

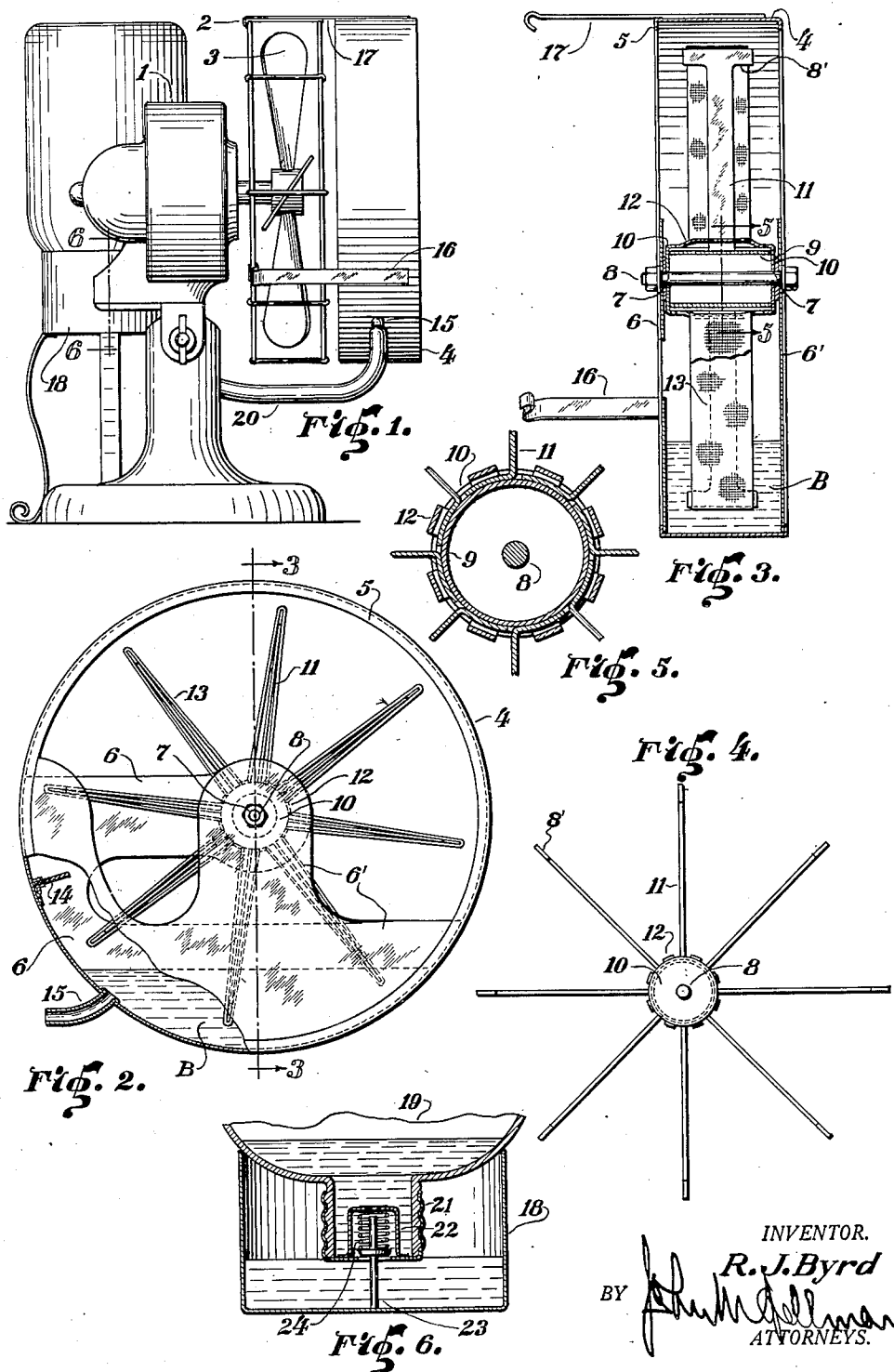
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AIR COOLING ATTACHMENT FOR ELECTRIC FANS

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AIR COOLING ATTACHMENT FOR ELECTRIC FANS

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7 Claims. (Cl. 261—92)

This invention relates to improvements in air-cooling and humidifying attachments for electric fans and particularly to improvements to that type of cooling attachment issued to William G. Rogers, July 4, 1933, and bearing United States Patent No. 1,916,332.

Another object of the invention is to provide a humidifier which includes a rotor comprising a plurality of flat imperforate blades extending radially from the axis of the rotor and provided with absorbent material extending substantially the length of the blades and having a portion adapted to dip into a water tank during rotation of the blades, together with a fan or other means for passing air axially through the rotor with a whirling movement, whereby the blades are rotated and moisture is imparted to the atmosphere.

Another object is to provide means for furnishing a regulated supply of water to the water tank of the humidifier in which the blades dip, whereby the speed of rotation of the rotor and the amount of moisture picked up is regulated.

A further object is to provide a wiper element located just above the level of the water, and adapted to engage the blades of the rotor successively as they leave the water to remove excess water and to prevent undue speeding of the rotor.

Another object of the present invention is the provision of means for automatically wiping the ends of the rotor arms of any surplus water as these arms revolve, to eliminate all possibility of occasional drops of water from being blown from these arms. The placing and fastening or threading of the cloth onto the rotor arms has also been facilitated by an improved construction of rotor arms. Likewise the possibility of water dripping onto the hub is also prevented.

A further object of the invention is the provision of an additional water container or tank spaced from the regular water receptacle carried by the cooling attachment, whereby the water in the latter may be maintained at a required and constant level or supply and which is automatically fed to the cooler attachment.

Finally, a suitable and flexible hose connection is provided between the two sources of water supply, and means are likewise provided for draining the cooler attachment when necessary.

With the preceding objects in view, the invention may be readily understood from a perusal of the following detailed description, taken in connection with the accompanying drawing, forming a part of this specification, and in the drawing:

Figure 1 represents a side elevational view of an electric fan with its motor, the cooling attach-

ment, and an extraneous water supply tank, and embodying the invention.

Figure 2 is an enlarged front elevational view of the cooling attachment per se, the front being partly broken away for convenience of illustration.

Figure 3 is a cross-sectional view of Figure 2, the view being had on the line 3—3 thereof.

Figure 4 is a side elevational view of the rotor removed from the drum.

Figure 5 is a cross-sectional view of Figure 3, taken through the hub of the rotor and on the line 5—5 of Figure 3, and

Figure 6 is a sectional detail view, taken on the line 6—6 of Figure 1, illustrating the automatic feeding of water to the cooling attachment from the additional water tank.

Having a more detailed reference to the drawing, like parts bearing like indicating identifications, 1 denotes an electric motor having a fan shaft upon which is mounted a fan 3, the blades being protected by the usual form of guard 2. The blades being inclined are adapted to impart a forward as well as a whirling movement to the air, in the usual manner. The cooling attachment embodies a circular drum 4, open at both sides, and having a rolled edge 5 for providing additional strength. This drum is removably fastened to the fan guard 2 by the strips 16 and 17, their construction being more clearly shown in Figure 3.

In Figures 2 and 3 the drum is shown as having a back plate 6 and a front plate 6', both plates being securely welded to the drum at its rolled edge, as will be apparent from Figure 3. The upper portions of these plates thus form a bearing or support for a shaft 8 of a hub 9, clearly shown in Figure 5. Spaced upon and around the hub are the radials or arms 11, and longitudinally of the hub and disposed thereupon and between the radials are the strips 12. These latter strips are arranged a slight distance from the hub as shown so that the absorbent cloth 13 may be passed through and then over the outer ends 8' of the arms, as indicated in Figure 2, after which the ends of the cloth are fastened together. The ends of the hub are provided with a cap 10 and between the cap and the plates 6 and 6' are washers 7. By tightening the nut on the end of the shaft 8 the washers 7 may be tightly engaged against the hub caps 10, whereby the speed of the rotor may be regulated or the rotary movement stopped entirely.

The bottom of the drum together with the front and rear plates thus forms a water receptacle for water B through which the arms

carrying the cloth are adapted to move. The plates 6 and 6' also provide a bracing means.

A small strip of rubber 14 is fastened to the drum as shown in Figure 2 for the purpose of wiping the ends of the arms as they pass to eliminate all possibility of drops of water being flung or blown off to the outside of the drum.

A drain tube 15 permits water from the receptacle to be drained away when required and also permits the attaching of a rubber tubing 20 for carrying water from the extra or additional water supply.

In Figure 1, also Figure 6 in detail, are shown a means for supplying water through the tubing to the water receptacle in the cooling attachment. This consists of a tank 18 with hose attachment similar to that shown in Figure 1 for the drum, and a water container of porcelain or glass type with a neck threaded to receive a cap 21. The cap has a valve housing 22 for a valve 23, and a spring 24. Inversion of this container in the tank 18 forces the valve to open position and the water escapes to a height in the tank to form a water lock. The tubing has communication between the tank and the water receptacle in the cooling attachment and as the water in the latter is decreased or lowered the supply is automatically supplied from the extraneous tank 18. This arrangement may be varied by placing the extraneous tank any suitable distance away from the cooling attachment and connected thereto by the hose of desired length.

The construction of the cooling attachment is thus simplified and strengthened, the throwing of occasional drops of water eliminated, extra water automatically supplied and the invention more improved.

The air current from the fan is sufficient to revolve the arms carrying the cloth just enough to cause a continual dragging or passage of the arms through the water at B, as the air tends to revolve and does not strike the arms and the cloth directly on their edges. Hence no extra blade or blades are required as in the former construction.

What is claimed as new is:

1. In a humidifier, a cylindrical casing or drum adapted to be supported with its axis horizontal, the front and rear walls of said drum being partially cut away at the upper portion to allow free passage of air, while the lower portion of the casing constitutes a water tank, a rotor having flat radial blades mounted within said drum, absorbent material carried by said blades and adapted to dip into the water in said tank during rotation of said rotor, and a wiper element for removing excess water from said blades extending from the inner cylindrical surface of said drum and located just above the water level in said tank.

2. In a humidifier, in combination, a cylindrical casing or drum adapted to be supported with its axis horizontal, and including a water tank in its lower portion, the front and rear faces being cut away at their upper portions to allow free passage of air, a rotor mounted in said casing and having a plurality of radial blades carrying absorbent material, and a wiper adapted to engage each of the blades successively as they leave the water to remove excess water and to prevent undue speeding of the rotor, said wiper comprising a flexible strip secured to the inner cylindrical

wall of said casing and extending radially a substantial distance into the path of the moving blades.

3. In combination with a fan having revolving blades and a guard frame surrounding the same, a humidifier comprising a water receptacle surrounding a central opening, a rimless rotor having a plurality of flat imperforate radial blades mounted for rotation about an axis within the central opening, and coverings of absorbent material carried by the radials, with a portion thereof immersed in the water in said receptacle and a portion projecting at least part way across said central opening, and means for attaching said humidifier to said guard frame with the axis of the rotor coincident with the axis of rotation of said fan.

4. In combination with a fan having revolving blades and a guard frame surrounding the same, a humidifier comprising a water receptacle surrounding an opening, flat imperforate blades projecting radially from a central axis within said opening, coverings of absorbent material carried by said blades, with a portion thereof immersed in the water in said receptacle and a portion projecting at least part way across said opening, said blades being mounted to permit rotation about said central axis, and means for attaching said humidifier to said guard frame with the axis of the rotor coincident with the axis of rotation of said fan.

5. In combination with a fan having revolving blades and a guard frame surrounding the same, a humidifier comprising a water receptacle surrounding a central opening, a rimless rotor having a plurality of flat imperforate radial blades mounted for rotation about an axis within the central opening, coverings of absorbent material carried by the radials, with a portion thereof immersed in the water in said receptacle, and a portion projecting at least part way across said central opening, and means for regulating the supply of water to said receptacle, and means for attaching said humidifier to said guard frame with the axis of the rotor coincident with the axis of rotation of said fan.

6. Humidifying apparatus in combination with a fan having a guard frame, a water receptacle carried by said guard frame and having a central open area to admit air currents excited by said fan, a rimless rotor comprising a hub mounted for rotation centrally of said open area and having flat imperforate radially projecting arms connected thereto, coverings for said arms composed of absorptive material, a portion of which absorptive material is adapted to dip into the water in said receptacle as the arms are rotated by air currents impinging on said coverings.

7. In combination with a fan having a guard frame, a humidifying unit carried by said guard frame and including a receptacle having a central air passage coaxial with the axis of rotation of the fan, a rimless rotary element mounted intermediate the fan and receptacle and having imperforate rotary arms covered with absorptive material, a portion of which material is adapted to dip in the water in said tank during rotation of said rotary element, and means for supplying said receptacle with fluid from a point remote therefrom.

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