Nov. 27, 1951 J. J. DEAN 2,576,503

AIR COOLER

Filed Nov. 16, 1948 2 SHEETS—SHEET 1

Fig. 1.

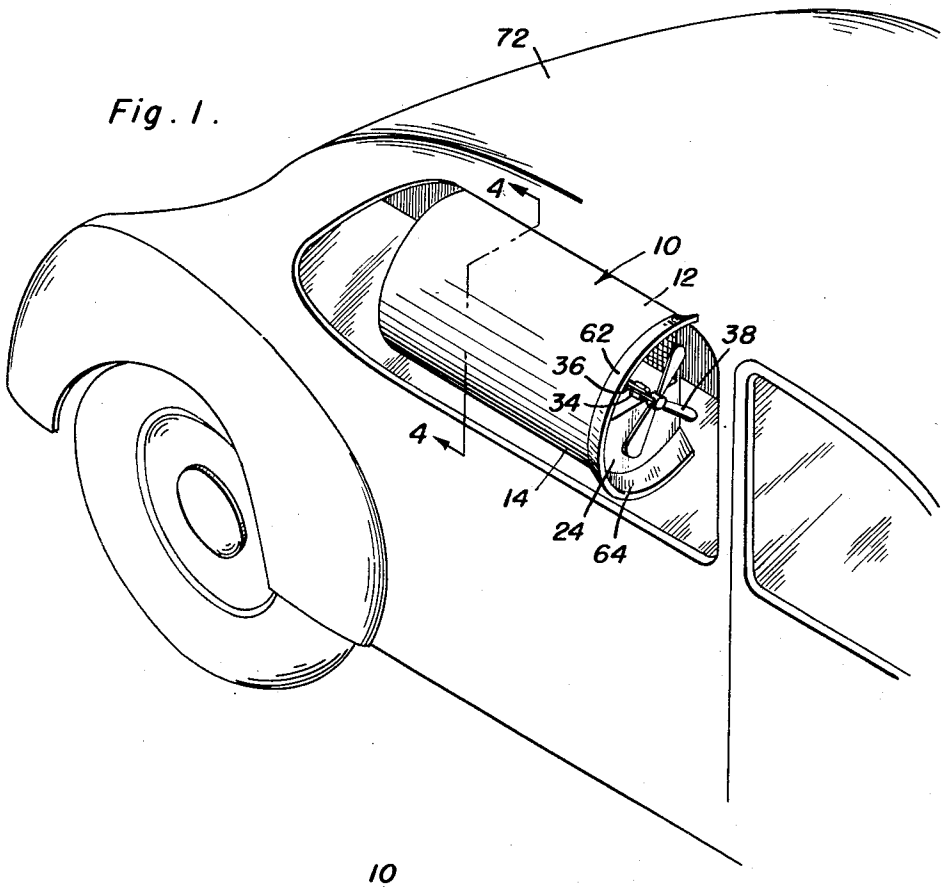
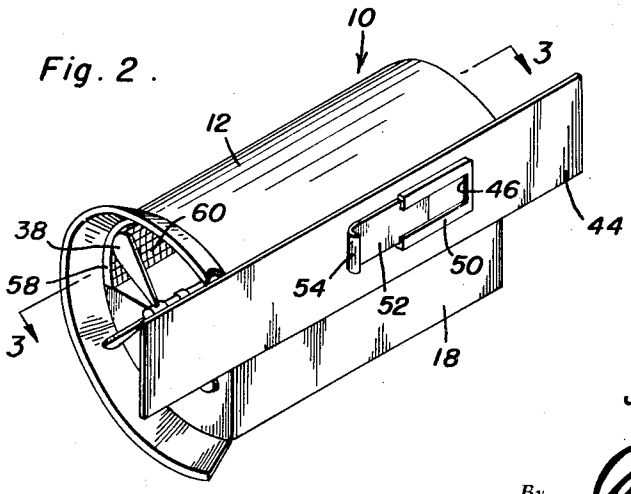


Fig. 2.



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Fig. 3.

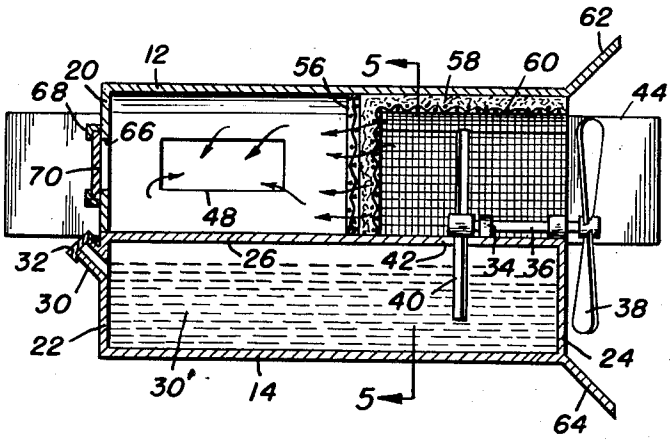


Fig. 4.

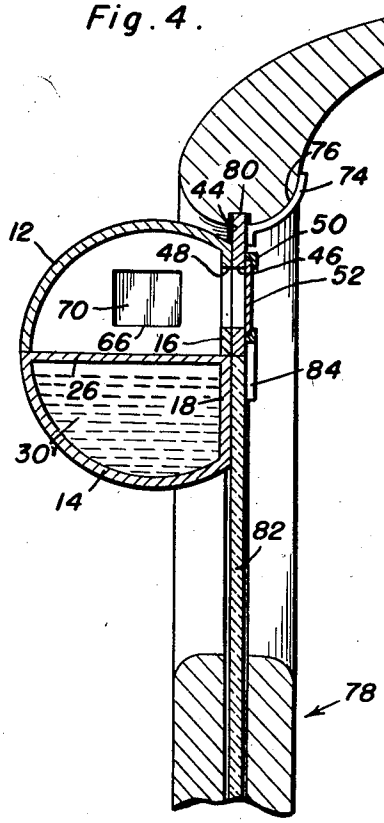


Fig. 5.

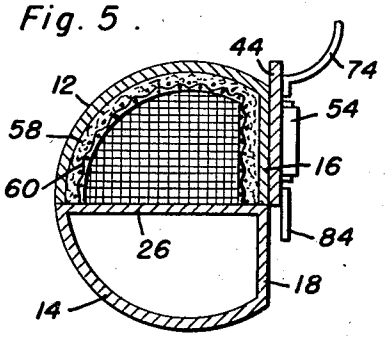
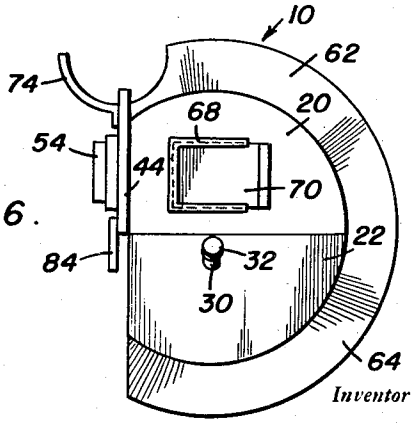


Fig. 6.



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AIR COOLER

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Application November 16, 1948, Serial No. 60,233

7 Claims. (Cl. 261—92)

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This invention relates to new and useful improvements in air coolers and the primary object of the present invention is to provide a simple and practical air cooling unit for buildings, vehicles and the like.

Another important object of the present invention is to provide an air cooler including a supply conduit having an outlet opening through which moisture laden air is delivered and embodying novel and improved means for introducing moisture or liquid into the conduit and into the path of air directed into the conduit by a fan.

A further object of the present invention is to provide an air cooler that is quickly and readily applied to or removed from the conventional window structure of a vehicle without in any way harmfully effecting such a window structure.

A still further aim of the present invention is to provide an air cooler that is small and compact in structure, neat and attractive in appearance, strong and reliable in use, light and convenient to handle, relatively inexpensive to manufacture, and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a fragmentary perspective view of a vehicle and showing the present invention applied to the same;

Figure 2 is a perspective view of the present invention;

Figure 3 is a longitudinal vertical sectional view taken substantially on the plane of section line 3—3 of Figure 2;

Figure 4 is a transverse vertical sectional view taken substantially on the plane of section line 4—4 of Figure 1;

Figure 5 is a transverse vertical sectional view taken substantially on the plane of section line 5—5 of Figure 3; and

Figure 6 is a rear elevational view of the present invention.

Referring now to the drawings in detail, wherein for the purpose of illustration, there is disclosed a preferred embodiment of the present invention, the numeral 10 represents an elongated hollow casing generally, including an upper arcuate section 12 and a lower arcuate section 14 which are provided with flat inner walls 16 and 18 that are co-planar or flush.

The sections 12 and 14 are closed at their rear

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ends by walls 20 and 22, and the lower section 14 is also closed at its forward end by a wall 24 whereas the upper section 12 is open at its forward end to provide an inlet opening.

The bottom section 14 is provided with an upper wall 26 and forms a reservoir or tank that receives a supply of liquid or fluid, such as water 30' which is placed into the lower section through an inlet nipple 30 at the rear wall 22. This nipple 30 is normally closed by a closure cap 32 that is frictionally fitted on the nipple or threaded on the nipple.

Journaled for rotation in bearings 34 mounted on the upper wall 26 of the lower section 14, is a shaft 36 one end of which projects outwardly from the open end of the section 12 to support a fan blade 38 that will draw air into the upper section through the open end thereof as the said fan blade rotates.

The inner end of the shaft 36 supports a pair of diametrically opposed, oppositely arranged angle members or radial blades 40 that rotate in both of the sections 12 and 14 and through an opening 42 provided in the upper wall 26 in order to supply the liquid 30 from the lower section 14 into the upper section 12.

Suitably secured to the inner flat wall 16 of the upper section 12, is an elongated, substantially rectangular anchoring strip 44 having an opening 46 adjacent one end that registers with an outlet opening 48 provided in the inner wall 16 of the upper section, adjacent the rear wall 20 thereof.

A substantially U-shaped channeled guide 50 is fixed to the strip 44, adjacent the upper, lower and rear edges of the opening 46 and slidably receives the longitudinal edges of a substantially rectangular closure or valve 52, having a finger gripping portion 54, for regulating the passage of moisture laden air from the upper section 12.

Suitably fixed within the upper section 12, between the open end of the section 12 and the outlet opening 48, is a suitable filter unit 56 that will prevent dust and the like from passing outwardly through the opening 48 and which will also restrict the amount of moisture laden air passing through the filter toward the outlet opening 48.

A flexible, water absorbent material 58 is mounted in the upper section 12 between the filter 56 and the open end of the upper section and bears against the inner periphery of the upper section and the filter 56. This material 58 is retained in the upper section by a screen mount-

ing or matting 60 that is suitably secured to the upper section.

The forward ends of the sections 12 and 14 are provided with outwardly flared, arcuate flanges 62 and 64 respectively to further aid in directing air into the upper section.

The rear wall 20 of the upper section 12 is provided with an opening 66 and a U-shaped channeled guide 68 is fixed to the rear wall 20 and slidably receives a closure 70 for controlling the opening 66.

In order to permit the instant air cooler to be applied to a vehicle 72, there is provided an arcuate or channel-shaped holding strip 74 that is fixed to the strip 44 and which embraces and bears against the inner surface 76 of the window structure 78 (see figure 4).

The upper edge of the strip 44 is received in the window channel 80, and the lower edge of the strip 44 bears upon the upper edge of the window 82.

A further anchor strip 84 depends from the strip 44 and bears against the inner face of the window 82 to prevent the casing 10 from falling outwardly from the window and the flat walls 16 and 18 of the sections 12 and 14 bear against the outer surface of the window.

In practical use of the present invention, the closure 52 is moved to an open position and the closure 70 is moved to a closed position. As the wind enters the upper section and engages the fan blade 38 to rotate the same, the blades 40 will be rotated to disperse the liquid 30' into the upper section.

As the air agitated in the upper section and presses through the filter 58, the same will then pass outwardly from the opening 48 and into the room area or vehicle.

Obviously, by manipulating the closures 52 and 70 a controlled supply of air into the vehicle or room area may be maintained and rain water can be restricted from entering the opening 48.

Although the fan balde 38 and blades 40 are rotated by air entering the casing for the purpose of simplicity, any suitable motor means could be utilized for driving the same.

In view of the foregoing description taken in conjunction with the accompanying drawings it is believed that a clear understanding of the construction, operation and advantages of the device will be quite apparent to those skilled in this art. A more detailed description is accordingly deemed unnecessary.

It is to be understood, however, that even though there is herein shown and described a preferred embodiment of the invention the same is susceptible to certain changes fully comprehended by the spirit of the invention as herein described and the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. An air cooler for vehicles comprising a casing having a pair of compartments therein, means for attaching the casing to a vehicle to be disposed exteriorly of the vehicle, one of said compartments being open at one end to provide an inlet opening, an outlet opening provided in said one of said compartments, means responsive to a movement of the vehicle on which the casing is attached for introducing air into said one of said compartments, means operated by said air introducing means and rotatable in both compartments for dispensing a liquid from one of said compartments into the other of said compartments, and means for retaining a liquid within said one of said compartments, said casing having an aperture in one side communicating with said one of said compartments, a first valve carried by the casing for controlling the flow of air through said outlet opening, and a second valve controlling the flow of air through said aperture.

2. An air cooler comprising an elongated casing including upper and lower hollow sections, said upper section being open at one end, said lower section being closed at both ends and forming a reservoir, said upper section having an outlet opening therein and a closure controlling said outlet opening, a shaft journaled for rotation in said casing, a fan blade mounted on said shaft for introducing air into said upper section through the open end thereof, means mounted on said shaft for rotation therewith for supplying a liquid from said lower section into said upper section, means for retaining liquid in said upper section, said upper section having an aperture in one side and another closure for controlling the passage of air from said aperture.

3. In a vehicle air conditioner, an elongated casing having a longitudinal, substantially horizontal partition therein dividing the casing into upper and lower compartments, bearings mounted on said partition and disposed within the upper compartment, a shaft journaled for rotation in said bearings and having forward and rear end portions, a fan blade mounted on the forward end portion of said shaft and disposed exteriorly of said casing for introducing air into the upper compartment, a paddle mounted on the rear end portion of said shaft, said partition having a slot therein receiving said paddle, said lower compartment constituting a reservoir, said paddle adapted to lift a fluid medium from the lower compartment to the upper compartment upon rotation of said shaft, and a bracket for attaching the casing to a vehicle to be disposed exteriorly of and at one side of a vehicle for imparting a rotation to said fan blade in response to a movement of the vehicle supporting the casing.

4. The combination of claim 3, wherein said casing includes an elongated relatively flat wall for resting against the outer surface of a vehicle window, said flat wall having an opening therein entering into the upper compartment adjacent one end thereof, and a slidable closure on said flat wall for the opening.

5. The combination of claim 4, and an elongated anchoring strip secured to the flat wall and having an upper edge for reception in a window receiving channel of a vehicle and a lower edge for resting upon the upper edge of a vehicle window, an anchor strip depending from the lower edge of said anchoring strip and spaced from the flat wall of the casing, and an arcuate holding strip rising from the upper edge of said anchoring strip for contacting a window frame of a vehicle.

6. In a vehicle air conditioner, an elongated casing having a longitudinal, substantially horizontal partition therein dividing the casing into upper and lower compartments, bearings mounted on said partition and disposed within the upper compartment, a shaft journaled for rotation in said bearings and having forward and rear end portions, a fan blade mounted on the forward end portion of said shaft and disposed exteriorly of said casing for introducing air into the upper compartment, a paddle mounted on the rear end portion of said shaft, said partition

having a slot therein receiving said paddle, said lower compartment constituting a reservoir, said paddle adapted to lift a fluid medium from the lower compartment to the upper compartment upon rotation of said shaft, said casing having an opening in its end remote from the fan blade and also having an opening at one side, and a valve associated with each of the openings for selectively controlling the passage of conditioned air through the openings.

7. An air cooler adapted to be mounted on and supported solely by a vehicle window for supplying a conditioned air into the interior of the vehicle during movement of the vehicle, said air cooler comprising an elongated casing having forward and rear ends and a peripheral wall, a horizontal partition fixed in said casing and extending throughout the length of said peripheral wall to divide the casing into upper and lower compartments, said lower compartment being closed at both ends for retaining a liquid in said lower compartment, said upper compartment including a rear end wall having an opening therein to permit air to pass outwardly from the upper compartment, a valve slidably carried by the rear end wall for controlling the flow of air through the opening in said rear end wall, means supported by said partition for injecting into the upper compartment a liquid in the lower compartment, said peripheral wall having an aperture therein communicating with the interior of the upper compartment to permit air to pass from one side of the casing and into a vehicle when the valve is moved to close the opening in the rear end wall, and another valve slidably carried by the casing for controlling the flow of air through said aperture.

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