W. F. YUILLE.

RAILWAY CAR.

APPLICATION FILED JULY 27, 1912.

1,196,832.

Patented Sept. 5, 1916.

3 SHEETS—SHEET 1.

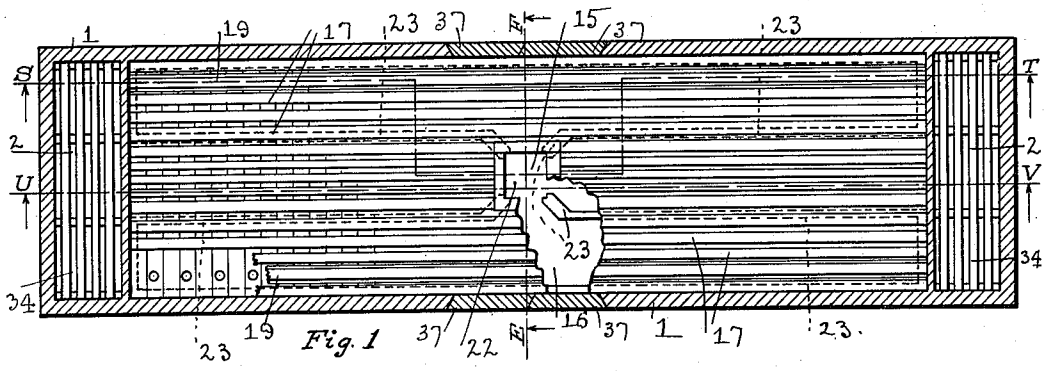


Fig. 1

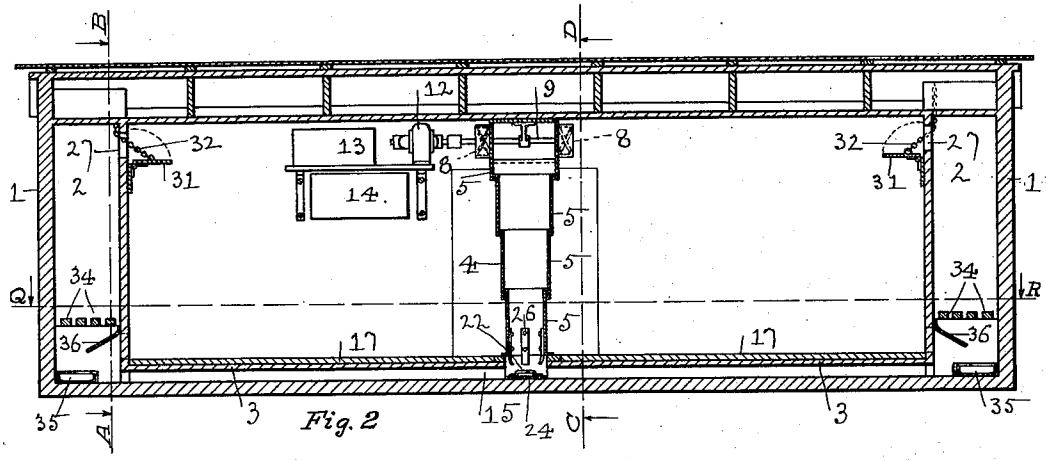


Fig. 2

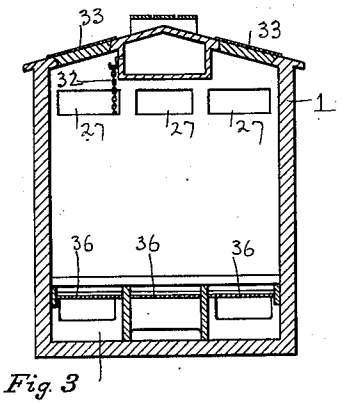


Fig. 3

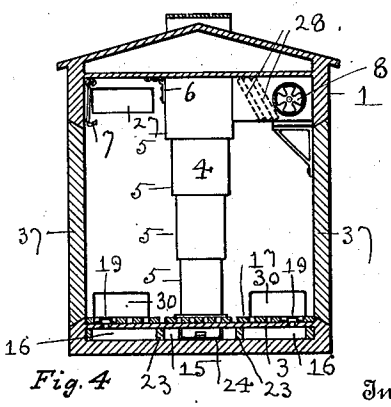


Fig. 4

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Witnesses

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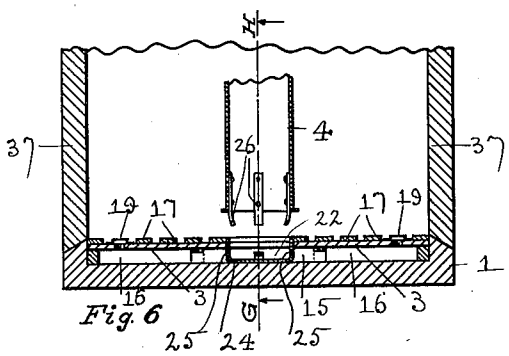


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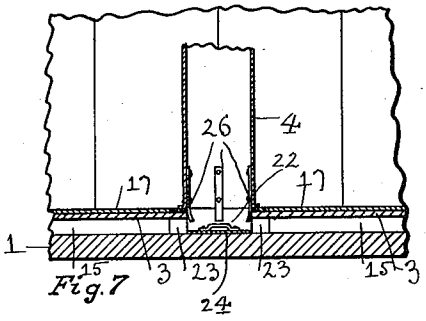


Fig. 7

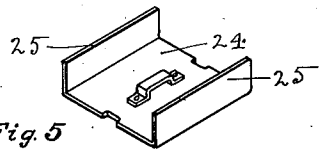


Fig. 5

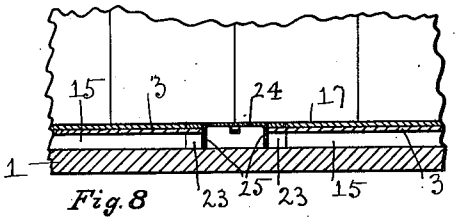


Fig. 8

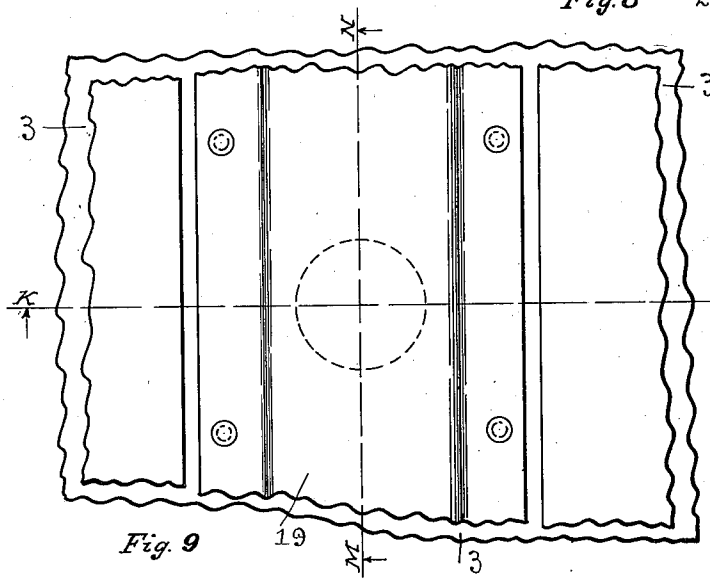


Fig. 9

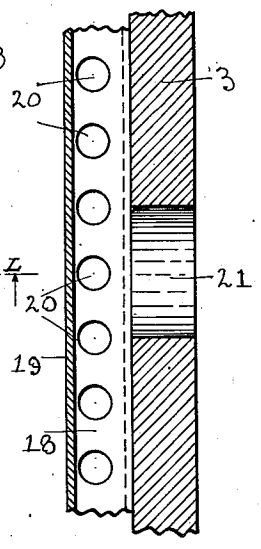


Fig. 11

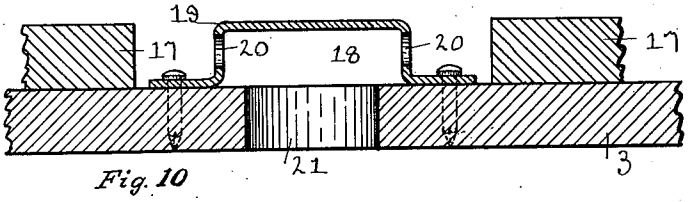


Fig. 10

Witnesses

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3 SHEETS—SHEET 3.

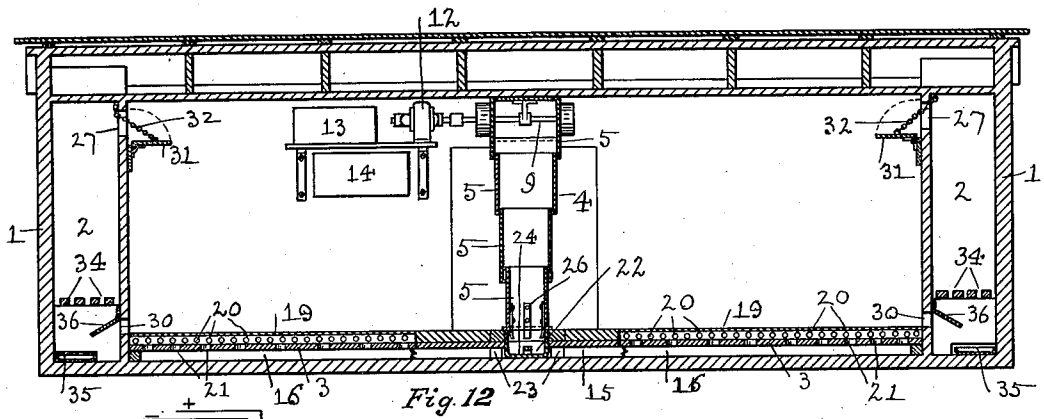


Fig. 12

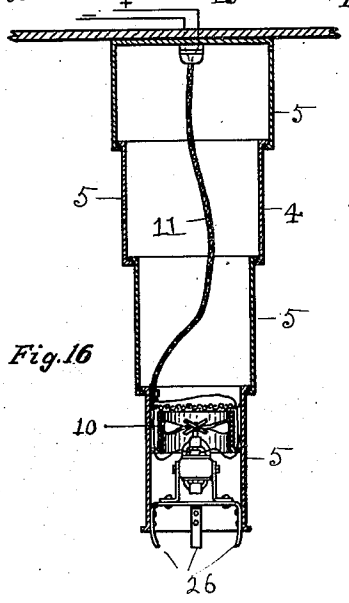


Fig. 16

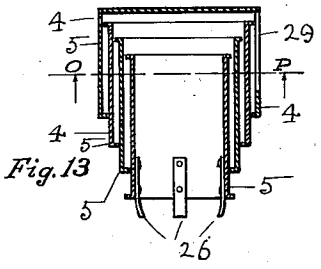


Fig. 13

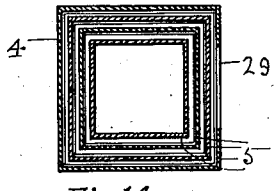


Fig. 14

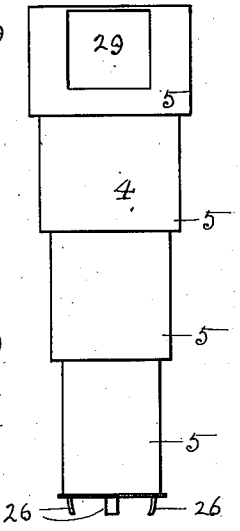


Fig. 15

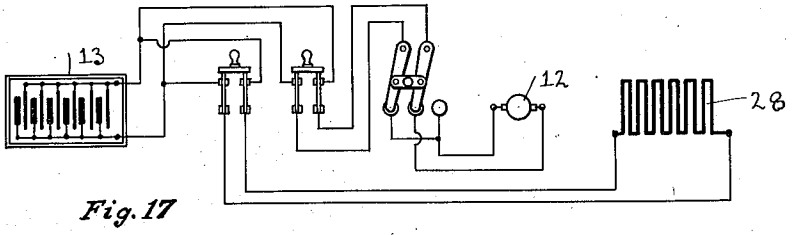


Fig. 17

Inventor

Witnesses

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Mary Schulte

Willard F Yuille.

By Wilson Mitchell Rice

Attorneys

UNITED STATES PATENT OFFICE.

WILLARD F. YUILLE, OF SEATTLE, WASHINGTON.

RAILWAY-CAR.

1,196,832. Specification of Letters Patent. Patented Sept. 5, 1916.

Application filed July 27, 1912. Serial No. 711,938.

To all whom it may concern:

Be it known that I, WILLARD F. YUILLE, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented new and useful Improvements in Railway-Cars, of which the following is a specification.

My present invention relates to cooling, heating and ventilating devices for railway cars, and its object is to provide improved devices of that character, which will be simple and economical in construction and very effective in operation. This object is attained by, and the invention finds a preferable embodiment in, the structures hereinafter described, illustrated by the accompanying drawings, in which:—

Figure 1 is a top plan view of the floor, etc., of a car body embodying my devices, such car being horizontally sectional on line Q—R of Fig. 2, the central air-pipe, however, being removed and portions of the floor, etc. broken away; Fig. 2 is a longitudinal, central, vertical section of such car on a plane corresponding with line U—V of Fig. 1; Fig. 3 is a vertical transverse section of the same on line A—B of Fig. 2; Fig. 4 is a like section of the same on line C—D of Fig. 2; Fig. 5 is a view in perspective of a removable floor plate and valve member for controlling air passages under the floor; Fig. 6 is a central vertical section of the lower part of the car showing one adjustment of said floor plate and valve member, (the central air-pipe being partially raised); Fig. 7 is a vertical section of the same parts on line G—H of Fig. 6, (the central air-pipe being lowered); Fig. 8 is a similar section of the same parts, (the central air-pipe not shown), the floor plate and valve member being adjusted to another position; Fig. 9 is a plan view of a portion of one of the floor air-conduits, etc.; Fig. 10 is a vertical section of the same parts on line K—L of Fig. 9; Fig. 11 is a vertical section of the same on line M—N of Fig. 9; Fig. 12 is a vertical section of such car on line S—T of Fig. 1; Fig. 13 is a vertical section of the telescoping central air-pipe in its closed or raised position; Fig. 14 is a horizontal section of the same on line O—P of Fig. 13; Fig. 15 is a side view of said air-pipe in its lowered or extended position; Fig. 16 is a vertical section of the same including a rotary fan; and Fig. 17 is a diagram of the electric connections for operating the fan and heating the air currents.

The car body 1 has ice chests 2 at the ends and a raised floor 3 providing air passage underneath. A vertical air-pipe 4, preferably located near the middle of the car, is adapted to be lowered into its operative position shown in the drawings, and to be raised for convenience in loading the car, etc.

This end may be effected in various ways, as by forming said pipe in telescoping sections 5 and by hinging the pipe to the car ceiling as at 6, the pipe being held in its raised position by suitable means, as by the hook 7; or either construction,—the telescoping sections or the hinging of the pipe to the ceiling may be adapted to the desired end without the other. A fan is employed to force air through this vertical pipe for ventilation, cooling, or heating the interior. This fan may be of various constructions. It may comprise the double rotary fan wheels 8, the vanes of one being faced oppositely to those of the other, so that by rotating the shaft 9 (on which both fans are carried), in one direction, air is forced downward into the pipe, and in the other direction air is drawn upward through the same. Or, in another mode, the fan 10 may be located, as shown in Fig. 16, near the lower end of said pipe, being driven through the flexible electric connections 11. Suitable power, as the electric motor 12, having battery 13 and switch-board 14, is employed to drive the fan. The space between the car floor and the car bottom is divided into a middle air passage 15 which communicates with the ice chests 2, and into side air passages 16, each extending lengthwise of the car. The car floor shown is provided with raised slats 17 extending in the said direction and with an air conduit 18 formed by the inverted channel iron 19 located over each side air-passage 16 and having orifices 20 therethrough leading into the interior of the car, the floor having orifices 21 there-

through leading from the interior of the conduit to the side passage 16. This inverted channel iron should be of the same height as the surface of the floor, *i. e.* the top of the slats 17, to present no obstruction to the loading of the car. The floor has an opening 22 therethrough immediately below and registering with the air pipe 4. The partition walls 23 of the air passages 15 and 16 terminate at the sides of this opening. A removable floor plate and valve member 24 is adapted to fit the floor opening, so that, in one position, (shown in Fig. 8) this member resting by its oppositely disposed flanges 25 on the car bottom closes the floor opening and continues the floor at the same level. By inverting the member 24 and inserting it in such position that the flanges 25 are in the position shown in Figs. 6 and 7, communication with the side air-passages 16 is cut off by the flanges, while communication is open between the middle air-passage 15 and the air-pipe 4, etc.; but if the member 24 is turned a quarter-way around and inserted then communication with the middle air-passage 15 is closed by the flanges, while the way is open between the side air-passages 16 and the air-pipe 4, etc.

When it is desired to cool the car, the inverted member 24 is turned so as to open communication with the middle air-passage 15, the air-pipe 4 is lowered, its guide members 26 engaging the sides of the floor-opening 22, and the fan is driven in the direction to draw air upwardly through the air-pipe 4. This continuously circulates the air, from the top of the car through the openings 27, downwardly through the ice chests 2, through the middle air-passage 15, and thence upwardly through the air-pipe 4.

If now, it is desired to heat the car, the inverted member 24 is turned so as to open communication with the side air-passages 16, the air-pipe being lowered as before, and the fan is driven in the opposite direction, *i. e.* to force air downwardly through the air-pipe 4. This continuously circulates the air through the electrically heated grids, indicated at 28, through the opening 29 into the air-pipe 4, downwardly through this air-pipe into the side-passages 16, thence through the floor openings 21 into the conduits 18, thence through the openings 20 and into the interior of the car.

Mere ventilation is, of course, effected by either of these operations, but without the use of ice or the heating grids. A natural circulation of air without the use of the fan, may, of course, be effected through the passages and openings described, which may be supplemented by the openings 30.

Closures 31 operated as by chains 32 through the roof-ventilating doors 33 are provided for the openings 27. Supports 34 for the ice, drip pans 35 and water deflectors 36 are shown in the ice chests 2, and the side doors of the car are shown at 37.

Not confining myself to the details of construction shown and described, I claim:

1. In a car of the character described; a swinging air-pipe located in the freight-containing interior of the car and pivotally supported at its upper end and adapted to be swung toward and from the floor; an air passage below the pipe; and means for detachably connecting the passage and the free end of the pipe in its lowered position to provide continuous and inclosed air communication through the pipe and the passage.

2. In a car of the character described; a swinging air-pipe located in the freight-containing interior of the car and pivotally supported at its upper end and adapted to be swung toward and from the floor and comprising telescoping sections; an air passage below the pipe; and means for detachably connecting the passage and the free end of the pipe in its lowered position to provide continuous and inclosed air communication through the pipe and the passage.

3. In a car of the character described; a swinging air-pipe located in the freight-containing interior of the car and pivotally supported at its upper end and adapted to be swung toward and from the floor; an air passage below the pipe; means for detachably connecting the passage and the free end of the pipe in its lowered position to provide continuous and inclosed air communication through the pipe and the passage; and means for forcing air through the pipe.

4. In a car of the character described; a swinging air-pipe located in the freight-containing interior of the car and pivotally supported at its upper end and adapted to be swung toward and from the floor and comprising telescoping sections; an air passage below the pipe; means for detachably connecting the passage and the free end of the pipe in its lowered position to provide continuous and inclosed air communication through the pipe and the passage; and means for forcing air through the pipe.

5. In a car of the character described; a swinging air-pipe located in the freight-containing interior of the car and pivotally supported at its upper end and adapted to be swung toward and from the floor; an air passage below the pipe and having openings to the freight-containing interior of the car; and means for detachably connecting the passage and the free end of the pipe in its lowered position to provide continuous and inclosed air communication through the pipe to and from the passage.

6. In a car of the character described; a

swinging air-pipe located in the freight-containing interior of the car and pivotally supported at its upper end and adapted to be swung toward and from the floor; an air passage below the pipe and having openings to the freight-containing interior of the car; means for detachably connecting the passage and the free end of the pipe in its lowered position to provide continuous and inclosed air communication through the pipe to and from the passage; and means for forcing air through the pipe.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLARD F. YUILLE.

Witnesses:
J. B. MULLALLY,
H. M. BENTLEY.