

July 14, 1942.

M. E. HANSON

2,289,910

PRESSURE VENTILATING UNIT

Filed Oct. 21, 1939

3 Sheets-Sheet 1

Fig. 1.

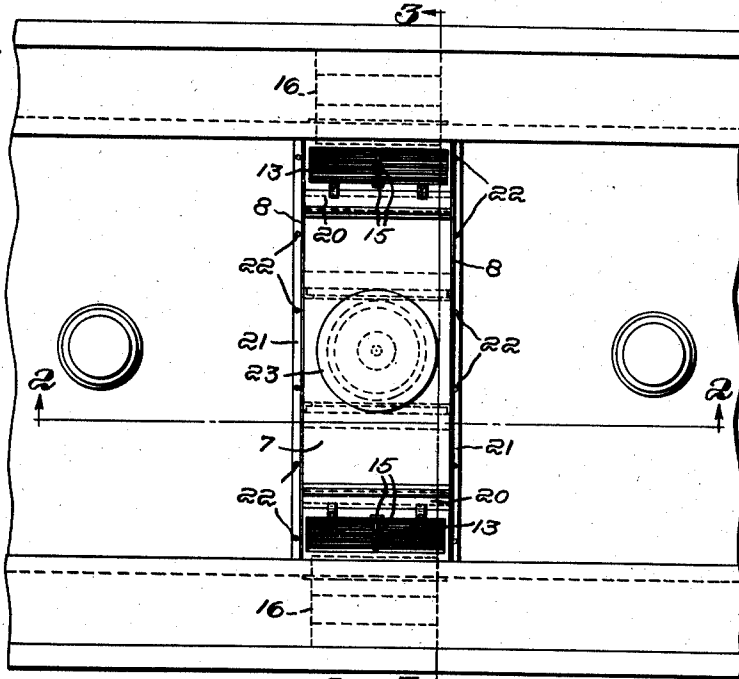
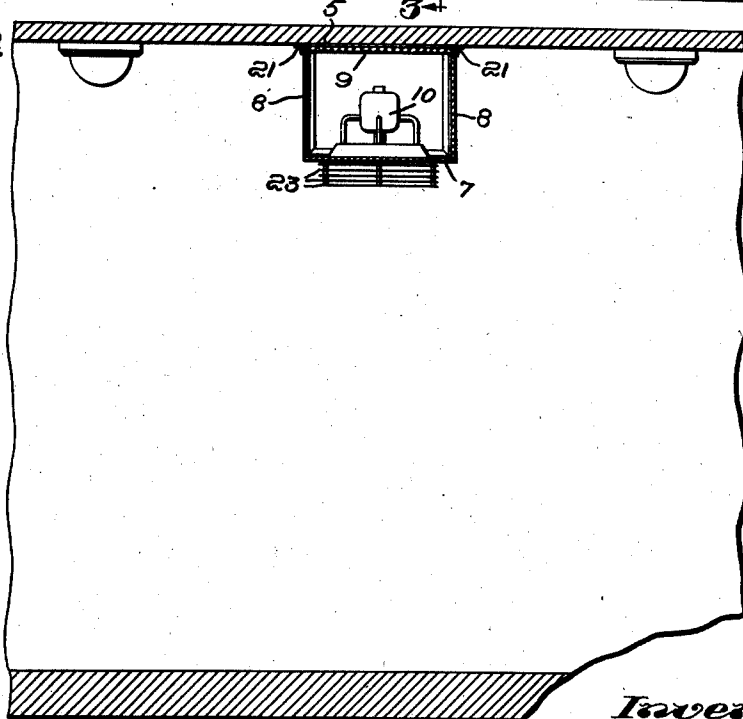


Fig. 2.



Inventor:

Milton E. Hanson

by Robert J. Palmer
Attorney

July 14, 1942.

M. E. HANSON

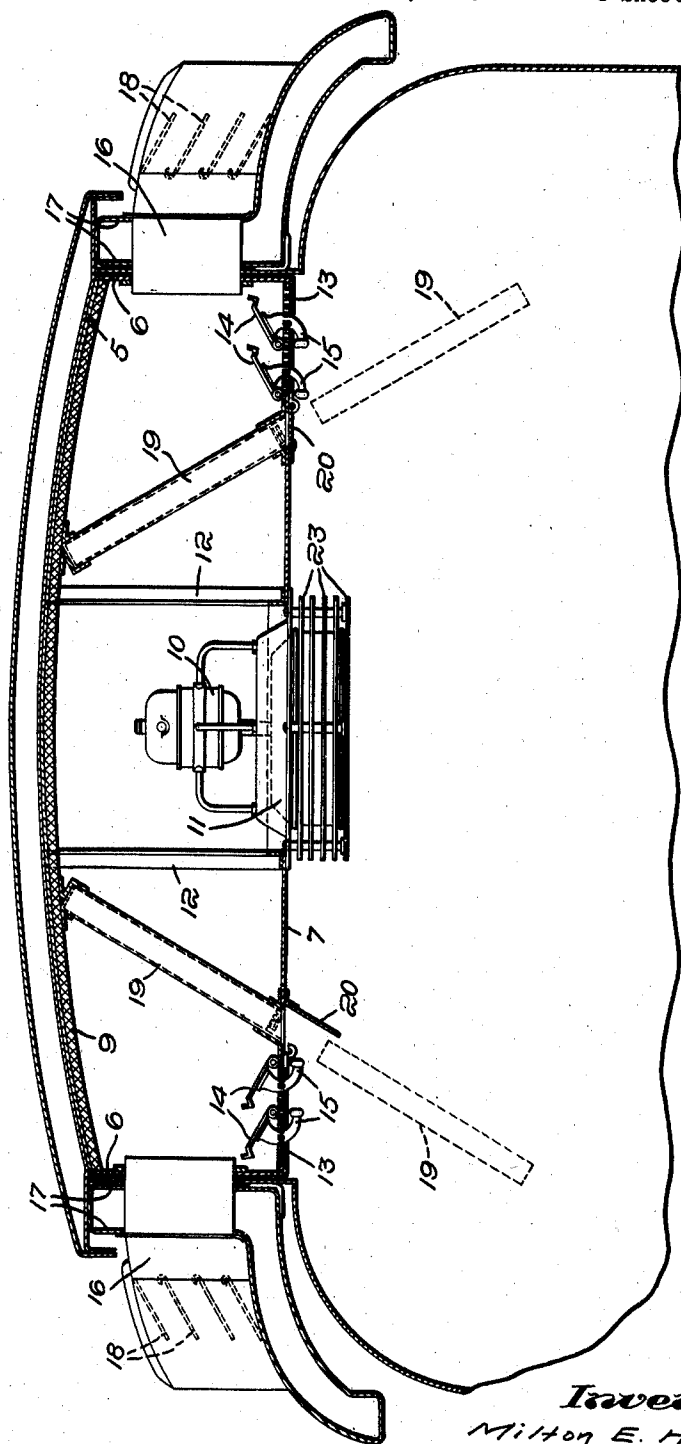
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Fig. 3.



Inventor:
Milton E. Hanson
by Robert J. Palmer
Attorney

July 14, 1942.

M. E. HANSON

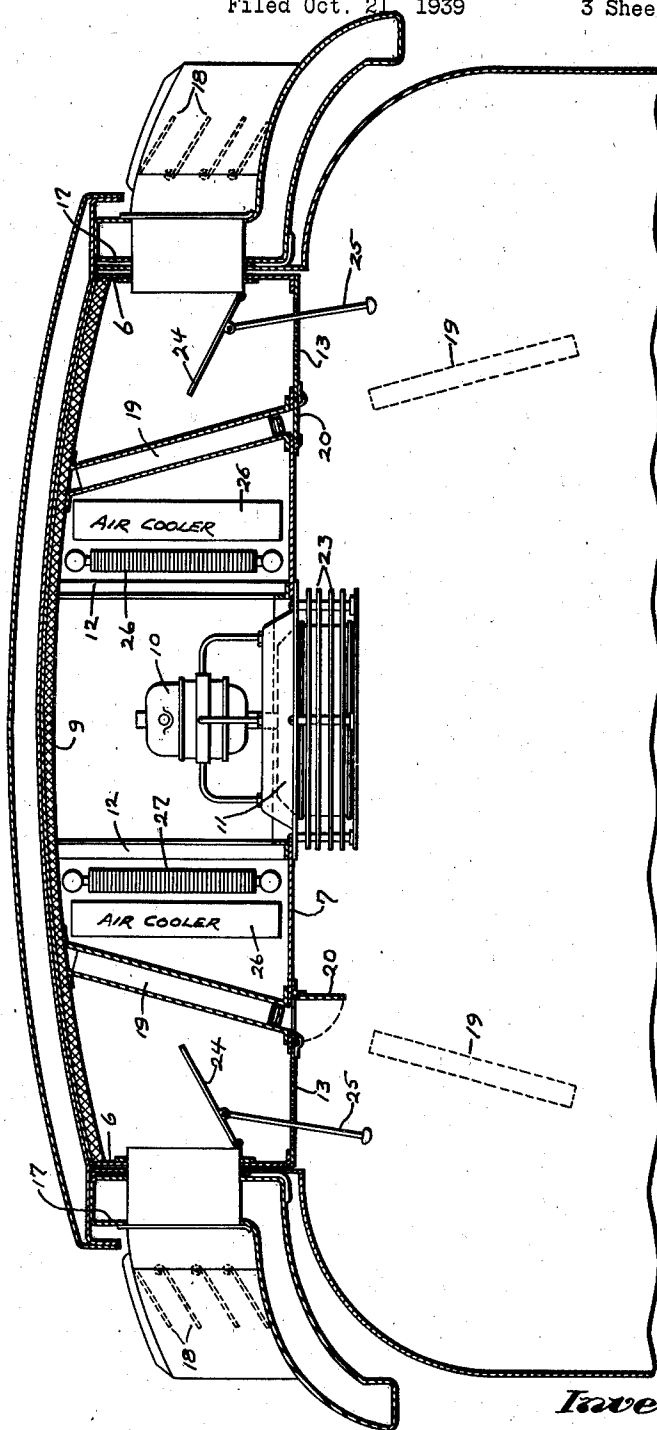
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Fig. 4.



Inventor:

MILTON E. HANSON

by Robert J. Palmer
Attorney

UNITED STATES PATENT OFFICE

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PRESSURE VENTILATING UNIT

Milton E. Hanson, Haddonfield, N. J., assignor to
B. F. Sturtevant Company, Boston, Mass.

Application October 21, 1939, Serial No. 300,652

2 Claims. (Cl. 98—14)

This invention relates to pressure ventilation and relates more particularly to pressure ventilating units for use in railway passenger cars of the type having clearstory spaces.

Pressure ventilating units supplying as much as 4500-8000 cubic feet per minute of outdoor air into the passenger spaces have been used satisfactorily in railway passenger cars for cooling the air therein. In cars cooled by refrigeration, it is the practice to supply only 2500 cubic feet per minute of air, only 500 cubic feet per minute being outdoor air.

The chief advantages of pressure ventilation are the low cost of the equipment, but the cost of its installation has heretofore been too great. In cars having clearstory spaces, it has been necessary to build ducts and to provide insulation resulting in many cases, in the cost of installation being greater than that of the ventilating equipment.

This invention provides factory constructed and assembled, pressure ventilating units which can be easily and quickly installed as complete units in the clearstory spaces of railway passenger cars without the necessity of insulating the clearstory spaces and of building ducts therein as has been necessary in the past.

An object of the invention is to reduce the cost of pressure ventilating systems for railway passenger cars.

Another object of the invention is to provide pre-assembled pressure ventilating units for installation in railway passenger cars.

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

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

Fig. 1 is a plan view, looking upwardly, upon a pressure ventilating unit embodying this invention, installed in a railway passenger car;

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

Fig. 3 is a cross sectional view taken along the lines 3—3 of Fig. 1, and

Fig. 4 is a cross sectional view of another embodiment of the invention.

Each unit comprises an integral casing or box having the sheet metal upper wall 5, the sheet metal side walls 6, the sheet metal lower wall 7, and the sheet metal end walls 8. The layer of insulating material 9 is attached to the inside of the upper wall 5.

The centrifugal fan indicated generally by 10 is supported from the lower wall 7 with its rotor

11 extending through a centrally located opening therein. The horizontal deflectors 23 of the fan extend below the opening. The four angle irons 12 extend vertically adjacent the fan 10, between the upper wall 5 and lower wall 7 and are fastened thereto and serve to brace the casing and to support the weight of the fan.

The details of the fan 10 are shown in the C. O. Bergstrom Patent No. 2,142,834 which issued on Jan. 3, 1939, and so will not be described herein.

The lower wall 7 contains in the embodiment illustrated by Fig. 3, adjacent each side of the unit, the recirculated air inlet grille 13, to which are mounted the dampers 14 adjustable by the handles 15 from the passenger space. During the cooling season, the dampers 14 would preferably be closed, but they may be opened during the heating season for partial recirculation.

The embodiment of Fig. 4 is similar to that of Fig. 3 except that the dampers 24 adjusted by handles 25 are provided in the path of the outdoor air instead of in the recirculated air as are the dampers 14 of Fig. 3, and the air coolers 26 and the air heaters 27 are included between the angle irons 12 and the filters 19 in each side of the unit. The heaters 27 may be supplied with steam from the train engine, and the coolers 26 may include a plurality of evaporator tubes for connection to a compressor-condenser unit.

The side walls 6 have centrally located openings for receiving the inner ends of the fresh air intake hoods 16. The side walls 17 of the car contain similar openings for receiving the hoods 16. Rubber gaskets may be provided around the inner ends of the hoods and against the side walls 6 to prevent air leakage. The outer ends of the hoods 16 may have the fixed louvres 18 for guiding the air effectively into the system.

The two filters 19 are diagonally supported between the upper and lower walls of the unit, one on each side of the fan 10, and between the fan and the outdoor and recirculated air inlet openings. The doors 20 are provided in the lower wall 7 of the unit for permitting the insertion and withdrawal of the filters 19 as shown by the lower dotted lines of Fig. 3.

The angle irons 21 are attached to the upper end of each unit along the end walls 8 and serve to support the unit to the roof of the car by means of the bolts 22 (Fig. 1).

It is intended that several of the pressure ventilating units described herein be spaced along

the longitudinal center of the car to distribute the air as shown by my Patent No. 2,142,842 which issued Jan. 3, 1939.

It is seen that this invention provides complete pressure ventilating units which may be bolted as integral units to the roof of a passenger car, eliminating the need for false ceilings, duct work and car insulation required in the past. It is only necessary to provide the fresh air inlet openings in the side of the car; to bolt the pressure ventilating units to the roof, and then to mount the fresh air intake ventilation hoods, to provide a complete pressure ventilating system.

While one embodiment of the invention has been described for the purpose of illustration, it should be understood that the invention is not limited to the exact apparatus and arrangement of apparatus described, as departures therefrom may be suggested by those skilled in the art, without departure from the essence of the invention.

What is claimed is:

1. In combination, a railway passenger car having a roof, a relatively long, relatively narrow box having its upper wall shaped to conform with the underside of said roof, extending cross-wise said car, means attached to the transversely extending sides of said box and to the underside of said roof for suspending said box from said roof with its upper wall in contact with the underside of said roof, the lower wall of said box extending horizontally completely across the upper portion

of said car and having a central opening therein, a centrifugal fan supported with its rotor extending through said opening to a point below said lower wall, and means forming outdoor air inlets through the sides of said car and through the narrow sides of said box, said box being insertable in and removable from, said car as a unit.

2. In combination, a railway passenger car having a transversely curved roof, a relatively long, relatively narrow box having its upper wall curved to conform with the underside of said roof, extending cross-wise said car, means attached to the transversely extending sides of said box and to the underside of said roof for suspending said box from said roof with its upper wall in contact with the underside of said roof, the lower wall of said box extending horizontally completely across the upper portion of said car and having a central opening therein, a centrifugal fan supported with its rotor extending through said opening to a point below said lower wall, means forming outdoor air inlets through the sides of said car and through the narrow sides of said box, and means extending from said lower wall to said upper wall at opposite sides of said fan and between same and said narrow walls for supporting the weight of said fan and for bracing said box at its center, said box being insertable in and removable from, said car as a unit.

MILTON E. HANSON.