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(54) **AIR WASHING APPARATUS USED FOR LAUNDRY PROCESSING DEVICE, AND LAUNDRY PROCESSING DEVICE**

(57) Provided is an air washing apparatus used for a laundry processing device; said laundry processing device comprises a laundry processing drum (3); the air washing apparatus comprises a water supply valve (1), a connection mechanism, and a vaporization generator (2); the water supply valve (1) is connected to the vaporization generator (2) by means of the connection mechanism; the connection mechanism is provided with a one-way check structure (7); the one-way check structure (7) is arranged so as to be isolated from the atmosphere when the water supply valve (1) is open and to be in communication with the atmosphere when the water supply valve (1) is closed; the outlet of the vaporization generator (2) is arranged facing toward the inner chamber of the laundry processing drum (3). The device can improve the laundry washing effectiveness of a laundry processing device having a wash function, and improve the range of applications of a garment, satisfying usage requirements of a user and thereby improving user experience.

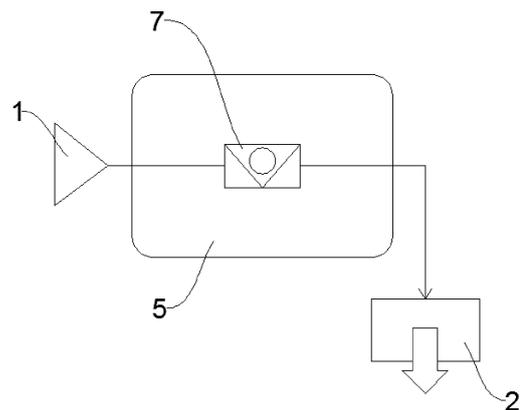


Fig.1

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**Description****FIELD**

**[0001]** The present disclosure belongs to the technical field of clothing treatment, and specifically provides an air washing device for a clothing treatment apparatus, and 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 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 will cause a very big limitation on an applicable range of the clothing of the washing machine.

**[0004]** Accordingly, there is a need in the art for a new air washing device for a clothing treatment apparatus, and a corresponding clothing treatment apparatus, so as 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 an air washing device for a clothing treatment apparatus, and a clothing treatment apparatus.

**[0006]** A first technical solution of the present disclosure provides an air washing device for a clothing treat-

ment apparatus, the clothing treatment apparatus includes a clothing treatment drum, and the air washing device includes a water supply valve, a connection mechanism and an atomization generator; in which the water supply valve is connected with the atomization generator through the connection mechanism, the connection mechanism is provided with a one-way check structure, 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, and an outlet of the atomization generator is arranged facing an inner cavity of the clothing treatment drum.

**[0007]** In a preferred technical solution of the above air washing device, the connection mechanism is a connection pipe.

**[0008]** In a preferred technical solution of the above air washing device, the connection mechanism is a water delivery channel of a dispensing device of the clothing treatment apparatus.

**[0009]** In a preferred technical solution of the above air washing device, the one-way check structure is arranged close to a water inlet end of the water delivery channel.

**[0010]** In a preferred technical solution of the above air washing device, the water supply valve is arranged outside of the dispensing device.

**[0011]** In a preferred technical solution of the above air washing device, 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.

**[0012]** In a preferred technical solution of the above air washing device, the position where the one-way check structure is arranged is higher than the position where the outlet of the atomization generator is arranged.

**[0013]** In a preferred technical solution of the above air washing device, the one-way check structure is a one-way check valve.

**[0014]** In another aspect, the present disclosure also provides a clothing treatment apparatus, which includes the air washing device described above.

**[0015]** 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; the drum washing machine further includes a window gasket connected with the drum, and the atomization generator is arranged on the window gasket.

**[0016]** It can be understood by those skilled in the art that in the preferred technical solutions of the present disclosure, by providing a one-way check structure on the connection mechanism, water can be injected into the connection mechanism 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 connection mechanism 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, the connection mechanism is a connection pipe; with such an arrangement, the atomized air washing of the clothing can be realized through a very simple structure, thereby facilitating the design of the product by the technicians and reducing the cost.

**[0018]** Further, the connection mechanism is the water delivery channel of the dispensing device of the clothing treatment apparatus; that is, the one-way check structure is arranged on the dispensing device, so as to achieve the atomized air washing of the clothing without changing the original structure as much as possible, thereby facilitating the design of the product by the technicians and reducing the cost.

**[0019]** 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 connection mechanism 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.

**[0020]** In addition, on the basis of the above technical solutions, the present disclosure also provides a clothing treatment apparatus, which includes the air washing device described above, and which therefore has the technical effects of the above air washing device; moreover, as compared with the clothing treatment apparatus before the improvement, the clothing treatment apparatus of the present disclosure can improve the washing effect on the clothing, increase the applicable range of the clothing, meet the user's use requirements, and further improve the user experience.

**[0021]** A second technical solution of the present disclosure provides a clothing treatment apparatus, which 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 with the atomization generator through the water delivery channel, an outlet of the atomization generator is arranged facing an inner cavity of the clothing treatment drum, and the water delivery channel is provided with a water diversion structure which is arranged to be able to communicate with the atmosphere.

**[0022]** In a preferred technical solution of the above clothing treatment apparatus, the water diversion structure is a water diversion port provided on the water delivery channel.

**[0023]** In a preferred technical solution of the above clothing treatment apparatus, the dispensing device further includes a clothing treatment agent dispensing box, and the water diversion port is arranged above the clothing treatment agent dispensing box.

**[0024]** In a preferred technical solution of the above clothing treatment apparatus, the water diversion structure is a water diversion pipe connected to the water delivery channel.

**[0025]** In a preferred technical solution of the above clothing treatment apparatus, the dispensing device further includes a clothing treatment agent dispensing box, and an outlet of the water diversion pipe is arranged above the clothing treatment agent dispensing box or extends into the clothing treatment agent dispensing box.

**[0026]** In a preferred technical solution of the above clothing treatment apparatus, a position where the water diversion structure is arranged is at a different height from a position where the outlet of the atomization generator is arranged.

**[0027]** In a preferred technical solution of the above clothing treatment apparatus, the position where the water diversion structure is arranged is higher than the position where the outlet of the atomization generator is arranged.

**[0028]** 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.

**[0029]** 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.

**[0030]** In a preferred technical solution of the above clothing treatment apparatus, the atomization generator is arranged on an outer cylinder of the drum.

**[0031]** It can be understood by those skilled in the art that in the preferred technical solutions of the present disclosure, a water diversion structure is provided on the water delivery channel, so that when the water supply valve is opened, water can be injected into the water delivery channel, and then when the water supply valve is closed, the water diversion structure communicates with the atmosphere so that a part of the water in the water delivery channel 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.

**[0032]** Further, the water diversion structure is a water diversion port, through which the water in the water delivery channel can be injected into the clothing treatment agent dispensing box when the water supply valve is opened, so that the clothing treatment agent in the clothing treatment agent dispensing box is diluted, and finally flows into the clothing treatment drum. When the water supply valve is closed, the water in the water delivery channel can also be drained since the water diversion port communicates with the atmosphere. A part of the water enters the clothing treatment agent dispensing box, and the other part of the water is converted into atomized water droplets by the atomization generator and sprayed onto the clothing. With such an arrangement, the water can be prevented from remaining in the water delivery channel, thereby avoiding the growth of bacteria in the water delivery channel, so that the user does not need to repeatedly clean the dispensing device and the user experience is improved.

**[0033]** Further, the water diversion structure is a water diversion pipe, through which the water in the water delivery channel can be injected into the clothing treatment agent dispensing box when the water supply valve is opened, so that the clothing treatment agent in the clothing treatment agent dispensing box is diluted, and finally flows into the clothing treatment drum. When the water supply valve is closed, the water in the water delivery channel can also be drained since the water diversion pipe communicates with the atmosphere. A part of the water enters the clothing treatment agent dispensing box, and the other part of the water is converted into atomized water droplets by the atomization generator and sprayed onto the clothing. With such an arrangement, the water can be prevented from remaining in the water delivery channel, thereby avoiding the growth of bacteria in the water delivery channel, so that the user does not need to repeatedly clean the dispensing device and the user

experience is improved.

**[0034]** Further, by setting the position where the water diversion 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 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**

### **[0035]**

FIG. 1 is a structural view showing the principle of an air washing device 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 drum washing machine according to a second technical solution of the present disclosure; and

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

## **DETAILED DESCRIPTION**

**[0036]** 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.

**[0037]** 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.

**[0038]** 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 con-

nection, 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.

**[0039]** 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 an air washing device for a clothing treatment apparatus, and 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

**[0040]** The clothing treatment apparatus of the present disclosure includes a clothing treatment drum. As shown in FIG. 1, the air washing device includes a water supply valve 1, a connection mechanism, and an atomization generator 2. The water supply valve 1 is connected with the atomization generator 2 through the connection mechanism. The connection mechanism is provided with a one-way check structure, 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. An outlet of the atomization generator 2 is arranged facing an inner cavity of the clothing treatment drum. The connection mechanism may be a separate connection pipe, or it may be a water delivery mechanism of the clothing treatment apparatus itself (for example, a dispensing device 5 of the drum washing machine). Those skilled in the art may flexibly set the specific structure of the connection mechanism in practical applications, as long as the water can be contained by the connection mechanism. The atomization generator 2 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 2 in practical applications, as long as the atomization generator 2 can convert the water in the connection mechanism 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 patentNo. 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 its 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. 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 direction and specific positions 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 connection mechanism, 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 connection mechanism is sprayed from the outlet of the atomization generator 2. 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.

**[0041]** It should be noted that by using the one-way check structure, the present disclosure enables the atomization generator 2 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 2 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 connection mechanism, and then the water supply valve 1 can be closed. At this time, the water in the connection mechanism can be sprayed onto the clothing in the form of atomized water droplets from the atomization generator 2 according to the principle of atmospheric communication, so as to ensure that the atomization generator 2 can perform atomized air washing of the clothing.

**[0042]** In addition, it should 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.

**[0043]** Specifically, as shown in FIG. 2, the drum washing machine of the present disclosure includes a cabinet, a drum 3 arranged in the cabinet, and a window gasket 4 connected between an outer cylinder of the drum 3 and the cabinet. The atomization generator 2 is preferably arranged on the window gasket 4, and an outlet of the atomization generator 2 is arranged facing an inner cavity of the drum 3. Of course, the atomization generator 2 may also be arranged on the outer cylinder of the drum 3, as long as it can spray atomized water droplets onto the clothing in an inner cylinder of the drum 3 so as to perform atomized air washing. In addition, the drum washing machine also includes a dispensing device 5 arranged on the cabinet. The dispensing device 5 includes a clothing treatment agent dispensing cavity, and a water box arranged on a top of the clothing treatment agent dispensing cavity. A water delivery channel 51 is formed in the water box to deliver water. A water inlet end of the water delivery channel 51 is connected to the water supply valve 1 arranged outside of the dispensing device 5, and a water outlet end of the water delivery channel 51 is connected to the atomization generator 2. The water outlet end of the water delivery channel 51 may be directly connected to the atomization generator 2 through a pipe, or a water tank 6 may also be arranged between the water delivery channel 51 and the atomization generator 2. That is, the water outlet end of the water delivery channel 51 is first connected to the water tank 6 through a pipe, and the water tank 6 is then connected to the atomization generator 2 through another pipe. The water tank 6 has a function of accumulating water, and the one-way check valve 7 is arranged on the water delivery channel 51. For example, the one-way check valve 7 may be arranged close to the water inlet end of the water delivery channel 51. Of course, the one-way check valve 7 may also be arranged at other positions of the water delivery channel 51, and those skilled in the art may flexibly set the position where the one-way check valve 7 is arranged on the water delivery channel 51 in practical applications. Such adjustments and changes to the position where the one-way check valve 7 is arranged do not constitute restrictions to the present disclosure, and should be defined within the scope of protection of the present disclosure.

**[0044]** 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 2 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 2, so that the water accumulated in the water delivery channel 51 can be sprayed onto the clothing more easily in the form of atomized water droplets through the atomization generator 2. Since the position where the dispensing device 5 is arranged is generally higher than the position where the drum 3 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 2 is arranged, thereby making full use of the original structure of the drum washing machine.

#### Second technical solution

**[0045]** As shown in FIGS. 3 and 4, the drum washing machine of the present disclosure includes a cabinet, a drum 1, a water supply valve 2, a dispensing device 3, and an atomization generator 4. The dispensing device 3 includes a water delivery channel 31, through which the water supply valve 2 is connected to the atomization generator 4. An outlet of the atomization generator 4 is arranged facing an inner cavity of the drum 1. The water delivery channel 31 is provided with a water diversion structure 5, which is arranged to be able to communicate with the atmosphere. The water diversion structure 5 may be a water diversion port provided on the water delivery channel 31, or a water diversion pipe provided on the water delivery channel 31. The structure of the water diversion port or the water diversion pipe can realize water diversion of the water delivery channel 31. Of course, the water diversion structure 5 may also be a plug structure provided on the water delivery channel 31. Specifically, when the water diversion structure 5 is the plug structure, an opening is provided on the water delivery channel 31, and a plug is provided at the opening. When water inflows from the water supply valve 2, the opening is closed by the plug, and when the water supply valve 2 is closed, the plug is removed and the opening communicates with the atmosphere, so that a part of the water in the water delivery channel 31 is diverted from the opening, and the other part of the water is sprayed from the outlet of the atomization generator 4. In addition, the atomization generator 4 may be arranged on a window gasket 6 of the drum 1. The window gasket 6 is connected between the cabinet and the drum 1, and a nozzle of the atomization generator 4 is arranged facing the inner cavity of the drum 1. Of course, the atomization generator 4 may also be arranged on the outer cylinder of the drum 1, as long as it can spray atomized water droplets onto the clothing in the inner cylinder of the drum 1 to perform atomized air washing. The atomization generator 4 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 4 in practical applications, as long as the atomization generator 4 can convert the water in the water delivery channel 31 into atomized water droplets when the water

diversion structure 5 communicates with the atmosphere so as to perform atomized air washing of the clothing.

**[0046]** It should be noted that by using the water diversion structure 5, the present disclosure enables the atomization generator 4 to smoothly generate atomized water droplets. This is because when the water supply valve 2 is always open, it is very difficult for the atomization generator 4 to form atomized water droplets under the action of water pressure. Therefore, the water supply valve 2 can be opened to accumulate water in the water delivery channel 31, and then the water supply valve 2 can be closed. At this time, the water in the water delivery channel 31 can be sprayed onto the clothing in the form of atomized water droplets from the atomization generator 4 according to the principle of atmospheric communication, so as to ensure that the atomization generator 4 can perform atomized air washing of the clothing.

**[0047]** In addition, it should also be noted that in the present disclosure, a water inlet end of the water delivery channel 31 is connected to the water supply valve 2 arranged outside of the dispensing device 3, and a water outlet end of the water delivery channel 31 is connected to the atomization generator 4. The water outlet end of the water delivery channel 31 may be directly connected to the atomization generator 4 through a pipe, or a water tank 7 (the structure as shown in FIG. 4) may also be arranged between the water delivery channel 31 and the atomization generator 4. That is, the water outlet end of the water delivery channel 31 is first connected to the water tank 7 through a pipe, and the water tank 7 is then connected to the atomization generator 4 through another pipe. The water tank 7 has a function of accumulating water. Those skilled in the art may flexibly set the way in which the water delivery channel 31 and the atomization generator 4 are connected. Such adjustments and changes to the way of connection do not constitute restrictions to the present disclosure, and should be defined within the scope of protection of the present disclosure.

**[0048]** In a possible situation, the water diversion structure 5 is a water diversion port provided on the water delivery channel 31. The water diversion port may be directly connected to the drum 1 through a communication structure (such as a pipe) to inject water into the drum 1, or the drum washing machine has another component that requires water/accumulates water. Then, the water diversion port is connected with this component through a communication structure (such as a pipe) to inject water into this component. For another example, the dispensing device 3 further includes a clothing treatment agent dispensing box, and the water diversion port is arranged above the clothing treatment agent dispensing box. An upper part of the clothing treatment agent dispensing box may have an opening structure, and the water diversion port is aligned with the opening structure. When the water supply valve 2 is opened, water enters the water delivery channel 31, flows out of the water diversion port, enters the clothing treatment agent dispensing box through the opening structure for dilution of the

clothing treatment agent, and finally flows into the drum 1. When the water supply valve 2 is closed, the atomization generator 4 is opened, and since the water diversion port communicates with the atmosphere, a part of the water in the water delivery channel 31 flows into the clothing treatment agent dispensing box through the water diversion port, and the other part of the water forms atomized water droplets under the action of the atomization generator 4, which are then sprayed onto the clothing. Moreover, under the action of the atmosphere, if the atomization generator 4 is always turned on, the water in the water delivery channel 31 can be fully drained to avoid residual water and growth of bacteria. In this embodiment, the number of water diversion ports may be one or plural. Those skilled in the art may flexibly set the number and distribution of the water diversion ports in practical applications, as long as the diversion of water and the communication with the atmosphere can be realized through the water diversion ports.

**[0049]** In another possible situation, the water diversion structure 5 is a water diversion pipe provided on the water delivery channel 31. The water diversion pipe may be directly connected to the drum 1 through a communication structure (such as a pipe) to inject water into the drum 1, or the drum washing machine has another component that requires water/accumulates water. Then, the water diversion pipe is connected with this component through a communication structure (such as a pipe) to inject water into this component. For another example, the dispensing device 3 further includes a clothing treatment agent dispensing box, and an outlet of the water diversion pipe is arranged above the clothing treatment agent dispensing box or extends into the clothing treatment agent dispensing box. When the outlet of the water diversion pipe is arranged above the clothing treatment agent dispensing box, an upper part of the clothing treatment agent dispensing box may have an opening structure, and the outlet of the water diversion pipe is aligned with the opening structure. When the outlet of the water diversion pipe extends into the clothing treatment agent dispensing box, it is only required to provide an opening on the clothing treatment agent dispensing box for docking with the outlet of the water diversion pipe. When the water supply valve 2 is opened, water enters the water delivery channel 31, flows out of the outlet of the water diversion pipe, then enters the clothing treatment agent dispensing box for dilution of the clothing treatment agent, and finally flows into the drum 1. When the water supply valve 2 is closed, the atomization generator 4 is opened, and since the water diversion pipe communicates with the atmosphere, a part of the water in the water delivery channel 31 flows into the clothing treatment agent dispensing box through the outlet of the water diversion pipe, and the other part of the water forms atomized water droplets under the action of the atomization generator 4, which are then sprayed onto the clothing. Moreover, under the action of the atmosphere, if the atomization generator 4 is always turned on, the water in

the water delivery channel 31 can be fully drained to avoid residual water and growth of bacteria. In this embodiment, the number of water diversion pipes may be one or plural. Those skilled in the art may flexibly set the number and distribution of the water diversion pipes in practical applications, as long as the diversion of water and the communication with the atmosphere can be realized through the water diversion pipes.

**[0050]** Preferably, the position where the water diversion structure 5 is arranged is at a different height from the position where the outlet of the atomization generator 4 is arranged, that is, when the water diversion structure 5 communicates with the atmosphere, a certain liquid level difference can be formed between the water diversion structure 5 and the outlet of the atomization generator 4, so that the water accumulated in the water delivery channel 31 can be sprayed onto the clothing more easily in the form of atomized water droplets through the atomization generator 4. Since the position where the dispensing device 3 is arranged is generally higher than the position where the drum 1 is arranged in the drum washing machine, it is more preferable to set the position where the water diversion structure 5 is arranged to be higher than the position where the outlet of the atomization generator 4 is arranged, thereby making full use of the original structure of the drum washing machine.

**[0051]** 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. An air washing device for a clothing treatment apparatus, the clothing treatment apparatus comprising a clothing treatment drum, wherein the air washing device comprises a water supply valve, a connection mechanism and an atomization generator; the water supply valve is connected with the atomization generator through the connection mechanism, the connection mechanism is provided with a one-way check structure, 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, and an outlet of the atomization generator is arranged facing an inner cavity of the clothing treatment drum.

2. The air washing device according to claim 1, wherein the connection mechanism is a connection pipe.
3. The air washing device according to claim 1, wherein the connection mechanism is a water delivery channel of a dispensing device of the clothing treatment apparatus.
4. The air washing device according to claim 3, wherein the one-way check structure is arranged close to a water inlet end of the water delivery channel.
5. The air washing device according to claim 3, wherein the water supply valve is arranged outside of the dispensing device.
6. The air washing device according to claim 1, 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.
7. The air washing device according to claim 6, 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.
8. The air washing device according to any one of claims 1 to 7, wherein the one-way check structure is a one-way check valve.
9. A clothing treatment apparatus, comprising the air washing device according to any one of claims 1 to 8.
10. The clothing treatment apparatus according to claim 9, wherein the clothing treatment apparatus is a drum washing machine, and the clothing treatment drum is a drum of the drum washing machine; and wherein the drum washing machine further comprises a window gasket connected with the drum, and the atomization generator is arranged on the window gasket.
11. 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 with the atomization generator through the water delivery channel, an outlet of the atomization generator is arranged facing an inner cavity of the clothing treatment drum, and the water delivery channel is provided with a water diversion structure which is arranged to be able to communicate with the atmosphere.
12. The clothing treatment apparatus according to claim 11, wherein the water diversion structure is a water diversion port provided on the water delivery channel.

13. The clothing treatment apparatus according to claim 12, wherein the dispensing device further comprises a clothing treatment agent dispensing box, and the water diversion port is arranged above the clothing treatment agent dispensing box. 5
14. The clothing treatment apparatus according to claim 11, wherein the water diversion structure is a water diversion pipe connected to the water delivery channel. 10
15. The clothing treatment apparatus according to claim 14, wherein the dispensing device further comprises a clothing treatment agent dispensing box, and an outlet of the water diversion pipe is arranged above the clothing treatment agent dispensing box or extends into the clothing treatment agent dispensing box. 15
16. The clothing treatment apparatus according to claim 11, wherein a position where the water diversion structure is arranged is at a different height from a position where the outlet of the atomization generator is arranged. 20  
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17. The clothing treatment apparatus according to claim 16, wherein the position where the water diversion structure is arranged is higher than the position where the outlet of the atomization generator is arranged. 30
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. 35
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. 40
20. The clothing treatment apparatus according to claim 18, wherein the atomization generator is arranged on an outer cylinder of the drum. 45

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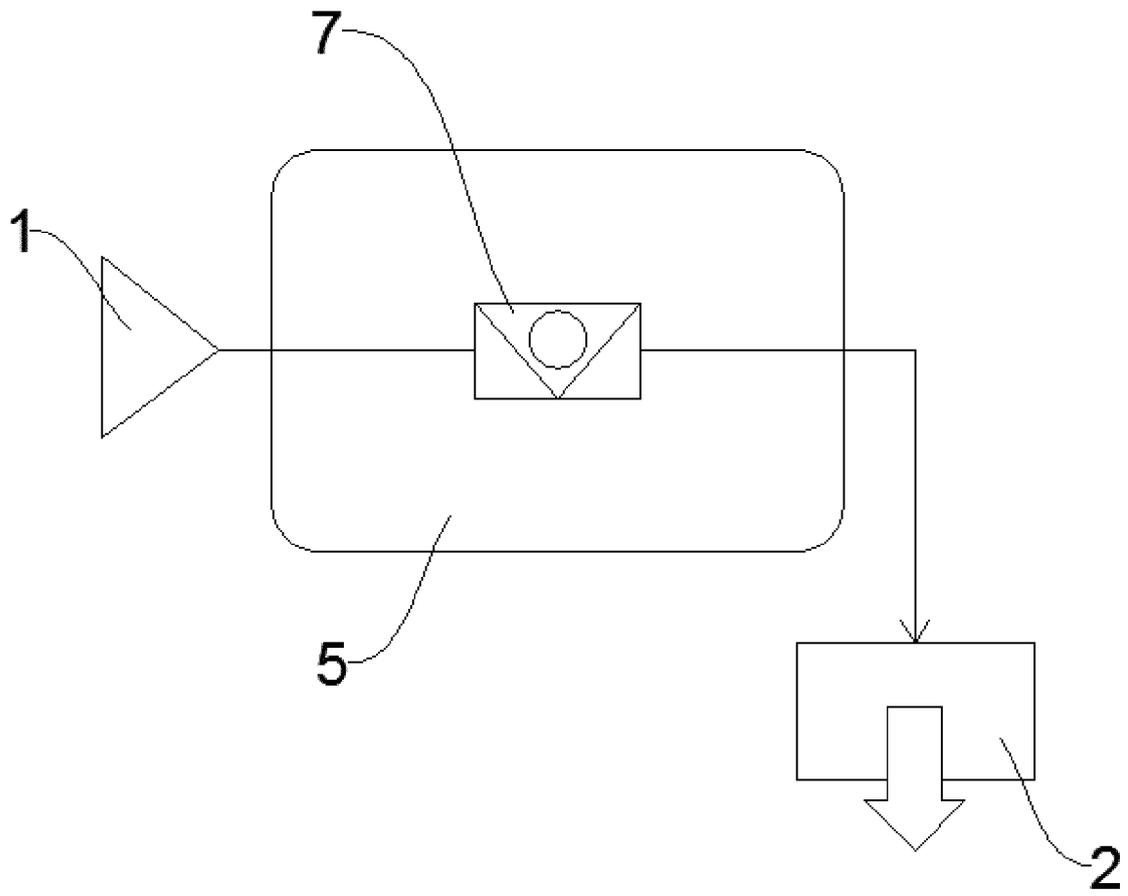


Fig.1

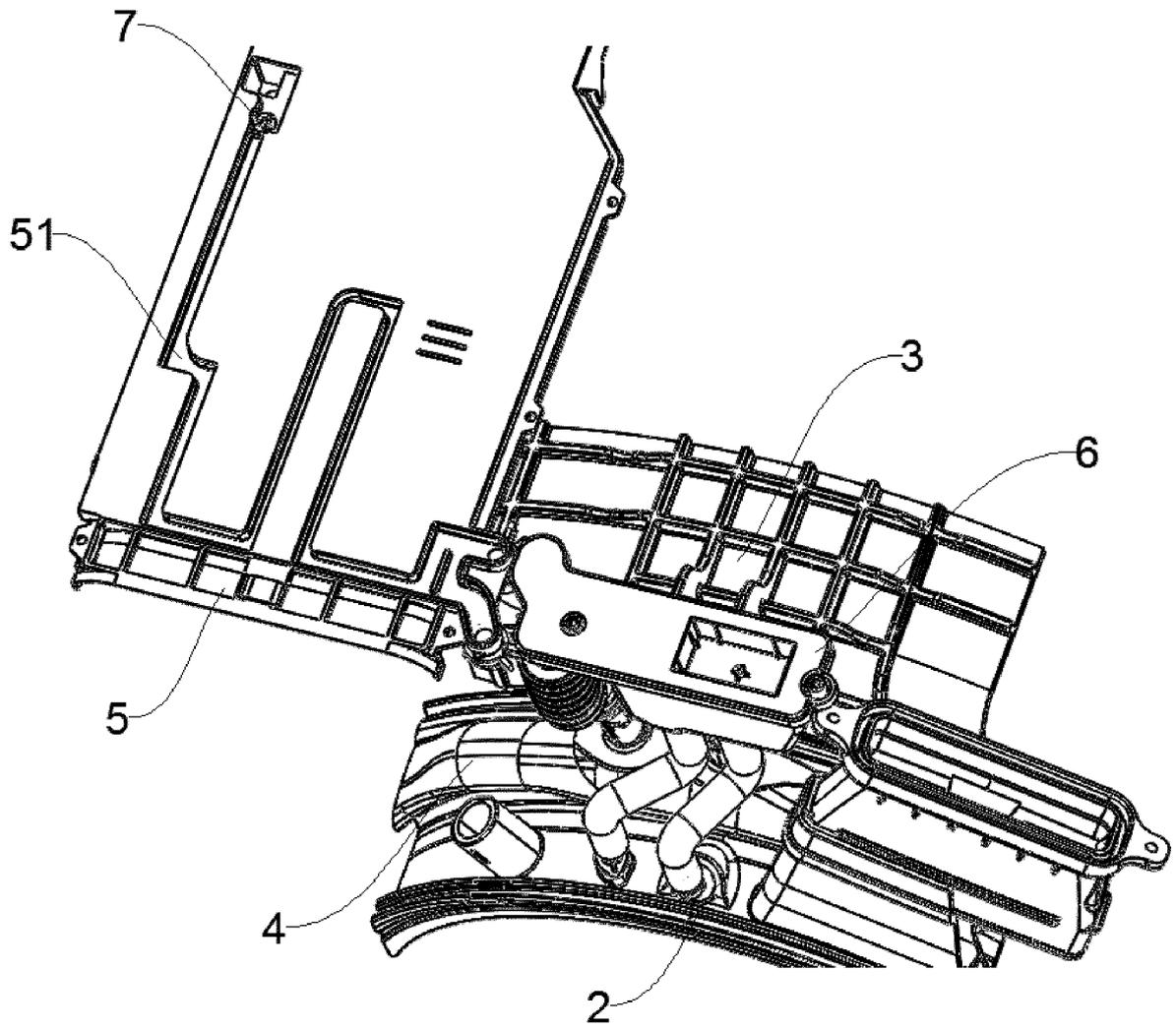


Fig.2

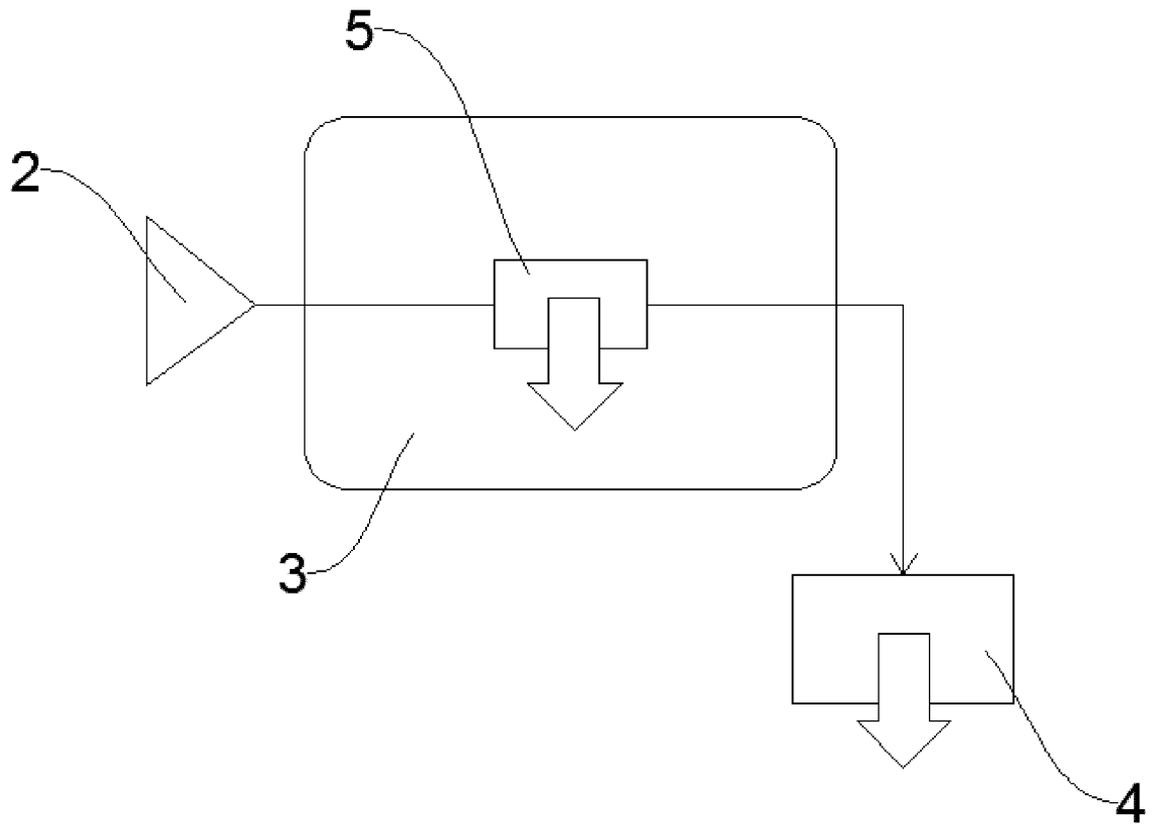


Fig.3

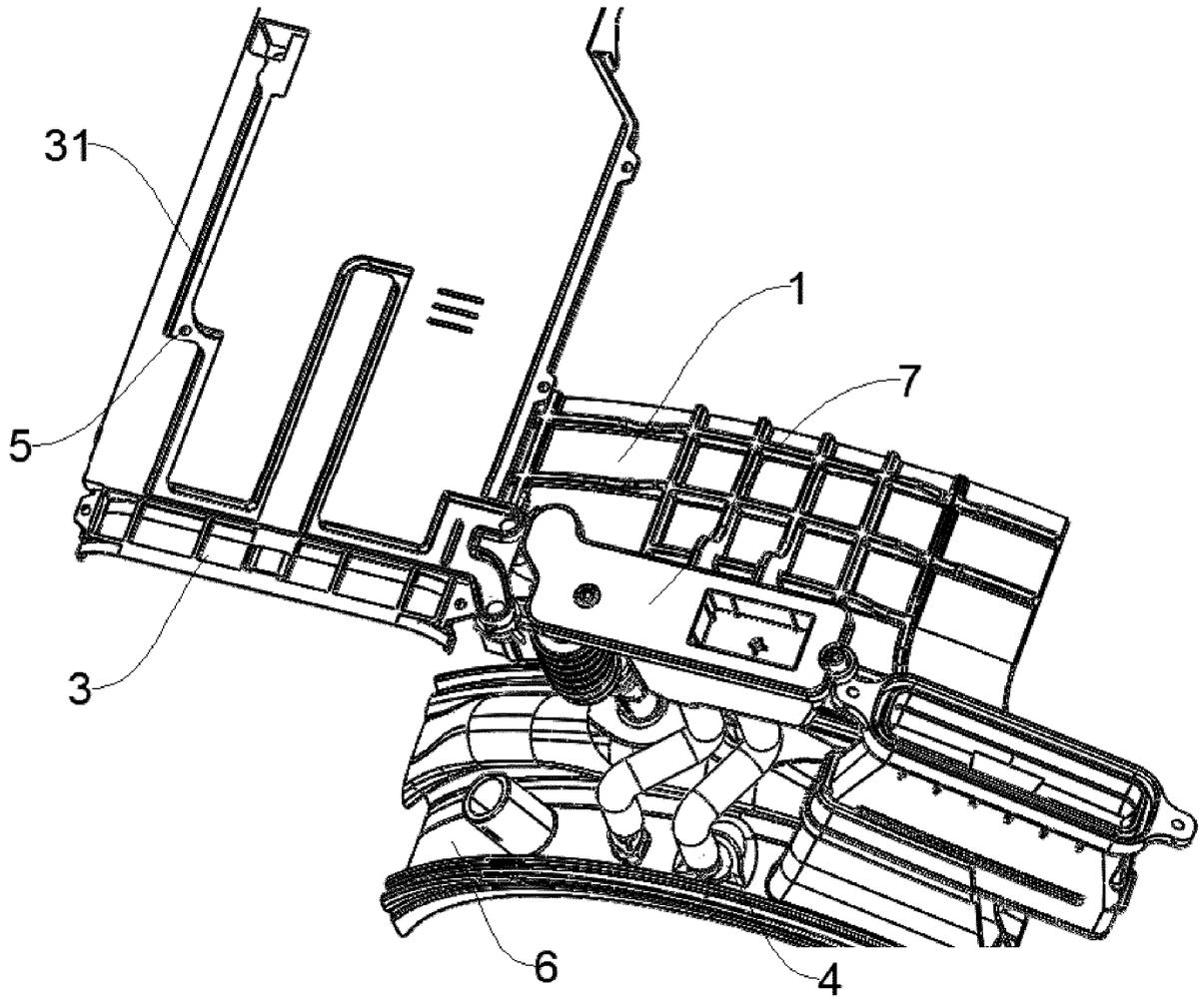


Fig.4

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2019/125904

5	<b>A. CLASSIFICATION OF SUBJECT MATTER</b> D06F 39/00(2020.01)i; D06F 35/00(2006.01)i	
	According to International Patent Classification (IPC) or to both national classification and IPC	
10	<b>B. FIELDS SEARCHED</b>	
	Minimum documentation searched (classification system followed by classification symbols) D06F, B05B	
	Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched	
15	Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) CNPAT, WPI, EPODOC, CNKI: 洗衣机, 空气洗, 供水, 进水, 雾化, 喷雾, 阀, 单向, 逆止, 空气, 大气, 分水, 切换, 浸润, 润湿, 孔, 堵, wash, clean, laundry, atomize, nozzle, check, valve, air, gas, soak, infiltrate, hole, water, block	
	<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>	
20	Category*	Citation of document, with indication, where appropriate, of the relevant passages
	X	CN 104781462 A (BSH BOSCH UND SIEMENS HAUSGERAETE GMBH) 15 July 2015 (2015-07-15) description, paragraphs 0040-0078, and figure 1
25	X	CN 107761309 A (QINGDAO HAIER DRUM WASHING MACHINE CO., LTD.) 06 March 2018 (2018-03-06) description, paragraphs 0038-0074, and figures 1-5
	A	CN 107119423 A (QINGDAO HAIER DRUM WASHING MACHINE CO., LTD.) 01 September 2017 (2017-09-01) entire document
30	A	CN 206625036 U (ZHANG, Caiyou) 10 November 2017 (2017-11-10) entire document
	A	CN 101029442 A (HAIER GROUP CORPORATION et al.) 05 September 2007 (2007-09-05) entire document
35	A	CN 200943155 Y (WUXI LITTLE SWAN CO., LTD.) 05 September 2007 (2007-09-05) entire document
	A	US 2015096128 A1 (XEROS LTD.) 09 April 2015 (2015-04-09) entire document
	<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.	
40	* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family
	Date of the actual completion of the international search <b>25 February 2020</b>	Date of mailing of the international search report <b>20 March 2020</b>
50	Name and mailing address of the ISA/CN <b>China National Intellectual Property Administration (ISA/CN) No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088 China</b>	Authorized officer
55	Facsimile No. (86-10)62019451	Telephone No.

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**INTERNATIONAL SEARCH REPORT**  
**Information on patent family members**

International application No.

**PCT/CN2019/125904**

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