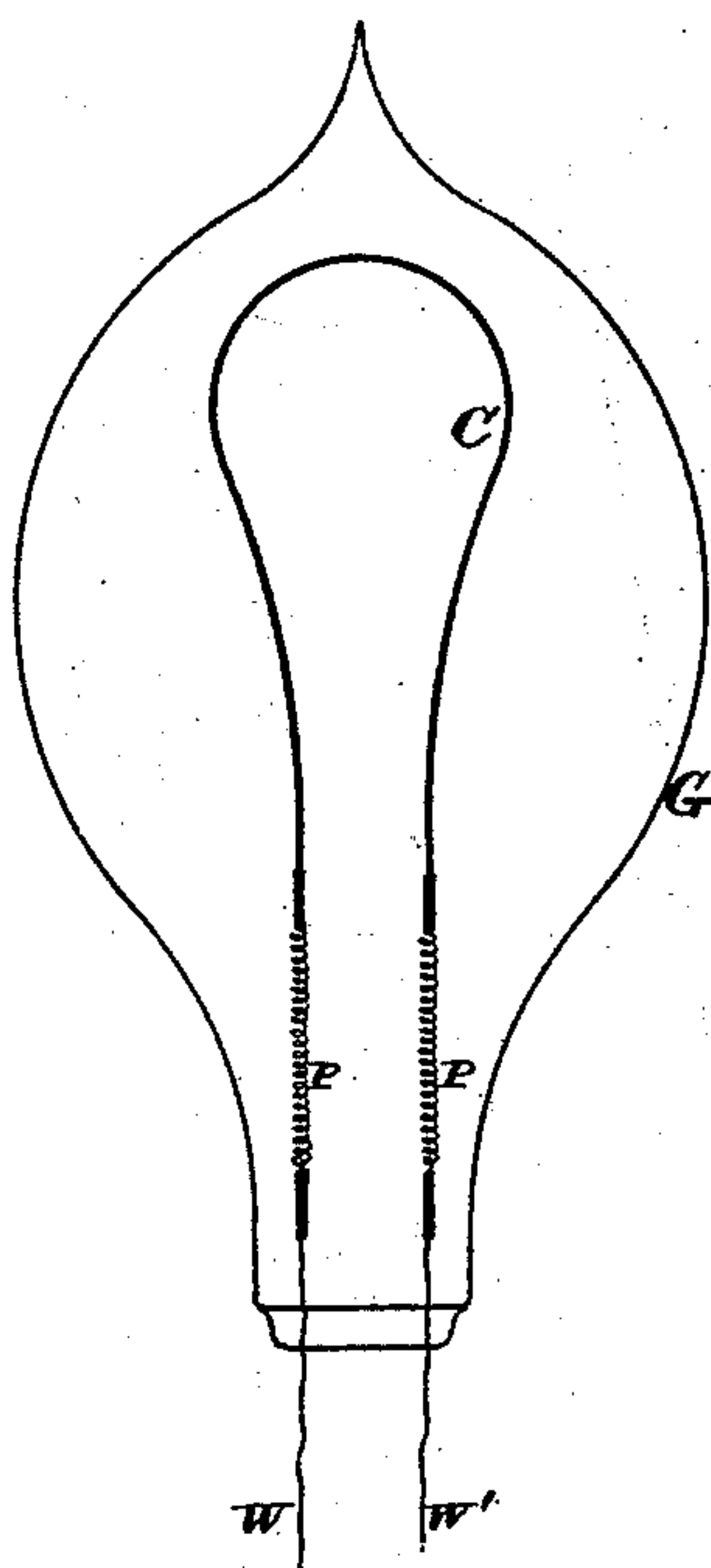


(No Model.)

T. E. GATEHOUSE.  
INCANDESCENT ELECTRIC LAMP.

No. 297,377.

Patented Apr. 22, 1884.



*Witnesses:*

*J. A. Rutherford*  
*George W. Rea*

*Inventor:*

*Tom Ernest Gatehouse.*

*By James L. Norris,*  
*Atty.*

# UNITED STATES PATENT OFFICE.

TOM ERNEST GATEHOUSE, OF CAMBERWELL, COUNTY OF SURREY,  
ENGLAND.

## INCANDESCENT ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 297,377, dated April 22, 1884.

Application filed November 9, 1882. (No model.) Patented in England March 23, 1882, No. 1,400.

*To all whom it may concern:*

Be it known that I, TOM ERNEST GATEHOUSE, a citizen of England, residing at Camberwell, in the county of Surrey, England, have invented an Improvement in Incandescent Electric Lamps, (for which I have obtained a patent in Great Britain, No. 1,400, bearing date March 23, 1882,) of which the following is a specification.

10 In an application for patent filed at the same time as the present application I describe the combination in parallel circuit, in an incandescent electric lamp, of two conductors, the one a metallic wire—such as platinum wire, the electrical resistance of which increases with increase of temperature, and the other a rod or filament of carbon, the electrical resistance of which decreases with increase of temperature. According to my present invention, I combine and connect directly these two conductors not in parallel circuit, but in continuous circuit in an incandescent electric lamp, the sectional area and length of each conductor being so proportioned to that of the other that the electrical resistance of the whole is better suited to the conditions of the lamp than when a single conductor—such as a metallic wire or a carbon filament—is used by itself. I arrange the carbon filament as the burner and make the leading-in wires of platinum, and connect them directly with the ends of the burner or filament. Then, if a sudden increase of current occurs, the temperature of the leading-in wires, or one of them, is raised and the resistance thereof increased, so as to retard the current and prevent it from injuriously affecting the filament.

The accompanying drawing shows a convenient arrangement of lamp according to my invention.

40 W W' are the circuit-wires, which, as usual, pass hermetically sealed through the glass of the exhausted globe G. To these wires are connected fine platinum wires P, which are helically twisted, so as to have considerable length

within moderate compass, and to the twisted platinum wires are connected the two ends of the carbon filament C. To obtain a good effect, the dimensions of the platinum and carbon should be such that at ordinary temperature the electrical resistance of the platinum should be to that of the carbon in the proportion of three or five to one hundred.

I am aware that in incandescent lamps platinum wires have been used to connect the carbon filaments, because such wires can be effectually sealed through the glass of the bulb; but it has always been an object to make these wires as small as possible, in order to save expense, and without regard to any effect of electrical resistance. I do not claim such a lamp.

Having thus described the nature of my invention and the best means I know of putting it in practice, I claim—

1. In an incandescent electric lamp, the combination, in continuous circuit, of two directly-connected conductors—such as platinum and carbon—proportioned as to resistance, substantially as specified, whereby the electrical resistance of the conductors will vary in opposite directions with similar changes of temperature, substantially as described.

2. An incandescent electric lamp having its burner formed of a carbon filament and its leading-in wires of platinum, said leading-in wires being directly connected to the carbon filament and having resistances proportioned substantially as described, whereby the electrical resistance of the conductors will vary in opposite directions with similar changes of temperature, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 20th day of October, A. D. 1882.

TOM ERNEST GATEHOUSE.

Witnesses:

CHAS. R. GATEHOUSE,  
JNO. P. M. MILLARD.