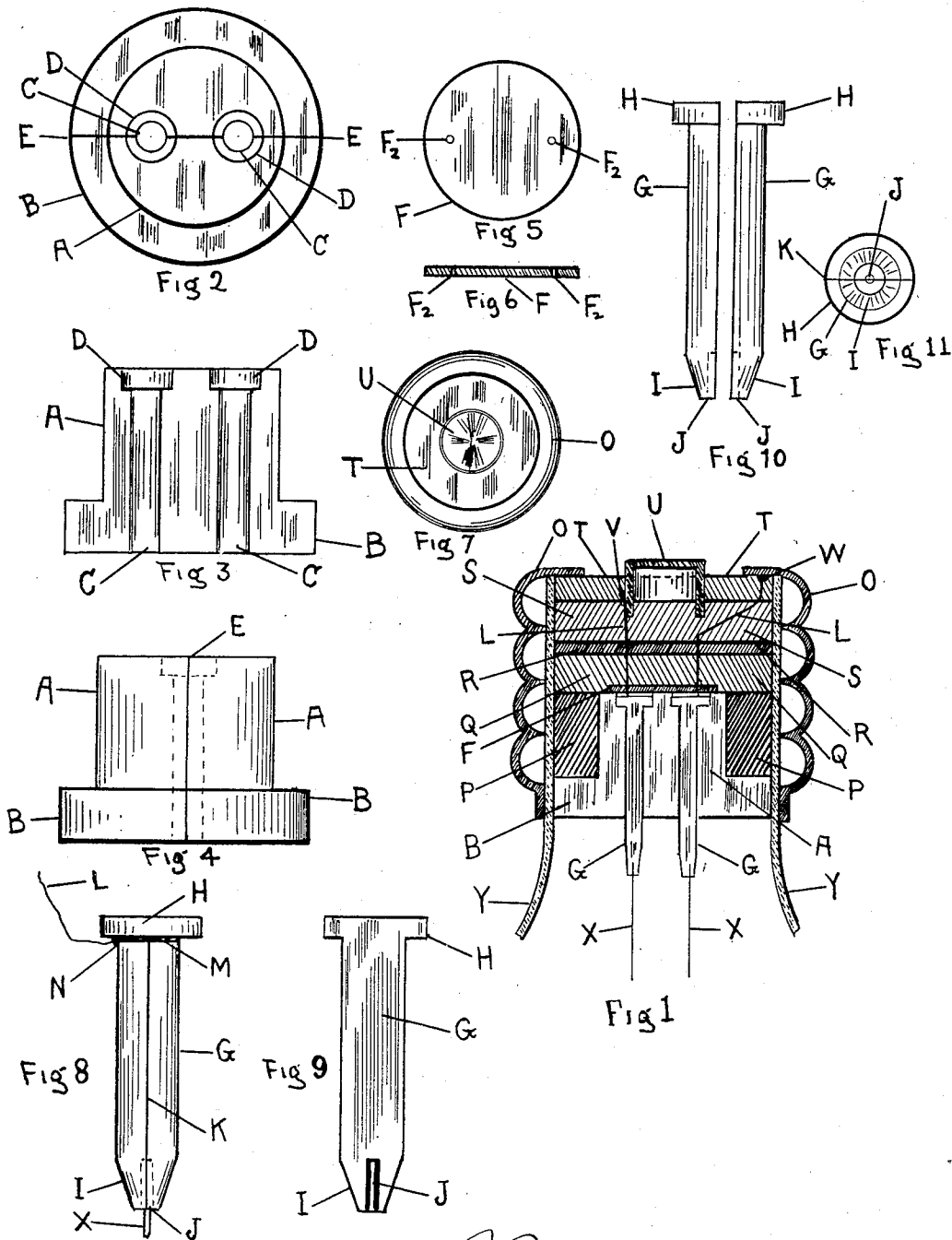


W. B. BURROW.
ELECTRIC INCANDESCENT LAMP.

APPLICATION FILED JULY 2, 1902.

NO MODEL.



Witnesses

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WALTER B. BURROW, OF NORFOLK, VIRGINIA.

ELECTRIC INCANDESCENT LAMP.

SPECIFICATION forming part of Letters Patent No. 737,575, dated September 1, 1903.

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To all whom it may concern:

Be it known that I, WALTER B. BURROW, a citizen of the United States, residing at Norfolk, in the county of Norfolk and State of Virginia, have invented certain new and useful Improvements in Electric 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.

My invention relates to incandescent electric lamps.

The object of my invention is to cheapen the labor in manufacturing and also to lessen the cost of the lamps without decreasing its life or illuminating qualities. I also cause by my invention the concentration of the resistance to the filament alone. I also dispense with the use of platinum or similar metal and soldered and welded joints inside of the exhausted glass bulb.

Referring to the drawings, Figure 1 is a sectional elevation of the neck or base of the completed lamp. Fig. 2 is a plan of the flanged divided plug or stopper. Fig. 3 is an elevation of one-half of the plug or stopper. Fig. 4 is an elevation of the plug or stopper, showing the dividing-line of the two halves. Fig. 5 is a plan of the insulating disk or washer, and Fig. 6 is a section of the same. Fig. 7 is a plan of the lamp neck or base. Fig. 8 is an elevation of one of the carbon-stems or filament-holders. Fig. 9 is an elevation of one of the halves of the carbon-stems. Fig. 10 is an elevation of one of the carbon-stems with the two halves separated. Fig. 11 is a plan of the tapered lower ends of the carbon-stems, to which the carbonized filament is clamped and in electrical connection with the terminals of the lamp.

In the drawings, in which like letters of reference indicate similar parts in all the views, A is the flanged insulating plug or stopper provided with perforations or holes C for the carbon-stems or filament-terminals G. The plug A is divided vertically, as shown at E, so that the carbon-stems G, having the filament secured between the two halves and forming a U-shaped figure, can be inserted into one half of the plug A and the other half applied and cemented. The

plug A is split or divided, because the carbon-stems and the filament X could not otherwise be placed in it. The holes or perforations C in the plug A are recessed or countersunk, as at D, so that the button or rivet heads H of the carbon-stems G can be inserted below or on a line with the plane of the smaller diameter or upper part of the plug, as will be hereinafter described.

F is a thin disk of porcelain or other similar insulating material and is provided with holes or perforations F² for the leading-in wires L, and it is used to cover up the recessed or countersunk holes containing the carbon-stems and preventing the plastic fillings from entering the recesses D and the holes C and also to allow the linear expansion of the carbon-stems.

G represents the conducting filament-holders or carbon-stems and are, like the plug A, divided into two halves, as at K. The carbon-stems G are provided with a flange or button-head H to prevent them from slipping through the holes in the plug A and also as a means for fastening the leading-in wires L to the stems. The stems G have tapered lower ends I and a cement orifice or cavity J for the filament. The carbon-stems G are coppered and enameled from the heads H to the taper I.

M and N are the leading-in wires L, wrapped around the stems G under the heads H, and N is the soldered joint holding the wires in place and forming an electrical connection with the terminals of the lamp.

O is the screw or other base and forms one of the terminals of the lamp.

P is a plastic insulating-filling poured between the glass globe or bulb Y and the plug A and on top of the flange B and up to the level of the plug, as shown in Fig. 1. The filling P is of a dense non-absorbing insulating material, having the same coefficient of expansion as the glass bulb Y.

Q is a plastic insulating-filling and is similar in composition to the filling P. This filling is poured on top of the filling P and the disk F and securely locks in the carbon-stems G in the recessed holes C, allowing them to expand without doing any damage to the disk or fillings. R is a glassy enamel subseal of a special composition and is placed on the

filling Q and attaches itself to the neck of the glass bulb Y.

S is a filling similar to P and Q and is placed on the subseal R.

- 5 T is the final seal, composed of glass and enamel and is a special compound and expanding equally with the glass part or bulb and also firmly adheres to the bulb and secures the terminal U in place, as shown in Fig. 1.
- 10 In assembling the lamp the carbon-stems G, having the filament X firmly clamped and cemented to their tapered ends I and in the orifice J, are inserted into one half of the plug A, after which the other half is coated
- 15 with a suitable cement and united to the other half and then inserted into the neck of the lamp-bulb Y. The leading-in wires L are held in their proper position and the filling P poured around the plug, after which the filling Q is poured on top of the plug A and the disk F and then allowed to dry before the subseal R is applied, after which the filling S and the final seal T are put on in their proper
- 20 order. The fillings and seals are placed around the leading-in wires L, as shown in Fig. 1, and they, as well as the fillings, seals, and metal parts of the lamp, have the same coefficient of expansion as the glass bulb Y and are special compositions.
- 30 By my invention I can cheapen the cost of the lamps and reduce the time in manufacturing the same. I also by my invention dispense with the use of platinum and other metal fused in the glass bulb and the welding of two or more parts of the globe, as is
- 35 ordinarily the case. As already described, the expansion of the dissimilar parts of the lamp can take place without endangering the vacuum in the glass globe or bulb Y by the leakage of air into the same. The conducting medium from the terminals O and U to the filament X are of a comparatively low resistance compared to that offered by platinum and the several joints inside and out-
- 40 side of the exhausted glass globe common in ordinary practice. Hence the resistance is confined only to the carbonized filament, thus giving more light and less heat for the same candle-power than is possible with
- 45 other lamps. The insulating-disk F incloses the carbon-filament terminals or stems with a very small fraction of an inch between it and the button or rivet heads H, and as the stems are slightly smaller in diameter than
- 50 the holes C expansion can take place in all directions without causing leakage of air into the globe. The seals R and T being nearly of the same hardness and other character-

istics as the glass, an almost perfect vacuum can be produced within the globe. I am not 60 confined, however, to the use of two seals if by the conditions in manufacturing the lamps it should be found that the final seal T is sufficient, though it would make the lamp tighter by using both, as shown in Fig. 1. 65

The base or terminals O and U in the drawings is the ordinary screw or Edison base; but I am not confined to such nor does it form a part of my invention.

Having described my invention, what I 70 claim, and desire to secure by Letters Patent, is—

1. An incandescent electric lamp, the combination of a transparent exhausted globe surrounding the source of light, and having 75 a vertically-divided flanged and perforated plug or stopper, in the neck of the globe, and having recessed or countersunk holes at the upper ends of the said perforations, and vertically-divided button or rivet head coppered 80 and enameled carbon-stems or filament-terminals, and a carbonized conductor or filament in electrical connection with the said carbon-stems and terminals of the lamp, the said carbon-stems inserted into the recessed 85 holes in the divided plug, and an insulating perforated disk covering and inclosing the button-heads and carbon-stems and a vitreous insulating filling or cement around the said plug or stopper and around the conduct- 90 ing-wires to the terminals, as described.

2. An incandescent electric lamp, the combination of a vacuous transparent globe, having a divided flanged perforated plug, in the neck of the said globe, and countersunk holes 95 in the plug, and divided button-head coppered carbon-stems or filament-holders, inserted in the perforations of the said plug, and a carbonized high-resistance conductor or filament, supported by and in electrical connection 100 with the said stems and the terminals of the lamp, and a perforated insulating disk or washer, over the said recessed holes and the carbon-stems, and a vitreous filling or cement over the disk and covering the same, and a 105 plurality of glass and enamel seals and fillings over the said first filling and a final seal of enamel and glass surrounding the lamp-terminals, as described.

In testimony whereof I have signed my 110 name to this specification in the presence of two subscribing witnesses.

WALTER B. BURROW.

Witnesses:

JAMES J. GRAY,
C. C. GRANT.