J. P. ELMER.

REFRIGERATOR CAR.

APPLICATION FILED FEB. 21, 1911.

1,032,051.

Patented July 9, 1912.

2 SHEETS—SHEET 1.

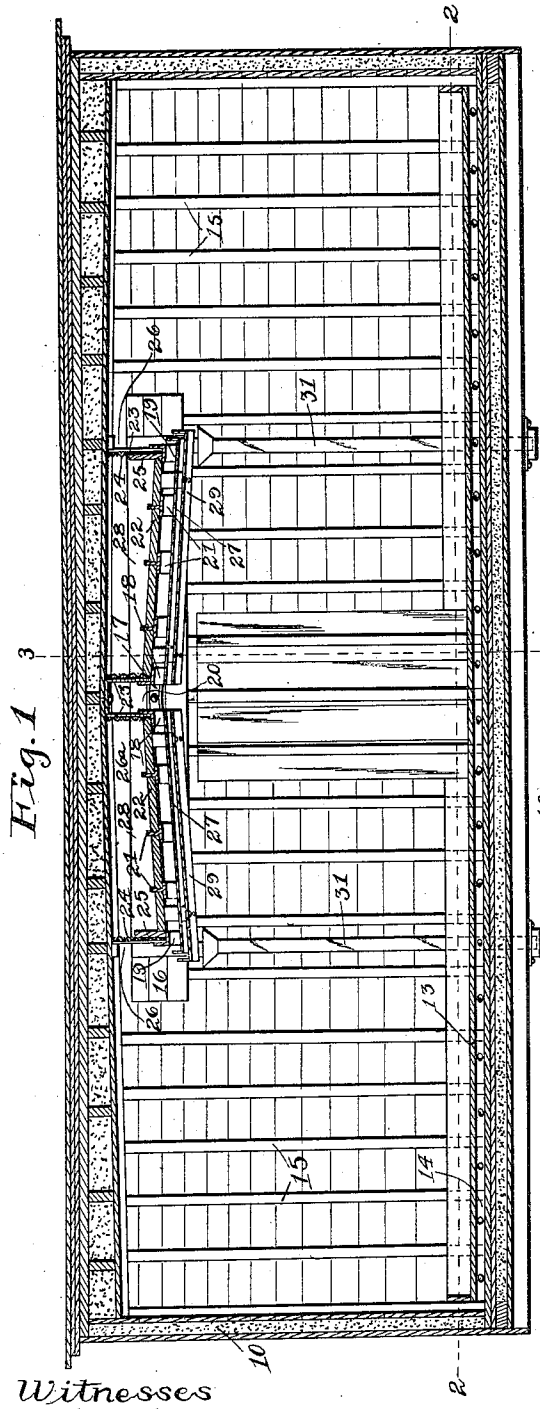

Fig. 1

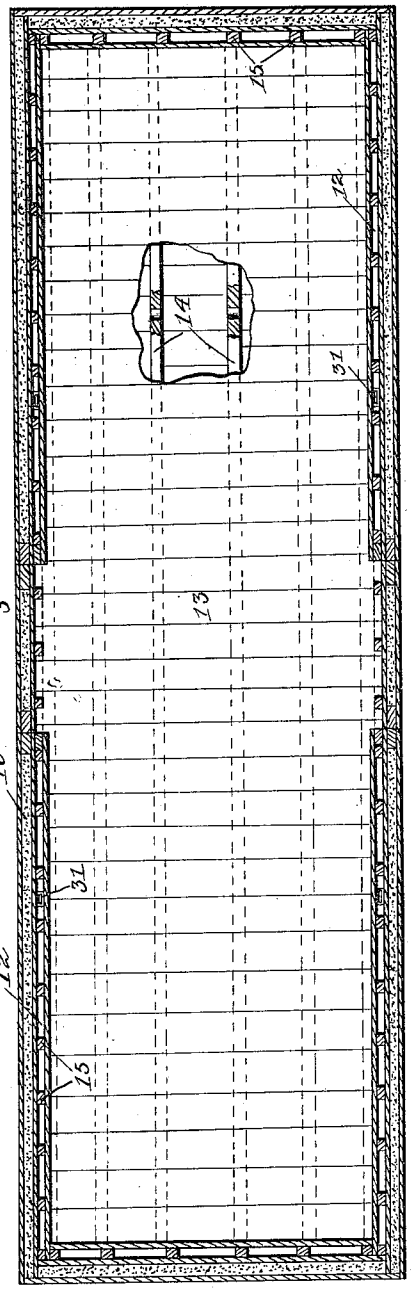

Fig. 2

Witnesses
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Fig. 4

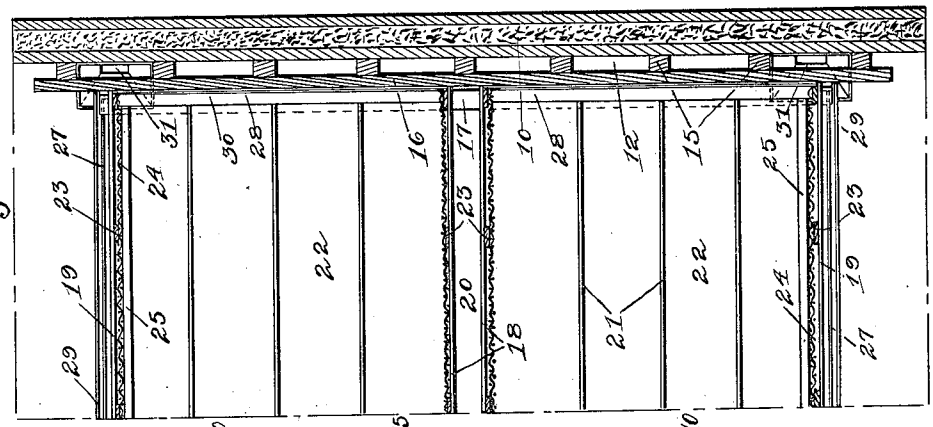


Fig. 5

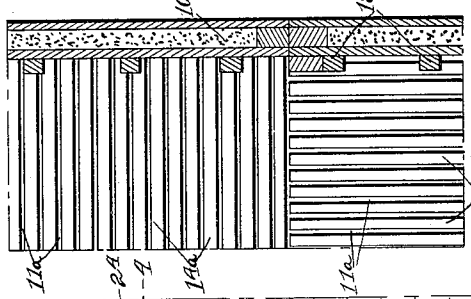


Fig. 6

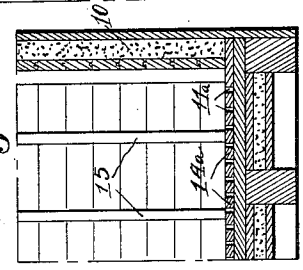
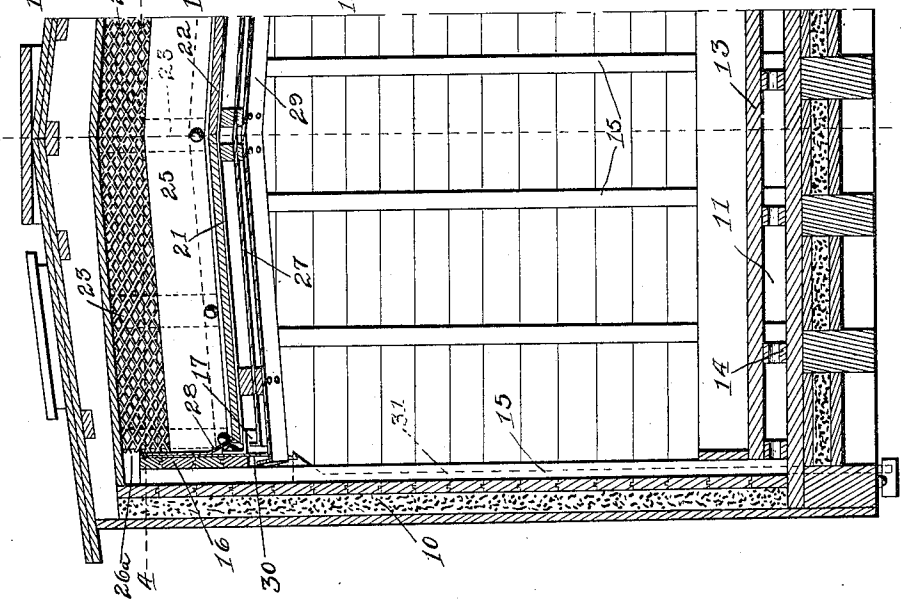


Fig. 3



Witnesses

F. C. Caswell

W. F. Williams.

Inventor

James P. Elmer

by John G. Hughes Atty.

UNITED STATES PATENT OFFICE.

JAMES P. ELMER, OF ST. PAUL, MINNESOTA, ASSIGNOR TO MOORE PATENT CAR COMPANY, A CORPORATION OF SOUTH DAKOTA.

REFRIGERATOR-CAR.

1,032,051. Specification of Letters Patent. Patented July 9, 1912.

Application filed February 21, 1911. Serial No. 610,094.

To all whom it may concern:

Be it known that I, JAMES P. ELMER, a citizen of the United States, residing in the city of St. Paul, county of Ramsey, and State of Minnesota, have invented a new and useful Improvement in Refrigerator-Cars, of which the following is a specification.

My invention relates to improvements in refrigerator cars. Its object is to provide a car in which the air is freely circulated, cooled and purified.

More specifically it is the object of my invention to circulate and cool the air in a car by means of a centrally arranged ice bunker adapted to receive warm air at its ends and sides, from the top of the car, to chill the air in its passage to the center of said bunker and to discharge the chilled air down into the car, through a port midway between its ends.

In the drawings by which I have illustrated my invention and which form part of this specification, Figure 1 is a central longitudinal sectional view of the car; Fig. 2 is a horizontal sectional view taken on the line 2—2 of Fig. 1; Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1; Fig. 4 is a horizontal sectional view taken on the line 4—4 of Fig. 3; Figs. 5 and 6 are detail views showing an alternate floor construction.

I have provided a suitable heat insulated car body 10, with air passageways 11 at the bottom and air passageways 12 at the sides thereof, so arranged that when the car is loaded the lading is completely surrounded by freely circulating air. I have illustrated a secondary car floor 13 supported on perforated strips 14 as a construction forming air passageways 11 between the floors of the car. I do not wish to be limited to this construction, however, as it is obvious that any similar arrangement would accomplish my purpose. For example, the secondary floor 13 may be omitted and strips 14^a forming air spaces 11^a, may be attached to the ordinary car floor as illustrated in Figs. 5 and 6 of the drawings. The vertically extending strips 15 are arranged at the sides and ends of the car body, to form the air spaces 12 about the lading.

An ice bunker is provided in the center of the car, and is constructed as follows: The sheathing 16 is secured to the strips 15 on the sides of the car, and on said sheathing longitudinal angle bars 17 are mounted. Said angle bars 17 are bent and slope downward from their central points toward the ends of the car as shown in Fig. 1 of the drawings. The angle bars 18 and 19 are mounted on the bars 17 and extend across the car, each of said angle bars having its central point higher than its ends as shown in Fig. 3. The angle bars 18 are spaced apart to form an air egress port 20 leading from the bunker to the interior of the car. The lateral T bars 21 are supported at their ends on the angle bars 17 and are parallel with the angle bars 18 and 19. The boards 22 on the T bars 21 and the last mentioned angle bars form the floor of the ice bunker. The supports 23 extend from the ceiling of the car to the angle bars 18 and 19 to form a mounting for the screens 24. Said screens are preferably formed of expanded sheet metal and are so mounted that the drip therefrom will run into the bunker. It is obvious that this construction results in an ice bunker having two compartments. The baffle boards 25 at the ends of the bunker, as shown in Fig. 1, are arranged to form air ingress ports 26 at the top thereof, leading from the freight chamber into the ice bunker. The pans 27 are adapted to receive the leakage from the floor boards 22 and the flashings 28. The lower pans 29 are designed principally to receive the drip due to condensation of moisture on the lower sides of the pans 27 and on the flashings 30, though incidentally the water draining from the pans 27 passes over the outer corners of the pans 29 on its way to the drain pipes 31. The ceiling of the car slopes upward from its ends and sides to the center. The ingress ports 26 and 26^a are arranged adjacent to the car ceiling and the egress port 20 in the bottom of the bunker is below said ingress ports. This arrangement facilitates the circulation of the air in the car through the ice bunker.

The air near the sides and bottom of the car, heated by radiation from without, rises and follows the inclination of the ceiling toward the center and is drawn into the ice bunker as the cold air seeking a lower level passes out through the port 20 into the car. This circulation of air is increased by reason of the passage of the melted ice from the bunker in the form of water, which water

absorbs carbon dioxid and other gases given off by the vegetables, fruit, meat or other freight in the car. The warm air passing through the ports 26 and 26ª into the bunker and over the ice is chilled and, to some extent at least, purified by the absorption of the gases mentioned by the water produced by the melting ice. A complete circulation of the air in the car is thus secured and said air is cooled and purified.

My arrangement of a plurality of pans beneath the ice bunker tends to keep the air in the freight chamber relatively dry, and the pasageways 12 by maintaining a circulation of air between the ice bunker and the sides of the car keep the moisture from the ice bunker out of the car insulation.

Having described my invention, what I claim as new and desire to protect by Letters Patent, is:

1. A refrigerator car having an ice bunker centrally arranged between its sides and near its top, said bunker comprising two compartments and having a lateral egress port near its bottom between said compartments, air passage ways in the sides of the chamber, one lateral and a plurality of longitudinal ingress ports at the top of each of said compartments, said longitudinal ingress ports communicating with said passage ways and said lateral ingress ports and egress port communicating directly with the interior of the car.

2. A refrigerator car having an ice bunker centrally arranged between its ends and sides and near the top thereof, a lateral egress port in the center of the bunker, a floor sloping downward from said port toward the ends of the car and from a central longitudinal line toward the sides of the car, ingress ports on all sides of said bunker and above said egress port, a plurality of drip pans below and parallel with the floor of said bunker and drain pipes leading from the lower corners of said pans to the exterior of the car.

3. A refrigerator car having an ice bunker centrally arranged between its ends and sides and near the top thereof, a lateral egress port centrally arranged in the bunker, a floor sloping from said port toward the ends of the car and from a central longitudinal line toward the sides of the car, air passage ways at the sides of said car, lateral and longitudinal ingress ports in said bunker above said egress port, said longitudinal ports communicating with said passage ways, said egress port and lateral ingress ports communicating with the interior of the car, a plurality of drip pans below and parallel with the floor of said bunker, and drain pipes leading from the outer lower corners of said pans to the exterior of the car.

4. A refrigerator car having an ice bunker centrally arranged between its ends and sides and near the top thereof, said bunker comprising two compartments spaced apart and with a lateral egress port between them, the floors of said compartments being inclined downward from said egress port toward the ends of the car and from a central longitudinal line toward the sides of the car, air passage ways at the sides of the car, a lateral ingress port and longitudinal ingress ports in each of said compartments above said egress port, said longitudinal ingress ports communicating with said passage ways, said egress port and lateral ingress ports communicating with the interior of the car, a drip pan below each of said compartments parallel with the floors thereof, a second pan below said first mentioned pan with its outer lateral and longitudinal edges extending beyond the first mentioned pan, flashings for directing drip from the bunker to said pan, and drain pipes leading to the exterior of the car and arranged to receive the drip from said pans.

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

JAMES P. ELMER.

Witnesses:

JOHN E. STRYKER,

F. C. CASWELL.