J. FARLEY.

AIR COOLING, FILTERING, PURIFYING, AROMATIZING, OR THE LIKE APPARATUS.

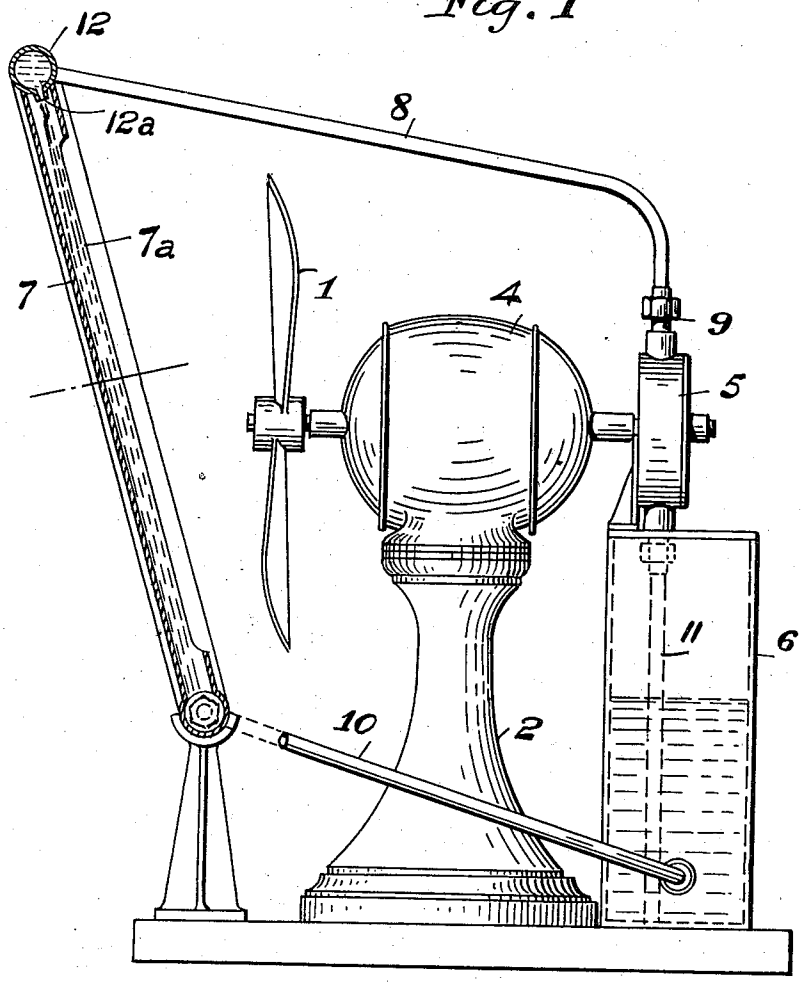
APPLICATION FILED DEC. 21, 1914.

1,173,497.

Patented Feb. 29, 1916.

3 SHEETS—SHEET 1.

Fig. 1



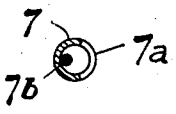


Fig. 2a.

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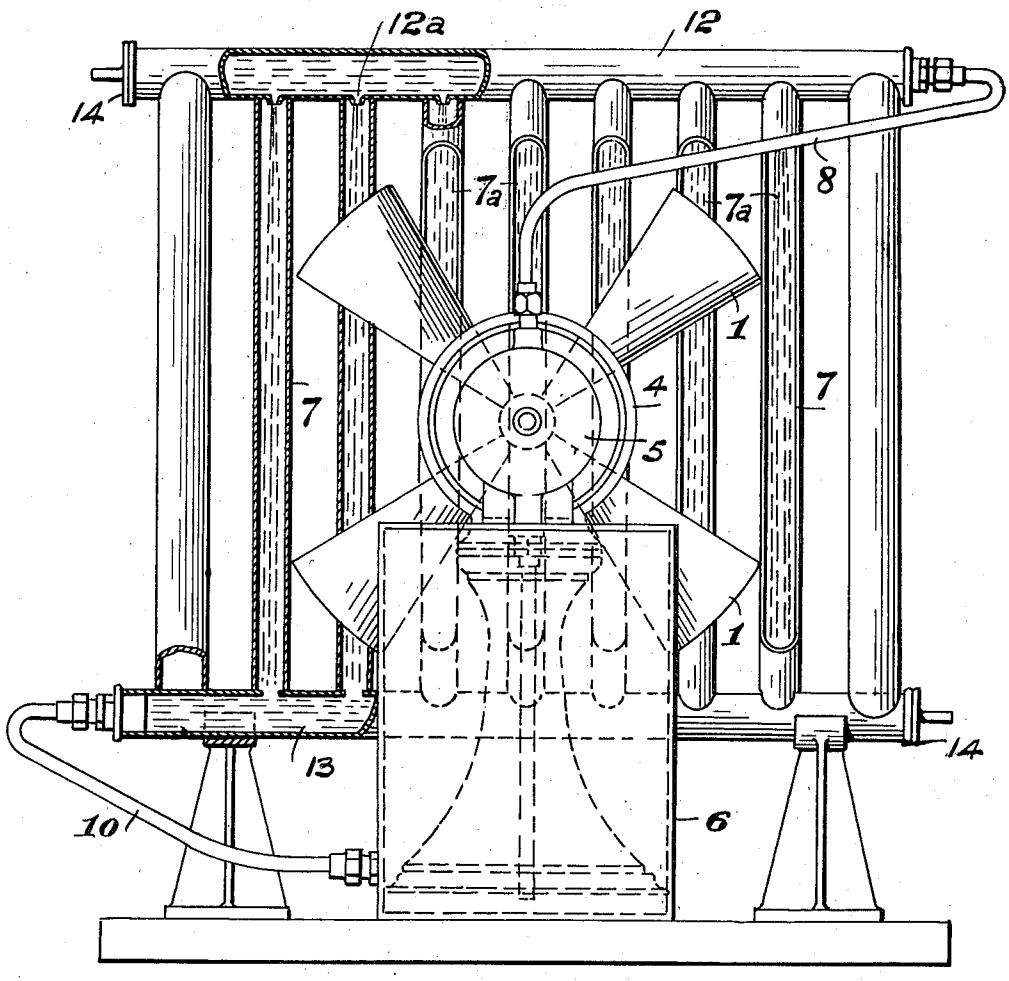
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

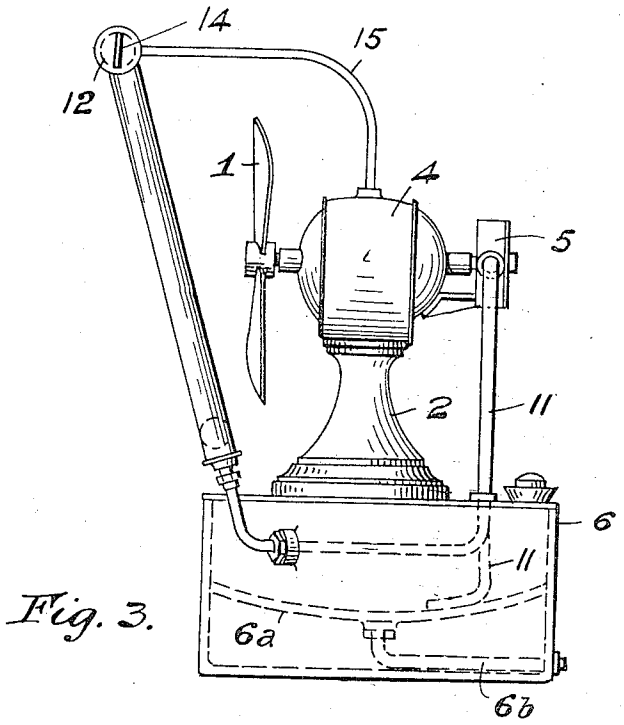


Fig. 3.

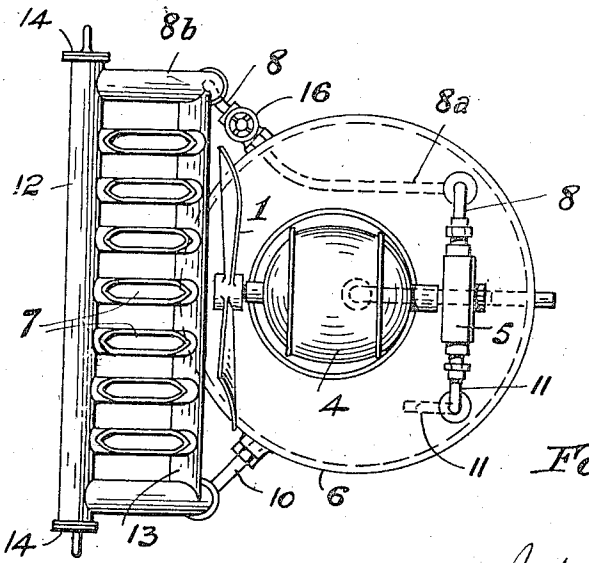


Fig. 4.

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UNITED STATES PATENT OFFICE.

JOHN FARLEY, OF LISCARD, ENGLAND.

AIR COOLING, FILTERING, PURIFYING, AROMATIZING, OR THE LIKE APPARATUS.

1,173,497. Specification of Letters Patent. Patented Feb. 29, 1916.

Application filed December 21, 1914. Serial No. 878,384.

To all whom it may concern:

Be it known that I, JOHN FARLEY, a subject of the King of Great Britain, and a resident of Liscard, Cheshire, England, have invented certain new and useful Improvements Relating to Air Cooling, Filtering, Purifying, Aromatizing, or the like Apparatus, of which the following is a specification.

This invention relates to apparatus for use in filtering, purifying, or otherwise treating the air of rooms or the like, such as sick rooms, railway dining cars, picture halls, or the like. The function of the usual ventilating fan is in many cases merely to churn the air around, and the object of the present invention is to combine with the fan a means for purifying or treating the air current set up by the fan.

According to this invention an air fan is provided, driven in any suitable manner, say by an electric motor, and mounted in front of the fan, in such manner that the air from the fan is driven therethrough, is a grid or the like device made of a series of tubes or ducts, the sides of which nearest the fan are open, or the tubes may be perforated. Means are provided, say a small centrifugal pump driven from the fan motor, for causing a circulation of water or other liquid to take place through the tubes of the grid. The liquid may be merely water for the purpose of cooling the air and entrapping dust and fiber which is then carried away in the water flow, or water impregnated with disinfectants or perfume.

The invention is illustrated in the accompanying drawings, in which—

Figure 1. is a side view of one form of the apparatus, and Fig. 2. a view looked at from the right of Fig. 1. Fig. 2ª. is a cross section through one tube of the grid showing a wire for preventing spraying of the liquid. Fig. 3 is a side view analogous to Fig. 1. of a modified arrangement of the apparatus in which the well forms the base of the fan, and Fig. 4. is a plan view of Fig. 3.

In the form of the apparatus shown in Figs. 1. and 2, an electrically driven air circulating fan 1 is provided carried from a suitable bracket or standard 2, the spindle 3 of the fan and the motor 4 being either geared or coupled to the spindle of a centrifugal or other circulating pump 5 or such pump may, as shown, be mounted direct on the rear of the fan spindle. The pump 5 is adapted to draw a supply of water, or water permeated with disinfectant or the like, from a storage tank or well 6, which after being passed through a series of tubes 7 disposed in front of the fan 1 is returned to the well 6 by a gravity flow. A suitable delivery pipe 8 is provided, coupled at 9 to the pump, for leading the circulating fluid to the pipes, a smaller connection 10 being provided for returning the circulating fluid to the well 6, the suction pipe 11 of the pump 5 being carried below the level of liquid in the well. The tubes 7 are arranged in an upright series connected at the top and bottom to supply and return flow trunk pipes 12, 13. The upright tubes are open at 7^a on their sides nearest the fan, and the plane of the tube grid may be inclined slightly from the vertical, as shown in Fig. 1. The inlet trunk pipe 12 of the grid has a series of small perforations 12^a, each perforation being at about the center of the bore of the upright tubes 7 of the grid, so that a series of water jets or sprays are directed down the upright tubes to the return trunk pipe 13 when the liquid circulating pump 5 is in operation. By inclining the grid from the vertical, these jets cascade down the rear walls of the tubes 7, the air being driven by the fan against the water jets and all dust, fiber or the like being abstracted from the air by being caught in the jets on the wet walls of the tubes, and returned to the well. If desired, a filter may be fitted in the well 6, so that such foreign matter may be retained therein and not again circulated through the tubes. Detachable plugs 14 may be fitted to the ends of the trunk pipes to insure that these may be effectively cleaned. In order to avoid any liability of the subdivided streams or jets of liquid as they fall down the tubes 7 being driven by the force of the air current out of the openings 7^a and producing a spray, wires 7^b may be fitted down the walls of the tubes, the wires, by means of a capillary action, absolutely preventing any possibility of spraying of the liquid past the tubular grid.

In the modification shown in Figs. 3 and 4, the wheel 6 is arranged as a pedestal for the standard 2 of the fan, the tube grid 7 being supported from the flow and return pipes 8, 10 of the pump which are both branched from the well 6. The suction pipe

11 to the pump 5 is carried down into the well, the delivery pipe 8 from the pump being also carried down into the well and through it, as indicated by the dotted lines 8^a, and thence up the side tube 8^b to the top trunk pipe 12, being then delivered through the open-side tubes 7, as previously described, and passing by way of the lower trunk pipe 13, returned by the pipe 10 to the well. Such a construction provides a very simple and compact arrangement of the apparatus. A stay 15 may be fitted to support the top of the tube grid from the casing of the motor 4, and the floor 6^a of the well may be cupped, as shown in Fig. 3., and a pipe 6^b provided for draining the well. In order to enable the liquid circulation to be shut off a stop valve 16 may be provided on the supply pipe 8.

Though the circulating pump has been described and shown as a feature integral with the ventilating fan 1, it may be a separate motor driven pump, and the standard 2 of the ventilating fan 1 provided with terminals electrically connected to the motor 4, the connections of the separately driven motor pump being coupled to such terminals, and flexible tubing or the like connections may be provided for coupling the inlet and outlet branches of the pump to the suction and delivery pipes 8, 11 of the supply well. By forming the tubes 7 open only on the side nearest the fan 1, the descending water jets are prevented from being sprayed or blown into the room, the rear wall of the tube avoiding this and enabling the water to be returned to the well, although permitting intimate contact of the air current with the circulating water.

I claim:—

1. Apparatus for cooling, purifying, aromatizing, or otherwise treating the air of rooms or the like, comprising, in combination, an air fan, a tubular grid in front of the fan having one of its sides open, a storage tank for liquid, and a centrifugal pump on the fan spindle adapted to circulate liquid from the tank through the tubes of the grid.

2. Apparatus for cooling, purifying, aromatizing, or otherwise treating the air of rooms or the like, comprising, in combination, an air fan, a tubular grid in front of the fan having one of its sides open, the tubes being open on their sides nearest the fan, a series of wires mounted in the tubes, a storage tank for liquid, and a pump adapted to circulate the liquid from the storage tank through the tubes of the grid.

3. The combination with a fan, a device for treating air comprising a fluid tank, a tubular grid positioned in front of the fan, said grid having one of its side faces open, a supply pipe connecting the fluid tank and grid, a return pipe for connecting the grid with the fluid tank, and means for forcing fluid through the supply pipe, grid and return pipe.

4. In combination with a fan, a device for treating air comprising a fluid tank, a tubular grid having one of its side faces open supported in front of the fan, said grid being supported at an angle with relation to the fan, means for connecting the grid with the fluid tank, and means for forcing fluid from the fluid tank through the grid.

5. In combination with a fan, an air treating device comprising a fluid tank, a tubular grid including an upper and lower pipe, said grid having one of its side faces open, means for supplying the upper pipe with fluid, said upper pipe adapted to distribute the fluid through the tubes of the grid, said lower pipe adapted to receive fluid after the same has passed through the tubes, and means for returning the fluid to the fluid tank.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN FARLEY.

Witnesses:
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