May 15, 1951 L. SCHWARZMAYR 2,552,819

REFRIGERATING DEVICE FOR CARS

Filed July 8, 1946 2 Sheets-Sheet 1

Fig. 1.

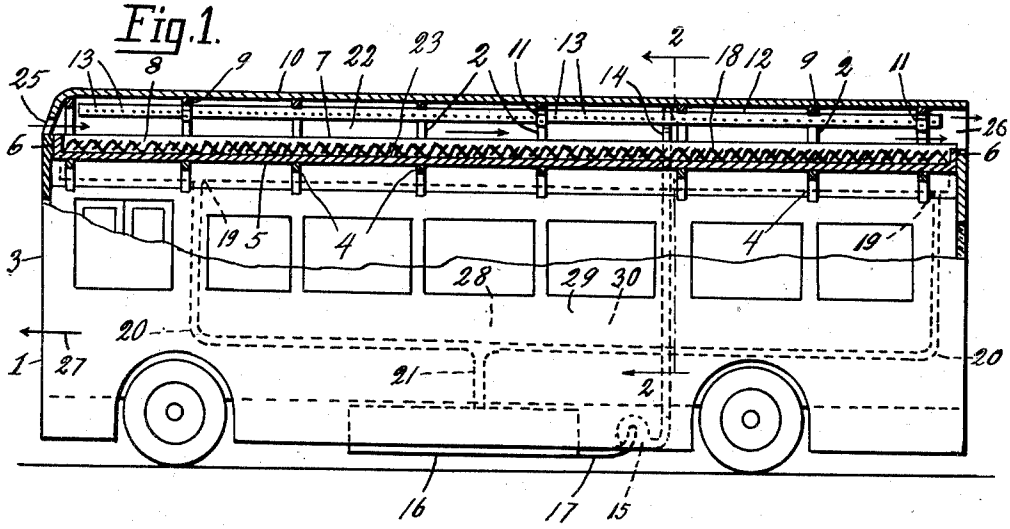
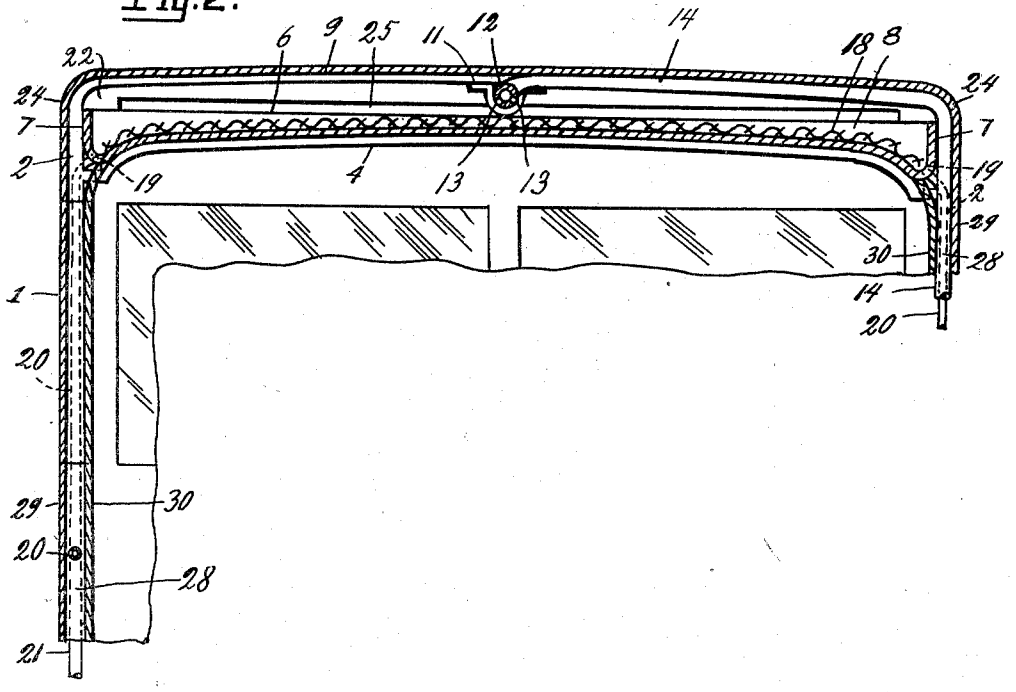


Fig. 2.



INVENTOR:

Ludwig Schwarzmayr

May 15, 1951 L. SCHWARZMAYR 2,552,819

REFRIGERATING DEVICE FOR CARS

Filed July 8, 1946 2 Sheets-Sheet 2

Fig. 3.

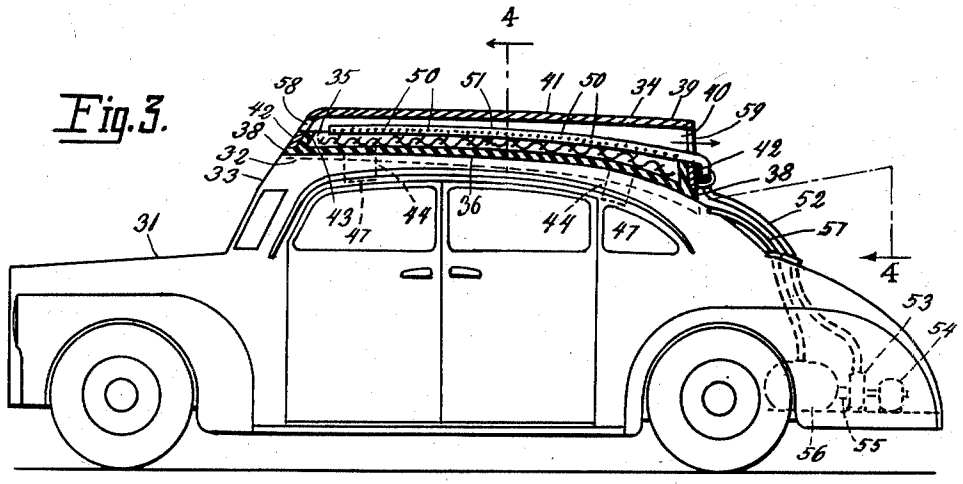
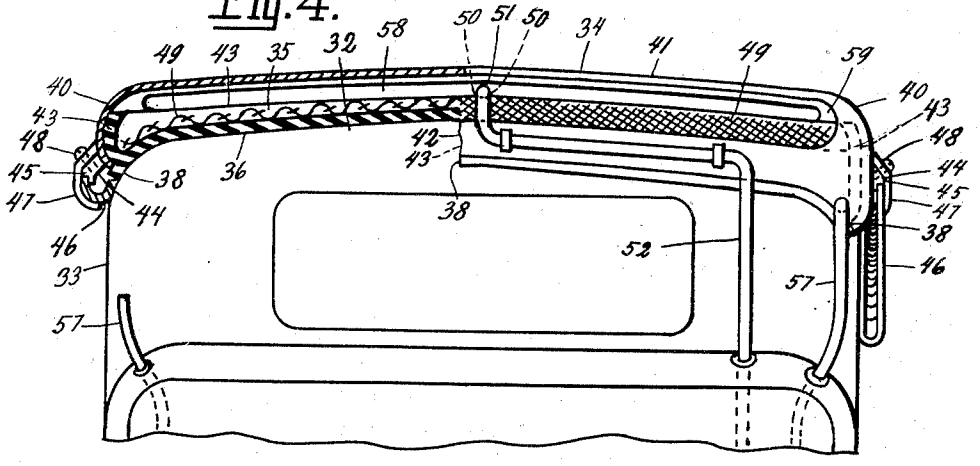


Fig. 4.



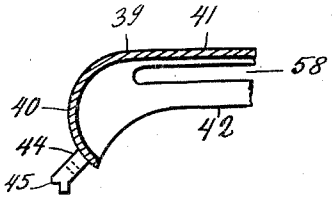


Fig. 5.

INVENTOR:

Ludwig Schwarzmayr

Patented May 15, 1951

2,552,819

UNITED STATES PATENT OFFICE

2,552,819

REFRIGERATING DEVICE FOR CARS

Ludwig Schwarzmayr, San Francisco, Calif.

Application July 8, 1946, Serial No. 682,004

4 Claims. (Cl. 62—139)

1

My invention relates to improvements in cars.

One object of the invention is to provide a car with a cooling device which is inexpensive to operate.

Another object is to provide a cooling tunnel in which the air pressure is reduced below the normal atmospheric pressure so as to increase vaporation of water providing the cooling agent for the car.

A further object is to provide a cooling device for conventional cars which conveniently can be mounted on a car or removed therefrom.

I attain these objects by the construction illustrated in the accompanying drawings, in which—

Figure 1 shows a side elevation of a car provided with one form of the cooling device of the invention, the cooling device is shown in section.

Fig. 2 is a sectional view of the upper part of the car and the cooling device on line 2—2 in Fig. 1.

Fig. 3 shows a side elevation of a private passenger car provided with the cooling device in a modified form, the cooling device is shown in section.

Fig. 4 is a rear view of the upper part of the car shown in Fig. 3 and the cooling device of which the left side is shown in section on line 4—4 in Fig. 3.

Fig. 5 is a part of the casing and the leg shown in Fig. 4 as it appears when removed.

The Figs. 1 and 2 show a passenger car or bus 1 provided with the cooling device of the invention. From the upright frame members 2, 2 of the body 3 of the car 1 extend the transverse frame members 4, 4 supporting the ceiling 5, which is provided with upturned ends 6,6 and upturned sides 7, 7 so as to form the tank 8. Transverse frame members 9, 9 extending from the upper ends of the frame members 2 support the roof 10. Hangers 11, 11 secured to the frame members 9, 9 support the tube 12, which has closed ends and is provided with perforations 13, 13 thruout its length. The tube 14 connects the tube 12 with the pump 15, which is connected with the water supply tank 16 by the pipe 17 and is driven by a motor, not shown in the drawing. On the upper side of the ceiling 5 is the fabric 18, which distributes the water sprinkled thereon from the perforations 13 of the tube 12. The tank 8 has outlets, at 19, 19, from which extend the tubes 20, 20 to the tube 21 which leads to the supply tank 16. The tunnel 22 formed by the bottom 23 of the tank 8, the sides 24, 24 and the roof 10 is aligned with the direction of travel of the car so that air met by the tunnel passes therethru. The

2

air inlet 25 of the tunnel 22 is relatively small and the outlet 26 is larger. The car 1 travels in the direction indicated by the arrow 27, and the air entering into the tunnel 22 thru the inlet 25, due to its inertia, remains stationary with respect to its original position and passes out thru the larger outlet 26 whereby it carries air from the tunnel with it, thereby the air pressure in the tunnel is reduced to below the normal atmospheric pressure, which condition increases vaporization of the water sprinkled on the fabric 18 by the perforations 13 whereby the temperature of the water is greatly reduced. The cooled water cools the ceiling 5 which cools the air in the car in contact therewith. The cooled water flows from the tank 8 thru the tubes 20 and 21, which cool the air in the chambers 28, 28 formed between the walls 29 and 30, thereby heat is prevented from penetrating thru the sides of the car to the interior.

During cold seasons the inlet 25 and the outlet 26 are to be closed by any of the conventional closing means, not shown in the drawings, so that the chamber formed by the closed tunnel provides an insulation against cold.

The Figs. 3, 4 and 5 show a private passenger car 31 provided with the cooling device of the invention in a modified form. On the top 32 of the body 33 of the car 31 is removably mounted the tunnel 34, which is aligned with the direction of travel of the car. A rubber tank 35 provided with a bottom 36 of a contour corresponding with the contour of the top 32 of the body 33 of the car 31 forms the bottom of the tunnel 34. The rubber tank 35 has flanges 38, 38 which support the casing 39 forming the sides 40, 40 and the top 41 of the tunnel 34. The sides 40, 40 of the casing 39 and the transverse members 42, 42 engage the sides 43, 43 of the rubber tank and hold the tank in position. Legs 44, 44 rigidly secured to the sides 40, 40 of the casing 39 have extending ends 45, 45 formed to engage the top and inside of the drains 46, 46 secured to the body 33 of the car 31. Clamps 47, 47 engaging the outside of the drains 46 are secured to the legs 44 by the screws 48, 48.

Upon the bottom 36 of the tank 35 is the fabric 49 to which water is distributed from the perforations 50, 50 of the tube 51, which has an extension 52 connected to the pump 53 driven by the motor 54. The pipe 55 connects the pump 53 with the water supply tank 56. From the lowest part of each side of the tank 35 extend drain tubes 57, 57 leading to the tank 56. In practice the tank 56 may be filled with ice water and the motor 54 put into operation before the

car is put to use so that a considerable cooling of the interior of the car is effected by the time the car is put to use.

As is shown in the drawings the inlet **58** of the tunnel **34** is relatively small and the outlet **59** is larger so that when the car travels a low air pressure zone is produced in the tunnel **34**, so as to increase vaporization of water providing the cooling means for the car.

The cooling device described above can be removed without difficulty when not needed. A convenient method of mounting and dismounting the tunnel is by providing a conventional elevating device suspended from the overhead frame work of the garage and having holding means adapted to be inserted into the tunnel **34** to engage the underside of the top **41** of the tunnel so that the tunnel may be elevated or placed down on top of the car as required in the respective case and the clamps **47** removed or secured. No drawing of the elevating device is shown and it forms no part of the invention.

I claim:

1. In a car, a car body provided with an upper structure comprising a tunnel aligned with the direction of travel, water distributing means in said tunnel arranged to distribute water over the bottom of the tunnel, said tunnel having a relatively small inlet and an outlet larger than said inlet to reduce the air pressure in the tunnel during movement of the car.

2. In a car, a car body having a top, a tunnel removably mounted on said top and being aligned with the direction of travel and comprising a rubber tank having a bottom of a contour corresponding with the contour of said top and forming the bottom of the tunnel, a casing arranged with respect to said tank to form the roof and sides of said tunnel, and means to deliver water to said tank.

3. In a car, a car body having a top, a tunnel aligned with the direction of travel and having a relatively small inlet and an outlet larger than said inlet and being removably mounted on said top and comprising a rubber tank having a bottom of a contour corresponding with the contour of said top, a casing arranged with respect to said tank to form the sides and top of the tunnel, said casing having members engaging the sides of said tank to retain the tank in position, and supporting means secured to said casing and being releasably secured to members of said body.

4. A car having a body provided with an upper structure comprising a tunnel aligned with its direction of travel, water distributing means in said tunnel arranged to distribute water over the bottom of said tunnel, the sides of said body having spaced walls forming chambers therebetween, a water supply tank arranged at the lower part of said car, means for delivering water from said supply tank to said distributing means, and tubes arranged to pass thru said chambers and being connected with the bottom of said tunnel to receive water therefrom and leading to said tank, substantially as described.

LUDWIG SCHWARZMAYR.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,151,097	Germonprez	Mar. 21, 1939
2,241,843	Buddrus et al.	May 13, 1941

FOREIGN PATENTS

Number	Country	Date
464,415	Great Britain	Apr. 19, 1937