Jan. 10, 1933. N. F. WOLF 1,894,014

REFRIGERATING AUTOMOBILE TRUCK

Filed July 13, 1931

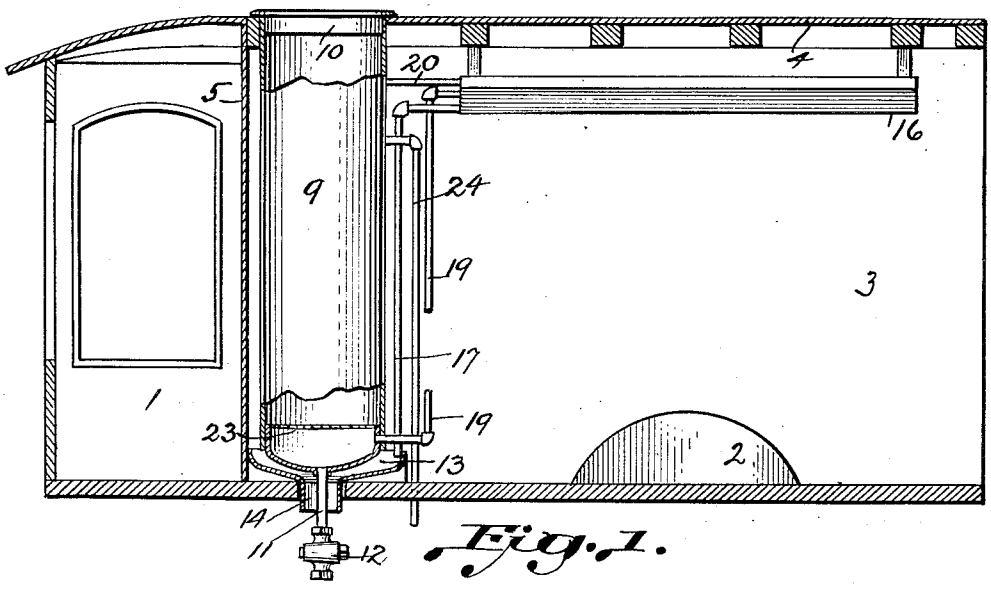

Fig. 1.

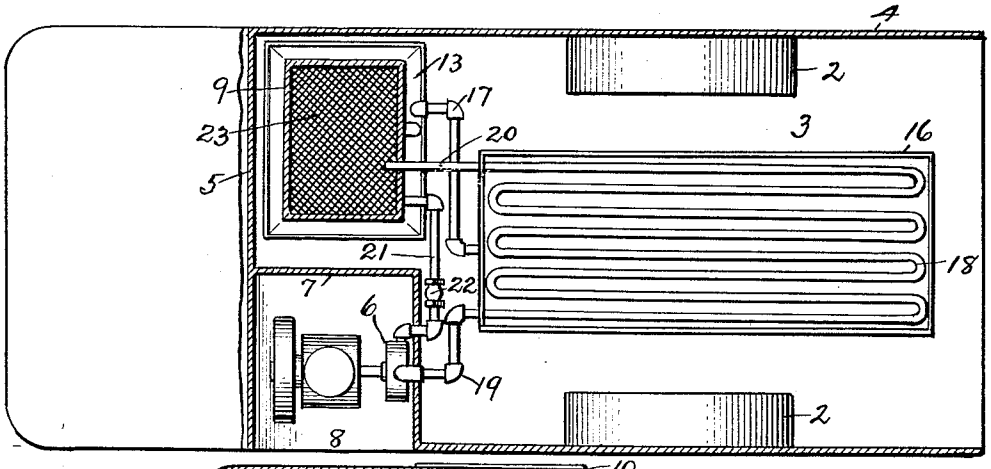

Fig. 2.

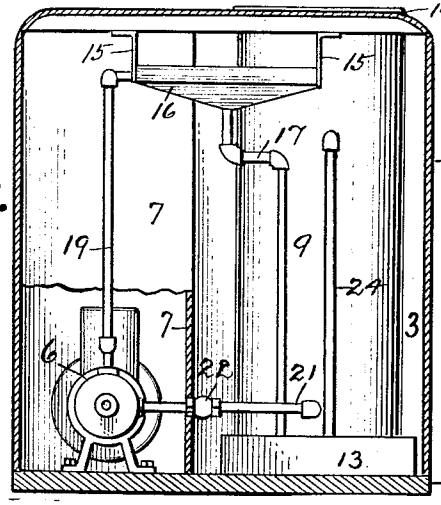

Fig. 3.

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UNITED STATES PATENT OFFICE

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REFRIGERATING AUTOMOBILE TRUCK

Application filed July 13, 1931. Serial No. 550,604.

This invention relates to an improved refrigerating automobile truck intended for the transfer of perishable products, foodstuffs, etc.

The object of the invention is to provide improved refrigerating apparatus including a tank for the refrigerant, a refrigerating coil for cooling the refrigerating chamber of the body of the truck, an internal combustion engine operated pump for circulating the refrigerant, and certain other devices, including condensation drainage means, and strainers, as hereinafter fully described and which are shown in the accompanying drawing, wherein:

Figure 1 is a vertical section through the truck body, certain parts being broken away and others in section;

Fig. 2 is a horizontal section taken above the coil; and

Fig. 3 is a cross section.

The chassis of the truck is not shown but so much of the body is disclosed as will afford a clear understanding of the location and use of the refrigerating apparatus. The driver's compartment appears at 1, the wheel boxes are shown at 2 and the refrigerating chamber appears at 3. The body 4 will be so constructed that the refrigerating chamber 3 may be wholly sealed to enable a suitably low temperature to be maintained therein by the refrigerating apparatus now to be described.

While the chamber 3 is shown as open at its right hand end, this is merely a conventional disclosure and it will be understood that a suitable door or doors close the said end. At the front of the chamber 3, there is a partition 5, which seals the front end of the said chamber.

The internal combustion engine operated pump 6, which is used for circulating the refrigerant, is completely sealed from the chamber 3 by walls 7 so that there is no possibility of the fumes therefrom having access to the chamber 3. At the side of the truck, the compartment provided by the walls 5 and 7, may be left open, as shown at 8, to afford convenient access to the pump 6 and its engine from the outside of the vehicle but a door may be provided at this point, if desired.

The refrigerating tank or container appears at 9, being vertically arranged and provided with a removable closure 10 at its top, through which the brine and ice may be introduced. The bottom of the tank 9 slopes to afford suitable drainage to a drain pipe 11, having valve 12. When this valve is opened, the contents of the tank 9 may be drawn off to the ground.

Located below the lower end of the tank 9 is a drain basin 13 which receives condensation from the tank 9 and condensation coming from the coil and its tray, as will now appear. This basin has an outlet 14 which loosely surrounds the pipe 11 to permit free passage for the condensation water received in the basin 13.

Suspended in any suitable manner as, for instance, by hangers or brackets 15, is a condensation pan or tray 16 from whose low point a pipe 17 runs to the basin 13 so that the water of condensation from said tray or pan 16 is delivered directly into the basin 13.

Contained within the tray 16 and suspended in any suitable manner, is a refrigerating coil 18 which is connected by feed pipe 19 to the pump 6 and which has a return pipe 20 that discharges into the tank 9.

A pipe 21, which connects the lower part of the tank 9 with the pump 6, affords a conduit for drawing the refrigerant, from the lower part of the tank 9 to the pump 6, which pumps the refrigerant up into the coil 18, after which the refrigerant is discharged into the tank 9 to be re-circulated through the pump and the coil. A strainer 22, located in the pipe 21, prevents impurities from being drawn from the tank 9 into the pump 6.

A strainer 23 is located in the bottom of the tank 9.

There is an overflow pipe 24 leading from a suitable upper level of tank 9 down through the bottom of the body 4 to discharge to the ground the contents of tank 9 above the desired level.

A suitable amount of ice, according to the capacity of tank 9 is placed in the tank, to-

gether with a suitable volume of water and a suitable quantity of rock salt. Without limiting my invention to dimensions and merely stating an example, I have found that if the chamber 3 is twelve feet in length, five feet wide and approximately five feet high, the tank 9 should be of a capacity to contain approximately two hundred pounds of ice, three gallons of water and five pounds of rock salt.

On starting the pump 6 and circulating the brine which is provided by the contents of tank 9, and running the pump for a period of, say, fifteen minutes, three or four times a day, the temperature in the chamber 3 may be kept down to 28° F., or lower, for a period of about twelve hours without requiring addition of ice and refrigerant to tank 9.

The pump 6 elevates the liquid refrigerant through the pipe 19, circulating it in the coil 18 and returning it to the tank 9 for re-circulation. Water of condensation from the coil 18 is caught in the tray 16, whence it passes through pipe 17 to the basin 13 and discharges to the ground.

The strainers 9 and 22 prevent clogging of the pipes and of the pump.

What I claim is:

1. In a refrigerating automobile truck, the combination with a refrigerating chamber, of an upright refrigerant tank which rises from the lower part of said truck, a refrigerating coil located in said chamber, said coil being in circuit with the tank, an independent compartment in said truck completely sealed from the refrigerating chamber and accessible from the exterior of the truck, and an internal combustion engine operated pump located in said compartment and in circuit with the coil and accessible independently of said refrigerating chamber.

2. In a refrigerating automobile truck, the combination with a refrigerating chamber, of a refrigerating coil located in said chamber, a compartment which is entirely sealed from the refrigerating chamber and accessible from the exterior of the truck, and a combined internal combustion engine and pump located in said compartment and accessible independently of said refrigerating chamber, said pump being adapted to circulate the refrigerant in said coil.

3. In a refrigerating automobile truck, the combination with a refrigerating chamber, of a compartment entirely sealed from said chamber, said compartment being accessible from the exterior of the truck, a refrigerating coil in said refrigerating chamber, a pump for circulating a refrigerant in said coil, and an internal combustion engine located in the compartment and adapted for operating the pump, said engine being completely sealed from the refrigerating chamber to prevent gases or fumes therefrom from entering the said chamber but accessible from the exterior of the truck.

4. In a refrigerating automobile truck, the combination with a refrigerant tank, of a valved drain therefor, a single condensation-catch-basin located below the tank, adapted to receive the condensation falling from the outside of the said refrigerant tank, said basin discharging below the body of the truck, a refrigerating coil in circuit with said tank, means for circulating the refrigerant from the tank, through the coil and back into the tank, a condensation pan combined with the coil, and a drain for the condensation pan which discharges into the aforesaid basin.

In testimony whereof I affix my signature.

NICKOLAS FRANK WOLF.