United States Patent [19]

Janssen

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[54] **LAMP**

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[52] **U.S. Cl.**..... **240/52.1;** 240/52 R; 240/73 QD; 240/81 R

[51] **Int. Cl.**..... **F21v 21/08**

[58] **Field of Search**... 240/52.1, 52 R, 81 R, 81 BS, 240/73 QD

[56] **References Cited**

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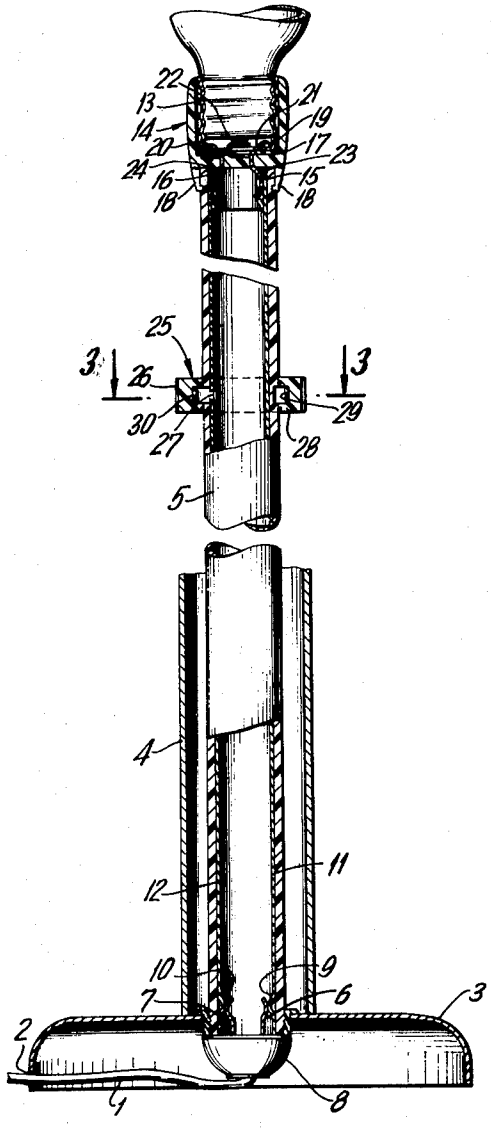
Primary Examiner—Richard L. Moses

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[57] **ABSTRACT**

The present invention relates to a lamp structure which is safer, more durable, more inexpensively manufactured and more easily repaired than lamp structures of the prior art. The lamp structure of the present invention has a shaft of insulating material extending upward from a base with bus bar conductors embedded in the surface of the shaft and running lengthwise of the shaft. A lighting socket and housing are affixed to the top of the shaft and snap contacts in the bottom portion of the socket housing make electrical connection with the bus bar conductors in the shaft. At the bottom of the shaft the bus bar conductors make contact with plug prongs which connect to a plug affixed to a standard electric cord.

9 Claims, 5 Drawing Figures



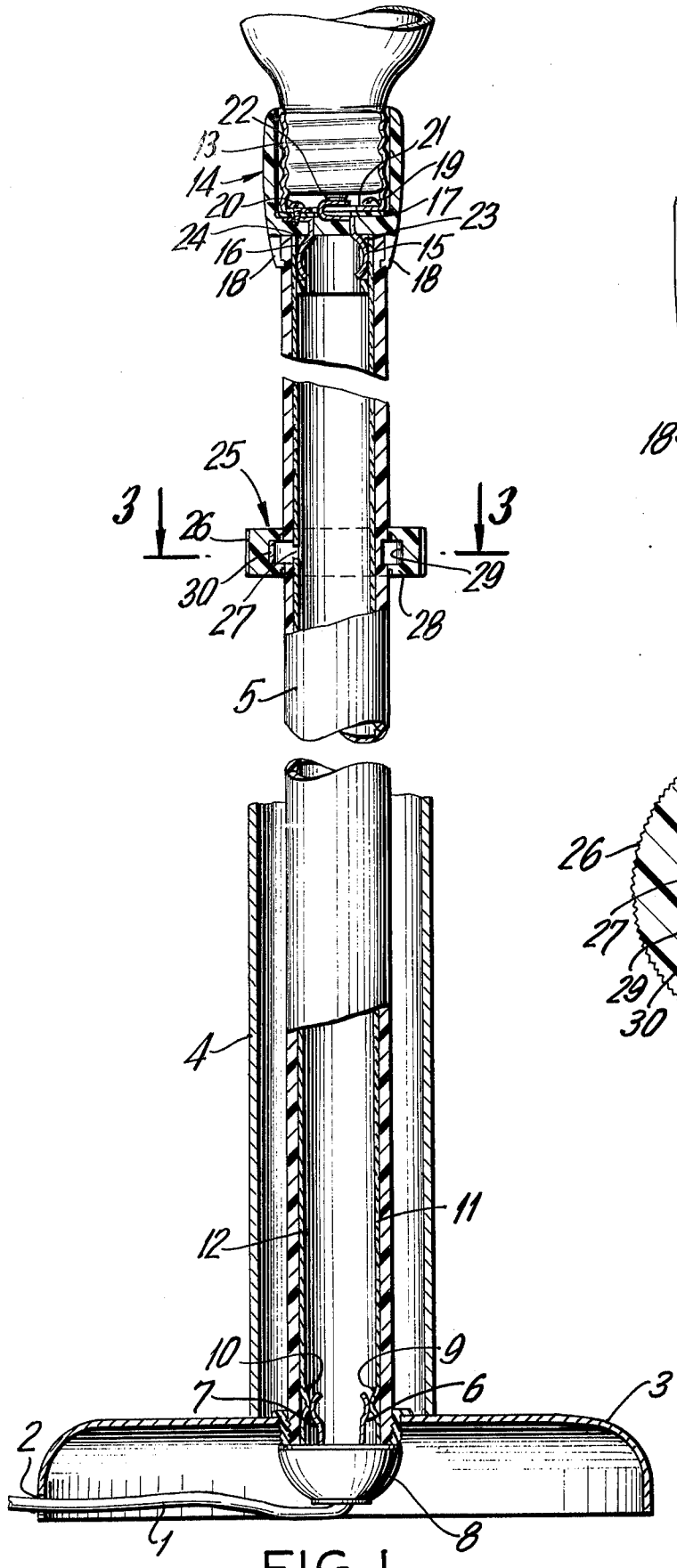


FIG. 1

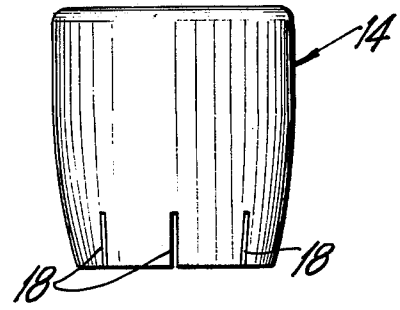


FIG. 2

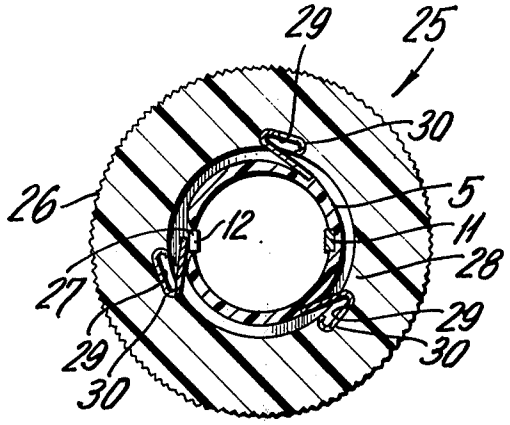


FIG. 3

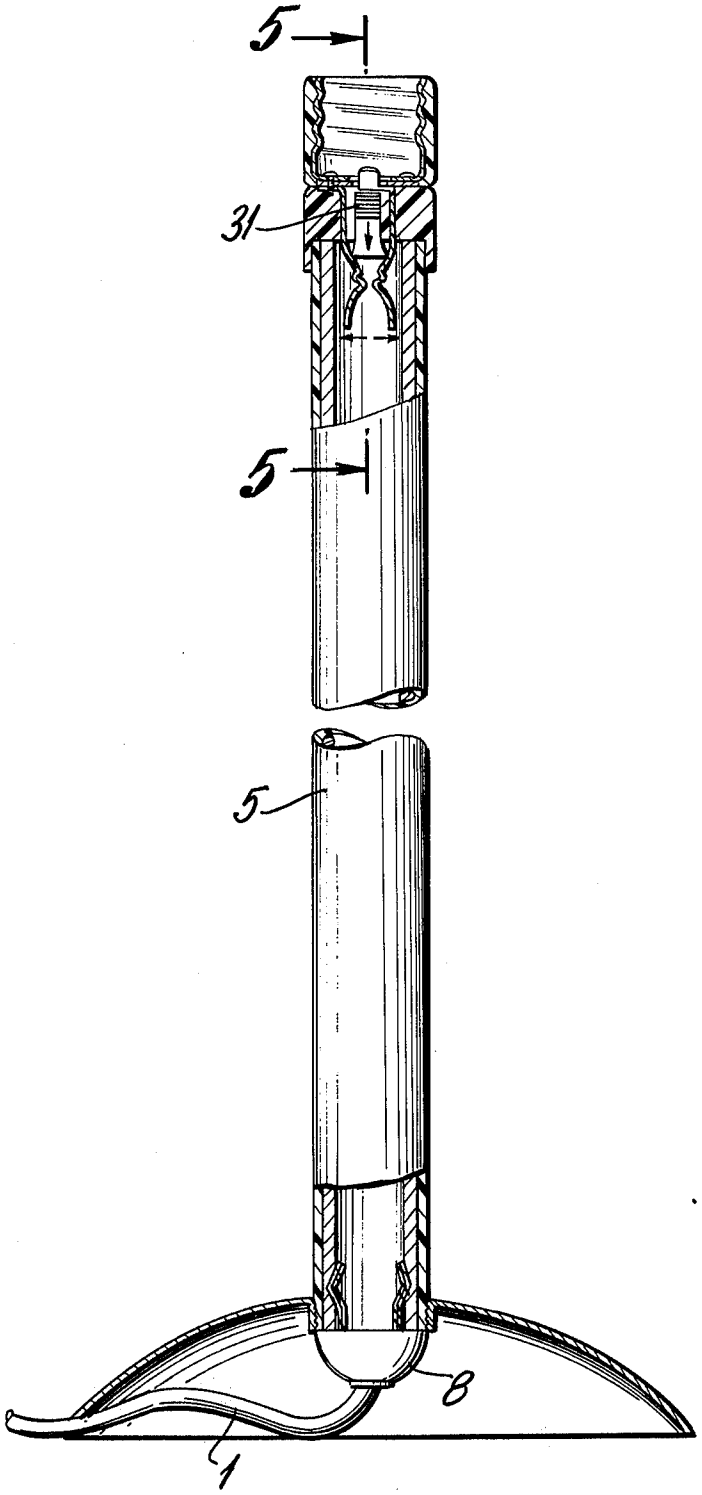


FIG. 4

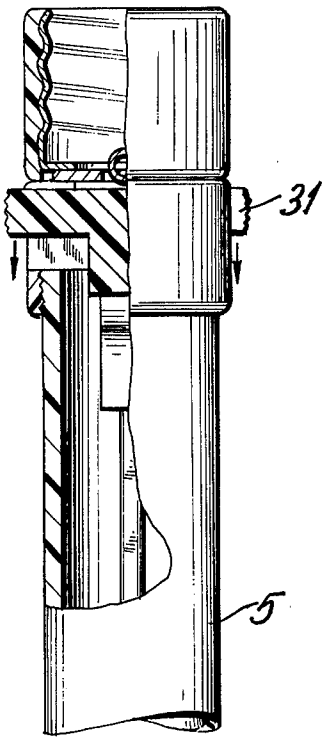


FIG. 5

LAMP

BACKGROUND OF THE INVENTION

Prior to the present invention, electric lamps were commonly constructed with a lamp shell attached to and extending upwardly from a base section. A lighting socket was affixed to the top of the lamp shell. Electrical current was carried into the base section of the lamp by means of an electric cord. This cord extended up through the lamp shell to the socket, was connected to the socket, and thereby transmitted electric current to the socket. Other lamp structures of the prior art had conductive wires extending up through the lamp shell through a tubular metal sheath, which contained insulating filling material, to a lighting socket. In both these types of lamps the socket was held onto the lamp shell by set screws.

Although structures of these types provide adequate lighting, they have several serious shortcomings.

Constructing a lamp of either of these types requires manual wiring by a technician. Consequently, construction costs are high. In addition, in lamps of the latter type, the conductive wires can make undesirable contact with the metal tubular sheath. In lamps of the former type, the conductive wires (even though enclosed with an insulating cord) are subject to twisting and fraying, both of which can cause malfunction. Frequently, the electric cords or conductive wires of prior art lamps twist and fray near the points at which they are attached to their associated lighting sockets. Further, lamps of the prior art are difficult and expensive to repair. In order to check for wiring defects in those types having an electric cord extending upward in the shell to the lighting socket, the entire cord must be removed from the lamp. In the other type of prior art lamp in which conductive wires extend upward through a metal sheath to the socket, the wiring in the sheath must be thoroughly checked for defects; rewiring is often required. In order to repair the wiring of either type of prior art lamp, or simply to check for defects, the entire lamp must be disassembled. Also, as the sockets of prior art lamps are held into place against their lamp shell bases with set screws, they often twist and loosen from their lamp shell bases causing improper functioning.

It is an object of the present invention to overcome these shortcomings of prior art lamps by providing a lamp that may be inexpensively mass produced, durable, safe, which requires minimal repair, and which has minimal possibility of electrical short-circuiting and malfunctioning.

It is a particular object of the present invention to provide a lamp structure which does not have conventional wiring between the base of the lamp and the lighting socket and which, as a result, can be constructed without manual wiring, and is not subject to short-circuiting and other difficulties associated with the fraying of wires, particularly the common problem of the fraying of conductive wires near the socket.

It is another object of the present invention to provide a lamp structure wherein the lamp socket is not subject to twisting and is prevented from loosening from the rest of the lamp.

SUMMARY OF THE INVENTION

In the lamp structure of the present invention: a shaft is adapted to fit into the base section of the lamp; bus bar conductors are embedded in the surface of the shaft and run lengthwise of the shaft; a lighting socket and plastic housing are fit over the top of the shaft so as not to be subject to twisting and loosening from the shaft; snap contacts extend downward from the bottom portion of said socket housing and make electrical connection with the bus bar conductors running along the shaft; the bus bar conductors make contact near the bottom of the shaft with the upper portion of either standard male plug prongs, or plug prongs adapted to fit into a standard female plug, one of said plugs being affixed to a standard electric cord.

BRIEF DESCRIPTION OF DRAWINGS

FIG. **1** is a front elevational view, partly in sectional, of one embodiment of the present invention.

FIG. **2** is a side elevational view showing in detail the socket and socket housing of the embodiment depicted in FIG. **1**

FIG. **3** is a cross-sectional view of the embodiment shown in FIG. **1** taken across the line **3—3,** showing in detail the switching means of the embodiment depicted in FIG. **1.**

FIG. **4** is a front elevational view, partly in sectional, of another embodiment of the present invention.

FIG. **5** is a detailed, sectional view of the switching means of the embodiment depicted in FIG. **4,** taken along the line **5—5.**

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to FIG. **1,** a conventional electric power cord **1,** passes through an aperture **2,** of a standard lamp base **3.** Attached to and extending upwardly from base **3,** within the lamp shell **4,** is a plastic, extruded tubular shaft **5.** The base and the lower portion of the shaft may be provided with threads so that the shaft may be screwed or threaded into the base. The prongs, **6** and **7,** of a male plug, **8,** attached to the end of the electric power cord extend upwardly into the bore of the shaft making contact with nipples or raised portions, **9** and **10,** of the bus bar conductors, **11** and **12,** near the bottom of the shaft. These nipples assure that electrical contact is maintained between the prongs and the bus bar conductors. In some embodiments, the bus bar conductors may have depressions instead of nipples; in such embodiments the upward extending plug prongs are adapted to fit into these depressions. In yet other embodiments, the bottom portion of the bus bar conductors may contact plug prongs adapted to fit into a female plug affixed to a standard electric cord. The bus bar conductors are of suitable conducting material (e.g. copper) and are embedded in the surface of the shaft base and run, on opposite sides of the shaft, from the bottom portion of the shaft to the top of the shaft. In some embodiments, the bus bar conductors may be embedded in the outer surface of an extruded or solid plastic shaft. It should be understood that the shaft may be made of suitable insulating material other than plastic.

The bus bar conductors are, preferably, flattened copper strips and are preferably joined to the wall of the shaft (inner or outer) by heat sensitive bonding resin.

A standard socket, **13,** contained within a plastic collar or housing, **14,** and having snap contacts, **15** and **16,** extending downward from insulating disc, **17,** is

adapted to fit and snap into attachment with the top of the plastic shaft so that the snap contacts make electrical connection with the bus bar conductors within the shaft. The upper portion of the bus bar conductors are exposed sufficiently to make contact with these snap contacts. Referring to FIG. **2**, the plastic collar, **14**, is adapted to force fit over the plastic shaft. The plastic collar is provided with slits, **18**, which relieve tension on the plastic collar, resulting from urging the collar into contact with the shaft, sufficiently to allow this force fit.

Referring again to FIG. **1**, the snap contacts, **15** and **16**, are made of suitable conducting material (e.g. copper) and are held in place respectively by screws, **19** and **20**, which pass through the bottom conducting surface of the socket, **21**, and the insulating disc, **17**, immediately beneath the socket. Provided at the bottom of the socket, as in conventional sockets, is a spring conductive contact, **22**, adapted to be depressed as a result of the insertion of a light bulb into the socket. Also, as is conventional sockets, the socket is threaded so that a standard light bulb may be threaded or screwed into it. The spring conductive contact in the socket makes electrical contact with the upper portions of snap contacts, **15** and **16**. At the upper portion of the shaft, on opposite sides of the shaft, are provided grooves, **23** and **24**, each of which surrounds the upper portion of one of the bus bar conductive strips; the snap contacts which extend from the socket housing into the shaft, when said housing is force fit over said shaft, are adapted to fit into these grooves thereby preventing twisting of the socket housing.

Switching means, **25**, are contained within switch retaining ring, **26**, which is positioned between the bottom and the top of the shaft, orthogonally intersects said shaft, and is adapted to be rotated. One bus bar conductor has a small gap (e.g. 3/32 inches), 27, within the segment of the plastic shaft between the top and bottom surfaces of the switch retaining ring. The switching means comprises a disc, **28**, which orthogonally intersects the plastic shaft and which is contained within and in coaxial relationship with the switch retaining ring so that rotation of the ring causes the rotation of the disc.

Referring to FIG. **3**, this disc is constructed with cavities, **29**, and thereby adapted to hold spring conductive clips, **30**. The disc may be rotated so that a spring conductive clip is positioned within gap **27**. When this situation exists, the spring conductive clip provides electrical connection between the bus bar conductive segment above the gap with the bus bar conductive segment below the gap; this is the "on" position. When the disc is rotated so that no conductive clip is within the gap, no such electrical connection is made; this is the "off" position. Rotation of the switch disc is effected by manually rotating the switch retaining ring.

In some embodiments, switching means, **31**, can be positioned just below the plastic socket housing at the top of the shaft and can be of the conventional type as shown in FIGS. **4** and **5**. In yet other embodiments, switching means of the conventional type may be positioned on the electrical cord or in the base section of the lamp.

It is noted that whereas in the embodiments shown, bus bar conductors are embedded in a plastic, extruded shaft, in other equivalent embodiments the bus bar conductors may be simply joined to the inner or outer walls of an extruded or solid shaft of any suitable insulating material.

The structure herein described constitutes the essential elements of a new and useful electric lamp structure. In some embodiments a decorative lamp shell of suitable material (e.g. wood, metal, plaster, etc.) may surround the plastic shaft. Some embodiments may also have a decorative light bowl or similar fixture surrounding the light bulb and socket and also a decorative fixture adapted to hold a lamp shade in place above and around the socket in conventional manner.

What is claimed is:

1. An improved lamp structure comprising:

a. a base section;

b. a shaft of insulating material located on said base section and extending upwardly from said base section;

c. bus bar conductors embedded in a surface of said shaft, running lengthwise of said shaft, electrically connected to electricity carrying means which extend out of the lamp structure, and exposed sufficiently at the upper portion of said shaft so as to be able to make electrical contact with the snap conductive contacts of a light bulb socket;

d. a light bulb socket contained within housing of insulating material, said housing being fit over the upper portion of said shaft;

e. snap conductive contacts affixed to and extending below said socket and making electrical contact with said bus bar conductors and said shaft, said snap conductive contacts also making electrical contact with a spring contact in said socket adapted to transmit electric current to an electric bulb when said bulb is inserted into said socket so as to depress said spring contact;

f. switching means for regulating current flow through said bus bar conductors to said light bulb socket.

2. Apparatus as claimed in claim **1** wherein said shaft is plastic.

3. Apparatus as claimed in claim **1**, wherein said shaft of insulating material is extruded and said bus bar conductors are embedded in the inner surface of said extruded shaft.

4. Apparatus as claimed in claim **3**, wherein said light bulb socket and socket housing are readily detached from said shaft by manually pulling said housing from said shaft and are adapted to be manually force fit over said shaft.

5. Apparatus as claimed in claim **4**, wherein there are two bus bar conductors.

6. Apparatus as claimed in claim **5** wherein said shaft is provided with grooves in the upper portion of its inner wall, each of which surrounds the upper portion of a bus bar conductor, and each of which is adapted to hold one said snap conductive contact in fixed position in contact with a bus bar conductor, when said socket housing is force fit over said shaft, so as to prevent said socket housing and said socket from twisting in relation to said shaft.

7. Apparatus as claimed in claim **6** wherein said bus bar conductors contact the upper portion of male plug prongs near the bottom of said shaft, the male plug being affixed to a standard electric cord which can extend to an electricity source.

8. Apparatus as claimed in claim **7**, wherein the bus bar conductors are provided with nipples near the bottom of the shaft which are adapted to maintain electrical contact with said male plug prongs.

9. Apparatus as claimed in claim **7**, wherein the bus bar conductors are provided with depressions near the botton of said shaft which are adapted to maintain electrical contact with said male plug prongs.

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