

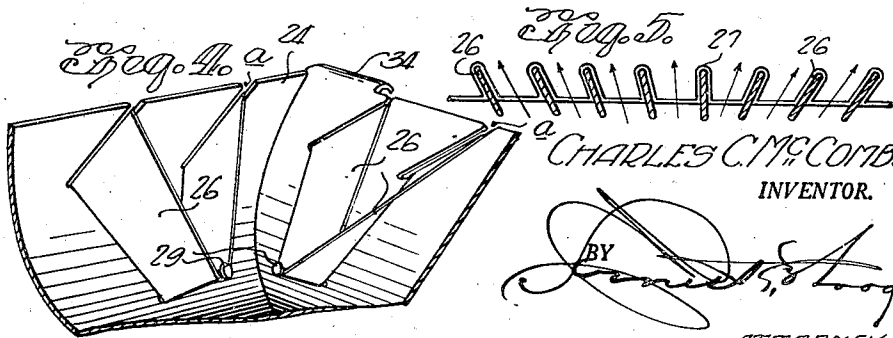
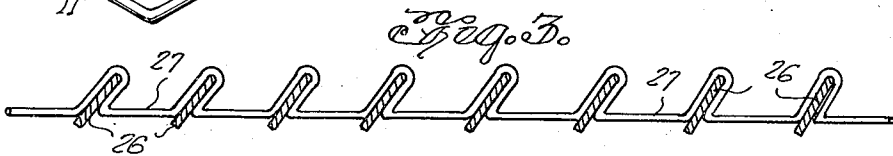
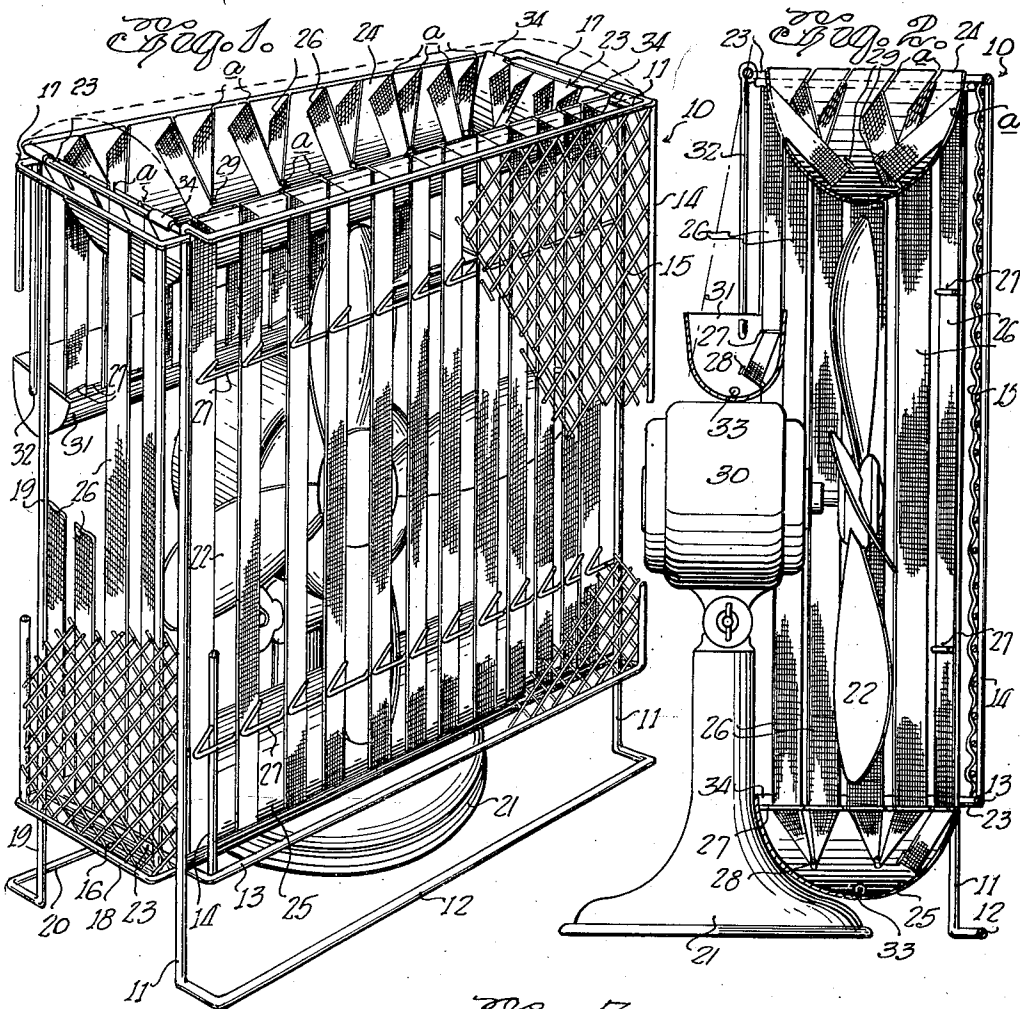
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EVAPORATIVE COOLING ATTACHMENT FOR FANS

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EVAPORATIVE COOLING ATTACHMENT
FOR FANS

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5 Claims. (Cl. 261—30)

This invention relates to evaporative air cooling devices and it has particular reference to an air cooling attachment for table fans.

The principal object of the invention is to provide an economical and highly effective attachment for fans for cooling the air circulated by the latter which consists primarily in an open frame, self-supported, embracing the blades of the fan and a pair of trough-like receptacles, preferably of semi-circular cross section, one being disposed above and the other below the fan and having communication one with the other by means of a plurality of wicks or strips of absorptive material. The upper of the said receptacles being adapted to contain water for the saturation of the wicks by virtue of capillary attraction and gravity, whereby the air, excited by the fan will be reduced in temperature upon coming into contact with the water saturated wicks disposed forwardly of and on each side of the fan in the frame.

Another object of the invention is to provide a novel form of mounting for the wicks or wick as the case may be, which consists of a plurality of oblique slots in spaced relationship along the forward edge and each end of the upper receptacle, the oblique relationship of the slots being effective to dispose the wicks in angular relation to the air stream, with associated means for holding the wicks in such position against displacement therefrom by the force of air from the fan.

Still another object of the invention is to provide a wick retaining means consisting of a metallic strip or wire extending athwart the wick assembly having spaced slots or bends therein which may be disposed radially or in a single plane for maintaining oblique relationship of the effective surfaces of the wicks, to the air stream, thereby providing for control of the latter.

Yet another object of the invention is to provide a third but smaller receptacle, pivotally suspended from the upper part of the frame at its rear and into which a series of wicks or at the lower bends of a single wick dependent to overlie the area immediately above the fan motor, the upper ends or bends of the wicks or wick being arranged to lie within oblique slots along the rear edge of the upper receptacle, the entire arrangement being intended to almost enclose the fan with water saturated surfaces.

With the foregoing objects as paramount, the invention has further reference to certain features of accomplishment which will become apparent as the description proceeds, taken in connection with the accompanying drawing wherein:

Figure 1 is a perspective view of an air cooling

device constructed according to the present invention.

Figure 2 is a vertical sectional view.

Figure 3 is a fragmentary detail view of one of the wick retaining devices.

Figure 4 is a fragmentary detail view in perspective of the uppermost water receptacle, showing the manner in which the wicks enter and are secured in the receptacle, and

Figure 5 is a fragmentary detail view, reduced in size, showing the manner in which the wicks may be disposed to radially direct the flow of air from the fan.

Continuing with a more detailed description of the drawing, reference numeral 10 denotes a frame fabricated preferably from wire and which may be of any suitable or desirable design. This frame consists of a front portion 11, which depends below the frame proper to define a transverse supporting member 12. The upper end of the member 11 is bent outwardly, parallel with the member 12 at the bottom and the member 11 is in corresponding relationship with a relatively parallel member 13 extending along the lower edge of the frame proper. Wires 14 interconnect the corners of the members 11 and 13, the arrangement providing a mounting for a screen grill 15, which overlies the wick arrangement to be presently described.

In support of the screen grill 16 which covers the sides of the frame, there is provided upper and lower supporting rods or wires 17 and 18 respectively. The rear portion of the frame, comparable to the front portion made up of the wire designated by numerals 11 and 12, consists of wire 19 which extends from the top to the bottom and below the frame proper and instead of a supporting member at the bottom extending entirely across from one side to the other side of the frame, this rear supporting arrangement is divided into two, axially aligned members 20, comparable to the transverse portion 12 of the foremost wire 11. While this detail is not fully shown in the drawing, it is provided in order to accommodate the base 21 of the fan 22, to which reference will again be made presently.

The members 11 and 19 are so shaped as to define relatively parallel members 23 at the top and bottom of the frame at each end thereof and which afford a supporting means for the upper receptacle 24 and the lower receptacle 25, which will be described presently.

The receptacles 24 and 25 are substantially the same in transverse section, except that the upper receptacle 24 is deeper and therefore of greater

capacity than the lower receptacle 25. Moreover, the receptacle 24 has about its edges a multiplicity of slots *a* which are in oblique relation to the longitudinal axis of the receptacle. The object of these oblique slots is to first receive and to dispose the wicks 26 in an angular plane with respect to the air stream passing therebetween.

Concerning the wick arrangement 26, it is preferred that one long strip be employed, which is woven or otherwise prepared from a suitable absorbent material. This strip is then threaded in a zigzagged fashion into the slots *a* and downward through a retaining wire 27, disposed along the inside edges of the lowermost receptacle 25, thence downward under projections 28 in said receptacle (Figure 2) thence upward through an adjacent slot *a* and under a projection 29 in the upper receptacle 24 and so on around the front and sides of the frame. The wick arrangement provided for the rear of the frame and above the fan motor 30 is identically the same as that described except that the wick, which bears the same reference character 26, depends into an auxiliary reservoir 21, the latter being pivotably suspended from the upper rear part of the frame by means of wire suspensions 32. This wick arrangement overlies that portion at the rear of the frame which is not occupied by the fan motor 30 and is advantageous in providing for further moistening the air influenced by the fan to move through the cooling device. The same reference characters are used to denote the wick holding elements in the auxiliary reservoir 21 as were used to indicate their counterparts in the receptacle 25, i. e., the retaining wires 27 and the pins 28.

As stated previously the circular form of the receptacles 24 and 25, combined with the oblique relationship of the slots *a* in the upper receptacle provide for the angular positioning of the wicks 26. However, in order that the force of air emerging from the fan 22 will not be effective to flatten the wicks, wire retainers, which bear the same reference character 27 as those in the lower receptacle, are provided in spaced relationship across the front of the frame and may also be provided along the side. These wire retainers are shaped substantially as shown in Figure 3, there being provided relatively spaced U-shaped bends along the lengths thereof, to receive and hold the wicks 26. In Figure 5 is shown another example of retainers which is the same in that of Figure 3 except that the U-shaped bends are disposed at a variety of angles in relation to the air stream to direct the latter in a radial fashion as it emerges from the cooling device.

Referring again to the receptacles 24 and 25, it will be noted that the lower receptacle as well as the auxiliary receptacle 31 has a drain 33. The receptacles 24 and 25 each have relatively spaced and downwardly curved lips 34 in each end which conformably engage the supporting wires 23 at each end of the upper part of the frame. In this manner, the receptacles are held in position in the frame for convenient removal for cleaning and for other purposes.

When the wicks or wick has been properly disposed so that it will dip into the upper receptacle 24 and depend into the lower receptacle 25 in the manner shown and described, as well as being similarly disposed in relation to the auxiliary receptacle 31, and with the assurance that the wick assembly is sufficiently taut, the upper receptacle 24 is filled to the bottom of the slots *a* with water. By capillary action, the water saturating

the depending portions of the wick will rise therein and will move downward along the wick towards the lower receptacle 25 and upon complete saturation and under certain conditions, a certain amount of water will be conveyed by the wicks into the lower receptacle 25. Of course, such evaporation that takes place as the water moves downward through the wicks will be effective to cool the air passing between the wicks.

In removing the fan from the cooling device, it is necessary only to drain the auxiliary receptacle 31 and raise the same out of the way, after which the fan and cooling device may be operated, since there is otherwise no connection between the two.

Manifestly, the construction as shown and described is capable of some modification and such modification as may be construed to fall within the scope and meaning of the appended claims is also considered to be within the spirit and intent of the invention.

What is claimed is:

1. An air cooling device for an electric fan including an open, grided and self supporting frame in which said fan is adapted to operate, an upper water containing tank removably suspended in the top of said frame, having inclined side and end walls, the latter being provided with relatively spaced, oblique slots throughout their length spaced pins extending inwardly from the walls of said tank below said slots, a second water receiving tank mounted in the bottom of said frame pins also in said latter tank, a continuous strip of water absorbent material extending from one to the other of said tanks, lying within said oblique slots and extending under the pins of each tank whereby the water saturated portions thereof exposed to the discharge of said fan will be constrained to lie in parallelism and in oblique relation to said fan discharge and horizontally disposed means for holding the leads of said strip in said latter relationship.

2. An evaporative air cooling device for a fan including an open frame embracing the front and sides of said fan, a water retaining receptacle suspended in the top of said frame having obliquely slotted inclined side and end walls, a water receiving receptacle in the bottom of said frame relatively spaced pins along the walls and ends of said receptacles, a continuous strip of water absorbent material having a plurality of turns held in said receptacles by said pins and extending from one to the other thereof in parallel leads, the said strip lying in the slots of said first receptacle, to hold said leads in oblique relation to the passage of air excited by said fan.

3. An evaporative air cooling device for a fan including spaced apart water receptacles between which said fan operates, each having inclined side and end walls, the upper having spaced, oblique slots in its side and end walls pins extending inwardly from the side and end walls of said receptacles, a zigzag strip of water absorbent material extending from one to the other of said receptacles lying in said oblique slots to hold the leads thereof at relative angles and in parallelism, means in said receptacles under which the turns of said strip engage to hold them therein, to effect transfer of water from the upper to the lower of said receptacles by way of said strip and horizontal, vertically spaced means for holding said leads collectively in oblique relation to the air-stream produced by said fan.

4. An air cooling attachment for fans including an open frame supporting an upper and a

lower receptacle, means for transferring water from the upper to the lower receptacle by capillarity and gravity, said means comprising a strip of water absorbent material extending from one to the other of said receptacles in a zig-zag manner, the upper extremities of the leads thereof overreaching the edges of the sides and ends of the upper receptacle, the lower extremities of said leads depending into said lower receptacle, pins protruding inwardly from the walls of said receptacles for holding the turns of said strip and means intermediate the turns of said strip for maintaining relative parallelism and obliquity of the leads of said strip in relation to the sides and ends of said frame.

5. An air cooling attachment for electric fans including an open frame, an upper receptacle and

a lower receptacle mounted in said frame, the upper of said receptacles having inclined side and end walls provided with spaced, oblique slots, a strip of water absorbent material having a plurality of abrupt turns in each of said receptacles to extend from one to the other thereof in relatively parallel leads, to transfer water from the upper to the lower receptacle, said leads lying in and held by said slots in oblique relation to the sides and ends of said frame, and a third receptacle pivotally suspended from said frame at a point above the midsection thereof and adapted to receive the lower turns of a water absorbent strip whose leads extend between said third receptacle and said upper receptacle.

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