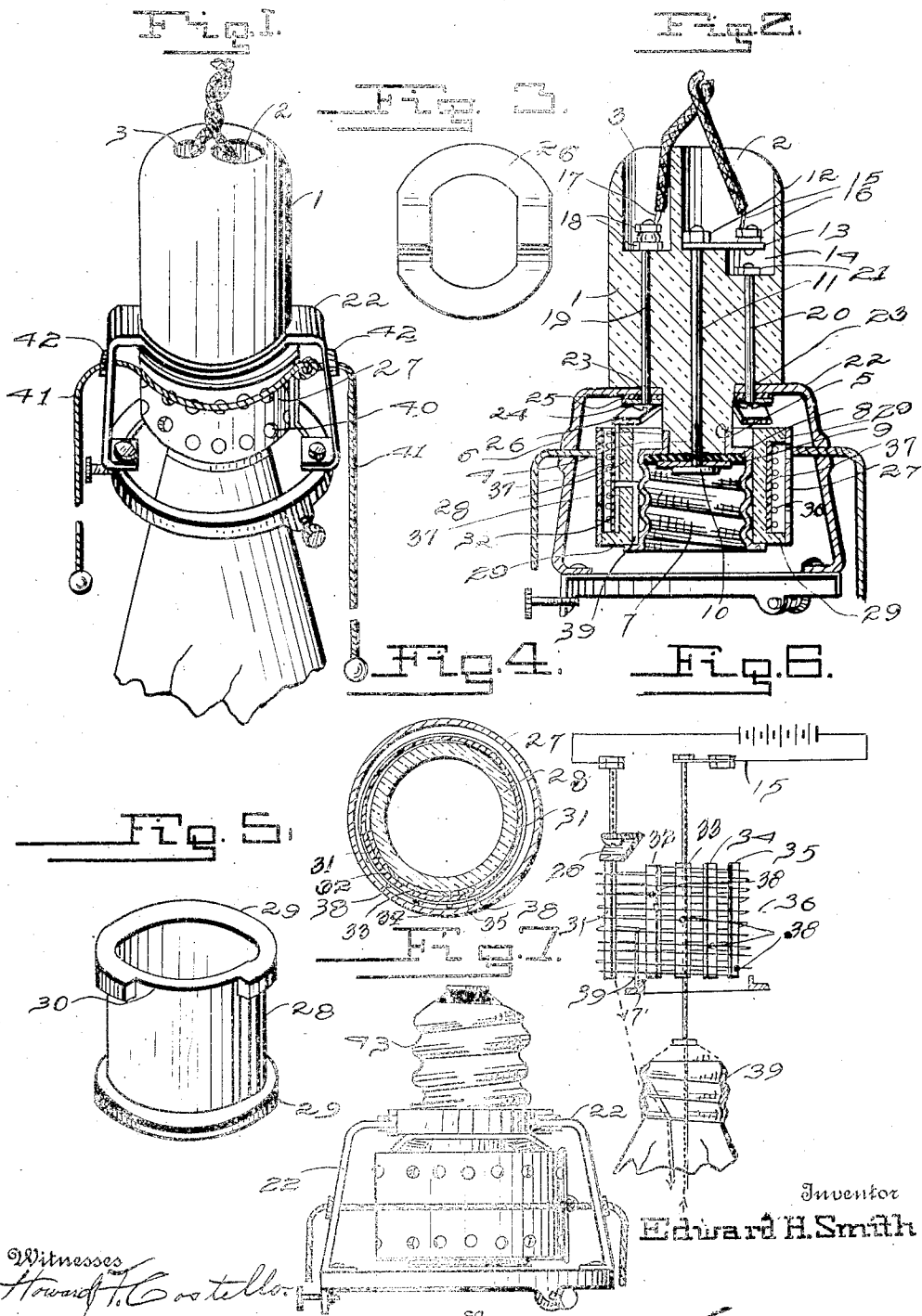


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LAMP REGULATOR.  
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997,155.

Patented July 4, 1911.



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# UNITED STATES PATENT OFFICE.

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## LAMP-REGULATOR.

997,155.

Specification of Letters Patent.

Patented July 4, 1911.

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*To all whom it may concern:*

Be it known that I, EDWARD H. SMITH, citizen of the United States, residing at Aberdeen, in the county of Chehalis and State of Washington, have invented certain new and useful Improvements in Lamp-Regulators, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to incandescent electric lamps and has special reference to that class of incandescent electric lamps in which means are provided for varying the light of the lamp, that is to say, decreasing or increasing its brightness.

The invention has for its object to provide an improved regulating device employed with sockets of incandescent electric lamps by means of which the light may be regulated from full incandescence to a low point of dimness.

The invention further has for its object to provide an improved regulating device, employed with an incandescent lamp socket, for increasing and diminishing the light, in which a rotary rheostat ring is mounted so constructed as to prevent overheating.

The invention consists of an incandescent electric lamp regulator and in details of construction thereof as hereinafter set forth and claimed.

Figure 1 is a view in perspective of a portion of an incandescent lamp provided with a regulator constructed in accordance with this invention. Fig. 2 is a side view of the invention in vertical section. Fig. 3 is a plan view of the contact ring removed. Fig. 4 is a plan view of the rotary contact cylinder. Fig. 5 is a view in perspective of the cylinder with contacts and wiring removed. Fig. 6 is a diagrammatic view showing a portion of the construction of the contact cylinder and a portion of an incandescent lamp plug. Fig. 7 is a view of the invention showing it provided with an ordinary screw threaded attaching plug.

The device constructed in accordance with this invention is as follows:

A plug for the leading in wires is provided, and, as here shown, for the sake of economy and simplicity of construction, a plug 1 of porcelain, or other suitable material, is provided having its upper end formed with a cavity or chamber 2 and a smaller cavity or chamber 3 in which the leading in wires pass. The lower end of

the plug 1 is formed with a central depending projection 4 having at its lower end a shouldered attenuated portion 5 about which projects the upper tubular end 6 of a threaded socket 7. In the upper end of the socket 7 is located a disk 8 of insulating material on the underside of which is located a washer 9 beneath which is located the head 10 of a rod 11 extending up through a hole in the plug 1. The head 10 of said rod 11 holds the upper end of the threaded socket 7 against the lower end of the plug 1, said rod 11 being drawn up by means of a nut 12 on its upper end which clamps against a metallic strip 13 on the upper end of the rod 11 and projecting over a recess or socket 14 in the lower end of the chamber 2.

15 indicates one of the leading in wires, which is clamped to the plate 13 by means of a nut 16. The leading in wire 17 is clamped between a pair of nuts 18 on the upper end of the rod 19 projecting into the bottom of the chamber 3, said rod 19 extending down through a hole in the plug 1 and projecting beneath the lower end of the plug 1. A rod 20 having a nut 21 on its upper end and located in the recess 14 extends down through the plug and projects at its lower end beneath the plug. The rods 19 and 20 project through holes 23 in the top of a metallic frame 22 and their headed ends hold a metallic ring 24 against an insulating ring 25 on the underside of the top of the frame 22. Secured to the metallic ring 24 is an elastic metallic ring 26, which is located above a rheostat ring formed with an outer metallic casing 27 and an inner porcelain cylinder 28 having an outturned flange 29 at its top and bottom. The porcelain cylinder 28 has a portion of its upper flange 29 cut away as at 30 so as to permit the upper end of a number of vertical contact plates 31, 32, 33, 34, and 35 to be located even with the upper surface of said flange 29, said plates resting against the outside of the cylinder 28 and having their lower ends resting upon the lower flange 29. The metallic contacts 31 to 35 inclusive, are spaced apart from each other and have extending about them a sheet of mica 37 or other suitable insulating material, which encircles the cylinder 28 and is held in position thereon in a suitable manner. A coil of fine conducting wire 36 is wound about the insulating material 37 and has one end secured to

the contact plate 31 and its other end to the contact plate 35, said contacting wire 36 engaging different convolutions of the coil at certain distances apart, as for example, at  
 5 the points 28 so as to have a number of different paths of different lengths for the current to pass through the entire coil from the contact plate 31 to the contact plate 35 or from any of the plates 32 to 35 inclusive  
 10 to the plate 31.

By means of the construction of the ring as hereinbefore described, a hollow rheostat ring is provided having a space between the contact plates and the coil of conducting  
 15 wire and the outer casing 27. The rheostat ring so constructed is mounted upon and rotates about the lamp socket 7, the lower end of the porcelain cylinder 28 resting on the flange 7' of the incandescent lamp  
 20 socket 7. The plate 31 is connected in any suitable manner with the lamp socket 7 and as here shown preferably by means of an angular metallic strip 39 connected at one end to the plate 31 and projecting through  
 25 the wall of the cylinder 28 and having its other end in contact with the flange 7' of the lamp socket 7.

In dispensing with the usual filling of cement within the rheostat ring and forming  
 30 the ring hollow over-heating of the parts is avoided, the outer casing 27 being provided with apertures 40 which serve to ventilate the interior of the rheostat ring thereby keeping the parts cool.

The rheostat ring is rotated by any suitable means, and, as here shown, preferably  
 35 by means of cords 41 secured to the ring in any suitable manner, each of the cords 41 passing through apertures 42 in the frame 22. By pulling one or the other of the  
 40 cords 41, the rheostat ring may be rotated in either direction so as to increase or decrease the light.

The contact ring 26 is normally out of contact with the contact plates 31 to 35 inclusive and rests against the upper flange  
 45 29 of the cylinder 28. By rotating the rheostat ring, the contact ring 26 is successively brought into and out of contact with the contact plates 31 to 35 inclusive. When the contact ring 26 is brought into  
 50 contact with the contact plate 31 a current passes from the leading in wire 17, the rod 19, the contact plate 26, the contact plate 31, and the metallic strip 39 of the lamp socket 7 and through the lamp back to the return  
 55 wire 15. As the contact ring 26 is successively brought into contact with the plates 32 to 35 inclusive the resistance is increased, since the paths in the different convolutions of the coil 36 are of increased length.

It will be seen that by means of the foregoing that by having the current pass directly through the lamp socket as described,  
 65 the lamp will burn with full brilliancy and

by shifting the contact ring 26 to cut in different resistances the light of the lamp will be gradually decreased to the lowest point of dimness. In other words the  
 70 greater the distance through the coil through which the current will have to travel the greater will be the resistance so that as the ring is turned into and out of contact with the different contact plates the light of the lamp will become dimmer and dimmer. 75

As heretofore stated the direct circuit is through the lamp from the leading in wires and through the plate 31, and when contact is made with the plate 32 it will stand a  
 80 resistance of 250 ohms. This contact will dim the light to about 5 candle power of a lamp of about 200 candle power. Contact with the plate 33 will stand a resistance of 150 watts or 120 candle power and can be turned down to 5 candle power. Contact  
 85 with plate 34 will reduce the light of all smaller lamps from 20 candle power down. Contact with plate 35 is one candle power in a 16 candle power lamp of the metal filament or tungsten lamps. In a 16 candle  
 90 power lamp of the carbon filament the light is reduced to one-half candle power.

It will be seen that by means of this invention that a simple and economical construction is provided by the employment  
 95 of a single coil. Any number of contacts may be employed and any number of degrees of light may be regulated to the length of the coil. Furthermore by means of employing a hollow rheostat ring with means for ventilating the same overheating of the parts is avoided, and a simple and economical construction is provided. 100

Having described the invention, I claim:

1. In a device of the character described,  
 105 a plug adapted to be electrically connected with an electric lighting circuit, an incandescent lamp socket mounted on said plug, a hollow rotary rheostat ring mounted on said lamp socket and formed with an outer casing with ventilating apertures, an inner cylindrical casing with insulating material, a number of vertical contact plates resting against said inner wall of the ring, a single  
 110 coil of conducting wire encircling said plates and said inner wall of the ring and insulated from said plates, one of said plates being in electrical contact with said lamp socket, and a spring contact plate mounted on said plug and bearing against the upper  
 115 side of said ring and adapted to be successively brought into contact with said several contact plates. 120

2. In a device of the character described, a plug, electrical conductors mounted in said  
 125 plug, means for connecting said electrical conductors with the leading in wires, a spring contact plate in electrical connection with said conductors, an incandescent lamp socket mounted on said plug, and having an 130

annular flange at its lower end, a hollow  
ventilated rheostat ring mounted on said  
flange and formed with an outer metallic  
cylindrical casing, and an inner cylindrical  
5 casing of insulating material, a number of  
vertical contact plates located on the side of  
said inner wall of the ring, a single coil of  
wire encircling said plates in the inner wall  
of the ring, and insulated from said plates,  
10 one of said plates being electrically con-  
nected with a flange of the lamp socket, said

spring contact plate being adapted to suc-  
cessively contact with said contact plates of  
the ring, and means for rotating said ring  
upon said lamp socket.

In testimony whereof I hereunto affix my  
signature in presence of two witnesses. 15

EDWARD H. SMITH.

Witnesses:

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