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J. E. KERCHEVAL

2,453,018

CAR COOLER

Filed March 22, 1948

FIG. 1.

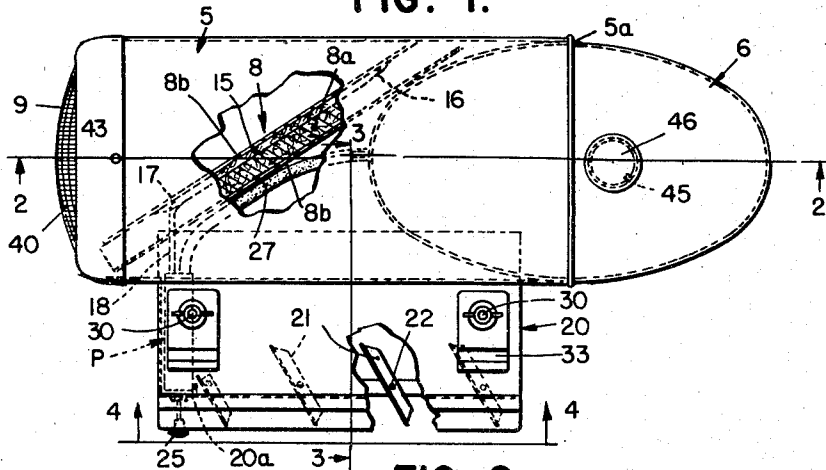


FIG. 2.

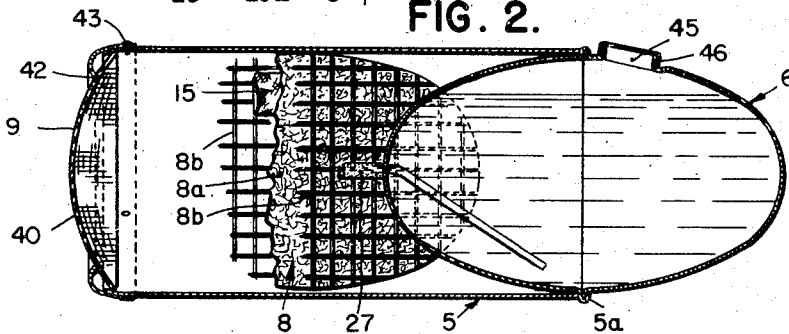


FIG. 3.

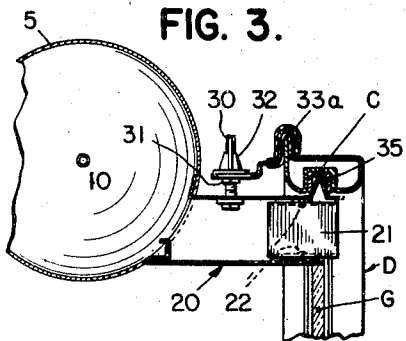


FIG. 4.

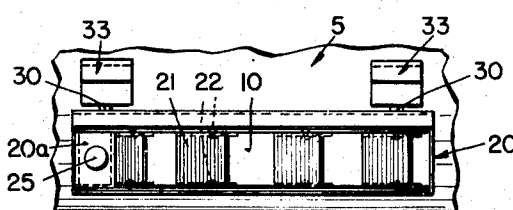


FIG. 7.

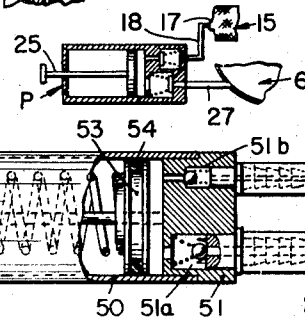


FIG. 6.

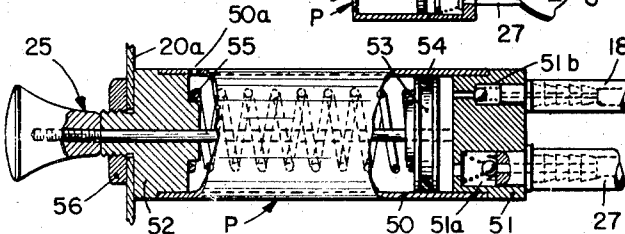
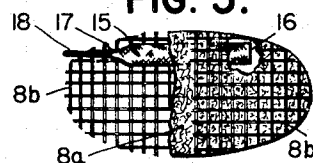


FIG. 5.



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UNITED STATES PATENT OFFICE

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CAR COOLER

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4 Claims. (Cl. 261—34)

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This invention has to do with car coolers, relating more particularly to portable and detachable devices for cooling the air in a closed automobile.

While portable car coolers are well-known in the art, those of which I am aware have possessed various shortcomings—that is, they are either too costly, or are so complicated that considerable skill and effort are required to operate them, or they do not function to properly cool the air. Another disadvantage of prior car coolers has been that they usually consist of a humidifier rotatably mounted in a casing in the bottom of which a pool of water is maintained in which the humidifier is partially immersed. Thus when an automobile stops suddenly the water in the casing tends to slush out. Another disadvantage has been the impractical means provided for wetting the humidifier.

It is an object of my invention to overcome those disadvantages and to provide a device which is so constructed as to be conducive to economical manufacture and simplicity of operation.

It is a further object to provide a car cooler which is efficient in use and provides effective cooling of the air.

A more particular object is to provide a car cooler in which the cooling water is stored in a closed tank and is applied at will to a stationary porous humidifier pad through which the air travels, the water being passed to the humidifier by a hand pump which is accessible inside the automobile upon which the device is mounted. The pump delivers the water to a distributor carried by the top of a humidifier pad so that the water is then gradually released into the pad.

A still further object of the invention to provide a device of this character wherein the water is pre-cooled before passing to the humidifier.

Another object is to provide a novel damper control for the cooled air entering the vehicle.

Other objects and advantages will appear from the following description of a presently preferred embodiment of the invention, for which purpose I shall now refer to the accompanying drawings wherein:

Fig. 1 is a top plan view;

Figs. 2 and 3 are sections taken, respectively, on the lines 2—2 and 3—3 of Fig. 1;

Fig. 4 is a view taken on line 4—4 of Fig. 1;

Fig. 5 is a side elevation of the humidifier with part broken away;

Fig. 6 is a side elevation, partly in section, of the pump; and

Fig. 7 is a diagram showing the arrangement for withdrawing water from the tank and forcing

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it into the distributor which in return releases the water to the humidifier.

Referring now to the drawings, I show at 5 a cylindrical casing having an oval tank 6 fitted in and sealing the rear end of the casing. The tank is preferably welded to the casing along the bead 5a, one-half of the tank projecting into the casing where it is exposed to cooled air after it passes through the humidifier pad to be described. While the tank illustrated is made of metal, I may prefer to make that portion of the tank which projects into the casing of a porous material to further the cooling of the water in the tank by evaporation.

A humidifier 8 is diagonally mounted lengthwise of the casing between the front or inlet end 9 of the casing and the side outlet 10. This humidifier is preferably made of a pad of porous material 8a, such as excelsior, sandwiched between two wire mesh sides 8b, the wire mesh merely serving to retain the pad and to pass air to and from the pad. Inasmuch as the humidifier is shaped to have a tight fit in the casing I find it unnecessary to otherwise secure it to the casing, although this may be done if desired.

To maintain the humidifier in wetted condition I provide a water distributor in the form of a fabric sack 15 which is closed at its outer end 16 and has an inlet neck 17 into which a flexible hose 18 extends and discharges. The sack is preferably of a woven fabric so that when filled with water the water will gradually be released through the interstices of the fabric and deposited in the pad 8a.

Secured to the side of the casing, around and communicating with the outlet 10, there is a rectangular outlet neck 20 which has a plurality of dampers 21 pivoted at 22 to swing in order to open and close the outlet end of the neck. These dampers are individually operable manually and act not only as dampers to limit the amount of air passing from the device but also act as deflectors to direct the air in the vehicle as may be desired.

A conventional hand pump P is mounted in the neck 20 upon a bracket 20a, and has an actuating rod 25 projecting from the neck to be accessible to an occupant of a car upon which the cooler is mounted.

A flexible hose 27 leads from the tank 6 to the pump inlet valve 51a in housing 51 and the previously mentioned hose 18 communicates with the pump outlet valve 51b, so that upon each outward stroke of the plunger water is drawn from the tank into the pump cylinder 50 and upon each inward stroke water is forced from the pump

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through the hose 18 into the sack 15 to be gradually released to the humidifier.

The pump cylinder has an outer end closure plug 52 which has a threaded neck extending through the bracket 20a to receive a nut 56. The pump plunger 53 has a seal ring 54 and the pressure stroke of the plunger is delivered by a coil spring 55 after the rod 25 is manually pulled outwardly and released.

To hang the device upon the door of an automobile I mount a pair of studs 30 on the neck and slidably mount on each stud, between nuts 31 and 32, a bracket 33 having a hooked outer end 33a adapted to engage over the top flange of an automobile door D. An extension 35 is provided on the top of the neck 20 and this extension has a portion 36 of inverted V-shaped cross-section which is adapted to engage in the top glass channel C of the window in the door. By adjusting the nuts up or down the device may be adjusted to clamp on to any car door.

The open front end of the casing is protected against entrance of foreign matter such as insects or the like, by a screen 40 held on the casing by a sleeve which has a flange 42 overhanging the peripheral portion of the screen. The sleeve may be held on the casing as by screws 43.

The tank has a filling opening 45 in its top closed by a screw plug 46.

From the foregoing it will be observed that since I do not have to maintain a pool of water in the bottom of the casing, I may leave the front end of the casing, through which the air enters, substantially entirely open to increase the amount of air passing through the device. In conventional coolers this is impossible because in order to prevent the water from slushing out of the casing a funneled inlet must be provided which has a relatively restricted outlet.

The device is mounted upon the door of a vehicle with the open end of the casing disposed in the direction of travel and the neck 20 is positioned to discharge into the vehicle through the window of the door. Usually the window glass G is moved up to engage the bottom of the neck. Thus the pump-actuating plunger is readily accessible to an occupant of the car so that as the moisture in the humidifier becomes evaporated it can be replenished. The air enters the front end of the casing at one side of the humidifier pad and before it can pass out the neck the air must pass through the humidifier pad inasmuch as the pad is disposed between the casing inlet and outlet. This insures that the air entering the vehicle is effectively washed and cooled. Inasmuch as considerable area of the water tank is exposed to this cooled air, the water is pre-cooled before being deposited on the pad.

Various modifications may be constructed if desired within the broader scope of the invention as defined by the appended claims.

I claim:

1. In a car cooler, a tubular casing having an air inlet in its front end, a rectangular air outlet neck projecting laterally from its side and a closed water tank at its rear end, a humidifying pad stationarily mounted in the casing between the inlet and outlet neck, manually actuated pressure generating means mounted in the neck for withdrawing water from the tank and forcing it under pressure onto the humidifying pad, and means for mounting the casing on a car with its inlet facing the direction of travel of the car and with its outlet neck projecting into the car through a window thereof; said cooler being fur-

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ther characterized by the pressure generating means having a manually operated actuating member projecting from the discharge end of the outlet neck in position to be accessible to an occupant of the car.

2. In a car cooler, a tubular casing having an air inlet in its front end, a rectangular air outlet neck projecting laterally from its side and a closed water tank at its rear end, a humidifying pad stationarily mounted in the casing between the inlet and outlet neck, a hand pump for withdrawing water from the tank and forcing it under pressure onto the humidifying pad, said pump having a cylinder mounted longitudinally of the outlet neck and a plunger reciprocally mounted in the cylinder, the plunger having a stem portion projecting from the discharge end of the outlet neck into position accessible to an occupant of the car; and bracket means on the outlet neck, said bracket means having a portion engageable with the door of a car for supporting the casing thereon with the outlet neck extending into the car.

3. A car cooler comprising a hollow, cylindrical casing having an air inlet in its front end, an air outlet in its side and a water tank closing its rear end, the tank having an ovate inner end portion projecting into the rear end portion of the casing to be exposed to air passing there-through, a flat, elongated humidifying pad stationarily mounted in the casing and being disposed diagonally longitudinally thereof between the air inlet and the air outlet, means for withdrawing water from the tank and forcing it under pressure onto the humidifying pad, and bracket means for mounting the casing on a car with its front end facing the direction of travel of the car and with its outlet positioned to discharge air into the car.

4. A car cooler comprising a hollow, cylindrical casing having an air inlet at its front end, an air outlet in its side and a water tank closing its rear end, the tank having an ovate inner end portion projecting into the rear end portion of the casing to be exposed to air passing there-through, a flat, elongated humidifying pad extending diagonally longitudinally of the casing between the inlet and outlet, the inner end portion of the pad being engaged between the exterior of the inner end portion of the tank and the inner surface of the side wall of the casing whereby to hold the pad stationarily so positioned in the tank, means for withdrawing water from the tank and delivering it under pressure onto the pad and bracket means for mounting the casing on a car.

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