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(54) **Led melody decoration kit with multicolor light sources**

(57) A LED melody decoration kit (30) with multicolor light sources comprises an electrical wire (31) with a plug-connector (32) to get a voltage from a traditional lighting string (10), one or more LED lights (40) to emit single or multiple lighting colors, and a cover package having a

driving IC (52) to drive and control the LED lights, which is directly applicable to change one of the incandescent lamps from a traditional lighting string for replacement, and which do not change the function of the original lighting string to emit single color or different multiple colors and obviously create plenty of effect in lighting string.

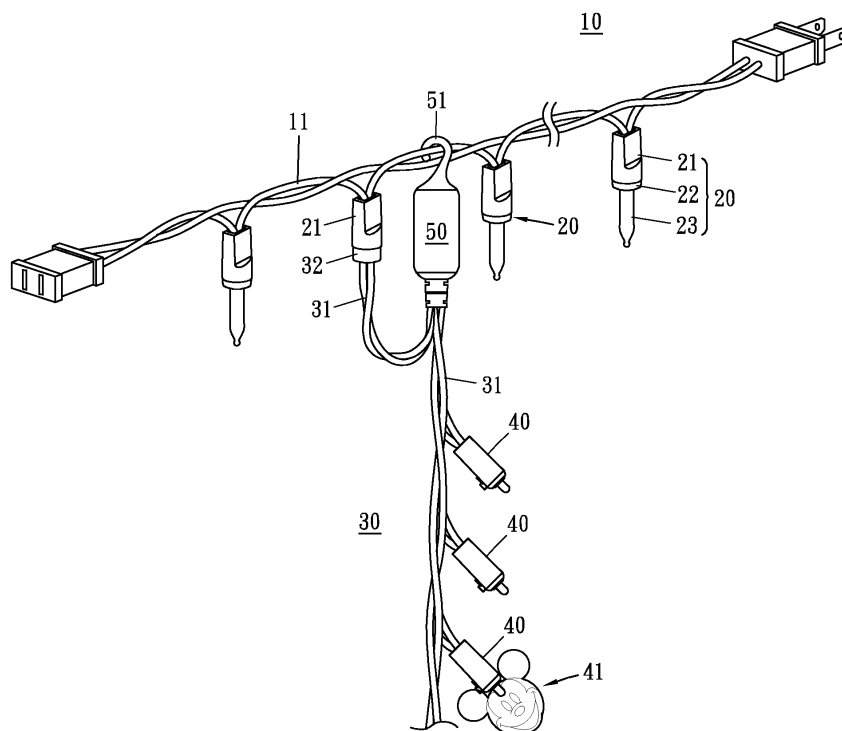


Fig. 4

Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates to a LED melody decoration kit with multicolor light sources, more particularly the LED melody decoration kit is applicable to be incorporated with a traditional lighting string to create plenty of effect in lighting string.

2. Description of the Prior Art

[0002] During the Christmas day or festival every year, people will use the decorative light with color or the shaped light string on the Christmas tree or on the windows for celebration. But the consumers fail to change the shape of bulb.

[0003] Take a traditional lighting string 10 shown in Fig. 1 as an example, which comprises an electrical wire 11 and a plurality of incandescent lamps 20 arranged electrically in series circuit with the electrical wire 11. Each incandescent lamp 20 of the lighting string 10 is constituted with a lamp socket 21, a lamp holder 22 and a mini-bulb 23. Each lamp socket 21 coupled to the electrical wire 11 is to provide power to the corresponding mini-bulb 23 which is electrically connected to the lamp socket 21 through the corresponding lamp holder 22 fastened on the lamp socket 21.

[0004] However, the defect of the incandescent lamps 20 used on a traditional lighting string 10 shown in Fig. 1 is the mini-bulb 23 with a flaw in very high temperature and with a frigid outfit of glasses. Thus, some of them may use Light Emitting Diode (hereinafter referred to as "LED") to replace the mini-bulb 23 of the incandescent lamps 20 used on a traditional lighting string 10.

[0005] But the LED is unable to directly replace the mini-bulb 23 of the incandescent lamps 20 in theory, which is difficult in the assembling application due to the limitation of LED's characteristic. To improve this potential defect, it needs to design a special electric circuit program for improvement.

[0006] Based on this, the present invention may create a lot of advantages, such as saving cost, increasing plenty colors and the luminous intensity, as well as the attractiveness, etc. Consequently, it may achieve the purpose that one of the incandescent lamp in a traditional lighting string is to be superseded by the LED lamp with the claimed device of a LED melody decoration kit with multicolor light sources.

SUMMARY OF THE INVENTION

[0007] The primary objective of this invention is to provide a LED melody decoration kit to upgrade the novelty, interest, attractiveness with multicolor in lighting string which comprises an electrical wire integrating with a plug-

connector on the terminal to get a voltage from a traditional lighting string, one or more LED lights to emit single or multiple lighting colors, and a cover package having a driving IC to drive and control the LED lights, a voltage-multiplied and rectified circuit to double the voltage got from the plug-connector and a constant voltage regulated circuit to stabilize the pulse/surge voltage input to the driving IC.

[0008] The LED melody decoration kit of the present invention is able to directly change one of the incandescent lamps from a traditional lighting string for replacement and to emit single color or different multiple colors, it will not change the function in the original lighting string and will create plenty of effect in lighting string.

[0009] The LED melody decoration kit of the present invention may emit the changeable lights with different colors and may apply to various lighting string or tree light to improve the incandescent lamp with drab shape and monotonous function.

[0010] The LED melody decoration kit of the present invention may integrate with different shape or lighting string to create the different changes in shape. It may also integrate a music control box with horn to voice various music or festival and theme songs.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011]

Fig. 1 is a schematic view showing a traditional lighting string with a plurality of incandescent lamps; Fig. 2 is a schematic view for the LED melody decoration kit with multicolor light sources of the present invention;

Fig. 3 is an illustrated diagram to explain the LED melody decoration kit of the present invention how to get the required power from the traditional lighting string of Fig. 1;

Fig. 4 is a schematic view to show the LED melody decoration kit of the present invention practically in application to the traditional lighting string of Fig. 1 and further to show those LED lights of the present invention may be covered with an outfit for decoration;

Fig. 5 is a schematic view to show several LED lights of the present invention are integrated with a flat ornament or card and further to show the LED melody decoration kit of the present invention may be provided with a music device and incorporated with a traditional lighting string to create plenty of effect in lighting string;

Fig. 6 shows a control block diagram of the LED melody decoration kit of the present invention;

Fig. 7 shows an electric circuit program applied to the LED melody decoration kit of the present invention which comprises a voltage-multiplied and rectified circuit, a constant voltage regulated circuit and a driving IC to drive one or more LED lights to emit

different colors;

Fig. 8 shows the electric circuit program of Fig. 7 may use the driving IC further to drive a music device to voice the music or various effect of sound;

Fig. 9 is a schematic view to show several LED lights of the present invention are integrated with a three-dimensional pattern.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0012] As shown in Figs. 2 and 4, the LED melody decoration kit 30 of the present invention provided with multicolor light sources is designed to be incorporated with a traditional lighting string 10 to create plenty of effect in lighting string.

[0013] Generally, the traditional lighting string 10 comprises an electrical wire 11 and a plurality of incandescent lamps 20 arranged electrically in series circuit with the electrical wire 11. Each incandescent lamp 20 applied to the traditional lighting string 10 is constituted with a lamp socket 21, a lamp holder 22 and a mini-bulb 23, and each lamp socket 21 coupled to the electrical wire 11 is to provide power to the corresponding mini-bulb 23 which is electrically connected to the lamp socket 21 through the corresponding lamp holder 22 fastened on the lamp socket 21.

[0014] As shown in Figs. 2 and 7, the LED melody decoration kit 30 of the present invention comprises an electrical wire 31 integrating with a plug-connector 32 on the terminal, one or more LED lights 40 to emit different lighting colors and a cover package 50 having a driving IC 52, a voltage-multiplied and rectified circuit 53 and a constant voltage regulated circuit 54 inside to control and emit the LED lights 40 simultaneously.

[0015] As shown in Figs. 5 and 8, another embodiment of the present invention is that the cover package 50 further has a music device with horn 55 to voice the music or various effect of sound.

[0016] Referred to Figs. 3 and 4, the power required for the LED melody decoration kit 30 of the present invention to control and emit the LED lights 40 is supplied from the traditional lighting string 10.

[0017] It is designed by changing one of the incandescent lamps 20 from the traditional lighting string 10 and replacing the selected incandescent lamps 20 by the LED melody decoration kit 30 of the present invention. In particular, it is designed by removing the lamp holder 22 and the mini-bulb 23 from any one of lamp sockets 21 of the traditional lighting string 10, and then plugging the plug-connector 32 of the electric wire 31 of the LED melody decoration kit 30 of the present invention into the lamp socket 21 and in connection to the positive contact and the negative contact in serial circuit of the electrical wire 11 of the traditional lighting string 10 to get the voltage from power source. Therefore, it will not change the function in the original lighting string 10.

[0018] Referred to Figs. 6 and 7, when the plug-connector 32 of the present invention get a voltage of V_m

from power source of the traditional lighting string 10, the resistor R1 of voltage-multiplied and rectified circuit 53 (or called voltage double rectifier circuit 53) of the present invention will get the voltage V_m directly, and the voltage is then multiplied up to $2V_m$ after the voltage V_m had processed through diodes D1 and D2 and capacitors C1 and C2 of voltage-multiplied and rectified circuit 53 of the present invention. And, the voltage $2V_m$ is further processed through capacitors C3 and C4 and zener diode ZD1 of the constant voltage regulated circuit 54 of the present invention to stabilize the pulse/surge voltage which may input to the IC 52 to drive and control the changes of LED lights 40 of present the invention or further to drive and control a music device with horn 55 to voice the music or various effect of sound from the cover package 50 of the invention.

[0019] The lighting color emitted from the LED lights 40 of the present invention includes red, yellow, green, amber, blue or white etc. and the lighting color may be further mixed with various changes in colors.

[0020] In case that the incandescent lamps 20 with voltage of 2.5V taken from the traditional light string 10, the voltage will be multiplied from 2.5V up to 5V through the voltage-multiplied and rectified circuit 53 of the present invention and the voltage of 5V is enough to drive the blue and white LED lights 40 applied to the LED melody decoration kit 30 of the present invention.

[0021] The driving IC 52 of the present invention comprises a driver circuit and a programmable control circuit which are designed in application to drive and control the LED lights 40 to emit different colors which are full of variety in single or multiple lighting colors.

[0022] As shown in Figs. 2 and 4, the cover package 50 of the LED melody decoration kit 30 of the present invention may be further provided with a hook 51 so that the LED melody decoration kit 30 of the present invention may be incorporated with the traditional lighting string 10 through the hook 51 of the cover package 50 to create plenty of effect in lighting string.

[0023] As shown in Fig. 4, the LED lights 40 of the present invention may be covered with an outfit 41 for decoration which may be changed with various shapes to make the LED melody decoration kit 30 of the present invention to be more attractive and lovely.

[0024] In addition, several LED lights 40 applied to the LED melody decoration kit 30 of the present invention may be further integrated with a flat ornament or card 60 as shown in Fig. 5 or a three-dimensional pattern 70 as shown in Fig. 9 to upgrade the novelty, interest, attractiveness with multicolor in lighting string.

[0025] The contents disclosed above relate to a preferred embodiment of the present invention. It is to be understood that all equivalent modifications, variations, improvement or changes that are easily made by skillful people in the trade and without departing from the spirit of the above contents and drawings should be included in the subject claim.

Claims

1. A LED melody decoration kit with multicolor light sources comprising an electrical wire integrating with a plug-connector on the terminal to get a voltage from a traditional lighting string, one or more LED lights to emit single or multiple lighting colors, and a cover package having a driving IC to drive and control the LED lights, a voltage-multiplied and rectified circuit to double the voltage got from the plug-connector and a constant voltage regulated circuit to stabilize the pulse/surge voltage input to the driving IC. 5
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2. The LED melody decoration kit with multicolor light sources as defined in claim 1, wherein the cover package further has a music device with horn which is driven and controlled by the driving IC. 15
3. The LED melody decoration kit with multicolor light sources as defined in claim 1, wherein the cover package has a hook. 20
4. The LED melody decoration kit with multicolor light sources as defined in claim 2, wherein the cover package has a hook. 25
5. The LED melody decoration kit with multicolor light sources as defined in claim 1, wherein the lighting color emitted from the LED lights includes red, yellow, green, amber, blue, white or mixed with various changes in colors. 30
6. The LED melody decoration kit with multicolor light sources as defined in claim 1, wherein the LED light is covered with an outfit for decoration. 35
7. The LED melody decoration kit with multicolor light sources as defined in claim 1, wherein several LED lights are integrated with a flat ornament or card. 40
8. The LED melody decoration kit with multicolor light sources as defined in claim 1, wherein several LED lights are integrated with a three-dimensional pattern. 45

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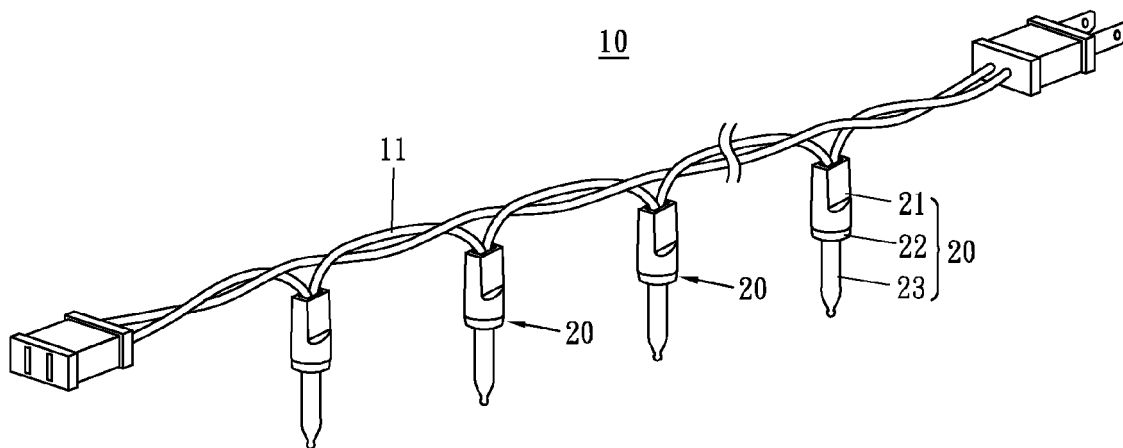


Fig. 1
(prior art)

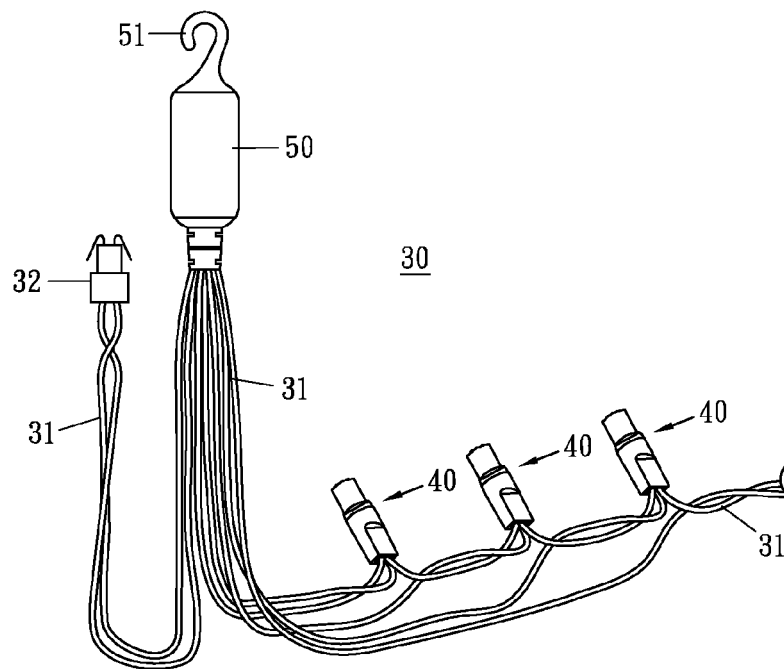


Fig. 2

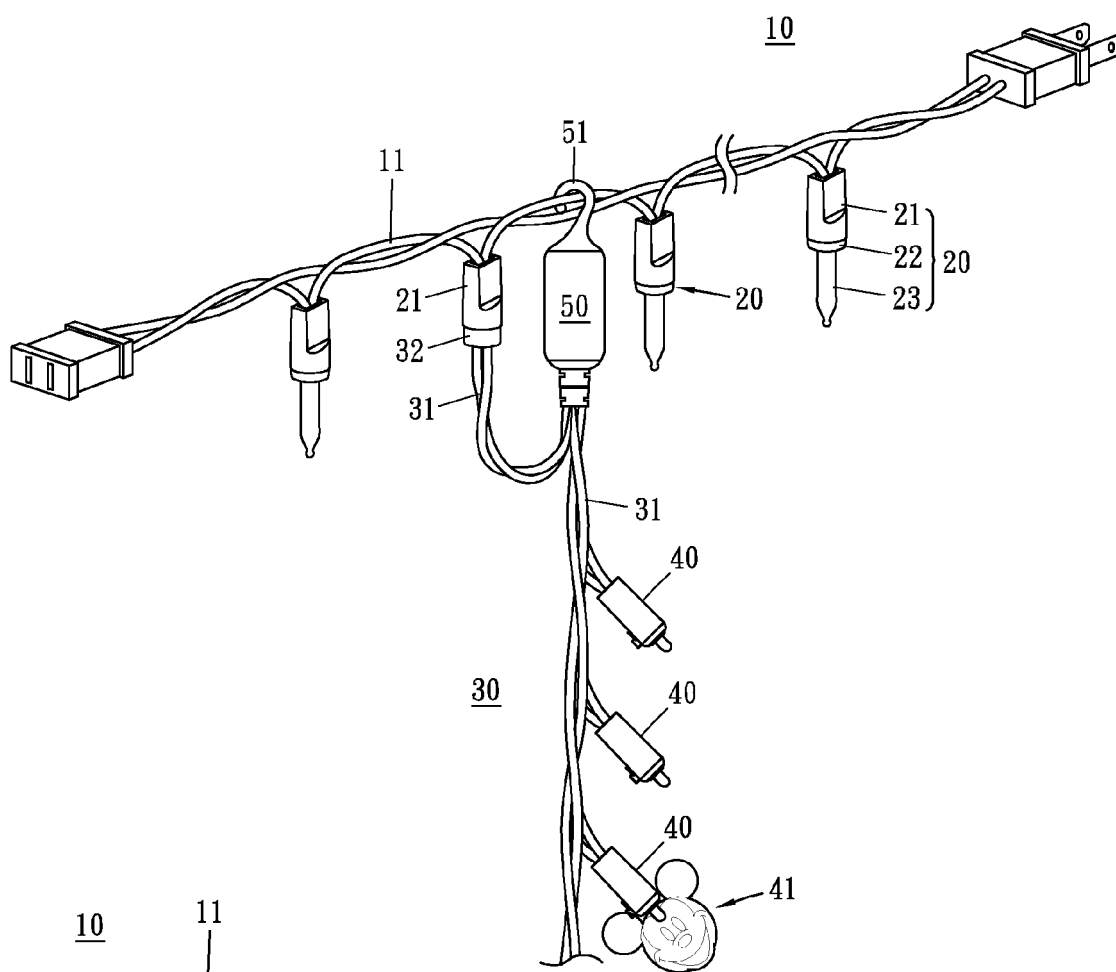


Fig. 4

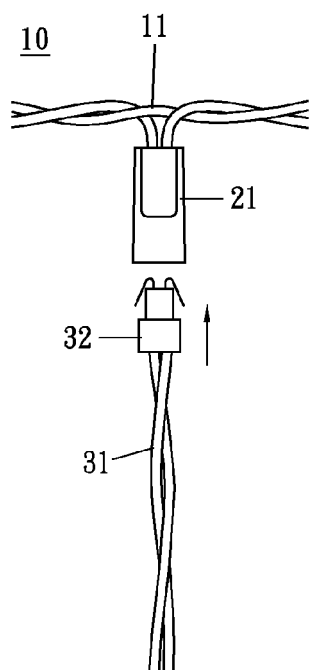


Fig. 3

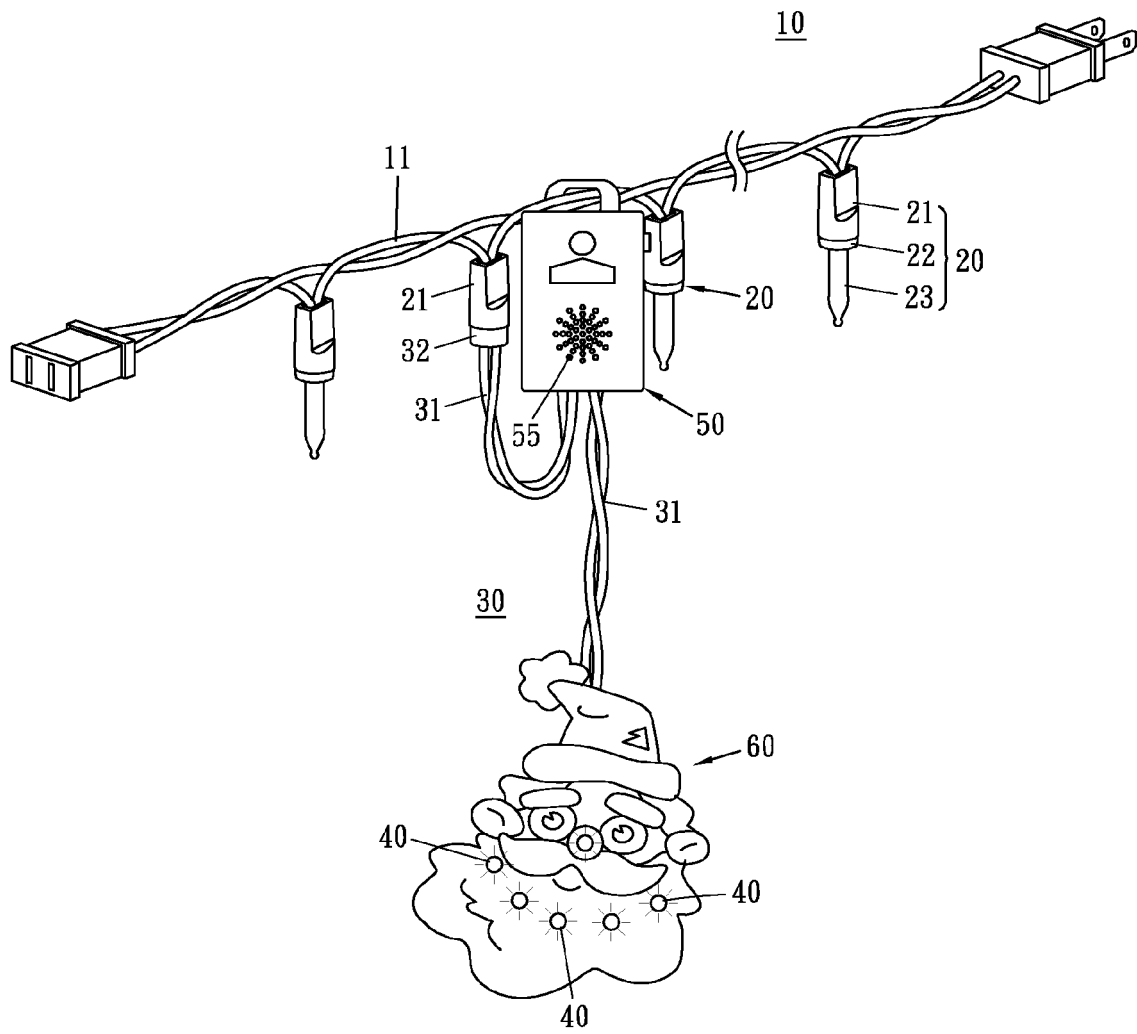


Fig. 5

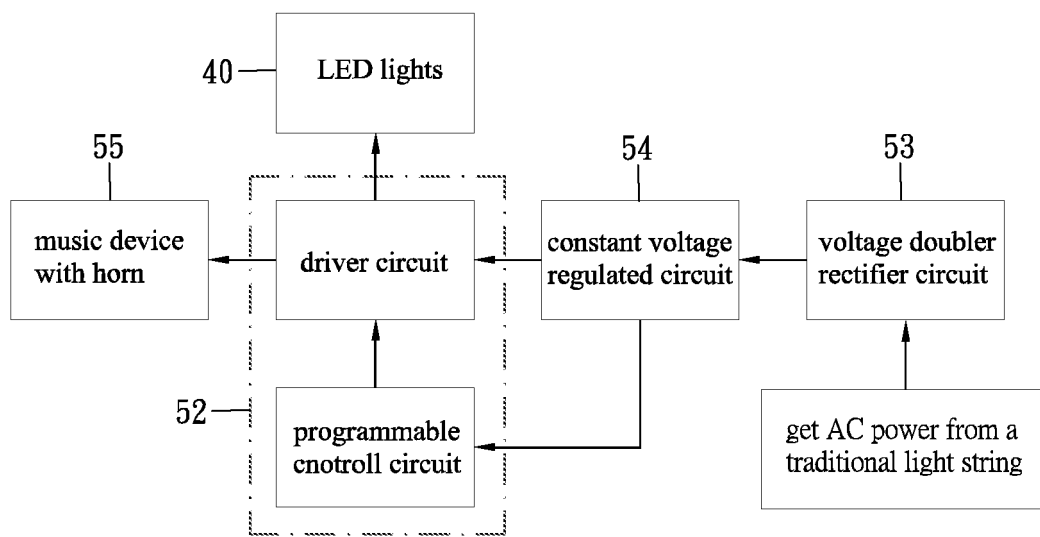


Fig. 6

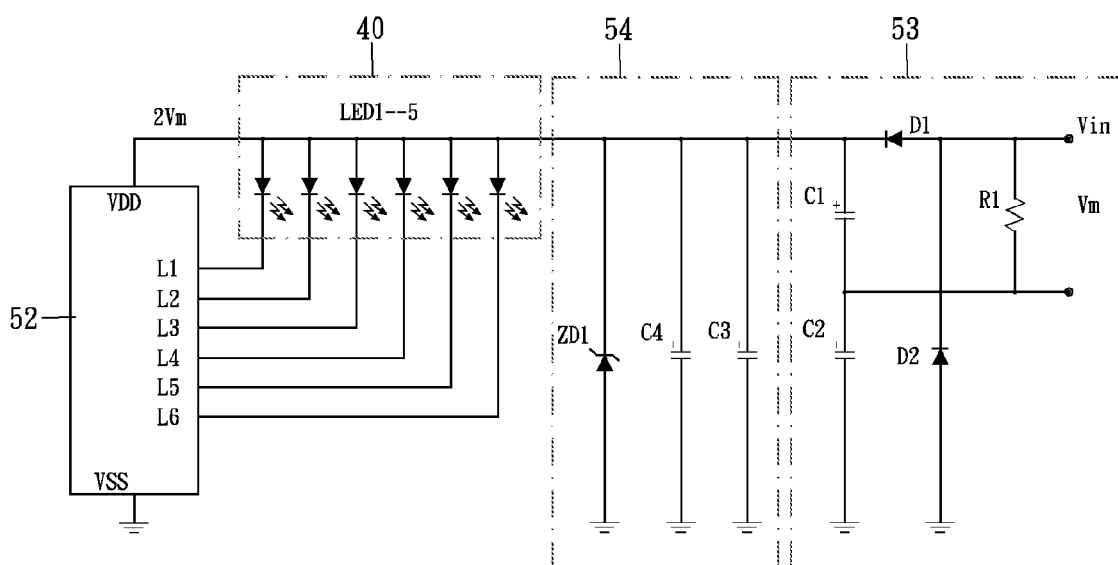


Fig. 7

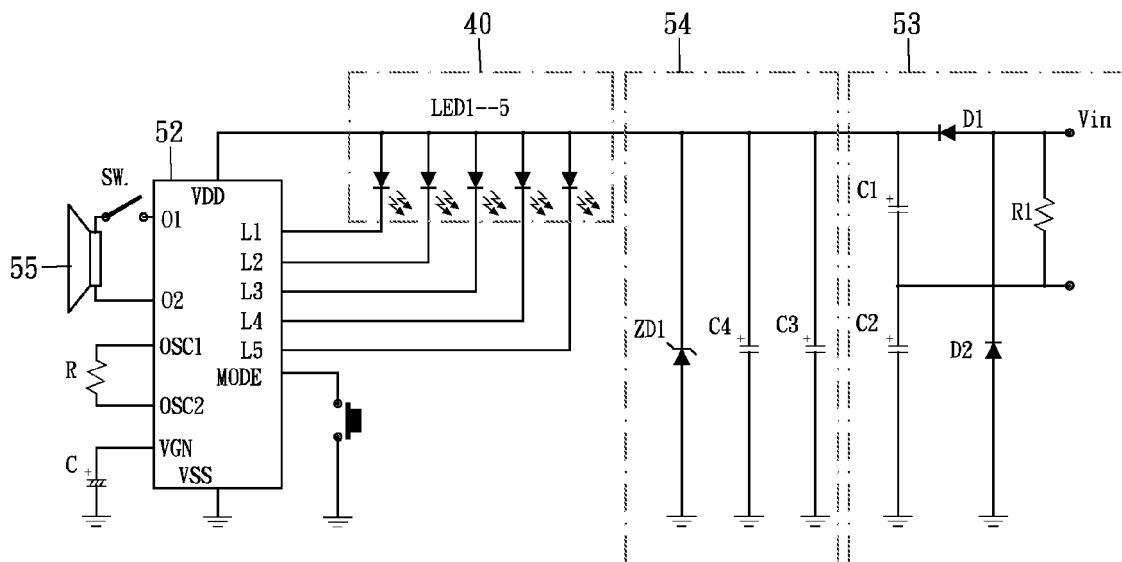


Fig. 8

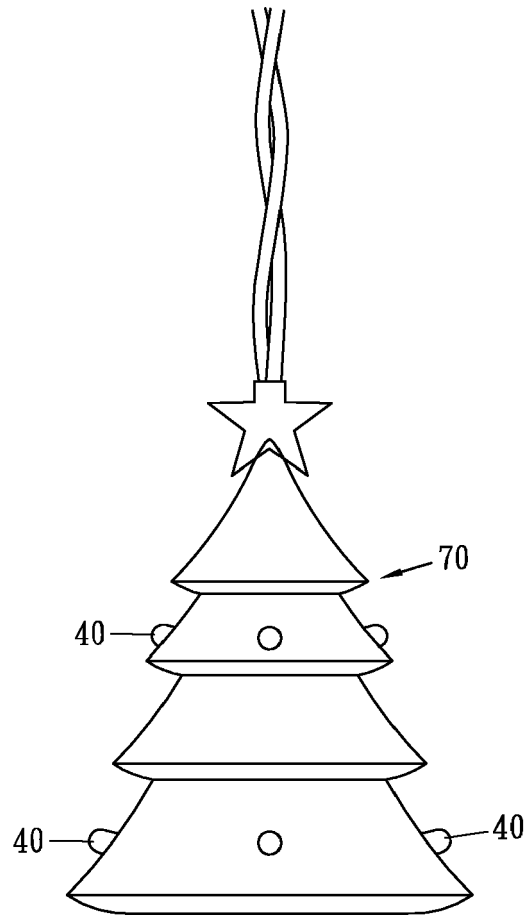


Fig. 9



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 07 10 1717

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 4 682 079 A (SANDERS ROBERT E [US] ET AL) 21 July 1987 (1987-07-21) * column 3, line 53 - column 4, line 2 * * column 9, line 1 - line 63 * * figures 2,16-18 * -----	1	INV. F21S4/00 A47G33/08 H02M7/02
A	US 2005/190555 A1 (WU JENG-SHYONG [TW]) 1 September 2005 (2005-09-01) * paragraph [0004] * * paragraph [0020] - paragraph [0021] * * paragraph [0031] - paragraph [0036] * * figures 2,7-9 * -----	1	ADD. F21Y101/02
A	US 4 544 218 A (SANDERS ROBERT E [US] ET AL) 1 October 1985 (1985-10-01) * the whole document * -----	1	
			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 7 May 2007	Examiner Arsac England, Sally
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 07 10 1717

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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07-05-2007

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