

(No Model.)

J. A. VANSANT & F. S. ANDERSON.

ELECTRIC REGULATOR.

No. 387,463.

Patented Aug. 7, 1888.

Fig. 1.

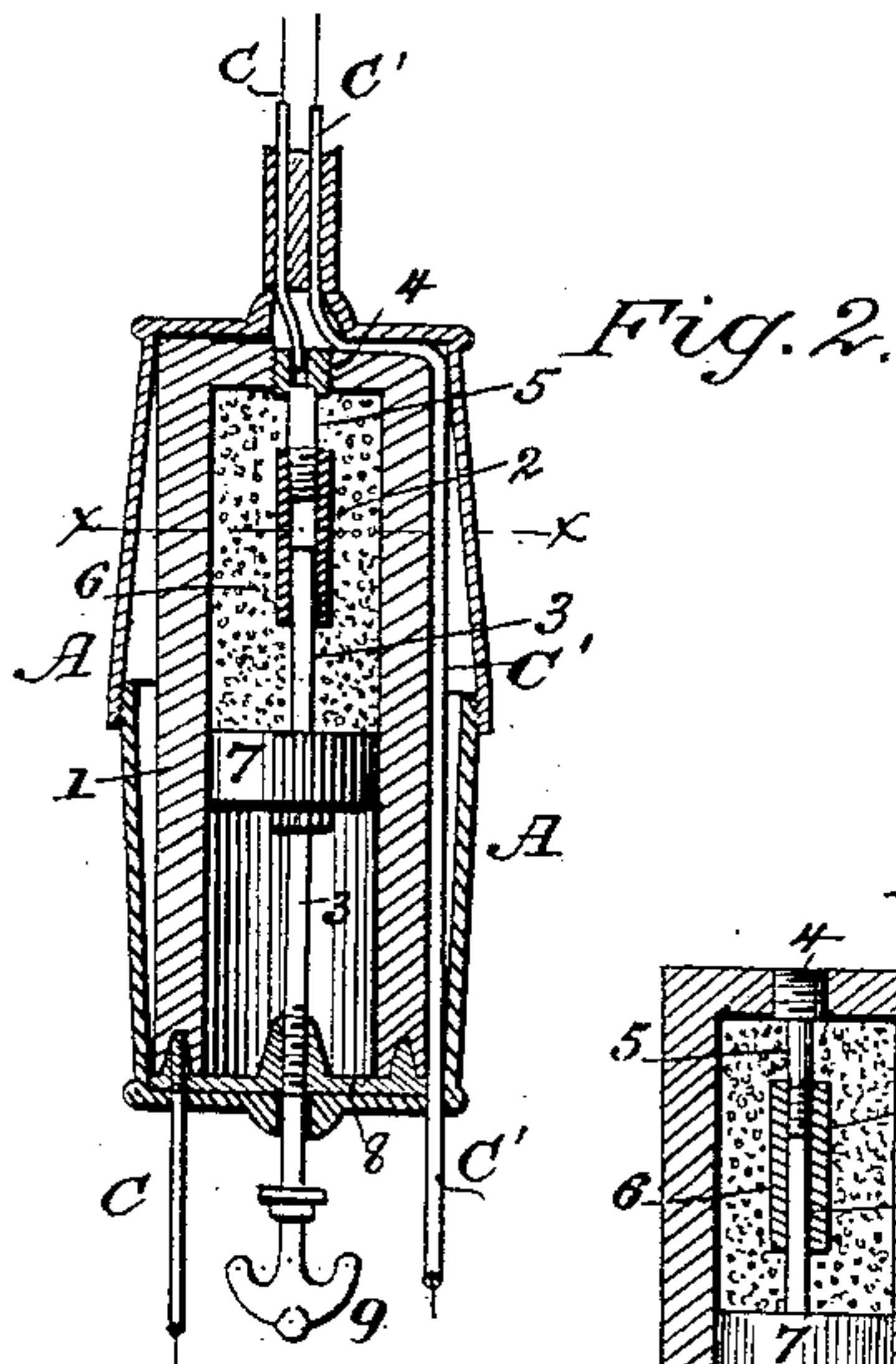
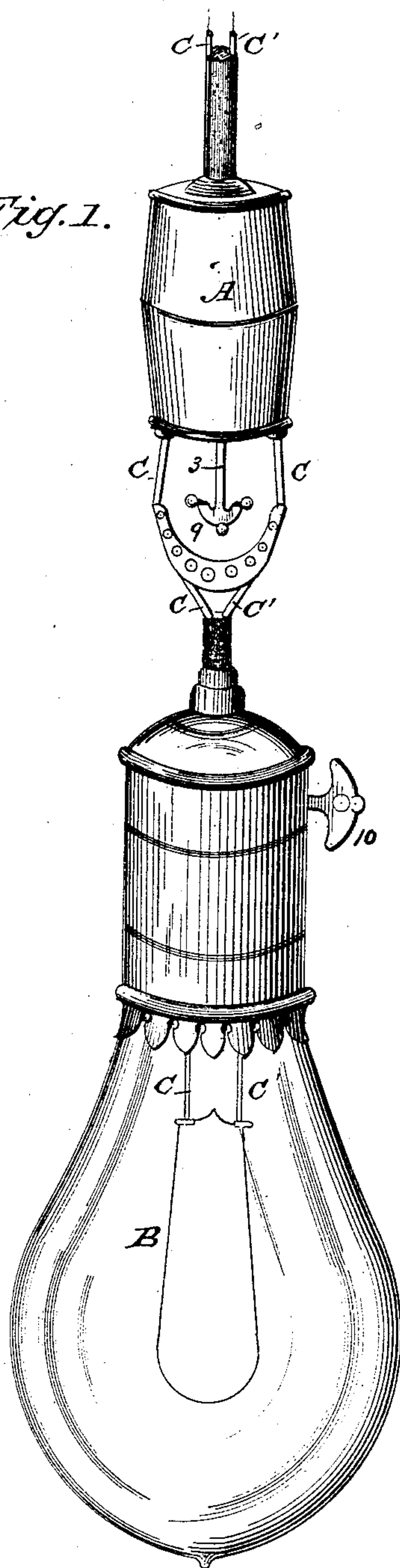


Fig. 4.

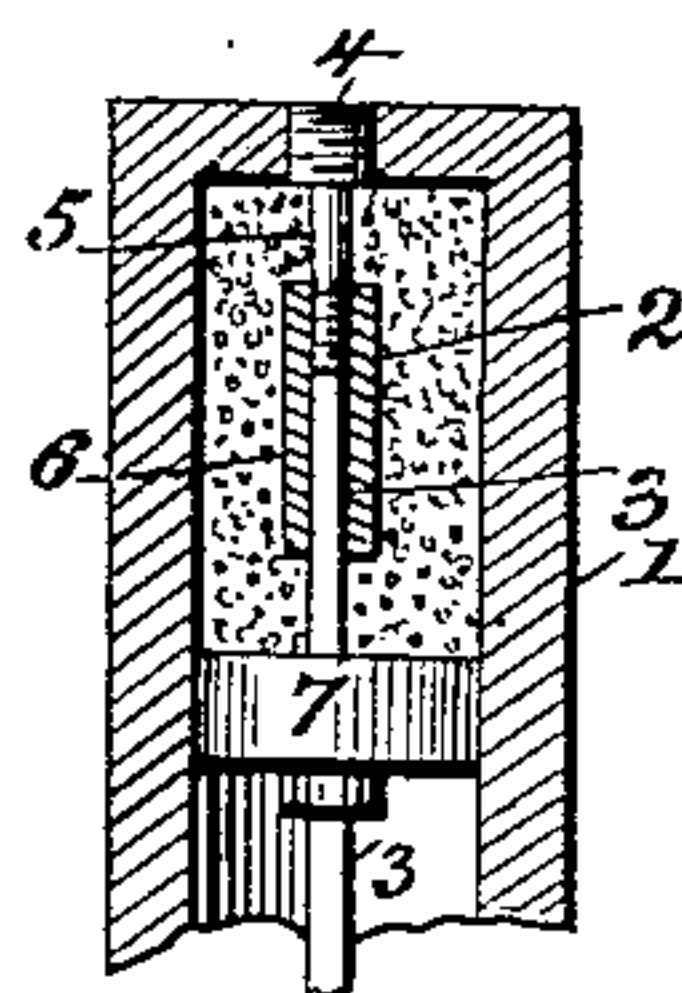
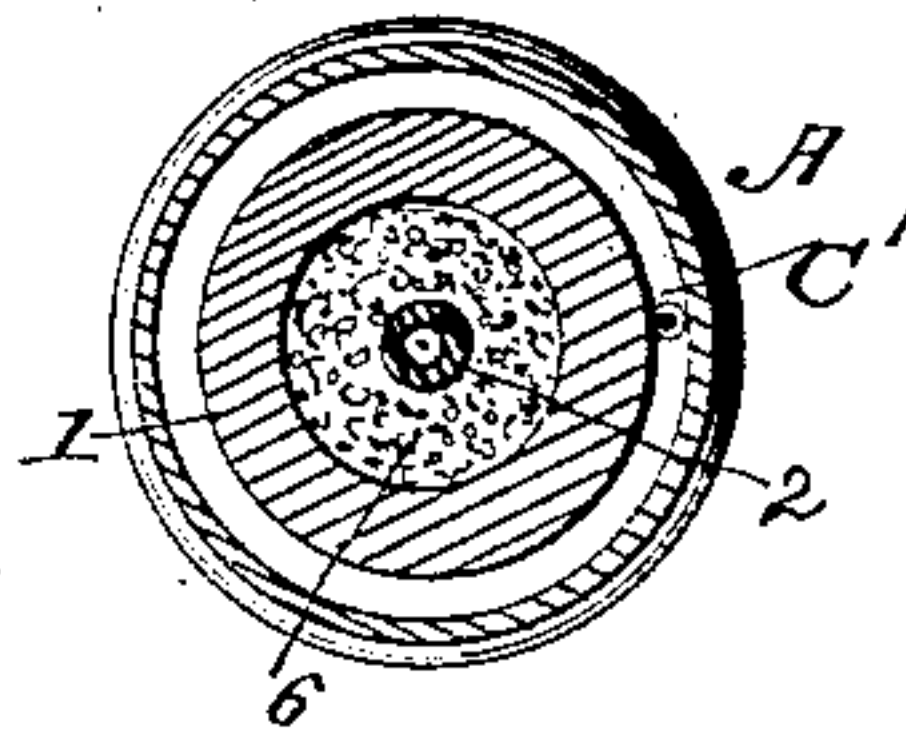


Fig. 3.



WITNESSES:

Fred G. Dieterich  
Amos W. Hart

INVENTOR:

J. A. Vansant  
F. S. Anderson  
BY Munn & Co.

ATTORNEYS.



# UNITED STATES PATENT OFFICE.

JOSEPH A. VANSANT AND FRANK S. ANDERSON, OF EASTON, MARYLAND.

## ELECTRIC REGULATOR.

SPECIFICATION forming part of Letters Patent No. 387,463, dated August 7, 1888.

Application filed September 5, 1887. Serial No. 248,853. (No model.)

*To all whom it may concern:*

Be it known that we, JOSEPH A. VANSANT and FRANK S. ANDERSON, of Easton, in the county of Talbot and State of Maryland, have  
5 invented a new and useful Improvement in Electric Regulators, of which the following is a specification.

The object of our invention is to provide an improved device or means for regulating the  
10 force of the current of electric lamps, dynamos, motors, and any other apparatus or machines to which electricity is supplied from a suitable source.

The regulator consists of several parts in-  
15 closed in a casing, and is adapted to be inserted in and form part of an electrical circuit. The construction and arrangement are such that the normal circuit may be broken at will and the current caused to diverge and pass  
20 through a material in a comminuted or powdered condition, and whose relatively-low conductivity is increased or diminished at will by compressing it more or less by suitable means provided for the purpose. The com-  
25 pression increases or diminishes the force or strength of the current, and thereby affects the brilliancy of the light or speed of the machine to which the current is supplied. In this instance we show the regulator applied to  
30 an incandescent lamp.

In the drawings, Figure 1 is a side view of the regulator and lamp suitably connected. Fig. 2 is a vertical central section of the regu-  
35 lator. Fig. 3 is a cross-section of the regulator on line  $x x$ , Fig. 2. Fig. 4 is a vertical section of the regulator, illustrating the position of the circuit-breaker when the circuit is normal.

The parts composing the regulator proper  
40 are contained in a case, A, which is cylindrical in form, and may be constructed of metal or other suitable material. In this instance it is made of sheet metal, and of two cup-shaped parts whose edges are united by a  
45 screw-thread, as shown in Fig. 2. The regulator is placed in and forms part of the circuit of the lamp B—that is to say, one of the conducting-wires C C' leading to the lamp is divided and its respective ends connected with  
50 the regulator.

The movable parts of the latter are contained

in a non-conducting cylinder, 1, made of wood, cork, rubber, or any other suitable material. Said parts are a circuit-breaker, a compressi-  
55 ble material through which the abnormal circuit may be formed, and a device for compressing such material. This material may be powdered carbon or some other form of conductor; but we prefer a composite material consisting of a conductor, like carbon, and a  
60 non-conductor, like mineral wool or spun glass, both comminuted or reduced to powder and mixed together. The carbon may bear a proportion of two-thirds to one-third of the mineral wool; but these proportions may, how-  
65 ever, be greatly varied. When the circuit is broken, it is re-established with less force through this composite material, and the resistance is increased or diminished at will by the degree to which the said material is  
70 compressed. The circuit-breaker, as here shown, is formed of a small non-conducting cylinder, 2, and a metal rod, 3. The said cylinder 2 is permanently connected with the  
75 conducting or circuit wire C in any suitable manner. In this instance the wire C is soldered into an externally-threaded sleeve, 4, which screws into the non-conducting cylinder 1, and the small cylinder 2 is in turn perma-  
80 nently attached to a short metal rod, 5, which depends from the said sleeve 4. The small cylinder 2 is made of asbestos, rubber, glass, wood, or any other suitable non-conducting  
85 substance. The composite powder 6, before described, surrounds and is in contact with the cylinder 2 and rod 5, and fills half or a larger portion of the larger cylinder, 1. It may be  
90 compressed to any required degree by means of the disk or piston 7, which fits the cylinder 1 somewhat closely, and is provided with a central opening to receive the upper un-  
95 threaded portion of rod 3. The lower or remaining portion of the latter is screw-threaded and works in a threaded bore of a metal casting, 8, which forms practically the lower head  
100 of cylinder 1. To this casting 8 one end of wire C is attached; but we do not restrict ourselves to the screw-rod, for it is obvious the piston or compressor 7 may be adjusted by means of rods having no screw-thread and  
adapted to be secured in any adjustment by other means. As shown in Fig. 2, that one (C')



of the conducting-wires which is not divided passes between the cylinder 1 and casing A of the regulator; but it may be obviously arranged otherwise.

5 The operation of the regulator, which will now be readily understood, is as follows: When the rod 3 is screwed up, as shown in Fig. 4, its end is in contact with the rod 5, and the circuit is then normal, the current passing  
10 through the sleeve 4, rod 5, screw-rod 3, and a casting, 7, and cylinder-head 8. The lamp B will then glow with normal or ordinary brilliancy; but when it is desired to lessen the glow or brilliancy of the light the rod 3 is  
15 screwed down until its upper end is separated from the rod 5, as shown in Fig. 2, the regular or normal circuit being thus broken and the current caused to diverge and pass from rod 5, through the surrounding composite ma-  
20 terial 6, to the screw-rod 3, and thence to lamp—that is to say, the circuit is then through a relatively-bad conductor, 6, and its force is therefore correspondingly diminished, so that the glow of the lamp is reduced accordingly.  
25 This reduction may be carried to any desired extent, so that only the faintest glow or “pink” tinge of the carbon bow can be perceived. It is thus practicable to perfectly control or regulate the light at will by simply turning the  
30 screw 3 by means of its head 9, which is accessible below the casing A.

The regulator may obviously be constructed as part of the head of the lamp proper, instead of being detached or separated from it, as  
35 shown, and this would be desirable for economical reasons.

The ordinary cut-off, 10, Fig. 1, may be dis-

pensed with, if desired, since the regulator will perform its function almost equally well.

It is obvious that the regulator may be ap- 40 plied to dynamos and motors, &c., as well as to lamps, without any change in its construction or manner of connection with the circuit-wires.

What we claim is— 45

1. A current-regulator consisting of a receptacle containing a powdered substance having a certain degree of conductivity, a circuit-breaker inclosed in said receptacle, and a compressor for varying the pressure upon and the 50 resulting density of said substance, as and for the purposes specified.

2. The improved regulator consisting of the large non-conducting cylinder 1, the circuit-breaker formed of the non-conducting cylin- 55 der 2, the electrical contact 5, an adjustable circuit-connector, 3, the powdered material 6, a piston for compressing the latter, and a rod for adjusting the piston, substantially as described. 60

3. In an electric regulator, the combination, with the conducting-wire C, divided, as specified, of the non-conducting cylinder 1, the metal rod 5, and the small non-conducting cylinder 2, the surrounding powdered composite mate- 65 rial 6, the piston 7, the screw-threaded rod 3, working in a nut at the lower end of said cylinder and provided with a suitable head for use in turning it, as specified.

JOSEPH A. VANSANT.

FRANK S. ANDERSON.

Witnesses:

AMOS W. HART,

P. B. TURPIN.