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(71) Applicant: **Indesit Company S.p.A.**
60044 Fabriano (AN) (IT)

(72) Inventors:
- **Gambardella, Fabio**
  88100 Catanzaro Lido (CZ) (IT)
- **Mezzopera, Bruno**
  60044 Fabriano (AN) (IT)
- **Scoponi, Matteo**
  62012 Civitanova Marche (MC) (IT)

(74) Representative: **Santonicola, Paolo**
Indesit Company S.p.A.
Viale Aristide Merloni 47
60044 Fabriano (AN) (IT)

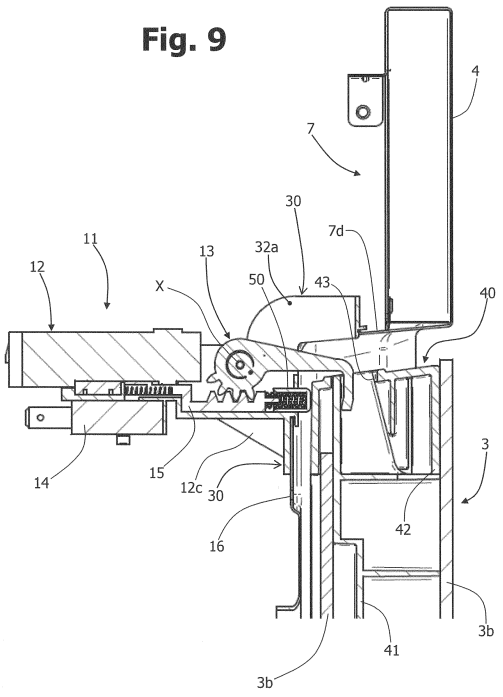
(54) HOUSEHOLD COOKING APPLIANCE

(57) A household cooking appliance has a load-bearing structure associated to which is a front door (3) of a cooking chamber, and a door-lock device (11) that comprises at least:
- a device body (12), which is fixed to the load-bearing structure (2);
- a locking member (13), displaceably mounted in a front region of the device body (12), the locking member (13) being designed to co-operate with a retention element (43) of a structure (3a, 3b, 40) of the door (3) that is displaceable with respect to the load-bearing structure;
- an actuation system having actuator means (14) that can be controlled for causing passage of the locking member (13) between an inoperative position, where the locking member (13) is not engaged to the retention element (43), and an operative position, where the locking member (13) is engaged to the retention element (43).

The device body (12) is fixed to the load-bearing structure at a passage of a front frame (7) and extends longitudinally in a direction generally transverse to said front frame (7).

The device body (12) is fixed at a front (30, 32) thereof to the front frame (7) so as to be supported substantially in cantilever fashion by the frame itself towards the inside of the load-bearing structure.

Fig. 9



EP 2 933 567 A2

Description

Field of the invention

[0001] The present invention relates to household cooking appliances and has been developed with particular reference to door-lock devices for such appliances.

Prior art

[0002] Electrical household appliances of various types are equipped, for safety reasons, with door-lock devices, in order to prevent opening of a door of the electrical household appliance during an operating cycle thereof or, vice versa, to prevent start of an operating cycle in the condition where the door is open. Door-lock devices are typically used on cooking appliances that integrate an oven, in particular appliances that provide for a program or a step of pyrolytic self-cleaning, i.e., at high temperature.

[0003] The door-lock devices employed on the above cooking appliances usually comprise a main body, associated to which is a movable locking member and a corresponding actuation system. The body of the device is usually fixed to the fixed structure of the electrical household appliance, with the locking member provided for cooperating with a retention element of the door. The body of the door-lock device is usually mounted and secured to an air-conveying channel that extends over the upper wall of the muffle that defines the cooking chamber, this channel extending in general between a fan and a front frame of the load-bearing structure of the appliance. The aforesaid channel, which is usually made of sheet metal, is typically provided to enable cooling of the door of the oven, or at least of its upper area, and/or to obtain expulsion of the cooking fumes from the muffle.

[0004] The door-lock device is fixed on the channel in a substantially central position so that its locking member is located at a passage of the front frame in which the retention element associated to the door can be received. In other solutions, the locking element, shaped like a hook, partially projects through the aforesaid passage to engage a corresponding seat made in the structure of the door, which provides the retention element.

[0005] The door-locking system hence presupposes co-operation of members associated to different parts of the structure of the appliance, of which at least one is movable. In order to ensure proper operation of a system of this sort, the locking member and the corresponding retention element must co-operate precisely, i.e., in conformance with the design specifications. This need hence imposes a particular precision in the relative arrangement of the components of the locking system on the respective parts of the appliance, as well as of these parts with respect to one another (the door with respect to the load-bearing structure). Furthermore, if we consider the case described of assembly of the door-lock device on the channel for conveying air and/or fumes, it will be appreciated that the chain of the assembly tolerances is further increased: the body of the door-lock device must in fact be mounted on the channel, and the latter must be mounted on the muffle, which is in turn mounted on part of the load-bearing structure of the oven, with also the front frame of the structure that must be mounted in front of the muffle. Also the door will then have to be mounted with extreme precision with respect to the front frame to enable exact co-operation of the parts of the locking system. This procedure hence calls for extreme precision in the operations of assembly of the cooking appliance, which result in a lengthening of the production times and, in ultimate analysis, an increase in the corresponding costs.

[0006] In order to overcome the aforesaid drawbacks, door-lock devices have been proposed distinguished by particular arrangements aimed at enabling recovery of possible assembly tolerances. Examples of devices of this sort are described, for example, in EP 1640493 A2 and EP1703212 A2. These known devices are, however, generally complicated to produce.

Summary of the invention

[0007] In its general terms, the object of the present invention is to provide a household cooking appliance equipped with a door-lock device that is simple and fast to assemble and is intrinsically precise, i.e., operation of which is substantially immune from tolerances of assembly of the parts of the appliance with which the device cooperates for its operation.

[0008] The above and other aims still, which will emerge more clearly hereinafter, are achieved according to the present invention by a household cooking appliance and by a door-lock device for a household cooking appliance having the characteristics specified in the ensuing claims. The claims form an integral part of the technical teaching provided herein in relation to the invention.

Brief description of the drawings

[0009] Further objects, characteristics, and advantages of the invention will emerge clearly from the ensuing detailed description, with reference to the annexed drawings, which are provided purely by way of explanatory example and in which:

- Figure 1 is a schematic view in front elevation of a household cooking appliance according to one embodiment of the invention;
- Figure 2 is a front elevation of a frame belonging to the load-bearing structure of an appliance according to a possible embodiment of the invention;
- Figure 3 is a schematic perspective view of a door-lock device for a household cooking appliance according to one embodiment of the invention;
- Figure 4 is an enlarged detail of the frame of Figure 2;
- Figure 5 is a perspective view of a portion of the rear

side of the frame of Figure 2;

- Figure 6 is a perspective view of the device of Figure 3 mounted in an area corresponding to the portion of the frame of Figure 4 or Figure 5;
- Figure 7 is a partial and schematic perspective view of the top part of an upright of a door of a cooking appliance according to one embodiment of the invention;
- Figure 8 is a schematic cross-sectional view of the device of Figure 3 in the condition of assembly of Figure 6; and
- Figure 9 is a cross-sectional view according to the line IX-IX of Figure 2.

Description of embodiments of the invention

[0010] Reference to "an embodiment" or "one embodiment" in the framework of the present description is intended to indicate that a particular configuration, structure, or characteristic described in relation to the embodiment is comprised in at least one embodiment. Hence, phrases such as "in an embodiment" or "in one embodiment" and the like, that may be present in various points of the present description, do not necessarily all refer to one and the same embodiment. Furthermore, the particular configurations, structures, or characteristics may be combined in any adequate way in one or more embodiments. The references used in what follows are provided merely for convenience and do not define the sphere of protection or the scope of the embodiments.

[0011] It is pointed out that in the sequel of the present description only the elements useful for an understanding of the invention will be described in particular detail, taking for granted that the appliance forming the subject of the invention comprises all the other elements in themselves known for normal operation of an ordinary electrical household cooking appliance, such as an oven or a kitchen range with built-in oven.

[0012] In Figure 1, designated as a whole by 1 is a household cooking appliance according to one embodiment of the invention, which in the example represented is a cooking oven. The oven 1 has a stationary load-bearing structure 2, associated to which is a front door 3, for access to a cooking chamber defined by a muffle mounted within the structure itself, designated as a whole by 2. The door 3, provided with a handle 3a, comprises one or more panels 3b, in particular made of glass or the like, and a corresponding supporting structure.

[0013] In the case exemplified, the oven 1 has a control panel 4, which is located on the upper edge of the door 3 and is provided with control and/or display elements. In the example, the panel 4 includes two rotary knobs 5 and a display 6.

[0014] The front of the oven 1 includes a front frame 7, designated as a whole by 7 in Figure 2, belonging to the load-bearing structure. The frame 7 is substantially quadrangular and has two uprights 7a, a lower cross member 7b, and an upper cross member 7c, which delimit a central opening (not indicated). The central opening is designed to be located, in the condition of assembly of the oven 1, substantially at the front opening of a muffle set within the structure, which defines the cooking chamber of the oven 1. The muffle, like other functional components of the oven, is not represented in the figures in so far as it is not necessary for an understanding of the invention.

[0015] In a preferred embodiment, the frame 7, made for example of a single piece of sheet metal, has its upper cross member 7c shaped for defining at least part of the control panel 4. In the example, the area of the cross member 7c designed to provide the panel 4 has for this purpose two recesses 8 for fixing, on the inner side of the frame 7, of suitable selectors or potentiometers, to which the knobs 5 of Figure 1 are associated, as well as an opening 9 in a position intermediate with respect to the two recesses 8, for assembly of the display 6. Conveniently, edge portions of the frame 7 in an area corresponding to the panel 4 can be bent backwards to form a sort of box-like structure. The upper cross member 7c of the frame 7 has, underneath the area designed to provide the panel 3, a series of slits 10: in the condition of assembly of the oven, behind these slits (i.e., inside the structure 2 of the oven) there extends a channel of the type indicated previously, on top of the muffle, for a flow of air for cooling the door of the oven and/or for expulsion of fumes from the cooking chamber.

[0016] Represented in Figure 3 is a door-lock device according to the invention, with which the oven 1 of Figure 1 is equipped. The device, designated as a whole by 11, has a device body 12, designed to be fixed to the stationary structure of the oven 1. The device body 12 may be conveniently shaped in a number of parts made of plastic material assembled together, amongst which a base body 12a and a closing lid 12b. Displaceably mounted on the base body 12a is a locking member. In the case exemplified, this member, hereinafter defined for simplicity as "hook" and designated as a whole by 13, is substantially hook-shaped and is mounted on the body 12a so as to turn according to a substantially horizontal axis designated by X. As may be noted, the body 12 of the device 11 has a generally elongated configuration and extends longitudinally between a front and a back, there being provided at the front an opening through which part of the hook 13 extends so as to project at the front. As will be seen, the hook 13 is designed to co-operate with a retention element provided in the structure of the door 3, which is preferably articulated to the front frame 7 illustrated in Figure 2: it may on the other hand be noted that, in possible variant embodiments, the door 3 can be hinged to an element of the fixed structure of the oven underlying the frame 7.

[0017] The device 11 has an actuation system, comprising actuator means that can be controlled by a control system of the oven 1 to enable passage of the hook 13 between an inoperative position and an operative position, where the hook is, respectively, disengaged from

and engaged to the aforesaid retention element of the door 3. As may be understood, only in the inoperative condition of the hook 13, can the door 3 be freely opened or closed by the user. The actuation system of the hook 13 may be of any conception known in the sector. In the example represented, the actuator means of the system comprise a thermoelectric actuator designated by 14, but in other possible embodiments, the actuator could be an actuator of an electromagnetic type, or else a bimetal or shape-memory element. The actuator 14 is designed to move a transmission system that actuates the hook 13 between its inoperative and operative positions, also this transmission system possibly being of a type in itself known. A possible embodiment thereof is represented schematically in Figure 9. In this embodiment, the actuator 14 is able to bring about linear movement in opposite directions of an actuation element 15, which has a rack or toothing, engaged in which is an arc-shaped toothing provided at a proximal end of the hook 13. With reference to the example illustrated, operation of the actuator 14 causes recession of the element 15 against the action of elastic means (i.e., a movement from right to left as viewed in Figure 9), thereby determining a clockwise angular movement of the hook 13 and hence passage of the device 11 into the operative condition of locking of the door 3. De-activation of the actuator 14 brings about a reverse movement of the element 15, also under the action of the corresponding elastic means, and hence a counterclockwise angular movement of the hook 13, and thus passage of the device 11 into the inoperative condition of release of the door 3.

[0018] The body 12 of the door-lock device 11 is provided for being fixed to the stationary structure 2 at a passage of the front frame 7, in order to extend longitudinally in a direction generally transverse to the frame itself.

[0019] As mentioned previously, door-lock devices according to the known art are usually mounted on a channel that extends over the muffle, in a generally central position. In addition to the drawbacks linked to the assembly tolerances, as already explained above, this known type of positioning of the door lock also creates complications in formation of the aforesaid channel and/or perturbations in the flow at outlet from the channel. In fact, the door-lock device is mounted in the area comprised between the control panel of the oven and the underlying opening for access to the cooking chamber (i.e., with reference to Figure 2, in an area corresponding to the one in which the slits 10 are provided) so that the channel must frequently be configured in such a way that its outlet section will include two branches in parallel, between which the door-lock device can be positioned.

[0020] According to the invention, and as will emerge more clearly hereinafter, the body 12 of the door-lock device 11 is instead fixed to the frame 7 at its front part, so as to be supported substantially in cantilever fashion by the frame itself towards the inside of the structure 2. This characteristic enables considerable benefits to be obtained in terms of precision of production. It will be appreciated in fact that, since the door-lock device is mounted directly on the front frame 7 and supported by this, the possible errors of positioning due to the assembly tolerances are reduced as compared to the known art, especially in the embodiments where the door 3 is articulated to the frame 7 itself.

[0021] In one embodiment, the passage where the hook 13 is operative is defined in an upper lateral area of the frame 7, at which the body 12 of the device 11 is also fixed. Such a passage is designated by 20 in Figure 2 and the aforesaid area is preferably an area of connection or transition between one of the upright parts 7a of the frame 7 and the upper cross member 7c.

[0022] In a particularly advantageous embodiment, the frame 7 has two passages 20, each defined in a respective upper lateral area of the frame. As may be seen, in the example, the slits 10 extend in the area of the cross member 7c comprised between the two passages 20. Provision of two passages 20 in substantially diametrically opposite positions enables positioning of the door-lock device 11 indifferently on the right-hand side or on the left-hand side of the frame 7. Assembly using any one of the passages 20 is convenient when the door 3 is hinged only in its lower part so that it can turn about a substantially horizontal axis. Instead, in the case of cooking appliances the front door of which is articulated so as to turn about a vertical axis, the device 11 can be mounted exploiting the more convenient passage 20. For instance, if the hinges that articulate the door 3 to the frame 7 are on the right-hand side, the door-lock device 11 will be mounted at the left-hand passage 20 in Figure 2. Instead, with the hinges positioned on the left-hand side of the frame 7, the door-lock device 11 may be mounted exploiting the passage 20 on the right-hand side.

[0023] In the solution according to the invention, moreover, the lateral positioning of the device 11 simplifies provision of the possible channel for the forced flow of air and/or fumes, which no longer needs to envisage a double outlet section, as mentioned above in relation to the known art. Furthermore, since positioning of the device 11 is in a corner area of the front frame 7, it is particularly convenient, given the absence in this area of internal functional elements of the oven.

[0024] According to a preferred characteristic, the passage 20, or each passage 20, extends at least in part within a recess of the frame 7 that projects towards the inside of the structure 2. Two of the aforesaid recesses are designated by 21 in Figure 2, and one of them is visible in greater detail in Figures 4 and 5. The presence of the recesses 21 has the function of providing a resting surface for the front of the door-lock device 11, as well as housing the heads of corresponding fixing members, without these projecting significantly with respect to the front side of the frame 7. As may be noted, in particular in Figure 4, the passage 20 extends in a corresponding first generally vertical portion of the frame 7 - here rep-

resented by the bottom of the corresponding recess 21 - as well as in a second portion, designated by 7d in Figures 4, 5 and 7-9, which is transverse to the aforesaid first portion and is determined by the presence of a shaping of the frame 7 underneath the control panel 4, here in an area of transition between the panel 4 and the part of the frame 7 provided with the slits 10.

[0025] As may be noted in Figures 4 and 5, defined in the bottom of the recess 21 are two through holes 22, used for fixing of the body 12 of the door-lock device. Preferentially, in the above bottom wall of the recess 21 further passages 23 are also defined, used for fixing of a small front lid, not represented in the figures, having the basically aesthetic purpose of covering the passage 20 and the aforesaid heads of the fixing members used. One of these fixing members, which are for example represented by screws, is visible in Figures 6 and 8, where it is designated by 24.

[0026] To return to Figure 3, the front of the body 12 of the device 11 has a front plate portion, designated as a whole by 30, the front surface of which is designed to rest against a corresponding surface of the rear side of the front frame 7, here defined by the bottom of the recess 16. The plate portion 30 has a pair of through holes for the respective fixing members 24 so that they can be fixed to the frame 7. In the embodiment exemplified, mounted in positions corresponding to these through holes (which are not visible) are small c-shaped metal brackets, designated by 31, which are also provided with through holes coinciding with those of the portion 30, for fixing via the members 24. Preferentially, extending between the back of the plate portion and the bottom of the base body 12a of the device 11, which are substantially orthogonal to one another, is at least one reinforcement wall designated by 12c, which strengthens the body 12 and guarantees proper support thereof in cantilever fashion.

[0027] As already mentioned, the front of the body of the device 11 has a through opening (partially visible in Figure 3), which extends at least in an area corresponding to the plate portion 30 and through which the hook 13 extends. From Figure 3 it may moreover be noted how the plate portion 30 presents a front projection 30a, which in use is designed to traverse the respective passage 20.

[0028] The front of the body 12 of the door-lock device moreover has an upper portion 32, which extends forwards starting from the top of the plate portion 30 and is designed to overlie a corresponding portion of the front frame 7, here represented by the transverse surface designated by 7d in Figures 4, 5 and 7-9.

[0029] In one embodiment, the upper portion 32 of the front of the body 12 is axially hollow and provided with a lower through opening. In the example illustrated, the upper portion 32 comprises two generally parallel walls and a front wall that define between them a cavity 32a open underneath, where the hook 13 can penetrate at least in part when it is in the respective inoperative position, i.e., raised with respect to the condition appearing in Figure 3. Preferentially, the aforesaid upper portion 32 has a flange formation 32b, designed to bear upon the transverse portion 7d of the frame. As mentioned previously, part of the passage 20 extends also at the transverse portion of the frame 7. This part of the passage 20 is at the cavity 32a of the upper portion 32, precisely for enabling the hook 13 to penetrate into this cavity. Preferentially, the upper portion 32 of the body 12 of the door-lock device has also a part 32c that projects underneath from its flange formation 32c and is designed to be inserted into a corresponding part of the passage 20 (as is clearly visible, for example, in Figure 8).

[0030] The projecting portions 30a and 32c have as a whole a profile corresponding to that of the passage 20: their insertion into said passage thus guarantees a high precision of relative positioning between the front of the device 11 and the corresponding area of the front frame 7 on which the device is to be secured. Once the projecting portions 30a and 32c have been inserted into the passage 20, the holes 22 on the bottom of the recesses 21 (Figures 4 and 5) are axially aligned to the holes of the brackets 31 and hence to the through holes provided in the plate portion 30.

[0031] In a particularly advantageous embodiment, the retention element with which the hook 13 is designed to co-operate is located in an upper region of a lateral upright of the structure of the door 3. In the embodiment exemplified, the structure of the door 3 includes two lateral uprights, represented schematically in Figure 1, where they are designated by 40, for example formed in one or more parts made of plastic or metal material. An upper portion of one of the uprights 40 is visible in Figure 6. With reference to the example illustrated, the upright 40 has a longitudinally extended part 41, coupled to the upper end of which is a terminal element 42, defined in the upper surface of which is a passage or seat 43 that provides the retention element designed to receive the front end of the hook 13. In the condition of assembly, the terminal element 42 is located precisely in the upper area of the door 3, in such a way that the seat 43 is directly accessible from above. The assembled condition is clearly visible in Figure 9, in which there may be noted the upright 40 with its parts 41 and 42, as well as the seat 43, and two glass panels 3b, one internal and the other external. The function of the uprights 40 is precisely to guarantee proper relative positioning between the panels 3b, which are fixed to the uprights according to techniques in themselves known.

[0032] It should be pointed out that the presence of cross members in the framework of the door 3 is not strictly indispensable. In any event, in the case where the structure of the door 3 also includes an upper cross member, the seat, or each seat 43, may be provided in such a cross member, in an area corresponding to the respective passage 20.

[0033] In a particularly advantageous embodiment of the invention the door-lock device 11 is equipped with a sensor system for detecting the condition of open-

ing/closing of the door 3, preferentially comprising a movable actuation member, belonging or connected to an electric switch, not visible in the figures. Partially visible in the figures is the aforesaid actuation member, designated by 50, the front end of which projects at the front from the plate portion 30, and precisely from the respective projection 30a underneath the hook 13, and hence through the passage 20.

[0034] The member 50 is elastically urged, for example via a spring, in a respective advanced position, where the corresponding electric switch is in an open condition. This advanced position, visible for example in Figures 3 and 8, is assumed by the member 50 when the door 3 is open, or else only partially closed. Instead, when the door is completely closed, its structure - for example the upright 40 in an area corresponding to the device 11 - determines displacement of the member 50 in a retracted position thereof, visible in Figure 9, thereby causing switching of the aforesaid switch into the closed condition. The sensor system comprising the switch and the corresponding member 50 may have, for example, the function of enabling or disabling certain functions of the oven 1, such as supply of the device 11 for purposes of passage from its inoperative position to its operative position and/or execution of programs of the oven that presuppose locking of the door in the closed position, such as for example a pyrolytic-cleaning cycle.

[0035] The mounted condition of the device is visible in different views in Figures 7, 8, and 9, from which there may clearly be noted the body 12 of the device 11 that is supported substantially in cantilever fashion by the frame and extends longitudinally towards the inside of the structure 2 (in Figure 7 just rear side or inside of the frame 7 is visible). The front of the device 11, in particular the plate portion 30, is substantially set up against the bottom of the recess 21, whilst the flange formation 32b of the upper portion 32 faces the transverse part 7d of the frame, possibly in contact therewith. The projecting parts 30a and 32c of the front of the device 1 are inserted into the passage 20, with the body 12 as a whole fixed to the frame 7 via the screws 24 or other fixing members. As may be noted in particular in Figure 8, the visible part of the head of the screw 24 projects minimally with respect to the recess 16 that houses it.

[0036] From the foregoing description, the characteristics of the cooking appliance described emerge clearly, as likewise its corresponding advantages, mainly represented by the fact that the solution according to the invention solves in a simple and inexpensive way the problems of the prior art referred to, linked to installation of a door-lock device.

[0037] It is clear that numerous variations may be made by the person skilled in the branch to the cooking appliance and to the door-lock device described by way of example, without thereby departing from the scope of the invention as defined in the ensuing claims.

[0038] In the embodiment exemplified in the figures the front of the appliance is prevalently constituted by a frame 7 made of a single piece, but the functions of the latter can be obtained also via a plurality of structural components configured as distinct elements assembled and/or fixed together, such as for example cross members and uprights.

Claims

1. A household cooking appliance having a load-bearing structure (2) associated to which is a front door (3) of a cooking chamber, and a door-lock device (11) which comprises at least:

   - a device body (12), which is fixed to the load-bearing structure (2);
   - a locking member (13), displaceably mounted in a front region of the device body (12), the locking member (13) being designed to co-operate with a retention element (43) of a structure of the door (3) which is displaceable with respect to the load-bearing structure (2);
   - an actuation system (14, 15) having actuator means (14) that can be controlled for causing passage of the locking member (13) between an inoperative position, in which the locking member (13) is not engaged to the retention element (43), and an operative position, in which the locking member (13) is engaged to the retention element (43),

   wherein the device body (12) is fixed to the load-bearing structure (2) at a passage (20) of a front frame (7) and extends longitudinally in a direction generally transverse to said front frame (7), the appliance (1) being **characterized in that** the device body (12) is fixed at a front thereof (30, 32) to the front frame (7) so as to be supported substantially in cantilever fashion by the frame itself towards the inside of the load-bearing structure (2).

2. The appliance according to Claim 1, wherein said passage (20) of the front frame (7) is defined in an upper lateral area of the front frame (7), at which the device body (12) is fixed, in particular in an area of connection or transition between an upright part (7a) and a transverse part (7c) of the front frame (7).

3. The appliance according to Claim 2, wherein the retention element (43) is located in an upper region (42) of a lateral upright (40) of the structure (3a, 3b, 40) of the door (3) or else in a longitudinal end region of an upper cross member of the structure of the door (3).

4. The appliance according to Claim 3, wherein the retention element (43) comprises a seat defined in an upper wall of the lateral upright (40) or else of the

upper cross member.

5. The appliance according to Claim 1, wherein the front (30, 32) of the device body (12) has a plate portion (30) that extends generally vertically, with a front surface designed to rest against a corresponding first portion (16) of a rear side of the front frame (7), the plate portion (30) having through holes for respective members (24) for fixing to the front frame (7).

6. The appliance according to Claim 5, wherein the front (30, 32) of the device body (12) has a through opening that extends at least at the plate portion (30), through which the locking member (13) extends.

7. The appliance according to Claim 5 or Claim 6, wherein the plate portion (30) has a front positioning projection (30a) designed to be inserted into the passage (20) of the front frame (7).

8. The appliance according to any one of Claims 5-7, wherein the front (30, 32) of the device body (12) has an upper portion (32) that extends forwards with respect to the plate portion (30), with a lower surface designed to face a corresponding second portion (7d) of the rear side of the front frame (7).

9. The appliance according to Claim 8, wherein the passage (20) of the front frame (7) extends at said first portion (16) and second portion (7d) of the rear side of the front frame (7).

10. The appliance according to Claim 9, wherein the upper portion (32) of the front (30, 32) of the device body (12) has a cavity (32a) at a respective portion of the passage (20) of the front frame (7), in which the locking member (13) can be at least partially received when it is in the inoperative position.

11. The appliance according to Claim 8, wherein the upper portion (32) of the front (30, 32) of the device body (12) has a lower part (32c) for insertion into the passage (20) of the front frame (7) at said second portion (7d) of the rear side of the front frame (7).

12. The appliance according to any one of the preceding claims, wherein the passage (20) of the front frame (7) extends at least in part within a recess (16) of the front frame (7) that projects towards the inside of the load-bearing structure (2).

13. The appliance according to any one of the preceding claims, wherein projecting from the front (30, 32) of the device body (12) is a displaceable member (50) belonging to a sensor system for detecting a position of the door (3).

14. The appliance according to any one of the preceding claims, wherein the front frame (7) has two of said passages (20), each defined in a respective upper lateral area of the frame itself.

15. A door-lock device (11) for a household cooking appliance (1) having a load-bearing structure (2) with a front frame (7) to which a door (3) of a cooking chamber is articulated, the device (12) comprising:

- a device body (12);
- a locking member (13), displaceably mounted in a front region of the device body (12), the locking member (13) being designed to co-operate with a retention element (43) of a structure (3a, 3b, 40) of the door (3);
- an actuation system (14, 15) having actuator means (14) that can be controlled for causing passage of the locking member (13) between an inoperative position and an operative position,

wherein the device body (12) has a front (30, 32) configured for fixing to said front frame (7) so as to be supported substantially in cantilever fashion by the frame itself towards the inside of the load-bearing structure (2).

Fig. 1

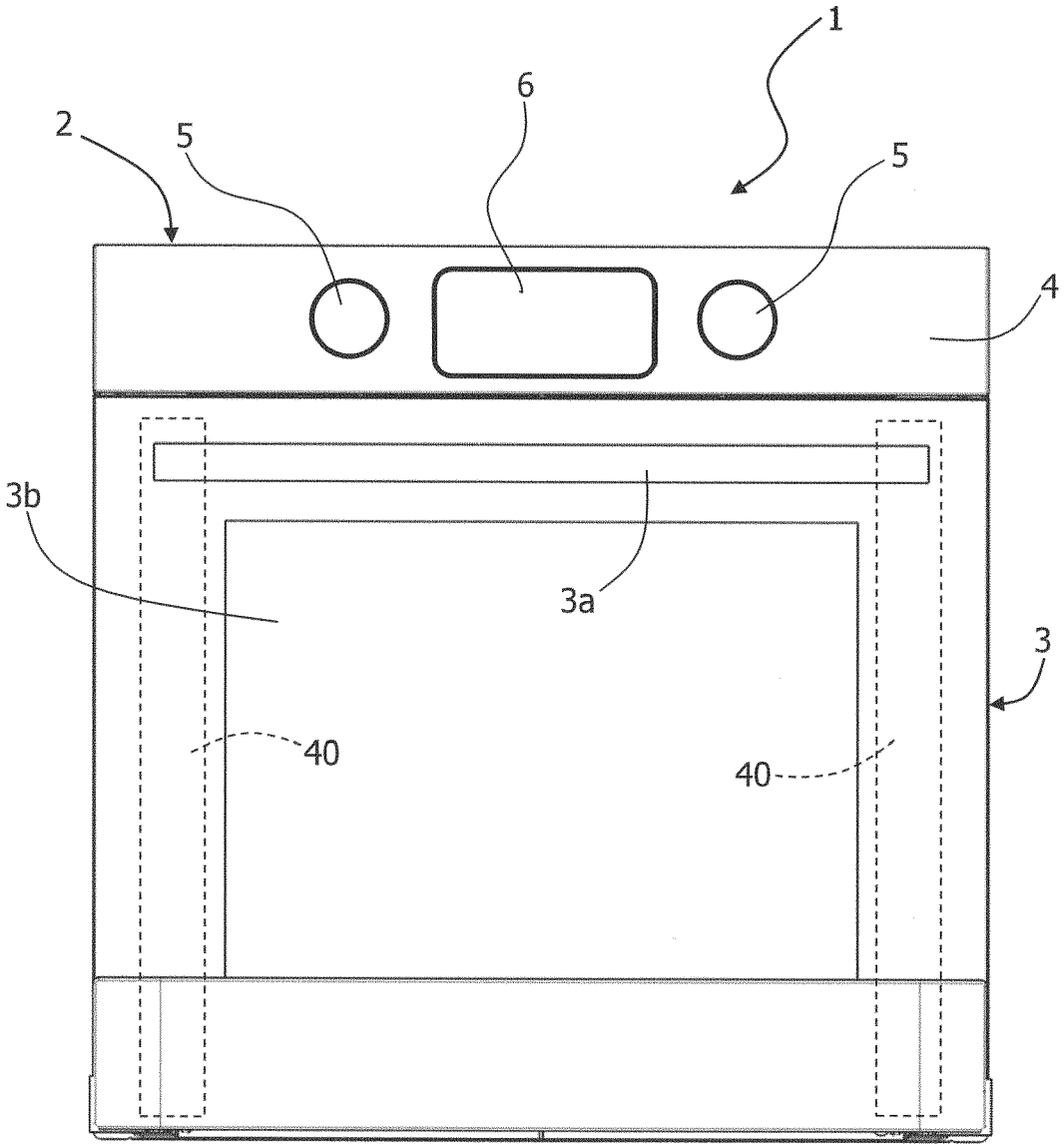


Fig. 2

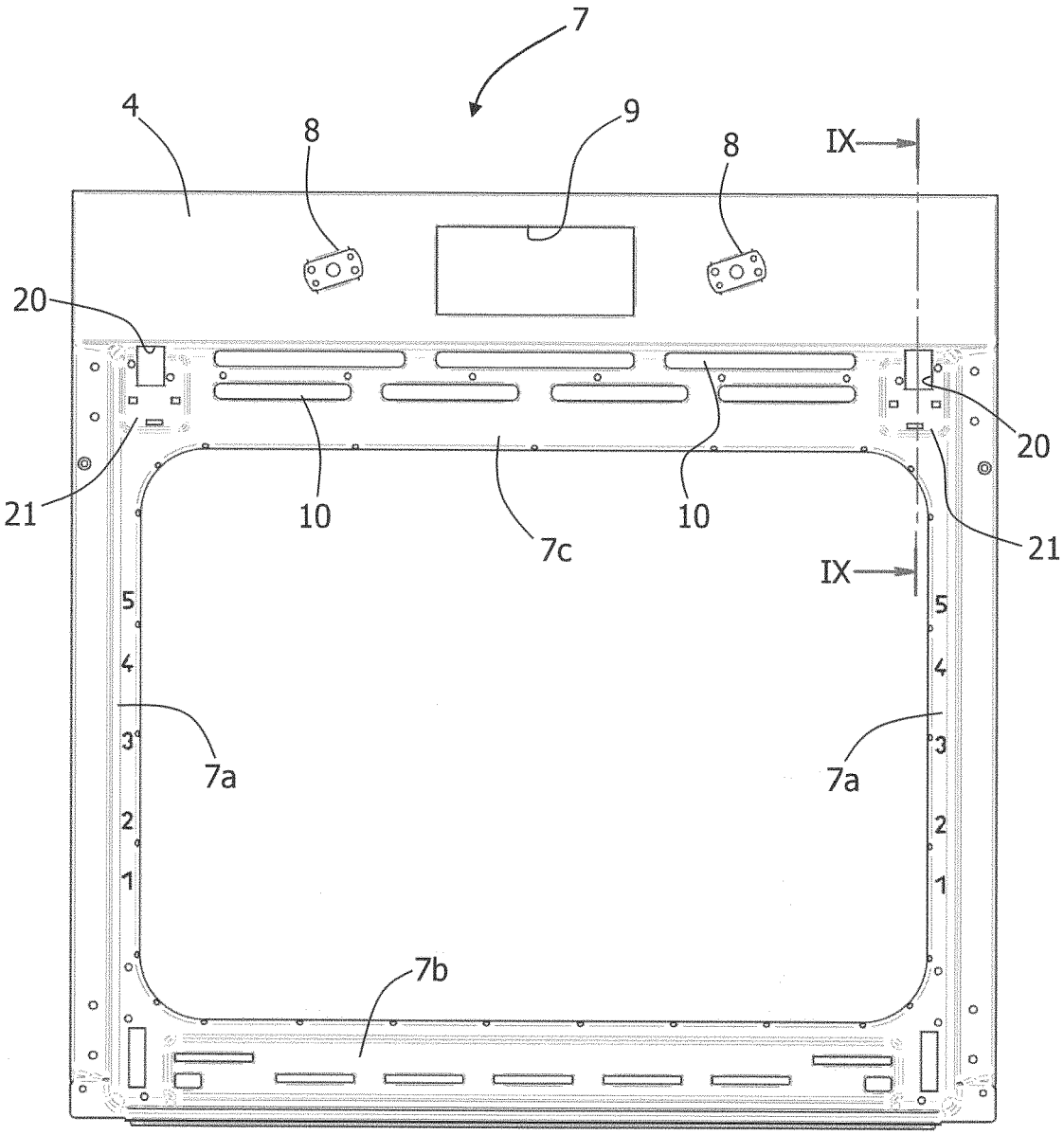
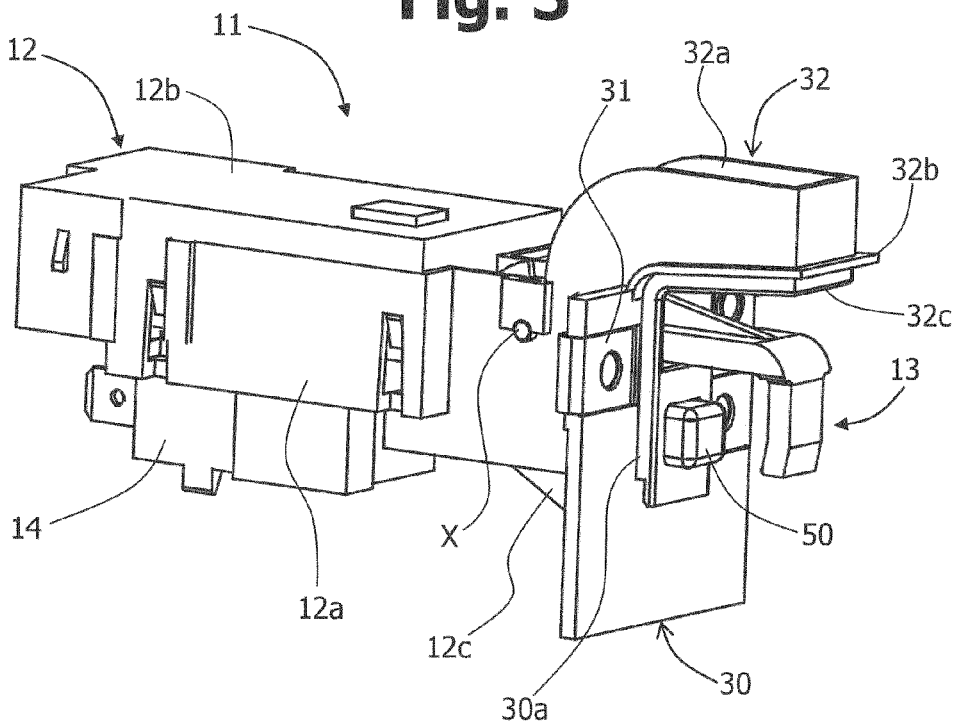


Fig. 3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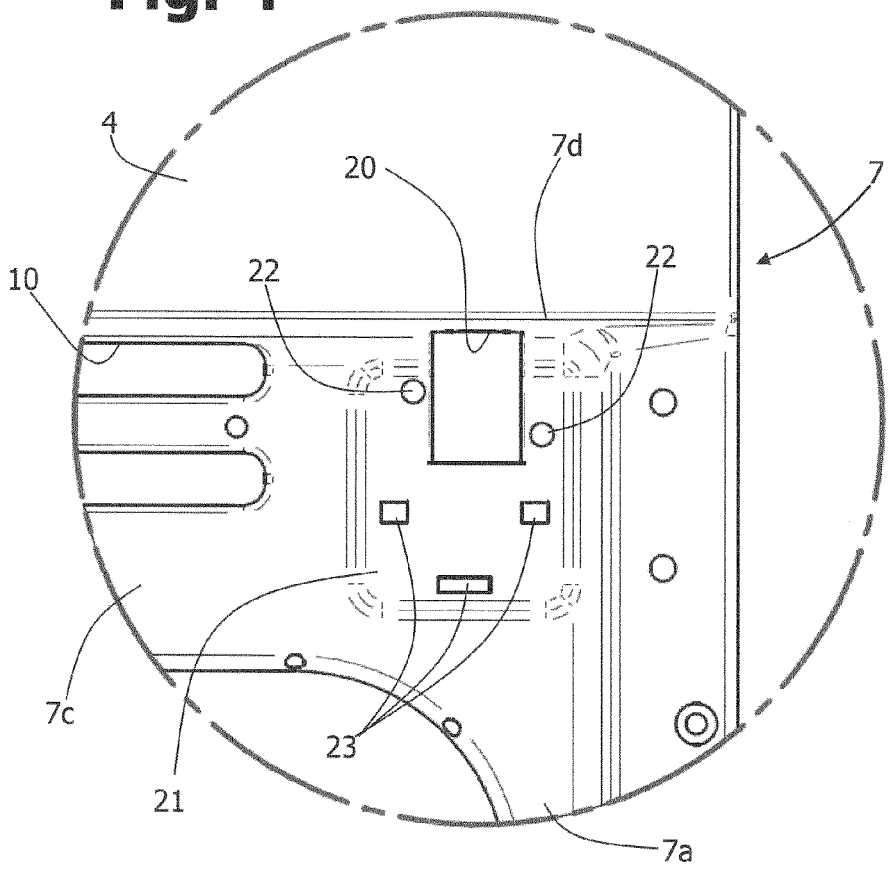
31
32a
32
32b
32c
13
14
X
50
12a
12c
30
30a

Fig. 4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7c
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21
7a

Fig. 5

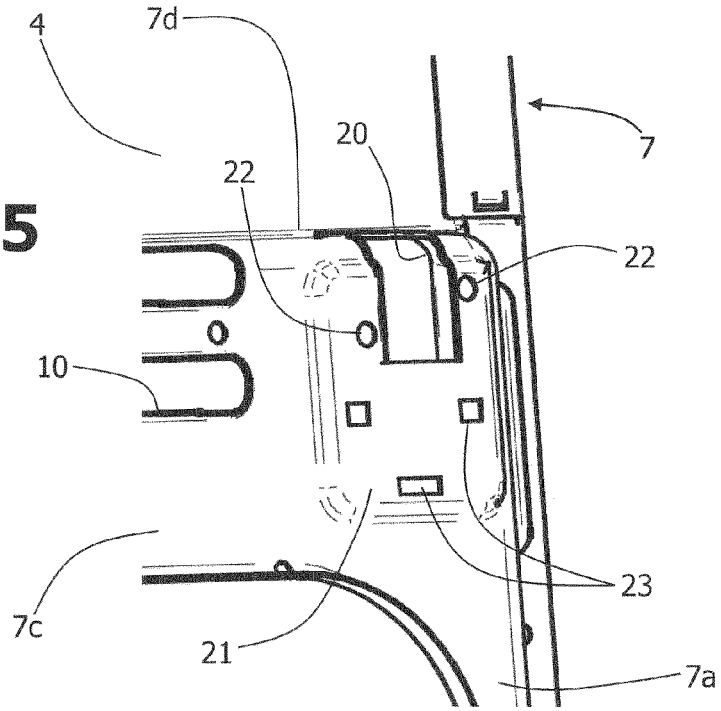


Fig. 6

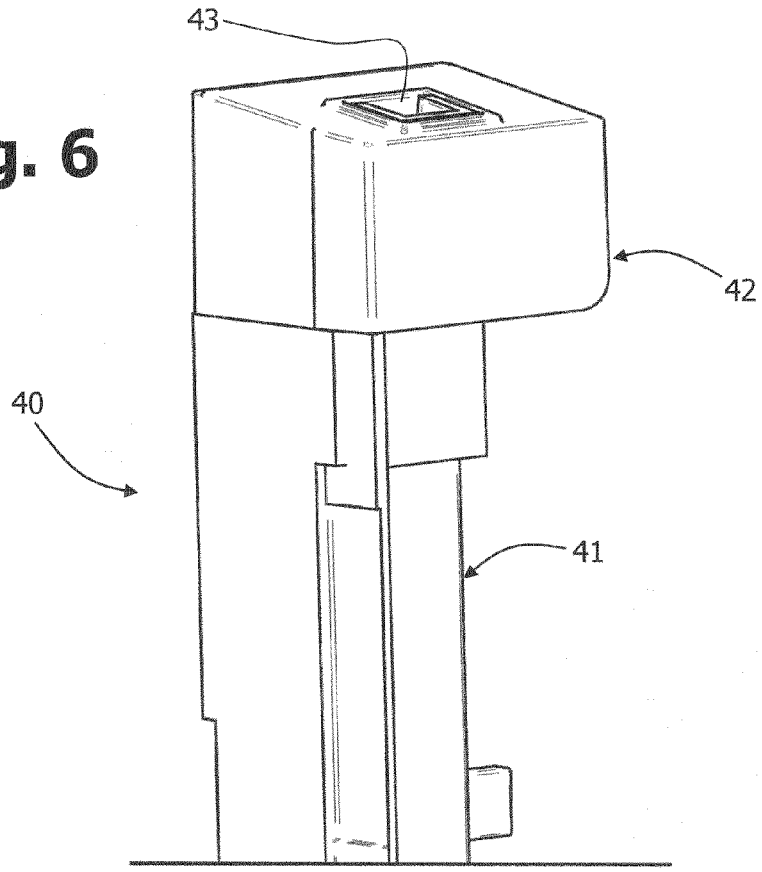
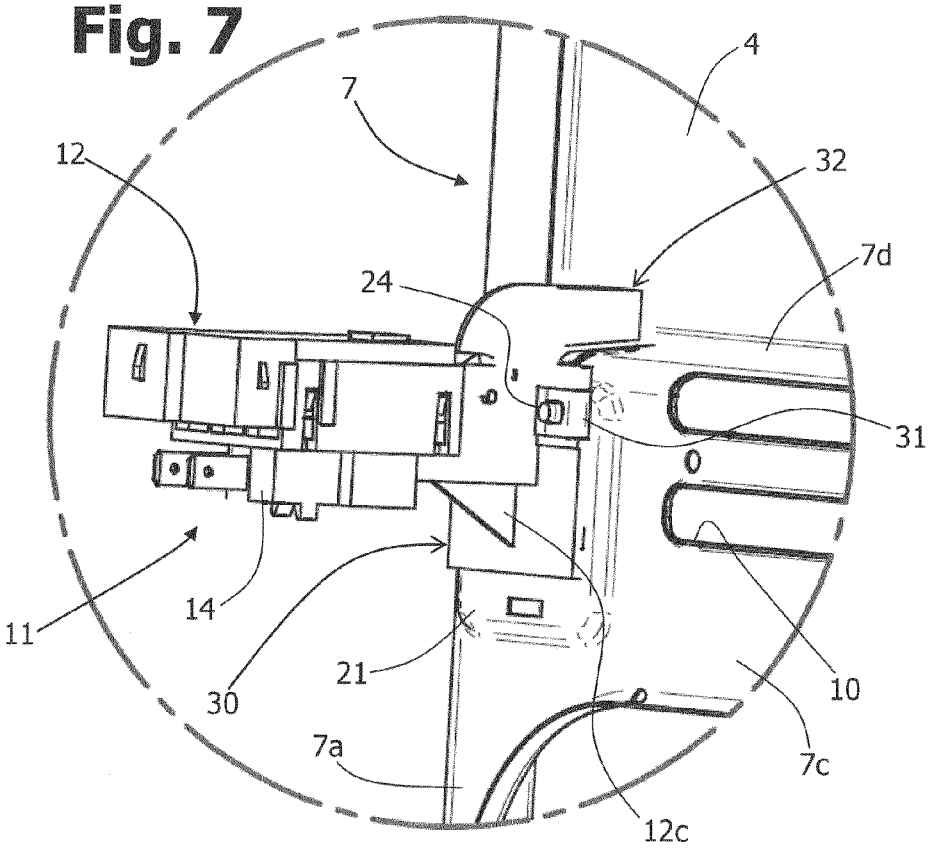


Fig. 7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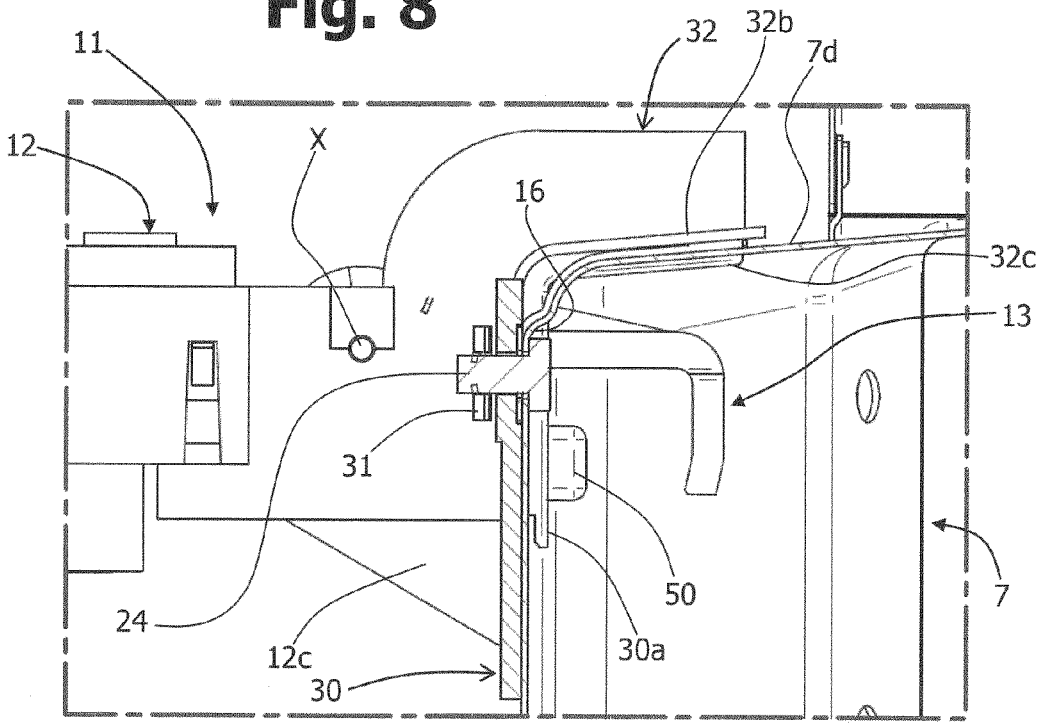
7a
7c
12c

Fig. 8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30a
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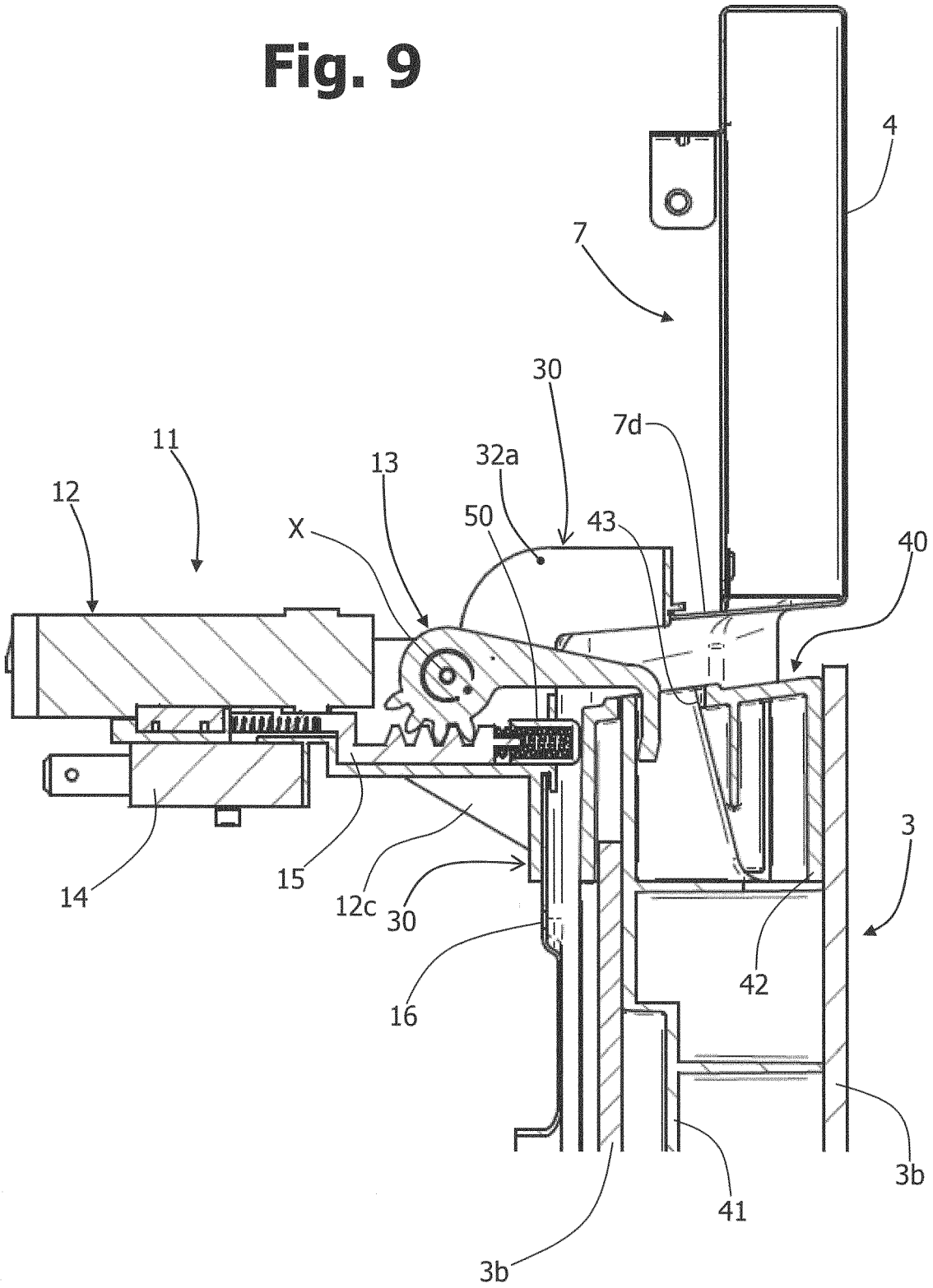
Fig. 9



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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