US005564816A

United States Patent [19]

Arcadia et al.

[11] Patent Number: 5,564,816

[45] Date of Patent: Oct. 15, 1996

[54] **ILLUMINATED MEMORIAL ASSEMBLY**

[76] Inventors: **Alexander J. Arcadia**, 251 Township Line Rd., Douglassville, Pa. 19518; **Theresa P. North**, 205 Whisper Ct., Burlington, N.J. 08016

[21] Appl. No.: **425,891**

[22] Filed: **Apr. 21, 1995**

[51] **Int. Cl.**[6] **F21V 33/00**

[52] **U.S. Cl.** **362/183**; 362/121; 362/802; 362/276; 362/191; 362/806; 362/253; 52/104

[58] **Field of Search** 362/183, 276, 362/1, 802, 32, 121, 253, 202, 190, 191, 311, 356, 158, 806, 808; 52/103, 104; 40/124.5

[56] **References Cited**

U.S. PATENT DOCUMENTS

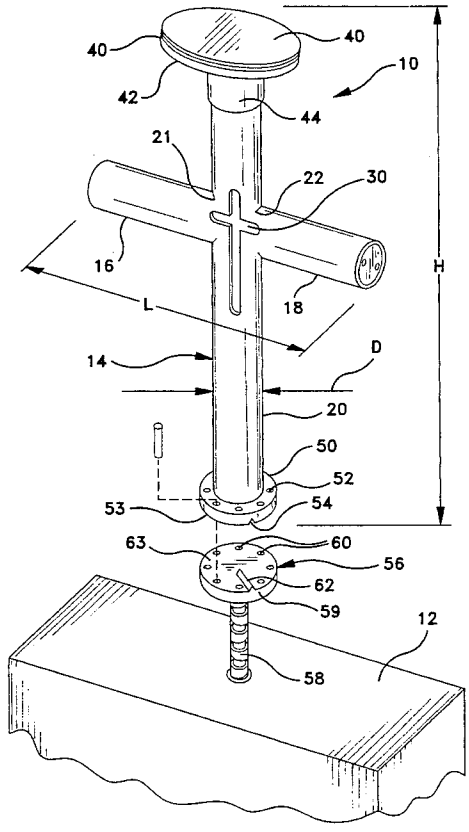
676,853	6/1901	Schlacks	362/121
1,294,279	2/1919	Kugel	362/121
1,391,945	9/1921	Flagge	362/121
2,019,192	10/1935	Minkel	362/121
2,132,297	6/1936	Horowitz .	
2,325,883	8/1943	Schleif	362/121
2,917,853	12/1959	Lawsyk .	
4,169,970	10/1979	Opiela	179/100.1
4,200,904	4/1980	Doan	362/183
4,281,369	7/1981	Batte	362/183
4,319,310	3/1982	Kingsley	362/183
4,384,317	5/1983	Stackpole	362/183
4,410,930	10/1983	Yachabach	362/145
4,453,201	6/1984	Prouty	362/121
4,843,525	6/1989	Williams	362/157
5,013,972	5/1991	Malkieli	315/209
5,014,472	5/1991	Svensson	52/103
5,065,291	11/1991	Frost	362/183
5,155,668	10/1992	Tanner	362/183
5,164,654	11/1992	Bertram	320/61
5,174,645	12/1992	Chung	362/86
5,255,170	10/1993	Plamp	362/183
5,404,343	4/1995	Boggio	360/12

Primary Examiner—Denise L. Gromada
Assistant Examiner—Thomas M. Sember
Attorney, Agent, or Firm—LaMorte & Associates

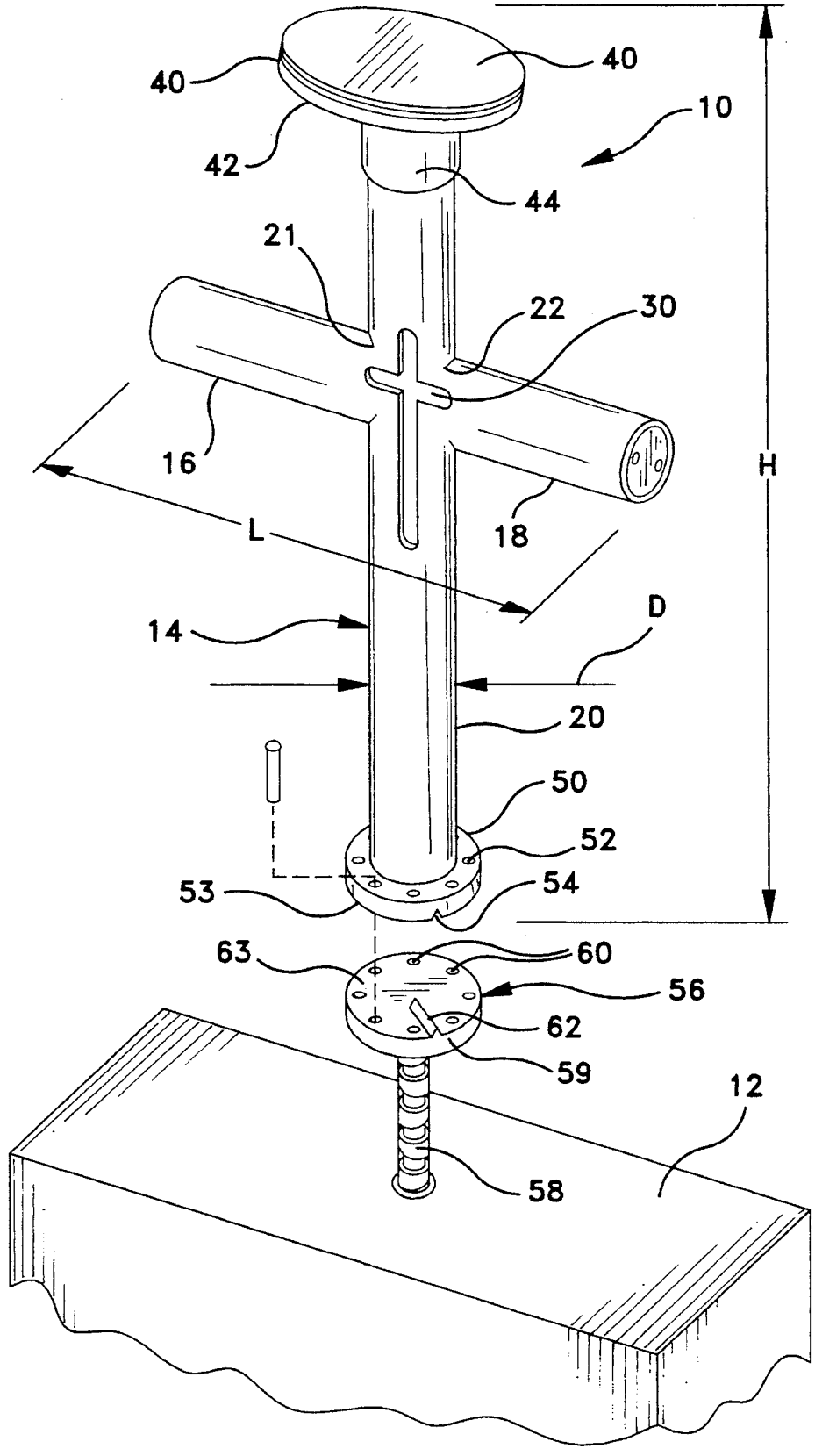
[57] **ABSTRACT**

An illuminated memorial for use at a grave site comprised of an opaque hollow structure that defines an interior chamber. An aperture extends into said hollow structure exposing a portion of the hollow chamber. The hollow structure itself is preferably formed from metal and is shaped and reinforced in its structure to resist physical damage from vandals. A light source is contained within hollow structure proximate the aperture, whereby light emitted by said light source is directed through said aperture. The light source is powered by at least one rechargeable battery. A photovoltaic source is supported at the highest point of the hollow structure, wherein said photovoltaic source converts light into electricity and recharges the rechargeable batteries during daylight conditions.

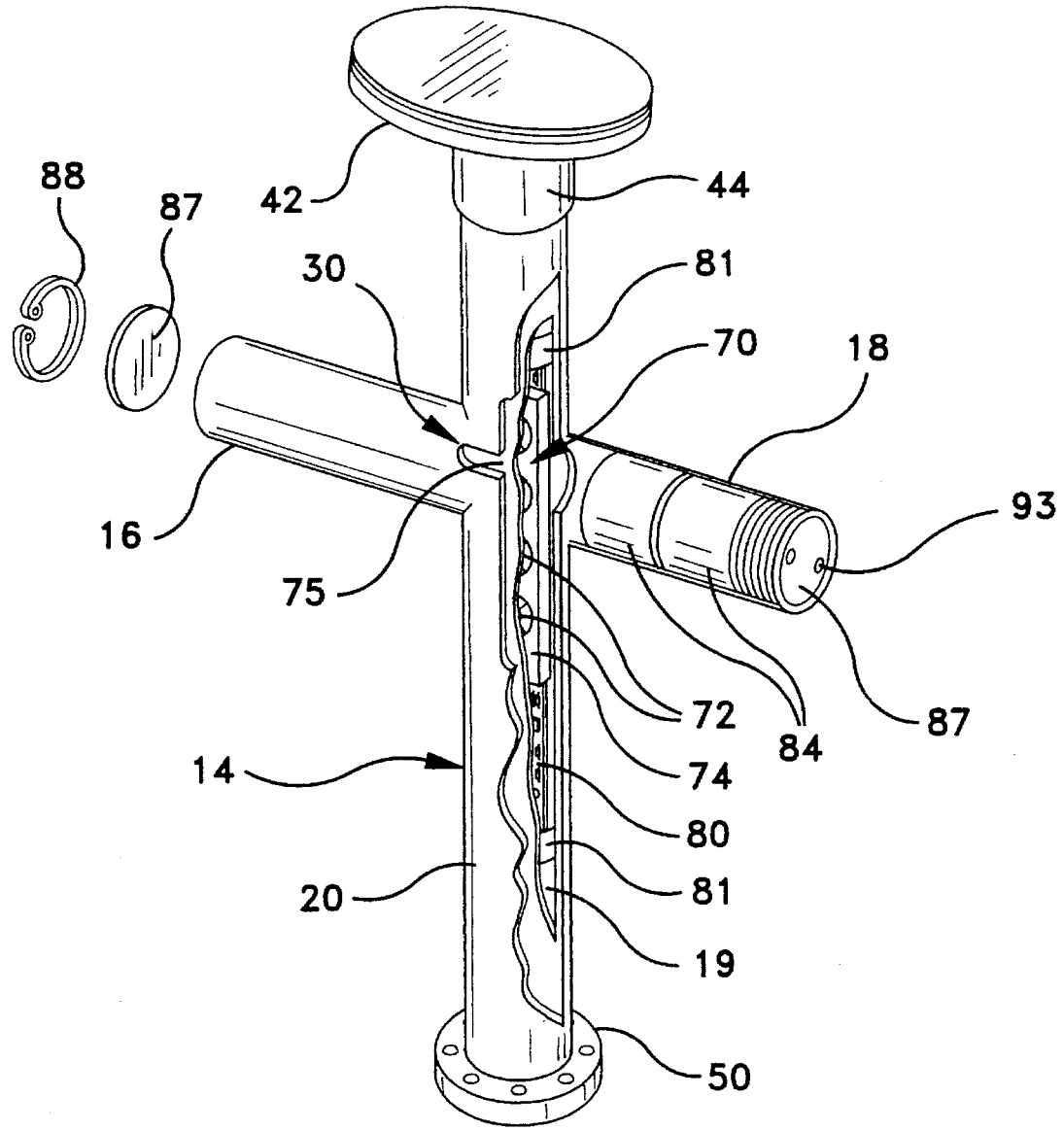
19 Claims, 4 Drawing Sheets



FIG—1



FIG—2



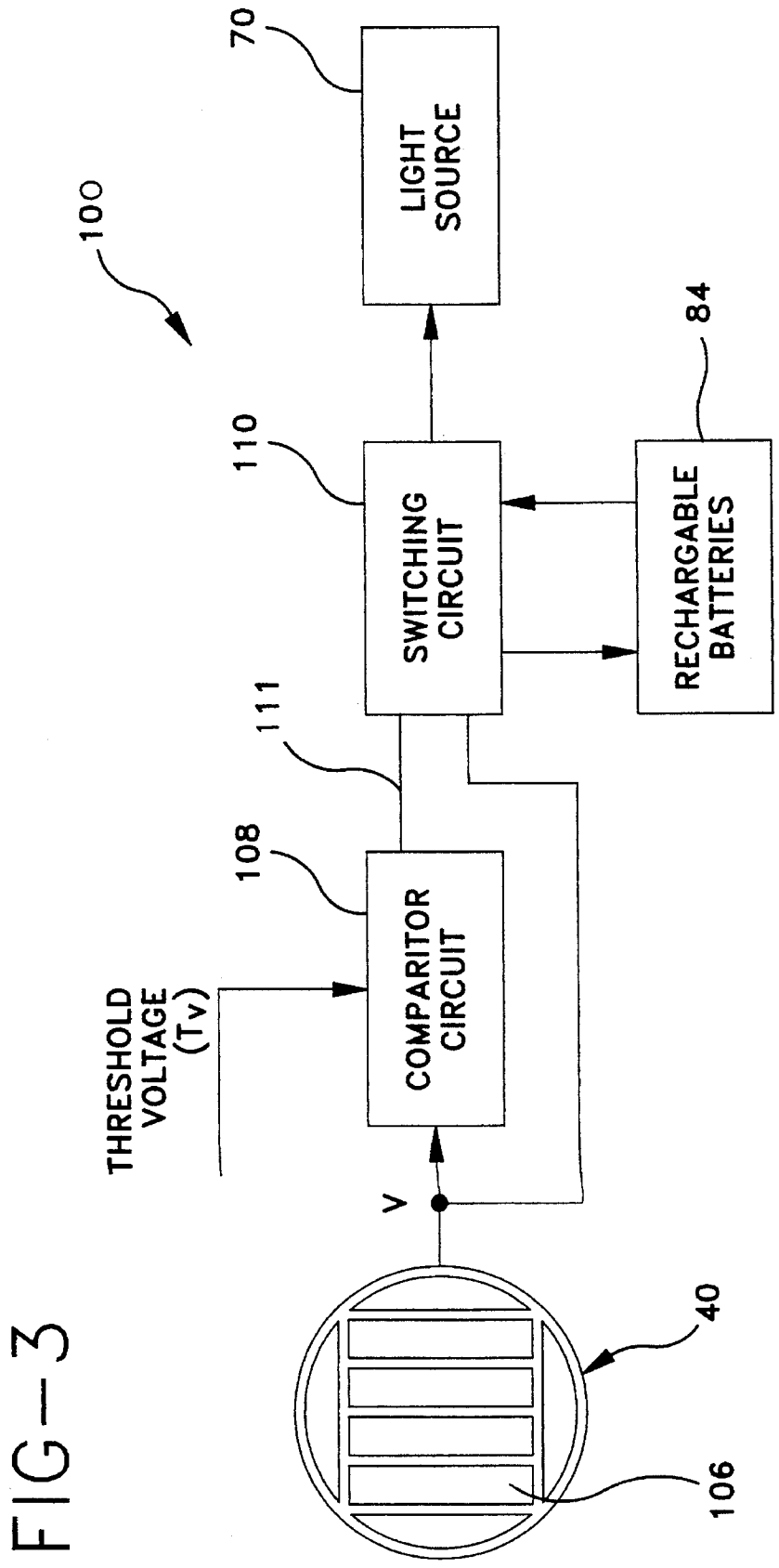
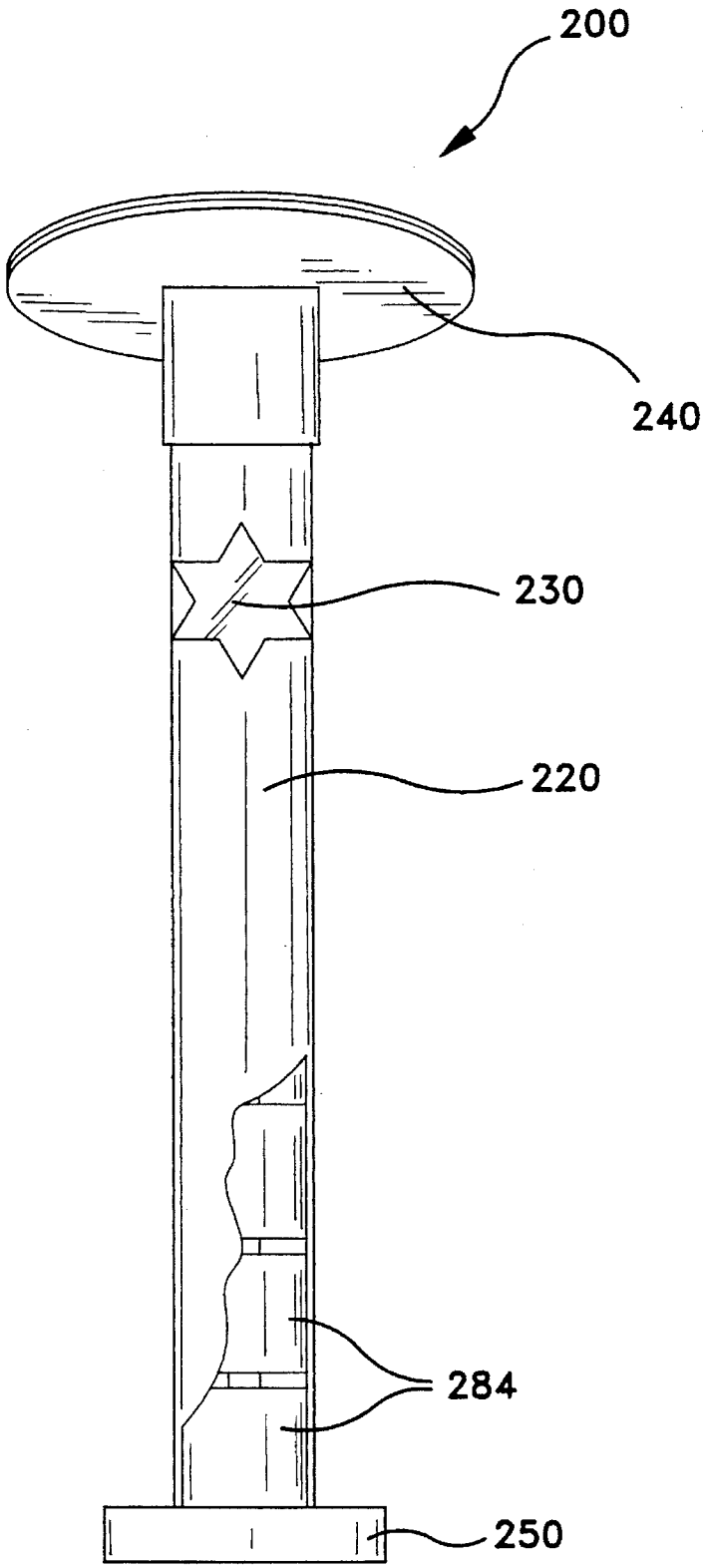

100
70
LIGHT SOURCE
84
110
SWITCHING CIRCUIT
RECHARGABLE BATTERIES
111
108
COMPARITOR CIRCUIT
THRESHOLD VOLTAGE (Tv)
V
40
106

FIG-3

FIG—4



ILLUMINATED MEMORIAL ASSEMBLY

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to memorials for the dead. More particularly, the present invention relates to illuminated memorials with solar panels that enable the memorial to recharge its own power source during the day, whereby the power source maintains the illumination of an internal light source at night.

2. Statement of the Prior Art

Many cultures use memorials at grave sites to memorialize the dead. A common such memorial is the tombstone wherein the person's name, date of birth, date of death and perhaps a brief personal message are carved into the stone. Due to religious beliefs and/or superstition, cemeteries are commonly considered places to be avoided at night or during inclement weather conditions. One of the reasons that may have lead to this fearful reputation is that cemeteries are often not well lit. As such, during the night and during inclement weather, cemeteries appear dark, dreary and uninviting. Because cemeteries are not well lit, cemeteries have often become subject to vandalism, wherein tombstones have been desecrated, damaged or toppled.

One of the primary reasons that cemeteries are not well lit is that cemeteries typically are not wired for electricity to a public utility. As a result, no electrical power for lighting is available. Another reason why lights are not present in cemeteries is that cemeteries are often very large and the cost of lighting such a large area is prohibitively expensive to a cemetery with limited financial resources.

In the prior art, there have been many devices invented that are intended to bring light to remote locations were there is no access to the public electric utility. Many of these prior art devices are solar powered units that charge batteries during the day and light a light during the night. Such prior art devices are exemplified by U.S. Pat. No. 5,065,291 to Frost et al, entitled MARKING LIGHT and U.S. Pat. No. 4,410,930 to Yachabach, entitled PHOTOVOLTAIC LIGHTING FOR OUTDOOR TELEPHONE BOOTH. The problem with many such solar powered systems are that they are fragile and are easily damaged by vandals. As such, they are not easily adapted for use in a cemetery where vandalism is commonplace. Furthermore, there are no poles or other tall structures in a cemetery upon which solar panels can be mounted. As a result, the solar panels must be mounted near the ground were they can be easily reached and damaged. The mounting of solar panels near the ground also means many shadows from trees, bushes and other grave stones many be cast across the solar panels at different times of the day.

U.S. Pat. No. 5,255,170 to Plamp et al , entitled ILLUMINATED MEMORIAL discloses a prior art solar powered memorial that has many of the disadvantages previously described. In the Plamp patent, a memorial is created using a translucent material such as plastic. Within the plastic structure are disposed a plurality small light emitting diodes that are widely dispersed and only provide a limited amount of illumination. Furthermore, the solar panel is located on the base of the monument where it can easily be kicked, damaged by landscaping equipment and obscured by the overgrowth of grass and weeds. Plastic is not typically known for its high tensile strength or high impact resistance. As such, it should be understood that the monument in the Plamp patent is relatively fragile and can be easily damaged

or destroyed by vandals. Furthermore, transparent structures such as those made from glass or plastic provide a very tempting target for vandals throwing stones in an attempt to smash the transparent structure.

The use of multiple small LEDs in a disperse pattern also is problematic because the low degree of light emitted by such an arrangement does little more than dimly illuminate just the memorial. Such lighting arrangements are too dim to illuminate any area surrounding the memorial and are therefore not good sources of ambient lighting. The poor illumination may be even too dim to allow a person to view and read the name and inscription on the memorial. Additionally, when disperse LEDs are used in a transparent structure, a viewer tends to look at the points of the various disperse lights rather than at the memorial itself. From a distance the shape of the memorial may not be discernable at all.

The positioning of a solar panel at ground level in a memorial is highly problematic. First, graves are commonly arranged in rows within the cemetery. As such, new gravestones must be placed in a predetermined place in a predetermined orientation. It is very likely that given the position and orientation of the grave, a solar panel at ground level may not have an unobstructed view of the southern sky. Furthermore, solar panels at ground level are easily obstructed by the shadows cast be surrounding objects and by other things such as overgrown grass, blown leaves, grass cuttings, flowers and the like.

It is therefore a primary objective of the present invention to provide a solar powered illuminated memorial where the solar panel is elevated to the highest point on the memorial and can be oriented in any direction desired.

It is a further object of the present invention to provide an illuminated memorial that is made of metal and is highly resistant to vandalism.

It is yet another object of the present invention to provide an illuminated memorial that has a concentrated source of illumination that is clearly viewed and provides a bright concentrated source of illumination.

Lastly, it is an objective of the present invention to provide an illuminated memorial that can be retroactively added to any existing tombstone.

SUMMARY OF THE INVENTION

The present invention is an illuminated memorial for use at a grave site. The memorial is comprised of an opaque hollow structure that defines an interior chamber. An aperture extends into said hollow structure exposing a portion of the hollow chamber. The hollow structure itself is preferably formed from metal and is shaped and reinforced in its structure to resist physical damage from vandals.

A light source is contained within hollow structure proximate the aperture, whereby light emitted by said light source is directed through said aperture. The light source is powered by at least one rechargeable battery. A photovoltaic source is supported at the highest point of the hollow structure, wherein said photovoltaic source converts light into electricity and recharges the rechargeable batteries during daylight conditions. The photovoltaic source is mounted in a manner that enhances its exposure to the sky and prevents the photovoltaic source from being obscured by snow, plant growth or other common obstructions.

A control circuit is provided that controls the interaction between the light source, the photovoltaic source and the rechargeable battery depending upon ambient lighting conditions.

BRIEF DESCRIPTION OF THE DRAWINGS

For a better understanding of the present invention, reference is made to the following description of exemplary embodiments thereof, considered in conjunction with the accompanying drawings, in which:

FIG. **1** is a perspective view of one preferred embodiment of the present invention memorial shown in conjunction with a tombstone to facilitate further consideration and discussion of its interned use;

FIG. **2** is a fragmented view of the embodiment of FIG. **1** showing the internal components that comprise the present invention memorial;

FIG. **3** is a block diagram schematic illustrating a preferred embodiment for the circuit logic for the present invention memorial; and

FIG. **4** is a partially fragmented view of an alternative embodiment of the present invention memorial.

DETAILED DESCRIPTION OF THE PRESENT INVENTION.

The present invention is a solar powered memorial that can either be used as a grave memorial or can be used in conjunction with a traditional stone grave memorial. Referring to FIG. **1**, there is shown a preferred embodiment of the present invention memorial **10** shown mounted to the top of a conventional stone tombstone **12**. In the shown embodiment, the present invention memorial **10** is formed as a cross structure **14**. However, as will later be explained other religious configurations may also be used. The cross structure **14** is made of tubing, wherein two short pieces of tubing **16, 18** are attached to a long central piece of tubing **20** in order to form the desired cross shape. The tubing can be made of any high strength, corrosive-resistant material such as titanium, tungsten alloy, aluminum alloy, carbon graphite or the like. However, in the preferred embodiment the tubing is made of stainless steel which is relatively low in cost and easy to machine as compared to some of the more exotic alternatives. The use of stainless steel also provides the memorial **10** with a highly reflective appearance that would reflect sunlight during the day and would present an aesthetically pleasant appearance. The thickness of the tubing use to make the cross structure **14** is sufficient enough to provide the overall cross structure **14** with enough strength to resist damage by vandals. For instance, it can be assumed that a vandal may attempt to break the cross structure **14** by either kicking the structure or standing on the structure. The thickness of the tubing should therefore be sufficient to handle such anticipated stresses without damage. Furthermore, the joints **21, 22** that join the short sections of tubing **16, 18** to the long central piece of tubing **20** must also be of sufficient strength to endure the anticipated stresses inflicted by a vandal.

In the shown embodiment, the stainless steel tubing has a diameter D of preferably about 1.5 inches. For such a diameter D, it has been determined that a tubing thickness of approximately 0.0625 inches provides the overall cross structure with enough rigidity to resist vandalism, assuming the overall height H of the cross structure **14** is approximately **14** inches and the overall length L of the cross's arms is approximately 7.25 inches. As the overall height H and length L of the cross structure **14** are changed, obviously the thickness of the tubing could also be changed in a corresponding manner. It has also been determined that by providing a double bevel or single bevel weld, ground smooth, along each of the joints **21, 22**, the cross structure **14** is provided with sufficient rigidity to resist damage from a vandal.

An ornamental aperture **30** is formed in the center of the cross structure **14**. Although the ornamental aperture **30** could take on any shape, the preferred shape for use in the cross shaped structure **14** would also be that of a cross. As will later be explained, it ornamental aperture **30** is the window though which light is emitted from the memorial **10**. By having an ornamental aperture **30** that is shaped like a cross within the larger cross structure **14**, the form of the cross is reinforced during the day. Furthermore, in darkness, the light emanating from the ornamental aperture **30** provides the appearance of a cross so that the cross is seen both by day and by night. The use of a single ornamental aperture **30** also provides a single focus point in viewing the memorial at night, wherein the cross-shaped aperture will appear to brightly glow in the darkness.

A solar panel **40** is supported by the cross structure **14**. The solar panel **40** lays upon a stainless steel plate **42**, wherein the stainless steel plate provides the solar panel with rigidity. The stainless steel plate **42** is welded to an end cap member **44** that attaches to the top end of the long center tube **20** that forms the center of the cross structure **14**. The stainless steel plate **42** is supported at an acute angle relative to the horizontal by the end cap member **44**. This angle serves a double purpose. First, it enables the solar panel **40** to be more effectively directed toward the southern sky. Secondly, the angle makes the solar panel difficult to stand upon and it prevents leafs, dust, water, snow and other debris from collecting upon the solar panel **40**. In the shown embodiment, the solar panel **40** is shown angled toward the back of the cross structure **14**. It should be understood that such an orientation is merely exemplary and the angle of the solar panel **40** could be oriented in any direction that would optimize exposure of the sun to the solar panel **40**. If the orientation of a particular grave sight is known, a person can order the monument from the factory with the end cap member **44** welded to the cross structure **14** in what ever orientation was most efficient for solar exposure. Alternatively, the top of the long center tube **20** may be threaded, as may the end cap member **44**. With both elements being threaded, the end cap member **44** and the solar panel **40** it supports can be threaded onto the cross structure **14** until the solar panel **40** is supported in a proper orientation. To prevent removal of the end cap member **44**, the threads of the end cap member **44** may be coated with an epoxy or similar thread sealer prior to its connection to the cross structure **14**. In yet another alternate embodiment, specialty fasteners that require special tools to remove, could be used to anchor the end cap member **44** to the cross structure **14** at a desired orientation. Specialty fasteners of this type are commonly uses in assemblies that are traditionally prone to vandalism.

A shatter resistant protective layer **46** is preferably disposed over the solar panel **40**. Such a protective layer **46** is made of a transparent material such as plastic and is permanently attached to the solar panel in either an adhesive or mechanical manner. The protective layer **46** prevents direct physical contact with the solar panel **40**, thereby preventing damage or wear to the solar panel **40** and hermetically sealing the solar panel **40** from the elements.

The bottom end of the long center tube **20**, opposite the end cap member **44**, is joined to a mounting flange **50**. In the preferred embodiment, the mounting flange **50** is welded to the center tube **20**, however alternative mechanical or adhesive based joining techniques may be used. The mounting

flange **50** contains a plurality of bolt apertures **52** arranged in a symmetrical pattern. The bottom surface **53** of the mounting flange is flat except for the possible existence of an optional groove **54** that helps to properly orient the cross structure **14** as will be later explained.

The present invention monument **10** can be mounted at a grave in a number of different ways. If the monument **10** is to be retroactively added to an existing tombstone **12**, as is shown, a plurality bolts can be set into the tombstone in a pattern matching the bolt aperture pattern on the mounting flange **50**. However, setting multiple bolts into a tombstone in an exact pattern can be a difficult undertaking. In a preferred embodiment, a base mount **56** can be used. The base mount **56** contains a single anchor element **58** that is set into the tombstone **12** by drilling a hole into the tombstone and cementing the anchor element into place. A base flange **59** extends from the anchor element **58**, wherein multiple threaded mounting bores **60** are provided in the exact orientation needed to match the bolt apertures pattern on the mounting flange **50**. A ridge **62** may be present on the top surface **63** of the base flange **59** that would help the installer of the base mount **56** properly orient the base mount **56** with respect to the existing features of the tombstone **12**. As the monument **10** was mounted to the base mount **56**, the ridge **62** on the base mount **56** would engage the groove **54** on the mounting flange **50**. As a result, the installer would be able to easily determine when the memorial **10** was in the proper orientation with respect to both the base mount **56** and the features of the tombstone **12**.

Referring to FIG. **2**, it can bee seen that the hollow **19** within the cross structure **14** is preferably utilized to hold the various batteries and electronics needed to store electricity during the day and lite the light source **70** during the night. The light source **70** itself can be one of a variety of low wattage lights such as a single cold cathode lamp, a single florescent bulb, or a plurality of light emitting diodes (LEDs). In the shown embodiment, a plurality of LEDs **72** are being used, wherein the LEDs **72** are positioned proximate the ornamental aperture **30** within the long central piece of tubing **20**. The LEDs **72** are retained within a reflective housing **74** that is shaped to direct the light emitted by the LEDs **72** toward the ornamental aperture **30**.

The ornamental aperture **30** is covered within the cross structure **14** by a translucent light diffuser **75**. The diffuser **75** enables the light created by the light source **70** to diffuse across the entire shape of the ornamental aperture **30**. As a result, when the ornamental aperture is viewed by a person looking at the memorial, the shape of the ornamental aperture is clearly defined by a relatively even glow of light. The diffuser **75** is preferably made of an impact resistant plastic and can be tinted into any desired color. Consequently, the light passing through the diffuser **75** can be tinted to the color of the diffuser **75**. The diffuser **75** covers the ornamental aperture **30** in a substantially water resistant manner. The diffuser **75** could be a semicircular structure mounted over the area of the ornamental aperture **30**. However, in the shown embodiment, the diffuser **75** is a hollow tube of translucent plastic that circumvents the inner diameter of the center piece of tubing **20**.

A circuit board **80** is supported within the cross structure **14**. Cushioned mounts **81** are used to hold the circuit board **80** in place and help to electrically isolate the circuit board **80** from the conductive material forming the cross structure **14**. The cushioned mounts **81** also prevent the circuit board **80** from experiencing the expansion and contraction stresses created by the temperature induced expansions and contractions of the stainless steel cross structure **14**. As will be later explained, the environment inside the cross structure **14** is hermetically isolated from the ambient atmosphere. However, if such hermetic isolation is not used, it should be understood that the circuit board **80** could be potted and thereby isolated from environmental conditions and contaminants.

As will later be described, the circuit board **80** contains the control circuit that regulates the lighting of the light source **70** and the recharging of the storage batteries **84**. In the shown embodiment, the storage batteries **84** are held within the short pieces of tubing **16**, **18** that form the arms of the cross structure **14**. It will be understood that such positioning is merely exemplary and the storage batteries **84** could also be located in the central piece of tubing **20**. One reason why the location of the storage batteries in the arms of the cross structure **14** may be preferable is that each of the pieces of tubing **16**, **18** that form the cross's arms are sealed by tube closures **87**. These tube closures **87** may be permanent structures, however they also may be made to be selectively removable with some sort of specialty tool. For instance, the tube closures could be held in place by C-clips **88** that engage a groove within each piece of tubing. In such a scenario, a set of C-clip pliers would be required to remove the tube closures. In an alternate embodiment, the tube closures **87** can be threaded to the tubing. Small indents **93** could be disposed in the tube closures **87**, wherein the tube closures **87** could be tightened or removed by a specially sized spanner wrench. One advantage of making the tube closures **87** removable is that it would provide access to the storage batteries **84** without requiring that the entire cross structure **14** be removed form place. Accordingly, when the useful life of the storage batteries **84** end, a custodial person at the cemetery or a family member could replace the storage batteries with new ones or even with better ones that my be developed at some point in the future.

The cross structure **14** of the shown embodiment preferably maintains the hollow **19** within the long central piece of tubing **20** in a hermetically sealed condition that is isolated from dust, pollutants and moisture carried in ambient air. The tube closures **87** isolate the interior regions of the short pieces of tubing **16**, **18** that form the arms of the cross structure **14**. The end cap member **44** and stainless steel plate **42** close the open top end of the central piece of tubing **20**. The mounting flange **50** closes the open bottom end of the cross structure **14**. Lastly, the diffuser **75** closes the ornamental aperture **30** in the center of the cross structure **14**. As a result, there are no open regions on the cross structure **14** through which air and/or water can enter the cross structure **14**.

Referring to FIG. **3**, there is shown block diagram schematic of a preferred embodiment of a control circuit **100** that controls the operation of the electrical features of the present invention memorial. The purpose of the circuit **100** is to control the flow of electricity to and from both the light source **70** within the memorial and the rechargeable batteries **84**, depending upon the conditions of ambient light. During daylight conditions the various photovoltaic cells **106** within the solar panel **40** produce electricity having a variable voltage V that varies in response to the intensity of the sun, as experienced by the solar panel **40**. The voltage V produced by the solar panel **40** is compared to a threshold voltage T_v by a comparitor circuit **108**. As will be explained, it is the comparative voltage difference between the solar panel voltage V and the threshold voltage T_v that determines the overall operation of the control circuit **100**. Normally, during daylight conditions, the voltage V produced by the solar panel **40** is greater than that of the threshold voltage T_v.

However, as the sun sets or if a storm approaches, the voltage V of the solar panel **40** drops below that of the threshold voltage T_v. The threshold voltage T_v may be a factory set value, however in alternate embodiments, the threshold voltage T_v may be variable. A variable threshold voltage T_v would enable adjustments for unforeseen on-site conditions. For instance, suppose a grave was located near a street with a street light. By varying the threshold voltage T_v the control circuit **100** can be finely adjusted to those lighting conditions so that the threshold voltage T_v is greater than the solar panel voltage V at night and is less than the solar panel voltage V during the day. The threshold voltage T_v, however, should always be at least as high as the voltage of the storage batteries **84** when fully charged.

A switching circuit **110** controls the flow of electricity between the solar panel **40** and the storage batteries **84** and between the storage batteries **84** and the light source **70**. The operation of the switching circuit **110** is controlled by the state of a trigger signal **111** produced by the comparitor circuit **108**. When the voltage V from the solar panel **40** is greater than the threshold voltage T_v, the voltage V is higher than the voltage output of the storage batteries **84**, since the threshold voltage T_v is at least as high as the battery voltage. When the solar panel voltage V is higher than the threshold voltage T_v, sufficient sunlight is present and the switching circuit **110** connects the flow of electricity from the solar panel **40** to the rechargeable storage batteries **84**. During such daylight conditions, the solar panel **40** recharges the storage batteries **84** and no power is provided to the light source **70**. When the amount of light energy impinging upon the solar panel **40** decreases, the state of the trigger signal **111** produced by the comparitor circuit **108** changes and signals the switching circuit **110** that the solar panel voltage V has dropped below that of the threshold voltage T_v. When the threshold voltage T_v drops below the solar panel voltage V, it is assumed that the sun has set or a storm has approached. The switching circuit **110** then couples the storage batteries **84** to the light source **70**, wherein the batteries empower the light source **70** causing the batteries to slowly drain. When the sun rises, the solar panel voltage V again rises over the threshold voltage T_v and the batteries **84** are again charged. This cycle is repeated until the storage batteries **84** loose their ability to store and discharge electricity.

From the above description, it can be seen that the solar panel **40** is used as both a power source and as a light sensor. During conditions of strong light, the solar panels **40** recharge the storage batteries **84**. In twilight, the solar panel detects the setting or rising of the sun, thereby appropriately controlling both the condition of the light source **70** and the recharging or discharging of the batteries **84**.

It is a rare condition when the darkness of a storm during the day causes the same degree of darkness as does the setting of the sun at night. Consequently, the preferred embodiment of the control circuit **100** does not includes complicated and costly circuits that are specifically designed to determine the difference between cloudy conditions and sunny conditions. Rather, by using the solar panel **40** as the light sensor, the storage batteries **84** are charged whenever the voltage V from the solar panel **40** surpasses the set value of the threshold voltage T_v.

Referring now to FIG. **4**, an alternate embodiment of the present invention memorial **200** is shown, wherein the memorial **200** is not a cross structure. Rather, in the shown embodiment, the memorial **200** consists solely of a linear piece of tubing **220** that supports a solar panel **240**. The purpose of describing this alternate embodiment is to show that the present invention need not be in the shape of a cross nor does it need to be constructed of circular tubing. In the shown embodiment, the ornamental aperture **230** is shaped as the Star of David to illustrate that any shape of religious icon can be used. Additionally, the linear piece of tubing **220** has a square cross-sectional profile to illustrate that and structure that defines a hollow interior could be used.

Since the shown embodiment does not have the side arms of a cross structure, the storage batteries **284** can be retained near the base of the piece of tubing **220**. In such an orientation, the storage batteries **284** can be accessed by the selective uncoupling of the mounting flange **250** from the base mount upon which it rests.

It will be understood that the embodiments of the present invention memorial illustrated and described above are merely exemplary and many variations and modifications can be made by using functionally equivalent components and/or alternate embodiments. For instance, it will be understood by a person skilled in the art the a large variety of circuits could be created that are capable of performing the circuit logic described in regard to FIG. **3**. All such circuits are intended to be included within the scope of the disclosure. Similarly, many of the described components, such as the LED light source, can be replaced with functionally equivalent components that have not been specifically described. All such variations and modifications are intended to be included within the scope of the invention as defined by the appended claims.

What is claimed is:

1. An illuminated memorial, comprising:

an opaque hollow structure having a first end and a second end and defining an internal region therebetween, wherein an aperture extends into said hollow structure at a point between said first end and said second end, exposing a portion of said internal region;

a mounting means disposed proximate said second end of said hollow structure for mounting said hollow structure to a tombstone;

a light source contained within said internal region proximate said aperture, whereby light emitted by said light source is directed through said aperture;

at least one rechargeable battery disposed within said hollow structure;

photovoltaic source supported at a predetermined height by said hollow structure, wherein said photovoltaic source converts light into electricity;

a control circuit coupled to said light source, said photovoltaic source and said rechargeable battery for selectively coupling said photovoltaic source to said rechargeable battery and said battery to said light source depending upon ambient lighting conditions.

2. The memorial according to claim **1**, wherein said hollow structure is metal.

3. The memorial according to claim **2**, wherein said metal is selected from a group consisting of stainless steel, titanium, aluminum alloy and tungsten alloy.

4. The memorial according to claim **1**, wherein said hollow structure is comprised of at least one segment of tubing.

5. The memorial according to claim **1**, wherein said aperture is shaped as a religious icon.

6. The memorial according to claim **1**, further including a translucent element disposed over said aperture, whereby the light from said light source passes through said translucent element.

7. The memorial according to claim **6**, wherein said translucent element is tinted in color.

8. The memorial according to claim **6**, wherein said internal region is hermetically sealed.

9. The memorial according to claim **1**, wherein said photovoltaic source is a solar panel that is supported by said hollow structure in a plane that is tilted at an acute angle relative to a horizontal plane.

10. The memorial according to claim **9**, wherein said solar panel is covered by a protective transparent cover.

11. The memorial according to claim **9**, wherein said solar panel is supported by a metal plate that is coupled to said first end of said hollow structure.

12. The monument according to claim **1**, wherein said hollow structure includes a means for non-destructively accessing said at least one storage battery.

13. The memorial according to claim **1**, wherein said hollow structure is a cross comprised of a central metal tube extending between said first end and said second end and two small pieces of tubing extending laterally from said central metal tube at a predetermined point between said first end and said second end.

14. The memorial according to claim **13** wherein said photovoltaic source is coupled to said first end of said cross, whereby said photovoltaic source is at the highest point associated with said memorial.

15. The memorial according to claim **1**, wherein said hollow structure is a single piece of tubing extending between said first end and said second end and wherein said photovoltaic source is coupled to said first end at the highest point associated with said memorial. tubing through said translucent window.

16. An illuminated memorial, comprising:

a tombstone;

a piece of hollow tubing extending between a first end and a second end;

a translucent window disposed between said first end and said second end, exposing a section within said hollow tubing;

a mounting means coupled to said second end for mounting said hollow tubing in a generally vertical orientation onto said tombstone.; and

a lighting means contained within said hollow tubing for producing light that shines out of said hollow tubing through said translucent window.

17. The memorial according to claim **16**, wherein said lighting means includes a rechargeable electric source and said memorial further includes a photovoltaic source coupled to said first end of said hollow tubing, wherein said photovoltaic source recharges said rechargeable electric source.

18. The memorial according to claim **16** wherein said hollow tubing is metal.

19. An illuminated memorial, comprising:

an opaque hollow structure having a first end and a second end and defining an internal region therebetween, wherein an aperture extends into said hollow structure at a point between said first end and said second end, exposing a portion of said internal region;

a light source contained within said internal region proximate said aperture, whereby light emitted by said light source is directed through said aperture;

a translucent element disposed over said aperture, whereby the light from said light source passes through said translucent element;

at least one rechargeable battery disposed within said hollow structure;

photovoltaic source supported at a predetermined height by said hollow structure, wherein said photovoltaic source converts light into electricity;

a control circuit coupled to said light source, said photovoltaic source and said rechargeable battery for selectively coupling said photovoltaic source to said rechargeable battery and said battery to said light source depending upon ambient lighting conditions.

* * * * *