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(54) Mobile air conditioner

(57) The present invention relates to a mobile air conditioner which comprises an insulated housing (3) having a cooled air outlet (12) and a heated air outlet (13), an evaporator (1) located in the said housing (3), a condenser (2), an electrical fan (4) having an air chamber (5), and a reservoir (9) for collecting condensed water formed on the evaporator (1). The evaporator (1) is located between the air chamber (5) and cooled air outlet (12); while the condenser (2) is located between the air chamber (5) and heated air outlet (13). The cavity of the said reservoir (9) is in fluid connection with a drain channel (10) which has a drain meatus located in the air-discharge passage (6) extended from the air outlet (15) of the air chamber (5) to the condenser (2). The condensed water from the reservoir (9) to the drain channel can be atomized into tiny drips by rapid air flow from the air chamber (5). The tiny drips are blown through the drain channel (10) onto the condenser (2) for being heated and onto the evaporator (1) for being cooled, then flowing into the reservoir at last. The above-described process can be repeated circularly during the air conditioner being in operation. It is much more convenient that this treatment of condensed water can keep the reservoir (9) from being fllled without emptying it manually.

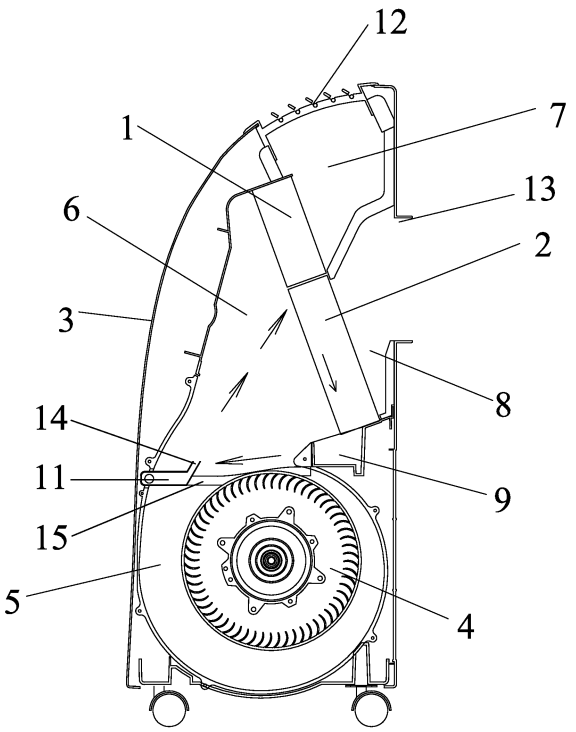

Fig.1

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Description

Field of the Invention

[0001] The present invention relates to a mobile air conditioner.

Background of the Invention

[0002] According to the prior art, mobile air conditioner is in a configuration of small mobile unit, which is necessary for regulating the hot and humid climate in working and resting places. It occupies less space and can be moved easily to a desired location to provide air conditioning supply.

[0003] The mobile air conditioner of prior art generally comprise an evaporator, a condenser, a housing, a fan, a reservoir, passages and so on, wherein air source is provided by fan for the air conditioner, which can be heated by the evaporator and then discharged from heated air outlet to exterior, and also can be cooled by condenser and then discharged from cooled air outlet to exterior, so that the mobile air conditioner can provide not only heated air but also cooled air. When the air is cooled by evaporator, the vapor in air is partially condensed to water which will flood in the air conditioner if it is not drained or collected in time, eroding the metal parts in the housing to jeopardize the function of the air conditioner. The treatment measure of condensed water in the prior art is to conduct the condensed water to the surface of the condenser, then a part of the condensed water is discharged from heated air outlet and the other part is collected by reservoir, which is positioned under the condenser, and need be taken out to pour out water when being full. Although the condensed water treating device as aforementioned has a simple structure, it is not convenient to empty the reservoir filled with condensed water for the treating procedure need manpower to execute.

Summary of the Invention

[0004] Accordingly, to overcome the disadvantages of the prior art, the present invention is to provide a mobile air conditioner, which can discharge condensed water out of the housing automatically without emptying the reservoir manually.

[0005] The mobile air conditioner provided by this invention comprises, a insulated housing provided with a cooled air outlet and a heated air outlet, an evaporator located in said housing, a condenser, an electric fan which has an air chamber, and a reservoir for collecting condensed water from the said evaporator, wherein the said evaporator is located between said air chamber and cooled air outlet, and the said condenser located between said air chamber and heated air outlet. The interior of said reservoir is in fluid connection with a drain channel which has a drain channel outlet located in an air discharge passage extending from an air outlet of the air chamber which is connected to the fan comprises an air inlet and an air outlet to the said condenser and/or extending from an air outlet of the air chamber to the said evaporator.

[0006] The mobile air conditioner further comprises a channel configured on said condenser for condensed water flowing, and the said reservoir is positioned under the said condenser.

[0007] The said drain channel outlet is near the said air outlet of the air chamber, preferably the drain channel outlet is located directly over the air outlet of the air chamber.

[0008] The said drain channel is in a shape of a pipeline.

[0009] Compared with the related art, the present invention has some advantages as following: the drain channel has a drain channel outlet located in the air-discharge passage which is extending from the air outlet of the air chamber to the condenser, and the drain channel is mounted between the reservoir and the air chamber, and therefore the drain channel can transmit the condensed water from the reservoir to the air-discharge passage, where the condensed water is atomized into tiny drips by the rapid air flow from the air outlet of the air chamber. Some of the tiny drips are blown to the condenser where they are heated and volatilized into exterior, and the other part of the tiny drips are blown to the evaporator where they are condensed into water to flow into the reservoir. The foregoing process is repeated circularly during the air conditioner being used. It is much more convenient that the treatment of the condensed water can keep the reservoir from being filled without emptying it manually.

Description of the Attached Drawings

[0010]

FIG. 1 is a schematic view of the structure of the mobile air conditioner according to the present invention; and

FIG. 2 is a schematic view showing the flow of condensed water in the mobile air conditioner according to the present invention;

[0011] Wherein, 1 evaporator; 2 condenser; 3 housing; 4 fan; 5 air chamber; 6 air-discharge passage; 7 chamber of cooled air; 8 chamber of heated air; 9 reservoir; 10 drain channel; 11 collecting channel; 12 cooled air outlet; 13 heated air outlet; 14 drain channel outlet; and 15 air outlet, are marked.

Detailed Description of Preferred Embodiments

[0012] As shown in FIG.1, the mobile air conditioner according to present invention includes a housing 3, an evaporator 1, a condenser 2, a fan 4 provided with an air

chamber 5, and a reservoir 9. On two different walls of the housing 3, a cooled air outlet 12 and a heated air outlet 13 are mounted respectively thereon. Among the evaporator 1, the housing 3 and the cooled air outlet 12 there forms a chamber of cooled air 7, cooled air in which is discharged to exterior through the cooled air outlet 12. The condenser 2 is located in the housing 3 near the heated air outlet 13. Among the condenser 2, the housing 3 and the heated air outlet 13 there forms a chamber of heated air 8, heated air in which is discharged to exterior through the heated air outlet 8. In the space extending from evaporator 1 and condenser 2 to the air outlet 15 of air chamber 5 there is provided an air-discharge passage 6, in which the air flows and which partially divides into cooled air in chamber 7 after passing through the evaporator 1, and the other part changes into heated air in chamer 8 after passing through the condenser 2.

[0013] As shown in FIG.2, on the evaporator 1 and the condenser 2 there respectively mounted a collecting channel 11 adapted to collect condensed water flow from the evaporator 1 and guiding the collected water to the condenser 2 and the reservoir 9, and the reservoir is located under the said condenser 2, so that part of the collected water is volatilized after flowing near/through the condenser 2 and the other part which is not volatilized due to heat flows into the reservoir 9. For the further treatment of the condensed water in the reservoir 9, the interior of the reservoir 9 is in fluid connection with a drain channel 10 which has a drain channel outlet 14 located in the air-discharge passage 6 extended from the air outlet 15 of the air chamber 5 to the condenser 2. As the air at the air outlet 15 flows at the maximum speed, it is advised according to a preferred embodiment that the drain channel outlet 14 of the drain channel 10 is positioned near the air outlet 15 of the air chamber 5 and the drain channel 10 is in a shape of pipeline.

[0014] The condensed water from the drain channel outlet 14 is atomized into tiny drips by the rapid air flow from the air chamber 5. The drain channel outlet 14 is arranged such that some of the tiny drips are blown onto the condenser 2 where they are heated and volatilized to the exterior, and the other part of the tiny drips are blown onto the evaporator 1 where they are cooled and condensed into water which flows into the reservoir 9 again via the collecting channel 11. The foregoing process should be repeated to keep the reservoir from being filled for a long time.

Claims

1. A mobile air conditioner comprising, an insulated housing (3) provided with a cooled air outlet (12) and a heated air outlet (13), an evaporator (1) in said housing (3), a condenser (2), an electrical operated fan (4) having an air chamber (5), the air chamber (5) comprising an air outlet (15), and a reservoir (9) for collecting condensed water from the evaporator (1), the evaporator (1) being located between the air chamber (5) and the cooled air outlet (12), and the condenser (2) being located between the air chamber (5) and the heated air outlet (13),
characterized in that
the interior of the reservoir (9) is in fluid connection with a drain channel (10) which has a drain channel outlet (14) located in an air discharge passage (6) which extends from the air outlet (15) of air chamber (5) to the condenser (2).

2. The mobile air conditioner of claim 1, further comprising a collecting channel (11) located on the evaporator (1) and the condenser (2), the collecting channel (11) being adapted for collecting water from the evaporator (1) and adapted for volatilizing at least a part of the collected water by the condenser (2), and adapted for guiding the water which was not volatilized by the condenser (2) into the reservoir (9) which is positioned under the condenser (2).

3. The mobile air conditioner according to one of the preceding claims, wherein the drain channel outlet (14) is arranged such that collected water from the reservoir (9) is guided out of the drain channel (10) and atomized into tiny drops by an air flow from the air outlet (15) of air chamber (5), and some of the tiny drops are blown onto the condenser (2) where they are heated and volatilized to the exterior, and the other part of the tiny drops are blown onto the evaporator (1) where they are cooled and condensed into water which flows into the reservoir (9) via the collecting channel (11).

4. The mobile air conditioner according to one of the preceding claims, wherein the drain channel outlet (14) is near the air outlet (15) of the air chamber (5).

5. The mobile air conditioner according to one of the preceding claims, wherein the drain channel (10) comprises a shape of a pipeline.

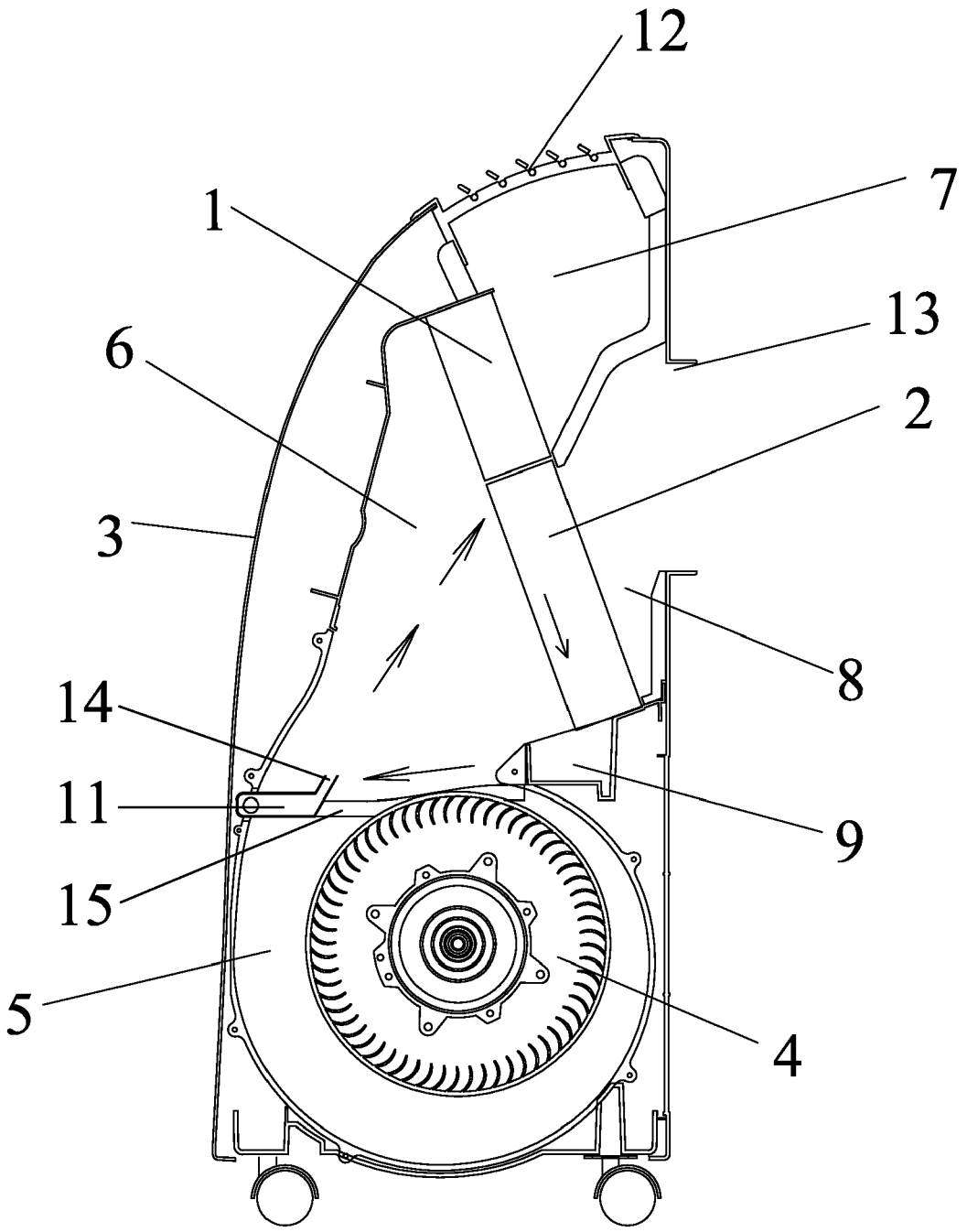

Fig.1

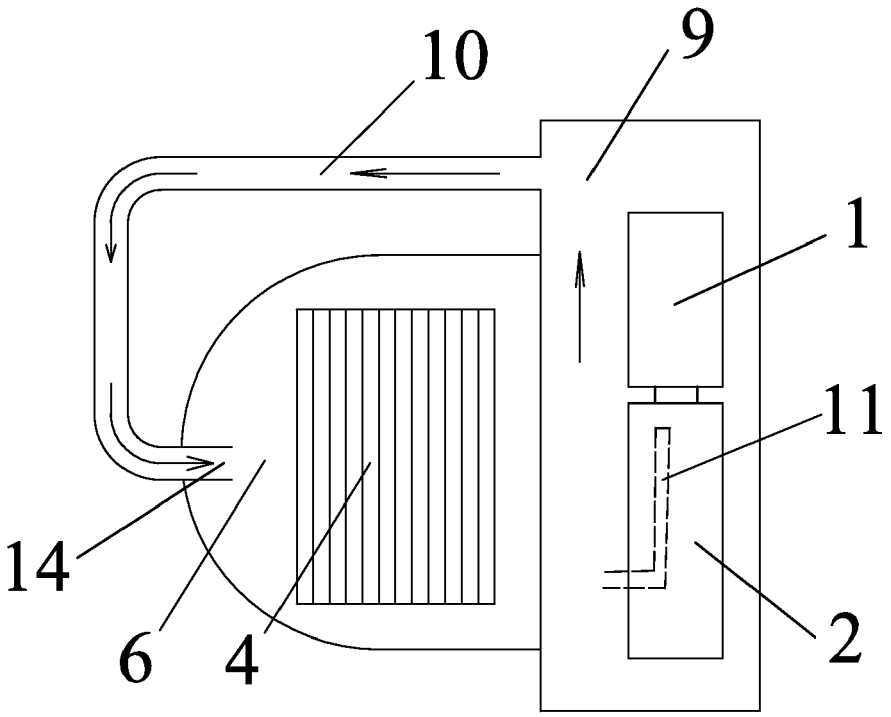

Fig.2