H. REMANE, E. HURWITZ & E. GOTTSCHALK.

ELECTRIC GLOW LAMP.

APPLICATION FILED JULY 18, 1907.

919,381. Patented Apr. 27, 1909.

Fig. 1.

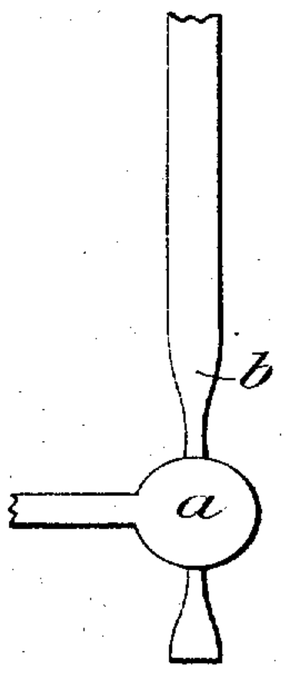


Fig. 2.

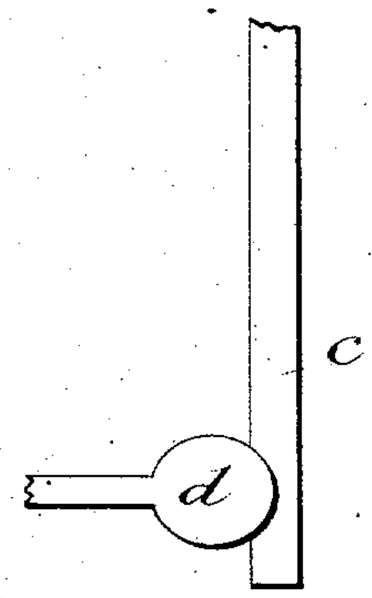


Fig. 4.

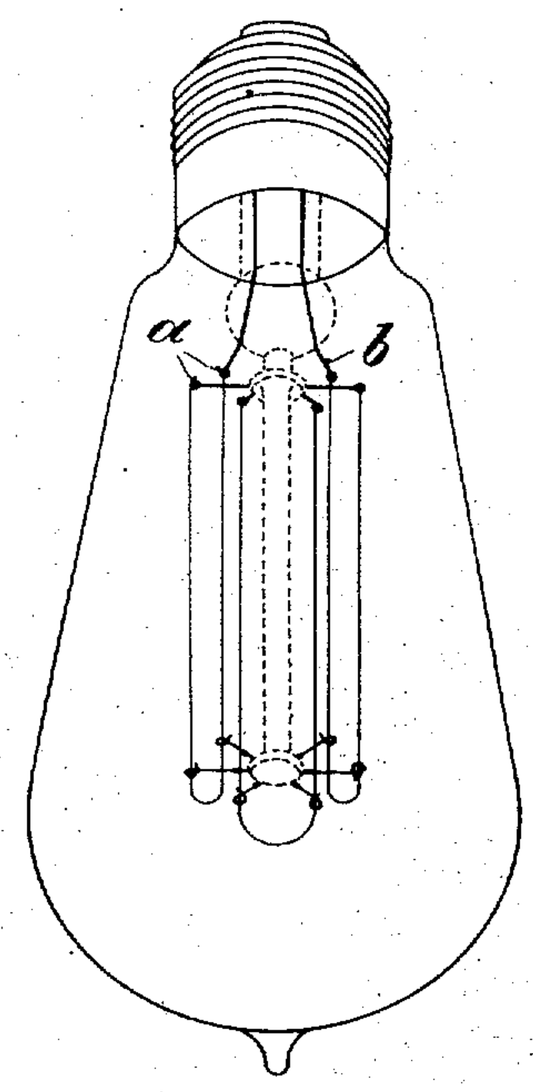
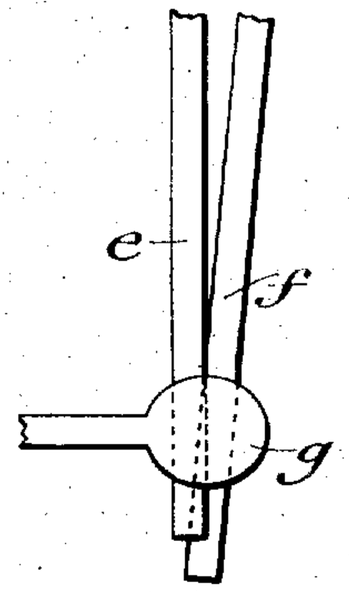


Fig. 3.



WITNESSES

G. V. Rasmussen

John A. Tecklenbeck.

INVENTORS

Herman Remané, Eugen Hurwitz

Emil Gottschalk

BY

Briesen & Knauth

ATTORNEYS

UNITED STATES PATENT OFFICE.

HERMANN REMANÉ AND EUGEN HURWITZ, OF BERLIN, AND EMIL GOTTSCHALK, OF CHARLOTTENBURG, GERMANY, ASSIGNORS TO DEUTSCHE GASGLÜHLICHT AKTIEN GESELLSCHAFT AUERGESELLSCHAFT, OF BERLIN, GERMANY, A CORPORATION.

ELECTRIC GLOW-LAMP.

No. 919,381. Specification of Letters Patent. Patented April 27, 1909

Application filed July 18, 1907. Serial No. 384,357.

To all whom it may concern:

Be it known that we, HERMANN REMANÉ, chief engineer, a subject of the German Emperor, and a resident of Berlin, Plan Ufer No. 14; EUGEN HURWITZ, engineer, a subject of the German Emperor, and a resident of Berlin, Klopstockstrasse 31, and EMIL GOTTSCHALK, engineer, a subject of the German Emperor, and a resident of Charlottenburg, Spandauerstrasse 17, Germany, have invented certain new and useful Improvements in Electric Glow-Lamps; and we 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Our invention relates to "improvements in electric glow lamps comprising tungsten filaments which are attached to the melted ends of supports."

At the present time the ends of the tungsten filaments used in electric lamps are attached to metallic supports by fusing the ends of the supports which, when they solidify, hold the ends of the incandescence filaments firmly in place. This method can be carried out successfully when platinum wires are used as the supports or current leads; but if nickel wires be used, frequent breakages will occur. This is caused by the formation of an alloy of a small portion of the nickel with the tungsten when the nickel ends are fused (by means of the electric arc). This alloy is itself readily fusible and causes a reduction in the sectional area of the filaments in the vicinity of the fused portion owing to the fusible alloy running down and this causes the filaments to break readily at these weakened places. If copper be used for the supporting wire instead of nickel, another defect is caused by the filament breaking through and escaping from the surrounding fused globule before it has solidified.

The present invention relates to a means for obviating these inconveniences by using, as a filament support, a wire containing two metals; one of them being for instance copper itself or a metal (such as silver) which behaves like copper, and a second metal, for instance nickel or a metal (such as iron) of analogous behavior. It is important that one of the metals should readily form alloys with tungsten, while the other metal should not.

A convenient means consists in using wires composed of alloys of the aforesaid metals, though it is also sufficient for the two metals to be merely mechanically united, in the wires. For example, a wire can be used composed of nickel with a coating of copper, or a copper wire coated with nickel. It should also be expressly understood that the filament supports need not always be terminals or current leads in the ordinary sense of the term, for instance when the ends of two filaments are incorporated in a single fusion globule.

In the drawings which are merely diagrammatic illustrations on an enlarged scale to make the processes clear:—Figure 1 illustrates the weakening of the tungsten filament *a* in a support *b* made of nickel. Fig. 2 shows how the filament *c* becomes detached from the end of the copper wire *d*, and Fig. 3 shows the arrangement of two filament ends *e f* in a common fusion globule *g*. Fig. 4 shows a complete electric glow lamp in accordance with the invention.

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

1. An electric glow lamp comprising a tungsten filament attached to the melted ends of supports containing two metals one of which has the property of forming an alloy

with tungsten while the other has the contrary property.

2. An electric glow lamp comprising a tungsten filament attached to the ends of supports containing a metal of the iron group and a metal of the copper group.

3. An electric glow lamp comprising a tungsten filament attached to the ends of supports containing an alloy of copper and nickel.

In testimony, that we claim the foregoing as our invention, we have signed our names in presence of two subscribing witnesses.

HERMANN REMANÉ.
EUGEN HURWITZ.
EMIL GOTTSCHALK.

Witnesses:
HENRY HASPER,
WOLDEMAR HAUPT.

Disclaimer in Letters Patent No. 919,381.

DISCLAIMER.

919,381.—*Hermann Remané* and *Eugen Hurwitz*, Berlin, and *Emil Gottschalk*, Charlottenburg, Germany. ELECTRIC GLOW-LAMP. Patent dated April 27, 1909. Disclaimer filed April 19, 1911, by the assignee by mesne assignments, the *General Electric Company*.

Enters this disclaimer—

"To that part of the description of said patent which is found in lines 50–51 and lines 59 to 65 thereof, as far as the same may be construed to relate to a wire or wires containing one metal in solid form and carrying a paste or an emulsion having as its active ingredient a different metal or in fact as far as the same relates to a structure other than that in which the support shall comprise the two metals in a solid metallic structure."

Further enters this disclaimer—

"To claims 1 and 2 in so far as the same may be construed to relate to a wire or wires containing one metal in solid form and carrying a paste or an emulsion having as its active ingredient a different metal or in fact as far as the same relates to a structure other than that in which the support shall comprise the two metals in a solid metallic structure."—[*Official Gazette, April 25, 1911.*]

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