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(54) LAUNDRY TREATMENT APPARATUS

(57) The present invention relates to the technical field of laundry processing, and particularly to a laundry processing apparatus comprising: a locking device, a receiving member and a laundry processing agent feeding device provided in the receiving member, wherein the laundry processing agent feeding device is slidably connected to the receiving member, the locking device is provided between the receiving member and the laundry processing agent feeding device, and the locking device is configured for preventing the laundry processing agent feeding device from being disengaged from the receiving member in a locked state and is further configured for allowing the laundry processing agent feeding device to be disengaged from the receiving member in an unlocked state. In the locked state, the locking device can prevent the laundry processing agent feeding device from being disengaged from the receiving member, eliminating potential safety risks; after the locking device turns to the unlocked state from the locked state, the laundry processing agent feeding device can be taken out of the receiving member for operations such as cleaning or maintenance, thus improving the user experience.

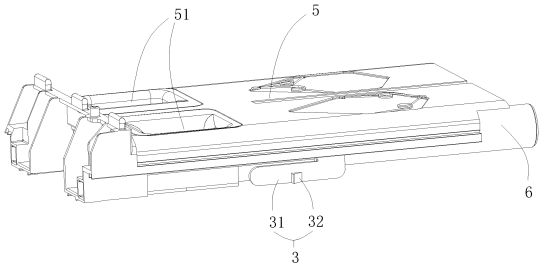

FIG. 2

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Description

TECHNICAL FIELD

[0001] The present invention relates to the technical field of laundry processing, and particularly, to a laundry processing apparatus.

BACKGROUND

[0002] Laundry processing apparatuses are machines for washing, spin-drying, dry-cleaning and/or heat-drying laundry. Common laundry processing apparatuses include washing machines, shoe washing machines, laundry dryers, dry-cleaning machines, and combo washer/dryer machines. To ensure the washing effect of the laundry, for example, in a washing machine, a detergent/washing powder is often added to the water before the laundry is washed, such that stains and/or oil stains on the laundry are removed using surfactants.

[0003] In the prior art, a washing machine is usually provided with a detergent feeding device. A detergent/washing powder can be fed into a washing chamber of the washing machine through the detergent feeding device. The detergent feeding device is generally of a drawer type, and can slide on a sliding rail provided on a body of the washing machine. However, when the detergent is fed, the detergent feeding device may fall off from the sliding rail, posing safety risks.

[0004] Therefore, there is a need in the art for a new laundry processing apparatus to solve the above problem.

SUMMARY

[0005] In order to solve the above-mentioned problem of the prior art that the laundry processing agent feeding device in an existing laundry processing apparatus may have risks of falling off from the laundry processing apparatus, the present invention provides a laundry processing apparatus, comprising: a locking device, a receiving member and a laundry processing agent feeding device provided in the receiving member, wherein the laundry processing agent feeding device is slidably connected to the receiving member, the locking device is provided between the receiving member and the laundry processing agent feeding device, and the locking device is configured for preventing the laundry processing agent feeding device from being disengaged from the receiving member in a locked state and is further configured for allowing the laundry processing agent feeding device to be disengaged from the receiving member in an unlocked state.

[0006] In one preferred embodiment of the laundry processing apparatus, the locking device comprises a first locking structure provided at a bottom or a side portion of the receiving member and a second locking structure correspondingly provided at a bottom or a side portion of the laundry processing agent feeding device; in the locked state, the first and second locking structures cooperate to prevent the laundry processing agent feeding device from being disengaged from the receiving member, and in the unlocked state, the first and second locking structures separate from each other to allow the laundry processing agent feeding device to come out of the receiving member.

[0007] In one preferred embodiment of the laundry processing apparatus, the first locking structure is a baffle, the second locking structure comprises an elastic plate and a stopper fixed to or integrated with the elastic plate, the baffle is fixed to or integrated with an inner sidewall of the receiving member, and the elastic plate is fixed to or integrated with an outer sidewall of the laundry processing agent feeding device; in the locked state, the stopper abuts against the baffle under the action of the elastic plate to prevent the laundry processing agent feeding device from being disengaged from the receiving member, and in the unlocked state, the elastic plate drives the stopper to move through elastic deformation and thus separates the stopper and the baffle, allowing the laundry processing agent feeding device to be disengaged from the receiving member.

[0008] In one preferred embodiment of the laundry processing apparatus, the stopper is provided with a stopping surface substantially perpendicular to the elastic plate, and in the locked state, the stopping surface abuts against the baffle to prevent the laundry processing agent feeding device from being disengaged from the receiving member.

[0009] In one preferred embodiment of the laundry processing apparatus, the stopper is further provided with an arc-shaped or flat sliding surface obliquely disposed relative to the elastic plate, such that the laundry processing agent feeding device is smoothly inserted into the receiving member during assembly.

[0010] In one preferred embodiment of the laundry processing apparatus, the stopper is a wedge having a shape of a right triangle or a right trapezoid, a surface where one of the legs of the right triangle or the perpendicular leg of the right trapezoid is located constitutes the stopping surface, and a surface where the hypotenuse of the right triangle or the oblique leg of the right trapezoid is located constitutes the sliding surface.

[0011] In one preferred embodiment of the laundry processing apparatus, the laundry processing agent feeding device comprises a storage container, a feeding container and a guiding tube, the storage container is fixed in the receiving member, the feeding container is slidably connected to the receiving member, one end of the guiding tube communicates with the feeding container, the other end of the guiding tube is inserted into the storage container, and the length of the guiding tube is configured such that the guiding tube does not come out of the storage container when the feeding container moves away from the storage container.

[0012] In one preferred embodiment of the laundry

processing apparatus, the storage container is provided with a directing structure, and the other end of the guiding tube is inserted into the storage container through the directing structure.

[0013] In one preferred embodiment of the laundry processing apparatus, the directing structure is a directing joint formed on an outer wall of the storage container.

[0014] In one preferred embodiment of the laundry processing apparatus, the laundry processing apparatus is a washing machine, and/or the laundry processing agent feeding device is a device for feeding a detergent or a care agent, and/or the receiving member is a receiving box.

[0015] It can be appreciated by those skilled in the art that in preferred embodiments of the present invention, providing a locking device between the laundry processing agent feeding device and the receiving member can prevent the laundry processing agent feeding device from being disengaged from the receiving member, thereby improving the safety of the laundry processing apparatus. The locking device has two states: a locked state and an unlocked state. In normal use, the locking device is in the locked state and can prevent the laundry processing agent feeding device from being disengaged from the receiving member, eliminating potential safety risks; when the laundry processing agent feeding device requires cleaning or maintenance, the locking device turns to the unlocked state from the locked state, such that the laundry processing agent feeding device can be taken out of the receiving member for operations such as cleaning or maintenance, thus improving the user experience.

[0016] Further, by providing the first locking structure at the bottom or the side portion of the receiving member and providing the second locking structure at the bottom or the side portion of the laundry processing agent feeding device, it is convenient for a user, when taking the laundry processing agent feeding device out of the receiving member, to hold the laundry processing agent feeding device while separating the first and the second locking structures, so as to take the laundry processing agent feeding device out of the receiving member; such configuration can also prevent the laundry processing agent feeding device from falling off from the user's hands, thus featuring a convenient and safe operation and improved user experience.

[0017] Still further, the first locking structure is a baffle, the second locking structure comprises an elastic plate and a stopper provided on the elastic plate, the baffle is provided on an inner sidewall of the receiving member, the elastic plate is provided on an outer sidewall of the laundry processing agent feeding device. In such configuration, the stopper abuts against the baffle under the action of the elastic plate to prevent the laundry processing agent feeding device from being disengaged from the receiving member, eliminating potential safety risks. When taking the laundry processing agent feeding device out of the receiving member, the user only needs to press the elastic plate inwards to elastically deform the elastic plate and drive the stopper to move towards the laundry processing agent feeding device, thus separating the stopper and the baffle. After that, the laundry processing agent feeding device can be taken out of the receiving member. The process is fast and convenient and further improves the user experience.

[0018] Still further, the stopper is further provided with an arc-shaped or flat sliding surface obliquely disposed relative to the elastic plate, such that the laundry processing agent feeding device is smoothly inserted into the receiving member during assembly. Such configuration can improve both the assembly efficiency of the laundry processing apparatus and the user experience.

[0019] Still further, the laundry processing agent feeding device is configured as a split structure, where the storage container and the feeding container are separably arranged, and only the feeding container is slidably connected to the receiving member, such that when adding the laundry processing agent, the user only needs to pull out the feeding container but not the storage container, which is easy and convenient, thereby improving the user experience. Also, since a guiding tube is provided between the feeding container and the storage container and the other end of the guiding tube is inserted into the storage container, when the feeding container is pulled out, the guiding tube moves along with the feeding container, but the other end of the guiding tube is not disengaged from the storage container, such that the feeding container always communicates with the storage container through the guiding tube. As such, the laundry processing agent can be delivered to the storage container through the guiding tube when the laundry processing agent is fed into the feeding container.

[0020] Still further, the guiding tube is inserted into the storage container through a directing structure provided on the storage container. The guiding tube is directed by the directing structure, so as to prevent guiding tube from shifting during the movement, thus improving the reliability of the laundry processing agent feeding device.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] Preferred embodiments of the present invention will be described below in conjunction with a washing machine with reference to the accompanying drawings, in which:

FIG. 1 is a structural schematic of a laundry processing agent feeding device according to the present invention;

FIG. 2 is a structural schematic of a feeding container and a guiding tube of a laundry processing agent feeding device according to the present invention;

FIG. 3 is a structural schematic of a storage container and a guiding tube of a laundry processing agent feeding device according to the present invention;

FIG. 4 is a partial enlarged view of FIG. 3;

FIG. 5 is a structural schematic of a second locking structure according to one preferred embodiment of the present invention; and

FIG. 6 is a structural schematic of a second locking structure according to another preferred embodiment of the present invention.

DETAILED DESCRIPTION

[0022] Firstly, it should be appreciated by those skilled in the art that the embodiments described below are only for illustrating the technical principles of the present invention, and are not intended to limit the scope of the present invention. For example, although the following embodiments are illustrated in conjunction with a washing machine, this is not intended to be limiting and the technical scheme of the present invention is also applicable to other laundry processing apparatuses, such as an air wash apparatus, a shoe washing machine, and a combo washer/dryer machine. Such modification made to the object of application does not depart from the principles and scope of the present invention.

[0023] It should be noted that in the description of the present invention, the terms "left", "right", "inner", "outer", etc., indicating directions or positional relationships are based on the directions or positional relationships shown in the drawings, which are only for convenience of description, and do not indicate or imply that the device or element must have a specific orientation or be configured and operated in a specific orientation, and thus should not be construed as limitation to the present invention. Furthermore, the terms "first" and "second" are used for descriptive purposes only and should not be construed as indicating or implying the relative importance.

[0024] Furthermore, it should be noted that, in the description of the present invention, unless otherwise explicitly specified or limited, the terms "provide", "dispose", "connect" and "communicate" are to be construed broadly and, for example, may be a fixed connection, a detachable connection, or an integral connection; may be a mechanical or electrical connection; or may be a direct connection or an indirect connection through a medium, or may be an intercommunication between two elements. For those skilled in the art, the specific meanings of the aforementioned terms in the present invention can be understood according to specific conditions.

[0025] For the falling-off risks of laundry processing agent feeding device of existing washing machines, as described in BACKGROUND, the present invention provides a washing machine intended to prevent the laundry processing agent feeding device from falling off from the washing machine.

[0026] Specifically, as shown in FIG. 1, the washing machine disclosed herein comprises a locking device, a receiving member 1 and a laundry processing agent feeding device provided in the receiving member 1, wherein the laundry processing agent feeding device is slidably connected to the receiving member 1, the locking device is provided between the receiving member 1 and the laundry processing agent feeding device, and the locking device is configured for preventing the laundry processing agent feeding device from being disengaged from the receiving member 1 in a locked state and is further configured for allowing the laundry processing agent feeding device to be disengaged from the receiving member 1 in an unlocked state. The locking device has two states: a locked state and an unlocked state. In normal use, the locking device is in the locked state and can prevent the laundry processing agent feeding device from being disengaged from the receiving member 1, eliminating potential safety risks; when the laundry processing agent feeding device requires cleaning or maintenance, the locking device turns to the unlocked state from the locked state, such that the laundry processing agent feeding device can be taken out of the receiving member 1 for operations such as cleaning or maintenance. The receiving member 1 is a receiving box, and the laundry processing agent feeding device is provided in the receiving box and is slidably connected to the receiving box. Certainly, the receiving member 1 can be configured as a receiving barrel, a receiving tank, etc. Such adjustments and modifications can be made to the specific configuration of the receiving member 1 without departing from the principles and scope of the present invention, and shall fall within the protection scope of the present invention.

[0027] It should be noted that, the laundry processing agent may be a detergent, and the laundry processing agent feeding device is a device for feeding the detergent; or the laundry processing agent may also be a care agent, and the laundry processing agent feeding device is a device for feeding the care agent. Such adjustments and modifications can be made to the specific types and kinds of the laundry processing agent without departing from the principles and scope of the present invention, and shall fall within the protection scope of the present invention.

[0028] Preferably, as shown in FIGs. 2 to 4, the locking device comprises a first locking structure 2 provided at a bottom or a side portion of the receiving member 1 and a second locking structure 3 correspondingly provided at a bottom or a side portion of the laundry processing agent feeding device; in the locked state, the first locking structure 2 and the second locking structure 3 cooperate to prevent the laundry processing agent feeding device from being disengaged from the receiving member 1, and in the unlocked state, the first locking structure 2 and the second locking structure 3 separate from each other to allow the laundry processing agent feeding device to be disengaged from the receiving member 1. The first locking structure 2 may be provided at the bottom of the receiving member 1, and the second locking structure 3 may be correspondingly provided at the bottom of the laundry processing agent feeding device; or alternatively, the first locking structure 2 may be provided at the side portion of the receiving member 1, and the second locking

structure 3 may be correspondingly provided at the side portion of the laundry processing agent feeding device.

[0029] Preferably, the first locking structure 2 is a baffle 2, the second locking structure 3 comprises an elastic plate 31 and a stopper 32 fixed to or integrated with the elastic plate 31, the baffle 2 is fixed to or integrated with an inner sidewall of the receiving member 1, and the elastic plate 31 is fixed to or integrated with an outer sidewall of the laundry processing agent feeding device. In the locked state, the stopper 32 abuts against the baffle 2 under the action of the elastic plate 31 to prevent the laundry processing agent feeding device from being disengaged from the receiving member 1, and in the unlocked state, the elastic plate 31 drives the stopper 32 to move through elastic deformation and thus separates the stopper 32 and the baffle 2, allowing the laundry processing agent feeding device to be disengaged from the receiving member 1. Specifically, in normal use, the locking device is in the locked state. When the laundry processing agent feeding device is pulled out (leftwards as shown in the figures) by a user, the laundry processing agent feeding device slides to a protruding position (referring to a position where the laundry processing agent can be fed into the laundry processing agent feeding device), and the stopper 32 abuts against the baffle 2 to stop the laundry processing agent feeding device from continuously sliding leftwards, thus preventing the laundry processing agent feeding device from being disengaged from the receiving member 1. When the elastic plate 31 is pressed inwards by hand, the elastic plate 31 elastically deforms and drives the stopper 32 to move towards the laundry processing agent feeding device to separate the stopper 32 and the baffle 2. At this time, the locking device turns to the unlocked state from the locked state, such that the laundry processing agent feeding device can be taken out of the receiving member 1 for operations such as cleaning or maintenance. Furthermore, the first locking structure 2 may be configured as a rib, and correspondingly the second locking structure 3 is configured as an elastic plate 31 provided with a ledge; or alternatively, the first locking structure 2 may be configured as a stopper, and correspondingly the second locking structure 3 is configured as an L-shaped baffle. Those skilled in the art may flexibly adjust the specific configurations of the first locking structure 2 and the second locking structure 3 in practice, as long as the first locking structure 2 and the second locking structure 3 can cooperate in the locked state to prevent the laundry processing agent feeding device from being disengaged from the receiving member 1, and separate from each other in the unlocked state to allow the laundry processing agent feeding device to be disengaged from the receiving member 1.

[0030] Preferably, as shown in FIGs. 5 and 6, the stopper 32 is provided with a stopping surface 321 substantially perpendicular to the elastic plate 31, and in the locked state, the stopping surface 321 abuts against the baffle 2 to prevent the laundry processing agent feeding device from being disengaged from the receiving member 1. The stopping surface 321 is preferably perpendicular to the elastic plate 31, but certainly, may also be slightly inclined to the left or right, as long as the stopping surface 321 can abut against the baffle 2 in the locked state to prevent the laundry processing agent feeding device from being disengaged from the receiving member 1. More preferably, the stopper 32 is further provided with an arc-shaped or flat sliding surface 322 obliquely disposed relative to the elastic plate 31, such that the laundry processing agent feeding device is smoothly inserted into the receiving member 1 during assembly. In one preferred condition, the stopper 32 is a wedge having a shape of a right triangle (for example, the stopper 32 in FIG. 5), a surface where one of the legs of the right triangle is located constitutes the stopping surface 321, and a surface where the hypotenuse of the right triangle is located constitutes the sliding surface 322. In another preferred condition, the stopper 32 is a wedge having a shape of a right trapezoid (for example, the stopper 32 in FIG. 6), a surface where the perpendicular leg of the right trapezoid is located constitutes the stopping surface 321, and a surface where the oblique leg of the right trapezoid is located constitutes the sliding surface 322. In the two preferred conditions above, the sliding surface 322 and the elastic plate 31 enable a smooth transition, which is more favorable for smoothly inserting the laundry processing agent feeding device into the receiving member 1. Certainly, the stopper 32 may be configured in other shapes, such as a conical shape and a pyramidal shape. Such adjustments and modifications can be made to the shape of the stopper 32 without departing from the principles and scope of the present invention, and shall fall within the protection scope of the present invention.

[0031] Preferably, as shown in FIGs. 1 to 3, the laundry processing agent feeding device comprises a storage container 4, a feeding container 5 and a guiding tube 6, the storage container 4 is fixed in the receiving member 1, the feeding container 5 is slidably connected to the receiving member 1, one end of the guiding tube 6 communicates with the feeding container 5, the other end of the guiding tube 6 is inserted into the storage container 4, and the length of the guiding tube 6 is configured such that the other end of the guiding tube 6 is not disengaged from the storage container 4 when the feeding container 5 moves away from the storage container 4. The laundry processing agent feeding device is configured as a split structure, where the storage container 4 and the feeding container 5 are separably arranged, and only the feeding container 5 is slidably connected to the receiving member 1, such that when adding the laundry processing agent, the user only needs to pull out the feeding container 5 but not the storage container 4. The feeding container 5 communicates with the storage container 4 via the guiding tube 6, and a right end of the guiding tube 6 is inserted into the storage container 4. When the feeding container 5 is pulled out (the feeding container 5 moves leftwards in the figures), the guiding tube 6 moves along with the feeding container 5, but the right end of the guiding tube

6 is not disengaged from the storage container 4, such that the laundry processing agent fed into the feeding container 5 can be delivered into the storage container 4 through the guiding tube 6. After adding the laundry processing agent, the user pushes the feeding container 5 and the guiding tube 6 back into the receiving member 1, and a right portion of the guiding tube 6 is inserted into the storage container 4 again. In this case, the elastic plate 31 is fixed to or integrated with an outer sidewall of the feeding container 5. When the feeding container 5 slides to a protruding position, the stopper 32 abuts against the baffle 2 to prevent the feeding container 5 from being disengaged from the receiving member 1. When the elastic plate 31 is pressed inwards by hand, the elastic plate 31 elastically deforms and drives the stopper 32 to move towards the feeding container 5 to separate the stopper 32 and the baffle 2. At this time, the feeding container 5 can be taken out of the receiving member 1.

[0032] Furthermore, it should be noted that, as shown in FIGs. 2 and 3, the feeding container 5 is provided with two feeding cavities 51, of which one is a detergent feeding cavity and the other is a care agent feeding cavity. Correspondingly, the storage container 4 is provided with two storage cavities: a detergent storage cavity communicated with the detergent feeding cavity through a guiding tube 6, and a care agent storage cavity communicated with the care agent feeding cavity through another guiding tube 6. Certainly, the number of the feeding cavities 51 is not limited to two as described above. For example, the number of the feeding cavities 51 can be one or three. Such adjustments and modifications can be made to the number of the feeding cavities 51 without departing from the principles and scope of the present invention, and shall fall within the protection scope of the present invention.

[0033] Furthermore, it should be noted that the laundry processing agent feeding device may also be configured as an integral structure, where the storage container 4 is fixed to or integrated with the feeding container 5. In this case, the guiding tube 6 can be eliminated.

[0034] Preferably, as shown in FIG. 3, the storage container 4 is provided with a directing structure 41, and the other end of the guiding tube 6 is inserted into the storage container 4 through the directing structure 41. The directing structure 41 is a directing joint 41 formed on an outer wall of the storage container 4. The right end of the guiding tube 6 is inserted into the storage container 4 through the directing joint 41. The directing joint 41 directs the guiding tube 6 when the guiding tube 6 moves along with the feeding container 5. Certainly, the directing structure 41 can be configured as other structures such as directing ribs or directing tubes. Such adjustments and modifications can be made to the specific configuration of the directing structure 41 without departing from the principles and scope of the present invention, and shall fall within the protection scope of the present invention.

[0035] So far, the technical schemes of the present invention have been described in conjunction with the preferred embodiments shown in the drawings. However, it is apparent to those skilled in the art that the scope of the present invention is not limited to such specific embodiments. Equivalent modifications or substitutions to associated technical features can be made by those skilled in the art without departing from the principles of the present invention, and such modified or substituted technical schemes shall fall within the protection scope of the present invention.

Claims

1. A laundry processing apparatus, comprising: a locking device, a receiving member and a laundry processing agent feeding device provided in the receiving member, wherein the laundry processing agent feeding device is slidably connected to the receiving member, the locking device is provided between the receiving member and the laundry processing agent feeding device, and the locking device is configured for preventing the laundry processing agent feeding device from being disengaged from the receiving member in a locked state and is further configured for allowing the laundry processing agent feeding device to be disengaged from the receiving member in an unlocked state.

2. The laundry processing apparatus according to claim 1, wherein the locking device comprises a first locking structure provided at a bottom or a side portion of the receiving member and a second locking structure correspondingly provided at a bottom or a side portion of the laundry processing agent feeding device; in the locked state, the first and second locking structures cooperate to prevent the laundry processing agent feeding device from coming out of the receiving member, and in the unlocked state, the first and second locking structures separate from each other to allow the laundry processing agent feeding device to be disengaged from the receiving member.

3. The laundry processing apparatus according to claim 2, wherein the first locking structure is a baffle, the second locking structure comprises an elastic plate and a stopper fixed to or integrated with the elastic plate, the baffle is fixed to or integrated with an inner sidewall of the receiving member, and the elastic plate is fixed to or integrated with an outer sidewall of the laundry processing agent feeding device; in the locked state, the stopper abuts against the baffle under the action of the elastic plate to prevent the laundry processing agent feeding device from being disengaged from the receiving member, and in the unlocked state, the elastic plate drives the stopper to move through elastic deformation and

thus separates the stopper and the baffle, allowing the laundry processing agent feeding device to be disengaged from the receiving member.

4. The laundry processing apparatus according to claim 3, wherein the stopper is provided with a stopping surface substantially perpendicular to the elastic plate, and in the locked state, the stopping surface abuts against the baffle to prevent the laundry processing agent feeding device from being disengaged from the receiving member.

5. The laundry processing apparatus according to claim 4, wherein the stopper is further provided with an arc-shaped or flat sliding surface obliquely disposed relative to the elastic plate, such that the laundry processing agent feeding device is smoothly inserted into the receiving member during assembly.

6. The laundry processing apparatus according to claim 5, wherein the stopper is a wedge having a shape of a right triangle or a right trapezoid, a surface where one of the legs of the right triangle or the perpendicular leg of the right trapezoid is located constitutes the stopping surface, and a surface where the hypotenuse of the right triangle or the oblique leg of the right trapezoid is located constitutes the sliding surface.

7. The laundry processing apparatus according to claim 1, wherein the laundry processing agent feeding device comprises a storage container, a feeding container and a guiding tube, the storage container is fixed in the receiving member, the feeding container is slidably connected to the receiving member, one end of the guiding tube communicates with the feeding container, the other end of the guiding tube is inserted into the storage container, and the length of the guiding tube is configured such that the guiding tube is not disengaged from the storage container when the feeding container moves away from the storage container.

8. The laundry processing apparatus according to claim 7, wherein the storage container is provided with a directing structure, and the other end of the guiding tube is inserted into the storage container through the directing structure.

9. The laundry processing apparatus according to claim 8, wherein the directing structure is a directing joint formed on an outer wall of the storage container.

10. The laundry processing apparatus according to any one of claims 1 to 9, wherein the laundry processing apparatus is a washing machine, and/or the laundry processing agent feeding device is a device for feeding a detergent or a care agent, and/or the receiving member is a receiving box.

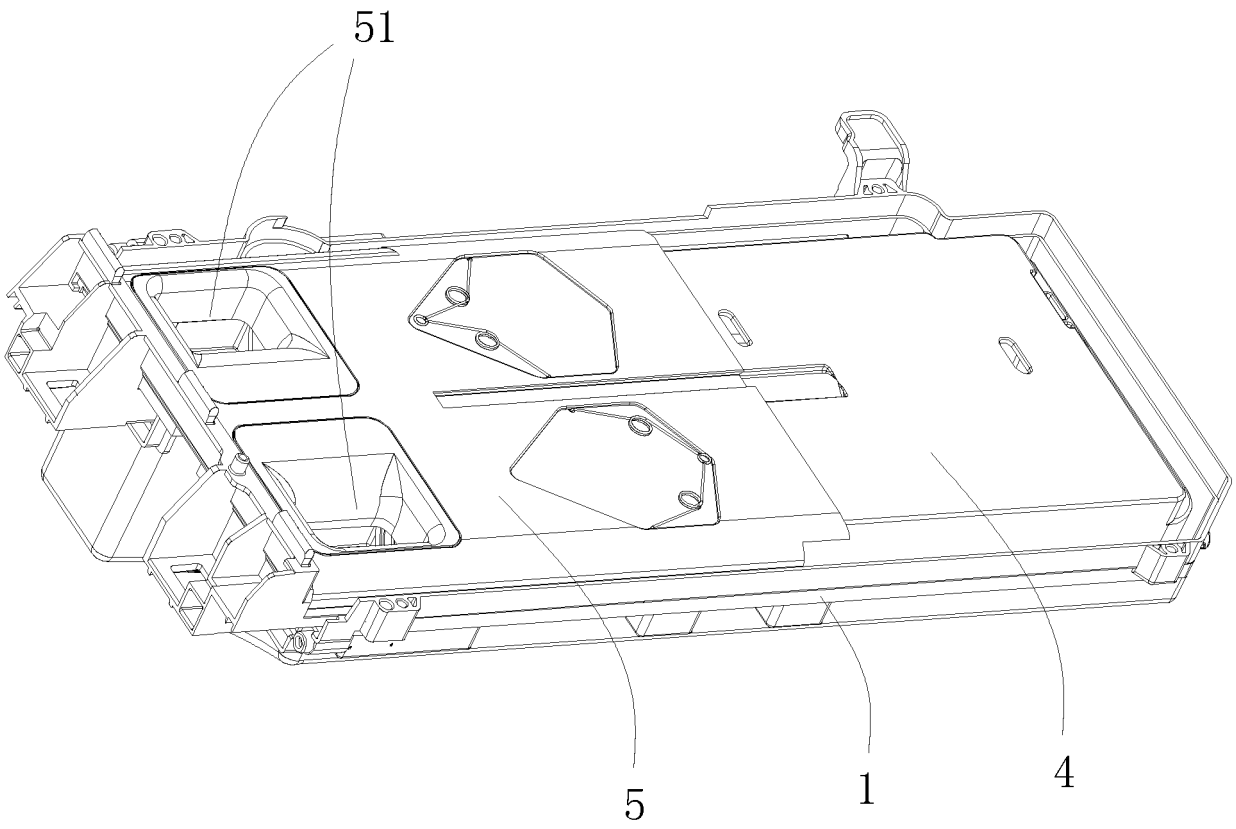

FIG. 1

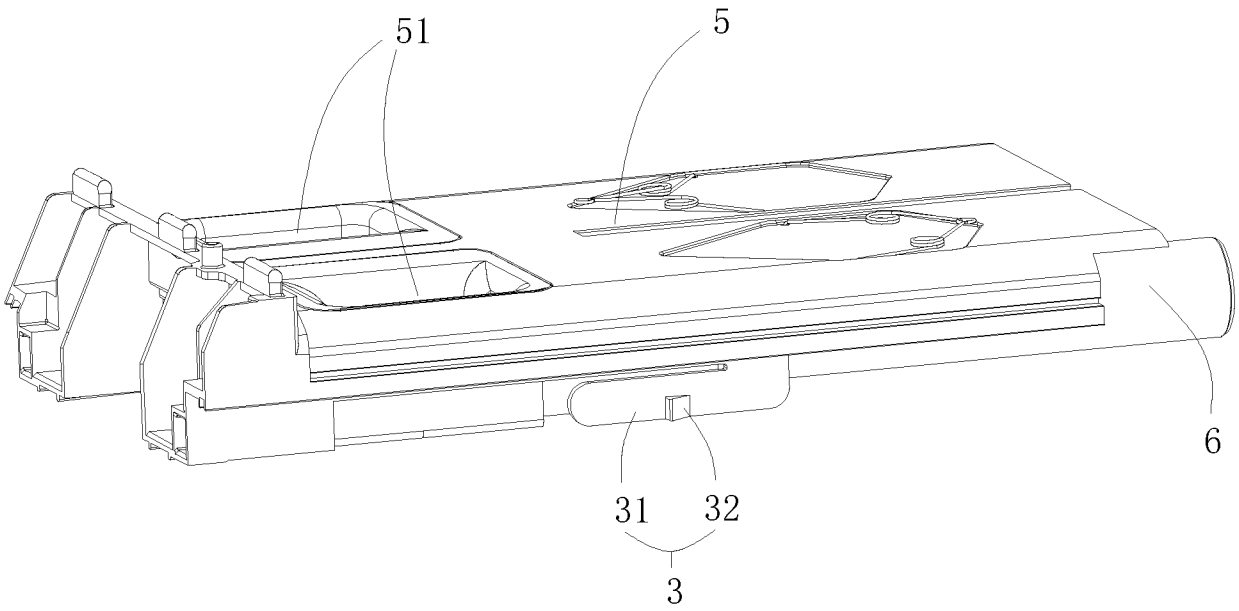

FIG. 2

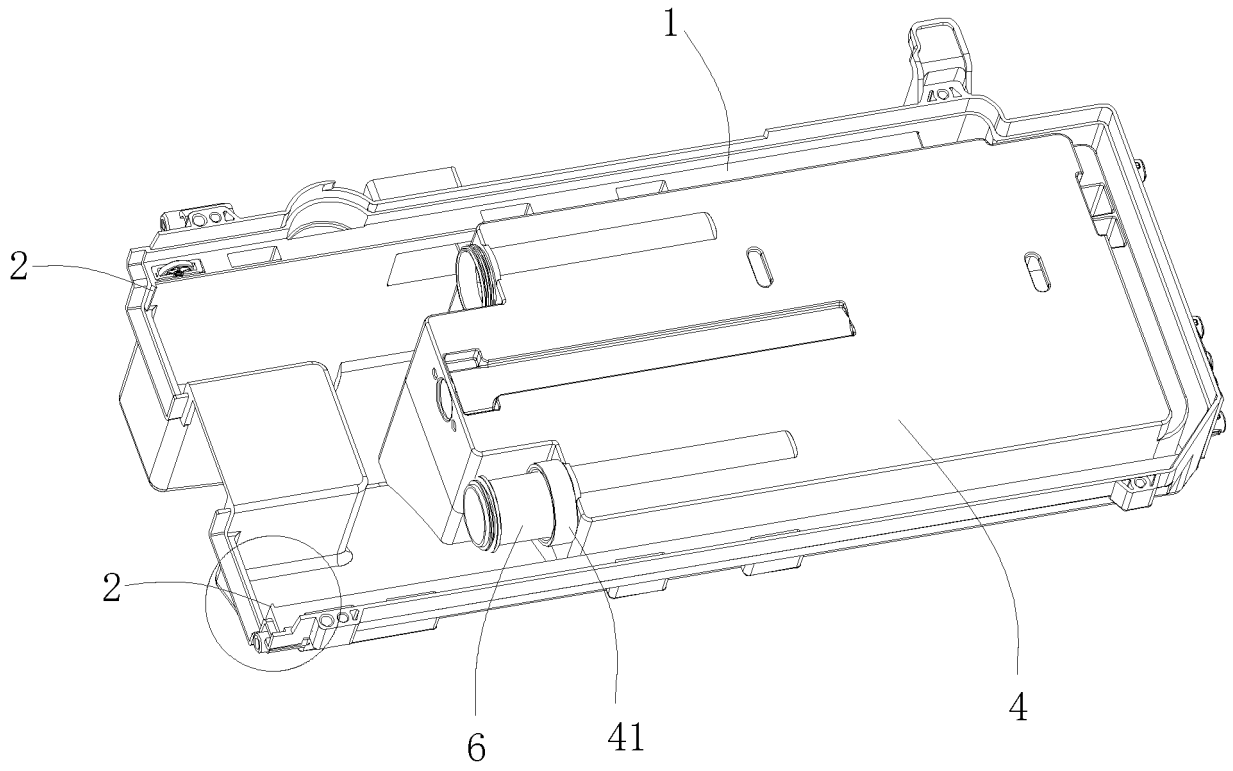

FIG. 3

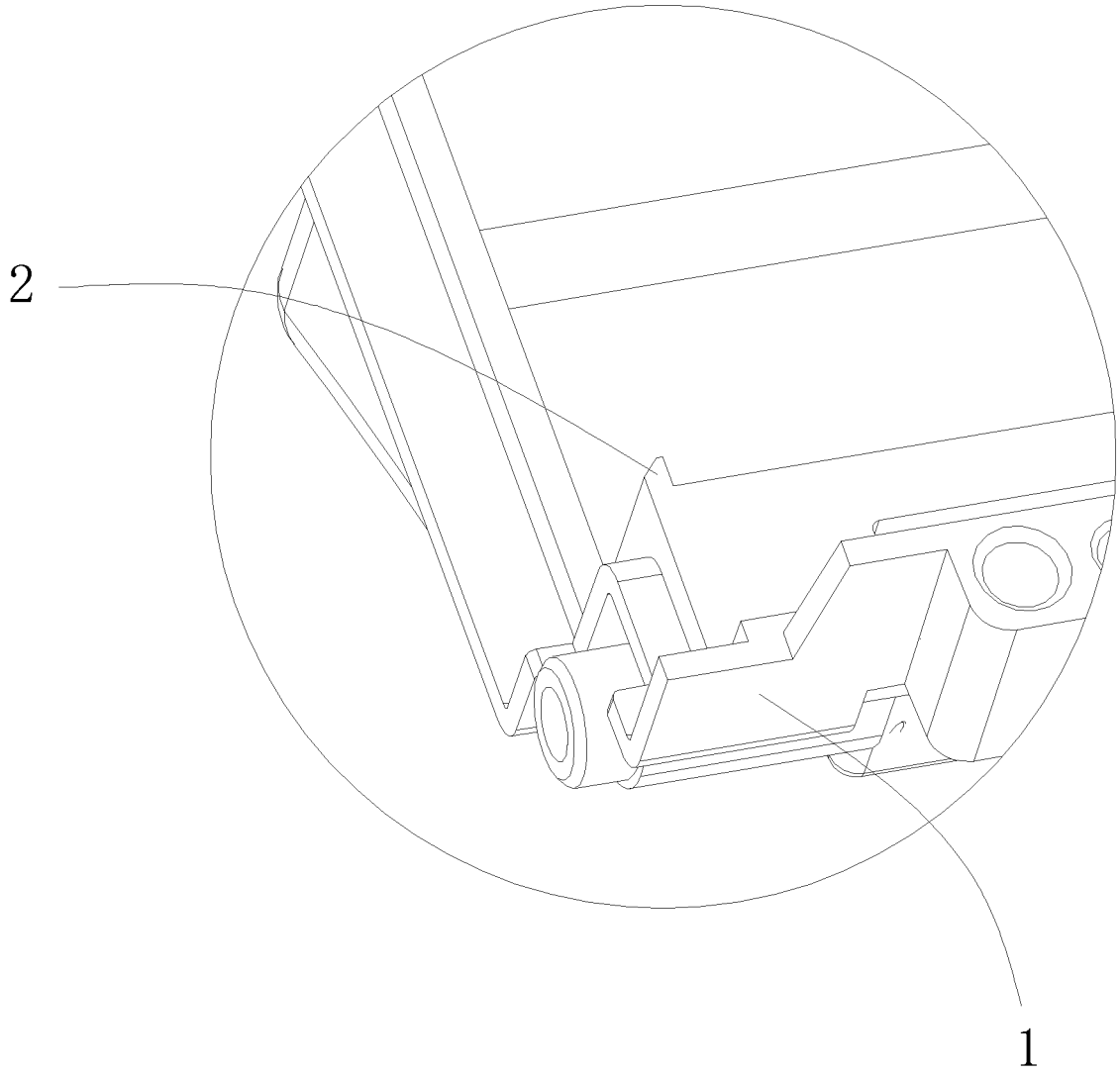

FIG. 4

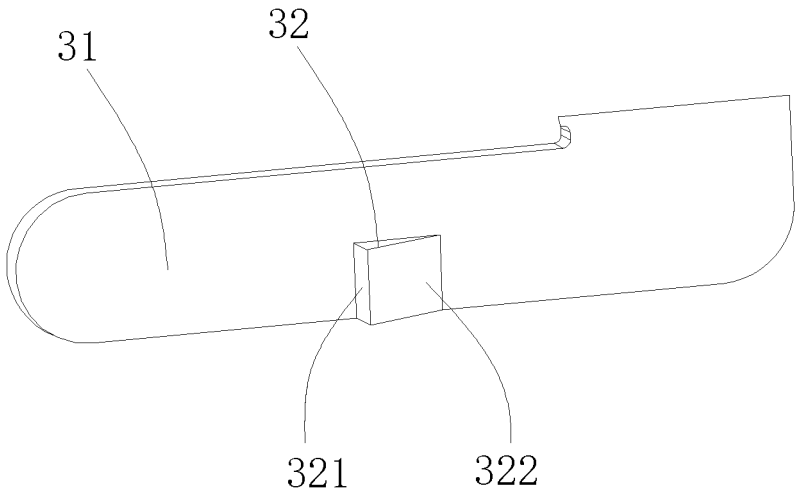

FIG. 5

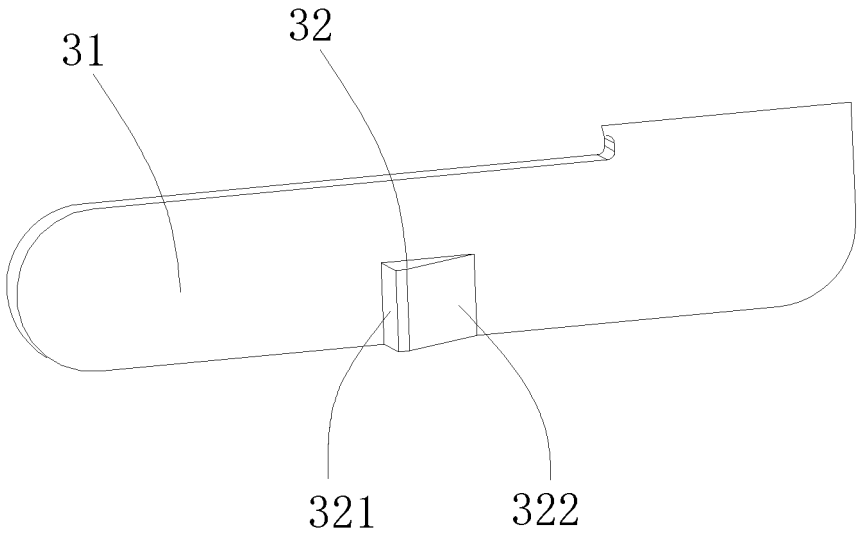

FIG. 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2020/095736

A. CLASSIFICATION OF SUBJECT MATTER

D06F 39/02(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

D06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

DWPI, EPODOC, CNPAT, CNKI: 衣物处理, 洗衣机, 限位, 锁定, 脱出, 位置, 底, 侧, 管, 液, 剂, wash+, position+, lock+, out, off, bottom, side, pipe, detergent.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 108221286 A (QINGDAO HAIER DRUM WASHING MACHINE CO., LTD.) 29 June 2018 (2018-06-29) description, paragraphs 2, 41-73, figures 1-5	1-6, 10
Y	CN 108221286 A (QINGDAO HAIER DRUM WASHING MACHINE CO., LTD.) 29 June 2018 (2018-06-29) description, paragraphs 2, 41-73, figures 1-5	7-10
X	CN 106637835 A (WUXI LITTLE SWAN CO., LTD.) 10 May 2017 (2017-05-10) description, specific embodiments, and figures 1-10	1-6, 10
Y	CN 106637835 A (WUXI LITTLE SWAN CO., LTD.) 10 May 2017 (2017-05-10) description, specific embodiments, and figures 1-10	7-10
X	CN 107044035 A (QINGDAO HAIER DRUM WASHING MACHINE CO., LTD.) 15 August 2017 (2017-08-15) description, particular embodiments, and figures 1-20	1-6, 10
Y	CN 107044035 A (QINGDAO HAIER DRUM WASHING MACHINE CO., LTD.) 15 August 2017 (2017-08-15) description, particular embodiments, and figures 1-20	7-10

☑ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
17 August 2020	**28 August 2020**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088** **China**	Authorized officer
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2020/095736

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	CN 107974807 A (QINGDAO HAIER WASHING MACHINE CO., LTD.) 01 May 2018 (2018-05-01) description, paragraphs 42-49, figures 1-6	7-10
Y	CN 107354679 A (WUXI LITTLE SWAN CO., LTD.) 17 November 2017 (2017-11-17) description, specific embodiments, and figures 1-7	7-10
Y	CN 208701370 U (QINGDAO HAIGAO DESIGN MANUFACTURE CO., LTD.) 05 April 2019 (2019-04-05) description, specific embodiments, and figures 1-4	7-10
A	JP 2018175049 A (TOSHIBA LIFESTYLE PRODUCTS & SERVICES CORP.) 15 November 2018 (2018-11-15) entire document	1-10
A	WO 2010130572 A1 (ELECTROLUX HOME PROD. CORP. N.V.) 18 November 2010 (2010-11-18) entire document	1-10

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2020/095736

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 108221286 A	29 June 2018	WO 2018108091 A1	21 June 2018
CN 106637835 A	10 May 2017	US 2019368110 A1	05 December 2019
		WO 2018149052 A1	23 August 2018
		EP 3584361 A1	25 December 2019
CN 107044035 A	15 August 2017	WO 2018219143 A1	06 December 2018
CN 107974807 A	01 May 2018	None	
CN 107354679 A	17 November 2017	None	
CN 208701370 U	05 April 2019	None	
JP 2018175049 A	15 November 2018	CN 108691152 A	23 October 2018
WO 2010130572 A1	18 November 2010	CN 102421957 A	18 April 2012
		EP 2251480 A1	17 November 2010
		RU 2011150213 A	20 June 2013
		BR PI1014502 A2	05 April 2016
		US 2012159997 A1	28 June 2012

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