

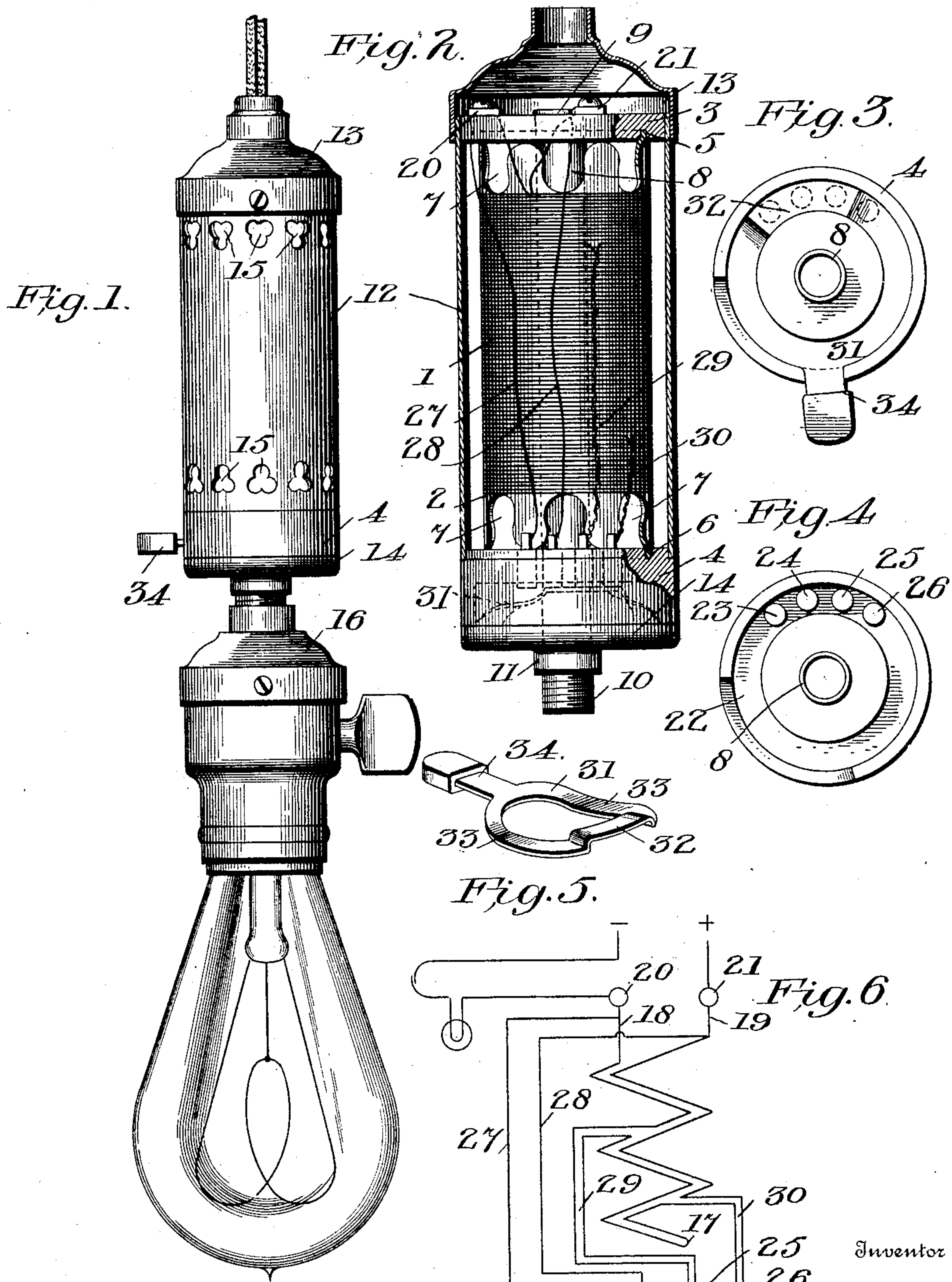
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F. C. SCHOFIELD.
REGULATOR FOR INCANDESCENT LAMPS.

APPLICATION FILED MAY 7, 1903.

NO MODEL.



Witnesses

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REGULATOR FOR INCANDESCENT LAMPS.

SPECIFICATION forming part of Letters Patent No. 749,705, dated January 12, 1904.

Application filed May 7, 1903. Serial No. 156,097. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK C. SCHOFIELD, a citizen of the United States, residing at Washington, District of Columbia, have invented certain new and useful Improvements in Regulators for Incandescent Lamps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates more especially to that class of incandescent-electric-lamp regulators which employ a rheostat to vary the intensity of the light by varying the current-flow through the lamp and is adapted for use upon either an alternating or direct current circuit.

My present invention further constitutes an improvement upon the regulator disclosed in United States Patent No. 686,910, granted to me November 19, 1901, and in this respect relates particularly to the mode of winding and connecting of the resistance-coil and the manner of mounting the same, whereby a more improved form of rheostat and better ventilation of the same are obtained.

My invention further consists in the novel combination and arrangement of parts hereinafter described, and particularly pointed out in the claims.

Referring to the accompanying drawings, which form a part of this specification and which illustrate an embodiment of my invention, Figure 1 represents in elevation an incandescent electric lamp provided with my improved regulator; Fig. 2, an enlarged view showing the rheostat in elevation and the outer casing in central vertical section; Fig. 3, a bottom plan view of the regulator with the lower retaining-cap removed, showing the movable switch in position; Fig. 4, a similar view of the regulator with the movable switch removed to show the switch-contacts; Fig. 5, a perspective view of the movable switch, and Fig. 6 a diagram of the electric circuits of the regulator.

Similar numerals refer to similar parts throughout the several views, in which—

1 represents the resistance-coil, wound, preferably, in one layer upon a sheet-iron or other

metal cylinder 2, the said cylinder being suitably insulated from the coil by a coating of paper or other insulating material. This cylinder, however, may be of porcelain or other suitable insulating material.

The cylinder 2 is held between two heads or collars 3 and 4, of porcelain, vulcanite fiber, or other suitable insulating material, which heads are provided with annular grooves 5 and 6, respectively, into which the ends of the cylinder 2 fit. For the purpose of admitting a free circulation of air through the cylinder 2, and consequently cooling the rheostat, the ends of the cylinder are serrated, so as to form a series of openings 7.

The heads 3 and 4 are each provided with a central aperture, through which passes a brass or other suitable metal tube 8, slightly flared at one end, as at 9, to provide a shoulder or stop for the head 3, and screw-threaded, as at 10, to receive a nut 11, which securely clamps the heads 3 and 4 against the ends of the cylinder 2.

The rheostat is inclosed in a suitable brass or other metal casing consisting of a sheathing 12, which fits over the heads 3 and 4, an upper cap 13, having an opening at its top to admit the lamp-cord or feed-wire, and a lower cap or head 14, which is held between the head 4 and nut 11. The sheathing 12 is provided with a double series of openings 15 for the purpose of ventilation.

The socket 16 of the lamp is adapted to screw on the lower end of the tube 8, through which tube the cord or feed-wires pass to the lamp.

The resistance-coil 1 of the rheostat consists of a single conductor of insulated German silver or other suitable wire doubled upon itself, so as to form a loop 17 at one end (see Fig. 6) and wound in two parallel strands—that is, non-inductively—preferably in a single layer terminating in the ends 18 19, which are connected to two terminal binding screws or contacts 20 and 21, respectively, mounted upon the insulating collar or head 3. The contact 21 connects direct to one of the feed-wires of the lamp-circuit, and the other contact 20 to the lamp-socket. (See Fig. 6.)

In an annular recess 22 in the lower face of

the head 4 are four switch-contacts 23 24 25 26, consisting of metal pins which pass through the head 4 and terminate slightly above its upper face. The contacts 23 and 24 are connected, respectively, by conductors 27 and 28 direct to the terminal contacts 20 and 21.

At a suitable point in the resistance-coil one of the strands is looped down, as at 29, and connected to switch-contact 25, while at another point in the resistance-coil the other strand is looped down, as at 30, and connected to the contact 26, there being no break in the resistance-coil. Obviously more points in the coil may be similarly connected to other switch-contacts; but the number shown is sufficient to disclose the principle of my invention. This mode of looping the resistance-coil down to the contacts obviates the necessity of connecting leads from the contacts to the coil, which connections have to be soldered and are extremely troublesome to make and always impair the insulation.

By connecting the switch-contacts in certain combinations I may either shunt the resistance-coil altogether and allow the full current to flow through the lamp, may vary the amount of resistance in series with the lamp, and thereby vary the intensity of the light by connecting in part of the resistance-coil, or may connect all of the resistance-coil in series with the lamp and obtain a maximum dimness of light without entirely extinguishing it. For thus connecting together the contacts 23 to 26 I provide a movable switch 31, consisting of a thin metal ring resilient in character and mounted in the annular recess 22. This switch 31 is provided with an offset portion 32 of sufficient length to bridge three of the switch-contacts at a time and is slightly sprung, as at 33, so that it will be held against the switch-contacts under tension by the cap 14, which engages it. By means of the friction thus created the switch will remain in the position without further provision. The switch is operated by means of a handle 34, which extends through an opening in the flange surrounding the annular space in which the switch is located.

Referring to the diagram Fig. 6, it will be seen that when the switch is turned to that position where it bridges contacts 23, 24, and 25 the current from the positive terminal contact will take the following course: conductor 28, contact 24, switch 31, contact 23, conductor 27 through the lamp. In this case the whole coil of the rheostat is shunted and the full current passes through the lamp. Now suppose the switch is moved to the next step, so that it bridges contacts 24, 25, and 26. The current will then pass from the contact 21 to conductor 28, contact 24, switch 31, contact 25, loop 29, and thence through a certain length of the resistance-coil to the lamp. This inserts a certain amount of extra resistance in the lamp-circuit, and thus dims the light.

If it is desired to dim the light still further, more resistance can be introduced by shifting the switch so that it bridges contacts 25 and 26. In this position of the switch the current takes the following course: from contact 21 through the resistance-coil to loop 30, then through contact 26 to contact 25, loop 29, another portion of the resistance-coil, and thence to the lamp.

If it is desired to insert the entire resistance of the coil in the lamp-circuit, the switch is shifted still farther until it rests upon the contact 26 only.

By the foregoing arrangement I secure a lamp-regulating rheostat which is simple, comparatively inexpensive, and easy of manufacture, and which is efficient to a high degree.

Having thus described my invention, what I claim is—

1. In an electric-lamp regulator, the combination with a central tube, of a hollow core surrounding said tube and forming an air-space around the same, heads supporting said core at each end thereof and mounted on said tube, a resistance-coil wound on said core, and means for connecting varying amounts of said coil in the lamp-circuit.

2. In an electric-lamp regulator, the combination with a central tube, of a hollow core surrounding said tube and forming an air-space therearound, said core having serrated ends, heads supporting said core at each end and mounted on said tube, a resistance-coil wound on said core, means for connecting varying amounts of resistance in the lamp-circuit, a casing surrounding said coil and provided with a series of openings, and a cap adapted to fit over the upper end of said casing and head of said core.

3. In an electric-lamp regulator, the combination with an incandescent electric lamp and socket, of a tube through which the main lamp-wires pass, and connected to the lamp-socket, a hollow core surrounding said tube and forming an air-space around the same, heads supporting said core at each end and provided each with a central opening through which said tube passes, extending longitudinally through said core, a resistance-coil wound on said core, and a switch having contacts connected to sections of said coil and to the lamp-circuit direct for varying the resistance of said circuit.

4. In an electric-lamp regulator, the combination with a tube through which the main lamp-wires pass, of a hollow core surrounding said tube, forming an air-space therearound and provided with a series of side openings around each end, heads supporting said core at each end and mounted upon said tube which passes through said heads and longitudinally through the said core, a resistance-coil on said core, and means for connecting varying amounts of said coil in the lamp-circuit.

5. In an electric-lamp regulator, the combination with a tube through which the main lamp-wires pass, of a hollow core surrounding said tube, forming an air-space therearound and provided with a series of side openings around each end, heads supporting said core at each end and mounted upon said tube which passes through said heads and longitudinally through the said core, a resistance-coil on said core, and means for connecting varying amounts of said coil in the lamp-circuit.

nation with a central tube, of a hollow core surrounding said tube and forming an air-space therearound, heads of insulating material supporting said core at each end thereof and mounted on said tube, a resistance-coil wound on said core and adapted to connect to the lamp-circuit, a series of switch-contacts, mounted on one of the heads of said core, adapted to connect to said lamp-circuit and to points in the length of said resistance-coil, and a moving switch comprising a conductor adapted to pass over and in contact with said switch-contacts.

6. In an electric-lamp regulator, the combination with a resistance-coil, of a series of switch-contacts, a series of loops each forming a continuation of the resistance-conductor, and each loop connected to an individual switch-contact, and a movable switch adapted to engage said contacts and electrically connect the same.

7. In an electric-lamp regulator, the combination with an incandescent-electric-lamp circuit, of a resistance-coil connected thereto, and means for supporting said coil, a series of switch-contacts, conductors connecting two of said contacts to the lamp-circuit, and forming a shunt around the resistance-coil, and loops forming continuations of the resistance-conductor located at intervals in the length of said conductor and each loop connected to an individual switch-contact, and a movable switch adapted to connect said contacts together in combinations whereby the said resistance-coil may be shunted or various amounts thereof connected in the lamp-circuit.

8. In an electric-lamp regulator, the combination with a resistance-coil, of a core upon

which said coil is wound, heads supporting said core at each end, one of said heads having an annular groove formed on one of its faces, a series of switch-contacts located in said groove and connected to points in the length of said resistance-coil, a movable metal ring mounted in said annular groove and forming a switch for connecting together said contacts in various combinations.

9. In an electric-lamp regulator, the combination with a resistance-coil, of a head forming a part of the support therefor, and having an annular groove in one of its faces, a series of switch-contacts located in said groove, a resilient bowed metal ring movable around in said groove and provided with an offset portion adapted to engage said contacts, and a cap bearing on said bowed ring whereby the same is held in position under tension.

10. In an electric-lamp regulator, the combination of a hollow core, the ends thereof being cut away so as to leave projecting portions and spaces between said portions for the purpose of ventilation, a resistance-coil mounted on said core, said resistance-coil being composed of two strands connected in series with the lamp, said strands being wound around said hollow core parallel to each other and terminating in a loop, whereby the inductive effect of an electric current is neutralized, and means for connecting varying amounts of said coil in the lamp-circuit.

In testimony whereof I affix my signature in presence of two witnesses.

FREDERICK C. SCHOFIELD.

Witnesses:

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