

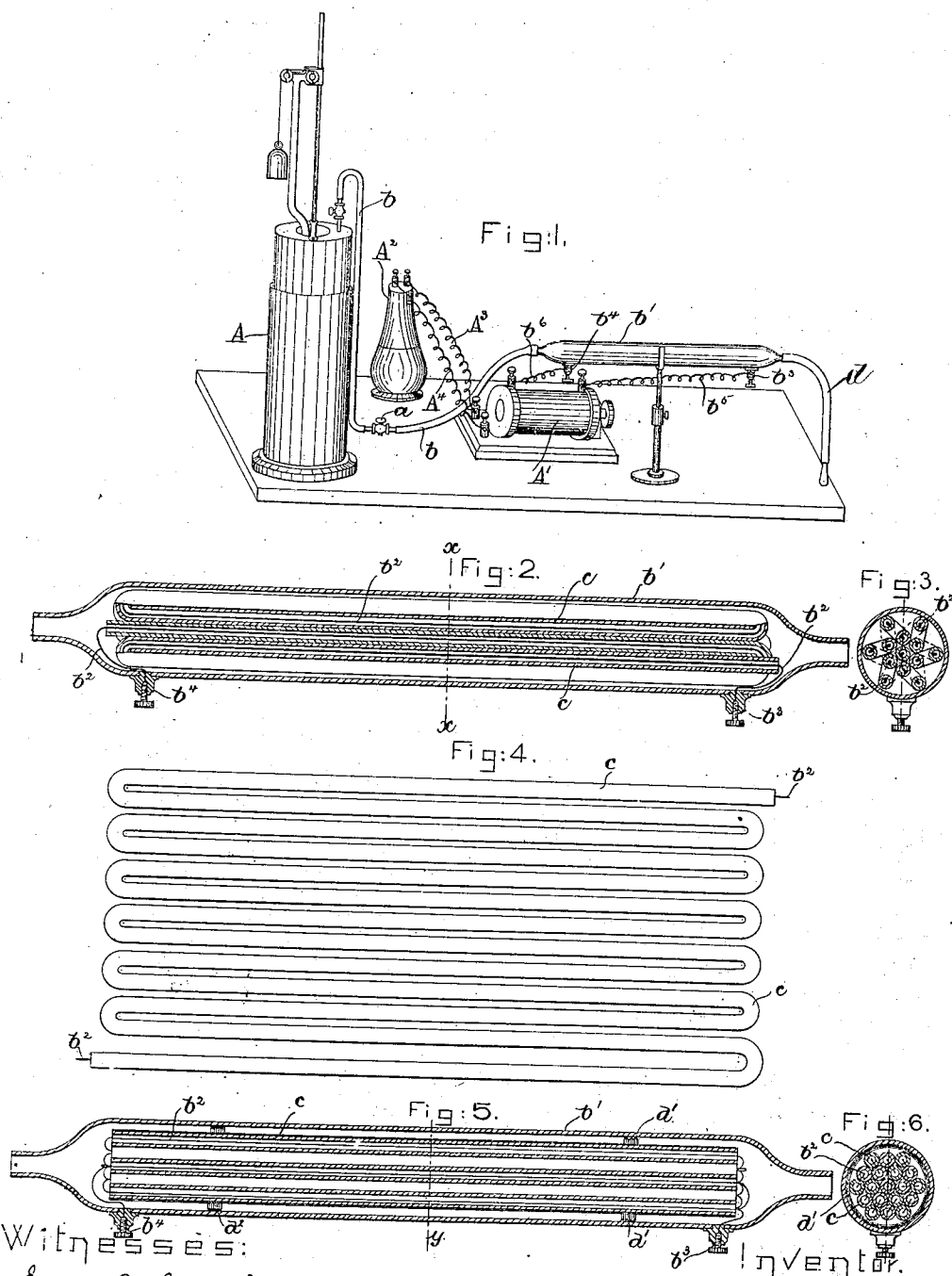
(No Model.)

G. H. MERKEL.

APPARATUS FOR MANUFACTURING OZONE.

No. 397,992.

Patented Feb. 19, 1889.



Witnesses:

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR MANUFACTURING OZONE.

SPECIFICATION forming part of Letters Patent No. 397,992, dated February 19, 1889.

Application filed May 28, 1888. Serial No. 276,377. (No model.)

To all whom it may concern:

Be it known that I, GOTTFRIED H. MERKEL, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Apparatus for Manufacturing Ozone, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to the production of ozone by means of electricity, and has for its object to provide apparatus by which a maximum of ozone may be formed from a given quantity or volume of oxygen.

Prior to my invention I am aware that ozone has been formed by passing an electric current through a wire wound spirally about a glass tube or rod located in a larger tube, through which the oxygen is passed. With an apparatus such as described the quantity of ozone produced or obtained from a given quantity or volume of oxygen is substantially small, owing to the fact that the resistance offered to the passage of the continuous electric current is substantially nothing, the current, which is of substantially high potential, jumping from one coil of the wire to another, so that it passes through the outer tube in substantially a straight path.

In accordance with my invention the electric conductor, preferably platinum wire, is passed, as herein shown, through a hollow carrier, preferably a glass tube bent or coiled to extend longitudinally the length of the ozonizing-chamber (shown as a tube) through which the oxygen is passed, the loops of wire being independently insulated from each other, whereby the current is caused to pass through the entire length of the platinum wire and is prevented from jumping or short-circuiting.

My invention therefore consists, essentially, in an apparatus for the production of ozone, of the combination, with an ozonizing-chamber, of the herein-described continuous electric conductor bent or coiled to extend longitudinally the length of the said chamber two or more times to form through the said chamber a complete continuous circuit of substantially high resistance, the said coils being in-

sulated from one another, substantially as will be described.

Figure 1 is an isometric view of a table or stand supporting an apparatus embodying my invention; Fig. 2, a longitudinal section of the outer chamber or tube and the form of carrier preferred by me; Fig. 3, a cross-section of Fig. 2 on line *xx*; Fig. 4, a detail of the carrier shown in Fig. 2; Fig. 5, a longitudinal section of the outer chamber and a modified form of carrier, and Fig. 6 a cross-section of Fig. 5 on line *yy*.

The gasometer A, containing the supply of oxygen, the induction-coil A', and battery A², connected to the primary coil thereof by wires A³ A⁴, are and may be of any desired or usual or well-known construction.

The gasometer A is connected by a preferably flexible pipe, *b*, provided with a cock, *a*, to the ozonizing-chamber *b'*, herein shown as a glass tube of considerable area in cross-section, the oxygen from the gasometer passing through the ozonizing-chamber. The oxygen on its passage through the chamber *b'* is converted into ozone by an electric current or discharge passing through an electric conductor, *b*², preferably platinum wire, having one end connected, as shown, to a binding-post *b*³, and its other end joined to a binding-post, *b*⁴, the said binding-posts being preferably sealed in the tube *b'* and connected respectively by wires *b*⁵ *b*⁶ to opposite ends of the secondary coil of the induction-coil A'.

To obtain within a chamber or tube *b'* of substantially small size, a substantially large surface or amount of platinum or other wire, the latter is preferably inserted through a single glass tube *c*, which is then bent or coiled, substantially as shown in Fig. 4, and the coils of the tube are then grouped together to enable them to be inserted into the chamber *b'*, one end of the latter being then drawn out to enable the pipe *d* to be fitted thereon. It will thus be seen that a substantially large amount of platinum wire is located in the chamber *b'*, and the separate coils are perfectly insulated from one another, whereby it is impossible for the current or discharge to short-circuit on its passage through the chamber *b'*, so that the oxygen passed through the said chamber is

subjected to the maximum effect of the electric current, and thereby a maximum volume or yield of ozone is obtained from a given volume of oxygen.

5 I prefer to make the carrier of a single glass tube bent or coiled, as shown in Fig. 4, and grouped as shown in Figs. 2 and 3; but instead thereof the carrier may be composed of a number of separate tubes grouped together and bound, as by platinum wires d' , as shown in Figs. 5 and 6.

My improved apparatus, while especially designed for converting pure oxygen into ozone for medical purposes, may be employed equally as well for forming ozone from air.

15 I have herein mentioned platinum wire as the electric conductor; but instead thereof I may employ any other suitable conductor which will not form with ozone an injurious gas—as, for instance, selenium and aluminium.

I claim—

20 1. In an apparatus for the production of ozone, the combination, with an ozonizing-chamber, b' , of the herein-described continuous electric conductor bent or coiled to ex-

tend longitudinally the length of the said chamber two or more times to form through the said chamber a complete continuous circuit of substantially high resistance, the said coils being insulated from one another, substantially as and for the purpose specified. 30

2. In an apparatus for the production of ozone, a gasometer to contain oxygen, an ozonizing-chamber, b' , connected thereto, the herein-described continuous electric conductor or wire and carrier therefor located in said chamber and composed of coils or tubes of glass or non-conducting material, through which the said continuous wire is passed, combined with an induction-coil connected to the opposite ends of the said electric conductor, and a current-generator connected to said induction-coil, substantially as described. 35 40

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses. 45

GOTTFRIED H. MERKEL.

Witnesses:

JAS. H. CHURCHILL,
J. C. SEARS.