

No. 844,611.

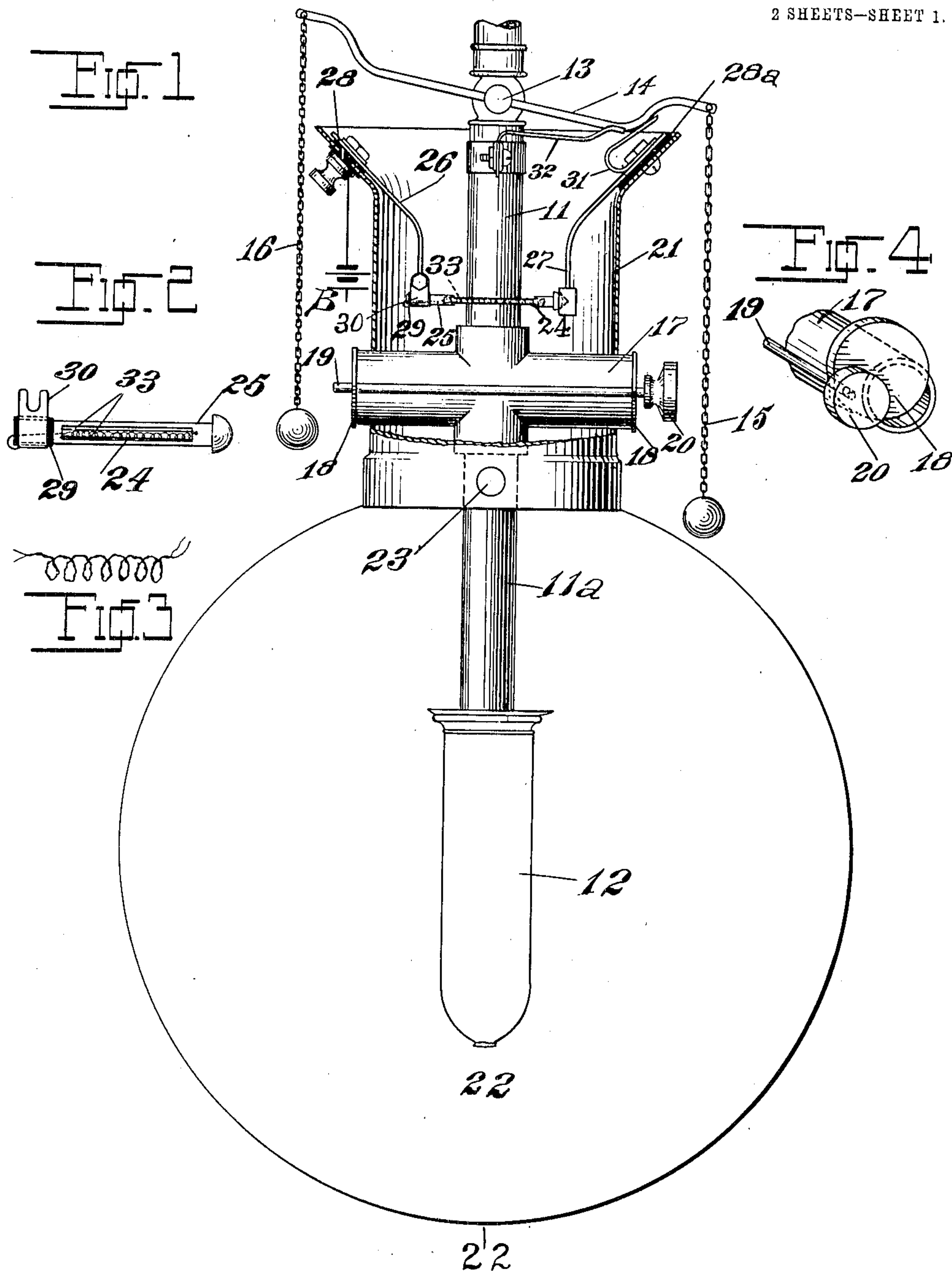
PATENTED FEB. 19, 1907.

S. M. MEYER.

ELECTRIC LIGHTING APPARATUS FOR INCANDESCENT AND OTHER GAS LAMPS.

APPLICATION FILED MAR. 10, 1906.

2 SHEETS—SHEET 1.



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FIG. 5

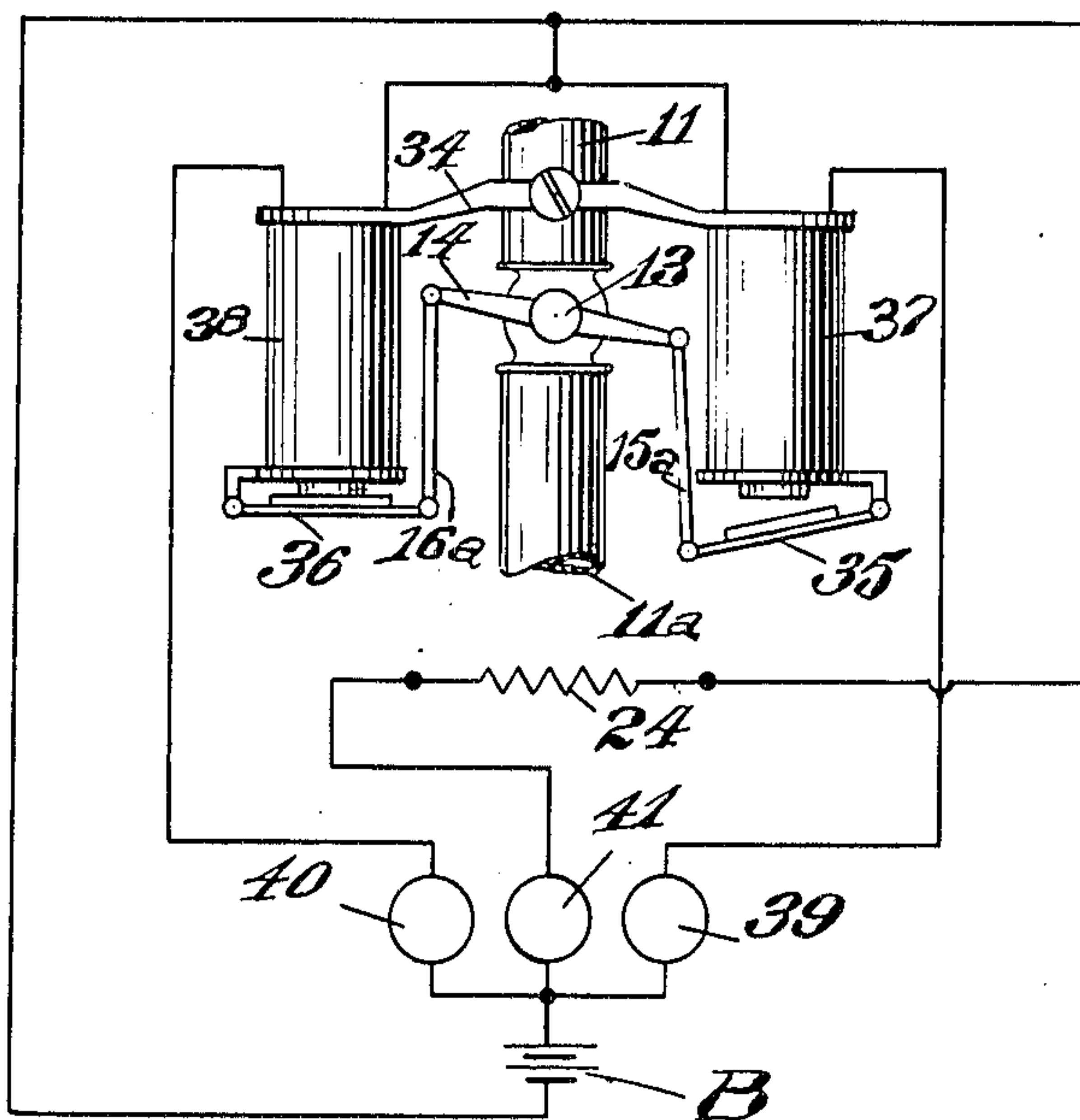


FIG. 6

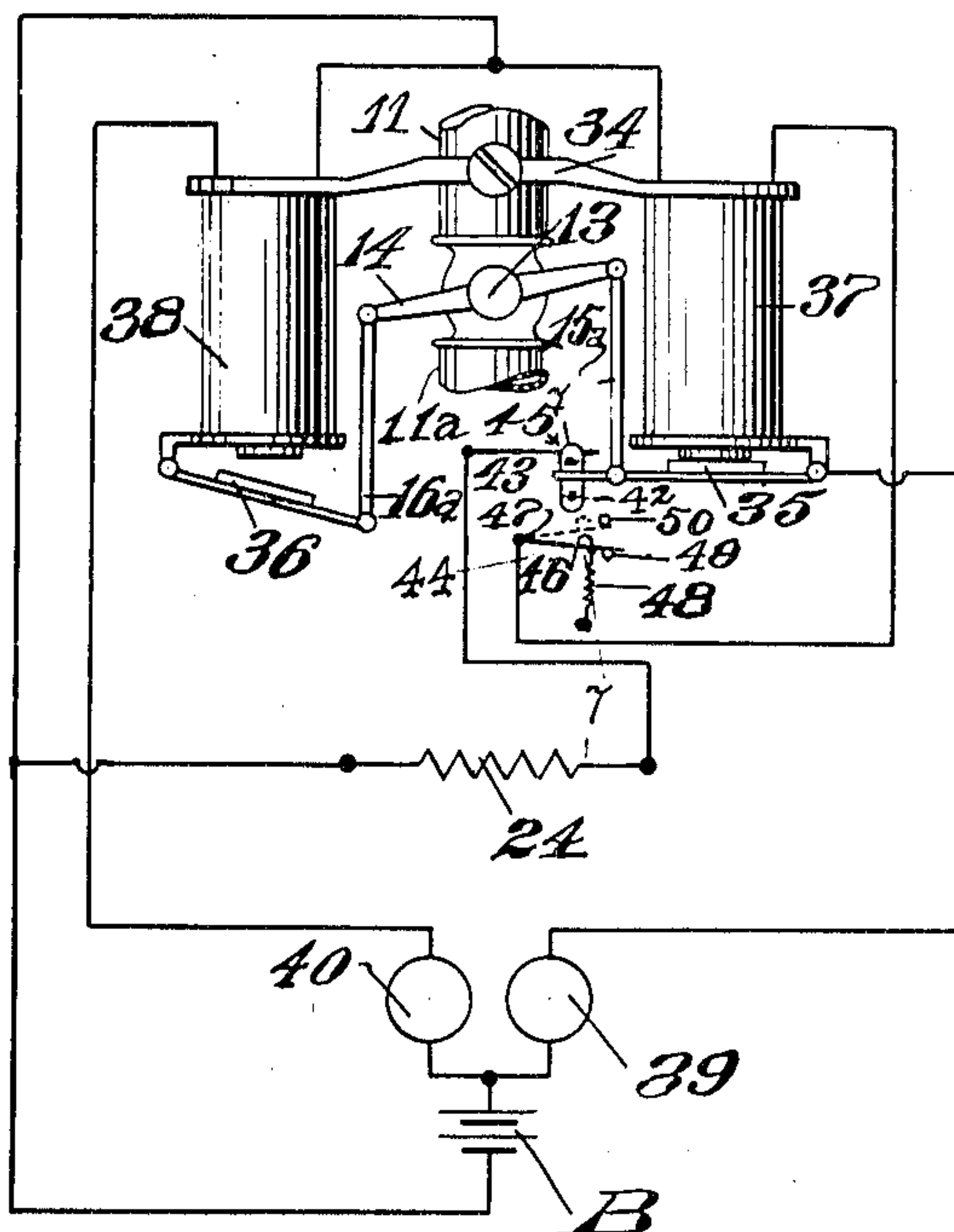
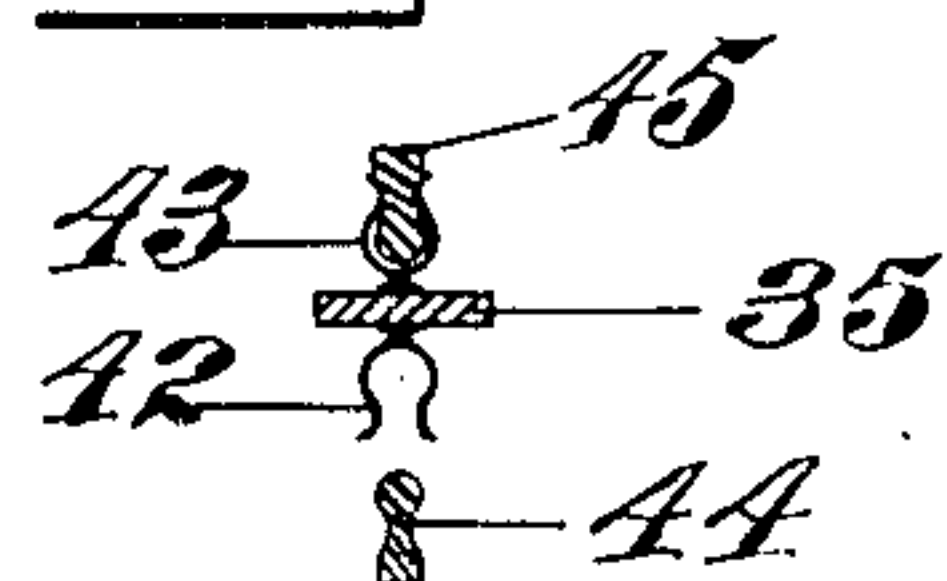


FIG. 7



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UNITED STATES PATENT OFFICE.

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ELECTRIC-LIGHTING APPARATUS FOR INCANDESCENT AND OTHER GAS-LAMPS.

No. 844,611.

Specification of Letters Patent.

Patented Feb. 19, 1907.

Application filed March 10, 1906. Serial No. 305,320.

To all whom it may concern:

Be it known that I, SVEND MARTIN MEYER, a citizen of the United States, and a resident of the borough of Brooklyn, in the city and State of New York, have invented certain new and useful Improvements in Electric-Lighting Apparatus for Incandescent and other Gas-Lamps, of which the following is a specification.

My invention is especially designed for application and use with so-called "incandescent" gas-burners—that is to say, gas-burners provided with incandescing mantles; but some of my improvements are applicable to lamps of other kinds—such, for example, as gas-burners of simple and common form.

For illustration I have in the accompanying drawings shown the invention applied to a pendent gas-burner with incandescing mantle, such as known in the trade as an "arc-light gas-burner," from its similarity in effect to an electric-arc light.

In the said drawings, Figure 1 is an elevation, partly in section, of such pendent gas-burner with mechanical means for turning the gas on and off, in connection with which my electric-lighting device is applied. Fig. 2 is a detail elevation, on a large scale, of the incandescing lighting-coil and its housing. Fig. 3 is a detail view, on a still larger scale, of an improved form of incandescing coil. Fig. 4 is a detail perspective view of one end of the mixing-tube, showing device for regulating induction of air. Fig. 5 is a diagrammatic elevation illustrating a modification of my invention in which the gas is turned on and off by electricity and ignited by electricity by closing a separate circuit. Fig. 6 is a similar view illustrating another modification in which the gas-igniting circuit is automatically closed by the armature movement which effects the turning on of the gas. Fig. 7 is a detail section on the line 7 7, Fig. 6.

The same reference-numerals indicate corresponding parts in the several figures.

Referring particularly to Figs. 1 to 4, inclusive, 11 11^a represent two members of a pendent gas-pipe terminating in a burner enveloped in an incandescing mantle 12, all of which may be of common form. 13 indicates the gas-cock operated by a horizontal rocking arm 14 by means of pendent pull-chains 15 16 in customary manner, the chain 15

being drawn down to the position shown for turning on the gas and the chain 16 being drawn down to rock the arm 14 to the opposite position for shutting it off. 17 represents a horizontal air-mixing tube open at its ends for admission of air and communicating at the center with the gas-pipe 11 on which it is mounted by T-couplings, as shown, so as to form a union between the upper member 11 and burner member 11^a of the pendent gas-pipe. The ends of the air-mixing tube 17 are closable to any desired extent by disk valves 18, united by a rock-shaft 19, on which they are mounted eccentrically and which is rotated by a thumb-button 20 to open or close the valves and regulate the quantity of air to be admitted for admixture with the gas. The customary vertical cylindrical shell 21, the upper part of which is shown in section, may be supported on the mixing-tube 17 or otherwise from the pendent 11. 22 indicates the customary glass globe inclosing the burner and suspended from the bottom of the shell 21 in customary manner by means of thumb-screws 23, (one shown.)

An important feature of my invention consists in providing ready and effective means for electric ignition of an incandescent gas-burner of the above-described type. To this end I have devised electric igniting apparatus adapted to be mounted within the shell from which the gas-globe is suspended in such position that when the gas is turned on and the lighting-coil is rendered incandescent the gas rising within the globe will be ignited by contact with the incandescent coil and will communicate flame to that issuing from the burner. Figs. 1, 5, and 6 illustrate under different modifications such electric igniting apparatus to be mounted within the suspending-shell of the lamp-globe, in combination with means for turning the gas on and off. Still referring particularly to Figs. 1 and 2, 24 indicates the incandescing coil, which for the purpose of illustration I have shown mounted in an insulated housing 25, suspended within the shell by pendent brackets 26 27, such brackets being insulated from the shell, as indicated at 28^a, by suitable plates and bushings of insulating material. The housing 25 consists of a longitudinally-slotted tube or skeleton frame by which the coil 24 is surrounded, as

illustrated in Fig. 2, to protect it from injury, while the open sides of the tube or frame afford free access of gas to the incandescent coil for ignition. For purpose of illustration of an effective mode of mounting and connecting the igniting-coil I have shown the housing 25 in electrical connection at one end with the insulated bracket 27 and mounted at the other end by means of an insulating bushing 29 and clip 30 on the insulated bracket 26 and the coil 24 electrically connected to the clip 30, and hence to the bracket 26, and passing through the tubular housing 25 without contact and attached at its other end thereto. 31 represents a contact-spring on the bracket 27, adapted to make contact with the arm 14 when the latter is drawn down to the position shown in Fig. 1 to turn on the gas, thus completing connection through the lighting-coil 24 to the ground, so that, the bracket 26 being in connection with a suitable source of electricity B, the gas will be automatically lighted by the act of turning it on. In operation the pull-chain is held for a moment until the ignition of gas is effected, and when it is released a spring 32 lifts the arm 14 slightly, so as to break contact with the spring 31 and stop the current through the lighting-coil 24 without stopping the flow of gas.

The air-regulating valves 18 are an important adjunct of my invention, for the reason that a proper proportionate admixture of air with the gas is necessary not only to effect the best operation of the incandescent burner, but is equally necessary for the effective operation of the electric-lighting device. After the proper adjustment of these air-inlet valves has been determined by experiment the prompt automatic action of the electric lighter will thereafter be assured.

33 represents plates of mica or other insulating material perforated to permit free passage of gas and interposed between the coil 24 and sides of the housing 25 to prevent short-circuiting.

Fig. 3 illustrates a novel construction of the igniting-coil *per se*. This coil is made of two wires of slightly-different size or fineness united at their ends to the same conducting media, but not in contact in the body of the coil. Such a coil made up of two wires not in contact is produced in the following manner: The separate wires before coiling are coated with a suitable combustible solution, such as collodion. Three coats, more or less, having been applied to the separate wires and become sufficiently dry, the two parallel wires are coiled together, contact between them being prevented by the applied coating. The coil is then mounted in the housing and the coat or covering burned off, leaving the wires with a space between them, so that each will separately carry the heating-cur-

rent. By thus forming an incandescing coil of separate wires of slightly-different size a practical advantage results in that the larger wire, offering less resistance, carries the principal part of the current until by effect of the heat its capacity is reduced or resistance increased to that of the smaller wire, after which the current flows through both together, and a larger extent of incandescence is exposed than would be the case with a single coil of the same length. Furthermore, incandescence is effected more promptly than would be the case with united wires of equal thickness.

In Figs. 5 and 6 I have given diagrammatic representations of similar devices for turning on and off and igniting the gas, to be mounted, as before, in the suspending-shell of the incandescent burner, the shell and burner being here omitted for simplicity in representation.

Referring to Fig. 5, 11 11^a represent parts of the pendent gas-pipe from which the incandescent burner 12 and shell 21 (shown in Fig. 1) are suspended. As before, 13 represents the gas-cock, and 14 its operating-arm. Instead of the customary pull-chains 15 and 16 for turning the gas on and off I here employ rods 15^a and 16^a, connected, respectively, to armatures 35 36 of electromagnets 37 38, which are mounted by a fixed yoke 34 on the pendent 11 or otherwise. The separate circuits of magnets 37 and 38, normally open, are closed by push-buttons 39 and 40, respectively, for turning the gas on or off. In practice the push-buttons and their connections are located outside the shell in any preferred position convenient for manipulation. Fig. 5 shows the position of the parts when the gas is turned off, which is effected by closing the circuit through the magnet 38 by pressing the push-button 40. Now to turn on the gas the button 39 is pressed, closing the circuit through the magnet 37, and thereby raising the armature 35 and depressing the armature 36, which is coupled thereto. Then by pushing a button 41 a separate circuit is closed through the igniting-coil (indicated diagrammatically at 24) for igniting the gas.

Fig. 6 illustrates another modification in which the movement of the armature 35 to turn on the gas effects the closure of the lighting-circuit through the incandescing coil 24, so that only two push-buttons 39 40 are needed. For this purpose the armature 35 carries spring-clips 42 43, making contact, respectively, with wire terminals 44 45 at each movement of the armature. The form of these spring-clips 42 43 and the convex contact-terminals with which they firmly engage is best shown in the transverse section, Fig. 7. The terminal 45 may be in fixed position. The other terminal 44 is carried by

an arm 46, pivoted at 47 and normally pressed down by a spring 48 against a stop-bearing 49 in position to adapt the clip 42 to be caught over the contact-terminal 44 by the downward movement of the armature 35. Fig. 6 illustrates the position of the parts when the gas is turned on and the igniting-circuit closed through the incandescing coil 24. Now to turn off the gas the magnet 38 is energized by pushing the button 40, shifting coupled armatures 35-36 to the opposite position from that shown in Fig. 6, and throwing the lower contact-clip 42 into firm engagement with the lower wire terminal 44. Then in order to turn on the gas by pressing the push-button 39 the circuit is closed through the armature 35, contact 42 44, and magnet 37, energizing said magnet and causing it to draw the armature 35 up to the position shown in Fig. 6. In this upward movement of the armature 35 the terminal 44 and pivoted arm 46 are carried up until in opposition to pressure of the spring 48 until at or just before the end of the upward movement of the armature the movement of the arm 46 is arrested by contact with a fixed stop 50, causing the contact-clip 42 to be detached from the terminal 44 and throwing the contact-clip 43 into effective engagement with the terminal 45, as represented in Figs. 6 and 7, so that, the button 39 being still pressed, a current is now established through the armature 35, contacts 43 45, and incandescing coil 24 to ignite the gas. This done, the button 39 is released and the circuit thereby broken. On being released from the clip 42 the pivoted arm 46 is restored by the spring 48 to its normal position on the bearing 49.

Having thus described my invention, the

following is what I claim as new therein and desire to secure by Letters Patent:

1. In an electric-lighting device for lamps, an incandescing lighting-coil made up of a plurality of separate wires mounted at their ends in a suitable housing and disconnected throughout their body, substantially as set forth.

2. In an electric-lighting apparatus for gas-lamps, the combination of electromagnetic means and connections for turning the gas on and off, an incandescing coil for igniting the gas and means for simultaneously cutting out the magnet-coils and passing the incandescing current through the igniting-coil, after the gas is turned on.

3. In an electric-lighting apparatus for gas-lamps, the combination of a suitable gas-burner, electrically-operated means for turning the gas on and off, including a pair of electromagnets and coupled armatures, connected with the gas-cock, an incandescing coil for igniting the gas and means for simultaneously cutting out the magnet-coils and passing the incandescing current through the igniting-coil, after the gas is turned on.

4. In an electric-lighting apparatus for gas-lamps, the combination of a suitable gas-burner, an electromagnet and connection therefrom for turning the gas on and off, an incandescing coil for igniting the gas and a circuit-closing device mounted on the magnet-armature serving to cut out the magnet-coil and cut in the igniting-coil when the gas is turned on, substantially as set forth.

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