

A CONTAINER FOR FRAMEWORK ELEMENTS

PRIORITY DOCUMENTS

[0001] The present application claims priority from Australian Provisional Patent Application No 2014900722 titled "A STILLAGE FOR FRAMEWORK ELEMENTS" filed on 4 March 2014, the content of which is hereby incorporated by reference in its entirety.

INCORPORATION BY REFERENCE

[0002] The following co-pending patent application is referred to in the following description: PCT/AU2013/000855 titled "FORMWORK SUPPORT ELEMENT" and filed on 2 August 2013 claiming priority from Australian Provisional Patent Application No 2012903312.

[0003] The content of this application is hereby incorporated by reference in its entirety.

TECHNICAL FIELD

[0004] The present invention relates to a container assembly. In a particular form the present invention relates to a container assembly for concrete formwork and/or elements of shoring or scaffolding system for supporting such formwork.

BACKGROUND

[0005] During the construction of buildings, formwork is used in concrete construction to provide a mould or a surface onto which wet concrete can be poured for forming features such as floor slabs and beams for example. In the case of floor slabs, it is common for floors of a multi-story building to be formed sequentially and for formwork to be set out on a preceding floor in order to form the subsequent higher floor.

[0006] Generally, a shoring or scaffolding system is used to support elevated forms comprising either lost (i.e. not reusable) formwork or a formwork that can be removed from the concrete slab once the concrete is set. Reusable formwork may comprise aluminium formwork pans which are held at the top of the scaffolding. In addition, sheets or boards may also be used at the top of the framework.

[0007] The process of assembling the shoring scaffold system, and the formwork in turn, first requires that the numerous necessary elements (or parts) be raised to the elevated level at which these

are required. This is typically done using pallets. Pallets are moved one at a time using a forklift or pallet jack, and the unloaded pallets present a problem, as they must be moved and stored until required.

[0008] It is against this background and the problems and difficulties associated therewith that the present invention has been developed.

[0009] Certain objects and advantages of the present invention will become apparent from the following description, taken in connection with the accompanying drawings, wherein, by way of illustration and example, an embodiment of the present invention is disclosed.

SUMMARY

[0010] According to a first aspect, there is provided a container for scaffold parts, the container comprising a base which is substantially rectilinear in planform and has four corners; and a mounting point at or near each of the corners for engaging each of a plurality of upright parts (or props) of the scaffold assembly, each mounting point cooperatively located to match a planform of the upright parts of the scaffold assembly, wherein each mounting point comprises a through aperture configured such that: a) a lower end of a corresponding upright part of the scaffold assembly is received through from above the container, and extends to a floor or ground surface on which the container is also supported, to store the container within the footprint of the scaffold assembly without bearing the load of the scaffold assembly, or b) an upper end of each upright of the scaffold assembly is received through from below the container, the container forming a platform supported by the upright parts, and when the upright parts of the scaffold assembly are not engaged with the mounting points, the container is adapted to carry the upright parts.

[0011] It will be apparent from the above that the base is configured to cooperate with the supporting scaffold structure.

[0012] In one form, the container further comprises a plurality of wheels depending from the base, and on which the container can roll.

[0013] In one form, the container further comprises coupling means via which a train of container's can be formed.

[0014] In one form, the base is adapted to receive a pair of forklift tines.

[0015] In one form, the container further comprises at least one lifting point via which the container can be craned.

[0016] In one form, the container further comprises a means for securing the framework elements with respect to the base.

[0017] In one form, the container further comprises side walls mounted along a pair of sides of the base, and end walls mounted along a pair of ends of the base.

[0018] In one form, the container further comprises a cross brace, wherein in use, the cross brace releasably bridges the side walls.

[0019] In one form, the side walls comprise cut out sections for providing access to the base, and means for connecting scaffold cross members.

[0020] In one form, the end walls comprise hinged top sections.

[0021] In one form, the container further comprises means for stacking the container with at least one like container when not in use.

[0022] According to a further aspect, there is provided a container for formwork support parts, the container comprising at least one mounting point for at least a part of the formwork support, wherein in use, when the part is in its in use position, at least a portion of the part is engage able with the mount.

[0023] For the purpose of this specification, the term 'framework element' should be construed as comprising any one or more of concrete formwork elements, and/or elements of scaffolding structure for supporting such formwork.

[0024] In one form, the supporting scaffold structure comprises a plurality of uprights, and the base is located via the mounting points upon the plurality of uprights.

[0025] In one form, the supporting scaffold structure comprises a plurality of uprights, and the base is located via the mounting points under the plurality of uprights.

[0026] In one form, the supporting scaffold structure comprises a plurality of uprights, and the base is located via the mounting points along the plurality of uprights.

[0027] In one form, in an alternative, the supporting scaffold structure comprises a plurality of cross-members, and the base is located via the mounting points on the cross-members.

[0028] In one form, the supporting scaffold structure is substantially rectilinear in planform and so comprises an upright at or near each of the corners.

[0029] In one form, the base is substantially rectilinear in planform and so comprises four corners, along with a mounting point located at or near each of the corners.

[0030] In one form, the mounting points are female mounts. That is to say, they are or have a recessed part into which a corresponding part of the scaffold fits.

[0031] In one form, in an alternative, the mounting points are male mounts. That is to say, they are or have a part which is made to fit into a corresponding open or recessed part of the scaffold.

[0032] In one form, the base comprises a pair of spaced apart channels for receiving forklift tines.

[0033] In one form, the base comprises a pallet frame.

[0034] In one form, the side and end panels are secured to the base using fasteners such as bolts.

[0035] In one form, in an alternative, the side and end panels are welded to the base.

[0036] In one form, the side and end panels are secured to each other using fasteners such as bolts.

[0037] In one form, in an alternative, the side and end panels are welded to each other.

[0038] In one form, the stacking means comprises a support flange located at the top of each side panel, the flange comprising a vertical member and a horizontal member. The flange is configured such that its horizontal member supports the container assembly on top, and the vertical member locates the stacked container assembly by restricting movement in a horizontal direction.

[0039] According to a further aspect, there is provided a container for scaffold parts, the container comprising at least one mounting point for at least a part of the scaffold, wherein in use, the container is adapted to carry scaffold parts, or serve as a platform for the scaffold, and when not in use, the container is adapted to be or be stored within the footprint of the scaffold.

[0040] A detailed description of one or more embodiments of the invention is provided below along with accompanying figures and photographs that illustrate by way of example the principals of the invention. While the invention is described in connection with such embodiments, it should be understood that the invention is not limited to any particular embodiment. On the contrary, the scope of the invention is limited only by the appended claims and the invention encompasses numerous alternatives, modifications and equivalents. For the purpose of example, numerous specific details are set forth in the following description in order to provide a thorough understanding of the present invention.

[0041] The present invention may be practiced according to the claim without some or all of the specific details. For the purpose of clarity, technical material is known in technical fields related to the invention has not been described in detail so that the present invention is not unnecessarily obscured.

BRIEF DESCRIPTION OF DRAWINGS

[0042] Embodiments of the present invention will be discussed with reference to the accompanying drawings wherein:

[0043] Figure 1 is a plan view of a container according to a first embodiment of the invention;

[0044] Figure 2 is a side view of the container of Figure 1;

[0045] Figure 3 is an end view of the container of Figures 1 and 2;

[0046] Figure 4 is a detail view of a mounting point for the container of Figures 1 through 3;

[0047] Figure 5 is a plan view of a container according to a further embodiment of the invention;

[0048] Figure 6 is a side view of the container of Figure 5;

[0049] Figure 7 is an end view of the container of Figures 5 and 6; and

[0050] Figures 8 through 10 are schematic illustrations showing a container in use with a scaffold assembly.

[0051] In the following description, like reference characters designate like or corresponding parts throughout the figures.

DESCRIPTION OF EMBODIMENTS

[0052] Referring now to Figure 1, where there is shown a container assembly 1 for concrete formwork and/or elements of shoring or scaffolding system for supporting such formwork. The container assembly 1 comprises a base for supporting a plurality of framework elements, the base comprising a frame 1A having a pallet like configuration. The frame 1A comprises frame side members 4, connected by frame end members 16 that extend the width of the frame 1A from or near the ends of the frame side members 4. The frame 1A is substantially rectilinear in plan form and comprise four corners. To reinforce the frame 1A, the frame side members 4 are further connected by cross-members 3, extending the width of the frame 1A and between and substantially parallel to the frame end members 16. Each of the frame side members 4, frame end members 16 and cross-members 3 are welded steel tubing, but the base may be of any suitable construction, such as moulded plastic or pressed steel plate, and it may be fixed together by suitable means (e.g. bolts, spot welds, adhesives etc).

[0053] The frame 1A further comprises gussets 10 to brace the connection between the frame side members 4 and the frame end members 16, and provide rigidity to the frame 1A during uneven or unbalanced loading and lifting.

[0054] Referring now to Figures 2 and 3, where there are shown side and end views, respectively, of the container of Figure 1, where it can be seen that the container assembly 1 further comprises wheels 14, which are removably connected to the bottom of the frame 1A via suitable means, to allow easy replacement if broken. The wheels 14 may be castor wheels which swivel to allow the container assembly 1 to roll in any direction. Alternatively, two or more of the wheels may not need to swivel. The wheels 14 provide a means for the container 1 to roll so it can be easily moved when carrying a load of framework elements.

[0055] The container assembly 1 further comprises coupling means comprising drawbars 9, a pair of which extend from each of the frame end members 16 and may be used to connect multiple containers 1 to form a train of containers 1. Each drawbar 9 comprises an elongate flat steel bar (but may be of any suitable construction) comprising a pivotal connection (such as by a bolt or pin) with the end frame member 16 to allow movement of the coupling means 9 relative to the end frame member 16 to assist in cornering when multiple containers are connected into a train. Each drawbar 9 is of a length suitable to reduce contact between the corners of connected containers during normal cornering, and a pivotal connection at one end of each drawbar 9 is also slotted to assist turning.

[0056] The container assembly 1 further comprises lifting points 5 and 7 via which the container 1 can be crane lifted. The lifting points 5 and 7 are designed to engage a lifting means. In one embodiment, lifting points 5 and 7 comprise steel plates, each with a slotted aperture for engagement by a crane hook or similar. Alternatively, the lifting points 5 and 7 may be of any suitable construction and are removably fixed to the side frame members 4 by bolts or any other suitable means. The lifting points 5 and 7 extend above the upper surface of the frame 1A, thereby further providing a guide to help retain and prevent lateral movement of the at least a first framework element when stacked upon the frame 1A.

[0057] The container assembly 1 further comprises a load retaining means 8, which comprises a pair of spaced apart ratchet strap arrangements depending from one side rail 4 for use in securing a load of framework elements with respect to the frame 1A, for example. In use, each strap is extended over the load and removably secured to a U bar (or D-shackle) 6, whereupon the strap may be tightened and the load secured. Alternatively, the retaining means may be any suitable mechanism adapted to secure a load of framework elements with respect to the frame 1A.

[0058] Container assembly 1 further comprises spaced apart channels 2, which extend between the frame side members 4 to provide support and a means for a forklift to lift the container 1. Each channel 2 is a length of rectangular hollow section able to accommodate a forklift tine. Alternatively, the channel 2 may comprise a U shaped section able to span a forklift tine.

[0059] The container assembly 1 further comprises a plurality of (four in this case) mounting points 18, one each located at or near each of the corners of the base. A detail view of a mounting point 18 for the container of Figure 1 is shown in figure 4. In one form, the mounting points 18 are female mounts, comprising a through aperture into which a corresponding part (an upright or prop in this case) of the scaffold fits. The female mounts may further comprise a collar 22 that extends beneath and around the lower edge of the recessed part, which strengthens the recessed part and provides further guidance for the corresponding male part. In one possible alternative, the inside of the recessed part may further comprise a chamfered lower edge, which helps guide the corresponding male part into the recess. The recessed part may comprise a through hole or a blind hole. In the case of a through hole, the male part of the scaffold comprises a shaft with a shoulder at the base, adapted to abut the collar 22 to prevent the shaft sliding further into the recess. In the case of a blind hole, the male part may comprise a shaft with an end adapted to abut the closed end of the blind hole. In one possible alternative, the shaft is tapered from base to tip or only near the tip, to assist in locating the shaft within the recessed part. Alternatively, the recessed part and shaft may both be tapered to provide a

matching tapered shaft and bore of the recess, whereby the matching tapers may prevent the shaft sliding further into the recess.

[0060] Alternatively, the mounting points of frame 1A are male mounts (not illustrated), comprising a part which is made to fit into a corresponding open or recessed part of the scaffold. The male mounts may be of the types described above, which includes in the case of a through hole, a shaft with a shoulder at the base, adapted to abut the collar 22 to prevent the shaft sliding further into the recess. In the case of a blind hole, the male part may comprise a shaft with an end adapted to abut the closed end of the blind hole. In one possible form, the shaft is tapered from base to tip or only near the tip, to assist in locating the shaft within the recessed part. Alternatively, the recessed part and shaft may both be tapered to provide a matching tapered shaft and bore of the recess, whereby the matching tapers would prevent the shaft sliding further into the recess. The corresponding open or recessed part of the scaffold may be of construction equivalent to the above described female mounts.

[0061] In use, container 1 provides a safe and effective means of moving framework elements around large building sites. Container 1 may be loaded with framework elements at ground level, at the level upon which the scaffold structure is situated or at a remote location. To increase safety when the container 1 is being moved, the framework elements may be secured via the retaining means 8, comprising the reel with a ratchet mechanism, wherein the strap extends over the load and is secured to the U bar 6, whereupon the strap may be tightened and the load secured. This will help prevent the load shifting or falling from the container 1 when it is moved. The container 1 may be moved to the area that the framework elements are required through towing via coupling means 9, either as a single container or connected together into a train of containers. The container 1 may be lifted by a forklift via the channels 2 or by a crane via the lifting points 5 and 7. In either of these ways, the container 1 can then be raised to the active work level, being the top of the supporting scaffold structure.

[0062] The supporting scaffold structure is substantially rectilinear in planform and so comprises an upright at or near each of the corners. Once located via the mounting points 18 upon the supporting scaffold structure, the container 1 is securely held in position and prevented from shifting laterally or tipping. The retaining means 8 can then be disengaged from the U bar 6 and the framework element may be safely unloaded by workers at the active work level. When unloaded, the container 1 may be lifted by a forklift via channels 2 or lifted by a crane via lifting points 5 and 7, and returned to the lower or ground level for reloading.

[0063] It will be apparent from the above description that the container 1 provides a safe and effective means of transporting framework elements from the ground, lower level or remote location on a large

building site, to the active work level atop a supporting scaffold structure, whereupon workers can easily access the framework elements.

[0064] Referring now to Figures 5 through 7, where there is illustrated a container assembly 100 according to a further embodiment of the present invention. Those parts of the container assembly 100 which are identical (or near- identical) to corresponding parts shown in the container assembly 1 of Figures 1 through 4, will be denoted by the same reference numerals and will not be described again in detail.

[0065] The container 1 further comprises a plurality of mounting points 112 for locating the frame 1A within a scaffold (or like) structure. The frame 1A is configured to be able to locate within the scaffold structure either at ground level or at an elevated level.

[0066] The container 100 further comprises side walls 113 and end walls 117 that are installed above the frame side members 4 and frame end members 5 respectively. The side walls 113 and end walls 117 serving the purpose of retaining scaffolding frame members whilst the container 1 is being moved. The side walls 113 as shown in Figure 6, are constructed from a frame work 114 of welded steel tube and also comprise infill panels 115, in this instance the infill panels 115 comprising wire mesh, but in other embodiments could include but not be limited to steel plate or moulded plastic. The side walls 113 further feature cut outs 116 in the top of the frame work 114, wherein in use, allows workers improved access to reach scaffolding equipment located on the base 2 of the container 1. Further, when the scaffolding frame work is constructed, scaffold structure cross members are able to pass through these cut outs 116 to connect with the adjoining scaffold frame work.

[0067] The end walls 117 as shown in Figure 7 are similarly constructed from a framework 118 of welded steel tube and comprise infill panels 119, in this instance the infill panels 119 comprising steel plate, but in other embodiments could include but not be limited to wire mesh or moulded plastic. The end walls 117 also comprise a top hinged panel 120, shown in its closed position in Figure 7 and in a partially open position in Figure 6. In its closed position the top hinged panel 120 is held closed by retaining pins 121 located on the side wall frame work 114. The top hinged panel 120 folds down to its open position, allowing workers improved access to reach scaffolding equipment located on the base 2 of the container 100. Further, when the scaffolding frame work is constructed, scaffold structure cross members are able to pass through the opened section to connect with the adjoining scaffold frame work.

[0068] Referring now to Figure 7, there is shown a removable cross brace member 123 that is used when the container 100 is being lifted by crane using lifting straps located through the lifting points 10. The cross brace member 123 is placed in position between the top of the side walls 113, and prevents the side walls 113 collapsing when the container 100 is lifted, and lifting straps exert force on the side walls 113.

[0069] Referring to Figures 2 and 3, there are support flanges 124 located at the top of each of the side walls 113 for the purpose of enabling stacking of one or more containers 100 to occur. The support flange 124 is configured such that its horizontal component supports the container 100 stacked on top, with the fork lift channels 11 resting upon it. The vertical component locates the stacked container 100, by sitting between the two fork lift channels 11 and on the inside of the frame side members 4 of the container 100 above, to prevent lengthwise and sideways movement of the stacked containers 100 occurring.

[0070] In use, container 100 provides a safe and effective means of moving framework elements around large building sites. Container 100 may be loaded with framework elements at ground level, at the level upon which the scaffold structure is situated or at a remote location. The side walls 113 and end walls 117 will help prevent the load shifting or falling from the container 100 when it is moved. The container 100 may be moved to the area that the framework elements are required through towing via coupling means 9, either as a single container 100 or connected together into a train of containers 100. The container 100 may be lifted by a forklift via the channels 11 or by a crane via the lifting points 10. If lifted by crane, the cross brace member 123 is placed between the two side walls 113 to prevent them collapsing. In either of these ways, the container 100 can then be raised to the active work level, being the top of the supporting scaffold structure.

[0071] Referring now to Figures 8 through 10, where there is illustrated a shoring or scaffolding system 200 of the type illustrated and discussed in PCT/AU2013/000855, and which comprises a substantially rectilinear planform, and an upright or prop 202 at or near each of the corners thereof.

[0072] When the container assembly 100 (or container assembly 1) is to be located (or stored) at ground level as illustrated in Figure 8, a lower end 204 of each upright 202 of the scaffold assembly 200 is received through a mounting point 112 from above the container assembly 100, and extends to a floor or ground surface on which the container assembly 100 is also supported. Referring now to Figure 9, a second and subsequent scaffold assemblies 200 can be stacked atop of the lowermost scaffold assembly 200. In this way, the container assembly 100 can be stored within the footprint of the scaffold assembly 200 without bearing the load of the scaffold assemblies.

[0073] Referring now to Figure 10, where an upper end 206 of each upright 202 of the scaffold assembly 200 is received through a mounting point 112 from below the container assembly 100.

[0074] Once located via the mounting points 112 upon the supporting scaffold system 200, the container 100 is securely held in position and prevented from shifting laterally or tipping. The cross bracing member 123 can then be removed and the top hinging panels 120 can then be unlocked and folded down to improve access. When unloaded, the container 100 may either be left in place to form part of the scaffold structure, and covered with plywood to form a platform. or be lifted by a forklift via channels 11 or lifted by a crane via lifting points 10, and returned to the lower or ground level for reloading.

[0075] It will be apparent from the above description that the container 1 provides a safe and effective means of transporting framework elements from the ground, lower level or remote location on a large building site, to the active work level atop a supporting scaffold structure, whereupon workers can easily access the framework elements.

[0076] Throughout the specification and the claims that follow, unless the context requires otherwise, the words “comprise” and “include” and variations such as “comprising” and “including” 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.

[0077] The reference to any prior art in this specification is not, and should not be taken as, an acknowledgement of any form of suggestion that such prior art forms part of the common general knowledge.

[0078] It will be appreciated by those skilled in the art that the invention is not restricted in its use to the particular application described. Neither is the present invention restricted in its preferred embodiment with regard to the particular elements and/or features described or depicted herein. It will be appreciated that the invention is not limited to the embodiment or embodiments disclosed, but is capable of numerous rearrangements, modifications and substitutions without departing from the scope of the invention as set forth and defined by the following claims.

CLAIMS

1. A container for parts of a scaffold assembly, the container comprising:
a base which is substantially rectilinear in planform and has four corners;
a plurality of wheels depending from the base, such that the container can roll on, and is supported by a floor or ground surface; and
a mounting point at or near each of the corners, each mounting point comprising an aperture adapted to receive a lower end of a respective scaffold assembly upright from above the container, each upright extending through the base to the floor or ground surface on which the container is also supported, such that a load on the scaffold assembly is not borne by the container.
2. The container of claim 1, further comprising coupling via which a train of containers can be formed.
3. The container of claim 1, wherein the base is adapted to receive a pair of forklift tines.
4. The container of claim 1, further comprising at least one lifting point via which the container can be craned.
5. The container of claim 1, further comprising a pair of spaced apart ratchet strap arrangements for securing the uprights with respect to the base.
6. The container of claim 1, further comprising side walls mounted along a pair of sides of the base, and end walls mounted along a pair of ends of the base.
7. The container of claim 6, further comprising a cross brace, for releasably bridging the side walls.
8. The container of claim 6, wherein the side walls comprise cut out sections for providing access to the base, and for scaffold cross members.
9. The container of claim 6, wherein the end walls comprise hinged top sections.
10. The container of claim 1, wherein the container comprises a first container and at least one second container substantially similar to the first container, and further comprises a support flange for stacking the container with the at least one second container when not in use.
11. The container of claim 1, wherein the base comprises a frame having a width and a length, the frame comprising side members connected by frame end members that extend the width of the frame, wherein the apertures extend through the frame.
12. The container of claim 11, wherein the apertures extend through the frame end members.

13. The container of claim 1, wherein each mounting point further comprises a collar that extends beneath and around the aperture.

14. A container for parts of a formwork shoring system, the container comprising:
a base which is substantially rectilinear in planform and has four corners;
a plurality of wheels depending from the base, such that the container can roll on, and is supported by a floor or ground surface; and
a mounting point at or near each of the corners, each mounting point having an aperture adapted to receive a lower end of a respective scaffold assembly upright from above the container, each upright extending through the base to the floor or ground surface on which the container is also supported, such that a load on the formwork shoring system is not borne by the container.

15. A scaffold assembly, comprising:
a scaffold having a substantially rectilinear planform having four corners and a scaffold upright at or near each of the corners of the scaffold; and
a container, comprising:
a base which is substantially rectilinear in planform and has four corners;
a plurality of wheels depending from the base, such that the container can roll, and is supported by a floor or ground surface; and
a mounting point at or near each of the corners of the base, each mounting point comprising an aperture,
wherein a lower end of a respective scaffold upright extends through each of the apertures to the floor or ground surface on which the container is also supported, such that a load on the scaffold is not borne by the container.