

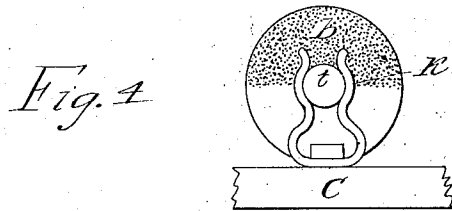
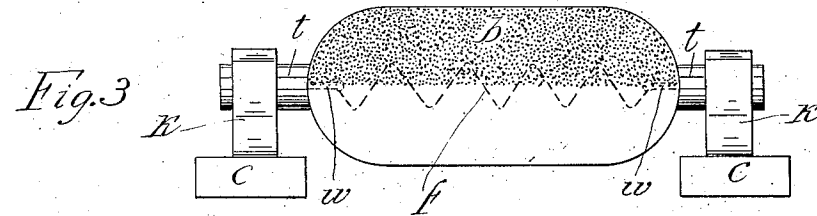
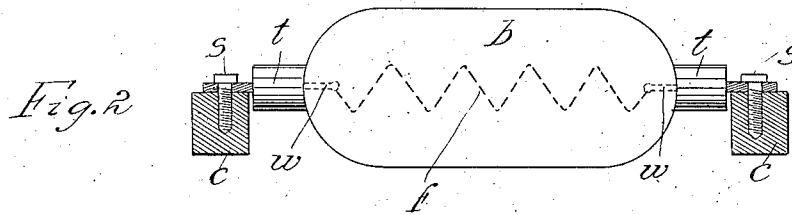
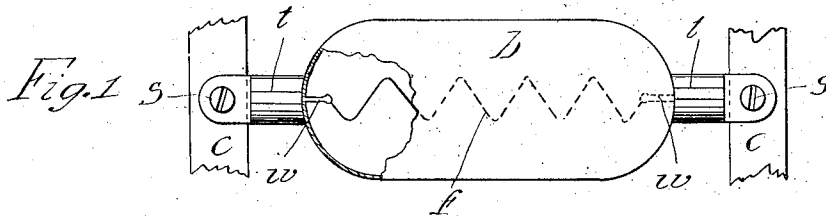
W. F. HOWARD & A. B. COUSINS.

LUMINOUS ELECTRIC HEATER.

APPLICATION FILED FEB. 1, 1909.

940,021.

Patented Nov. 16, 1909.



WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM FRANK HOWARD, OF WEST EALING, AND ALBAN BERTIE COUSINS, OF ABINGDON-ON-THAMES, ENGLAND.

LUMINOUS ELECTRIC HEATER.

940,021.

Specification of Letters Patent.

Patented Nov. 16, 1909.

Application filed February 1, 1909. Serial No. 475,357.

To all whom it may concern:

Be it known that we, WILLIAM FRANK HOWARD and ALBAN BERTIE COUSINS, subjects of the King of Great Britain, and residing, respectively, at West Ealing, Middlesex, and 19 Park road, Abingdon-on-Thames, Berkshire, England, have invented certain new and useful Improvements in Luminous Electric Heaters, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to luminous electric heaters consisting of an airtight bulb B of glass or other suitable material from which all possible air is exhausted, containing a filament F usually made of carbon or metal and attached to two leading in wires W—W which are passed through the ends of the bulb B and sealed into it, and these wires W—W are electrically connected to two massive metal caps or terminals T—T securely fixed to the ends of the bulb B.

The letters refer to the drawings accompanying this specification, of which,

Figure 1 is a plan view, Fig. 2 is a sectional elevation showing the heating element held to the live contact blocks C—C by set screws, Fig. 3 is a sectional elevation, and Fig. 4 is an end elevation showing the heating element held to the live contact blocks C—C by strong metal spring clips K—K.

We place the two wires W—W leading the electric current to the filament F of the heating element, as far apart as possible, that is at the two opposite ends or sides of the heating element also we make the heating elements with strong massive metal terminals T—T that can be screwed to the live contact blocks C—C of the heater frame with set screws S—S or held to the live contact blocks of the heater frame with strong massive metal spring clips K—K, and in practice the circuit wires are connected with the heater frame or the blocks C—C in the usual manner.

If the method of fixing the heating elements to the live contact blocks shown in Figs. 1 and 2 is used it is advisable to slot the holes in the terminals T—T through which the set screws S—S are passed, and to insert under the head of the set screws S—S spring washers (not shown on the accompanying drawings) so that the heating

elements may be free to expand and contract slightly with changes of temperature.

Small tubular lamps for lighting purposes have been made in a manner somewhat similar to those shown in Figs. 3 and 4, but our invention does not relate to such lamps for lighting, as owing to the small current they consume and the lightness of the filament and the comparatively low temperature at which they work these small lamps have never given much trouble in practical use, the power dissipated by them seldom exceeding 70 watts.

The large lamps usually used for heating purposes almost invariably dissipate a power of at least 250 watts, and thus run very hot and take a large current which rapidly destroys the type of contacts used on the lamps at present in use.

We make the heating elements with the whole of the terminals T—T of the heating elements bare so that they provide a large metallic surface for the purpose of providing a good area of contact for the passage of the electric current. We also make these terminals T—T very massive so that they are not appreciably heated by the passage of the electric current through them. We also make the filament F of the heating element in a spiral wave or similar form which makes it very elastic and capable of withstanding rough usage and expansion and contraction due to varying temperatures.

In practice, if desired, the bulb b, or as shown in Figs. 3 and 4, a part of the bulb b may be frosted, or coated, or ornamented in any desired manner, but this forms no essential part of our invention.

Having now particularly described and ascertained the nature of our said invention, and in what manner it is to be performed, we declare that what we claim is:—

1. A luminous electric heater, consisting of a bulb of glass or other suitable material exhausted of air, and an electric filament of spiral or other longitudinally contractile form placed therein, said bulb being provided with massive metal terminals of low resistance and wires sealed in the ends thereof and to said terminals and with which said filament is electrically and mechanically connected, and said terminals being adapted to be electrically and mechanically connected with a heater frame.

2. A luminous electric heater consisting

of a bulb of glass or other suitable material
exhausted of air, and an electric filament
placed therein, said bulb being provided
with inflexible massive metal terminals of
5 low electrical resistance and wires sealed in
the ends thereof and to said terminals and
with which said filament is connected, and
said terminals being adapted to be electric-
ally and mechanically connected with a
10 heater frame.

In testimony that we claim the foregoing
as our invention we have signed our names
in presence of the subscribing witnesses this
19th day of January 1909.

WILLIAM FRANK HOWARD.
ALBAN BERTIE COUSINS.

Witnesses:

BESSIE LAVINIA ADAMS,
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