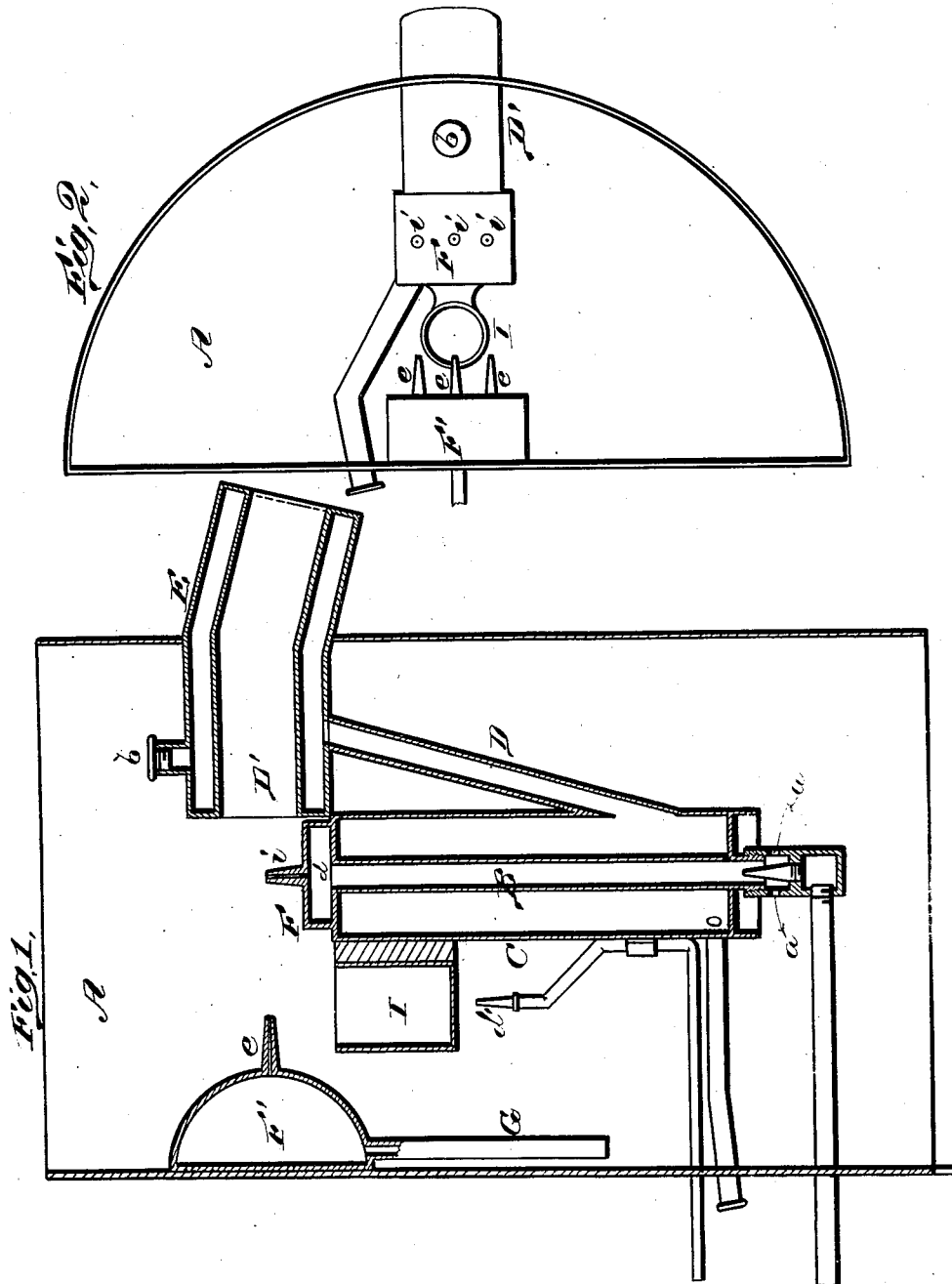


J. BUCHANAN.
Apparatus for Producing Ozone.

No. 207,496.

Patented Aug. 27, 1878.



WITNESSES
A. Bates
F. J. Massi.

INVENTOR
John Buchanan.
by E. W. Anderson,
ATTORNEY

UNITED STATES PATENT OFFICE.

JOHN BUCHANAN, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN APPARATUS FOR PRODUCING OZONE.

Specification forming part of Letters Patent No. **207,496**, dated August 27, 1878; application filed May 14, 1878.

To all whom it may concern:

Be it known that I, JOHN BUCHANAN, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and valuable Improvement in Apparatus for Producing Ozone; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a central vertical section of my ozone apparatus, and Fig. 2 a top view thereof.

This invention has relation to improvements in ozone apparatuses; and the nature of the invention consists of an ozone-generator composed of a tube jacketed and surrounded by a freezing-mixture, and having a burner at its lower end, a chest at its upper end, provided with nozzles and communicating therewith, a jacketed horizontal pipe, a pipe connecting the jackets of the said pipes, a chamber having jets on a level with the jets on the chest and the mouth of the horizontal pipe, and a cup designed to contain permanganate of potash and a gas pipe and burner.

It also consists in a cup designed to contain the permanganate of potash and a gas pipe and burner, the said cup being situated between the jets of a blowing apparatus and a pipe jacketed with a freezing compound or mixture, as will be hereinafter more fully set forth.

In the annexed drawings, the letter A designates a casing or stand, in or by which my improved generator is supported. Inside of this casing is a pipe, B, surrounded by a jacket, C, designed to contain a suitable freezing-mixture, and connected by a pipe, D, with an exit-tube, D', for the ozone, which is also jacketed, as shown at E, and provided with a tap, b, by means of which the freezing-mixture is introduced into the jackets C E. At the lower end of the pipe B is a gas-burner, preferably of the description known as the "Bunsen" burner, the jet of which projects up said pipe. This jet is supplied with air through openings *a* formed in a casing rigidly secured to the base of the tip and screwed upon the lower end of

pipe B. This pipe has upon its upper end a chest, F, and communicates with it through one or more openings, *d*, formed in the bottom of said chest. Upon the top of said chest are three or more nozzles, *i*, extending upward a sufficient distance to be opposite the end of the jacketed pipe D' aforesaid.

Upon the side of jacket C is a metallic cup, I, of suitable dimensions, designed to hold a quantity of permanganate of potash and heated by means of a gas or other burner, *d'*. Opposite the opening of the pipe D' is an air-chamber, F', having a number of horizontal jets, *e*, the mouths or vents of which are on a level with those of the nozzles *i*, and provided with a pipe, G, leading to a blowing-engine.

The constituents of freezing-mixtures are so numerous and well known that it is not deemed necessary to specify any particular mixture herein.

Having described the mechanical parts of my improved ozone apparatus, I shall now describe their operation. The blower is set in motion, and a strong current of air directed across the ends of the jets *i* on the chest to the mouth of tube D'. The burner in pipe B and that under the cup I (the latter having been first supplied with permanganate of potassium) are then lighted. It is a well-known fact that when air is passed over or through the flame of a gas-burner the oxygen is in a great degree converted into ozone. In the present instance the air is supplied through pipe *e*, and passes in a jet through the flame of the burner *i*, the ozone produced during its passage passing directly into the pipe D'. In the meantime the permanganate of potassium is fused and volatilized, and, coming in contact with the air-current, forms ozone, which, together with that produced by the decomposition of air in the tube B, is carried by the air-current through the tube D'. The air in passing over the cup forms ozone, the necessary heat being supplied by the burner *d'*. From tube D' the ozone passes into a suitable receptacle containing a liquid which holds it in solution, ready for external or internal use.

I am aware that it is not new to decompose atmospheric air in a tube surrounded by a freezing-mixture, and to force the air thus decomposed through a tube also surrounded by

a jacket containing a freezing-mixture by an air-jet, and hence I make no broad claim to such devices.

What I claim as new, and desire to secure by Letters Patent, is—

1. The ozone-generator herein described, consisting of the jacketed tube B, having a burner at its lower end, a chest provided with nozzles and communicating with said pipe, the pipe D, connecting the jackets of the pipes B and D', a chamber, F', having horizontal jets *e* on or about a level with the jets *i* and the opening of the said pipe D', and a cup containing permanganate of potash and a gas pipe and burner, combined and arranged substantially as specified.

2. In an ozone apparatus, a cup to contain the permanganate of potash and a gas pipe and burner, situated between and combined with a chamber having air-jets and an exit-tube, D', and about in line with said jets, and provided with a jacket containing a freezing-mixture, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JOHN BUCHANAN.

Witnesses:

E. L. PERDRIAUX,
ALLEN H. GANGEWER.