June 14, 1938. R. T. BRIZZOLARA 2,120,830

AIR COOLING UNIT

Filed Aug. 13, 1937

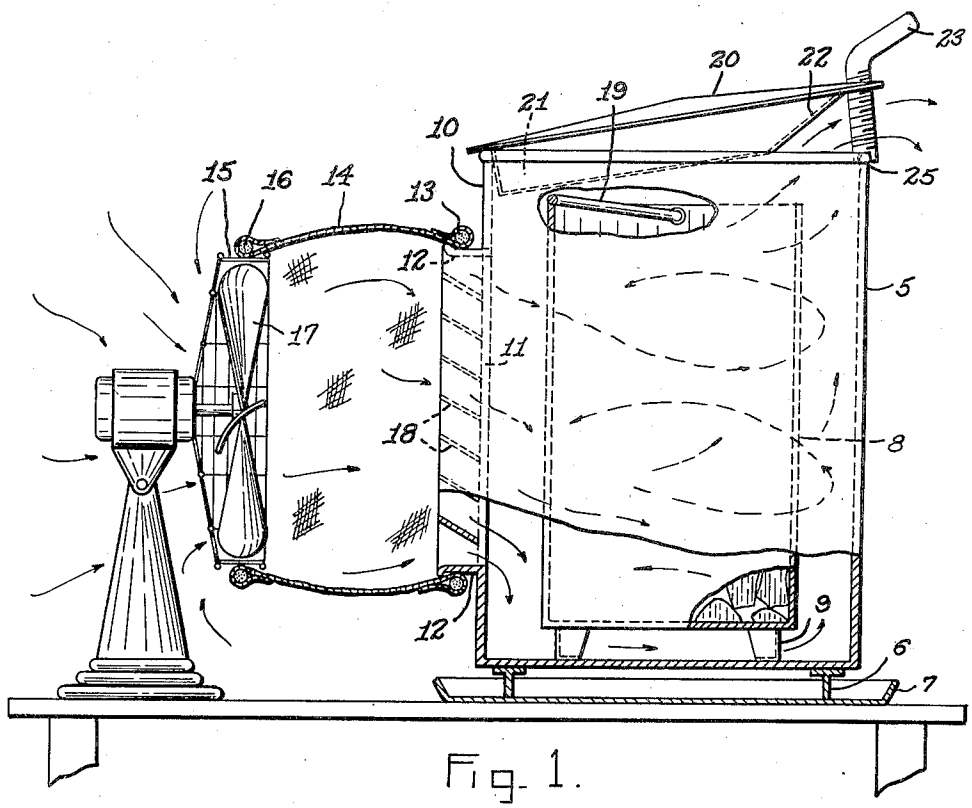


Fig. 1.

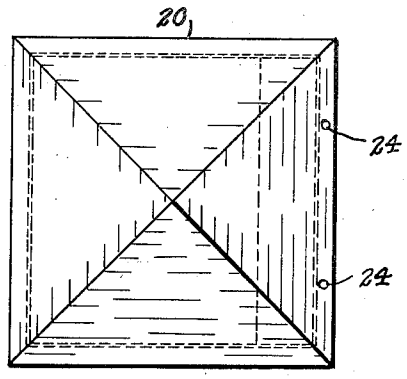


Fig. 2.

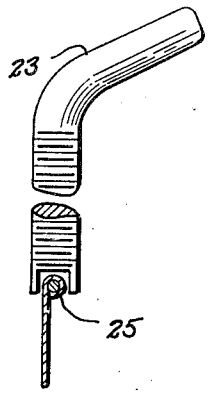


Fig. 4.

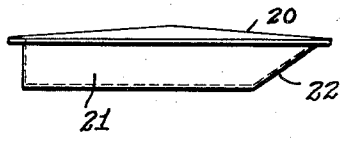


Fig. 3.

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AIR COOLING UNIT

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10 Claims. (Cl. 62—131)

This invention relates to air cooling apparatus and relates more particularly to a small portable air cooler using ice for the production of the cooling effect.

The cooling by refrigeration of the entire space within a room involves not only elaborate and costly equipment but the first cost and operating cost of such equipment is usually so great that but few rooms are equipped for air cooling.

According to this invention no attempt is made to cool the entire space within a room. Instead, what I have termed a "spot cooler" is provided for projecting upon a person or persons, a stream of air having a temperature sufficiently low to produce the desired cooling effect yet not having such a low temperature that the person or persons are chilled. The first cost and cost of operation of this cooler is so low that experience has shown that many persons have utilized it with entire satisfaction who otherwise would have done without any air cooling rather than utilize the far more expensive equipment formerly available.

One embodiment of the invention comprises an outer container provided with a circular opening around which is fitted a flexible sleeve adapted to slip over the safety guard of any standard electric fan. A smaller, metal inner container contains ice. The outer container has a cover which is adapted to be tilted to guide air discharged from between the inner and outer container, in a desired direction. The fan blows the air over the cold surface of the inner container and discharges it in a guided stream. The stream when projected upon or near a person maintains him cool and comfortable even in the hottest, most humid weather.

An object of the invention is to cool air at low cost.

Another object of the invention is to provide a small, inexpensive air cooler.

Another object of the invention is to provide an air cooler adapted for association with standard electric fans.

Other objects of the invention will be apparent from the following description and from the drawing.

The invention will now be described with reference to the drawing, of which:

Fig. 1 is an elevation view with a portion in section; with a portion removed, and with a portion in dotted outline of a cooling unit in association with a standard electric fan, according to this invention;

Fig. 2 is a plan view looking downwardly upon the cover of the unit of Fig. 1;

Fig. 3 is an elevation view of the cover of Fig. 2, and

Fig. 4 is an enlarged view of one of the adjusting screws for positioning one edge of the cover of the unit, for providing a guided air discharge.

The cooling unit includes the outer container 5 which may be of metal or any other suitable material and which rests upon the supports 6 in the drain pan 7. The inner metal container 8 is mounted on the container 5 on the legs 9 which space the base of the inner container from that of the outer container to permit air flow therebetween. The inner container 8 is preferably a standard size metal can, provided with the bail 19 for removal of the inner container from the outer one.

The outer container 5 has in its wall 10, a circular opening 11 around which extends the flange 12. The elastic ring 13 within one end of the cloth sleeve 14 holds that end of the sleeve 14 tightly over and around the flange 12. The other end of the sleeve 14 is fitted around and held tightly to the guard 15 of the electric fan 17 by means of the elastic ring 16. Mounted within the flange 12 are the plurality of louvres 18 which guide the air entering the container 5, in a downward direction.

The cover 20 has a lower flange 21 which extends around three sides of the cover but is cut back near the fourth side to form the slanted edges 22. The cover 20 is provided adjacent the edges 22 with the two screws 23 which extend through the holes 24 of the cover and rest upon one of the four upper edges 25 of the outer container, and are adjustable for spacing the one side of the cover different distances from the outer container. The cover so placed provides with its flat lower surface and the edges 2, an air guiding passage which terminates at the edges 22.

The inner container 8, when it is desired to place the unit in condition for cooling, is filled with small pieces of water ice or with dry ice. If filled with water ice, the voids between the pieces may be filled with water. The cover 20 is then adjusted to project an air stream in the desired direction. The cover may be placed in four positions to project air in four compass directions, so that it is not necessary to reposition the fan and unit for providing changes in air directions. Adjustment of the screw 23 provides variable discharge outlet openings and also controls to a

certain extent the up and down direction of the projected air stream.

Operation of the fan then provides an air current through the sleeve **14** and between the louvers **18** which direct the air downwardly so that it circulates around the lower portions of and under the base of the container **8**. The sides and base of the container **8** are chilled by the ice and extract heat from the air passing them. This air is then projected in the desired direction on discharge between the top **20** and one edge of the container **5**.

The sleeve **14** may be fitted to any so-called desk fan regardless of its diameter. The elastic rings with the cloth sleeve therefore form a universal coupling.

Condensation takes place upon the surface of the inner container and drops onto the bottom of the outer container, which is so light in weight, that the condensation can be poured out occasionally.

Condensation may take place upon the outer surface of the outer container as when the unit is charged with ice, but the fan is not running. Such condensation collects in the tray **7**.

In one form of the device in which twenty-five pounds of crushed ice were placed and the unit fitted to an eight inch fan, the air was cooled 10° F. with a wet bulb temperature reduction of 8° F. The ice was melted at the rate of five pounds per hour. About seventy cubic feet of air per minute were discharged and the air stream did not produce an uncomfortable effect at a distance of five feet.

While one embodiment of the invention has been described for the purpose of illustration, it should be understood that the invention is not to be limited to the exact arrangement described, as many departures may be made by those skilled in the art, after having had access to this disclosure.

What is claimed is:

1. An air cooler comprising in combination, an outer container, an inner container within said outer container and spaced therefrom to provide air passages therebetween, said inner container being adapted to receive ice, a fan, means for connecting said fan to said outer container for blowing air around and in contact with the walls of said inner container, a cover for said outer container, and means for spacing one edge of said cover from the upper edge of said outer container for providing an air discharge passage from same.

2. An air cooler comprising in combination, an outer container, an inner container within said outer container and spaced therefrom to provide air passages therebetween, said inner container being adapted to receive ice, said outer container having a vertical wall and having an opening in same, a fan, means for connecting said fan to said outer container around said opening for blowing air around and in contact with the walls of said inner container, a cover for said outer container, and means for spacing one edge of said cover from the upper edge of said outer container for providing an air discharge passage from same.

3. An air cooler comprising in combination, an outer container, an inner container within said outer container and spaced therefrom to provide air passages therebetween, said inner container being adapted to receive ice, said outer container having a vertical wall and having an opening in same, a fan, means comprising a flexible connection for connecting said fan to said outer container around said opening for blowing air around and in contact with the walls of said inner container, a cover for said outer container, and means forming an air discharge passage at the upper portion of said outer container.

4. An air cooler comprising in combination, an outer container, an inner container within said outer container and spaced therefrom to provide air passages therebetween, said inner container being adapted to receive ice, said outer container having a vertical wall and having an opening in same, a fan, means comprising a flexible connection for connecting said fan to said outer container around said opening for blowing air around and in contact with the walls of said inner container, a cover for said outer container, and means for spacing one edge of said cover from the upper edge of said outer container for providing an air discharge passage from same.

5. An air cooler comprising in combination, an outer container, an inner container within said outer container and spaced therefrom to provide air passages therebetween, said inner container being adapted to receive ice, said outer container having a vertical wall and having an opening in same and having an outwardly extending flange around said opening, a fan having a guard around its blades, means forming a flexible coupling between said fan and said outer container, elastic means for securing one end of said coupling around said guard and the other end around said flange, and means for discharging air from said outer container.

6. An air cooler comprising in combination, an outer container, an inner container within said outer container and spaced therefrom to provide air passages therebetween, said inner container being adapted to receive ice, said outer container having a vertical wall and having an opening in same and having an outwardly extending flange around said opening, means in said opening for downwardly directing the air entering said outer container, a fan having a guard around its blades, means forming a flexible coupling between said fan and said outer container, elastic means for securing one end of said coupling around said guard and the other end around said flange, and means for discharging air from said outer container.

7. An air cooler comprising in combination, an outer container, an inner container within said outer container and spaced therefrom to provide air passages therebetween, said inner container being adapted to receive ice, said outer container having a vertical wall and having an opening in same and having an outwardly extending flange around said opening, a fan having a guard around its blades, means forming a flexible coupling between said fan and said outer container, elastic means for securing one end of said coupling around said guard and the other end around said flange, a cover for said outer container, and means for spacing one edge of said cover from the upper edge of said outer container for providing an air discharge passage from said cooler.

8. An air cooler comprising in combination, an outer container, an inner container within said outer container and spaced therefrom to provide air passages therebetween, said inner container being adapted to receive ice, a fan, means for connecting said fan to said outer container for blowing air around and in contact with the walls of said inner container, a cover for said outer container, said cover having a substantially flat under surface and having a downwardly ex-

tending flange extending except for a cut-away portion completely around the edges of said cover for fitting same tightly to said outer container, and means for spacing said cut-away portion of said cover from the upper edge of said outer container for providing an air discharge passage from said cooler.

9. An air cooler comprising in combination, an outer container, an inner container within said outer container and spaced therefrom to provide air passages therebetween, said inner container being adapted to receive ice, said outer container having a vertical wall and having an opening in same and having an outwardly extending flange around said opening, a fan having a guard around its blades, means forming a flexible coupling between said fan and said outer container, elastic means for securing one end of said coupling around said guard and the other end around said flange, a cover for said outer container, said cover having a substantially flat under surface and having a downwardly extending flange extending except for a cut-away portion completely around the edges of said cover for fitting same tightly to said outer container, and means for spacing said cut-away portion of said cover from the upper edge of said outer container for providing an air discharge passage from said cooler.

10. An air cooler comprising in combination, an outer container, an inner container within said outer container and spaced therefrom to provide air passages therebetween, said inner container being adapted to receive ice, said outer container having a vertical wall and having an opening in same and having an outwardly extending flange around said opening, means in said opening for downwardly directing the air entering said outer container, a fan having a guard around its blades, means forming a flexible coupling between said fan and said outer container, elastic means for securing one end of said coupling around said guard and the other end around said flange, a cover for said outer container, said cover having a substantially flat under surface and having a downwardly extending flange extending except for a cut-away portion completely around the edges of said cover for fitting same tightly to said outer container, and adjustable means for spacing said cut-away portion of said cover from the upper edge of said outer container for providing an air discharge passage from said cooler.

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