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(71) Applicants:
- **Qingdao Haier Drum Washing Machine Co., Ltd.**
  Qingdao Shandong 266101 (CN)
- **Haier Smart Home Co., Ltd.**
  Qingdao, Shandong 266101 (CN)

(72) Inventors:
- **HUANG, Tao**
  Qingdao, Shandong 266101 (CN)
- **XU, Yonghong**
  Qingdao, Shandong 266101 (CN)
- **HUANG, Bencai**
  Qingdao, Shandong 266101 (CN)

(74) Representative: **Jakelski & Althoff**
Patentanwälte PartG mbB
Patentanwälte
Partnerschaftsgesellschaft
Mollenbachstraße 37
71229 Leonberg (DE)

(54) LAUNDRY TREATMENT APPARATUS

(57) A laundry treatment apparatus. The laundry treatment apparatus comprises: a laundry treatment barrel, a water supply valve (1), a delivery device (2), a water containing member, an atomization generator (3), and a one-way check mechanism. The delivery device (2) comprises a water delivery channel (21); the water supply valve (1) is connected to the inlet end of the water delivery channel (21); the outlet end of the water delivery channel (21) is connected to the atomization generator (3) by means of the water containing member; the outlet of the atomization generator (3) is disposed toward the inner cavity of the laundry treatment barrel; the one-way check mechanism is respectively connected to the water delivery channel (21) and the water containing member; and the one-way check mechanism is configured to be isolated from the atmosphere when the water supply valve (1) is opened and to be communicated with the atmosphere when the water supply valve (1) is closed. The laundry treatment device can improve the laundry washing effect of the laundry treatment device having a washing function, and improve the applicability to the laundry to meet use requirements of users, thereby improving the user experience.

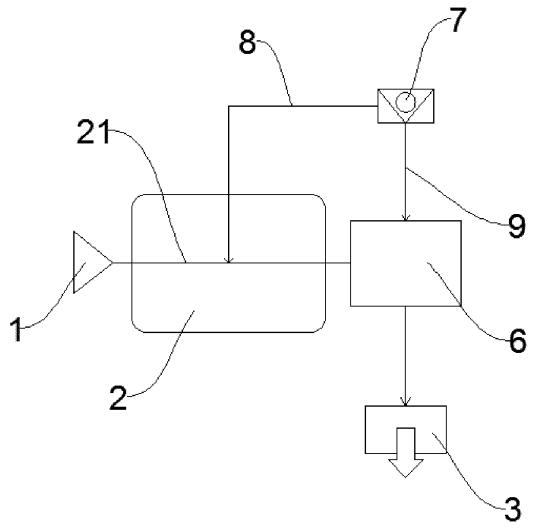

Fig.1

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Description

FIELD

[0001] The present disclosure belongs to the technical field of clothing treatment, and specifically provides a clothing treatment apparatus.

BACKGROUND

[0002] A clothing treatment apparatus is an apparatus capable of washing, drying, sterilizing and/or deodorizing clothing. With the continuous improvement of production level and ongoing growth of users' needs, users have also raised higher and higher requirements on the clothing treatment apparatus.

[0003] In the prior art, taking a washing machine as an example, the clothing is generally washed by water. The washing process is accompanied by mechanical rotation, so that stains on the clothing are washed away. However, this washing method has a limitation in that if a large amount of water is injected into a washing drum at the beginning, the stains on a surface of the clothing will directly enter a lining of the clothing in a state where a washing liquid is not completely dissolved, so that more time, water amount, washing liquid and mechanical action are required for washing the clothing clean in the subsequent washing process, thus resulting in a poor washing effect. In existing clothing treatment apparatuses, other functions are often added on the basis of a washing machine, such as adding a drying function to become a washing-drying integrated machine, etc. Such an improvement does not significantly improve the washing effect of the washing machine. Moreover, current washing machines still cannot achieve in-depth treatment of clothing made of special materials, such as cashmere, wool and other materials. If the traditional washing by water is used, it is highly possible that fiber structures of the clothing will be damaged, which has caused a very big limitation on an applicable range of the clothing of the washing machine.

[0004] Accordingly, there is a need for a new clothing treatment apparatus in the art to solve the above problems.

SUMMARY

[0005] In order to solve the above problems in the prior art, that is, to solve the problems of poor washing effect and very limited applicable range of clothing of existing clothing treatment apparatuses with a washing function, the present disclosure provides a clothing treatment apparatus.

[0006] A first technical solution of the present disclosure provides a clothing treatment apparatus, and the clothing treatment apparatus includes a clothing treatment drum, a water supply valve, a dispensing device, a water-containing member, an atomization generator and a one-way check mechanism; in which the dispensing device includes a water delivery channel, the water supply valve is connected to a water inlet end of the water delivery channel, and a water outlet end of the water delivery channel is connected to the atomization generator through the water-containing member; an outlet of the atomization generator is arranged facing an inner cavity of the clothing treatment drum, the one-way check mechanism is connected to the water delivery channel and the water-containing member respectively, and the one-way check mechanism is arranged to be isolated from the atmosphere when the water supply valve is opened and to communicate with the atmosphere when the water supply valve is closed.

[0007] In a preferred technical solution of the above clothing treatment apparatus, the dispensing device further includes a clothing treatment agent dispensing cavity, and the clothing treatment agent dispensing cavity is arranged below the water delivery channel.

[0008] In a preferred technical solution of the above clothing treatment apparatus, the water supply valve is arranged outside of the dispensing device.

[0009] In a preferred technical solution of the above clothing treatment apparatus, a position where the one-way check structure is arranged is at a different height from a position where the outlet of the atomization generator is arranged.

[0010] In a preferred technical solution of the above clothing treatment apparatus, the position where the one-way check structure is arranged is higher than the position where the outlet of the atomization generator is arranged.

[0011] In a preferred technical solution of the above clothing treatment apparatus, the outlet of the atomization generator is arranged obliquely.

[0012] In a preferred technical solution of the above clothing treatment apparatus, the one-way check mechanism includes a one-way check valve, a first pipeline and a second pipeline, the one-way check valve is connected to the water delivery channel through the first pipeline, and the one-way check valve is connected to the water-containing member through the second pipeline.

[0013] In a preferred technical solution of the above clothing treatment apparatus, the clothing treatment apparatus is a drum washing machine, and the clothing treatment drum is a drum of the drum washing machine.

[0014] In a preferred technical solution of the above clothing treatment apparatus, the drum washing machine further includes a window gasket connected to the drum, and the atomization generator is arranged on the window gasket.

[0015] In a preferred technical solution of the above clothing treatment apparatus, the atomization generator is arranged on an outer cylinder of the drum.

[0016] It can be understood by those skilled in the art that in the preferred technical solutions of the present disclosure, by connecting the one-way check structure

with the water delivery channel and the water-containing member, water can be injected into the water delivery channel and the water-containing member when the water supply valve is opened, and then the one-way check structure communicates with the atmosphere when the water supply valve is closed, so that the water in the water delivery channel and the water-containing member is sprayed from the atomization generator, and the water is converted into small particles of atomized water droplets under the atomization action of the atomization generator, thereby realizing a tender treatment of the clothing by atomized air. Specifically, before washing by water, the clothing can be moistened first by atomized water droplets, so that the stains on the surface of the clothing are removed first, preventing the stains on the surface of the clothing from entering the lining of the clothing. Therefore, less time, water amount, washing liquid and mechanical action can be used to wash the clothing clean in the subsequent washing process so that the washing effect on the clothing is improved and the clothing treatment apparatus is more energy-saving. In addition, the use of this atomized air washing method can treat clothing of special materials such as cashmere, wool, etc., which not only can make the surface of the clothing of this material smoother and softer, but also can quickly remove stains on the clothing without damaging the fiber structures of the clothing, thereby increasing the applicable range of the clothing of the clothing treatment apparatus and further improving the user experience.

[0017] Further, by setting the position where the one-way check structure is arranged at a different height from the position where the outlet of the atomization generator is arranged, a certain liquid level difference is formed, so that the water in the water delivery channel and the water-containing member can be smoothly sprayed from the outlet of the atomization generator, which makes it easier to perform the atomized air washing of the clothing and improves the user experience.

[0018] A second technical solution of the present disclosure provides a clothing treatment apparatus, and the clothing treatment apparatus includes a clothing treatment drum, a water supply valve, a dispensing device, a water-containing member, and an atomization generator; in which the dispensing device includes a water delivery channel, the water supply valve is connected to a water inlet end of the water-containing member through the water delivery channel, a water outlet end of the water-containing member is connected to the atomization generator through a first pipeline, and the water outlet end of the water-containing member is also connected to the clothing treatment drum through a second pipeline; an outlet of the atomization generator is arranged facing an inner cavity of the clothing treatment drum, the water delivery channel and/or the water-containing member is provided with a one-way check structure, and the one-way check mechanism is arranged to be isolated from the atmosphere when the water supply valve is opened and to communicate with the atmosphere when the water supply valve is closed.

[0019] In a preferred technical solution of the above clothing treatment apparatus, a sprinkling head is provided on the clothing treatment drum, and the second pipeline is connected with the sprinkling head.

[0020] In a preferred technical solution of the above clothing treatment apparatus, a sprinkling port of the sprinkling head is arranged facing the inner cavity of the clothing treatment drum.

[0021] In a preferred technical solution of the above clothing treatment apparatus, the one-way check structure is arranged close to the water inlet end of the water delivery channel.

[0022] In a preferred technical solution of the above clothing treatment apparatus, a position where the one-way check structure is arranged is at a different height from a position where the outlet of the atomization generator is arranged.

[0023] In a preferred technical solution of the above clothing treatment apparatus, the position where the one-way check structure is arranged is higher than the position where the outlet of the atomization generator is arranged.

[0024] In a preferred technical solution of the above clothing treatment apparatus, the one-way check structure is a one-way check valve.

[0025] In a preferred technical solution of the above clothing treatment apparatus, the clothing treatment apparatus is a drum washing machine, and the clothing treatment drum is a drum of the drum washing machine.

[0026] In a preferred technical solution of the above clothing treatment apparatus, the drum washing machine further includes a window gasket connected to the drum, and the atomization generator is arranged on the window gasket.

[0027] In a preferred technical solution of the above clothing treatment apparatus, the atomization generator is arranged on an outer cylinder of the drum.

[0028] It can be understood by those skilled in the art that in the preferred technical solutions of the present disclosure, by arranging the one-way check structure on the water delivery channel and/or the water-containing member, water can be injected into the water delivery channel and the water-containing member when the water supply valve is opened, and then the one-way check structure communicates with the atmosphere when the water supply valve is closed, so that the water in the water-containing member is sprayed from the atomization generator, and the water is converted into small particles of atomized water droplets under the atomization action of the atomization generator, thereby realizing a tender treatment of the clothing by atomized air. In addition, other ways of water injection, such as sprinkling, may be provided by connecting the second pipeline to the clothing treatment drum. Specifically, before washing by water, the clothing can be moistened first by atomized water droplets, so that the stains on the surface of the clothing are removed first, preventing the stains on the

surface of the clothing from entering the lining of the clothing. After the atomized air washing, water is injected into the clothing treatment drum through the second pipeline. Therefore, less time, water amount, washing liquid and mechanical action can be used to wash the clothing clean in the subsequent washing process so that the washing effect on the clothing is improved and the clothing treatment apparatus is more energy-saving. In addition, the use of this atomized air washing method can treat clothing of special materials such as cashmere, wool, etc., which not only can make the surface of the clothing of this material smoother and softer, but also can quickly remove stains on the clothing without damaging the fiber structures of the clothing, thereby increasing the applicable range of the clothing of the clothing treatment apparatus and further improving the user experience.

[0029] Further, the second pipeline is connected to the sprinkling head provided on the clothing treatment drum, so that the clothing treatment apparatus of the present disclosure has at least two clothing washing modes: atomized air washing and sprinkling washing, thus enabling the users to choose the corresponding washing mode flexibly according to their own needs to meet the various requirements of users and improve the user experience.

[0030] Further, by setting the position where the one-way check structure is arranged at a different height from the position where the outlet of the atomization generator is arranged, a certain liquid level difference is formed, so that the water in the water-containing member can be smoothly sprayed from the outlet of the atomization generator, which makes it easier to perform the atomized air washing of the clothing and improves the user experience.

[0031] A third technical solution of the present disclosure provides a clothing treatment apparatus, and the clothing treatment apparatus includes a clothing treatment drum, a water supply valve, a dispensing device, a water-containing member, and an atomization generator; in which the dispensing device includes a water delivery channel, the water supply valve is connected to a water inlet end of the water delivery channel, a water outlet end of the water delivery channel is connected to the atomization generator through the water-containing member; an outlet of the atomization generator is arranged facing an inner cavity of the clothing treatment drum, the water delivery channel and/or the water-containing member is provided with a one-way check structure, and the one-way check mechanism is arranged to be isolated from the atmosphere when the water supply valve is opened and to communicate with the atmosphere when the water supply valve is closed.

[0032] In a preferred technical solution of the above clothing treatment apparatus, the one-way check structure is arranged close to the water inlet end of the water delivery channel.

[0033] In a preferred technical solution of the above clothing treatment apparatus, the water supply valve is arranged outside of the dispensing device.

[0034] In a preferred technical solution of the above clothing treatment apparatus, a position where the one-way check structure is arranged is at a different height from a position where the outlet of the atomization generator is arranged.

[0035] In a preferred technical solution of the above clothing treatment apparatus, the position where the one-way check structure is arranged is higher than the position where the outlet of the atomization generator is arranged.

[0036] In a preferred technical solution of the above clothing treatment apparatus, the outlet of the atomization generator is arranged obliquely.

[0037] In a preferred technical solution of the above clothing treatment apparatus, the one-way check structure is a one-way check valve.

[0038] In a preferred technical solution of the above clothing treatment apparatus, the clothing treatment apparatus is a drum washing machine, and the clothing treatment drum is a drum of the drum washing machine.

[0039] In a preferred technical solution of the above clothing treatment apparatus, the drum washing machine further includes a window gasket connected to the drum, and the atomization generator is arranged on the window gasket.

[0040] In a preferred technical solution of the above clothing treatment apparatus, the atomization generator is arranged on an outer cylinder of the drum.

[0041] It can be understood by those skilled in the art that in the preferred technical solutions of the present disclosure, by arranging the one-way check structure on the water delivery channel and/or the water-containing member, water can be injected into the water delivery channel and the water-containing member when the water supply valve is opened, and then the one-way check structure communicates with the atmosphere when the water supply valve is closed, so that the water in the water-containing member is sprayed from the atomization generator, and the water is converted into small particles of atomized water droplets under the atomization action of the atomization generator, thereby realizing a tender treatment of the clothing by atomized air. Specifically, before washing by water, the clothing can be moistened first by atomized water droplets, so that the stains on the surface of the clothing are removed first, preventing the stains on the surface of the clothing from entering the lining of the clothing. Therefore, less time, water amount, washing liquid and mechanical action can be used to wash the clothing clean in the subsequent washing process so that the washing effect on the clothing is improved and the clothing treatment apparatus is more energy-saving. In addition, the use of this atomized air washing method can treat clothing of special materials such as cashmere, wool, etc., which not only can make the surface of the clothing of this material smoother and softer, but also can quickly remove stains on the clothing without damaging the fiber structures of the clothing,

thereby increasing the applicable range of the clothing of the clothing treatment apparatus and further improving the user experience.

[0042] Further, by setting the position where the one-way check structure is arranged at a different height from the position where the outlet of the atomization generator is arranged, a certain liquid level difference is formed, so that the water in the water-containing member can be smoothly sprayed from the outlet of the atomization generator, which makes it easier to perform the atomized air washing of the clothing and improves the user experience.

[0043] A fourth technical solution of the present disclosure provides a clothing treatment apparatus, and the clothing treatment apparatus includes a clothing treatment drum, a water supply valve, a dispensing device and an atomization generator; in which the dispensing device includes a water delivery channel, the water supply valve is connected to a water inlet end of the water delivery channel, a water outlet end of the water delivery channel is connected to the atomization generator through a first pipeline, and the water outlet end of the water delivery channel is also connected to a second pipeline; an outlet of the second pipeline is arranged facing an inner cavity of the clothing treatment drum, an outlet of the atomization generator is arranged facing the inner cavity of the clothing treatment drum, and the second pipeline is arranged to be able to communicate with the atmosphere.

[0044] In a preferred technical solution of the above clothing treatment apparatus, the second pipeline includes a pipeline body and a one-way check structure provided on the pipeline body, and the one-way check structure is arranged to be isolated from the atmosphere when the water supply valve is opened and to communicate with the atmosphere when the water supply valve is closed.

[0045] In a preferred technical solution of the above clothing treatment apparatus, a position where the one-way check structure is arranged is at a different height from a position where the outlet of the atomization generator is arranged.

[0046] In a preferred technical solution of the above clothing treatment apparatus, the position where the one-way check structure is arranged is higher than the position where the outlet of the atomization generator is arranged.

[0047] In a preferred technical solution of the above clothing treatment apparatus, the one-way check structure is a one-way check valve.

[0048] In a preferred technical solution of the above clothing treatment apparatus, the outlet of the atomization generator is arranged obliquely.

[0049] In a preferred technical solution of the above clothing treatment apparatus, the dispensing device further includes a clothing treatment agent dispensing cavity, and the clothing treatment agent dispensing cavity is arranged below the water delivery channel.

[0050] In a preferred technical solution of the above clothing treatment apparatus, the clothing treatment apparatus is a drum washing machine, and the clothing treatment drum is a drum of the drum washing machine.

[0051] In a preferred technical solution of the above clothing treatment apparatus, the drum washing machine further includes a window gasket connected to the drum, and the atomization generator is arranged on the window gasket.

[0052] In a preferred technical solution of the above clothing treatment apparatus, the atomization generator is arranged on an outer cylinder of the drum.

[0053] It can be understood by those skilled in the art that in the preferred technical solutions of the present disclosure, water can be injected into the water delivery channel when the water supply valve is opened, and then when the water supply valve is closed, the second pipeline can communicate with the atmosphere, so that a part of the water in the water delivery channel and all the water in the first pipeline can be sprayed from the atomization generator, and can be converted into small particles of atomized water droplets under the atomization action of the atomization generator, thereby realizing a tender treatment of the clothing by atomized air. Specifically, before washing by water, the clothing can be moistened first by atomized water droplets, so that the stains on the surface of the clothing are removed first, preventing the stains on the surface of the clothing from entering the lining of the clothing. Therefore, less time, water amount, washing liquid and mechanical action can be used to wash the clothing clean in the subsequent washing process so that the washing effect on the clothing is improved and the clothing treatment apparatus is more energy-saving. In addition, the use of this atomized air washing method can treat clothing of special materials such as cashmere, wool, etc., which not only can make the surface of the clothing of this material smoother and softer, but also can quickly remove stains on the clothing without damaging the fiber structures of the clothing, thereby increasing the applicable range of the clothing of the clothing treatment apparatus and further improving the user experience.

[0054] Further, by providing the one-way check structure, the one-way check structure is isolated from the atmosphere when the water supply valve is opened, so as to perform a normal water injection operation, and the one-way check structure communicates with the atmosphere when the water supply valve is closed, so that a part of the water in the water delivery channel and all the water in the first pipeline can be sprayed from the atomization generator to realize the atomized air washing of the clothing.

[0055] Further, by setting the position where the one-way check structure is arranged at a different height from the position where the outlet of the atomization generator is arranged, a certain liquid level difference is formed, so that the water in the water delivery channel and the first pipeline can be smoothly sprayed from the outlet of the

atomization generator, which makes it easier to perform the atomized air washing of the clothing and improves the user experience.

BRIEF DESCRIPTION OF THE DRAWINGS

[0056]

FIG. 1 is a partial structural view showing the principle of a clothing treatment apparatus according to a first technical solution of the present disclosure;

FIG. 2 is a partial schematic view showing the structure of a drum washing machine according to the first technical solution of the present disclosure;

FIG. 3 is a partial structural view showing the principle of a clothing treatment apparatus according to a second technical solution of the present disclosure;

FIG. 4 is a partial schematic view showing the structure of a drum washing machine according to the second technical solution of the present disclosure;

FIG. 5 is a partial structural view showing the principle of a clothing treatment apparatus according to a third technical solution of the present disclosure;

FIG. 6 is a partial schematic view showing the structure of a drum washing machine according to the third technical solution of the present disclosure; and

FIG. 7 is a partial structural view showing the principle of a clothing treatment apparatus according to a fourth technical solution of the present disclosure.

DETAILED DESCRIPTION

[0057] Preferred embodiments of the present disclosure will be described below with reference to the accompanying drawings. It should be understood by those skilled in the art that these embodiments are only used to explain the technical principles of the present disclosure, and are not intended to limit the scope of protection of the present disclosure.

[0058] It should be noted that in the description of the present disclosure, terms indicating directional or positional relationships, such as "in", "above", "below", "inside", "outside" and the like, are based on the directional or positional relationships shown in the accompanying drawings. They are only used for ease of description, and do not indicate or imply that the device or element must have a specific orientation, or be constructed or operated in a specific orientation, and therefore they should not be considered as limitations to the present disclosure. In addition, terms "first" and "second" are only used for descriptive purposes, and should not be understood as indicating or implying relative importance.

[0059] In addition, it should also be noted that in the description of the present disclosure, unless otherwise clearly specified and defined, terms "arrange", "install", "connect" and "connection" should be understood in a broad sense; for example, the connection may be a fixed connection, or may also be a detachable connection, or an integral connection; it may be a mechanical connection, or an electrical connection; it may be a direct connection, or an indirect connection implemented through an intermediate medium, or it may be an internal communication between two elements. For those skilled in the art, the specific meaning of the above terms in the present disclosure can be understood according to specific situations.

[0060] In view of the problems of poor washing effect and very limited applicable range of clothing of existing clothing treatment apparatuses with a washing function, the present disclosure provides a clothing treatment apparatus, aiming at improving the washing effect of the clothing treatment apparatuses with the washing function on the clothing, increasing the applicable range of the clothing, meeting user's requirements on use, and thereby improving the user experience.

First technical Solution

[0061] As shown in FIG. 1, the clothing treatment apparatus of the present disclosure includes a clothing treatment drum, a water supply valve 1, a dispensing device 2, a water-containing member, an atomization generator 3, and a one-way check mechanism. The dispensing device 2 includes a water delivery channel 21, the water supply valve 1 is connected to a water inlet end of the water delivery channel 21, and a water outlet end of the water delivery channel 21 is connected to the atomization generator 3 through the water-containing member. An outlet of the atomization generator 3 is arranged facing an inner cavity of the clothing treatment drum. The one-way check mechanism is connected with the water delivery channel 21 and the water-containing member respectively, and the one-way check mechanism is arranged to be isolated from the atmosphere when the water supply valve 1 is opened and to communicate with the atmosphere when the water supply valve 1 is closed. The water-containing member may be a water tank, or a water box, or a sink on the clothing treatment apparatus. Those skilled in the art may flexibly set the specific structure of the water-containing member in practical applications, as long as the water-containing member can store and accommodate water. The atomization generator 3 may be an ultrasonic atomization generator or a compressed atomization generator. Those skilled in the art may flexibly set the specific structure of the atomization generator 3 in practical applications, as long as the atomization generator 3 can convert the water in the water delivery channel 21 and the water-containing member into atomized water droplets when the one-way check structure communicates with the atmosphere so

as to perform atomized air washing of the clothing. In addition, a combined structure of a one-way check valve 7 and pipelines may be used as the one-way check structure, in which the one-way check valve 7 may be the one-way check valve in the patent No. 201721853840.8. The principle of the one-way check valve 7 belongs to the prior art, so it will not be described in detail herein. Of course, in the present disclosure, other combined structures of a one-way check structure and pipelines may also be used. For example, the one-way check structure includes a cylinder, a movable block arranged in the cylinder, and a spring connected between the cylinder and the movable block. The movable block divides an internal cavity of the cylinder into two parts. A top part of the cylinder is provided with an air inlet, a bottom part of the cylinder is provided with a water inlet, and a middle part of the cylinder is provided with an outlet. The spring allows the movable block to move between a top limit position, a middle position and a bottom limit position. When the spring is in a natural state, it enables the movable block to be maintained at the bottom limit position. At this time, the air inlet communicates with the outlet, and the water inlet is isolated from the outlet by the movable block, so as to realize the communication between the one-way check structure and the atmosphere. When water inflows from the water inlet, the water pressure moves the movable block to the top limit position against the force of the spring, so that the water inlet communicates with the outlet, and that the air inlet is isolated from the outlet by the movable block. Therefore, the one-way check structure allows water to pass through and be isolated from the atmosphere. It should be noted that the above-mentioned top part and bottom part are defined relative to the cylinder, and they do not constitute restrictions to the specific direction of arranging the one-way check structure. Alternatively, the one-way check structure may also be a combined structure of a plug and pipelines. Specifically, the water delivery channel 21 and the water-containing member are connected by a connection pipe, an opening is provided at the highest point of the connection pipe, and a plug is provided at the opening. When water inflows from the water supply valve 1, the opening is closed by the plug, and when the water supply valve 1 is closed, the plug is removed and the opening communicates with the atmosphere, so that the water in the water delivery channel 21 and the water-containing member is sprayed from the outlet of the atomization generator 3. Those skilled in the art may flexibly set the specific structure of the one-way check structure in practical applications, as long as the one-way check structure can be isolated from the atmosphere when the water supply valve 1 is opened and can communicate with the atmosphere when the water supply valve 1 is closed.

[0062] It should be noted that by using the one-way check structure, the present disclosure enables the atomization generator 3 to smoothly generate atomized water droplets. This is because when the water supply valve 1 is always open, it is very difficult for the atomization generator 3 to form atomized water droplets under the action of water pressure. Therefore, the water supply valve 1 can be opened to accumulate water in the water delivery channel 21 and the water-containing member, and then the water supply valve 1 can be closed. At this time, the water in the water delivery channel 21 and the water-containing member can be sprayed onto the clothing in the form of atomized water droplets from the atomization generator 3 according to the principle of atmospheric communication, so as to ensure that the atomization generator 3 can perform atomized air washing of the clothing.

[0063] In addition, it should also be noted that the clothing treatment apparatus of the present disclosure may be a drum washing machine, a pulsator washing machine, a washing-drying integrated machine, a clothing care machine, etc., and those skilled in the art may flexibly set the application objects of the technical solutions of the present disclosure. Such adjustments and changes to the application objects do not deviate from the principle of the present disclosure, and should be defined within the scope of protection of the present disclosure. The technical solutions of the present disclosure will be further explained below in conjunction with a drum washing machine.

[0064] Specifically, as shown in FIGS. 1 and 2, the drum washing machine of the present disclosure includes a cabinet, a drum 4 arranged in the cabinet, and a window gasket 5 connected between an outer cylinder of the drum 4 and the cabinet. The atomization generator 3 is preferably arranged on the window gasket 5, and an outlet of the atomization generator 3 is obliquely arranged facing an inner cavity of the drum 4 (of course, other directions of arrangement are also possible). Alternatively, the atomization generator 3 may also be provided on the outer cylinder of the drum 4, as long as it can spray atomized water droplets onto the clothing in an inner cylinder of the drum 4 to perform atomized air washing. In addition, the drum washing machine also includes a dispensing device 2 arranged on the cabinet. The dispensing device 2 includes a clothing treatment agent dispensing cavity and a water box arranged on a top of the clothing treatment agent dispensing cavity. The water delivery channel 21 is formed in the water box. A water inlet end of the water delivery channel 21 is connected to the water supply valve 1 arranged outside of the dispensing device 2, and a water outlet end of the water delivery channel 21 is connected to a water tank 6 through a pipeline. The water tank 6 is connected to the atomization generator 3 through a pipeline, and the water tank 6 has a function of accumulating water. The one-way check valve 7 is arranged outside of the water delivery channel 21 and the water tank 6, the one-way check valve 7 is connected to the water delivery channel 21 through a first pipeline 8, and the one-way check valve 7 is also connected to the water tank 6 through a second pipeline 9 (this part of the structure is not shown in FIG. 2).

[0065] Preferably, the position where the one-way check valve 7 is arranged is at a different height from the position where the outlet of the atomization generator 3 is arranged, that is, when the one-way check valve 7 communicates with the atmosphere, a certain liquid level difference can be formed between the one-way check valve 7 and the outlet of the atomization generator 3, so that the water accumulated in the water delivery channel 21 and the water tank 6 can be sprayed onto the clothing more easily in the form of atomized water droplets through the atomization generator 3. Since the position where the dispensing device 2 is arranged is generally higher than the position where the drum 4 is arranged in the drum washing machine, it is more preferable to set the position where the one-way check valve 7 is arranged to be higher than the position where the outlet of the atomization generator 3 is arranged, thereby making full use of the original structure of the drum washing machine.

Second technical solution

[0066] As shown in FIG. 3, the clothing treatment apparatus of the present disclosure includes a clothing treatment drum, a water supply valve 1, a dispensing device 2, a water-containing member, and an atomization generator 3. The dispensing device 2 includes a water delivery channel 21, the water supply valve 1 is connected to a water inlet end of the water-containing member through the water delivery channel 21, a water outlet end of the water-containing member is connected to the atomization generator 3 through a first pipeline 9, and the water outlet end of the water-containing member is also connected to the clothing treatment drum through a second pipeline 10. An outlet of the atomization generator 3 is arranged facing an inner cavity of the clothing treatment drum. The water delivery channel 21 and/or the water-containing member are provided with a one-way check mechanism, and the one-way check mechanism is arranged to be isolated from the atmosphere when the water supply valve 1 is opened and to communicate with the atmosphere when the water supply valve 1 is closed. The water-containing member may be a water tank, or a water box, or a sink on the clothing treatment apparatus. Those skilled in the art may flexibly set the specific structure of the water-containing member in practical applications, as long as the water-containing member can store and accommodate water. The atomization generator 3 may be an ultrasonic atomization generator or a compressed atomization generator. Those skilled in the art may flexibly set the specific structure of the atomization generator 3 in practical applications, as long as the atomization generator 3 can convert the water in the water-containing member into atomized water droplets when the one-way check structure communicates with the atmosphere so as to perform atomized air washing of the clothing. In addition, a one-way check valve 8 may be used as the one-way check structure, such as the one-way check valve 8 in the patent No. 201721853840.8. The principle of the one-way check valve 8 belongs to the prior art, so it will not be described in detail herein. Of course, in the present disclosure, other one-way check structures may also be used. For example, the one-way check structure includes a cylinder, a movable block arranged in the cylinder, and a spring connected between the cylinder and the movable block. The movable block divides an internal cavity of the cylinder into two parts. A top part of the cylinder is provided with an air inlet, a bottom part of the cylinder is provided with a water inlet, and a middle part of the cylinder is provided with an outlet. The spring allows the movable block to move between a top limit position, a middle position and a bottom limit position. When the spring is in a natural state, it enables the movable block to be maintained at the bottom limit position. At this time, the air inlet communicates with the outlet, and the water inlet is isolated from the outlet by the movable block, so as to realize the communication between the one-way check structure and the atmosphere. When water inflows from the water inlet, the water pressure moves the movable block to the top limit position against the force of the spring, so that the water inlet communicates with the outlet, and that the air inlet is isolated from the outlet by the movable block. Therefore, the one-way check structure allows water to pass through and be isolated from the atmosphere. It should be noted that the above-mentioned top part and bottom part are defined relative to the cylinder, and they do not constitute restrictions to the specific direction and specific position of arranging the one-way check structure. Alternatively, the one-way check structure may also be a plug structure. Specifically, an opening is provided at the highest point of the water delivery channel 21 and/or the water-containing member, and a plug is provided at the opening. When water inflows from the water supply valve 1, the opening is closed by the plug, and when the water supply valve 1 is closed, the plug is removed and the opening communicates with the atmosphere, so that the water in the water-containing member is sprayed from the outlet of the atomization generator 3. Those skilled in the art may flexibly set the specific structure of the one-way check structure in practical applications, as long as the one-way check structure can be isolated from the atmosphere when the water supply valve 1 is opened and can communicate with the atmosphere when the water supply valve 1 is closed. Moreover, it is possible to arrange the one-way check structure only on the water delivery channel 21. With this structure, if the one-way check structure communicates with the atmosphere, the water in the water delivery channel 21 and the water in the water-containing member will both flow into the interior of the clothing treatment drum through the atomization generator 3. Of course, the water delivery channel 21 and the water-containing member may also be provided with a one-way check structure respectively, so that when the one-way check structure communicates with the atmosphere, the water in the water delivery channel 21 and the water in the water-containing member will both flow

into the interior of the clothing treatment drum through the atomization generator 3. Alternatively, it is also possible to arrange the one-way check structure only on the water-containing member. In this case, when the one-way check structure communicates with the atmosphere, at least the water in the water-containing member can flow into the interior of the clothing treatment drum through the atomization generator 3. Those skilled in the art may flexibly set the arrangement position and distribution of the one-way check structure in practical applications, as long as it can be ensured that at least the water in the water-containing member can flow into the interior of the clothing treatment drum through the atomization generator 3 to realize the atomized air washing of the clothing. In the present disclosure, the first pipeline 9 and the second pipeline 10 may be connected to the water delivery channel 21 through the same water outlet end of the water delivery channel 21, or they may also be connected to the water delivery channel 21 through different water outlet ends of the water delivery channel 21 respectively. Such changes to the structure do not deviate from the technical solutions of the present disclosure, and should be defined within the scope of protection of the present disclosure.

[0067] It should be noted that by using the one-way check structure, the present disclosure enables the atomization generator 3 to smoothly generate atomized water droplets. This is because when the water supply valve 1 is always open, it is very difficult for the atomization generator 3 to form atomized water droplets under the action of water pressure. Therefore, the water supply valve 1 can be opened to accumulate water in the water delivery channel 21 and the water-containing member, and then the water supply valve 1 can be closed (the second pipeline 10 is selectively closed at this time). At this time, at least a part of the water in the water-containing member can be sprayed onto the clothing in the form of atomized water droplets from the atomization generator 3 according to the principle of atmospheric communication, so as to ensure that the atomization generator 3 can perform atomized air washing of the clothing. If it is required to inject a large amount of water into the clothing treatment drum, the atomization generator 3 is closed at this time so as to keep the water supply valve 1 always open and ensure that the second pipeline 10 is in a communicated state, thereby achieving continuous water injection into the clothing treatment drum. The second pipeline 10 can be directly connected to a water injection port or sprinkling structure on the clothing treatment drum.

[0068] In addition, it should also be noted that the clothing treatment apparatus of the present disclosure may be a drum washing machine, a pulsator washing machine, a washing-drying integrated machine, a clothing care machine, etc., and those skilled in the art may flexibly set the application objects of the technical solutions of the present disclosure. Such adjustments and changes to the application objects do not deviate from the principle of the present disclosure, and should be defined within the scope of protection of the present disclosure. The technical solutions of the present disclosure will be further explained below in conjunction with a drum washing machine.

[0069] Specifically, as shown in FIG. 4, the drum washing machine of the present disclosure includes a cabinet, a drum 4 arranged in the cabinet, and a window gasket 5 connected between an outer cylinder of the drum 4 and the cabinet. The atomization generator 3 is preferably arranged on the window gasket 5, and an outlet of the atomization generator 3 is obliquely arranged facing an inner cavity of the drum 4 (of course, other directions of arrangement are also possible). Alternatively, the atomization generator 3 may also be provided on the outer cylinder of the drum 4, as long as it can spray atomized water droplets onto the clothing in an inner cylinder of the drum 4 to perform atomized air washing. A sprinkling head 7 is provided on the drum 4 or on the window gasket 5, and an outlet of the sprinkling head 7 is also arranged facing the inner cavity of the drum 4. The sprinkling head 7 is mainly configured to sprinkle water into the drum 4. A control valve may be selectively installed on the second pipeline 10, and the control valve can control on and off of the second pipeline 10. In addition, the drum washing machine also includes a dispensing device 2 arranged on the cabinet. The dispensing device 2 includes a clothing treatment agent dispensing cavity and a water box arranged on a top of the clothing treatment agent dispensing cavity. The water delivery channel 21 is formed in the water box. A water inlet end of the water delivery channel 21 is connected to the water supply valve 1 arranged outside of the dispensing device 2, and a water outlet end of the water delivery channel 21 is connected to a water tank 6 through a pipeline. The water tank 6 is connected to the atomization generator 3 through the first pipeline 9, and is connected to the sprinkling head 7 through the second pipeline 10. The water tank 6 has a function of accumulating water. The one-way check valve 8 is arranged on the water delivery channel 21. For example, the one-way check valve 8 may be arranged close to the water inlet end of the water delivery channel 21. Of course, the one-way check valve 8 may also be arranged at other positions of the water delivery channel 21. Those skilled in the art may flexibly set the position where the one-way check valve 8 is arranged in the water delivery channel 21 in practical applications. Such adjustments and changes to the arrangement position of the one-way check valve 8 do not constitute limitations to the present disclosure, and should be defined within the scope of protection of the present disclosure.

[0070] Preferably, the position where the one-way check valve 8 is arranged is at a different height from the position where the outlet of the atomization generator 3 is arranged, that is, when the one-way check valve 8 communicates with the atmosphere, a certain liquid level difference can be formed between the one-way check valve 8 and the outlet of the atomization generator 3, so that the water accumulated in the water delivery channel

21 and the water tank 6 can be sprayed onto the clothing more easily in the form of atomized water droplets through the atomization generator 3. Since the position where the dispensing device 2 is arranged is generally higher than the position where the drum 4 is arranged in the drum washing machine, it is more preferable to set the position where the one-way check valve 8 is arranged to be higher than the position where the outlet of the atomization generator 3 is arranged, thereby making full use of the original structure of the drum washing machine.

Third technical solution

[0071] As shown in FIG. 5, the clothing treatment apparatus of the present disclosure includes a clothing treatment drum, a water supply valve 1, a dispensing device 2, a water-containing member, and an atomization generator 3. The dispensing device 2 includes a water delivery channel 21, the water supply valve 1 is connected to a water inlet end of the water delivery channel 21, and a water outlet end of the water delivery channel 21 is connected to the atomization generator 3 through the water-containing member. An outlet of the atomization generator 3 is arranged facing an inner cavity of the clothing treatment drum. The water delivery channel 21 and/or the water-containing member are provided with a one-way check mechanism, and the one-way check mechanism is arranged to be isolated from the atmosphere when the water supply valve 1 is opened and to communicate with the atmosphere when the water supply valve 1 is closed. The water-containing member may be a water tank, or a water box, or a sink on the clothing treatment apparatus. Those skilled in the art may flexibly set the specific structure of the water-containing member in practical applications, as long as the water-containing member can store and accommodate water. The atomization generator 3 may be an ultrasonic atomization generator or a compressed atomization generator. Those skilled in the art may flexibly set the specific structure of the atomization generator 3 in practical applications, as long as the atomization generator 3 can convert the water in the water-containing member into atomized water droplets when the one-way check structure communicates with the atmosphere so as to perform atomized air washing of the clothing. In addition, a one-way check valve 7 may be used as the one-way check structure, such as the one-way check valve 7 in the patent No. 201721853840.8. The principle of the one-way check valve 7 belongs to the prior art, so it will not be described in detail herein. Of course, in the present disclosure, other one-way check structures may also be used. For example, the one-way check structure includes a cylinder, a movable block arranged in the cylinder, and a spring connected between the cylinder and the movable block. The movable block divides an internal cavity of the cylinder into two parts. A top part of the cylinder is provided with an air inlet, a bottom part of the cylinder is provided with a water inlet, and a middle part of the cylinder is provided with an outlet. The spring allows the movable block to move between a top limit position, a middle position and a bottom limit position. When the spring is in a natural state, it enables the movable block to be maintained at the bottom limit position. At this time, the air inlet communicates with the outlet, and the water inlet is isolated from the outlet by the movable block, so as to realize the communication between the one-way check structure and the atmosphere. When water inflows from the water inlet, the water pressure moves the movable block to the top limit position against the force of the spring, so that the water inlet communicates with the outlet, and that the air inlet is isolated from the outlet by the movable block. Therefore, the one-way check structure allows water to pass through and be isolated from the atmosphere. It should be noted that the above-mentioned top part and bottom part are defined relative to the cylinder, and they do not constitute restrictions to the specific direction and specific position of arranging the one-way check structure. Alternatively, the one-way check structure may also be a plug structure. Specifically, an opening is provided at the highest point of the water delivery channel 21 and/or the water-containing member, and a plug is provided at the opening. When water inflows from the water supply valve 1, the opening is closed by the plug, and when the water supply valve 1 is closed, the plug is removed and the opening communicates with the atmosphere, so that the water in the water-containing member is sprayed from the outlet of the atomization generator 3. Those skilled in the art may flexibly set the specific structure of the one-way check structure in practical applications, as long as the one-way check structure can be isolated from the atmosphere when the water supply valve 1 is opened and can communicate with the atmosphere when the water supply valve 1 is closed. Moreover, it is possible to arrange the one-way check structure only on the water delivery channel 21. With this structure, if the one-way check structure communicates with the atmosphere, the water in the water delivery channel 21 and the water in the water-containing member will both flow into the interior of the clothing treatment drum through the atomization generator 3. Of course, the water delivery channel 21 and the water-containing member may also be provided with a one-way check structure respectively, so that when the one-way check structure communicates with the atmosphere, the water in the water delivery channel 21 and the water in the water-containing member will both flow into the interior of the clothing treatment drum through the atomization generator 3. Alternatively, it is also possible to arrange the one-way check structure only on the water-containing member. In this case, when the one-way check structure communicates with the atmosphere, at least the water in the water-containing member can flow into the interior of the clothing treatment drum through the atomization generator 3. Those skilled in the art may flexibly set the arrangement position and distribution of the one-way check structure in practical applications, as long as it can be ensured that at least the

water in the water-containing member can flow into the interior of the clothing treatment drum through the atomization generator 3 to realize the atomized air washing of the clothing.

[0072] It should be noted that by using the one-way check structure, the present disclosure enables the atomization generator 3 to smoothly generate atomized water droplets. This is because when the water supply valve 1 is always open, it is very difficult for the atomization generator 3 to form atomized water droplets under the action of water pressure. Therefore, the water supply valve 1 can be opened to accumulate water in the water delivery channel 21 and the water-containing member, and then the water supply valve 1 can be closed. At this time, at least the water in the water-containing member can be sprayed onto the clothing in the form of atomized water droplets from the atomization generator 3 according to the principle of atmospheric communication, so as to ensure that the atomization generator 3 can perform atomized air washing of the clothing.

[0073] In addition, it should also be noted that the clothing treatment apparatus of the present disclosure may be a drum washing machine, a pulsator washing machine, a washing-drying integrated machine, a clothing care machine, etc., and those skilled in the art may flexibly set the application objects of the technical solutions of the present disclosure. Such adjustments and changes to the application objects do not deviate from the principle of the present disclosure, and should be defined within the scope of protection of the present disclosure. The technical solutions of the present disclosure will be further explained below in conjunction with a drum washing machine.

[0074] Specifically, as shown in FIG. 6, the drum washing machine of the present disclosure includes a cabinet, a drum 4 arranged in the cabinet, and a window gasket 5 connected between an outer cylinder of the drum 4 and the cabinet. The atomization generator 3 is preferably arranged on the window gasket 5, and an outlet of the atomization generator 3 is obliquely arranged facing an inner cavity of the drum 4 (of course, other directions of arrangement are also possible). Alternatively, the atomization generator 3 may also be provided on the outer cylinder of the drum 4, as long as it can spray atomized water droplets onto the clothing in an inner cylinder of the drum 4 to perform atomized air washing. In addition, the drum washing machine also includes a dispensing device 2 arranged on the cabinet. The dispensing device 2 includes a clothing treatment agent dispensing cavity and a water box arranged on a top of the clothing treatment agent dispensing cavity. The water delivery channel 21 is formed in the water box. A water inlet end of the water delivery channel 21 is connected to the water supply valve 1 arranged outside of the dispensing device 2, and a water outlet end of the water delivery channel 21 is connected to a water tank 6 through a pipeline. The water tank 6 is connected to the atomization generator 3 through a pipeline, and the water tank 6 has a function of accumulating water. The one-way check valve 7 is arranged on the water delivery channel 21. For example, the one-way check valve 7 may be arranged close to the water inlet end of the water delivery channel 21. Of course, the one-way check valve 7 may also be arranged at other positions of the water delivery channel 21. Those skilled in the art may flexibly set the position where the one-way check valve 7 is arranged in the water delivery channel 21 in practical applications. Such adjustments and changes to the arrangement position of the one-way check valve 7 do not constitute limitations to the present disclosure, and should be defined within the scope of protection of the present disclosure.

[0075] Preferably, the position where the one-way check valve 7 is arranged is at a different height from the position where the outlet of the atomization generator 3 is arranged, that is, when the one-way check valve 7 communicates with the atmosphere, a certain liquid level difference can be formed between the one-way check valve 7 and the outlet of the atomization generator 3, so that the water accumulated in the water delivery channel 21 and the water tank 6 can be sprayed onto the clothing more easily in the form of atomized water droplets through the atomization generator 3. Since the position where the dispensing device 2 is arranged is generally higher than the position where the drum 4 is arranged in the drum washing machine, it is more preferable to set the position where the one-way check valve 7 is arranged to be higher than the position where the outlet of the atomization generator 3 is arranged, thereby making full use of the original structure of the drum washing machine.

Fourth technical solution

[0076] As shown in FIG. 7, the clothing treatment apparatus of the present disclosure includes a clothing treatment drum, a water supply valve 1, a dispensing device 2, and an atomization generator 3. The dispensing device 2 includes a water delivery channel 21, the water supply valve 1 is connected to a water inlet end of the water delivery channel 21, a water outlet end of the water delivery channel 21 is connected to the atomization generator 3 through a first pipeline 4, and the water outlet end of the water delivery channel 21 is also connected to a second pipeline 5. An outlet of the second pipeline 5 is arranged facing an inner cavity of the clothing treatment drum, an outlet of the atomization generator 3 is arranged facing an inner cavity of the clothing treatment drum, and the second pipeline 5 is arranged to be able to communicate with the atmosphere. The second pipeline 5 may be directly connected to the clothing treatment drum, and the outlet of the second pipeline 5 may also be arranged above the clothing treatment drum. Those skilled in the art may flexibly set the ways of arranging and connecting the second pipeline 5 in practical applications, as long as water can be injected into the clothing treatment drum through the second pipeline 5. In addition, the technical solution of the present disclosure may

also be applied to a clothing treatment apparatus with a multi-drum structure, such as a dual-drum washing machine, which includes a first drum and a second drum. The outlet of the atomization generator 3 is arranged facing an inner cavity of the first drum, and the outlet of the second pipeline 5 is arranged facing an inner cavity of the second drum, so that water can be injected into the first drum and the second drum through the same water supply valve 1. Atomized water injection is implemented in the first drum (in which other water injection structures may also be included), and direct water injection is implemented in the second drum (including water injection by sprinkling, etc.). Those skilled in the art may flexibly set the application scenes of the present disclosure in practical applications, as long as at least the atomized air washing of the clothing can be realized. The atomization generator 3 may be an ultrasonic atomization generator or a compressed atomization generator. Those skilled in the art may flexibly set the specific structure of the atomization generator 3 in practical applications, as long as the atomization generator 3 can convert the water in the water delivery channel 21 and the first pipeline 4 into atomized water droplets when the second pipeline 5 communicates with the atmosphere so as to perform atomized air washing of the clothing. It should be noted that the second pipeline 5 of the present disclosure may be a structure that is always in communication with the atmosphere. For example, the outlet of the second pipeline 5 is arranged above the clothing treatment drum, and the outlet of the second pipeline 5 is arranged facing the inner cavity of the clothing treatment drum. Of course, the second pipeline 5 may also be a structure that can selectively communicate with the atmosphere. The technical solution of the present disclosure will be further explained below in conjunction with this structure.

[0077] Preferably, the second pipeline 5 includes a pipeline body and a one-way check structure provided on the pipeline body, and the one-way check structure is arranged to be isolated from the atmosphere when the water supply valve 1 is opened and to communicate with the atmosphere when the water supply valve 1 is closed. A one-way check valve may be used as the one-way check structure, such as the one-way check valve in the patent No. 201721853840.8. The principle of the one-way check valve belongs to the prior art, so it will not be described in detail herein. Of course, in the present disclosure, other one-way check structures may also be used. For example, the one-way check structure includes a cylinder, a movable block arranged in the cylinder, and a spring connected between the cylinder and the movable block. The movable block divides an internal cavity of the cylinder into two parts. A top part of the cylinder is provided with an air inlet, a bottom part of the cylinder is provided with a water inlet, and a middle part of the cylinder is provided with an outlet. The spring allows the movable block to move between a top limit position, a middle position and a bottom limit position. When the spring is in a natural state, it enables the movable block to be maintained at the bottom limit position. At this time, the air inlet communicates with the outlet, and the water inlet is isolated from the outlet by the movable block, so as to realize the communication between the one-way check structure and the atmosphere. When water inflows from the water inlet, the water pressure moves the movable block to the top limit position against the force of the spring, so that the water inlet communicates with the outlet, and that the air inlet is isolated from the outlet by the movable block. Therefore, the one-way check structure allows water to pass through and be isolated from the atmosphere. It should be noted that the above-mentioned top part and bottom part are defined relative to the cylinder, and they do not constitute restrictions to the specific direction and specific position of arranging the one-way check structure. Alternatively, the one-way check structure may also be a plug structure. Specifically, an opening is provided at the highest point of the second pipeline 5, and a plug is provided at the opening. When water inflows from the water supply valve 1, the opening is closed by the plug, and when the water supply valve 1 is closed, the plug is removed and the opening communicates with the atmosphere, so that the water in the water delivery channel 21 and the first pipeline 4 is sprayed from the outlet of the atomization generator 3. Those skilled in the art may flexibly set the specific structure of the one-way check structure in practical applications, as long as the one-way check structure can be isolated from the atmosphere when the water supply valve 1 is opened and can communicate with the atmosphere when the water supply valve 1 is closed. In the present disclosure, when the water supply valve 1 is closed, a part of the water in the water delivery channel 21 enters the first pipeline 4 and the other part of the water enters the second pipeline 5. The first pipeline 4 and the second pipeline 5 may be connected to the water delivery channel 21 through the same water outlet end of the water delivery channel 21, or may also be connected to the water delivery channel 21 through different water outlet ends of the water delivery channel 21 respectively. Such changes to the structure do not deviate from the technical solution of the present disclosure, and should be defined within the scope of protection of the present disclosure.

[0078] It should be noted that by using the one-way check structure, the present disclosure enables the atomization generator to smoothly generate atomized water droplets. This is because when the water supply valve is always open, it is very difficult for the atomization generator to form atomized water droplets under the action of water pressure. Therefore, the water supply valve can be opened to accumulate water in the water delivery channel, and then the water supply valve can be closed. At this time, the water in the water delivery channel and the first pipeline can be sprayed onto the clothing in the form of atomized water droplets from the atomization generator according to the principle of atmospheric communication, so as to ensure that the atomization gener-

ator can perform atomized air washing of the clothing.

[0079] In addition, it should also be noted that the clothing treatment apparatus of the present disclosure may be a drum washing machine, a pulsator washing machine, a washing-drying integrated machine, a clothing care machine, etc., and those skilled in the art may flexibly set the application objects of the technical solutions of the present disclosure. Such adjustments and changes to the application objects do not deviate from the principle of the present disclosure, and should be defined within the scope of protection of the present disclosure. The technical solutions of the present disclosure will be further explained below in conjunction with a drum washing machine.

[0080] Specifically, the drum washing machine of the present disclosure includes a cabinet, a drum arranged in the cabinet, and a window gasket connected between an outer cylinder of the drum and the cabinet. The atomization generator is preferably arranged on the window gasket, and an outlet of the atomization generator is obliquely arranged facing an inner cavity of the drum (of course, other directions of arrangement are also possible). Alternatively, the atomization generator may also be provided on the outer cylinder of the drum, as long as it can spray atomized water droplets onto the clothing in an inner cylinder of the drum to perform atomized air washing. In addition, the drum washing machine also includes a dispensing device arranged on the cabinet. The dispensing device includes a clothing treatment agent dispensing cavity and a water box arranged on a top of the clothing treatment agent dispensing cavity. The water delivery channel is formed in the water box (that is, the clothing treatment agent dispensing cavity is arranged below the water delivery channel). A water inlet end of the water delivery channel is connected to the water supply valve arranged outside of the dispensing device, a water outlet end of the water delivery channel is connected to the atomization generator through the first pipeline, and the water outlet end of the water delivery channel is also directly connected to the outer cylinder of the drum through the second pipeline. The one-way check valve is provided on the second pipeline. The water outlet end of the water delivery channel may be directly connected to the atomization generator through the first pipeline, and a water tank may also be arranged between the water delivery channel and the atomization generator; that is, the water outlet end of the water delivery channel is first connected to the water tank through a pipeline, and then the water tank is connected to the atomization generator through another pipeline. The water tank has a function of accumulating water.

[0081] Preferably, the position where the one-way check valve is arranged is at a different height from the position where the outlet of the atomization generator is arranged, that is, when the one-way check valve communicates with the atmosphere, a certain liquid level difference can be formed between the one-way check valve and the outlet of the atomization generator, so that the water accumulated in the water delivery channel and the first pipeline can be sprayed onto the clothing more easily in the form of atomized water droplets through the atomization generator. Since the position where the dispensing device is arranged is generally higher than the position where the drum is arranged in the drum washing machine, it is more preferable to set the position where the one-way check valve is arranged to be higher than the position where the outlet of the atomization generator is arranged, thereby making full use of the original structure of the drum washing machine.

[0082] Hitherto, the technical solutions of the present disclosure have been described in conjunction with the preferred embodiments shown in the accompanying drawings, but it is easily understood by those skilled in the art that the scope of protection of the present disclosure is obviously not limited to these specific embodiments. Without departing from the principles of the present disclosure, those skilled in the art can make equivalent changes or replacements to relevant technical features, and all the technical solutions after these changes or replacements will fall within the scope of protection of the present disclosure.

Claims

1. A clothing treatment apparatus, comprising a clothing treatment drum, a water supply valve, a dispensing device, a water-containing member, an atomization generator and a one-way check mechanism; wherein the dispensing device comprises a water delivery channel, the water supply valve is connected to a water inlet end of the water delivery channel, and a water outlet end of the water delivery channel is connected to the atomization generator through the water-containing member; an outlet of the atomization generator is arranged facing an inner cavity of the clothing treatment drum, the one-way check mechanism is connected to the water delivery channel and the water-containing member respectively, and the one-way check mechanism is arranged to be isolated from the atmosphere when the water supply valve is opened and to communicate with the atmosphere when the water supply valve is closed.

2. The clothing treatment apparatus according to claim 1, wherein the dispensing device further comprises a clothing treatment agent dispensing cavity, and the clothing treatment agent dispensing cavity is arranged below the water delivery channel.

3. The clothing treatment apparatus according to claim 1, wherein the water supply valve is arranged outside of the dispensing device.

4. The clothing treatment apparatus according to claim 1, wherein a position where the one-way check struc-

ture is arranged is at a different height from a position where the outlet of the atomization generator is arranged.

5. The clothing treatment apparatus according to claim 4, wherein the position where the one-way check structure is arranged is higher than the position where the outlet of the atomization generator is arranged.

6. The clothing treatment apparatus according to claim 1, wherein the outlet of the atomization generator is arranged obliquely.

7. The clothing treatment apparatus according to claim 1, wherein the one-way check mechanism comprises a one-way check valve, a first pipeline and a second pipeline, the one-way check valve is connected to the water delivery channel through the first pipeline, and the one-way check valve is connected to the water-containing member through the second pipeline.

8. The clothing treatment apparatus according to any one of claims 1 to 7, wherein the clothing treatment apparatus is a drum washing machine, and the clothing treatment drum is a drum of the drum washing machine.

9. The clothing treatment apparatus according to claim 8, wherein the drum washing machine further comprises a window gasket connected to the drum, and the atomization generator is arranged on the window gasket.

10. The clothing treatment apparatus according to claim 8, wherein the atomization generator is arranged on an outer cylinder of the drum.

11. A clothing treatment apparatus, comprising a clothing treatment drum, a water supply valve, a dispensing device, a water-containing member, and an atomization generator; wherein the dispensing device comprises a water delivery channel, the water supply valve is connected to a water inlet end of the water-containing member through the water delivery channel, a water outlet end of the water-containing member is connected to the atomization generator through a first pipeline, and the water outlet end of the water-containing member is also connected to the clothing treatment drum through a second pipeline; and wherein an outlet of the atomization generator is arranged facing an inner cavity of the clothing treatment drum, the water delivery channel and/or the water-containing member is provided with a one-way check structure, and the one-way check mechanism is arranged to be isolated from the atmosphere when the water supply valve is opened and to communicate with the atmosphere when the water supply valve is closed.

12. The clothing treatment apparatus according to claim 11, wherein a sprinkling head is provided on the clothing treatment drum, and the second pipeline is connected with the sprinkling head.

13. The clothing treatment apparatus according to claim 12, wherein a sprinkling port of the sprinkling head is arranged facing the inner cavity of the clothing treatment drum.

14. The clothing treatment apparatus according to claim 11, wherein the one-way check structure is arranged close to the water inlet end of the water delivery channel.

15. The clothing treatment apparatus according to claim 11, wherein a position where the one-way check structure is arranged is at a different height from a position where the outlet of the atomization generator is arranged.

16. The clothing treatment apparatus according to claim 15, wherein the position where the one-way check structure is arranged is higher than the position where the outlet of the atomization generator is arranged.

17. The clothing treatment apparatus according to claim 11, wherein the one-way check structure is a one-way check valve.

18. The clothing treatment apparatus according to any one of claims 11 to 17, wherein the clothing treatment apparatus is a drum washing machine, and the clothing treatment drum is a drum of the drum washing machine.

19. The clothing treatment apparatus according to claim 18, wherein the drum washing machine further comprises a window gasket connected to the drum, and the atomization generator is arranged on the window gasket.

20. The clothing treatment apparatus according to claim 18, wherein the atomization generator is arranged on an outer cylinder of the drum.

21. A clothing treatment apparatus, comprising a clothing treatment drum, a water supply valve, a dispensing device, a water-containing member, and an atomization generator; wherein the dispensing device comprises a water delivery channel, the water supply valve is connected to a water inlet end of the water delivery channel, a water outlet end of the water delivery channel is connected to the atomization gen-

erator through the water-containing member; an outlet of the atomization generator is arranged facing an inner cavity of the clothing treatment drum, the water delivery channel and/or the water-containing member is provided with a one-way check structure, and the one-way check mechanism is arranged to be isolated from the atmosphere when the water supply valve is opened and to communicate with the atmosphere when the water supply valve is closed.

22. The clothing treatment apparatus according to claim 21, wherein the one-way check structure is arranged close to the water inlet end of the water delivery channel.

23. The clothing treatment apparatus according to claim 21, wherein the water supply valve is arranged outside of the dispensing device.

24. The clothing treatment apparatus according to claim 21, wherein a position where the one-way check structure is arranged is at a different height from a position where the outlet of the atomization generator is arranged.

25. The clothing treatment apparatus according to claim 24, wherein the position where the one-way check structure is arranged is higher than the position where the outlet of the atomization generator is arranged.

26. The clothing treatment apparatus according to claim 21, wherein the outlet of the atomization generator is arranged obliquely.

27. The clothing treatment apparatus according to claim 21, wherein the one-way check structure is a one-way check valve.

28. The clothing treatment apparatus according to any one of claims 21 to 27, wherein the clothing treatment apparatus is a drum washing machine, and the clothing treatment drum is a drum of the drum washing machine.

29. The clothing treatment apparatus according to claim 28, wherein the drum washing machine further comprises a window gasket connected to the drum, and the atomization generator is arranged on the window gasket.

30. The clothing treatment apparatus according to claim 28, wherein the atomization generator is arranged on an outer cylinder of the drum.

31. A clothing treatment apparatus, comprising a clothing treatment drum, a water supply valve, a dispensing device and an atomization generator; wherein the dispensing device comprises a water delivery channel, the water supply valve is connected to a water inlet end of the water delivery channel, a water outlet end of the water delivery channel is connected to the atomization generator through a first pipeline, and the water outlet end of the water delivery channel is also connected to a second pipeline; an outlet of the second pipeline is arranged facing an inner cavity of the clothing treatment drum, an outlet of the atomization generator is arranged facing the inner cavity of the clothing treatment drum, and the second pipeline is arranged to be able to communicate with the atmosphere.

32. The clothing treatment apparatus according to claim 31, wherein the second pipeline comprises a pipeline body and a one-way check structure provided on the pipeline body, and the one-way check structure is arranged to be isolated from the atmosphere when the water supply valve is opened and to communicate with the atmosphere when the water supply valve is closed.

33. The clothing treatment apparatus according to claim 32, wherein a position where the one-way check structure is arranged is at a different height from a position where the outlet of the atomization generator is arranged.

34. The clothing treatment apparatus according to claim 33, wherein the position where the one-way check structure is arranged is higher than the position where the outlet of the atomization generator is arranged.

35. The clothing treatment apparatus according to claim 32, wherein the one-way check structure is a one-way check valve.

36. The clothing treatment apparatus according to claim 31, wherein the outlet of the atomization generator is arranged obliquely.

37. The clothing treatment apparatus according to claim 31, wherein the dispensing device further comprises a clothing treatment agent dispensing cavity, and the clothing treatment agent dispensing cavity is arranged below the water delivery channel.

38. The clothing treatment apparatus according to any one of claims 31 to 37, wherein the clothing treatment apparatus is a drum washing machine, and the clothing treatment drum is a drum of the drum washing machine.

39. The clothing treatment apparatus according to claim 38, wherein the drum washing machine further comprises a window gasket connected to the drum, and

the atomization generator is arranged on the window gasket.

40. The clothing treatment apparatus according to claim 38, wherein the atomization generator is arranged on an outer cylinder of the drum.

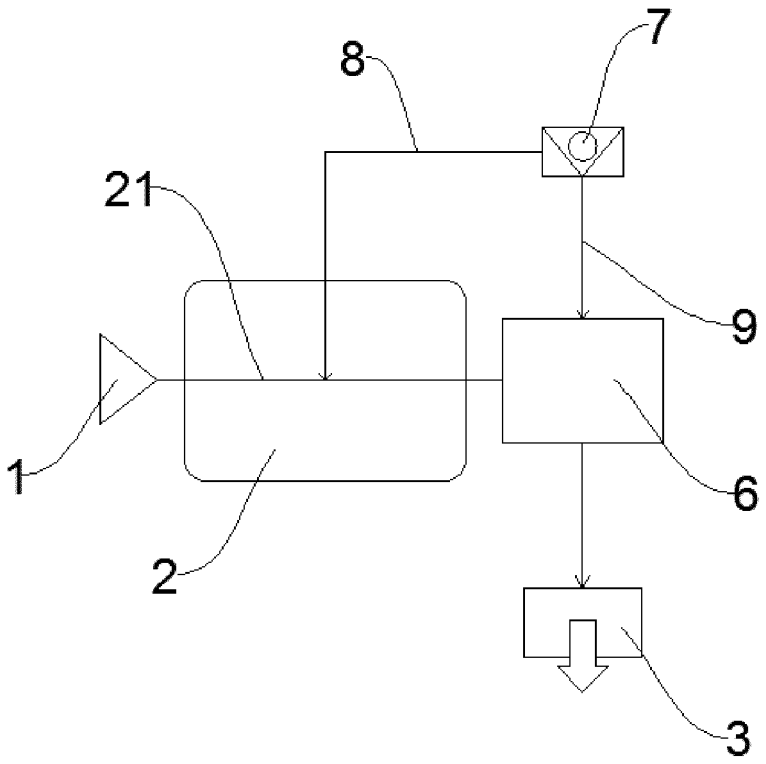

Fig.1

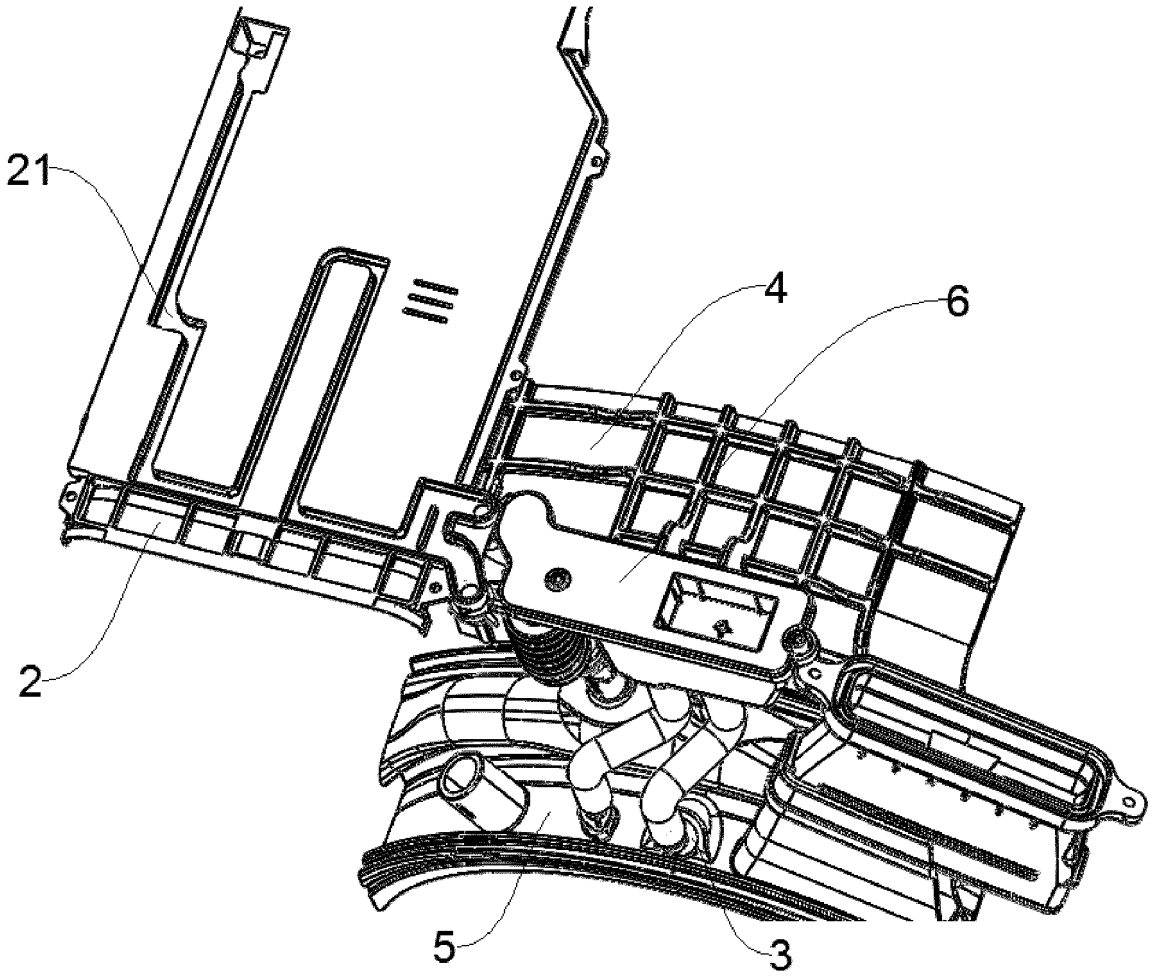

Fig.2

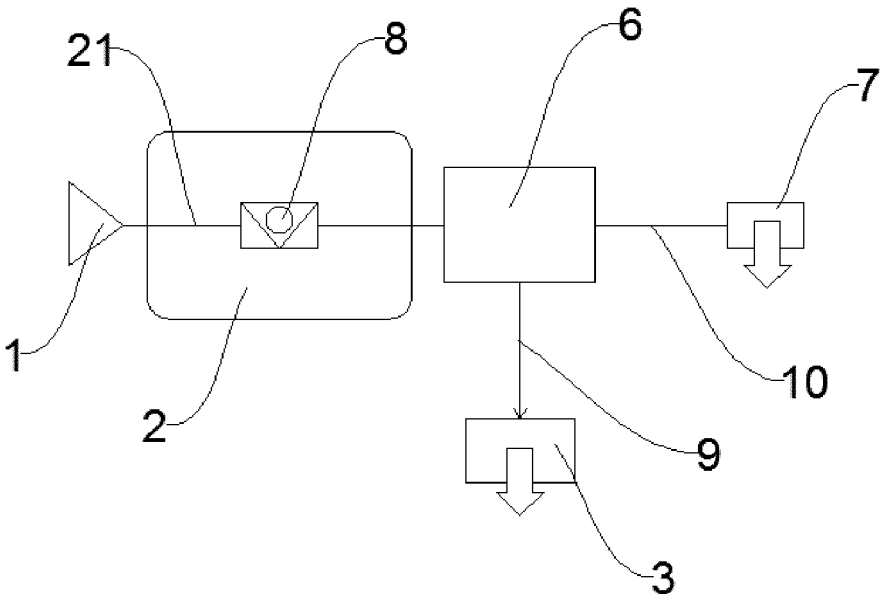

Fig.3

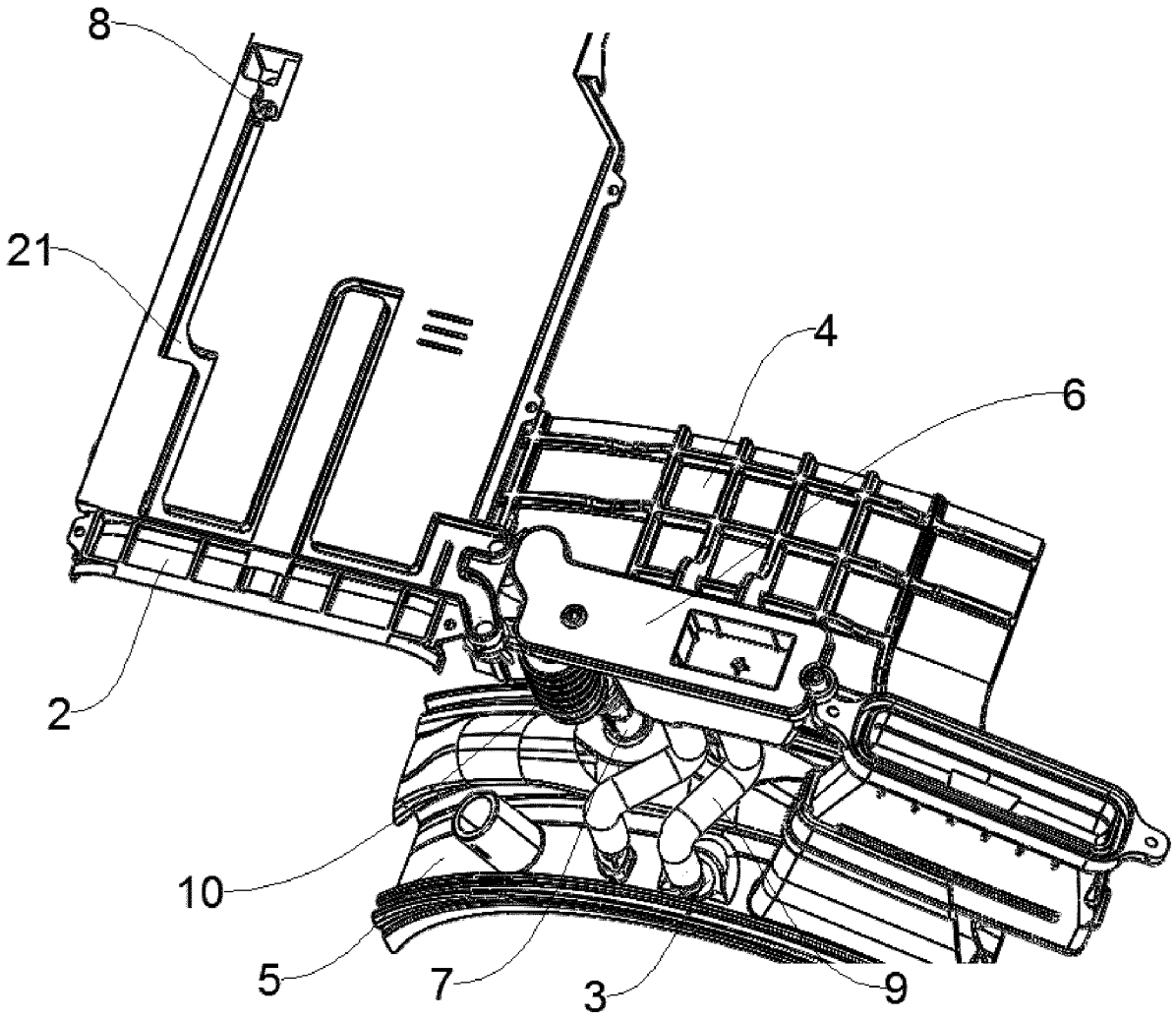

Fig.4

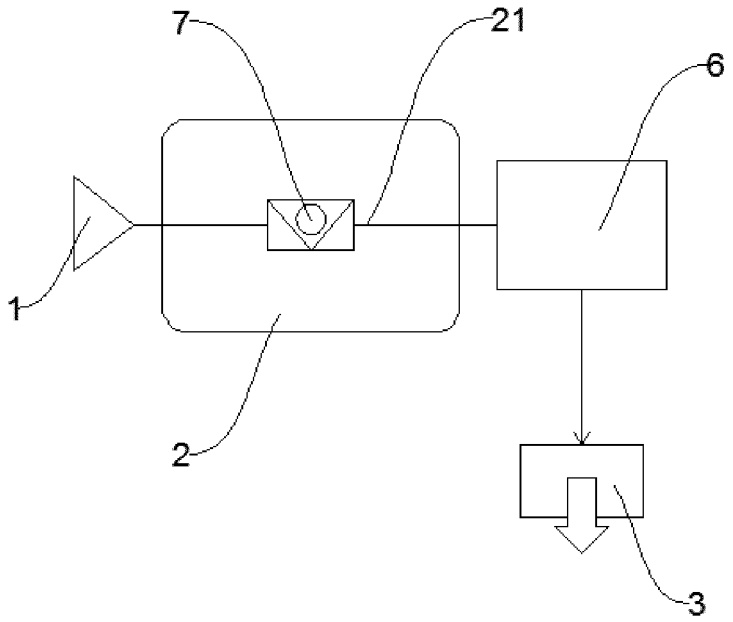

Fig.5

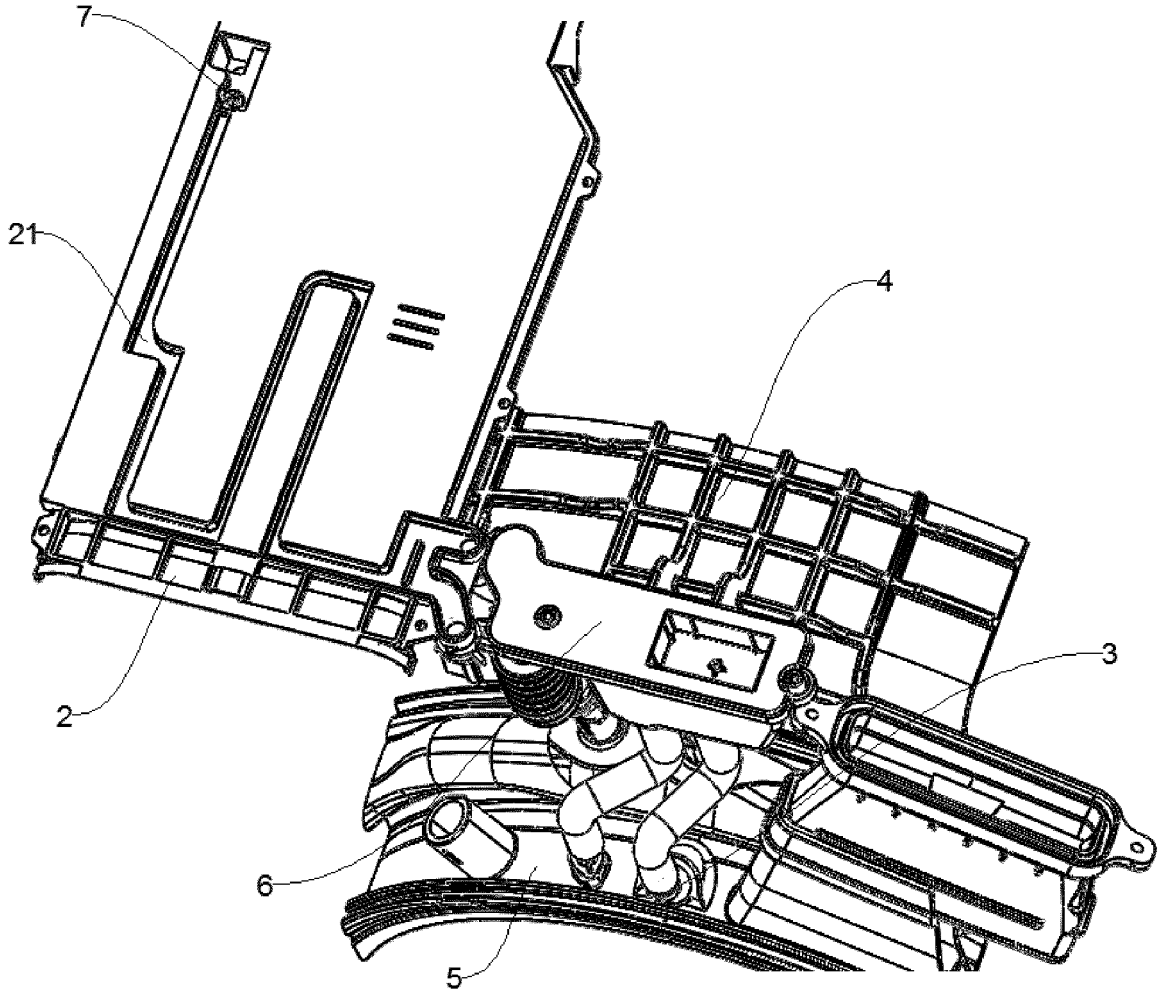

Fig.6

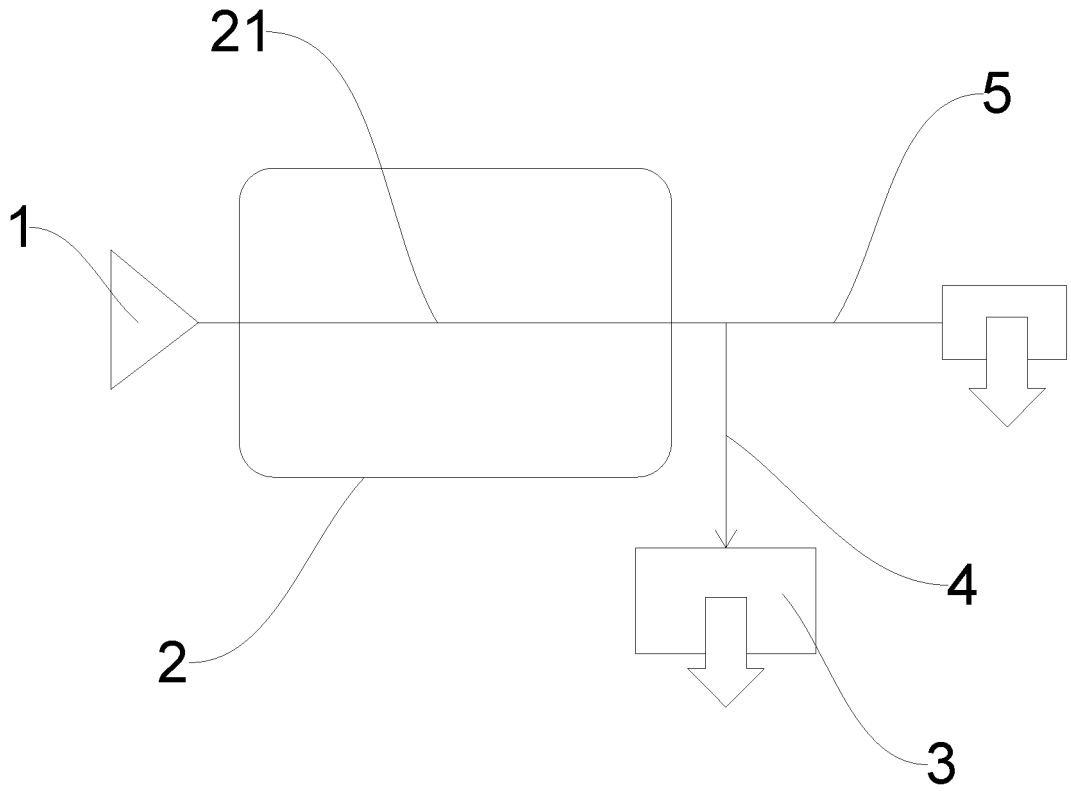

Fig.7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2019/125903

A. CLASSIFICATION OF SUBJECT MATTER

D06F 17/12(2006.01)i; D06F 39/08(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)

CNPAT, EPODOC, WPI, CNKI: 海尔, 黄涛, 徐永洪, 黄本财, 洗衣机, 供水阀, 投放装置, 容水构件, 水箱, 水盒, 水槽, 雾化发生器, 单向逆止阀, wash, water supply, valve, delivery, tank, atomize, check valve

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 209703098 U (QINGDAO HAIER DRUM WASHING MACHINE CO., LTD.) 29 November 2019 (2019-11-29) description, paragraphs [0023]-[0027], figures 1-2	1-30
PX	CN 209703102 U (QINGDAO HAIER DRUM WASHING MACHINE CO., LTD.) 29 November 2019 (2019-11-29) description, paragraphs [0026]-[0030], and figures 1-2	1-30
Y	CN 101660258 A (SHARP CORPORATION) 03 March 2010 (2010-03-03) description, page 9, paragraph 6 to page 14, paragraph 3, figures 1-6	1-40
Y	CN 108729141 A (QINGDAO HAIER DRUM WASHING MACHINE CO., LTD.) 02 November 2018 (2018-11-02) description, paragraphs [0037]-[0075], figures 1-2	1-40
A	CN 106521884 A (QINGDAO HAIER DRUM WASHING MACHINE CO., LTD.) 22 March 2017 (2017-03-22) entire document	1-40
A	JP 2012005876 A (TOSHIBA CORPORATION et al.) 12 January 2012 (2012-01-12) entire document	1-40

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

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
26 February 2020	**25 March 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
Facsimile No. **(86-10)62019451**	Telephone No.

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2019/125903

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 209703098 U	29 November 2019	None	
CN 209703102 U	29 November 2019	None	
CN 101660258 A	03 March 2010	JP 2010051661 A	11 March 2010
		KR 20100027055 A	10 March 2010
CN 108729141 A	02 November 2018	WO 2018192458 A1	25 October 2018
CN 106521884 A	22 March 2017	None	
JP 2012005876 A	12 January 2012	None	

Form PCT/ISA/210 (patent family annex) (January 2015)

REFERENCES CITED IN THE DESCRIPTION

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- WO 201721853840 A **[0061] [0066] [0071] [0077]**