(No Model.)

2 Sheets—Sheet 1.

# A. VERLEY.

## APPARATUS FOR PRODUCING OZONE OR OZONIZED AIR.

No. 597,517. Patented Jan. 18, 1898.

Fig. 1.

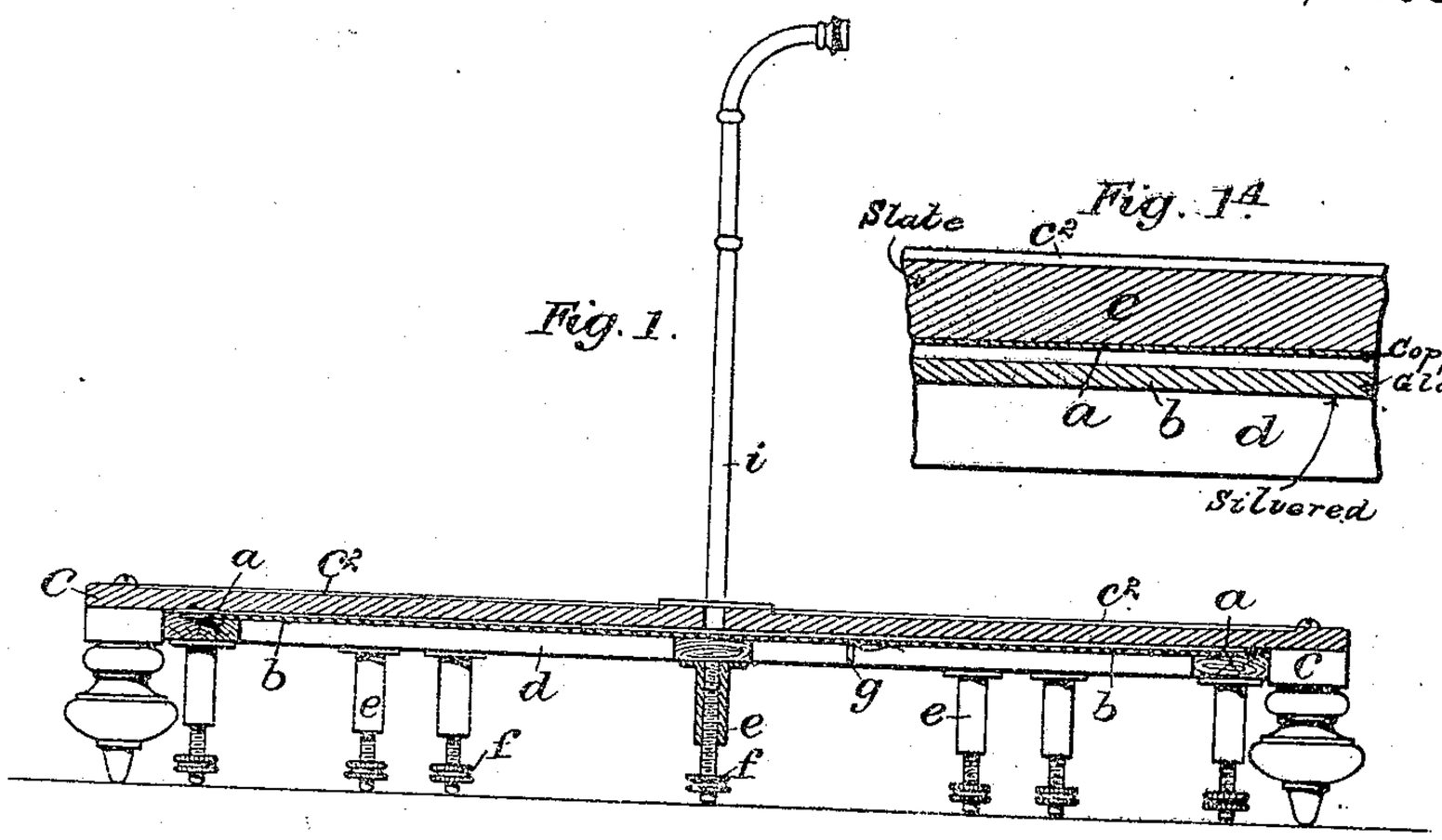



Fig. 14.

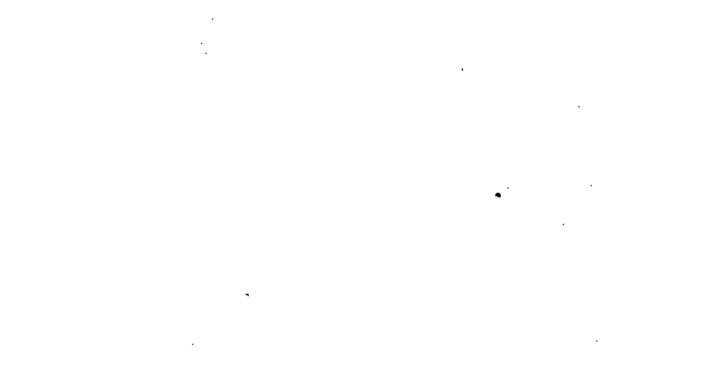
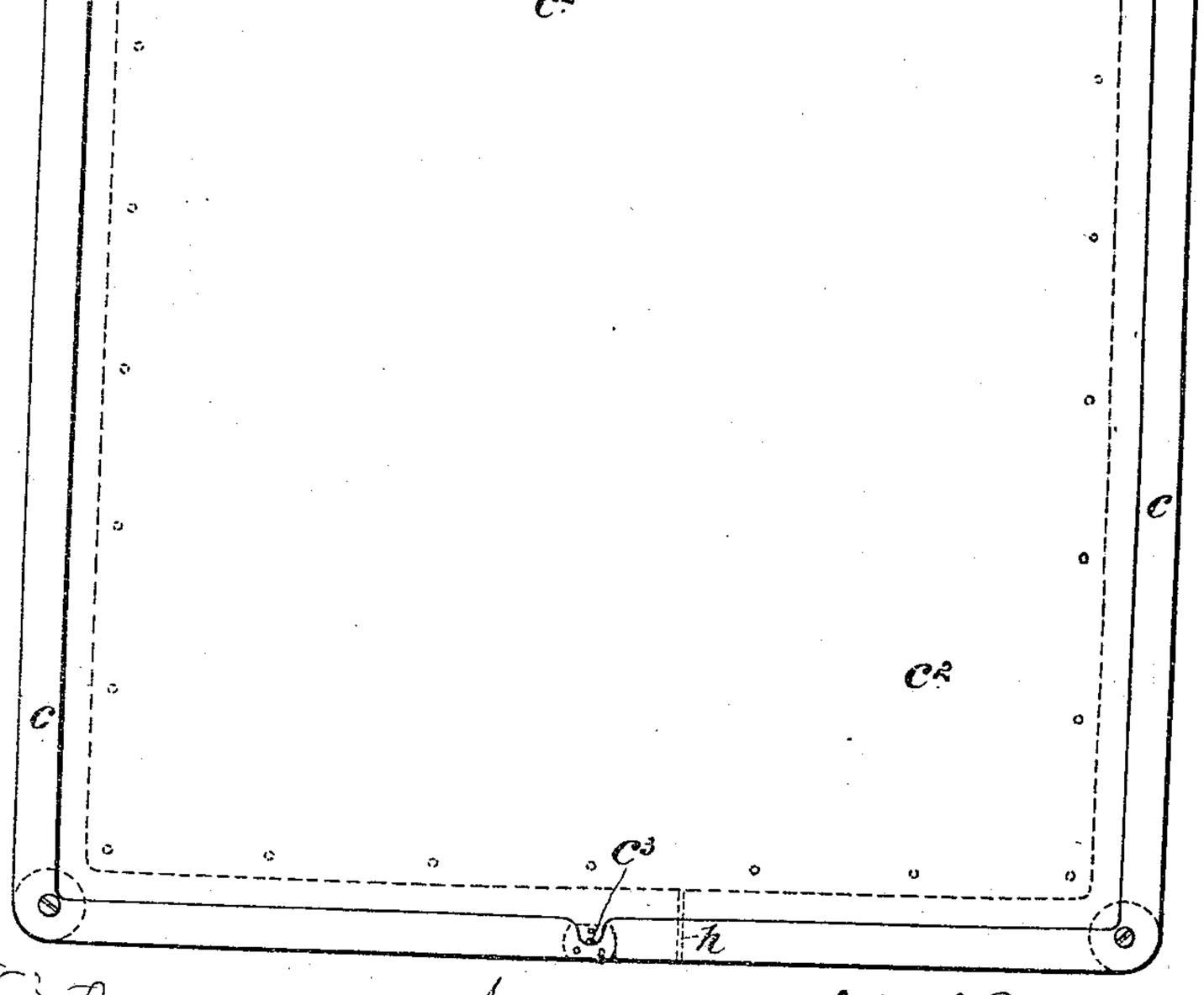



Fig. 2.




Attest:
Geo. Lewis
W. R. Edelen

Inventor—
Albert Verley
by Toulmin & Mauro
his attorneys.

(No Model.) 2 Sheets—Sheet 2.

# A. VERLEY.

## APPARATUS FOR PRODUCING OZONE OR OZONIZED AIR.

No. 597,517. Patented Jan. 18, 1898.

Fig. 3.

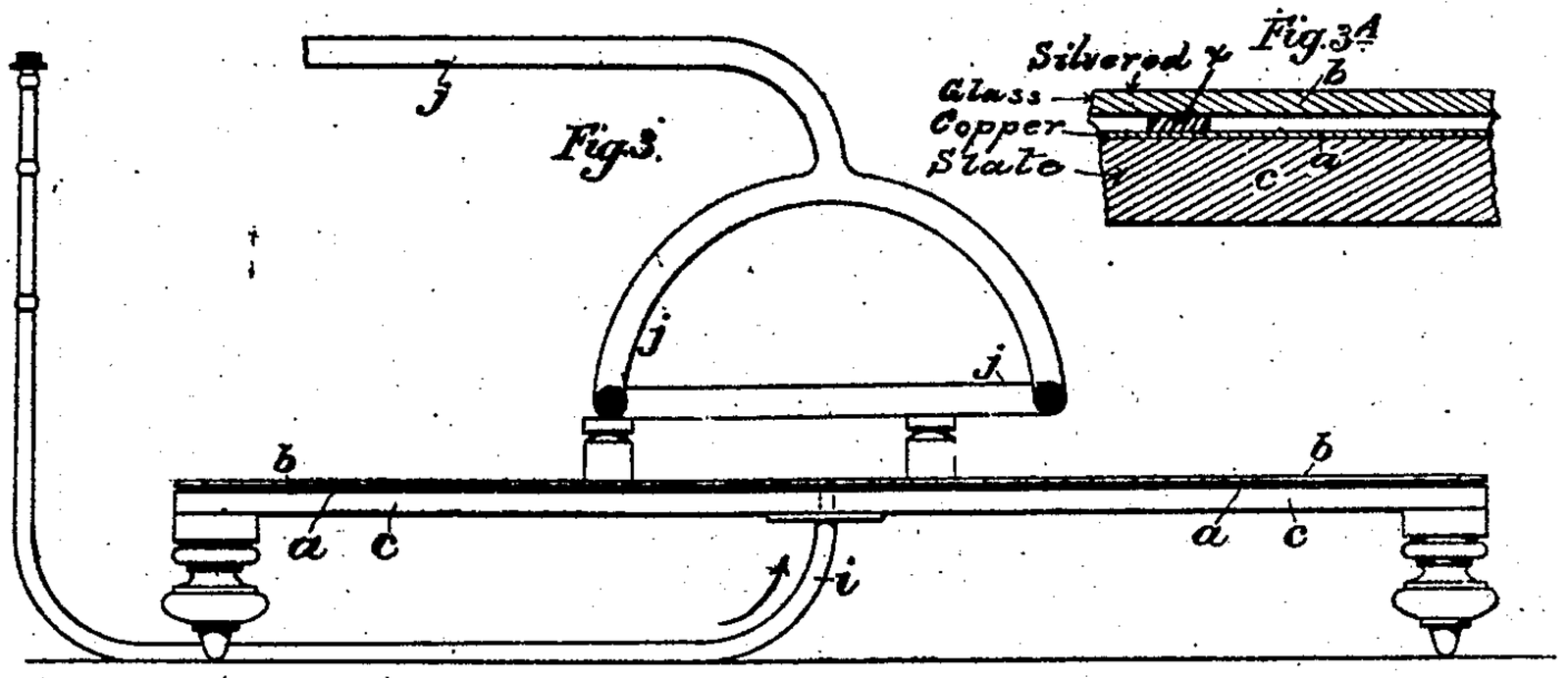
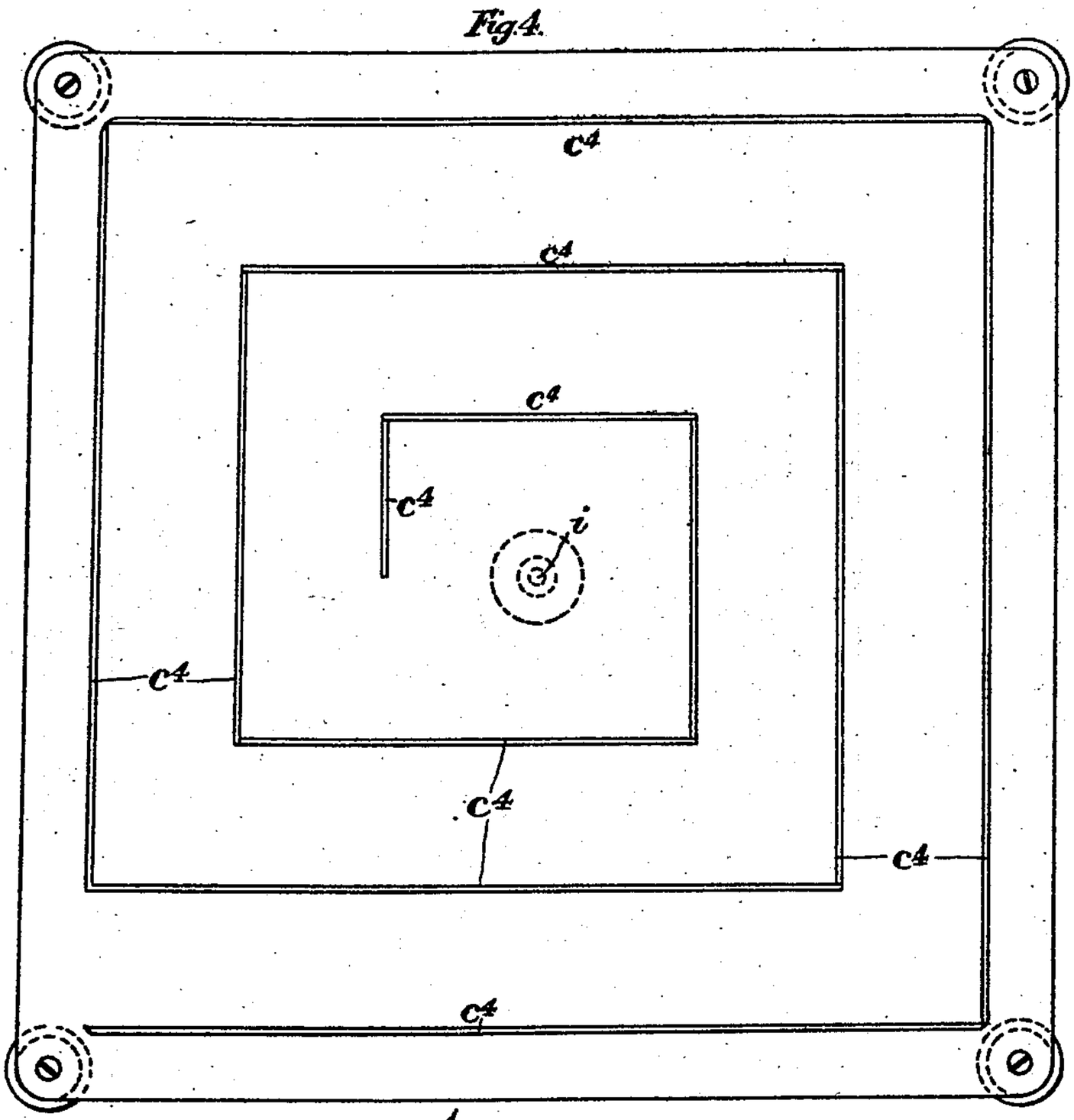



Fig. 3A.




Fig. 4.




Attest:-
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W. R. Edelen.

Inventor:- Albert Verley by
Pollock & Maure
his attorneys.

# UNITED STATES PATENT OFFICE.

ALBERT VERLEY, OF PARIS, FRANCE.

## APPARATUS FOR PRODUCING OZONE OR OZONIZED AIR.

SPECIFICATION forming part of Letters Patent No. 597,517, dated January 18, 1898.

Application filed February 17, 1897. Serial No. 623,779. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT VERLEY, chemist, a citizen of the French Republic, residing at 69 Avenue de la Grande Armée, Paris, France, have invented certain Improvements in Apparatus for the Production of Ozone or Ozonized Air, of which the following is a specification.

My invention has for its object to provide apparatus which can be conveniently made of any desired size, so as to be capable of readily producing ozone or ozonized air in large quantities.

According to my invention I employ a sheet of polished copper or other suitable metal and a sheet of silvered glass or equivalent material, these sheets being supported so that their respectively polished and unsilvered surfaces face each other and are at but a small distance apart. The said copper or like sheet and the silver coating of the glass or the like are respectively connected to the two poles of a transformer or generator of a continuous electric current of, say, for instance, from five thousand to twelve thousand volts. The air to be ozonized or from which ozone is to be produced enters at the side or sides of the space between the said polished and unsilvered surfaces and is subjected to the action of the electric effluvia passing between the two sheets and so is ozonized, and the ozone or ozonized air is drawn or passes off by a pipe opening from the center of the space between the two sheets. Undue heating may be prevented by any suitable cooling medium—such, for instance, as by a current of water or by the expansion of compressed air.

The apparatus may be arranged in any suitable way, and I describe examples with reference to the accompanying drawings, in which I have illustrated, in transverse section in Fig. 1 and in plan in Fig. 2, an apparatus constructed in accordance with my invention, and in Figs. 3 and 4 I have shown a transverse section and a plan with the upper sheet removed of another construction of the said apparatus according to my invention. Figs. $1^A$ and $3^A$ are enlarged sections of portions of the tables and sheets of the respective arrangements.

*a* is the sheet of polished copper or other suitable metal, and *b* is the sheet of glass or equivalent material silvered on the side farthest from the sheet *a*. The sheet *a* is secured to the under side of the table *c*, and fitting in the under side of the framing or between the legs thereof, so that it can be moved vertically in the said framing as a guide, is another framing *d*, with legs *e*, whose length is adjustable by means of screws *f*, so that by this means the small space between the two sheets can be adjusted and fixed accurately, air having access to the said space at the side or sides thereof.

*g h* are the connections for the conductors, connecting, respectively, the silvering and the metal plate to the poles of the generator of electricity. The contact with the silvering may be made by means of a metal spring-tongue bearing thereon.

*i* is a lead pipe connected with a suitable blower (not shown) whereby a suction is created for drawing air into the apparatus and through which the ozone or ozonized air passes to the holder or place of utilization.

The top of the table *c* may be of slate and is recessed at $c^2$, so as to allow a current of cooling liquid, such as water, to circulate over it, the said water escaping by the outlet $c^3$. Small cups or distance-pieces *x*, (see Fig. $3^a$,) placed in the space between the sheets, will maintain the requisite small distance between the metal plate and the glass plate. The space between the two plates may be divided by glass rods or the like, so that the said space is made to constitute a spiral or zigzag passage, through which the air under operation passes to the center in a spiral or zigzag direction, and from this center the ozone or ozonized air produced escapes or is drawn off through an orifice and outlet-pipe. This formation of a circuitous passage is shown in the plan, Fig. 4, of the second example, where the rods which form it are marked $c^4$, or the space may be divided by radially-arranged rods or otherwise.

The polished copper sheet *a* may, according to the example shown in Figs. 3 and 4, be carried by the upper side of the table *c* and the silvered glass *b* be supported over the copper sheet with the unsilvered side next it, distance-pieces maintaining the requisite space between the polished and unsil-

vered surfaces. Compressed gas, such as air, may be passed through perforations in a pipe *j*, so as to effect the necessary cooling. In this case the outlet-pipe *i* passes from below.

In an apparatus arranged or constructed according to my invention the sheet of glass *b* or the like can be made of considerable thickness, which is important, as it is not possible to make very thin sheets with that truth of surface which is necessary to give the requisite equality of distance between the polished metal surface and the silvered surface throughout their whole extent.

By the term "silvering" I of course mean any metallic coating of sufficient conductibility, such as gilding or the application of a sheet of tin-foil. The apparatus may be made of any convenient shape, and the details may be considerably varied, without departing from the nature of my invention.

Having now particularly described and ascertained the nature of this invention and in what manner the same is to be performed, I declare that what I claim is—

1. In an apparatus for the production of ozone or ozonized air, a flat sheet of polished copper or other suitable metal, means for supporting said plate in a horizontal position, a flat glass plate silvered on one side, the metal plate and silvering being respectively connected with the poles of a source of electricity, means independent of the means for supporting the copper plate for supporting the glass plate in a horizontal position with its silvered side farthest from the metal plate and so as to leave a small space between the plates with an inlet for the air around the edges thereof, one of the plates being formed with an outlet therethrough at its middle portion for the exit of the ozone or ozonized air, and means for circulating air through the apparatus from the inlet to the outlet.

2. In an apparatus for the production of ozone or ozonized air, a flat sheet of polished copper or other suitable metal, means for supporting said plate in a horizontal position, a flat glass plate silvered on one side, the metal plate and silvering being respectively connected with the poles of a source of electricity, adjustable means, independent of the means for supporting the copper plate, for supporting the glass plate in a horizontal position with its silvered side farthest from the metal plate and so as to leave a small space between the plates with an inlet for the air around the edges thereof, one of the plates being formed with an outlet therethrough at its middle portion for the exit of the ozone or ozonized air, and means for circulating air through the apparatus from the inlet to the outlet, substantially as described.

3. In an apparatus of the kind described, a flat sheet of polished copper or other suitable metal, means for supporting said plate in a horizontal position, a flat glass plate silvered upon its side farthest from the metal plate, said metal plate and silvering being respectively connected with a source of electricity, legs composed in part of adjustable screws for supporting the glass plate beneath and at a suitable distance from the metal plate with an inlet for the air around the edges of said plates, one of the plates being formed with an outlet through its mid portion for the ozone or ozonized air, and means for circulating air through the apparatus from the inlet to the outlet, substantially as described.

4. In an apparatus of the kind described, two flat horizontally-disposed plates arranged face to face with a small space between and constituting the electrodes, of means for projecting jets of compressed gas against the upper surface of the upper plate, substantially as described.

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

A. VERLEY.

Witnesses:
MAURICE BAUBE,
VILLEOR.