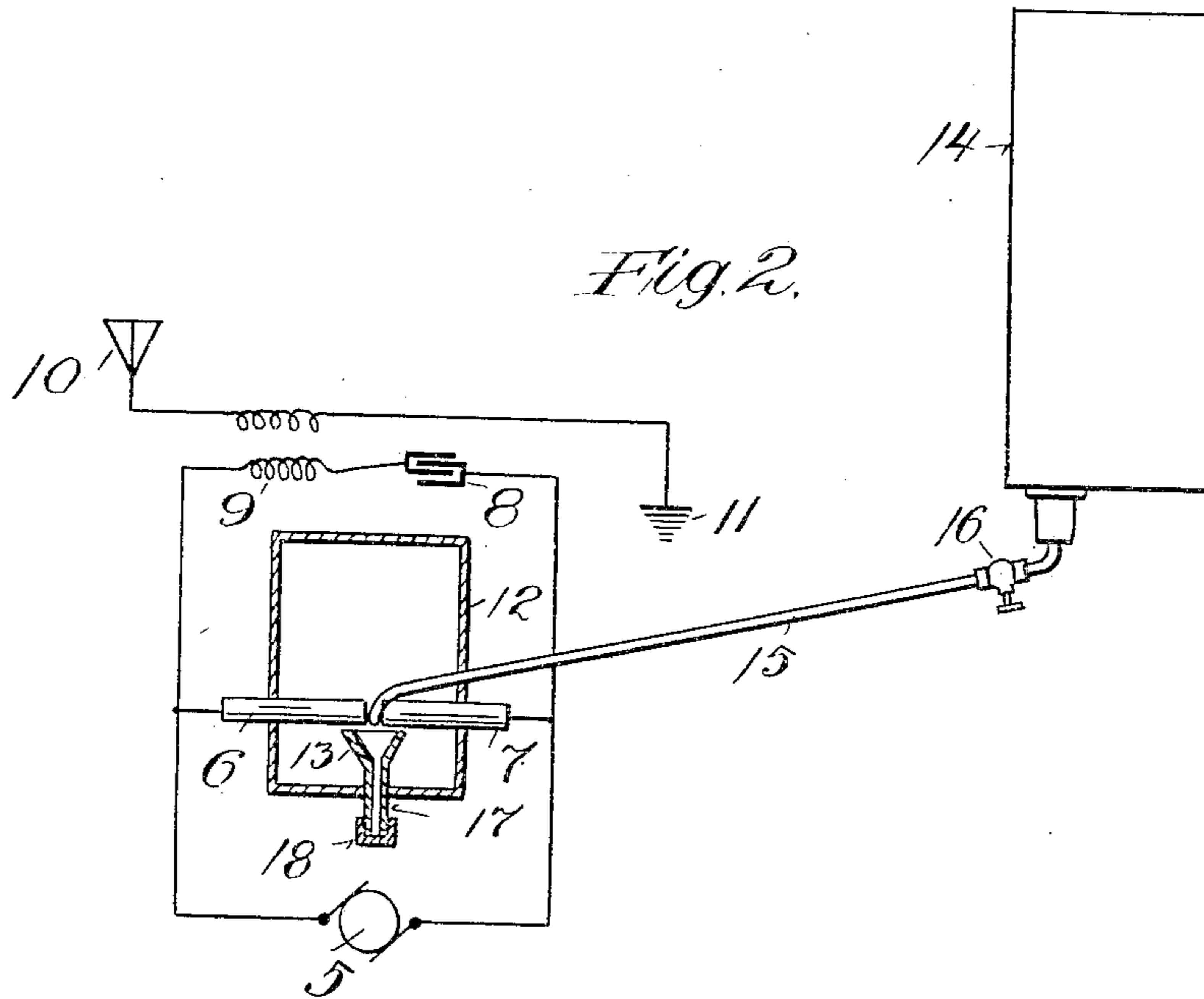
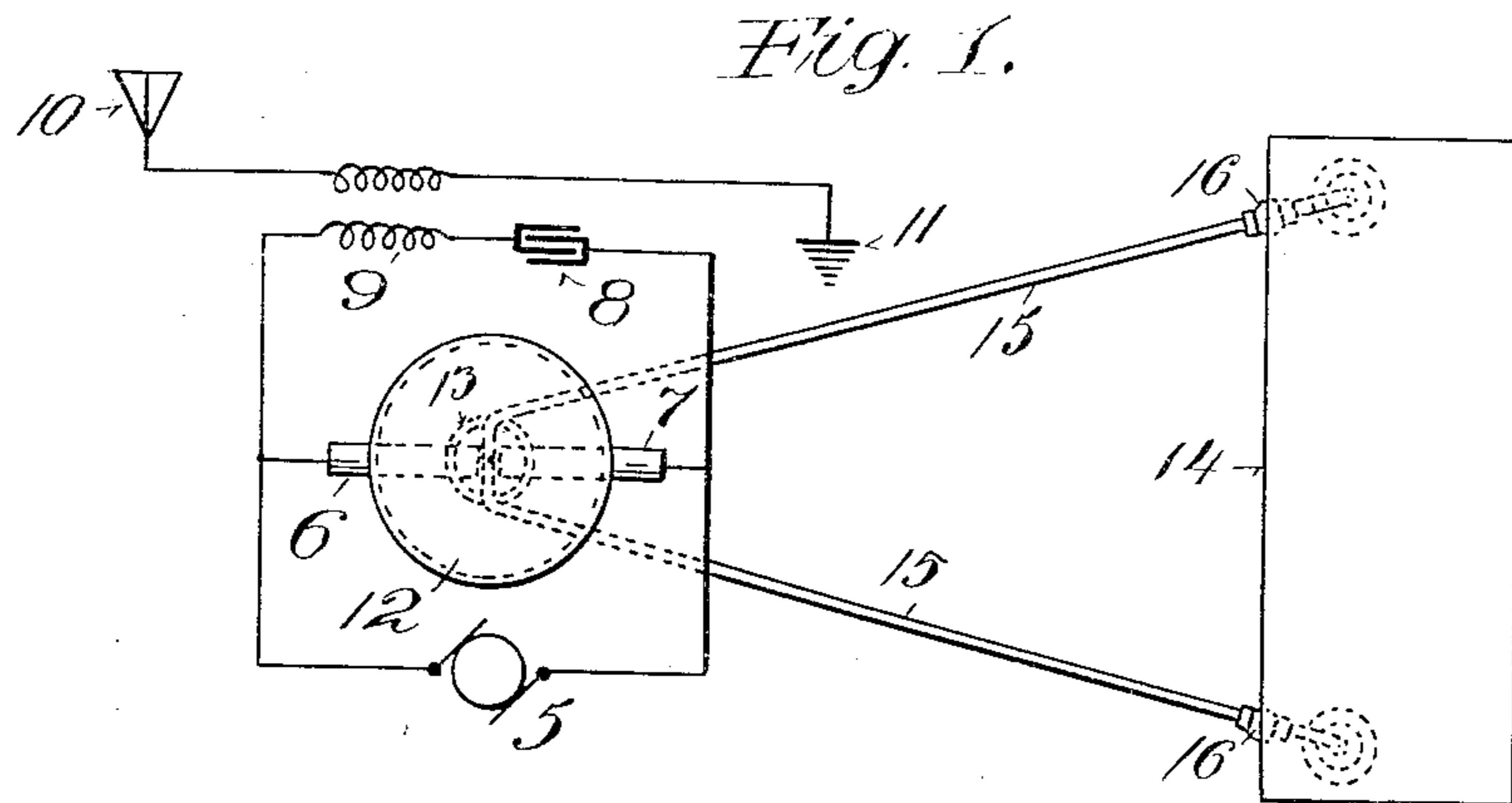


R. KENT.
ARC MECHANISM FOR SPACE SIGNALING.
APPLICATION FILED AUG. 24, 1908.

966,560.

Patented Aug. 9, 1910.



Witnesses:
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By his Attorney
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UNITED STATES PATENT OFFICE.

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ARC MECHANISM FOR SPACE SIGNALING.

966,560.

Specification of Letters Patent.

Patented Aug. 9, 1910.

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To all whom it may concern:

Be it known that I, ROSCOE KENT, a citizen of the United States, residing at New York, in the county of New York, State of New York, have made a certain new and useful Invention in Arc Mechanism for Space Signaling, of which the following is a specification.

This invention relates to arc mechanism for space signaling apparatus, and particularly to means for maintaining uniformity in the arc length.

The object of the invention is to provide means which are simple and efficient for automatically preventing undue accumulation of carbon or other deposit upon the electrodes more rapidly than the electrodes are consumed by the arc.

A further object is to provide means whereby a vapor or "atmosphere" is supplied to the arc automatically.

A further object is to provide means for constantly supplying alcohol or other liquid in proper quantity to the arc in the most efficient way to generate and maintain an "atmosphere" or vapor around the arc, and without the necessity for resorting to the use of wick or similar device.

Other objects of the invention will appear more fully hereinafter.

The invention consists substantially in the construction, combination, location, and relative arrangement, all as will be more fully hereinafter set forth, as shown in the accompanying drawing, and finally pointed out in the appended claims.

In the accompanying drawing, Figure 1 is a view in top plan, partly diagrammatic, showing an arrangement of apparatus embodying the principles of my invention. Fig. 2 is a side elevation, parts in vertical section, and partly diagrammatic.

In the practical operation of space telephone and telegraph systems employing, in the transmitting apparatus, an energizing circuit, commonly known as the "singing arc" circuit, and which includes a source of current, a condenser, an inductance and an electric arc, as well as in systems employing other arrangements including an electric arc or electric discharges between electrodes, great difficulty has been experienced by reason of irregularities resulting from variations in the length of the arc, such variations causing variations in the length of

the electro-magnetic waves generated, as well as derangement of the period or frequency of the oscillations. Where carbon electrodes are employed the arc is frequently unsteady and unstable, thereby introducing disturbances in the system which prevent the accomplishment of the best results. It has been proposed to obviate some of these difficulties by forming the arc in an "atmosphere" that is to surround it by a suitable vapor, and alcohol, or a mixture of alcohol and some hydrocarbon containing material, such as methylene, has been found suitable for this purpose. In supplying the alcohol or other material or mixture to form the vapor envelop for the arc difficulty has been experienced in securing an efficient and steady feed to the end that only so much thereof as may be required is supplied. An oversupply of the vapor producing material or liquid is not desirable because of the danger of causing carbon or other deposit to accumulate on the ends of the electrodes more rapidly than the electrodes are consumed, thereby forming teats or protuberances on the electrode surfaces, and causing variations in the length of the arc with consequent disturbances as above indicated. Too small a supply of the alcohol, mixture or other material will fail to accomplish the desired results.

It is among the special purposes of my present invention to overcome and avoid the objections noted, and to provide means for effecting the supply of the alcohol or other material from which the vapor envelop is produced only in such quantity as may be required, and under proper and suitable conditions of control and regulation. I also propose to supply the vaporizing fluid to the immediate vicinity of the arc so that vaporization may be instantaneously effected at the point where the vapor is required, and, in one operative embodiment of means for accomplishing these results, I propose to arrange a drip pan or receptacle in the vicinity of the arc, preferably immediately below it, and to cause the vaporizing fluid to drip into such pan or receptacle. I also propose to provide means whereby any excess of fluid supplied to the pan may be taken care of or removed and also means whereby any deposit or sediment in the pan may be readily removed.

In the drawing reference sign 5, design-

nates a source of electro-motive force, such, for instance, and preferably, as a direct current generator, and 6, 7, suitable electrodes included in the circuit of said source of electro-motive force. Said electrodes are also included in circuit with a condenser 8, and an inductance 9. An aerial 10, is grounded, as at 11, and is suitably coupled inductively, conductively, or otherwise, with the inductance 9.

The apparatus and arrangement above described constitute essential features of one form of means for producing a practically continuous train of electro-magnetic waves, and while the arrangement shown is preferred, my invention as defined in the claims, is not to be limited or restricted to any particular arrangement in this regard, nor even to means for producing a continuous train of waves, as it is equally well adapted for use in connection with other systems for producing electro-magnetic oscillations.

The electrodes 6, 7, extend from opposite directions into a chimney or chamber 12, and the arc or other discharge is effected between the juxtaposed ends thereof. For convenience of reference but without any intention of confining myself in this respect, I will hereinafter designate the discharge between the electrodes, whether in the form of an arc, or a spark, or otherwise, as the arc. A drip cup 13 is located in the vicinity of the space between the proximate ends of the electrodes, preferably immediately below the same. Into this cup I drip the vaporizable fluid, to form the required vapor envelop for the arc. The vaporizing fluid is contained in a tank or reservoir 14, preferably arranged at a suitable height above the drip pan, and is delivered directly from the reservoir into the drip pan by pipes 15. The feed of the vaporizing fluid may be regulated in any suitable or convenient manner, as, for instance, by the valves 16.

In order that any excess of fluid supplied to the drip pan may be taken care of or removed, I provide such pan with a tubular stem 17, through which the excess of fluid may escape. When the flow of fluid is once properly adjusted this stem may be closed by a cap 18. This construction also provides a simple arrangement for cleaning out or removing any accumulation of deposit or sediment without the necessity of removing the cup or pan, by simply inserting a suitable cleaning device into the pan through the stem thereof.

From the foregoing description it will be seen that I provide an exceedingly simple and efficient apparatus for producing a vapor envelop for the arc and that the vaporization of the fluid employed takes place at the immediate vicinity of the arc. It will also be seen that I avoid any waste of vaporizing fluid, while at the same time any

accumulation of deposit or sediment may be readily removed. It will also be seen that the material of the electrodes which may be consumed by the arc is replaced by carbon or other deposit from the vapor and in the same proportion in which such consumption takes place and consequently not only is the arc maintained steady and uniform by the vapor envelop therefor but also the length of the arc is maintained uniform thereby avoiding variation in the characteristics of the electro-magnetic oscillations which are produced.

Having now set forth the object and nature of my invention, and an arrangement of apparatus embodying the principles thereof, what I claim as new and useful and of my own invention, and desire to secure by Letters Patent is:

1. In an apparatus for producing electro-magnetic waves, the combination with electrodes, of a drip pan arranged in the vicinity thereof, and means for dripping vaporizing fluid into said pan.
2. In an apparatus for producing electro-magnetic waves, the combination with electrodes, of a drip pan located below said electrodes, a reservoir located at a higher altitude than said pan, and means for delivering the fluid from the reservoir to the pan.
3. In an apparatus for producing electro-magnetic waves, the combination with electrodes, of a drip pan located below said electrodes and having a tubular stem, and means for dripping a vaporizing fluid into said pan.
4. In an apparatus for producing electro-magnetic waves, the combination with electrodes, of a drip pan located below said electrodes and having a tubular stem, a removable cap for the end of the stem, and means for dripping a vaporizing fluid into said pan.
5. In an apparatus for producing electro-magnetic waves, the combination with electrodes, of a reservoir located at a higher level than said electrodes, and a delivery pipe extending from the reservoir and delivering to the space between said electrodes and a drip pan located below said space.
6. In an apparatus for producing electro-magnetic waves, the combination with electrodes, a drip pan, arranged in proximity thereto, a reservoir, a delivery pipe extending from the reservoir to the pan, and a stop cock for controlling the flow of fluid through the pipe.

In testimony whereof I have hereunto set my hand in the presence of the subscribing witnesses, on this 17th day of August A. D., 1908.

ROSCOE KENT.

Witnesses:

W. A. DARBY,
S. E. DARBY.