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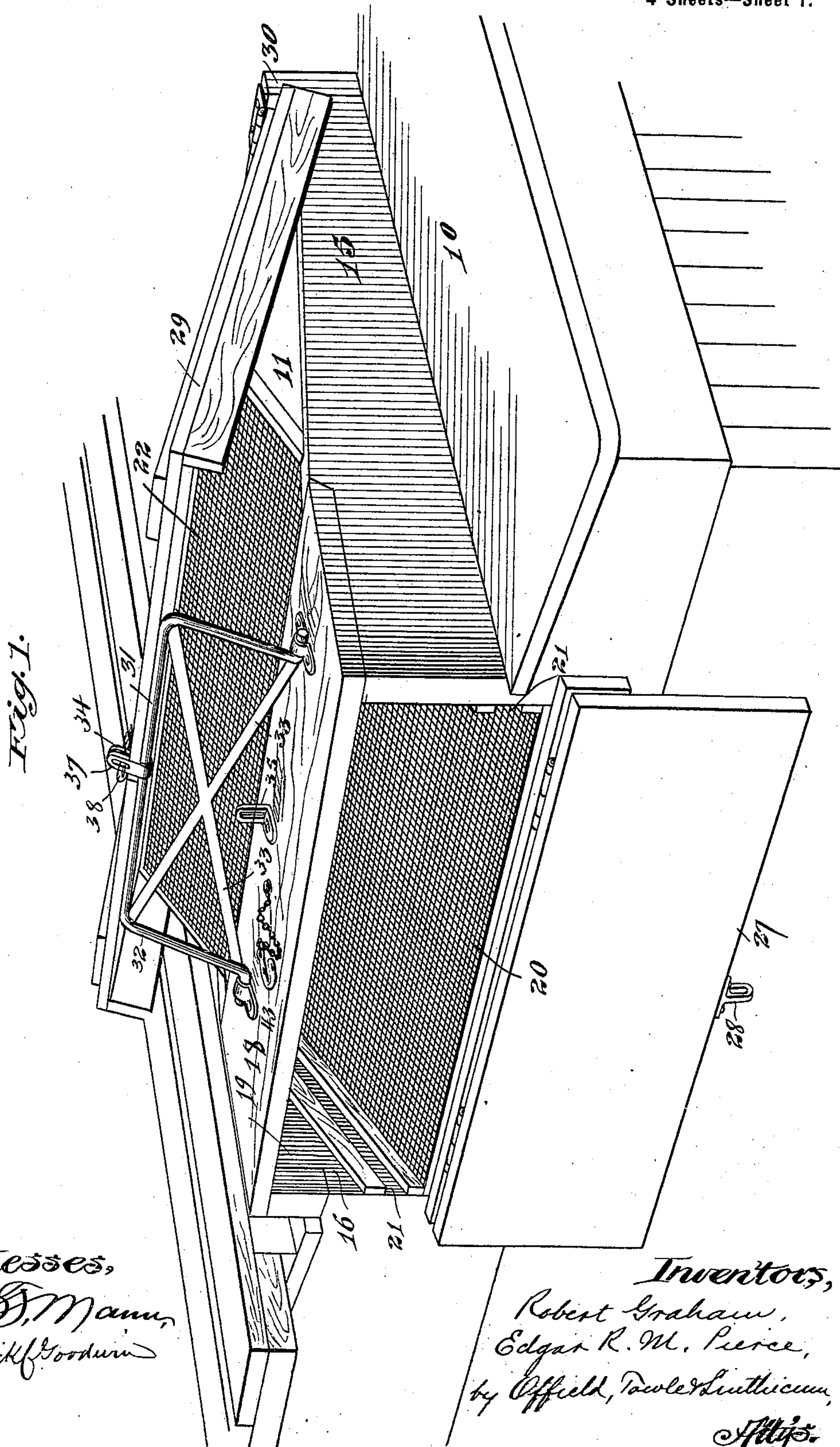
Patented Feb. 28, 1899.

R. GRAHAM & E. R. M. PIERCE.
VENTILATOR FOR REFRIGERATOR CARS.

(Application filed May 31, 1898.)

(No Model.)

4 Sheets—Sheet 1.



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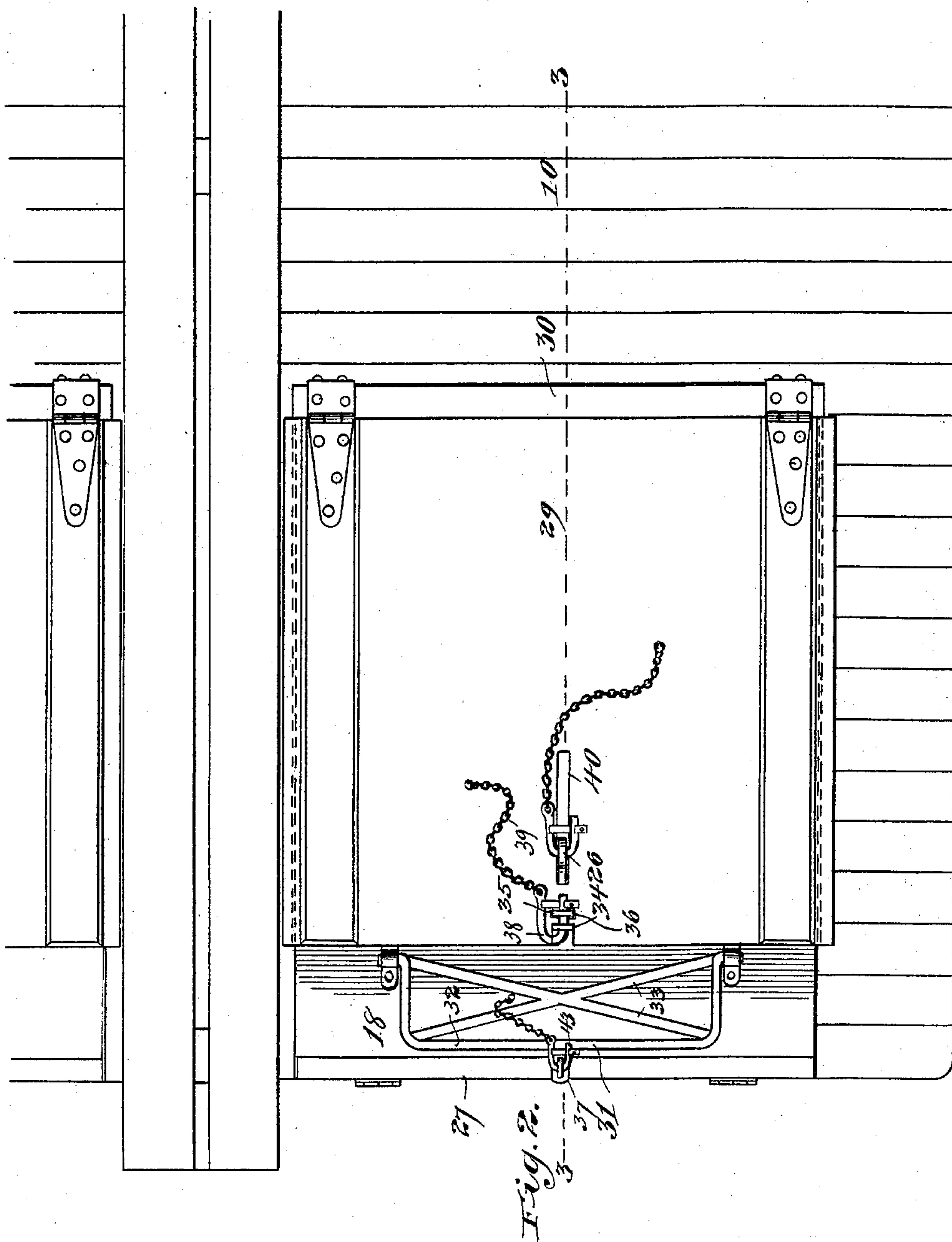
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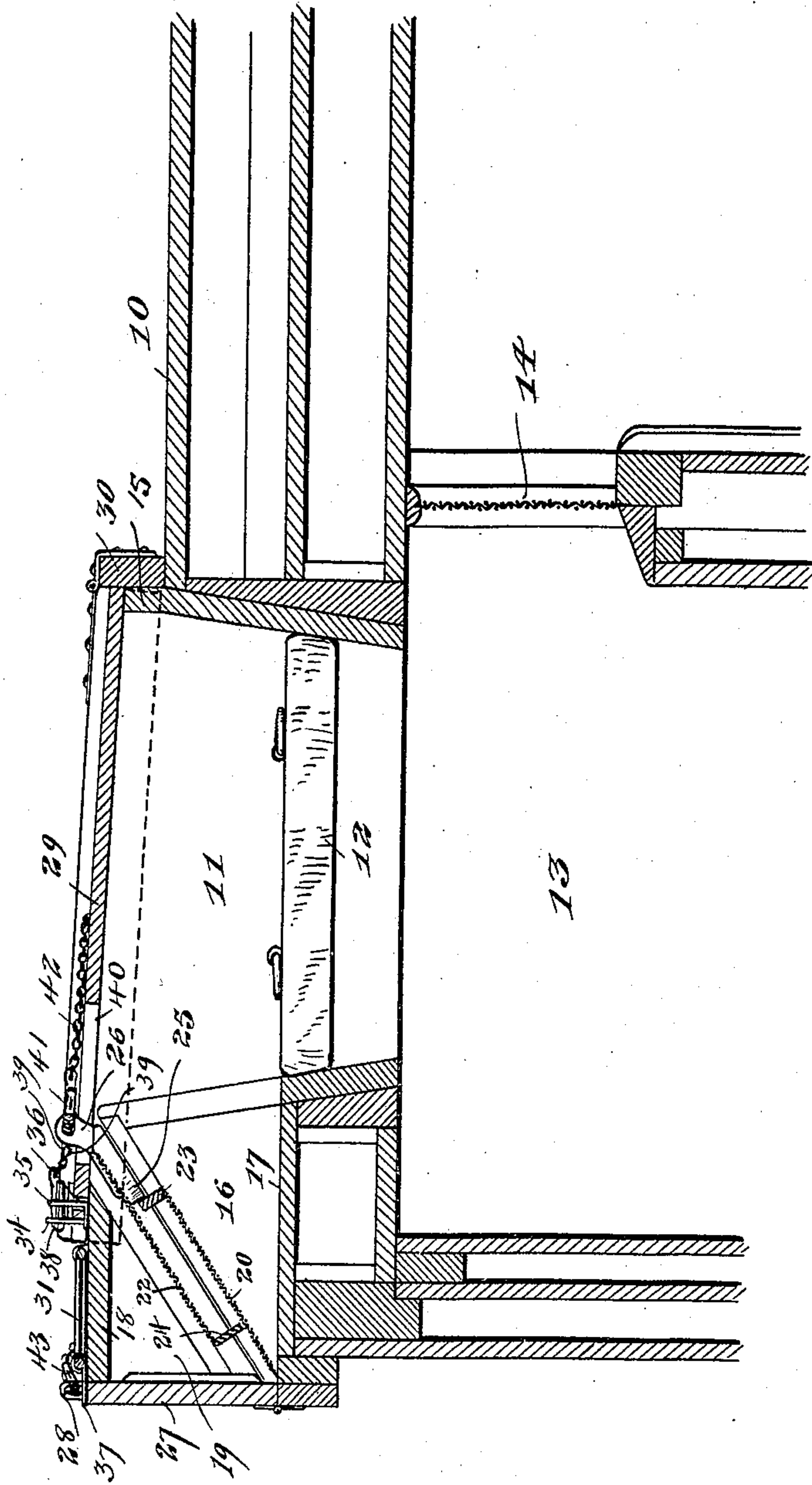
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Fig. 3.



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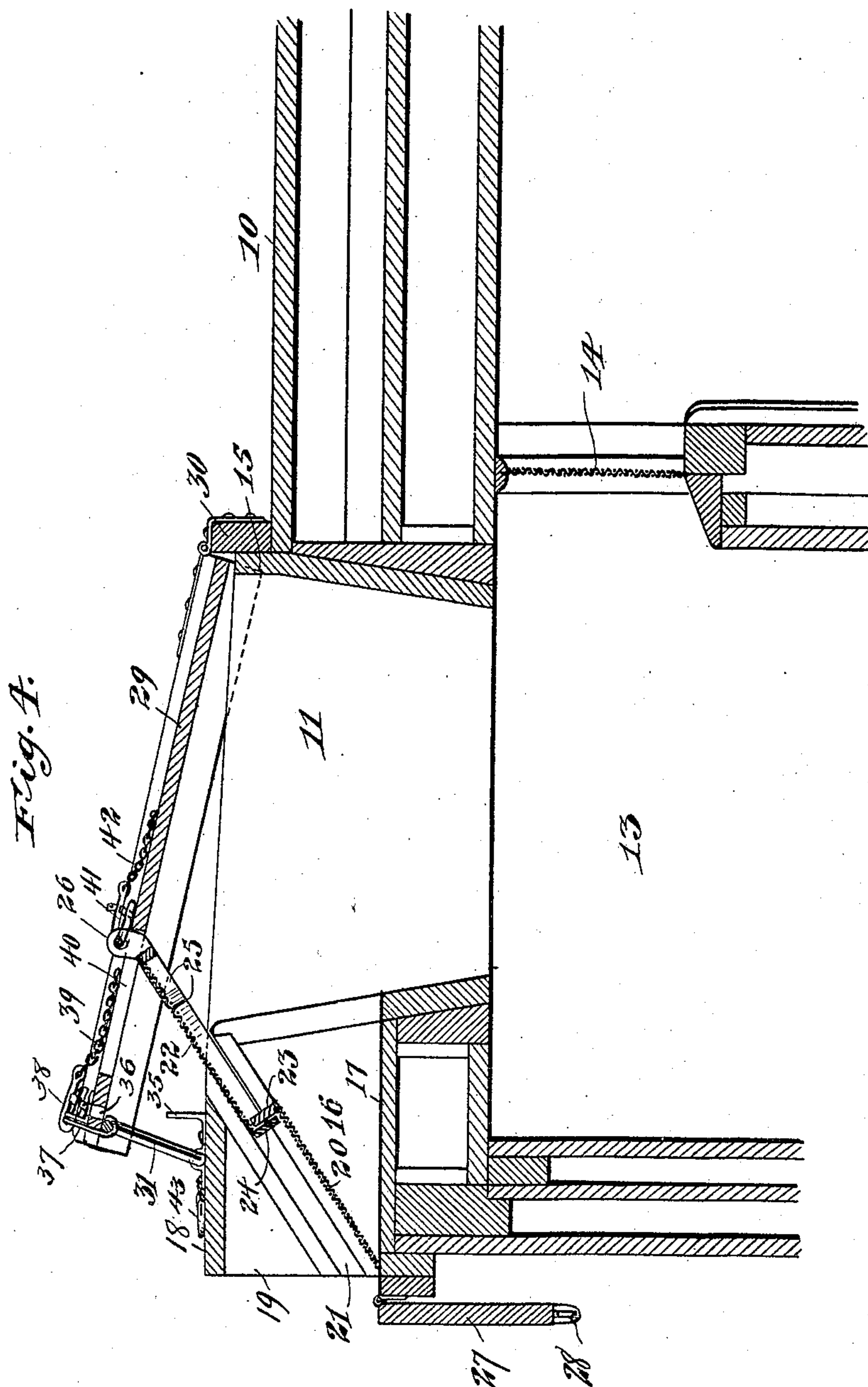
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UNITED STATES PATENT OFFICE.

ROBERT GRAHAM AND EDGAR R. M. PIERCE, OF SACRAMENTO, CALIFORNIA,
ASSIGNORS TO ARMOUR & CO., OF CHICAGO, ILLINOIS.

VENTILATOR FOR REFRIGERATOR-CARS.

SPECIFICATION forming part of Letters Patent No. 620,119, dated February 28, 1899.

Application filed May 31, 1898. Serial No. 682,134. (No model.)

To all whom it may concern:

Be it known that we, ROBERT GRAHAM and EDGAR R. M. PIERCE, of Sacramento, in the county of Sacramento and State of California, have invented certain new and useful Improvements in Ventilators for Refrigerator-Cars, of which the following is a specification.

This invention relates to ventilators for refrigerator-cars, and has for its object to provide a construction whereby such cars are adapted to be used as ventilated cars by means of suitable provision for the introduction thereinto of air-currents, while they may be readily converted into closed refrigerator-cars, the ventilating appliances being in such case suitably protected from damage in icing the cars, but being readily accessible so as to permit the car to be quickly changed into a ventilated car when desired.

The invention has for a further object the provision of means whereby the ventilation may be readily regulated by controlling the size of the ventilating-openings, both those which receive and those which discharge the air, and thereby regulating the amount of air admitted and discharged, and consequently the ventilation of the interior of the car.

To these ends our invention consists in certain novel features which we will now proceed to describe and will then particularly point out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of one corner of a car embodying our invention, the ventilating devices being shown in operative position. Fig. 2 is a plan view of the same, showing the ventilating devices closed. Fig. 3 is a longitudinal vertical sectional view taken on the line 3 3 of Fig. 2, showing the ventilating devices closed; and Fig. 4 is a similar view showing the ventilating devices open.

In the said drawings, 10 represents a portion of the car-roof of a refrigerator-car having at each of its corners an ice-hole 11, which may, when the car is to be used as a closed refrigerator-car, be closed by a suitable plug 12 of usual construction. This ice-hole opens into one of the ice-tanks 13, from which a passage 14 leads to the interior of the car at the top thereof, said passage being preferably provided with a screen, as shown. A similar

passage leads from the lower portion of the ice-tank to the interior of the car in a manner usual and well known in cars of this description.

The ice-hole 11 is surrounded on three sides by a suitable coaming 15, which extends a short distance above the car-roof, the side members of said coaming being preferably inclined upward toward the end of the car. From the fourth side of the ice-hole there extends to the end of the car-roof a conduit or passage 16 of a width equal to the width of the ice-hole and of a height such as to extend from a point above the seat of the plug or closure 12 to the highest point of the coaming 15. 17 indicates the bottom of this conduit, 18 the top, and 19 the side walls thereof. Located within the conduit 16 is a stationary screen 20, extending rearwardly and upwardly from the lower front edge toward the rear upper portion thereof, and above said fixed screen and sliding in suitable guide-ways 21 in a plane parallel thereto is a movable screen 22. An upwardly-extending cross-bar 23 at the upper end of the fixed screen serves, in conjunction with a cross-bar 24 at the lower end of the movable screen and a projection 25 at the upper end thereof, to limit the movement of said screen in each direction. The movable screen 22 is provided at the central portion of its upper edge with an apertured projection 26.

The outer end of the conduit 16—that is to say, the end farthest from the ice-hole—is provided with a hinged door or closure 27, said door being preferably hinged to the lower edge of the mouth of said conduit and being provided at the central portion of its free edge with an apertured lug 28, by means of which said door may be secured in a closed position in the manner hereinafter described.

29 indicates a door or cover which is hinged adjacent to the edge of the coaming 15 farthest from the end of the car. We have shown this door or cover as hinged to a strip 30, secured to the coaming; but it is obvious that it may be hinged directly to the coaming, if desired or preferred. This door or cover may be supported and secured in an inclined position, such as is shown in Fig. 4 of the drawings, by means of a frame 31,

which is hinged to the car-roof at a point adjacent to the free edge of said door or cover and which preferably consists of a body portion of inverted-U shape 32 and cross-bars 33, which serve to obstruct the opening of the door or cover, so as to prevent access to the interior of the car, while at the same time permitting a free circulation of the air. The door or cover is provided with an apertured loop 34, which when the door or cover is closed is brought into juxtaposition with a similar apertured loop 35, secured on the car-roof and adapted to project through a slot or opening 36 in the door or cover. The hinged frame 31 is provided with a similar apertured loop 37, which when the cover is raised comes opposite the loop 34 of the cover in the manner indicated in Fig. 4 of the drawings. In either position the cover may be secured by means of a suitable locking device 38, such as a seal-lock or padlock, which is preferably connected with the door or cover by means of a chain 39 to prevent its being lost or mislaid.

The door or cover 29 is provided with a slot or aperture 40, through which the lug or projection 26 on the movable screen 22 may project, as shown in Fig. 4, and a suitable locking device 41, connected with the door or cover by means of a chain 42, is provided for the purpose of securing the movable screen in its elevated position, as shown in said Fig. 4.

The hinged frame 31 is so located and arranged that when it is desired to use the car as a closed car and the cover 29 is closed said frame may be connected by means of its loop 37 with the apertured lug 28 on the door 27, as shown in Fig. 3 of the drawings, and by means of a suitable locking device 43 will serve to lock said door 27 in a closed position, and thus prevent unauthorized access to the interior of the car through said door.

The device thus constructed is employed in the following manner: When it is desired to use the car as a ventilated car, the door or cover 29 is raised and supported in the raised position (shown in Fig. 4) by means of the hinged frame 31, which, as hereinbefore pointed out, serves not only to support the door or cover in its raised position, but also to prevent access to the interior of the car through the opening thus formed. When the parts are in this position, the movable screen 22 is raised to the position shown in Fig. 4 and secured in said position by means of the apertured lug 26, which projects upward through the slot or opening 40 in the door or cover and is there held by means of the locking device 41. The door 27 is also opened, so as permit the entrance of air through the passage or conduit 16. The screens 20 and 22 serve to prevent the entrance of cinders or the like into the interior of the car, while they permit free entrance of the air.

The ventilation may be regulated and con-

trolled by closing either the door 27 or the door 29. In the former case air will be admitted to the car only through the opening formed by the raising of the door 29, while in the latter case air will be admitted only through the conduit or passage 16. When it is desired to use the car as a closed car, the door 29 is lowered and secured by means of the locking device 38, which engages the apertured lugs 34 and 35, the movable screen 22 is moved into the lowered position shown in Fig. 3, and the door 27 is closed and secured by means of the locking device 43, which engages with the apertured lug 28 on said door and the similar lug 37 on the hinged frame 31, which is lowered into the position shown in Fig. 3 for that purpose.

We claim—

1. In a ventilator for refrigerator-cars, the combination, with a car having an ice-hole in its roof, of a door or cover hinged to the margin of said ice-hole and provided with means for securing the same in a partially open inclined position, said car-roof being provided with a conduit or passage extending from the end of the car to said ice-hole, substantially as described.

2. In a ventilator for refrigerator-cars, the combination, with a car having an ice-hole in its roof, of a door or cover hinged to the margin of said ice-hole and provided with means for securing the same in a partially open inclined position, said car-roof being provided with a conduit or passage extending from the end of the car to said ice-hole and having a door or closure controlling said conduit or passage, substantially as described.

3. In a ventilator for refrigerator-cars, the combination, with a car having an ice-hole in its roof and a conduit or passage extending from the end of the car to said ice-hole, of doors or covers for said ice-hole and conduit, means for supporting the ice-hole cover in a partially open inclined position, a fixed screen in said conduit or passage, and a movable screen adapted to be raised and suitably engaged with the ice-hole cover when this latter is raised, substantially as described.

4. In a ventilator for refrigerator-cars, the combination, with a car having an ice-hole in its roof and a conduit or passage extending from the end of the car to said ice-hole, of hinged doors or covers for said ice-hole and conduit, and a support hinged on the car-roof intermediate said doors or covers and adapted to engage and support the ice-hole cover when this latter is raised and to engage the conduit door or cover when this latter is closed, substantially as described.

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