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

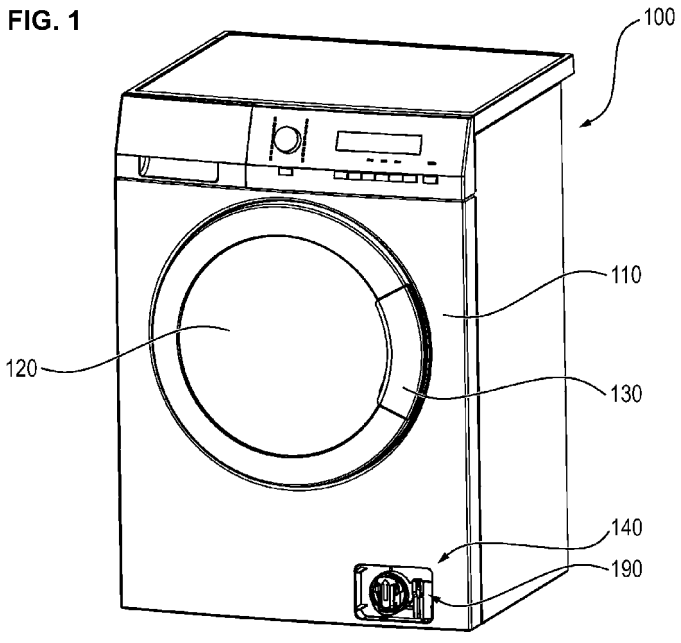
(72) Inventors:
- **Pessot, Marco**
  33080 Porcia (PN) (IT)
- **Bottosset, Roberto**
  33080 Porcia (PN) (IT)

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

(54) Laundry treatment machine, for example a washing machine or a laundry dryer or washer-dryer with emergency release system

(57) The present invention is related to a laundry treatment machine (100, 200, 300), comprising: a treatment chamber for the treatment of laundry; a door (120, 220), providing, in an open state, access to the treatment chamber; a locking device (430, 930) for locking the door (120, 220) in a closed state when the machine is operating and releasing the door (120, 220) when the machine is not operating, wherein the locking device (430, 930) is operated electrically and locks, in a locking state, and/or releases, in a releasing state, the door depending on electrical control signal provided by a control device of the laundry treatment machine (100, 200, 300); at least one emergency release system enabling a user to release the lock of the door (120, 220) even if the locking device (430, 930) is in the locking state, the emergency release system comprising a doorlock strip (170, 800) which has a first end (420b) connected to the locking device (430, 930) and a second end (420c) adapted to be actuated for applying to the first end (420b) a displacement which causes the lock of the door (120, 220) to be released. The machine comprises a covering element (190, 290a, 390, 804) covering the second end (420c) for preventing a human finger or human hand from directly accessing to an actuating said second end (420c).

FIG. 1



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Description

[0001] The present invention relates to a laundry treatment machine, preferably a laundry washing machine or laundry dryer or washer-dryer, with an emergency release system.

[0002] A conventional washing machine is operated electrically and has to be supplied with electrical power. Such washing machines usually comprise a door which is locked during operation of the machine by means of an electrically operated blocking device or door lock device, such that the door cannot be opened in an operated state of the machine, since dangerous conditions, e.g. a high spin speed of the drum, a high temperature of the washing liquid, etc., may occur during operation of the machine. In order to open the door user has therefore to wait until the operation of the washing machine has terminated, or has to carry out actuations for terminating the washing operation by himself.

[0003] Thus, in the case of an electrical power failure or of a breakdown of the machine or of the door lock device, the door of the washing machine remains in a locked state and therefore cannot be opened by the user, because the door lock device is broken or it is no longer supplied with electricity, and therefore it does not release the door. This situation is inconvenient for users.

[0004] For this reason mechanisms are known for releasing door lock device and, thus, allow the opening of the washing machine door by the user, in the case, for example, of an electric power failure.

[0005] DE 10 2009 019 224 A1 discloses a machine for treatment of textile or leather goods comprising a door switch for keeping a locked state which prevents the door from opening during a washing process. The door switch keeps the locked state as a consequence of an applied voltage and releases the door when the washing process is terminated and the applied voltage is switched off. A failure of the door switch causes the problem that the door cannot be opened and the textile or leather goods cannot be taken out. For solving this problem a switch unit is provided for connecting selectively the door switch with an opening unit for enabling a user to release the door switch.

[0006] It is an object of the present invention to provide a laundry treatment machine comprising a door, wherein the user is enabled to unlock the door in the case, for example, of an electric power failure or a failure of the electronic system of the appliance, in a convenient and secure way.

[0007] The object of the present invention is achieved by a laundry treatment machine according to claim 1.

[0008] According to the present invention a laundry treatment machine comprises:

- a treatment chamber for the treatment of laundry;
- a door providing, in an open state, access to the treatment chamber;
- a locking device for locking the door in a closed state when the machine is operating and releasing the door when the machine is not operating, wherein the locking device is operated electrically and locks, in a locking state, and/or releases, in a releasing state, the door depending on electrical control signal provided by a control device of the laundry treatment machine;
- at least one emergency release system enabling a user to release the lock of the door even if the locking device is in the locking state, the emergency release system comprising a doorlock strip which has a first end (or connection end) connected to the locking device and a second end (or free end) adapted to be actuated for applying to the first end a displacement which causes the lock of the door to be released.

[0009] The machine comprises a covering element covering the second end for preventing a human finger or human hand from directly accessing to an actuating the second end.

[0010] For avoiding unintended releasing of the lock of the door an emergency release system is provided having a covering element which is preventing a human finger or human hand from actuating the doorlock strip. Thus, a user is forced to think about his actions before acting. The control and operation of the appliance in the case of a power failure is safer. Further a laundry treatment machine embodying the invention allows to unlock the door even when the locking device is in a locking state, e.g. due to an electric failure or of a berakdown of the locking device, but ensures at the same time that the user cannot accidentally unlock the door.

[0011] According to an advantageous embodiment of the invention the second end is adapted to cooperate with a tool and the covering element is arranged in such a way that the second end can be actuated by means of a tool.

[0012] Thus, it is ensured, that the second end can only be actuated by using a specified tool. The adaption of the second end to the form or another property of the tool in cooperation with the covering element enables a safe and reliable actuation.

[0013] According to a further advantageous embodiment of the invention the second end of the doorlock strip comprises a slot or opening which has a form that is adapted to or corresponds to the form of a tool.

[0014] Thus, a user can use for example a tool (e.g. a screwdriver) which is commonly known and easy to handle and which can safely engage into the slot of the second end of the doorlock strip. A form closure between the slot and the tool ensure reliable actuation.

[0015] According to a further advantageous embodiment of the invention the doorlock strip can move slidably relative to the covering element when the second end is actuated.

[0016] Thus, an easy actuation of the doorlock strip is possible without moving or making changes of the ma-

chine housing or housing panels.

[0017] According to a further advantageous embodiment of the invention the covering element comprises a slot and/or a hole and/or a recess and/or an opening which is shaped such that it provides a passage for a tool to be cooperated with the second end, but impedes the passage of a human finger.

[0018] A covering element in such a design allows a safe arrangement of the covering element. In normal operation, the function of the doorlock strip keeps unaffected, e.g. by filth, or substantially protected from splashwater.

[0019] According to a further advantageous embodiment of the invention the doorlock strip comprises a first section, a second section and a third section, wherein the first section is a central section of the doorlock strip and wherein the width of the first section is smaller than the width of the second section and the width of the third section.

[0020] Thus, the doorlock strip comprises flexibility in a region where it is needed without loosing too much stability. This is advantageous in the mounting process of the doorlock strip.

[0021] According to a further advantageous embodiment of the invention that the doorlock strip comprises at least one fixing device, for example a lug for temporarily fixing the doorlock strip to an appliance casing, e.g. a washing machine casing, in the mounting process.

[0022] Thus, in the mounting process of the appliance, the doorlock strip can be temporarily fixed to the casing. Then other mounting steps are possible, such as mounting the locking device. After these steps final mounting of the doorlock strip is easily possible.

[0023] According to a further advantageous embodiment of the invention the second end of the doorlock strip comprises a first displaced lateral section and a second displaced lateral section which are arranged on opposing sides of the doorlock strip and/or the second end comprises a first lateral thickening on an upper side of the doorlock strip and a second lateral thickening on a lower side of the doorlock strip and/or the second end comprises a first central thickening.

[0024] Such formings of the second end of the doorlock strip impede seizing of the second end with fingers. A manual actuation of the doorlock strip is, thus, further on prevented.

[0025] According to a further advantageous embodiment of the invention the second end comprises a head section which has an enlarged width compared to the width of the doorlock strip.

[0026] An enlarged head section of the second end also prevents seizing or gripping of the doorlock strip with fingers or a hand. Manual actuation of the doorlock strip is further on prevented in this manner.

[0027] According to a further embodiment of the invention the second end of the doorlock strip is covered by a cover or a front lid and the cover or the front lid can be removed manually without the use of a tool.

[0028] Thus, the doorlock strip, and in particular its second end is in a normal state not visible. However, doorlock strip is protected from dirt and at the same to can be reached easily by removing the cover or opening the front lid.

[0029] According to a further embodiment of the invention the covering element comprises a shell structure which comprises two lateral side walls and preferably, but not necessarily, also an upper wall, wherein the second end of the doorlock strip is arranged in between the two lateral side walls and, if provided, also the upper wall, such that the second end of the doorlock strip cannot be reached by a human finger or human hand.

[0030] Thus, advantageously, access is provided to the slot of the doorlock strip and at the same time manual actuation of the second end is prevented. Within such a shell structure the second end can be arranged and adjusted easily.

[0031] According to an alternative embodiment of the invention the covering element comprises an insertion part inserted within a recess of the laundry treatment machine housing, wherein the second end is arranged within the insertion part and wherein the insertion part comprises a slot or opening through which a tool can engage and actuate the second end and wherein the slot or opening is formed such that the second end cannot be reached by a human finger or human hand.

[0032] The insertion part and, thus, the second end, can be arranged on a panel of the machine housing. Access to the second end can be provided in a region that is convenient for a user. Access can be provided in particular in a region different from a plinth.

[0033] According to a further alternative embodiment of the invention the covering element comprises an enclosure enclosing the second end of the doorlock strip, wherein the enclosure comprises a slot or opening through which a tool can engage and actuated the second end and wherein the slot or opening is formed such that the second end cannot be reached by a human finger or human hand.

[0034] A completely enclosed doorlock strip is protected from influences such as filth and water, wherein still convenient actuation is possible when necessary.

[0035] According to another embodiment of the invention a plinth is comprised which extends in a vertical plane that is different from the vertical plane in that a front panel extends and wherein a horizontal section is formed which comprises a recess or a hole wherein a bushing is inserted and wherein the doorlock strip is guided through a passage which is provided by the bushing.

[0036] Thus, a doorlock strip can be arranged and provided for a different housing design of a laundry treatment machine, namely a laundry treatment machine with displaced plinth. Also here access to the second end of the doorlock strip is provided for a tool, but manual actuation is prevented.

[0037] According to a further embodiment of the invention the covering element is formed integrally to a ma-

chine housing or to a part of the machine housing.

[0038] Thus, the manufacturing of the machine is simplified and a very stable structure is created.

[0039] The invention will be described in further detail with reference to the drawings, in which

FIG 1 illustrates a perspective view of a first version of a laundry treatment machine according to an embodiment of the present invention;

FIG 2 illustrates a detailed view of a lower section of the laundry treatment machine according to FIG 1 showing the access to a filter system of the laundry treat-ment machine;

FIG 3 illustrates a perspective view of a second version of a laundry treatment ma-chine according to an embodiment of the present invention;

FIG 4 illustrates a detailed view of a lower section of the laundry treatment machine according to FIG 3 showing an alternative access to a filter system of the laundry treatment machine;

FIG 5 illustrates a perspective view of a third version of a laundry treatment ma-chine according to an embodiment of the present invention;

FIG 6 illustrates a detailed view of a lower section of the laundry treatment machine according to FIG 5 showing a further alternative access to a filter system of the laundry treatment machine;

FIG 7 illustrates a front view of a mechanism with a doorlock strip and a locking device according to an embodiment of the present invention;

FIG 8 illustrates a detailed view of the shape of a second end of a doorlock strip according to an embodiment of the present invention;

FIG 9 illustrates a detailed view of the shape of a second end of a doorlock strip according to an alternative embodiment of the present invention;

FIG 10 illustrates a detailed view of the shape of a second end of a doorlock strip according to a further alternative embodiment of the present invention;

FIG 11 illustrates a perspective view of a doorlock strip according to an embodiment of the present invention;

FIG 12 illustrates a detailed view of a bushing for a doorlock strip according to FIG 11;

FIG 13 illustrates a rear view of a front panel for a doorlock strip to be built in ac-cording to an embodiment of the present invention as shown in FIG 11 and FIG 12;

[0040] The laundry treatment machine as described in the following can be washing machines, but also laundry dryers or washer-dryers and have machine housing which usually comprise at least one front panel 110, 210, 310.

[0041] FIG 1 illustrates a perspective view of a washing machine 100 according to an embodiment of the present invention. The washing machine 100 comprises a front panel 110 and a washing machine door 120 which provides, in an open state, access to a treatment chamber (not illustrated, preferably comprising, in the case of a washing machine, a washing tub and a rotatable washing drum contained in the latter) for the treatment of laundry. The washing machine door 120 has an opening handle 130 which can be actuated by a user to open the washing machine door 120. The front panel advantageously 110 extends in a vertical plane along the complete front side of the washing machine from an operation panel to the bottom, whereon the washing machine is positioned. Advantageously, in a lower section of the front panel 110 an opening or recess is shown providing access to a filter unit 140, e.g. comprising a lint filter or the like.

[0042] FIG 2 illustrates a detailed view of the filter unit 140. The access to the filter unit 140 is provided by an opening or recess in a lower section of the front panel 110. In a standard state of the washing machine, the opening or recess 160 is preferably closed by a cover, not shown, and which is attachable or insertable into the opening or recess 160. The cover may be provided such that it can be removed by a user manually in an easy way when necessary. Through the recess 160 a filter assembly 150, comprising e.g. a lint filter, can be reached manually by a user for cleaning purposes or the like.

[0043] Within the recess 160 a mounting plate 180 is advantageously formed providing several functional structures. Support structures 195 are advantageously provided for facilitating fastening or attaching the cover for covering the recess. Further a shell structure 190 is advantageously formed integrally or non-integrally to the mounting plate 180. The shell structure 190 comprises two lateral side walls 191 and preferably also an upper wall 192. The upper wall 192 has a recess or a passage through which the second end (or free end) of a doorlock strip 170 can pass. The passage is formed such that the doorlock strip 170 can be moved in a vertical direction downwards and upwards.

[0044] The lateral side walls 191 of the shell structure 190 are distanced from each other such that the doorlock strip 170 can move freely in between, but that the doorlock strip 170 cannot be reached by a finger or the hand of a user. The distance between the lateral side walls 191 is in particular dimensioned smaller than the average diameter of an index finger of an adult. Thus, a manual

operation of the doorlock strip 170 is prevented.

[0045] FIG 3 illustrates a perspective view of a washing machine 200 according to another embodiment of the present invention. The washing machine 200 comprises also a front panel 210 and a washing machine door 220 which provides, in an open state, access to a treatment chamber for the treatment of laundry. The washing machine door 220 has an opening handle 230 which can be actuated by a user to open the washing machine door 220.

[0046] The front panel 210 advantageously extends in a vertical plane along the front side of the washing machine from an operation panel to a certain distance from the bottom and is advantageously delimited from the bottom by a plinth 245b.

[0047] FIG 4 illustrates a detailed view of the filter unit 240. The plinth 245b advantageously comprises a recess 260 which provides access to a filter assembly 250. Preferably the recess 260 can be opened and closed by means of a front lid 245a. In a closed position the front lid 245a preferably lies flush with the plinth 245b. Within the recess 260 a mounting plate 280 is preferably formed for providing a seat for the filter assembly 250.

[0048] Further an enclosure 290a is formed, integrally or not, to the mounting plate 280. Access to the doorlock strip which is enclosed by the enclosure 290a is provided by means of slot 290b. The slot 290b is formed such that a tool, e.g. a screwdriver can engage through the slot 290b into the interior of the enclosure 290a.

[0049] FIG 5 illustrates a perspective view of a washing machine 300 according to a further embodiment of the present invention.

[0050] The washing machines 100, 200 are advantageously adapted to be stand-alone washing machines. Differently, the washing machine 300 is preferably adapted for being built in a cabinet or the like. The washing machine 300 comprises a front panel 360.

[0051] The embodiments as shown in FIG 5 and in the following figures can be used in free-standing machines as well as in built-in machines, as far as it is possible to use the same housing or housing parts for free-standing machines and built-in machines.

[0052] The front panel 310 extends in a vertical plane along the front side of the washing machine from an operation panel to a certain distance from the bottom and is delimited from the bottom by a plinth 345 which preferably forms a seat for a filter unit 340. It is also possible that the front panel 310 is made of one piece comprising a section which is displaced relative to the vertical plane in which the front panel 310 extends. In a lower section of the front panel 310 a recess 360 is provided.

[0053] FIG 6 illustrates a detailed view of the recess 360. An insertion part 390 is inserted into the recess 360 providing a slot 390b. The doorlock strip is arranged within the interior of the insertion part 390 and can be manipulated by means of a tool, e.g. a screwdriver.

[0054] All covering elements (190, 290a, 390, 804) have in common, that they are distinct from the tool, i.e. the tool is a device which is separate from the covering element. In particular, customary standard tools, such as screw drivers can be used. Applicable are for example slot screw drivers or cross screw drivers.

[0055] FIG 7 illustrates a doorlock strip 170. The doorlock strip 170 can be used identically within the different washing machines 100, 200 and 300 and comprises a free end 400 and a connection end 410. The connection end 410 is attached to a locking device 430 which is provided for being fastened to a front panel of a washing machine 100, 200, 300 and being able to lock the door of the washing machine. A connection element 450, e.g. a connection pin or a screw, is formed or attached to an actuation element of the locking device 430 and is used to fasten the connection end 410 thereto.

[0056] A slot or opening is provided on the free end 400 of the doorlock strip 170 being formed for enabling an engagement of a tool, e.g. a slot screwdriver, and for impeding or preventing a manual manipulation of the free end 400 of the doorlock strip 170. Also other forms than a slot or opening can be applicable, depending on the tool which shall be used.

[0057] In an operated state or mode of the washing machine 100, 200, 300 the locking device locks the door of the washing machine to unable opening of the door during a washing operation. When the washing operation is terminated, an electrical signal is transmitted to the locking device 430 which releases (immediately, or after a prefixed time interval) the locking mechanism (however the washing machine door keeps still closed and must be opened manually by a user, e.g. by acting on the door handle). As a consequence, during a power failure such an electric signal would not be transferred to the locking device 430, and the locking mechanism would be kept close, so that the user can't open the door.

[0058] In case of a power failure a user can actuate the doorlock strip 170 by engaging a tool within the slot or opening at the free end of the doorlock strip 170 and drawing the doorlock strip 170 (in a downward direction with reference to the preferred embodiments illustrated in the enclosed figures). Consequently the actuation element of the locking device 430 is actuated and operates the locking device 430 in such a way to release the door; the door however remains closed and has to be opened by the user. In a first embodiment of the invention, once the user has actuated the doorlock strip 170, he can open the door simply by acting on the opening handle of the door (i.e without continuing keeping the doorlock strip 170 manually actuated); in another embodiment the user has to keep the doorlock strip actuated (e.g. drawing the doorlock strip 170 in a downward direction) in order to be able to open the door by using the opening handle (i.e. he has to actuate contemporaneously the strip and the handle in order to open the door).

[0059] The doorlock strip 170 is formed preferably substantially flat and has a defined width. A first section 420a of the doorlock strip 170 comprises a width which is smaller than the width of a second section 420b and a third

section 420c of the doorlock strip 170. The first section 420a is a central section of the doorlock strip 170.

[0060] In a mounting process of the doorlock strip 170 the first section 420a provides a defined flexibility of the strip, so that it can be handled and mounted within a small available space. For further facilitating the mounting process of the doorlock strip 170, the connection end 410 is provided with a fixing device, comprising for example two lugs 440. The lugs 440 allow a temporary and easy fixing and detaching of the doorlock strip 170 at the front panel or to another casing part of the washing machine. In the mounting process the doorlock strip 170 can be arranged within the casing of the washing machine and temporarily fixed therein. After the positioning of the locking device 430 within the casing, the doorlock strip 170 can be detached from the casing and fixed to the locking device 430 in a final position.

[0061] The doorlock strip 170 can be arranged such that a connection section, e.g. a connection end 410, is or comprises a second section 420b and is connected to the locking device 430, 930 and such that a free section, e.g. a free end 400 is arranged in a lower section of a front of the appliance for being actuated by means of a tool.

[0062] FIG 8 illustrates a shape of a free end of a doorlock strip according to an embodiment of the present invention. The free end 400 of the doorlock strip is shaped in such a manner, that an extraction or displacement of the doorlock strip during the mounting process is impeded or prevented and that a user is impeded to operate the doorlock strip by hand and/or fingers (in case, for example, the covering element has been broken or accidentally removed). Actuation of the doorlock strip shall only be possible by means of a tool such as a screw driver. Therefore the free end 400 of the doorlock strip comprises a first displaced lateral section 501 and a second displaced lateral section 502 which are arranged on opposing sides of the doorlock strip. A slot 504 is provided between the displaced lateral sections 501, 502.

[0063] The free end 400 of the doorlock strip preferably comprises further a head section 503 that has an enlarged width compared to the width of the doorlock strip. The first displaced lateral section 501 is displaced in a vertical direction relative to a surface of the doorlock strip, wherein the second displaced lateral section 502 is displaced in the opposite direction relative to the surface of the doorlock strip. Such a design or shape of the doorlock strip is in particular capable when the doorlock strip is made of metal.

[0064] FIG 9 illustrates an alternative shape of a free end 400 of a doorlock strip according to an embodiment of the present invention. The free end 400 advantageously comprises in an alternative shape a first lateral thickening 601 on an upper side of the doorlock strip and a second lateral thickening 602 on a lower side of the doorlock strip. Also a slot 604 and a head section 603 are provided, wherein the head section 603 has an enlarged width compared to the width of the doorlock strip. Such a design of the doorlock strip is in particular capable when the doorlock strip is made of a plastics material.

[0065] FIG 10 illustrates a further alternative shape of the free end 400 of the doorlock strip. The free end 400 comprises a first central thickening 701 which can be provided on an upper side or on both lower and upper sides of the doorlock strip. A slot 704 is provided for enabling engagement of a tool. A head section 703 is provided, wherein the head section 703 has an enlarged width compared to the width of the doorlock strip.

[0066] FIG 11 illustrates a further alternative of a doorlock strip according to the present invention. The doorlock strip 800 comprises a free end 801 for being actuated by a user and a connection end 802 for being connected to a locking device of a washing machine. A bushing 804 is provided with snap elements 805 intended to be fastened to a washing machine casing as explained below. The doorlock strip 800 is guided through a passage (806) provided by the bushing 804.

[0067] A fastening device is provided, for example hooks 803 formed integrally with the doorlock strip 800, for temporarily fixing the doorlock strip 800 to the bushing 804 in a mounting process. Preferably the bushing 804 comprises a protruding element 808, protruding from its upper surface and adapted to cooperate with the hooks 803 for temporarily keeping the bushing 804 fixed to the doorlock strip 800. Hhooks 803 are arranged such that a movement of the doorlock strip 800 in a vertical direction is not impeded.

[0068] FIG 12 illustrates the bushing 804, comprising a recess 806 which provides the passage (806) or guiding for the doorlock strip 800. The bushing 804 is formed and dimensioned such that is can be inserted within a corresponding recess or whole formed or provided by the housing or casing of a washing machine.

[0069] FIG 13 illustrates a front panel 910 of a washing machine, wherein the doorlock strip 800 and the bushing 804 are preferably intended to be built in, wherein the side of the front panel 910 is shown that is directed to the interior of the washing machine. A locking device 930 is attached to the inner side of the front panel 910, wherein the connection end 802 of the doorlock strip 800 is connected the locking device 930.

[0070] The front panel 910 and a plinth 920 are provided. Thereby the front panel 910 extends in a vertical plane along the front side of the washing machine, wherein the plinth extends in a vertical plane which extends displaced and parallel to the vertical plane wherein the front panel 910 extends.

[0071] Thus, the front panel 910 comprises a horizontal section 921 which forms the connection of front panel 910 and plinth 921. Front panel 910, plinth 920 and horizontal section 921 can be made of one part. The horizontal section 921 comprises a recess or hole wherein the bushing 804 can be inserted and fastened thereto, for example by means of snap elements 805, or by other fastening devices (e.g. screw, bolts, glue, etc).

[0072] The doorlock strip 800 is guided through the

recess provided by the bushing 804, such that a user can manipulate the doorlock strip by means of a tool and move it in a vertical direction. Consequently the user is enabled to release the door of the washing machine.

[0073] In general, the above explained embodiments and in particular the covering elements (190, 290a, 390, 804) can be arranged not only in a lower section, e.g. in the region of the filter unit, but also in other regions of the housing of the machine of the laundry treatment machine which are convenient to reach for a user.

[0074] Although an illustrative embodiment of the present invention has been described herein with reference to the accompanying drawings, it is to be understood that the present invention is not limited to those precise embodiments, and that various other changes and modifications may be affected therein by one skilled in the art without departing from the scope or spirit of the invention. All such changes and modifications are intended to be included within the scope of the invention as defined by the appended claims.

Claims

1. Laundry treatment machine (100, 200, 300), comprising:

- a treatment chamber for the treatment of laundry;
- a door (120, 220) providing, in an open state, access to said treatment chamber;
- a locking device (430, 930) for locking the door (120, 220) in a closed state when the machine is operating and releasing the door (120, 220) when the machine is not operating, wherein the locking device (430, 930) is operated electrically and locks, in a locking state, and/or releases, in a releasing state, the door depending on electrical control signal provided by a control device of the laundry treatment machine (100, 200, 300);
- at least one emergency release system enabling a user to release the lock of the door (120, 220) even if the locking device (430, 930) is in said locking state, said emergency release system comprising a doorlock strip (170, 800) which has a first end (420b) connected to the locking device (430, 930) and a second end (420c) adapted to be actuated for applying to said first end (420b) a displacement which causes the lock of the door (120, 220) to be released,

characterized by

comprising a covering element (190, 290a, 390, 804) covering said second end (420c) for preventing a human finger or human hand from directly accessing to an actuating said second end (420c).

2. Laundry treatment machine according to claim 1, **characterized in that** said second end (420c) is adapted to cooperate with a tool and that the covering element (190, 290a, 390, 804) is arranged in such a way that the second end (420c) can be actuated by means of a tool.

3. Laundry treatment machine according to one of the preceding claims, **characterized in that** said second end (420c) of the doorlock strip (170, 800) comprises a slot or opening which has a form that is adapted to or corresponds to the form of a tool.

4. Laundry treatment machine according to one of the preceding claims, **characterized in that** the doorlock strip (170, 800) can move slidably relative to said covering element (190, 290a, 390, 804) when the second end (420c) is actuated.

5. Laundry treatment machine according to one of the preceding claims, **characterized in that** the covering element (190, 290a, 390, 804) comprises a slot and/or a hole and/or a recess and/or an opening which is shaped such that it provides a passage for a tool to be cooperated with the second end (420c), but impedes the passage of a human finger.

6. Laundry treatment machine according to one of the preceding claims, **characterized in that** the doorlock strip comprises a first section (420a), a second section (420b) and a third section (420c), wherein the first section (420a) is a central section of the doorlock strip and wherein the width of the first section (420a) is smaller than the width of the second section (420b) and the width of the third section (420c).

7. Laundry treatment machine according to one of the preceding claims, **characterized in that** the doorlock strip comprises at least one fixing device (440) for temporarily fixing the doorlock strip to a machine casing in the mounting process.

8. Laundry treatment machine according to one of the preceding claims, **characterized in that** the second end (420c) of the doorlock strip comprises a first displaced lateral section (501) and a second displaced lateral section (502) which are arranged on opposing sides of the doorlock strip and/or that the second end (420c) comprises a first lateral thickening (601) on an upper side of the doorlock strip and a second lateral thickening (602) on a lower side of the doorlock strip and/or that the second end (420c) comprises a first central thickening (701).

9. Laundry treatment machine according to one of the preceding claims, **characterized in that** the second end (420c) comprises a head section which has an enlarged width compared to the width of the doorlock

strip.

10. Laundry treatment machine according to one of the preceding claims, **characterized in that** the second end (420c) of the doorlock strip is covered by a cover or a front lid and wherein the cover or the front lid can be removed manually without the use of a tool.

11. Laundry treatment machine according to one of the preceding claims, **characterized in that** said covering element (190, 290a, 390, 804) comprises a shell structure (190) which comprises two lateral side walls (191), wherein the second end (420c) of the doorlock strip (170) is arranged in between the two lateral side walls (191) such that the second end (420c) of the doorlock strip (170) cannot be reached by a human finger or human hand.

12. Laundry treatment machine according to one of the claims 1 to 10, **characterized in that** the covering element (190, 290a, 390, 804) comprises an insertion part (390) inserted within a recess of the laundry treatment machine housing, wherein said second end (420c) is arranged within said insertion part (390) and wherein said insertion part (390) comprises a slot or opening (390b) through which a tool can engage and actuate the second end (420c) and wherein said slot or opening (390b) is formed such that said second end (420c) cannot be reached by a human finger or human hand.

13. Laundry treatment machine according to one of the claims 1 to 10, **characterized in that** the covering element (190, 290a, 390, 804) comprises an enclosure (290a) enclosing the second end (420c) of the doorlock strip (170), wherein the enclosure (290a) comprises a slot or opening (290b) through which a tool can engage and actuated the second end (420c) and wherein the slot or opening (290b) is formed such that the second end (420c) cannot be reached by a human finger or human hand.

14. Laundry treatment machine according to one of the claims 1 to 10, **characterized by** comprising a plinth (920) which extends in a vertical plane that is different from the vertical plane in that a front panel (910) extends, and wherein a horizontal section (921) is formed which comprises a recess or a hole wherein a bushing (804) is placed, and wherein the doorlock strip (800) is guided through a passage (806) which is provided by the bushing (804).

15. Laundry treatment machine according to one of the preceding claims, **characterized in that** the covering element (190, 290a, 390, 804) is formed integrally to a machine housing or to a part of the machine housing.

FIG. 1

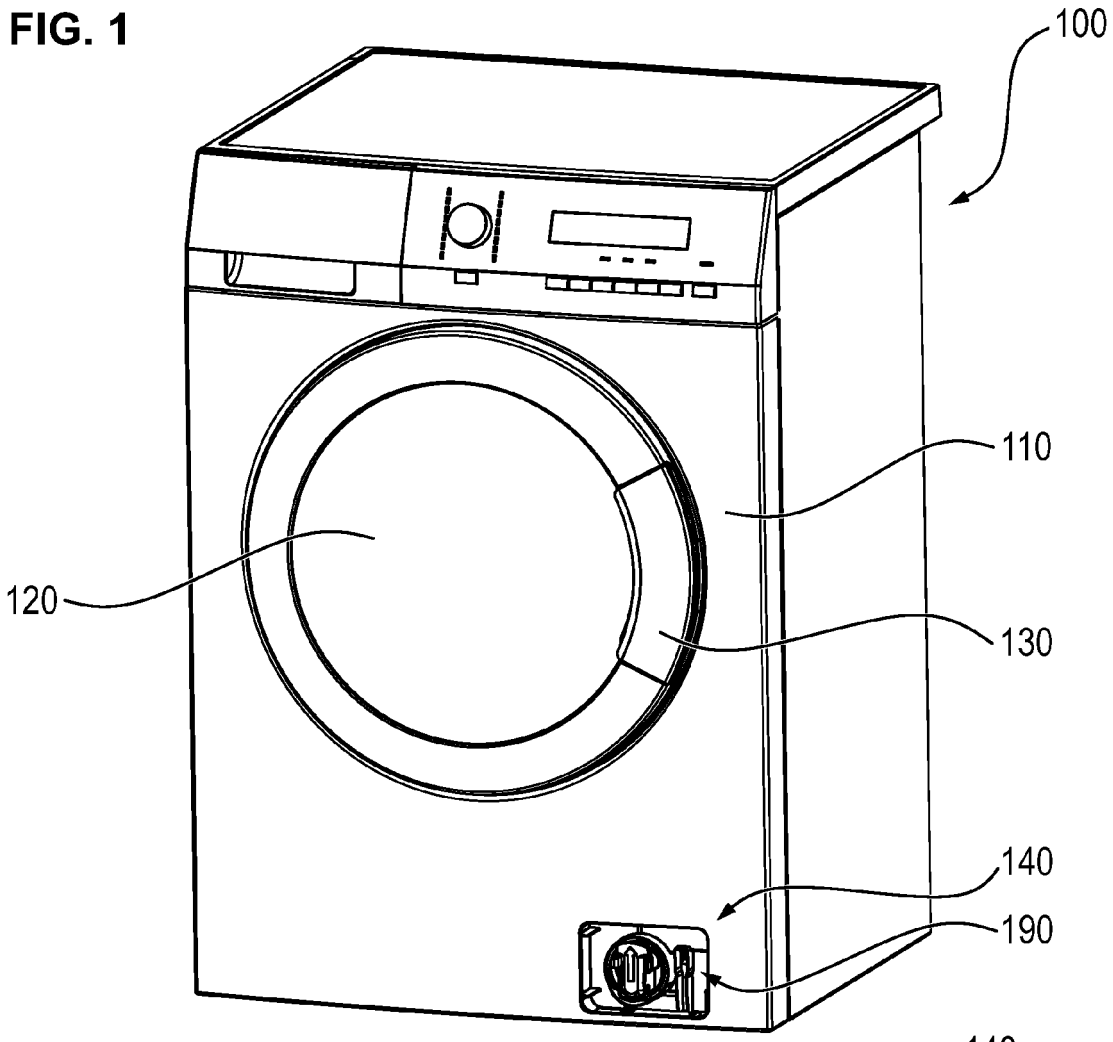


FIG. 2

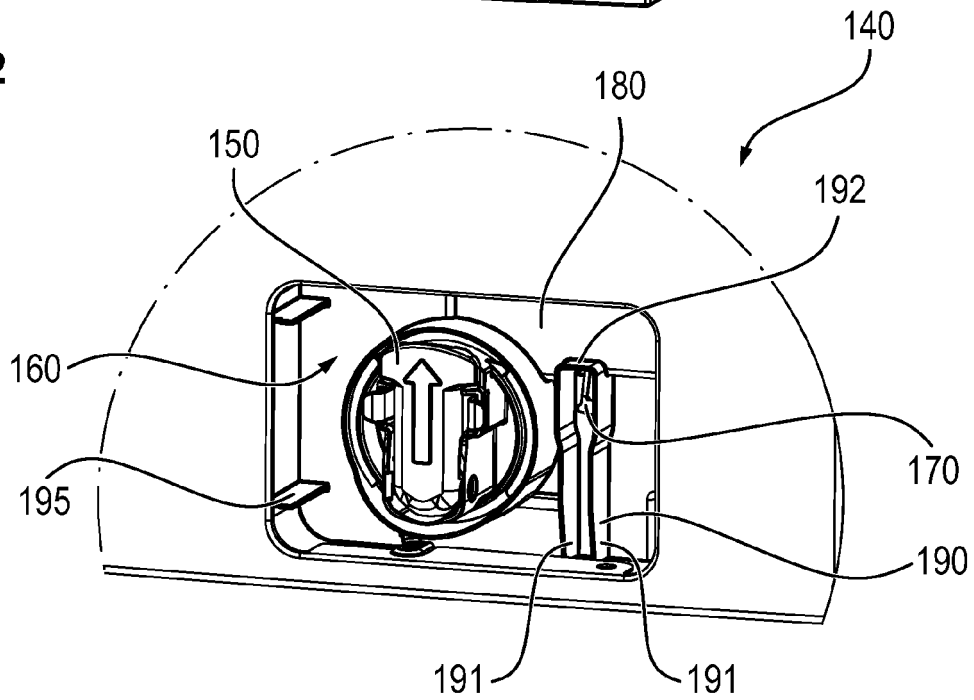


FIG. 3

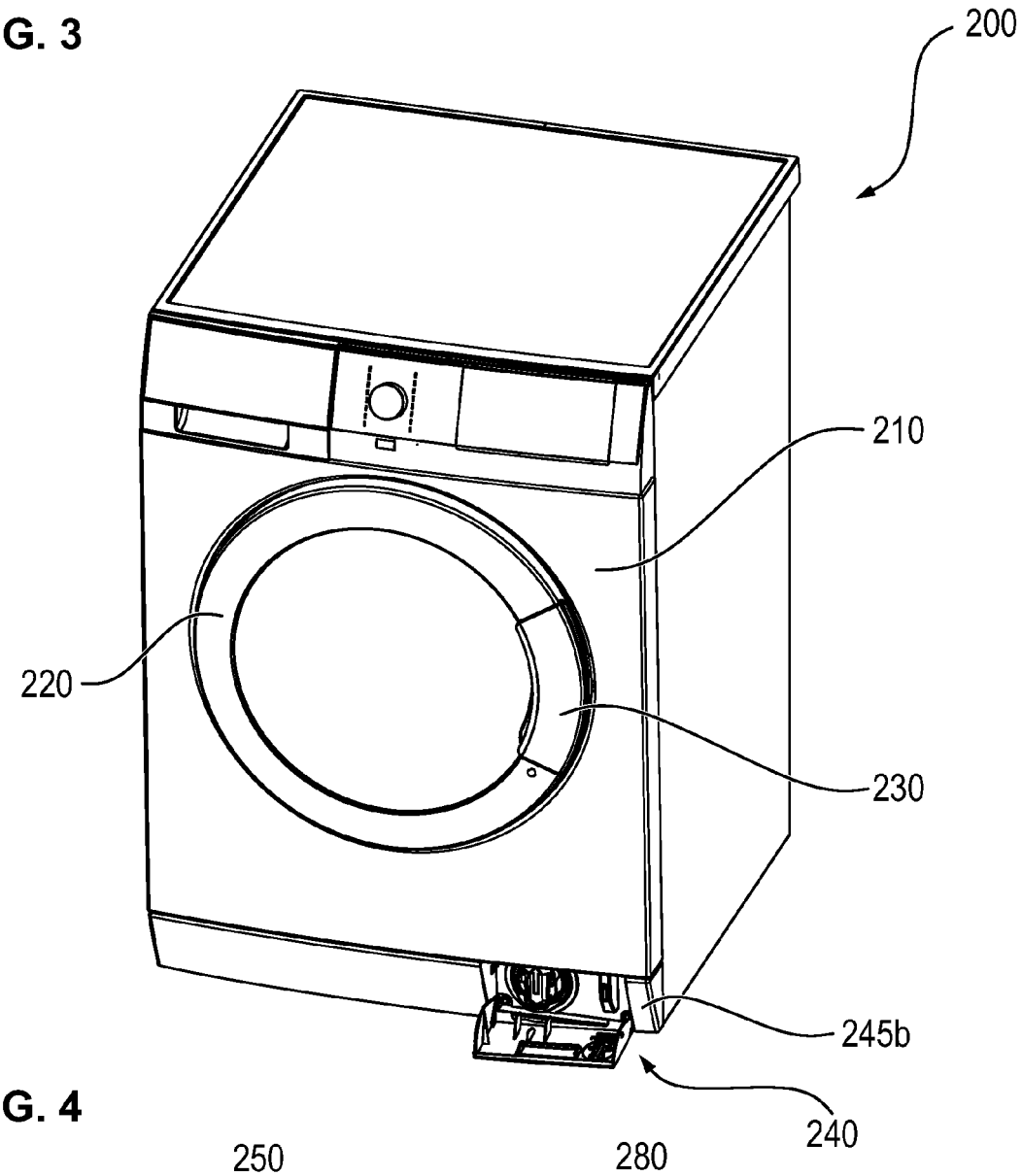


FIG. 4

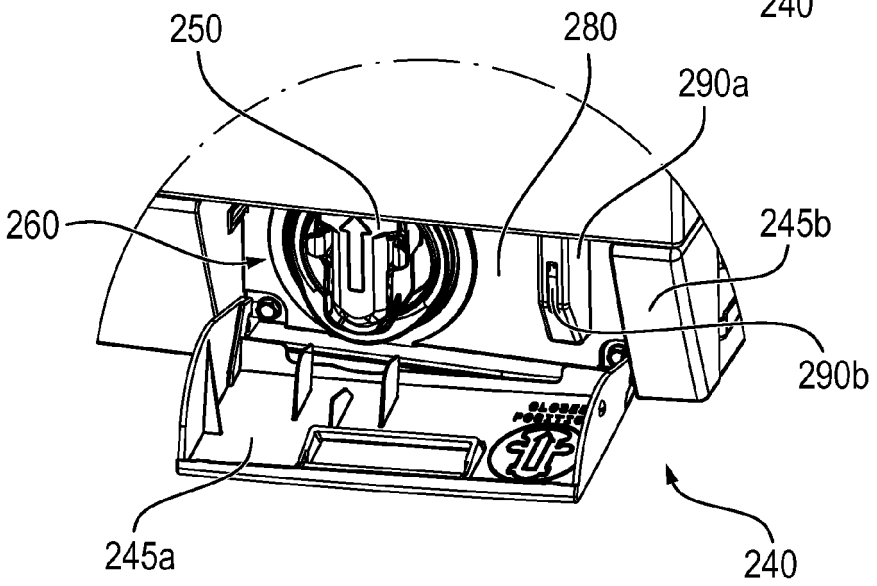


FIG. 5

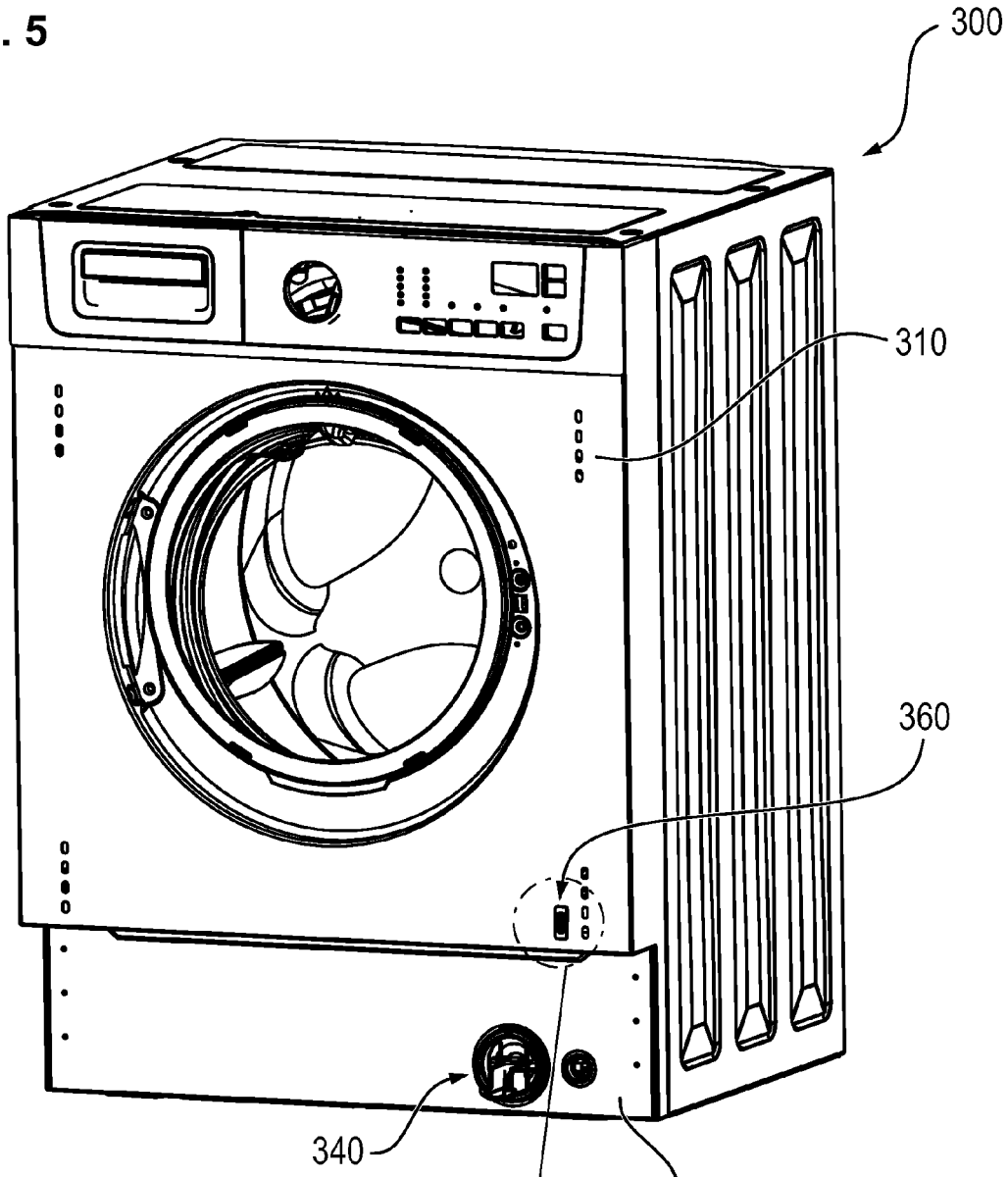


FIG. 6

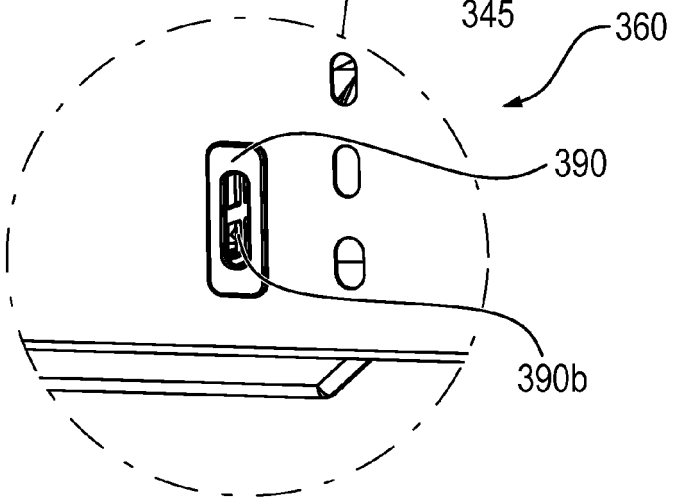


FIG. 7

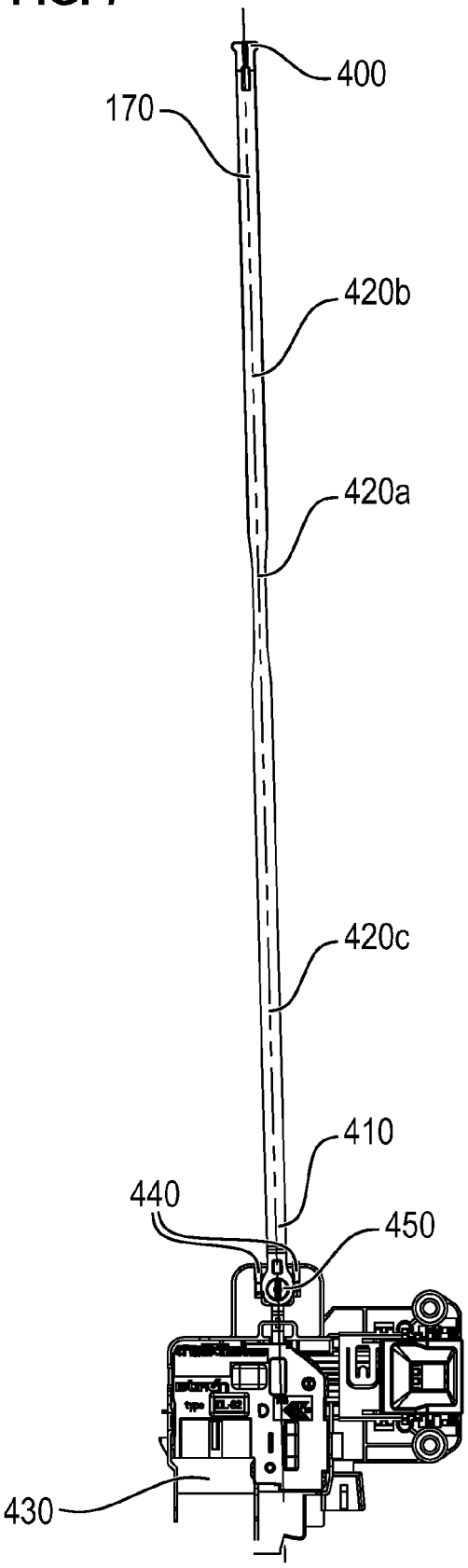


FIG. 8

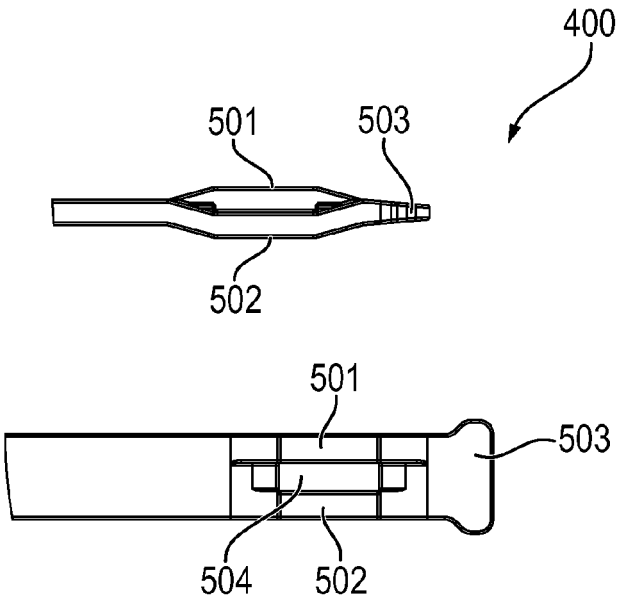


FIG. 9

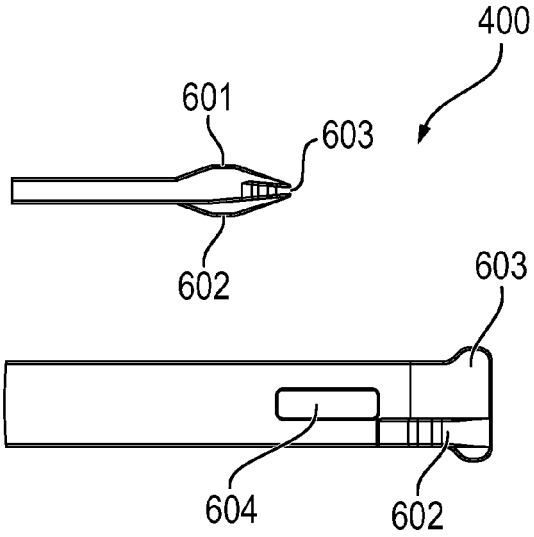


FIG.10

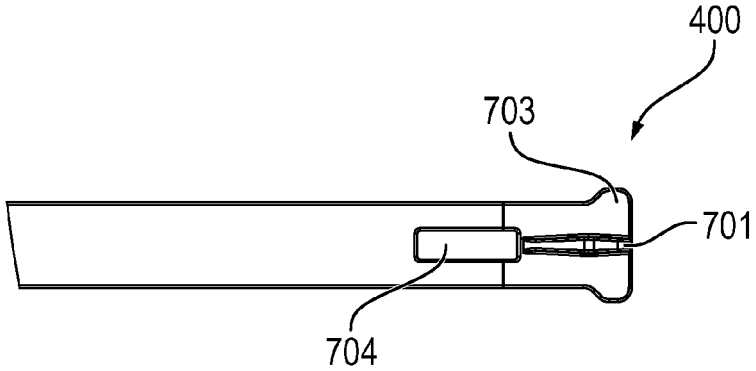


FIG. 11

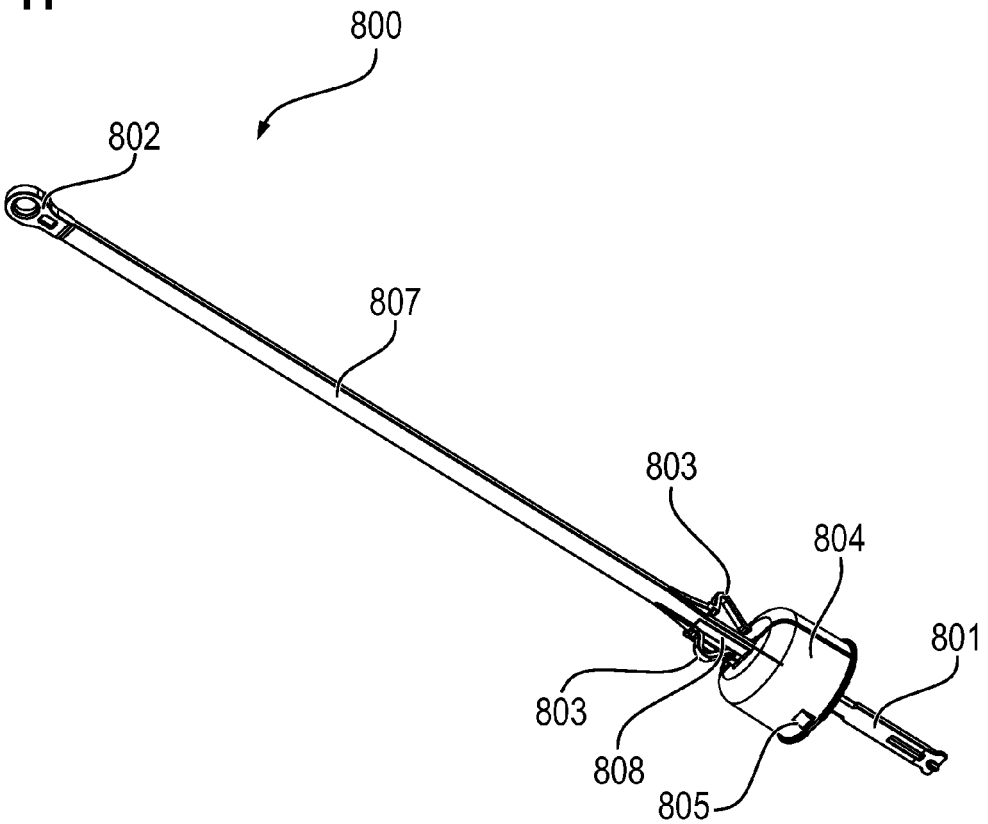


FIG. 12

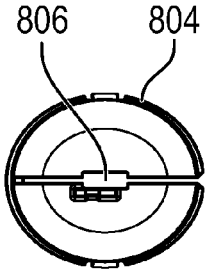
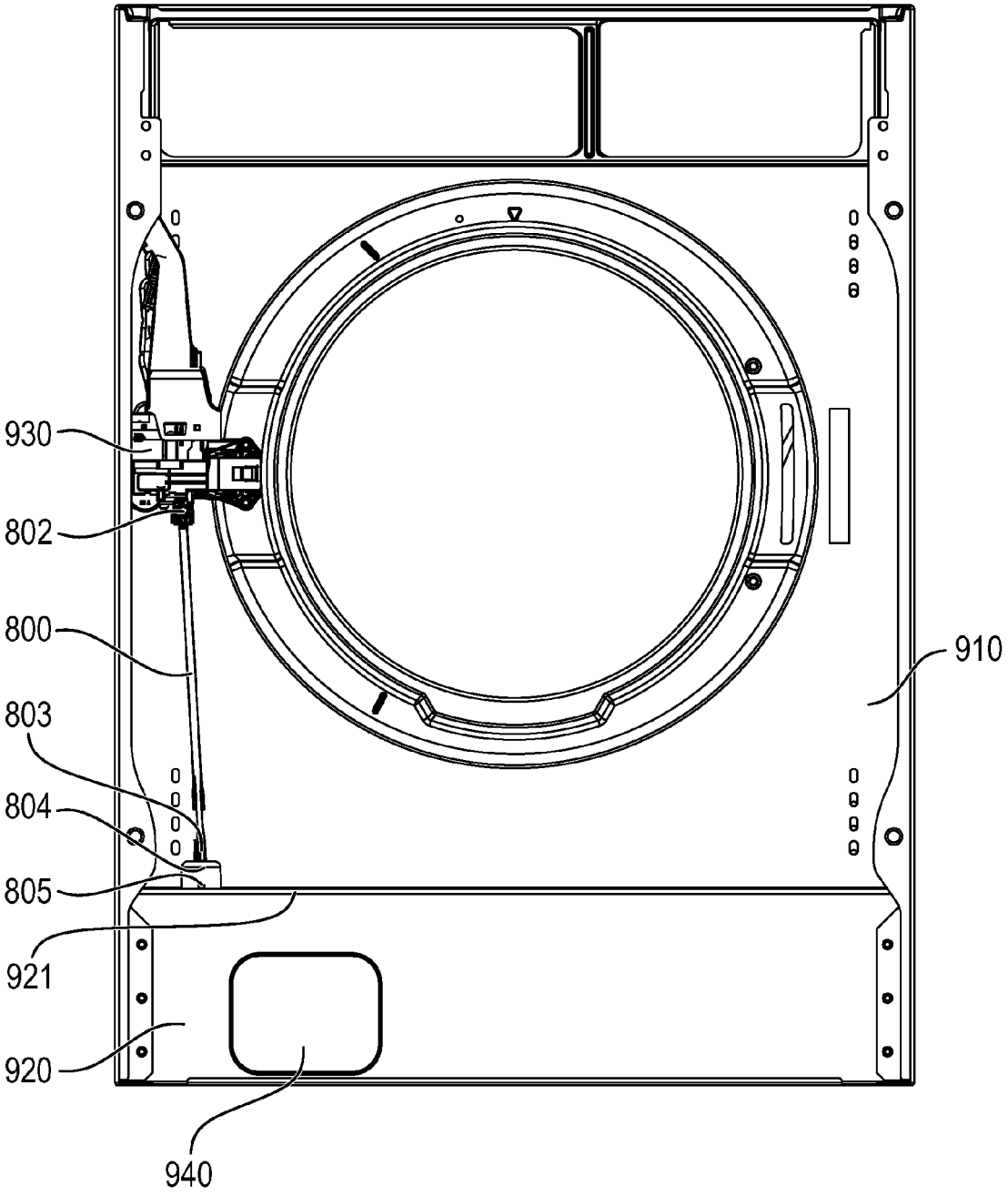


FIG. 13



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EUROPEAN SEARCH REPORT

Application Number
EP 11 17 2548

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X A	EP 2 159 316 A1 (ELECTROLUX HOME PROD CORP [BE]) 3 March 2010 (2010-03-03) * paragraph [0011] - paragraph [0032]; figures * -----	1-5,7, 9-15 6,8	INV. D06F37/42 D06F39/14
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X	DE 19 77 023 U (MIELE & CIE [DE]) 18 January 1968 (1968-01-18) * the whole document * -----	1-4,15	

TECHNICAL FIELDS SEARCHED (IPC)

D06F

1 The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	3 February 2012	Diaz y Diaz-Caneja

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03-02-2012

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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