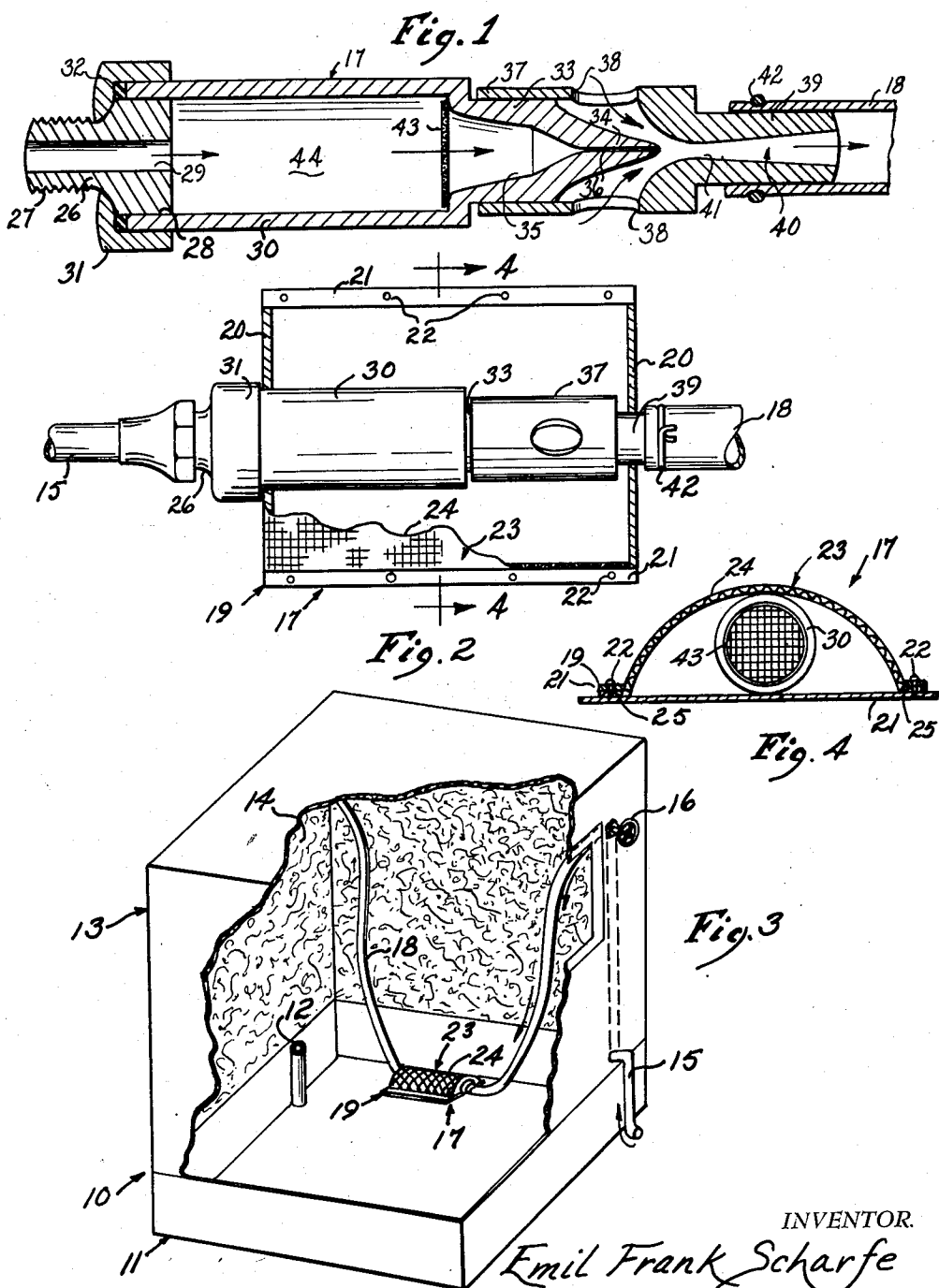


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E. F. SCHARFE
EVAPORATIVE COOLER
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INVENTOR.

Emil Frank Scharfe
BY Victor J. Evans & Co.

ATTORNEYS

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2,948,233

EVAPORATIVE COOLER

Emil Frank Scharfe, 5106 Caswell Ave., Austin, Tex.

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2 Claims. (Cl. 103—262)

This invention relates to an evaporative cooler, and more particularly to a jet pump for an evaporative cooler.

The object of the invention is to provide an evaporative cooler that includes a jet pump whereby the un-evaporated water will be recirculated through the cooler.

Another object of the invention is to provide an evaporative cooler which includes a jet pump and wherein the jet pump is adapted to be used for supplying or directing water onto the evaporative pads or walls of the cooler housing, the jet pump including a means for recirculating the water which does not evaporate.

A further object of the invention is to provide an evaporative cooler which is extremely simple and inexpensive to manufacture.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings, forming a part of this application, and in which like numerals are used to designate like parts throughout the same.

Figure 1 is a longitudinal sectional view taken through the jet pump for use with the evaporative cooler of the present invention.

Figure 2 is a top plan view of the jet pump, with parts broken away and in section.

Figure 3 is a fragmentary perspective view of the evaporative cooler, showing the jet pump therein, and with parts broken away and in section.

Figure 4 is a sectional view taken on the line 4—4 of Figure 2.

Referring in detail to the drawings, the numeral 10 designates the evaporative cooler which includes a lower base 11 that is provided with an overflow pipe 12, Fig. 3. Extending upwardly from the base 11 is a hollow housing 13 and the housing 13 may include walls 14 which are made of absorbent material so as to define evaporative pads or walls.

There is further provided a first conduit 15 which is adapted to be connected to a suitable source of supply of water, and a manually operable valve 16 is connected to the conduit 15 for controlling the flow of water therethrough. The conduit 15 leads to a jet pump 17 which is mounted in the base 11, Fig. 3. A second conduit 18 extends upwardly from the jet pump 17, and the conduit 18 is adapted to be used for discharging or spraying water onto the walls or evaporative pads 14. Thus, when air is circulated through or around the core, the water on the pads or walls 14 will evaporate so that cool air will be produced whereby this cool air can be used for any desired cooling purpose.

The jet pump 17 includes a frame 19 which embodies a pair of spaced parallel vertically disposed end plates 20, side pieces 21, and the side pieces 21 are secured in place by suitable securing elements 22. There is further provided a reticulated member or screen 23 which includes a major arcuate portion 24 which has the side edge portions 25 thereof secured beneath the side pieces 21 of the frame 19, as for example as shown in Fig. 4.

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The jet pump 17 further includes a plug 26 which is provided with a threaded neck portion 27 that is connected to the conduit 15, and the plug 26 includes an enlarged shoulder 28, there being a bore or passageway 29 extending longitudinally through the plug 26. A cylindrical sleeve 30 has a portion thereof surrounding the shoulder 28 of the plug 26. A collar 31 is mounted on the plug 26, and the collar 31 has a portion surrounding the sleeve 30, there being a yieldable washer or gasket 32 abutting the end of the sleeve 30. The sleeve 30 includes a portion 33 of reduced diameter which terminates in a pointed tip 34, and there is provided within the portion 33 a tapered chamber 35 which terminates in a small orifice or opening 36.

A casing 37 has a portion surrounding the reduced diameter portion 33, and the casing 37 is provided with a plurality of openings 38 therein. Extending from an end of the casing 37 is a reduced diameter section 39 which defines a shank, and the shank is provided with an elongated passageway 40 which is provided with a restricted throat 41. The conduit 18 is adapted to be secured to the shank 39 by means of a securing element 42.

As shown in Fig. 1 and Fig. 4, a filter screen 43 is mounted within the sleeve 30, and the filter screen 43 helps to remove any foreign matter or impurities which may be present in the water coming from the source of supply.

From the foregoing, it is apparent that there has been provided an evaporative cooler which utilizes a novel means for recirculating the water which is not evaporated from the absorbent walls. In use, the conduit 15 is adapted to be connected to a suitable source of supply of water and this water passes through the conduit 15 to the plug 26 of the jet pump 17. The valve 16 can be used for manually controlling the flow of water through the conduit 15, and the water passes through the bore 29 in the plug 26 and then passes through the hollow sleeve 30. This water then enters the tapered chamber 35 and then passes through the small orifice 36 and enters the passageway 40 through the restricted throat 41. This passage of water creates a suction so that water which is in the base 11 will be sucked up through the openings 38 and this water will commingle or intermix with the water passing through the orifice 36 whereby the intermixed water will pass into the conduit 18. This water is then sprayed from the conduit 18 onto the evaporative or absorbent walls 14 so that as air passes through or along the walls 14, evaporation will take place whereby cool air will be produced. Since not all of the water will be evaporated from the walls 14, that water which does not evaporate will return to the base 11. The water in the base 11 will be filtered through the screen 23, and this water will be the water which passes through the openings 38 so that the water is recirculated through the system. The screen 43 helps remove foreign matter or impurities from the water coming from the source of supply, while the screen 23 serves to filter the water which is being recirculated.

The conduit 15 is connected to the neck portion 27 of the plug 26, while the conduit 18 is connected to the shank 39 by means of the clip or securing element 42.

The parts can be made of any suitable material and in different shapes or sizes. Preferably, plastic is used in making the parts, wherever feasible.

Thus, it will be seen that according to the present invention, the jet pump 17 uses city water pressure or other water pressure for a very small jet stream and this picks up additional water from the bottom container 11 of the evaporative cooler whereby the water from the container 11 will be pumped back to the top of the evaporative

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pads, and the present invention is adapted to be used in evaporative coolers that do not have an electric or other pump for this purpose. The jet pump is highly efficient and by making the various parts of a suitable material such as plastic, the apparatus is extremely simple and inexpensive to manufacture and is simple and rugged in operation, and the operating costs and maintenance costs are quite low. The small opening 36 permits a predetermined quantity of water to pass therethrough. The pump is adapted to be used without an automatic float valve and the overflow pipe 12 will permit the water to escape when the level of water in the container or base 11 exceeds a predetermined level. Any foreign particles present in the incoming water are collected within the chamber 44 which is arranged within the sleeve 30, and the screens 43 and 23 insure trouble free operation by removing foreign particles or impurities from the water. The small opening 36 produces the jet stream of water, as previously described. The present invention will put a greater amount of water into the cooler than is evaporated so that the overflow will tend to reduce considerably the mineral deposits on the cabinet or parts. The jet pump will recirculate water from the bottom to the top of the evaporative cooler, and the jet pump will circulate more water therethrough than will evaporate in the cooler.

While I have shown a preferred form of my invention, I reserve all rights to such modifications as properly fall within the scope of the invention as claimed.

I claim:

1. In an evaporative cooler having a lower base, an overflow pipe arranged adjacent said base, a housing extending upwardly from said base and including walls which are made of absorbent material defining evaporative pads, a first conduit extending into said housing and adapted to be connected to a source of supply of water and a manually operative valve connected to said first conduit, the improvement comprising a jet pump adapted to be connected to said conduit, a second conduit extending upwardly from said jet pump for discharging water, said jet pump including a frame embodying spaced parallel vertically disposed end plates and spaced parallel side pieces, a reticulated member having a major portion of arcuate formation, said reticulated member having the side edge portions thereof secured beneath the side pieces of said frame and the remaining edge portions of said reticulated member being in engagement with the edges of the end plates thereby preventing foreign particles from entering the jet pump, a plug including a threaded neck adapted to be connected to said first conduit, there being a longitudinally extending bore in said plug for the passage therethrough of water, a cylindrical sleeve connected to said plug and extending therefrom, a collar engaging said plug and having a portion surrounding an end of said

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sleeve, a screen mounted in said sleeve, a reduced diameter end portion extending from said sleeve and terminating in a pointed tip, there being a tapered chamber in said reduced diameter end portion terminating in a passageway of reduced size, said passageway extending through said pointed tip, a casing having a portion surrounding the reduced diameter end portion of said sleeve and provided with a pair of opposed openings, a shank of reduced diameter extending from said casing and said shank being provided with a bore therein, said bore having a restricted throat portion, and means securing said second conduit to said shank.

2. A jet pump for an evaporative cooler including a frame embodying spaced parallel vertically disposed end plates and spaced parallel side pieces, a reticulated member having a major portion of arcuate formation, said reticulated member having the side edge portions thereof secured beneath the side pieces of said frame and the remaining edge portions of said reticulated member being in engagement with the edges of the end plates thereby preventing foreign particles from entering the jet pump, a plug including a threaded neck, there being a longitudinally extending bore in said plug for the passage therethrough of water, a sleeve connected to said plug and extending therefrom through and inwardly of one of the end plates of said frame and beneath said reticulated member, a collar engaging said plug and having a portion surrounding an end of said sleeve outwardly of said one of said end plates, a screen mounted in said sleeve, a reduced diameter end portion extending from said sleeve and terminating in a pointed tip, there being a tapered chamber in said reduced diameter end portion terminating in a passageway of reduced size, said passageway extending through said pointed tip, a casing having a portion surrounding the reduced diameter end portion of said sleeve and provided with a pair of opposed openings, a shank of reduced diameter extending from said casing outwardly of the other of said end plates and said shank being provided with a bore therein, said bore having a restricted throat portion.

References Cited in the file of this patent

UNITED STATES PATENTS

265,246	Conord	Oct. 3, 1882
1,472,051	Davis	Oct. 30, 1923
1,708,600	Beckman	Apr. 9, 1929
2,093,408	Batterson	Sept. 21, 1937
2,235,116	Ray	Mar. 18, 1941
2,382,688	Wilson	Aug. 14, 1945
2,592,896	Hayes	Apr. 15, 1952
2,778,203	Griffith	Jan. 22, 1957