

[54] **CHRISTMAS TREE LIGHTS**

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[51] Int. Cl. .... **F21p 1/02, F21s**

[58] Field of Search ..... **240/10 T**

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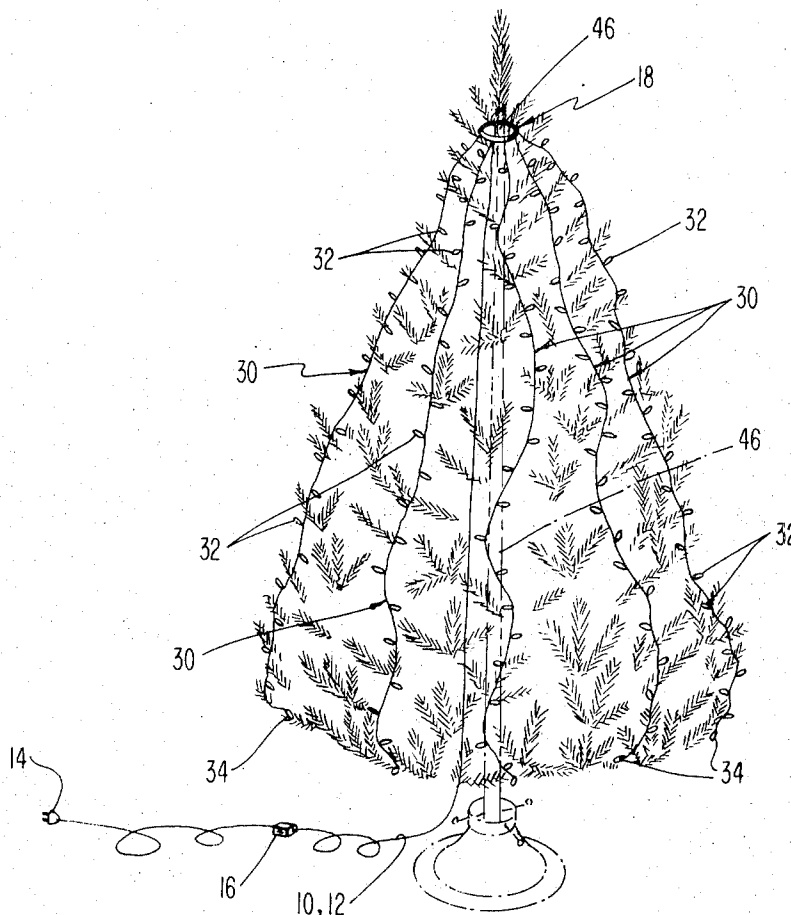
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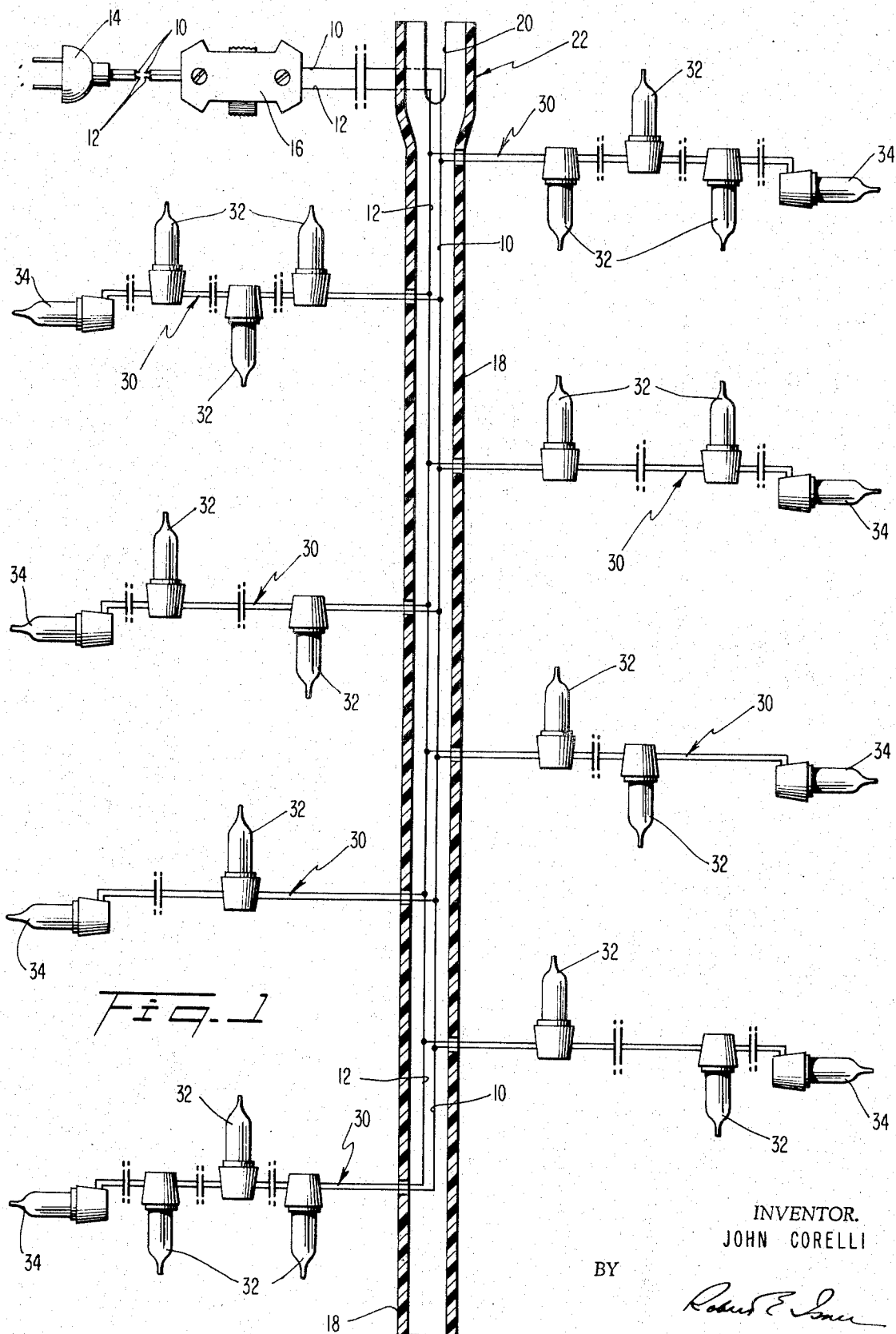
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[57] **ABSTRACT**

A unitary Christmas tree lighting assembly which provides pluralities of discrete dependent strings of series connected lamp elements. The strings are selectively connected at one end, in spaced relation, to a common pair of primary conductors within a deformable mounting element formed of insulating material; each of the strings has a remotely locatable free end to facilitate progressively remote disposition of the lamp elements thereof relative to the mounting element.

**1 Claim, 6 Drawing Figures**





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Fig. 2a

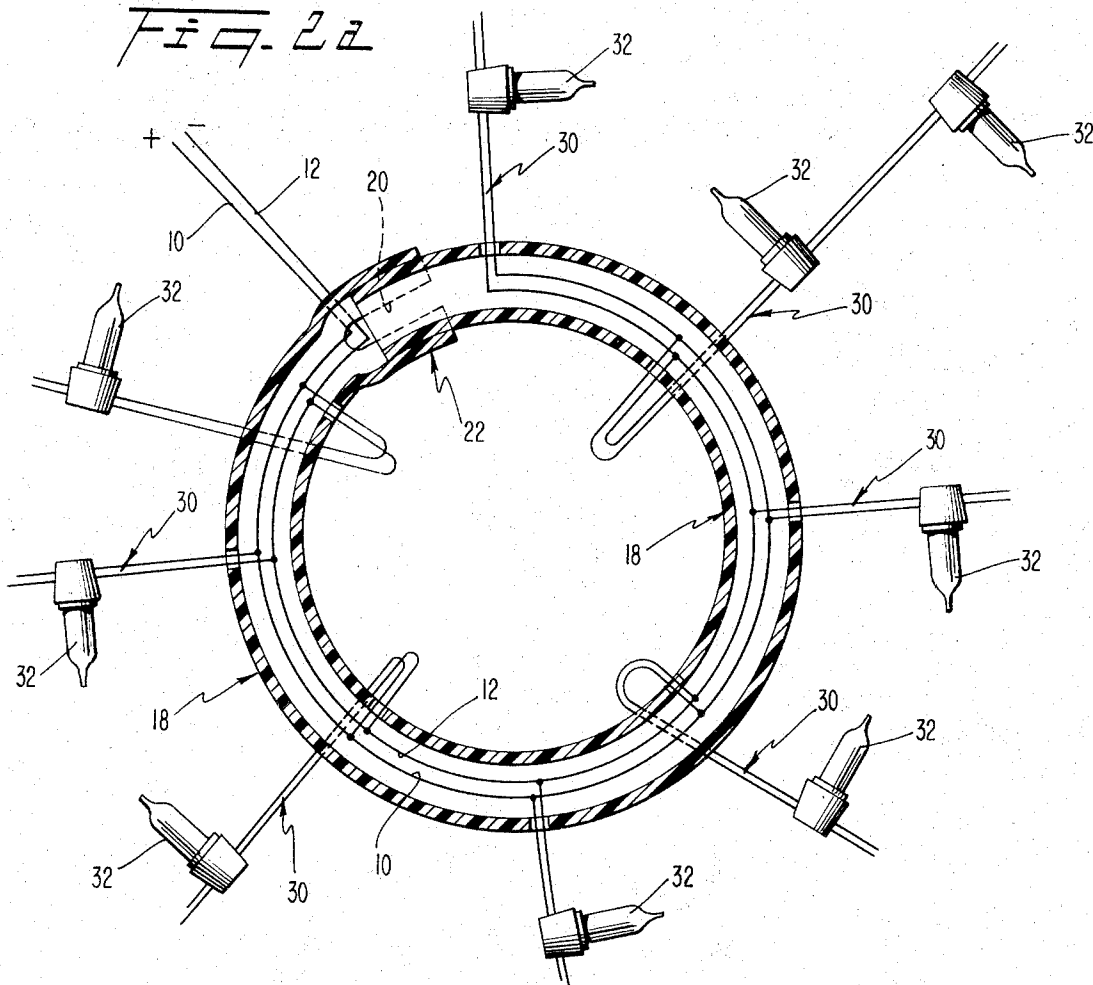
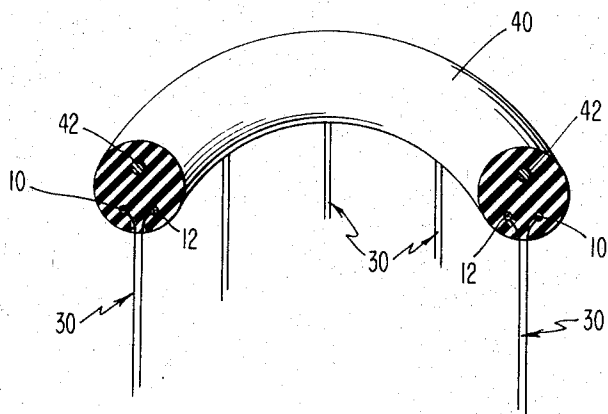


Fig. 2b

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Fig. 3

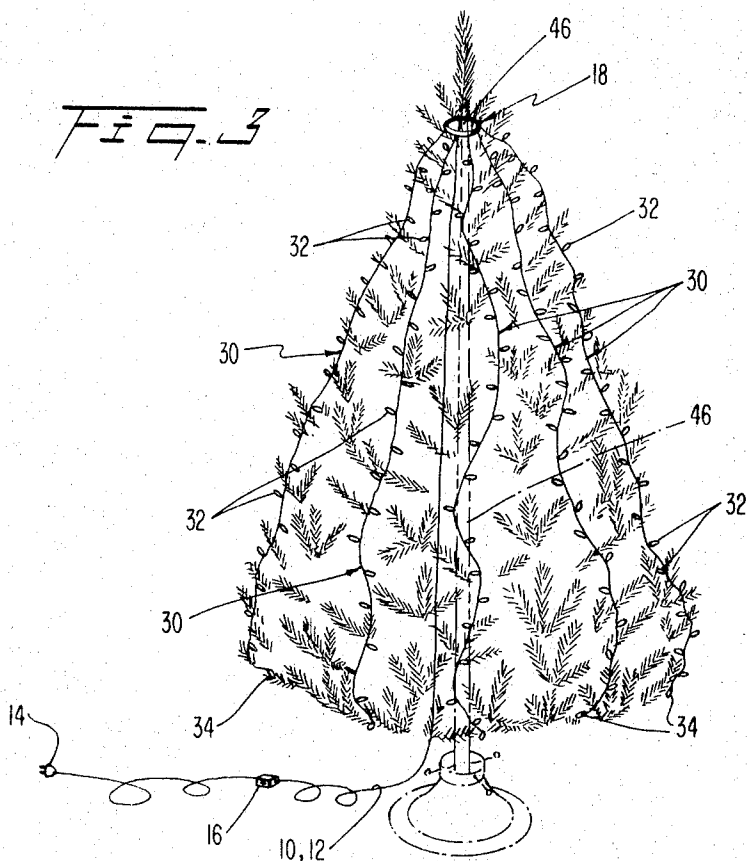


Fig. 3

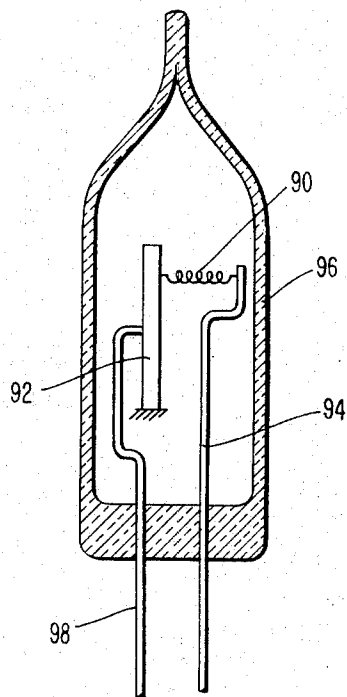
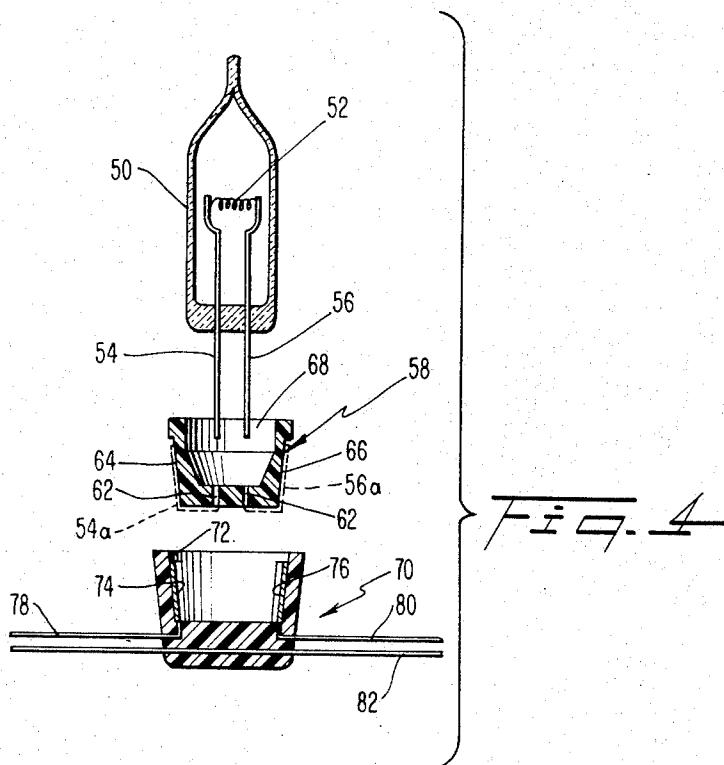


Fig. 4

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## CHRISTMAS TREE LIGHTS

This invention relates to the decorative illumination of Christmas trees and particularly to an improved construction for multi-element lighting sets adapted for mounting on Christmas trees or the like.

Conventional Christmas tree lighting sets usually include a plurality of threaded socket elements, each adapted to receive a threaded-base lamp element, mounted in spaced relation along a pair of elongate insulated conductors that terminate, at least at one end, in an attachment plug receptacle element for effecting interconnection to a source of electricity or to another string of lights. Such strings conventionally have the lamp elements arranged in either a series or parallel connection and the voltage and current ratings of the lamp elements employed are selected in accord therewith. The mounting of such strings of lights on Christmas trees is generally relatively burdensome in that it normally requires careful positioning of the elements thereof to avoid localized overloading, to facilitate interconnection of successive strings and to obtain a relatively uniform distribution of lights for esthetic purposes.

This invention may be briefly described as a novel and improved Christmas tree lighting assembly which, in its broad aspects, includes an elongate pair of conductors serving as a primary bus, a tubular mounting element disposed around a predetermined length of said primary bus located remote from the end thereof connectable to a power source and deformable into a preselected configuration and a plurality of discrete strings of miniature type lighting elements terminally connected across said bus within said mounting ring with each of said strings having a remotely locatable free end to facilitate progressively remote dispositions of each of the lighting elements thereon relative to said mounting element. In more narrow aspects, the subject invention preferably includes utilization of discrete strings formed of a plurality of series connected lighting elements desirably of the "miniature" or "midget" type requiring a 12, 6 or even a 3.5 volt potential for energization and wherein at least one of said lighting elements is so constituted as to sequentially make and break the string circuit to provide a pleasing and unique decorative effect.

Among the advantages of the subject invention is the provision of a simple and inexpensive construction that is readily and simply mounted on a Christmas tree and facilitates arrangement of individual lights in any desired manner. Other advantages of the subject invention is the permitted supplying of great numbers of lighting elements in a unitary and light weight structural arrangement that is readily mountable and permits of a multiplicity of esthetic effects and arrangements.

The primary object of this invention is the provision of an improved Christmas tree lighting assembly that incorporates a multiplicity of lighting elements in a unitary and lightweight structure that is readily mounted on a tree in a simple and facile manner.

Other objects and advantages of the subject invention will be set forth in the following portion of this specification and will become apparent from the accompanying drawings which illustrate, in accord with the mandate of the patent statutes, a presently pre-

ferred embodiment that incorporates the principles of the invention.

Referring to the drawings:

FIG. 1 is a schematic representation of the circuit arrangement and mounting ring assembly incorporating the principles of this invention;

FIG. 2a is a schematic representation similar to FIG. 1 but showing the mounting element disposed in telescopic engaged relation;

FIG. 2b is a schematic sectional view illustrating an alternative mounting element construction;

FIG. 3 is an oblique view showing the positioning of the mounting element and dependent strings of lighting elements on a Christmas tree;

FIG. 4 is a schematic exploded sectional view of the essentials of a preferred type of lighting element; and

FIG. 5 is a schematic representation of the essentials of a suitable circuit making and breaking element includable in the series connected strings of lighting elements.

Referring to the drawings and particularly to FIGS. 1 and 2a, there is provided an elongate pair of primary conductors 10, 12 serving as a common power bus. Mounted on one terminal end of said conductors 10, 12 is a connector element such as a conventional two-prong plug 14 and an adjacently located switch element 16 which preferably also includes a protective fuse. Disposed adjacent the other end of the primary conductors 10, 12 and remote from the plug 14 is an elongate mounting element, generally designated 18. The mounting element 18 suitably comprises an elongate tube of flexible and deformable insulating material having the primary conductors 10, 12 disposed therewithin and provided with a longitudinal slit, as at 20, at the terminal end thereof so as to facilitate accommodation of the extending portion of the primary conductors 10, 12. When said tube is selectively deformed into a generally toroidal configuration with the terminal ends thereof telescopically engaged as shown at 22 in FIG. 2a.

Electrically connected to the portion of the primary conductors 10, 12 disposed within the mounting sleeve 18 are the terminal ends of a plurality of discrete strings 30 of lighting elements 32, each of said strings 30 desirably being uniformly spaced from each other and suitably including pluralities of series connected miniature lighting elements 32. Such strings 30 are preferably several feet in length and each possesses a remotely locatable free end 34 to facilitate the progressively remote disposition of each of the successively located lighting elements included therein from said mounting elements.

In the subject construction as many as eight discrete strings 30 may be connected to a primary pair of conductors 10, 12 and with each such string incorporating at least ten individual lights 32 of the miniature or midget type, to thereby provide at least 80 discrete lights 32 in one unitary assembly. As will be apparent to one skilled in this art, such an arrangement, will utilize 12 volt miniature lamps 32. Concomitantly if 6 volt lamps are employed the number per string thereof may be doubled, all other factors being equal, and if 3.5 volt lamps are used the number per unitary assembly may be quadrupled, i.e. to provide about 320 lights per assembly for an eight string assembly as described above.

FIG. 2b schematically illustrates an alternative construction for the mounting element 18. In this embodi-

ment a solid sleeve of deformable insulating material 40 is molded about the primary conductors 10, 12 and the connecting segments of the strings 30. Also included therein is a deformable wire 42 or the like which will permit manual deformation thereof to any desired shape or configuration and retention thereof until further deformed by externally applied forces.

FIG. 3 is illustrative of the utilization of the subject construction on a Christmas tree. As there illustrated the mounting element 18, if of the toroidal type shown in FIG. 2a, is slipped over the top of the tree and is supported in stem encircling relation with the bole 46 at a selected location down from the top by adjacent extending branches 48. As will be now apparent, the embodiment of FIG. 2b, although somewhat more expensive to fabricate, may suitably be configured by the user in accordance with the dictates of a particular tree and thus even further simplifies the mounting thereof. In either case, however, the length of the primary pair of conductors 12, 13 leading to the plug 14 is conveniently disposed in dependent relation adjacent to the bole 46 and said plug 14 and switch 16 are thus rendered readily accessible to provide their respective functions adjacent the tree base. With the mounting element so disposed, each of the radially extending strings 30 may be selectively located on the peripheral portion of the tree to readily provide a balanced decorative effect in accord with the desires of the user thereof. Such essentially dependent orientation of the strings 30 permits positioning to be readily effected by mere disposition of the leads in the clefts of the branch ends and thus obviates the securement problem attendant present-day conventional constructions.

FIG. 4 schematically illustrates, in exploded relation, the essential nature of the presently preferred types of miniature lamp unit utilizable in the subject assembly and conventionally designatable as "midget" or "mini-lamps." As illustrated, such lamps generally comprise a tubular envelope 50 surrounding a filament 52 and having a pair of extending leads 54, 56 extending from the base thereof. The base portion of the envelope 50 is adapted to be received by a holder 58 having a pair of apertures 60, 62 in the base thereof and a pair of diametrically disposed sloping flat surfaces 64, 66 respectively. When the envelope 50 is disposed within the bore 68 of the holder 58, the leads 54 and 56 are adapted to pass through the apertures 60, 62 respectively and the extending ends thereof bent upwardly and disposed against the flat surfaces 64, 66 as generally indicated by the dotted lines 54a and 56a respectively. The sub-assembly constituted by the envelope 50 and holder 58 as described above is adapted to be removably received within a socket member, generally designated 70. The socket member 70 includes an axial bore 72 of a configuration complementary to that of the external configuration of the holder 58 and

sized to receive the same in a press fit relationship. Included within the bore 72 are a pair of electrode elements 74, 76 positioned to engage the upwardly bent portions 54a, 56a of the leads 54, 56 disposed adjacent the flat surfaces 64, 66 when said holder 58 and lamp envelope 50 are inserted in the bore 72. As shown, the electrode elements 74, 76 are selectively connected to leads 78, 80 respectively which, when assembled, in conjunction with common lead 82 from the conventional series type of lamp sub-assembly includable in the series connected strings 30.

FIG. 5 schematically illustrates the structured essentials of a circuit making and breaking lamp element includable in a series connected string 30. As shown, such lamp includes a filament 90 having one end engageable with a thermally displaceable bimetallic element 92 and the other end to one lead element 94 extending through the envelope 96. The second lead 98 is connected to the filament 90 through the bimetallic element 92. As will be apparent the circuit will be repetitively made and broken as the bimetallic element flexes in response to temperature variations occasioned by current flow therethrough. Inclusion therefore of such a unit in a series connected string 30 will effectively result in the entire string going on and off in accord with the interruptions and resumptions of current flow through such unit.

As will now be apparent from the foregoing, the subject assembly fully satisfies the objects stated above, and comprises a simple, inexpensive and readily fabricated unitary structure that obviates most, if not all, of the problems heretofore encountered in the decorative illumination of Christmas trees.

Having thus described my invention, I claim:

1. A christmas tree light assembly comprising an elongated primary pair of conductors having connector means disposed at one end thereof for connection of said primary pair across a source of electric voltage,
- a tubular mounting element including end portions securable in telescopically engaged relation disposed around a predetermined length of said primary conductor pair disposed remote from said connector means and deformable into a preselected configuration,
- and a plurality of discrete strings of pluralities of series connected light elements terminally connected across said primary conductor pair within said mounting element,
- each of said strings of series connected lighting elements being possessed of a remotely locatable free end to facilitate progressively remote disposition of each of said lighting elements thereon relative to said mounting element.

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