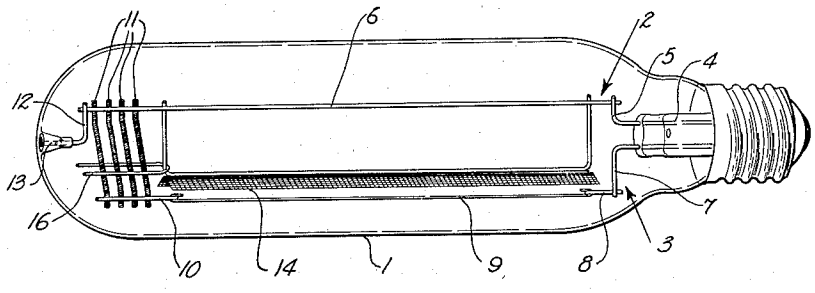
Aug. 21, 1951 L. G. LEIGHTON 2,565,138

FILAMENT SUPPORT STRUCTURE FOR INCANDESCENT LAMPS

Filed Sept. 21, 1949



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Patented Aug. 21, 1951 2,565,138

UNITED STATES PATENT OFFICE

2,565,138

FILAMENT SUPPORT STRUCTURE FOR INCANDESCENT LAMPS

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Application September 21, 1949, Serial No. 116,936

4 Claims. (Cl. 313—278)

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My invention relates to incandescent electric lamps and more particularly to lamps of the type having an elongated filament held under tension.

It is an object of my invention to provide an improved structure whereby the filament is maintained taut by suitable spring means having associated therewith a suitable brace structure which will minimize flexing of the spring means in directions transverse to the filament. The invention will be better understood from the following description taken in connection with the accompanying drawing which is a perspective view of a lamp embodying the invention.

The lamp shown in the drawing is of the same general type as that disclosed in Patent 2,467,710, I. H. Van Horn et al., which is assigned to the same assignee as the present application. The lamp comprises an elongated tubular glass bulb 1 which may contain a suitable gas filling. A pair of lead-in conductors 2, 3 project into the lamp through a conventional stem 4 at one end thereof. The longer conductor 2 comprises an angular section 5 and a long straight section 6 extending longitudinally of the bulb to a point adjacent its remote end. The shorter conductor 3 comprises an angular section 7 and a short straight section 8 welded thereto. The filament 9 consists of a straight length of suitable wire, such as tungsten, secured at one end to the lead wire section 8 and at its other end to an auxiliary section 10 of the lead wire. The said section 10, and therefore the filament 9, is supported from the long lead wire section 6 by suitable spring means herein illustrated as consisting of a plurality (four) of helical springs 11 which are welded at their ends to the respective lead sections. The said spring members 11, which preferably consist of helical coils of tungsten wire, maintain a tension on the filament 9. Although a single coil 11 may be sufficient to maintain the necessary tension, in this case a plurality of coils is used in order to avoid overheating thereof by the large current flowing therethrough. The filament mount structure is additionally supported from the bulb by means of an angular length of wire 12 having one end welded to the lead wire section 6 and having its other end extending into the interior of a hollow glass nipple 13 fused to the tip of the bulb.

The lamp is also preferably provided with an elongated screen 14 to prevent blackening of the bulb. The screen 14 is preferably supported by a wire frame 15 of shallow U-shape located

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substantially in the plane defined by the filament 9 and conductor 6. The ends of the frame 15 are preferably welded to the conductor 6, and the screen 14 is preferably welded along its longitudinal center line to the base portion of the frame.

While the spring members 11 effectively serve to maintain the filament 9 in a taut condition by their flexure in the plane including the conductor 6 and filament 9, the said springs 11 are also flexible in directions transversely of that plane. The said transverse flexure is apt to give rise to difficulties, such as breakage of the joint between the filament and lead wire, and even entanglement of the filament with the screen 14, in case the lamp is subjected to shocks or vibration of sufficient magnitude. In accordance with the present invention I provide means to eliminate that difficulty, the means being herein illustrated as a U-shaped wire brace member 16 which is fixedly supported in the bulb with its leg members arranged at opposite sides of the spring coils 11 a substantial distance from the conductor 6 to effectively minimize transverse flexing of the coil springs 11. Although the brace member 16 may be supported from the bulb or the filament mount structure in any suitable manner, it is herein illustrated as having its base welded to a portion of the frame member 15.

Although a preferred embodiment of my invention has been disclosed, it will be understood that the invention is not to be limited to the specific construction and arrangement of parts shown, but that they may be modified within the spirit and scope of my invention as defined in the appended claims. To this end, for example, the spring means 11 may take other forms, and the brace means 16 may also be modified in structure and in its manner of support within the bulb.

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

1. An electric incandescent lamp comprising an elongated bulb, a pair of rigid lead-in conductors projecting into one end of said bulb, one of said conductors extending a substantial distance into the bulb beyond the other, an elongated filament extending longitudinally of said bulb and having one end connected to the shorter one of said conductors, spring means connected to the opposite end of said filament and to the longer one of said conductors and extending transversely therebetween to support said filament and maintained taut, said spring means

being flexible in directions transversely of said bulb as well as longitudinally thereof, and brace means fixedly supported in said bulb and comprising members arranged at opposite sides of said spring means a substantial distance from said longer one of said conductors to minimize lateral movement of said filament due to transverse flexing of said spring means.

2. An electric incandescent lamp comprising an elongated bulb, a pair of rigid lead-in conductors projecting into one end of said bulb, one of said conductors extending a substantial distance into the bulb beyond the other, an elongated filament extending longitudinally of said bulb and having one end connected to the shorter one of said conductors, spring means connected to the opposite end of said filament and to the longer one of said conductors and extending transversely therebetween to support said filament and maintained taut, said spring means being flexible in directions transversely of said bulb as well as longitudinally thereof, and brace means fixedly supported in said bulb from said longer conductor and comprising members arranged at opposite sides of said spring means a substantial distance from said longer conductor to minimize lateral movement of said filament due to transverse flexing of said spring means.

3. An electric incandescent lamp comprising an elongated bulb, a pair of rigid lead-in conductors projecting into one end of said bulb, one of said conductors extending a substantial distance into the bulb beyond the other, an elongated filament extending longitudinally of said bulb and having one end connected to the shorter one of said conductors, spring means connected to the opposite end of said filament and to the longer one of said conductors and extending transversely therebetween to support said filament and maintain it taut, said spring means being

flexible in directions transversely of said bulb as well as longitudinally thereof, and a U-shaped brace member fixedly supported in said bulb from said longer conductor and having its leg portions arranged at opposite sides of said spring means a substantial distance from said longer conductor to minimize lateral movement of said filament due to transverse flexing of said spring means.

4. An electric incandescent lamp comprising an elongated bulb, a pair of rigid lead-in conductors projecting into one end of said bulb, one of said conductors extending a substantial distance into the bulb beyond the other, an elongated filament extending longitudinally of said bulb substantially parallel to the longer one of said conductors and having one end connected to the shorter one of said conductors, a plurality of coil springs arranged in a row and each connected to the opposite end of said filament and to the said longer conductor and extending transversely therebetween in the plane including said filament and said longer conductor to support said filament and maintain it taut, said springs being flexible in directions transversely of said bulb as well as longitudinally thereof, and brace means fixedly supported in said bulb and comprising members arranged at opposite sides of said springs substantially parallel to said filament and a substantial distance from said longer conductor to minimize lateral movement of said filament due to transverse flexing of said springs.

LEROY G. LEIGHTON.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,467,710	Van Horn	Apr. 19, 1949

Certificate of Correction

Patent No. 2,565,138 August 21, 1951

LEROY G. LEIGHTON

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows:

Column 2, line 55, and column 3, line 20, for "maintained" read *maintain it*;

and that the said Letters Patent should be read as corrected above, so that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 5th day of February, A. D. 1952.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.