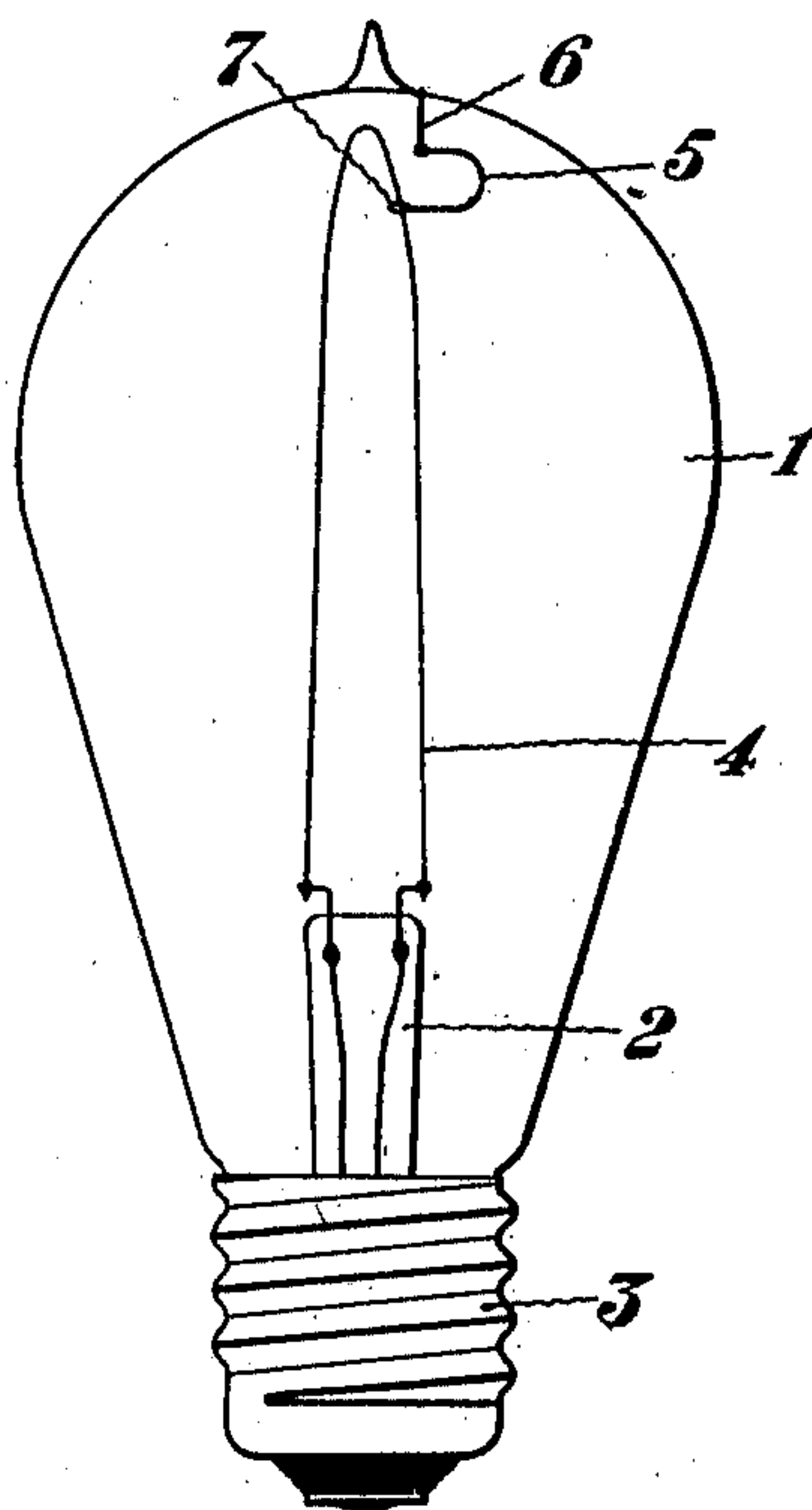


C. E. CAMPBELL.
INCANDESCENT LAMP.
APPLICATION FILED APR. 18, 1910.

988,308.

Patented Apr. 4, 1911.



Witnesses:

E. W. Wurdemann
Alice Ackroyd

Inventor,

Charles E. Campbell
by his attorney
Philip Van Curen Smith

UNITED STATES PATENT OFFICE.

CHARLES E. CAMPBELL, OF LYNN, MASSACHUSETTS, ASSIGNOR TO VACUUM GLASS COMPANY, OF LYNN, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

INCANDESCENT LAMP.

988,308.

Specification of Letters Patent.

Patented Apr. 4, 1911.

Application filed April 18, 1910. Serial No. 556,137.

To all whom it may concern:

Be it known that I, CHARLES E. CAMPBELL, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in 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.

The present invention relates to an improvement in incandescent lamps.

The object of the invention is to produce an improved construction of tungsten filament incandescent lamps.

To this end the invention consists in the incandescent lamp hereinafter described and claimed.

The accompanying drawing illustrates the preferred form of the invention.

The illustrated embodiment of the invention is described as follows:—The lamp bulb 1, stem 2, socket member 3, are all of the usual form. The filament 4 is a tungsten filament of hair-pin form. This filament when heated to incandescence by the current is not rigid. It needs, therefore, a support beyond that of its own strength. The filament support 5 consists of a piece of platinum wire having its end 6 penetrating the glass bulb, being secured therein by having the glass melted about it. The inner end 7 of the filament support is provided with a loop which embraces one leg of the filament. If desired, the portion of the filament support inside of the thickness of the glass of the bulb may be made of copper or other metal welded or otherwise securely attached to the platinum portion of the support.

Heretofore it has been proposed, and to a limited extent practiced, to provide to the filament support at the end of a bulb by having a projection of glass extend inward into the bulb and in fixing in such inward projection of glass a piece of metal wire having a loop which encircles the lamp filament. This form of lamp in operation causes the deposit of a very considerable quantity of the metal upon the inner surface of the bulb owing to the temperature to which the metal wire encircling the filament is subjected. With the construction of the present invention, however, the filament sup-

port extends into a thin portion of the bulb so that the heat which the filament-support receives from the filament is readily conducted to the surface of the bulb and there radiated away. Thus the filament-support is supported in such a manner that it radiates the heat which is imparted to it by the filament. It will be observed that the loop portion of the filament-support approaches the filament in a direction at right angles to the latter so that movements of the filament in the support are not impeded in any way. This mode of support also contributes to secure the conduction of the heat from the support away from the filament-supporting end thereof as readily as possible.

An important feature of this invention resides in its adaptability to the manufacture of tungsten filament lamps from old carbon filament lamps. Thus, a worn out carbon filament lamp may be opened by removing the closing tip. Through this opening the old filament may be removed, the leading-in wires may be bent to the proper form to receive and to have attached thereto, the ends of the tungsten filament by providing them at their ends with little open-sided hooks which will hold the paste. The filament support may be conveniently sealed into the glass at the edge of this opening, then the filament may be introduced through this opening passing one leg of the filament through the loop in the end thereof and extending the filament ends up to and attaching them to the ends of the leading-in wires. The intubation of the pumping tube is next performed when the lamp is ready for exhaustion. In the manufacture of new lamps the filament support would be inserted at a different time in the operation.

The invention is not limited to use in connection with tungsten filament lamps as it contemplates an incandescent lamp provided with a filament support irrespective of the material of the filament so long as it is a filament which is of such a character as to need support at its end.

Having thus described the invention, what is claimed is:—

1. An incandescent-filament vacuum-lamp comprising a filament and a glass bulb and a platinum filament support penetrating a thin portion of the glass bulb encircling the filament, substantially as described.

2. An incandescent-filament vacuum-lamp

comprising a filament and a glass bulb and a platinum filament support penetrating a thin portion of the glass bulb and having an end encircling the filament and leading away from the filament in directions at right angles to the filament so as thereby to conduct the heat imparted to it by the filament away from the filament to the outer surface of the bulb so as thereby to prevent the filament from heating the filament support to such temperature to cause it to produce a metallic deposit upon the inside of the bulb, substantially as described.

3. An incandescent-filament vacuum-lamp comprising a filament and a glass bulb, and a filament support of heat conducting material having one end formed with a loop embracing the filament and having the other end penetrating a thin portion of the glass bulb so that the outer end of the filament support may act to dissipate the heat conducted to it from the filament.

CHARLES E. CAMPBELL.

Witnesses:

MAE L. HAGAN,
HENRY R. HURLEY.