(No Model.)

R. WESTPHAL.

DISINFECTING APPARATUS.

No. 589,054. Patented Aug. 31, 1897.

Fig. 1

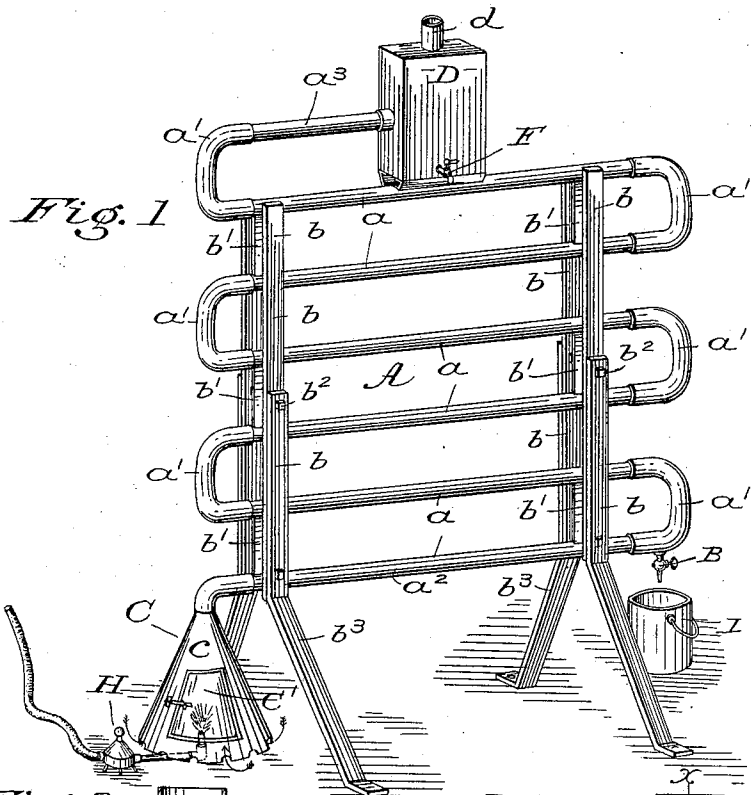


Fig. 3

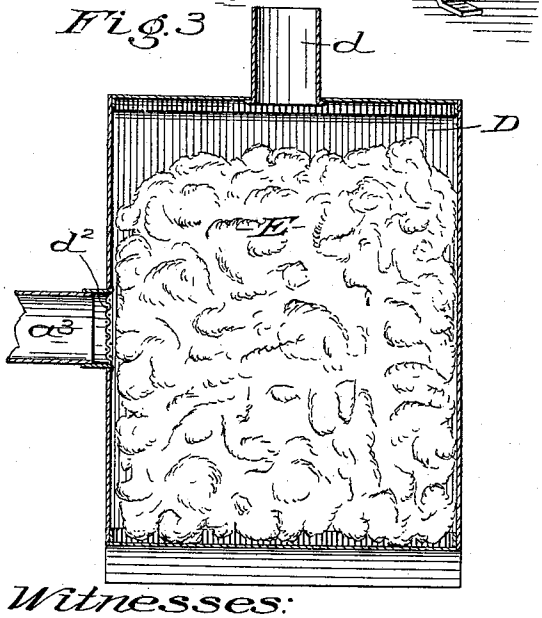
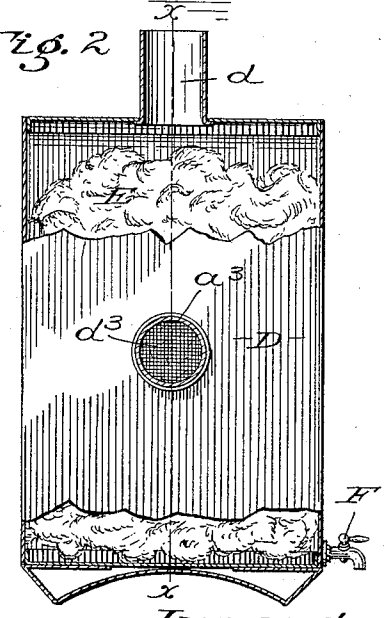


Fig. 2



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UNITED STATES PATENT OFFICE.

ROBERT WESTPHAL, OF SOUTH BEND, INDIANA.

DISINFECTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 589,054, dated August 31, 1897.

Application filed February 1, 1897. Serial No. 621,430. (No model.)

To all whom it may concern:

Be it known that I, ROBERT WESTPHAL, a citizen of the United States, residing at South Bend, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Air Drying and Sterilizing Apparatus, of which the following is a specification.

My invention relates to an apparatus which may be employed for drying, purifying, deodorizing, and sterilizing the air in rooms or wherever there is damp and impure air, and is especially designed for use in sleeping-rooms or other habitable apartments or in cellars or warehouses which require a perfectly dry atmosphere.

The object of my invention is to provide a simple device which may preferably be made portable and which may be conveniently used wherever required; and the improvement consists, as generally stated, in a return-tube section having at its lower end a combustion-chamber open to receive the damp and impure air, and fitted at its upper end with a condensation-chamber into which the moisture from the air is deposited, substantially as described.

In the accompanying drawings, Figure 1 is a perspective view of my improved apparatus; Fig. 2, an enlarged vertical section of the condensation-chamber in detail, and Fig. 3 a similar transverse section thereof in the line x x of Fig. 2.

The return-tube section A of the apparatus consists of zigzag pipes a, connected at their adjacent ends by pipe-coupling double elbows a', placed vertically one above the other, the said tube-section being supported at its ends between oppositely-disposed parallel plates b at each end of said section and suitable blocks b', held between said plates and between the adjacent ends of said tubes by bolts b^2, which holds said plates together and also serve to hold diverging legs b^3 thereto, also made of bars or plates having feet at their lower ends to support the tube-section in a suitable manner to admit of its being moved from place to place and properly supported. A combustion-chamber C is connected to the lower and extreme end of the bottom pipe a^2, and a condensation-chamber D is secured to the extreme end of the top pipe a^3 of the tube-section.

The separate pipe-sections a are each placed to zigzag or incline slightly from the horizontal alternately in opposite directions, the ends which are coupled together being convergent and the disconnected ends divergent, and in such manner that the smallest quantity of water which collects within the pipes will flow downwardly from the uppermost to the lowermost pipe of the series and preferably at the double-pipe-jointed connection end of the bottom pipe a^2, where it may be discharged therefrom through a cock B, fitted into the lower end of the bottom coupling-elbow a' of the tube-section.

The top pipe a^3 of the tube-section is shorter than the other pipes and connects the top coupling-elbow to the condensing-chamber D, in which is placed a sponge E or other suitable absorbent or draft-interrupting media, and by means of which any moisture remaining in the air carried from the tube-section is taken up and deposited therein. A stop-cock or faucet F is fitted to the bottom of said chamber D to allow the water to be drawn off, and an escape-pipe d is fitted to the cover of said condensing-chamber, through which the air which is purified and freed from moisture may escape.

The condensing-chamber D is fitted at the bottom with a curved base-plate to rest upon and be fixed to the top pipe a^3 of the tube-sections. The combustion-chamber C preferably consists of a sheet-metal cone, fitted at its apex to the lower end of the bottom pipe of the tube-sections, and is provided with an opening through which the air from the apartment to be dried may enter, or the bottom and open end of the said combustion-chamber is raised and supported a sufficient distance from the floor of the apartment for this purpose. A door C' is fitted to the chamber C, which will give access to the burner H or to the fire kindled within the said chamber. A portable gas-burner for heating the combustion-chamber is shown in the drawings, but any preferred burner or flame may be used, the object being to take the heavy, damp, and impure air from the floor of the room or apartment and feed it directly to the

flame, a portion of the air, with all of the combustible particles carried thereby, supplying the flame and being consumed and the remainder being heated and carried up through the pipes together with the moisture-laden air. The inner surface of the zigzag tube-sections is colder than the heated air and vapors which come direct from the flame, and the latter will be condensed, the water of condensation being carried back through said pipes and through the escape-cock at the bottom of the tube-sections to a suitable vessel I to receive it.

The lighter and combustible impurities of the air—such as fine dust, bacteria, and noxious gases—which pervade sick-rooms, hospitals, and poorly-ventilated apartments or the dust-laden air of school-rooms when carried through the flame of the combustion-chamber of this device will be entirely consumed, while the moisture and non-combustible and impure vapors of the air thus conducted will be deposited either in the pipe-sections or in the condensing-chamber. The condensing-chamber may contain a suitable disinfectant, over which the air is passed before it is returned to the apartment. Even air containing the germs of contagious diseases may by this device be completely purified.

My device is light and portable and may be easily moved from place to place or from one part of a building to another, as occasion may require.

I claim as my invention and desire to secure by Letters Patent—

1. A portable air drying and purifying device consisting of a series of vertically-disposed pipe-sections, connected at their ends successively in zigzag order, the disconnected lower end of the bottom pipe being connected to a combustion-chamber and the upper end connected with a condensing-chamber and frame-pieces connected to the pipe-sections to provide standards or supports, substantially as described.

2. An air drying and purifying device consisting of a series of pipes connected in zigzag order; a combustion-chamber at the lower end thereof, and a condensing-chamber at the upper end thereof provided with absorbent or vapor-arresting media, substantially as described.

3. An air drying and purifying device comprising a combustion-chamber, a series of pipes connected in zigzag order, a condensing-chamber provided with vapor-arresting media connected to the upper terminus of said pipe, and a faucet to permit the water to be withdrawn from the condensing-chamber, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name in the presence of two subscribing witnesses.

ROBERT WESTPHAL.

Witnesses:
B. KRUEPER,
C. H. ZABELER.