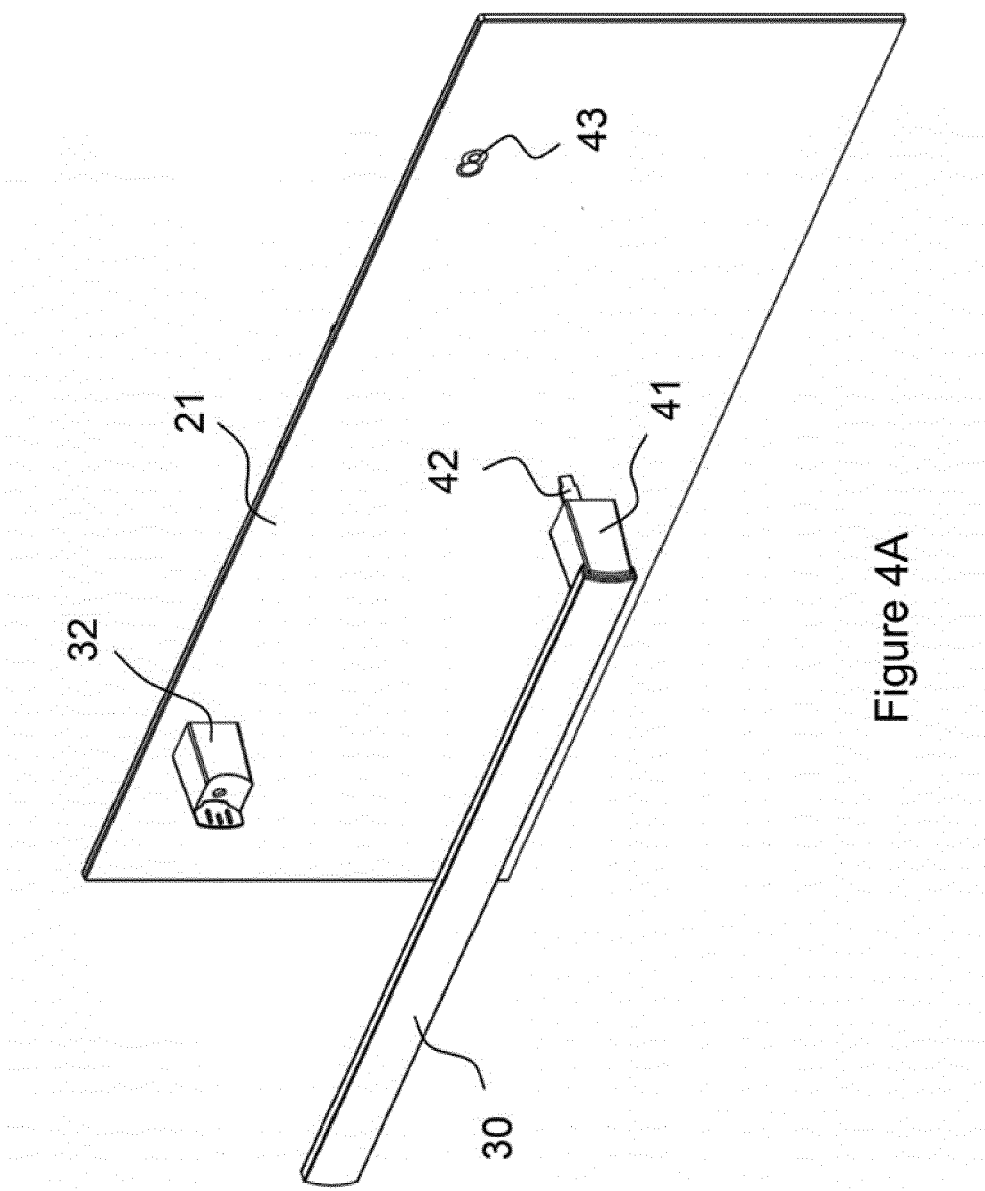


Figure 4A

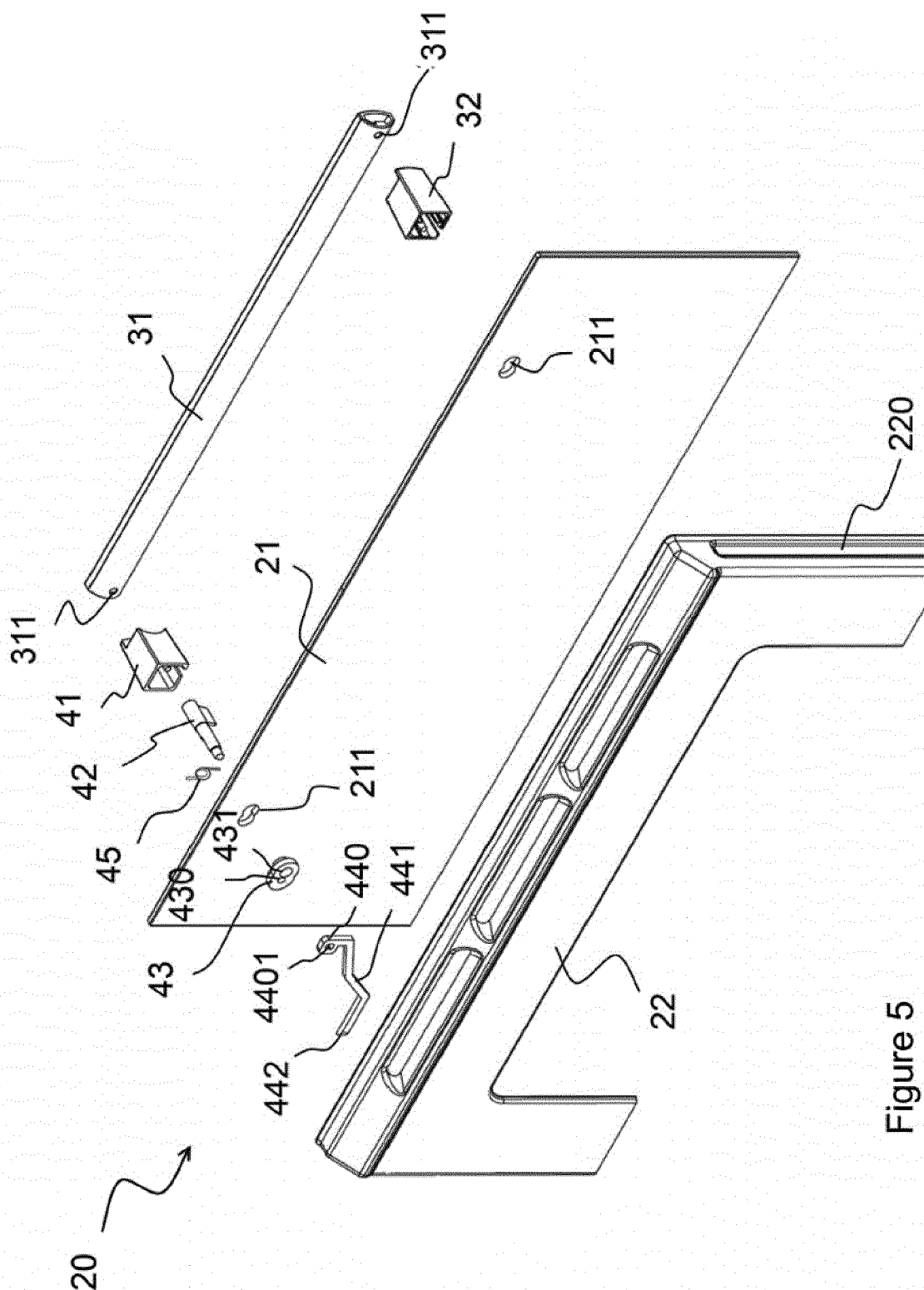


Figure 5

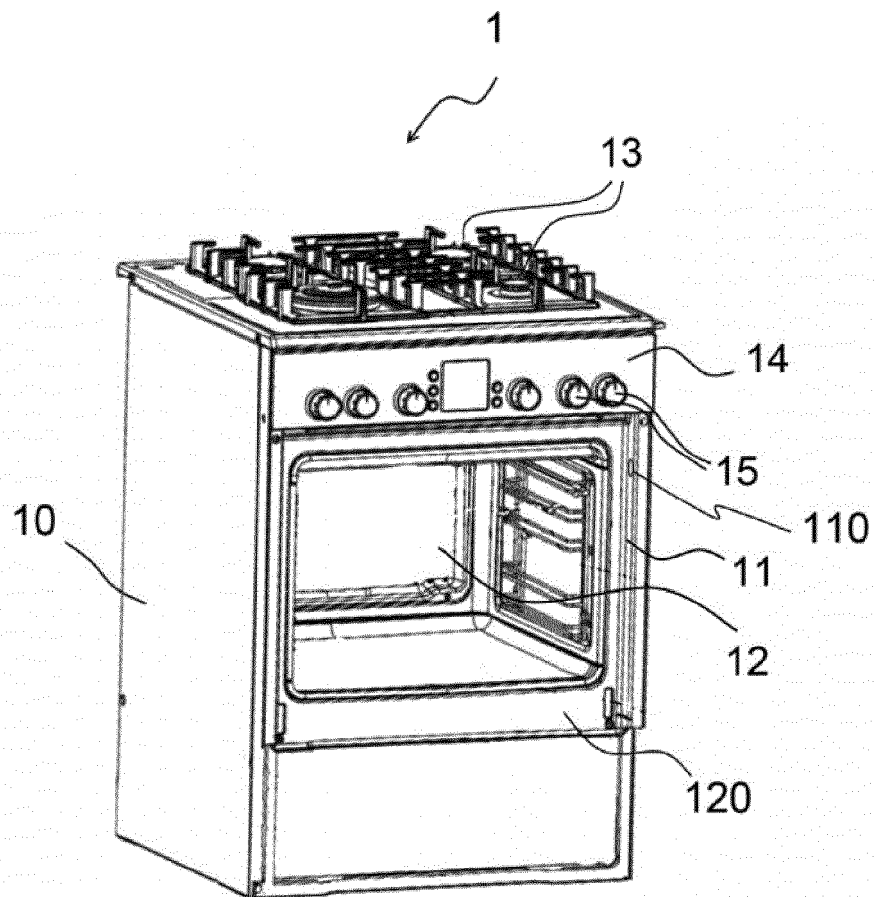


Figure 6



EUROPEAN SEARCH REPORT

Application Number
EP 15 15 7342

5

10

15

20

25

30

35

40

45

50

55

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	DE 39 35 597 A1 (LICENTIA GMBH [DE]) 2 May 1991 (1991-05-02) * claim 1; figures 1-3 *	1-14	INV. F24C15/02 E05B65/00
A	EP 1 235 034 A2 (AEG HAUSGERAETE GMBH [DE]) 28 August 2002 (2002-08-28) * figures 4-6 *	1-14	
A	FR 2 912 493 A1 (BRANDT IND SAS [FR]) 15 August 2008 (2008-08-15) * figures 1-2 *	1-14	
A	EP 0 795 722 A1 (EUROP EQUIP MENAGER [FR]) 17 September 1997 (1997-09-17) * figures 1a-3b *	1-14	
A	DE 94 06 610 U1 (BOSCH SIEMENS HAUSGERAETE [DE]) 23 June 1994 (1994-06-23) * figures 1-4 *	1-14	
A	DE 24 44 546 A1 (ELECTROLUX AB [SE]) 7 May 1975 (1975-05-07) * figure 1 *	1-14	TECHNICAL FIELDS SEARCHED (IPC) F24C E05B H05B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 7 August 2015	Examiner Adant, Vincent
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			

 1
EPO FORM 1503 03.82 (P04C01)

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

EP 15 15 7342

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

07-08-2015

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 3935597	A1	02-05-1991	NONE
EP 1235034	A2	28-08-2002	AT 448449 T 15-11-2009 DE 10108724 A1 12-09-2002 DK 1235034 T3 15-03-2010 EP 1235034 A2 28-08-2002
FR 2912493	A1	15-08-2008	NONE
EP 0795722	A1	17-09-1997	AT 203316 T 15-08-2001 DE 69705653 D1 23-08-2001 DE 69705653 T2 23-05-2002 DK 0795722 T3 05-11-2001 EP 0795722 A1 17-09-1997 FR 2746173 A1 19-09-1997
DE 9406610	U1	23-06-1994	DE 9406610 U1 23-06-1994 EP 0678710 A1 25-10-1995 FI 951889 A 21-10-1995
DE 2444546	A1	07-05-1975	DE 2444546 A1 07-05-1975 DK 500974 A 30-06-1975 FI 279774 A 01-05-1975 NO 743875 A 26-05-1975 SE 393446 B 09-05-1977

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- EP 0678710 A [0005]
- WO 2004005653 A [0006]