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FILAMENT MOUNTING

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Fig. 1.

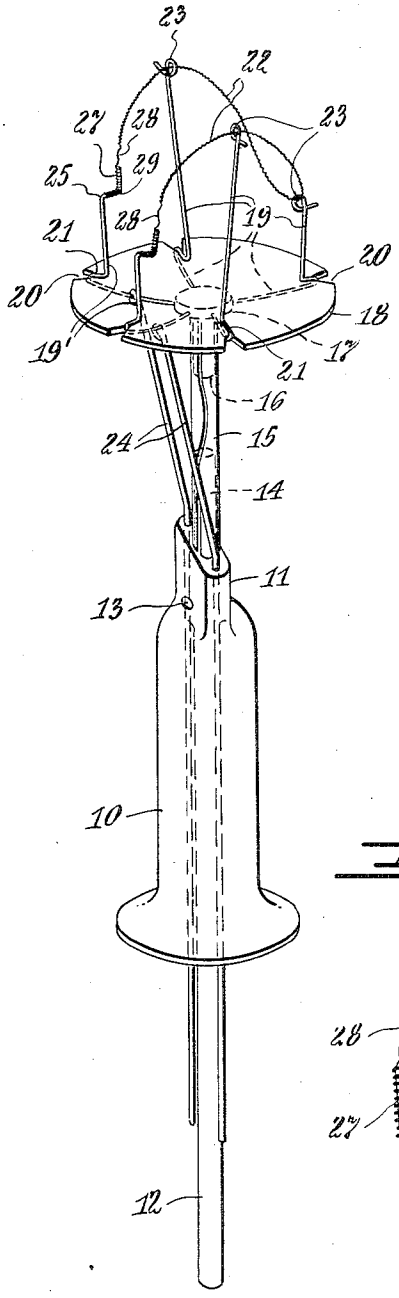


Fig. 2.

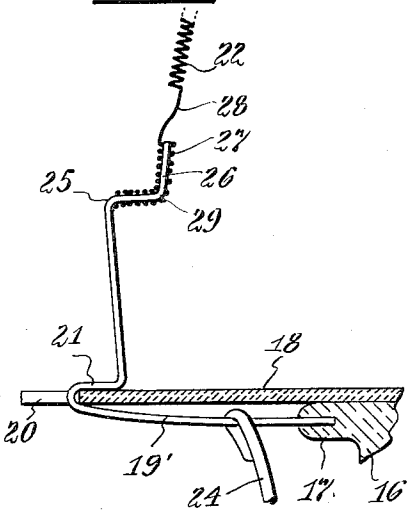


Fig. 3.

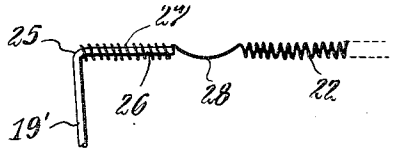
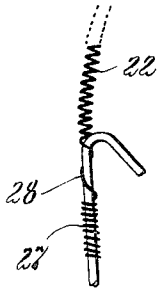


Fig. 4.

Fig. 5.



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2,848,642

FILAMENT MOUNTING

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3 Claims. (Cl. 313—279)

This invention relates to filament mounting and has particular reference to the mechanical and electrical junction between the filament and its lead-in wires in an electric lamp.

It is present day practice to pre-fabricate lamp filaments in many instances by providing a coil with two pulled out sections such that the length of coil between those sections is of proper length to require the rated wattage for the lamp. Beyond the pulled out sections there are end coils which in the past were slipped onto conductor wires well below the ends thereof so said conductor wires protruded therethrough and were bent back or hooked after assembly to keep the end coils from thereafter slipping off of the lead-in wires. The prior art mounting is illustrated in Figs. 4 and 5, and it will be observed that there is uncertainty in the prior art mounting as to exact location of the end coil and pulled-out section with respect to the hook of the lead-in wire. Such prior art mounting is subject to slippage and sparking due to unavoidable looseness of the coil on the wire. Furthermore, in order to insert the lead-in wire or its equivalent through the end coil but avoid its insertion into the body coil of the filament, the pulled-out section has to be bent sidewise to dis-align the coils. However, the pulled-out section is the weaker part of the filament and making the additional bend mentioned and then bending it back again after the lead-in wire or its equivalent is hooked is highly detrimental and results in many filaments breaking during fabrication of the lamp.

According to the present invention the above mentioned and other deficiencies of prior art lamps are overcome.

In its broad aspect, the invention proposes improved mounting of a filament on its lead-in wire or other wire conductor.

More specificially, the invention contemplates a fixed attachment of the filament which prevents it from sliding on the conductor wire.

In conjunction with the foregoing, the invention improves upon and obtains good electrical continuity from the lead-in wire to the filament in a simple and readily applied manner.

An important objective is to provide for mounting and fixing the filament on the conductor wire without having to deform the pulled-out section of the filament.

Other objects, advantages and novel features of construction and method steps will appear to persons skilled in the art to which the invention appertains as the description proceeds, both by direct recitation thereof and by inference from the context.

Referring to the accompanying drawing, in which like numerals of reference indicate similar parts throughout the several views;

Figure 1 is a perspective view of a stem assembly which includes our invention as part thereof;

Figure 2 is an enlarged sectional view in the plane of the conductor wire and associated portion of the filament;

Figure 3 is an elevation of the filament-receiving end of the conductor wire in its initial condition and showing a filament applied thereto; and

Figures 4 and 5 are elevational views showing the prior art mode of mounting filaments on conductor wires.

As one use and embodiment of the invention, the same is shown in the drawing as incorporated in an arbitrarily selected type of electric lamp stem assembly, but it is to be understood that the invention is likewise applicable to other stem assemblies. The stem assembly shown, comprises a glass flare tube **10** at the upper end of which is a press **11** and within which is a tubulation **12** which has an opening **13** to the exterior of the tube, and interior of the lamp, at the lower end of the press. At the upper end of the press there projects a glass rod **14** coaxial with the flare tube, said rod having a metal tube **15** applied thereover in relatively tight contact therewith for maintaining substantially axial alignment. The tube extends considerably above the glass rod and at its upper end receives and retains another glass rod **16** which is beaded at its outer end with the under side of the bead **17** resting on the end of said metal tube. The outer end of said bead is preferably flat, and a disc spacer **18** of insulative material lies across the same and is approximately centered coaxial with said bead and rod. Support wires **19** have ends thereof individually sealed in and supported by said bead, all radiating therefrom equal distances to proximity to the periphery of said spacer. Said spacer has a plurality of peripheral notches **20**, one for each of said support wires which bend up through the notches and back onto the upper surface of the disc, as at **21**, constituting gripping means to seat and hold said disc in place. Radially inwardly of the notches said wires bend again to project upwardly away from the disc in a direction approximately perpendicular to the plane thereof. A filament **22** is carried by the upper ends of these several support wires some of which have pig-tail loops **23** around the filament for supporting retention of the filament thereby.

Two of said support wires, distinctively designated as **19'**, are utilized as conductors and are equivalent to and function as lead-in wires in relation to the filament. Lead-in wires **24** of the character well known in the prior art are sealed through press **11**. These lead-in wires are hooked and pinched over the two support wires **19'** selected as conductors and thereby a complete electrical circuit is provided for the filament. These lead-in wires keep the beaded rod and metal tube assembled with respect to each other and upon the rod **14**.

An essential feature of the present invention is the means and method of attaching the filament to said conductors **19'**. As initially formed, each said conductor wire **19'** is bent, as at **25**, to provide a substantially straight end portion **26** which projects transversely to the upwardly projecting portion of said conductor. According to the illustrated example, said bend **25** is substantially a right angle. The length of said transversely-projecting end portion **26** and the length of end coil **27** of the filament up to the pulled-out section **28** thereof are made substantially equal and said end coil is slipped onto said end portion **26** as shown in Fig. 3. By virtue of bend **25** the conductor provides a definite stop limiting the insertion of the end portion **26** into the coil. After the coil is in place, said transversely projecting end portion **26** of conductor **19'** is bent intermediate of its ends, as at **29**, through a substantial angle, as for example a right angle as illustrated in Fig. 3, so that the part of the end coil next to the pulled-out section will have substantially axial alignment with the main portion of the filament **22** next

beyond said pulled-out section and thereby orienting said filament in its position of use in the stem assembly. Thus, it will be seen that the pulled-out section is not bent during the assembly and likelihood of breakage thereat is reduced to a minimum. The provision of the bend intermediate of the ends of the end coil in conjunction with the bend of the transversely-projecting end section of the conductor within the coil causes the turns of the end coil at said bend to be compressed on one side of the conductor and expanded on the opposite side thereof, as shown in Fig. 2. The resultant deformation of the end coil **27** effected by the bend **29** is, therefore, such that the filament **22** is not only locked in place on the conductor **19'** but forced into tight engagement and positive electrical contact therewith. Slippage of the coil is, accordingly, obviated enabling the length of filament from one conductor to the other to be readily predetermined and maintained constant for each assembly and uniform for a series of assemblies.

We claim:

1. A filament mounting comprising a wire wound to form a coiled filament, and a conductor having a transversely-projecting end portion which is inserted into and engages a predetermined end section of said coiled filament, the said end portion of the conductor and engaged filament end section being bent at a point intermediate of the ends of said conductor end portion through an angle such that said engaged filament end section is deformed at said bend and said coiled filament locked in positive electrical contact with said conductor.

2. A filament mounting comprising a wire wound to form a coiled filament, and a conductor having a transversely-projecting end portion which is substantially straight and inserted into the coiled filament and

engages a predetermined end section thereof, the said end portion of said conductor and engaged filament end section being bent at a point intermediate of the ends of said conductor end portion through an angle such that the turns of said filament at said bend are compressed on one side of the conductor and expanded on the opposite side thereof to thus lock the filament on said conductor in positive electrical contact therewith.

3. A filament mounting comprising a wire wound to form a coiled filament having a pulled-out section and an end section, and a conductor having a transversely-projecting end portion which is inserted into the end section of said coiled filament, the said end portion of said conductor being substantially straight and of such length that it is coextensive with the said filament end section, said conductor end portion and filament end section being bent at a point intermediate of their ends through an angle such that the spacing between the turns of said filament end section at said bend are compressed on one side of the conductor and expanded on the opposite side thereof to thus lock said coiled filament on said conductor in positive electrical contact therewith.

References Cited in the file of this patent

UNITED STATES PATENTS

1,637,034	Bergmans	July 26, 1927
2,123,015	Marden et al.	July 5, 1938
2,329,118	Inman	Sept. 7, 1943
2,366,292	Smith	Jan. 2, 1945
2,424,518	Stuart	July 22, 1947
2,465,106	Lund	Mar. 22, 1949