

Dec. 26, 1939.

H. HEMMING

2,184,837

HEAT EXCHANGE UNIT

Filed June 9, 1938

2 Sheets-Sheet 1

Fig. 1.

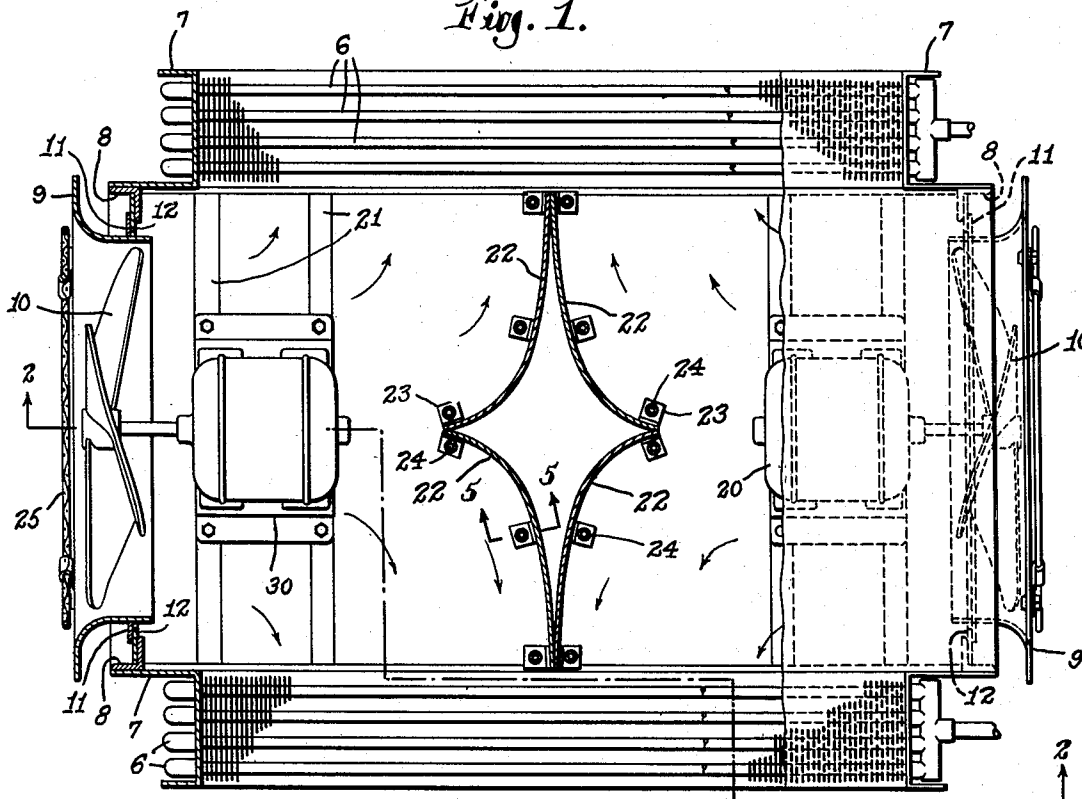
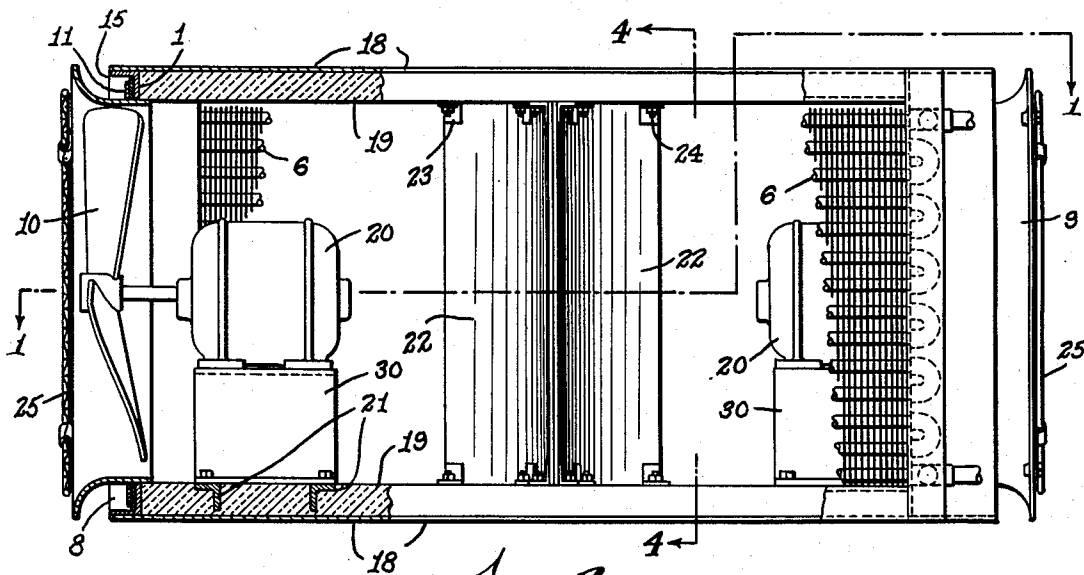


Fig. 2.

Inventor
HAROLD HEMMING
by Robert J. Palmer
Attorney

Dec. 26, 1939.

H. HEMMING

2,184,837

HEAT EXCHANGE UNIT

Filed June 9, 1938

2 Sheets-Sheet 2

Fig. 3.

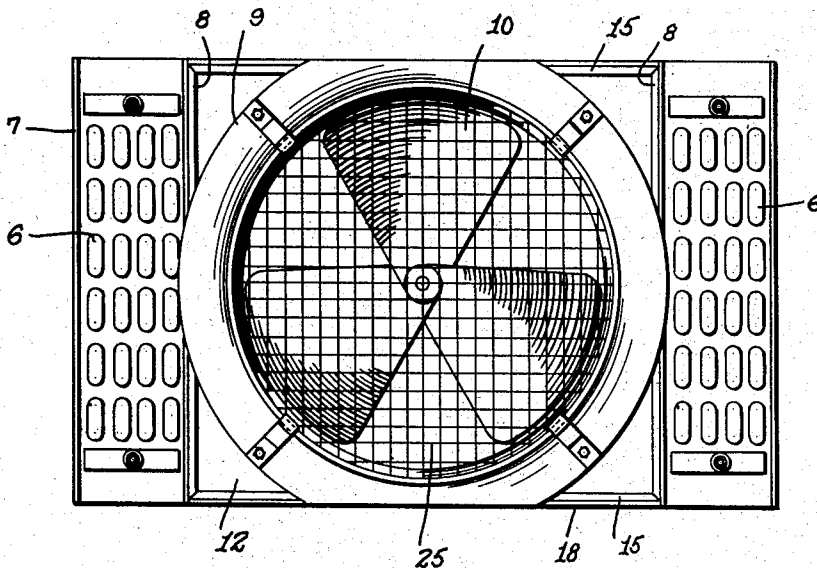


Fig. 4.

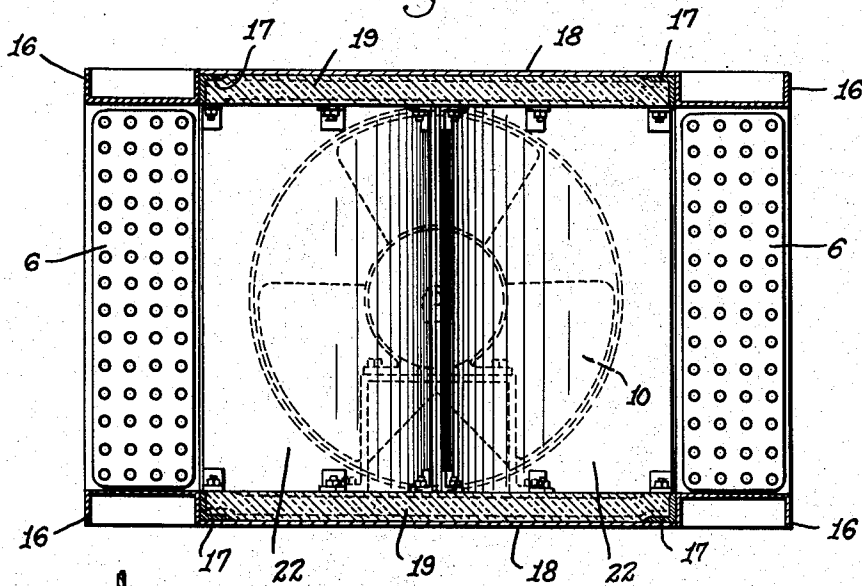
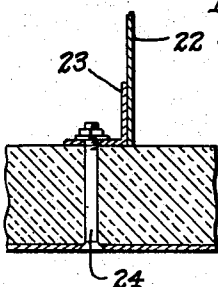


Fig. 5.



Inventor
HAROLD HEMMING
by Robert S. Palmer
Attorney

UNITED STATES PATENT OFFICE

2,184,837

HEAT EXCHANGE UNIT

Harold Hemming, Dedham, Mass., assignor to
B. F. Sturtevant Company, Hyde Park, Bos-
ton, Mass.

Application June 9, 1938, Serial No. 212,728

4 Claims. (Cl. 257—137)

This invention relates to heat exchange units and relates more particularly to condenser units for use with refrigeration apparatus.

It is highly desirable to provide refrigeration apparatus for quiet operation for use in comfort air conditioning such, for example, as the conditioning of air for railway passenger cars. It has been decided that it is desirable to divide the refrigeration apparatus into three separate units, viz., a compressor unit, an evaporator unit, and a condenser unit. The present invention is directed to the provision of a quiet operating condenser unit.

In one embodiment of the invention, the condenser coils are arranged in two spaced longitudinal rows with fans at each end which move the air over the coils.

One feature of the invention resides in the provision of what are termed "air splitter sheets" located midway between the fans and which not only turn the air through the unit at right angles, but separate the air streams from the two fans, and add strength at the center of the unit thus enabling a lighter frame for the unit to be used.

An object of the invention is to provide a relatively quiet fan and coil unit.

Another object of the invention is to provide an efficient, mechanically strong and light weight fan and coil unit.

Another and more definite object of the invention is to provide a relatively quiet, refrigerant condenser unit.

Other objects of the invention will be apparent from the following description taken with the drawings.

The invention will now be explained with reference to the drawings, of which:

Fig. 1 is a plan view in section along the lines 1—1 of Fig. 2, looking downward upon one embodiment of the invention;

Fig. 2 is a sectional view along the lines 2—2 of Fig. 1;

Fig. 3 is an end view of the unit;

Fig. 4 is a sectional view along the lines 4—4 of Fig. 2, and

Fig. 5 is an enlarged view showing the details of the support of the air splitter sheets.

Arranged on opposite vertical sides of the unit are the condenser coils 6 which are supported in the vertical angles 7. The vertical end angles 8 are attached as by welding to the angles 7 and the inlet rings 9 of the fans 10 are attached by the members 11 and 12 to the angles 8 and to the horizontal end angles 15.

The longitudinal angles 16 are attached to the

vertical angles 7 at opposite ends of the unit. The smaller longitudinal angles 17 are attached to the angles 16 and to the upper and lower frame sheets 18 which are also attached to the horizontal end angles 15.

The horizontal, sound insulating blocks 19 are attached to the top and bottom sheets 18 and the motors 20 are supported upon the lower block 19, through the intermediary of the pedestal block 30 and the transverse angles 21.

In the center of the unit are arranged the four splitter sheets 22. These extend from top to bottom of the interior of the unit as shown most clearly by Figs. 2 and 4 of the drawings and looking at them from above or below or in horizontal section they are substantially star shaped in sectional outline as shown most clearly by Fig. 1. They form a cellular strengthening and supporting structure at the center of the unit and also segregate and provide stream-line flow for the air from the oppositely placed fans 10.

The two fans 10 are provided in order that the fan speed and resulting noise can be reduced. The splitter sheets 22 turn the air from each fan in two opposite directions in streamline flow and at the same time separate the air stream produced by the separate fans, thus providing more efficient and less noisy operation.

The splitter sheets 22 are attached to the upper and lower insulating blocks 19 by being attached as by welding to the vertical sides of the clips 23 with the horizontal sides of the clips being attached to the blocks 19 by the bolts 24.

The unit is seen to have as its two vertical longitudinal sides, the coils 6 and to have as its upper and lower horizontal sides, the sheets 18 to which the insulating blocks 19 are attached. The fans 10 are mounted in the two ends of the unit and are provided for efficiency and quietness with the rings 9. The screen guards 25 are provided at the exterior of the fans.

While the fans have been illustrated as blowing the air through the coils, they could be designed and rotated according to this invention to draw the air through the coils.

While one embodiment of the invention has been explained for the purpose of illustration, it should be understood that other apparatus and arrangement of apparatus may be utilized by those skilled in the art without departing from the spirit of the invention.

What is claimed is:

1. A condenser unit comprising a rectangular casing including two continuous, oppositely disposed walls, and two apertured walls formed by

- rows of condenser tubes, and having open ends, fans in said ends for moving air over said tubes, and means between said fans extending crosswise the passage between said walls and connecting said continuous walls for strengthening said unit at its center and for turning the air moved by each fan, in opposite directions so that the air moved by each fan is directed over both of said rows of tubes.
2. A condenser unit comprising a rectangular casing including two continuous, oppositely disposed walls, and two apertured walls formed by rows of condenser tubes, and having open ends, fans in said ends for moving air over said tubes, and means comprising two pairs of curved plates extending between said fans crosswise the space between said continuous walls and forming a cellular support connecting said continuous walls and shaped for turning the air moved by each fan, in opposite directions so that the air moved by each fan is directed over both of said rows of tubes.
3. A condenser unit comprising a rectangular casing including two continuous, oppositely disposed walls, and two apertured walls formed by rows of condenser tubes, and having open ends,

fans in said ends for moving air over said tubes, and means for strengthening said unit at its center and for turning the air moved by said fans, comprising two pairs of curved sheets extending between said fans crosswise the span between and connecting said continuous walls and converging towards said fans at points midway between said apertured walls and converging towards said apertured walls at points between said fans.

4. A condenser unit comprising a rectangular casing including two relatively long, continuous, oppositely disposed, horizontal walls, and two relatively long, oppositely disposed apertured vertical walls formed by horizontal rows of condenser tubes, and having open ends, fans in said ends for moving air over said tubes, and means for strengthening said unit at its longitudinal center comprising two pairs of curved sheets connecting said continuous walls between said fans and converging towards said fans and towards said apertured walls along vertical lines, said sheets having horizontal upper and lower edges contacting said horizontal walls and forming a cellular bracing structure.

HAROLD HEMMING.