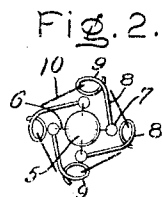
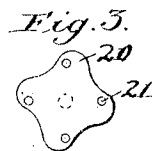
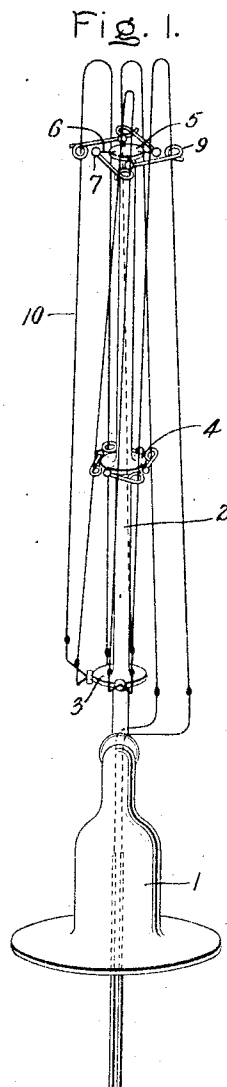


L. GLASER.  
SUPPORTING FRAME FOR INCANDESCENT LAMPS WITH METAL FILAMENTS.  
APPLICATION FILED MAR. 13, 1907.

1,011,771.

Patented Dec. 12, 1911.



Witnesses:

*George F. Thornton.*  
*J. Ellis Glen.*

Inventor:

Ludwig. Glaser,  
By *Albert H. Davis*  
Att'y.

# UNITED STATES PATENT OFFICE.

LUDWIG GLASER, OF BERLIN, GERMANY, ASSIGNOR TO GENERAL ELECTRIC COMPANY,  
A CORPORATION OF NEW YORK.

## SUPPORTING-FRAME FOR INCANDESCENT LAMPS WITH METAL FILAMENTS.

1,011,771.

Specification of Letters Patent.

Patented Dec. 12, 1911.

Application filed March 13, 1907. Serial No: 362,135.

*To all whom it may concern:*

Be it known that I, LUDWIG GLASER, a subject of the Grand Duke of Saxe-Coburg-Gotha, residing at Berlin, Germany, have invented certain new and useful Improvements in Supporting-Frames for Incandescent Lamps with Metal Filaments, of which the following is a specification.

Incandescent lamps with filaments of high fusion metals are usually furnished with a special supporting frame having one or more groups of holders for supporting the separate filaments in the interior of the lamp. This frame is intended to prevent contact of the filaments with each other and to hold the filaments securely in place so that they will not break from shocks or oscillations during transportation. The frame also serves to permit operation of the lamps in any position, even though the filaments of the lamps are soft while in a hot condition.

Since the temperature of the incandescent metal filament is very high, the holders or supports (loops or eyes) through which the arms of the filaments are led must be made of a high fusing material, for example, thorium oxid, magnesia, etc. The loops are connected with the supporting frame, either rigidly or flexibly, by any desired connecting means. In order to diminish the number of connecting means, each group usually contains as many holders as there are looped filaments, so that one arm of the filament is held by means of a support, while the other arm is free. In the burning of such a lamp the disadvantage frequently arises that the free arm of the incandescent filament comes in contact with the more fusible parts of the supporting frame, made commonly of glass, or with the connections between the supporting frame and the holder. A chemical or mechanical effect may be produced by this contact. Generally the filament adheres, resulting in a broken filament when the lamp is cut out of circuit.

The object of the present invention is a supporting frame by means of which the above-mentioned difficulties are avoided. While the separate holders have been, up to the present time, placed in a substantially radial position, they are, according to this invention, so placed or so formed that they

occupy a substantially tangential position, or at least so that parts of them occupy such position. Thus the holders of each group are closed upon themselves in a ring, and completely prevent the freely movable filament arms located outside from coming in contact with the more fusible parts of the supporting frame.

Figure 1 illustrates a supporting frame having four filaments, with two groups of holders; Fig. 2 shows the upper group of holders, seen from above; and Fig. 3 shows a support formed of a single piece, as viewed from above.

The usual lamp stem 1 is provided with a glass rod or pedestal 2 carrying disk-shaped enlargements 3, 4 and 5 to which the filaments are secured. Disk 5 at the end of the pedestal has four short pieces of wire 6 sealed therein, each carrying at its outer end a glass bead 7. Refractory holders 8 are fused to the glass beads and are located in a substantially tangential manner so that the loop 9 of each holder is contiguous to the bead of the next holder. The looped part of each holder secures one leg of a filament in position and the straight or tangential part of that holder prevents the free leg of another filament from coming in contact with the glass pedestal, its enlargements, or the pieces of wire 6, and beads of glass 7. The holders grouped about disk 5 each embrace one leg of each of the filaments 10, and the holders grouped about disk 4 engage the other legs of these filaments.

The form or embodiment shown can be varied in many ways without departing from the spirit of my invention. It is possible also to replace each holder-group by a shaped member made of refractory material, such as thorium oxid, stamped or pressed out at one operation. This form of holder is illustrated by Fig. 3, which shows a disk-shaped member 20 having holes 21 arranged near its outer edge. The disk 20 is suitably attached to the supporting standard 2 at the regions now occupied by the ring of refractory holders.

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

1. A supporting frame for incandescent lamp filaments comprising a standard and a group of refractory holders supported by said standard and arranged to form an in-

closing barrier thereabout and prevent contact between the filaments and other parts of the supporting frame.

2. The combination of a plurality of filament loops, a standard, and a plurality of refractory holders having eyes for engagement with the filament loops and disposed tangentially about said standard to prevent contact of the filaments with parts of the supporting frame other than said holders.

3. In an incandescent lamp, the combination of a plurality of filament loops and a refractory holder engaging with one leg of a filament loop and limiting the movement of the next filament loop.

4. In an incandescent electric lamp, the combination of a plurality of filament loops, and a plurality of holders each having an eye for engagement with one leg of a filament loop and a straight portion for protecting the next loop against contact with the structure by which said holders are supported.

5. The combination of a central pedestal, a plurality of filament loops disposed about said pedestal, a group of refractory holders equal in number to said loops each engaging with one leg of a filament loop, and a second group of holders of the same number spaced apart from the first group in the longitudinal direction of said pedestal engaging with the other legs of said loops.

6. The combination of a pedestal, a plurality of filament loops disposed about said pedestal, and a plurality of holders tangentially arranged with respect to said pedestal and having eyes for engagement with said filament loops.

7. The combination of a central pedestal, a plurality of filament loops disposed about

said pedestal, a plurality of refractory holders carried by said pedestal and each having an eye engaging with one leg of a filament loop, said holders serving as barriers to limit movement of other filament legs in a radial direction with reference to the group of filaments.

8. In an incandescent lamp, the combination of a plurality of filament loops and a plurality of refractory holders therefor arranged to form a substantially closed barrier and limit movement of said filament loops.

9. In an incandescent lamp, the combination of a plurality of filament loops and refractory means engaging some of the legs of said loops and guarding the unengaged legs from contact with the structure carrying said refractory means.

10. In an incandescent lamp, the combination of a plurality of filament loops, and a plurality of groups of supports for said filament loops, each group comprising one support for each filament loop formed for engagement with a leg thereof and the engaging portions of the supports of one group being in staggered relation with those of an adjacent group.

11. The combination with a group of filament legs of refractory supporting means engaging some of said legs and acting to limit movement of the other legs in a radial direction with reference to said group.

In witness whereof, I have hereunto set my hand this 21st day of February, 1907.

LUDWIG GLASER.

Witnesses:

HANS GELLAS,  
GUSTAV NUTTLERS.