The present invention is a combination metal cage supporting a cargo to be shipped within the metal cage. The metal cage provides a pallet platform and integral thereto, plural walls extending upwardly from the pallet platform. These walls define an open top of the metal cage. One of the plural walls is hingably mounted as a door. The cargo is comprised of a plurality of individual cartons, each of which has a length to width ratio of at least 10, i.e., the length of the carton is at least ten times the magnitude of the width of the carton. Preferably, the cartons are identical and are positioned in a vertical attitude within the metal cage in an adjacent, side-by-side manner. Preferably, one end of each of the cartons rests on the pallet platform while the opposing end of each of the cartons extends above the open top of the metal cage. The cage employs a loading rod for packing the cargo as it is loaded and a tilt mechanism to position the cage for gravity assist in loading.
SHIPPING CAGE AND VERTICAL CARGO

BACKGROUND OF THE INVENTION

[0001] 1. FIELD OF THE INVENTION

[0002] This invention relates generally to shipping containers and more particularly to a shipping container formed as a cage and a combination of such cage and items of particular size and shape for being shipped within the cage. The field of this invention also pertains to methods of packing and using such shipping container cages.

[0003] 2. DESCRIPTION OF RELATED ART

[0004] The following art defines the present state of this field:

[0005] Cheval et al., U.S. Des. 297,619 describes a combined container and pallet design.

[0006] Sjoblom, U.S. Pat. No. 2,975,929 describes a vertical end section adapted to be removably secured to an end edge of a rectangular load pallet having a horizontal load-supporting surface supported by rectangular skirting blocks arranged at the corners of said load-supporting surface, said vertical end section comprising two coplanar vertical shank portions connected together at their upper ends and separable at their lower ends for coplanar movement relative to each other, a pallet gripping member secured to the lower portion of each of said vertical shank portions, each of said gripping members having a horizontal portion adapted to contiguously engage the upper surface of the pallet load supporting surface, a first vertical portion parallel to the pallet end edge and adapted to contiguously engage the corresponding outer end surface of the associated pallet corner skirting block, a second vertical portion at right angles to said first vertical portion and adapted to contiguously engage the corresponding outer end surface of said associated corner skirting block, and third vertical portion extending parallel to said first vertical portion and adapted to contiguously engage the face of said corner skirting block which is opposite the end surface engaged by said first vertical portion, the lower ends of said vertical shank portions being normally maintained adjacent each other.

[0007] Dane, U.S. Pat. No. 3,101,128 describes a platform for mounting on the lifting forks of a fork lift, said platform having a flat base, means on the underside of the base forming a pair of parallel elements for receiving the tines of the lifting forks, said elements projecting beyond an edge of the base and each element having a portion adapted to lie behind the heel of a tine to prevent fortuitous disengagement of the platform from the tines, support means projecting downwardly from the base to support the platform with the base inclined at a substantial angle to a supporting surface, said inclination of the base being sufficient, and said portions being long enough to permit entrance and withdrawal of the tines from the elements when the portion of the base above the free ends of the tines is raised substantially above the tines to tilt the base, the platform having a railing about its periphery and a section of the railing adjacent the time-entering side of the base being swingable inwardly above the platform.

[0008] Legg et al., U.S. Pat. No. 3,861,554 describes a cage-like structure which is intended to be removably mounted on a storage pallet to constitute a container for goods on the pallet. The structure includes a gripping foot bracket assembly at each of its lower corners. The gripping foot bracket comprises a pair of interrelated sections, one of the sections being slidably mounted to the adjacent side of the structure, so as to be drawn into a tight gripping relationship with the edge of the pallet when the sides are moved down toward the plane of the load supporting surface of the pallet. The structure also includes a hinged end panel and a movable locking strip of a unique construction for holding the panel in a closed condition. The sides of the structure are intercoupled by unique locking brackets which permit each panel to be rigidly coupled to the adjacent panels, and yet to be easily separated from the adjacent panels when the structure is removed from the pallet.

[0009] Weaver, U.S. Pat. No. 4,290,730 describes an attachment for a fork lift truck for opening and closing sliding doors such as railway freight car doors. The attachment includes a floor that can be engaged by the tines of the fork lift and two vertically spaced apart door engaging members mounted to the floor for transverse movement with respect thereto. The floor also mounts an upstanding cage assembly so that a person can work inside a protected area.

[0010] Keenan et al., U.S. Pat. No. 4,735,331 describes a collapsible bin construction having an erected configuration and a storage configuration. The bin has four side walls which are arranged at different vertical levels so that when they are collapsed, they are vertically spaced apart to permit them to lie in a relatively flat position. Side wall access opening means are provided to permit loading or unloading of the bin via the side walls. Additionally, a top wall is provided which is hingedly mounted to permit loading or unloading of the bin from the top.

[0011] Schutz, U.S. Pat. No. 5,366,090 describes a pallet container for transport and storage of liquids comprising a collapsible outer jacket of a metal latticework, detachably mounted on a pallet, and a foldable supporting insert for the thin-walled plastic inner container, this insert being in contact with the outer jacket. The plastic inner container consists of a rigid, dimensionally stable bottom section and a flexible top section that can be inverted into the bottom section for stacking and shipping purposes. The pallet container can be readily and quickly disassembled for empty shipping purposes and can be assembled into a space-saving transport unit. Without the plastic inner container, the pallet container can be utilized for the shipping and storage of piece goods and semifinished products of various kinds.

[0012] Przytulla et al., U.S. Pat. No. 5,501,334 describes a pallet container for storage and transport of liquid contents with a thin-walled inner container of thermoplastic material, with a support jacket of wire cage bars or pipe bars which tightly enclose the inner container and with a bottom pallet suitable for application with a forklift and bidirectionally secured to the liquid supporting jacket, wherein the inner container is provided in the top plate of the liquid supporting jacket, covered from above by a cover plate which includes a central opening for access to the top and a discharge valve near the bottom. In order to improve the stacking capability and to increase the stackability, the top plate of the inner container is covered from above by a cover plate which includes a central opening for access to the upper charging opening and a discharge valve near the bottom. The upper edge of the support jacket is formed by the uppermost circumferential cage bar or pipe bar which is covered from above in
horizontal or radial direction by the cover plate and from outside in vertical or axial direction by a subsequently arranged flange rim which projects downwardly essentially at a right angle from the cover plate.

[0013] Hermann et al., U.S. Pat. No. 5,704,477 describes a storage/transport container having a rigid and floor-forming pallet having a generally rectangular outer edge having four sides, an annular and erect outer wall in the form of a gridwork of metal rods defining a plurality of generally flat side panels extending upward from the sides of the edges, meeting at corners, and each formed of a set of horizontal metal rods and a set of vertical metal rods, and an inner vessel composed of flexible plastic material enclosed by the outer wall and supported on the pallet. The gridworks are attached to the pallet generally at the respective sides thereof. The rods of one of the sets of each side panel are each formed with at least two straight outer portions lying generally in a respective vertical plane extending upwardly from the respective side and joining the respective corners and at least two straight angled portions extending at a acute angle to the respective vertical plane and each having an outer end connected at the respective plane to one of the respective outer portions and an inner end connected inward of the respective plane to one of the inner ends of one of the angled portions of the respective rod. Thus the straight and angled portions together form at least one inset on each side panel.

[0014] Estvanko, U.S. Pat. No. 6,058,852 describes an equipment skid for supporting heavy loads that is fabricated from square metal tubing. The skid is provided with cross-tubes which provide additional strength and support. The cross-tubes are have openings at each end, which openings are sized to receive the times of a fork-lift truck. A cage structure, constructed of angle irons, is positioned on the skid and functions to stabilize the heavy equipment supported on the skid.

[0015] James, WO 89/11422 describes a collapsible storage container comprising a rectangular pallet base with a horizontal floor and with upwardly projecting skirt walls each being a different height above the pallet floor, a pair of end wall panels and a pair of side wall panels and a lid panel wherein each of the wall panels is pivotally supported for inward folding movement about a horizontal axis with the horizontal axes of the wall panels being spaced at different distances from the pallet floor corresponding to the height of the associated skirt wall, so as to allow the panels to be folded approximately flat one on top of the other in overlying relationship.

[0016] The prior art teaches the use of shipping pallets, containers and packing crates but does not teach a combination shipping container and particular product for which the container is is ideally adapted. The present invention fulfills these needs and provides further related advantages as described in the following summary.

SUMMARY OF THE INVENTION

[0017] The present invention teaches certain benefits in construction and use which give rise to the objectives described below.

[0018] When items of significant length and fragility, such as long plaster mouldings, are shipped, they cannot be packaged and handled in the horizontal orientation because they tend to crack due to the fragile nature of the material of construction. It has not been discovered an ideal manner of packaging such products and of shipping them so as to avoid breakage. Nothing in the prior art teaches how to crate and ship such items. The present invention is a combination metal cage supporting a cargo of such long and fragile items to be shipped within the metal cage in such manner as to assure that the fragile items survive the rigors of shipping. The metal cage provides a pallet platform and integral thereto, plural walls extending upwardly from the pallet platform. These walls define an open top of the metal cage. One of the plural walls is hingedly mounted as a door. The cargo is comprised of a plurality of individual cartons, each of which has a length to width ratio of at least 10, i.e., the length of the carton is at least ten times the magnitude of the width of the carton. Preferably, the cartons are identical and are positioned in a vertical attitude within the metal cage in an adjacent, side-by-side manner. Preferably, one end of each of the cartons rests on the pallet platform while the opposing end of each of the cartons extends above the open top of the metal cage. The cage employs a loading rod for packing the cargo as it is loaded and a tilt mechanism to position the cage for gravity assist in loading.

[0019] A primary objective of the present invention is to provide an apparatus and method of use of such apparatus that provides advantages not taught by the prior art.

[0020] Another objective is to provide such an invention capable of shipping long items which are fragile, with safety and without elaborate packaging.

[0021] A further objective is to provide such an invention capable of swift loading of a cargo into a packing crate.

[0022] A still further objective is to provide such an invention capable of using the cargo itself to cushion and support fragile items of significant length.

[0023] Other features and advantages of the present invention will become apparent from the following more detailed description, taken in conjunction with the accompanying drawings, which illustrate, by way of example, the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] The accompanying drawings illustrate the present invention. In such drawings:

[0025] FIG. 1 is a perspective view of a metal cage of the preferred embodiment of the invention showing a packing rod and a hinged door;

[0026] FIG. 2 is a similar view thereof showing a mechanism for tiling the cage for improved packing tightness of a cargo of vertically oriented long packages; and

[0027] FIG. 3 is a similar view thereof showing the metal cage fully packed.

DETAILED DESCRIPTION OF THE INVENTION

[0028] The above described drawing figures illustrate the invention in at least one of its preferred embodiments, which is further defined in detail in the following description.
The present invention is a combination metal cage 10 and a cargo 20 of relatively long and fragile items to be shipped within the metal cage 10. The metal cage 10 provides a pallet platform 30 and integral thereto, plural walls extending upwardly from the pallet platform 30. These walls define an open top 40 of the metal cage 10. One 50 of the plural walls is hingably mounted as a door for moving between a closed position “C” integral with two side walls 60, 70 of the plural walls, and an open position “O” forming a loading portal 52 for loading the items to be shipped in the cage 10. The cargo 20 is comprised of a plurality of individual cartons 22, each of which has a length to width ratio of at least 10, i.e., the length of the carton is at least ten times the magnitude of the width of the carton. Preferably, the cartons 22 are identical and are positioned in a vertical attitude within the metal cage in an adjacent, side-by-side manner as shown in FIGS. 2 and 3. Preferably, one end 24 of each of the cartons 22 rests on the pallet platform 30 while the opposing end 26 of each of the cartons 22 extending above the open top 40 of the metal cage 10.

As shown in the figures, at least one of the plural walls, and preferably all of them provide a generally horizontal side-stop bar 80 positioned adjacent to the pallet platform 30 and spaced apart from it. The spacing is not more than 15 percent of the length of any one of the individual cartons. This side-stop bar 80 is critical in preventing vertically oriented packages from slipping sideways off the platform 30 and is critical to the present usage of the invention.

A stacking rod 90 of a rigid material such as steel provides spaced apart primary pins 92 extending laterally from opposing ends of the rod 90. Each of the two side walls 60 provide plural, spaced apart, pin engagement means 100, such as the pairs of holes shown in the figures. The pairs of holes are adapted for receiving the spaced apart primary pins 92 for mounting the stacking rod 90 across the open top 40 of the metal cage 10 at any one of plural positions parallel to a back wall 58 of the cage 10. Refer to FIGS. 1 and 2. The primary use of stacking rod 90 is for holding those packages already in place, as shown in FIG. 2, while further packages are being loaded into the cage 10. Rod 90 is moved forward in the cage 10 as more packages are stacked.

The stacking rod 90 provides spaced apart secondary pins 94 extending laterally from the opposing ends thereof and at right angles to the primary pins 92. After packing, the secondary pins 94 of the stacking rod 90 may be inserted into the pin engagement means 100 directly above door 50 for shipping. Notice that the pins 94 are longer than the pins 92 so that the former are ideal for improved strength in shipping, while the later are ideal for stacking use of the rod 90.

A leg extension means 110 is adapted for adjusting the pallet platform between a level attitude, shown in FIGS. 1 and 3, and a slanted-back attitude, as shown in FIG. 2. The leg extension means 110 is preferably leg segments 112 fitted into hollow spaces 114 of the pallet platform 30 such that the segments 112 can be extended downwardly, as shown at the bottom of FIG. 2. Snap in pins 116 are inserted into corresponding holes 118 for engagement for producing selected extensions of the leg segments 112. With the segments 112 positioned as shown in FIG. 2, the entire cage 10 is tilted back so that the packages 22 loaded within the cage 10 are set off vertical. Angle “X” in FIG. 2, is an acute angle.

While the invention has been described with reference to at least one preferred embodiment, it is to be clearly understood by those skilled in the art that the invention is not limited thereto. Rather, the scope of the invention is to be interpreted only in conjunction with the appended claims.

What is claimed is:
1. An apparatus comprising in combination: a metal cage and a cargo to be shipped within the metal cage; the metal cage providing a pallet platform and integral thereto, plural walls extending upwardly from the pallet platform defining an open top of the metal cage; one of the plural walls being hingably mounted as a door for moving between a closed position integral with two side walls of the plural walls, and an open position forming a loading portal; the cargo comprising a plurality of individual cartons, each of the cartons having a length to width ratio of at least 10, the cartons positioned in a vertical attitude within the metal cage in an adjacent, side-by-side manner, with one end of each of the cartons resting on the pallet platform and an opposing end of each of the cartons extending above the open top of the metal cage.
2. The apparatus of claim 1 wherein at least one of the plural walls provides a generally horizontal side-stop bar positioned adjacent the pallet platform and spaced apart therefrom by not more than 15 percent of the length of any one of the individual cartons.
3. The apparatus of claim 1 further comprising a stacking rod of a rigid material, the stacking rod providing spaced apart primary pins extending laterally from opposing ends thereof, each of the two side walls providing plural, spaced apart, pin engagement means adapted for receiving the spaced apart pins for mounting the stacking rod across the open top of the metal cage at any one of plural positions parallel to a back wall of the cage.
4. The apparatus of claim 3 wherein the stacking rod provides spaced apart secondary pins extending laterally from the opposing ends thereof and at right angles to the primary pins, the secondary pins of a greater length than the primary pins.
5. The apparatus of claim 1 further comprising leg extension means adapted for adjusting the pallet platform between a level attitude and a slanted-back attitude.