May 1, 1923. 1,453,494

P. A. DENNON

AIR WASHING AND COOLING APPARATUS

Filed Oct. 20, 1919

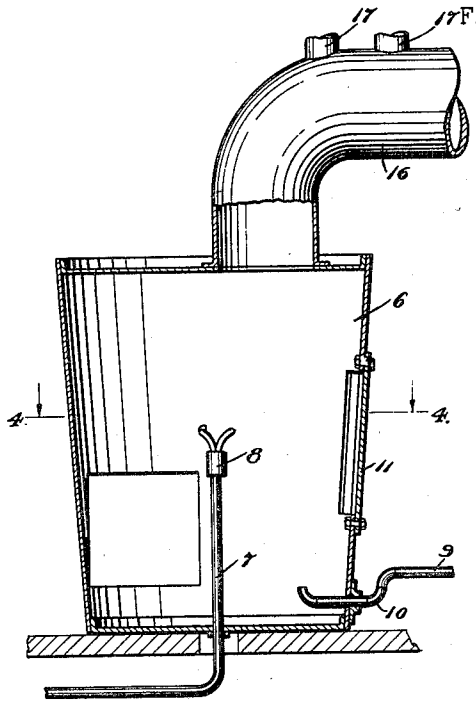


Fig. 2.

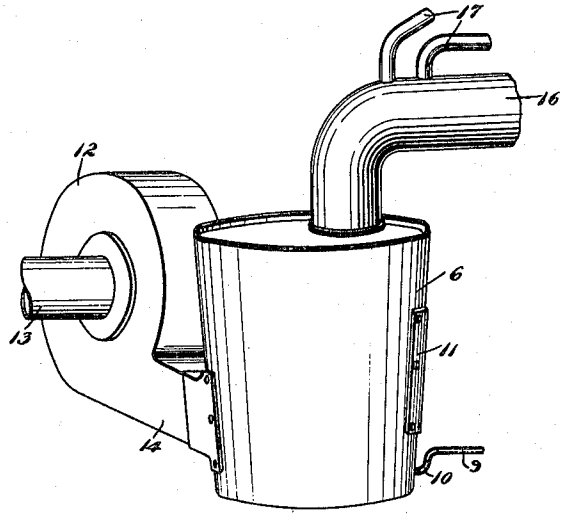


Fig. 1.

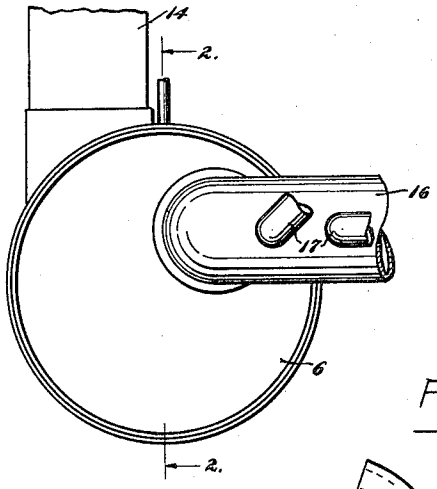


Fig. 3.

Fig. 5.

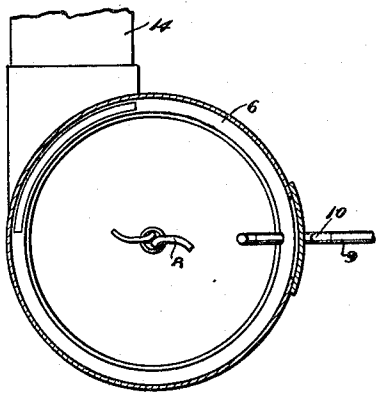
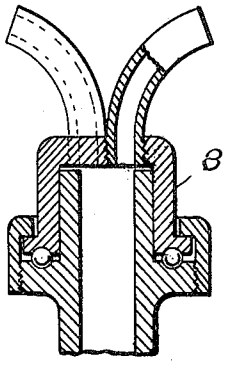


Fig. 4.



WITNESSES

J. C. Ledbetter

INVENTOR

PURLY A. DENNON.

BY Munn & Co.

ATTORNEY

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UNITED STATES PATENT OFFICE.

PURLY A. DENNON, OF GRAND ISLAND, NEBRASKA.

AIR WASHING AND COOLING APPARATUS.

Application filed October 20, 1919. Serial No. 332,044.

To all whom it may concern:

Be it known that I, PURLY A. DENNON, a resident of Grand Island, county of Hall, and State of Nebraska, have invented a new and Improved Air Washing and Cooling Apparatus, of which the following is a full, clear, and exact description.

This invention relates to air washing and cooling apparatus, particularly to an air washing means adapted to be used in connection with a ventilating system.

An object of the invention is to provide an air washing and ventilating apparatus, adapted for use in connection with factories, laundries, theatres, and other institutions where it is necessary to employ artificial cooling means and washed air for the purpose of rendering more healthful the working conditions of the factories, laundries or other institutions.

With the above and other objects in view the invention has relation to the combination and arrangement of air washing and cooling means as set forth in the appended claims, described in this specification, and illustrated in the accompanying drawings, wherein:

Figure 1 discloses a perspective view of the general arrangement of combined elements which make up the apparatus. Figure 2 shows a sectional view taken through the atomizing and air washing chamber to disclose the arrangement of a minimum number of parts entering into the make up of this apparatus.

Figure 3 shows a plan view of the atomizing chamber with connecting conduits.

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

Figure 5 is a detail view of the liquid spraying device.

An air washing and cooling apparatus constructed in accordance with this invention embodies an air washing and atomizing chamber in which air under pressure is thoroughly sprayed, and washed by a fine mist of water. Water intake and drain mains are employed and an air fan or centrifugal blower is connected with the air washing chamber for forcing air therethrough and into the distribution conduits leading to the various points of consumption.

In presenting a more detailed disclosure of the invention and referring to the drawings, the reference numeral 6 points out an air washing and atomizing drum for receiving air under pressure to be washed therein. The drum is closed at each end and is preferably formed conical or tapering in shape with the larger end turned up. A water supply pipe 7 is employed and extends vertically up through the center of the air washing drum. On the upper end of the water supply or intake pipe 7 there is placed a rotating water atomizer 8. A drain pipe 9 is connected with the drum 6 and is provided with a water trap 10. The water intake 7 is connected to any suitable water supply and may be controlled by a valve. The drain pipe 9 will preferably be connected with any suitable means of disposal to continually carry the dirty water from the drum. The drum is provided with a man hole 11 thru which a repair man may enter the drum for inspection and repair of parts.

12 represents the casing of an air blower or centrifugal air blast fan (not shown). An air intake conduit 13 furnishes fresh air to the fan. The conduit 13 may extend to any suitable place where a supply of preferably fresh air may be obtained. Any approved means (not shown) may be employed for driving the fan. The fan casing 12 has a conduit 14 leading therefrom and connecting with the air washing and atomizing drum 6. The conduit 14 preferably connects with the drum 6 near the edge thereof in order to project the air at a tangent into the washing drum 6. By blowing the air into one side of the washing drum, there is set up a high velocity swirl which very greatly agitates the air and allows it to be better washed by the spray as will later be brought out in this specification.

An air distributing conduit 16 connects with the top of the washing drum 6 and carries the washed air from the drum to be distributed to the various points of consumption. Distributing air pipes 17 connect with the conduit 16 to transmit air to the various parts of a building.

In the operation of the apparatus water is conveyed through the pipe 7 into the rotary water atomizer 8. The atomizer rotates under the pressure of the water discharging therefrom and forms a water shower or sprinkle within the drum 6. The air comes from the fan in the drum at a tangent thereto and whirls around the drum

in the same direction that the water atomizer is turning. This breaks the water sprinkle into a finely dissolved mist which mixes with the air to thoroughly wash the air before it passes into the conduit 16. The drain pipe 9 carries off the water as it settles in the drum 6 and prevents the water from entering the conduit 14. The water trap 10 locks sufficient water therein to prevent air from passing out through the drain pipe 9.

This apparatus for air washing is economical in construction, and installation. It will adequately cool laundries where the temperature is usually rather high and will materially increase the working power of the inmates.

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

In an air washing and cooling apparatus, the combination of an inverted conical drum, an air inlet conduit communicating tangentially with the drum adjacent its bottom, an air outlet conduit communicating with the drum through its top at a point spaced from the outer edge and center thereof, a fluid injector in the drum between the inlet and outlet ports thereof, a fan in communication with the inlet conduit, and a fluid drain pipe adjacent the bottom of the drum and communicating therewith at a point below the inlet port thereof.

PURLY A. DENNON.