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(54) **CONDENSER WITH AIR CONDITIONER OIL SEPARATOR**

KONDENSATOR MIT ÖLABSCHEIDER EINER KLIMAAANLAGE

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(56) References cited:

CN-A- 102 221 274 CN-A- 103 727 713
CN-A- 104 713 280 CN-A- 106 440 574
CN-A- 107 940 833 CN-B- 104 833 139
CN-U- 205 351 864 GB-A- 1 490 590

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Description

Technical Field

[0001] The disclosure relates to a field of refrigeration technology, in particular to an air conditioner oil separator, a condenser, and an air conditioner.

Background

[0002] With a development of air conditioning condenser unit, in order to simplify connection pipelines outside of a unit and beautify an appearance of the unit, external independent oil separators of many condenser units are canceled, and a component with an oil-gas separation function is disposed on an inner top of a housing of the condenser, to make full use of a top space of the housing of the condenser.

[0003] Fig. 1 shows a structure diagram of a condenser known to the inventors. As shown in Fig. 1, an air conditioner condenser known to the inventors includes a housing 1', and an inlet 2' and an outlet 3' disposed on the housing 1'. Both the inlet 2' and the outlet 3' are disposed on a first end of the housing 1'. The condenser further includes a first pipeline and a second pipeline disposed in the housing 1'.

[0004] A first end of the first pipeline communicates with the inlet 2', a first end of the second pipeline communicates with the outlet, and a second end of the second pipeline communicates with a second end of the first pipeline.

[0005] There is also a support plate 5 for supporting the first pipeline and the second pipeline arranged in the housing 1'.

[0006] A first hole matching with the first pipeline and a second hole matching with the second pipeline are disposed on the support plate 5. The first pipeline is disposed in the first hole in a penetrating manner, and the second pipeline is disposed in the second hole in a penetrating manner.

[0007] There are a plurality of first pipelines, and all the first ends of the plurality of first pipelines communicate with the inlet 2'.

[0008] There are a plurality of second pipelines, and all the first ends of the plurality of second pipelines communicate with the outlet 3'.

[0009] There is also an oil separator 4 arranged in the housing 1'.

[0010] The oil separator 4 is on the inner top of the housing 1' of the condenser.

[0011] Fig. 2 shows a structure diagram of an oil separator known to the inventors. As shown in Fig. 2, the oil separator includes a chamber. A gas inlet 2 for introducing a refrigerant to be separated and a gas outlet 6 for outputting the separated refrigerant are disposed on the chamber. The gas inlet 2 and the gas outlet 6 are arranged on a same side face of the chamber. In some embodiments, both the gas inlet 2 and the gas outlet 6

are disposed on an upper end of the chamber.

[0012] An exhaust port of a compressor communicates with the gas inlet 2 of the oil separator 4. The refrigerant separated by the oil separator 4 is discharged from gas outlet 6 to the inner cavity of the housing 1 of the condenser, and performs heat exchange with a medium in the first pipeline and the second pipeline.

[0013] As shown in Fig. 2, a width of the chamber shrinks along the direction away from the gas outlet 6. An end, away from the gas outlet 6, of the chamber is provided with an oil drainage port 9 for draining an oil separated from the refrigerant.

[0014] The refrigerant changes a flow direction after entering the chamber through the gas inlet 2, and finally flows out from the chamber of the oil separator 4 through the gas outlet 6. In a process of the refrigerant changing the flow direction, the oil is separated from the refrigerant under the inertia effect. In order to further improve a separation efficiency of the oil separator 4, there is a filter component 8 disposed at the gas outlet 6, to further separate the oil in the refrigerant.

[0015] Pressures of airflow in areas at different distances from the gas outlet 6 and the gas inlet 2 are different too. In order to ensure that the separation efficiencies of the refrigerants output from all the areas of the gas outlet 6 achieve a predetermined effect, filtering performance of the filter component 8 is designed by the standard of a requirement of the area with the maximum pressure of airflow. Therefore, in the area with the relatively low pressure of airflow, the performance of the filter component 8 causes an unnecessary waste, and the filter component in the area produces unnecessary resistance to airflow. Therefore, the filter component 8 with single performance arranged at the outlet of the oil separator 4 is an unnecessary waste for the area with relatively low pressure of airflow, and causes an airflow blockage to the area with relatively low pressure of airflow.

[0016] A heat exchange apparatus and condenser with built-in oil separation system is disclosed in D1(CN104833139B); An oil separator, condenser and refrigeration device is disclosed in D2(CN106440574A).

Summary

[0017] The invention is defined by the appended set of claims.

[0018] Other characteristics and advantages of the disclosure will become clear by describing the exemplary embodiments of the disclosure in detail with reference to the following accompanying drawings.

Brief Description of the Drawings

[0019] In order to more clearly illustrate technical solutions in the embodiments of the disclosure or the technology known to inventors, the accompanying drawings needed in description of the embodiments or the technology known to inventors are simply introduced below.

It is apparent that the accompanying drawings in the following description are only some embodiments of the disclosure, for the ordinary skill in the art, some other accompanying drawings are also obtained according to these on the premise of not contributing creative effort.

Fig. 1 illustrates a structure diagram of a condenser of an air conditioner known to inventors.

Fig. 2 illustrates a structure diagram of an oil separator in a condenser of an air conditioner known to inventors.

Fig. 3 illustrates a structure diagram of an air conditioner oil separator for a condenser according to the invention.

Fig. 4 illustrates a partial enlarged drawing of Fig. 3.

[0020] The above accompanying drawings include the following reference numbers:

1, chamber; 2, gas inlet; 3, filter component; 31, first filter area; 32, second filter area; 33, third filter area; 4, baffle.

Detailed Description of the Embodiments

[0021] The technical solutions in the embodiments of the disclosure will be clearly and fully described below in combination with the drawings in the embodiments of the disclosure. It is apparent that the described embodiments are not all embodiments but part of embodiments of the disclosure. The description of at least one exemplary embodiment below is actually just illustrative, and is never seen as any limit to the disclosure and its application or use. The scope of protection is defined by the appended claims.

[0022] In combination with Fig. 3 and Fig. 4, the condenser according to the invention comprises an air conditioner oil separator including a chamber 1, a gas inlet 2 disposed on the chamber 1 and a gas outlet disposed on the chamber 1. The gas inlet 2 and the gas outlet are arranged on a same side face of the chamber 1. The gas outlet is provided with a filter component 3. The filter component 3 is configured to filter oil mixed in a refrigerant.

[0023] The gas outlet extends in a length direction of the oil separator. In some embodiments, the gas outlet includes a first gas outlet and a second gas outlet respectively disposed at two sides of the gas inlet 2, to shorten a length of each gas outlet, thus a pressure difference of airflow between the two gas outlets is reduced.

[0024] In some embodiments, the air conditioner oil separator further includes a baffle 4 disposed in the chamber 1. The baffle 4 is opposite to the gas inlet 2. After entering the chamber 1, the refrigerant to be separated first impacts with the baffle 4. After the refrigerant to be separated impacts with the baffle 4, because oil and gaseous refrigerant have different inertias, the oil and the gaseous refrigerant are separated for the first time.

[0025] After the first separation, the refrigerant mixed with less oil moves to the two sides of the gas inlet 2, and

then enters the condenser after being filtered by the filter component 3, and performs heat exchanger with other media in the condenser.

[0026] Because of an inertia effect of airflow, pressures of airflow of various areas in a direction away from the gas inlet 2 in the chamber 1 are different. If the filter component 3 with single performance is adopted, because the pressures of the airflows passing through the various areas of the filter component 3 are different, correspondingly the pressures of the airflows after passing through the filter component 3 are not uniform.

[0027] In some embodiments, the performance of the filter component 3 is a separation efficiency of the filter component, namely a ratio between oil content of the refrigerant before passing through the filter component 3 and oil content of the refrigerant after passing through the filter component 3. Generally, the greater a thickness of the filter component 3, the higher the separation efficiency, correspondingly, the greater the resistance to the refrigerant; the greater the density of the filter component 3, the higher the separation efficiency, correspondingly, the greater the resistance to the refrigerant. In some embodiments, the separation efficiency of the filter component 3 is also related to the material of the filter component 3.

[0028] In order to ensure that a filtering effect of the filter component 3 on the refrigerant at any position achieves a predetermined requirement, the performance of the filter component 3 with single performance is often designed to the highest requirements. The better the filtering performance of the filter component 3, the greater the resistance to the airflow of the refrigerant, so the resistance of the filter component 3 to the refrigerant in an area with relatively low pressure of airflow is too great.

[0029] To solve the above problem, the filter component 3 according to the invention includes a first filter area 31, a second filter area 32 and a third filter area 33 sequentially disposed in a direction close to the gas inlet 2. The third filter area 33 is close to the gas inlet 2. The third filter area 33 is also a filter area closest to the gas inlet 2 of multiple filter areas.

[0030] At a position close to the gas inlet 2, most refrigerants flow towards the direction away from the gas inlet 2, and the rest refrigerants flow out from the oil separator through the third filter area 33. As the refrigerant flows away from the gas inlet 2, more refrigerants flow out from the oil separator through the second filter area 32; therefore, a pressure of airflow of the refrigerant in the third filter area 33 is lower than that in the second filter area 32. As the refrigerant flows away from the gas inlet 2, the pressure of airflow of the refrigerant gets lower and lower; therefore, the pressure of airflow of the refrigerant in the first filter area 31 is lower than that in the second filter area 32.

[0031] In order to adapt the separation efficiency of each filter area to the pressure of airflow of the refrigerant, according to the invention, a separation efficiency of the first filter area 31 for a refrigerant is lower than that of the

second filter area 32 for a refrigerant, and the separation efficiency of the third filter area 33 for a refrigerant is lower than that of the second filter area 32 for a refrigerant.

[0032] According to the invention, the separation efficiency of the third filter area 33 for the refrigerant is higher than that of the first filter area 31 for the refrigerant.

[0033] In some embodiments, by setting the filter components with corresponding performances according to the pressures of airflow of various areas in the direction away from the gas inlet 2, the performance of the filter component is fully used, and it is beneficial to ensuring the uniformity of the pressures of airflow output by various areas of the gas outlet.

[0034] As shown in Fig. 4, according to the invention, the gas outlet with a length L is divided into the first filter area 31, the second filter area 32 and the third filter area 33. All the sizes, in the direction away from the gas inlet 2, of the first filter area 31, the second filter area 32 and the third filter area 33 are $1/3L$.

[0035] The thicknesses and the materials of the filter components of the first filter area 31, the second filter area 32 and the third filter area 33 are the same. The densities of the first filter area 31, the second filter area 32 and the third filter area 33 are respectively H_1 , H_2 and H_3 . The separation efficiencies of the first filter area 31, the second filter area 32 and the third filter area 33 are respectively E_1 , E_2 and E_3 . Wherein, $H_2 > H_3 > H_1$, and $E_2 > E_3 > E_1$. The filter component made of the material with a higher separation efficiency or a greater density is disposed at the position bearing a larger impact of airflow or close to the gas inlet 2, and the filter component made of the material with a lower separation efficiency or a less density is disposed at the position bearing a smaller impact of airflow or away from the gas inlet. Thus, improves the degree of uniform distribution of airflow and reduces the pressure drop.

[0036] In some embodiments, the thicknesses of the filter components of the first filter area 31, the second filter area 32 and the third filter area 33 are the same, but the materials are different, so that $E_2 > E_3 > E_1$.

[0037] In some embodiments, the densities and materials of the filter components of the first filter area 31, the second filter area 32 and the third filter area 33 are the same, but the thicknesses are different, so that $E_2 > E_3 > E_1$.

[0038] In some embodiments, a width of the chamber 1 shrinks along the direction away from the filter component 3. An end, away from the filter component 3, of the chamber 1 is provided with an oil drainage port. The filter component 3 is disposed on a top of the chamber 1. The oil separated by the oil separator gathers at a bottom of the chamber 1, and the gathered oil is drained through the oil drainage port. The condenser according to the invention includes a housing and the air conditioner oil separator. The air conditioner oil separator is disposed in the housing. There is also a pipeline for the medium for heat exchange to flow arranged in the housing. The

refrigerant discharged from the oil separator flows in an inner cavity of the housing, and performs heat exchange with the medium for heat exchange in the pipeline.

[0039] In some embodiments, the pipeline includes a first pipeline and a second pipeline. A first end of the first pipeline is used for introducing the medium for heat exchange with the refrigerant, and a first end of the second pipeline is used for outputting the medium after heat exchange with the refrigerant. A second end of the second pipeline communicates with a second end of the first pipeline.

[0040] There are a plurality of first pipelines and a plurality of second pipelines. A first end of a housing of the condenser is provided with a medium inlet and a medium outlet. The first ends of the plurality of first pipelines communicate with the medium inlet, and the second ends of the plurality of second pipelines communicate with the medium outlet.

[0041] In some embodiments, the first pipeline and the second pipeline are respectively arranged at two sides of the air conditioner oil separator.

[0042] Some embodiments of the present disclosure also provide an air conditioner. The air conditioner includes a compressor and the condenser. An exhaust port of the compressor communicates with the gas inlet 2 of the air conditioner oil separator.

Claims

1. A condenser, comprising:

housing comprising an inner cavity;
an air conditioner oil separator being disposed in the housing, said air conditioner oil separator comprising: a gas inlet (2) for introducing a refrigerant to be separated, and a gas outlet communicating with an inner cavity of the housing for outputting a separated refrigerant;
and a pipeline, which is disposed in the housing and is configured to be used for a medium for heat exchange with a refrigerant discharged from the gas outlet to flow;
wherein the air conditioner oil separator further comprises:
a filter component (3) disposed at the gas outlet;
the filter component (3) comprises:

a first filter area (31);
a second filter area (32), which is closer to the gas inlet (2) than the first filter area (31);
and
a third filter area (33), which is closer to the gas inlet (2) than the second filter area (32);
wherein the first filter area (31), the second filter area (32) and the third filter area (33) are arranged side by side in a direction close to the gas inlet (2);

- characterized in that** a separation efficiency of the first filter area (31) for the refrigerant is lower than a separation efficiency of the second filter area (32) for the refrigerant; and, a separation efficiency of the third filter area (33) for the refrigerant is lower than the separation efficiency of the second filter area (32) for the refrigerant; the separation efficiency of the third filter area (33) for the refrigerant is higher than a separation efficiency of the first filter area (31) for the refrigerant.
2. The condenser as claimed in claim 1, wherein
- a thickness or a density of a filter component of the second filter area (32) is greater than that of a filter component of the first filter area (31); the thickness or the density of the filter component of the second filter area (32) is greater than that of a filter component of the third filter area (33); and the thickness or the density of the filter component of the third filter area (33) is greater than that of the filter component of the first filter area (31).
3. The condenser as claimed in claim 1, wherein
- a material of the second filter area (32) is different from a material of the first filter area (31), so that a separation efficiency of the second filter area (32) is greater than a separation efficiency of the first filter area (31); a material of the second filter area (32) is different from a material of the third filter area (33), so that the separation efficiency of the second filter area (32) is greater than a separation efficiency of the third filter area (33); and the material of the third filter area (33) is different from the material of the first filter area (31), so that the separation efficiency of the third filter area (33) is greater than the separation efficiency of the first filter area (31).
4. The condenser as claimed in claim 1, wherein the gas outlet comprises a first gas outlet and a second gas outlet respectively at two sides of the gas inlet (2).
5. The condenser as claimed in claim 1, wherein both the gas inlet (2) and the gas outlet are disposed on a top of the air conditioner oil separator.
6. The condenser as claimed in claim 1, wherein the pipeline comprises:
- a first pipeline, a first end of the first pipeline

being used for introducing the medium for heat exchange with the refrigerant; and a second pipeline, a first end of the second pipeline being used for outputting a medium after heat exchange with the refrigerant; a second end of the second pipeline communicates with a second end of the first pipeline.

7. The condenser as claimed in claim 6, wherein the first pipeline and the second pipeline are respectively disposed at two sides of the air conditioner oil separator.

8. An air conditioner, comprising:

a compressor, which is provided with a gas outlet for outputting compressed refrigerant; and the condenser as claimed in any one of claims 1 to 7, wherein the gas inlet (2) of the air conditioner oil separator communicates with an exhaust port of the compressor.

Patentansprüche

1. Kondensator, umfassend:

ein Gehäuse, das einen inneren Hohlraum umfasst;

einen Ölabscheider einer Klimaanlage, der in dem Gehäuse angeordnet ist, wobei der Ölabscheider der Klimaanlage umfasst: einen Gaseinlass (2) zum Einleiten eines abzuscheidenden Kältemittels, und einen Gasauslass, der mit einem inneren Hohlraum des Gehäuses in Verbindung steht, um ein abgeschiedenes Kältemittel abzugeben;

eine Rohrleitung, die in dem Gehäuse angeordnet ist und so ausgelegt ist, dass sie für den Durchfluss eines Mediums zum Wärmeaustausch mit einem aus dem Gasauslass abgegebenen Kältemittel verwendet wird;

wobei der Ölabscheider der Klimaanlage ferner umfasst:

eine am Gasauslass angeordnete Filterkomponente (3); wobei die Filterkomponente (3) umfasst:

einen ersten Filterbereich (31);

einen zweiten Filterbereich (32), der näher am Gaseinlass (2) liegt als der erste Filterbereich (31); und

einen dritten Filterbereich (33), der näher am Gaseinlass (2) liegt als der zweite Filterbereich (32);

wobei der erste Filterbereich (31), der zweite Filterbereich (32) und der dritte Filterbereich (33) Seite an Seite in einer Richtung

- nahe dem Gaseinlass (2) angeordnet sind;
dadurch gekennzeichnet, dass ein Abscheidungsgrad des ersten Filterbereichs (31) für das Kältemittel niedriger ist als ein Abscheidungsgrad des zweiten Filterbereichs (32) für das Kältemittel; und ein Abscheidungsgrad des dritten Filterbereichs (33) für das Kältemittel niedriger ist als der Abscheidungsgrad des zweiten Filterbereichs (32) für das Kältemittel; wobei der Abscheidungsgrad des dritten Filterbereichs (33) für das Kältemittel höher ist als ein Abscheidungsgrad des ersten Filterbereichs (31) für das Kältemittel.
2. Kondensator nach Anspruch 1, wobei
- eine Dicke oder Dichte einer Filterkomponente des zweiten Filterbereichs (32) größer ist als die einer Filterkomponente des ersten Filterbereichs (31);
 die Dicke oder die Dichte der Filterkomponente des zweiten Filterbereichs (32) größer ist als die einer Filterkomponente des dritten Filterbereichs (33); und
 die Dicke oder die Dichte der Filterkomponente des dritten Filterbereichs (33) größer ist als die der Filterkomponente des ersten Filterbereichs (31).
3. Kondensator nach Anspruch 1, wobei
- ein Material des zweiten Filterbereichs (32) sich von einem Material des ersten Filterbereichs (31) unterscheidet, so dass ein Abscheidungsgrad des zweiten Filterbereichs (32) größer ist als ein Abscheidungsgrad des ersten Filterbereichs (31);
 ein Material des zweiten Filterbereichs (32) sich von einem Material des dritten Filterbereichs (33) unterscheidet, so dass der Abscheidungsgrad des zweiten Filterbereichs (32) größer ist als ein Abscheidungsgrad des dritten Filterbereichs (33); und
 das Material des dritten Filterbereichs (33) sich von dem Material des ersten Filterbereichs (31) unterscheidet, so dass der Abscheidungsgrad des dritten Filterbereichs (33) größer ist als der Abscheidungsgrad des ersten Filterbereichs (31).
4. Kondensator nach Anspruch 1, wobei der Gasauslass einen ersten Gasauslass und einen zweiten Gasauslass jeweils an zwei Seiten des Gaseinlasses (2) umfasst.
5. Kondensator nach Anspruch 1, wobei sowohl der Gaseinlass (2) als auch der Gasauslass auf einer
- Oberseite des Ölabscheiders der Klimaanlage angeordnet sind.
6. Kondensator nach Anspruch 1, wobei die Rohrleitung umfasst:
- eine erste Rohrleitung, wobei ein erstes Ende der ersten Rohrleitung zum Einleiten des Mediums zum Wärmeaustausch mit dem Kältemittel verwendet wird; und
 eine zweite Rohrleitung, wobei ein erstes Ende der zweiten Rohrleitung zur Abgabe eines Mediums nach dem Wärmeaustausch mit dem Kältemittel verwendet wird; wobei ein zweites Ende der zweiten Rohrleitung mit einem zweiten Ende der ersten Rohrleitung in Verbindung steht.
7. Kondensator nach Anspruch 6, wobei die erste Rohrleitung und die zweite Rohrleitung jeweils an zwei Seiten des Ölabscheiders der Klimaanlage angeordnet sind.
8. Klimaanlage, umfassend:
- einen Kompressor, der mit einem Gasauslass zur Abgabe von komprimiertem Kältemittel versehen ist; und
 den Kondensator nach einem der Ansprüche 1 bis 7, wobei der Gaseinlass (2) des Ölabscheiders der Klimaanlage mit einer Auslassöffnung des Kompressors in Verbindung steht.

Revendications

1. Condenseur, comprenant :

un logement comprenant une cavité intérieure ;
 un séparateur d'huile de climatiseur disposé dans le logement, ledit séparateur d'huile de climatiseur comprenant : une entrée de gaz (2) pour introduire un fluide frigorigène à séparer, et une sortie de gaz communiquant avec une cavité intérieure du logement pour délivrer un fluide frigorigène séparé ;
 et
 une conduite, qui est disposée dans le logement et est configurée pour être utilisée pour qu'un milieu pour l'échange de chaleur avec un fluide frigorigène évacué par la sortie de gaz s'écoule ; dans lequel le séparateur d'huile de climatiseur comprend en outre :
 un composant de filtre (3) disposé à la sortie de gaz ; le composant de filtre (3) comprend :

une première région de filtre (31) ;
 une deuxième région de filtre (32), qui est plus proche de l'entrée de gaz (2) que la

- première région de filtre (31) ; et
une troisième région de filtre (33), qui est plus proche de l'entrée de gaz (2) que la deuxième région de filtre (32) ;
dans lequel la première région de filtre (31), la deuxième région de filtre (32) et la troisième région de filtre (33) sont agencées côte à côte dans une direction proche de l'entrée de gaz (2) ;
caractérisé en ce qu'une efficacité de séparation de la première région de filtre (31) pour le fluide frigorigène est inférieure à une efficacité de séparation de la deuxième région de filtre (32) pour le fluide frigorigène ; et, une efficacité de séparation de la troisième région de filtre (33) pour le fluide frigorigène est inférieure à l'efficacité de séparation de la deuxième région de filtre (32) pour le fluide frigorigène ; l'efficacité de séparation de la troisième région de filtre (33) pour le fluide frigorigène est supérieure à une efficacité de séparation de la première région de filtre (31) pour le fluide frigorigène.
2. Condenseur selon la revendication 1, dans lequel une épaisseur ou une densité d'un composant de filtre de la deuxième région de filtre (32) est supérieure à celle d'un composant de filtre de la première région de filtre (31) ; l'épaisseur ou la densité du composant de filtre de la deuxième région de filtre (32) est supérieure à celle d'un composant de filtre de la troisième région de filtre (33) ; et l'épaisseur ou la densité du composant de filtre de la troisième région de filtre (33) est supérieure à celle du composant de filtre de la première région de filtre (31).
3. Condenseur selon la revendication 1, dans lequel un matériau de la deuxième région de filtre (32) est différent d'un matériau de la première région de filtre (31), de sorte qu'une efficacité de séparation de la deuxième région de filtre (32) est supérieure à une efficacité de séparation de la première région de filtre (31) ; un matériau de la deuxième région de filtre (32) est différent d'un matériau de la troisième région de filtre (33), de sorte que l'efficacité de séparation de la deuxième région de filtre (32) est supérieure à une efficacité de séparation de la troisième région de filtre (33) ; et le matériau de la troisième région de filtre (33) est différent du matériau de la première région de filtre (31), de sorte que l'efficacité de séparation de la troisième région de filtre (33) est supérieure à l'efficacité de séparation de la première région de filtre (31).
4. Condenseur selon la revendication 1, dans lequel la sortie de gaz comprend une première sortie de gaz et une seconde sortie de gaz respectivement sur deux côtés de l'entrée de gaz (2).
5. Condenseur selon la revendication 1, dans lequel l'entrée de gaz (2) et la sortie de gaz sont toutes deux disposées sur une partie supérieure du séparateur d'huile de climatiseur.
6. Condenseur selon la revendication 1, dans lequel la conduite comprend :
une première conduite, une première extrémité de la première conduite étant utilisée pour introduire le milieu pour l'échange de chaleur avec le fluide frigorigène ; et
une seconde conduite, une première extrémité de la seconde conduite étant utilisée pour délivrer un fluide après échange de chaleur avec le fluide frigorigène ; une seconde extrémité de la seconde conduite communique avec une seconde extrémité de la première conduite.
7. Condenseur selon la revendication 6, dans lequel la première conduite et la seconde conduite sont respectivement disposées sur deux côtés du séparateur d'huile de climatiseur.
8. Climatiseur, comprenant :
un compresseur, qui est pourvu d'une sortie de gaz pour délivrer le fluide frigorigène comprimé ; et
le condenseur selon l'une quelconque des revendications 1 à 7, dans lequel l'entrée de gaz (2) du séparateur d'huile de climatiseur communique avec un orifice d'échappement du compresseur.

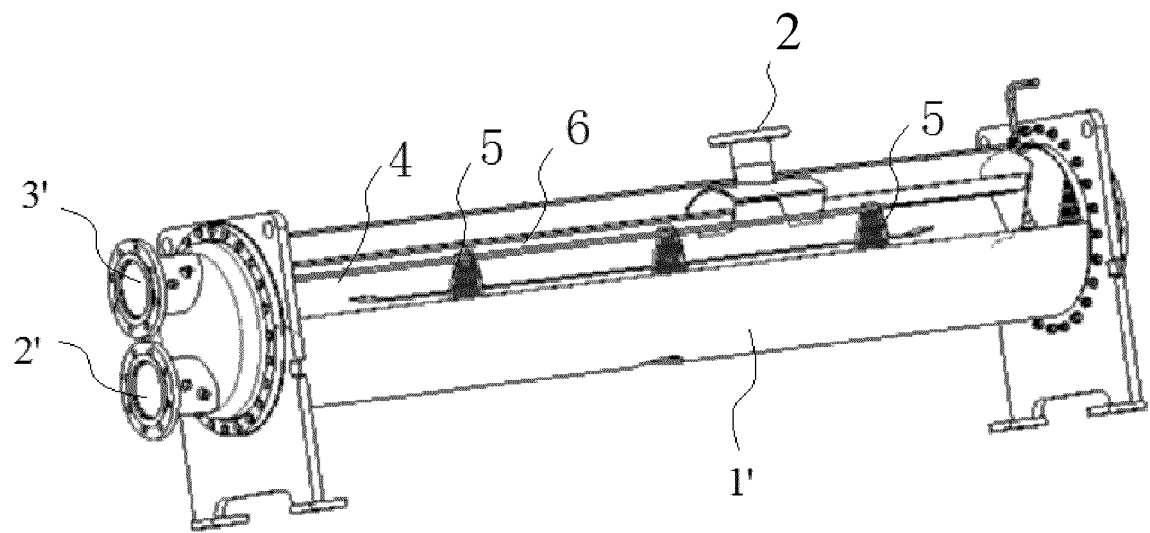


Fig. 1

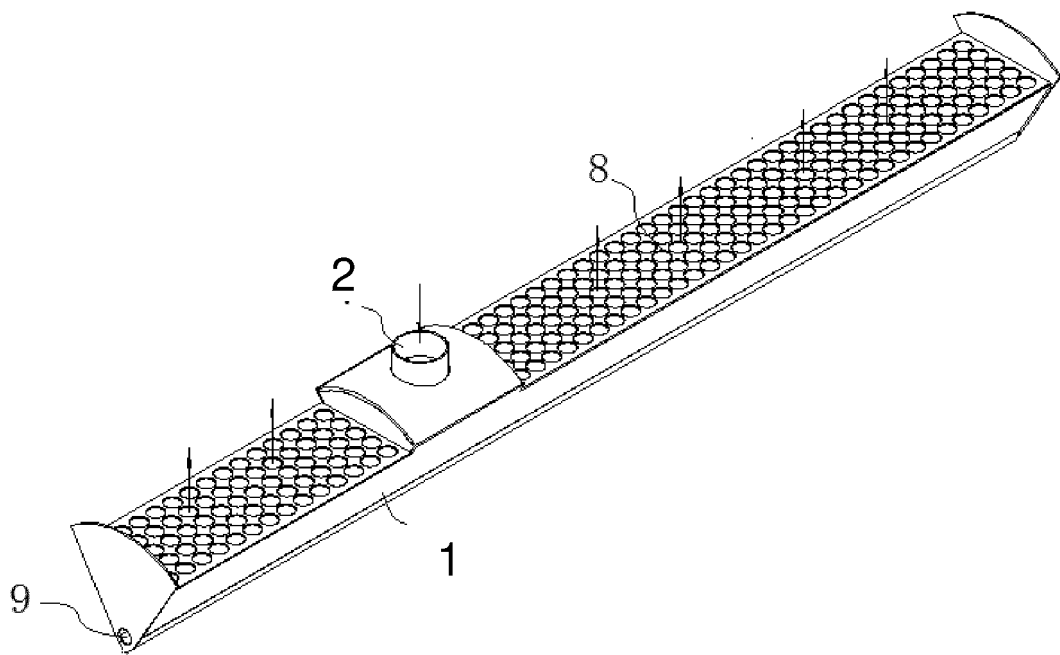


Fig. 2

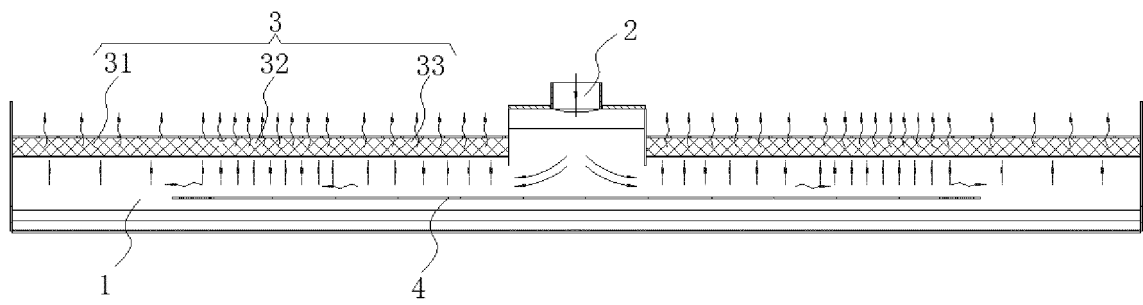


Fig. 3

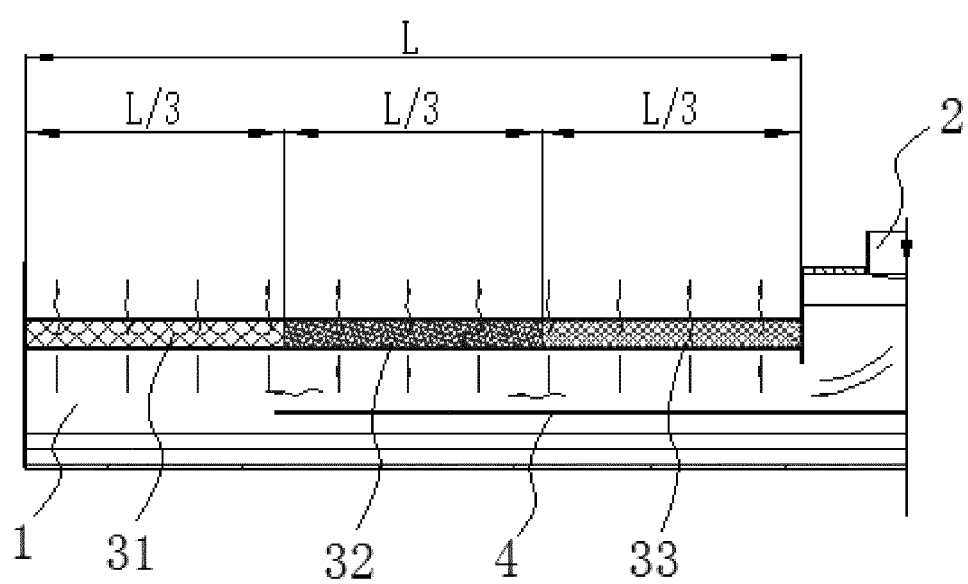


Fig. 4

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- CN 104833139 B [0016]
- CN 106440574 A [0016]