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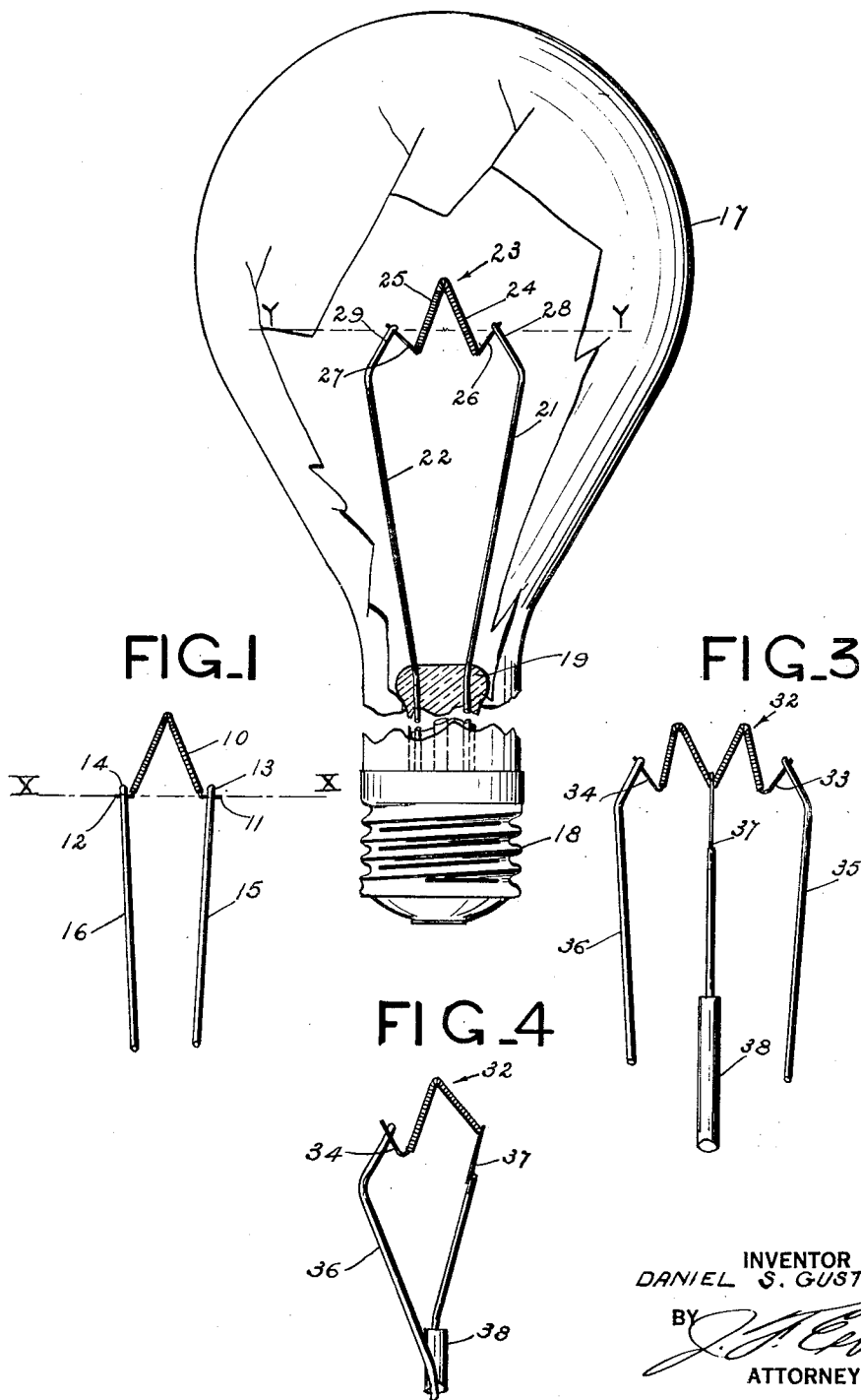
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FILAMENT MOUNTING FOR INCANDESCENT LAMPS

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FIG. 2



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FILAMENT MOUNTING FOR INCANDESCENT LAMPS

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This invention relates to electric incandescent lamps and more particularly to a lamp of the coiled filament type.

In the manufacture of incandescent lamps, especially those employing a coiled or so-called concentrated filament, great difficulty has been encountered in properly supporting the filament in a given focal position and in the provision of a supporting structure able to resist impacts and vibration imposed thereon. The jars or impacts to which a filament is subjected occur during transportation, general handling and often when the lamp is put into use on a moving body, as on vessels or in buildings where heavy machinery is in operation.

In the mounting of the plain or uncoiled filament, the weight of the filamentary body is distributed in such a manner that it can readily be supported at various points along its length. This is the case in lamps having the saw-tooth filament as found in Mazda B type lamps. In some forms of the concentrated filament type lamp it is also possible to provide several support members so that the weight of the filament is divided between the supports, as, for example, in the ring shaped filament of a "C" type Mazda lamp.

The concentrated type of filament is of relatively small mass but is also comparatively heavy and when deposited at the ends of support wires is difficult to properly support, since owing to its inertia a quick jar will often cause a rupture at its points of union with the supports. This is especially true in the case of the inverted V-shaped filament which is secured in two places only, that is, by its terminals to the leading-in wires.

The V-shaped filament is most extensively employed in connection with what is termed a "series lamp". In lamps of this character, where the filament is disposed in a vertical position, considerable breakage occurs at the points of juncture between the filament and the leading-in wires. This has heretofore been caused by the disposition of the relatively heavy filamentary body in constructions where the weight of the body combined

with the leverage imposed upon the points of union resulted in excessive stresses.

An object of the present invention is, therefore, to provide a V-shaped filament mounted upon the leading-in conductors of a lamp in such a manner as to minimize detrimental effects through jars or impacts.

Another object of the invention is to provide coiled type filaments which may resist impacts with the least detrimental stress being imparted to the points of union between the leading-in conductors and the filament.

Another object of the invention is to provide a coiled filament of the V-shaped type so disposed between leading-in conductors that the weight of the filament is so distributed as to minimize the force imparted to the points of union between the filament and the leading-in wires.

A further object of the invention is to provide an incandescent electric lamp with a filamentary body so arranged and united to the leading-in wires of the lamp as to provide a more rugged and effective structure.

In practicing the present invention, the usually V-shaped filament of a street series lamp may be taken as an example. Instead of making the terminals of the filament extend substantially on the axial line of the respective sections of the filament, the said ends are somewhat extended and bent upwardly or inverted, giving the filament the shape of the letter W. The leading-in wires of the lamp which, in the case of a street series lamp, are relatively long, may have their ends bent toward each other and the terminals of the filament are secured to the ends of the leading-in wires in such position as to bring the center of gravity of the filamentary body substantially on a line passing through the points of union of the filament and the leading-in wires. In this construction the filament may be subjected to jars or impacts with the least amount of stress being imparted to its union with the leads. The invention will be more fully understood by reference to the accompanying drawing in which:

Fig. 1 shows a filament as heretofore con-

structed and mounted upon the lead-in wires of a lamp;

Fig. 2 shows an incandescent lamp of street series type with an inverted V-shaped filament constructed in accordance with the present invention;

Fig. 3 shows the present invention applied to another shape of filament; and,

Fig. 4 is a side view of the filament shown in Fig. 3.

As illustrated in Fig. 1, a coiled filamentary body 10 is shown with terminals 11 and 12 welded or otherwise secured to ends 13 and 14 of leading-in conductors 15 and 16. In this type of filament, it will be evident that since the points of union between the filament and the leading-in conductors are in a plane indicated by the dotted line X—X, and disposed on a line comparatively remote from the center of gravity of the filamentary body, that any impact or jar imparted to the body will be the result of the weight of the body magnified by the leverage which is relatively great and in the course of general handling and transportation, or even when a filament is in operation, excessive vibration or a quick jar will be multiplied and the stresses imposed upon the points of union cause breaks destroying usefulness of the lamp.

A construction avoiding the above disadvantage is shown in Fig. 2 of the drawing illustrating the present invention applied to a so-called series lamp comprising a bulb 17 having the usual screw base 18 and stem press 19 from which leading-in wires 21 and 22 extend into the bulb. This lamp as shown is provided with a coiled inverted V-shaped filamentary body 23 constructed in accordance with the present invention. As will be noted, the legs 24 and 25 of the filamentary body are provided with relatively long terminals 26 and 27 respectively. These terminals are bent or inverted to angular relation with the legs 24 and 25 of the filament and provide comparatively long contact areas which may be welded or otherwise secured to ends 28 and 29 of the leads 21 and 22 respectively. As will be noted, by reason of the extended terminals and the oppositely bent ends of the leading-in wires, the filamentary body may be quickly and conveniently positioned to dispose its center of gravity on the straight line indicated by dotted line Y—Y passing through the points of union of the filament and the leading-in wires. By reason of this construction, it will be obvious that a maximum amount of resistance to impacts imparted to the filament is attained. The weight of the body is so disposed that any movement thereof is not multiplied by an excessive leverage to cause detrimental stresses and consequent ruptures as heretofore occurred. In addition to the resistance of the present construction to breakage due

to vibration or sudden jar, it will be appreciated that the relatively long terminals provide a resilient support for the filament and augment its efficiency in resisting any bad effects which might result from contraction and expansion of the filament when in use. In practice, it has been found that lamps constructed in accordance with the present invention withstand impacts imparted to the lamp by the usual factory tests with approximately seventy per cent greater resistance than lamps as heretofore constructed.

The present invention may be applied to filaments other than V-shaped, such, for example, as the filament 32 shown in Fig. 3 which is provided with terminals 33 and 34 secured to leading-in wires 35 and 36. In this type of filament an extra support member 37 is provided and projects from a glass arbor 38 usually made integral with the stem of the lamp.

It is to be understood that the reference to the center of gravity of the body is only taken as a standard in defining the position of the body with relation to its points of union with the leading-in wires. The applicant's invention, however, resides in so placing the filament with respect to the points of union with the leads that the least detrimental effects result and it has been found that when the line in which points of union are disposed passes transversely through the body that good results are obtained and either by trial or calculation the said line may be made to pass through or near the center of gravity or the center of percussion or any point in the filamentary body giving the maximum efficiency.

It is obvious that modifications and structural operations may be resorted to in carrying out the present invention but it is to be understood that the invention contemplates all such modifications as lie within the scope of the appended claims.

What is claimed is:

1. An incandescent electric lamp comprising a bulb, rigid support wires extending into said bulb, an inverted V-shaped continuously coiled filament having uncoiled resilient portions connected at their ends with the ends of the support wires, the said uncoiled portions being of a length sufficient to resiliently support the relatively heavy coiled filament and dissipate energy detrimental to the life of the filament.

2. An incandescent electric lamp comprising a bulb, rigid support wires extending into said bulb having their ends in given spaced relation, a continuously coiled inverted V-shaped body, uncoiled resilient portions constituting terminals of said body, said uncoiled portions being bent toward and at an angle to the respective legs of said body, said uncoiled portions being connected to the ends of said support wires at a sufficient distance from the

coiled body to provide uncoiled portions of wire to serve as resilient supports for the coiled body.

3. An incandescent electric lamp comprising a bulb, a pair of rigid support wires extending into said bulb and having their free ends disposed in given spaced relation, a continuously coiled filamentary body disposed between said ends and in such position that said ends are disposed on a common line passing through said body, uncoiled terminal resilient portions on said body connected to said support wires said terminal portions serving to resiliently suspend said body between the ends of said support wires.

4. An incandescent electric lamp comprising a bulb, a coiled filamentary body of inverted V-shape, an uncoiled terminal portion extending from each leg of said body bent to give the body and terminals the form of a W, and a pair of support wires extending into said bulb having their ends secured to the ends of said terminals.

In testimony whereof I have hereunto subscribed my name this 18th day of March, 1926.

DANIEL SNYDER GUSTIN.