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(54) **Washing and drying machine**

(57) A washing and drying machine, comprising a processing tub (4); a condensing assembly (8) comprising at least one air flow passage (10) in communication with the processing tub (4); spraying means (12) comprising a water charging passage (14) in communication with said air flow passage (10), and a spraying head (18) located at one end (16) of the water charging passage (14), with the other end (17) of the water charging pas-

sage (14) being connected to a common water source (13), wherein the air flow passage (10) of the processing tub (4) and the condensing assembly (8) has a maximum allowable level (3), a side wall of the water charging passage (14) has an opening (24), and at least a part of the opening (24) is higher than said maximum allowable level (3). Therefore, the washing water in the air flow passage (10) does not tend to be sucked into the common water source (13) and the risk of contamination is avoided.

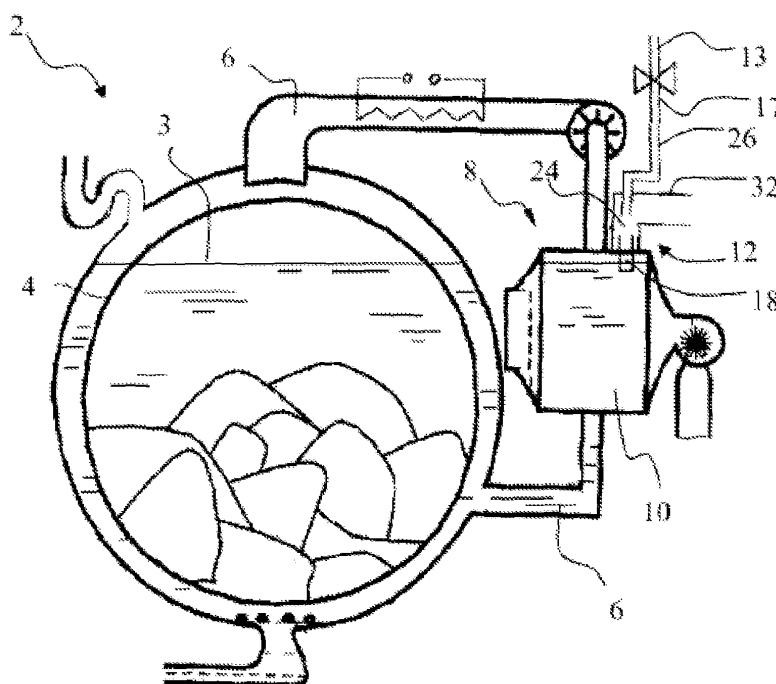


Fig. 1

Description

Technical field

[0001] The present invention relates to a washing and drying machine, which washing and drying machine comprises a processing tub, a drying air circulating passage connected to the processing tub, a condensing assembly located in the drying air circulating passage, with the condensing assembly comprising at least one air flow passage in communication with the processing tub and the drying air circulating passage, and spraying means comprising a water charging passage connected with the air flow passage, and a spraying head located at one end of the water charging passage, with the other end of the water charging passage being connected to the common water source.

Background art

[0002] An ordinary washing and drying machine can be used for washing clothes put into the washing tub and drying the clothes according to the selected program after washing. Its drying process is as follows: dry air is heated into dry hot air in a heating pipe under the effects of a heating device and then flows into a washing tub for heat exchange with the wet clothes therein and taking away the moisture from the clothes to form wet hot air, then the wet hot air flows through an outlet disposed on the washing tub into a condensing assembly, wherein the moisture in the wet hot air is condensed into water under the condensing effects of the condensing assembly, the condensed water is discharged via a discharge pipe, the air after condensing becomes relatively dry cold air and is re-introduced into the heating pipe by a fan, then the dry hot air formed by heating flows to the next cycle, and the above process is repeated until the drying procedure is completed.

[0003] A common condensing assembly comprises spraying means for spraying water to the wet hot air flowing through the condensing assembly, so as to condense the moisture in the wet hot air into water.

[0004] Since the clothes will inevitably produce some thrum or other impurities (hereinafter referred to as "thrum") in the washing and drying process, and the thrum will be directly brought into the condensing assembly by the wet hot air and adhered to the surface of the condensing assembly, this will thus affect the condensing effects or block the whole air circulating passage. Therefore, the condensing assembly preferably also comprises spraying means for flushing away the adhered thrum, even if the spraying water is not used as the condensing media.

[0005] The spraying means usually comprises a water charging passage with one end connected to an external common water source and the other end disposed with a set of spraying holes, with the spraying holes being located inside the space of the condensing assembly for

spraying water into the condensing assembly. In the washing process of the washing and drying machine, the washing tub is filled with the water needed, and the condensing assembly also has a large amount of water, for communication with the washing tub. When there is a large amount of clothes to be washed and the water level is high enough to submerge the spraying holes of the spraying means, it is possible for the water in the condensing assembly for washing clothes to be sucked into the common water source via the water charging passage, thus causing the water source contamination.

Contents of the invention

[0006] One of the objects of the present invention is to provide a washing and drying machine which can effectively avoid the washing water from being sucked into the common water source.

[0007] To achieve the above object, the washing and drying machine provided by the present invention comprises a processing tub, a condensing assembly and spraying means, said condensing assembly comprises at least one air flow passage in communication with the processing tub, the spraying means comprises a water charging passage in communication with said air flow passage, a spraying head located at one end of the water charging passage, with the other end of the water charging passage being connected to a common water source, and the air flow passages of the processing tub and the condensing assembly having a maximum allowable level, wherein the side wall of said water charging passage has an opening, and at least a part of the opening is higher than said maximum allowable level. Due to such an opening, the common water source is separated from the washing water by air, so that the washing water does not tend to be sucked in.

[0008] As a refinement of the present invention, the spraying means comprises an air passage in communication with the atmosphere, and said air passage is in communication with said opening, so that said opening is always in communication with the atmosphere. Therefore, there exists a constant atmosphere pressure between the common water source and the washing water, and it is less easy for the washing water to be sucked into the common water source.

[0009] As a refinement of the present invention, an overflow cavity is connected between said opening and said air flow passage. Thus, the water overflowing from said opening can be introduced by the overflow cavity into the air flow passage.

[0010] As a refinement of the present invention, said water charging passage comprises a part substantially parallel to the direction of gravity, and said opening is located on the part. With such a structure, it is very difficult for the water flow to go vertically upwards through such a passage with an opening, and the effect of anti-back-flow is further enhanced.

[0011] As a refinement of the present invention, the

opening on the side wall of said water charging passage separates the water charging passage into a first part and a second part substantially not connected to each other. Thus, the possibility of backflow of the washing water is further reduced.

[0012] As a refinement of the present invention, the inner diameter of said first part is slightly smaller than that of the second part, thereby ensuring that the water spraying out of the first part will fall into the second part as much as possible.

[0013] As a refinement of the present invention, said spraying head is cup-shaped and comprises at least two spraying holes, in order for such a structure to be able to achieve a relatively good spraying effect.

[0014] As a refinement of the present invention, said spraying holes are radially distributed, so as to achieve a relatively large spraying range.

[0015] Description of the accompanying drawings

Fig. 1 is a structural diagram of a drying machine.

Fig. 2 is a cross-section view of the spraying means in Fig. 1.

Particular embodiments

[0016] As shown in Fig. 1, a washing and drying machine 2 comprises a processing tub 4, two ends of a drying air circulating passage 6 are respectively connected to the processing tub 4, a condensing assembly 8 is located in the drying air circulating passage 6, and the condensing assembly 8 has an air flow passage 10 which is in communication with the drying air circulating passage 6. Therefore, the air flowing from the drying air circulating passage 6 and through the condensing assembly 8 has heat exchange in the air flow passage 10, and the water therein is condensed.

[0017] Spraying means 12 is combined with a condensing assembly 8 and connected to a common water source 13 to spray the water from the common water source 13 to the air flow passage 10 of the condensing assembly 8 in a spraying manner, so as to flush away the throm adhered to the air flow passage 10. In other embodiments, the spraying means sprays water into the air flow passage for condensing the water in the drying air flow.

[0018] As shown in Fig. 2, the spraying means 12 comprises a water charging passage 14, with one end 16 of the water charging passage being connected to a spraying head 18 and the other end 17 being connected to the common water source 13. In this case, the spraying head 18 is cup-shaped, and a set of spraying holes 20 are radially formed on the spraying head 18. The water charging passage 14 is in communication with the air flow passage 10 of the condensing assembly 8 via the spraying holes 20. Usually, the number of the spraying holes 20 is at least two, to ensure a relatively large spraying range. The water charging passage 14 comprises a part 22 substantially parallel to the direction of gravity, the side wall

(15) of the part has an opening 24 separating the water charging passage 14 into a first part 26 and a second part 28, which are separated from each other. In other embodiments, the first part 26 can be partially connected to the second part 28, and the degree of connection shall ensure that water will not flow back through the connecting part. Ideally, the lesser the connection degree, the better the effect. The inner diameter of the first part 26 is slightly smaller than that of the second part 28, so as to ensure that the water spraying out of the first part 26 can fall into the second part 28 as much as possible. The air flow passage 10 of the processing tub 4 and the condensing assembly 8 has a preset maximum allowable level 3, and the opening 24 is higher than said maximum allowable level 3, as shown in Fig. 1. In other embodiments, it is only necessary to ensure that the opening 24 is not submerged by the washing water and at least a part of the opening 24 is higher than the maximum allowable level 3.

[0019] Since the water charging passage 14 has an opening 24, water will overflow from the opening 24 if the water pressure is high and the velocity of the injection water flowing from outside is higher than the spraying velocity of the spraying head 18. In order to avoid the overflowing of water onto any part of the drying machine 2, the opening 24 is in communication with an overflow cavity 30, and the overflow cavity 30 is further in communication with the air flow passage 10 of the condensing assembly 8, so that the overflow can flow into the air flow passage 10.

[0020] The spraying means 12 also has an air passage 32 which is in communication with the atmosphere, and the air passage 32 is in communication with said opening (24) which ensures that the opening (24) is always in communication with the atmosphere, even at the maximum allowable level 3.

[0021] The various embodiments described above and shown in the accompanying drawings are merely for illustrating the present invention, and are not intended to be the entirety of the present invention. Within the scope of the basic technical concept of the present invention, any change in the present invention in any form made by those skilled in the art is within the protection scope of the present invention.

Claims

1. A washing and drying machine, comprising a processing tub (4), a condensing assembly (8) and spraying means (12); said condensing assembly (8) comprising at least one air flow passage (10) in communication with the processing tub (4); the spraying means (12) comprising a water charging passage (14) in communication with said air flow passage (10), and a spraying head (18) located at one end (16) of the water charging passage (14), with the other end (17) of the water charging passage (14)

being connected to a common water source (13); and the air flow passage (10) of the processing tub (4) and the condensing assembly (8) having a maximum allowable level (3), **characterized in that** a side wall (15) of said water charging passage (14) has an opening (24), and at least a part of the opening (24) is higher than said maximum allowable level (3).

2. The washing and drying machine according to claim 1, **characterized in that** the spraying means (12) comprises an air passage (32) in communication with the atmosphere, and said air passage (32) is in communication with said opening (24), so that said opening (24) is always in communication with the atmosphere.
3. The washing and drying machine according to claim 1 or 2, **characterized in that** an overflow cavity (30) is connected between said opening (24) and said air flow passage (10).
4. The washing and drying machine according to one of claims 1 to 3, **characterized in that** said water charging passage (14) comprises a part (22) substantially parallel to the direction of gravity, and said opening (24) is located on the part.
5. The washing and drying machine according to one of claims 1 to 4, **characterized in that** the opening (24) of said water charging passage (14) separates the water charging passage (14) into a first part (26) and a second part (28) substantially not connected to each other.
6. The washing and drying machine according to claim 5, **characterized in that** the inner diameter of said first part (26) is slightly smaller than that of the second part (28).
7. The washing and drying machine according to one of claims 1 to 6, **characterized in that** said spraying head (18) is cup-shaped and comprises at least two spraying holes (20).
8. The washing and drying machine according to claim 7, **characterized in that** said spraying holes (20) are radially distributed.

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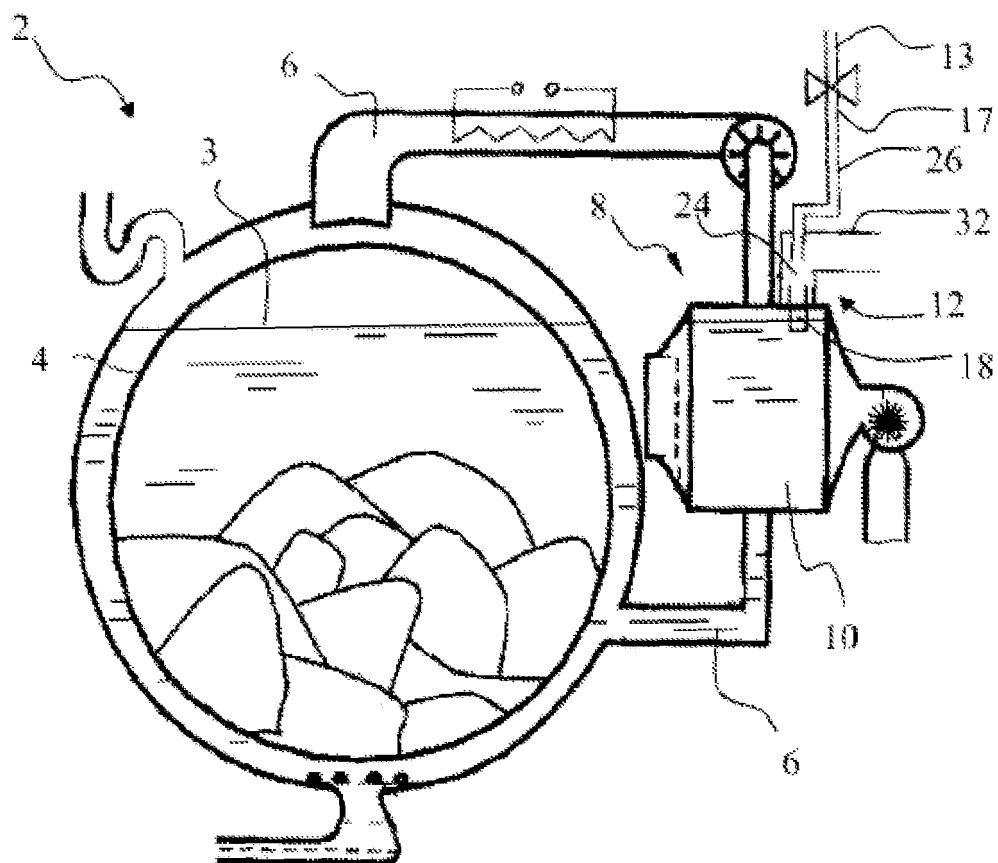


Fig. 1

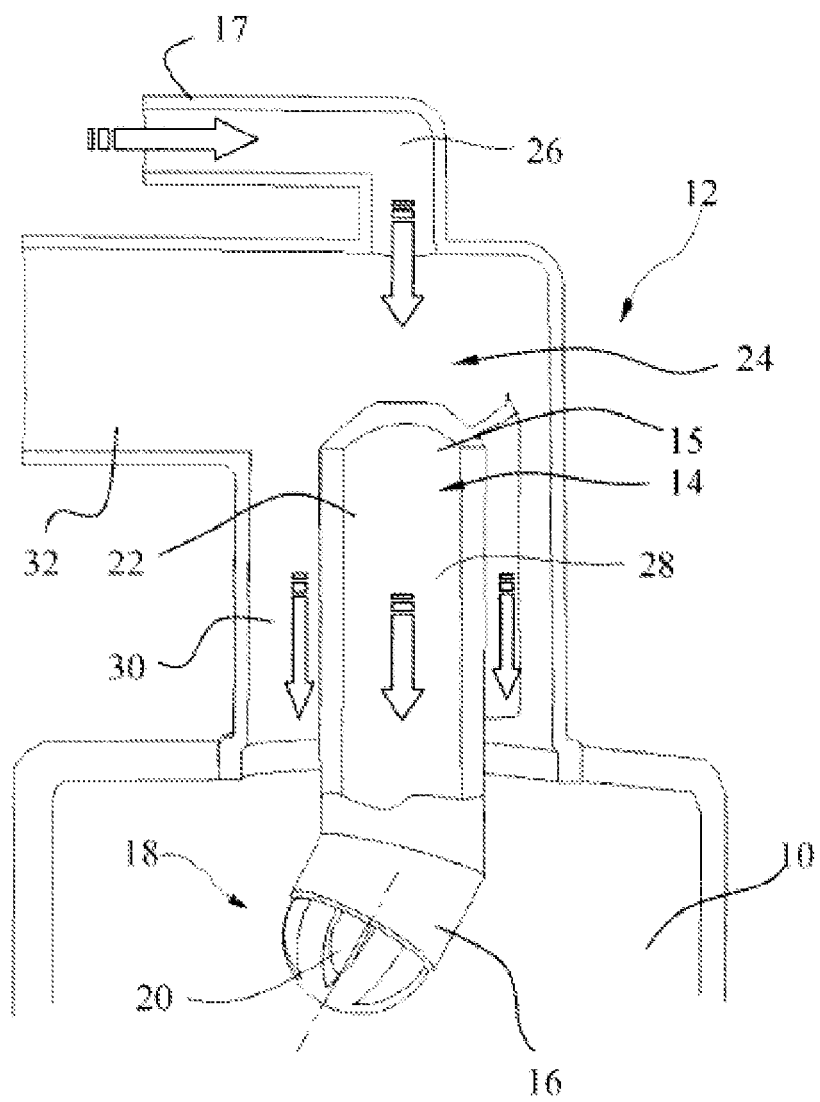


Fig. 2