

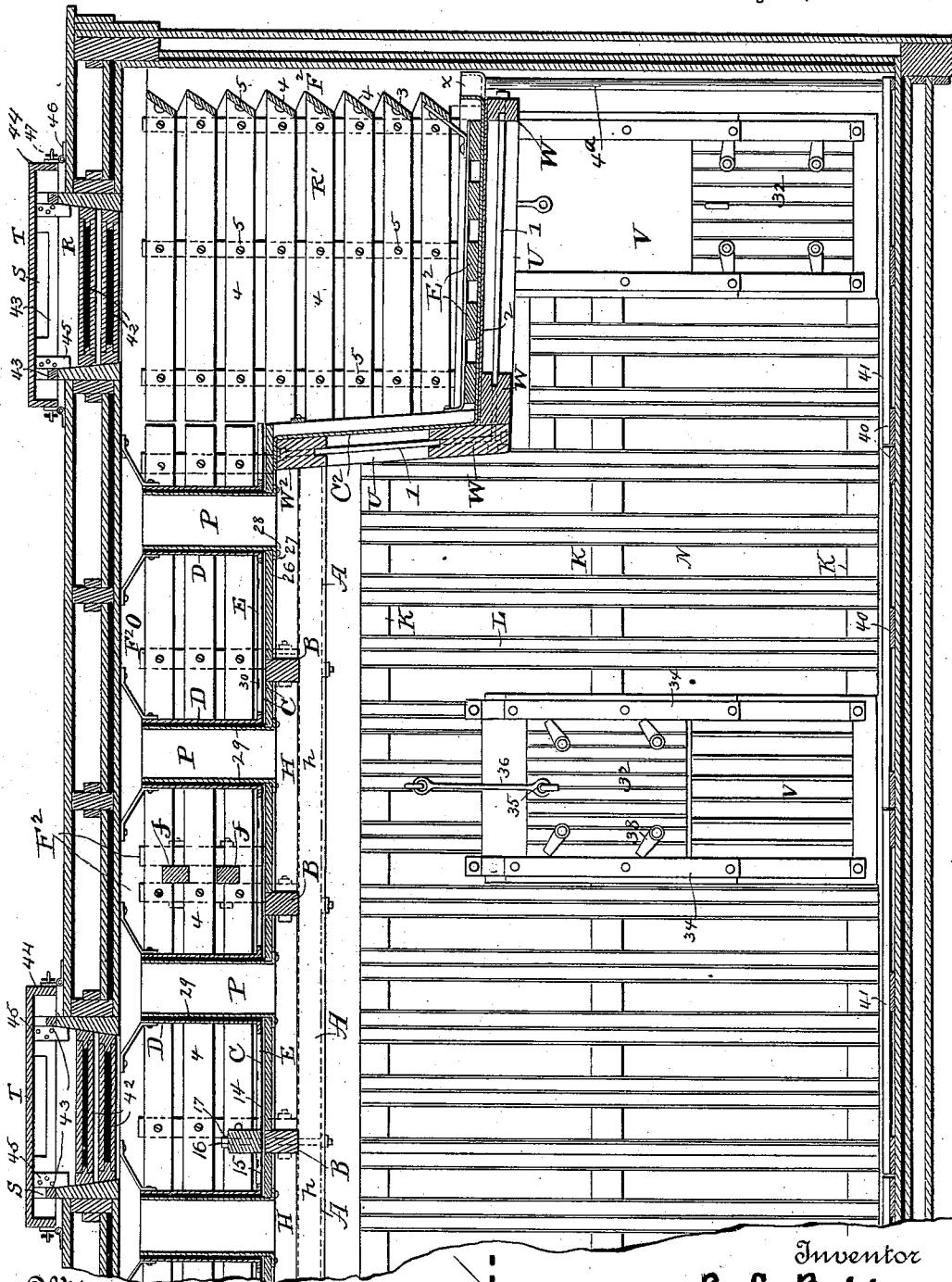
(No Model.)

3 Sheets—Sheet 1.

B. L. BALDWIN.
REFRIGERATING AND VENTILATING CAR.

No. 538,945.

Patented May 7, 1895.



Witnesses
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(No Model.)

3 Sheets—Sheet 2.

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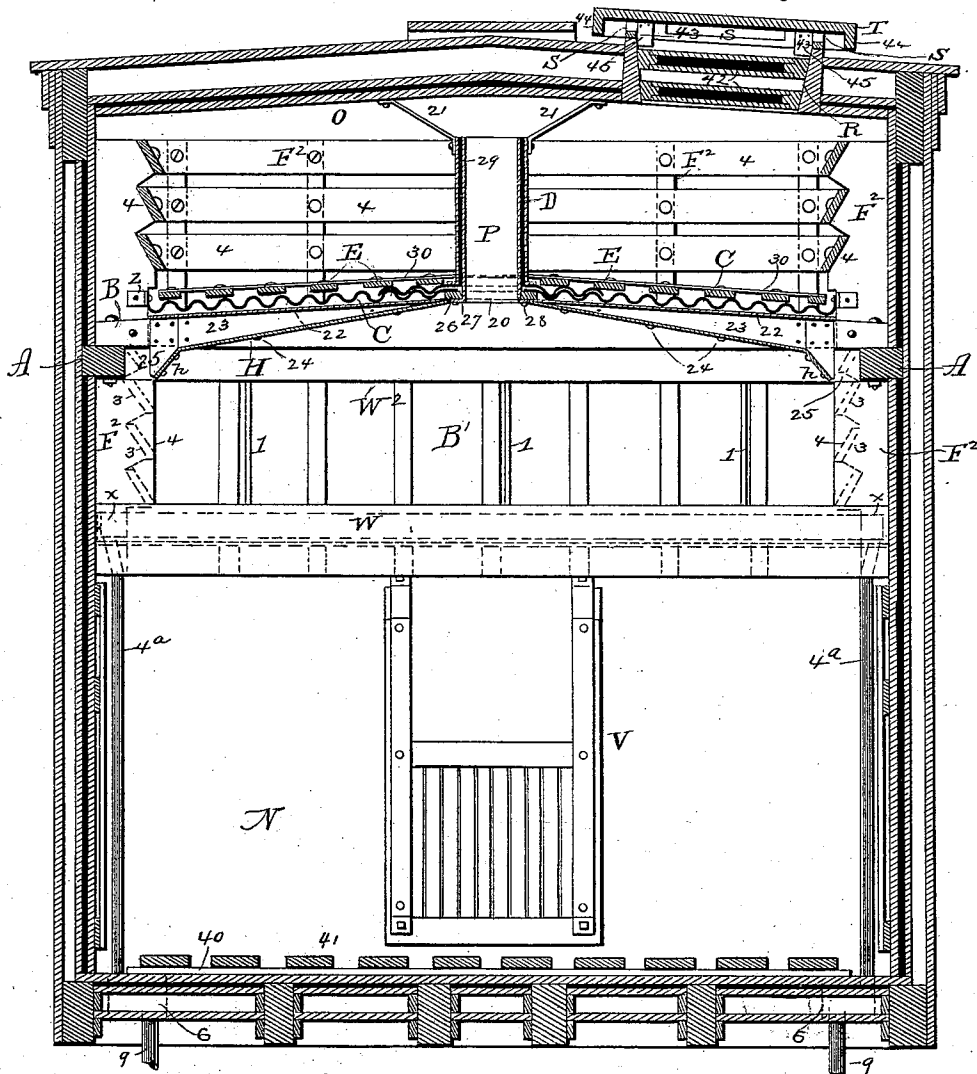
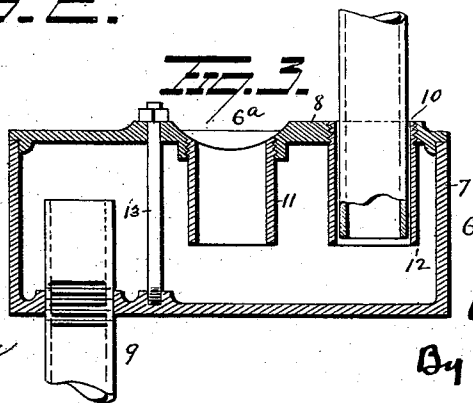


FIG. 2.



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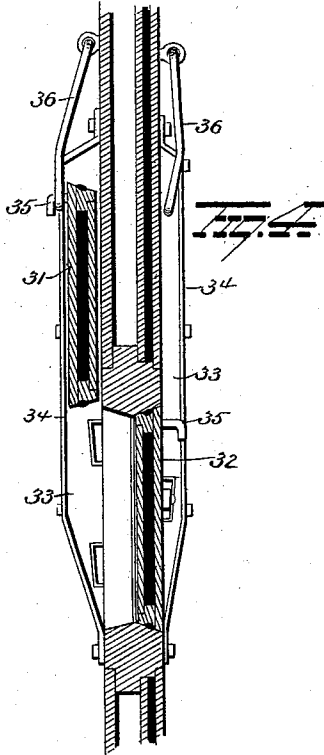


Fig. 3.

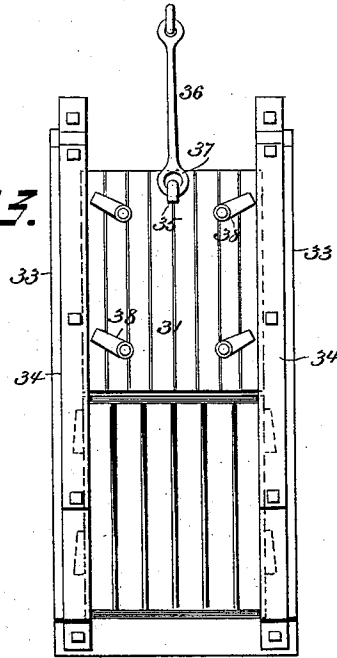


Fig. 5.

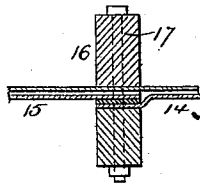
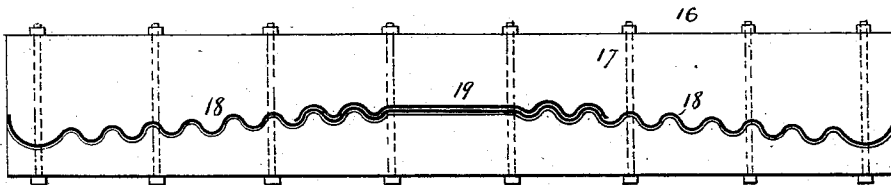


Fig. 7.

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UNITED STATES PATENT OFFICE.

BENJAMIN L. BALDWIN, OF GAINESVILLE, FLORIDA.

REFRIGERATING AND VENTILATING CAR.

SPECIFICATION forming part of Letters Patent No. 538,945, dated May 7, 1895.

Application filed June 4, 1894. Serial No. 513,377. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN L. BALDWIN, a resident of Gainesville, in the county of Alachua and State of Florida, have invented certain new and useful Improvements in Refrigerating and Ventilating Cars; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in refrigerating and ventilating cars, the object of the invention being to so construct a car as to facilitate the circulation of air for refrigerating and ventilating purposes, and it consists in certain novel features of construction and combinations and arrangements of parts as hereinafter set forth and pointed out in the claims.

In the accompanying drawings, Figure 1 is a longitudinal sectional view of a portion of a car embodying my improvements. Fig. 2 is a cross-section. Figs. 3, 4, 5, 6, and 7 are detail views.

The construction of the body of the car is similar to that of other refrigerating cars, except in the openings for ventilation. I provide a freight or storage chamber N in the lower portion of the car and an ice chamber O above the freight chamber. The ice chamber is supported by sub-beams A, A, secured in the side walls of the car at a proper height above the floor of the freight chamber. On these sub-beams, cross beams B are removably secured by means of suitable bolts, and upon said cross beams a corrugated metal pan or trough C is removably secured. Said pan or trough extends each way from the middle of the car toward the sides to within four (more or less) feet of the ends of the car, at which points the bottom of the ice chamber is dropped (on a vertical line or at an angle of about five degrees) two feet (more or less) below the line of the corrugated drip pan or trough C, thus producing enlarged chambers B' at the ends of the ice chamber, as shown in Fig. 1. At the ends the corrugated metal pans are joined by plain sheet metal ice pans C² which form the bottom and slope of the enlarged end portions of the ice chamber.

The inner walls of the enlarged portions of

the ice chamber extend upwardly and their top edges are turned so that they will pass under the end of the corrugated pan and rest on cross timbers W² so that the drip water from the corrugated pans C will pass down said inner walls of the enlarged portion of the ice chamber.

The edges of the ice pan C² are preferably turned up, next to the side and end walls, two or more inches, leaving a space *x* of four inches (more or less) between the edges of the pan and the walls of the car. For the support of these enlarged portions B' of the ice chamber, the cross timbers W are employed and framed into the side walls of the car, said timbers W being connected together by means of tie bolts 1. Between these timbers or beams W and from them up to cross beams W², is a series of slats U framed into the beams W, upon which rests the plain sheet metal ice pan C². There is an insulating sheathing 2, of asbestos or other non-conducting material between the timbers and the bottom of the sheet metal pan.

Uprights F² are secured to the side and end walls of the car and extend up to near the overhead sheathing. The lower ends of said uprights are five inches (more or less) wide, and are cut so as to pass down between the ice pan and the walls of the car. There are lugs *z* secured by rivets or bolts to the upturned edges of the ice pan and secured to the uprights F², for the purpose of securing the ice pan in place.

The inner edges of the uprights F² are notched to produce inclined faces 3 for the reception of wooden slats 4 which form the side and end walls of the ice chamber. The slats 4 are secured to the uprights F² by screws 5 and are placed at an angle as shown, so as to drain inward. At each corner of the ice chamber, pipes 4^a are secured in the bottom of the drip pans C² and, passing down discharge the drip water into traps 6 in the floor of the car. The traps 6 are placed with their tops slightly below the surface of the floor of the freight chamber and should the drain pipes, from any cause, get choked up and the water overflow, it will flow into the traps and pass out. Openings 6^a are made in the top of the traps for this purpose. The

traps are made of metal and are made in two parts, 7, 8. The bottom portion 7 contains a pipe 9 that passes through the bottom of the car with its top end near the cap 8. The cap 5 has two openings 6^a, and 10, with pipes 11, 12 secured in them, said pipes passing down to near the bottom of the trap. One of the openings, 10, is for the drain pipe, the other, 6, to receive overflow. The cap of the trap 10 is secured to the lower portion thereof with a bolt 13, the joint being made air tight by means of suitable packing. The caps of the traps are easily removable for the purpose of cleaning.

15 The bottom of the ice chamber C has a slight incline each way from the middle of the car, so the drip water from the ice will be readily conveyed to the drip pipes. The corrugated metal drip pans are made in two 20 sections 14, 15 and their ends joined together at or near the middle of the car. Said ends being lapped one on the other, are secured by means of a clamp 16 made of two pieces of timber secured together by means 25 of bolts 17, which pass up through the timbers of the clamp and sheet metal pans, with packing between the sheets. The top piece of the clamp also forms a stop to prevent the ice from shifting. There are also cross bars 30 *f, f*, secured to the uprights F², as shown in Fig. 1 to prevent the ice from shifting.

Each section of the ice pan C is made of three pieces 18, 18, 19, the two side pieces 18 being corrugated lengthwise with their outer 35 edges turned up two inches, more or less, and their inner edges are also turned up, but not above the corrugations and the middle piece 19 has at least two corrugations on each edge, leaving the space in the middle plain, twelve 40 inches, more or less. The two side corrugations rest in the same number of corrugations of the side sections, making the ice pan secure against all leakage and removable for the purpose of repairs. In the middle section 45 19 of the ice pan round holes 20 are cut at intervals, into which are secured by means of solder, vertical metal air flues D. These air flues D extend upwardly to within a few inches of the overhead sheathing of the car 50 and at their upper ends are braced by brackets 21 secured to the overhead sheathing with screws.

At each edge of the metal drip pan C, the uprights F² are secured to the cross beams B 55 and pass up to near the overhead sheathing, their outer edges resting against the side walls of the car and the inner edges, at the bottom, are cut to receive the upturned edges of the corrugated ice pans and are also notched to 60 receive the inclined slats 4, which form the side walls of the ice chamber. Underneath the corrugated metal pan C, is a sheet 22 of asbestos or some other non-conducting material, the corrugated metal pan C resting on 65 said sheathing. There is also a sectional ceiling or sheathing H of iron or wood secured between the cross beams B, cleats 23 being se-

cured to said beams, and the said sheathing or ceiling H is secured to same with screws 24 and is removable. The sheathing or ceiling 70 is made sloping from near the middle (as shown in Fig. 2) to near the side walls of the car, at which points it is bent to an angle of about forty-five degrees as shown at *h* and leaves a space or passage 25 of about three 75 inches, more or less, between said sheathing or ceiling and the sub-beams A, A.

Underneath the plain portion of the ice pan C, is a board 26 resting on cross beams B and is secured in place with screws and to said 80 board the flanges 27 of flues P are secured by means of screws 28 and are removable, said flues P passing up through flues D and terminating at the same point. The flues P are insulated with asbestos sheathing 29 where 85 they pass through flues D. There are wooden slats E resting on the corrugations of the metal pan C for the support of the ice and these slats are held in place by means of thin iron plates 30 which pass over and are let into 90 the tops of said slats, and are secured with screws, said slats thus being removable. There are also wooden slats E² resting on the bottom of the enlarged portions B' of the ice chambers and also up the slope or inner walls 95 thereof.

There are four grated openings V in the side wall and one in each end wall near the floor of the car. These openings are provided with inside and outside insulated doors 31, 32 and 100 to each side of each opening V, cleats 33 are secured, said cleats being of a thickness to allow the doors to be removed from their seats and pass up above the openings. Straps 34 105 of iron are secured to the cleats and project over the edges of the opening to prevent the door from dropping out, said straps being secured in place by means of screws passing through the straps and the wooden cleats into the walls of the car. Each door is provided 110 with a short hook 35 secured thereto near its top. Links 36 are connected to the wall of the car at a proper height and made with eyes 37 adapted to engage the hooks 33 on the doors to retain the latter in elevated position. When 115 it is desired to close the door, remove the link from the hook and place the door in its seat. On the doors are two or more pawls 38, whereby to secure the doors in place.

On the side and end walls of the freight 120 chamber horizontal slats K are secured, to which vertical slats L are fixed. The floor also has slats 40 laid cross-wise at intervals and to them slats 41 are secured, said slats extending lengthwise of the car and are made in 125 sections and may be taken up and stored in the ends of the car. In the roof of the car, at one side of the longitudinal center, are openings R for filling the ice chamber, and are provided with the usual insulating shutters 130 42. Covers T are also placed over the tops of the openings R. These covers are made of common boards and project over the frame of the openings R several inches. To the un-

der face of these covers, slats 43 are secured and rest on the top of the frame of the openings. These slats have slots S cut in their top edges for the purpose of ventilation. There are also guards or boards 44 around the edges of the cover to prevent cinders or rain from entering at slots S. There are also blocks 45 secured to the four corners of the cover and extend down into the four corners of the opening R to secure the cover in place. Said covers are also held in place by hasps 46 and keys 47 secured to the roof of the car. When in use as a ventilator car, the insulated doors or covers of the ice openings R are taken out and placed down in the ice chamber, thus allowing the air that enters at the grated openings V to pass up through the air pipes P of the ice chamber and out through the ice openings R and slots S of the covers T.

When the car is in use as a refrigerating car, the openings all being closed, the heated air from the freight chamber rises and comes in contact with the sloped sheathing or ceiling H, which draws the air to the center of the chamber and it passes up through flues P and is delivered over the ice, while the refrigerated air passes down between the sides of the ice chamber and the walls of the car and through the slats K and L and the wall and slat frame 41 resting on the floor, by which a perfect circulation is obtained, as the heated air on its ascent does not come in contact with the refrigerated air on its descent.

I am aware that prior to my invention, refrigerating and ventilating cars have been constructed with ice chambers above the freight chamber; also sub-beams and cross beams have been used for the support of the

ice chambers. I therefore do not claim such construction broadly, but,

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a refrigerating and ventilating car, the combination with an ice chamber, of a metallic bottom therefor, said bottom comprising two main sections, clamps for securing said sections together, each of said main sections comprising two corrugated sections and an intermediate plain section, substantially as set forth.

2. In a refrigerating car, the combination with an ice chamber in the upper portion thereof, of a bottom therefor formed of sectional plates and timbers between which the sections lie and are secured, substantially as set forth.

3. In a refrigerating and ventilating car, the combination with an ice chamber located therein, of a sectional drip pan, the side sections of which are corrugated, flues communicating with openings in the central portion of the drip pan and extending up through the ice chamber, a sheathing below the drip pan and flues communicating with openings in said sheathing and passing through said first-mentioned flues, and insulating material between said flues, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

BENJAMIN L. BALDWIN.

Witnesses:

V. J. SHIPMAN,
A. R. HARPER.