

No. 871,652.

PATENTED NOV. 19, 1907.

F. A. WARD.  
AIR PURIFIER.  
APPLICATION FILED AUG. 23, 1906.

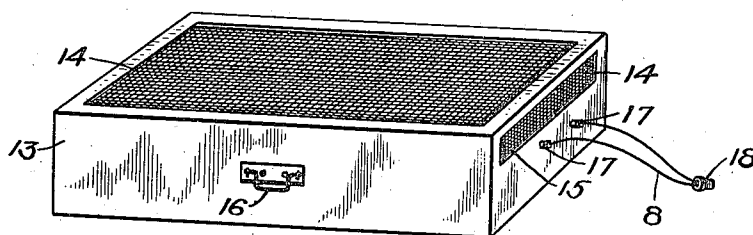


Fig. 1.

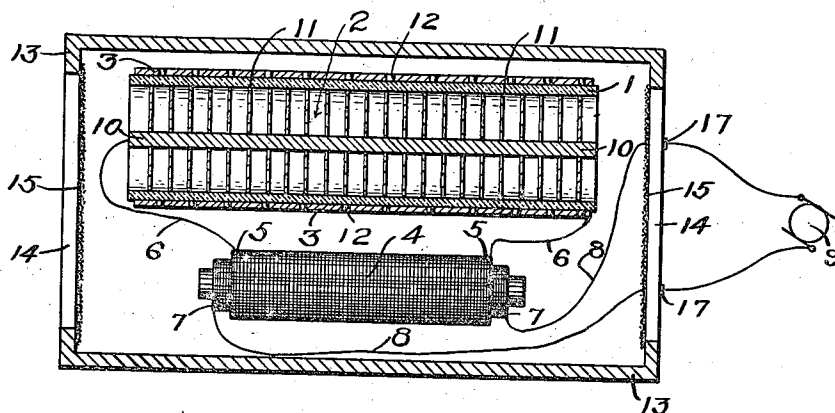


Fig. 2.

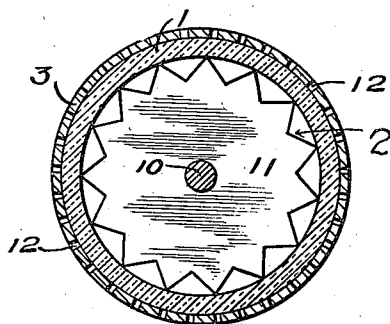


Fig. 3.

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# UNITED STATES PATENT OFFICE.

FRANK A. WARD, OF LOS ANGELES, CALIFORNIA.

## AIR-PURIFIER.

No. 871,652.

Specification of Letters Patent.

Patented Nov. 19, 1907.

Application filed August 23, 1906. Serial No. 331,787.

*To all whom it may concern:*

Be it known that I, FRANK A. WARD, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Air-Purifiers; and I do declare the following to be full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in apparatus for purifying or ozonizing air, by means of the discharge of an electric current of high potential.

One object of the invention is to improve and simplify the construction of devices of this character, and thereby render the same more efficient and less expensive.

Another object of the invention is to provide a simple and practical apparatus of this character, which may be connected to the ordinary 110 volt electric light circuit, and thus conveniently used in sick rooms.

With the above and other objects in view, the invention consists in the construction, combination and arrangement of parts hereinafter described and claimed.

In the accompanying drawings,—Figure 1 is a perspective view of my improved air-purifier; Fig. 2 is a horizontal sectional view through the same; and Fig. 3 is a transverse sectional view through the two electrodes and the cylinder of glass or dielectric material, which separates them.

The apparatus comprises a wall of glass or other dielectric material 1, having arranged upon opposite sides and in contact therewith electrodes 2, 3, which are connected to a source of alternating currents, here shown in the form of a transformer 4, having its secondary coil 5 connected by conductors 6 to said electrodes and its primary coil 7 connected by conductors 8 to a suitable electric generator 9. The dielectric wall 1 is preferably of cylindrical form and has the electrode 2 arranged within it. This electrode 2 comprises a concentrically-disposed metallic rod 10, to which one of the conductors 6 is connected, and a plurality of disks 11, the latter being formed by stamping them from sheet metal. These disks 11 are arranged at suitable intervals along the rod 10 and have their peripheries or edges notched to form points, which engage the inner surface of the glass cylinder 1. The outer electrode 3 is in the form of a metallic cylinder which snugly fits

the outer surfaces of the glass cylinder 1, and is formed with perforations 12, as clearly shown in Figs. 2 and 3 of the drawings. The other conductor 6 connects this cylinder to one of the coils 5 of the transformer. This outer perforated cylindrical electrode closely hugs the dielectric tube, and the perforations therein form the points necessary to cause a blue flame to be emitted from practically the entire surface of said electrode, said flame streaming from the edges of each perforation and the air or oxygen passing through the perforation 13 is thereby quickly converted into ozone. By making the inside electrode in the form of stamped disks mounted with their points in contact with the dielectric tube on its inner face, the ozone after being formed is permitted to escape freely.

The apparatus is preferably mounted in a casing 13, here shown in the form of a rectangular wooden box having openings 14 in its top and ends, covered by a screen 15, so that air may readily pass through the box and the cylinder 1. Handles 16 are preferably arranged upon opposite sides of the box and at one of its ends are insulators 17, through which the conductors 8 pass. While the transformer 4 may be wound for a current of any desired strength, the one shown in the drawing is wound for the usual 110 volt alternating electric light current, and the conductors 8, shown in Fig. 1, are connected to a screw-plug 18, which may be readily screwed into the ordinary electric lamp socket.

The construction, operation and advantages of the invention will be readily understood from the foregoing description, taken in connection with the accompanying drawings. It will be seen that when a current of low potential passes through the primary coil 7 of the transformer 4, an alternating current of high potential will be produced in the circuit of the secondary coil 5, the conductors 6 and the electrodes 2, 3, so that the discharge of a current of high potential will be produced and air or oxygen passing through the box or casing 13 will be converted into ozone, or, in other words, purified.

While I have shown but one of the tubes or cylinders 1, mounted within the box or casing 13, it will be understood that any number may be employed. It will also be understood that various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the

advantages of the invention, as defined by the appended claims.

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

1. In an apparatus of the character described, a wall of dielectric material, a point-bearing electrode arranged upon one side of said wall and having its points in contact therewith, a smooth perforated electrode in close contact with the other side of said wall, and a source of alternating currents connected to said electrodes.

2. In an apparatus of the character described, a tube of dielectric material, a point-bearing electrode arranged within said tube and having its points in contact therewith, a smooth perforated sheet metal tubular electrode surrounding the outside of said dielectric tube and in close contact therewith, and a source of alternating currents connected to said electrodes.

3. In an apparatus of the character described, a tube of dielectric material, a point-bearing electrode arranged within said tube and having its points in contact therewith, a smooth perforated sheet metal tubular electrode surrounding the outside of said dielectric tube and in close contact therewith, and a transformer having its secondary coil connected to said electrodes and its primary coil to a source of electrical supply.

4. In an apparatus of the character described, a cylinder of dielectric material, a

point-bearing electrode arranged within said tube and comprising a metallic rod carrying a plurality of spaced metallic disks having points upon their peripheries in contact with said cylinder, a smooth cylindrical metallic electrode formed with perforations and surrounding the exterior of the dielectric cylinder and in close contact therewith, and a transformer having its secondary coil connected to said electrodes, and its primary coil to a source of electrical supply.

5. In an apparatus of the character described, a cylinder of dielectric material, a point-bearing electrode arranged within said tube and comprising a metallic rod carrying spaced metallic disks having points upon their peripheries in contact with said cylinder, a smooth cylindrical metallic electrode formed with perforations and surrounding the exterior of the dielectric cylinder and in close contact therewith, a transformer having its secondary coil connected to said electrodes and its primary coil to a source of electrical supply, and a casing inclosing said transformer and electrodes and provided with screened openings.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FRANK A. WARD.

Witnesses:

S. K. ELLIOTT,  
PEARL M. PALMER.