March 16, 1937. C. F. HENNEY 2,073,744

REFRIGERATION

Original Filed July 20, 1932

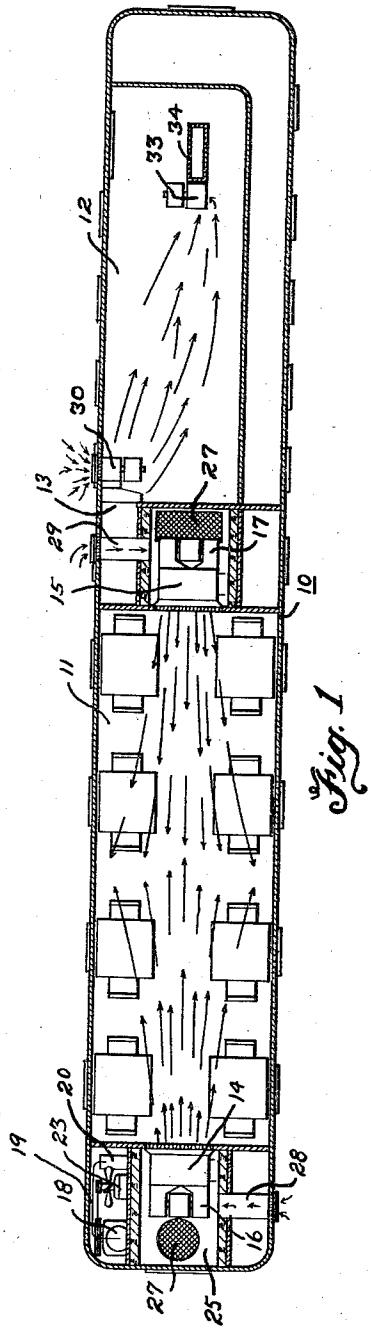

Fig. 1

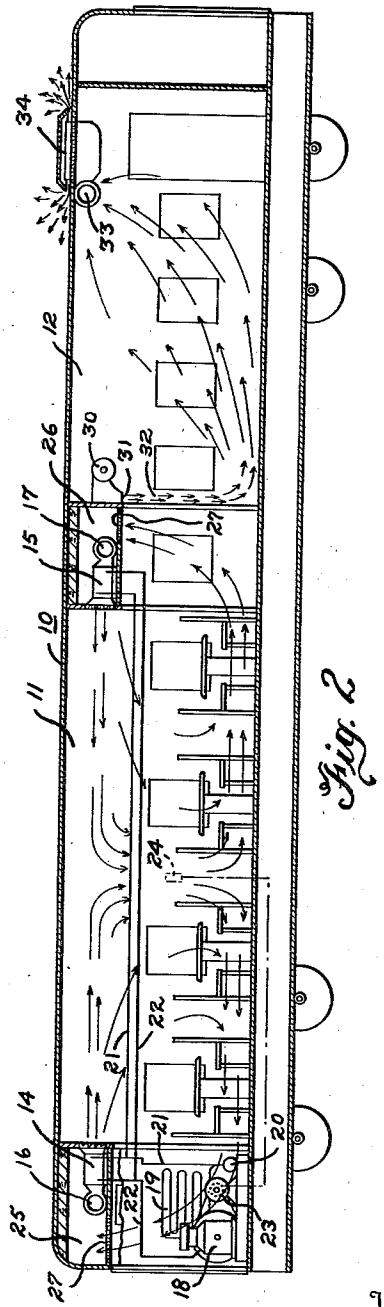

Fig. 2

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REFRIGERATION

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11 Claims. (Cl. 98—10)

This invention relates to refrigeration.

One of the objects of this invention is the maintainance of proper air conditions within structures having two or more compartments with an inter-communicating passage where the air conditions in one of the compartments are to be maintained different from the air conditions in another compartment and where it is nevertheless desirable to maintain a relatively free access or passage from one compartment to the other. This invention is of general scope and is useful in many applications. It is particularly useful in structures where there is a dining compartment and a communicating service or cooking compartment and where it is desirable to maintain the air in the dining compartment in an exceptionally desirable condition and free from kitchen smoke or odors while maintaining the inter-communicating passage open so that service between the two compartments will not be unduly hampered.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawing, wherein a preferred form of the present invention is clearly shown.

In the drawing:

Fig. 1 is a horizontal cross-sectional view, somewhat diagrammatic, of a structure embodying this invention; and

Fig. 2 is a vertical cross-sectional view somewhat diagrammatic of the structure shown in Fig. 1.

In practicing the invention, one of the compartments, in this particular embodiment the dining compartment, is provided with means for conditioning the air. Means are also provided for maintaining a blast of air across the passage leading to the service or cooking compartment in such a way as to inhibit circulation of air from one compartment to the other and means are provided for maintaining different air pressures in the compartments, so that the air from the blast after it has spent itself will flow substantially to one compartment only.

This invention is particularly useful in dining cars, though it is to be understood that it is applicable to many other structures, and for a clearer understanding of the invention the same is disclosed as embodied in a dining car. In the drawing, a structure or dining car is designated at 10 and includes a dining compartment 11, and a service or cooking compartment 12. An intercommunicating passage 13 is provided for easy access between the two compartments. While a door may be provided for the passage 13, it is generally desirable while meals are being served, to maintain the passage 13 open, so that the waiters may pass freely to and fro, between the two compartments.

Means are provided for conditioning the air in the dining compartment 11. This conditioning may be by heating nature in the winter, and cooling in the summer. The conditioning means shown in the drawing includes one or more cooling devices having tubular casings 14 and 15 placed at each end of the dining compartment and through these blowers 16 and 17 force air into the dining compartment. Inside the casings 14 and 15 are placed cooling coils, not shown, which may be the evaporators of a mechanical refrigerating system including a compressor 18, condenser 19, receiver 20, liquid refrigerant lines 21, and evaporated refrigerant line 22. The compressor 18 may be driven by an electric motor 23 controlled if desired by a thermostat or humidistat or a combination of the two generally designated as 24. The compressor delivers compressed refrigerant to the condenser 19 where it is liquefied and discharged into the receiver 20 from whence it flows through the lines 21 to the evaporators. Here the refrigerant is evaporated and returns in a gaseous condition through the line 22 to the compressor 18. It is to be understood, however, that any means for conditioning the air may be substituted for the structure shown in the drawing.

The air forced by the blowers 16 and 17 into the compartment 11 returns as indicated by the arrow to the intake compartments 25 and 26 through grills 27 and is redischarged through the cooling devices. If desired, the intake compartments 25 and 26 may be provided with fresh air ducts 28 and 29 which admit the desired amount of fresh air into the dining room compartment.

Means are provided for creating a blast of air across the passage 13 in such a manner as to inhibit circulation of air between the compartments 11 and 12. This may include a blower 30 which forces air, preferably from outside of the car 10, through a nozzle 31 in the form of a sheet-like blast 32 across the passageway 13. The blast is of such size and force that it prevents substantially any interchange of air between the compartments 11 and 12, but is not of sufficient force to interfere with the proper service between the two. Means are provided for maintaining different pressures in the compartments 11 and 12 so that the blast 32 is directed sub-

stantially only into one of the compartments. In this particular embodiment, the blast of air is caused to enter the compartment 12 by maintaining the compartment 11 at a greater air pressure than the compartment 12. For this purpose a blower 33 is provided, which has a greater force than the blower 30, and withdraws air from the compartment 12 at such a rate or force that the air pressure in the compartment 12 is less than in the compartment 11. Preferably the blower 33 forces the air thus withdrawn through a proper discharge device 34 out to the exterior of the car.

Generally the compartment 12, when it is a service or cooking compartment, has many devices which tend to heat the air in the compartment. It would generally be a very costly operation to cool this compartment with artificial refrigeration. However, by the active circulation maintained at the blowers 30 and 33, compartment 12 is prevented from unduly heating above the temperature of the outside atmosphere and thus conditions as comfortable as could reasonably be expected are maintained in this compartment. On the other hand, the dining compartment 11 is not subject to artificial heating devices in the summer, and hence this compartment may be economically cooled by artificial refrigeration, and because of my invention, the air in this compartment may be maintained at a comfortable temperature without being heated or rendered disagreeable by the relatively warm, odor laden air in the kitchen compartment. By the use of this invention, therefore it is possible to maintain proper air conditions throughout the car in an economical manner, and without interfering with proper dining service.

While the form of embodiment of the invention as herein disclosed, constitutes a preferred form, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow.

What is claimed is as follows:

1. A structure having two compartments with an inter-communicating passage, means for cooling the air in one of said compartments, means for creating a blast of air introduced from outside said structure across said passage to inhibit the circulation of air from one compartment to the other, and means for withdrawing air from one of said compartments to reduce the air pressure therein below the air pressure in the other of said compartments.

2. A structure having a first named compartment and a second named compartment with an inter-communicating passage, means for cooling the air in said first named compartment, means for creating a blast of air introduced from outside said structure across said passage to inhibit the circulation of air from said second named compartment to said first named compartment, and means for withdrawing air from said second named compartment to reduce the air pressure therein below the air pressure in the other of said compartments.

3. A structure having a dining compartment and a service compartment with an inter-communicating passage, means for cooling the air in said dining compartment, means for creating a blast of air across said passage to inhibit the circulation of air from one compartment to the other, and means for maintaining a greater air pressure in said dining compartment than in said service compartment.

4. A structure having a dining compartment and a service compartment with an inter-communicating passage, means for cooling the air in said dining compartment, means for creating a blast of air introduced from outside said structure across said passage to inhibit the circulation of air from one compartment to the other, and means for maintaining a greater air pressure in said dining compartment than in said service compartment.

5. A structure having a dining compartment and a service compartment with an inter-communicating passage, means for cooling the air in said dining compartment, means for creating a blast of air introduced from outside said structure across said passage to inhibit the circulation of air from one compartment to the other, and means for discharging air outside said structure from said service compartment at a rate sufficient to maintain a greater air pressure in said dining compartment than in said service compartment.

6. A structure having a dining compartment and a service compartment with an inter-communicating passage, means for cooling the air in said dining compartment, a fan for forcing air from outside said structure in the form of a blast across said passage to inhibit the circulation of air from one compartment to the other, and a fan of greater force than said first named fan for withdrawing air from said service compartment at a rate sufficient to maintain a greater air pressure in said dining compartment than in said service compartment.

7. A structure having two compartments with an inter-communicating passage, means for cooling the air in one of said compartments, means for creating a downward blast of air across said passage to inhibit the circulation of air from one compartment to the other, and means for maintaining a different air pressure in said compartments to direct substantially all of said blast into one of said compartments.

8. A structure having a dining compartment and a service compartment with an inter-communicating passage, means for cooling the air in said dining compartment, means for creating a downward blast of air across said passage to inhibit the circulation of air from one compartment to the other, and means for maintaining a greater air pressure in said dining compartment than in said service compartment.

9. A structure having a dining compartment and a service compartment with an inter-communicating passage, means for cooling the air in said dining compartment, means above the floor of said passage for creating a blast of air across said passage to inhibit the circulation of air from one compartment to the other, and means for maintaining a greater air pressure in said dining compartment than in said service compartment.

10. A structure having a dining compartment and a service compartment with an inter-communicating passage, means for cooling the air in said dining compartment, means above the floor of said passage for creating a blast of air introduced from outside said structure across said passage to inhibit the circulation of air from one compartment to the other, and means for discharging air outside said structure from said service compartment at a rate sufficient to maintain a greater air pressure in said dining compartment than in said service compartment.

11. A structure having two compartments substantially sealed from each other except for an

intercommunicating open doorway between said compartments, means for creating a blast of air completely across said doorway, and means creating a greater pressure in one of said compartments than in the other of said compartments to force substantially all of said blast into said other of said compartments whereby there is an unobstructed passage between said compartments and the air from said other of said compartments is substantially prevented from entering the first named of said compartments.

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