PORTABLE KIT BOX FOR TORCH EQUIPMENT

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ABSTRACT
A portable kit box for torch equipment comprising a lid, a tank compartment for holding at least one tank, and a base. The base defines a base surface for contacting and translating the kit box along a surface. The lid comprises a compartment for storing at least one tank and is movable between an open position and a closed position. The kit box has at least three positions relative to the surface. In the first position, the at least one tank is supported at an acute angle relative to the surface, in the second position the at least one tanks is supported approximately perpendicular to the surface, and in the third position, the at least one tank is supported approximately horizontal to the surface. The kit box further includes at least one storage compartment, a securing member for securing the lid to the base, and a handle.
PORTABLE KIT BOX FOR TORCH EQUIPMENT

FIELD OF THE INVENTION

[0001] The invention relates to a kit box for torch equipment and, more particularly, to a kit box for storing, supporting, positioning, toting and maneuvering torch equipment.

BACKGROUND OF THE INVENTION

[0002] In the field, users of torches, such as MAP® gas and propane torches, often find themselves working in tightly constrained work areas and crawl spaces where it is impractical if not impossible to use their large and less portable torch equipment; therefore, in these confined work environments users must rely on portable torch equipment that is readily maneuverable throughout these environments and capable of being positioned and supported for optimum performance, accessibility and ease of use. To satisfy these demands, various types of carriers are commercially available for holding torch and welding equipment; however, these carriers are generally oversized, heavy and cumbersome, and only allow the torch's gas tanks or bottles to be supported in the upright position, which provides less than optimal gas flow to the torch during use. Furthermore, these carriers do not allow the user to drag the bottles hose, which greatly inhibits maneuverability and convenience.

[0003] As a remedy to the problem, a portable torch stand has been devised as shown in FIG. 1. The stand is made from a bent wire frame that supports the gas tanks at a 30° angle relative to the ground surface, which is the optimal position for proper gas flow and maximum burn; and it allows the tanks to be dragged by the hose for better maneuverability. However, the wire frame is easily damaged and is unstable as the tanks can become dislodged and/or the frame can fall over on its side if, for example, the frame catches on an imperfection in the surface that the frame is resting on while the frame is being dragged or maneuvered. Additional disadvantages are that the wire frame can only support a single gas bottle and is not capable of storing extra torch equipment and accessories: furthermore, the frame cannot support the gas tank in the upright or horizontal positions, which although not the optimal position as noted above, do provide the user with an alternate stable bottle position in situations where the upright or horizontal positions are the most convenient or desirable over the thirty degree (30°) position.

[0004] For the foregoing reasons, there is a need for a portable kit box for torch equipment that supports the tanks in the thirty degree (30°), upright vertical and horizontal positions in a manner relative to the surface that the kit box is resting on, such as a ground or floor surface, can store more than one fuel tank as well as additional torch equipment and supplies, is rugged and not easily damaged, and provides a stable base for dragging and maneuvering the kit box along a surface regardless of whether the torch is in use.

SUMMARY OF THE INVENTION

[0005] One aspect of the present invention is directed to a portable kit box for torch equipment comprising a base defining a base surface for contacting and translating the kit box along a surface, such as a ground or floor surface, or any other surface that the kit box is able to rest on, a lid movable between an open position and a closed position relative to the base, a tank compartment for holding at least one tank, and a support surface for supporting the at least one tank. The kit box has a first position, wherein the at least one tank is supported at an acute angle relative to the surface when the kit box is in the first position. In one embodiment, the acute angle ranges from about 20° to about 60° relative to the surface and, in another embodiment, the acute angle is approximately 30° relative to the ground surface.

[0006] In another aspect of the invention, the kit box has a second position, wherein the at least one tank is supported approximately perpendicular to the surface when the kit box is in the second position, and a third position wherein the at least one tank is supported approximately horizontal to the surface when the kit box is in the third position.

[0007] In yet another aspect of the invention, the box is configured so that the lid is in the closed position when the kit box is in the first and second positions and the lid is in the open position when the kit box is in the third position; further, the base surface contacts the surface when the kit box is in the first and third positions.

[0008] In a further aspect of the invention, the lid defines the tank compartment such that the at least one tank stored in the tank compartment moves in unison with the lid, and the base defines the angled support surface, which supports the lid in the closed position.

[0009] In still another aspect of the invention, the kit box further comprises at least one internal compartment for holding additional objects, a pair of external cleats disposed on the lid, the base or any combination thereof for wrapping and storing a hose, a receptacle for receiving a torch, at least one securing member for securing the lid and the base, and a handle disposed on a portion of the kit box for toting the kit box and torch equipment disposed thereon.

[0010] In a further aspect of the invention the kit box further includes at least one tank of torch fuel, the at least one tank including a nozzle, a torch, a hose for connecting the torch to the tank nozzle, and at least one valve for controlling the flow of fuel between the at least one tank and the torch.

[0011] The portable kit box of present invention offers at least the following advantages: the kit box can store more than one tank and the tanks can be supported in multiple positions relative to the surface that the kit box is resting on in a stable manner, the kit box can store torch equipment and supplies in an organized fashion, the kit box is rugged and not easily damaged, and the kit box provides a stable base for dragging and maneuvering the kit box and torch equipment across a surface with little effort regardless of whether the torch is in use.

[0012] These and other features, aspects and advantages of the present invention will become better understood with reference to the following description, appended claims and accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] FIG. 1 is a side perspective view of a prior art torch kit with support stand;

[0014] FIG. 2 is perspective view of an embodiment of the portable kit box being carried by a user with the torch equipment in place;

[0015] FIG. 3 is a side perspective view of an embodiment of the portable kit box showing the lid partially opened;
FIG. 4 is a top view of an embodiment of the portable kit box in the first position with the base surface contacting the ground surface;  
FIG. 5 is a bottom view of an embodiment of the portable kit box;  
FIG. 6 is a side view of an embodiment of the portable kit box;  
FIG. 7 is a side view of an embodiment of the portable kit box in the first position with the handle removed showing a tank in the acute angle position;  
FIG. 8 is a front view of an embodiment of the portable kit box;  
FIG. 9 is a rear view of an embodiment of the portable kit box;  
FIG. 10 is a side perspective view of an embodiment of the portable kit box in the second (upright standing) position with base surface not contacting the ground surface and the torch equipment stored thereon;  
FIG. 11 is a top view of an embodiment of the portable kit box in the second position with base surface not contacting the ground surface and showing a hose wrapped around the hose cleats;  
FIG. 12 is a side perspective view of an embodiment of the portable kit box showing the lid partially opened and tanks supported thereon;  
FIG. 13 is a top view of an embodiment of the kit box showing the handle in an alternative position spanning the hose cleats; and  
FIG. 14 is a side view of an embodiment of the kit box showing the kit box in the first or drag position with the base surface resting on a surface and the torch/hose and kit box being pulled in the direction of the arrows.

DETAILED DESCRIPTION OF THE INVENTION

Referring to FIGS. 2-14, a portable kit box for torch equipment embodying the present invention is indicated generally by the reference numeral 10. The kit box 10 is typically made of polymer material, but could also be made of rubber, metal, composites, or any material or combination of materials suited for the intended purpose that are currently known or later become known. The kit box 10 comprises a base 20 and a lid 30 movable between an open position and a closed position relative to the base. In one embodiment, the lid 30 is rotatably coupled to the base 20 via at least one coupling member 42, such as a hinge, flexible membrane or any other means currently known or later becomes known for rotatably coupling the lid 30 to the base 30. The lid 30 defines a compartment 26 for holding at least one tank 50 of torch fuel in one embodiment shown in FIGS. 3 and 12. The compartment 26 is designed to hold two tanks, a primary in-use tank 51 and a secondary tank 53 that acts as a backup when the primary tank 51 becomes empty or fails to expel its contents. The at least one tank 50 typically stores liquid petroleum gas mixed with methy-lacetylene-propadiene, which is commercially available as MAP® gas (BOC Group, Inc.) or propane; however, the tanks can store other torch that are currently known or later become known. The tank compartment 26 can be a single piece receptacle-like member disposed upon or defined by the lid 30 (FIG. 3) or can comprise a separate support member 28 removably attached to the lid 30 (FIG. 12); in either embodiment, the at least one tank 50 is held firmly against the lid 30 so that the position of the at least one tank 50 relative to a surface 15 that the kit box 10 is resting on, for example, a ground or floor surface, directly coincides with the position of the lid 30 relative to the surface 15.

To position the at least one tank 50, the kit box 10 can rest on the surface 15 in at least three positions. In the first position (FIGS. 7 and 13), the kit box 10 is in a drag position and at least one tank 50 is supported at an acute angle α relative to the surface 15. In this (first) position, a base surface 32 of the base (described in further detail below) contacts the surface 15 and the lid 30 is in the closed position. The acute angle α ranges from about 20° to about 60° and, in one embodiment of the invention, the acute angle α is approximately 30° relative to ground surface to achieve optimum flow of torch fuel from the at least one tank 50 to an attached torch 80. In the second position (FIG. 11) the kit box 10 stands in an upright position and the at least one tank 50 is supported approximately perpendicular to the surface 15. In this (second) position, the base surface 32 is approximately perpendicular to the surface 15 and the lid 30 is in the closed position. In the third position (not shown), the at least one tank 50 is supported approximately horizontal to the surface 15. In this (third) position, the base 20 surface 32 contacts the surface 15 and the lid 30 is in the open position. Referring to FIG. 3, it should be noted that the lid 30 is rotatably movable in the direction of the arrow an angle β relative to the ground surface. The angle β ranges from about 30° to about 180°.

Drawing attention to FIGS. 5-6, the base 20 is shown in greater detail. The base 30 defines a base surface 32 on the outside for containing and translating the kit box 10 along the surface 15 when the kit box 10 is in the first and third positions. The base surface 32 comprises at least two runners 34 disposed thereon in the longitudinal direction and extending outwardly from the base surface 32. In an alternative embodiment, the runners 34 are formed integral to the base surface 32 as a single component. The runners 34 are typically made from a polymer material, such as nylon, but could be made from rubber, metal, wood, composites, or any material or combination of materials that are currently known or later become known for the purpose of allowing the kit box 10 to translate across the surface 15 when a force is applied by the user.

Referring now to FIG. 3, the base 20 further defines an angled support surface 36 for supporting the lid 30 in the closed position and the at least one tank 50 held thereon in the first position (acute angle position). Optiona, a storage compartment 38 is formed in the base 20 for storing torch equipment, supplies, and/or any other objects or accoutrements that the user wishes to store therein. To assist in supporting the at least one tank 50, an optional support member 46 is removably disposed within or integrated base 20 itself.

To further stabilize and support the at least one tank 50 in the first and second positions, and to allow a portion of a nozzle 54 of the at least one tank 50 to protrude from the kit box 10 when the lid 30 is in the closed position and the at least one tank 50 is in the first and second positions, the kit box 10 comprises at least one tank aperture 52 (FIGS. 2 and 8) defined by a portion of at least one of the lid 30, the base 20, or any combination thereof. In an alternative embodiment, the tank nozzles 54 do not protrude from the kit box; rather, the apertures are configured to allow a hose member 70 (described below) to pass through the kit box 10. The kit box 10 further comprises a handle 40 disposed...
thereon for toting the kit box 10 from location to location and at least one securing member 44, such as a latch or other device that is currently known or later becomes known that is capable of securing together the base 20 and the lid 30. The handle 40 can be integrated into or affixed to the base 20 (FIG. 12), the lid 30 (not shown) or any combination thereof. In one embodiment shown in FIG. 13, the handle 40 spans across a pair of hose cleats 72, 74, which are described in further detail below.

[0032] Drawing attention to FIG. 2, the kit box 10 is shown comprising torch equipment stored therewith. The torch equipment includes, but is not limited to, the at least one tank 50, at least one tank nozzle 54, at least one valve 90, a hose 70, a torch 80 and any other pieces of torch equipment that are currently known or later become known. To receive and store the hose 70, a pair of hose cleats 72, 74 are disposed on the lid as shown, for example in FIGS. 2 and 11, so that the hose can be neatly wrapped and stored thereupon. To receive and store the torch 80, a torch holster or receptacle 82 is disposed on the base 20, the lid 30 or any combination thereof. The torch receptacle 82 is designed to receive the torch 80 and torch tip 84, so that the torch tip 84 is protected from being damaged when not in use and also to protect the user from being burned by a potentially hot torch 80 and/or torch tip 84. The torch receptacle 84 is typically made of metal or any other material or blend of materials that are currently known or later become known that can withstand the heat from the torch and/or torch tip after use and thereby protect the user.

[0033] An illustrative example of how the kit box 10 of the present invention can be used is as follows. With the at least one tank 50 of torch fuel placed in the tank compartment 26 such that the tank nozzle 54 is positioned within the tank aperture 52, the torch 80 connected to the at least one tank 50 via the hose 70 and the at least one valve 90, the hose 70 wrapped around the hose cleats 72, 74, the torch 80 held in the torch receptacle 82, and the kit box 10 in the first (upright) position with the lid 30 in the closed position and secured to the base 20 (FIG. 19), the kit box 10 is placed in the first position so that the base surface 32 contacts the resting surface 15. The torch 80 is removed from the torch receptacle 82 and the hose 70 unwound from the cleats 72, 74. While resting on the base surface 32 and, in particular, on the runners 34 of the base surface 32, the kit box 10 is in the drag position (FIG. 14), wherein the lid 30 is resting on the angled support surface 36 of the base 20 and the at least one tank 50 is positioned at an approximately 30° angle relative to the resting surface 15. In the drag position (first position), the kit box 10 can be "dragged" and maneuvered along the surface 15 by tugging and/or pulling on the torch 80 and/or hose 70, without dislodging the at least one tank 50. This allows the user to move through a confined work space with the at least one tank 50 and torch equipment conveniently in tow.

[0034] As an alternative, the user can operate the torch 80 with the kit box 10 in the second position (standing upright position) with the lid 30 closed and secured to the base 20, and the at least one tank 50 positioned approximately perpendicular to the resting surface 15 (FIG. 3—torch 80 not shown). As a further alternative, the user can operate the kit box 10 in the third position (kit box 10 open) with the base surface 32 contacting the resting surface 15 and, in particular, contacting the runners 34 of the base surface 32, and the at least one tank 50 positioned approximately horizontal to the resting surface 15. In this position, the lid 30 is unlatched from the base 20 and in the open position so that the user can operate the torch 80 while simultaneously having convenient access to any torch accessories stored in the at least one storage compartment 38, such as flux, solder, brushes, and/or any non-torch-related items stored in the at least one storage compartment 38.

[0035] When the user has finished using the torch 80, the accessories and other items (if any) are placed in the at least one storage compartment 38 and the kit box 10 is closed and the lid 30 is secured to the base 30 via the at least one securing member 44. The hose 70 is then wrapped around the cleats 72, 74 for storage and the torch 80 is placed in the torch receptacle 82. With all the torch equipment, accessories and items conveniently stored in the kit box 10, the kit box 10 toed to the next job site/location by grasping the handle 40.

[0036] As may be recognized by those skilled in the pertinent art based on the teachings herein, numerous changes and modifications may be made to the above-described kit box and example of use without departing from the spirit and scope of the invention as defined in the appended claims. For example, the kit box 10 and its components may be made of any of numerous different materials that are currently known or later become known for performing the functions of the various components. The kit box 10 and components thereof, as well as the relevant torch equipment, may take any of numerous different configurations that are currently known or later become known for performing the functions of the different features described herein. Similarly, the kit box 10 and components thereof may take any of numerous different shapes that are currently or later become known. Further, the principles of the present invention are equally applicable to equipment other than torch equipment, and may be applied, for example, to any of numerous different types of equipment that require tanks of solids, liquids and/or gases during operation, such as, but not limited to, welding equipment, brazing equipment, soldering equipment, painting equipment, extermination and fumigation equipment and gardening equipment. Accordingly, this detailed description is to be taken in an illustrative, as opposed to a limiting sense.

What is claimed is:
1. A portable kit box for torch equipment comprising: a base defining a base surface for contacting and translating the kit box along a surface; a lid movable between an open position and a closed position relative to the base; a tank compartment for holding at least one tank; and a support surface for supporting the at least one tank, wherein the kit box has a first position, the at least one tank being supported at an acute angle relative to the surface when the kit box is in the first position.
2. A portable kit box as defined in claim 1, wherein the kit box has a second position, the at least one tank being supported approximately perpendicular to the surface when the kit box is in the second position.
3. A portable kit box as defined in claim 2, wherein the kit box has a third position, the at least one tank being supported approximately horizontal to the surface when the kit box is in the third position.
4. A portable kit box as defined in claim 1, wherein the acute angle ranges from about 20° to about 60° relative to the ground surface.
5. A portable kit box as defined in claim 4, wherein the acute angle is approximately 30° relative to the ground surface.

6. A portable kit box as defined in claim 1, wherein the lid defines the tank compartment.

7. A portable kit box as defined in claim 6, wherein the base defines the support surface, the support surface supporting the lid in the closed position.

8. A portable kit box as defined in claim 1, wherein the lid is in the closed position when the kit box is in the first and second positions, the lid is in the open position when the kit box is in the third position, and the base surface contacts the surface when the kit box is in the first and third positions.

9. A portable kit box as defined in claim 1, further comprising at least one internal compartment for holding additional objects.

10. A portable kit box as defined in claim 1, further comprising a pair of external cleats disposed on the lid, the base or any combination thereof for wrapping and storing a hose.

11. A portable kit box as defined in claim 1, further comprising a handle disposed on a the kit box.

12. A portable kit box as defined in claim 1, further comprising a receptacle for receiving a torch.

13. A portable kit box as defined in claim 1, further comprising at least one aperture for allowing a nozzle portion of the at least one tank to protrude from the kit box when the lid is in each of the open and closed positions, the at least one aperture defined by a portion of at least one of the lid and the base.

14. A portable kit box as defined in claim 1, further comprising at least one securing member for securing together the lid and the base.

15. A portable kit box as defined in claim 1, wherein the base surface further comprises at least two runners disposed thereon for aiding the base surface in translating across the surface.

16. A portable kit box as defined in claim 1, wherein the base portion is rotatably coupled to the lid portion.

17. A portable kit box for torch equipment comprising:
   a base defining a base surface for contacting and translating the kit box along a surface;
   a lid movable between an open position and a closed position relative to the base, the lid defining a compartment for holding at least one tank;
   an angled support surface defined by a portion of the base for supporting the lid in the closed position;
   at least one tank aperture for allowing a nozzle portion of the at least one tank to protrude from the kit box when the lid is in each of the open and closed positions, the at least one tank aperture defined by a portion of at least one of the lid and the base;
   a handle disposed on the kit box; and
   at least one securing member for securing the lid to the base,

18. A portable kit box as defined in claim 17, wherein the acute angle ranges from about 20° to about 60° relative to the ground surface.

19. A portable kit box as defined in claim 18, wherein the acute angle is approximately 30° relative to the ground surface.

20. A portable kit box as defined in claim 17, wherein the lid is in the closed position when the kit box is in the first and second positions, the lid is in the open position when the kit box is in the third position, and the base surface contacts the surface when the kit box is in the first and third positions.

21. A portable kit box as defined in claim 17, further comprising at least one internal compartment for holding additional objects.

22. A portable kit box as defined in claim 17, further comprising a pair of external cleats for wrapping and storing a hose, the cleats disposed on the lid, the base or any combination thereof.

23. A portable kit box as defined in claim 17, further comprising a receptacle for receiving a torch, the receptacle disposed on the lid, the base or any combination thereof.

24. A portable kit box as defined in claim 17, wherein the base surface further defines at least two runners for assisting the base surface in translating across the ground surface.

25. A portable kit box for torch equipment comprising:
   a base pivotally coupled to the lid and including first means for contacting and translating the kit box along a surface;
   a lid movable between an open position and a closed position relative to the base;
   second means for holding at least one tank within the lid;
   third means for supporting the lid in the closed position; and
   fourth means securing the lid in the closed position,

26. A portable kit box as defined in claim 25, wherein the first means comprise a base surface defined by a portion of the base, the base surface including at least two runners, the second means comprises a compartment defined by a portion of the lid and at least one holding member for holding the at least one tank in the compartment, the third means comprises an angled support surface defined by a portion of the base, and the fourth means is a mechanical latch member.

27. A portable kit box as defined in claim 25, wherein the kit box has a second position, the at least one tank being supported approximately perpendicular to the surface when the kit box is in the second position, and a third position, the at least one tank being supported approximately horizontal to the surface when the kit box is in the third position.

28. A portable kit box as defined in claim 25, wherein the acute angle is about 20° to about 60° relative to the ground surface.

29. A portable kit box as defined in claim 28, wherein the acute angle is approximately 30° relative to the ground surface.

30. A portable kit box as defined in claim 27, wherein the lid is in the closed position when the kit box is in the first and second positions, the lid is in the open position when the kit box is in the third position, and the base surface contacts the surface when the kit box is in the first and third positions.

31. A portable kit box for torch equipment comprising:
   at least one tank of torch fuel, the at least one tank including a nozzle;
a base defining a base surface for contacting and translating the kit box along a surface;
a lid movable between an open position and a closed position relative to the base;
a tank compartment for holding the at least one tank;
a support surface for supporting the at least one tank;
a torch;
a hose for connecting the torch to the tank nozzle;
at least one valve for controlling the flow of fuel between the at least one tank and the torch; and
at least one securing member for securing together the lid and the base,
wherein the kit box has a first position, the at least one tank being supported at an acute angle relative to the surface when the kit box is in the first position.

32. A portable kit box as defined in claim 31, wherein the kit box has a second position, the at least one tank being supported approximately perpendicular to the surface when the kit box is in the second position, and a third position, the at least one tank being supported approximately horizontal to the surface when the kit box is in the third position.

33. A portable kit box as defined in claim 31, further comprising:
at least one tank aperture for allowing the nozzle, hose, or any combination thereof, to protrude from the kit box when the lid is in each of the first and second positions,
the at least one aperture defined by a portion of at least one of the lid, the base, or any combination thereof;
a pair of external cleats disposed on the lid, the base or any combination thereof for wrapping and storing the hose;
a handle affixed to at least one of the lid, the base, the external cleats or any combination thereof;
a receptacle for receiving the torch; and
at least one internal compartment within the base for holding additional objects.

34. A portable kit box as defined in claim 31, wherein the acute angle ranges from about 20° to about 60° relative to the ground surface.

35. A portable kit box as defined in claim 30, wherein the acute angle is approximately 30° relative to the ground surface.

36. A portable kit box as defined in claim 32, wherein the lid is in the closed position when the kit box is in the first and second positions, the lid is in the open position when the kit box is in the third position, and the base surface contacts the surface when the kit box is in the first and third positions.

37. A portable kit box as defined in claim 31 wherein the base surface further defines at least two runners for aiding the base surface in translating across the ground surface.