

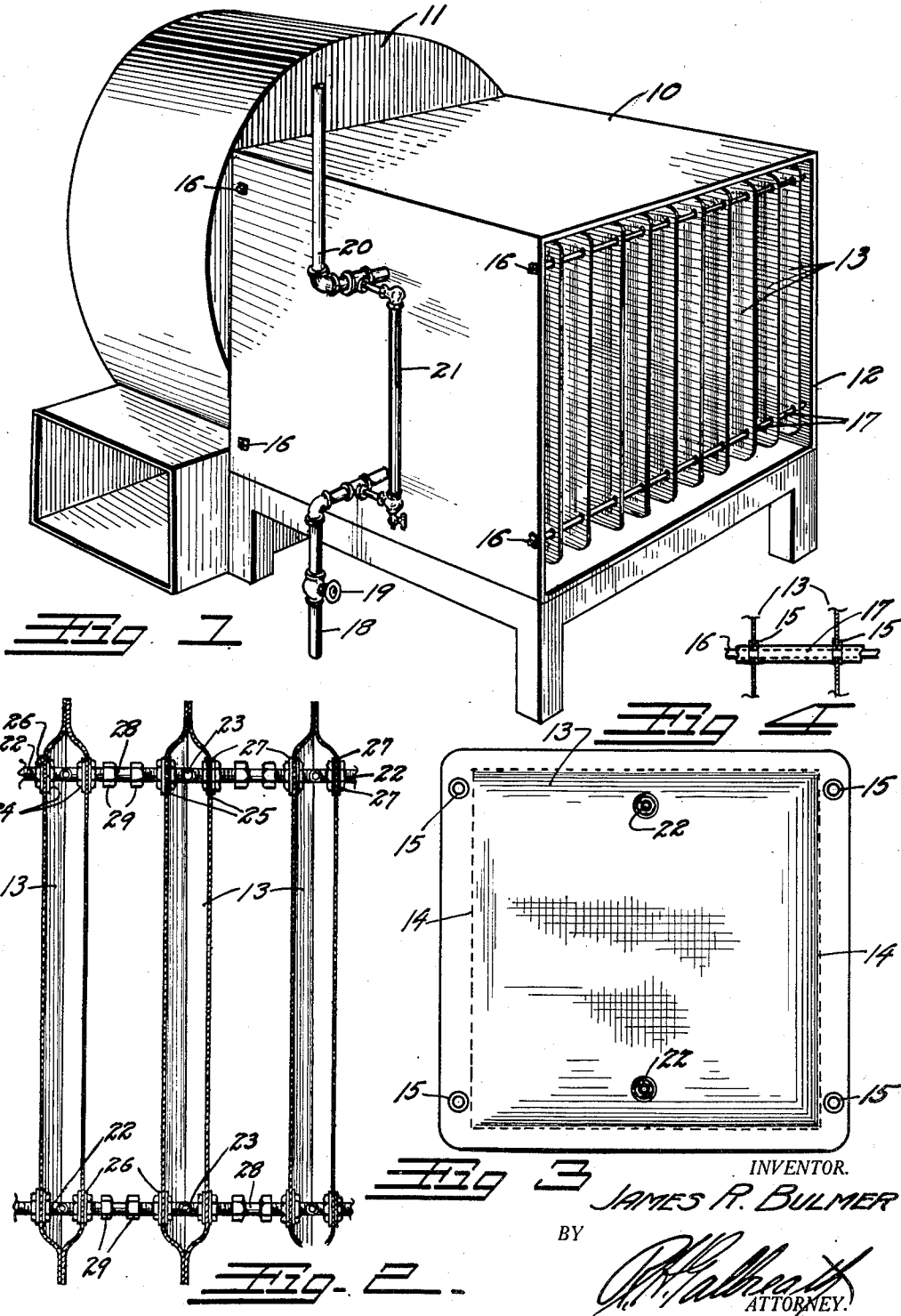
March 22, 1927.

1,621,766

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AIR COOLER AND HUMIDIFIER

Filed May 25, 1925



INVENTOR.

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AIR COOLER AND HUMIDIFIER.

Application filed May 25, 1925. Serial No. 32,667.

This invention relates to devices for cooling and humidifying a current of air and is especially adapted for use in connection with ventilating systems for buildings, theaters, etc. It can also be applied, however, to small portable electric fans and to windows where there is a natural draft which makes the use of fans unnecessary.

My invention depends for its operation upon the well known principle of cooling by evaporation such as embodied in the common canvas water bags used by travelers.

The primary object of the invention is to provide an economical and efficient device for employing the principle of cooling by evaporation on a commercial scale for practical use.

Other objects and advantages resulting in efficiency, economy and simplicity, reside in the detail construction of the invention and will become more apparent from the following description.

In the following detailed description of the invention, reference is had to the accompanying drawing which forms a part hereof. Like numerals refer to like parts throughout the description and in all views of the drawing.

In the drawing:—

Fig. 1. is a perspective view of my invention as applied to a large ventilating fan.

Fig. 2 is a cross section through the evaporation cells of the device illustrating the method of interconnecting the adjacent cells.

Fig. 3 is a face elevation of one of the evaporation cells.

Fig. 4 is a detail view illustrating the method of supporting the evaporation cells and maintaining them in spaced relation.

The device, which will be designated as a whole as the "cooler", is illustrated at 10 and, in Fig. 1, is shown connected to the intake of a large ventilating blower or fan 11, arranged to draw a current of air through the cooler. The cooler could, however, be used without the fan 11 in installations where there is sufficient natural draft to force a current of air therethrough. The cooler could also be placed so that the fan would blow the air therethrough instead of drawing it, if desired, and could be made of relatively small size so as to be conveniently portable for placing in front of the usual portable electric fan or window.

The cooler 10 comprises a housing 12, open at two sides to allow a current of air to pass

completely therethrough. In the housing 12, a series of evaporation cells 13 are supported. These cells 13 are preferably made of hemp duck or other fabric sufficiently closely woven to retain water and yet porous enough to allow a seepage of the water to keep the exterior surface wet.

The cells 13 may be formed by doubling back a sheet of fabric and stitching it as indicated by the broken lines 14 in Fig. 3.

Through the contacting edges of the doubled-back fabric, clamping eyelets 15 are placed, by means of which, the cells are suspended in the housing 12 on horizontal rods 16, arranged to pass through the eyelets of the cells.

To maintain the cells uniformly spaced apart, on the rods 16, I place a short tube or spacer 17 around the rods 16 between each pair of the cells 13. Thus the cells are maintained in a vertical, uniformly-spaced, relation parallel to the travel of the air current which flows between the cells to the intake of the fan 11.

Water is fed to the cells through a feed pipe 18, controlled by a valve 19 and communicating with the lower part of each cell. The contained air is forced from the cells by the incoming water through an air relief pipe 20, communicating with the upper part of each cell. Between the air relief pipe 20 and the feed pipe 18, a water gauge 21 is connected, by means of which, the level of the water in the cells may be determined.

The method of connecting both the air relief pipe 20 and the feed pipe 18 to the cells is similar and comprises the placing of a threaded nipple 22 through each of the cells. This nipple is provided with an opening 23, drilled completely therethrough, which communicates with the interior of the cell. Inside of each cell two lock nuts 24 are threaded on the nipple 22 and act to clamp against two rubber washers 25 serving to maintain the two sides of the cell apart. Two similar lock nuts 26 clamp similar rubber washers 27 against the outer face of the cells so that a tight joint is obtained. The projecting nipple ends of the adjacent cells are connected together by means of a short tube 28, attached to the nipples 22 by means of suitable compression couplings 29.

While a specific form of the improvement has been described and illustrated herein, it is desired to be understood that the same may be varied, within the scope of the appended

claims, without departing from the spirit of the invention.

Having thus described my invention, what I claim and desire to secure by Letters-Patent is:—

5 1. An air cooling device comprising the combination of a series of parallel flexible fabric water cells having passages allowing seepage of water through the walls thereof; 10 a relatively short tube passing through and carried by each of said cells and projecting beyond the sides thereof for admitting water thereto, said tube being adapted to hold the sides of said cell apart and having an open- 15 ing for communicating with the interior of

the cell; and relatively short tubes connecting the projecting extremities of the first tubes of adjacent cells.

2. An air cooling device comprising a housing; a series of closed fabric water bags 20 contained within said housing; eyelets formed in said water bags; horizontal rods secured to said housing passing through said housing and said eyelets for supporting said 25 bags; and means for simultaneously admitting water to all of said bags.

In testimony whereof, I affix my signature.

JAMES R. BULMER.