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(72) Inventor: **Wong, Tsui-Tuan
Hsitzu Chen, Taipei Hsien (TW)**

(74) Representative: **Ottevangers, Sietse Ulbe et al
Vereenigde,
Postbus 87930
2508 DH Den Haag (NL)**

(71) Applicant: **Wong, Tsui-Tuan
Hsitzu Chen, Taipei Hsien (TW)**

(54) **Structure of an ornamental light bulb**

(57) An ornamental light bulb has a pair of electrical wires (10), a bulb (20) electrically connected with the wires (10), a plug (30) securely inserted between the electrical wires (10), a protection tubular film (40) securely surrounded outside the assembled bulb (20), electrical wires (10) and the plug (30) and an enclosure (50) securely formed outside of the connected bulb (20), the electrical wires (10), the plug (30) and the film (40). The enclosure (50) is formed by molding or injection molding, such that the components inside the enclosure (50) are protected and the entire bulb structure is waterproof.

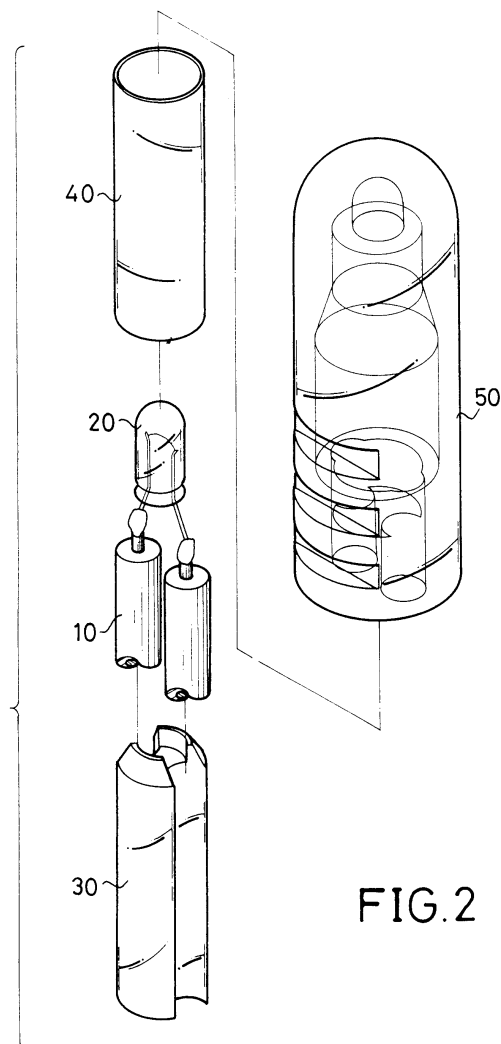


FIG. 2

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Description

1. Field of the Invention

[0001] The present invention relates to the structure of an ornamental light bulb, particularly to a light bulb having an integral housing provided thereto so as to prevent a short in the electrical wire and water leakage.

2. Description of Related Art

[0002] As shown in Fig. 4, an ornamental light bulb normally has a pair of electrical wires (40), a bulb (42) electrically connected with distal ends of the electrical wires (40), a layer of glue (43) glued outside of the electrical wires (40), a first isolation tube (44) securely attached with the glue (43) and enclosing the electrical wires (40) and a second isolation tube (45) securely connected with the first isolation tube (44). After attaching the first isolation tube (44) and the second isolation tube (45), the bulb (42) extends partially from one end of the first and second isolation tubes (44, 45). Because the layer of glue (43) securely attaches the first isolation tube (44) and the second isolation tube (45) securely attaches the first isolation tube (44), the ornamental light bulb is waterproof. However, the assembly of the ornamental light bulb requires a lot of manual work, it is labor intensive.

[0003] The invention aims to provide an ornamental light bulb having an injection molded closure securely enclosing the bulb and the electrical wires therein to overcome the aforementioned problems.

[0004] The main object of the present invention is to provide a structure of an ornamental light bulb. The light bulb has an injection molded enclosure securely enclosing the bulb and the electrical wires therein so as to eliminate the need for manual assembly.

[0005] A further object of the invention is that the enclosure is integrally formed with the attached bulb and the electrical wire, such that manual assembly of the ornamental light bulb is unnecessary and the cost of which is greatly reduced.

[0006] The detailed features of the present invention will be apparent in the detailed description with appropriate reference to the accompanying drawings.

IN THE DRAWINGS:

[0007]

Fig. 1 is a perspective view of an ornamental light bulb of the present invention;
 Fig. 2 is an exploded perspective view of the ornamental light bulb as shown in Fig. 1;
 Fig. 3 is a side view in partial section of the bulb in Fig. 1, showing the relationship between the enclosure and the attached bulb and the electrical wires;
 and

Fig. 4 is a perspective view showing the structure of a conventional ornamental light bulb.

[0008] The present invention relates to an ornamental light bulb. As shown in Figs 1 and 2, the ornamental light bulb in accordance with the invention has a pair of electrical wires (10), a bulb (20) electrically connected with distal ends of each of the electrical wires (10), a plug (30) securely mounted between the electrical wires (10) to function as a stop to the wires (10) so as that a short between the wires (10) avoided, a protection tubular film (40) securely surrounded the outside of the assembled electrical wires, the bulb (20) and the plug (30) and an enclosure (50) integrally formed outside of the attached bulb (20) and the electrical wires (10).

[0009] The connection between the electrical wires (10) and the bulb (20) is conventional. Therefore, detailed description thereof is not necessary.

[0010] When the connection between the bulb (20) and the electrical wires (10) is finished, the plug (30) is then inserted between the two electrical wires (10) such that a short between the electrical wires (10) is avoided. After the connection between the electrical wires (10), the bulb (20) and the plug (30) is accomplished, the protection tubular film (40) is then heated to surround and secure the above structure. Thereafter, the bulb (20) with the electrical wires (10) as well as the plug (30) and the film (40) is inserted into a mold (not shown) full of polyvinyl chloride (PVC). Because the bulb (20) and a portion of the electrical wires (10) which connect with the bulb (20) are immersed in the mold, when the PVC in the mold is cool down and shaped, the bulb (20), a portion of the electrical wires (10) together with the plug (30) and the film (40) are securely enclosed by a layer of transparent enclosure (50) of PVC. Because the enclosure (50) is molded or injection molded, the components inside the enclosure (50) are sealed, such that not only are the components inside the enclosure (50) protected, but the entire assembly is waterproof.

[0011] The present invention has the following advantages:

1. Easy Assembly:

[0012] Using automation to connect the bulb (20), the electrical wires (10), the plug (30) and the film (40) can be easily done. Then, the only process left is to move the bulb (20) and the electrical wires (10) into a mold full of PVC and wait for the PVC to be cure.

2. Cost Reduction:

[0013] Due to the formation of the enclosure (50), manual labor is reduced to the minimum. Thus, the cost for production is greatly reduced.

3. Waterproof

[0014] It is to be understood, however, that even though numerous characteristics and advantages of the present invention have been set forth in the foregoing description, together with details of the structure and function of the invention, the disclosure is illustrative only, and changes may be made in detail, especially in matters of shape, size, and arrangement of parts within the principles of the invention to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed.

Claims

1. An ornamental light bulb comprising

two electrical wires (10);
 a bulb (20) electrically connected with distal ends of the electrical wires (10);
 a plug (30) securely inserted between the electrical wires (10); and
 an enclosure (50) securely formed outside of the connected bulb (20), the electrical wires (10) and the plug (30).

2. The structure as claimed in claim 1, wherein the enclosure (30) is formed by molding.

3. The structure as claimed in claim 2 further has a protection tubular film (40) securely surrounded the assembled bulb (20), the electrical wires (10) and the plug (30).

4. An ornamental light bulb comprising:

two electrical wires (10);
 a bulb (20) electrically connected with distal ends of the electrical wires (10);
 a plug (30) securely inserted between the electrical wires (10);
 a protection tubular film (40) securely surrounded outside the assembled two electrical wires (10), the bulb (20) and the plug (30); and
 an enclosure (50) securely formed outside of the connected bulb (20), the electrical wires (10), the plug (30) and the protection tubular film (40).

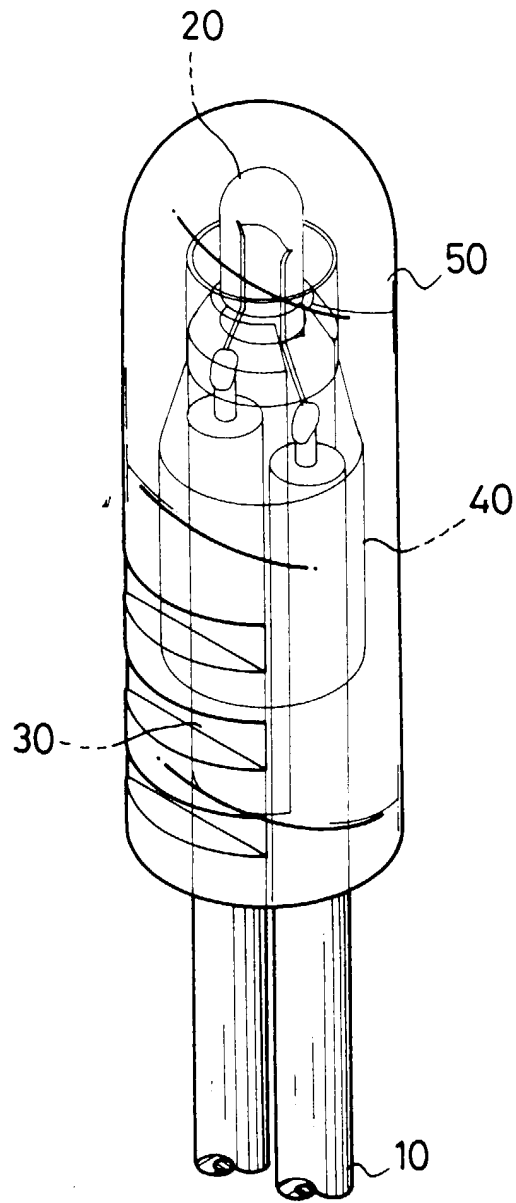


FIG. 1

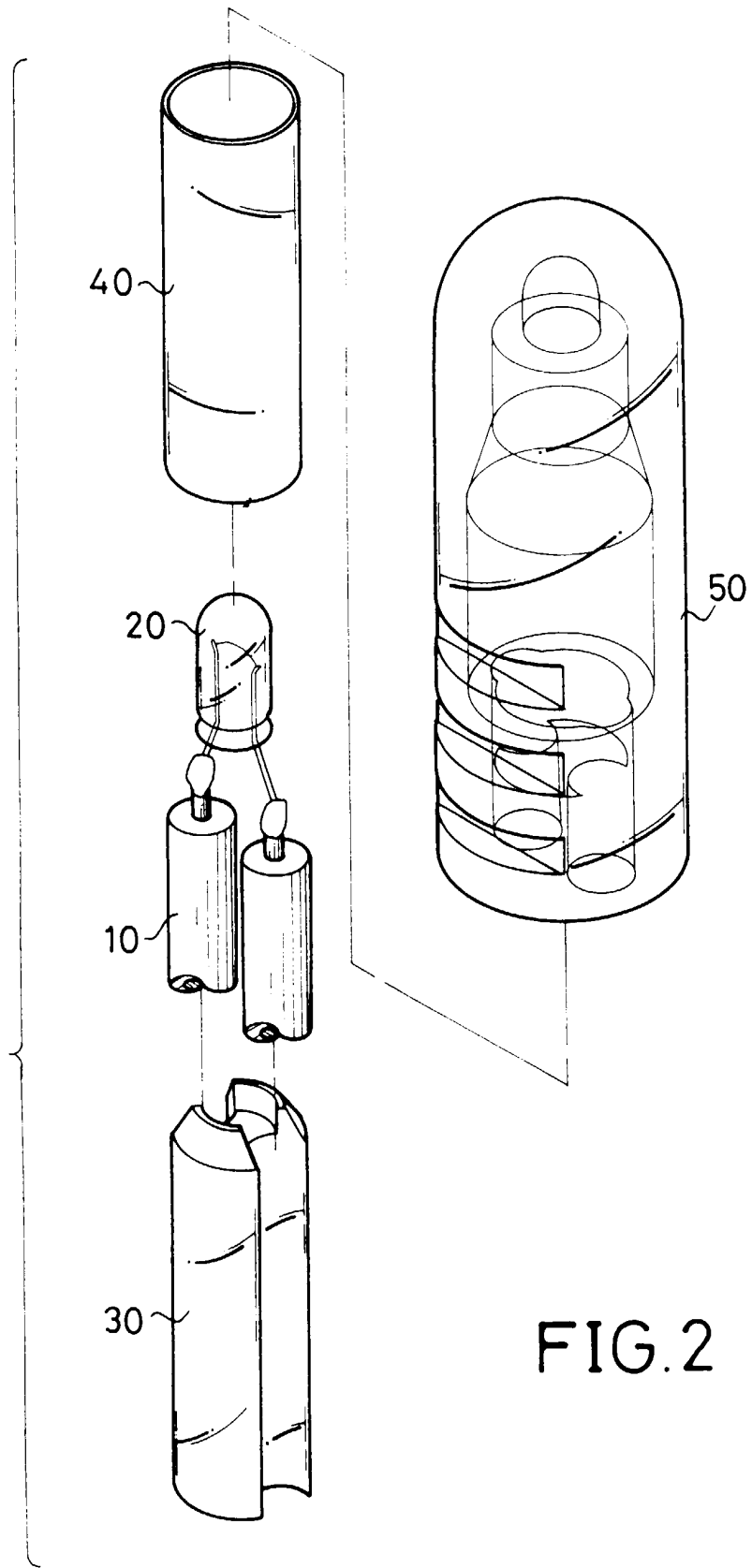


FIG.2

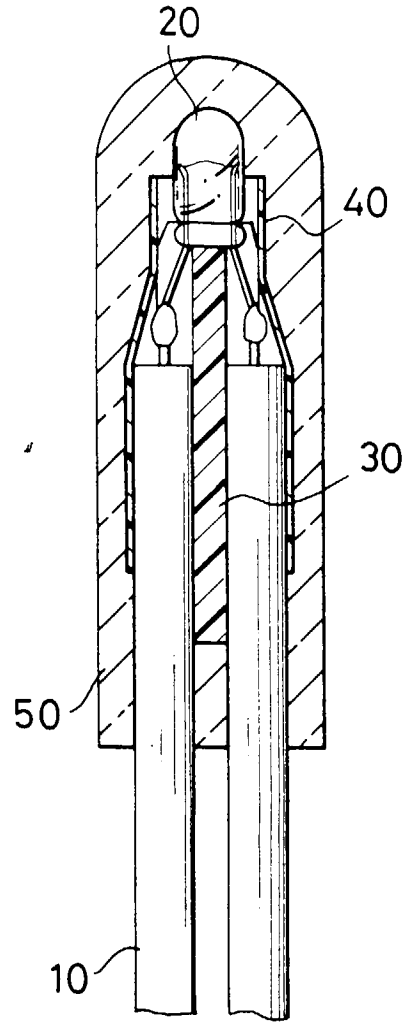


FIG.3

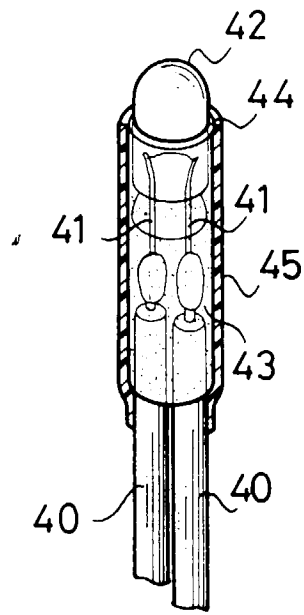


FIG.4
PRIOR ART



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EUROPEAN SEARCH REPORT

Application Number
EP 99 20 1807

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	SE 165 588 C (N.V.PHILIPS'GLOEILAMPENFABRIEKEN) 9 December 1958 (1958-12-09) * figures 1-3 * ---	1-4	F21V19/00
X	US 3 733 479 A (CARLEY) 15 May 1973 (1973-05-15) * abstract; figure 4 * ---	1	
A	US 5 669 701 A (LIN) 23 September 1997 (1997-09-23) * abstract; figures 1,2 * ---	4	
A	US 5 752 765 A (LIOU) 19 May 1998 (1998-05-19) * abstract; figures 2,3 * ---	1,4	
A	US 5 816 862 A (TSENG) 6 October 1998 (1998-10-06) * abstract; figures 1-8 * -----	1,4	
The present search report has been drawn up for all claims			
			F21V F21P H01R
Place of search	Date of completion of the search	Examiner	
THE HAGUE	28 October 1999	Onillon, C	
CATEGORY OF CITED DOCUMENTS		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	
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			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 99 20 1807

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 The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

28-10-1999

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US 3733479	A	15-05-1973	NONE	
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82