

No. 751,634.

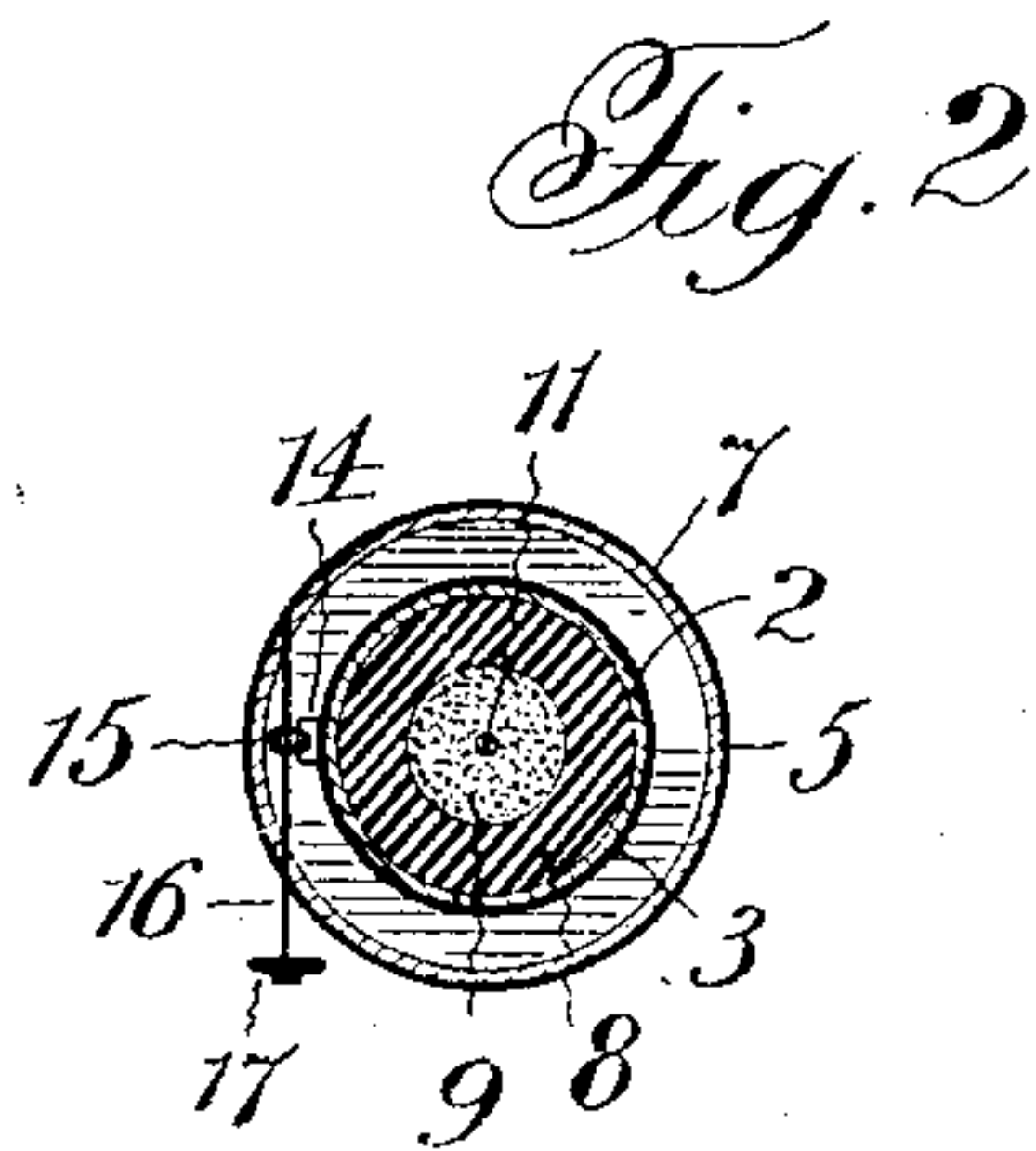
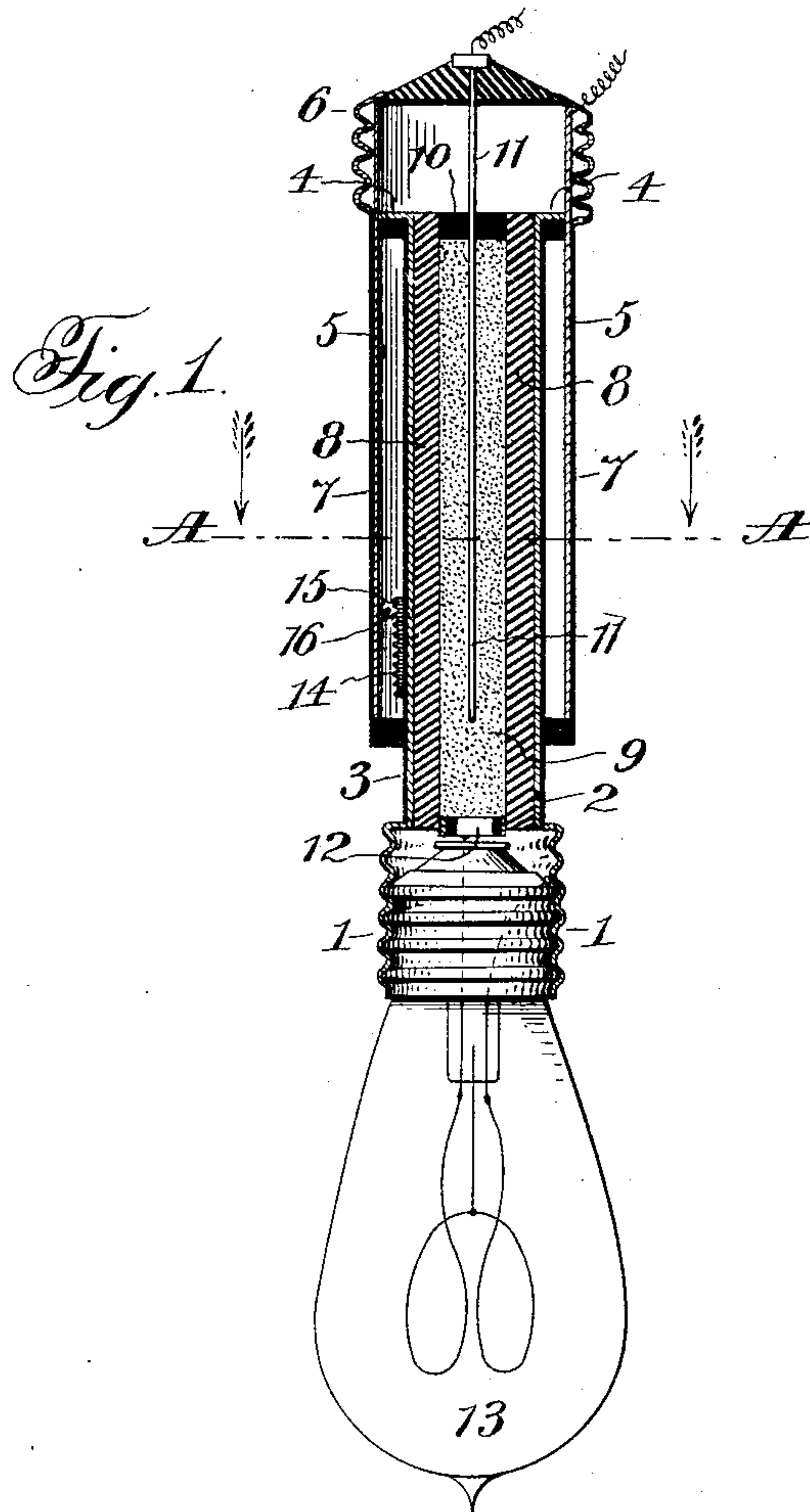
PATENTED FEB. 9, 1904.

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RHEOSTAT.

APPLICATION FILED JUNE 8, 1903.

NO MODEL.



Witnesses:
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UNITED STATES PATENT OFFICE.

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RHEOSTAT.

SPECIFICATION forming part of Letters Patent No. 751,634, dated February 9, 1904.

Application filed June 8, 1903. Serial No. 160,604. (No model.)

To all whom it may concern:

Be it known that we, GEORGE GRAYBILL and JOHN P. ODEN, citizens of the United States, residing at York, in the county of York, State of Pennsylvania, have invented certain new and useful Improvements in Rheostats, of which the following is a specification.

The present invention relates to improvements in rheostats or electric controllers, and has for its object to provide a simple and durable device by which the strength of the electric current supplied to the consuming device may be regulated and controlled as desired.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view through a rheostat constructed in accordance with the present invention, showing it applied to the socket of an incandescent lamp, for which use it is particularly adapted. Fig. 2 is a cross-sectional view on the line A A of Fig. 1.

Referring to the drawings, in which like numerals of reference designate corresponding parts in both figures, 1 designates a socket adapted to receive an incandescent electric lamp, which socket may be of any style and size. With said socket is electrically connected a tube or cylinder 2 of any suitable conducting material the outer surface of which is covered substantially throughout its length with a coating of insulation 3. This insulated coating may consist of a suitable cylinder of fiber or other non-conducting material fitted closely about the said cylinder 2. The outer end of said cylinder 2 is provided with an annular flange 4, that projects laterally beyond the insulated covering 3 and contacts with the inner surface of a tube or sleeve 5, that is arranged concentric with the said tube 2. This outer tube or sleeve 5, which is electrically connected by the flange 4 with the aforesaid tube 2, is electrically connected with a suitable contact in or forming part of a plug 6, such as is commonly applied to an incandescent lamp. Said tube or sleeve 5 is provided with a coating or outer casing 7 of insulating material and has its end adjacent the socket 1 bent inward to bear against the insulator-casing 3

of the inner tube 2. Said tube 2 and sleeve 5 are thus telescopically connected, and the tube is adapted to be moved longitudinally in the sleeve without interfering with the electrical connection between said parts.

Within the inner tube 2 is arranged a cylinder 8, of porcelain or other non-conducting material, and within said cylinder is placed a suitable quantity of finely-powdered material 9 of such nature as to offer resistance to the passage of an electric current therethrough. Any suitable material may be employed for this purpose, although it is believed that graphite will be found most desirable. The outer end of said resistance-material container 8 is closed by a disk 10, of insulating material, provided with a central passage or aperture through which extends a rod or pin 11, of metal or any suitable conducting material, which is attached to the plug 6. Said pin or rod 11 is electrically connected with a suitable contact carried by the plug 6, which contact is insulated from the contact on said plug with which the outer tube or sleeve 5 is electrically connected.

The pin or rod 11 extends centrally through the receptacle 8 and resistance material therein and is of substantially the same length as said receptacle, whereby when the tube is in its upper or innermost position the free end of said rod will contact with a contact 12, arranged in the socket 1 and insulated from the side wall thereof. When a lamp 13 is inserted in the socket 1, one of the filament-terminals thereof will be in electrical connection with the contact 12 and the other with the wall of said socket, and consequently with the inner tube or cylinder 2.

If the tube 2 and sleeve 5 are in such relation that the rod or pin 11 bears against the contact 12, it will be seen that the full current will pass through the filament of the lamp 13 and the same will therefore emit the brightest possible light. By moving the sliding tube 2 outwardly relative to the outer stationary tube 5 the rod or pin 11 will be drawn away from the contact 12 and the electric current will be compelled to pass through the body of

resistance material that is between the free end of said rod or pin and said contact 12. As the amount of such resistance material between the free end of said rod and the contact 5 12 varies according to the adjustment of the sliding tube 5, and as the strength of the current supplied to the lamp depends upon the amount of resistance, it will be seen that by moving the sliding tube 2 the power of the 10 lamp 13 can be varied and controlled as desired.

Various means may be provided for adjusting the tube 2 longitudinally of the tube 5. In the embodiment of the invention herein 15 illustrated a rack or toothed bar 14 is secured to and extends longitudinally of the tube 2. With said rack engages a pinion 15, mounted on a shaft 16, journaled in and projecting laterally beyond the sleeve 5 and provided at its 20 outer end with a thumb-piece or handle 17, by means of which it can be readily rotated. Said shaft and thumb-piece may be formed of insulating material. By turning said shaft 16 it will be seen that the tube 2 can be adjusted to 25 any desired position relative to the tube 5 and held in such adjusted position.

It will be apparent that instead of inserting a lamp 13 in the socket 1 a suitable plug containing the terminals of an electric circuit may 30 be thus inserted, and by the present invention the current passing through such plug can be regulated as desired—that is, the improved current-controller or rheostat herein illustrated and described can be used in connection 35 with numerous other electric devices and apparatus than incandescent lamps, which have been selected for illustration.

Having thus described the invention and without intending to limit it to the exact details of the embodiment thereof herein illustrated and described, what is claimed, and desired to be secured by Letters Patent, is—

1. In a device for the purpose described, the combination of a socket containing two electric 45 contacts insulated from each other, an insulated tube or cylinder of conducting material attached to said socket and electrically connected with one of the contacts thereof, an insulated sleeve surrounding and electrically 50 connected with one of the contacts thereon, means for moving said tube longitudinally of the sleeve, two electric contacts carried by said sleeve and insulated from each other, a rod or pin electrically connected with one of said 55 contacts on the sleeve and extending into said tube and adapted when the sliding tube is in its innermost position to bear against the second contact in the socket, and a body of resistance material in powdered form arranged 60 within said tube about the said rod or pin, said resistance material being insulated from the said tube within which it is arranged.

2. In a device for the purpose described, the

combination of two concentrically-arranged 65 telescopically-connected tubes which are in electrical connection in every adjusted position, a plug connected to one end of the outer tube and provided with two contacts, insulated from each other, and one of which is electrically connected with the body of said 70 tube, a conducting rod or pin electrically connected with the other contact in said plug and extending into and longitudinally of the inner tube, a body of finely-divided resistance material arranged within said inner tube 75 about said rod or pin therein, said resistance material being insulated from the said inner tube, a socket provided with two contacts, insulated from each other, one of which is arranged in the path of said rod or pin and the 80 other being electrically connected with the said inner tube, and means for adjusting one of said tubes relative to the other and maintaining it in any adjusted position.

3. In a device for the purpose described, the 85 combination of a socket, a tube electrically connected with said socket, a contact arranged within said tube and socket and insulated therefrom, a sleeve loosely surrounding and electrically connected with said tube, a 90 plug connected with and closing the outer end of said sleeve, said plug having two contacts, insulated from each other, one electrically connected with said sleeve and the other adapted to bear against the contact within the 95 said tube and socket, a body of resistance material arranged within said tube over the socket-contact therein, and through which the aforesaid contact on the plug is adapted to pass, as the sleeve is moved longitudinally of 100 the tube, and means for moving said tube longitudinally of the sleeve and maintaining it in any adjusted position.

4. The herein-described rheostat consisting of two telescoping tubes, electrically connected 105 in every adjusted position, two contacts secured to the inner tube one being electrically connected with said tube and the other insulated therefrom, two contacts carried by the outer tube and insulated from each other, one 110 of said contacts on the outer tube being adapted to bear against one of the contacts on the inner tube when the sliding tube is retracted, and a body of resistance material arranged 115 within and insulated from the inner tube and through which the last said contact on the outer tube moves as said inner tube is adjusted longitudinally of the outer tube.

5. The herein-described rheostat consisting of a relatively stationary tube of conducting 120 material, a body of resistance material arranged in and insulated from said tube, a contact arranged at one side of said resistance material and insulated from said tube, a sleeve of conducting material surrounding 125 said tube, means for moving the tube rela-

tive to the sleeve, said sleeve having a constant electrical connection with the tube, and two contacts carried by said sleeve and insulated from each other, one of said contacts extending into the said resistance material in the tube, and the amount of such material between said contact and the aforesaid contact at one side of said material being varied as the tube is adjusted longitudinally of the sleeve.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

GEORGE GRAYBILL.
JOHN P. ODEN.

Witnesses:

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