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

(72) Inventors:
- **Lu, Jin**
  Nanjing 210046 (CN)
- **Zhang, Shurong**
  Nanjing 210042 (CN)

(54) **HANDLE ASSEMBLY, DETERGENT BOX, AND LAUNDRY EQUIPMENT**

(57) A handle assembly (100), a detergent box (200), and laundry equipment are provided. The handle assembly is applied to a detergent box. The handle assembly is connected to a box body (201)of the detergent box. The handle assembly includes: a handle decorating member (10), a handle (20), and a distance adjusting part (30), where the distance adjusting part is located between the handle decorating member and the handle, and is separately connected to the handle decorating member and the handle, to reduce a relative distance between the handle decorating member and the handle when the handle decorating member is pressed. When the handle decorating member at a first preset position, the box body is in a locked state, and when the handle decorating member is pressed to move by a preset stroke to a second position, the locked state of the box body is released. The above-mentioned solution can provide an improved handle assembly. By using the handle decorating member as a trigger region of the handle assembly, both integrity and a trigger range of the handle assembly may be taken into account.

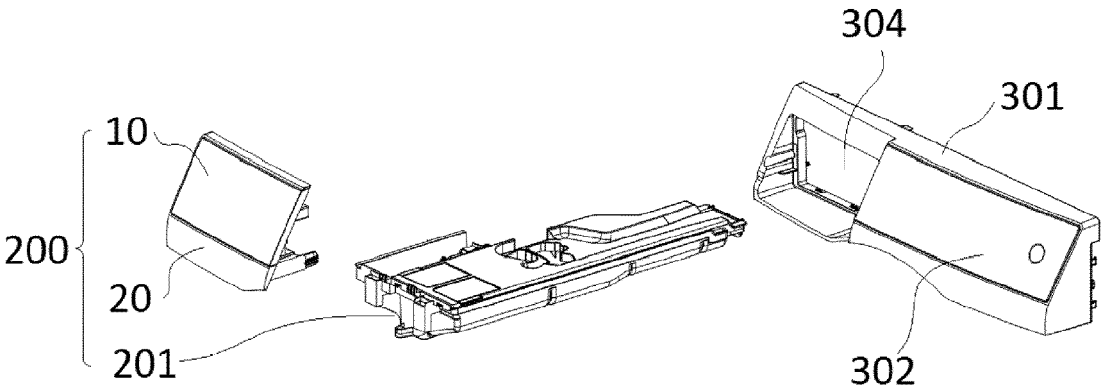

FIG. 13

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Description

[0001] Embodiments of the present invention relate to the mechanical field, and in particular, to a handle assembly, a detergent box, and laundry equipment.

[0002] At present, a washing machine is generally provided with a detergent box configured to dispense a detergent. The detergent box is generally provided with a handle. A user may unlock the detergent box by operating the handle, to add a detergent such as washing powder, laundry liquid or a softener.

[0003] In some solutions where the detergent box can be ejected semi-automatically, a button generally is added to the handle, so that the detergent box is unlocked by pressing a button. However, the button disposed on the handle affects the integrity of the detergent box, and a trigger range of the button is relatively small.

[0004] An objective of embodiments of the present invention is to provide an improved handle assembly and a detergent box.

[0005] To solve the above-mentioned technical problem, the embodiments of the present invention provide a handle assembly, applied to a detergent box. The handle assembly is connected to a box body of the detergent box. The handle assembly includes: a handle decorating member, a handle, and a distance adjusting part, where the distance adjusting part is located between the handle decorating member and the handle, and is separately connected to the handle decorating member and the handle, to reduce a relative distance between the handle decorating member and the handle when the handle decorating member is pressed. When the handle decorating member is at a first preset position, the box body is in a locked state, and when the handle decorating member is pressed to move by a preset stroke to a second position, the locked state of the box body is released.

[0006] Compared with the prior art, the technical solutions of the embodiments of the present invention have the following beneficial effects:

[0007] The handle assembly consists of a handle decorating member, a distance adjusting part, and a handle. The distance adjusting part is configured to connect the handle decorating member and the handle, and may reduce a relative distance between the handle decorating member and the handle when the handle decorating member is pressed, where when the handle decorating member at a first preset position, the box body is in a locked state, and when the handle decorating member is pressed to move by a preset stroke to a second position, the locked state of the box body is released. According to the handle assembly provided by the embodiments of the present invention, by using the handle decorating member as a trigger region of the handle assembly, both integrity and a trigger range of the handle assembly may be taken into account.

[0008] Optionally, the distance adjusting part includes: a first connecting part, connected to the handle decorating member, and extending in a direction toward the handle; an elastic part, sleeved on the first connecting part; and a second connecting part, connected to the handle, and adapted to the first connecting part.

[0009] Optionally, the second connecting part extends in a direction away from the handle decorating member to form an accommodating cavity, the accommodating cavity is configured to accommodate the first connecting part and the elastic part, a side wall of the accommodating cavity is provided with a connecting hole, and a size of the accommodating cavity is greater than a diameter of the connecting hole.

[0010] Optionally, the first connecting part includes a first portion and a second portion, where a first end of the first portion is connected to the handle decorating member, a second end of the first portion is connected to a first end of the second portion, and a size of the first portion is greater than a size of the second portion; and the second portion passes through the connecting hole, and the exterior of the second portion is sleeved with the elastic part.

[0011] Optionally, the first connecting part further includes a third portion, the third portion is connected to an outer surface of the first end of the second portion, and a projection of the second portion on an end face of the second end of the first portion does not exceed the end face of the second end of the first portion. By providing a third portion, when the first connecting part moves with respect to the second connecting part, friction between the elastic part and the third portion may be reduced, thereby improving the smoothness of the movement of the handle decorating member with respect to the handle.

[0012] Optionally, the handle is provided with a stop part, the stop part faces the box body, and the stop part is abutted against a control panel for mounting the detergent box, to limit a maximum movement distance of the handle with respect to the control panel.

[0013] Optionally, the handle decorating member is provided with a box body connector configured to connect the box body, and the handle is provided with a slot adapted to the box body connector.

[0014] Optionally, the handle includes a mounting groove, and the mounting groove is configured to mount the handle decorating member.

[0015] Optionally, a plane where an opening of the mounting groove is located is flush with a front surface of the handle decorating member, so that the appearance integrity of the handle assembly is better.

[0016] Optionally, a guide part extends from the handle decorating member toward the handle, the guide part is configured to guide the movement of the handle decorating member with respect to the handle, and the guide part cooperates with the mounting groove to form an enclosed space.

[0017] Optionally, the handle includes a bearing part and a supporting part, where the bearing part is configured to bear the handle decorating member; and one end of the supporting part is connected to a bottom end of

the bearing part, a plane where the supporting part is located is parallel to a horizontal plane, and an included angle between the supporting part and the bearing part is an acute angle, which may make a relative viewing angle between a user and the handle assembly better, and enable a face of the user to face the handle assembly without squatting down, thereby improving user experiences.

[0018] The embodiments of the present invention further provide a detergent box, including any one of the above-mentioned handle assemblies.

[0019] Optionally, the detergent box further includes a locking mechanism and an ejection mechanism disposed on the box body, where the locking mechanism is configured to lock the box body and to release the locking of the box body when the handle decorating member is pressed to move by a preset stroke; and the ejection mechanism is adapted to eject the box body and the handle assembly after the locking of the box body is released.

[0020] The embodiments of the present invention further provide laundry equipment, including any one of the above-mentioned detergent boxes, and a control panel. The control panel has a front surface, and the front surface of the control panel is flush with a front surface of the handle decorating member.

FIG. 1 is an exploded view, from a perspective, of a handle assembly according to an embodiment of the present invention;

FIG. 2 is an exploded view, from another perspective, of a handle assembly according to an embodiment of the present invention;

FIG. 3 is an exploded view of another handle assembly according to an embodiment of the present invention;

FIG. 4 is a schematic diagram of a structure of a handle decorating member according to an embodiment of the present invention;

FIG. 5 is partial enlarged view of portion I of FIG. 4;

FIG. 6 is a schematic diagram of a structure of a handle according to an embodiment of the present invention;

FIG. 7 is a schematic diagram of a structure, from a perspective, of a handle assembly according to an embodiment of the present invention;

FIG. 8 is a sectional view of FIG. 7 in direction A-A;

FIG. 9 is a schematic diagram of a structure, from another perspective, of a handle assembly according to an embodiment of the present invention;

FIG. 10 is a schematic diagram of a structure of a part of a control panel according to an embodiment of the present invention;

FIG. 11 is a schematic diagram of relative positions, from a perspective, of a handle assembly and a control panel according to an embodiment of the present invention;

FIG. 12 is a schematic diagram of relative positions, from another perspective, of a handle assembly and a control panel according to an embodiment of the present invention;

FIG. 13 is a partially exploded view of a detergent box and a control panel according to an embodiment of the present invention; and

FIG. 14 is a fully exploded view of a detergent box and a control panel according to an embodiment of the present invention.

[0021] To make the objectives, features and beneficial effects of the embodiments of the present invention more comprehensible, the specific embodiments of the present invention are further described in detail below with reference to the accompanying drawings.

[0022] Referring to FIG. 1, FIG. 1 is an exploded view, from a perspective, of a handle assembly according to an embodiment of the present invention. FIG. 2 is an exploded view, from another perspective, of a handle assembly according to an embodiment of the present invention. FIG. 3 is an exploded view of a handle assembly according to an embodiment of the present invention. FIG. 4 is a schematic diagram of a structure of a handle decorating member according to an embodiment of the present invention. FIG. 5 is partial enlarged view of portion I of FIG. 4. FIG. 6 is a schematic diagram of a structure of a handle according to an embodiment of the present invention. FIG. 7 is a schematic diagram of a structure, from a perspective, of a handle assembly according to an embodiment of the present invention. FIG. 8 is a sectional view of FIG. 7 in direction A-A. FIG. 13 is a partially exploded view of a detergent box and a control panel according to an embodiment of the present invention. FIG. 14 is a fully exploded view of a detergent box and a control panel according to an embodiment of the present invention. The following describes the structure of the handle assembly with reference to FIG. 1 to FIG. 8, FIG. 13, and FIG. 14.

[0023] In a specific implementation, the handle assembly 100 may be applied to a detergent box 200. The handle assembly 100 is connected to a box body 201 of the detergent box 200, to pull out or push in the box body 201.

[0024] The handle assembly 100 may include a handle decorating member 10, a handle 20, and a distance adjusting part 30. The distance adjusting part 30 is located between the handle decorating member 10 and the han-

dle 20, and is separately connected to the handle decorating member 10 and the handle 20. The distance adjusting part 30 is configured to adjust a relative distance between the handle 20 and the handle decorating member 10. When the handle decorating member 10 is pressed, the handle decorating member 10 moves toward the handle 20, to reduce the relative distance between the handle decorating member 10 and the handle 20. When the handle decorating member 10 is pressed at a first preset position, the box body 201 is in a locked state. When the handle decorating member 10 is pressed at a second preset position, the locked state of the box body 201 is released.

[0025] In view of the above, the handle decorating member 10 is connected to the handle 20 by means of the distance adjusting part 30. When handle decorating member 10 is pressed, the relative distance between the handle decorating member 10 and the handle 20 may be reduced, where when the handle decorating member 10 is at the first preset position, the box body 201 is in the locked state, and when the handle decorating member 10 is pressed to move by a preset stroke to the second position, the locked state of the box body 201 is released. According to the handle assembly 100 provided by embodiments of the present invention, by using the handle decorating member 10 as a trigger region of the handle assembly 100, both integrity and a trigger range of the handle assembly 100 may be taken into account while implementing adjustment of a state of the box body 201 of the detergent box 200.

[0026] In a specific implementation, the distance adjusting part 30 may have a plurality of structural forms, as along as the distance adjusting part 30 can connect the handle decorating member 10 and the handle 20, and can adjust the relative distance between the handle decorating member 10 and the handle 20.

[0027] In an embodiment of the present invention, the distance adjusting part 30 is a connecting post made of an elastic material such as elastic rubber or a spring. Both ends of the distance adjusting part 30 are connected to the handle 20 and the handle decorating member 10, respectively. When an external force acts on the handle decorating member 10, the connecting post is compressed to produce compressive deformation. When the external force acting on the handle decorating member 10 disappears, the connecting post recovers from the deformation and produces a resilience force. The resilience force may drive the handle decorating member 10 to move in a direction away from the handle 20.

[0028] In a specific implementation, there are a plurality of distance adjusting parts 30, and the plurality of distance adjusting parts 30 may be arranged between the handle 20 and the handle decorating member 10 in a relatively uniform manner, so that when the handle decorating member 10 is pressed, the distance adjusting parts 30 can disperse the acting force that acts on the handle decorating member 10, so that the handle decorating member 10 is uniformly stressed to move stably with respect to the handle 20. The actual number of the distance adjusting parts 30 is related to one or more factors such as the specific structure of the handle decorating member 10, the structure of the handle 20, the size of the handle decorating member 10, the size of the handle 20, or actual application requirements.

[0029] In another embodiment of the present invention, the distance adjusting part 30 includes a first connecting part 31, an elastic part 32, and a second connecting part 33. The first connecting part 31 is connected to the handle decorating member 10, and extends in a direction toward the handle 20. The elastic part 32 is sleeved on the first connecting part 31. The second connecting part 33 is connected to the handle 20, and is adapted to the first connecting part 31. The elastic part 32 may be a spring, a rubber ring or other elastic and deformable components.

[0030] In a specific implementation, the second connecting part 33 extends in a direction away from the handle decorating member 10 to form an accommodating cavity 331. The accommodating cavity 331 is configured to accommodate the first connecting part 31 and the elastic part 32, a side wall of the accommodating cavity 331 is provided with a connecting hole 332, and a size of the accommodating cavity 331 is greater than a diameter of the connecting hole 332. The accommodating cavity 331 has functions of accommodating and bearing the first connecting part 31 and the elastic part 32, and may further guide the movement of the first connecting part 31 with respect to the second connecting part 33. The side wall of the accommodating cavity 331 refers to a wall surface opposite to an opening of the accommodating cavity 331.

[0031] In a specific implementation, the accommodating cavity 331 may be in a shape of a cylinder, and a cross section thereof is circular. In this case, an inner diameter of the accommodating cavity 331 is greater than the diameter of the connecting hole 332. The accommodating cavity 331 may also be in the shape of a regular or irregular cube, and a cross section thereof is quadrilateral or polygonal. In this case, a minimum edge length of the accommodating cavity 331 is greater than the diameter of the connecting hole 332. The specific shape of the accommodating cavity 331 may be set according to the shape of an outer surface of the first connecting part 31, as long as the accommodating cavity 331 is adapted to the first connecting part 31.

[0032] In a specific implementation, the first connecting part 31 may include a first portion 311 and a second portion 312.

[0033] A first end of the first portion 311 is connected to the handle decorating member 10, a second end of the first portion 311 is connected to a first end of the second portion 312, and a size of the first portion 311 is greater than a size of the second portion 312. The second portion 312 passes through the connecting hole 332, and the exterior of the second portion 312 is sleeved with the elastic part 32.

[0034] In the embodiments of the present invention, to facilitate connection, an end face of a second end of the second portion 312 is parallel to a vertical direction, the first end of the first portion 311 has an inclined surface, and the inclined surface is configured to connect to the handle decorating member 10, so that the handle decorating member 10 forms a certain included angle with a horizontal plane after the handle decorating member 10 is mounted, to enable a face of a user to face the handle assembly 100, thereby improving user experiences.

[0035] In a specific implementation, the first connecting part 31 may further include a third portion 313, the third portion 313 is connected to an outer surface of the first end of the second portion 312, and a projection of the second portion 312 on an end face of the second end of the first portion 311 does not exceed the end face of the second end of the first portion 311.

[0036] In an embodiment of the present invention, both the first portion 311 and the second portion 312 are cylindrical, the third portion 313 is ring-shaped and sleeved on the second portion 312, and an outer diameter of the first portion 311 is greater than an outer diameter of the third portion 313. The outer diameter of the third portion 313 is separately greater than an outer diameter of the second portion 312 and the diameter of the connecting hole 332. The exteriors of the third portion 313 and the second portion 312 are sleeved with the elastic part 32.

[0037] In a specific implementation, the third portion 313 and the second portion 312 are located in the accommodating cavity 331. The second end of the first portion 311 is located in the accommodating cavity 331, and the first end of the first portion 311 is located outside the accommodating cavity 331.

[0038] In another embodiment of the present invention, referring to FIG. 4 and FIG. 5, there are a plurality of third portions 313, which are distributed on an outer surface of the second portion 312 at intervals. The third portions 313 may be uniformly distributed on the outer surface of the first end of the second portion 312 in a circumferential direction, and may also be non-uniformly distributed in the circumferential direction. The number of the third portions 313 shown in FIG. 5 is four. It can be understood that the number of the third portions 313 may also be three, six or any other number, and no repeated description is provided herein; and the specific number may be set according to the size of the second portion 312 or actual application requirements. The third portions 313 are distributed on the outer surface of the second portion 312 at intervals, and may reduce friction between the elastic part 32 sleeved on the third portions 313 and the third portions 313 in the event of elastic deformation, thereby improving the smoothness of the movement of the handle decorating member 10 with respect to the handle 20.

[0039] In the embodiments of the present invention, an outer surface of the first portion 311 may be provided with a guide rail 3111. When the first connecting part 31 moves with respect to the second connecting part 33, the guide rail 3111 contacts an inner wall surface of the accommodating cavity 331. Because a contact area between the guide rail 3111 and the inner wall surface of the accommodating cavity 331 is less than a contact area between the first portion 311 and the accommodating cavity 331, when the first connecting part 31 moves with respect to the second connecting part 33, friction between the first connecting part 31 and the second connecting part 33 may be reduced, thereby further improving the smoothness of the movement of the handle decorating member 10 with respect to the handle 20.

[0040] In a specific implementation, the second portion 312 and the handle 20 may be connected by means of snap-fit, and may also be connected by means of a fastener 34 such as a screw. When the second portion 312 and the handle 20 are connected by means of the fastener 34, the second portion 312 is provided with a mounting hole 3121 configured to mount the fastener 34. A size of a portion of the fastener 34 is greater than the diameters of the mounting hole 3121 and the connecting hole 332. For example, a diameter of a cap of the fastener 34 is greater than the diameter of the connecting hole 332, to prevent the fastener 34 from passing through the connecting hole 332 under the action of the elastic force of the elastic part 32.

[0041] Because the second portion 312 passes through the connecting hole 332, that is, an inner diameter of the second portion 312 is less than the diameter of the connecting hole 332, the second portion 312 may move with respect to the connecting hole 332. When the handle decorating member 10 is pressed, the second portion 312 of the first connecting part 31 moves with respect to the connecting hole 332 in a direction away from the handle 20, the elastic part 32 is compressed, and the relative distance between the handle decorating member 10 and the handle 20 is reduced gradually. The size of the second portion 312 is greater than the diameter of the connecting hole 332, and therefore, the third portion 313 cannot pass through the connecting hole 332, and a maximum movement distance of the handle decorating member 10 with respect to the handle 20 may be limited.

[0042] As the handle decorating member 10 is pressed continuously, the handle decorating member 10 moves continuously with respect to the handle 20. When the elastic part 32 is compressed to the greatest extent, or the third portion 313 is abutted against a side wall where the connecting hole 332 is located so that the relative distance between the handle decorating member 10 and the handle 20 cannot be further reduced, the handle decorating member 10 would push the handle 20 to move together in this case.

[0043] Referring to FIG. 9, FIG. 9 is a schematic diagram of a structure, from another perspective, of a handle assembly according to an embodiment of the present invention.

[0044] FIG. 10 is a schematic diagram of a structure of a part of a control panel according to an embodiment

of the present invention. FIG. 11 is a schematic diagram of relative positions, from a perspective, of a handle assembly and a control panel according to an embodiment of the present invention. FIG. 12 is a schematic diagram of relative positions, from another perspective, of a handle assembly and a control panel according to an embodiment of the present invention.

[0045] In a specific implementation, referring to FIG. 9 to FIG. 12, the handle 20 is provided with a stop part 21, and the stop part 21 faces the box body 201. The stop part 21 may be abutted against a control panel 301, to limit a maximum movement distance of the handle 20 with respect to the panel. The control panel 301 is configured to mount the detergent box 200. Specifically, the control panel 301 is provided with a handle stop surface 303, and when the stop part 21 is abutted against the handle stop surface 303, the handle 20 cannot continue to move with respect to the control panel 301.

[0046] In a specific implementation, there may be a plurality of stop parts 21, so that the handle 20 can be abutted against the control panel 301 in a relatively stable manner.

[0047] In an embodiment of the present invention, referring to FIG. 2 and FIG. 4, the handle decorating member 10 is provided with a box body connector 11, and the box body connector 11 is configured to connect the box body 201. The handle 20 is provided with a slot 27, the slot 27 is adapted to the box body connector 11, and the box body connector 11 is connected to the box body 201 through the slot 27.

[0048] In another embodiment of the present invention, referring to FIG. 3, the box body connector 11 is disposed on the handle 20.

[0049] In the embodiments of the present invention, referring to FIG. 1 and FIG. 6, the handle 20 is provided with a mounting groove 22, and the handle decorating member 10 is mounted in the groove 22.

[0050] In an embodiment of the present invention, a plane where an opening of the mounting groove 22 is located is flush with a front surface 12 of the handle decorating member 10, so that the appearance of the handle assembly 100 is relatively flat, and the integrity is relatively good.

[0051] In a specific implementation, referring to FIG. 4 and FIG. 6, a guide part 13 extends from the handle decorating member 10 toward the handle, and the guide part 13 is configured to guide the handle decorating member 10 to move with respect to the handle. The guide part 13 cooperates with the mounting groove 22 to form an enclosed space. Specifically, an inner wall 23 of the mounting groove 22 cooperates with the guide part 13 to form the enclosed space. The cooperation between the inner wall 23 of the mounting groove 22 and the guide part 13 may guide a movement direction of the handle decorating member 10. Moreover, a gap between the handle decorating member 10 and the handle 20 of the handle assembly 100 may be minimized as far as possible by means of the cooperation between the mounting groove 22 and the guide part 13, thereby improving the integrity of the handle assembly 100.

[0052] Referring to FIG. 6, FIG. 13, and FIG. 14, the handle 20 includes a bearing part 25 and a supporting part 26, where the bearing part 25 is configured to bear the handle decorating member 10, one end of the supporting part 26 is connected to a bottom end of the bearing part 25, a plane where the supporting part 26 is located is parallel to the horizontal plane, and an included angle between the supporting part 26 and the bearing part 25 is an acute angle, so that after the handle assembly 100 is mounted on the detergent box 200, relative viewing angles between the user and the handle assembly 100 as well as the control panel 301 are relatively good, which enables the face of the user to face the handle assembly 100 and the control panel 301, and enables the user to operate the handle assembly 100 or a display screen on the control panel 301 without stooping or squatting down, thereby improving user experiences. In addition, in a case where the thickness of the control panel 301 is unchanged, when a better viewing angle for user operations can be provided, feasibility for more modeling can also be provided.

[0053] In the embodiments of the present invention, the included angle between the supporting part 26 and the bearing part 25 ranges from 10° to 35°.

[0054] The embodiments of the present invention further provide a detergent box 200. The detergent box 200 may include the handle assembly 100 according to any one of the foregoing embodiments of the present invention. For a specific structure of the handle assembly 100, reference may be made to the description in any one of the foregoing embodiments of the present invention, and no repeated description is provided herein.

[0055] In a specific embodiment, the detergent box 200 may further include a locking mechanism and an ejection mechanism disposed on the box body 201. The locking mechanism is configured to lock the box body 201 and to release the locking of the box body 201 when the handle decorating member 10 is pressed to move by a preset stroke. The ejection mechanism may eject the box body 201 and the handle assembly 100 after the locking of the box body 201 is released. Because the handle assembly 100 may be ejected with the detergent box 200, neither a cross-sectional size of the detergent box 200 nor a volume of the detergent box 200 would be reduced.

[0056] The embodiments of the present invention further provide laundry equipment. Referring to FIG. 13 and FIG. 14, the laundry equipment may include the detergent box 200 according to any one of the foregoing embodiments of the present invention, and a control panel 301. The control panel 301 has a front surface 302, and the front surface 302 of the control panel 301 is flush with the front surface 12 of the handle decorating member 10, so that the integrity between the detergent box 200 and the control panel 301 is relatively good.

[0057] In a specific implementation, the control panel 301 may include a panel decorating member, and the

front surface 302 of the control panel 301 may be a front surface of the panel decorating member.

[0058] The control panel 301 is provided with a detergent box mounting opening 304, and the detergent box mounting opening 304 is configured to mount the detergent box 200.

[0059] Although specific implementation solutions have been described above, these implementation solutions are not intended to limit the scope disclosed in the present invention, even where only a single implementation solution is described with respect to a particular feature. The feature examples provided in the present invention are intended to be illustrative rather than limiting, unless otherwise stated. In a specific implementation, technical features of one or more dependent claims and technical features of independent claims are combined according to actual requirements and in a feasible technology. Technical features from corresponding independent claims may be combined by any proper manner rather than only by a specific combination exemplified in the claims.

[0060] Although the present invention is disclosed above, the present invention is not limited thereto. A person skilled in the art can make various changes and modifications without departing from the spirit and the scope of the present invention. Therefore, the protection scope of the present invention should be subject to the scope defined by the claims.

Claims

1. A handle assembly (100), applied to a detergent box (200), **characterized in that**, the handle assembly (100) is connected to a box body (201) of the detergent box (200), and the handle assembly (100) comprises a handle decorating member (10), a handle (20), and a distance adjusting part (30), wherein
the distance adjusting part (30) is located between the handle decorating member (10) and the handle (20), and is separately connected to the handle decorating member (10) and the handle (20), to reduce a relative distance between the handle decorating member (10) and the handle (20) when the handle decorating member (10) is pressed; and
wherein when the handle decorating member (10) at a first preset position, the box body (201) is in a locked state, and when the handle decorating member (10) is pressed to move by a preset stroke to a second position, the locked state of the box body (201) is released.

2. The handle assembly (100) according to claim 1, **characterized in that**, the distance adjusting part (30) comprises:

a first connecting part (31), connected to the handle decorating member (10), and extending in a direction toward the handle (20);
an elastic part (32), sleeved on the first connecting part (31); and
a second connecting part (33), connected to the handle (20), and adapted to the first connecting part (31).

3. The handle assembly (100) according to claim 2, **characterized in that**, the second connecting part (33) extends in a direction away from the handle decorating member (10) to form an accommodating cavity (331), the accommodating cavity (331) is configured to accommodate the first connecting part (31) and the elastic part (32), a side wall of the accommodating cavity (331) is provided with a connecting hole (332), and a size of the accommodating cavity (331) is greater than a diameter of the connecting hole (332).

4. The handle assembly (100) according to claims 2 or 3, **characterized in that**, the first connecting part (31) comprises a first portion (311) and a second portion (312), wherein
a first end of the first portion (311) is connected to the handle decorating member (10), a second end of the first portion (311) is connected to a first end of the second portion (312), and a size of the first portion (311) is greater than a size of the second portion (312); and
the second portion (312) passes through the connecting hole (332), and an exterior of the second portion (312) is sleeved with the elastic part (32).

5. The handle assembly (100) according to claim 4, **characterized in that**, the first connecting part (31) further comprises a third portion (313), the third portion (313) is connected to an outer surface of the first end of the second portion (312), and a projection of the second portion (312) on an end face of the second end of the first portion (311) does not exceed the end face of the second end of the first portion (311).

6. The handle assembly (100) according to any one of claims 1 to 5, **characterized in that**, the handle (20) is provided with a stop part (21), the stop part (21) faces the box body (201), and the stop part (21) is abutted against a control panel (301) for mounting the detergent box (200), to limit a maximum movement distance of the handle (20) with respect to the control panel (301).

7. The handle assembly (100) according to any one of claims 1 to 6, **characterized in that**, the handle decorating member (10) is provided with a box body connector (11) configured to connect the box body (201), and the handle (20) is provided with a slot (27) adapted to the box body connector (11).

8. The handle assembly (100) according to any one of claims 1 to 7, **characterized in that**, the handle (20) comprises a mounting groove (22), and the mounting groove (22) is configured to mount the handle decorating member (10).

9. The handle assembly (100) according to claim 8, **characterized in that**, a plane where an opening of the mounting groove (22) is located is flush with a front surface (12) of the handle decorating member (10).

10. The handle assembly (100) according to claims 8 or 9, **characterized in that**, a guide part (13) extends from the handle decorating member (10) toward the handle (20), the guide part (13) is configured to guide the movement of the handle decorating member (10) with respect to the handle (20), and the guide part (13) cooperates with the mounting groove (22) to form an enclosed space.

11. The handle assembly (100) according to any one of claims 1 to 10, **characterized in that**, the handle (20) comprises a bearing part (25) and a supporting part (26), wherein the bearing part (25) is configured to bear the handle decorating member (10); and
one end of the supporting part (26) is connected to a bottom end of the bearing part (25), a plane where the supporting part (26) is located is parallel to a horizontal plane, and an included angle between the supporting part (26) and the bearing part (25) is an acute angle.

12. A detergent box (200), **characterized by** comprising the handle assembly (100) according to any one of claims 1 to 11.

13. The detergent box (200) according to claim 12, **characterized in that**, the detergent box (200) further comprises a locking mechanism and an ejection mechanism disposed on the box body (201), wherein the locking mechanism is configured to lock the box body (201) and to release the locking of the box body (201) when the handle decorating member (10) is pressed to move by a preset stroke; and
the ejection mechanism is adapted to eject the box body (201) and the handle assembly (100) after the locking of the box body (201) is released.

14. Laundry equipment, **characterized by** comprising the detergent box (200) according to claim 12 or 13, and a control panel (301), wherein the control panel (301) has a front surface (302), and the front surface (302) of the control panel (301) is flush with a front surface (12) of the handle decorating member (10).

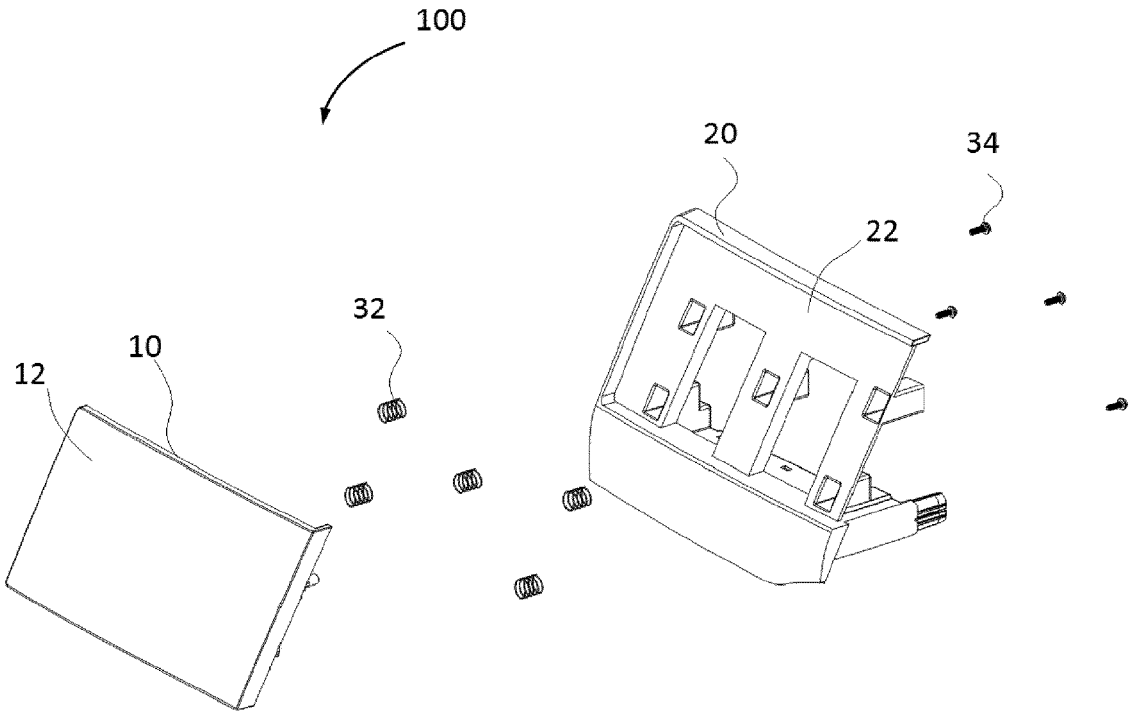

FIG. 1

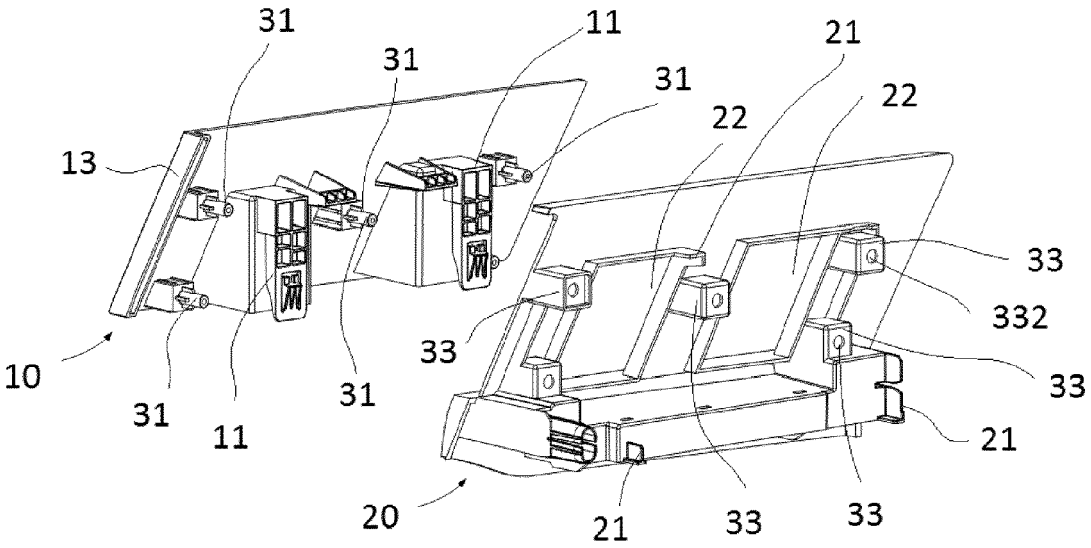

FIG. 2

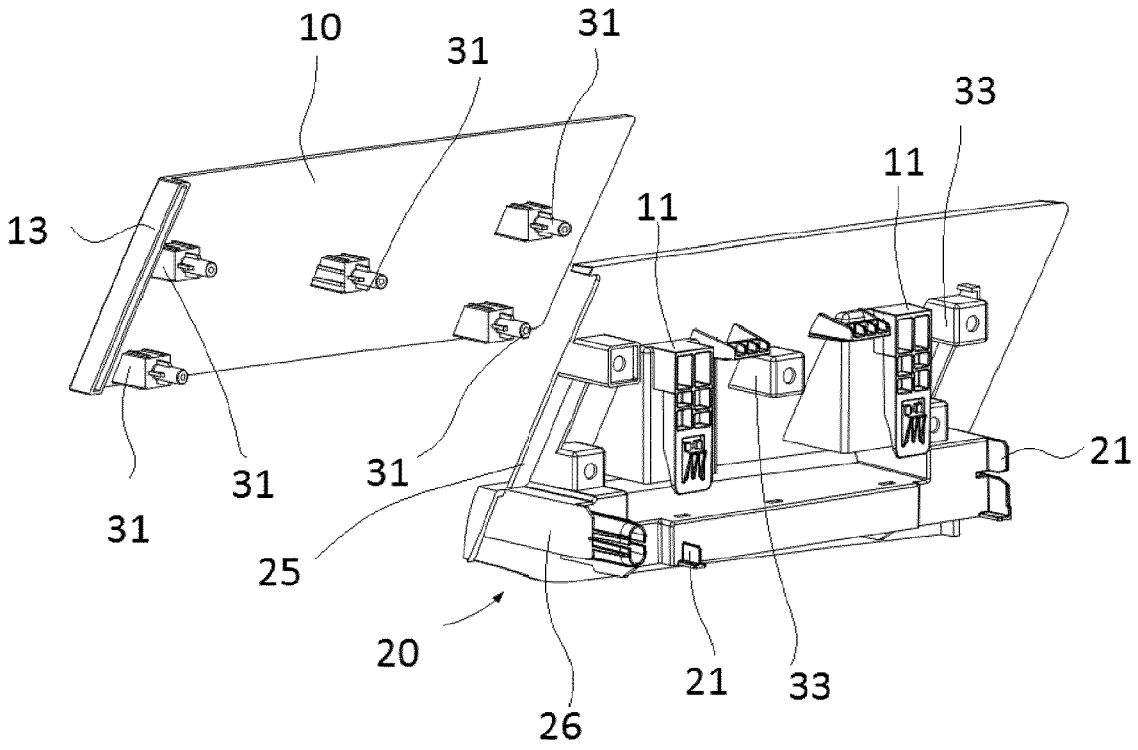

FIG. 3

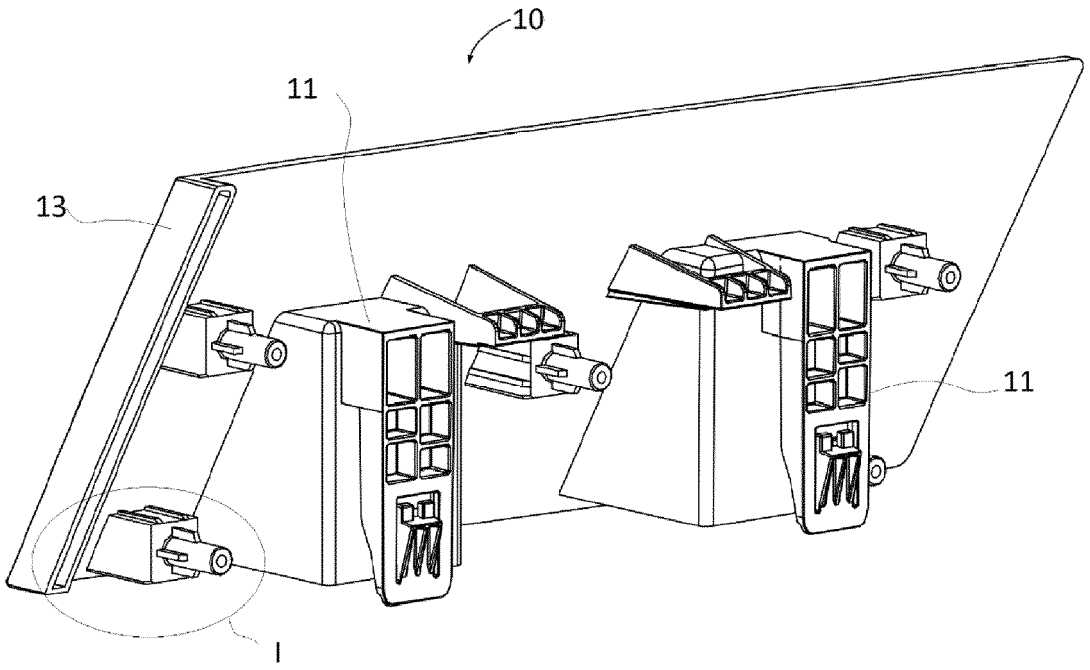

FIG. 4

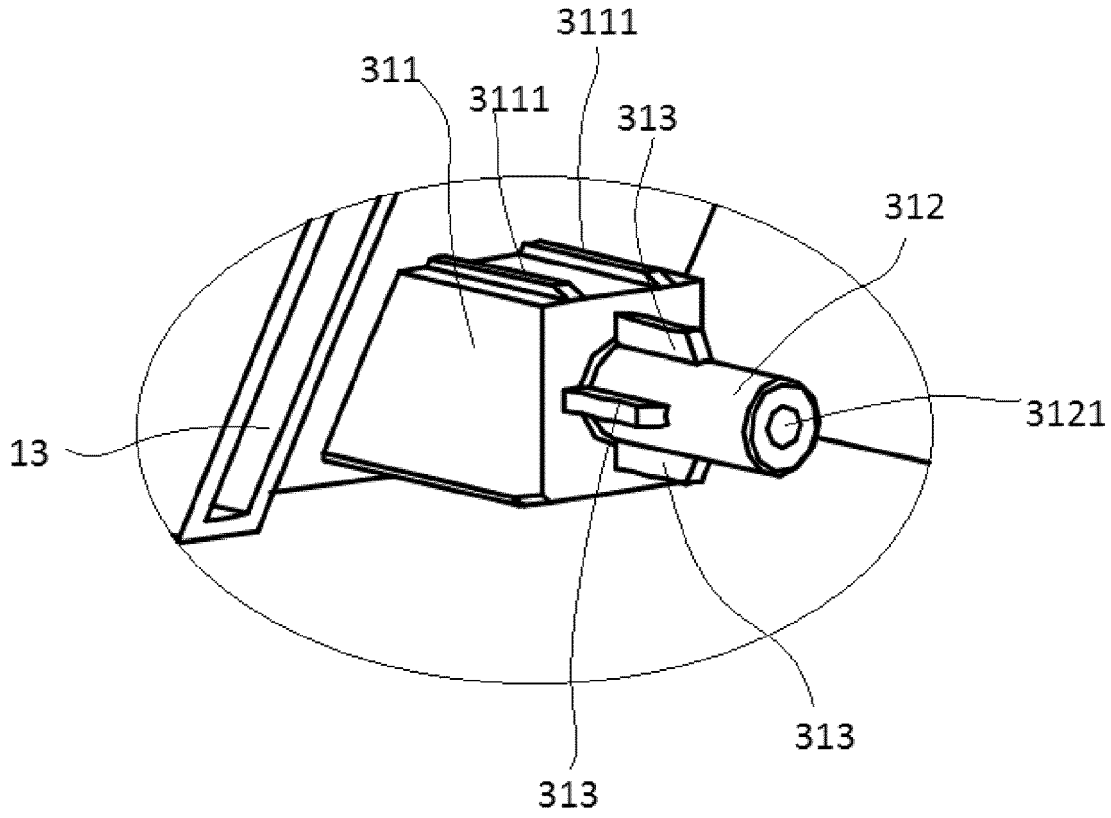

FIG. 5

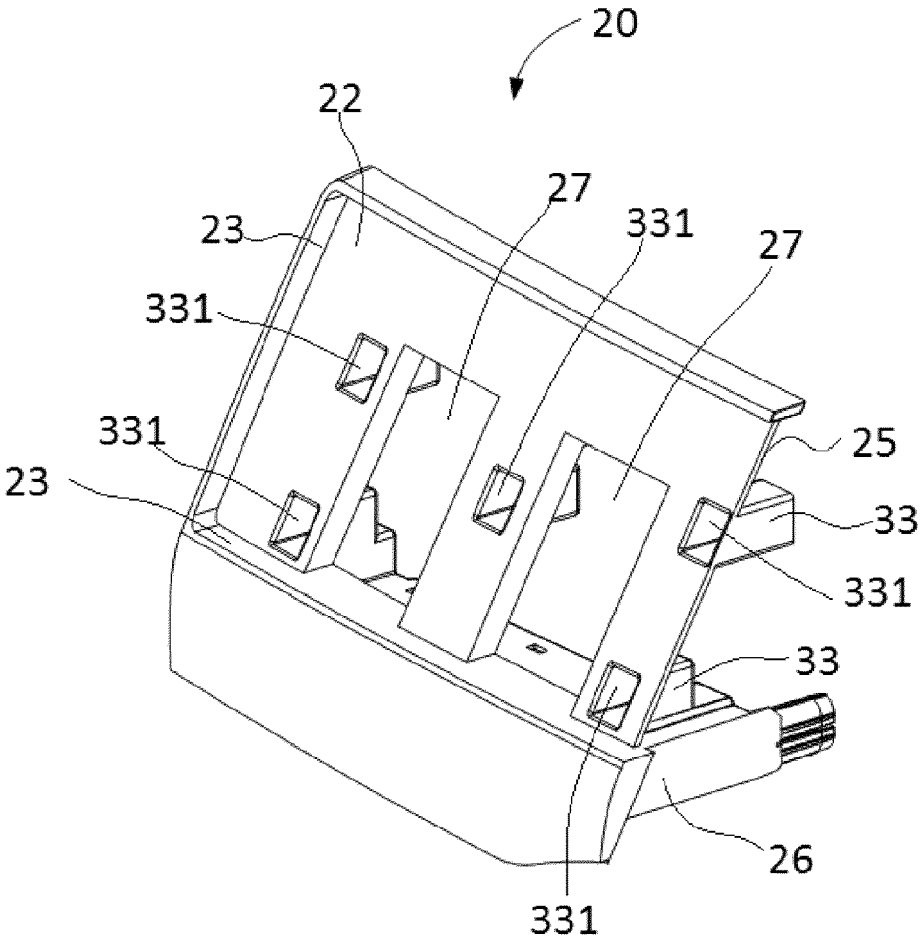

FIG. 6

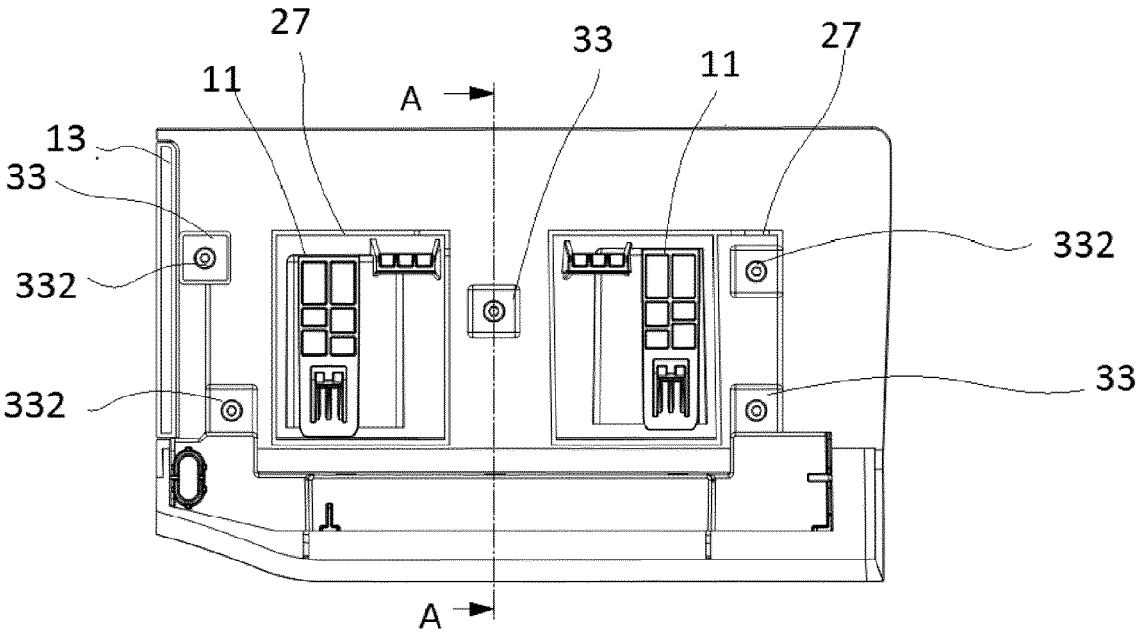

FIG. 7

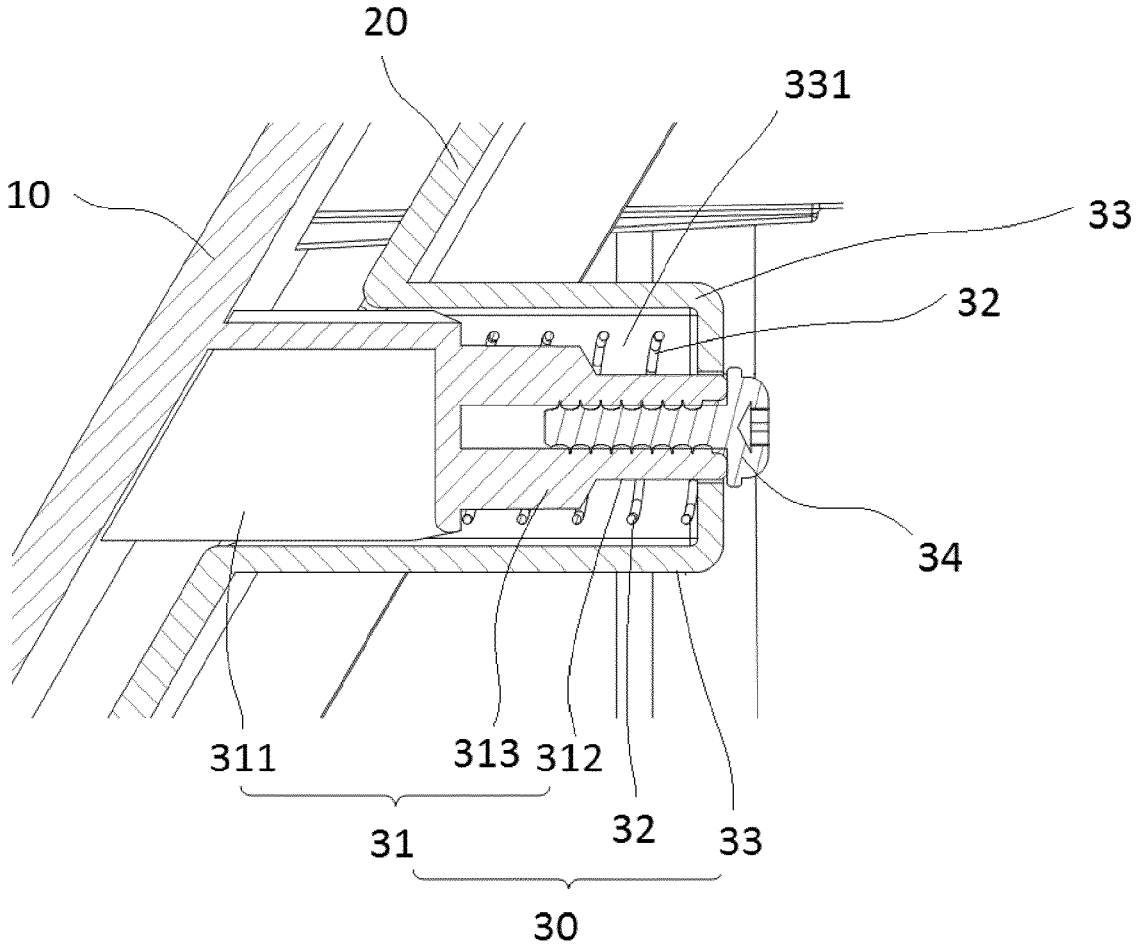

FIG. 8

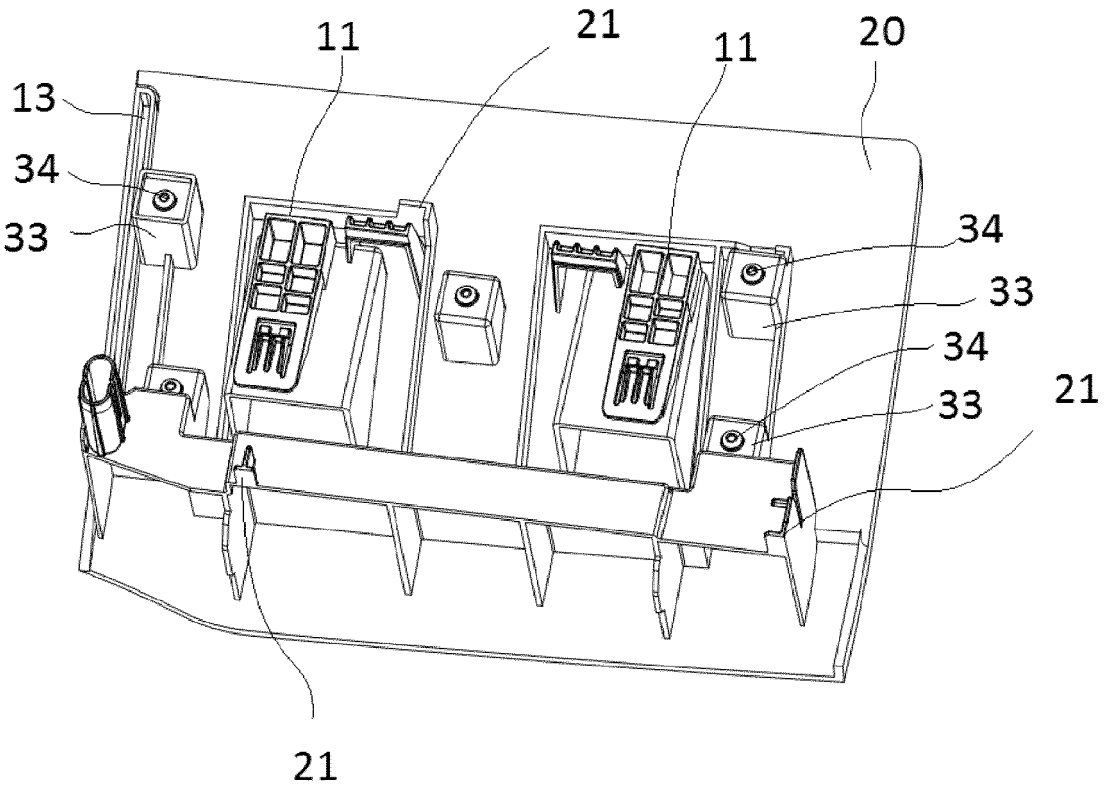

FIG. 9

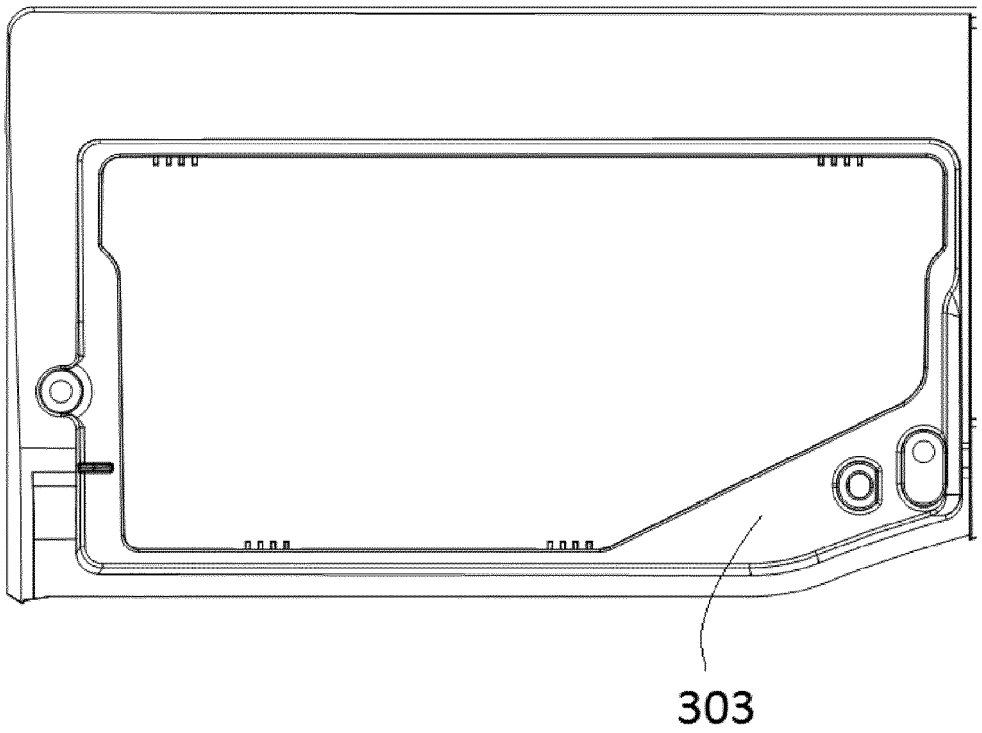

FIG. 10

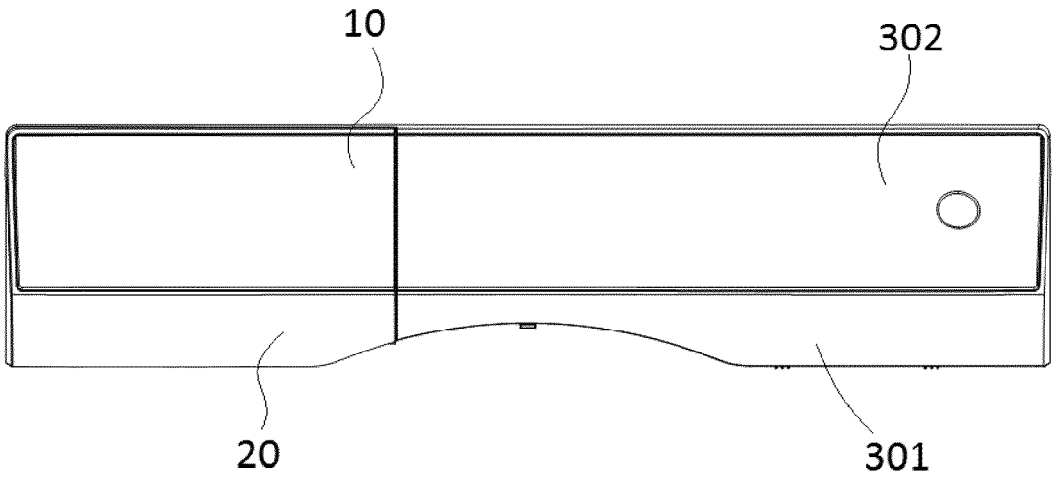

FIG. 11

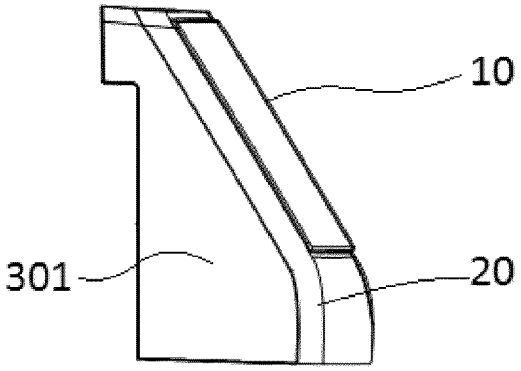

FIG. 12

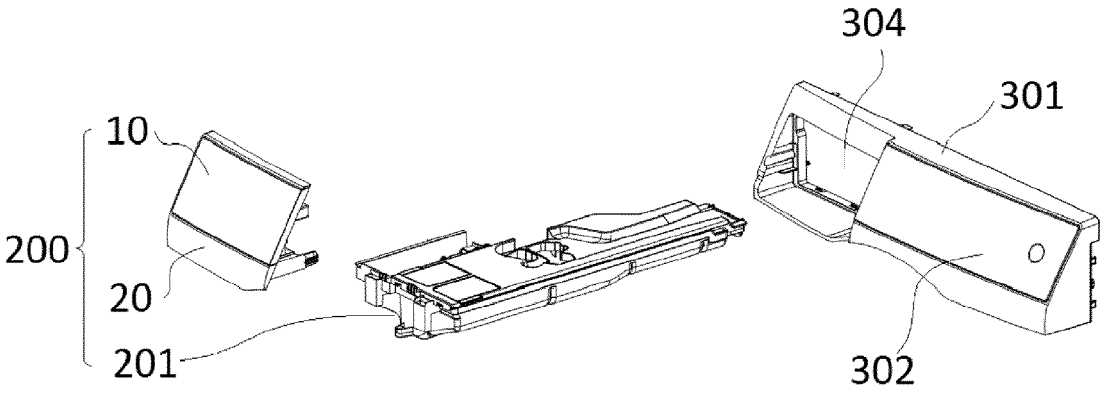

FIG. 13

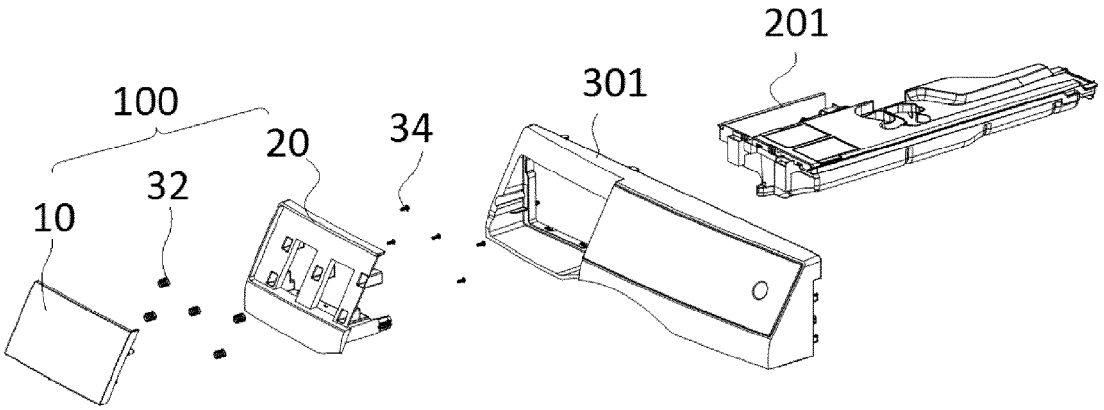

FIG. 14

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EUROPEAN SEARCH REPORT

Application Number
EP 21 15 9279

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	EP 1 905 881 A2 (LG ELECTRONICS INC [KR]) 2 April 2008 (2008-04-02) * the whole document *	1-14	INV. D06F39/02
A	US 2004/093913 A1 (BOLDUAN EDWIN [DE] ET AL) 20 May 2004 (2004-05-20) * paragraph [0002] - paragraph [0008] * * paragraph [0033] - paragraph [0036] *	1-14	
A	EP 1 903 138 A1 (LG ELECTRONICS INC [KR]) 26 March 2008 (2008-03-26) * paragraph [0017] - paragraph [0021] * * paragraph [0031] - paragraph [0032] *	1-14	

TECHNICAL FIELDS SEARCHED (IPC)

D06F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	24 June 2021	Jezierski, Krzysztof

CATEGORY OF CITED DOCUMENTS

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24-06-2021

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1905881 A2	02-04-2008	CN 101153449 A	02-04-2008
		EP 1905881 A2	02-04-2008
		KR 20080030139 A	04-04-2008
		US 2008078211 A1	03-04-2008
US 2004093913 A1	20-05-2004	AT 277218 T	15-10-2004
		DE 10065337 A1	04-07-2002
		EP 1349977 A1	08-10-2003
		ES 2228751 T3	16-04-2005
		JP 3958212 B2	15-08-2007
		JP 2004516873 A	10-06-2004
		KR 20030063463 A	28-07-2003
		US 2004093913 A1	20-05-2004
		WO 02052091 A1	04-07-2002
EP 1903138 A1	26-03-2008	CN 101153452 A	02-04-2008
		EP 1903138 A1	26-03-2008
		KR 20080027677 A	28-03-2008
		US 2008072632 A1	27-03-2008

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