"PORTABLE LIGHT STAND"

Field of the Invention

The present invention relates to a portable light stand and relates particularly, though not exclusively, to a portable light stand for a solar-powered light.

Background to the Invention

Street parties and social gatherings in public spaces are becoming increasingly popular in many urban centres, as people discover new ways of enjoying social occasions and celebrations in an urban environment. It is not uncommon for such occasions and events to continue into the evening and night hours, after dark. In some contexts there is a need for temporary street lighting, and therefore some municipalities have been providing temporary street lighting powered by diesel generators so that the festivities can continue after dark. More recently, low-powered LED floodlights and improved battery technology have made solar-powered temporary street lighting more feasible.

Prior art temporary street lighting generally employs a concrete base, which is extremely heavy and has to be lifted and placed in position using a crane.

The present invention was developed with a view to filling the need for a simple pop-up solar-powered street light that can be quickly and easily deployed. However it will be appreciated that the fillable base, originally designed for the pop-up solar-powered street light, may have several other uses, including serving as a temporary base for other kinds of vertically upright poles and stands, such as a flag pole, banner stand, tent pole, traffic signals, traffic signage, traffic speed indicator, security cameras, and electrical lights etc.

References to prior art in this specification are provided for illustrative purposes only and are not to be taken as an admission that such prior art is part of the common general knowledge in Australia or elsewhere.

Summary of the Invention

According to one aspect of the present invention there is provided a fillable base for a portable light stand, the base comprising:

a hollow structure made from moulded plastics material, the hollow structure having an upper portion and a lower portion with a generally circular footprint, the lower portion of the hollow structure having a substantially vertical cylindrical outer side wall, and the upper portion of the hollow structure having a conical outer side wall, the conical outer side wall having an outer edge extending from a top edge of the cylindrical side wall to an apex of the upper portion of the structure, the structure also comprising a recess that opens at the apex and within which one end of an elongate pole can be received.

Preferably the substantially vertical cylindrical outer side wall is angled at between 0° and 5° to the vertical. More typically the substantially vertical cylindrical outer side wall is angled at between 0.1° and 1° to the vertical.

Typically the conical outer side wall is angled at between 60° and 30° to the vertical. More typically the conical outer side wall is angled at between 50° and 40° to the vertical.

Advantageously the lower portion of the hollow structure further comprises a conical inner side wall that is angled at substantially the same angle to the vertical as the conical outer side wall of the upper portion of the hollow structure wherein, in use, one of the bases can be more easily stacked on top of another similar base.

Preferably the recess that opens at the apex of the hollow structure extends all the way through the hollow structure along a central vertical axis of the hollow structure to the conical inner side wall.

Preferably the upper portion of the hollow structure is provided with a fill aperture in the conical outer side wall for filling the hollow structure with a suitable filler material. Preferably the hollow structure is fillable with water, and the fill aperture is provided with a recessed cap for sealing the aperture after filling. Typically the fill aperture is one of two fill apertures provided in the conical outer side wall for filling the hollow structure with water. Preferably the lower portion of the hollow structure is provided with a drain aperture adjacent a lower edge of the substantially vertical cylindrical outer side wall for draining the hollow structure of water. Preferably the drain aperture is provided with a recessed cap for sealing the aperture after draining or prior to filling.

Advantageously the hollow structure is also provided with two or more moulded handles provided in the substantially vertical cylindrical outer side wall to assist with lifting the base manually.

Preferably the hollow structure is also provided with a pair of rectangular apertures moulded into a lower surface of the base, the apertures extending as parallel channels across a full width of the lower portion of the base, and being sized to receive the tines of a forklift truck.

According to another aspect of the present invention there is provided a solar-powered pop-up fixture, the fixture comprising:

a base having a hollow structure made from moulded plastics material, the hollow structure having an upper portion and a lower portion with a generally circular footprint, the lower portion of the hollow structure having a substantially vertical cylindrical outer side wall, and the upper portion of the hollow structure having a conical outer side wall, the conical outer side wall having an outer edge extending from a top edge of the cylindrical side wall to an apex of the upper portion of the hollow structure, the hollow structure also comprising a recess that opens at the apex;

an elongate pole having a bottom end received in the recess that opens at the apex; and,

a solar-powered fixture mounted at a top end of the pole.

Throughout the specification, unless the context requires otherwise, the word "comprise" or variations such as "comprises" or "comprising", will be understood to imply the inclusion of a stated integer or group of integers but not the exclusion of any other integer or group of integers. Likewise the word "preferably" or variations such as "preferred", will be understood to imply that a stated integer or group of integers is desirable but not essential to the working of the invention.

Brief Description of the Drawings

The nature of the invention will be better understood from the following detailed description of several specific embodiments of a base for a light stand, given by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a side perspective view of a first embodiment of a solar-powered street light in accordance with the present invention;

Figure 2 is an isometric view of a first embodiment of a base for the solar-powered street light of Figure 1;

Figure 3 is a top plan view of the base of Figure 2;

Figure 4 is a front elevation of the base of Figure 2;

Figure 5 is a section view through the line A-A in Figure 4;

Figure 6 is a side elevation of the base of Figure 2;

Figure 7 illustrates the arrangement of three of the bases of Figure 2 mounted in a rota mould carriage frame (mould not shown);

Figure 8 is a side elevation of a second embodiment of a fillable base for a portable light stand in accordance with the present invention; and,

Figure 9 is an isometric view of the fillable base of Figure 8.

Detailed Description of Preferred Embodiments

A preferred embodiment of a solar-powered street light 10 in accordance with the invention, as illustrated in Figure 1, comprises a fillable base 20, with a light pole 12 mounted thereon and a solar-powered light 14 mounted at the top of the light pole. The solar-powered light 14 is preferably a MOMA LED in-house designed light with built-in Li-Ion battery and solar panel. Optionally the solar-powered light 14 may also have a PIR motion sensor built-in to save power in the absence of activity. Typically a 40 W or 60 W MOMA solar-powered light is employed, which typically provides 5 hours of 100% brightness + 5 hours of PIR 30% brightness & 70% brightness until dawn.

The light pole 12 is typically a hollow steel or aluminium pole received in a recess provided at the apex of the base 20.

Other features may be provided in association with the solar-powered street light 10, such as security devices and security cameras, as required. Alternatively the solar-powered light 14 may be replaced with other kinds of solar-powered fixtures, such as traffic signals, traffic signage, traffic speed indicator, security camera, etc.

The solar-powered light 14 may also be fitted with bird-repellent, such as sharp upwardly pointing spikes on top (not shown), to prevent birds from perching on the light.

A first embodiment of the fillable base 20 for a portable light stand will now be described with reference to Figures 2 to 7. The fillable base 20 comprises a hollow structure 22 made from moulded plastics material. Preferably the hollow structure is manufactured using a rota-moulding technique, however other well-known plastics moulding techniques may be employed. The hollow structure 22 is typically manufactured from a suitable thermoplastic material, for example, Medium Density Polyethylene (MDPE), or High Density Polyethylene (HDPE). The wall thickness of the hollow

structure 22 is typically between 5 mm and 10 mm, more typically around 8 mm.

The hollow structure 22 has an upper portion 24 and a lower portion 26 (see Figure 4) with a generally circular footprint. The lower portion 26 of the hollow structure 22 has a substantially vertical cylindrical outer side wall 28, and the upper portion 24 of the hollow structure 22 has a conical outer side wall 30. The conical outer side wall 30 has an outer edge 32, and extends from a top edge 34 of the cylindrical side wall 28 to an apex 36 of the upper portion 24 of the hollow structure 22.

Preferably the substantially vertical cylindrical outer side wall 28 is angled at between 0° and 5° to the vertical. More typically the substantially vertical cylindrical outer side wall 28 is angled at between 0.1° and 1° to the vertical. Typically the conical outer side wall 30 is angled at between 60° and 30° to the vertical. More typically the conical outer side wall 30 is angled at between 50° and 40° to the vertical. The angled side walls of the base not only allow rain water to flow freely off the base, so that it is self-cleaning, they also discourage people and animals from climbing or perching on the base.

The hollow structure 22 also comprises a recess 38 that opens at the apex 36 and within which one end of an elongate pole, such as the light pole 12 can be received. Typically the recess 38 has a length of HDPE poly pipe 40 moulded-in to the recess, with a slit to allow the poly pipe to clamp against a light pole received in the recess. A pipe clamp (not shown) may be used to clamp the light pole 12 in the recess 38.

Advantageously the lower portion 26 of the hollow structure 22 further comprises a conical inner side wall 42, as can be seen most clearly in Figure 5. The conical inner side wall 42 is angled at substantially the same angle to the vertical as the conical outer side wall 30 of the upper portion 24 of the hollow structure 22 so as to form a concave cone-shaped recess in the underside of the base 20. In use, one of the bases 20 can be more easily stacked on top of another similar base 20', as the conical outer side

wall 30 of the upper portion 24 of the other similar base 20' can be received within the concave cone-shaped recess formed by conical inner side wall 42 of the lower portion 26 of the base 20.

Preferably the recess 38, which opens at the apex 36 of the hollow structure 22, extends all the way through the hollow structure along a central vertical axis of the hollow structure to the conical inner side wall 42.

Preferably the upper portion 24 of the hollow structure 22 is provided with a fill aperture 44 in the conical outer side wall 30 for filling the hollow structure 22 with a suitable filler material. Preferably the hollow structure 22 is fillable with water, and the fill aperture 44 is provided with a recessed cap 46 for sealing the aperture 44 after filling. Typically the fill aperture 44 is one of two fill apertures provided in the conical outer side wall 30 for filling the hollow structure 22 with water. Preferably the lower portion 26 of the hollow structure 22 is provided with a drain aperture 48 adjacent a lower edge of the substantially vertical cylindrical outer side wall 28 for draining the hollow structure 22 of water. Preferably the drain aperture 48 is provided with a recessed cap 50 for sealing the aperture 48 after draining or prior to filling.

Advantageously the hollow structure is also provided with two or more moulded handles 52 provided in the substantially vertical cylindrical outer side wall 28 to assist with lifting the base 20 manually.

In the illustrated embodiment of the base 20, the hollow structure 22 has a height of 1217 mm, the upper portion 24 being 420 mm high and the lower portion 26 being 797 mm high. With the moulded-in length of poly pipe the total height of the base 20 is 1300 mm. Advantageously three of the bases 20 can be mounted end to end in a rota moulding frame, as shown in Figure 7. The maximum outside diameter of the base 20 is 1050 mm, and the minimum outside diameter of the substantially vertical cylindrical outer side wall 28 is 854 mm. Both the flush mounted fill aperture 44 and flush mounted drain aperture 48 are 50 mm in diameter, and are fitted with a cap installed with spin weld thread. The hollow structure can contain about 580 L of water when filled (580 kg), but only weighs 30 kg when empty.

A second embodiment of the fillable base 60 for a portable light stand will now be described with reference to Figures 8 and 9. The fillable base 60 is similar to the fillable base 20 of the first embodiment, and therefore the like parts will be identified using the same reference numerals and will not be described again in detail. The fillable base 60 comprises a hollow structure 22 made from moulded plastics material. Preferably the hollow structure is manufactured using a rota-moulding technique, as per the fillable base 20.

The hollow structure 22 has an upper portion 24 and a lower portion 26 with a generally circular footprint. The lower portion 26 of the hollow structure 22 has a substantially vertical cylindrical outer side wall 28, and the upper portion 24 of the hollow structure 22 has a conical outer side wall 30. Preferably the substantially vertical cylindrical outer side wall 28 is angled at between 0° and 5° to the vertical, as per the fillable base 20. However in this embodiment the conical outer side wall 30 is angled at between 80° and 30° to the vertical. More typically the conical outer side wall 30 is angled at between 70° and 60° to the vertical. The result is that this embodiment of the fillable base 60 is about 150 mm shorter in overall height, and therefore has a more squat appearance, than the first embodiment of the fillable base 20. In this embodiment of the base 60, the hollow structure 22 has a height of 1067 mm, the upper portion 24 being 270 mm high and the lower portion 26 being 797 mm high. With the moulded-in length of poly pipe the total height of the base 60 is 1150 mm.

In the first embodiment of the base 20 the hollow structure 22 is provided with two or more moulded handles 52 provided in the substantially vertical cylindrical outer side wall 28 to assist with lifting the base 20 manually. The handles 52 are provided intermediate the height of the side wall 28 on opposite sides of the lower portion 26. In the second embodiment of the base 60 two or more handles 66 are provided in the outer side wall 28, recessed into a lower edge 64 of the outer side wall 28 (see Figure 9).

Advantageously, this embodiment of the fillable base 60 is also provided with a pair of rectangular apertures 62 moulded into a lower surface of the

base. The apertures 62 extend as parallel channels across a full width of the lower portion 26 of the base 60, and are sized to receive the tines of a forklift truck, so that the base can be more easily lifted and moved when filled.

In other respects the fillable base 60 of this embodiment is substantially identical as the first embodiment of the fillable base 20, and will not be described again in detail here.

Now that preferred embodiments of the solar-powered street light and base for a light stand have been described in detail, it will be apparent that the described embodiments provide a number of advantages over the prior art, including the following:

(i) The base for the light stand is stackable for transport purposes.

(ii) The base is advantageously less than 1150 mm in diameter and will fit a standard transport pallet of 1190 mm width. A typical tray of a truck is 2390 mm wide, so two rows of stacked bases can be transported side by side.

(iii) The solar-powered street lights are engineered for Category A winds, with the base providing sufficient ballast to keep the light pole upright.

(iv) The base is easily fillable and drainable on site.

(v) When emptied of water the base is easily lifted manually and can be carried by two people for installation or relocation.

(vi) When filled with water the base can be easily lifted using a forklift truck, by inserting the tines in the apertures provided for this purpose.

(vii) No cranes or heavy lifting machinery are normally required to install the solar-powered street lights.

(viii) The base has a small environmental footprint as it runs without fossil fuel generators and electrical outputs from generators to lighting towers and fully operates within a no sound environment.

It will be readily apparent to persons skilled in the relevant arts that various modifications and improvements may be made to the foregoing embodiments, in addition to those already described, without departing from the basic inventive concepts of the present invention. For example, in the illustrated embodiment the moulded handles protrude from the side wall of the lower portion of the hollow structure, however the handles can be recessed instead of protruding to keep them inside the base diameter, and the number and shape of the handles can also be varied from that shown. One or more of the moulded handles can also be replaced with barrier connecting points. Therefore, it will be appreciated that the scope of the invention is not limited to the specific embodiment described.

Claims

1. A fillable base for a portable light stand, that in use supports an elongate pole having a lighting device such as a solar-powered light located towards a top of the elongate pole, the base comprising:

a hollow structure made from moulded plastics material that can be filled with a filler material, the hollow structure having:

an upper portion and a lower portion with a generally circular footprint, the lower portion of the hollow structure having a substantially vertical cylindrical outer side wall, and the upper portion of the hollow structure having a conical outer side wall, the conical outer side wall having an outer edge extending from a top edge of the cylindrical side wall to an apex of the upper portion of the structure, wherein the lower portion of the hollow structure further comprises a conical inner side wall that is angled at substantially the same angle to the vertical as the conical outer side wall of the upper portion of the hollow structure so that, in use, one of the bases can be more easily stacked on top of another similar base,

a recess that opens at the apex and within which one end of an elongate pole can be received,

the base further comprising a pair of channels moulded into a lower section of the base that are sized to receive tines of a forklift.

2. A fillable base for a portable light stand as defined in claim 1, wherein the substantially vertical cylindrical outer side wall is angled at between 0° and 5° to the vertical.

3. A fillable base for a portable light stand as defined in claim 2, wherein the substantially vertical cylindrical outer side wall is angled at between 0.1° and 1° to the vertical.

4. A fillable base for a portable light stand as defined in any one of claims 1 to 3, wherein the conical outer side wall is angled at between 80° and 30° to the vertical.

5. A fillable base for a portable light stand as defined in claim 4, wherein the conical outer side wall is angled at between 70° and 40° to the vertical.

6. A fillable base for a portable light stand as defined in any one of claims 1 to 5, wherein the recess that opens at apex of the hollow structure extends all the way through the hollow structure along a central vertical axis of the hollow structure to the conical inner side wall.

7. A fillable base for a portable light stand as defined in claim 6, wherein the recess comprises a pipe, wherein a portion of the pipe extends out past the top and the elongate pole is securable to the portion of the pipe that extends out past the top using a clamp.

8. A fillable base for a portable light stand as defined in any one of claims 1 to 7, wherein the upper portion of the hollow structure is provided with a fill aperture in the conical outer side wall for filling the hollow structure with a suitable filler material.

9. A fillable base for a portable light stand as defined in claim 8, wherein the hollow structure is fillable with water, and the fill aperture is provided with a recessed cap for sealing the aperture after filling.

10. A fillable base for a portable light stand as defined in claim 8 or 9, wherein the fill aperture is one of two fill apertures provided in the conical outer side wall.

11. A fillable base for a portable light stand as defined in any one of claims 1 to 10, wherein the lower portion of the hollow structure is provided with a drain aperture adjacent a lower edge of the substantially vertical cylindrical outer side wall for draining the hollow structure of filler material.

12. A fillable base for a portable light stand as defined in claim 11, wherein the drain aperture is provided with a recessed cap for sealing the aperture after draining or prior to filling.

13. A fillable base for a portable light stand as defined in any one of claims 1 to 12, wherein the hollow structure is also provided with two or more moulded handles

provided in the substantially vertical cylindrical outer side wall to assist with lifting the base manually.

14. A fillable base for a portable light stand as defined in any one of claims 1 to 13, wherein the channels moulded into the lower section of the base extending as parallel channels across a full width of the lower portion of the base.

15. A solar-powered pop-up fixture, the fixture comprising:

a base having a hollow structure made from moulded plastics material, the hollow structure having an upper portion and a lower portion with a generally circular footprint, the lower portion of the hollow structure having a substantially vertical cylindrical outer side wall, and the upper portion of the hollow structure having a conical outer side wall, the conical outer side wall having an outer edge extending from a top edge of the cylindrical side wall to an apex of the upper portion of the hollow structure, wherein the lower portion of the hollow structure further comprises a conical inner side wall that is angled at substantially the same angle to the vertical as the conical outer side wall of the upper portion of the hollow structure so that, in use, one of the bases can be more easily stacked on top of another similar base, the hollow structure also comprising a recess that opens at the apex, the base further comprising a pair of channels moulded into a lower section of the base that are sized to receive tines of a forklift;

an elongate pole having a bottom end received in the recess that opens at the apex; and,

a solar-powered fixture mounted at a top end of the pole.

16. A solar-powered pop-up fixture as defined in claim 15, wherein the base of the fixture is a fillable base as defined in any one of claims 1 to 14.