

E. W. RICE, JR.
 INCANDESCENT ELECTRIC LAMP.
 APPLICATION FILED SEPT. 13, 1907.

964,692.

Patented July 19, 1910.

Fig. 1

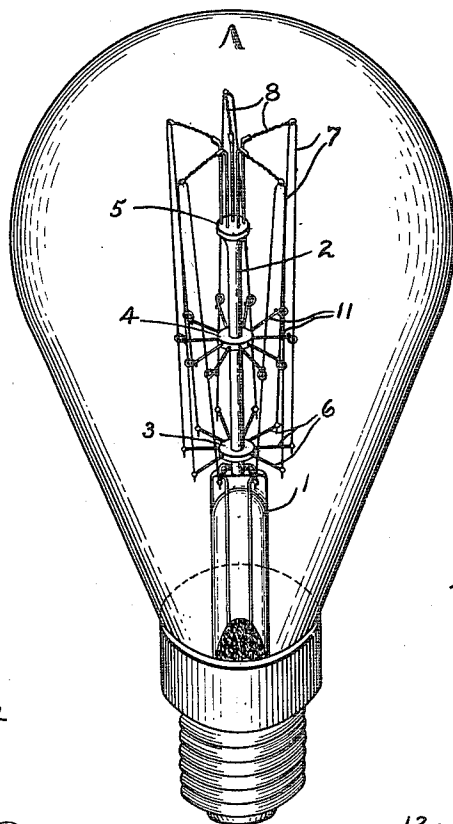


Fig. 2

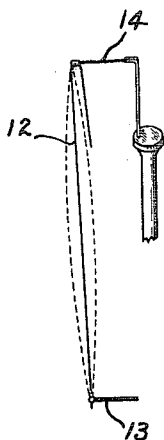
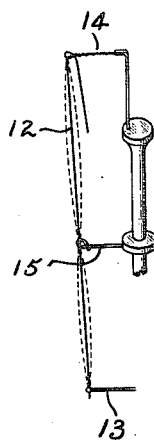


Fig. 3



WITNESSES:

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 ATT'Y.

UNITED STATES PATENT OFFICE.

EDWIN W. RICE, JR., OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

INCANDESCENT ELECTRIC LAMP.

964,692.

Specification of Letters Patent. Patented July 19, 1910.

Application filed September 13, 1907. Serial No. 392,620.

To all whom it may concern:

Be it known that I, EDWIN W. RICE, JR., a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Incandescent Electric Lamps, of which the following is a specification.

My present invention relates to incandescent electric lamps and comprises means for anchoring or supporting the filaments to protect them from destruction when the lamps are roughly handled, as during shipment.

The novel features of my invention are particularly set forth in the appended claims, for a better understanding of which reference may be had to the following detailed description taken in connection with the accompanying drawing.

Figure 1 of the drawing is a perspective view of the lamp embodying my invention; and Figs. 2 and 3 are diagrammatic representations of one leg of the filament.

The lamp illustrated in Fig. 1 comprises a lamp stem 1 on which is mounted a glass pedestal 2 carrying hubs or enlargements 3, 4 and 5. The lower hub 3 is provided with a series of radial conductors 6 of ordinary type, serving as current supply wires for the filament loops 7. These filaments may consist of such materials as tungsten, tantalum, osmium, or other refractory metals or alloys, and may be supported, in accordance with present practice, by means of supports 8, consisting of a copper standard embedded in glass hub 5, and each provided with a resilient tip or extension of tantalum or tungsten wire forming an eye engaging with the filament loop. Such supports exert a certain tension on the metal filament 7 and tend to hold it in position when soft and plastic by virtue of high running temperature. This tension is ordinarily adjusted so that it is just sufficient to hold the filament straight when in an incandescent condition. When the filament is cold, and therefore contracted, the tension is somewhat greater.

In the lamp shown in Fig. 1, the filament loops 7 are supported near the middle of each leg by anchors 11 of tungsten, tantalum, or other suitable material, projecting

radially from the glass hub 4. The advantages of these intermediate supports or anchors will be better understood by reference to the diagrams of Fig. 2 and Fig. 3.

Fig. 2 illustrates one leg 12 of a metal filament support held under slight tension between a current supply wire 13 and the resilient support wire 14, but without intermediate support of any kind. When such a filament is subjected to jars or shocks, such as occur during transportation, it is set into transverse vibration as indicated by dotted lines. In my opinion the stresses incident to such a vibration are highly detrimental to the filament and are liable to cause a rupture thereof. If, however, this vibrating filament leg be provided with an intermediate support 15, as indicated in Fig. 3, the transverse vibration will be greatly reduced. This auxiliary support serves as a sort of node to decrease the amplitude of transverse vibration for all parts of the filament. The filament is thereby protected and is better able to stand rough handling.

In the accompanying drawing, I have shown the filament as provided with but a single auxiliary support or node, but my invention contemplates the use of as many of these supports as are necessary to protect the filament from dangerous vibration.

What I claim as new and desire to secure by Letters Patent of the United States, is,—

1. In an incandescent lamp, the combination of a metal filament held under tension between supports, and means for preventing free vibration of said filament.

2. The combination of a metal filament loop, means for holding said loop under tension, and auxiliary means for preventing free vibration of the legs of said loop.

3. The combination of a filament loop, resilient supporting means for holding said filament under tension, and means for preventing transverse vibration of said filament.

4. The combination of a metal filament loop, anchors for the legs of said loop, a resilient support holding said loop under tension, and auxiliary anchors located between said resilient support and said first mentioned anchors.

5. The combination of a plurality of fila-

ment loops grouped about a pedestal, a single support for the end of each loop which acts to keep it taut, and anchors carried by said pedestal engaging with intermediate points of said filament loops.

5 6. The combination of a metal filament loop, current supply wires connected with the legs of said loop, resilient supporting means connected with the end of said loop
10 and anchoring means engaging with each leg of said loop between the resilient support and the current supply wire.

15 7. The combination with a fragile filament held taut by suitable supporting means, of anchoring means engaging said filament

between the points of support to prevent free vibration thereof.

8. The combination of a fragile filament loop, suitable connections for the legs of said loop, a support for the end of said loop which acts to keep it taut, and suitable means for preventing vibration engaging the legs of said loop between said connections and said end. 20

In witness whereof, I have hereunto set my hand this 11th day of September, 1907. 25

EDWIN W. RICE, Jr.

Witnesses:

BENJAMIN B. HULL,
BERTHA SECOR.