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2,326,601

APPARATUS FOR PRODUCING OZONE

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FIG. 1.

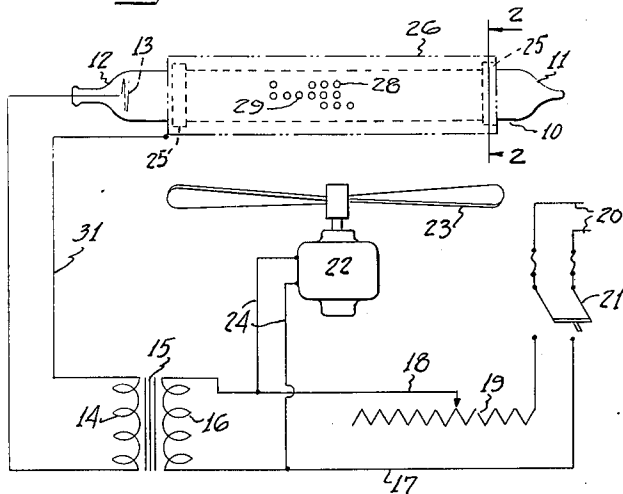


FIG. 2.

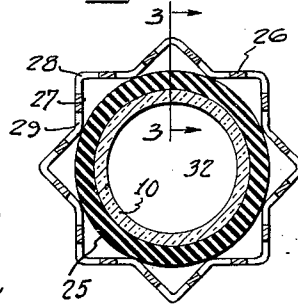


FIG. 3.

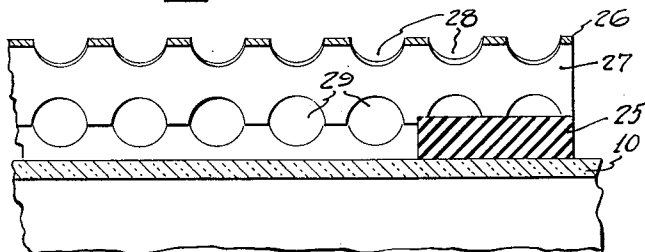
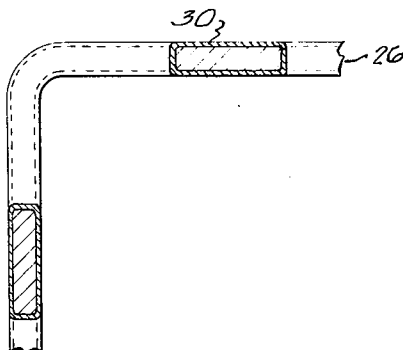


FIG. 4.



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APPARATUS FOR PRODUCING OZONE

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2 Claims. (Cl. 204—320)

This invention relates generally to gas generating machines, and particularly to a machine for producing pure allotropic oxygen commonly known as ozone.

The main object of this invention is the production of ozone in a manner as to keep it free from poisonous gaseous formations.

The second object is to construct a machine which will purify and deodorize air passing through the machine.

The third object is to produce an ozone machine which will operate at a relatively low temperature and which will not have an oxidizing effect.

These and other objects are accomplished in the manner set forth in the following specification as illustrated in the accompanying drawing, in which:

Fig. 1 is a diagrammatic view of the apparatus.

Fig. 2 is a transverse section taken along the line 2—2 in Fig. 1.

Fig. 3 is an enlarged section taken along the line 3—3 in Fig. 2.

Fig. 4 is a fragmentary section through a modified form of grid.

Similar numerals refer to similar parts throughout the several views.

Before entering into an explanation of this invention, it must be understood that numerous machines have been invented for producing ozone. In the machine I am about to describe ultra violet light or sunlight is created by a gaseous tube and grid in combination with the right amount of inert gas inclosed in the glass tube to give the required amount of current and voltage flow to generate ozone or O₃.

Referring in detail to the drawing, there is shown a glass tube 10 having the closed ends 11 and 12 into the latter of which extends the electrode 13 which is connected to the secondary 14 of the transformer 15 whose primary 16 is connected by the wires 17 and 18 through a variable resistor 19 to a power line 20 under the control of a switch 21.

The motor 22 of the fan 23 is connected across the wires 17 and 18 by means of the wires 24. The fan 23 is positioned to circulate the air past the tube 10.

The tube 10 contains a quantity of gas in space 32 of which several are now in common use for the purpose of generating ultra violet light.

Near the ends 11 and 12 of the tube 10 are placed the insulating rings 25 which act as spacers for the fluted and perforated grid 26 whose V-shaped flutes 27 have perforations 28

formed along their outermost edges and the perforations 29 formed at the bottom thereof, which bottom portions rest upon the insulating rings 25 and hold the grid 26 in spaced relationship to the tube 10.

It is desirable to employ a glass tube whose wall is approximately one-sixteenth of an inch in thickness and sufficiently heavy to keep the high voltage from breaking or piercing the same. The distance of the tube from the grid is also approximately one-sixteenth of an inch. Due to the fact that the grid 26 is perforated, it facilitates the flow of air therethrough offering the least amount of resistance to the escape of the ozone and preventing the ozone from being further charged by being confined between the grid 26 and the tube 10 or in the field of radiation thereby creating nitrous oxide or other oxide equally as bad. Also due to the fact that the grid 26 is perforated and fluted, the tube 10 is permitted to operate at a much lower temperature than is otherwise possible.

Moreover, it is found desirable to cover the grid 26 with a coating 30 of shellac or other suitable material to prevent the allotropic oxygen from attacking the material of which the tube is constructed or from forming in combination with other chemicals which might go through the machine in gaseous form or a like form of air to form some poisonous combination. The grid 26 is bent in the form shown to allow for the further circulation of air and the free movement of the gaseous oxygen to escape therefrom and also makes possible more surface upon which the bombardment of electrons may be discharged.

It will be noted that the grid 26 itself forms one side of the circuit and is connected by means of the wire 31 to the transformer secondary 14, the action of the tube 10 being of course that of a condenser.

It is desirable to have the electrode 13 in spiral form so that the gas next to the wall of the glass tube 10 becomes excited more evenly over the entire surface of the tube thereby creating more ultra violet radiation and more output of ozone.

Ozone machines of the spark type are in common use. These have a tendency to generate oxides due to their high operating temperature and lack of air movement between the surrounding plates especially in the presence of moisture which adds to the conductivity of the air which in turn lets more current and voltage flow as to cause a burning of the air. The amount of resistance which the gas contains in my tube does

not allow an excess amount of current to flow thereby guarding against the burning of the air or oxygen. The tube runs at approximately blood temperature having a tendency to keep the tube dry and to keep down the tendency to arc, thereby eliminating the possibility of throwing off nitrous oxide from burning air or other poisonous gases.

In the use of this device the tube and grid must be fed the right amount of voltage as to create the radiation which surrounds the tube 10. This is accomplished by means of the resistor 19. The transformer 15 must be of a type which will handle the voltage rise due to the condenser action of the grid and tube. That is to say, a transformer must be employed with a heavy enough insulation to withstand the tremendous voltage received by the condenser holding the charge.

I claim:

1. In an ozone generator, the combination of an elongated, sealed, gas-filled glass tube having an encircling grid of sharply and longitudinally fluted, perforated metal whose innermost points are spaced from the exterior of said tube and having high tension connections to the gaseous filling and to said encircling grid.

2. In an ozone generator an elongated, clear, gas-filled sealed tube having an encircling grid of longitudinally fluted metal of star-shaped cross section having perforations formed along the ridges and valleys thereof, means for holding said tube in spaced relation to said grid and high tension connections to the gaseous filling of the tube and to the encircling grid.

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