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LIGHTING SYSTEM FOR CHRISTMAS TREES

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Fig. 1

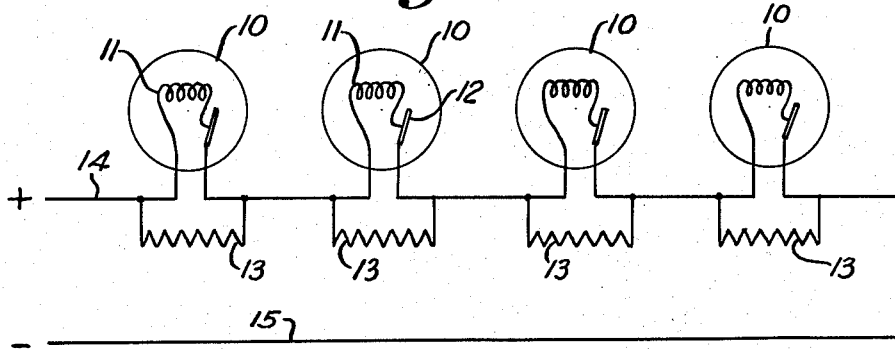


Fig. 2

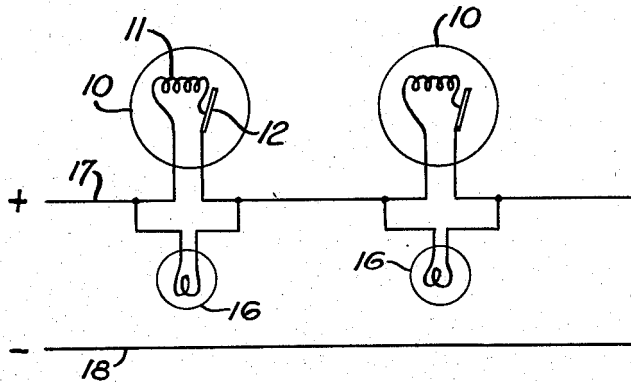
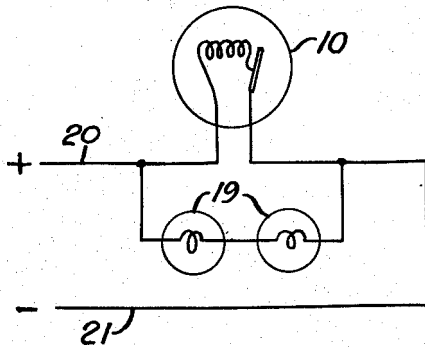


Fig. 3



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1

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LIGHTING SYSTEM FOR CHRISTMAS TREES

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1 Claim. (Cl. 315—186)

This invention relates to electrical lamp connections and refers, more particularly, to strings of electrical lights which are particularly suitable for Christmas tree decorations and other displays.

Christmas tree lights consist usually of small lamps which are interconnected in series. This arrangement has the drawback that when one of the lamps fails all the lamps in the series are put out and the identification of the defective lamp is difficult and consumes a great deal of time. Arrangements of lamps in groups are also not found to be satisfactory.

An object of the present invention is to eliminate the drawbacks of prior art constructions and to provide a string of Christmas tree lights which is so constructed that an increase in electrical current will not disrupt the illumination in its entirety.

A further object is the provision of an electrical apparatus for decorating a Christmas tree having a most novel and unusual lighting effect.

Other objects of the present invention will become apparent in the course of the following specification.

One of the important features of the present invention is the provision of Christmas tree lamps, each of which includes a bi-metallic strip or any suitable thermally activated strip connected in series with the lighting filament of the lamp, which is also shunted by a resistance.

The size of the resistance is such that normally a substantial quantity of the electrical current flows through the lamp filament, so that the lamp is lit. When the bi-metallic strip is moved away from the filament due to overheating, the current will then flow through the shunt resistance so that the remaining Christmas tree lamps will continue to light. Thus the electrical circuit will not be interrupted.

In accordance with another embodiment of the inventive idea, the shunt resistance is replaced or combined with one or more small lamps. Again, the respective resistances are so dimensioned that the electrical current will flow mainly through the main lamp under normal operating conditions. On the other hand, when the bi-metallic strip of a main lamp moves away from the filament of that lamp, as the result of overheating, the electrical current will flow through the auxiliary lamp which will suddenly become lit. As soon as the bi-metallic strip has cooled off and has returned to its original position, the main lamp will become lit again and the auxiliary lamp will be turned off. When an entire string of such lamps is used, the general impression is a most interesting and striking one, since lights will appear, disappear, and reappear over the entire Christmas tree provided with these decorations, thereby creating a most striking, novel and unusual effect.

The invention will appear more clearly from the following detailed description when taken in connection with the accompanying drawing, showing preferred embodiments of the inventive idea.

Figure 1 is a diagram illustrating a string of Christmas

2

tree lamps constructed in accordance with the principles of the present invention.

Figure 2 is a diagram illustrating a different modification.

Figure 3 is a diagram showing the third modification.

The electrical apparatus shown in the drawing includes a plurality of lamps 10 which are all of the same construction, namely, they are 8 volt, 1/4 ampere lamps, each of which comprises a lighting filament 11 and a bi-metallic strip 12 connected in series with the filament 11 and located close thereto. A resistance 13 which may consist of 25 to 50 ohms is connected in parallel with the lamp 10 and in actual construction may constitute a part of the lamp. In the construction shown in Figure 1, a plurality of the lamps 10 are interconnected in series and are supplied with electrical energy from a source through the wires 14 and 15.

The resistances 13 are so dimensioned that when the system functions normally, the electrical current will flow through the filaments 11 of the lamps 10, so that all the lamps 10 will be illuminated.

As soon as the supply of electrical current becomes excessive, instead of burning out the filament, the current will overheat a bi-metallic strip 12, so that the strip 12 of one lamp will move away from the filament 11 of that lamp. Then, that lamp will cease to be illuminated. However, the electrical current will be diverted to the shunt 13 of the lamp with the result that all the remaining lamps 10 will continue to function. Any further increase in the electrical current will affect the bi-metallic strip of the next lamp without affecting the lamps as a whole.

As soon as the electrical current has become normal, the bi-metallic strips will return to their initial positions and will remain therein, so that the electrical lamps will be illuminated again.

If the current continues to be excessive, the bi-metallic strips may move in and out of contact with the filaments 11, thereby providing a blinking effect.

The apparatus shown in Figure 2 again consists of several electrical lamps 10, each of which includes a filament 11 and a bi-metallic strip 12. However, in this construction, an auxiliary lamp 16 is shunted across the terminals of each lamp 10. The auxiliary lamp 16 may be of 15 volts, 1/4 ampere type. Strings of lamps 10 and 16 are connected to the wires 17 and 18 which are supplied with electrical current.

It is apparent that when the system shown in Fig. 2 operates normally, the electrical current will flow through the lamps 10, while the lamps 16 will remain extinguished. However, as soon as the bi-metallic strip 12 of the lamp 10 is overheated, it will move away from its filament 11, so that the lamp 10 will be extinguished. At that time, the current will flow through the lamp 16 and will light the lamp.

As soon as the bi-metallic strip 12 is cooled off, it will re-engage its filament 11 so that the lamp 10 will be lit again and the shunt lamp 16 will be extinguished.

It is apparent that the bi-metallic strips 12 may be so constructed that they will respond not to an excessive current but to a lesser current, so that the actuation of the bi-metallic strips 12 will be a continuous one. Furthermore, the bi-metallic strips 12 may be made of a variety of sizes. Then, it will be possible to provide a string of electrical Christmas tree lamps wherein the lamps will go on and off intermittently in any desired variety of sequences. It is further possible to make the lamps 10 and 16 of a variety of colors, thereby further enhancing the decorative effect.

In the construction shown in Figure 3, two lamps 19, each of which is the same as the lamp 16, are connected in series with each other and in parallel with the lamp

10. A plurality of such lamp arrangements, only one of which is shown, is connected to the electrical terminals by wires 20 and 21.

This arrangement operates substantially the same as that shown in Figure 2 with the exception that whenever one lamp 10 is extinguished, two lamps 19 are lighted in its stead. These lamps might be of different colors and joined by comparatively long wires, so that the effects upon the Christmas tree may be varied and greatly enhanced.

It is apparent that the examples shown above have been given only by way of illustration and not by way of limitation, and that they are subject to many variations and modifications within the scope of the present invention. All such variations and modifications are to be included within the scope of the present invention.

What is claimed is:

A multiple lamp decorative lighting system, comprising a plurality of lamps interconnected in series, each of said lamps comprising a light-emitting portion having a filament and a bi-metallic strip adjacent said filament and connected therewith; and a separate resistance in shunt with each lamp and located outside of said light-emitting portion, at least some of said bi-metallic strips being of different sizes, whereby the lamps will go on and off intermittently.

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