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<table>
<thead>
<tr>
<th>(54) Titre : ABRI PORTATIF D'ENTREPOSAGE</th>
<th>(54) Title: PORTABLE STORAGE SHELTER</th>
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(57) Abrégé/Abstract:
A portable storage shelter storing, small vehicles and other items has a base, a support structure, and a shell. The base has a first and a second rail, and a first and second cross bar removably attached between said first and second rails. The support structure
(57) Abrégé(suite)/Abstract(continued):
comprises a plurality of vertical members slidably received within the rails. The vertical members are each contiguous with shell support means and a second one of said vertical members thereby forming a plurality of substantially U-shaped vertical support members. A means is provided for extendably securing each of the U-shaped support members to one another. Means are provided for attaching the shell to the support structure. U-shaped transitional members are slidably, pivotally attachable to the two rails of the base, thereby permitting the pivotal movement of the shell between an open vertically oriented position and a closed horizontal position.
ABSTRACT

A portable storage shelter storing, small vehicles and other items has a base, a support structure, and a shell. The base has a first and a second rail, and a first and second cross bar removably attached between said first and second rails. The support structure comprises a plurality of vertical members slidably received within the rails. The vertical members are each contiguous with shell support means and a second one of said vertical members thereby forming a plurality of substantially U-shaped vertical support members. A means is provided for extendably securing each of the U-shaped support members to one another. Means are provided for attaching the shell to the support structure. U-shaped transitional members are slidably, pivotally attachable to the two rails of the base, thereby permitting the pivotal movement of the shell between an open vertically oriented position and a closed horizontal position.
PORTABLE STORAGE SHELTER

FIELD OF THE INVENTION

The present invention relates generally to a portable storage shelter for containing, storing or protecting motorcycles and ATV’s, small vehicles and other items such as garden equipment, bicycles, lawn mowers, garden furniture, and wood piles.

BACKGROUND OF THE INVENTION

There is a need for portable storage shelters which can be used to store motorcycles and ATV’s, small vehicles and other items such as garden equipment, bicycles, lawn mowers, garden furniture, and wood piles. Conventional storage sheds are usually rigid structures that are built or assembled on site on permanent basis. They are not usually easily moved once assembled. They cannot be adjusted in size to accommodate their surroundings and contents to be stored. They typically have a door which allows access limited to one side of the shed. Alternatively items can be stored outside and wrapped with a cover such as a tarp or plastic sheet. This storage method does not necessarily prevent water leaking into the cover. Moreover if the item to be stored is a small vehicle or tools or equipment which have motors or engines that heat up when in use, the item cannot be stored immediately after use, but rather must be permitted to time to cool before being wrapped in a cover, in order to avoid burning the cover.

It is an object of the present invention to provide a portable shelter for storage that is easy to assembly, disassemble and relocate.
It is a further object of the present invention to provide a shelter which does not touch the items stored within, so as to avoid the need to wait for engines or exhaust systems to cool before storing the items.

It is an object of the present invention to allow the ease of access to the stored items from three open sides of the shelter.

It is yet another object of the present invention to provide a shelter which can be adjusted in size to accommodate a variety of stored items and to adjust to cramped spaces.

SUMMARY OF THE INVENTION

There is disclosed a storage shelter having an extendable support structure such that the storage shelter is adjustable in length.

The storage shelter comprises a base, a support structure attachable to said base, and a shell attachable to said support structure. The support structure comprises a plurality of support frames extendably secured to one another. Each support frame comprises a pair of vertical members and a shell support means contiguous therewith. A means is provided for extendably securing the vertical members to one another. The means for extendably securing comprises a scissor mechanism being attached to the vertical members. Pairs of the vertical members are contiguous with a respective shell support means forming the plurality of substantially U-support frames.

Each vertical member has an attachment means at a bottom end thereof. The attachment means on the vertical members each comprise a caster and further comprise an upright roller
bushing at a leading edge of the caster and an upright roller bushing at the trailing edge of the caster.

The base comprises a first and a second rail. A first cross bar may be removably attached between said first and second rails and a second cross bar may be removably attached between said first and second rails. A brace may be removably attached between the first and second rails. The support structure comprises a plurality of vertical members, each vertical member having an attachment means at a bottom end thereof, and a shell support means at the top end thereof. Each of the first and second rails is adapted to slidably receive a plurality of the attachment means of the vertical members.

The support structure further comprises a plurality of transitional members each having a shell support means, and two leg portions extending therefrom. The leg portions of the transitional members are slidably, pivotally attachable to the two rails of the base, thereby permitting the pivotal movement of the shell between an open vertically oriented position and a closed horizontal position.

Other advantages, features and characteristics of the present invention, as well as methods of operation and functions of the related elements of the structure, and the combination of parts and economies of manufacture, will become more apparent upon consideration of the following detailed description and the appended claims with reference to the accompanying drawings, the latter of which is briefly described hereinbelow.

20 **BRIEF DESCRIPTION OF THE DRAWINGS**

FIGURE 1 is a perspective view of a portable shelter according to the present invention,
shown in a full open position.

FIGURE 2 is a perspective view of a portable shelter according to the present invention, shown in a full closed position.

FIGURE 3 is a perspective view of a portable shelter according to the present invention, shown in a minimum closed position.

FIGURE 4 is a side view of the portable shelter.

FIGURE 5 is an end view of portable shelter.

FIGURE 6 is an exploded view of the support structure and base of the portable shelter.

FIGURE 7A is a longitudinal section through one rail of the base of the portable shelter and showing a partial view of one vertical member of the support structure.

FIGURE 7B is a cross section of the rail of 7A.

FIGURE 8 is a cross section through the rear of one rail of the base of the portable shelter and showing a partial view of one vertical member of the support structure in an alternate embodiment.

15 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIGURE 1-6 of the drawings the storage shelter having according to the
The present invention is shown generally by reference numeral 10. The storage shelter 10 has a base 12, a support structure 14 attachable to said base, and a shell 16 being removably attachable to said support structure 14. In FIGURE 2, the shell is shown partially cut away to reveal the support structure 14 inside.

As best seen in FIGURE 6, the base 12 comprises a first 18 and a second rail 20, and a first cross bar 22 removably attached between said first and second rails and a second cross bar 24 removably attached between said first and second rails. A brace 25 is removably attached between the first 18 and second 20 rails. Each of the rails 18 and 20 have attachment points for connection to the cross bars. If the storage shelter is to be used as a stand alone portable shelter, the cross bars 22,24 and the brace 25 remain connected to the rails 18, 20 to maximize the overall stability of the shelter. Alternatively, the rails 18, 20 can be bolted to a base. Holes are provided in each of the rails to facilitate bolting to a base such as a concrete pad, garage floor, plywood or other base (not shown). In such instance, the floor bars are not used.

The support structure 14 comprises a plurality of frame supports 32. Each frame support 32 comprises a pair of vertical members 26, each vertical member 26 having an attachment means 29 at a bottom end thereof, and a shell support means 28 at the top end thereof. As best seen in FIGURES 7A and 7B, each of the first 18 and second 20 rails is adapted to slidably receive a plurality of the attachment means 29 of the vertical members 26. In the preferred embodiment of the invention, the attachment means comprises a caster wheel 31 equipped with two upright roller bushings 33,35 at the leading and trailing edge, which act in conjunction with the slot 30 in either floor rails 18, 20 to steer the sliding mechanism. When the casters 31 are moved in a first direction (to close the shelter), the casters are steered by
the upright front leading bushing that protrudes from the rail slit. In the reverse direction (to open the shelter) the trailing bushing steers the caster.

The rearmost pair of vertical members 26 are screwed in a fixed position into a threaded bushing welded into the ends of the rails 18 and 20. The fixed position of the rear poles provides a stationary anchor from which the remaining plurality frame supports 32 extend carrying the shell.

In the preferred embodiment shown in FIGURE 6, the rails 18, 20 each have a slot 30 running longitudinally there through to receive the complimentary profile of the attachment means 29 on each vertical member 26. Each of the vertical members 26 is contiguous with the respective shell support means 28 and a second one of said vertical members 26 thereby forming a plurality of support frames 32. The support frames are shown as being substantially U-shaped, but may have other profiles. A means is provided for extendably securing each of the support frames to one another. Although a variety of means could be employed for extendably securing the vertical members of the support frames together, and are intended to fall within the scope of the present invention, the drawings show the use of a scissor mechanism 34 as the means for extendably securing. The length of the shelter 10 can be adjusted to correspond to the storage needs of the user. The vertical members 26, which are extendably secured to one another, can be selectively positioned at a full extension from one another, or closer together. By extending or compacting the vertical members 26 which are connected by the scissor mechanism 34, the length of the shelter can be adjusted.

The structural integrity of the shelter is dramatically increased by the scissor mechanism 34 having a cross member design. Sidewall protection is also provided by the side cross members. The portable shelter side and top frame protect items stored from dust, dirt, car
door dings or accidentals dents from things being carried past the storage shelter.

There are a two transitional members 36 each having a shell support means (not shown), and a plurality of leg portions 37 extending therefrom. It is preferred that the transitional members be substantially U-shaped as formed by the plurality of leg portions and a respective plurality of shell support means, though other profiles could be used without straying beyond the scope of the present invention. The leg portions 37 are best seen in FIGURE 6. The leg portions 37 are mounted to a carriage 39 so as to be slidably, pivotally attachable to the two rails of the base, thereby permitting the pivotal movement of the shell between an open vertically oriented position and a closed horizontal position.

The shell 16 of the storage shelter can be constructed of rigid or non-rigid materials. If adapted to use rigid materials, the shell could be constructed with rigid components that fold relative to one another accordion style and can be opened out to form the shell.

The shell 16 of the storage shelter is preferably constructed from a non-rigid material. Water-resistance, UV resistance and the ability to withstand fluctuations in temperature are desirable characteristics when selecting a material for the shell. All though the following list is not intended to be limiting, the shell 16 may be constructed from a material selected from the group comprising canvas, nylon, pvc, polyethylene film, woven synthetic fibre material such as that available under the trade-mark KEVLAR™, and nylon, polyethylene PVC backed canvas. The most preferable material for the shell is polyethylene PVC backed canvas. The shell may be equipped with side vents, to provide adequate air circulation to prevent build up of mold and mildew in the storage shelter.

In the preferred embodiment of the present invention, the shell is attached to the structure
by tabs of hook and loop fastener. Other attachment means could be used. For example, screws could be used to attached the shell to the verticle support members of the support structure. Alternatively, pockets could be formed on the inner surface of the shell and then the verticle support members looped through the pockets. The selection of appropriate attachment means should be made having regard to the material from which the shell is constructed.

In a further alternative embodiment, the shell could be suspended from and positioned inside the support structure.

The base 12 and support structure 14 of the storage shelter 10 are preferably constructed from a strong, rigid, lightweight material. The base and support structure could be constructed from a material selected from the group consisting of aluminum, steel, carbon fiber material, extruded plastic rail, and fiberglass rod. Heavy gage steel tubing represents a far greater overall strength when compared to aluminum construction of the same size, and is the preferred material for forming the base and support structure of the storage shelter. The rigidity of the frame allows it to withstand severe outdoor conditions.

In the embodiment shown, the storage shelter when fully extended reaches 11 feet in length offering huge interior capabilities. The shelter 10 can be closed before its full length travel to allow for minimal floor space requirements. Thus the size of any given storage shelter can be varied by a user to suit the particular storage needs and floor space. It is not intended to limit the present invention to a particular set of dimensions. The number of attachment means and vertical members can be selected based upon a determination of the desired length of the overall portable shelter, and the dimensions of the shell can be varied. Accordingly, the shelter can be manufactured with dimensions to suit the nature of the items
to be stored therein. It is anticipated that present invention could be adapted to store very long and very large items, in applications going far beyond what might be needed for small vehicles or lawn and garden equipment.

To operate the storage shelter, the first support frame (from either end) is lifted up from the ground high enough to clear the lock tabs, and evenly pushed back. The shell, being attached to the support frames 32, is also pushed back. The process is continued until the shell is fully extended. Two holding straps, one at each side of the opening, are provided, and can be clipped onto the last of the vertical members 26 and the last of the folding poles. The last folding poles are held fast, and the support frames are pulled evenly clearing the contents of the storage shelter. Just before reaching the end of the travel, "kick up" the folding pole to clear the lock tabs. The process is reversed to close the unit. The opening and closing of the shelter may be performed manually or performed mechanically by the use of motors or devices (electric, pneumatic, hydraulic etc) and could be remotely activated by use of a garage style remote control unit.

The storage shelter, when closing, blocks the unit in its fully closed position, preventing it from sliding back under tension, thus assuring a firm fit of the cover. The guide rail principle offers a more secure enclosure which can be bolted directly to any flat surface. The storage shelter in its closed position can be manually locked to ensure a secure enclosure. Left or right hand locking feature is standard on the unit, allowing the storage shelter the capability of being installed on a left or right wall, the back being upright tight against a rear wall or free standing in an open area.

The assembly of the storage shelter according to the present invention is simplified by the use of sub-assemblies comprising vertical members 26 and elements of the scissor
mechanism.

Optionally in an alternative embodiment, as seen in FIGURE 8, a rear assembly may be provided having a pair of removably insertable rear brackets 40. The insertable rear brackets 40 provide an anchoring function, but without the need to screw the rearmost pair of vertical members 26 in a fixed position into a threaded bushing welded into the ends of the rails 18 and 20. In this embodiment, the rear brackets 40 are attached to each corresponding rails 18, 20 by means of jam nuts 42 and a bolts 44. The rear brackets (and each of the plurality of attachment means 29 positioned forward thereof) are locked into the rails 18, 20. After the initial assembly of the storage shelter, a user can dismantle the storage shelter by simply loosening two jam nuts 42, removing two bolts 44 and kicking out the complete frame work and canvas cover from the rails as one unit. The shelter can then be transported as a support structure with attached shell and then reinserted into the rails at a new location.

It will be obvious to those skilled in the art that modifications of the storage shelter of the present invention may be adopted without departing from the spirit of the present invention. For example the shell could be formed from slidably engaged segments of rigid material such as fiberglass or plastic, instead of a non rigid material. Thus, changes may be made in the combination and arrangement of the various parts and elements, described herein without departing from the spirit and scope of this invention. It will be apparent that the scope of the present invention is limited only by the claims set out hereinbelow.
I claim:

1. A storage shelter having an extendable support structure such that the storage shelter is adjustable in length.

2. The storage shelter of claim 1 comprising a base, a support structure attachable to said base, and a shell attachable to said support structure.

3. The storage shelter of claim 2, wherein the support structure comprises a plurality of support frames extendably secured to one another.

4. The storage shelter of claim 3, wherein each support frame comprises a pair of vertical members and a shell support means contiguous therewith.

5. The storage shelter of claim 4 each vertical member having an attachment means at a bottom end thereof.

6. The storage shelter of claim 5, further comprising a means for extendably securing vertical members to one another.

7. The storage shelter of claim 6, wherein the means for extendably securing comprises a scissor mechanism being attached to the vertical members.
8. The storage shelter of claim 7 wherein the support frames are substantially U-shaped.

9. The storage shelter of claim 5, wherein the base comprises a first and a second rail.

10. The storage shelter of claim 9, wherein each of said first and second rails is adapted to slidably receive the plurality of the attachment means of the vertical members.

11. The storage shelter of claim 10, wherein each of the attachment means comprise a caster.

12. The storage shelter of claim 11, wherein the attachment means further comprise an upright roller bushing at a leading edge of the caster and an upright roller bushing at the trailing edge of the caster.

13. The storage shelter of claim 12, further comprising a two transitional members each having a shell support means, and a plurality of leg portions extending therefrom.

14. The storage shelter of claim 13, wherein the leg portions of the transitional members are slidably, pivotally attachable to the two rails of the base, thereby permitting the pivotal movement of the shell between an open vertically oriented
open position and a closed horizontal position.

15. The storage shelter of claim 14, wherein the base further comprises a first cross bar removably attached between said first and second rails and a second cross bar removably attached between said first and second rails.

16. The storage shelter of claim 14, wherein said base further comprises a brace removably attached between said first and second rails.

17. The storage shelter of claim 2, wherein the shell is constructed from a rigid material.

18. The storage shelter of claim 2, wherein the shell is constructed from a non-rigid material.

19. The storage shelter of claim 15, wherein the shell is constructed from a material selected from the group consisting of canvas, nylon, pvc, polyethylene film, synthetic fibre material, and nylon PVC backed canvas.

20. The storage shelter of claim 2, wherein the base is constructed from a material selected from group consisting of aluminum, and steel, carbon fiber material, extruded plastic rail, and fiber glass rod.

21. The storage shelter of claim 2, wherein the support structure is constructed from a
material selected from the group consisting of aluminum, and steel, carbon fiber material, extruded plastic rail, and fiberglass rod.

22. The storage shelter of claim 14 further comprising a rear assembly having a pair of rear brackets removably insertable into and attachable to the rails.