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(54) **AIR CONDITIONER FOR VEHICLE**

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(57) **ABSTRACT**

Disclosed is an air conditioner for a vehicle which has an improved shaft structure to enhance temperature controllability and adjust an air discharge volume, thereby improving airflow distribution. The air conditioner includes: an air conditioning case in which an air passage and a plurality of air discharge ports are formed; a cooling heat exchanger and a heating heat exchanger sequentially arranged in the air passage of the air conditioning case in an air flow direction; and a door adjusting the opening degree of the air discharge ports, wherein the door is formed in a sliding type and includes a shaft, a gear part, and a plate part which engages with the gear part to open and close the air discharge ports, and a guide part guiding the air flow direction is provided on the shaft.

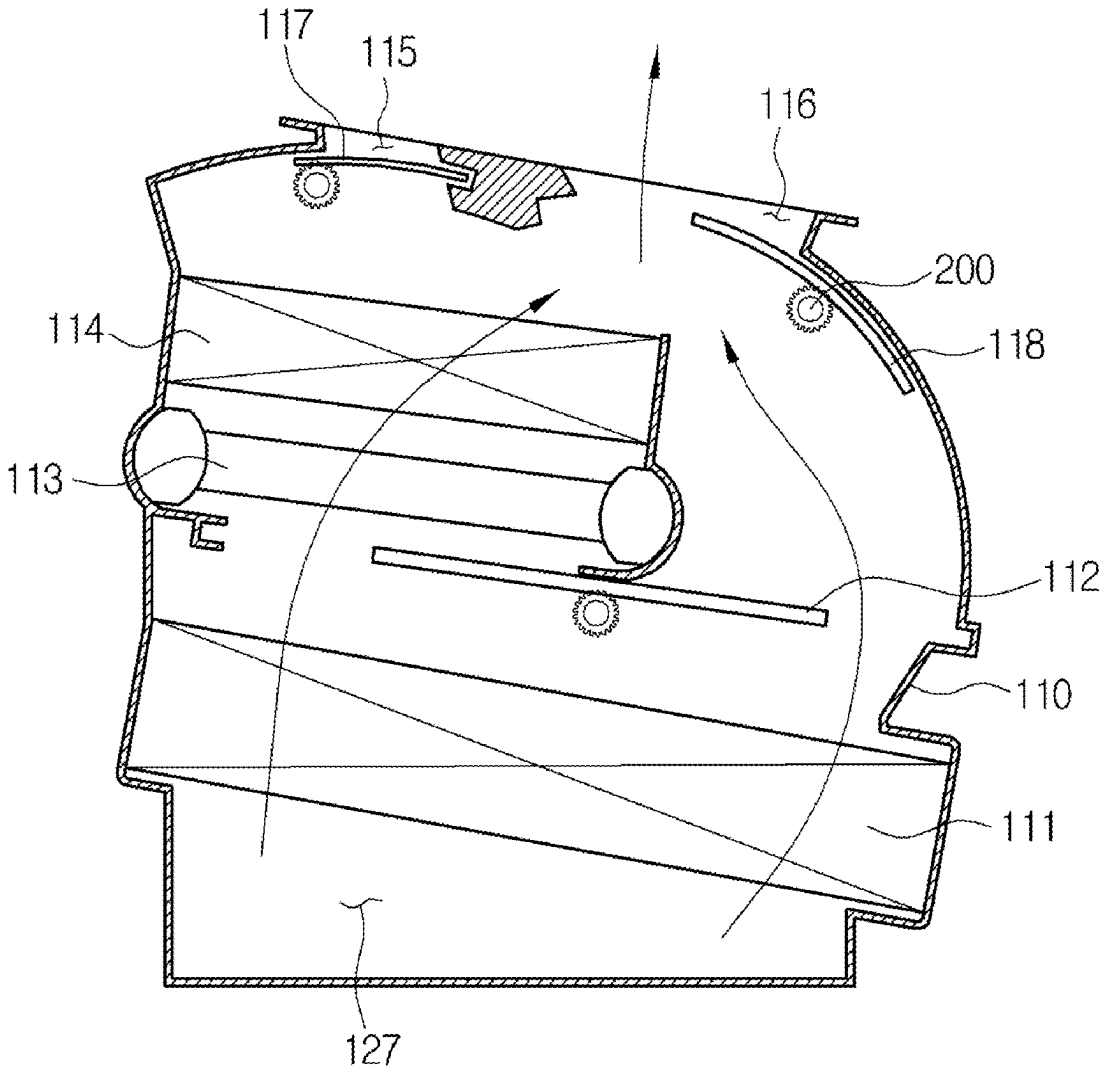
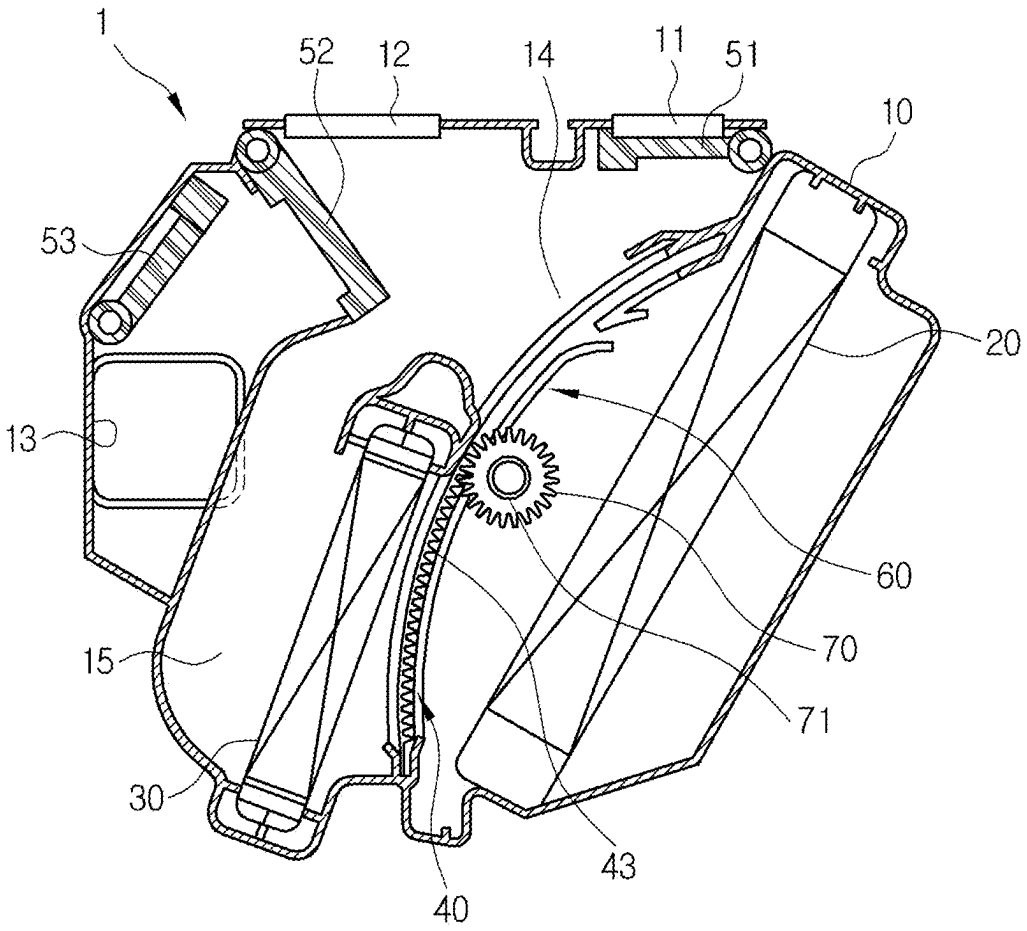


FIG. 1



PRIOR ART

FIG. 2

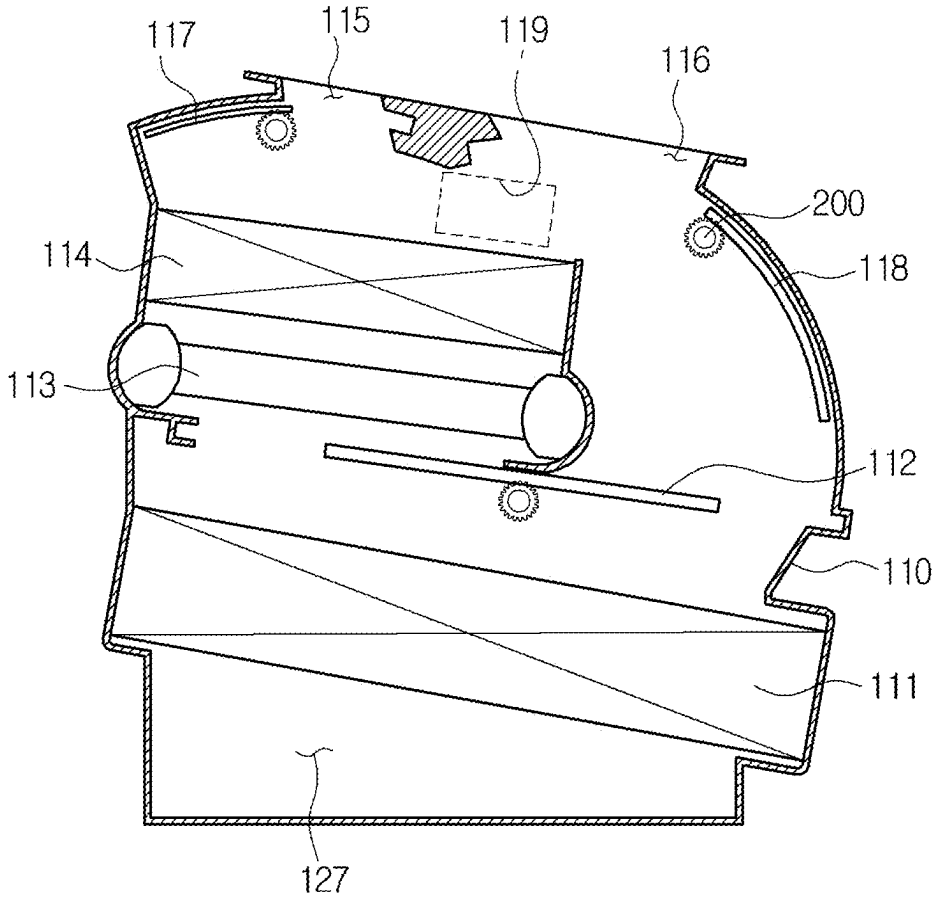


FIG. 3

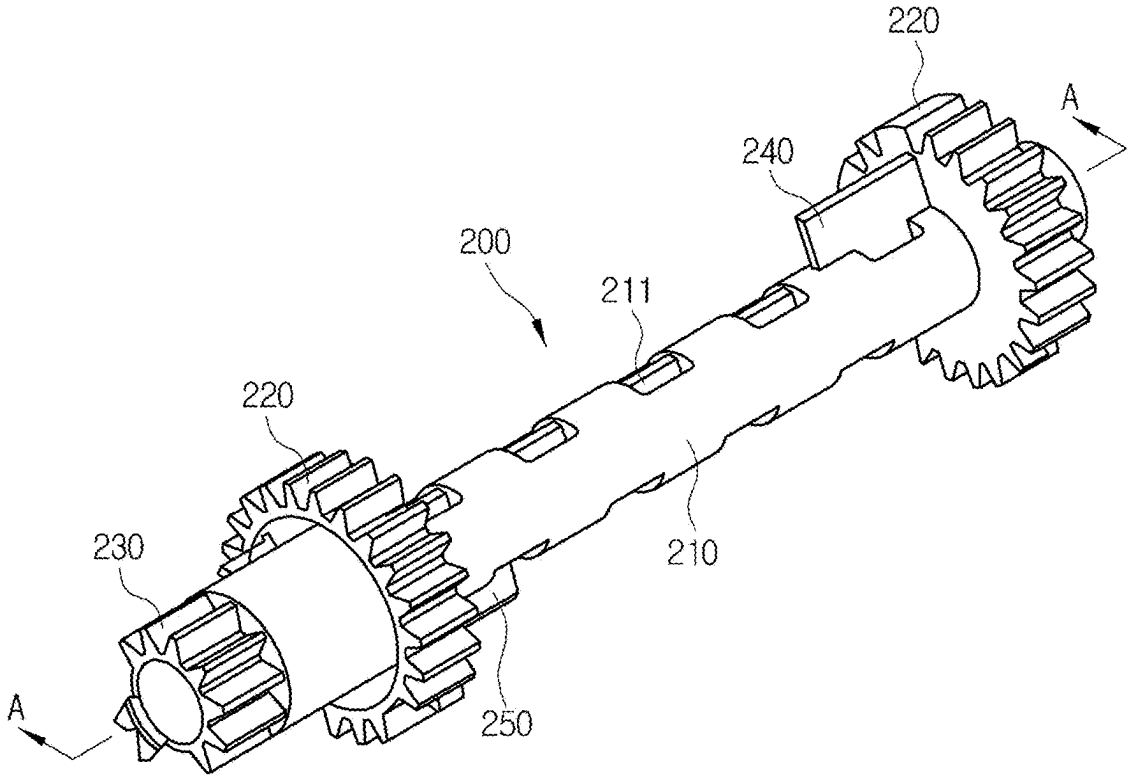


FIG. 4

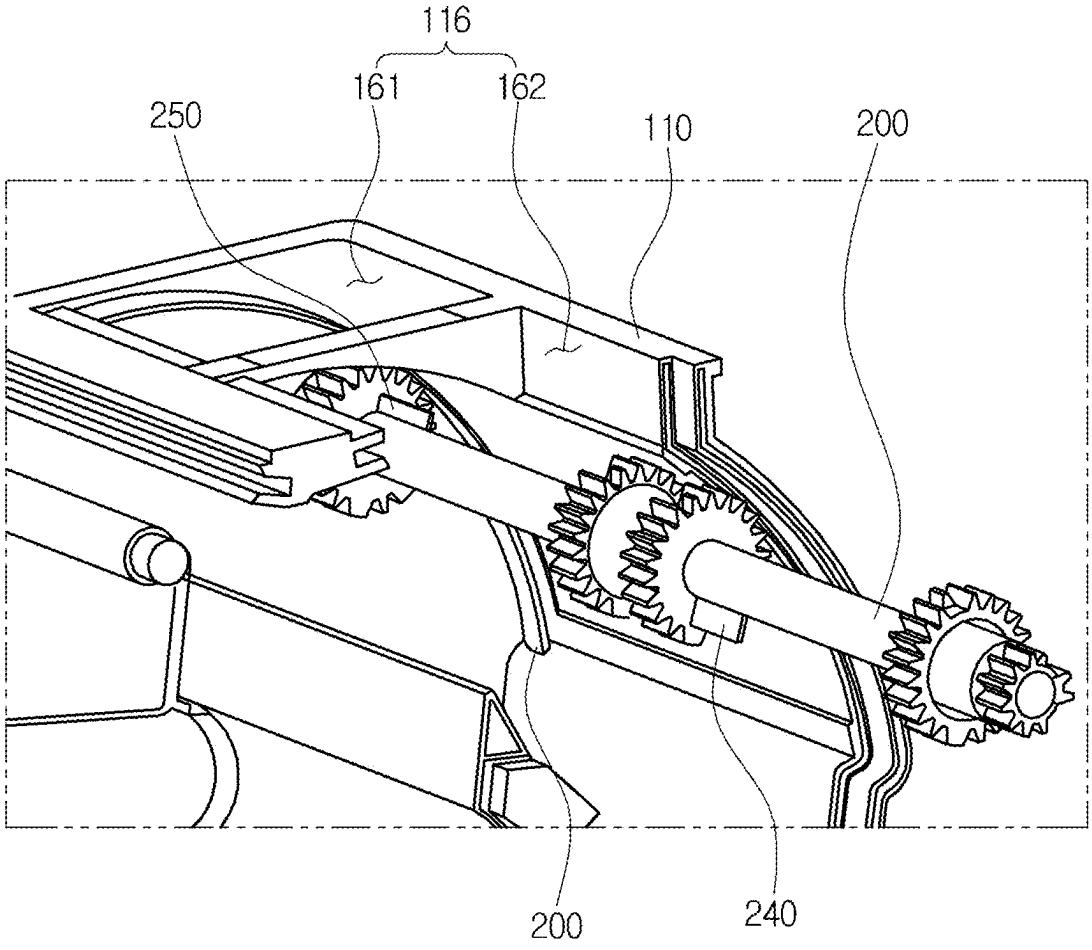


FIG. 5

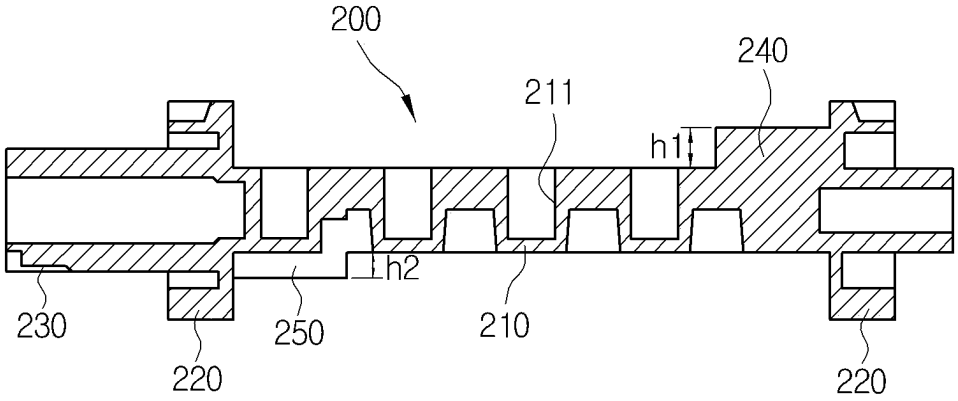


FIG. 6

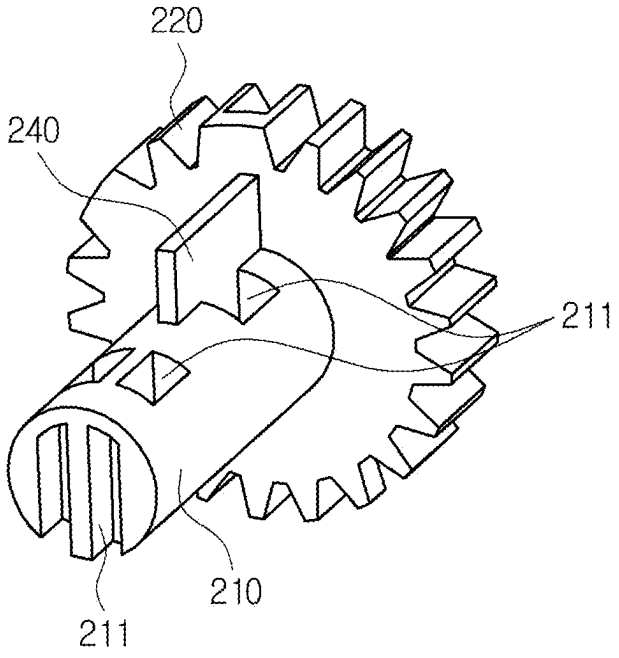


FIG. 7

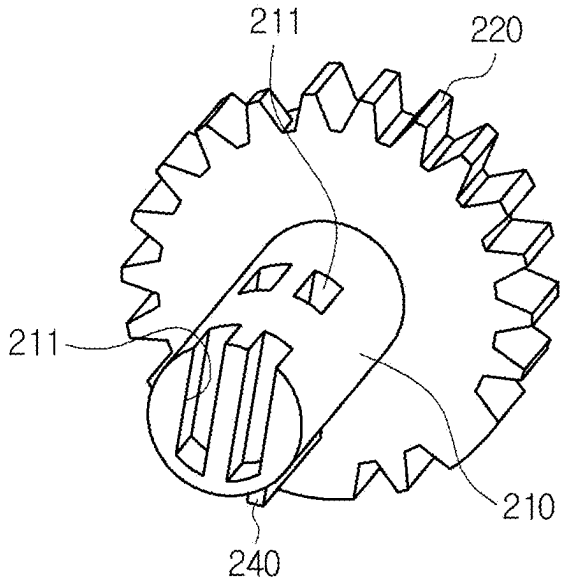


FIG. 8

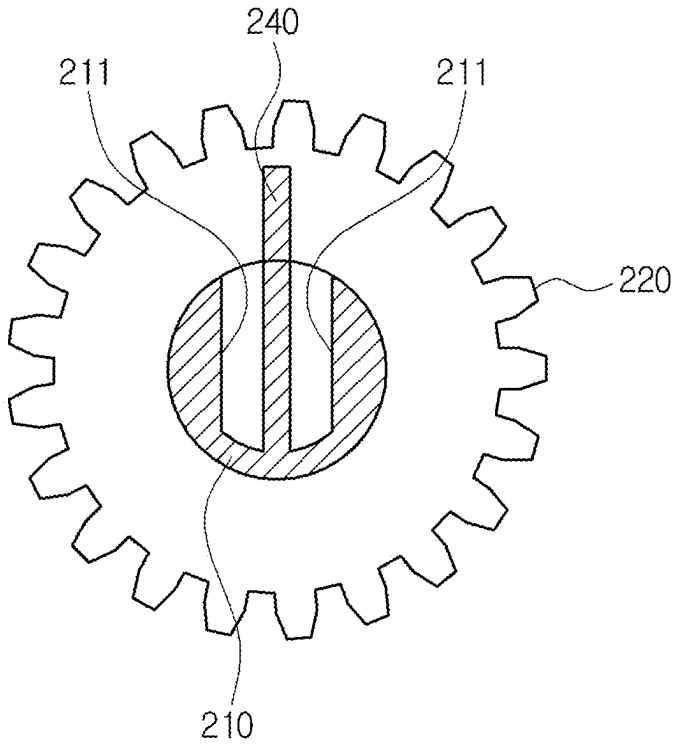


FIG. 9

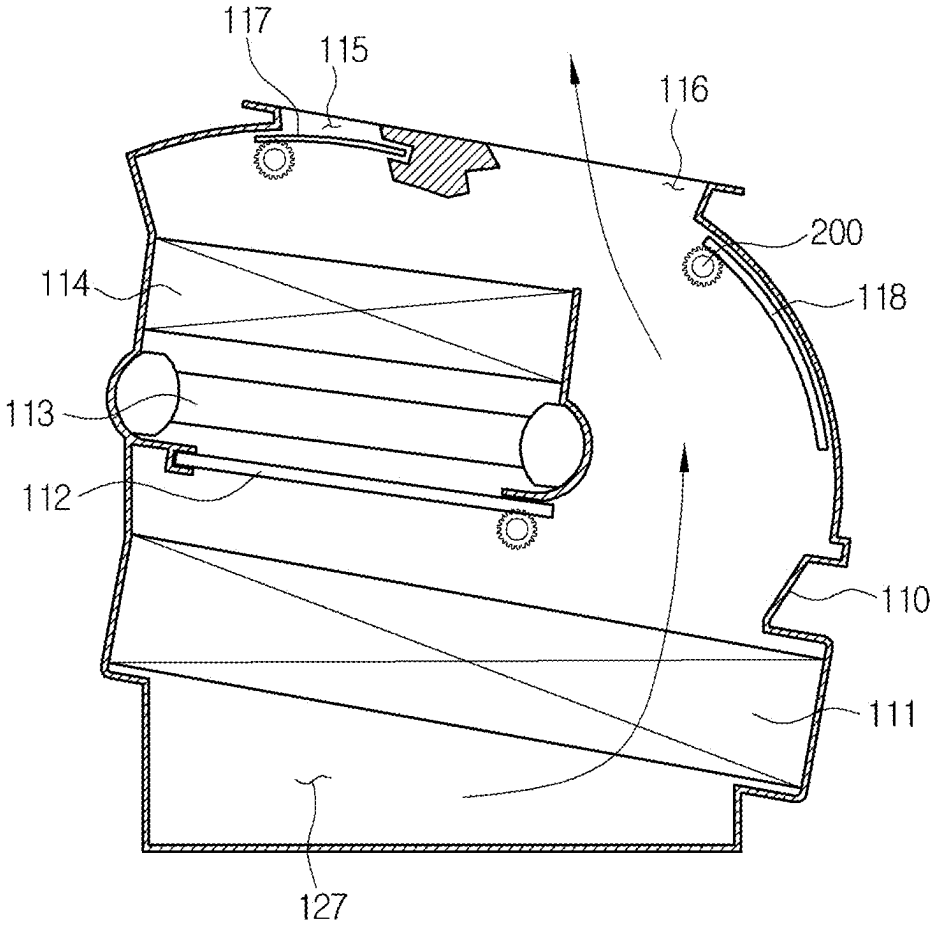


FIG. 10

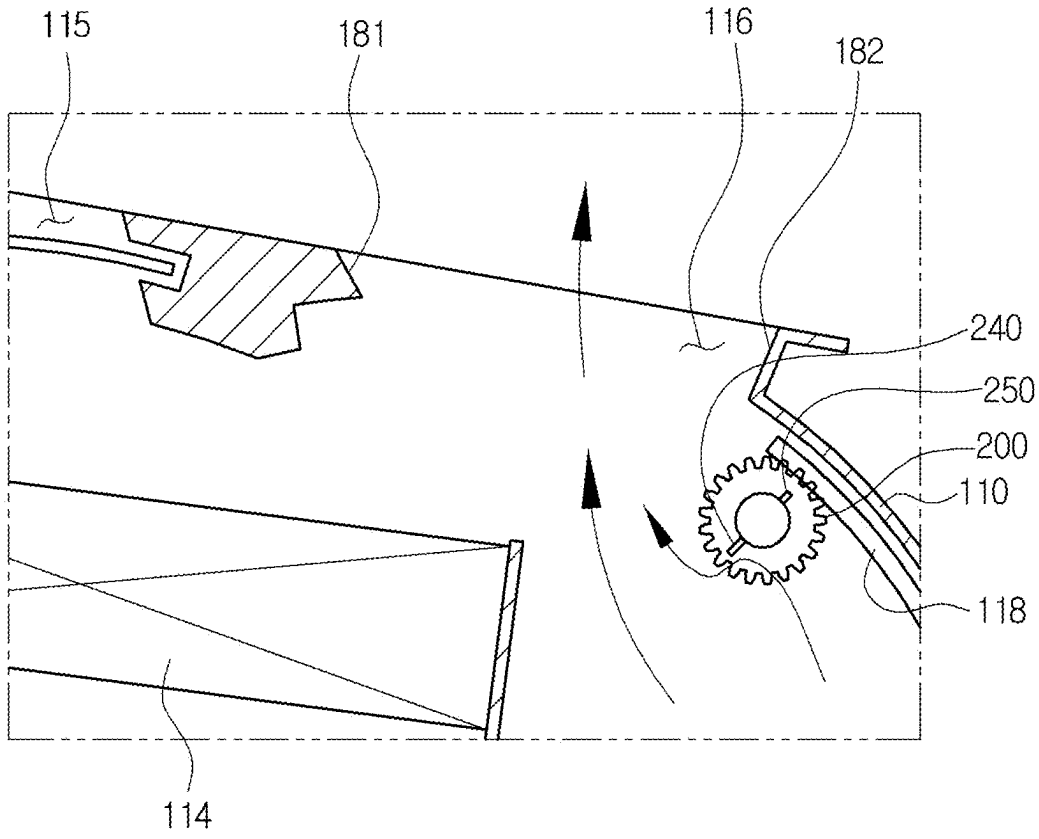


FIG. 11

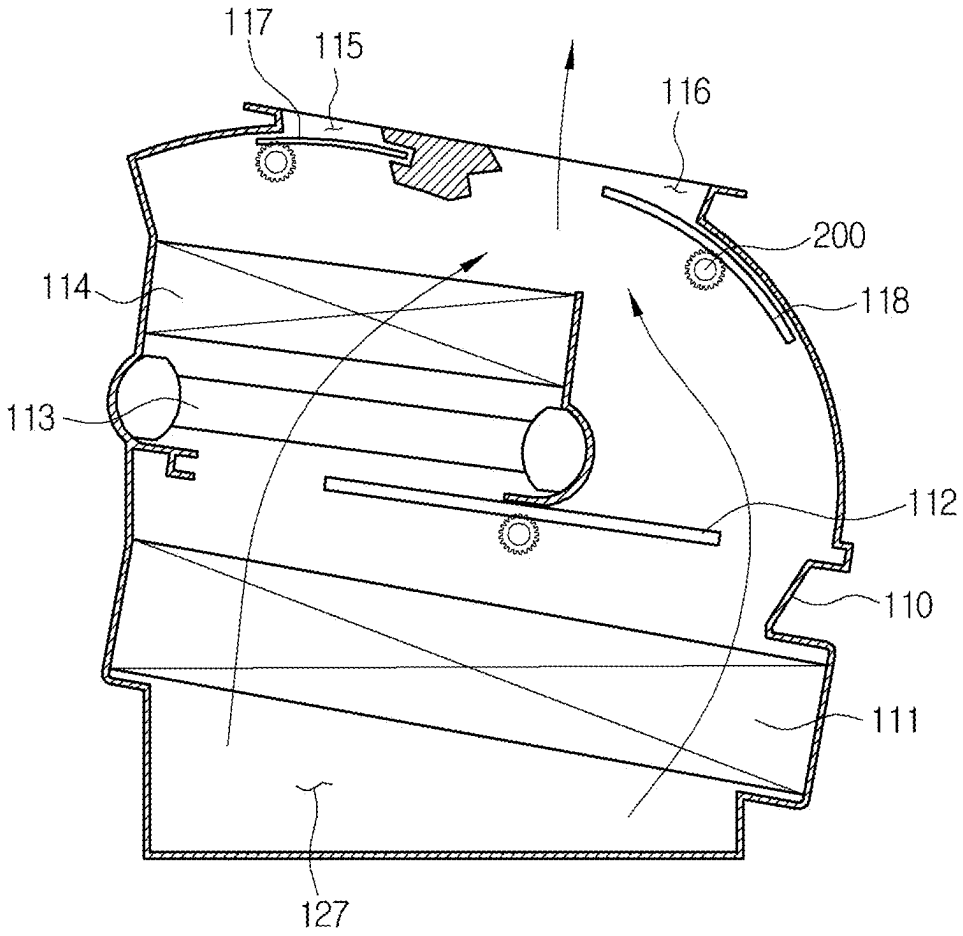


FIG. 12

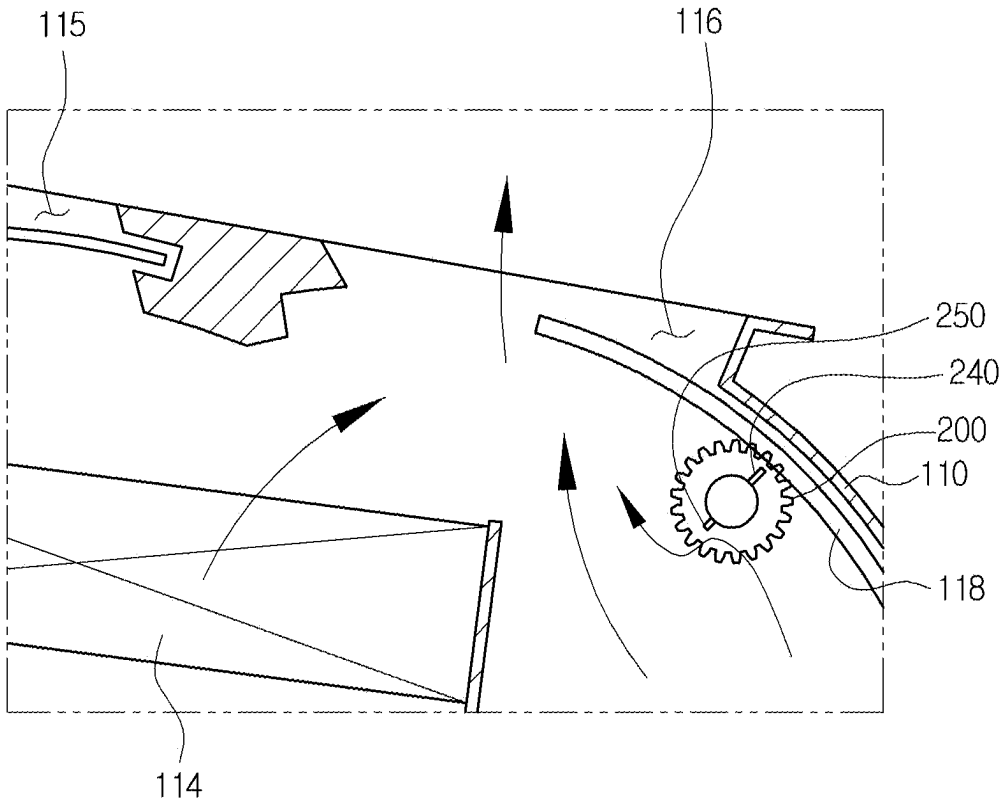


FIG. 13

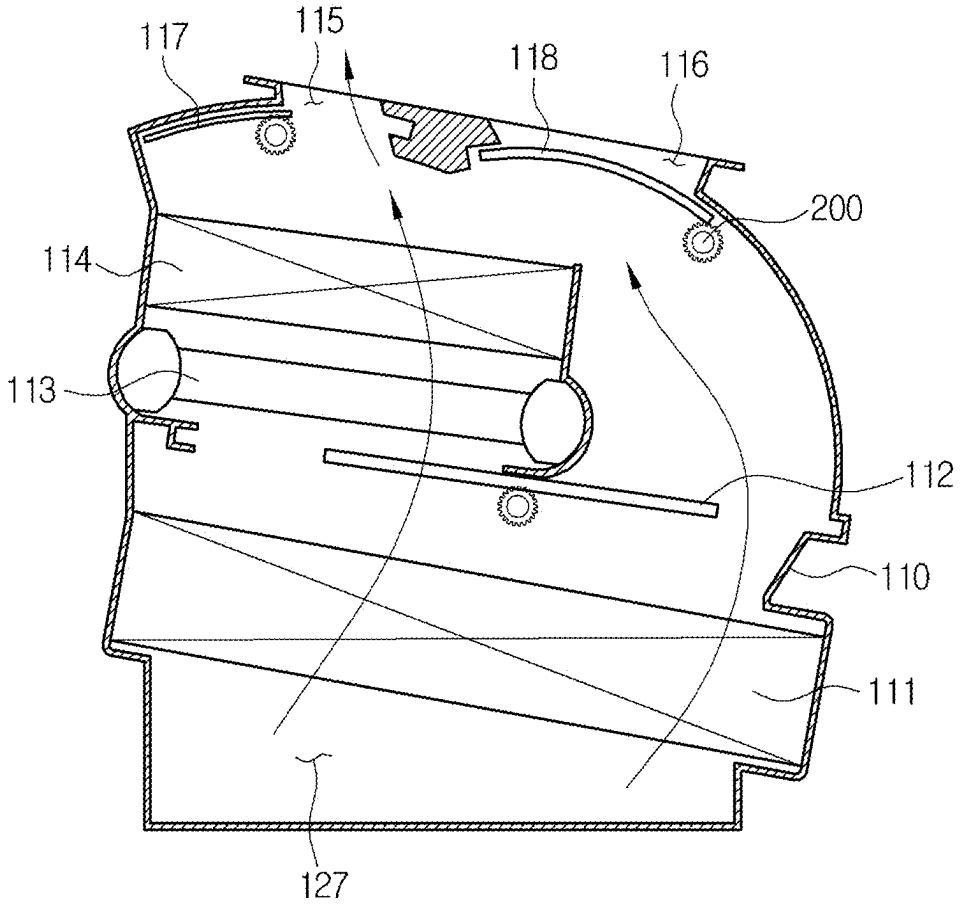
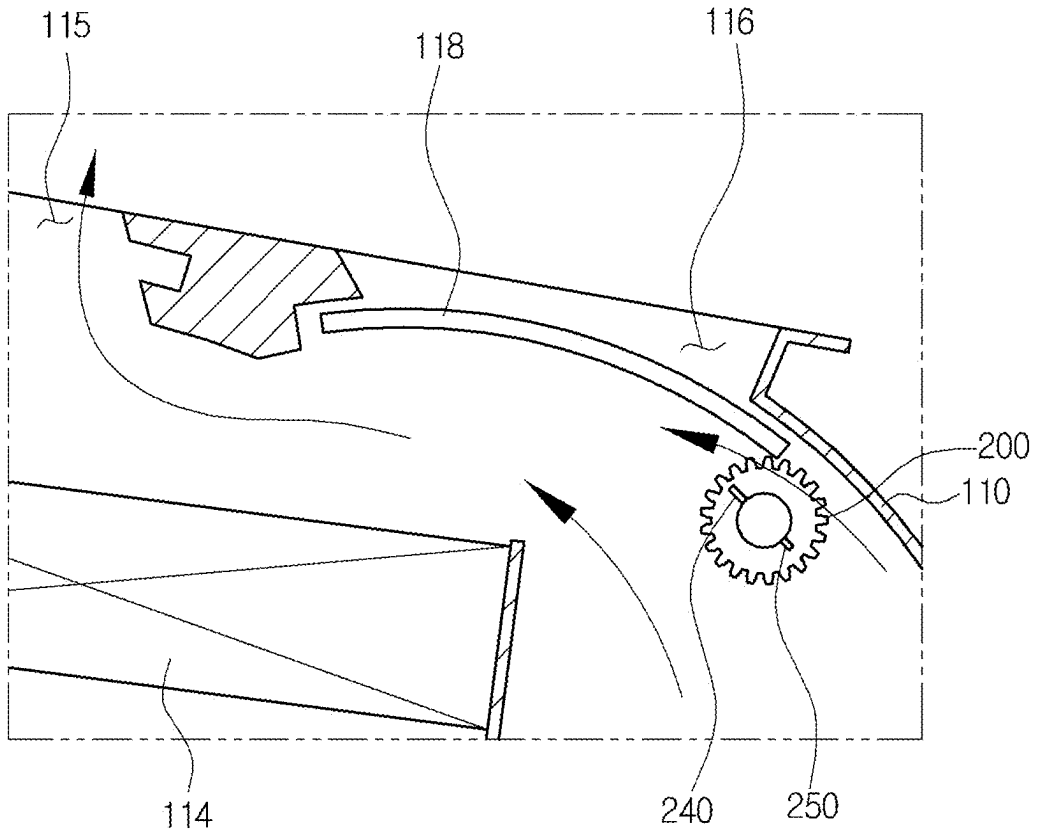


FIG. 14



AIR CONDITIONER FOR VEHICLE

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] The present application claims the benefit of priority to Korean Patent Application No. KR 10-2024-0022048, filed Feb. 15, 2024, and is incorporated herein by reference in its entirety.

BACKGROUND OF THE PRESENT INVENTION

Field of the Present Invention

[0002] The present invention relates to an air conditioner for a vehicle, and more specifically, to an air conditioner for a vehicle, in which a door for adjusting the opening degree of an air discharge port is formed in a sliding type and has an improved shaft structure.

Background Art

[0003] In general, an air conditioner for a vehicle is a vehicle interior part that is installed for the purpose of cooling or heating the interior of the vehicle in the summer or winter or securing a driver's front and rear view by removing the frost from the windshield during the rainy or winter season. The air conditioner is usually equipped with a heating system and a cooling system to selectively introduce the indoor air or the outdoor air, heat or cool the air, and blow the heated or cooled air to the interior of the vehicle, thereby cooling, heating, or ventilating the interior of the vehicle.

[0004] Referring to FIG. **1**, a conventional air conditioner **1** for a vehicle includes an air conditioning case **10**, an evaporator **20** which is a cooling heat exchanger, an indoor condenser **30** which is a heating heat exchanger, and a temperature door **40**. The evaporator **20** and the indoor condenser **30** are sequentially arranged inside the air conditioning case **10** in an air flow direction. Downstream of the indoor condenser **13** in the air flow direction, an electric heater such as a PTC heater can be provided.

[0005] The temperature door **40** adjusts the opening degree of a warm air passage **15** passing through the indoor condenser **30** and a cold air passage **14** bypassing the indoor condenser **30**, thereby controlling the interior temperature of the vehicle. The air conditioning case **10** includes a plurality of air discharge ports. The air discharge ports include a defrost vent **11**, a face vent **12**, and a floor vent **13**. The defrost vent **11** discharges wind towards the vehicle window, the face vent **12** discharges wind towards passengers' faces, and the floor vent **13** discharges wind towards the passengers' feet.

[0006] Additionally, the air conditioning case **10** includes a plurality of doors to control the opening degree of the air discharge ports. That is, the air conditioning case **10** includes a defrost door **51** for controlling the opening degree of the defrost vent **11**, a vent door **52** for controlling the opening degree of the face vent **12**, and a floor door **53** for controlling the opening degree of the floor vent **13**. The temperature door **40** is formed in a sliding type, and has a rail-shaped guide groove **60** formed on the inner wall of the air conditioning case **10** to guide the temperature door **40**.

[0007] The temperature door **40** has a driven gear **43** that meshes with a driving gear **70**. The temperature door **40** slidably moves along the guide groove **60** by the rotation of the driving gear **70**. The guide groove **60** extends in a convex arc shape in the wind direction, and the temperature door **40** is correspondingly curved to fit the guide groove **60**. The driving gear **70** has a drive shaft **71** extending in the width direction of the door.

[0008] When the conventional air conditioner for the vehicle has a door formed in a sliding type, a shaft for actuating the door is located within an air passage toward the discharge port of the face vent **12** or the floor vent **13**, obstructing the flow of air. So, cold air or warm air fails to reach a target point intended in a design, and is dispersed. Additionally, the conventional air conditioner for the vehicle has another problem in that a gear part which is a portion of the shaft blocks an air discharge area, causing uneven airflow distribution through the discharge ports.

SUMMARY OF THE INVENTION

[0009] Accordingly, the present invention has been made to solve the above-mentioned problems occurring in the prior arts, and it is an objective of the present invention to provide an air conditioner for a vehicle which has an improved shaft structure to enhance temperature controllability and adjust an air discharge volume, thereby improving airflow distribution.

[0010] To accomplish the above object, according to the present invention, there is provided an air conditioner for a vehicle including: an air conditioning case in which an air passage and a plurality of air discharge ports are formed; a cooling heat exchanger and a heating heat exchanger sequentially arranged in the air passage of the air conditioning case in an air flow direction; and a door adjusting the opening degree of the air discharge ports, wherein the door is formed in a sliding type and includes a shaft, a gear part, and a plate part which engages with the gear part to open and close the air discharge ports, and a guide part guiding the air flow direction is provided on the shaft.

[0011] The guide part is positioned between the plate part and the shaft or arranged on the opposite side of the plate part depending on the position of the shaft to guide the airflow.

[0012] The shaft is placed on one side of the air discharge port.

[0013] The guide part includes a baffle which protrudes on the shaft in a radial direction.

[0014] The baffle rotates integrally with the shaft as the door moves.

[0015] The door includes a vent door which adjusts the opening degree of the face vent, and the baffle is formed on the shaft of the vent door.

[0016] The face vent is partitioned into a center vent and a side vent in the vehicle width direction, and the baffle includes a center vent baffle formed at a position corresponding to the center vent and a side vent baffle formed at a position corresponding to the side vent.

[0017] The center vent baffle and the side vent baffle are positioned at different locations in the circumferential direction of the shaft.

[0018] The center vent baffle and the side vent baffle are positioned 180° apart from each other in the circumferential direction of the shaft, protruding in opposite directions to each other.

[0019] The center vent baffle and the side vent baffle are formed only on a portion of an end of the shaft in an axial direction.

[0020] The center vent baffle protrudes further in the radial direction of the shaft than the side vent baffle.

[0021] The shaft includes a plurality of recessed sliming parts, and the baffle protrudes parallel to the recessed direction of the sliming parts.

[0022] The baffle is positioned perpendicular to the air flow direction to suppress the flow of air discharged to the face vent during an air conditioning mode where the vent door opens the face vent.

[0023] The protrusion length of the baffle is formed to be smaller than the radius of the gear part of the shaft.

[0024] Depending on the air conditioning mode, the center vent baffle or the side vent baffle is positioned to suppress the airflow, selectively reducing the airflow to the center vent or the side vent.

[0025] In a vent mode where air is discharged only to the face vent, the center vent baffle is positioned to suppress the airflow.

[0026] In a bi-level mode where air is discharged to the face vent and the floor vent, the side vent baffle is positioned to suppress the airflow.

[0027] In a floor mode where air is discharged to the floor vent or in a defrost mode where air is discharged to the defrost vent, the center vent baffle and the side vent baffle are positioned parallel to the air flow direction.

[0028] The air conditioner for the vehicle according to the present invention can use the disadvantage of the shaft acting as a resistor, achieve a desired airflow by additionally installing a baffle as a resistor onto the shaft, improve the temperature controllability of cold air and warm air, and adjust the discharged airflow to enhance airflow distribution.

BRIEF DESCRIPTION OF THE DRAWINGS

[0029] FIG. **1** is a side sectional view illustrating a conventional air conditioner for a vehicle.

[0030] FIG. **2** is a side sectional view illustrating an air conditioner for a vehicle according to an embodiment of the present invention.

[0031] FIG. **3** is a perspective view illustrating a shaft of the air conditioner for the vehicle according to an embodiment of the present invention.

[0032] FIG. **4** is an exploded perspective views illustrating the interior of an air conditioning case having a shaft installed according to an embodiment of the present invention.

[0033] FIG. **5** is a cross-sectional view taken along line A-A of FIG. **3**.

[0034] FIGS. **6** and **7** are perspective views of the shaft partially cut in a horizontal direction according to an embodiment of the present invention.

[0035] FIG. **8** is a cross-sectional view of the shaft cut in the horizontal direction according to an embodiment of the present invention.

[0036] FIG. **9** is a view of a vent mode of the air conditioner for a vehicle according to an embodiment of the present invention.

[0037] FIG. **10** is an enlarged view of the shaft in FIG. **9**.

[0038] FIG. **11** illustrates a bi-level mode of the air conditioner for the vehicle according to an embodiment of the present invention.

[0039] FIG. **12** is an enlarged view of the shaft in FIG. **11**.

[0040] FIG. **13** illustrates a defrost mode of the air conditioner for the vehicle according to an embodiment of the present invention.

[0041] FIG. **14** is an enlarged view of the shaft in FIG. **13**.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0042] Hereinafter, referring to the drawings, the technical configuration of an air conditioner for a vehicle will be described in detail.

[0043] Referring to FIGS. **2** to **8**, the air conditioner for a vehicle according to an embodiment of the present invention is a slim-type air conditioner with a horizontally arranged heat exchanger type, and has a relatively thin vertical width. The air conditioner for a vehicle according to an embodiment of the present invention includes an air conditioning case **110**, a cooling heat exchanger, a heating heat exchanger. In the description below, the left-right direction in FIG. **2** corresponds to the vehicle's front-rear direction, while the left-right direction in FIG. **5** corresponds to the vehicle's width direction.

[0044] The air conditioning case **110** includes an air passage and is a slim type with a narrow vertical width. The air conditioning case **110** includes an air inflow port **127** and a plurality of air discharge ports. An air blower for blowing air into the air conditioning case **110** is connected to the air inflow port **127**. The air blower selectively introduces inside air or outside air and blows the air into the air conditioning case **110**.

[0045] Moreover, the air inflow port **127** is located below the cooling heat exchanger so that air flows from the bottom to the top. The air discharge ports of the air conditioning case **110** includes a defrost vent **115**, a face vent **116**, and a floor vent **119**. The defrost vent **115** is formed to direct air toward the vehicle windows, the face vent **116** is formed to direct air toward the front seat passengers' faces, and the floor vent **119** is formed to direct air toward the front seat passengers' feet. The floor vent **119** is formed on the side of the air conditioning case **110** to guide air toward the lower portion of the vehicle through a duct.

[0046] The cooling heat exchanger is an evaporator **111**, and the heating heat exchanger is an indoor condenser **113**. An electric heater **114** such as a PTC heater is provided downstream of the indoor condenser **113** in the air flow direction. The evaporator **111** and the indoor condenser **113** are connected in a refrigerant circulation line connecting a compressor, an expansion valve, etc., to act as a cooling means or a heating means depending on the refrigerant state. That is, the refrigerant passing through the evaporator **111** exchanges heat with air to cool the air, and the refrigerant passing through the indoor condenser **113** exchanges heat to heat the air.

[0047] The evaporator **111** and the indoor condenser **113** are sequentially arranged in the air passage of the air conditioning case **110** in the air flow direction. The evaporator **111**, the indoor condenser **113**, and the electric heater **114** are all arranged horizontally. That is, the internal passage of the air conditioning case **110** is vertically oriented relative to the ground, directing the airflow route from the lower part to the upper part in the direction of gravity. In addition, the cooling heat exchanger and the heating heat exchanger on the internal passage are arranged sequentially from the bottom to the top in the direction of gravity corresponding to the air flow route.

[0048] As described above, the heat exchangers are arranged horizontally relative to the ground surface or inclined at a predetermined angle to be close to the horizontal. That is, air is introduced into the air inflow port **127** at the lower side of the air conditioning case **110** and flows upwards. From below, the evaporator **111**, the indoor condenser **113**, and the electric heater **114** are arranged in sequence.

[0049] The air conditioner for a vehicle includes a temperature door **112** and a plurality of doors. The temperature door **112** is placed between the evaporator **111** and the indoor condenser **113**. The temperature door **112** controls the opening degree between the warm air passage passing through the indoor condenser **113** and the cold air passage bypassing the indoor condenser **113** to adjust the interior temperature of the vehicle. That is, the temperature door **112** adjusts the amount of air passing through or the amount of air bypassing the indoor condenser **113** and the electric heater **114** according to the position thereof.

[0050] The temperature door **112** is a plate door that slides horizontally within the air conditioning case **110**, adjusting the opening degree between the cold air passage and the warm air passage. The sliding-type temperature door **112** helps reduce the height of the air conditioning case **110**. The doors adjust the opening degree of the air discharge ports. The doors are provided to adjust the opening degree of the air discharge ports, and include a defrost door **117** for adjusting the opening degree of the defrost vent **115**, a vent door **118** for adjusting the opening degree of the face vent **116**, and a floor door for adjusting the opening degree of the floor vent **119**.

[0051] A separator which divides the inside of the air conditioning case **110** into the left and right in a vehicle width direction is provided within the air conditioning case **110**. The separator divides the air passage of the air conditioning case **110** into the left and right, enabling right and left independent air conditioning for the driver's seat and the front passenger's seat. The air passage inside the air conditioning case **110** is divided into a left passage and a right passage by the separator.

[0052] Meanwhile, the face vent **116** includes a center vent **162** and side vents **161** partitioned in the vehicle width direction. Specifically, the left passage divided by the separator is partitioned into the center vent **162** and the side vent **161** by a partition wall, and the right passage is also divided into the center vent **162** and the side vent **161** by a partition wall. Consequently, the center vent **162** is formed at the central portion in the vehicle width direction, and the side vents **161** are positioned on both sides.

[0053] In this instance, the door is actuated in a sliding type. The door includes a shaft **200**, a gear part, and a plate part. The plate part engages with the gear part to open and close the air discharge port. Additionally, the door shaft **200** includes a guide part. The guide part functions to guide the airflow toward the air discharge port when the air moves in the same direction as the movement of the door. The guide part includes a baffle. The baffle is formed to protrude radially from the shaft.

[0054] In an embodiment of the present invention, the baffle is formed on the shaft **200** of the vent door **118**. The baffle rotates integrally with the shaft **200** as the vent door **118** slides. Therefore, the position and angle of the baffle vary depending on the position of the vent door **118**. When positioned perpendicularly to the air flow direction, the baffle acts as a wall which blocks the airflow and guides the air flow direction. When aligned parallel to the air flow direction, the baffle has minimal effect on the airflow.

[0055] The guide part is positioned between the plate part and the shaft or positioned on the opposite side of the plate part depending on the position of the shaft **200** to guide the airflow. That is, the guide part is located to guide the air during the air conditioning modes as needed, but is positioned parallel to the air flow direction not to obstruct the airflow during the air conditioning modes where the guide part is not necessary.

[0056] Additionally, the shaft **200** is placed on one side of the air discharge port. As illustrated in FIG. **10**, the shaft **200** is located on one side of the face vent **116**. That is, the shaft **200** is arranged outside an area between a starting end **182** and a terminating end **181** of the air discharge port. In this embodiment, the shaft **200** is installed on one side of the starting end **182** of the air discharge port. If the shaft **200** is positioned at the terminating end **181** or at the center of the air discharge port in the air flow direction, the guide part cannot perform the guiding function effectively. Thus, the shaft **200** is arranged at the starting end **182** of the air discharge port in the air flow direction.

[0057] The shaft **200** of the vent door **118** includes a cylindrical body part **210**, and gear parts **220** formed on both sides of the body part **210**. The gear parts **220** are located on both sides of the body part **210** in the longitudinal direction, which corresponds to the vehicle width direction. The gear parts **220** engage with gear teeth formed on the vent door **118**. So, as the shaft **200** rotates, the vent door **118** slides. A driving gear **230**, which is connected to a power source such as an actuator or power transmission means like arms and cams, is formed on one side of the body part **210**.

[0058] The shaft **200** includes a plurality of recessed sliming parts **211**. The sliming parts **211** are recessed inward on the outer circumferential surface of the body part **210**, reducing the weight of the shaft **200** and improving the structural strength. The sliming parts **211** are alternately formed in a zigzag pattern on one side and the other side of the body part **210**. In this case, the baffle is formed to protrude parallel to the recessed direction of the sliming parts **211**. Therefore, the baffle can be formed integrally with the shaft since a mold can be took out at the time of injection-molding of the shaft **200**.

[0059] Additionally, the protrusion length of the baffle is formed to be smaller than the radius of the gear part **220** of the shaft **200**. Therefore, the baffle can rotate smoothly without interfering with the vent door **118** during the rotation of the shaft **200**.

[0060] More specifically, the baffle includes a center vent baffle **240** and a side vent baffle **250**. The center vent baffle **240** is positioned at a location corresponding to the center vent **162**, and the side vent baffle **250** is positioned at a location corresponding to the side vent **161**. The center vent baffle **240** serves as a means to increase resistance of air discharged to the center vent **162** and guide the airflow, whereas the side vent baffle **250** serves as a means to increase resistance of air discharged to the side vent **161** and guide the airflow.

[0061] As described above, since the center vent baffle **240** and the side vent baffle **250** are provided, the volume of air discharged to the center vent **162** and the side vent **161** can

be appropriately controlled based on the installation environment of the air conditioner and passengers' preferences of air-conditioning.

[0062] The center vent baffle **240** and the side vent baffle **250** are arranged at different positions in the circumferential direction of the shaft **200**. That is, the center vent baffle **240** and the side vent baffle **250** are positioned 180° apart from each other in the circumferential direction of the shaft **200** and protrude in opposite directions to each other. As described above, since the center vent baffle **240** and the side vent baffle **250** are arranged with 180° phase difference, during the movement of the vent door **118**, air volumes of the center vent **162** and the side vent **161** can be controlled differently depending on the opening degree of the face vent **116**.

[0063] The center vent baffle **240** and the side vent baffle **250** are formed only at a portion of an end of the shaft **200** in the axial direction. The center vent baffle **240** is formed only at a portion of the position corresponding to the center vent **162** in the vehicle width direction, and the side vent baffle **250** is formed only at a portion of the position corresponding to the side vent **161** in the vehicle width direction. Therefore, the center vent baffle **240** and the side vent baffle **250** can effectively reduce the air volumes of the center vent **162** and the side vent **161**, guide the air flow direction, and prevent a decrease in overall airflow by not blocking the entire air passage.

[0064] Furthermore, the center vent baffle **240** protrudes further in the radial direction of the shaft **200** than the side vent baffle **250**. As illustrated in FIG. **5**, a protrusion height h**1** of the center vent baffle **240** is greater than a protrusion height h**2** of the side vent baffle **250**. The center vent **162** is positioned at the center of the air conditioning case **110** in the vehicle width direction, so the airflow velocity through the center vent **162** is higher than that through the side vent **161**. Thus, since the center vent baffle **240** protrudes further than the side vent baffle **250**, the resistance of the air flowing to the center vent **162** is increased, thereby uniformly achieving the reduction in air volumes of the center vent **162** and the side vent **161** and the air flow direction guidance effect.

[0065] When the vent door **118** is in the air conditioning mode that opens the face vent **116**, the baffle is arranged perpendicular to the air flow direction to suppress the flow of the air discharged through the face vent **116** and guide the air flow direction. That is, in the air conditioning modes where the face vent **116** is closed, the baffle is aligned parallel to the air flow direction, and acts as a wall only in the air conditioning mode where the face vent **116** is opened. So, the baffle has little effect on the airflow, preventing the deterioration in air conditioning performance.

[0066] Additionally, the center vent baffle **240** or the side vent baffle **250** is positioned to suppress the airflow depending on the air conditioning modes, selectively reducing the air volume to the center vent **162** or the side vent **161** and guiding the air flow direction. As described above, the baffle which is a structure obstructing the airflow within the air conditioning case **110** is attached to the shaft **200**, thereby guiding the airflow in a desired direction. The baffle which acts as a resistor can suppress the airflow of the air discharge port (face vent) where excessive air volume is discharged and guide the air flow direction.

[0067] Thus, the air conditioner for the vehicle according to the present invention can use the disadvantage of the shaft **200** acting as a resistor, achieve a desired airflow by additionally installing a baffle as a resistor onto the shaft, improve the temperature controllability of cold air and warm air, and adjust the discharged airflow to enhance airflow distribution.

[0068] Referring to FIG. **9**, in the vent mode, the air conditioner is controlled to discharge airflow only to the face vent **116**. The defrost door **117** closes the defrost vent **115**, and the floor door closes the floor vent **119**. The vent door **118** fully opens the face vent **116**. The temperature door **112** closes the warm air passage and opens the cold air passage, such that the air passing through the evaporator **111** bypasses the indoor condenser **113** and the electric heater **114** and is discharged to the face vent **116**.

[0069] In this case, as illustrated in FIG. **10**, the center vent baffle **240** is positioned to suppress the flow of air (cold air). The center vent baffle **240** partially blocks the airflow passing through the evaporator **111**, reducing the amount of cold air discharged to the center vent **162** of the face vent **116** and guiding the air flow direction. In this instance, the side vent baffle **250** is positioned close to the vent door **118** and does not significantly affect the airflow. The above configuration can overcome the problem that the temperature of the air discharged to the center vent **162** becomes colder than that of the air discharged to the side vent **161** in the maximum vent mode.

[0070] Additionally, referring to FIG. **11**, in the bi-level mode, the air conditioner is controlled to discharge air to the face vent **116** and the floor vent **119**. The defrost door **117** closes the defrost vent **115**, and the floor door opens the floor vent **119**. The vent door **118** opens the face vent **116**. The temperature door **112** opens the warm air passage and the cold air passage such that a portion of the air passing through the evaporator **111** bypasses the indoor condenser **113** and the electric heater **114**, and another portion of the air passes through the indoor condenser **113** and the electric heater **114**.

[0071] The cold air and the warm air are mixed in the mixing zone, and then, the mixed air is discharged to the face vent **116** and the floor vent **119**. In this instance, as illustrated in FIG. **12**, the side vent baffle **250** is positioned to suppress the flow of air (cold air). The side vent baffle **250** partially blocks the airflow passing through the evaporator **111**, reducing the amount of the cold air discharged to the side vent **161** of the face vent **116** and guiding the air flow direction. In this instance, the center vent baffle **240** is positioned close to the vent door **118** and does not significantly affect the airflow. The above configuration can overcome the problem that the temperature of the air discharged to the side vent **161** becomes colder than that of the air discharged to the center vent **162** in the bi-level mode.

[0072] Furthermore, as illustrated in FIGS. **13** and **14**, in a floor mode or the defrost mode, the center vent baffle **240** and the side vent baffle **250** are aligned parallel to the air flow direction. The floor mode is a mode to discharge air to the floor vent **119**, and the defrost mode is a mode to discharge air to the defrost vent **115**. As described above, in the air conditioning modes where the face vent **116** is closed, the center vent baffle **240** and the side vent baffle **250** are positioned parallel to the air flow direction, so have little impact on the airflow without functioning as a wall and a guide.

[0073] The air conditioner for a vehicle according to the present invention has been described with reference to the embodiments illustrated in the drawings, but the embodi-

ments are merely examples. It should be apparent that modifications and variations can be made by persons skilled without deviating from the spirit or scope of the present invention. Therefore, the true scope of technical protection should be defined by the spirit of the appended claims.

What is claimed is:

1. An air conditioner for a vehicle comprising:

an air conditioning case in which an air passage and a plurality of air discharge ports are formed;

a cooling heat exchanger and a heating heat exchanger sequentially arranged in the air passage of the air conditioning case in an air flow direction; and

a door adjusting the opening degree of the air discharge ports,

wherein the door is formed in a sliding type and includes a shaft, a gear part, and a plate part which engages with the gear part to open and close the air discharge ports, and

wherein a guide part guiding the air flow direction is provided on the shaft.

2. The air conditioner according to claim **1**, wherein the guide part is positioned between the plate part and the shaft or arranged on the opposite side of the plate part depending on the position of the shaft to guide the airflow.

3. The air conditioner according to claim **1**, wherein the shaft is placed on one side of the air discharge port.

4. The air conditioner according to claim **2**, wherein the guide part includes a baffle which protrudes on the shaft in a radial direction.

5. The air conditioner according to claim **4**, wherein the baffle rotates integrally with the shaft as the door moves.

6. The air conditioner according to claim **5**, wherein the door includes a vent door which adjusts the opening degree of a face vent, and

wherein the baffle is formed on the shaft of the vent door.

7. The air conditioner according to claim **6**, wherein the face vent is partitioned into a center vent and a side vent in the vehicle width direction, and

wherein the baffle includes a center vent baffle formed at a position corresponding to the center vent and a side vent baffle formed at a position corresponding to the side vent.

8. The air conditioner according to claim **7**, wherein the center vent baffle and the side vent baffle are positioned at different locations in the circumferential direction of the shaft.

9. The air conditioner according to claim **8**, wherein the center vent baffle and the side vent baffle are positioned 180° apart from each other in the circumferential direction of the shaft, protruding in opposite directions to each other.

10. The air conditioner according to claim **7**, wherein the center vent baffle and the side vent baffle are formed only on a portion of an end of the shaft in an axial direction.

11. The air conditioner according to claim **7**, wherein the center vent baffle protrudes further in the radial direction of the shaft than the side vent baffle.

12. The air conditioner according to claim **6**, wherein the shaft includes a plurality of recessed sliming parts, and

wherein the baffle protrudes parallel to the recessed direction of the sliming parts.

13. The air conditioner according to claim **6**, wherein the baffle is positioned perpendicular to the air flow direction to suppress the flow of air discharged to the face vent during an air conditioning mode where the vent door opens the face vent.

14. The air conditioner according to claim **6**, wherein the protrusion length of the baffle is formed to be smaller than the radius of the gear part of the shaft.

15. The air conditioner according to claim **7**, wherein depending on the air conditioning mode, the center vent baffle or the side vent baffle is positioned to suppress the airflow, selectively reducing the airflow to the center vent or the side vent.

16. The air conditioner according to claim **7**, wherein in a vent mode where air is discharged only to the face vent, the center vent baffle is positioned to suppress the airflow.

17. The air conditioner according to claim **7**, wherein in a bi-level mode where air is discharged to the face vent and the floor vent, the side vent baffle is positioned to suppress the airflow.

18. The air conditioner according to claim **7**, wherein in a floor mode where air is discharged to the floor vent or in a defrost mode where air is discharged to the defrost vent, the center vent baffle and the side vent baffle are positioned parallel to the air flow direction.

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