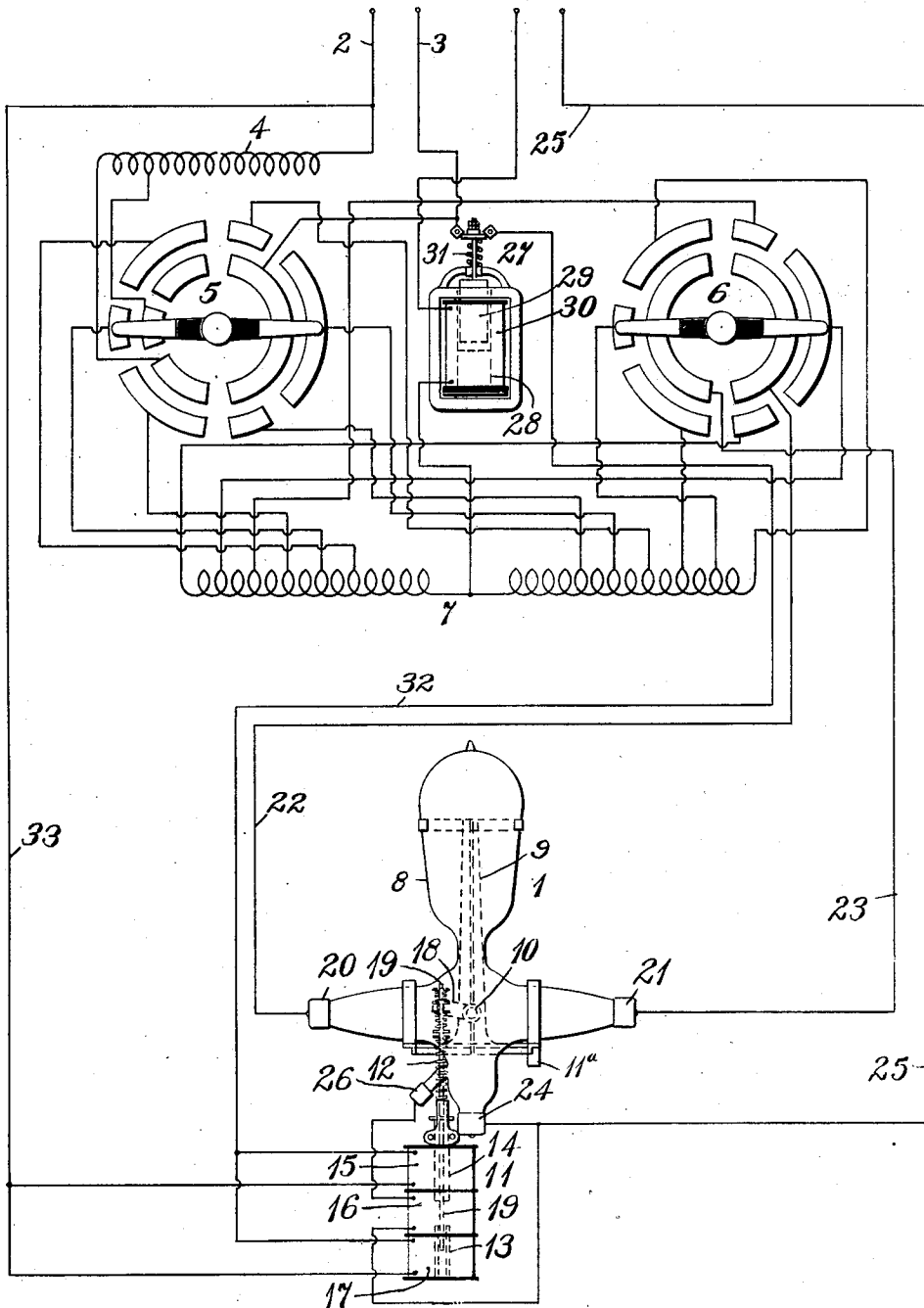


H. M. SCHEIBE.
VAPOR ELECTRICAL APPARATUS.
APPLICATION FILED JAN. 21, 1909.

940,736.

Patented Nov. 23, 1909.



WITNESSES:

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VAPOR ELECTRICAL APPARATUS.

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To all whom it may concern:

Be it known that I, HAROLD M. SCHEIBE, a citizen of the United States, and a resident of Wilksburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Vapor Electrical Apparatus, of which the following is a specification.

My invention relates to vapor electrical apparatus, and it has for its object to provide a means for automatically starting vapor rectifiers and similar devices that shall be simple in construction and reliable in operation.

The single figure of the accompanying drawing is a diagrammatic view of a system of distribution embodying my invention.

Referring to the drawing, alternating current energy is supplied to a vapor rectifier 1 from any suitable source, such as supply circuit 2—3, through a reactance 4, regulating dials 5 and 6 and a transformer 7. Regulating dials 5 and 6 are adapted to so vary the circuit connection of the transformer as to adjust the alternating current voltage impressed upon the rectifier. The rectifier 1 comprises a substantially cruciform bulb 8, a supporting frame 9 therefor, which is pivotally mounted on a stationary shaft 10, a starting or tilting magnet 11, a counter-weight 11^a and buffer springs 12. The starting magnet 11 comprises stationary and movable core members 13 and 14, and coils 15, 16 and 17. The movable core member 14 is connected to a crank projection 18 on the frame 9 by means of a rod 19. The bulb 8 is provided with alternating current terminals 20 and 21, which are connected to the autotransformer 7 through conductors 22 and 23, and the regulating dial 6, a direct current terminal 24, which is connected to a conductor 25 of the direct current receiving circuit, and an auxiliary terminal 26, which is so arranged, relative to the direct current terminal, as to be connected thereto through the liquid within the rectifier when the bulb is tilted by the action of the starting magnet 11. The coils 15 and 17 of the starting magnet may be connected either in multiple or in series relation, across the circuit 2—3, through a relay switch 27. The terminals of the coil 16 are respectively connected to the auxiliary terminal 26 and the direct current terminal 24, so that this coil is short circuited when the bulb is tilted. The relay

switch 27 comprises stationary and movable core members 28 and 29, a coil 30 and a closing spring 31. The coil 30 is connected in series with the direct current circuit of the rectifier which is jointed to the middle point of the transformer 7 in the usual manner. When energized, the relay switch 27 is open and the coils 15 and 17 are deenergized.

The operation of the device is as follows: Assuming that the rectifying process is in operation so that the coil 30 is energized, and the relay switch 27 is open; the bulb will occupy its normal position so that the coil 16 is deenergized and, since the relay switch 27 is open, the coils 15 and 17 will also be deenergized. Should the alternating current supply circuit 2—3 be interrupted, or should the rectifying process be stopped, for any reason, the direct current traversing the circuit conductors 25 will, of course, be interrupted and the coil 30 deenergized. The spring 31 will then close the switch 27 and alternating current energy will be supplied from conductor 3 through conductor 32 to coils 15 and 17, the circuit being completed through conductor 33 to the conductor 2. When the coils 15 and 17 are energized, the bulb 8 will be tilted and the coil 16 will be short circuited, as above indicated. The coil 16 acts like a short circuited secondary winding of a transformer since the coils 15, 16 and 17 are mounted on the same core members and, therefore, the magnetization effected by the coils 15 and 17 will be partially neutralized by the coil 16 when the bulb is tilted. The counter-weight 11^a will then bring the rectifier to its operating position and an arc will be produced within the bulb by the interruption of the short circuit above indicated, and the rectifying process may be recommenced. If the rectifier fails to start, the coils 15 and 17 will remain energized, so that the starting process will be repeated until the coil 30 is energized by the starting of the rectifier.

The circuit connections of the coils 15, 16 and 17 are such that the rectifying process tends to start properly with the circuits completed through the vapor supplying unidirectional current through the terminal 24, but, if, for any reason, the current is supplied through auxiliary terminal 26, the coil 16 will be so energized by the unidirectional current as to again tilt the bulb.

It will be readily understood that my

starting device is not restricted in its use to mercury vapor rectifiers and that it may be employed for starting other forms of vapor electrical apparatus, such as vapor lamps.

5 I claim as my invention:

1. A starting or tilting magnet for vapor electric apparatus comprising an actuating coil or coils and an opposing coil which is effective when the apparatus is tilted.

10 2. A starting or tilting magnet for vapor electric apparatus comprising stationary and movable core members, an actuating coil encircling the core members and an opposing coil in inductive relation thereto which is short circuited when the apparatus is tilted.

15 3. In vapor electric apparatus, the combination with a fluid-containing bulb and a pivotally mounted supporting frame therefor, of a starting or tilting magnet for the bulb comprising a stationary core member, a movable core member operatively connected to the frame, actuating coils for the movable core member and an opposing coil in induct-

ive relation thereto which is short circuited by the liquid in the bulb when the frame is tilted. 25

4. In vapor electric apparatus, the combination with a pivotally mounted supporting frame, and a rectifier bulb having alternating current terminals, a direct current terminal and an auxiliary terminal, of a starting or tilting magnet for the frame comprising stationary and movable core members, actuating coils therefor, and an opposing coil in inductive relation thereto, the respective terminals of the opposing coil being connected to the direct current terminal and to the auxiliary terminal of the rectifier. 35

In testimony whereof, I have hereunto subscribed my name this 13th day of January, 1909. 40

HAROLD M. SCHEIBE.

Witnesses:

HAROLD B. TAYLOR,
BIRNEY HINES.