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ELECTRIC INCANDESCENT LAMP

Filed June 28, 1923

Figs 1.

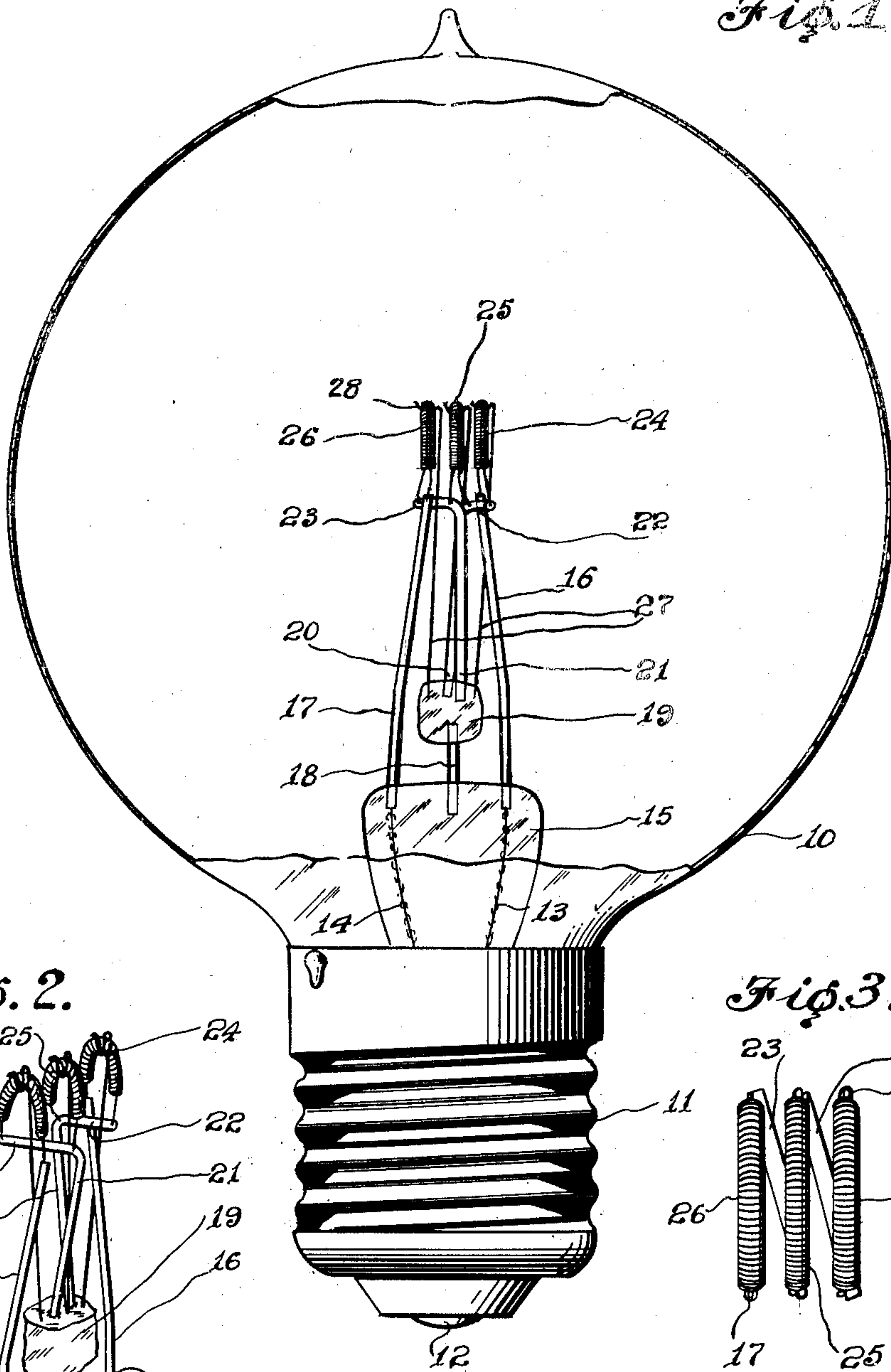


Fig. 2.

Fig. 3.

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UNITED STATES PATENT OFFICE.

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ELECTRIC INCANDESCENT LAMP.

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This invention is an improvement in electric incandescent lamp filaments.

Its primary object is to provide a lamp for projection purposes having a filament composed of a plurality of parallel filament elements mounted so closely together that the projected images from each element overlap each other, the arrangement of the filament supports being such that notwithstanding the proximity of the filament elements, arcing between them is prevented.

In practice the lamp filament comprises a plurality of small bent or substantially U-shaped filament elements, which collectively form a high voltage filament, the terminals of such elements being so arranged as to prevent arcing, and the elements are mounted side by side and in parallel relation to each other, and so closely together that the beams projected from the several elements overlap each other, and thus combine to form a single powerful beam.

In the accompanying drawing which forms a part of this application, and in which like reference characters refer to like parts throughout the several views:—

Figure 1 represents an elevational view of an electric incandescent lamp, a part of the bulb being in section, showing a side view of the filament structure.

Figure 2 represents a perspective view of the filament structure, and

Figure 3 represents an enlarged plan view of the filament structure.

Referring to the drawings, the lamp comprises a globe 10 which is provided with a threaded base 11 of usual construction for fitting the lamp into sockets. On the bottom of the base is a contact 12 that is connected with a leading-in wire 13, the contact being insulated from the base in the usual manner, while to the upper part of the base is attached the extremity of a return wire 14.

Carried by the base in the usual manner, and projecting upwardly into the globe 10, is a standard 15 which is, as shown, composed of glass. The wires 13 and 14 are embedded in the standard and near the top thereof are joined respectively to a pair of upwardly extending posts 16 and 17.

Projecting upwardly from the center of the standard 15 between the posts 16 and 17 is another post 18 that carries a glass insulating body 19. Extending upwardly from

the body 19 is a pair of supports 20 and 21, the upper extremities of which are bent to provide a pair of horizontal limbs 22 and 23, respectively.

As shown, the filament supports are so disposed that the limbs 22 and 23, while parallel to each other, are so arranged that the bend of the support 20 is directly opposite the top of the post 16 on one side of the axis of the lamp, and on the other side of the axis the bend of the support 21 is opposite the top of the post 17. A filament 24 is connected to the top of the post 16 and to the end of the limb 22. Another filament 25 is connected to the bends of both of the supports 20 and 21, and a third filament 26 is connected to the end of the limb 23 and to the top of the post 17. The filaments thus mounted are side by side and in parallel relation to each other, and so closely together that the beams projected from the several filaments overlap each other, and thus combine to form a single powerful beam. The filaments are formed from lengths of coiled filament wire, and by preference they are bent or substantially of inverted U shape as shown.

This construction is such that the current, on flowing upwardly through the post 16 is carried by the filament 24 to the end of the limb 22. The current then flows through the limb 22 to the bend of the support 20, and across the filament 25 to the bend of the support 21. Continuing along the length of the limb 23, the current now flows across the filament 26, and down the post 17 to the return wire 14.

When this construction is used in a 100 volt lamp, the potential difference between the top of the post 17 and the bend of the adjacent support 21 will be only $33\frac{1}{3}$ volts, while the potential difference between the bend of the support 21 and the end of the adjacent limb 22 will be only $33\frac{1}{3}$ volts, and the potential difference between the top of the post 16 and the bend of the adjacent support 20 will be only $33\frac{1}{3}$ volts. Thus despite the proximity of the filament terminals there will be no danger of arcing between them.

For the purpose of retaining the filaments in proper relation to each other, I utilize a plurality of anchor wires 27, each of which consists of a length of stiff wire having one end embedded in the insulating

body 19, and its upper end provided with a U-shaped seat 28 for the filament, such seat being formed by bending the outer end of the wire, as shown.

5 Having thus described my invention, what I claim is:—

10 1. An electric incandescent lamp having a plurality of substantially U-shaped filaments each formed of a length of coiled filament wire and mounted in parallel planes, the adjacent terminals supporting the filaments having the same potential difference between them as the voltage drop in a single filament element.

15 2. An electric incandescent lamp having a plurality of substantially U-shaped filaments relatively short in length and formed of coiled wire and mounted close together in parallel planes, the voltage drop between adjacent filament ends not exceeding the voltage drop due to a single filament element.

20 3. An electric incandescent lamp having a plurality of parallel filaments formed of short lengths of coiled filament wire and arranged close together and electrically connected in series, and nonluminous connections electrically connecting the ends of the filaments in such a manner that the positive ends of the filament are arranged at one side and the negative ends at the other side of the lamp.

25 4. An electric incandescent lamp having a plurality of parallel substantially short U-shaped coiled filaments arranged close together and electrically connected in series, and nonluminous connections electrically connecting the filaments in such a manner that

the current flows through all the filaments in the same direction.

5. An electric incandescent lamp having 40 a pair of filament supports, the upper ends of which are bent in opposite direction to provide substantially parallel limbs arranged close together, a pair of posts to which the leading-in wires are connected, one post terminating at its top opposite the bend of one support and the other post terminating at its top opposite the bend of the other support, a relatively short U-shaped coiled filament connected at its ends adjacent the bends of said filament supports, and relatively short U shaped coiled filaments substantially parallel with and close to the first named filament and respectively connecting the tops of the posts with the ends of the 55 adjacent limbs.

6. An electric incandescent lamp having a pair of filament supports terminating in parallel limbs arranged close together, a pair of posts to which the lead-in wires are connected, one post terminating at its top opposite the end of one limb and the other post terminating at its top opposite the opposite end of the other limb, a relatively short coiled filament connected at its ends adjacent the opposite ends of said limbs, and relatively short coiled filaments substantially parallel with and close to the first named filament and respectively connecting the tops of the posts with the remote ends of said limbs. 65 70

In testimony whereof I hereunto affix my signature.

STATES LEE LEBBY.