Jan. 27, 1970 T. C. CAVIS 3,491,550

ROOM COOLER

Filed June 27, 1968

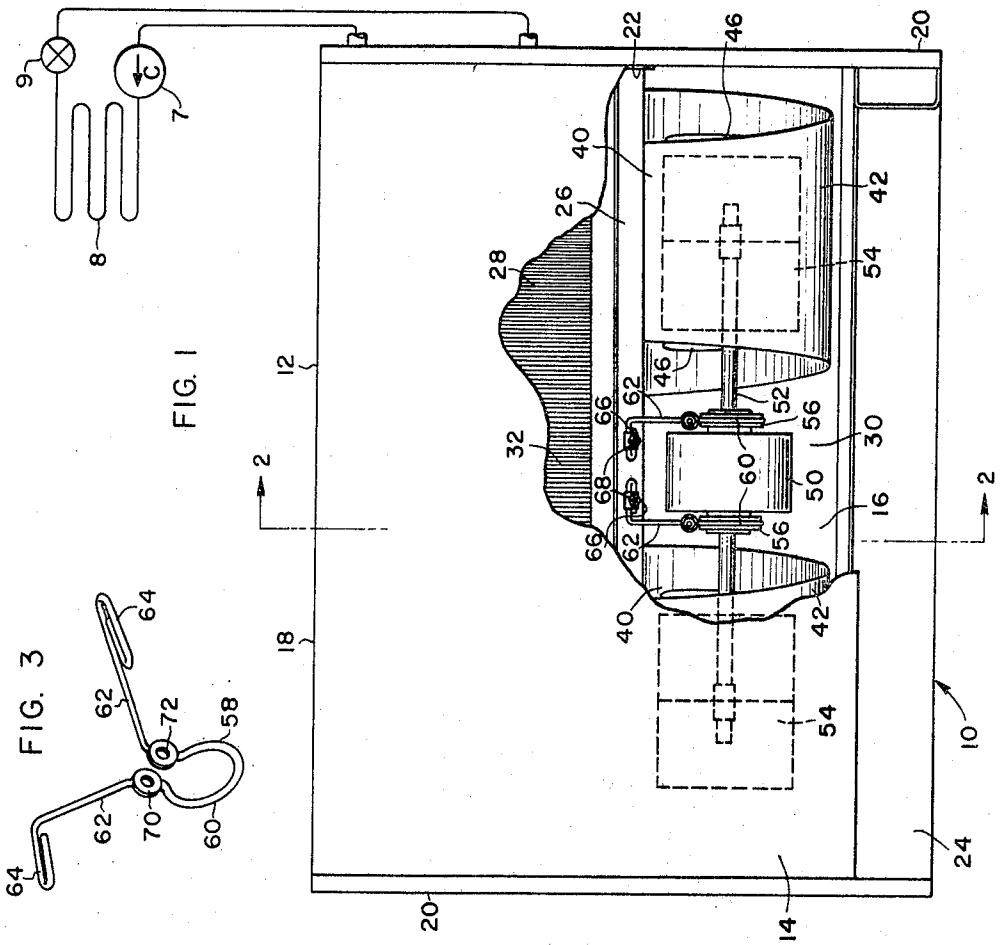


FIG. 1

FIG. 3

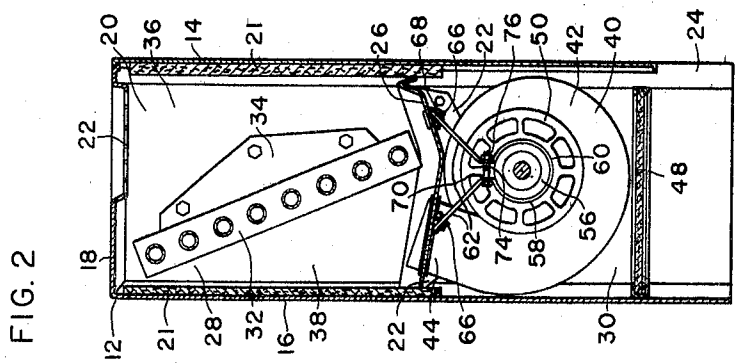


FIG. 2

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United States Patent Office 3,491,550 Patented Jan. 27, 1970

3,491,550

ROOM COOLER

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Filed June 27, 1968, Ser. No. 740,724
Int. Cl. F25d 21/14, 17/06
U.S. Cl. 62—285 6 Claims

ABSTRACT OF THE DISCLOSURE

An air cooling unit having a heat exchanger adapted to cool air below its dew point; a drain pan mounted below the heat exchanger for receiving cool condensate from the heat exchanger; a blower for passing a water vapor laden air in heat exchange relation with the heat exchanger; an electric motor drivingly connected to the blower; and means for supporting the motor from the drain pan in a manner to minimize heat conduction from the motor to the drain pan thereby minimizing condensation of moisture on said motor from the air.

The instant invention relates to cabinet type room coolers employing an air cooling heat exchanger and blower for cooling room air circulated therethrough. Particularly, this invention relates to the mounting of the heat exchanger, drain pan, and blower motor within the unit in such a manner as to keep condensate off the motor. The presence of condensate on the motor is inherently deleterious to the motor.

The structural means to achieve this objective will be apparent from the detailed description of the invention with the accompanying drawing in which:

FIGURE 1 is a front elevation of a room cooling unit connected to a refrigeration system and embodying the invention with a front portion of the housing broken away to more clearly disclose the inner working parts thereof;

FIGURE 2 is a section of the apparatus of FIGURE 1 taken along line 2—2; and

FIGURE 3 is an enlarged perspective of a detail motor supporting member.

Now referring to the drawing, there is shown a room cooling unit **10** having a cabinet or housing **12** including a front side **14**, a back side **16**, a top side **18**, and a pair of end walls **20**. Top side **18** is provided with an air outlet **22** which extend across the top of the housing adjacent the front wall **14**. An air inlet **24** to the housing is provided at the foot of the front wall. The bottom of the housing is normally substantially closed by the floor of the room. Various interior walls of the unit may be provided with thermal and sound insulation **21** if desired.

Disposed within housing **12** between inlet **24** and outlet **22** is a generally horizontal drain pan fan board **26** which divides the interior of housing **12** into an upper chamber **28** and a lower chamber **30**. Drain pan **26** may be supported from the end walls **20** via brackets **22** at each end thereof for collecting cool condensate which drains from coil **32**. The drain pan is necessarily cooled by such condensate.

Disposed within upper chamber **28** is a fin-and-tube type cooling heat exchanger coil **32** which is supported from the end valls **20** via brackets **34** at each thereof. Coil **32** may be connected as the evaporator in a conventional closed refrigerant circuit serially connecting a compressor **7**, a condenser **8**, throttling valve **9**, and the coil **32**. In the alternative, coil **32** may be connected to be cooled by a secondary refrigerant such as chilled water. Coil **32** is tilted upwardly rearwardly having its upper edge adjacent back side **16** and its lower edge adjacent drain pan **26** and spaced from back side **16**. Coil **32** effectively

divides upper chamber **28** into a front portion **36** and a rear portion **38**. Outlet **22** in the top side communicates directly with the front portion **36** of chamber **28**. Because of the disposition of coil **28**, substantially all the air passing from the rear portion **38** to the front portion **36** of chamber **28** must pass through the coil **28** to be cooled thereby. Air is delivered to the rear portion **38** of chamber **28** from chamber **30** via a pair of blowers **40**.

Each of blowers **40** has a scroll-shaped housing **42** preferably molded of plastic or other material low in heat conductivity. The discharge portion **44** of each blower housing extends upwardly through an aperture in the drain pan **26** into the rear portion **38** of chamber **28**. The inlets **46** of blowers **42** communicate with lower chamber **30**. If desired a filter **48** may be disposed within chamber **30** whereby air entering unit housing inlet **24** is filtered as it passes upwardly through chamber **30** to blower inlet **46**. Blower housings **42** are fastened via screws or other appropriate fasteners (not shown) to drain pan **26**.

An electric blower motor **50** is disposed below drain pan **26** between blower housings **42**. The shaft **52** of motor **50** extends horizontally from each end thereof into each blower housing. Each of the shaft extensions carries a blower rotor **54** within each housing. Each end of the motor has a circular boss or mounting area **56** circumscribing the motor shaft extension by which the motor may be mounted. The motor **50** is mounted on the lower side of the drain pan **26** via mounting means **58** disposed at each end of the motor.

Each mounting means **58** has a substantially annular wire loop or yoke portion **60** substantially circumscribing one of the circular boss or mounting areas **56** of motor **50**. The ends of wire loop **60** are connected to drain pan **26** via wire ligaments **62**. Wire ligaments **62** are at least ten times their diameter so as to present a thermal path of high resistance to minimize heat conduction therethrough from motor **50** to drain pan **26**. Ligaments **62** and loop **60** of each mounting means **58** are disposed in a common plane normal to the motor shaft **52**. However, the ligaments **62** diverge from each other in a direction away from loop **60** which increases their length and thus therein thermal resistance. The upper end of each ligament **62** is provided with an elongated loop **64** which extends in a direction parallel to shaft **52** through which a stud **66** fastened to drain pan **26** extends. Each stud **66** has a nut **68** thereon which when tightened clamps loop **64** rigidly to the drain pan. By loosening nuts **68** the mounting means **58** may be adjusted to permit axial adjustment of the motor **50**. Each loop **60** is clamped to the motor mounting area **56** via a clamping means **70** interposed between the lower ends of ligaments **62** and the ends of loop **60**. Clamping means **70** is formed by providing an aperture **72** in the connections between each end of loop **60** and ligaments **62**. This may be done by flattening a portion of the wire in these areas if desired. The head of a bolt **74** extending through apertures **72** bears against the rim of one aperture **72** while a nut **76** on bolt **74** bears against the rim of the other aperture **72** of each mounting means **58**. By tightening nut **76** the hoop tension in loop **60** is increased thereby rigidly connecting the loop **60** to the motor **50**.

It will thus be seen that appreciable cooling of motor **56** via of heat transmission from the motor to the cool drain pan through the motor mounting means **58** is virtually eliminated by reason of the relatively small diameter of ligaments **62** and their diverging relation which adds to their length thereby enhancing their thermal resistance.

Having now described the preferred embodiment of my invention, I contemplate that many changes may be made without departing from the scope or spirit of my

invention and I accordingly desire to be limited only by the claims.

I claim:

1. An air cooler comprising in combination: an air cooler heat exchanger for cooling air below the dew point thereof; a drain pan mounted below said heat exchanger for receiving from said heat exchanger water condensed from the air; at least one scroll-shaped blower housing disposed below said drain pan for passing air upwardly beyond said drain pan through said heat exchanger; a blower rotor in said blower housing; an electric motor disposed below said drain pan, and having a drive shaft extending into said blower housing; said rotor being mounted on said shaft extension for rotation therewith; and means for supporting said motor from said drain pan in a manner to minimize heat conduction from said motor to said drain pan thereby minimizing condensation of moisture on said motor from the air; said support means being a plurality of metallic wire ligaments extending between said motor and said drain pan; each of said ligaments having a length of at least ten times its width thereby rendering the thermal path through said wire ligaments relatively high in thermal resistance.

2. The apparatus as defined by claim 1 wherein said supporting means includes a wire loop substantially circumscribing the shaft of said motor in a plane adjacent one end of said motor generally normal to said shaft and means for clamping said loop to said motor.

3. The apparatus as defined by claim 2 wherein each of said wire ligaments extends from an end of said wire loop in a diverging relation with respect to another of said wire ligaments in a direction away from said motor.

4. The apparatus as defined by claim 3 wherein said clamping means is disposed between said wire ligaments and said loop for drawing the ends of said loop together.

5. The apparatus as defined by claim 3 wherein said ligaments lie substantially in said plane.

6. The apparatus as defined by claim 1 wherein each of said ligaments has an elongated loop at the upper terminal portion thereof adjacent said drain pan; the longitudinal axis of said elongated loops extending axially with respect to said shaft; and means on said drain pan extending through said elongated loop for adjustably securing said loops to said drain pan.

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WILLIAM J. WYE, Primary Examiner

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