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(72) Inventors:  
• **Maiero, Marco**  
**33080 Porcia (PN) (IT)**  
• **Bondi, Martino**  
**33080 Porcia (PN) (IT)**

(71) Applicant: **Electrolux Home Products Corporation N.V.**  
**1130 Brussel (BE)**

(74) Representative: **Nardoni, Andrea et al**  
**Electrolux Italia S.p.A.**  
**Corso Lino Zanussi, 30**  
**33080 Porcia (PN) (IT)**

(54) **Household appliance with a door safety device**

(57) The present invention relates to an appliance (1) comprising a casing (2), a receiving space with an aperture (60) for introduction of items and a closing door (6) for the aperture (60). The appliance is provided with a door closing device (8) comprising a blocking element (9) associated to the closing door (6) and a seat (27) associated to the casing (2). The seat (27) is adapted to engage with the blocking element (9) and adapted to re-

tain the blocking element (9) in a blocking position when the closing door (6) closes the aperture (60). The blocking element (9) is displaceable between the blocking position and a releasing position in which it does not engage with the seat (27). A door safety device (15) adapted to prevent the closure of the closing door (6) is provided. The door safety device (15) comprises a retaining device (17) suitable to maintain the blocking element (9) in the releasing position.

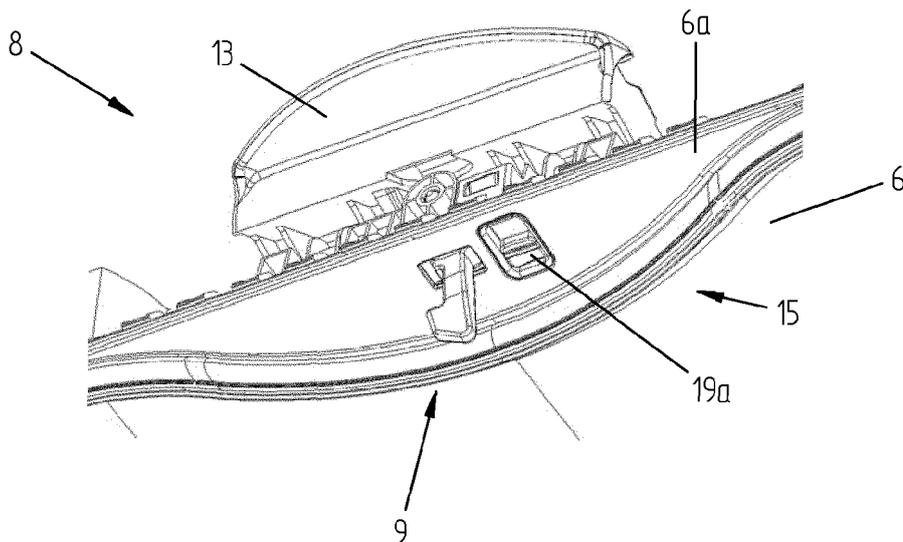


FIG. 6

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**Description****FIELD OF THE INVENTION**

[0001] The present invention concerns the technical field of appliances safety systems, especially household appliances safety systems.

[0002] In particular, the present invention refers to a laundry washing machines, or the like, provided with a door safety device.

**BACKGROUND ART**

[0003] The use of various pieces of equipment, in particular household appliances, like for example laundry washing machines, laundry washing-drying machines, laundry dryers, dishwashers and the like, nowadays is very widespread and indispensable.

[0004] Said appliances are provided with a receiving space wherein items to be treated are introduced through an aperture provided with a closing door.

[0005] The appliances typically rest on the floor and the aperture may be easily accessible to children or pets which may remain trapped inside the receiving space.

[0006] In order to prevent this dangerous situation, appliances are usually provided with a safety system which avoids starting of the appliances if the door is not safety closed. For this reason the appliance is typically provided with a door safety device which is opportunely activated to prevent the closure of the door. Only when the device is deactivated and the door may be safety closed, functioning of the appliance is allowed. A door safety device belonging to the known technique is disclosed in European patent n. EP 610824 B1.

[0007] This document discloses a laundry dryer having an aperture for the introduction of clothes and a suitable front door hingedly attached to the external casing.

[0008] The laundry dryer is provided with a door closing device comprising a hook positioned at the door side which is received in a hole positioned at the casing side.

[0009] The hook is suitable to be maintained in the hole by means of a slidable element associated to the case which is pushed against the hook by a spring.

[0010] The door is also provided with projecting pins which are received in slots disposed in the casing around the aperture. The laundry dryer is switched on only when the door is safety closed and the projecting pins are completely inserted in the slots.

[0011] The laundry dryer comprises a safety device which may be activated by the user to prevent the closure of the door.

[0012] The activation of the door safety device causes the slidable element not to be pushed against the hook. Once the door safety device is activated the hook cannot be maintained in the hole and the door cannot be closed. The activation of the door safety device takes place by rotating in a first direction a rotating element with a screwdriver or a coin. The deactivation of the door safety device

takes place by rotating the rotating element in the opposite direction with the screwdriver, or the coin.

[0013] However, the door safety device above described belonging to the known art poses some drawbacks.

[0014] A first drawback posed by this known technique is constituted by the fact that the activation and the deactivation of the door safety device require the use of a tool, as a screwdriver or a coin. This may be uncomfortable for the user.

[0015] A further drawback is the fact that a malfunctioning of the door safety device is not perceptible to the eye. This may cause a dangerous situation for the user which may believe that the door safety device is activated while it is not.

[0016] A further door safety device belonging to the known technique is disclosed in document Korean patent application n. KR 20100068886 A.

[0017] The document discloses a laundry washing machine having an aperture for the introduction of clothes and a suitable front door hingedly attached to the external casing.

[0018] The door closing device comprises a hook positioned at the door side which is received in a hole positioned at the casing side.

[0019] The hook is suitable to be retained in the hole when the door is closed.

[0020] The door is also provided with a projecting pin which is received in a slot disposed in the casing around the aperture.

[0021] The laundry washing machine comprises a door safety device which may be activated by the user to prevent the closure of the door.

[0022] The door safety device comprises a rotating element provided with a portion which may occlude the slot in the case.

[0023] The activation of the door safety device takes place by rotating the rotating element in a first direction so that it occludes the slot and the projecting pin cannot enter the slot. The deactivation of the door safety device takes place by rotating the rotating element in the opposite direction so that the slot is opened and the projecting pin may enter the slot. The door then may be safety closed.

[0024] However, also this door safety device belonging to the known art poses some drawbacks.

[0025] A first drawback posed by this known technique is that the deactivation of the door safety device may be easily performed also by a child. This may determine a dangerous situation.

[0026] A further drawback, as for the previous technique described above, is the fact that a malfunctioning of the door safety device is not perceptible to the eye. This may cause a dangerous situation for the user which may believe that the door safety device is activated while it is not.

[0027] The main object of the present invention is therefore to overcome said drawbacks.

**[0028]** In particular, it is one object of the present invention to provide a door safety device which is activated in an easier way compared to the known techniques.

**[0029]** It is a further object of the present invention to provide a door safety device with increased safety compared to the known techniques.

**[0030]** It is another object of the invention to provide a door safety device in which a malfunctioning of the same may be easily detected by the user.

## DISCLOSURE OF INVENTION

**[0031]** The applicant has found that by providing an appliance comprising a casing, a receiving space with an aperture for introduction of items and a closing door for the aperture, by providing a door closing device having a blocking element associated to the closing door or to the casing, and a seat associated to the other between the casing or the closing door which is adapted to engage with the blocking element and adapted to maintain it in a blocking position when the closing door closes the aperture, wherein the blocking element is displaceable between the blocking position and a releasing position in which it does not engage with the seat, by providing a door safety device adapted to prevent the closure of the closing door and by configuring the door safety device so as to enable the maintaining of the blocking element in the releasing position, it is possible to obtain that the operations required to activate the door safety device are simplified.

**[0032]** The present invention relates, in a first aspect thereof, to an appliance comprising;

- a casing;
- a receiving space with an aperture for introduction of items;
- a closing door for said aperture;
- a door closing device comprising:
  - a blocking element associated to said closing door or to said casing;
  - a seat associated to the other between said casing or said closing door; said seat being adapted to engage with said blocking element and adapted to maintain said blocking element in a blocking position when said closing door closes said aperture, said blocking element being displaceable between said blocking position and a releasing position in which it does not engage with said seat;
- a door safety device adapted to prevent the closure of said closing door; wherein said door safety device comprises a retaining device suitable to maintain said blocking element in said releasing position.

**[0033]** In a preferred embodiment of the invention, the retaining device comprises a support element and a slid-

ing retaining element slidable mounted to the support element between a passive position and an active position, wherein the passive position is a position in which the sliding retaining element does not interact with the blocking element and wherein the active position is a position in which the sliding retaining element maintains the blocking element in the releasing position.

**[0034]** Opportunely the retaining device comprises an elastic device pushing the retaining element towards the passive position.

**[0035]** Advantageously the retaining device comprises an actuating portion accessible to the user to move the sliding retaining element from the passive position towards the active position.

**[0036]** Preferably the sliding retaining element comprises a lug suitable to abut against a portion of the blocking element in the blocking position.

**[0037]** In a preferred embodiment of the invention, the blocking element is a hook member pivotable about a rotation axis and displaceable between the blocking position and the releasing position.

**[0038]** Opportunely the appliance comprises elastic element pushing the blocking element towards the blocking position.

**[0039]** Advantageously the appliance comprises a handle accessible to the user for moving the blocking element between the blocking position and the releasing position.

**[0040]** Preferably, movement of the blocking element between the blocking position and the releasing position is obtained through the contact between a cam portion of the handle and a contacting surface of the blocking element.

**[0041]** In a preferred embodiment of the invention, the blocking element is associated to the closing door and the seat is associated to the casing.

**[0042]** Advantageously the appliance comprises a door blocking device suitable to firmly maintain the blocking element in the blocking position into the seat.

**[0043]** The household appliance of the invention preferably belongs to the group comprising: laundry washing machines, laundry washing-drying machines, clothes dryers and dishwashers.

**[0044]** In a further aspect thereof, the present invention concerns a method for preventing the closure of a closing door of an appliance of the type comprising;

- a casing;
- a receiving space with an aperture for introduction of items, said closing door being associated to said aperture;
- a door closing device comprising:
  - a blocking element associated to said closing door or to said casing;
  - a seat associated to the other between said casing or said closing door; said seat being adapted to engage with said

blocking element and adapted to retain said blocking element in a blocking position when said closing door closes said aperture, said blocking element being displaceable between said blocking position and a releasing position in which it does not engage with said seat; wherein said method comprises the step of displacing said blocking element in said releasing position and the step of maintaining it in said releasing position.

## BRIEF DESCRIPTION OF THE DRAWINGS

[0045] Further characteristics and advantages of the present invention will be highlighted in greater detail in the following detailed description of a preferred embodiment provided with reference to the enclosed drawings. In the drawings, corresponding characteristics and/or components are identified by the same reference numbers. In particular:

- Figure 1 shows a laundry washing machine according to the invention in a first configuration with the door closed;
- Figure 2 shows the laundry washing machine of Figure 1 in a second configuration with the door opened;
- Figure 3 shows a front sectional view of the door closing device of the laundry washing machine of Figure 1 in the closed position;
- Figure 4 shows a front sectional view of the door closing device of the laundry washing machine of Figure 1 in the opened position;
- Figure 5 shows an isometric view of the door closing device and of the door safety device of the invention in a first operative condition;
- Figure 6 shows the door closing device and the door safety device of the Figure 5 in a second operative condition;
- Figure 7 shows an isometric view of the door closing device and of the door safety device of Figure 5;
- Figure 8 is a rear view of Figure 7;
- Figure 9 shows an exploded view of the door closing device and of the door safety device of the invention;
- Figure 10 is a rear view of Figure 9;
- Figure 11 shows a detail of the door safety device of the invention in its deactivated condition;
- Figure 12 shows a detail of the door safety device of the invention in its activated condition.

## DETAILED DESCRIPTION OF THE INVENTION

[0046] An appliance carried out according to a first preferred embodiment of the invention is described here below with reference to Figures from 1 to 12.

[0047] In this embodiment the appliance is advantageously a laundry washing machine 1, in particular a top-loading laundry washing machine.

[0048] It should in any case be underlined that the

present invention is not limited to this type of application. On the contrary, the present invention can be usefully applied substantially to all the appliances, in particular household appliances, which are intended to receive items to be treated, as for example clothes to be washed, clothes to be dried, dishes to be washed, etc.. Therefore, for example, it is possible to use the device of the invention also in front-loading laundry washing machines, in laundry washing-drying machines, in laundry dryers, in dishwashers, etc.

[0049] The top-loading laundry washing machine 1, hereinafter referred to as laundry washing machine 1, comprises an external casing or casing 2, in which a washing tub 3 is provided that contains a rotatable perforated drum 4.

[0050] The drum 4 preferably has a substantially cylindrical shape with a receiving space where the laundry to be washed can be loaded.

[0051] The upper side of the drum 4 and the upper side of the tub 3 comprise respective apertures 4a, 3a from which the laundry is loaded/unloaded. A door, preferably a sliding door 26 or a door hinged to the lateral wall of the drum 4, closes the aperture 4a of the drum 4.

[0052] A main aperture 60 of the casing 2 is substantially aligned with aperture 3a. A closing door 6 associated to the main aperture 60 is hingedly connected to the casing 2.

[0053] The laundry washing machine 1 advantageously comprises a control unit, not illustrated, which ensures the operations of the laundry washing machine 1. The control unit is advantageously connected also to an interface unit 70 which is accessible to the user and by means of which the user may select and set the washing parameters from time to time, in particular the desired washing program. Advantageously, other parameters can optionally be inserted by the user, for example the washing temperature, the spinning speed, the load in terms of weight of the laundry to be washed, the type of fabric of the load, etc..

[0054] The interface unit 70 preferably comprises a display 71 where information are displayed, as for example the time remaining, the washing temperature, alarms, etc.. The closing door 6 is displaceable between a closed position (in which it closes the main aperture 60), as shown in Figure 1 and an opened position (in which main aperture 60 is open, i.e. accessible for loading/unloading the machine), as shown in Figure 2. Preferably, but not necessarily, a sealing element 7, as for example a flexible rubber tube, guarantees adherence and perfect sealing between the closing door 6 and the casing 2 when the closing door 6 is in the closed position.

[0055] The laundry washing machine 1 advantageously comprises a door closing device 8 associated to the closing door 6.

[0056] The door closing device 8 preferably comprises a hook member 9 placed at the front side 6a of the closing door 6. The hook member 9 is intended to be inserted in an opening 27 provided in an upper wall 2a (called also

frame or hopper) of the casing 2 around the main aperture 60.

**[0057]** The hook member 9 preferably comprises a shank 10 rotatable about a pivot axis 11. The free end of hook member 9 comprises an enlarged head 12 provided with an abutting surface 12a.

**[0058]** When the closing door 6 is in the closed position and safety locked to the casing 2, the control unit may start, or continue, the washing program. The closed position of the door 6 may be preferably detected and communicated to the control unit by means of a switch, not illustrated herein, operatively connected to the control unit and able to change condition or state when the closing door 6 is safety locked.

**[0059]** In further embodiments the locked condition of the closing door 6 may be detected in different ways, as for example by means of an optical sensor.

**[0060]** Preferably, if the closing door 6 is not in the closed position, the control unit does not permit the washing program to be started or continued. Preferably a "open door" alarm is also displayed at the display 71 of the interface unit 70, and/or an alarm sound is played (e.g. by a suitable speaker or buzzer operatively connected to the control unit) for informing the user that the door is open.

**[0061]** The hook member 9 is displaceable between a first position, or blocking position as shown in Figure 3, and a second position, or releasing position, as shown in Figure 4.

**[0062]** In particular when the hook member 9 is introduced into the opening 27 in its blocking position, the abutting surface 12a of the hook member 9 abuts against the lateral wall of opening 27 (or against a suitable retaining element, for example a pin, not illustrated, provided inside the opening 27) maintaining therefore the door 6 safety closed to the casing 2. This condition may be indicated as a condition wherein the hook member 9 engages with the opening 27.

**[0063]** On the contrary, when the hook member 9 is introduced into the opening 27 in its releasing position, the abutting surface 12a of the hook member 9 does not abut against the lateral wall of opening 27 (or retaining element, if provided) and the door 6 may be moved, for example may be opened. This condition may be indicated as a condition wherein the hook member 9 does not engage with the opening 27.

**[0064]** The hook member 9 is advantageously pushed and maintained towards its blocking position by means of elastic device, as for example a main spring element 24. The main spring 24 preferably comprises a helical portion 24a surrounding the pivot axis 11 of the hook member 9. A first end 24b of the helical portion 24a contacts and pushes the hook member 9 towards the blocking position.

**[0065]** In order to displace the hook member 9 from the blocking position to the releasing position, a handle 13 operable by the user is provided above the hook member 9. The handle 13 may rotate with respect the front

side 6a of the closing door 6 about two rotating pins 62, 63. By rotating the handle 13, the hook member 9 is moved between its blocking position, as shown in Figure 5, to the releasing position, as shown in Figure 6. Transmission of the movement of the handle 13 to the hook member 9 is obtained by means of a cam portion 13b of the handle 13 which pushes a contacting surface 66 of the hook member 9.

**[0066]** In further embodiments, transmission of the movement of the handle to the hook member may be achieved in a different way, as for example by interposition of a separate interconnecting element.

**[0067]** The handle 13 is advantageously pushed and maintained towards its resting position, i.e. the position of Figure 5. This is advantageously achieved by means of elastic device.

**[0068]** In the preferred embodiment here described this is obtained by means of a shaped portion 24c of the main spring 24. The distal end 24d of the shaped portion 24c is connected to the handle 13 by insertion into a receiving hole 65 of a connecting portion 13a of the handle 13 itself, as shown in Figure 8.

**[0069]** The main spring 24 therefore has both the function of maintaining the hook member 9 towards its first blocking position and of maintaining the handle 13 towards its resting position.

**[0070]** The laundry washing machine 1 preferably comprises a door blocking device 28, preferably electro-mechanical, operatively connected to the control unit of the machine and indicated with a dashed line in Figures 3 and 4, which maintains firmly the hook member 9 in its blocking position into the opening 27. The door blocking device 28 is preferably arranged in the casing 2 in correspondence of the opening 27. When the hook member 9 is inserted into the opening 27, the door blocking device 28 keeps the hook member firmly inside the opening 27 avoiding the aperture of the closing door 6. The door blocking device 28 is active when the laundry washing machine 1 is working, in particular when the drum 4 rotates. This enhances safety during functioning of the laundry washing machine 1. Aperture of the closing door 6 with deactivation of the door blocking device 28 is advantageously performed only when safety conditions are guaranteed, for example when the drum 4 is still.

**[0071]** According to the invention the laundry washing machine 1 preferably comprises a door safety device 15.

**[0072]** The door safety device 15 is opportunely activated to prevent the closure of the door 6. The door safety device 15 of the present invention is based on the idea of preventing the closure of the door 6 by positioning and maintaining the hook member 9 in its releasing position, i.e. the position shown in Figures 4 and 6.

**[0073]** The door safety device 15 preferably comprises a protruding portion 16 of the hook member 9 and a retaining device 17 cooperating with the protruding portion 16, as better shown in Figure 12.

**[0074]** The retaining device 17 preferably comprises a support element 18 wherein a sliding retaining element

19 is mounted. The sliding retaining element 19 is mounted so as to be movable with respect to the support element 18 between a first position, or passive position as shown in Figure 11, and a second position, or active position as shown in Figure 12.

**[0075]** An elastic element, for example a helical spring 20, is preferably interposed between the retaining element 19 and the support 18. The elastic element (e.g. helical spring 20) tends to push the retaining element 19 towards its passive position.

**[0076]** In the passive position the sliding retaining element 19 does not interact with the protruding portion 16 of the hook member 9. The door closing device 8 and the hook member 9 therefore may work normally as described above.

**[0077]** The sliding retaining element 19 preferably comprises an actuating portion 19a projecting from a slot 31 of the support 18 and accessible to the user preferably at the front side 6a of the closing door 6, as shown in Figures 5 and 6. The actuating portion 19a may be operated by the user to move the sliding retaining element 19 from its passive position (e.g. Fig. 11) towards its active position (e.g. Fig. 12).

**[0078]** Returning of the retaining element 19 to the passive position is guaranteed by the action of the elastic element (e.g. helical spring 20).

**[0079]** The retaining element 19 advantageously comprises a retaining lug 21. The retaining lug 21 may abut against an abutting surface 16a of the protruding portion 16 of the hook member 9, as shown in Figure 12. In this configuration (Fig. 12) the sliding retaining element 19 is maintained in its active position and the hook member 9, in turn, is maintained in its releasing position, i.e. the position shown in Figure 4.

**[0080]** In order to reach this configuration the user first rotates the hook member 9 in a first direction W1 about its axis 11 in order to displace the hook member 9 in an over travel position with respect to its releasing position. Rotation of the hook member 9 is advantageously obtained by means of the handle 13. Then, while the hook member 9 is kept in this over travel position, user operates the actuating portion 19a in order to move the sliding retaining element 19 in its active position along a first direction D1 (in doing so user compresses the elastic element). Then, while keeping the sliding retaining element 19 in its active position, user releases hook member 9 from the over travel position so that the abutting surface 16a of its protruding portion 16 abuts against the retaining lug 21. The action of the main spring 24 pushes the protruding portion 16 towards the retaining element 19 so that the hook member 9 and the retaining element 19 are firmly engaged one to the other in the releasing position.

**[0081]** Therefore, the releasing position of the hook member 9 is maintained and the closing door 6 may not be closed in the locked closed position.

**[0082]** With the term "over travel position" of the hook member 9 it is intended a position of the hook member 9 that is at a distance from the blocking position which is

greater than the distance between the blocking position and the releasing position. More particularly with the term "over travel position" it is intended a position of the hook member 9 which is obtained by rotating (with reference to Figure 12 in direction W1) the hook member 9 about its axis 11 of a rotation angle which is greater than the rotation angle between the blocking position and the releasing position.

**[0083]** Advantageously the door safety device 15 of the present invention may be easily activated by the user.

**[0084]** In order to re-establish the normal working operation of the hook member 9, the door safety device 15 is deactivated.

**[0085]** This may be obtained by rotating the hook member 9 in the first direction W1 about its axis 11 in an over travel position until the abutting surface 16a of the protruding portion 16 and the retaining lug 21 disengage. From this configuration the retaining element 19 automatically returns to its passive position by means of the action of the elastic element (e.g. helical spring 20) along a second direction D2 and the hook member 9 automatically returns to its rest, or blocking, position by means of the force of the main spring 24.

**[0086]** Deactivation of door safety device 15 is therefore performed by pushing the hook member 9 in the over travel position.

**[0087]** Rotation of the hook member 9 in the over travel position may be obtained either by pushing the hook member 9 directly or by rotating the handle 13 to a respective over travel position.

**[0088]** The deactivation of the door safety device 15 takes place, therefore, by moving the hook member 9, or the handle 13, with a movement which is in a direction away from the direction towards the blocking position.

**[0089]** Furthermore, it has to be noted that when the door safety device is activated, as shown in Figures 6 or 12, any manipulation of the actuating portion 19a does not cause the deactivation of the door safety device 15. In fact, movement of the retaining element 19 in the first direction D1, as shown in Figure 12, does not permit the protruding portion 16 and the retaining lug 21 to disengage being the protruding portion 16 pushed towards the retaining element 19 by the action of the main spring 24. Further, movement of the retaining element 19 in the opposite second direction D2 is impeded by the contact between the abutting surface 16a of protruding portion 16 and the retaining lug 21.

**[0090]** The deactivation of the door safety device 15 of the present invention, therefore, is not carried out acting on the actuating portion 19a. Deactivation of the door safety device 15 advantageously involves movement of the hook member 9 itself, opposite to the known techniques which require the activation of a further element, either manually or with a tool.

**[0091]** Furthermore, detection of the activation of the door safety device 15, i.e. the condition in which the hook member 9 is maintained in the releasing position, is easily detected by the user. In fact, in its releasing position the

hook member 9 obliquely protrudes from the closing door 6 to the outside.

**[0092]** For this reason malfunctioning of the door safety device 15 is straight detected by the user who may see that the position of the hook member 9 is not the same as in the releasing position.

**[0093]** It has thus been shown that the present invention allows all the set objects to be achieved. In particular, it makes it possible to obtain a door safety device which is activated in an easier way compared to the known technique.

**[0094]** Clearly, changes may be made to the door closing device or to the door safety device as described herein without, however, departing from the scope of the present invention. For example, the door closing device may comprise a hook member placed at the casing side which is intended to be inserted in an opening placed at the door side.

**[0095]** In a further embodiment, not illustrated, the door closing device and the door safety device may cooperate so that the door safety device is automatically activated by moving the blocking element in the over travel position, without intervention of the user on other further element. Deactivation of the blocking element may be advantageously performed by pushing again the blocking element in the over travel position.

**[0096]** While the laundry washing machine and the door safety device has been described with reference to a laundry washing machine, it should be noted that the present invention is not limited to the specific embodiment illustrated and described herein; on the contrary, further variants of the embodiments described herein fall within the scope of the present invention, which is defined in the claims.

## Claims

### 1. An appliance (1) comprising;

- a casing (2);
- a receiving space with an aperture (60) for introduction of items;
- a closing door (6) for said aperture (60);
- a door closing device (8) comprising;

- a blocking element (9) associated to said closing door (6) or to said casing (2);
- a seat (27) associated to the other between said casing (2) or said closing door (6);
- said seat (27) being adapted to engage with said blocking element (9) and adapted to retain said blocking element (9) in a blocking position when said closing door (6) closes said aperture (60), said blocking element (9) being displaceable between said blocking position and a releasing position in which it does not engage with said seat (27);

- a door safety device (15) adapted to prevent the closure of said closing door (6); **characterized in that**

said door safety device (15) comprises a retaining device (17) suitable to maintain said blocking element (9) in said releasing position.

2. Appliance (1) according to claim 1, **characterized in that** said retaining device (17) comprises a support element (18) and a sliding retaining element (19) slidably mounted to said support element (18) between a passive position and an active position, wherein said passive position is a position in which said sliding retaining element (19) does not interact with said blocking element (9) and wherein said active position is a position in which said sliding retaining element (19) maintains said blocking element (9) in said releasing position.
3. Appliance (1) according to claim 2, **characterized in that** said retaining device (17) comprises an elastic element (20) pushing said retaining element (19) towards said passive position.
4. Appliance (1) according to claim 2 or 3, **characterized in that** said retaining device (17) comprises an actuating portion (19a) accessible to the user to move said sliding retaining element (19) from said passive position towards said active position.
5. Appliance (1) according to any of the preceding claims, **characterized in that it** comprises an elastic device (24) pushing said blocking element (9) towards said blocking position.
6. Appliance (1) according to any of the claims from 2 to 6, **characterized in that** said sliding retaining element (19) comprises a lug (21) suitable to abut against a portion (16) of said blocking element (9) in said blocking position.
7. Appliance (1) according to any of the preceding claims, **characterized in that** said blocking element is a hook member (9) pivotable about a rotation axis (11) and displaceable between said blocking position and said releasing position.
8. Appliance (1) according to any of the preceding claims, **characterized in that** it comprises a handle (13) accessible to the user for moving said blocking element (9) between said blocking position and said releasing position.
9. Appliance (1) according to claim 8, **characterized in that** movement of said blocking element (9) between said blocking position and said releasing position is obtained through the contact between a cam portion (13b) of said handle (13) and a contacting

surface (66) of said blocking element (9).

10. Appliance (1) according to any of the preceding claims, **characterized in that** said blocking element (9) is associated to said closing door (6) and said seat (27) is associated to said casing (2). 5

11. Appliance (1) according to any of the preceding claims, **characterized in that** it comprises a door blocking device (28) suitable to firmly maintain the blocking element (9) in said blocking position into said seat (27). 10

12. Appliance (1) according to any of the preceding claims, **characterized in that** of being an household appliance which belongs to the group comprising: laundry washing machines (1), laundry washing-drying machines, clothes dryers and dishwashers. 15

13. Method for preventing the closure of a closing door (6) of an appliance (1) of the type comprising; 20

- a casing (2);
- a receiving space with an aperture (60) for introduction of items, said closing door (6) being associated to said aperture (60); 25
- a door closing device (15) comprising:

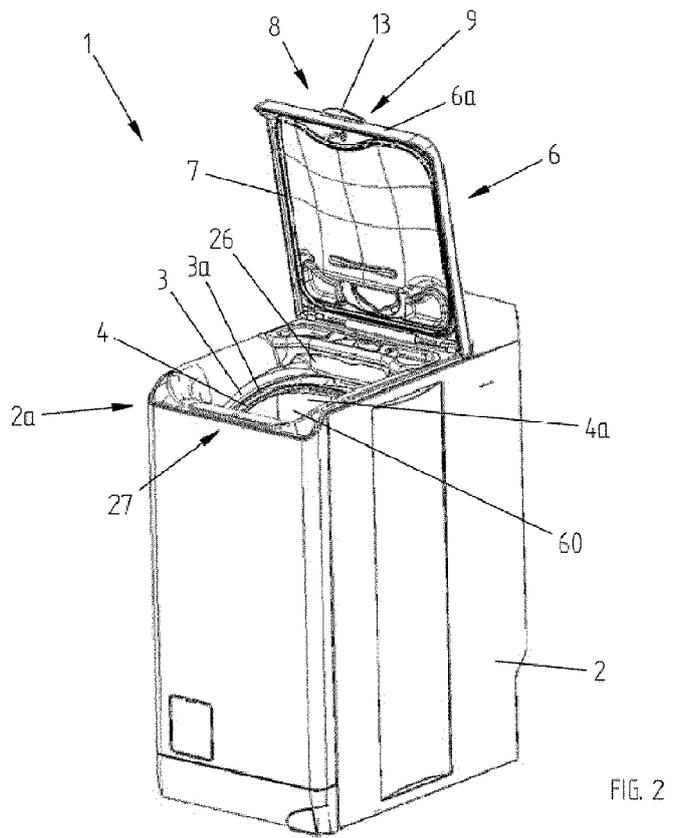
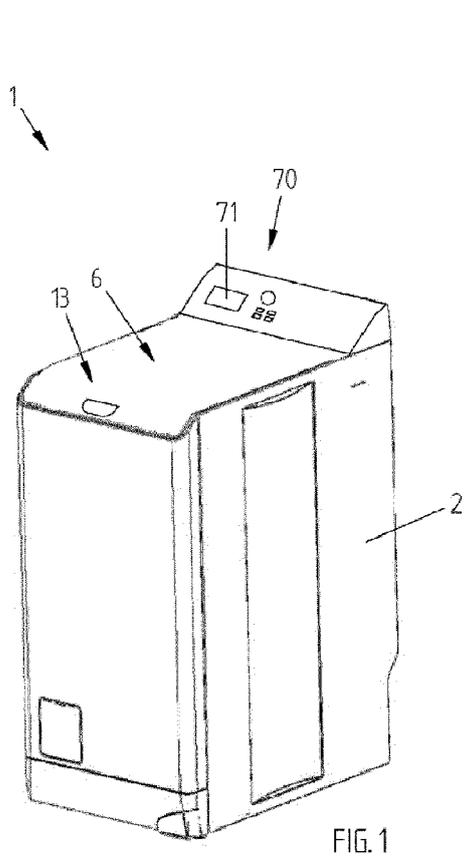
- a blocking element (9) associated to said closing door (6) or to said casing (2); 30

- a seat (27) associated to the other between said casing (2) or said closing door (6); said seat (27) being adapted to engage with said blocking element (9) and adapted to retain said blocking element (9) in a blocking position when said closing door (6) closes said aperture (60), said blocking element (9) being displaceable between said blocking position and a releasing position in which it does not engage with said seat (27); 35 40

**characterized in that** said method comprises the step of displacing said blocking element (9) in said releasing position and the step of maintaining it in said releasing position. 45

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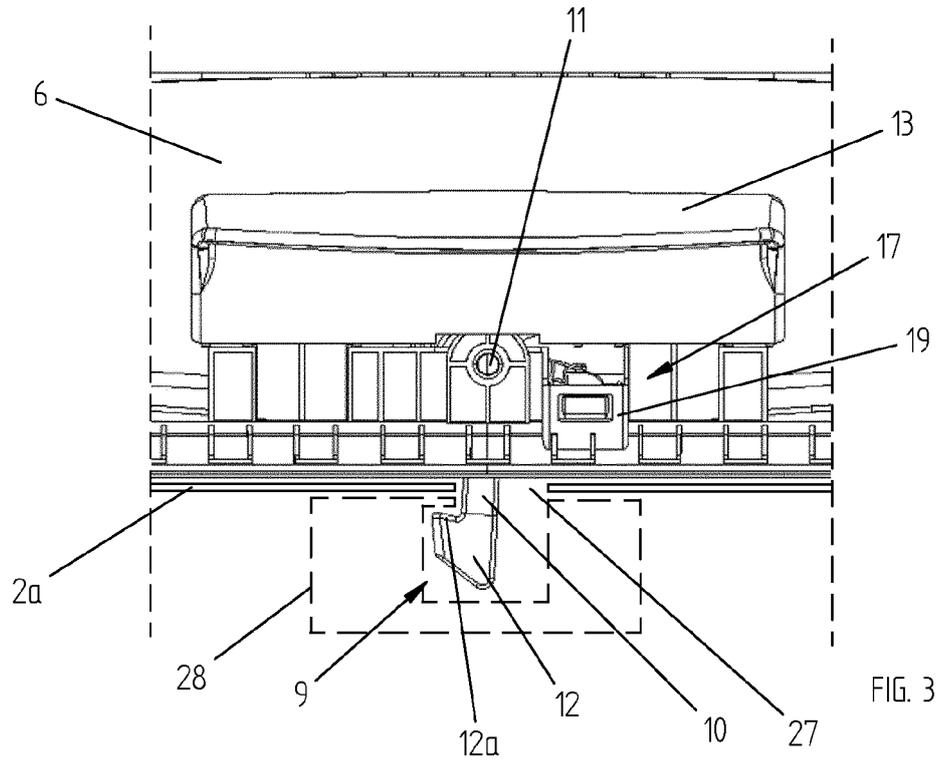


FIG. 3

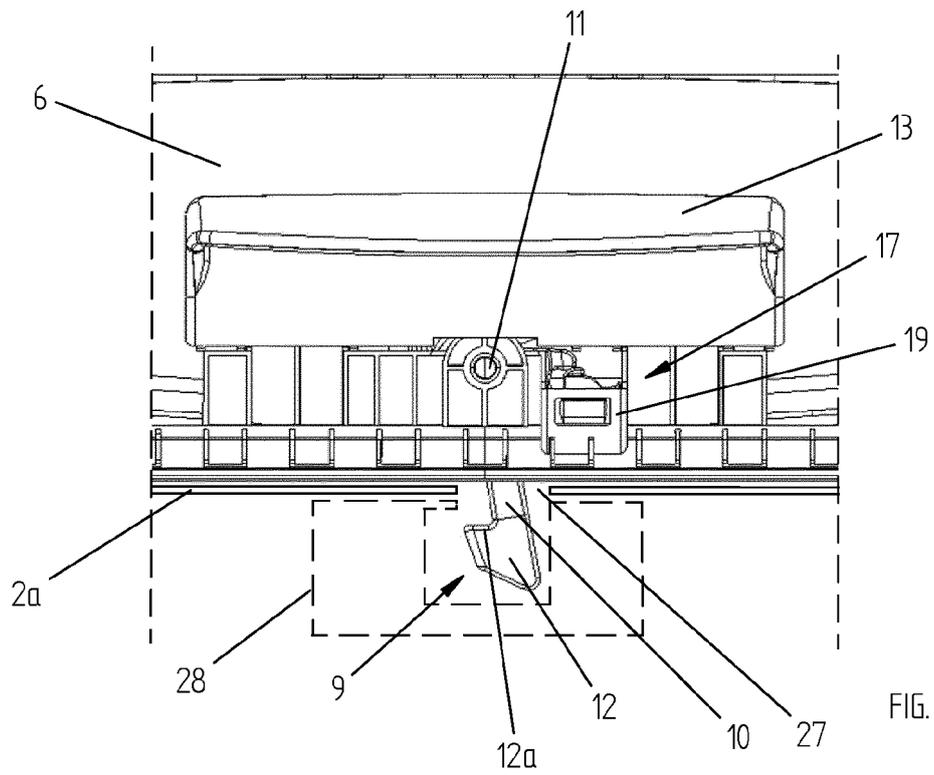


FIG. 4

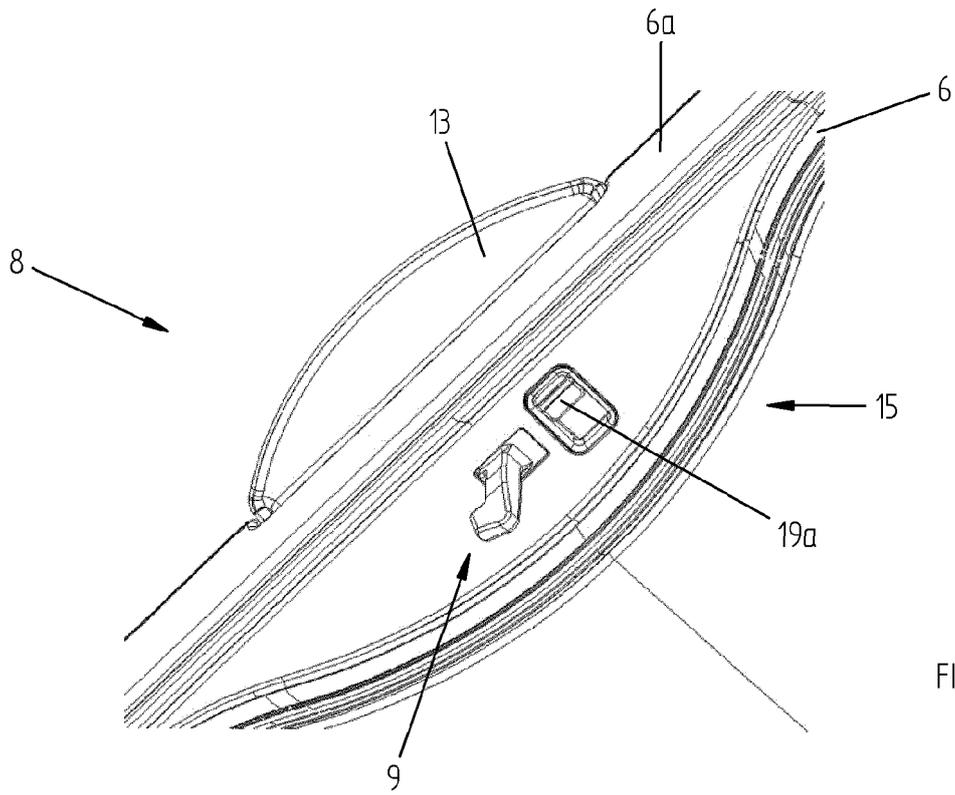


FIG. 5

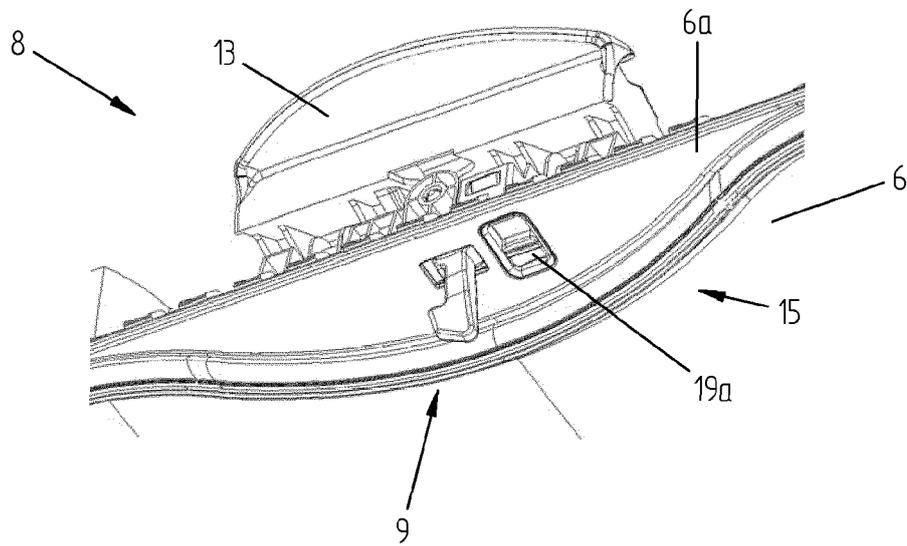


FIG. 6

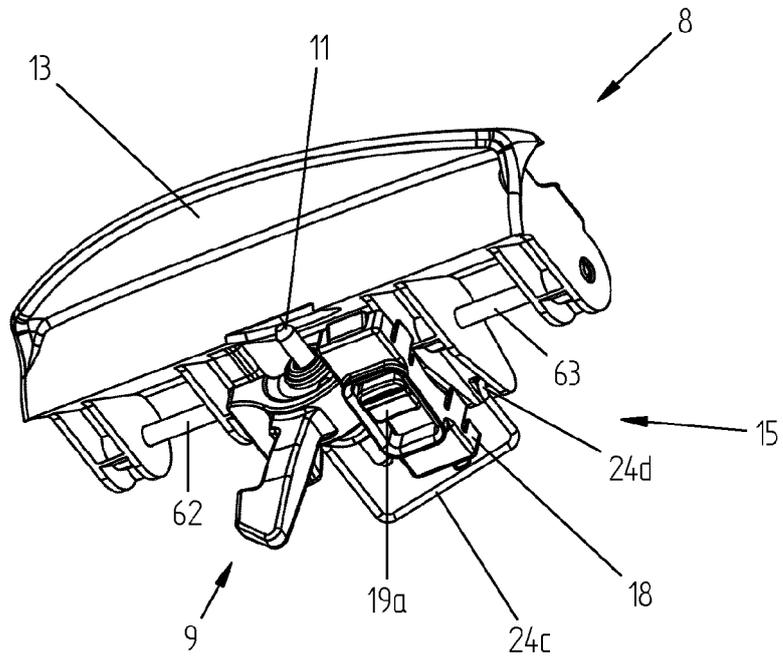


FIG. 7

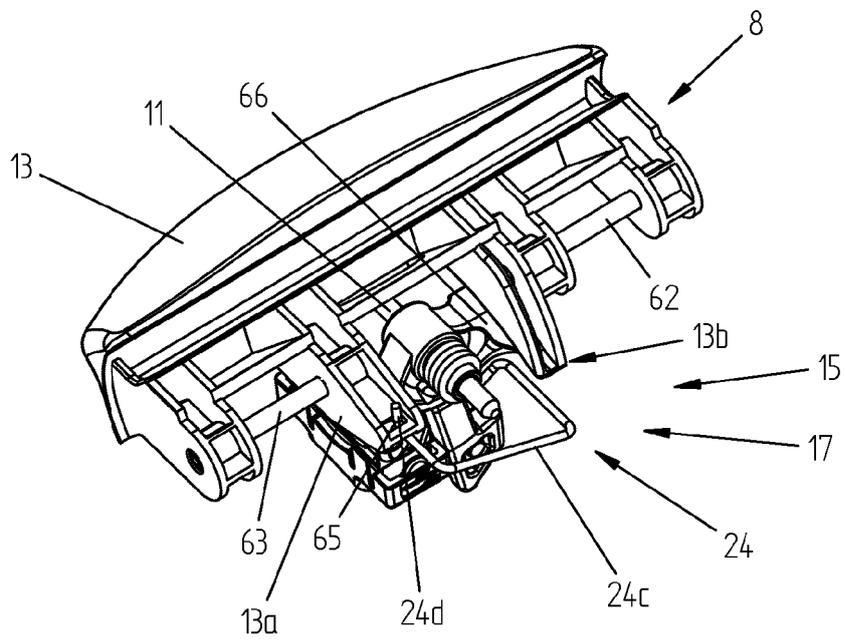


FIG. 8

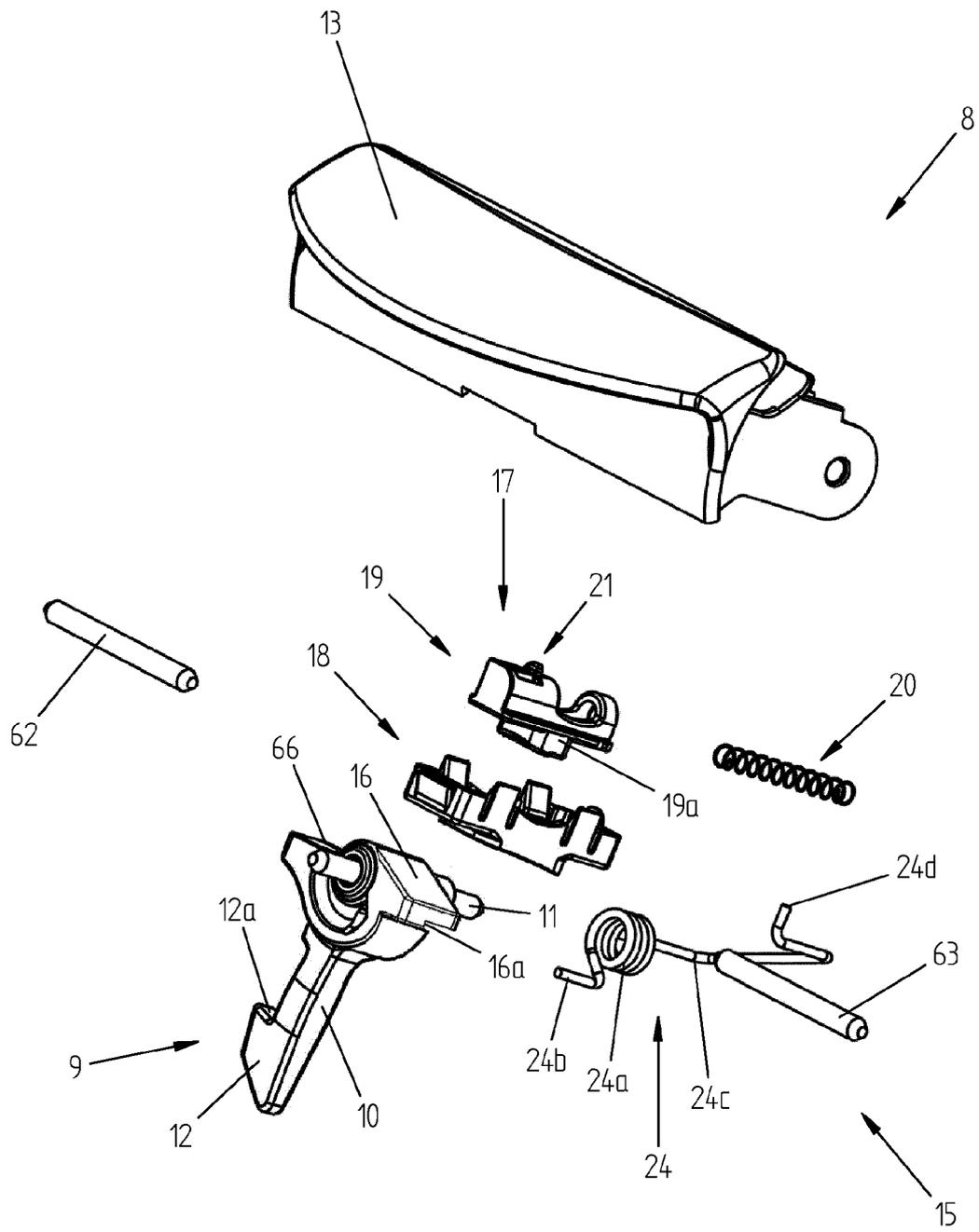


FIG. 9

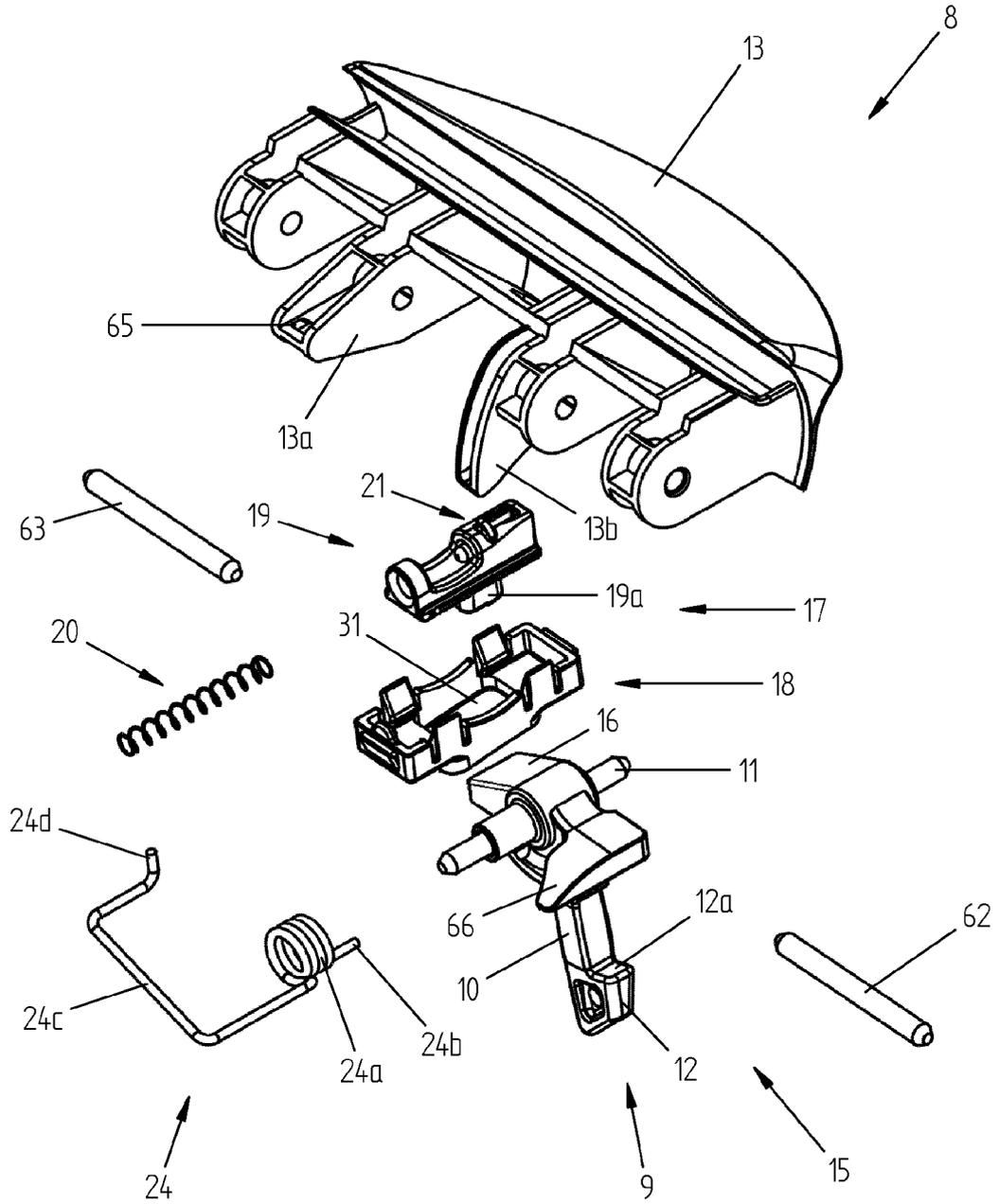


FIG. 10

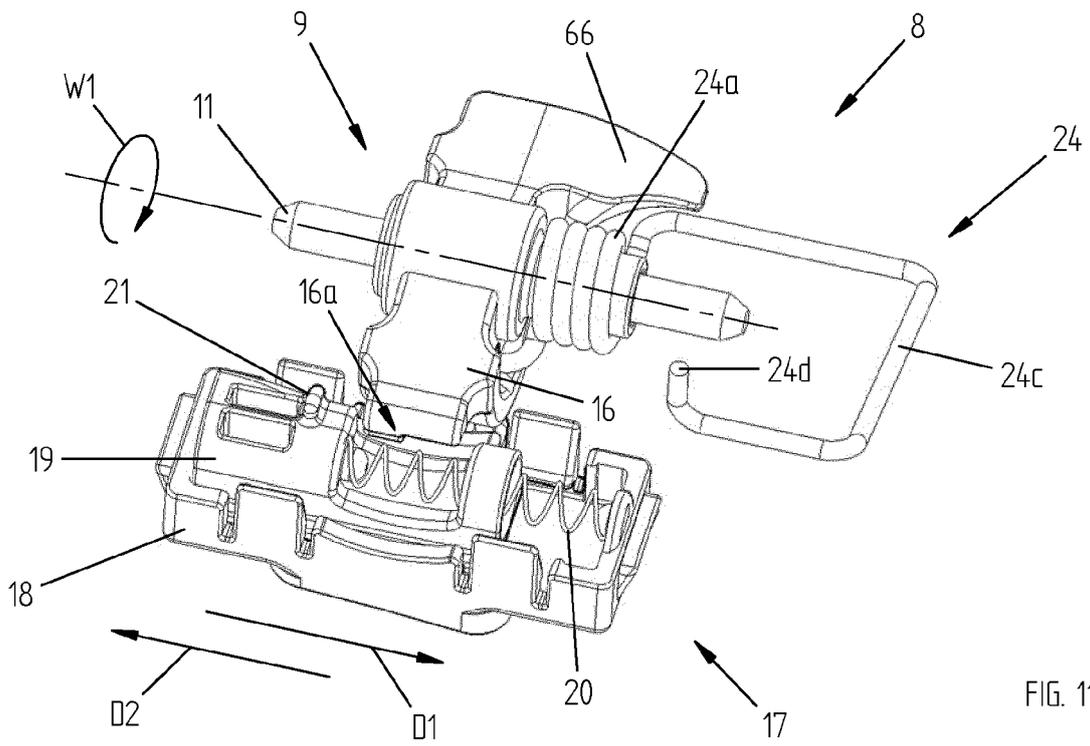


FIG. 11

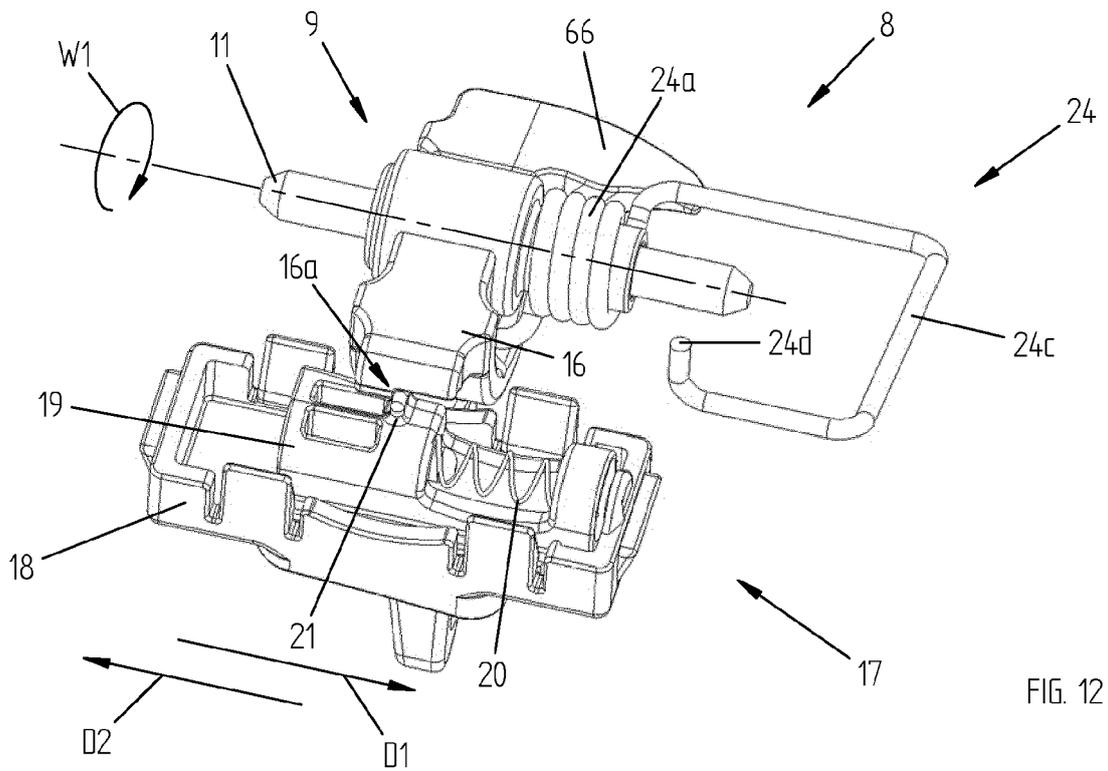


FIG. 12



EUROPEAN SEARCH REPORT

Application Number  
EP 11 19 1499

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			D06F A47L
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 27 April 2012	Examiner Richmond, Sarah
CATEGORY OF CITED DOCUMENTS		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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