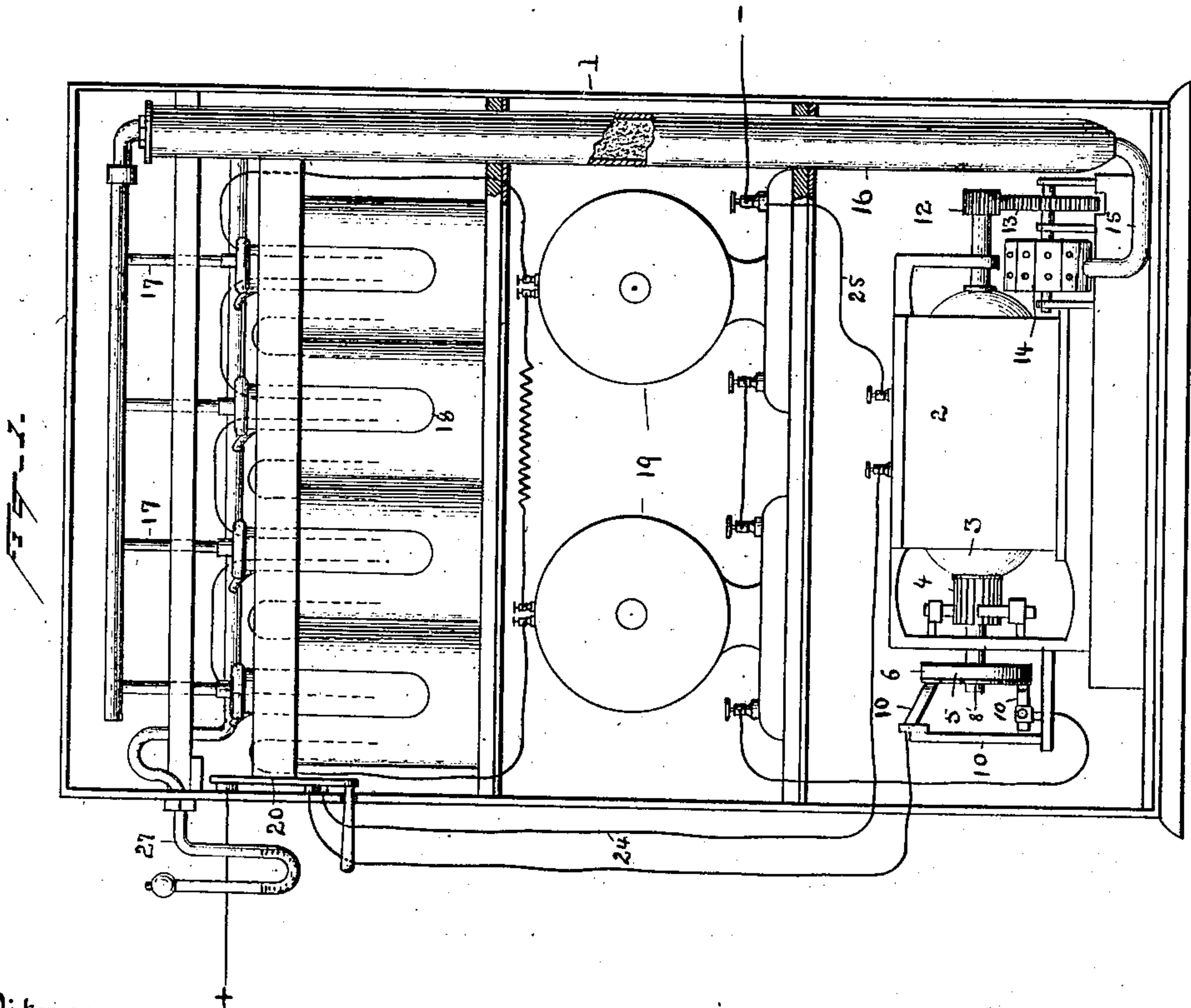
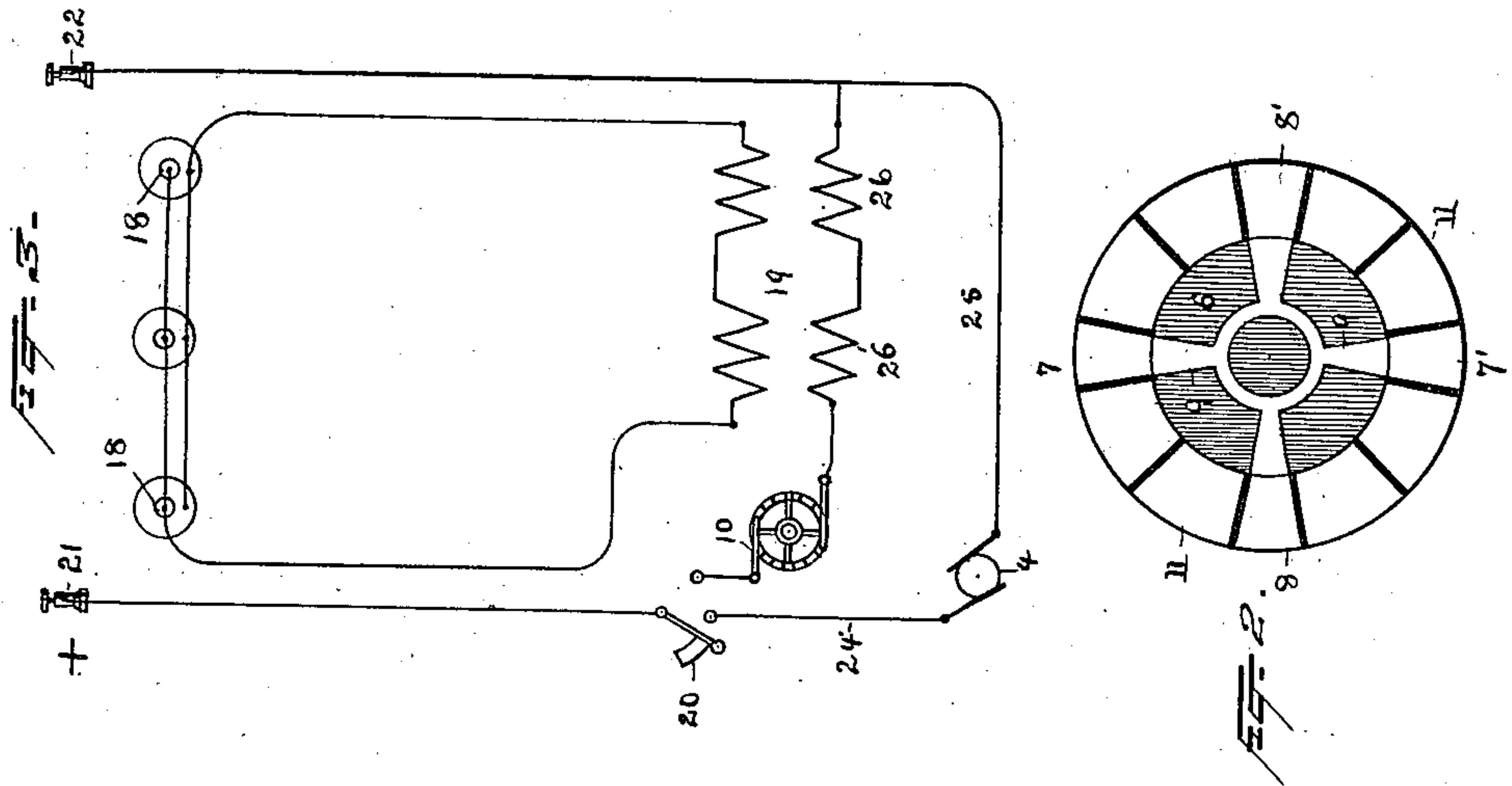


(No Model.)

F. M. GRUMBACHER.
OZONE MACHINE.

No. 470,425.

Patented Mar. 8, 1892.



Witnesses
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UNITED STATES PATENT OFFICE.

FREDERICK M. GRUMBACHER, OF NEW YORK, N. Y.

OZONE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 470,425, dated March 8, 1892.

Application filed March 24, 1891. Serial No. 386,244. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK M. GRUMBACHER, a citizen of Germany, having declared my intention of becoming a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Ozone-Machines, of which the following is a description.

The invention relates to an apparatus for generating ozone, and is especially adapted for use in theaters and similar places for ozonizing the air.

The invention consists in a novel arrangement of apparatus, and in certain combinations hereinafter set forth and claimed.

In the accompanying drawings, which illustrate the improvement, Figure 1 is a front view of the case in which the apparatus is mounted, the front door being removed. Fig. 2 is a face view of a commutator of special construction used in the apparatus. Fig. 3 is a diagram illustrating the circuits.

1 is the case or box, in which is a motor 2, having an armature 3 and commutator 4 of any suitable construction. Both ends of the armature-shaft are extended. One end carries a commutator or circuit-interrupter 5 of special form. A face view of this device is shown in Fig. 2.

6 is a disk on which are mounted four plates of metal 7 7' 8 8'. These plates are connected by the radial arms 9.

10 are brushes adapted to bear on the contact-plates. It will be evident that when 7 7' are in the position shown the two brushes are connected. The brushes would also be connected when plates 8 8' occupy the position of 7 7'. Between the plates 7 8 are insulated segments 11. There are preferably two or more of these plates in each of the intervening spaces. With this arrangement there is less danger of a gradual making and breaking of the circuit, such as might otherwise happen owing to the formation of a conducting film between the plates 7 8 and the plates 11.

At the opposite end of the armature is a gear or friction wheel 12, meshing with the wheel 13, which drives the fan of a blower 14. From said blower a pipe 15 extends to a chamber 16, containing drying material. From the upper end of this chamber branch pipes 17

extend to the ozone-tubes 18, which may be of any suitable construction—such, for example, as the well-known Siemens ozone-tubes. Above the motor is a partition or shelf on which rest the necessary number of induction-coils 19.

20 is a switch pivoted to the inner side of the case, having a handle extending to the outside through a curved slot.

The circuits shown in Fig. 3 are as follows: A suitable source of current is connected to the two terminals 21 22. 21 is connected to switch 20, which switch is adapted to bear on two contact-points. One point is connected by wire 24 to the commutator 4 of the motor, the opposite brush of the commutator being connected by wire 25 to the terminals 22. The second contact of the switch is connected to one of the brushes 10 of the other commutator. The opposite brush 10 is connected through the primaries 26 of the induction-coils to wire 25 and back to terminals 22. The switch closes the motor-circuit and the primary circuit in multiple arc. The secondaries of the induction-coils are united and are connected to the two terminals of the ozone-tubes in the well-known manner.

27 is a tube having a bend and connected to the ozone-tubes. Within the bend is placed a quantity of an essential or volatile oil or similar material. The ozone generated passes through the oil and escapes into the air. The quantity of oil in the tube should be small, so that there is only a short contact between the ozone and the oil. This treatment tends to remove the pungent odor of the ozone, but does not impair its useful properties.

The operation of the apparatus is as follows: The switch being moved to close the circuits described, the motor begins to revolve, thereby driving the blower and forcing air through the drying-chamber to the ozone-tubes, and also interrupting the branch circuit, which extends through the primaries of the induction-coils by means of the commutator 5. This interruption of the current generates secondary currents of exceedingly high tension which produce ozone in the ordinary manner.

Having thus described the invention, what I claim is—

1. In an ozone-machine, the combination of

tubes or receptacles in which ozone may be generated, a secondary circuit of an induction-coil extending to said receptacle, a primary circuit for the induction-coil, a commutator or circuit-breaker for said primary circuit, and an electric motor for moving it, substantially as described.

2. In an ozone-machine, the combination of tubes or receptacles in which ozone may be generated, a secondary circuit of an induction-coil extending to said receptacle, a primary circuit for the induction-coil, a commutator or circuit-breaker for said primary circuit, an electric motor for moving it, and a blower, also operated by said motor, for forcing air to the receptacle, substantially as described.

3. In an ozone-machine, the combination of tubes or receptacles in which ozone may be generated, a secondary circuit of an induction-coil extending to said receptacle, a primary circuit for the induction-coil, a commutator or circuit-breaker for said primary circuit, an electric motor for moving it, a drying-chamber communicating with the receptacle, and a blower for forcing air through the drier to the receptacle, substantially as described.

4. In an ozone machine, the combination of receptacles in which ozone may be generated

for ozonizing air, an induction-coil, the secondary of which has terminals in said receptacle and the primary of which is connected with a suitable source of current, and a receptacle containing an essential oil or similar material through which the ozone generated is passed, the quantity of oil through which the ozone is passed being insufficient to destroy the ozone, substantially as described.

5. The combination, in an ozone-machine, of induction-coils for producing high-tension currents, an interrupter for the primary circuit of said induction-coils, and a motor for moving said interrupter, the motor and primary circuit being in multiple arc from the main supply circuit, substantially as described.

6. The combination, in an ozone-machine, of an induction-coil having primary and secondary circuits, an interrupter for the primary circuit consisting of plates or blocks connected in pairs, and one or more insulated plates in the spaces between said connected plates, substantially as described.

This specification signed and witnessed this 26th day of January, 1891.

F. M. GRUMBACHER.

Witnesses:

J. A. YOUNG,
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