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(54) **LIGHT PROVIDING APPARATUS
ATTACHABLE TO UMBRELLA AND STAND
ASSEMBLY**

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(76) Inventor: **Oliver Joen-An Ma**, 29 W. Wistaria Ave., Arcadia, CA (US) 91006

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This patent is subject to a terminal disclaimer.

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(51) **Int. Cl.**
A45B 3/04 (2006.01)
F21L 4/02 (2006.01)
F21V 21/088 (2006.01)

Primary Examiner—Alan Cariaso
(74) *Attorney, Agent, or Firm*—Knobbe Martens Olson & Bear LLP

(52) **U.S. Cl.** **362/102**; 362/183; 362/251; 362/396; 135/16; 135/910

(57) **ABSTRACT**

(58) **Field of Classification Search** 362/102, 362/183, 352, 365, 367, 396, 431, 436, 438, 362/450, 577, 240, 249–252; 135/16, 910
See application file for complete search history.

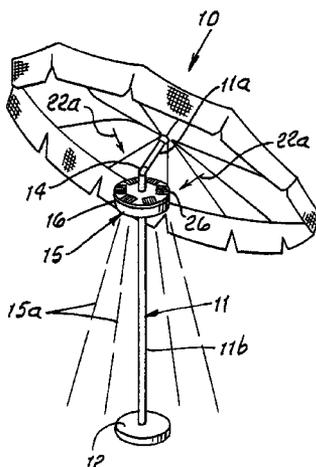
A light provider for an umbrella and stand assembly, comprising a body releasably attachable to the assembly, a source or sources of electric light carried by the body, to direct light away from the body, and incident light responsive means on the body to provide electrical energization for the light source, the means configured to receive incident light from a direction or directions spaced away from light directed from the source or sources.

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26 Claims, 11 Drawing Sheets



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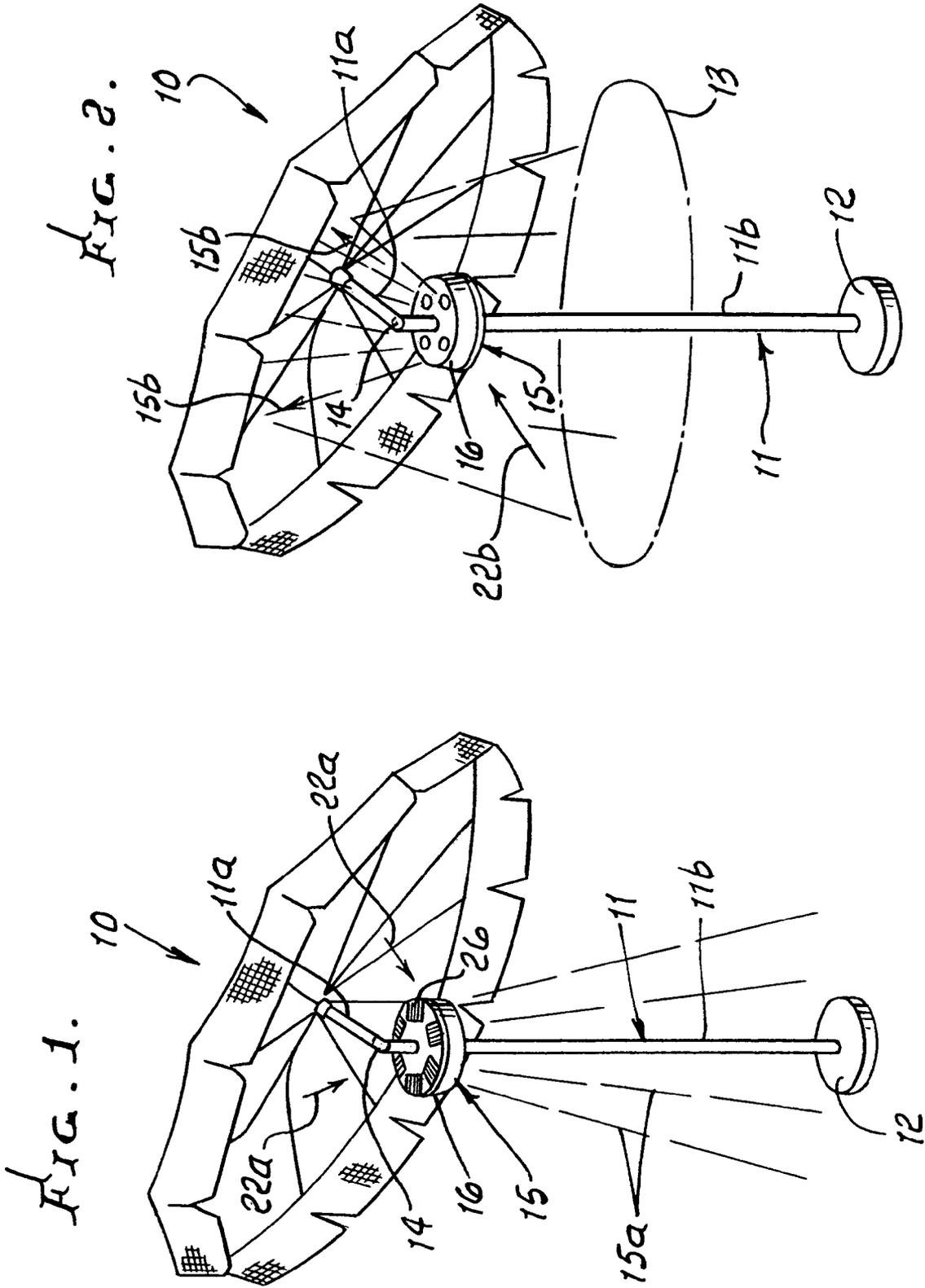
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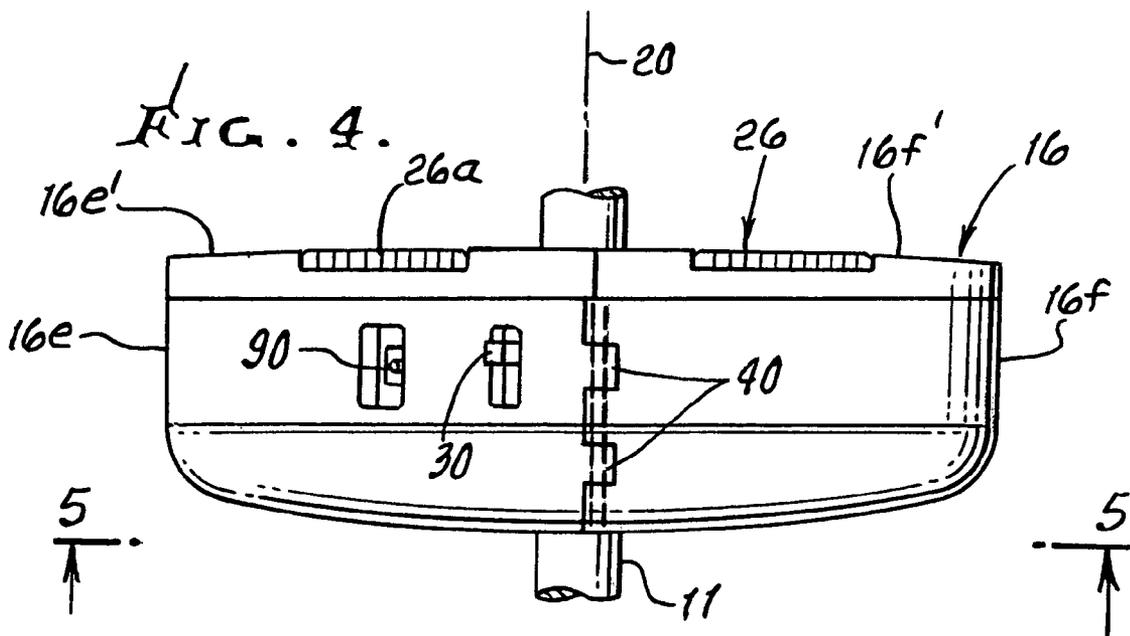
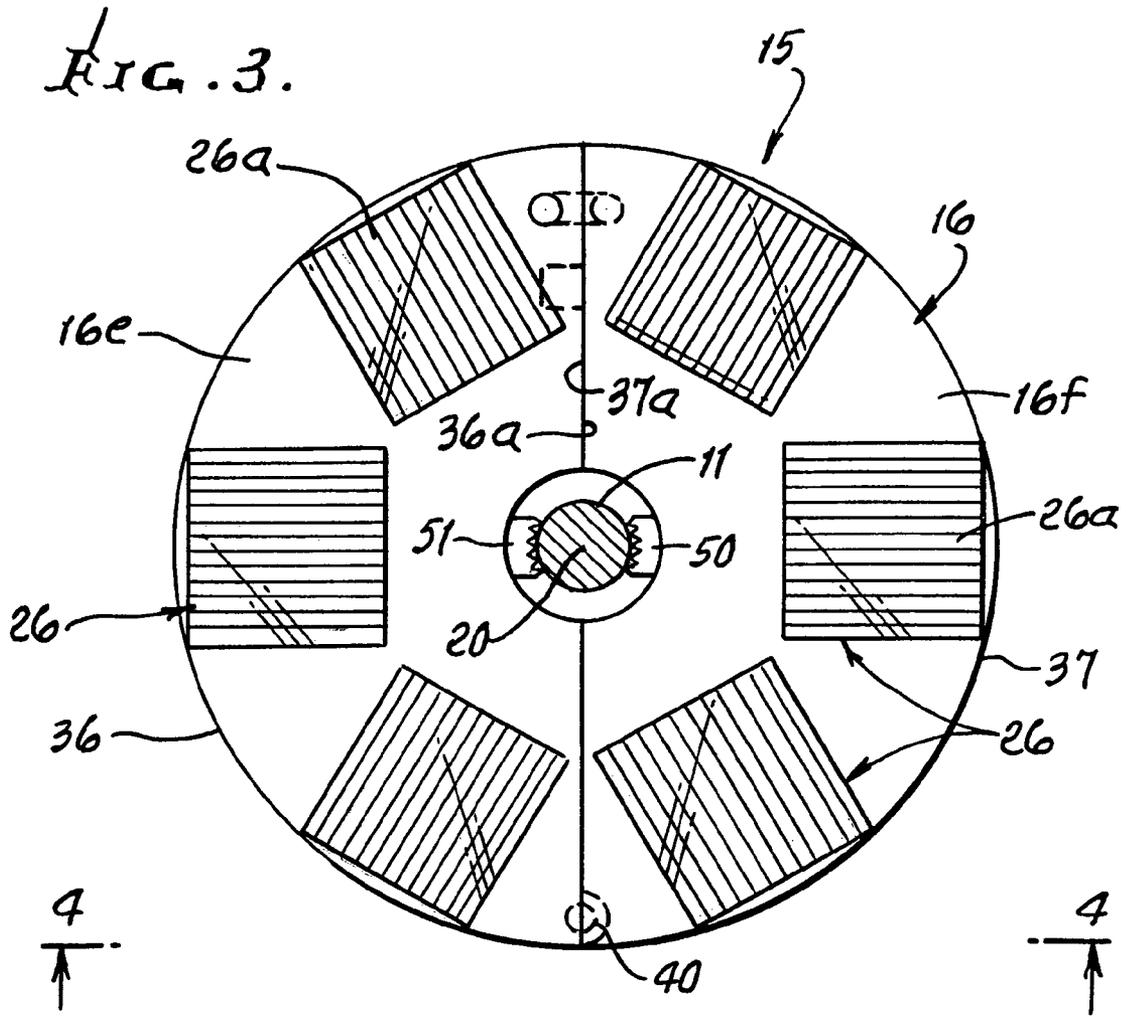


FIG. 5.

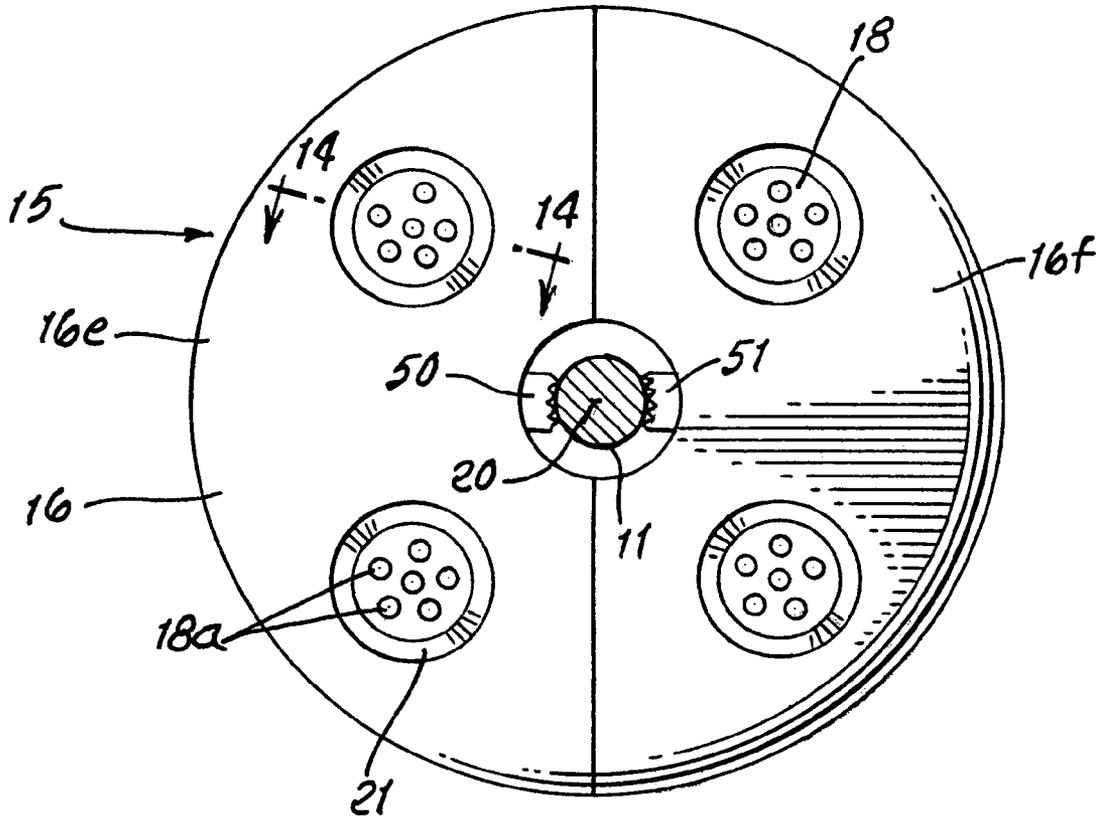
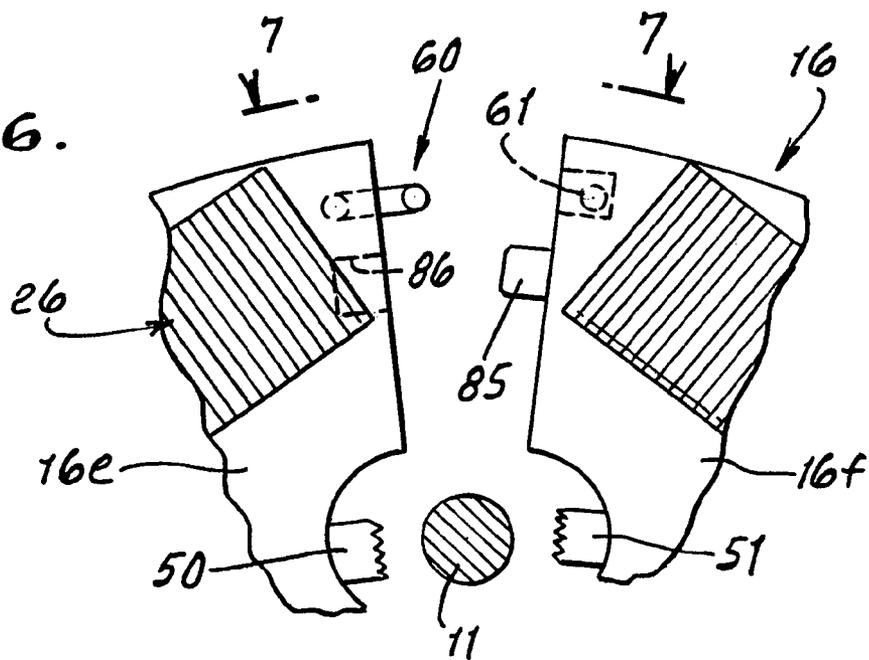


FIG. 6.



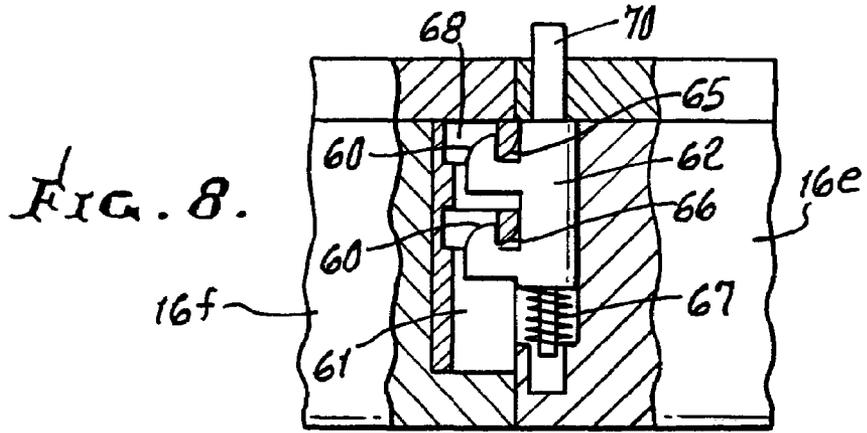
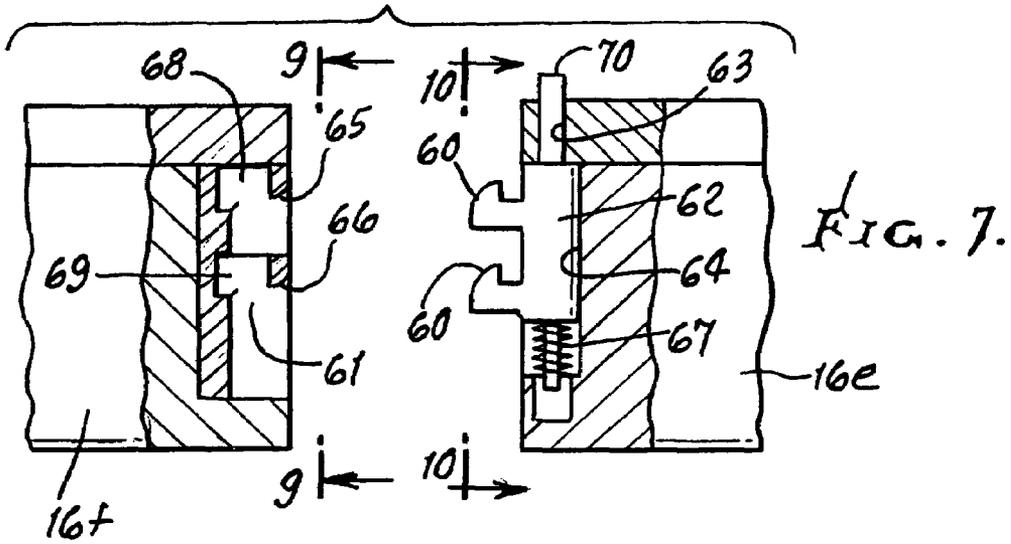


FIG. 9.

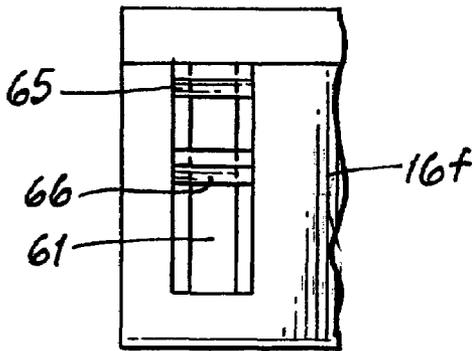
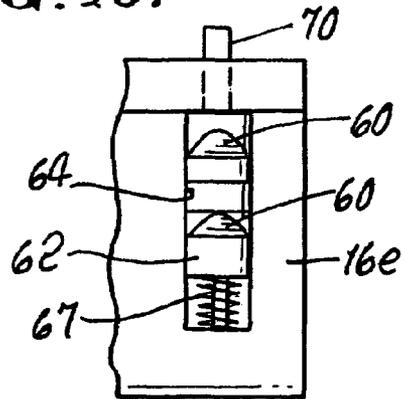


FIG. 10.



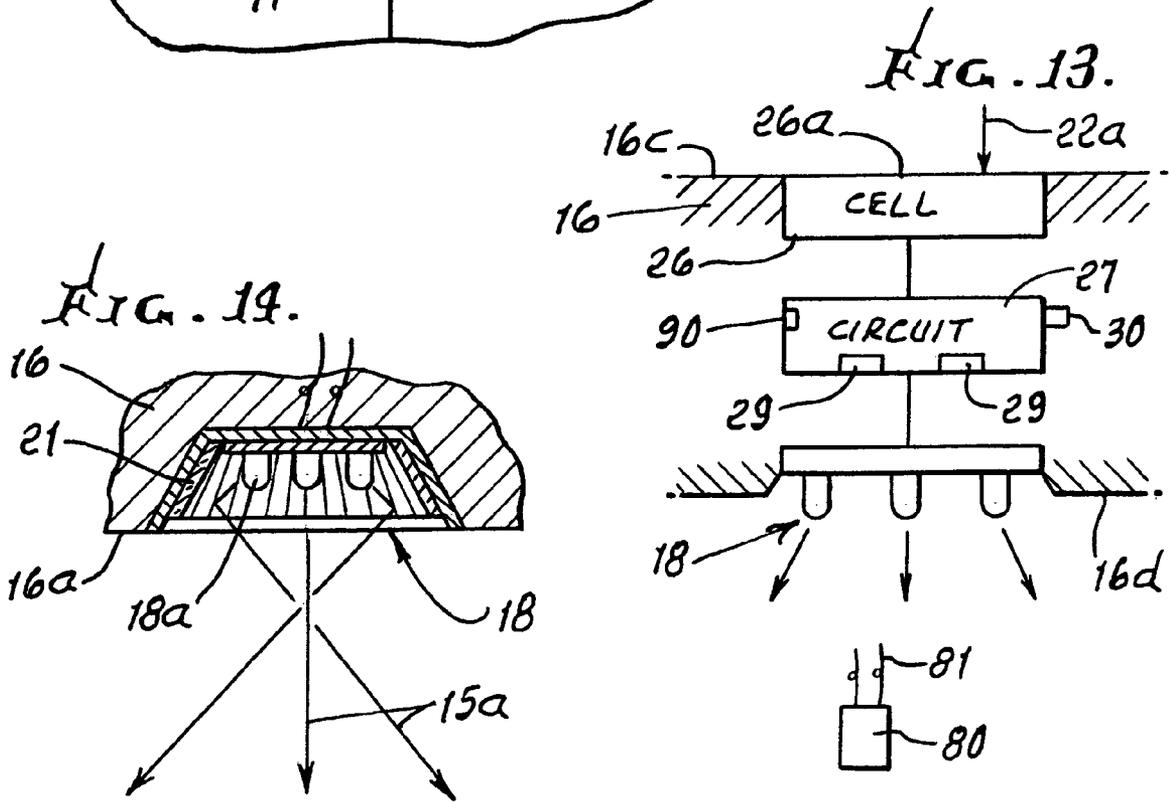
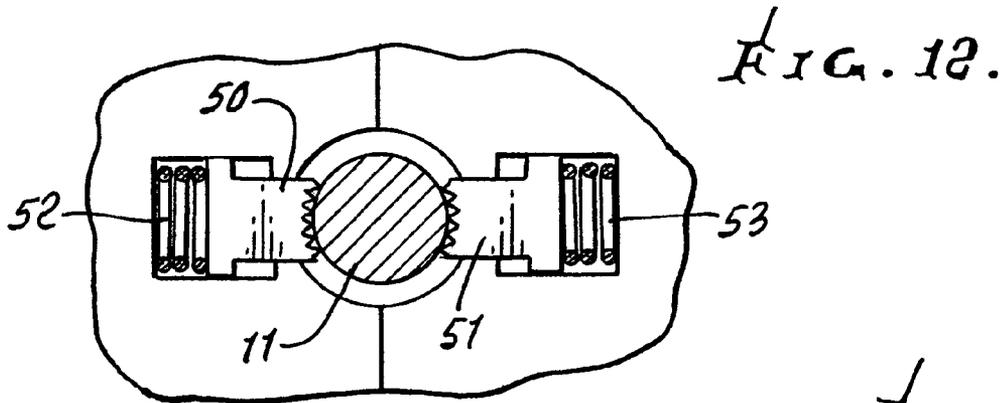
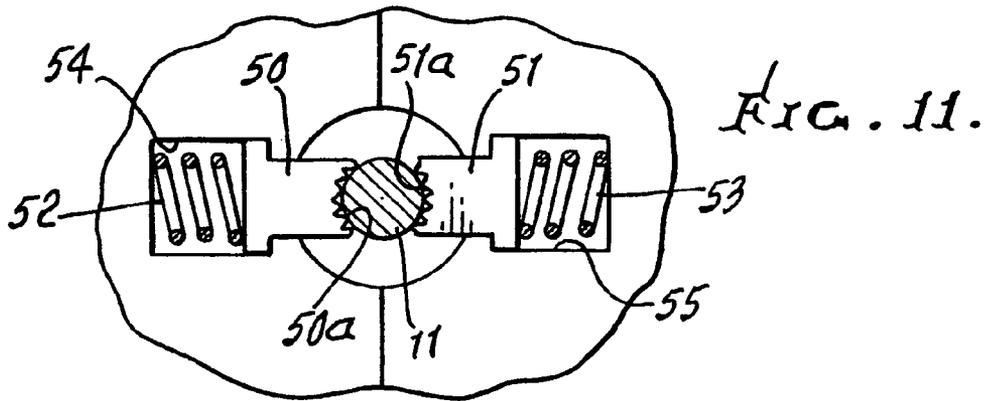


FIG. 15.

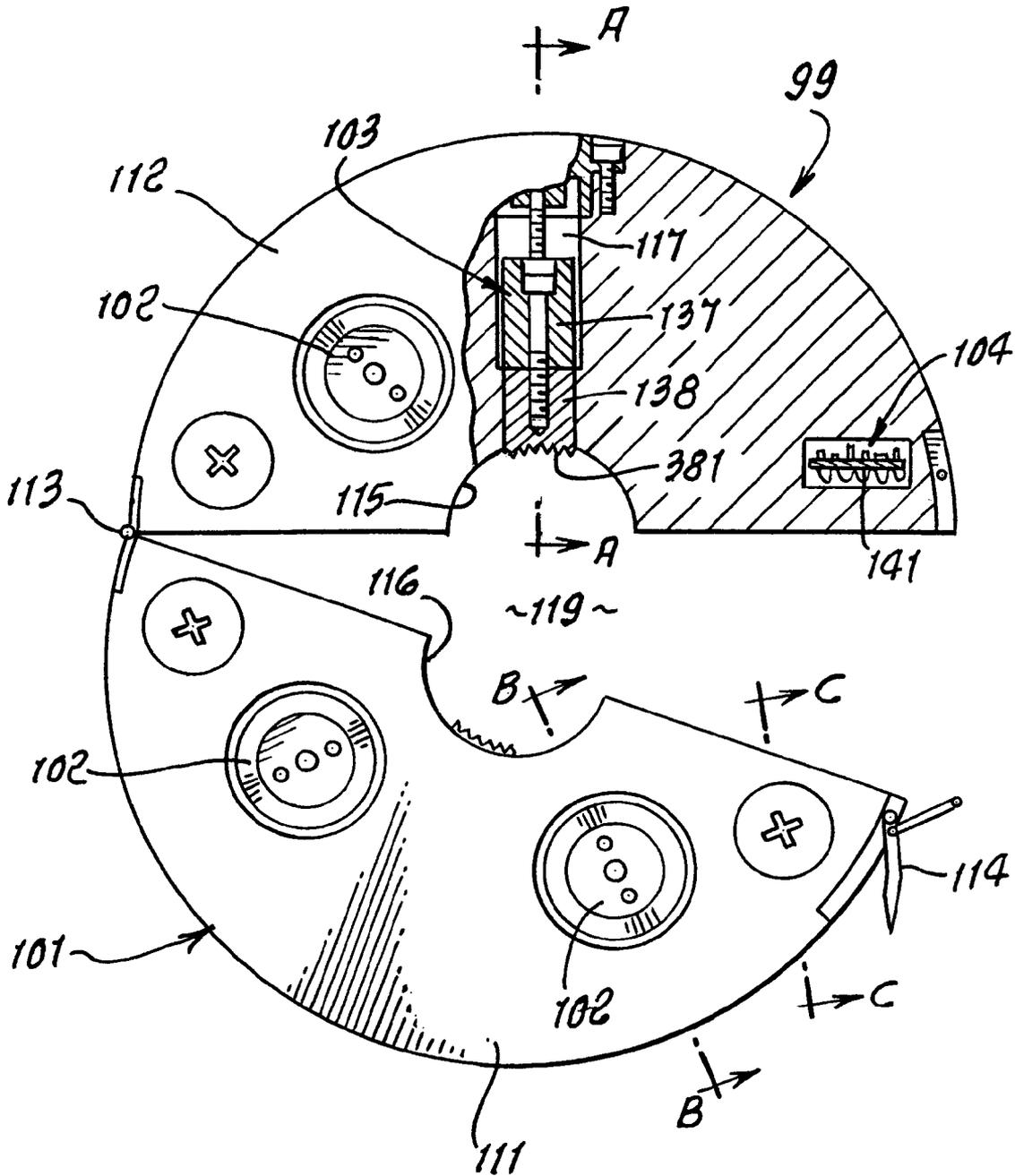
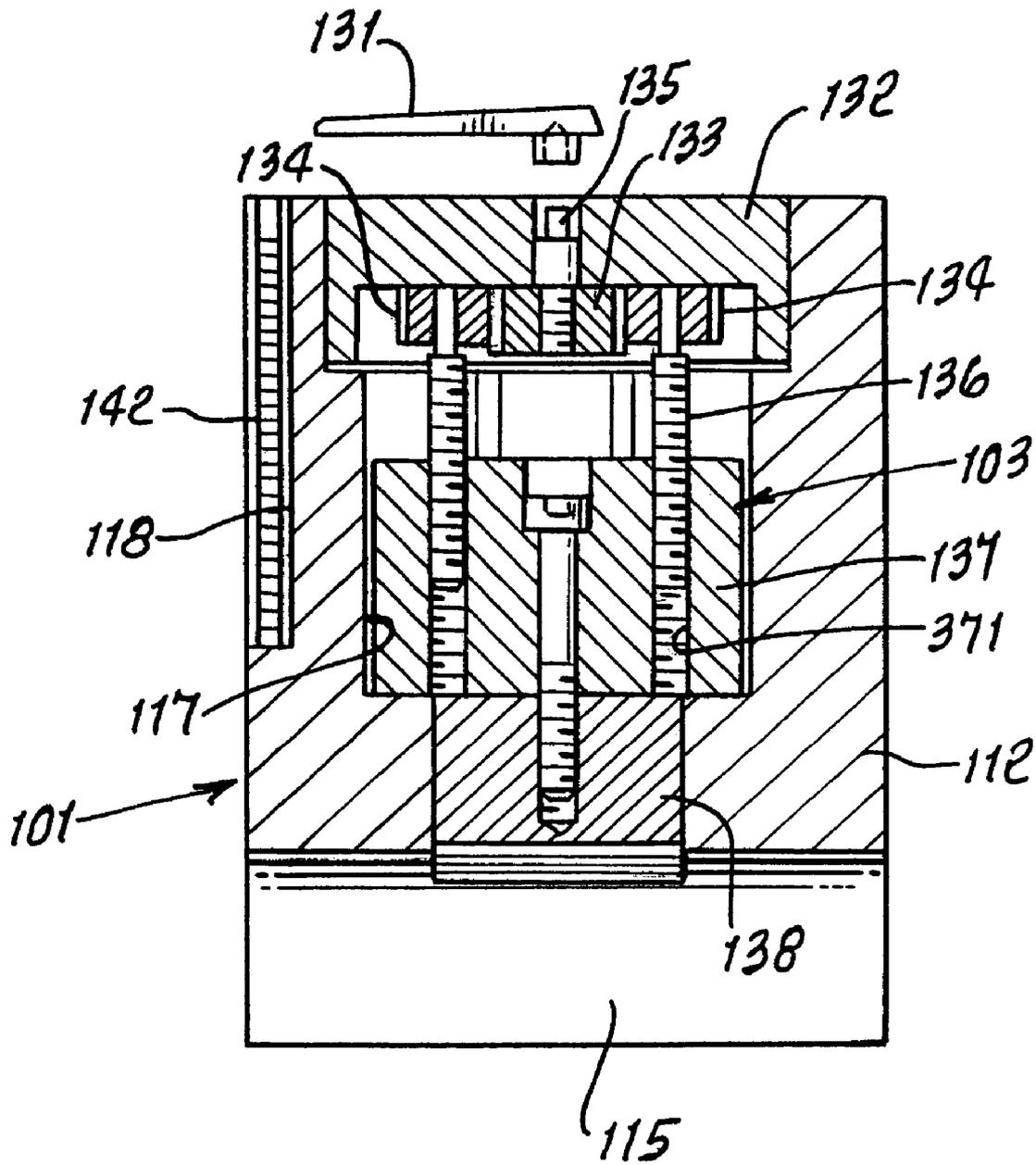


FIG. 16.



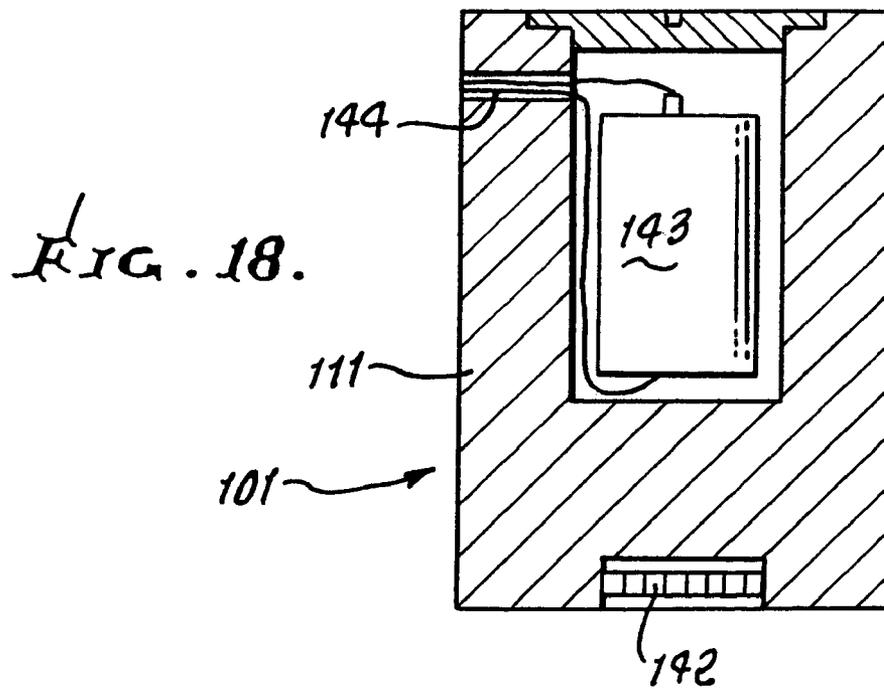
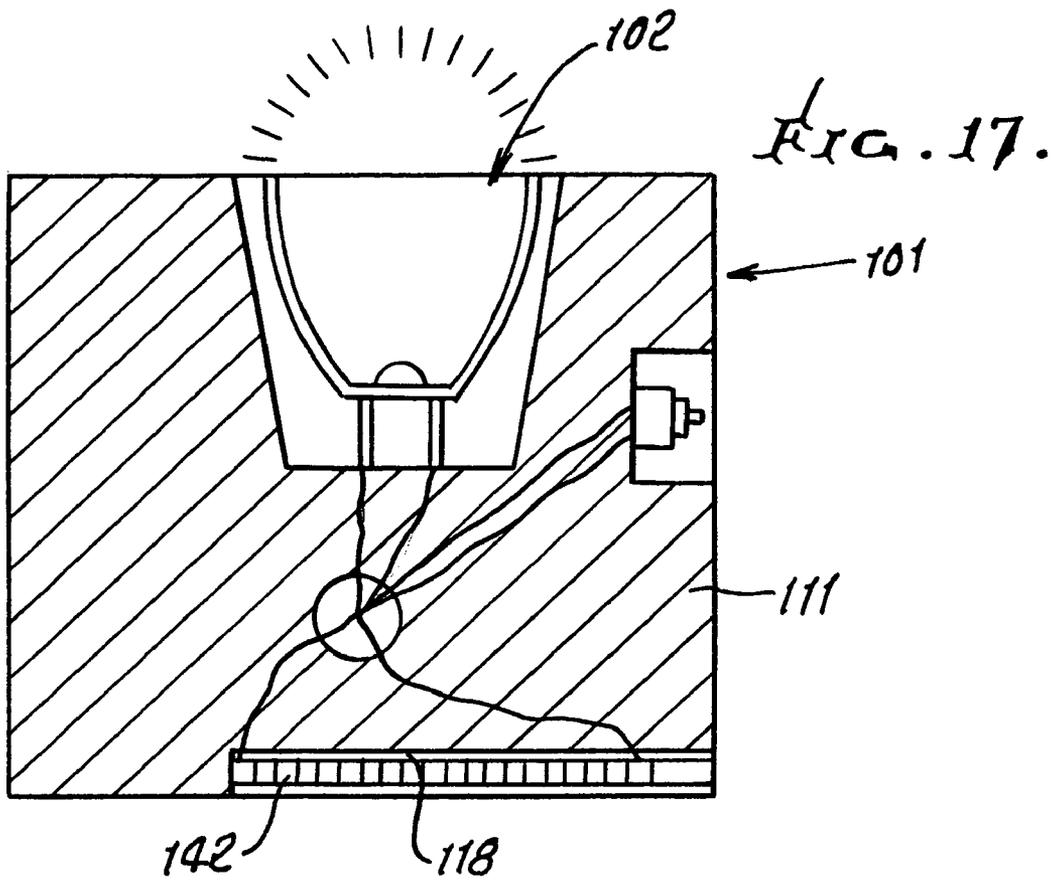


FIG. 19.

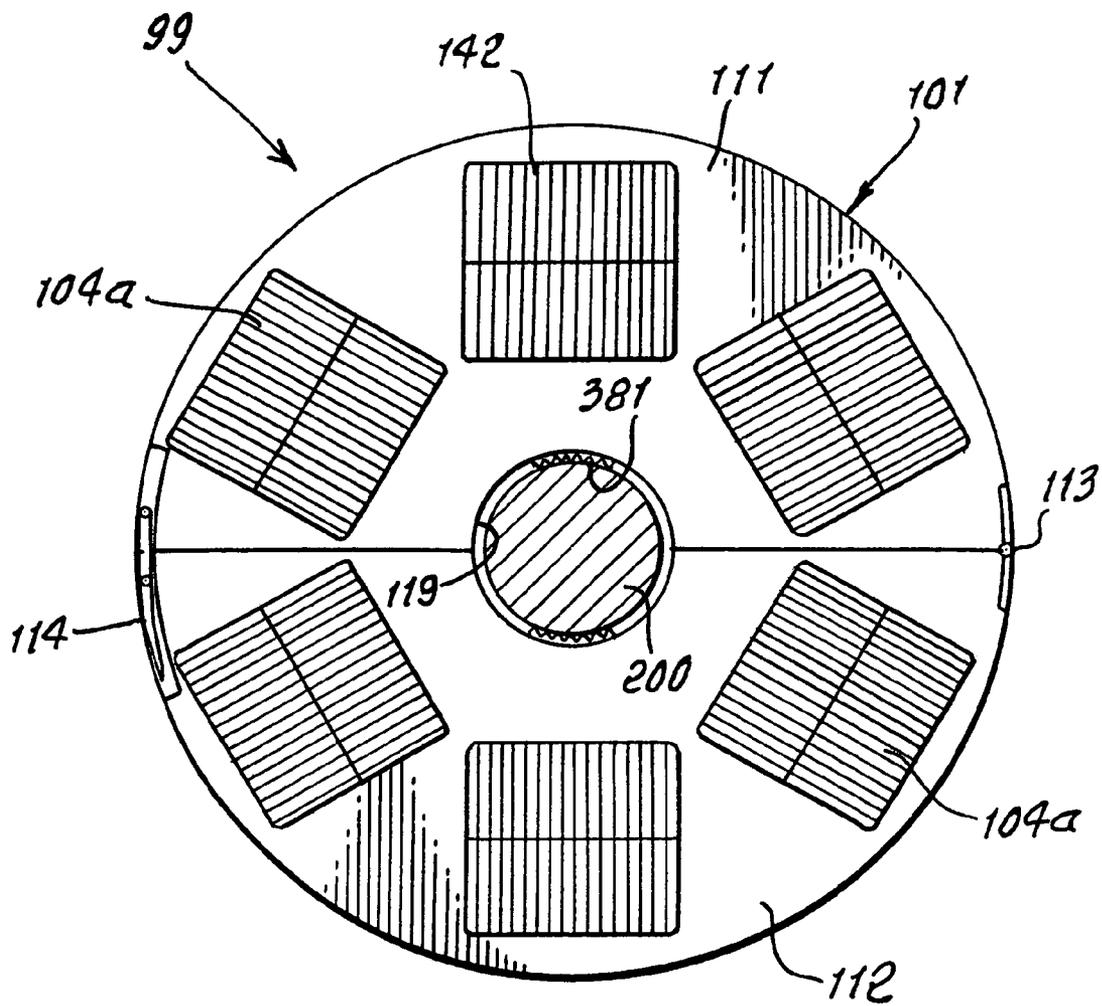


FIG. 20.

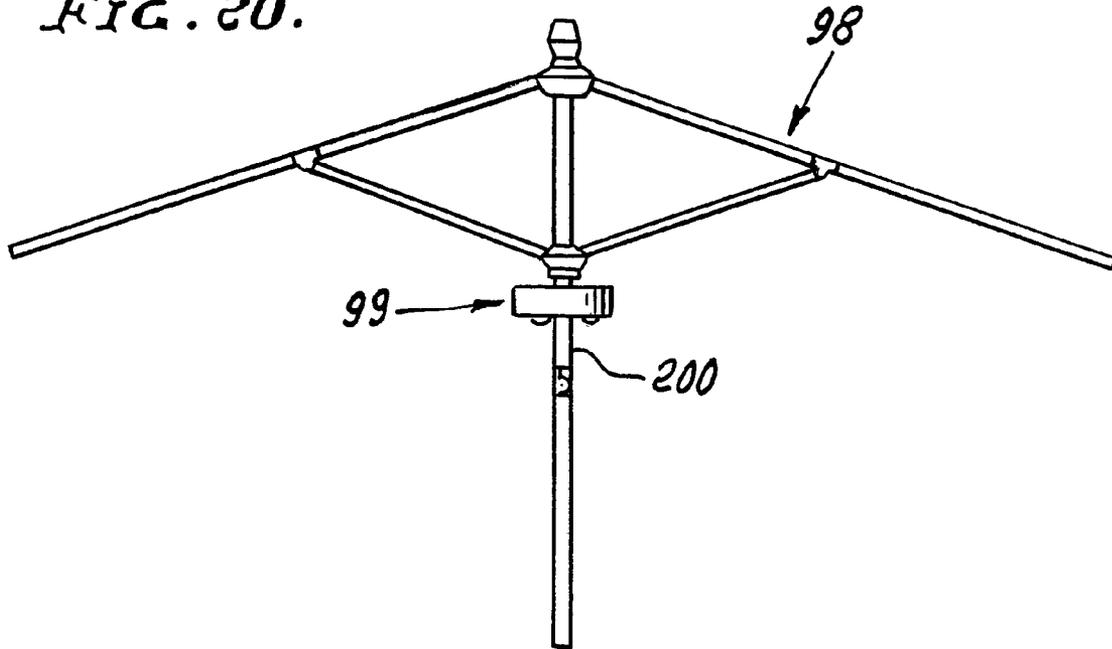


FIG. 21.

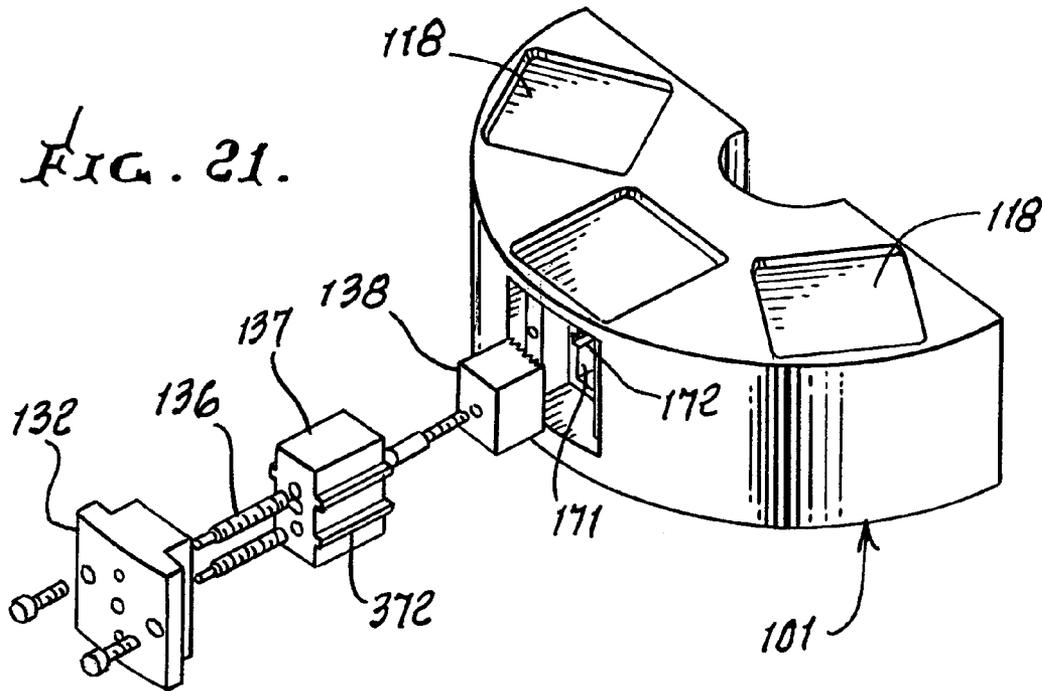
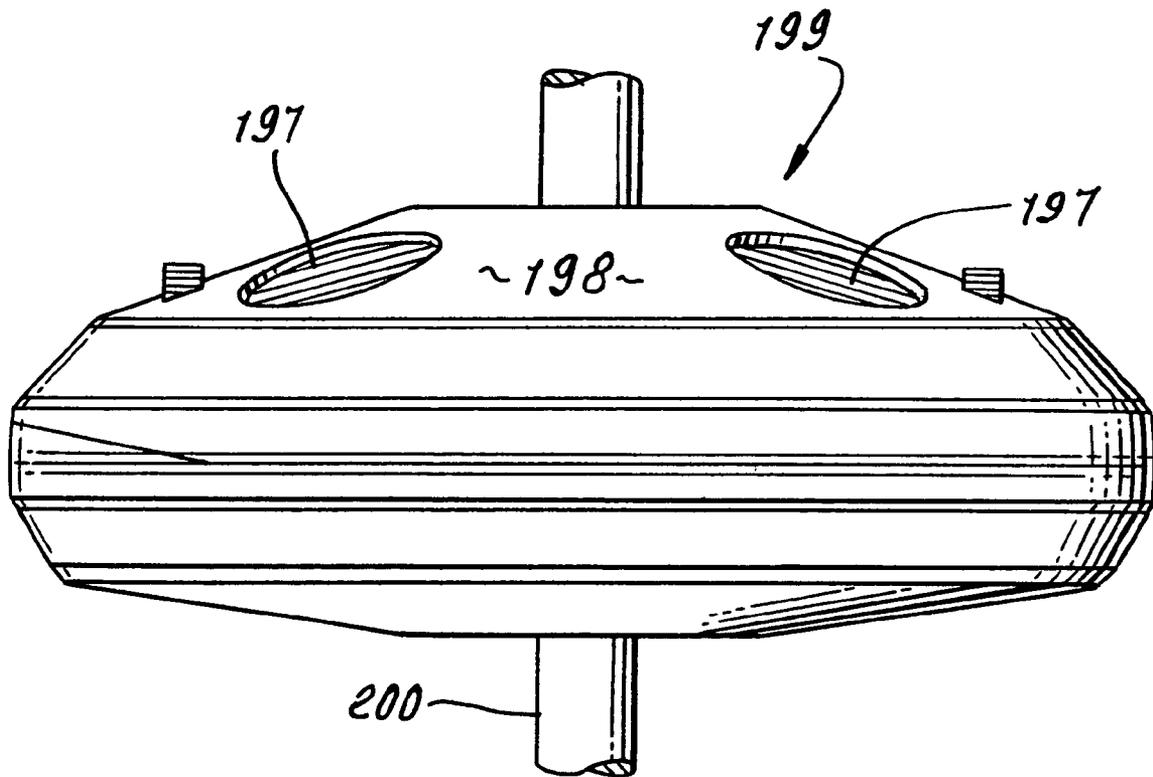


FIG. 22.



**LIGHT PROVIDING APPARATUS
ATTACHABLE TO UMBRELLA AND STAND
ASSEMBLY**

CROSS-REFERENCE TO RELATED
APPLICATIONS

The present application is a continuation of U.S. patent application Ser. No. 10/715,096, filed Nov. 18, 2003, now U.S. Pat. No. 7,134,762, issued Nov. 14, 2006, the entirety of Which is hereby incorporated by reference.

BACKGROUND OF THE INVENTION

This invention relates generally to light transmission from an umbrella and stand locations, and more particularly to apparatus attachable to an umbrella stand to achieve such illumination.

It is a common practice for ordinary people to use a garden umbrella in various outdoor resting/dining areas as a means to shade sunlight or to block rain drops when spending their leisure time outdoors. Hence, in this way a comfortable and relaxing environment can be provided. At present, since there is no lighting device specifically designed to be used with a garden umbrella when the surrounding lighting condition becomes dim, and people tend to improvise by attaching a corded lighting device to the umbrella to provide sufficient lighting to adjacent area. Nevertheless, although this type of lighting device is readily available, the disadvantages for using a corded lighting device in this way often poses a hazardous situation to people moving around in this area, because of the dangling electrical cord; and further the hanging electrical cord gives an undesirable contrast to the nature background which can easily ruin the relaxing atmosphere.

There is also need at umbrella and stand locations, such as patios, for controlled illumination, associated with selected individual umbrella locations, instead of general illumination of the entire area. It appears that no way was previously known to achieve these objectives in the novel and unusual manner, and with unusual results, as are now provided by the present invention.

SUMMARY OF THE INVENTION

It is a major object of the invention to provide apparatus and method to meet the above need. Basically, the invention is embodied in a light provider for an umbrella and stand assembly, and that comprises:

- a) a body releasably attachable to the assembly,
- b) a source or sources of electric light carried by the body, to direct such light away from the body,
- c) and incident light responsive means on the body to provide electrical energization for the light source, said means configured to receive incident light from a direction or directions spaced away from light directed from said source or sources.

As will appear, the carrier body advantageously includes multiple sections that become interconnected when the body is attached to the assembly stand, whereby quick mounting or de-mounting of the light provider is made possible.

It is an objective of the present invention to solve all technical issues to meet the need for the referenced need by providing a portable, multi-purpose lighting device which can be easily fastened to, as well as un-fastened from, a pole-like object such as an umbrella stand, and without the trouble of having an electrical cord hanging undesirably from it.

The present invention achieves desired objectives by providing a multi-purpose lighting device comprising a plurality of base parts, preferably a lighting means integrated to each base part, and a power supply part. The present invention in one form is characterized by two structurally divided base parts A and B, each having a semi-circularly curved inner sidewall surface facing that of the other and in which a circular through hole is formed when the two base parts A and B are joined together. The present invention is further characterized by having a solar power charging part and a grip locking means for gripping to a pole-like structure when said two base parts are coupled together while regulating gripping tension at the same time.

Another object is to provide the incident light responsive means in the form of a solar cell or cells, and said light source or sources comprise an LED or LEDs. The LEDs may be provided in clusters received in light reflecting receptacles, for producing concentrated light beams, the intensity and/or color of which may be controlled.

Another object includes provision of a carrier body central opening to receive the umbrella stand. The body may include multiple sections that become interconnected when said body is attached to the assembly stand. At least two sections may have hinged interconnection, whereby the sections are clampingly connected to the stand.

Additionally, a stand gripper or grippers may be provided at the central opening, and carried by the body; and the two body sections may respectively carry two grippers, with a spring or springs urging at least one gripper toward the other, to grip the stand therebetween. Stands of different diameters can thereby be gripped.

Latch elements may be carried by the body sections to latch together when the sections are closed about an umbrella stand; and a latch release may be provided on one section. The construction enables inverting of the carrier body, to direct light upwardly or downwardly.

Typically, a grip locking means is provided to include a gripping claw, a sliding block, a crank handle, and a transmission part substantially connected to said crank handle; wherein, a slot is integrally formed inside each of the above-mentioned base part for slidably receiving said sliding block. Preferably, the grip locking means further comprises two threaded pillar parts substantially perpendicular to the coupling surface for rotatably driving said sliding block and transmission part. The gripping claw is securely coupled to the sliding block which enables inward or outward sliding movements of the gripping claw along longitudinal direction of said slot. Thus, gripping tension of said gripping claw can be suitably adjusted when gripping to a pole-like object by suitably adjusting the extension of said gripping claw protruding from the slot of said coupling surface.

The solar power charging part comprises a plurality of solar panels formed on a base part, and each solar panel is electrically connected to a solar-charging circuit part in the base part by means of wires.

The base part preferably includes a circular disk shape, wherein, a circular hole is formed through the center of the base part by having two structurally divided base parts A and B, combined together having a symmetrical semi-circularly curved inner sidewall surface facing that of the other.

The two divided base parts A and B may be hinged together along corner edges while the other corner edges are bound together by means of a separable buckling part, preferably.

The transmission structure may comprise a larger first gear and a pair of smaller second gears both engaging said first

gear. The first gear is mounted inside a gear box part by means of an axle part while the second gears drive a threaded pillar part.

The sliding block and the gripping claw may both be of rectangular shape. A curved gripping surface is formed on the gripping claw such that a gripping teeth profile is preferably formed on the curved gripping surface. Furthermore, a longitudinal extending recessing strip formed on each side wall of said slot slidably receives a corresponding longitudinal extending protruding strip formed on each side wall of the sliding block.

The lighting means is preferably a battery-powered high luminance LED lamp. Compared with the prior lighting devices, the present invention has the advantage of comprising a locking means capable of regulating gripping tension of said gripping claw to achieve firm grip to a pole-like object of different circumferential dimensions. Furthermore, the locking means is easy to be positioned, installed and uninstalled.

The present invention has another advantage of using a solar power charging part for charging a rechargeable battery directly which provides a safer and easier use of the device. Additionally, said rechargeable battery part is equipped with a corded charging unit, and the rechargeable battery is preferably concealed inside the base part.

These and other objects and advantages of the invention, as well as the details of an illustrative embodiment, will be more fully understood from the following specification and drawings, in which:

DRAWING DESCRIPTION

FIG. 1 is an elevation view of light providing apparatus incorporating the invention, supported on an umbrella stand;

FIG. 2 is a view like FIG. 1, but showing the apparatus of FIG. 1 in inverted position;

FIG. 3 is an enlarged, top plan view of the FIG. 1 apparatus;

FIG. 4 is an elevation view taken on lines 4-4 of FIG. 3;

FIG. 5 is an enlarged, bottom plan view of the FIG. 1 apparatus;

FIG. 6 is a fragmentary view showing the apparatus in disconnected condition, with latch guide elements protruding;

FIG. 7 is an elevation taken on lines 7-7 of FIG. 6;

FIG. 8 is a view like FIG. 7, but showing the latch elements in connected condition;

FIG. 9 is an elevation view taken on lines 9-9 of FIG. 7, showing female latching elements;

FIG. 10 is an elevation view taken on lines 10-10 of FIG. 7, showing male latch elements;

FIG. 11 is a fragmentary plan view showing umbrella stand grippers, engaging a stand of lesser diameter;

FIG. 12 is a view like FIG. 11, showing the grippers engaging a stand of relatively larger diameter;

FIG. 13 is a circuit schematic;

FIG. 14 is a section showing LED clustering within a light reflector;

FIG. 15 is a schematic diagram of another form of the present invention;

FIG. 16 shows a cross-sectional view of FIG. 15 along an A-A dissecting plane;

FIG. 17 shows a cross-sectional view of FIG. 15 along a B-B dissecting plane;

FIG. 18 shows a cross-sectional view of FIG. 15 along a C-C dissecting plane;

FIG. 19 shows a bottom view of a device embodying the present invention with both divided base parts A and B bound together as a whole;

FIG. 20 is a frontal view showing schematically the application of a device embodying the present invention to or on umbrella structure;

FIG. 21 shows an exploded perspective diagram of a divided base part of the present invention; and

FIG. 22 is a side elevation view of a modified device.

DETAILED DESCRIPTION

In FIGS. 1 and 2, an umbrella 10 is supported in a central stand 11, projecting from a base 12. The stand may or may not have an upper section 11a which can be tilted, at joint 14. An optional table is indicated at 13.

In accordance with the invention, a preferred light provider or fixture 15 is installed in supported position on the stand section 11b. In FIG. 1, light beams 15a are directed downwardly, away from body 16 of the light provided; and in FIG. 2, light beams 15b are directed upwardly away from the inverted body 16. A source or sources 18 of projected light are carried by the body 16, and may comprise clusters 18a of LEDs, as shown in FIG. 5. Such clusters are spaced about the stand axis 20; and each cluster may comprise between 2 and 8 LEDs, as shown. Receptacle shaped reflectors 21 re-direct light rays from the LED clusters downwardly in FIG. 1, and upwardly in FIG. 2. See also FIG. 14. The LEDs are protectively received in the receptacles which are sunk into the body 16, from surface 16a. Concentrated beams are produced by the multiple clustered LEDs.

FIGS. 3 and 4 show one form of incident light responsive means on the body to provide for electrical energization of the light source or sources 18. That light responsive means is typically configured to receive incident light from a direction or directions 22a in FIG. 1, and 22b in FIG. 2, spaced away from light beams 15 and 15b from the source or sources. Such incident light is typically ambient daytime light. FIG. 13 shows ambient light rays 22a or 22b incident upon a solar cell or cells 26. The latter generate electricity transmitted as by circuit 27 to the LED light sources 18. A dry cell battery or batteries 29 may be incorporated in circuit 27 to store electricity generated by cell or cells 26 as during daytime; and a control switch 30 may be operated to cause circuit 27 to deliver electricity from the battery or batteries to the LEDs. Elements 18, 26, 27, and 29 are carried on, within, or by invertible body 16. As shown in FIG. 13, solar cells 26 have upwardly facing inlets 26a, at upper side 16c of body 16; and LEDs 18 generate light rays that are transmitted downwardly and away from the lower side 16d of body 16, as in FIG. 1. FIG. 4 shows a receptacle 90 on the body to receive AC current, to energize the LEDs, if desired.

See also FIGS. 3 and 4 showing multiple solar cells 26 spaced clockwise about the body or stand central upright axis 20; and also see FIG. 5 showing the LED clusters 18a and reflectors 21 spaced clockwise about the axis 20, for concentrating the LED light in beams transmitted from the reflectors.

Also shown in FIG. 13 is a remote control means 80, connected as by wiring 81 (or a radio link) with circuit 27, for controlling the intensity and/or color of light transmission from the LED or LEDs. Switch 30 enables switching power to lights 18 from solar cell energization, to battery power energization to household AC energization.

Preferably, the body 16 is comprised of two sections, as shown at 16e and 16f in FIGS. 3-7. Those sections may have semicircular peripheries, as at 36 and 37, and flat sides 36a and 37a that interface when the body sections are closed together about the stand, as enabled by hinge connection of the bodies as at 40. When the sections are closed together, the stand becomes attached or clamped to the stand frictionally,

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in such manner as to allow quick release, or adjustment of the body 16 along the stand, or removal from the stand, or inverting of the body and attachment to the stand or pole as in FIG. 2.

As shown in FIGS. 5, 11 and 12, grippers 50 and 51 are carried by the body sections to grip the stand, when the sections are closed together. The grippers may have serrated edges as at 50a and 51a to frictionally grip or clamp the stand. Compression springs 52 and 53 urge the grippers toward the stand, the grippers being slidable in recesses 54 and 55 in the body sections. This also accommodates stands of different diameters, as in FIGS. 11 and 12, to which the device may be readily attached.

FIGS. 6-10 show the provision of a latch or latches 60 protruding from section 16e and receivable in slots 61 formed in body section 16f, as the two sections close together. FIG. 7 shows that latches 60 are carried on a plunger 62 movable in a guide groove or grooves 63 and 64, parallel to axis 20. When the sections are closed together, latches 60 are cammed downwardly at keeper shoulders 65 and 66, the plunger 62 then downwardly compressing a spring 67. Upon full closure of sections 16e and 16f, the latches hook into keeper recesses 68 and 69. A protruding release button 70 is manually operable upon being pushed, to move the plunger and latches downwardly, allowing their removal from recesses 68 and 69, and spreading apart of the body sections 16e and 16f, to release the carrier body from the stand. A guide protrusion 85 may be provided on section 16f, to fit into guide recess 86 in section 16e to assist in orienting the sections 16e and 16f during closure.

Body sections 16e and 16f have cover plates 16e' and 16f' which may be upwardly convex or domed.

As shown in FIG. 15, another form of the present invention seen at 99 comprises a base part 101, a lighting means 102, a locking means 103, and a solar power charging part 104. See also solar windows 104a. Furthermore, the base part 101 is preferably of circular disk shape comprising a symmetrically divided first base part 111 and a second base part 112 each having a semi-circularly curved inner sidewall surfaces 115 and 116 facing that of the other in which (when 111 and 112 are closed together) a circular through hole 119 is formed to substantially encircle a pole-like object 200 when said two base parts 111 and 112 are jointly bound together. See FIG. 18. The two base parts 111 and 112 are connected together by means of a hinge part 113 along a corner edge of each base part while the other corner edges are coupled together by means of a separable binding part 114 for ease of binding and un-binding. A perpendicular slot 117 extending inwardly through each of the inner sidewall surfaces 115 and 116, to slidably receive a locking means 103 for gripping to a pole-like object of different circumferential dimensions.

Preferably, the lighting means 102 of the present invention comprises a plurality of high luminance LED lamps evenly distributed on the base part 101, to which the electrical power of each LED lamps is supplied by a rechargeable battery 143 seen in FIG. 18. Each rechargeable battery 143 is concealed in a corresponding battery holder in the base part 101.

Typically, the rechargeable battery 143 is recharged with a corded charging unit. It is a feature of the present invention to use a solar power charging part 104 for charging a rechargeable battery directly. That solar power charging part 104 comprises a plurality of solar panels 142 formed on the base part 101, and each solar panel is electrically connected in series to a solar-charging circuit part 141 in the base part by means of wires 144. The solar panels 142 collect solar energy to be converted by the solar-charging circuit part 141 to electrical energy for supplying power to the rechargeable

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battery 143. Each solar panel 142 is inserted and bonded inside a recess 118 of the base part 101 as shown in FIG. 2.

Referring to FIG. 16, said locking means 103 is preferably fixed inside the perpendicular slot 117 of the base part 101 for gripping to a pole-like object of different circumferential dimensions. The locking means 103 further comprises a gripping claw 138, a sliding block 137, a crank handle 131, a plurality of threaded pillar parts 136, and a transmission part. The transmission part preferably comprises a gear mounting part 132, a larger first gear 133, a pair of smaller second gears 134 both engaging said first gear 133, and an axle part 135. The gear mounting part 132 may be fixed to the base part 101 by means of screws. The first gear 133 is rotatably fixed to the gear mounting part 132 by means of the axle part 135, while the second gears 134 drive the threaded pillar part 136. An open end of the axle part 135 is coupled to the crank handle 131. The perpendicular slot 117 is integrally formed inside each of the first and second base parts 111 and 113 for slidably receiving sliding block 137. Typically, the two threaded pillar parts 136 rotatably drive sliding block 137.

As seen in FIG. 21, a longitudinal extending recessing strip 172 formed on each side wall 171 of the perpendicular slot 117 slidably receives a corresponding longitudinal extending protruding rail 372 formed on each side wall of the sliding block 137. Sliding block 137 further comprises a plurality of threaded through holes 371 (see FIG. 16) which preferably are two in number in this embodiment. Each threaded through hole 371 receives a threaded pillar part 136 by means of such thread. Second gears 134 enable inward or outward sliding movements of the sliding block 137 along the longitudinal direction of the perpendicular slot 117 through rotation of the threaded pillar parts 136. The gripping claw 138 is securely coupled to the sliding block 137 by means of screws. Typically, the sliding block 137 and the gripping claw 138 are both of rectangular shape.

A concavely curved gripping surface is formed on the gripping claw 138 such that a curved gripping teeth profile 381 is preferably formed on the curved gripping surface. The gripping claw 148 is securely coupled to the sliding block 137 which slides along the longitudinal direction of 117 which extends normal to the device axis. Thus, gripping tension of said gripping claw can be suitably adjusted when gripping to a pole-like object by suitably adjusting the extension of said gripping claw 148 protruding from the perpendicular slot 117 of said coupling surface.

FIG. 20 shows the device 99 attached to stand 200 supporting umbrella 98. FIG. 22 shows a modified device 199, like 99, but upwardly domed at 198 so that light receiving windows 197 are angled to efficiently receive light from under the edges of the umbrella.

Although the present invention has been explained by the embodiments shown in the drawings described above, it should be understood to the ordinary skilled person the art that the invention is not limited to the embodiments, but rather that various changes or modifications thereof are possible without departing from the spirit of the invention. Accordingly, the scope of the invention shall be determined only by the appended claims and their equivalents.

I claim:

1. A light for an umbrella pole, comprising in combination: a body comprising a generally circular outer periphery, an inner sidewall surface at least partially defining an opening for receiving the pole, the opening extending along a transverse axis, the body further comprising a first housing portion, a second housing portion, and a hinge coupling the first housing portion to the second housing portion at a first loca-

tion adjacent the outer periphery, the hinge being configured to enable pivoting of the first housing portion and the second housing portion relative to each other about an axis parallel to the transverse axis of the opening between a first position and a second position, wherein when in the first position, the first housing portion and the second housing portion are coupled at the hinge but spaced apart at a location spaced from the hinge such that a gap larger than the umbrella pole extends at the outer periphery between the first and second portions, the gap permitting the inner sidewall surface to be moved into adjacency with the umbrella pole; and wherein when in the second position, the first housing portion and the second housing portion are moved into adjacency at the location spaced from the hinge; the body further comprising a first lateral surface extending between the outer periphery and the inner sidewall surface and a second lateral surface extending between the outer periphery and the inner sidewall surface, the first and second lateral surfaces being disposed on opposite sides of the body;

a clamping device comprising a gripping surface and a resilient member adjacent to the gripping surface biasing the gripping surface away from the inner sidewall surface, at least a portion of the clamping device being movable relative to the sidewall surface between an extended position and a range of clamping positions, the clamping positions being located at least between the extended position and the sidewall surface, the resilient member urging the gripping surface toward the extended position, whereby the light can be self-supported at various positions along a range of umbrella poles of different diameters;

the first lateral surface having a plurality of recesses therein around the opening, each recess having mounted therein a source or sources of electric light, to direct the light away from the first surface of the body, the light being mountable on an umbrella pole with the light sources pointing downwardly; and

means on or in the body for providing energy to the light sources.

2. The light of claim 1 wherein the means for providing energy comprises at least one battery.

3. The light of claim 1 wherein the means for providing energy comprises at least one solar panel.

4. The light of claim 3 wherein the means for providing energy further comprises a battery configured to be recharged by the at least one solar panel.

5. The light of claim 1 wherein the first and second housing portions of the body are sized and configured as semicircles.

6. The light of claim 1 wherein the first and second housing portions of the body are hingedly connected.

7. The light of claim 1 wherein a control switch for the light sources is disposed on the first housing portion of the body and at least a portion of the light sources are disposed on the second housing portion of the body, the control switch being operable to cause the light sources to be energized.

8. The light of claim 1 wherein the resilient member comprises a spring.

9. The light of claim 1, wherein the first lateral surface is substantially perpendicular to a central axis of the opening for receiving the pole.

10. The light of claim 1, wherein the body further comprises a guide protrusion disposed on one of the first and second sidewall surface and a guide recess formed on the other of the first and second sidewall surfaces, the guide

recess and the guide protrusion configured to guide and orient opposite sides of the body into engagement.

11. The light of claim 1, wherein the body further comprises a latch disposed on one of the first and second sidewall surface and a slot disposed on the other of the first and second sidewall surfaces, the slot configured to receive and engage the latch, the latch being actuatable to disengage the latch from the slot.

12. The light of claim 11, wherein the body further comprises a guide protrusion disposed on one of the first and second sidewall surface and a guide recess formed on the other of the first and second sidewall surfaces, the guide recess and the guide protrusion configured to guide and orient opposite sides of the body into engagement.

13. The light of claim 1, further comprising a control switch located at the other periphery of the body to switch the light sources on and off.

14. The light of claim 1, further comprising a recess extending from one of the first and second inner sidewall surfaces, the resilient member being disposed in the recess, the recess extending across an area substantially smaller than the surface area of the first and second inner sidewall surfaces.

15. The light of claim 1, wherein at least one of the first and second lateral surfaces comprises a domed surface between the inner sidewall surfaces and the outer periphery.

16. The light of claim 1, wherein the source or sources of electric light comprises a plurality of LEDs and a reflective element positioned to enhance the amount of light transmitted from the first lateral surface.

17. A light for mounting around a pole, the pole having a longitudinal axis, the light comprising:

a clamshell housing having an outer periphery and comprising a first portion and a second portion configured to be coupled to the first portion adjacent the outer periphery, the first portion having a first inner sidewall surface and a first lateral surface extending outwardly from the inner sidewall surface to the outer periphery of the clamshell housing, the second portion having a second inner sidewall surface and a second lateral surface extending outwardly from the inner sidewall surface to the outer periphery of the clamshell housing, the first and second portions defining an opening configured to receive the pole;

at least one light source recessed into at least one of the first and second lateral surfaces, the light sources being configured to direct the light away from the clamshell housing;

means on or in the clamshell housing for providing energy to the light source;

at least one clamp including a gripper for engaging the pole in a direction substantially perpendicular to the axis of the pole and a spring adjacent to the gripper for biasing the gripper away from the inner sidewall surface;

the first and second portions being connectable together adjacent the opening between them, to cause the clamp to grip the pole so that the light is self supported thereon; and

the clamp being biased to be able to engage poles of different diameters and to be mountable at various locations along a range of poles of different sizes, the light being mountable on an umbrella pole with the light sources pointing downwardly.

18. The light of claim 17 wherein the means for providing energy comprises at least one battery.

19. The light of claim 17 wherein first and second portions are pivotally coupled.

20. A light for mounting around a pole, the pole having a longitudinal axis, the light comprising:
 a housing comprising first and second portions, the first portion being configured to be coupled to the second portion to define an opening configured to receive the pole, the first portion defining a first inner sidewall surface and the second portion defining a second inner sidewall surface,
 the housing having a generally circular outer periphery when the first and second portions are coupled,
 the housing having a lower surface extending between at least one of the first and second sidewall surfaces and the outer periphery;
 at least one light source carried by the first portion of the housing and being substantially flush with the lower surface to direct the light away from the housing;
 means on or in the housing for providing energy to the light source;
 a control switch for the light source, the control switch being disposed on the second portion of the housing, the control switch being operable to cause the light source on the first portion of the housing to be energized; and
 at least one clamp extending from one of the first and second inner sidewall surfaces for engaging the pole when the first and second portions are coupled, the clamp comprising a gripping surface and biasing means for biasing the gripping surface away from the inner sidewall surfaces, the biasing means comprising a spring, at least a portion of the clamping device being movable relative to the inner sidewall surfaces between an extended position and a range of clamping positions, the clamping positions being located at least between the extended position and the sidewall surface, the gripping surface being located between the biasing means and the extended position, whereby the light can be self-supported at various positions on a range of poles of different sizes.
21. The light of claim 20 wherein light sources are carried on both the first and second portions of the housing.
22. The light of claim 20 wherein the means for providing energy comprises at least one battery.
23. The light of claim 20 wherein first and second portions are pivotally coupled.
24. The light of claim 20 further comprising a recess extending from one of the first and second inner sidewall surfaces, the clamp extending from the recess, the recess extending across an area substantially smaller than the surface area of the first and second inner sidewall surfaces.

25. A light for mounting around a pole, the pole having a longitudinal axis, the light comprising:
 a housing comprising first and second portions, the first portion being configured to be coupled to the second portion to define an opening configured to receive the pole, the first portion defining a first inner sidewall surface and the second portion defining a second inner sidewall surface;
 at least one light source carried by the first portion of the housing, the light source being configured to direct the light away from the housing;
 means on or in the housing for providing energy to the light source;
 a control switch for the light source, the control switch being disposed on the second portion of the housing, the control switch being operable to cause the light source on the first portion of the housing to be energized; and
 at least one clamp extending from one of the first and second inner sidewall surfaces for engaging the pole when the first and second portions are coupled, the clamp comprising a gripping surface and biasing means for biasing the gripping surface away from the inner sidewall surfaces, at least a portion of the clamping device being movable relative to the inner sidewall surfaces between an extended position and a range of clamping positions, the clamping positions being located at least between the extended position and the sidewall surface, whereby the light can be self-supported on the pole;
 wherein the housing includes a recess and the clamp further comprises a first member and the biasing means comprises a plurality of threaded pillar parts, a transmission and a crank handle, the first member comprising the gripping surface and a sliding block being slidable within the recess, the plurality of threaded pillar parts being configured to drive the sliding block, the transmission transmitting longitudinal force to the sliding block via rotation of the threaded pillar parts, the crank handle being configured to cause the pillar parts to rotate whereby the gripping surface of the clamp is urged into engagement with the pole.
26. The light of claim 25 wherein the transmission part further comprises a drive gear coupled with the crank handle and a pair of driven gears coupled with the drive gear and with the pillar parts, wherein rotation of the crank handle induces rotation in the pillar parts to slide the sliding block.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,497,583 B2
APPLICATION NO. : 11/599165
DATED : March 3, 2009
INVENTOR(S) : Oliver Joen-an Ma

Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

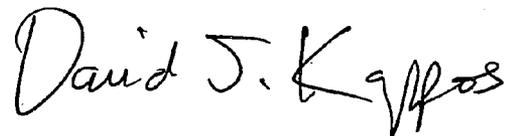
In Column 1, line 11, please change "Which" to --which--.

In Column 2, line 56 (approx.), please change "mans" to --means--.

In Column 10, line 45, in Claim 26, please change "whith" to --with--.

Signed and Sealed this

First Day of September, 2009

A handwritten signature in black ink that reads "David J. Kappos". The signature is written in a cursive style with a large, stylized 'D' and 'K'.

David J. Kappos
Director of the United States Patent and Trademark Office