

(No Model.)

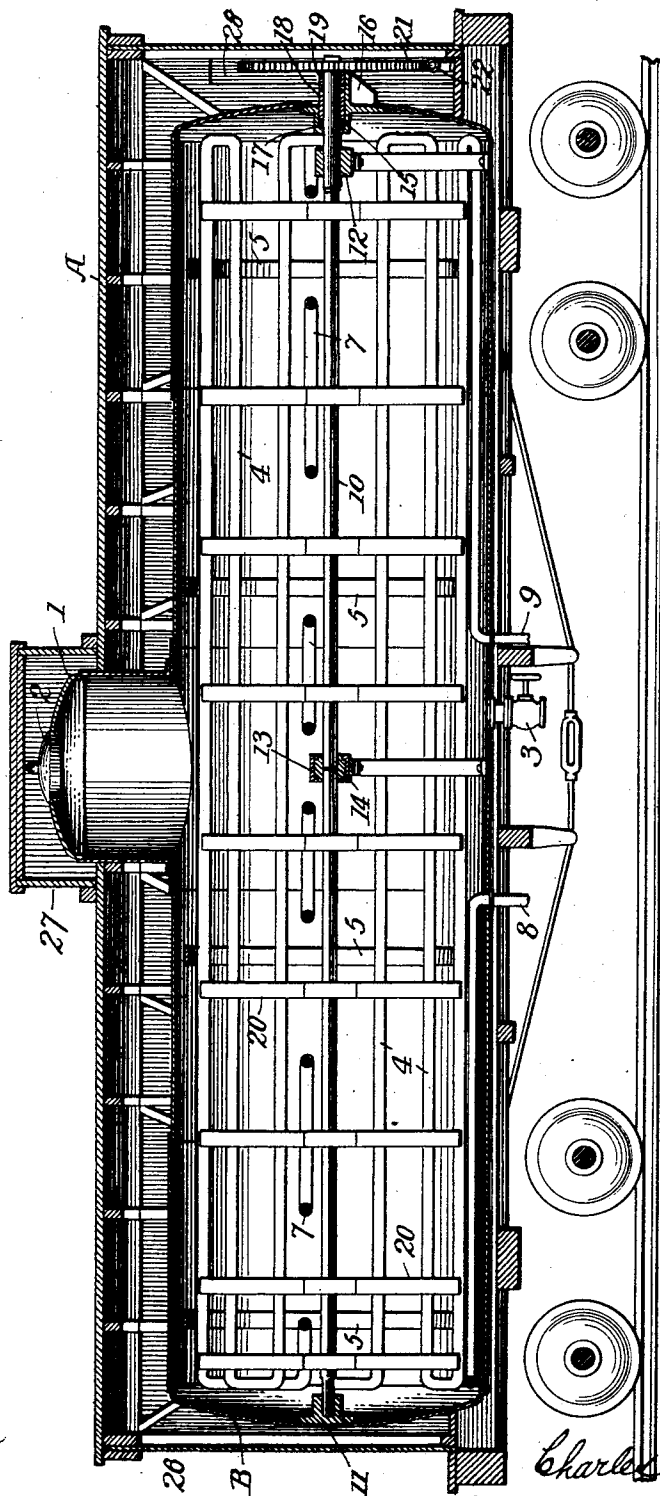
2 Sheets—Sheet 1.

C. L. ROGERS.
REFRIGERATOR TANK CAR.

No. 588,089.

Patented Aug. 10, 1897.

Fig. 1.



Witnesses
J. Hinkel

William E. Kruff

Inventor
Charles L. Rogers

Watson & Watson Attorneys

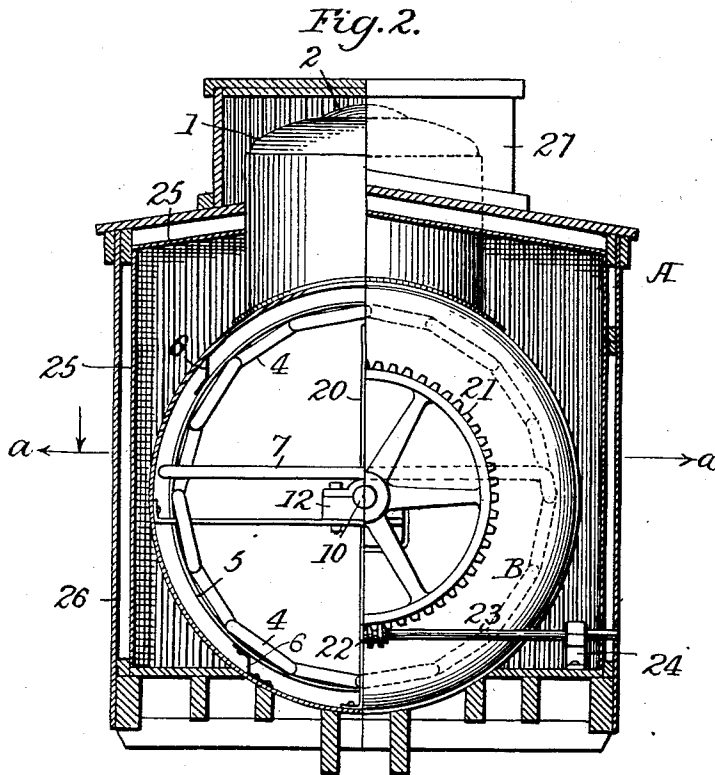
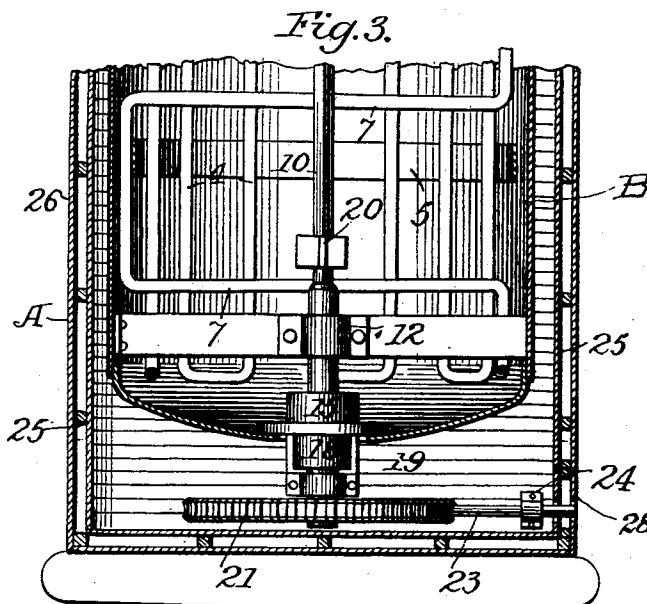
(No Model.)

2 Sheets—Sheet 2.

C. L. ROGERS.
REFRIGERATOR TANK CAR.

No. 588,089.

Patented Aug. 10, 1897.



Witnesses

J. Hinkel

William E. Stiff

Inventor

Charles L. Rogers

Watson & Watson

Attorneys

UNITED STATES PATENT OFFICE.

CHARLES L. ROGERS, OF MILTON, PENNSYLVANIA, ASSIGNOR TO MURRAY,
DOUGAL & CO., LIMITED, OF SAME PLACE.

REFRIGERATOR-TANK CAR.

SPECIFICATION forming part of Letters Patent No. 588,089, dated August 10, 1897.

Application filed March 2, 1897. Serial No. 625,712. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. ROGERS, a citizen of the United States, residing at Milton, in the county of Northumberland and State of Pennsylvania, have invented certain new and useful Improvements in Refrigerator-Tank Cars, of which the following is a specification.

The object of my invention is to provide means for transporting fluids and maintaining them at any desired temperature during transportation.

It is desirable at certain seasons of the year to maintain the temperature of fluids during transportation at a higher degree than the temperature of the atmosphere, while at other seasons it is desirable that the temperature should be lower than the temperature of the atmosphere in order to preserve the quality of the material and for other reasons.

To attain these ends, my invention consists in a tank or reservoir inclosed within the box or body of a car and provided with means for heating or cooling its contents and means for stirring or agitating the contents during the heating or cooling operation.

For a detailed description of the invention reference is had to the following specification and to the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section through the middle of a car provided with my improvements. Fig. 2 is an end view, parts being broken away to show the interior construction of the tank and car. Fig. 3 is a plan section taken on the line *a a* of Fig. 2.

In the drawings, A indicates the box or body of a car, and B a tank of ordinary construction contained within the car. The tank is preferably cylindrical and placed with its axis horizontal, as shown, but the invention may be employed with other forms of tanks. On top of the tank is a dome 1, provided with a filling-opening, which is closed by a cap 2, and beneath the tank is a valve 3, through which the contents of the tank may be discharged.

To cool or warm the contents of the tank, I provide a series of coils 4, supported on rings 5, said rings being carried by brackets 6, at-

tached to the tank. The coils 4 are thus arranged in a circular series adjacent to the wall of the tank. Another series of coils 7 run back and forth across the tank horizontally in order to heat the middle portion of the contents. As shown, these coils are continuous and the heating or cooling fluid passes into one end 8 of the system and out through the other end 9.

A shaft 10, preferably angular in cross-section but round at ends, extends centrally through the tank. At one end it is supported in a bearing 11 and at the opposite end in a bearing 12. A central bearing 13 is also preferably provided. As shown, there is a journal 14 running in the bearing 13, and the shaft, which is made in two sections, is fitted into said journal. Additional bearings may be provided, if necessary. One end of the shaft passes through a stuffing-box 15, which is preferably integral with a bracket 16, attached to the end of the tank. The stuffing-box is provided with suitable packing 17 and a gland 18. An additional bearing 19 is also provided for the outer end of the shaft, said bearing resting on the bracket 16. At suitable intervals paddles 20 are connected to the shaft, the function of the paddles being to stir and circulate the contents of the tank. These paddles may be of any suitable form and material.

Suitable means are provided for applying power to the shaft to rotate the same. This may be accomplished by mounting a gear, pulley, or sprocket wheel on the end of the shaft and arranging to turn the same from a source of power outside the car. As shown, a worm-wheel 21 is connected to the shaft and in mesh with the worm 22 upon the inner end of a shaft 23, which is carried in suitable bearings 24. The end of the worm-shaft extends to a small door 28, near the end of the car, which door can be readily removed, if desired, to operate the paddles.

In order to prevent the temperature of the contents from being changed by exposure to the atmosphere, I preferably line the box or body of the car with some non-conducting material. As shown in Figs. 2 and 3, there is a lining 25 in addition to the outer cover-

ing 26. The dome may also be covered with a housing 27, as shown in Fig. 1, to afford additional protection. The operation will be obvious from the foregoing description and need only be briefly recited. The car is filled in the usual manner through the opening in the dome, and fluid, gas, or air, as the case may be, is circulated through the coils 4 and 7 until the temperature of the contents of the tank is raised or lowered to the desired degree. In order to make the temperature uniform throughout the mass to prevent overheating or overcooling of any portion of it, to prevent sediment depositing in the bottom, and for other reasons, the paddles 20 are operated while the heating or cooling medium is circulating in the coils. As soon as the temperature has reached the desired degree the door 28 is closed, thus sealing the car, and the coils are emptied. If the car be kept closed, the temperature in the tank will change very slowly and the material may be

transported a long distance without material change of temperature.

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

The combination of a car having a closed box or body, a tank within said box, coils within and adjacent to the wall of the tank, additional coils arranged transversely in the middle of the tank, a shaft mounted in bearings within the tank and extending through a stuffing-box in the end of the tank, paddles upon the shaft within the tank and suitable means connected to the projecting end of the shaft for turning the same, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES L. ROGERS.

Witnesses:

JOS. W. ECKMAN,
B. BUDD CANNON.