No. 614,500. Patented Nov. 22, 1898.

A. S. RAMAGE.

OZONIZING APPARATUS.

(Application filed Jan. 23, 1896.)

(No Model.)

Fig. 1.

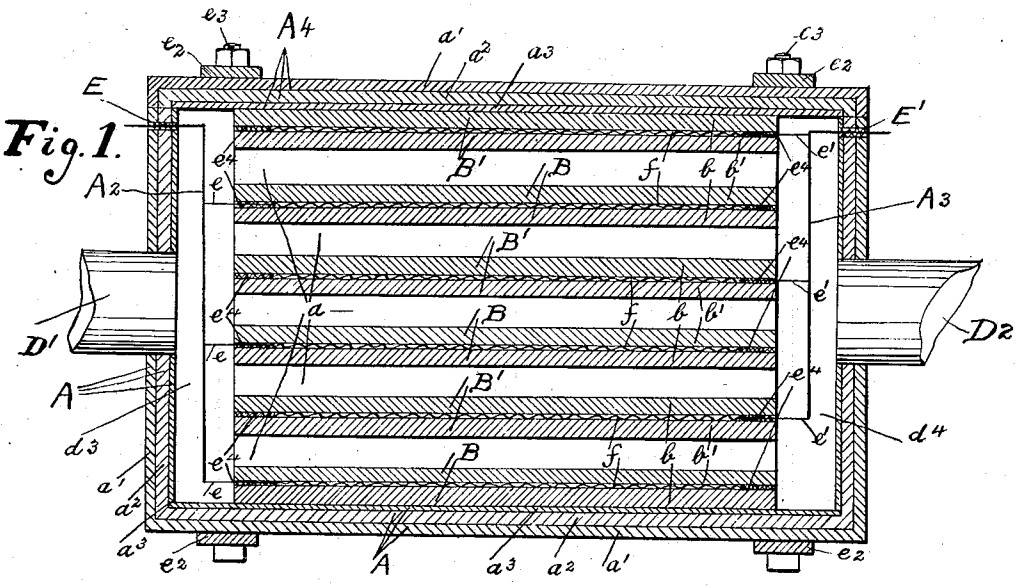
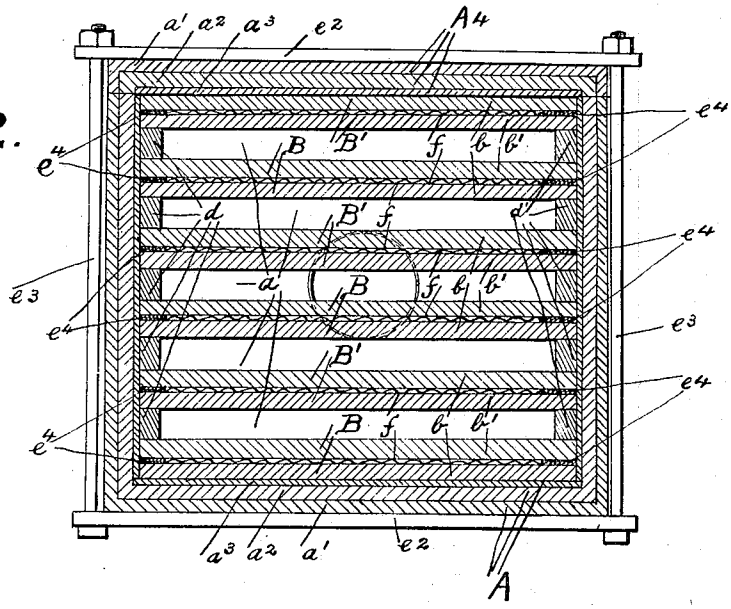


Fig. 2.



Witnesses
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UNITED STATES PATENT OFFICE.

ALEXANDER S. RAMAGE, OF CLEVELAND, OHIO, ASSIGNOR TO JOSEPH BLACK, OF SAME PLACE.

OZONIZING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 614,500, dated November 22, 1898.

Application filed January 23, 1896. Serial No. 576,484. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER S. RAMAGE, of Cleveland, Cuyahoga county, Ohio, have invented certain new and useful Improvements in Ozonizing Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to an improved apparatus for the production of ozone; and it consists in certain features of construction and combinations of parts hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a longitudinal section of my apparatus, and Fig. 2 is a cross-section of the same.

Referring to said drawings, A represents the casing of my apparatus, which may be of any suitable material. The manner in which I prefer to make the same is to provide an outer jacket of wood a and an inner lining of glass a^2, with a space a^3 between the same filled with plaster-of-paris or other suitable material.

B B′, B B′, B B′ represent a series of electric discharge-plates formed in batteries of pairs with air-spaces a between the same. Each of said plates is formed of two sheets of glass b b', cemented together with suitable cementing material c, such as shellac, with tin-foil sheets f in between. Said tin-foil sheets preferably have corrugated or pitted surfaces and are made smaller than said sheets of glass, so as to enable the same to be easily cemented together and at the same time to completely insulate and hermetically seal the metal sheets. Said plates B B′, B B′, B B′ are made shorter than said casing A in a longitudinal direction, so that common chambers d^3 d^4 are formed at each end of said plates, with which said air-spaces a communicate at their respective ends. In the other directions said discharge-plates fit close against the sides of said casing A and are supported horizontally by strips of glass or other suitable material d d', (see Fig. 2,) so that the gases can only pass from one of said common chambers to the other through the air-passages a between said discharge-plates B B′, B B′, B B′. Preferably the said strips are of sufficient width to cover the part of the plate which does not inclose the metallic sheet, and thus force every particle of air to pass through the electric discharge and become thoroughly ozonized.

D′ represents the gas-entrance pipe, which communicates with the common chamber d^3, and d^2 the exit-pipe communicating with the common chamber d^4.

A^2 A^3 represent the electric-current wires. One of the ends of the tin-foil in each of the plates B are connected to wire A^2 by means of suitable branches e, and the opposite ends of the tin-foil in each of the plates B are likewise connected to wire A^3 by branches e'. Said wires A^2 and A^3 pass through suitable bushings E E′ in the casing A.

Access is obtained to the interior of casing A by the cover A^4, which is held in position by suitable cross-bars and bolts e^2 e^3, respectively.

Having now given a general description of my apparatus, I will explain how it will work in actual operation.

An alternating current is passed through wires A^2 A^3 of sufficiently high voltage to cause a silent discharge across the air-spaces a between the tin-foil sheets in plates B B′, B B′, B B′, air or oxygen enters common chamber d^3 through pipe D and passes through said air-spaces a, where it comes in contact with said silent discharge and becomes ozonized, to chamber d^4, and out of the apparatus through exit-pipe D^2.

In conclusion, I wish it to be understood that I do not restrict myself to the exact construction and arrangement of parts which I have herein described, and shown in the drawings, as they might be altered in many respects without departing from the true scope of my invention.

What I claim is—

1. The combination with an insulating-casing of two or more discharge-plates, having air-spaces between same which communicate with common inlet and outlet air-chambers at each end respectively of said casing, said discharge-plate consisting of a corrugated metallic sheet hermetically sealed between

insulating-plates and connected with a suitable source of electrical energy, and air inlet and outlet pipes communicating with the respective common chambers, substantially as described.

2. The combination with a casing formed of an inner casing of glass an outer covering of wood and a layer of plaster-of-paris between the same, of discharge-plates consisting of two sheets of glass and a corrugated metallic sheet hermetically cemented between the same connected with a suitable source of electricity, said discharge-plates arranged in series of pairs with air-spaces between, said air-spaces communicating at their respective ends with common air-chambers formed between the ends of said plates and the casings, a supply-pipe communicating with one of said common air-chambers and an exit-pipe communicating with the other, substantially as and for the purpose set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 2d day of January, 1896.

ALEXANDER S. RAMAGE.

Witnesses:

C. H. DORER,

ELLA E. TILDEN.