J. R. QUAIN.

PRODUCTION OF OZONE.

APPLICATION FILED OCT. 4, 1913.

1,147,265. Patented July 20, 1915.

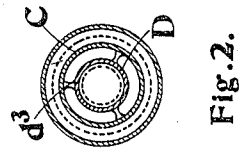


Fig.2.

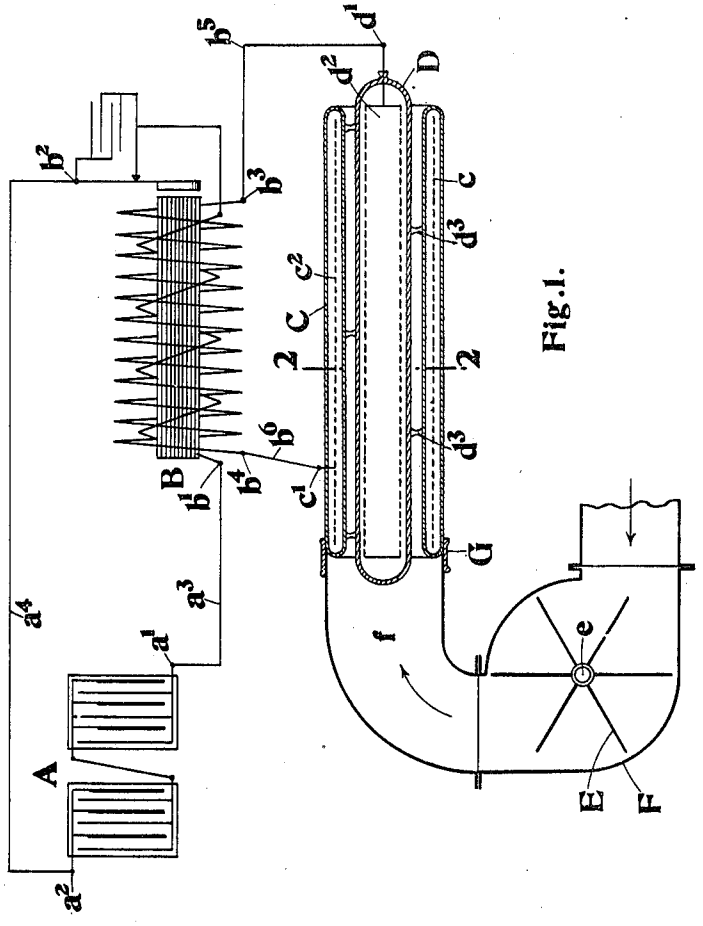


Fig.1.

Witnesses—
Stanley Wood
Robert Owen Hughes.

Inventor
John Robert Quain
by
Weaver.
Attorney.

UNITED STATES PATENT OFFICE.

JOHN ROBERT QUAIN, OF LONDON, ENGLAND.

PRODUCTION OF OZONE.

1,147,265. Specification of Letters Patent. Patented July 20, 1915.

Application filed October 4, 1913. Serial No. 793,453.

To all whom it may concern:

Be it known that I, JOHN ROBERT QUAIN, a subject of the King of Great Britain and Ireland, residing at 17 Victoria street, London, S. W., England, have invented certain new and useful Improvements in and Relating to the Production of Ozone, of which the following is a specification.

This invention relates to the production of ozone and has for its object to increase the efficiency of production of apparatus of the kind described in the specification of Patent No. 898,506, dated the 15th September, 1908, granted to me, and to provide an apparatus which is capable of use for the purposes of purification and generally for the purposes for which ozone is applicable.

According to the invention I employ in the insulating envelops within which the electrodes are mounted a quantity of mercury, and I preferably employ envelops made of silica or of other material capable of conducting the rays that emanate from the insulated electrodes on the passage of current through them; while furthermore, I prefer to provide within the insulating envelop a coil or strips of wire extending from the electrode so as to insure that under all conditions of use the current may pass through the mercury. It has, of course, been proposed to use mercury in the envelops of the electrodes of apparatus for the production of ozone, and to provide the envelops of quartz or like material.

An apparatus as described in the specification of the said prior patent and to which the present invention is applicable, is illustrated in the accompanying drawings in which,

Figure 1 is an elevation of the improved apparatus complete, the sealed tubes being shown in longitudinal section. Fig. 2 is a cross section on line 2—2 of Fig. 1.

A source of electric supply such as an accumulator or a magneto generator is employed to supply current of the required tension to the electrodes of the apparatus.

In the drawings an accumulator A provided with terminals a^1 a^2 is connected by means of conductors or leads a^3 a^4 to an induction coil or transformer B having primary terminals b^1 b^2. The coil B is provided with high tension terminals b^3 b^4 to which are connected the high tension leads b^5 b^6. The lead b^5 is connected electrically at the joint d^1 to an electrode d^2 which is hermetically inclosed in an envelop D of suitable insulating material. The lead b^6 is similarly connected by means of a joint c^1 to an electrode c^2 which is likewise hermetically inclosed within an insulating envelop C.

In Figs. 1 and 2 the envelop C is shown as an annular tube which may for instance be made of silica and the envelop D is shown as a cylindrical tube which also may be of silica arranged concentrically within the annulus C and separated therefrom by means of studs, projections or the like distance-pieces d^3 arranged at intervals along the length of the device. In this way space is left between the tubes C D through which air or other gas to be ozonized is passed by any suitable apparatus.

In the drawings is shown a blower consisting of a fan E mounted on a spindle e and journaled in a casing F having a cone-shaped mouth f leading to the tube C. This blower serves to direct a current of air through the space between the tubes C D and this air is accordingly ozonized and driven out at the opposite end of the annular passage when the high tension current passes from the one electrode c^2 to the second one d^2. A rubber or other socket piece G may be employed to connect the mouth f to the tube C as shown in Fig. 1.

In carrying the invention into effect with reference to the apparatus hereinbefore described and disclosed in the specification of the prior patent aforesaid, I provide within each of the insulating envelops C and D, which are made of silica, a quantity of mercury, and I extend the electrodes c^2 and d^2 in the respective insulating envelops C and D in the form of metal strips or coils of metal wire to insure that under all conditions of use the current may pass through the mercury. On passing current through the respective electrodes c^2 and d^2 ozone is generated in the space between the envelops C and D, while within the insulating envelops C and D the mercury is vaporized, and in this way the generation of ozone is increased.

The invention is not, of course, limited to any particular disposition of the electrodes with reference to each other.

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

1. An apparatus for the production of ozone comprising a source of high tension

current, insulating envelops, said envelops being exhausted of air, a quantity of mercury in said envelops, electrodes sealed in said insulating envelops, current conveying connections to said electrodes adapted on the passage of current to vaporize the mercury contained in said envelop, said insulating envelops being spaced apart to form passages through which air may pass.

2. In apparatus for the production of ozone, the combination of a source of electric current a positive electrode sealed in an exhausted envelop, a negative electrode also sealed in an exhausted envelop, a quantity of mercury in said exhausted envelops, said exhausted envelops being spaced apart from one another, means for passing air between said envelops in the direction of the length thereof and external electric connections with said electrodes adapted on the passage of current to vaporize the mercury contained in said envelop.

3. An apparatus for the production of ozone comprising a source of high tension current, insulating envelops of silica, said envelops being exhausted of air and containing a quantity of mercury, current conveying connections to said electrodes adapted on the passage of current to vaporize the mercury contained in said envelop, said envelops being spaced apart and means for passing air through the space between said envelops.

4. An apparatus for the production of ozone, comprising a source of high tension current, a tubular insulating envelop, a second tubular insulating envelop disposed within the first said envelops being exhausted of air and containing a quantity of mercury, electrodes sealed in said insulating envelops, current conveying connections to said electrodes adapted on the passage of current to vaporize the mercury contained in said envelop, said tubular insulating envelops being spaced apart and means for passing air through the space between said electrodes in the direction of their length.

In testimony whereof I have hereunto signed my name to this specification in the presence of two subscribing witnesses.

JOHN ROBERT QUAIN.

Witnesses:

ROBERT OWEN HUGHES,

W. E. ROGERS.