Aug. 6, 1957 L. L. NICOLARO 2,802,191

BASE FOR ELECTRIC LAMP

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Fig. 1.

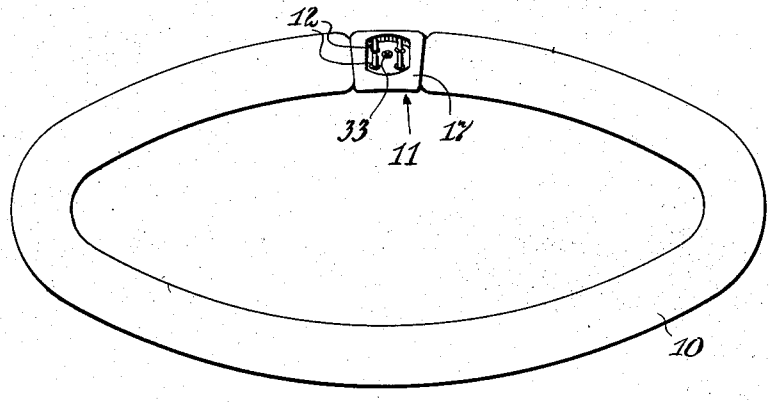


Fig. 3.

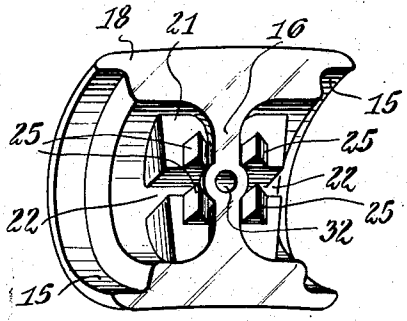


Fig. 4.

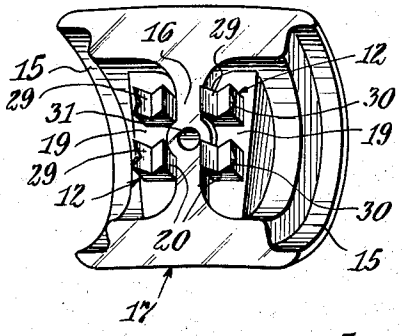


Fig. 2.

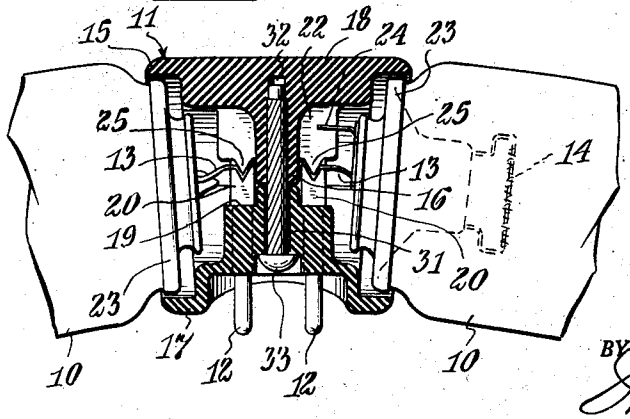
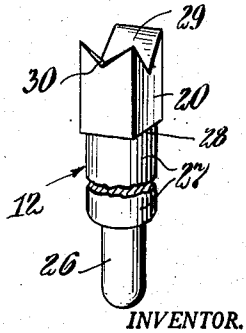


Fig. 5.



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BASE FOR ELECTRIC LAMP

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3 Claims. (Cl. 339—145)

This invention relates to bases for electric lamps, and more particularly intended for fluorescent lamps of circular type.

Heretofore bases for the type of lamp above indicated have required that the four lead-in wires be threaded through small holes of the contact pins. Performance of this operation has been done by hand and requires an experienced operator and at best involves pains-taking care, patience and a considerable expediture of time. Also, the prior art bases have utilized two sections with a threaded member that had to be screwed home as one of the steps in completing the assembly, again involving a time-consuming operation. Finally, the lead-in wires, where protruding from the outer ends of the pins were cut off flush and soldered thereat to the pins. As a result, the labor cost of basing the lamps has been exceedingly high, and a more simple and less expensive base and basing operations are of paramount importance.

According to the present invention, the primary object is to simplify the construction of base and basing operations.

More specifically, an objective is to avoid need for threading wires in pin holes.

Another object of the invention is to provide a base, the sections of which can be held together by means pressed into place, thereby avoiding time consuming operation of screwing together.

Again, the invention proposes securing the lead-in wires to the pins by the same operation utilized for pressing the base sections together.

Yet another object of the invention is to avoid need for soldering the lead-in wires to the pins.

Other objects of the invention will appear to persons skilled in the art to which it appertains as the description proceeds, both by direct recitation thereof and by implication 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 lamp embodying my invention;

Figure 2 is a longitudinal section of the base and adjacent portions of the envelope in elevation;

Figures 3 and 4 are perspective views of the two sections of the base; and

Figure 5 is a perspective view of one of the pins utilized as part of the base assembly.

In the specific embodiment of the invention illustrated in said drawing, the reference numeral **10** designates a lamp envelope to which a base of insulative material, identified generally by numeral **11**, is applied. Said base has metallic conductive pins **12** protruding therefrom for purpose of making exterior contact with the electric circuit (not shown) said pins being connected within the base by lead-in wires **13** which are sealed through the lamp envelope to carry the electric current to electrodes **14** within the lamp.

According to the present invention, the base has an

exterior cylindrical configuration. The interior is cylindrically hollow at both ends, thereby providing cylindrical end rims **15**, and the mid-portion between said ends or rims provides a thickened body portion consisting in part of a partition **16** dividing one end hollow from the other and substantially filling the interior of the base thereat. The base of my invention is divided longitudinally substantially on a diametric plane, thereby providing two semi-cylindrical sections **17**, **18**. Each section includes a semi-circular half of the aforementioned partition **16**.

All of said pins **12** are mounted in one section only, for instance in section **17**, and are perpendicular to said dividing plane and at the mid-portion of the base with one pair at one side of the partition and another pair at the other side thereof, so each pair will pass through a ledge **19** constituting another part of the thickened body portion of that section and located next to the partition. There is a ledge **19** at each side of the partition in the section **17** having said pins, said ledge being parallel to the said dividing plane and stepped back therefrom to afford space for the heads **20** of pins **12**.

The other section **18** of the base likewise has ledges, there identified by numeral **21**, but each ledge is preferably divided midway of its length so as to provide a recess **22** inwardly toward the partition and open toward the rim ends of the base, and, in the present showing, also open toward the dividing plane of the base sections. The lamp envelope terminates with a metal header **23** nonrotatably fixed on the envelope, and one at least of these headers has a finger **24** projecting therefrom in a direction enabling it to be located in one recess **22** of base section **18**. This arrangement keeps the base from rotating on the envelope when assembled thereon. The surface plane of these ledges **21** is parallel to the aforementioned dividing plane of the sections and stepped back therefrom. Protruding from said surface of ledges **21** are a plurality of knobs **25**, which in number and arrangement correspond to the number and arrangement of pins **12** in the other section **17**. These knobs **25** are preferably integral with the base and formed as part of the insulating material thereof. Said knobs are furthermore by preference wedge or tent shape with the ridge peak thereof parallel to the partition and to said dividing plane, substantially in said plane, and arranged so the ridge peaks of each pair are aligned with each other. These ridge peaks are located so as to extend diametrically across the pin heads **20** mounted in the other section **17** when the two sections are assembled.

The contact pins **12** are preferably all alike. Each comprises, as best shown in Fig. 5, a prong portion **26** at one end and a head **20** at the other end. Between the head and prong is an intermediate shank **27** shown of less diameter than the head and of greater diameter than the prong. The shank **27** is located in the assembly within a transverse hole provided therefor through the body of the section **17**, said hole being through the ledge and axially perpendicular thereto. Said shank is held within the hole by friction, cement or other suitable means, with the prong protruding exterior to the base. By virtue of the larger diameter of the head, it provides a shoulder **28** at the junction thereof with the shank, and in the assembled base this shoulder will engage against the adjacent portion of the ledge and prevent the pin from any outward displacement.

The inner end of head **20** has a diametric V-shaped trough **29** therein substantially matching the angularity of the aforementioned knobs **25**, so that when the base sections are assembled each knob will substantially fit within its respective trough. Accordingly, in making the assembly, the pins are located with the troughs of each pair in alignment and parallel to the partition. It also

may be added, that the length of the pin heads and shanks, and distance of projection of the knobs are proportioned properly to obtain a substantially nesting interfit thereof in use. One side of each trough **29**, which in assembly is positioned to be the side away from the partition, is notched, as at **30** at its outer edge, said notch being intended for and adapted to receive a lead-in wire **13** therein so that said wire may extend across the trough. When the two base sections **17**, **18** are pushed together, the respective knobs will deflect the lead-in wire to assume the angularity of the nesting trough and knob and will be clamped therebetween, thereby establishing electrical connection from the pin to said lead-in wire without need of threading or soldering. The notch **30** keeps the wires located during the assembly operation. The partition functions to keep the wires confined to their respective ends of the base and prevents them from short-circuiting.

The two sections **17**, **18** of the base are clamped together, and according to the present invention, I have found that this can be accomplished without need for screwing a threaded member through said sections. The section **17** having pins **12** therein, is provided with a hole **31** at the diagonal center between the pins so that said hole is midway of the length of the partition as viewed toward the dividing plane. The hole is perpendicular to said plane and extends therefrom to the exterior of the section **17**. The other section **18** has a hole **32** which, when the sections are assembled, is aligned with and of matching diameter to aforementioned hole **31**. The hole **32** in section **18** is also perpendicular to the dividing plane and extends within the partition toward the exterior of its section, but in this instance does not go all the way through to the exterior and may therefore be termed a blind hole. Use of a blind hole has advantages not only to maintain smooth and pleasing appearance of the exposed part of the base, but prevents access thereat to the securing member located in the hole in the completed lamp. After the base is assembled on the envelope, a securing member **33** is applied in the aligned holes in a manner serving to retain the sections of the base in permanent juxtaposition.

The mode of securing said sections in their assembled juxtaposed relation is an essential feature of the present invention. Holes **31**, **32** coordinate to provide a continuing cavity in the two base sections. The hole **31** which extends entirely through and opens at the periphery of section **17** preferably is of uniform diameter throughout and of a size substantially the diameter of the securing member **33** which may be inserted therein without binding. A head on the securing member will retain the section from displacement off of the said securing means. The hole **32** in the other section may advantageously have a slight taper, say about two hundredths of an inch smaller diameter at its blind end than at its open end.

The material of which the base sections are fabricated is preferably urea formaldehyde, which is a moldable resin. The distortion point of this material is in the range of 132° to 138° C., which is deemed preferable. The invention may be practiced, however, with either lower or higher distortion points, and in this larger operative range limits of approximately 100°–170° C. for the distortion point seem to apply. While the urea formaldehyde is most favorably considered, there are other materials having distortion points in the usable range which I may use if desired, such as phenol formaldehyde, melamine formaldehyde, phenol furfural, polyvinyl carbazole, furan, and others.

The securing member **33** is of the nature of a headed dowel the shank of which, at least near the end remote from the head, is roughened, as by knurling, ridging, threading or otherwise producing a multiplicity of sharp projections on the surface thereof. Just as this member is about to be inserted in holes **31**, **32**, it is heated, as by being passed through a gas flame, or otherwise, so when entering and lodging in said holes it will have a temperature well above the distortion point of the material of which said sections are composed. With the urea formaldehyde, I find a temperature of 250° C. to which the securing member is heated, works very well. For other materials with lower or higher distortion points, the heat to which the securing member is raised is proportionately lower or higher respectively. By pressing the securing member into said holes as far as it will go, with the head thereof brought into clamping engagement with base section **17**, the securing member obtains a very tenacious grip in the blind hole and cannot be pulled out by any probable force to which the base will be subjected in use.

While I do not limit myself to any adopted theory of operation, it is a fact that if the same securing members are attempted to be pressed home in the base sections with the pin cold or unheated, a very high percentage of the base sections are cracked. I am of the opinion that the heat of the securing member, inserted in accordance with my invention radiates from the embossing thereon and sufficiently softens the base material to admit the projections of said members to embed in the material which, as the member cools, grips the member and holds it permanently in place. Steel, nickel steel, or similar alloys function to good advantage as the material for the securing members, presumably because they will retain the heat adequately for the interval between the application of the heat and the application of the member into the holes. Such materials also appear to be advantageous because of the fact that the amount of heat applied does not melt or soften the member and its projections therefore remain intact and sharp and not only embed more readily but obtain a deeper grip into the material of the section than would occur if the projections became deteriorated by the heating of the member.

In the practice of my invention, the base section **17** having the several contact pins **12** therein may be laid in a jig or holder with the heads of the pins upward. The envelope **10** is applied upon the rim portions of the base with the lead-in wires engaging in notches **30** of the pin heads and extending across the troughs **29**. The other section **18** of the base **11** is then applied in position with finger **24** entering a recess **22** of said section and the knobs **25** registering above said troughs **29** of the pins. Said section **18** is then pressed down to closing engagement with the under section **17** to final position which results in the knobs clamping the lead-in wires within said troughs. Then the securing member **33**, being duly heated, is pressed home in holes **31**, **32** and the lamp is fully based. The several operations are simple mechanical movements, and may be performed by machine, conducive to rapidity of manufacture.

I claim:

1. A base for a tubular lamp of circular configuration comprising, a body of electrically non-conductive moldable material having a known heat distortion point, said body being substantially cylindrically hollow at each end and divided on an axial plane to provide a pair of matching and oppositely-disposed base sections of such length that when tightly pressed together they engagingly accommodate the end portions of said lamp, means extending through one of said base sections for interiorly receiving the end portions of the lamp lead-in wires and providing exteriorly-disposed pin connectors therefor, means carried by the other of said sections for cooperatively depressing said lead-in wire end portions into firm electrical contact with the interiorly-disposed ends of said pin connectors when said base sections are aligned in operative relation and firmly pressed together at said plane, and press-fitting means embeddable in said moldable material for holding said sections together in tightly-closed relation.

2. A base for a tubular lamp of circular configuration comprising, a substantially cylindrical body of electrically non-conductive moldable material having a known heat distortion point, said body being substantially cylindrically

hollow at each end and divided on an axial plane to provide a pair of matching and oppositely-disposed base sections of such length that when tightly pressed together they engagingly accommodate the end portions of said lamp, one of said base sections having a hole therethrough and carrying contact pins each having an exteriorly-projecting prong end and an inner end disposed toward said plane and terminating in a head provided with a recessed end surface adapted to receive a lamp lead-in wire, the other of said base sections having a slightly-tapered blind hole therein adapted to register with the hole in the first said section when said sections are aligned in operative position, cooperating knobs carried by the second said section and disposed to project toward said plane and nestingly engage the end surfaces of the pin heads carried by the first said section when the sections are aligned and firmly pressed together at said plane, and a metallic fastening member insertable through the hole in the first said section and proportioned to make a press fit with the blind hole in the second said section, said member when heated and pressed into place being embeddable in said moldable material and adapted to hold said sections together in tightly-closed relation at said plane and on said lamp.

3. A base for a tubular lamp of circular configuration comprising, a body of electrically non-conductive moldable material having a known heat distortion point, said body being substantially cylindrically hollow at each end and divided on an axial plane to provide a pair of matching and oppositely-disposed base sections adapted when tightly pressed together to engagingly accommodate the end portions of said lamp, one of said base sections carrying contact pins each having an exteriorly-extending prong end and an inner end disposed toward said

plane and terminating in a head having a V-shaped trough across its end surface adapted to receive a lamp lead-in wire, the other of said base sections having a plurality of integrally-formed wedge-shaped knobs disposed to register and nest with the V-shaped troughs in said pin heads in the first said section when the sections are aligned and firmly pressed together at said plane, and press-fitting means embeddable in said moldable material for holding said sections together in tightly-closed relation on said lamp, each of said V-shaped troughs in said pin heads having a notch in the side of the V facing the lamp ends adapted to orient said lamp lead-in wire so that it extends across said trough and is firmly clamped therein by one of said knobs when the base is assembled.

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