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(54) **DETERGENT BOX ASSEMBLY AND WASHING DEVICE INCLUDING DETERGENT BOX ASSEMBLY**

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Description

[0001] The present invention relates to the field of household appliance technologies, and in particular, to a detergent box assembly and a washing device including the detergent box assembly.

[0002] At present, a washing device is usually provided with a detergent box for containing detergent (see for instance documents EP 1 905 881 A2 and US 5 675 994 A).

[0003] However, in most cases, manual operation is required for opening or closing an existing detergent box. In addition, when the washing device wobbles, the detergent box is likely to slip down due to the wobbling.

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

[0005] The detergent box assembly provided in the embodiments of the present invention, includes: a box body adapted to be pushed, a motion subassembly adapted to drive the box body to pop out, and a lock subassembly adapted to lock or unlock the box body. The lock subassembly includes a push rod, a motion diverter movably connected to the push rod, and a lock pin movably connected to the motion diverter. The push rod is adapted to move with the box body when the box body is pushed along a first direction, and during moving, to push the motion diverter to rotate, thereby driving the lock pin to move to lock or unlock the box body.

[0006] Optionally, the lock pin is disposed to move along a third direction and a fourth direction that is opposite to the third direction. The third direction and the fourth direction are respectively angled with the first direction.

[0007] Optionally, the lock pin includes a unidirectional rotary groove. The lock subassembly includes a housing adapted to contain the lock pin, a first spring connected between the housing and the lock pin, and a swing hook with a first end fixed on the housing and a second end movable within the unidirectional rotary groove. The unidirectional rotary groove includes a first rest position and a second rest position. By the effect of the first spring, the second end of the swing hook may stay at the first rest position or the second rest position. When the lock pin is pushed by the motion diverter, the second end of the swing hook may switch between the first rest position and the second rest position. When the second end of the swing hook is located at the first rest position, the lock pin extends into a lock slot of the box body. When the second end of the swing hook is located at the second rest position, the lock pin detaches from the lock slot.

[0008] Optionally, the lock pin includes a third contact portion, adapted to be abutted against by the motion diverter when the motion diverter rotates, to push the lock pin along a third direction.

[0009] Optionally, the motion diverter includes a first arm and a second arm that are co-axially connected. The

first arm is adapted to, when the push rod is pushed, be abutted against by the push rod to rotate, and the second arm is adapted to rotate with the first arm to abut against the third contact portion, thereby driving the lock pin to move along a third direction.

[0010] Optionally, the lock pin includes a bolt portion extending toward the box body. The bolt portion is adapted to extend along a fourth direction into a lock slot of the box body to limit movement of the box body along the first direction or a second direction that is opposite to the first direction to lock the box body, and to retract out of the box body along a third direction from the lock slot of the box body to lift the limit to unlock the box body.

[0011] Optionally, the push rod includes a first contact portion extending toward the box body and a second contact portion extending toward the motion diverter. The first contact portion is adapted to move with the box body when the box body is pushed, to drive the push rod to move. The second contact portion is adapted to abut against the motion diverter when the push rod moves, to drive the motion diverter to rotate.

[0012] Optionally, the first contact portion of the push rod may come into contact with the motion subassembly and be pushed by the motion subassembly to move.

[0013] Optionally, the motion subassembly includes a rack connected to the box body, a gear engaging with the rack, and an energy storage apparatus connected to the gear. The rack is adapted to move with the box body when the box body is pushed, to drive the gear to rotate along a first rotation direction, thereby driving the energy storage apparatus to store energy. The energy storage apparatus is adapted to release energy when the box body is unlocked, to drive the gear to rotate along a second rotation direction that is opposite to the first rotation direction, so that the rack draws the box body to pop out along the second direction that is opposite to the first direction.

[0014] Optionally, the rack is provided with a clamping portion extending toward the box body. The box body is provided with a receiving portion fitted with the clamping portion. The clamping portion is clamped in the receiving portion to join the rack to the box body.

[0015] Optionally, the detergent box assembly includes a supporting member disposed out of the box body. The supporting member is adapted to enable the rack to be movably supported on the supporting member.

[0016] Optionally, the detergent box assembly includes an outer shell. The supporting member, the motion subassembly, and the lock subassembly are disposed on the outer shell. The box body is contained and supported in a space surrounded by the outer shell.

[0017] The washing device provided in the embodiments of the present invention includes a washing tub adapted to contain items to be washed and the foregoing detergent box assembly. The box body of the detergent box assembly is adapted to contain detergent and provide the detergent for the washing tub.

[0018] Compared with the related art, the technical so-

lutions of the embodiments of the present invention have the following beneficial effects. For example, the box body in the detergent box assembly that is adapted to contain detergent can be closed and locked or unlocked and opened simply when being pushed. The operation is easy, time-saving and effort-saving.

[0019] In another example, the box body is in a locked state when being closed, so that the box body can be prevented from slipping down due to wobbling.

[0020] In another example, due to the effect of the motion diverter, a direction in which the lock pin acts is different from a direction in which the box body moves. Therefore, the lock pin can be easily inserted into the box body to lock the box body. In addition, no additional component or force is required for stabilizing the lock pin when the box body is in a locked state.

[0021] In another example, by means of the combination of the rack, the gear, and the energy storage apparatus in the motion subassembly, the box body can automatically pop out to be opened after being unlocked.

[0022] In another example, by disposing a damping component in the energy storage apparatus, the box body can pop out gently to ensure stability in the pop-out process.

FIG. 1 is a schematic structural diagram of a detergent box assembly according to an embodiment of the present invention;

FIG. 2 is a schematic structural diagram of a lock subassembly according to an embodiment of the present invention;

FIG. 3 is a left view of the lock subassembly shown in FIG. 2;

FIG. 4 is a schematic partial diagram of a lock pin in a unidirectional rotary groove according to an embodiment of the present invention;

FIG. 5 is a front view of the unidirectional rotary groove shown in FIG. 4;

FIG. 6 is a sectional view of the unidirectional rotary groove shown in FIG. 5 taken along a plane S-S;

FIG. 7 is a schematic structural diagram of a detergent box assembly in an unlocked state according to an embodiment of the present invention;

FIG. 8 is a schematic structural diagram of a detergent box assembly in a locked state according to an embodiment of the present invention; and

FIG. 9 is a schematic structural diagram of a washing device according to an embodiment of the present invention.

[0023] An existing detergent box is opened or closed totally manually, and the detergent box is likely to slip down when the washing device wobbles.

[0024] Different from the related art, embodiments of the present invention provide an improved detergent box assembly and a washing device including the detergent box assembly.

[0025] The detergent box assembly includes: a box

body adapted to be pushed, a motion subassembly adapted to drive the box body to pop out, and a lock subassembly adapted to lock or unlock the box body. The lock subassembly includes a push rod, a motion diverter movably connected to the push rod, and a lock pin movably connected to the motion diverter. The push rod is adapted to move with the box body when the box body is pushed along a first direction, and during moving, to push the motion diverter to rotate, thereby driving the lock pin to move to lock or unlock the box body.

[0026] Compared with the related art, in the technical solutions provided in the embodiments of the present invention, a box body adapted to contain detergent can be closed and locked or unlocked and opened simply when being pushed. The operation is easy, time-saving and effort-saving. In addition, the box body is in a locked state when being closed, so that the box body can be prevented from slipping down due to wobbling.

[0027] For ease of description of the detergent box assembly and the washing device provided in the embodiments of the present invention, some accompanying drawings provided in the embodiments of the present invention show six directions: front, back, left, right, up, and down. The six directions are determined from an angle of view of the detergent box assembly and the washing device facing a user in a normal use state. "Front" indicates a direction in which the detergent box assembly and the washing device face the user. "Back" indicates a direction that is opposite to "front", "left", "right", "up", and "down" are determined according to natural orientation division based on the foregoing "front" and "back" directions. It should be understood that, from another angle of view of the detergent box assembly and the washing device, there are also directions of front, back, left, right, up, and down corresponding to the angle of view. The directions of front, back, left, right, up, and down shown in some accompanying drawings provided in the embodiments of the present invention are merely used for ease of description of the technical solutions provided in the embodiments of the present invention, but do not limit explanation of the technical solutions.

[0028] 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 described in detail below with reference to the accompanying drawings.

[0029] Referring to FIG. 1, a detergent box assembly 10 includes a box body 100, a motion subassembly 200, and a lock subassembly 300.

[0030] Specifically, the box body 100 is configured to contain detergent, and is adapted to be pushed to be closed and locked, or to be unlocked and opened. The lock subassembly 300 is adapted to directly or indirectly be driven by the box body 100 when the box body 100 is pushed, to lock the box body 100 or unlock the box body 100. The motion subassembly 200 is adapted to drive the box body 100 to pop out when the box body 100 is unlocked, to open the box body 100.

[0031] In the embodiments of the present invention, a direction in which the box body 100 is pushed and a direction in which the box body 100 pops out are both related to an orientation of the box body 100 in a space. For ease of description, in the embodiments of the present invention, the direction in which the box body 100 is pushed is uniformly referred to as a first direction M1, and the direction in which the box body 100 pops out is uniformly referred to as a second direction M2. Correspondingly, two directions perpendicular to the first direction M1 and the second direction M2 are respectively referred to as a third direction M3 and a fourth direction M4.

[0032] In the embodiments shown in FIG. 1 to FIG. 9, the first direction M1 may be a "front" direction, the second direction M2 may be a "back" direction that is opposite to the first direction M1, the third direction M3 may be an "up" direction, and the fourth direction M4 may be a "down" direction that is opposite to the third direction M3. In the embodiments of the present invention, these directions are merely used for ease of description of the technical solutions provided in the embodiments shown in FIG. 1 to FIG. 9, but do not limit explanation of the technical solutions.

[0033] Referring to FIG. 1, the box body 100 may be pushed along the first direction M1 and pop out along the second direction M2 that is opposite to the first direction M1 to be opened.

[0034] During specific implementation, the box body 100 has an opening 101 that opens upward for taking out or putting in detergent when the box body 100 pops out to be opened.

[0035] In the embodiments of the present invention, the box body 100 may be movably connected to the lock subassembly 300 directly or indirectly. When the box body 100 is movably connected to the lock subassembly 300 directly, the box body 100 is adapted to abut against the lock subassembly 300 directly when being pushed, and to drive the lock subassembly 300 to move to lock or unlock the box body 100. When the box body 100 is movably connected to the lock subassembly 300 indirectly, the box body 100 is adapted to abut against the lock subassembly 300 by means of the motion subassembly 200 when being pushed, and to drive the lock subassembly 300 to move to lock or unlock the box body 100.

[0036] Referring to FIG. 1 to FIG. 3, the lock subassembly 300 includes a push rod 310, a motion diverter 320 movably connected to the push rod 310, a lock pin 330 movably connected to the motion diverter 320, and a housing 301 adapted to contain the push rod 310, the motion diverter 320, and the lock pin 330.

[0037] Specifically, the housing 301 is located above the box body 100 and includes a top wall 301a, a bottom wall 301b, and a side wall 301c connecting the top wall 301a and the bottom wall 301b. The push rod 310 is partially contained in the housing 301. The motion diverter 320 is entirely contained in the housing 301 and mount-

ed rotatably on the side wall 301c. The lock pin 330 is partially or entirely contained in the housing 301.

[0038] The push rod 310 is adapted to be pushed by the box body 100 to move along the first direction M1 with the box body 100 when the box body 100 is pushed along the first direction M1, and is adapted to, when being pushed by the box body 100 to move along the first direction M1, push the motion diverter 320 to rotate.

[0039] During specific implementation, the motion diverter 320 and the box body 100 are respectively disposed on an upper side and a lower side of the push rod 310. The push rod 310 may include a first contact portion 311 extending toward the box body 100 and a second contact portion 312 extending toward the motion diverter 320.

[0040] The first contact portion 311 extends out of the housing 301 and is adapted to, when the box body 100 is pushed along the first direction M1, be abutted against and moved by the box body 100 to move along the first direction M1. When moving along the first direction M1, the first contact portion 311 drives the entire push rod 310 to move along the first direction M1.

[0041] The second contact portion 312 is adapted to move with the push rod 310 when the push rod 310 moves along the first direction M1, to abut against the motion diverter 320 and push the motion diverter 320 to rotate.

[0042] The motion diverter 320 is movably connected to the push rod 310, and is adapted to rotate when being pushed by the push rod 310, to abut against the lock pin 330 and push the lock pin 330 to move.

[0043] During specific implementation, the motion diverter 320 may include a first arm 321, a second arm 322, and a rotation shaft 323 connecting the first arm 321 and the second arm 322. The rotation shaft 323 is fixed on the side wall 301c of the housing 301, and the first arm 321 and the second arm 322 are rotatably connected to the rotation shaft 323. For example, the first arm 321 and the second arm 322 are connected to the rotation shaft 323 by means of a same bearing and are rotatable around the rotation shaft 323 synchronously by means of the same bearing.

[0044] In the embodiments of the present invention, the first arm 321 is adapted to, when the push rod 310 is pushed, be abutted against by the push rod 310 to rotate, and the second arm 322 is adapted to rotate with the first arm 321 to abut against the lock pin 330 and drive the lock pin 330 to move.

[0045] During specific implementation, projections of the first arm 321 of the motion diverter 320 and the second contact portion 312 of the push rod 310 at least partially overlap in a plane perpendicular to the first direction M1 and the second direction M2. Therefore, when the push rod 310 moves along the first direction M1, the first arm 321 can be pushed by the second contact portion 312 to rotate around the rotation shaft 323.

[0046] Projections of the second arm 322 of the motion diverter 320 and the lock pin 330 at least partially overlap in a plane perpendicular to the third direction M3 and the

fourth direction M4. Therefore, when rotating with the first arm 321, the second arm 322 can abut against the lock pin 330 and drive the lock pin 330 to move.

[0047] During specific implementation, the lock pin 330 may be disposed to move along the third direction M3 and the fourth direction M4 that is opposite to the third direction M3.

[0048] In the embodiments of the present invention, the third direction M3 and the fourth direction M4 are respectively angled with the first direction M1. The angles range from 0 degree to 180 degrees with the exception of 0 degree and 180 degrees.

[0049] In some preferred specific examples, the angles are 90 degrees, that is, the third direction M3 and the fourth direction M4 are respectively perpendicular to the first direction M1. For instance, the first direction M1 is a front direction, the third direction M3 is an up direction, and the fourth direction M4 is a down direction.

[0050] For ease of description, in the embodiments of the present invention, a motion direction in which the lock pin 330 is abutted against and driven by the second arm 322 of the motion diverter 320 is uniformly referred to as the third direction M3. Therefore, the second arm 322 of the motion diverter 320 is adapted to abut against the lock pin 330 and drive the lock pin 330 to move along the third direction M3 when the motion diverter 320 rotates.

[0051] The lock pin 330 is movably connected to the motion diverter 320, and is adapted to, when being pushed by the motion diverter 320, move along the third direction M3 to unlock the box body 100 or move along the fourth direction M4 to lock the box body 100.

[0052] During specific implementation, the lock pin 330 may include a third contact portion 332 and a bolt portion 333.

[0053] The third contact portion 332 is adapted to be abutted against by the second arm 322 of the motion diverter 320 when the motion diverter 320 rotates, so that the lock pin 330 is pushed along the third direction M3.

[0054] During specific implementation, projections of the second arm 322 of the motion diverter 320 and the third contact portion 332 at least partially overlap in a plane perpendicular to the third direction M3 and the fourth direction M4. Therefore, the second arm 322 can abut against the third contact portion 332 when rotating with the first arm 321, to drive the lock pin 330 to move along the third direction M3.

[0055] Referring to FIG. 7 and FIG. 8, the box body 100 may include a lock slot 120 extending toward the fourth direction M4. The lock slot 120 is disposed corresponding to the bolt portion 333 of the lock pin 330 and is adapted to at least partially receive the bolt portion 333 when the bolt portion 333 moves along the fourth direction M4, to lock the box body 100.

[0056] Specifically, the bolt portion 333 is adapted to be contained in the housing 301 or extend out of the housing 301 when the box body 100 is unlocked, is adapted to extend along the fourth direction M4 that is opposite to the third direction M3 into the lock slot 120 of the box

body 100 to limit movement of the box body 100 along the first direction M1 or the second direction M2 that is opposite to the first direction M1 to lock the box body 100, and is further adapted to retract out of the box body 100 along the third direction M3 from the lock slot 120 of the box body 100 to lift the limit to unlock the box body 100.

[0057] Still referring to FIG. 1 to FIG. 3, the lock pin 330 further includes a unidirectional rotary groove 331 that is located above the third contact portion 332. The lock subassembly 300 further includes a first spring 340 connected between the housing 301 and the lock pin 330 and a swing hook 350 with a first end 351 fixed on the housing 301 and a second end 352 movable within the unidirectional rotary groove 331.

[0058] During specific implementation, the first spring 340 is always in a compressed state, and two ends of the first spring 340 are respectively fixedly connected to the top wall 301a of the housing 301 and an end of the lock pin 330 that is away from the bolt portion 333 of the lock pin 330. Two ends of the swing hook 350 are respectively the first end 351 and the second end 352. The first end 351 is fixedly connected to the top wall 301a of the housing 301, and the second end 352 is movably disposed within the unidirectional rotary groove 331.

[0059] Referring to FIG. 4 and FIG. 5, the unidirectional rotary groove 331 includes a first rest position A and a second rest position C. By the effect of the first spring 340, the second end 352 of the swing hook 350 may stay at the first rest position A or the second rest position C. When the lock pin 330 is pushed by the motion diverter 320, the second end 352 of the swing hook 350 may switch between the first rest position A and the second rest position C. When the second end 352 of the swing hook 350 is located at the first rest position A, the lock pin 330 extends into the lock slot 120 of the box body 100. When the second end 352 of the swing hook 350 is located at the second rest position C, the lock pin 330 detaches from the lock slot 120.

[0060] During specific implementation, the unidirectional rotary groove 331 is a closed-loop groove, and further includes a first transition position B and a second transition position D that are located between the first rest position A and the second rest position C. The first rest position A, the first transition position B, the second rest position C, and the second transition position D are sequentially contained in the closed-loop groove, and in the third direction M3, the second rest position C is lower than the first rest position A but higher than the first transition position B and the second transition position D.

[0061] Therefore, the first spring 340 is more compressed when the second end 352 of the swing hook 350 is located at the second rest position C than when the second end 352 is located at the first rest position A, but less compressed than when the second end 352 is located at the first transition position B and the second transition position D.

[0062] The unidirectional rotary groove 331 further in-

cludes a first rotary section 331a connecting the first rest position A and the first transition position B, a second rotary section 331b connecting the first transition position B and the second rest position C, a third rotary section 331c connecting the second rest position C and the second transition position D, and a fourth rotary section 331d connecting the second transition position D and the first rest position A.

[0063] Referring to FIG. 6, a groove depth of the first rotary section 331a gradually decreases along a direction of the first rest position A pointing to the first transition position B, a groove depth of the second rotary section 331b gradually decreases along a direction of the first transition position B pointing to the second rest position C, a groove depth of the third rotary section 331c gradually decreases along a direction of the second rest position C pointing to the second transition position D, and a groove depth of the fourth rotary section 331d gradually decreases along a direction of the second transition position D pointing to the first rest position A.

[0064] A groove depth of a transition from the first rotary section 331a toward the second rotary section 331b abruptly increases at the first transition position B, a groove depth of a transition from the second rotary section 331b toward the third rotary section 331c abruptly increases at the second rest position C, a groove depth of a transition from the third rotary section 331c toward the fourth rotary section 331d abruptly increases at the second transition position D, and a groove depth of a transition from the fourth rotary section 331d toward the first rotary section 331a abruptly increases at the first rest position A.

[0065] Referring to FIG. 7, when the box body 100 is in an unlocked state, the second end 352 of the swing hook 350 stays at the second rest position C. In this case, if the second arm 322 of the motion diverter 320 drives the lock pin 330 to move along the third direction M3, the first spring 340 is squeezed by the lock pin 330 along the third direction M3 to be compressed along the third direction M3. At the same time, the second end 352 of the swing hook 350 moves along the third rotary section 331c of the unidirectional rotary groove 331 from the second rest position C to the second transition position D.

[0066] Given that in the third direction M3, the second transition position D is lower than the third rotary section 331c and the fourth rotary section 331d that are adjacent to the second transition position D, the second end 352 of the swing hook 350 cannot move toward a lower position in the third direction M3, so that the first spring 340 cannot be further compressed. In this case, as the first spring 340 is in a compressed state, the first spring 340 automatically elongates toward a direction of releasing compression, that is, elongating toward the fourth direction M4 that is opposite to the third direction M3.

[0067] When elongating toward the fourth direction M4, the first spring 340 drives the lock pin 330 to move along the fourth direction M4 at the same time. When moving along the fourth direction M4, the lock pin 330

drives the second end 352 of the swing hook 350 to move along the fourth rotary section 331d of the unidirectional rotary groove 331 from the second transition position D to the first rest position A.

[0068] Given that the groove depth of the transition from the third rotary section 331c toward the fourth rotary section 331d abruptly increases at the second transition position D, the second end 352 of the swing hook 350 at the second transition position D is more likely to move to the fourth rotary section 331d rather than the third rotary section 331c. This is because if the second end 352 of the swing hook 350 cannot stride over the abruptly increased groove depth of the transition between the third rotary section 331c and the fourth rotary section 331d at the second transition position D, the second end 352 of the swing hook 350 cannot move from the second transition position D to the third rotary section 331c consequently.

[0069] Given that in the third direction M3, the first rest position A is higher than the fourth rotary section 331d and the first rotary section 331a that are adjacent to the first rest position A, the second end 352 of the swing hook 350 cannot move toward a higher position in the third direction M3, so that the first spring 340 cannot further elongate. Further, as the first spring 340 is still in a compressed state, the second end 352 of the swing hook 350 stays at the first rest position A. In this case, the bolt portion 333 of the lock pin 330 inserts into the lock slot 120 of the box body 100 to lock the box body 100.

[0070] Referring to FIG. 8, when the box body 100 is in a locked state, the second end 352 of the swing hook 350 stays at the first rest position A. In this case, if the second arm 322 of the motion diverter 320 drives the lock pin 330 to move along the third direction M3, the first spring 340 is squeezed by the lock pin 330 along the third direction M3 to be compressed along the third direction M3. At the same time, the second end 352 of the swing hook 350 moves along the first rotary section 331a of the unidirectional rotary groove 331 from the first rest position A to the first transition position B. In this case, the bolt portion 333 of the lock pin 330 retracts out of the box body 100 along the third direction M3 from the lock slot 120 of the box body 100 to unlock the box body 100.

[0071] Given that in the third direction M3, the first transition position B is lower than the first rotary section 331a and the second rotary section 331b that are adjacent to the first transition position B, the second end 352 of the swing hook 350 cannot move toward a lower position in the third direction M3, so that the first spring 340 cannot be further compressed. In this case, as the first spring 340 is in a compressed state, the first spring 340 automatically elongates toward a direction of releasing compression, that is, elongating toward the fourth direction M4 that is opposite to the third direction M3.

[0072] When elongating toward the fourth direction M4, the first spring 340 drives the lock pin 330 to move along the fourth direction M4 at the same time. When moving along the fourth direction M4, the lock pin 330

drives the second end 352 of the swing hook 350 to move along the second rotary section 331b of the unidirectional rotary groove 331 from the first transition position B to the second rest position C.

[0073] Given that the groove depth of the transition from the first rotary section 331a toward the second rotary section 331b abruptly increases at the first transition position B, the second end 352 of the swing hook 350 at the first transition position B is more likely to move to the second rotary section 331b rather than the first rotary section 331a. This is because if the second end 352 of the swing hook 350 cannot stride over the abruptly increased groove depth of the transition between the second rotary section 331b and the first rotary section 331a at the first transition position B, the second end 352 of the swing hook 350 cannot move from the first transition position B to the first rotary section 331a consequently.

[0074] Given that in the third direction M3, the second rest position C is higher than the second rotary section 331b and the third rotary section 331c that are adjacent to the second rest position C, the second end 352 of the swing hook 350 cannot move toward a higher position in the third direction M3, so that the first spring 340 cannot further elongate. In this case, the bolt portion 333 of the lock pin 330 is located out of the box body 100 and detaches from the lock slot 120 of the box body 100, so that the box body 100 is in an unlocked state.

[0075] In the embodiments shown in FIG. 1 to FIG. 8, the second end 352 of the swing hook 350 always moves counterclockwise within the unidirectional rotary groove 331. It may be understood that this is merely an example but does not limit explanation of the technical solutions of the embodiments of the present invention. In another embodiment, by changing a trend of a groove depth of the unidirectional rotary groove 331 in each rotary section, the second end 352 of the swing hook 350 may always move clockwise within the unidirectional rotary groove 331.

[0076] In the embodiments of the present invention, the motion subassembly 200 is adapted to, when the box body 100 is unlocked, drive the box body 100 to pop out along the second direction M2 that is opposite to the first direction M1 to be opened.

[0077] Referring to FIG. 1, FIG. 7, and FIG. 8, the motion subassembly 200 includes a rack 210 connected to the box body 100, a gear 220 engaging with the rack 210, and an energy storage apparatus 230 connected to the gear 220.

[0078] The rack 210 is adapted to move with the box body 100 toward the first direction M1 when the box body 100 is pushed along the first direction M1, to drive the gear 220 to rotate along a first rotation direction (for example, counterclockwise), thereby driving the energy storage apparatus 230 to store energy.

[0079] During specific implementation, the rack 210 may be located above the box body 100 and provided with a clamping portion 211 extending toward a direction of the box body 100. The box body 100 is provided with

a receiving portion 110 fitted with the clamping portion 211. The clamping portion 211 is clamped in the receiving portion 110 to join the rack 210 to the box body 100.

[0080] The energy storage apparatus 230 is adapted to release energy when the box body 100 is unlocked, to drive the gear 220 to rotate along a second rotation direction that is opposite to the first rotation direction (for example, clockwise), so that the rack 210 draws the box body 100 to pop out along the second direction M2 that is opposite to the first direction M1.

[0081] During specific implementation, the energy storage apparatus 230 includes an energy storage component such as a tension spring and/or a coil spring, to store or release energy.

[0082] In some preferred specific embodiments, the energy storage apparatus 230 may further include a damping component, such as a mass block or a flywheel, connected to the energy storage component. The damping component is adapted to move with the energy storage component and consume energy stored in the energy storage component, to speed down the gear 220 rotating along the second rotation direction and the rack 210 moving along the second direction M2, so that the box body 100 gently pops out along the second direction M2.

[0083] Referring to FIG. 7 and FIG. 8, the detergent box assembly 10 further includes an outer shell 400 adapted to support the box body 100, the motion subassembly 200, and the lock subassembly 300.

[0084] During specific implementation, the box body 100 is contained and supported in a space surrounded by the outer shell 400. The outer shell 400 opens on a side thereof at a front end of the box body 100, so that the box body 100 can pop forward to be opened or be pushed backward to be closed relative to the outer shell 400.

[0085] The lock subassembly 300 is fixed on an outer side of the outer shell 400 and is located above the outer shell 400. The outer shell 400 is provided with a hole corresponding to the lock slot 120 of the box body 100 and the bolt portion 333 of the lock pin 330. The hole is adapted to enable the bolt portion 333 of the lock pin 330 to pass through to insert into the lock slot 120 of the box body 100.

[0086] The gear 220 and the energy storage apparatus 230 of the motion subassembly 200 are fixed in the outer shell 400. The rack 210 of the motion subassembly 200 is at least partially contained in the outer shell 400. The outer shell 400 further includes a supporting member 410 that is contained in the space surrounded by the outer shell 400 and that is located above the box body 100. The supporting member 410 is adapted to enable the rack 210 to be movably supported on the supporting member 410.

[0087] In the embodiments of the present invention, the first contact portion 311 of the push rod 310 may further be movably connected to the motion subassembly 200 and be pushed by the motion subassembly 200 to

move.

[0088] During specific implementation, the first contact portion 311 of the push rod 310 may be movably connected to a back end of the rack 210 of the motion sub-assembly 200. The first contact portion 311 of the push rod 310 is adapted to be abutted against and pushed by the rack 210 when the rack 210 moves with the box body 100 along the first direction M1.

[0089] In another embodiment not shown in the accompanying drawings, the push rod 310 may also be directly pushed by the box body 100. For example, it may be implemented as: the first contact portion 311 of the push rod 310 may be movably connected to the box body 100. When moving along the first direction M1, the box body 100 comes into contact with the first contact portion 311 of the push rod 310 and pushes the push rod 310 to move along the first direction M1. Then, when moving along the second direction M2 that is opposite to the first direction M1, the box body 100 detaches from the first contact portion 311 of the push rod 310.

[0090] Referring to FIG. 9, an embodiment of the present invention further provides a washing device 1.

[0091] The washing device 1 includes a washing tub, a water inlet pipe, and the detergent box assembly 10 provided in the embodiments of the present invention. The washing tub is adapted to contain items to be washed. The water inlet pipe is connected to the washing tub, and is adapted to guide water into the washing tub. The detergent box assembly 10 is connected to the washing tub by means of the water inlet pipe. The box body 100 of the detergent box assembly 10 is configured to contain detergent, and the detergent is adapted to enter the washing tub through the water inlet pipe.

[0092] Although specific implementations are described above, the implementations are not intended to limit the scope disclosed in the present invention, even if only a single implementation is described relative to a specific feature. The feature examples provided in the present invention are intended to be illustrative rather than limiting, unless different expressions are made.

Claims

1. A detergent box assembly (10), comprising: a box body (100) adapted to be pushed, a motion sub-assembly (200) adapted to drive the box body (100) to pop out, and a lock subassembly (300) adapted to lock or unlock the box body (100), **characterized in that** the lock subassembly (300) comprises a push rod (310), a motion diverter (320) movably connected to the push rod (310), and a lock pin (330) movably connected to the motion diverter (320), wherein the push rod (310) is adapted to move with the box body (100) when the box body (100) is pushed along a first direction (M1), and during moving, to push the motion diverter (320) to rotate, thereby driving the lock pin (330) to move to lock or unlock the box body

(100).

2. The detergent box assembly (10) according to claim 1, **characterized in that** the lock pin (330) is disposed to move along a third direction (M3) and a fourth direction (M4) that is opposite to the third direction, wherein the third direction (M3) and the fourth direction (M4) are respectively angled with the first direction (M1).
3. The detergent box assembly (10) according to claim 1, **characterized in that** the lock pin (330) comprises a unidirectional rotary groove (331), and **in that** the lock subassembly (300) comprises a housing (301) adapted to contain the lock pin (330), a first spring (340) connected between the housing (301) and the lock pin (330), and a swing hook (350) with a first end (351) fixed on the housing (301) and a second end (352) movable within the unidirectional rotary groove (331), wherein the unidirectional rotary groove (331) comprises a first rest position (A) and a second rest position (C), by the effect of the first spring (340), the second end (352) of the swing hook (350) may stay at the first rest position (A) or the second rest position (C), when the lock pin (330) is pushed by the motion diverter (320), the second end (352) of the swing hook (350) may switch between the first rest position (A) and the second rest position (C), when the second end (352) of the swing hook (350) is located at the first rest position (A), the lock pin (330) extends into a lock slot (120) of the box body (100), and when the second end (352) of the swing hook (350) is located at the second rest position (C), the lock pin (330) detaches from the lock slot (120).
4. The detergent box assembly (10) according to claim 1, **characterized in that** the lock pin (330) comprises a third contact portion (332), adapted to be abutted against by the motion diverter (320) when the motion diverter (320) rotates, to push the lock pin (330) along a third direction (M3).
5. The detergent box assembly (10) according to claim 4, **characterized in that** the motion diverter (320) comprises a first arm (321) and a second arm (322) that are co-axially connected, wherein the first arm (321) is adapted to, when the push rod (310) is pushed, be abutted against by the push rod (310) to rotate, and the second arm (322) is adapted to rotate with the first arm (321) to abut against the third contact portion (332), which thereby driving the lock pin (330) to move along the third direction (M3).
6. The detergent box assembly (10) according to claim 1, **characterized in that** the lock pin (330) comprises a bolt portion (333) extending toward the box body (100), wherein the bolt portion (333) is adapted to

extend along a fourth direction (M4) into a lock slot (120) of the box body (100) to limit movement of the box body (100) along the first direction (M1) or a second direction (M2) that is opposite to the first direction (M1) to lock the box body (100), and to retract out of the box body (100) along a third direction (M3) from the lock slot (120) of the box body (100) to lift the limit to unlock the box body (100).

7. The detergent box assembly (10) according to claim 1, **characterized in that** the push rod (310) comprises a first contact portion (311) extending toward the box body (100) and a second contact portion (312) extending toward the motion diverter (320), wherein the first contact portion (311) is adapted to move with the box body (100) when the box body (100) is pushed, to drive the push rod (310) to move, and the second contact portion (312) is adapted to abut against the motion diverter (320) when the push rod (310) moves, to drive the motion diverter (320) to rotate.
8. The detergent box assembly (10) according to claim 7, **characterized in that** the first contact portion (311) of the push rod (310) may come into contact with the motion subassembly (200) and be pushed by the motion subassembly (200) to move.
9. The detergent box assembly (10) according to any one of claims 1 to 8, **characterized in that** the motion subassembly (200) comprises a rack (210) connected to the box body (100), a gear (220) engaging with the rack (210), and an energy storage apparatus (230) connected to the gear (220), wherein the rack (210) is adapted to move with the box body (100) when the box body (100) is pushed, to drive the gear (220) to rotate along a first rotation direction, thereby driving the energy storage apparatus (230) to store energy, and the energy storage apparatus (230) is adapted to release energy when the box body (100) is unlocked, to drive the gear (220) to rotate along a second rotation direction that is opposite to the first rotation direction, so that the rack (210) draws the box body (100) to pop out along the second direction (M2) that is opposite to the first direction (M1).
10. The detergent box assembly (10) according to claim 9, **characterized in that** the rack (210) is provided with a clamping portion (211) extending toward the box body (100), the box body (100) is provided with a receiving portion (110) fitted with the clamping portion (211), and the clamping portion (211) is clamped in the receiving portion (110) to join the rack (210) to the box body (100).
11. The detergent box assembly (10) according to claim 9, **characterized by** comprising a supporting member (410) disposed out of the box body (100), wherein

the supporting member (410) is adapted to enable the rack (210) to be movably supported on the supporting member (410).

12. The detergent box assembly (10) according to claim 11, **characterized by** comprising an outer shell (400), wherein the supporting member (410), the motion subassembly (200), and the lock subassembly (300) are disposed on the outer shell (400), and the box body (100) is contained and supported in a space surrounded by the outer shell (400).
13. A washing device (1), comprising a washing tub adapted to contain items to be washed, **characterized by** comprising the detergent box assembly (10) according to any one of claims 1 to 12, wherein the box body (100) is adapted to contain detergent and provide the detergent for the washing tub.

Patentansprüche

1. Waschmittelkammerbaugruppe (10), die Folgendes umfasst: einen Kammerhauptteil (100), der verschiebbar ausgelegt ist, eine Bewegungsteilbaugruppe (200), die so ausgelegt ist, dass sie den Kammerhauptteil (100) herauschiebt, und eine Verriegelungsteilbaugruppe (300), die so ausgelegt ist, dass sie den Kammerhauptteil (100) verriegelt oder entriegelt, **dadurch gekennzeichnet, dass** die Verriegelungsteilbaugruppe (300) eine Schubstange (310), einen beweglich mit der Schubstange (310) verbundenen Bewegungsumlenker (320) und einen beweglich mit dem Bewegungsumlenker (320) verbundenen Verriegelungsstift (330) umfasst, wobei die Schubstange (310) so ausgelegt ist, dass sie sich mit dem Kammerhauptteil (100) bewegt, wenn dieser in einer ersten Richtung (M1) verschoben wird, und bei der Bewegung den Bewegungsumlenker (320) in Rotation versetzt, wodurch der Verriegelungsstift (330) so in Bewegung versetzt wird, dass er den Kammerhauptteil (100) verriegelt oder entriegelt.
2. Waschmittelkammerbaugruppe (10) nach Anspruch 1, **dadurch gekennzeichnet, dass** der Verriegelungsstift (330) so angeordnet ist, dass er sich in einer dritten Richtung (M3) und einer der dritten Richtung entgegengesetzten, vierten Richtung (M4) bewegt, wobei die dritte Richtung (M3) und die vierte Richtung (M4) jeweils in einem Winkel zur ersten Richtung (M1) verlaufen.
3. Waschmittelkammerbaugruppe (10) nach Anspruch 1, **dadurch gekennzeichnet, dass** der Verriegelungsstift (330) eine unidirektionale Drehnut (331) und die Verriegelungsteilbaugruppe (300) ein Gehäuse (301) umfasst, das so ausgelegt ist, dass es

- den Verriegelungsstift (330), eine erste Feder (340) zwischen dem Gehäuse (301) und dem Verriegelungsstift (330) und einen Schaukelhaken (350) umfasst, bei dem ein erstes Ende (351) an dem Gehäuse (301) fixiert und ein zweites Ende (352) in der unidirektionalen Drehnut (331) beweglich ist, wobei die unidirektionale Drehnut (331) eine erste Ruheposition (A) und eine zweite Ruheposition (C) umfasst, das zweite Ende (352) des Schaukelhakens (350) durch die Wirkung der ersten Feder (340) in der ersten Ruheposition (A) oder der zweiten Ruheposition (C) bleiben kann, das zweite Ende (352) des Schaukelhakens (350), wenn der Verriegelungsstift (330) von dem Bewegungsumlenker (320) verschoben wird, zwischen der ersten Ruheposition (A) und der zweiten Ruheposition (C) wechseln kann, der Verriegelungsstift (330), wenn sich das zweite Ende (352) des Schaukelhakens (350) in der ersten Ruheposition (A) befindet, in einen Verriegelungsschlitz (120) des Kammerhauptteils (100) hinein verläuft und, wenn sich das zweite Ende (352) des Schaukelhakens (350) in der zweiten Ruheposition (C) befindet, aus dem Verriegelungsschlitz (120) löst.
4. Waschmittelkammerbaugruppe (10) nach Anspruch 1, **dadurch gekennzeichnet, dass** der Verriegelungsstift (330) einen dritten Kontaktabschnitt (332) umfasst, der so ausgelegt ist, dass der Bewegungsumlenker (320), wenn der Bewegungsumlenker (320) sich dreht, daran anliegt und so den Verriegelungsstift (330) in einer dritten Richtung (M3) verschiebt.
5. Waschmittelkammerbaugruppe (10) nach Anspruch 4, **dadurch gekennzeichnet, dass** der Bewegungsumlenker (320) einen ersten Arm (321) und einen zweiten Arm (322) umfasst, die coaxial verbunden sind, wobei der erste Arm (321) so ausgelegt ist, dass die Schubstange (310), wenn sie verschoben wird, daran anliegt und er sich so dreht, und der zweite Arm (322) so ausgelegt ist, dass er sich mit dem ersten Arm (321) so dreht, dass er an dem dritten Kontaktabschnitt (332) anliegt, der somit den Verriegelungsstift (330) in der dritten Richtung (M3) in Bewegung versetzt.
6. Waschmittelkammerbaugruppe (10) nach Anspruch 1, **dadurch gekennzeichnet, dass** der Verriegelungsstift (330) einen Riegelabschnitt (333) umfasst, der zum Kammerhauptteil (100) hin verläuft, wobei der Riegelabschnitt (333) so ausgelegt ist, dass er in einer vierten Richtung (M4) in einen Verriegelungsschlitz (120) des Kammerhauptteils (100) hinein verläuft und so die Bewegung des Kammerhauptteils (100) in der ersten Richtung (M1) oder einer der ersten Richtung (M1) entgegengesetzten zweiten Richtung (M2) begrenzt und so den Kammerhauptteil (100) verriegelt und in einer dritten Richtung (M3) aus dem Verriegelungsschlitz (120) des Kammerhauptteils (100) heraus zurückgefahren wird und so zum Entriegeln des Kammerhauptteils (100) die Begrenzung aufhebt.
7. Waschmittelkammerbaugruppe (10) nach Anspruch 1, **dadurch gekennzeichnet, dass** die Schubstange (310) einen zum Kammerhauptteil (100) hin verlaufenden, ersten Kontaktabschnitt (311) und einen zum Bewegungsumlenker (320) hin verlaufenden, zweiten Kontaktabschnitt (312) umfasst, wobei der erste Kontaktabschnitt (311) so ausgelegt ist, dass er, wenn der Kammerhauptteil (100) verschoben wird, sich mit dem Kammerhauptteil (100) bewegt und so die Schubstange (310) in Bewegung versetzt, und der zweite Kontaktabschnitt (312) so ausgelegt ist, dass er, wenn sich die Schubstange (310) bewegt, an dem Bewegungsumlenker (320) anliegt und so den Bewegungsumlenker (320) in Rotation versetzt.
8. Waschmittelkammerbaugruppe (10) nach Anspruch 7, **dadurch gekennzeichnet, dass** der erste Kontaktabschnitt (311) der Schubstange (310) mit der Bewegungsteilgruppe (200) in Kontakt kommen und von der Bewegungsteilbaugruppe (200) in Bewegung versetzt werden kann.
9. Waschmittelkammerbaugruppe (10) nach einem der Ansprüche 1 bis 8, **dadurch gekennzeichnet, dass** die Bewegungsteilbaugruppe (200) eine mit dem Kammerhauptteil (100) verbundene Zahnstange (210), ein in die Zahnstange (210) eingreifendes Zahnrad (220) und eine mit dem Zahnrad (220) verbundene Energiespeichervorrichtung (230) umfasst, wobei die Zahnstange (210) so ausgelegt ist, dass sie, wenn der Kammerhauptteil (100) verschoben wird, sich mit dem Kammerhauptteil (100) bewegt und so das Zahnrad (220) in einer ersten Rotationsrichtung in Rotation versetzt, wodurch die Energiespeichervorrichtung (230) zum Speichern von Energie veranlasst wird, und die Energiespeichervorrichtung (230) so ausgelegt ist, dass sie, wenn der Kammerhauptteil (100) entriegelt ist, Energie abgibt und so das Zahnrad (220) in einer der ersten Rotationsrichtung entgegengesetzten, zweiten Rotationsrichtung in Rotation versetzt, so dass die Zahnstange (210) den Kammerhauptteil (100) in der ersten Richtung (M1) entgegengesetzten, zweiten Richtung (M2) herauszieht.
10. Waschmittelkammerbaugruppe (10) nach Anspruch 9, **dadurch gekennzeichnet, dass** die Zahnstange (210) mit einem Klemmabschnitt (211) versehen ist, der zum Kammerhauptteil (100) hin verläuft, wobei der Kammerhauptteil (100) mit einem Aufnahmeab-

schnitt (110) versehen ist, der mit dem Klemmabschnitt (211) ausgestattet ist, und der Klemmabschnitt (211) so in dem Aufnahmeabschnitt (110) festgeklemmt ist, dass er die Zahnstange (210) mit dem Kammerhauptteil (100) verbindet.

11. Waschmittelkammerbaugruppe (10) nach Anspruch 9, **dadurch gekennzeichnet, dass** sie ein Halteelement (410) umfasst, das außerhalb des Kammerhauptteils (100) angeordnet ist, wobei das Halteelement (410) so ausgelegt ist, dass es ermöglicht, dass die Zahnstange (210) verschiebbar an dem Halteelement (410) gehalten wird.
12. Waschmittelkammerbaugruppe (10) nach Anspruch 11, **dadurch gekennzeichnet, dass** sie einen Außenmantel (400) umfasst, wobei das Halteelement (410), die Bewegungsteilbaugruppe (200) und die Verriegelungsteilbaugruppe (300) an dem Außenmantel (400) angeordnet sind und sich der Kammerhauptteil (100) in einem von dem Außenmantel (400) umgebenen Raum befindet und darin gehalten wird.
13. Waschgerät (1) mit einem Waschbehälter, der so ausgelegt ist, dass sich darin zu waschende Gegenstände befinden können, **dadurch gekennzeichnet, dass** es die Waschmittelkammerbaugruppe (10) nach einem der Ansprüche 1 bis 12 umfasst, wobei der Kammerhauptteil (100) so ausgelegt ist, dass er Waschmittel enthält und das Waschmittel für den Waschbehälter bereitstellt.

Revendications

1. Ensemble boîtier de détergent (10), comprenant : un corps de boîtier (100) propre à recevoir une pression, un sous-ensemble de déplacement (200) propre à entraîner le corps de boîtier (100) pour le faire apparaître, et un sous-ensemble de blocage (300) propre à bloquer ou débloquer le corps de boîtier (100), **caractérisé en ce que** le sous-ensemble de blocage (300) comprend une tige de pression (310), un dériveur de mouvement (320) raccordé à mouvement à la tige de pression (310), et une broche de blocage (330) raccordée à déplacement au dériveur de mouvement (320), dans lequel la tige de pression (310) est propre à se déplacer avec le corps de boîtier (100) quand le corps de boîtier (100) est poussé dans une première direction (M1) et, pendant le mouvement, à pousser le dériveur de mouvement (320) à entrer en rotation, entraînant ainsi la broche de blocage (330) à se déplacer pour bloquer ou débloquer le corps de boîtier (100).
2. Ensemble boîtier de détergent (10) selon la revendication 1, **caractérisé en ce que** la broche de blocage (330) est disposée pour se déplacer sur une

troisième direction (M3) et une quatrième direction (M4) opposée à la troisième direction, dans lequel la troisième direction (M3) et la quatrième direction (M4) sont respectivement en biais par rapport à la première direction (M1).

3. Ensemble boîtier de détergent (10) selon la revendication 1, **caractérisé en ce que** la broche de blocage (330) comprend un sillon de rotation unidirectionnel (331) et **en ce que** le sous-ensemble de blocage (300) comprend un logement (301) propre à contenir la broche de blocage (330), un premier ressort (340) raccordé entre le logement (301) et la broche de blocage (330), et un crochet d'oscillation (350) dont une première extrémité (351) est fixée au logement (301) et une deuxième extrémité (352) peut être déplacée dans le sillon rotatif unidirectionnel (331), dans lequel le sillon rotatif unidirectionnel (331) comprend une première position de repos (A) et une deuxième position de repos (C), par l'effet du premier ressort (340), la deuxième extrémité (352) du crochet d'oscillation (350) peut rester à la première position de repos (A) ou à la deuxième position de repos (C), quand la broche de blocage (330) est poussée par le dériveur de mouvement (320), la deuxième extrémité (352) du crochet d'oscillation (350) peut commuter entre la première position de repos (A) et la deuxième position de repos (C), quand la deuxième extrémité (352) du crochet d'oscillation (350) se trouve à la première position de repos (A), la broche de blocage (330) s'étend dans la fente de blocage (120) du corps de boîtier (100), et quand la deuxième extrémité (352) du crochet d'oscillation (350) se trouve à la deuxième position de repos (C), la broche de blocage (330) se désolidarise de la fente de blocage (120).
4. Ensemble boîtier de détergent (10) selon la revendication 1, **caractérisé en ce que** la broche de blocage (330) comprend une troisième partie de contact (332) propre à être aboutée contre le dériveur de mouvement (320) quand le dériveur de mouvement (320) entre en rotation, pour pousser la broche de blocage (330) sur une troisième direction (M3).
5. Ensemble boîtier de détergent (10) selon la revendication 4, **caractérisé en ce que** le dériveur de mouvement (320) comprend un premier bras (321) et un deuxième bras (322) lesquels sont coaxialement raccordés, dans lequel le premier bras (321) est propre, quand la tige de pression (310) est poussée, à venir s'abouter contre la tige de pression (310) à rotation, et le deuxième bras (322) est propre à entrer en rotation avec le premier bras (321) pour s'abouter contre la troisième partie de contact (332), ce qui fait qu'il y a entraînement de la broche de blocage (330) à déplacement sur la troisième direction (M3).

6. Ensemble boîtier de détergent (10) selon la revendication 1, **caractérisé en ce que** la broche de blocage (330) comprend une partie formant boulon (333) s'étendant vers le corps de boîtier (100), dans lequel la partie formant boulon (333) est propre à s'étendre sur une quatrième direction (M4) dans une fente de blocage (120) du corps de boîtier (100) pour limiter le mouvement du corps de boîtier (100) sur la première direction (M1) ou une deuxième direction (M2) allant à l'opposé de la première direction (M1) pour bloquer le corps de boîtier (100), et pour se retirer du corps de boîtier (100) sur une troisième direction (M3) de la fente de blocage (120) du corps de boîtier (100) pour augmenter la tolérance pour le déblocage du corps de boîtier (100).
7. Ensemble boîtier de détergent (10) selon la revendication 1, **caractérisé en ce que** la tige de pression (310) comprend une première partie de contact (311) s'étendant vers le corps de boîtier (100) et une deuxième partie de contact (312) s'étendant vers le dériveur de mouvement (320), dans lequel la première partie de contact (311) est propre à se déplacer avec le corps de boîtier (100) quand le corps de boîtier (100) reçoit une pression, pour entraîner la tige de pression (310) à se déplacer, et la deuxième partie de contact (312) est propre à s'abouter contre le dériveur de mouvement (320) quand la tige de pression (310) se déplace, pour entraîner le dériveur de mouvement (320) à entrer en rotation.
8. Ensemble boîtier de détergent (10) selon la revendication 7, **caractérisé en ce que** la première partie de contact (311) de la tige de pression (310) peut entrer en contact avec le sous-ensemble de mouvement (300) et être poussée par le sous-ensemble de mouvement (200) à déplacement.
9. Ensemble boîtier de détergent (10) selon l'une quelconque des revendications 1 à 8, **caractérisé en ce que** le sous-ensemble de mouvement (200) comprend un rack (210) raccordé au corps de boîtier (100), un engrenage (220) se mettant en prise avec le rack (210) et un appareil de stockage d'énergie (230) raccordé à l'engrenage (220), dans lequel le rack (210) est propre à se déplacer avec le corps de boîtier (100) quand le corps de boîtier (100) reçoit une pression, pour entraîner l'engrenage (220) à entrer en rotation sur une première direction de rotation, entraînant ainsi l'appareil de stockage d'énergie (230) à stocker de l'énergie, et l'appareil de stockage d'énergie (230) est propre à libérer de l'énergie quand le corps de boîtier (100) est débloqué, pour entraîner l'engrenage (220) à entrer en rotation sur une deuxième direction de rotation qui va à l'opposé de la première direction de rotation, de sorte que le rack (210) amène le corps de boîtier (100) à apparaître sur la deuxième direction (M2) qui est à l'opposé de la première direction (M1).
10. Ensemble boîtier de détergent (10) selon la revendication 9, **caractérisé en ce que** le rack (210) est doté d'une partie de serrage (211) s'étendant vers le corps de boîtier (100), le corps de boîtier (100) est doté d'une partie de réception (110) garnie de la partie de serrage (211), et la partie de serrage (211) est serrée dans la partie de réception (110) pour assembler le rack (210) au corps de boîtier (100).
11. Ensemble boîtier de détergent (10) selon la revendication 9, **caractérisé en ce qu'il** comprend un élément de support (410) se trouvant hors du corps de boîtier (100), dans lequel l'élément de support (410) est propre à permettre au rack (210) d'être supporté à mouvement sur l'élément de support (410).
12. Ensemble boîtier de détergent (10) selon la revendication 11, **caractérisé en ce qu'il** comprend une coque extérieure (400), dans lequel l'élément de support (410), le sous-ensemble de mouvement (200) et le sous-ensemble de blocage (300) se trouvent sur la coque extérieure (400) et le corps de boîtier (100) est contenu et supporté dans un espace entouré par la coque extérieure (400).
13. Appareil de lavage (1), comprenant une cuve de lavage propre à contenir des articles à laver, **caractérisé en ce qu'il** comprend l'ensemble boîtier de détergent (10) selon l'une quelconque des revendications 1 à 12, dans lequel le corps de boîtier (100) est propre à contenir le détergent et fournir le détergent à la cuve de lavage.

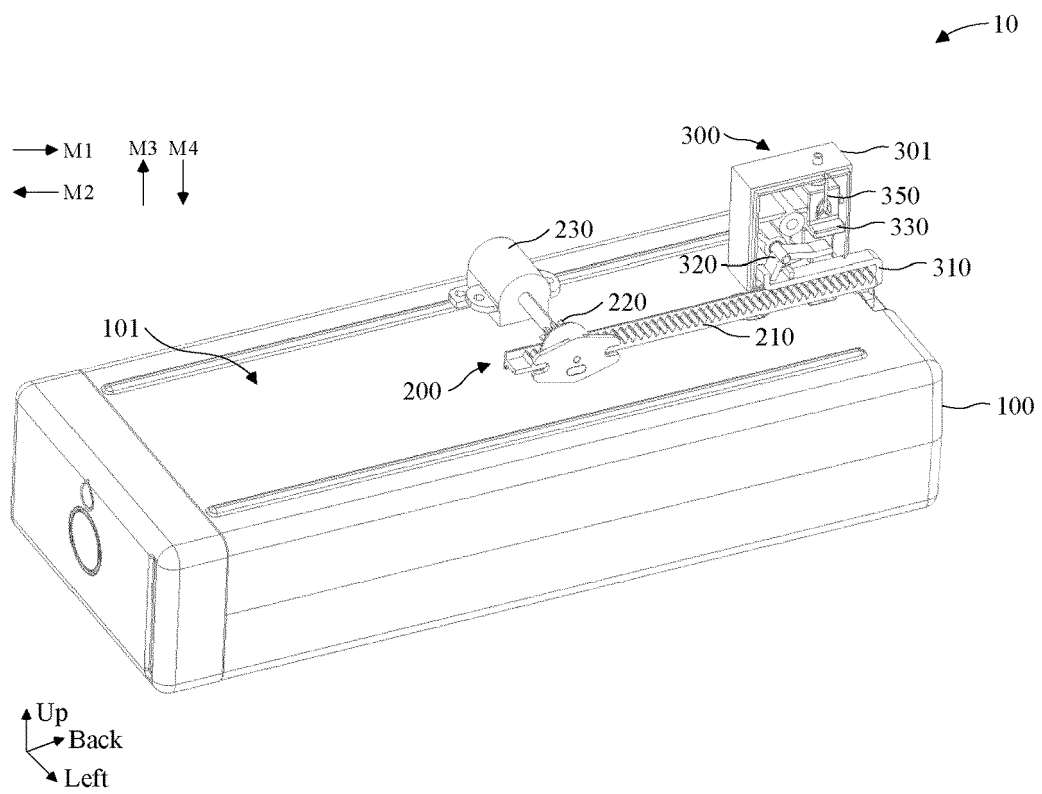


FIG. 1

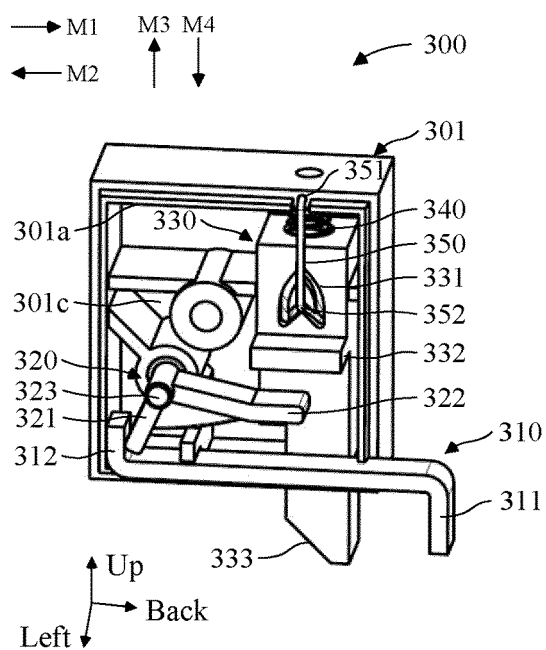


FIG. 2

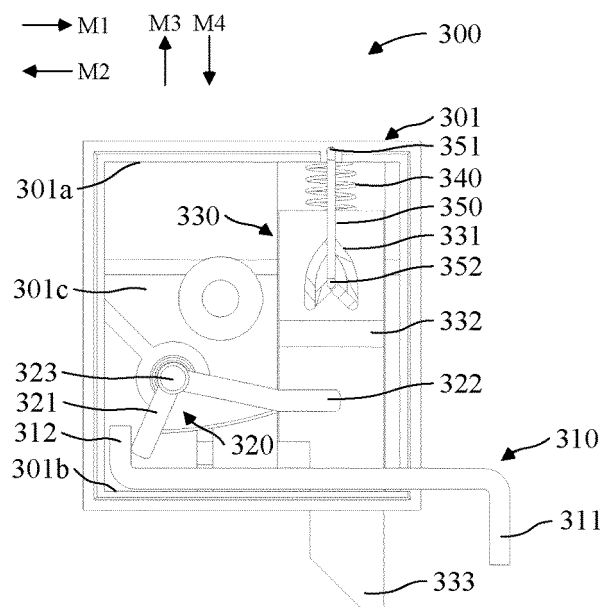


FIG. 3

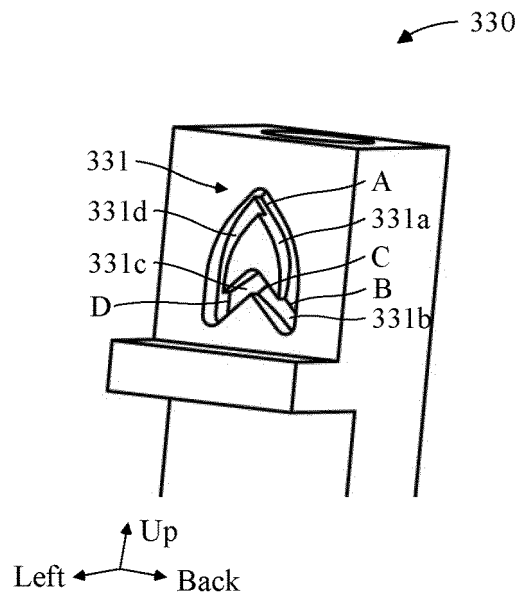


FIG. 4

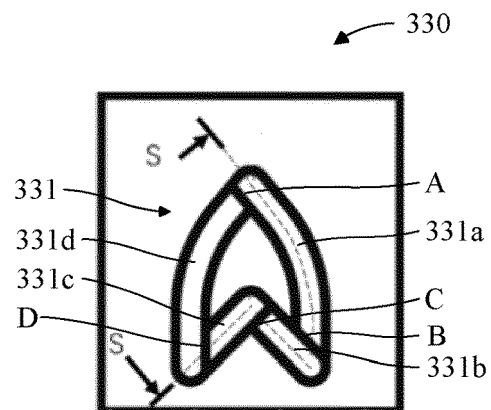


FIG. 5

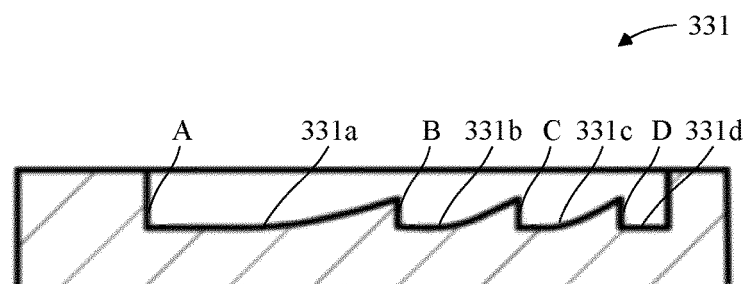


FIG. 6

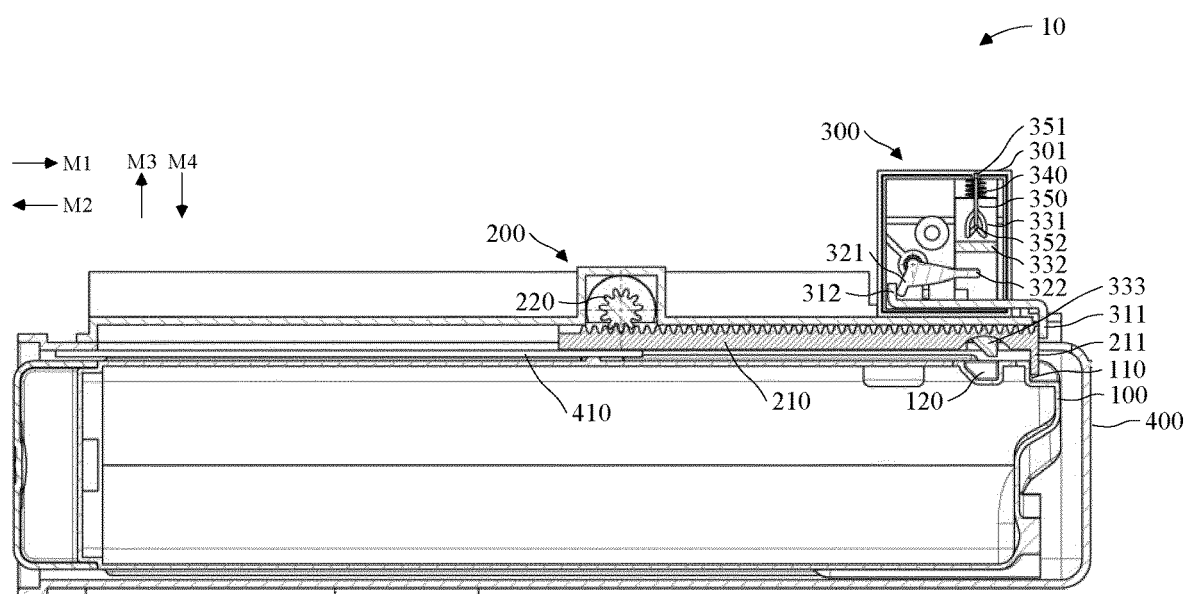


FIG. 7

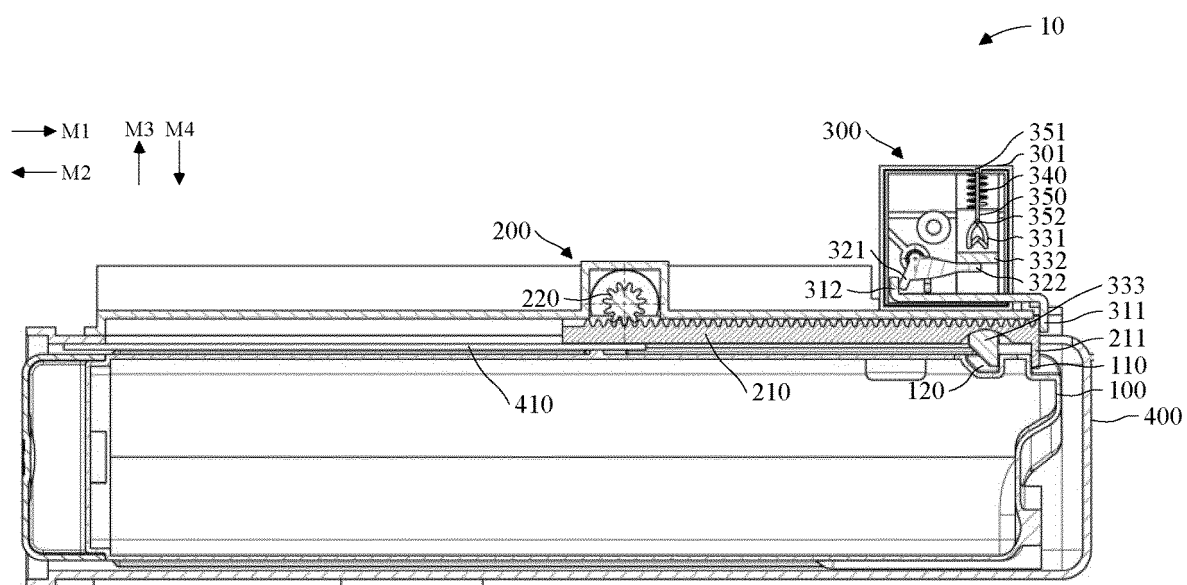


FIG. 8

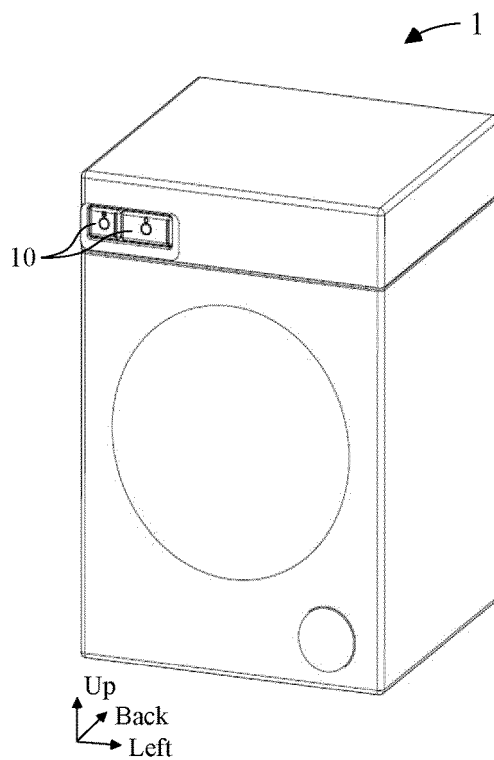


FIG. 9

REFERENCES CITED IN THE DESCRIPTION

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