

No. 780,939.

PATENTED JAN. 24, 1905.

C. H. COOLIDGE.
REFRIGERATOR.

APPLICATION FILED OCT. 1, 1902.

3 SHEETS--SHEET 1.

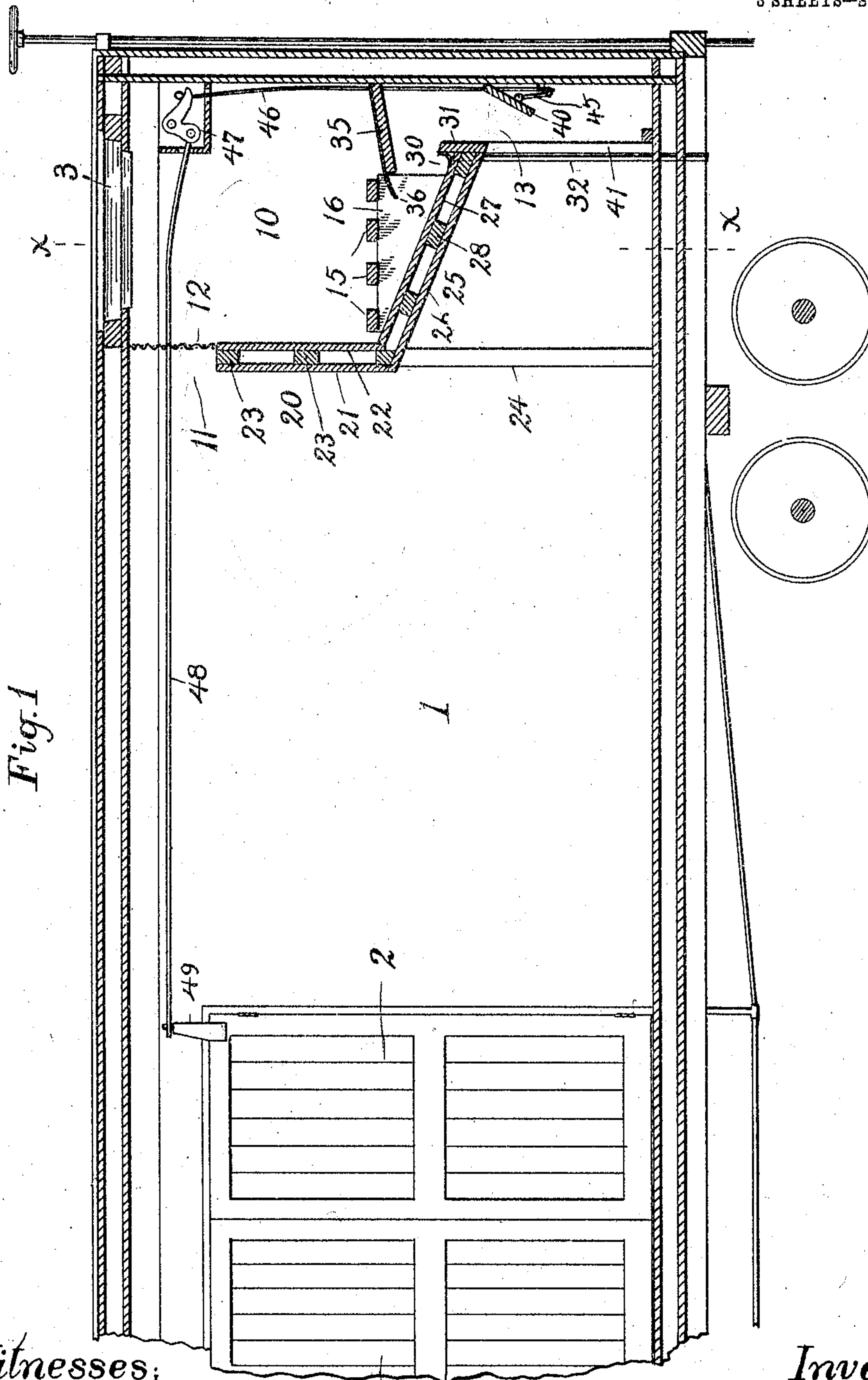


Fig. 1

Witnesses;

E. H. Wait.

E. R. Scott.

Inventor,

Charles H. Coolidge;

By *A. B. Upham,*
His Attorney.

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3 SHEETS—SHEET 2.

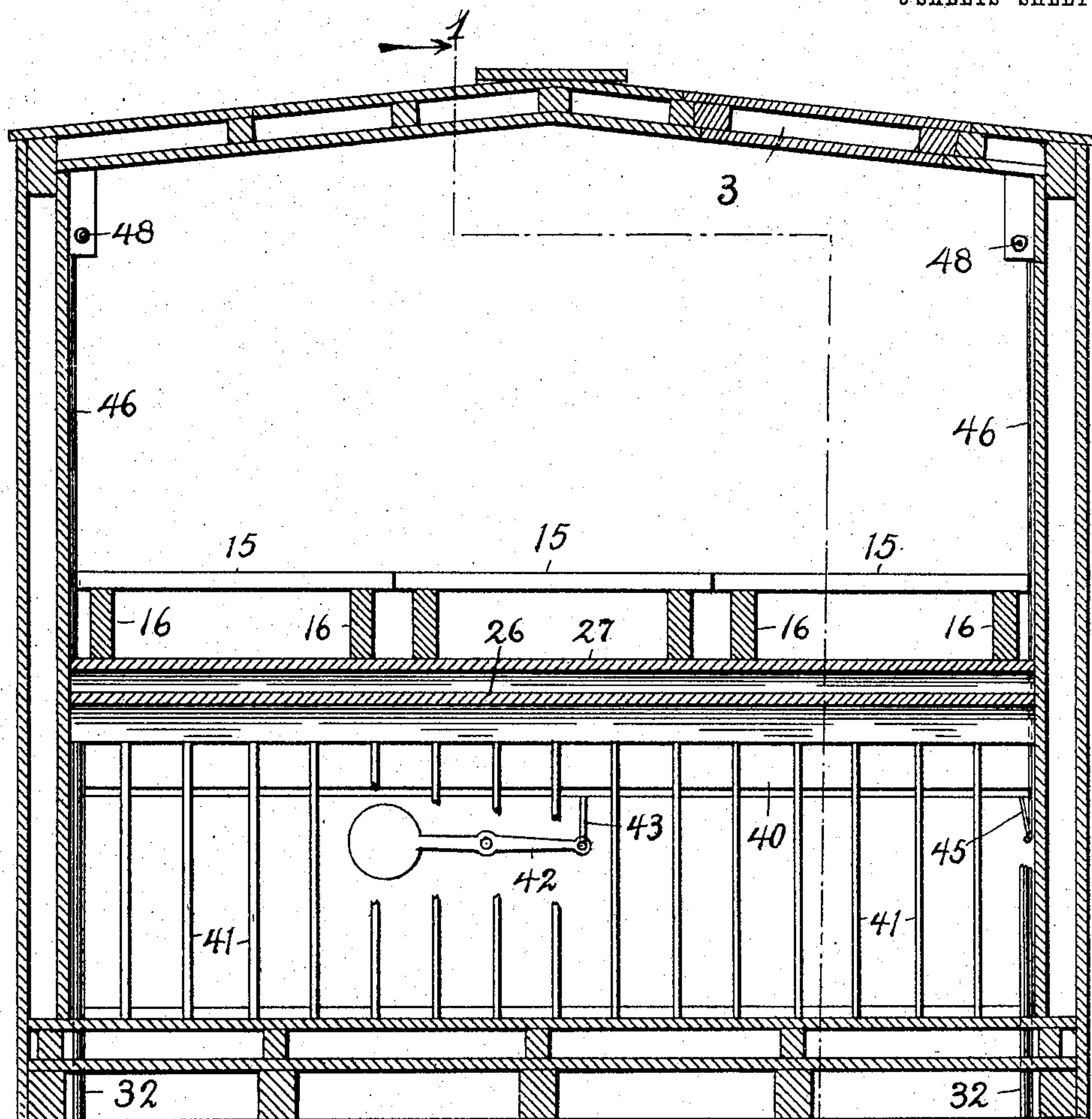


Fig. 2

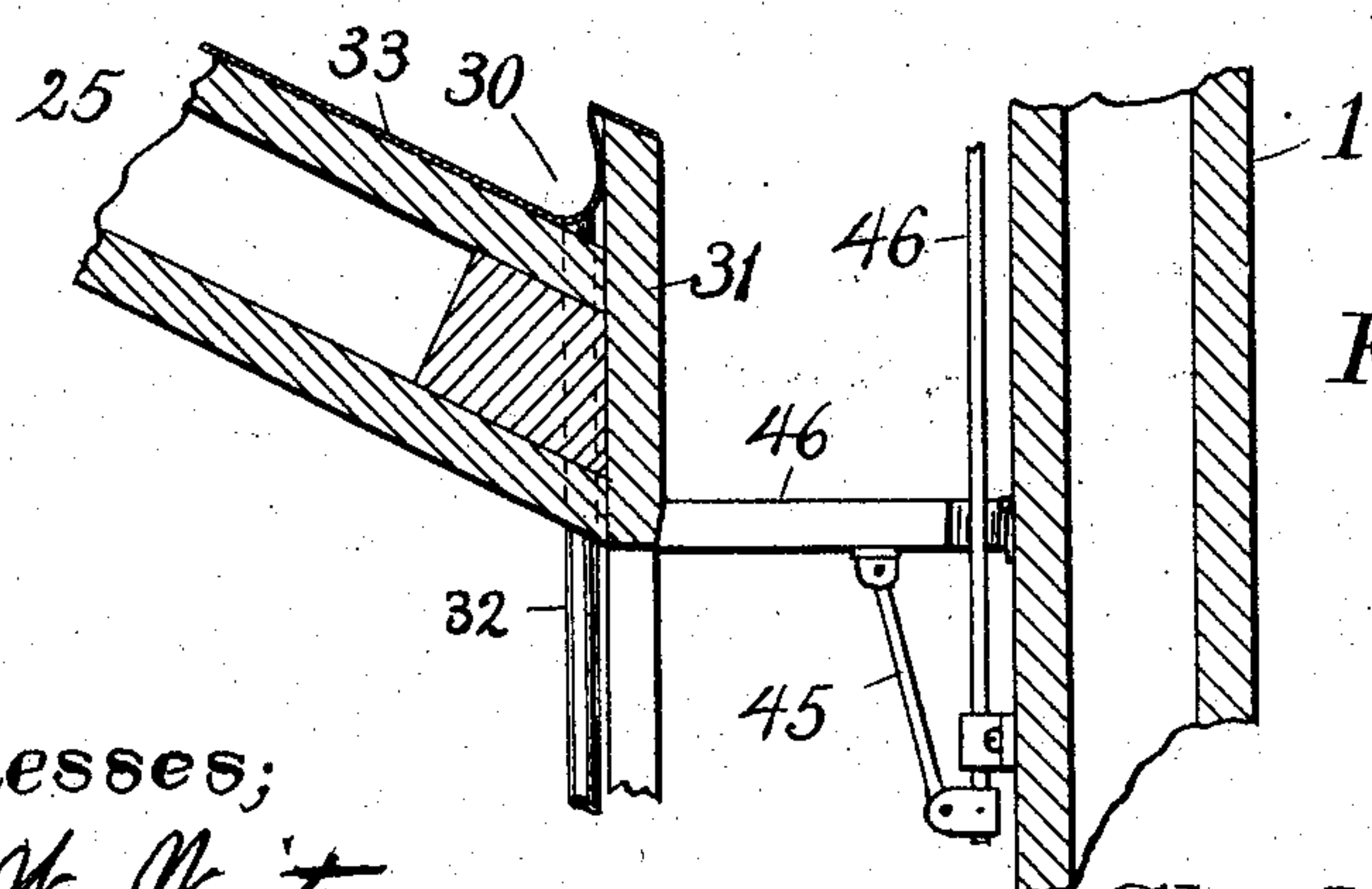


Fig. 3

Witnesses;

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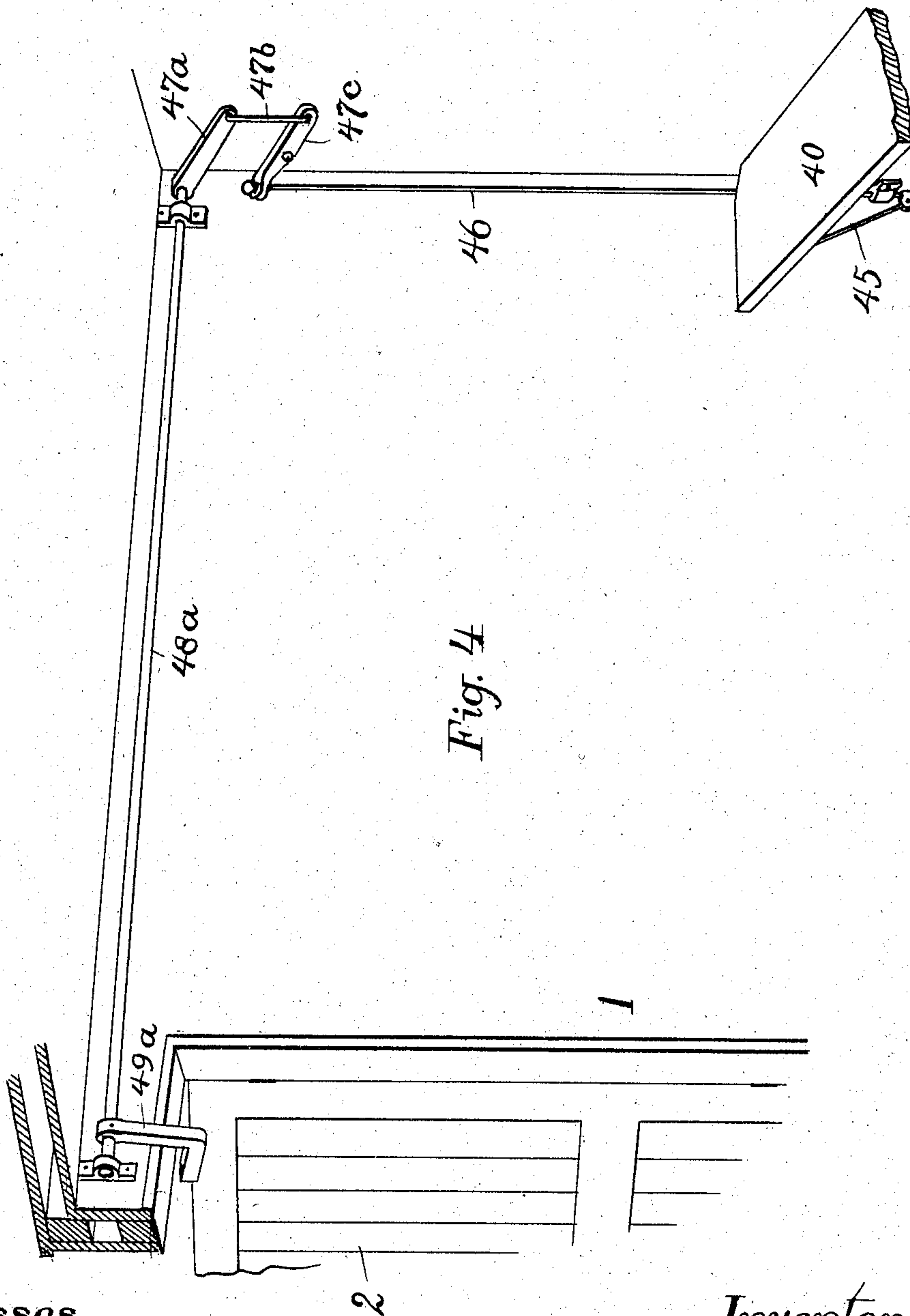


Fig. 4

Witnesses;

E. H. Waite

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Inventor,

Charles H. Coolidge;

By *A. B. Upham,*
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UNITED STATES PATENT OFFICE.

CHARLES H. COOLIDGE, OF MALDEN, MASSACHUSETTS, ASSIGNOR TO
COOLIDGE REFRIGERATOR AND CAR COMPANY, OF BOSTON, MAS-
SACHUSETTS, A CORPORATION OF MASSACHUSETTS.

REFRIGERATOR.

SPECIFICATION forming part of Letters Patent No. 780,939, dated January 24, 1905.

Application filed October 1, 1902. Serial No. 125,492.

To all whom it may concern:

Be it known that I, CHARLES H. COOLIDGE, a citizen of the United States, residing at the city of Malden, in the county of Middlesex, State of Massachusetts, have invented certain new and useful Improvements in Refrigerators, of which the following is a full, clear, and exact description.

My invention is particularly designed for use in connection with railways; but it is equally applicable to other purposes where a dry as well as a cool air is desired.

Referring to the drawings forming part of this specification, Figure 1 is a vertical longitudinal section of a refrigerator-car embodying my invention, taken upon line 1 1 in Fig. 2 looking in the direction of the arrows. Fig. 2 is a transverse section of the same on the line X X in Fig. 1. Fig. 3 is a detail sectional view showing more clearly the means for temporarily terminating the refrigerating action, and Fig. 4 a perspective view of an automatic means for operating the same.

The car-body 1, with which my invention is shown as applied, is formed with double floors, sides, top, and ends, as indicated in the drawings, while its doors 2 are double and folding, as indicated by Fig. 1.

Preferably at each end of the car, although but one end is illustrated, is my refrigerating device, which consists of an ice-container 10, having its floor located at approximately half-way between the car floor and roof and filled through a suitable trap-door 3 in the car-roof. This container or box 10 extends for the entire width of the car, and hence requires for its construction only the additional elements of the side 20 and floor 25, each securely fastened to the car sides and supported by the same and by the two posts 24, fixed to the car sides. Both said floor and side are made double, the side comprising the wooden timbers or scantlings 23 and the sheathing 21 22 and the floor comprising similar scantlings 28 and sheathing 26 27, the spaces between the sheathing forming dead-air chambers for preventing the transmission of heat.

The side 20 does not extend to the roof of the car; neither does the floor 25 reach the car end, a space or passage 11 being thereby left at the ice-box top and a somewhat narrower passage 13 being left through the floor. The object of these passages is to permit of the air within the car rising up and into the ice-box, while the cooled air within the latter flows down into the car, and thus by gravity maintaining a constant circulation between the car and cooler.

Resting upon the floor 25 are the blocks 16, having the slats or grating 15 secured thereto for the direct support of the ice. Such grating is made in sections, as shown in Fig. 2, to more easily permit of its removal through the trap-door 3 for cleansing or repair. The floor 25 being inclined, as shown in Fig. 1, the reason for which will be explained hereinafter, said blocks are made triangular to locate the slats 15 on the level. Said blocks abut against the board 35, which is fixed to the car end and sides, and are thereby kept from sliding down the inclined floor 25. Said board 35 is inclined, as shown, to facilitate drainage from it to the floor 25, and I prefer to have the galvanized sheet-iron 36, with which it is sheathed, extended between the blocks 16 to reach nearer the floor 25, and so diminish the danger of any spattering on the part of the water dripping therefrom to the floor and a consequent descent of moisture through the passage 13 to the car-floor, for it is one of the objects of my invention to construct a refrigerator-car which shall be absolutely dry.

At the edge of the floor 25 is fixed a vertical board 31, projecting a short distance above such floor and composing therewith a sink 30, the same being made water-tight, as are all the other inner walls of the ice-box, by the sheet-iron sheathing 33, as shown in Fig. 3. At each end of this sink and at the sides of the car is a drain-pipe 32, descending through the car-bottom, the two pipes serving to effectually drain the sink whether the car is on a level or canted to either side.

The board 35 is located above the upper

edge of the board 31 for a distance about equal to the width of the passage 13 in order not to interfere with the free circulation of air through the cooler or ice-box.

5 When the car is being filled or emptied and the doors 2 at either one or both sides of the car wide open, the incoming warm air will fill the car and freely circulate through the ice-boxes, rapidly melting the ice and caus-
10 ing additional labor and expense in resupplying the boxes. To prevent this, I provide the passage 13 with a door 40, hinged to the car end and adapted when swung up to a horizontal position to fully close said passage. As
15 we cannot expect the freightmen and lumpers to remember to open and close this door, I have provided means for rendering such closure automatic and dependent upon the similar action of the car-doors.

20 Fixed to the door 2 is a cleat 49, pivotally carrying one end of the rod 48, so that as said door is opened and closed said rod will be moved longitudinally back and forth. The other end of the rod is attached to the verti-
25 cal leg of the bell-crank lever 47, while from the other leg hangs a rod 46, the lower end of which extends below the door 40 and is connected therewith by a link 45. By this arrangement whenever the car-doors are
30 opened the door or trap 40 is automatically closed and all circulation through the ice-box immediately cut off, for if the cold air in the box cannot descend therefrom there can be no inrush of warm air through the passage 11.

35 To enable the trap 40 to be operated by the opening or closing of the car-doors upon both sides or on one side alone, I provide a duplicate closing arrangement at each side of the car, as indicated in Fig. 2, but do not have
40 the rods 46 pivoted to the bell-crank levers 47, but only loosely hung therefrom, so that when one bell-crank lever only is moved through the action of its connected car-door then the rod 46 at the opposite side of the car
45 will slide up without interference within its bell-crank lever as raised by the closure of the trap. To partially counterbalance said trap 40, and thereby reduce to a minimum the effort required for its closure, I provide the
50 weighted lever 42, connected at its light end to the trap by a link 43, as shown in Fig. 2.

The trap-closing arrangement just described is only adapted for cars whose doors open inward. To enable outward-swinging doors to
55 operate said trap, I prefer the construction illustrated in Fig. 4, where the rock-shaft 48^a is provided with an arm 49^a, which by the pressure of the door 2 when closed rocks said shaft and swings the arm 47^a upward. This,
60 through the intermediate lever 47^c and connection 47^b, causes the rod 46 to descend and the trap 40 to open. In this case the weighted lever 42 more than counterbalances said trap, so that when the car-door is opened said

weighted lever raises said trap, and so termi- 65
nates air circulation through the ice-box.

As shown in Figs. 1 and 2, the trap 40 and its operating parts are protected from interference by carelessly - located bundles and boxes by means of the grating 41. 70

To prevent pieces of ice from jarring out into the car through the passage 11 when the ice-box has been filled rather too full, I provide said passage with a screen 12, of heavy wire rod, as shown in Fig. 1. 75

I have found that by forming the side and floor 20 25 double, and thereby inclosing dead-air spaces wholly unpacked with ashes, sawdust, or other alleged non-conductors, there is absolutely no condensation of moisture or
80 "sweating" on the exterior or car side of the ice-box; neither is there any possibility of ice particles or water-drippings finding their way into the car. The result is that my refrigerator-car will carry meat without tainting for
85 an unusual length of time and at a minimum of expense in ice and attention.

What I claim as my invention, and for which I desire Letters Patent, is as follows, to wit:

1. In a refrigerator-car, the combination 90
with the car-body having doors in its sides, of the ice-container having its floors separated for a space from the car end, the hinged trap adapted to close the opening between said floor and the car end, vertical rods at the ends 95
of said trap, connecting means between each of said rods and one of the doors for raising the rods by the opening of the doors, and connecting means between each of said rods and the trap, each of said rods having a sliding 100
connection with one of said connecting means, whereby the opening of either door closes said trap whether the other door be opened or not, substantially as described.

2. In a refrigerator-car, the combination 105
with the car-body having swinging doors in its sides, of the ice-container having its floor separated for a space from the car end, the hinged trap adapted to close the opening between said floor and the car end, vertical rods 110
at the ends of said trap, connecting means between each of said rods and one of the doors for raising the rods by the opening of the doors, and connecting means between each of said rods and the trap, said rods having slid- 115
ing connections with the connecting means between the rods and doors, whereby the opening of either door closes said trap whether the other door be opened or not, substantially 120
as described.

In testimony that I claim the foregoing invention I have hereunto set my hand this 27th day of September, 1902.

CHARLES H. COOLIDGE.

Witnesses:

A. B. UPHAM,
GRACE KNIGHT.