

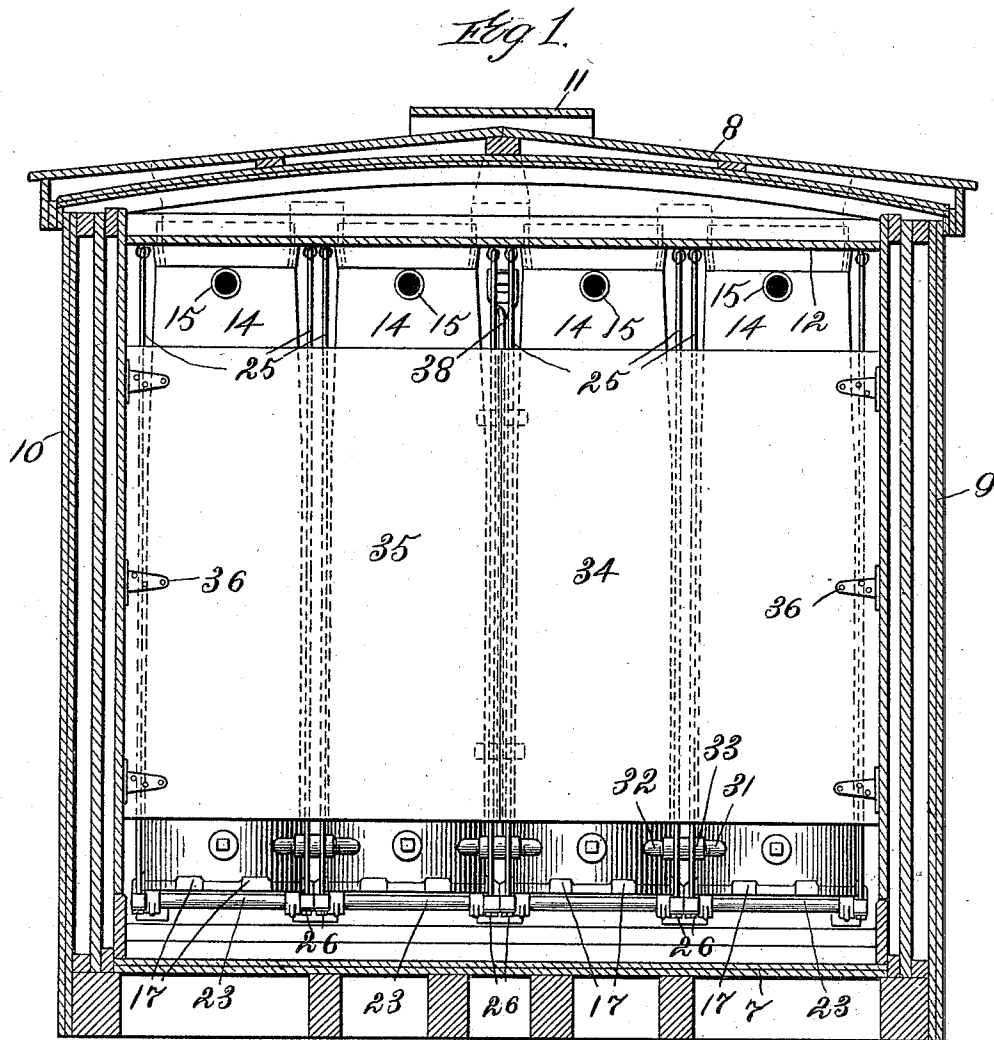
(No Model.)

3 Sheets—Sheet 1.

H. A. BOWEN.
REFRIGERATOR CAR.

No. 535,046.

Patented Mar. 5, 1895.



Witnesses:
Wm. M. Rheem
Wm. J. Huming

Inventor:
Herbert A. Bowen
By Bond, Adams, Pichard & Jackson
His Attys.

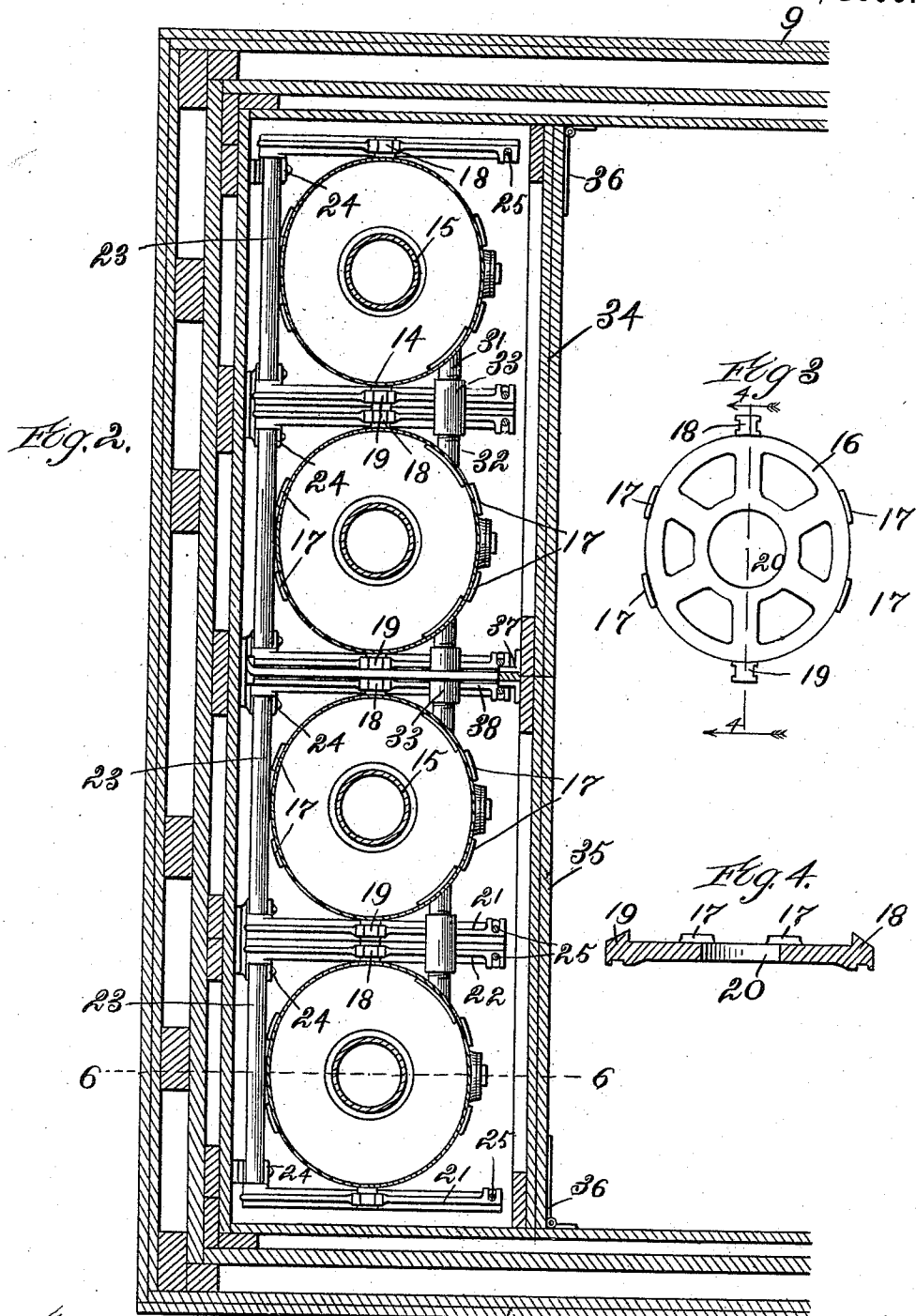
(No Model.)

3 Sheets—Sheet 2.

H. A. BOWEN.
REFRIGERATOR CAR.

No. 535,046.

Patented Mar. 5, 1895.



Witnesses:

Wm. M. Rheum
Wm. F. Hanning

Inventor:
H. A. Bowen
By Bond, Adams Pickard & Jackson
His Attys.

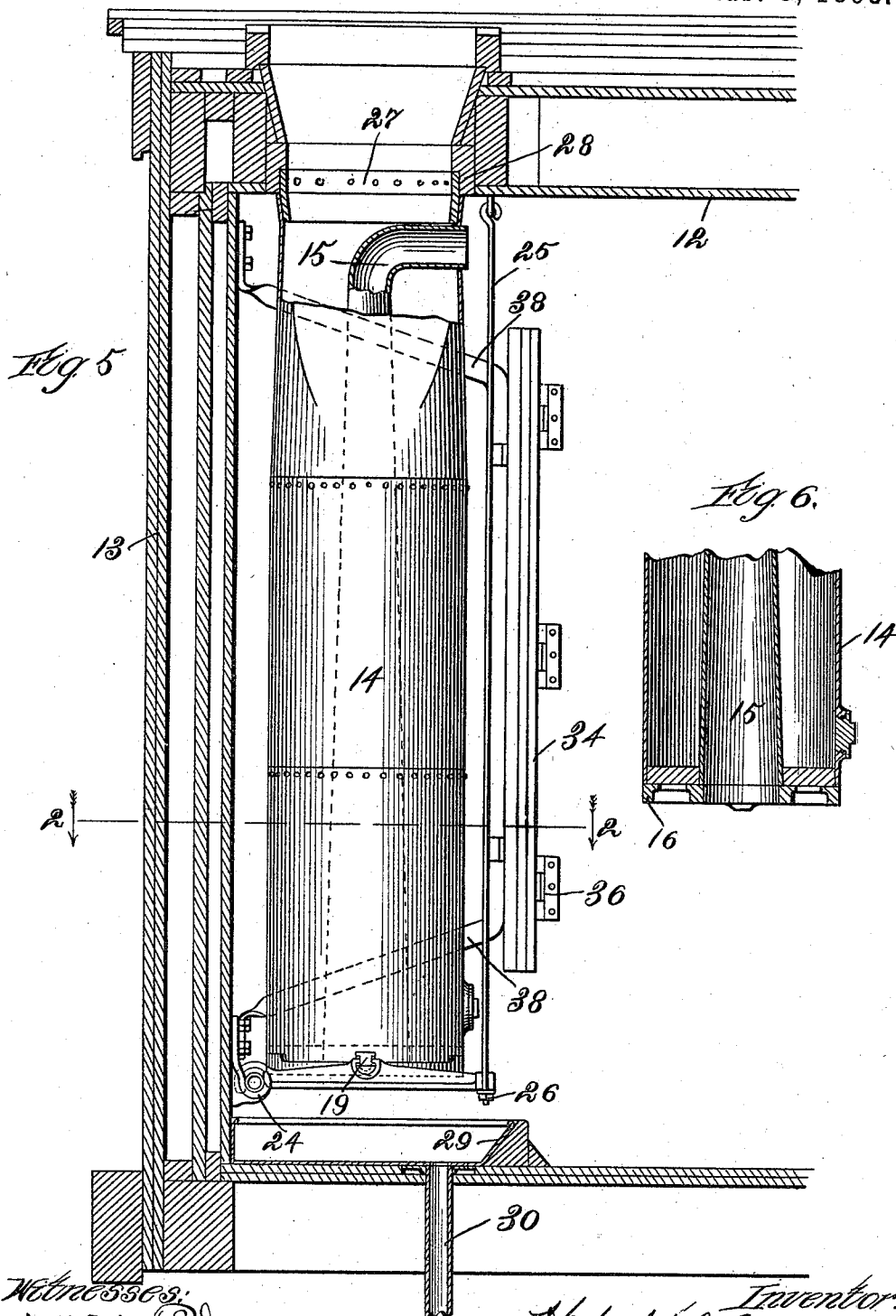
(No Model.)

3 Sheets—Sheet 3.

H. A. BOWEN.
REFRIGERATOR CAR.

No. 535,046.

Patented Mar. 5, 1895.



Witnesses:
Wm. M. Rheem
Wm. F. Hanning

Inventor:
Herbert A. Bowen
by Bond Adams Putland & Jackson
his Attys.

UNITED STATES PATENT OFFICE.

HERBERT A. BOWEN, OF CHICAGO, ILLINOIS, ASSIGNOR TO GUSTAVUS F. SWIFT, OF SAME PLACE.

REFRIGERATOR-CAR.

SPECIFICATION forming part of Letters Patent No. 535,046, dated March 5, 1895.

Application filed June 15, 1894. Serial No. 514,709. (No model.)

To all whom it may concern:

Be it known that I, HERBERT A. BOWEN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Refrigerator-Cars, of which the following is a specification, reference being had to the accompanying drawings, in which—

10 Figure 1 is a vertical cross section of a car showing one end thereof. Fig. 2 is a horizontal section on line 2—2 of Fig. 5. Fig. 3 is a plan view of one of the supporting frames. Fig. 4 is a section on line 4—4 of Fig. 3. Fig. 5 is a partial longitudinal vertical section of a car; and Fig. 6 is a partial sectional view of one of the tanks, on line 6—6 of Fig. 2.

15 My invention relates to refrigerator cars, and has particularly to do with the devices for holding the cooling mixture employed for maintaining the car at the proper temperature.

My invention consists in the novel features and the combination and arrangement of 25 parts hereinafter fully described and afterward definitely pointed out in the claims.

In the drawings,—7 indicates the floor of a car, 8 its roof, and 9—10 its sides.

11 indicates the foot-board.

30 12 indicates the ceiling, and 13 one end of the car.

14 indicates tanks which are adapted to contain the freezing mixture. The tanks 14 are preferably circular, or substantially so, in cross section, except at their upper ends, 35 where they are squared, as best shown in Figs. 1 and 5. Each tank 14 is provided with an internal passage or tube 15, the upper end of which opens into the car, its lower end extending through the bottom of the tank, so 40 that a longitudinal passage is provided through the tank, as indicated by dotted lines in Fig. 5. The tube 15 is preferably conical in form, as shown in Fig. 6.

45 The tanks 14 are arranged across the ends of the car, as shown in Fig. 2, and are preferably four in number. They are supported upon frames 16 which are shaped to correspond with the bottom of the tanks, and are 50 provided with lugs 17 at suitable points to prevent the tanks from becoming displaced.

At diametrically opposite points the frames 16 are provided with trunnions 18—19, as shown in Fig. 3. A central opening 20 is also provided in each frame, which openings align 55 with the tubes 15, as shown in Fig. 6. The frames 16 are adapted to be supported by bars 21—22, a pair of bars being provided for each frame, as shown in Fig. 2. Each pair of bars 21—22 is connected at the rear by a rod 23. 60 Their rear ends are supported by brackets 24 projecting from the wall of the car, as shown in Fig. 2. The forward ends of the bars 21—22 is supported by rods 25 which are secured to the roof of the car, as shown in Fig. 65 5, and pass through suitable slots in the forward ends of the bars 21—22, where they are secured by nuts 26, as shown in Fig. 5.

By unscrewing the nuts 26 the forward ends of the bars 21—22 may be lowered, the bars 70 swinging upon their brackets 24 as pivots. At suitable points the bars 21—22 are provided with bearings which receive the trunnions 18—19. The brackets 24 and rods 25 are so adjusted that the frames 16 will be held 75 several inches above the floor of the car so that air may freely circulate under the tanks.

The upper ends of the tanks 14 are secured to prevent them from rocking by frames 27 80 which are of such size as to fit tightly into the upper ends of the tanks, as shown in Fig. 5. In order to secure a better fit the sides of the frames 27 are inwardly inclined so that they may be wedged tightly into the upper 85 ends of the tanks 14. The frames 27 are secured to the inner casings 28 of the car hatchways by screws, or in any other suitable manner.

29 indicates a pan located beneath the tanks and extending across the end of the car, which 90 pan serves to receive any drippings from the tanks, whence they are carried off by a waste pipe 30 extending through the bottom of the car and communicating with the pan 29, as shown in Fig. 5.

95 As shown in Figs. 1 and 2, the lower portions of the tanks 14 communicate with each other through a series of pipes 31—32 which are coupled by a flexible coupling 33, so that the depth of water in the various tanks will 100 be equal and the water from all the tanks may be drawn off through a single discharge

pipe extending from one of the tanks. By thus flexibly connecting the several tanks they are not injuriously affected by the jarring of the car and they may be more easily
5 connected up after having been put in place.

In order to inclose the tanks and prevent them from being damaged by articles in the car, doors 34—35 are provided, which are hinged by hinges 36 to the sides of the car,
10 as shown in Fig. 2.

37 indicates a stop for the meeting edges of the doors 34—35, which stop is formed by a bar 38 which is secured to the end of the car on the middle line and extends forward be-
15 tween the tanks to the proper position to receive the inner edges of the doors 34—35.

When it is desired to remove one of the tanks, the doors 34—35 are opened and the rods 25 are released from their connection
20 with the bars 21—22, permitting such bars to drop, thereby moving the upper end of the tank out of engagement with the frame 27 so that it may be tilted forward on its frame 16 and removed. It will be seen therefore that
25 by the improvements described the work of removing or replacing the tanks is simplified to the greatest degree.

I do not wish to limit myself to the specific details of construction herein described, as,
30 so far as I am aware, no refrigerator car has heretofore been constructed having removable tanks.

That which I claim as my invention, and desire to secure by Letters Patent, is—

35 1. The combination with a refrigerator car, of a vertically movable tank and a wedge shaped open frame adapted to fit into the upper end of said tank and communicating with a hatchway in the roof of the car, substan-
40 tially as described.

2. The combination with a refrigerator car, and one or more tanks, of a vertically movable supporting device for said tank or tanks, and means for securing the upper ends of said
45 tank or tanks in position, substantially as described.

3. The combination with a refrigerator car, and a tank, of a frame adapted to fit into the upper end of said tank, and a vertically movable support for said tank, substantially as
50 described.

4. The combination with a refrigerator car, and a tank, of a frame adapted to fit into the upper end of said tank, and a pivoted support for said tank, substantially as described.
55

5. The combination with a refrigerator car, and a tank, of a frame adapted to fit into the upper end of said tank, and a vertically movable pivoted support for said tank, substan-
60 tially as described.

6. The combination with a refrigerator car, of a tank, a pivoted support therefor, and means for securing the upper end of said tank in position, substantially as described.

7. The combination with a refrigerator car,
65 of a tank, a vertically movable pivoted support therefor, and means for securing the upper end of said tank in position, substantially as described.

8. The combination with side bars, and a
70 frame supported thereby, of a tank, and rods 25 adapted to be secured to the forward ends of said bars, substantially as described.

9. The combination with bars 21—22, and brackets 24, of a frame 16, a tank, and rods
75 25 secured to the free ends of said bars 21—22, substantially as described.

10. The combination with side bars, and a frame supported thereby, of a tank, rods 25
80 adapted to be secured to the forward ends of said bars, and an internal frame 27, substantially as described.

11. The combination with a refrigerator car, of a series of tanks provided at their adjacent sides near the front and bottom with oppo-
85 sitely projecting pipes, and flexible connections uniting the adjacent pipe, substantially as described.

HERBERT A. BOWEN.

Witnesses:

HORACE C. GARDNER,
F. J. GARDNER.