

[54] **ELECTRICALLY ENERGIZED
DECORATIVE SUPPORT APPARATUS**

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[58] Field of Search 240/10.1, 10 R, 10 T, 81 A

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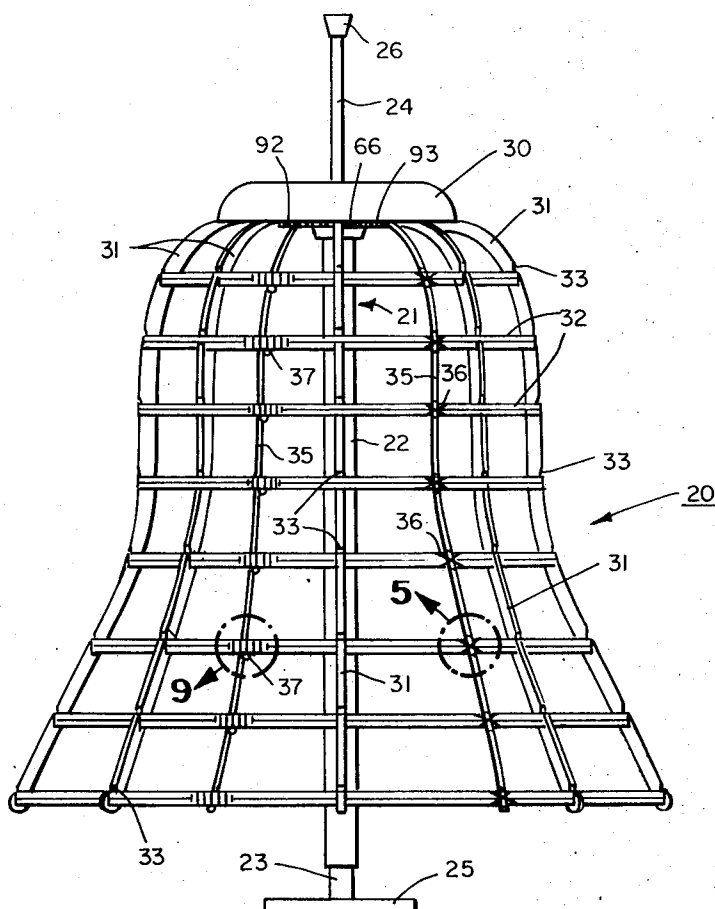
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[57] **ABSTRACT**

A decorative device having an electrified rotating frame, the frame supported by a spring biased support pole and powered by an electric motor housed on the rotating frame and energized through slip rings on the support pole. The frame member comprises a plurality of horizontal rings supported by vertical frame members, the rings having a pair of energized electrical conductors, and adapted for carrying a plurality of ornamental electrical bulbs.

6 Claims, 14 Drawing Figures



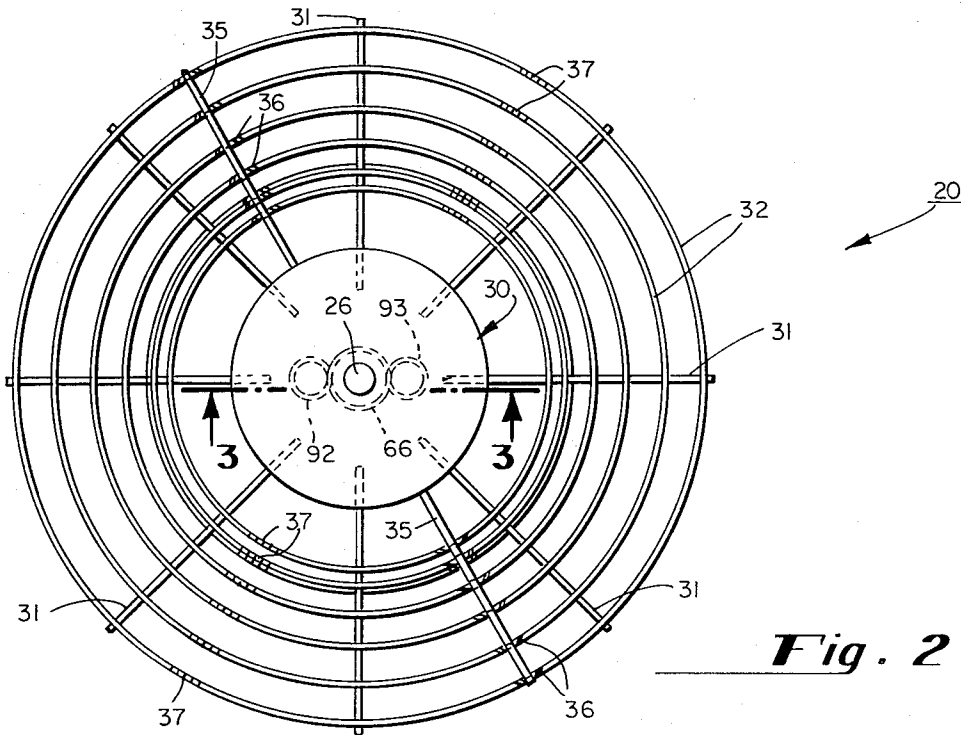


Fig. 2

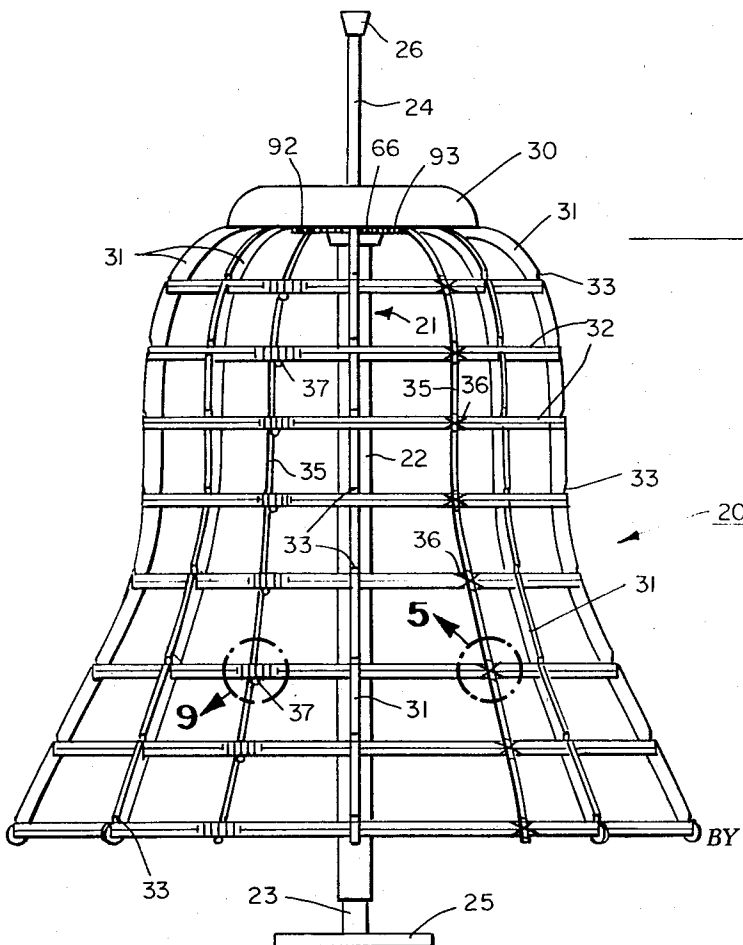
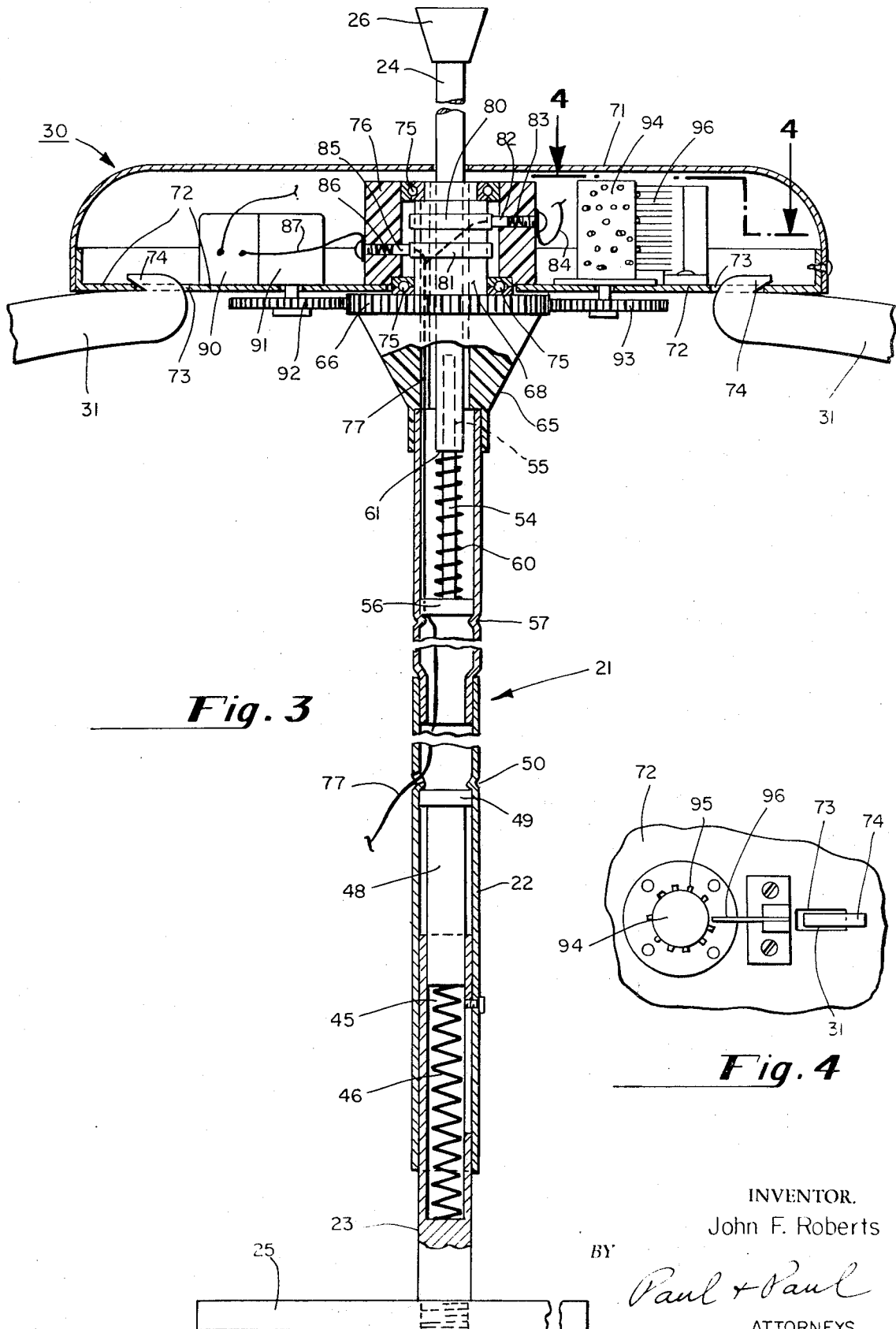


Fig. 1

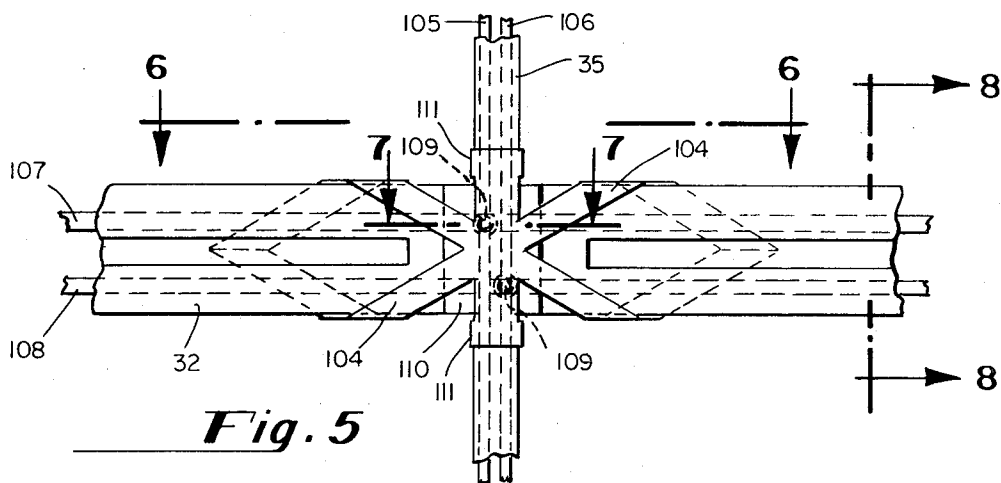
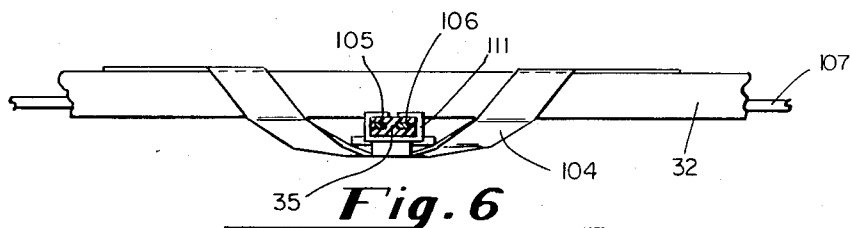
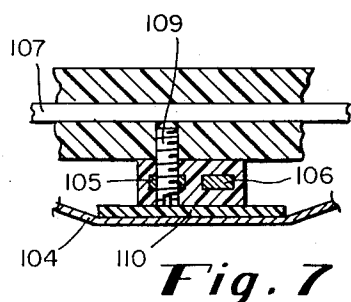
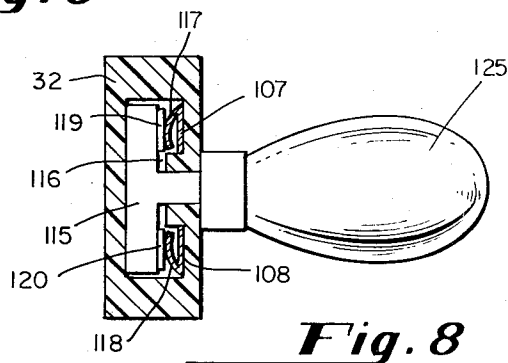
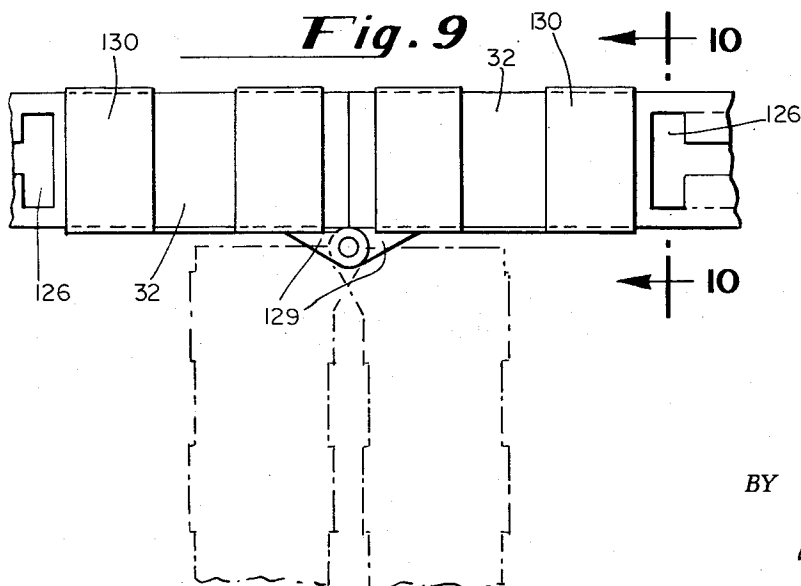
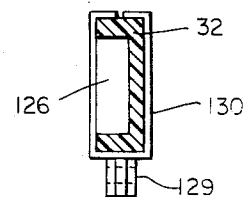
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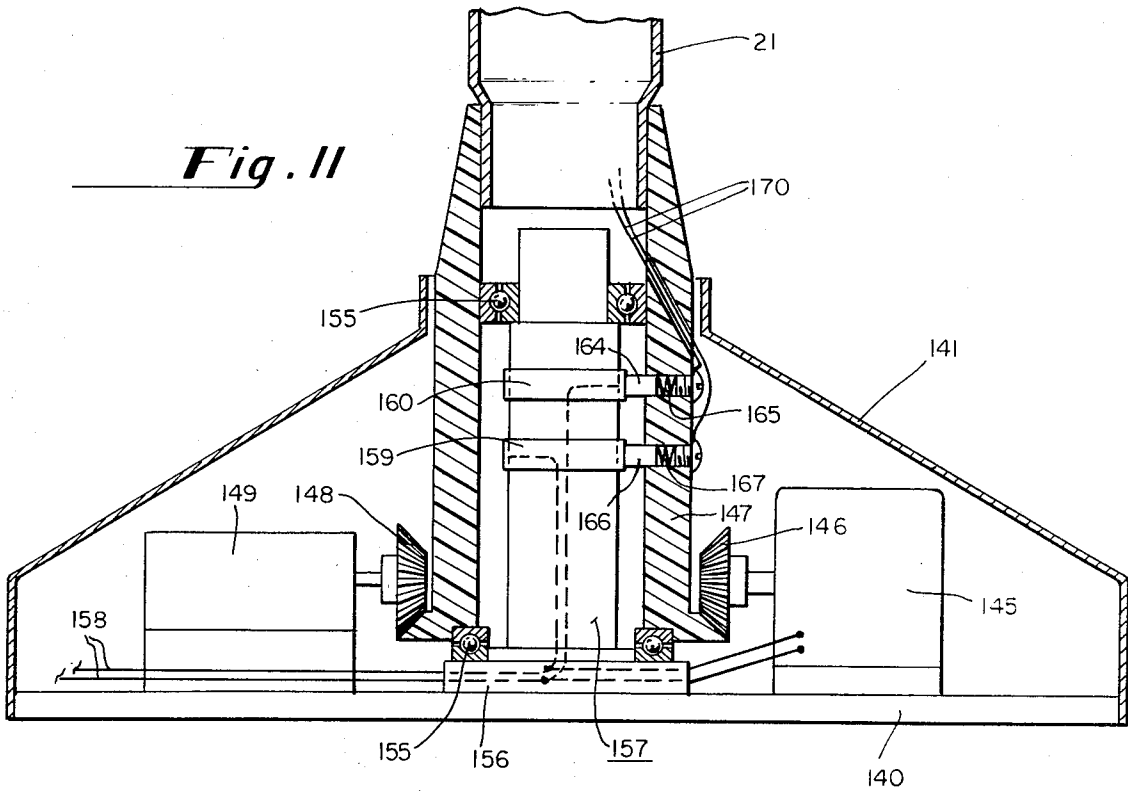
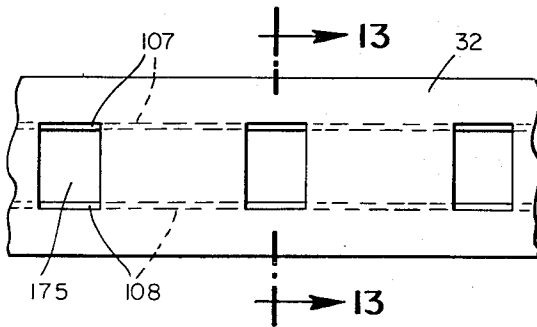
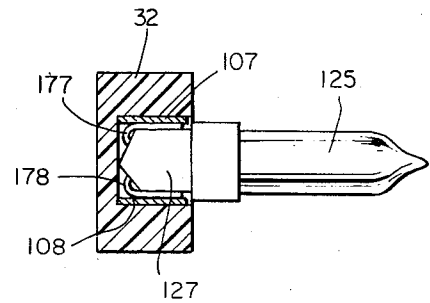
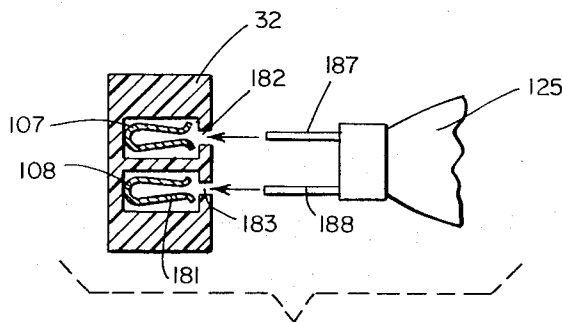
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ELECTRICALLY ENERGIZED DECORATIVE SUPPORT APPARATUS

BACKGROUND OF THE INVENTION

This invention lies in the field of decorative devices and, more particularly, rotatable motor driven decorative devices having an electrically energized rotating frame.

The invention herein disclosed is an improvement over the device disclosed in U. S. Pat. No. 1,134,834.

SUMMARY OF THE INVENTION

The primary object of this invention is to provide a motorized decorative support apparatus, which may be used to provide a safe and esthetically appealing decoration, particularly a holiday decoration.

Accordingly, this invention provides a frame rotatably mounted upon a spring biased support pole, the frame being motor driven and comprising a plurality of electrically energized conductor pairs to which ornamental bulbs may be conveniently and safely attached. The conductor rings are energized through a pair of power cords, are detachable from the main apparatus, and are hinged so that the conductor rings and power cords as a unit may be separated and folded for convenient storing. A music box is driven through a gear train connecting to the motor, to provide music while the decorative device rotates.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an elevational view of the preferred embodiment of the bell shaped apparatus of this invention.

FIG. 2 is a plan view of same.

FIG. 3 is a vertical section taken along lines 3—3 of FIG. 1.

FIG. 4 is a fragmentary section taken along lines 4—4 of FIG. 3.

FIG. 5 is an enlarged fragmentary view taken of the structure indicated at 5 in FIG. 1.

FIG. 6 is a sectional view taken along lines 6—6 of FIG. 5.

FIG. 7 is a sectional view taken along lines 7—7 of FIG. 5.

FIG. 8 is a sectional view taken along line 8—8 of FIG. 5, and showing a light bulb inserted in the channel of the ring.

FIG. 9 is an enlarged fragmentary view of the structure indicated by 9 in FIG. 1.

FIG. 10 is a sectional view taken along line 10—10 of FIG. 9.

FIG. 11 is a fragmentary cross section of the base of an alternate embodiment of this invention.

FIG. 12 is an elevational view of an alternate embodiment of the ring.

FIG. 13 is a sectional view taken along line 13—13 of FIG. 12, and showing a bulb inserted in a receptacle within the ring of FIG. 12.

FIG. 14 is a cross sectional view of another embodiment of the ring, with a bulb shown in position to be inserted therein.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to FIGS. 1 and 2, the primary frame structure of this invention is shown. A bell shaped

frame, shown generally at 20, is supported on a spring biased pole 21 having a middle fixed section 22, a lower movable section 23 and an upper movable section 24. The pole, which may be firmly held between upper and lower surfaces not shown, as between a ceiling and a floor, has a floor support member 25 and an upper end member 26, preferably made of rubber, for distributing the spring force of the pole between floor and ceiling respectively. An upper housing 30, connected to pole 21 by means shown in FIG. 3, supports a plurality of vertical frame members 31, or formers, which members curve generally outward from the pole to provide a bell shaped profile. Members 31 are preferably made of plastic to provide strength with a minimum of weight, and have notches 33, in which are supported a plurality of rings 32. The rings 32 may also be made of plastic, or any other light material which is a good electrical insulator. The rings 32 are connected to a pair of power cords 35, the rings and cables being interconnected by clamps 36. Each ring is hinged by a pair of hinges 37, there being a cord 36 connecting and providing power to each semi-circular portion of each ring.

Referring now to FIG. 3, the lower portion of the pole 23 is seen to have an axial bore 45 therein in which is housed spring 46 which is restrained at its upper end by fixed member 48 within center portion 22 of the pole. Fixed member 48 is topped by annular head 49, which engages crimp 50, restraining its upward movement. Thus, as lower portion 23 is moved upwardly with respect to center portion 22, spring 46 is compressed, providing a restraining force. Similarly, upper pole member 24 has a bore 55 which receives fixed member 54, member 54 having an annular head 56 which engages crimp 57 in center member 22. Upper spring 60, mounted around member 54, engages head 56 and the bottom edge 61 of portion 24, such that downward movement of portion 24 with respect to center portion 22 is opposed by the tension of spring 60. Thus, pole 21 is held firmly in position between floor and ceiling by the combined forces of springs 46 and 60. It is noted that proper tension may be obtained by use of just an upper or lower spring in a spring-biased pole of this type.

Hub 65, made preferably of plastic or a like insulating material, is fixedly mounted on top of center portion 22, surrounding upper pole portion 24. Gear 66 is integrally fixed around the upper periphery of hub 65. An upper portion 68 of hub 65, cylindrical in form and surrounding pole member 24 above gear 66, houses a plurality of bearings 75, which in turn rotatably support upper housing 30. Upper housing 30 comprises cover member 71 and lower member 72, which has outside openings 73 therein for supporting vertical frame members 31. Each vertical frame member 31 has a hooked end 74 which is fitted through opening 73 and engages member 72, and is supported thereby. Centrally attached to member 72 is annular insulator member 76 which is supported on bearings 75, such that the entire housing 30 is free to rotate about the fixed center support pole.

Upper hub portion 68 has positioned thereon upper slip ring 80 and lower slip ring 81, which are connected through the pole to leads contained in cable 77, and are thus energized with single phase electrical power. Slip ring 80 is contacted by upper brush 82 mounted in in-

insulator 76, which brush 82 in turn is held against ring 80 by spring 83, to which is connected lead 84. Similarly, lower brush 85 contacts lower slip ring 81, and is held in position by spring 86 to which is connected lead 87. Leads 84 and 87, which rotate within housing 30, thus provide an available supply of electrical power, which may be connected to the entire rotating structure. The leads are connected directly to terminals on motor 90, and also, through leads not shown, to the cords 35 which provide power to the rings 32.

Motor 90, which may be a conventional AC motor, drives motor gear 92 through gear box 91. A fan, not shown, may be provided to cool the space within the housing. Gear 92 engages fixed gear 66, such that the teeth of gear 92 are driven in a cycloidal path around fixed gear 66, thereby carrying housing 30 and the rest of the frame attached thereto in a circular manner around the center pole. The movement of housing 30 causes music box gear 92 to be rotated with respect to fixed gear 66, such that motion is imparted through gear 93 to music box 94. As seen in FIG. 4, music box 94 is a standard type apparatus, having protruding teeth 95 which drive prongs 96 in a programmed fashion, to produce music.

The manner of providing electrical power to rings 32 is illustrated in FIG. 5. Cord 35 carries conductors 105 and 106, which may be connected at any suitable place within rotating housing 30. For example, these conductors may be connected directly to the terminals of motor 90. Preferably, two female connectors are provided within housing 30, which are energized by leads 84 and 87. The two cords 35 are terminated in male plugs (not shown), such that the cords may be disconnected from the housing when the apparatus is dismantled. Each cable 35 is connected to a section of each ring 32 by a metal wrap shown generally at 104, having upper and lower clamp portions 111 which engage cable 35, as more clearly seen in FIG. 6. The remainder of wrapper 104 has a generally FIG. 8 appearance, and surrounds ring 32 to hold it firmly and connect it to cable 35. A pair of contact screws 109, separated from metal wrap 104 by an insulator 110, penetrate through conductors 105 and 106 respectively of cable 35, and make electrical contact with conductors 107 and 108 respectively of the ring 32, thus providing electrical continuity through to the conductors of the ring. As noted before, each ring is comprised of two semi-circular sections, separated by a pair of hinges 129 having clamp members 130 which fixedly hold and support the sections of ring 32 (see FIG. 9).

Referring now to FIG. 8, one form of ring 32 and complementary bulb structure is shown, which permits the user of the structure of this invention to place bulbs at virtually any desired point, or points, around the ring. Ring 32 may have an interior space 116, into which the user may slide a generally T-shaped base connected to a bulb 125. The base may be inserted into ring 32 at an opening 126 (FIG. 9) adjacent a hinge, and then slid along the ring to any desired position. Conductors 107 and 108 have resilient members 117 and 118, against which are engaged conducting strips 119 and 120 mounted on base 115. The bulb 25 is connected through to conducting elements 119 and 120 through internal wiring not shown. Thus, the bulb 125 may be placed in any position around the semi-circular portion of the ring in which it is inserted.

An alternate of the structure of ring 32 is shown in FIGS. 12 and 13. A plurality of discrete spaced receptacles 175 are provided around the ring, with conductors 107 and 108 in the form of strips running longitudinally around the ring, and spaced along the upper and lower portions of each receptacle. The bulb 125 has a base 127 terminating in prongs 177 and 178 which are bent around the outside of the base so as to make firm contact with conductors 107 and 108 respectively. In this form, a bulb 125 may, at the option of the user, be inserted in any receptacle 175.

A third arrangement of the ring structure 32 is shown in FIG. 14. Conductors 107 and 108, which are continuous around each semi-circular portion of ring 32, are horseshoe shaped in configuration, and positioned in cavities 180 and 181 respectively, into which may be inserted the prongs 187 and 188 respectively of a bulb 125. The openings 182 and 183 of ring 32 are also continuous, such that the bulb 125 may be inserted at any point around the ring.

In an alternate embodiment of this invention, useful for smaller sized structures where, for primarily esthetic reasons, it would be undesirable to have a support pole, a bottom rotating support frame is provided, which carries the center pole of the energized bell structure. As shown in FIG. 11, a main base member 140 is provided, having mounted thereon frame member 141, which encloses the drive means for the apparatus. A motor 145 is powered by electrical energy transmitted through cable 158. The motor drives motor output gear 146, which in turn interengages with gear teeth on rotating support 147, causing rotation of same. The gear teeth of support 147 also drive music box drive gear 148, which transmits rotational force to music box 149. Rotating support member 147 is mounted on bearings 155, which in turn are positioned on bearing support platform 156 mounted on base 140. A cylindrical center support 157, which is within the interior of hollow rotating member 147, supports lower and upper slip rings 159 and 160 respectively, which are connected to the power source through conductors connected to cable 158. Upper brush 164 contacts upper slip ring 160, and is held in position by spring 165, which in turn is connected to one of the two leads 170. Similarly, lower brush 166 is held in position against lower slip ring 159 by spring 167, which in turn is connected to the other of the conductors 170. The conductors 170 are carried upward within the hollow interior of member 21, and in turn connected to cables which lead to the rings 32 in the same manner as illustrated in FIG. 1. It is thus seen that in this embodiment the entire structure is rotated by a drive mechanism mounted at the base of the decoration. The drive means, the motor and the music box are all covered by frame member 141, providing an esthetic appearance to the lower portion of the apparatus.

When the apparatus of this invention is in use, it may be decorated in any desirable manner, as by hanging icicles and other ornamental decorations from the rings. When not in use, the rings, preferably eight in number, may be separated from the rest of the structure by disconnecting the two power cords from the housing, and lifting the rings out of the support slots in the frame members. The rings, thus detached but still held together by the cords, may be folded over at the hinges for convenient storage.

I claim:

1. Decorative support apparatus, comprising:

- a. a spring biased support pole fixed between upper and lower parallel surfaces;
- b. a rotatable housing, rotatably supported upon said support pole;
- c. a bell-shaped frame, carried by and suspended from said rotatable housing;
- d. motor means, mounted in said rotatable housing, for rotating said housing about said support pole;
- e. electrical energy means, for providing electrical energy to said motor, including stationary slip rings on said support pole and spring-held brushes mounted on said rotatable housing in continuous contact with said slip rings;
- f. a plurality of concentric rings, supported by said suspended frame, each of said rings being comprised of a pair of semi-circular sections connected by a pair of hinges, each such section containing a pair of conductors electrically energized by a cable detachably connected to said electrical energy means, each such semi-circular section having a receiving opening for receiving an electrical light bulb;
- g. a music box, for producing music when said housing is rotated, fixedly mounted in said housing; and
- h. drive means, comprising a motor gear driven by said motor, a gear fixed to said support pole and inter-engaging said motor gear, and a music box gear engaging said fixed gear, for driving said music box from said motor.

2. The apparatus as described in claim 1, wherein each semi-circular ring section is connected to a cable carrying a pair of energized conductors, by a metal wrapper having a pair of clamp frames which engage said cable and a flexible portion integrally attached to said clamp frames and extending in opposite directions normal from said connecting cable and wrapping around said ring section, said wrapper supporting a pair of screw contacts with electrically connect the conductors in the cable to respective conductors in the semi-circular ring section.

3. The apparatus as described in claim 2, wherein each said ring section contains a plurality of energized light bulb receptacles.

4. The apparatus as described in claim 1 wherein each said ring section has a channel having an opening

extending substantially along the length of the section, for movably receiving a plurality of electrical light bulbs.

5. The apparatus as described in claim 4, comprising a plurality of light bulb elements having bases with geometrical forms complementary said channel and adapted to slide within said channel, said channel having continuous energized conductors for energizing said light bulbs.

6. Bell-shaped decorative apparatus, comprising:

- a. a fixed housing adapted for stable placement on a flat surface, and having a first opening at the top thereof;
- b. a cylindrical support member, having a hollow interior and a second opening at the top thereof, rotatably mounted within said housing and extending through said first opening, and having a first gear at the bottom periphery thereof;
- c. a motor mounted in said housing and having a drive shaft connected to an output gear, said output gear meshing with said first gear, so as to drive said cylindrical support member;
- d. a music box, mounted in said housing, being driven by a drive shaft terminated in a drive gear meshed with said first gear;
- e. second cylindrical support means, having a hollow interior, fixedly connected to and mounted within said second opening of said rotatable cylindrical support member;
- f. a housing, fixedly mounted at the top of said second support means, and rotating therewith;
- g. a bell-shaped frame, carried by and suspended from said housing, and having a plurality of rings centered about said second support means;
- h. electrical energy means, for providing electrical energy to said rings; and
- i. said rings being each comprised of a pair of semi-circular sections connected by a pair of hinges, each such section containing a pair of conductors electrically energized by said electrical energy means, each such semi-circular section having a receiving channel for receiving a plurality of electrical light bulbs, said channel having continuous energized conductors for energizing said light bulbs.

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