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Giardini

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[54] MODULAR RACK ASSEMBLY

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[52] **U.S. Cl.** **211/177**, 108/53

[51] **Int. Cl.** **A47f 5/10**

[58] **Field of Search** ..... 211/177, 178 R, 148; 108/53, 56, 55, 91

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Primary Examiner—Ramon S. Britts

[57] **ABSTRACT**

A modular rack assembly for storing and shipping massive metal articles which includes a rigid rectangular base having a vertically disposed leg fixed at each corner and a post member extending vertically above and supported by each leg. The legs and post members include means providing a pair of open, interfacing vertically aligned grooves at each side of the rack assembly for slidably receiving and laterally supporting the opposite ends of side members disposed on edge along each side of the rack assembly to provide a load bearing side wall at each side of the rack assembly.

13 Claims, 8 Drawing Figures

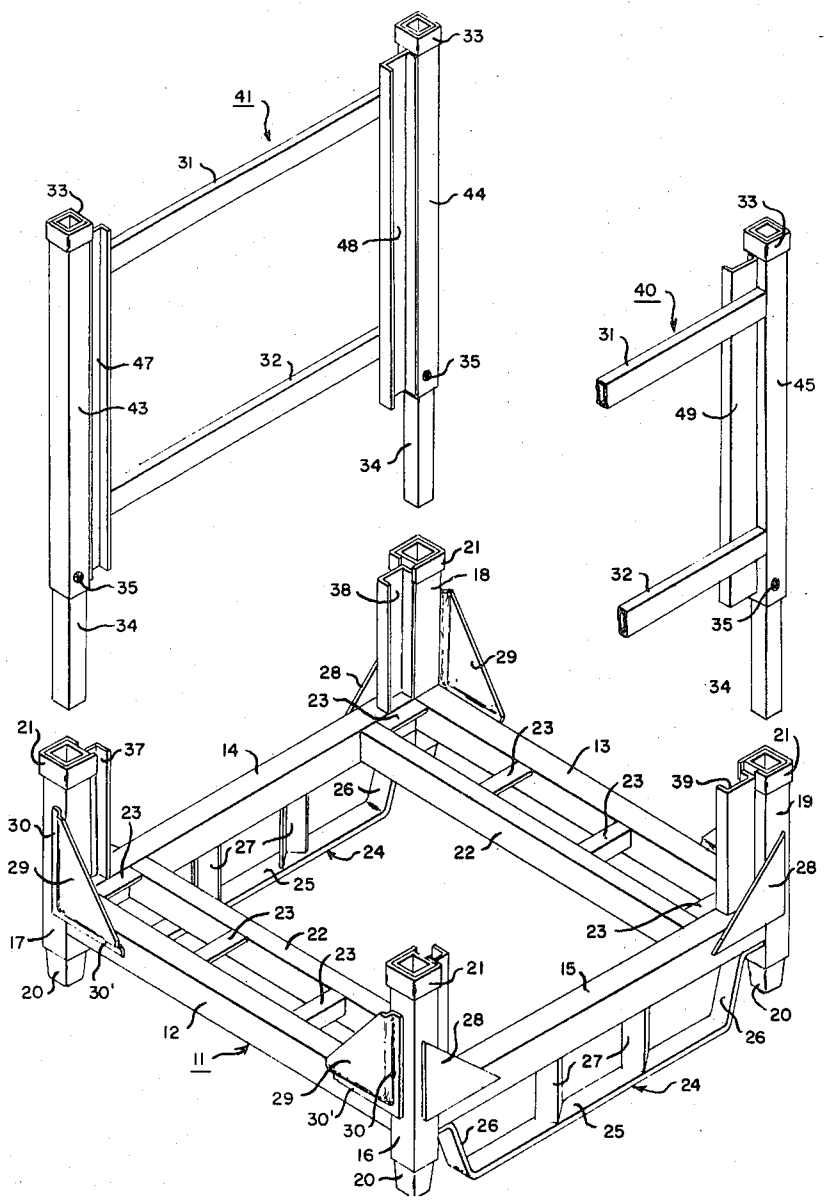


Fig. 1.

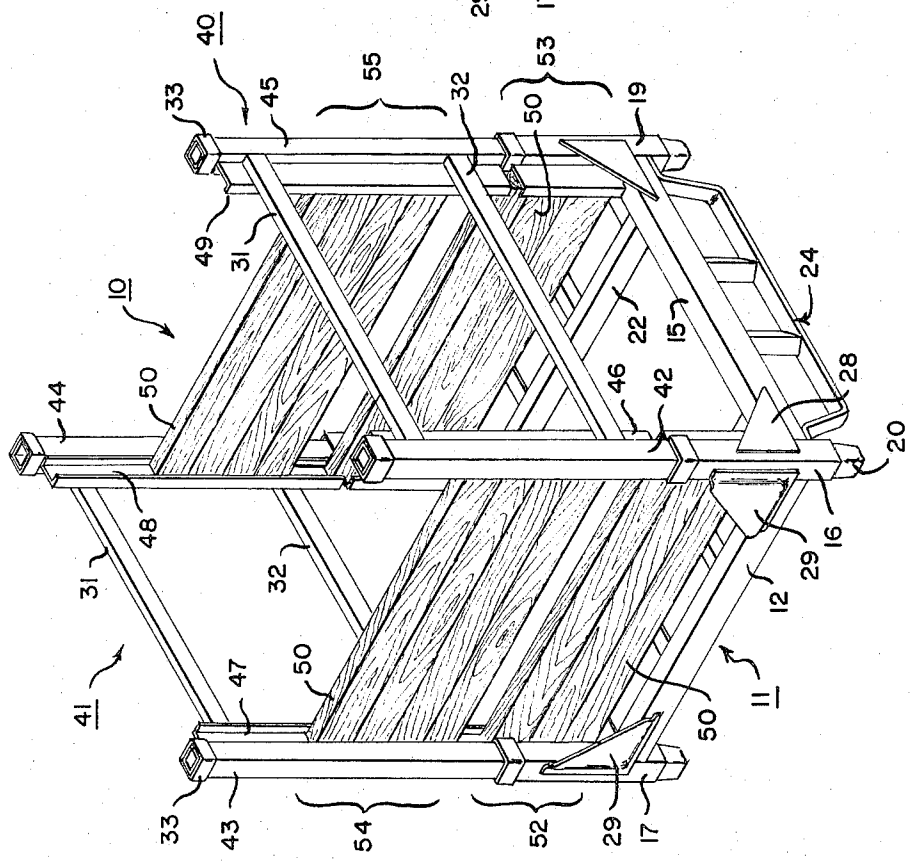


Fig. 2.

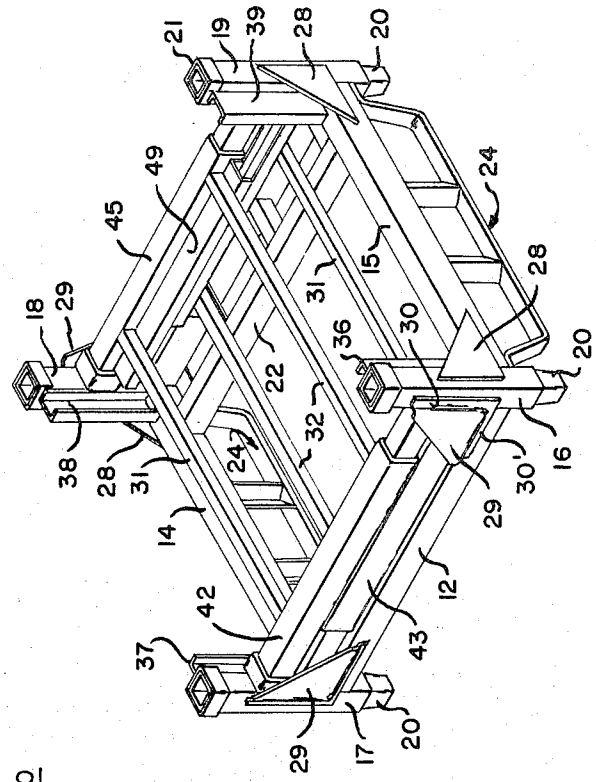


Fig. 3.

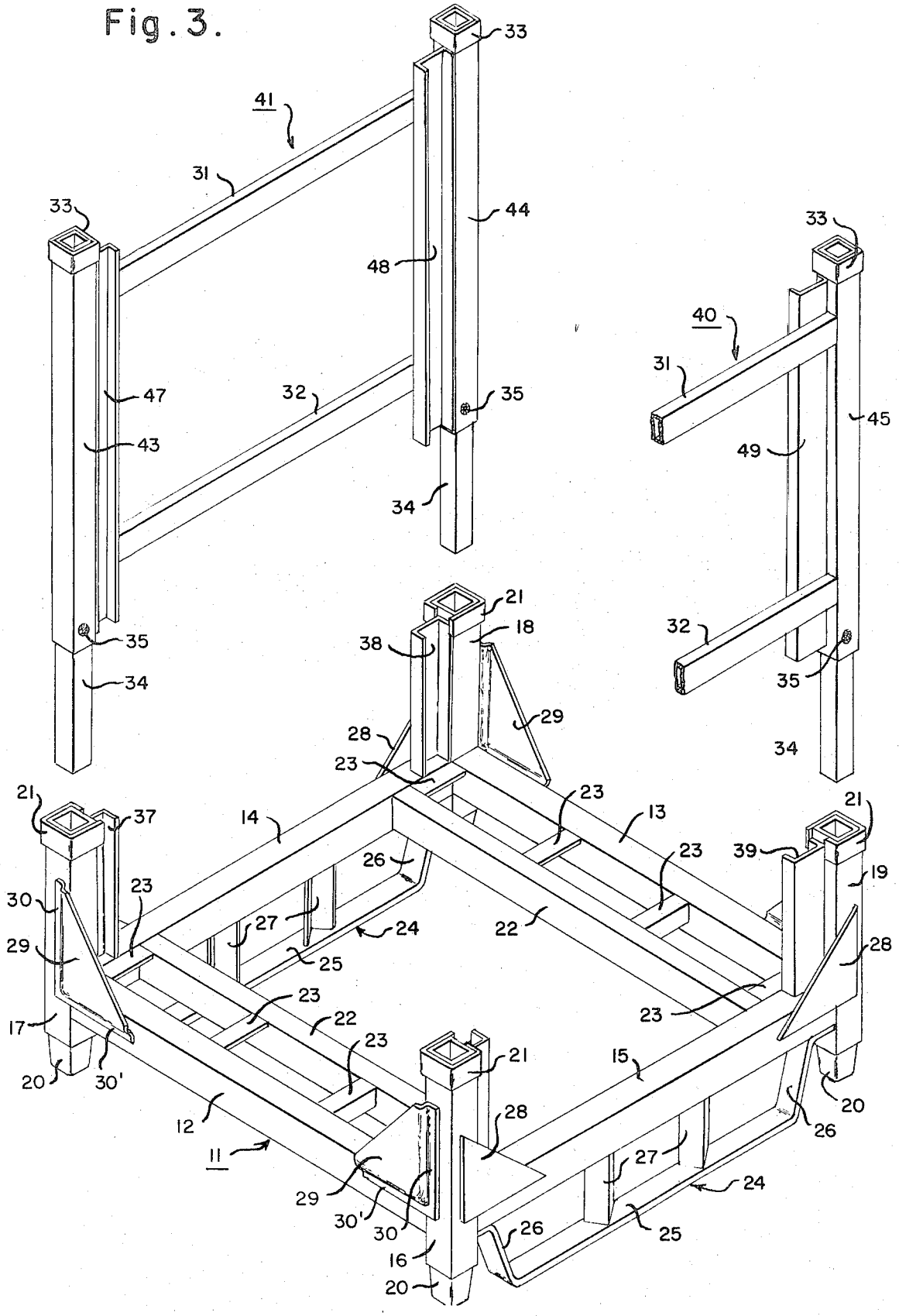

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Fig. 4.

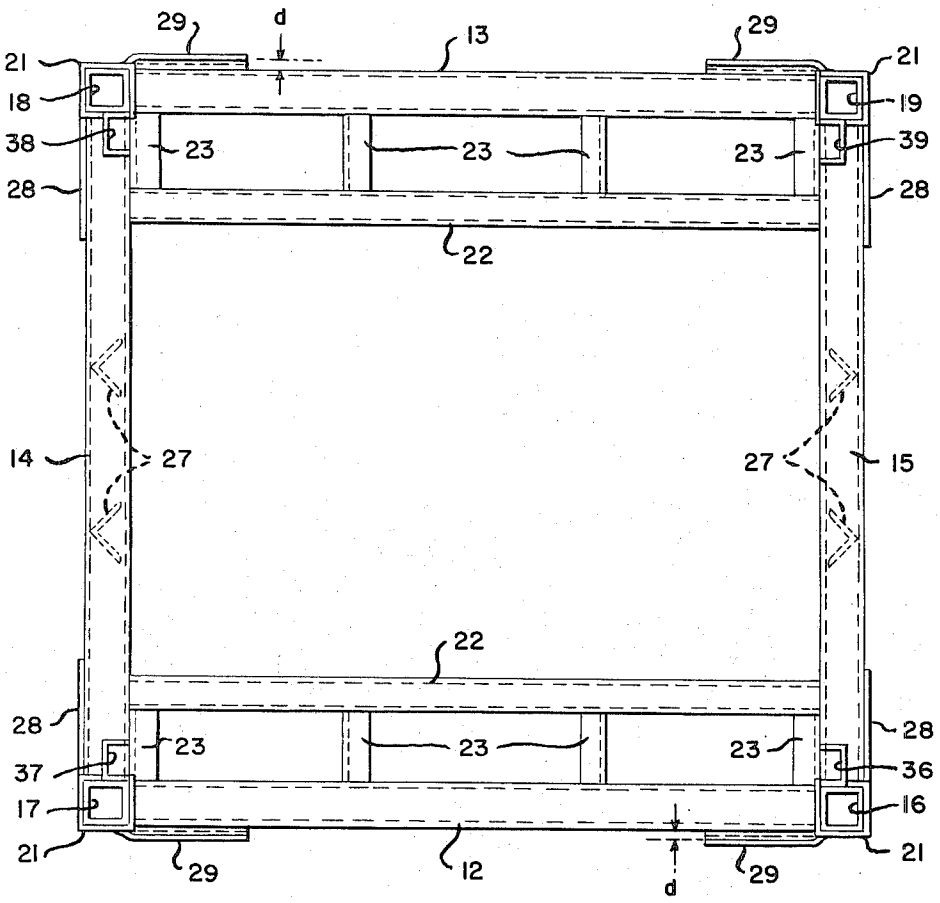

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Fig. 5.

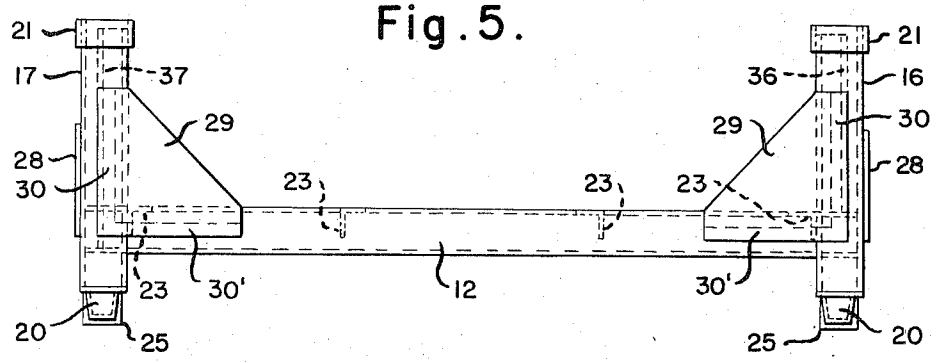

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Fig. 6.

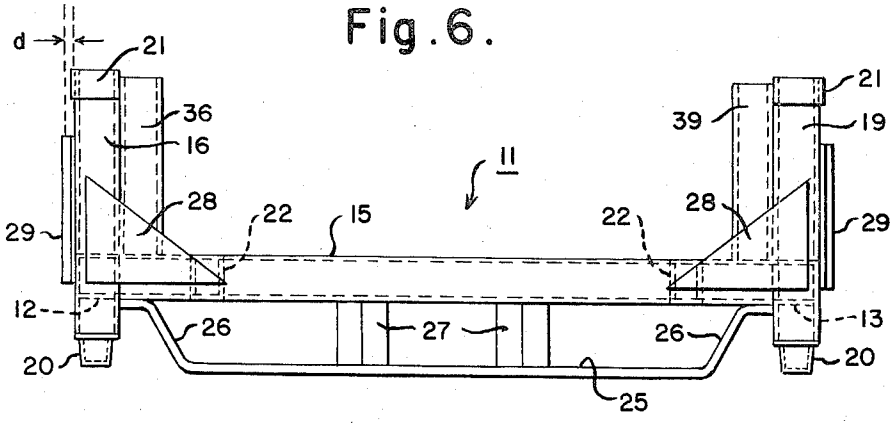


Fig. 7.

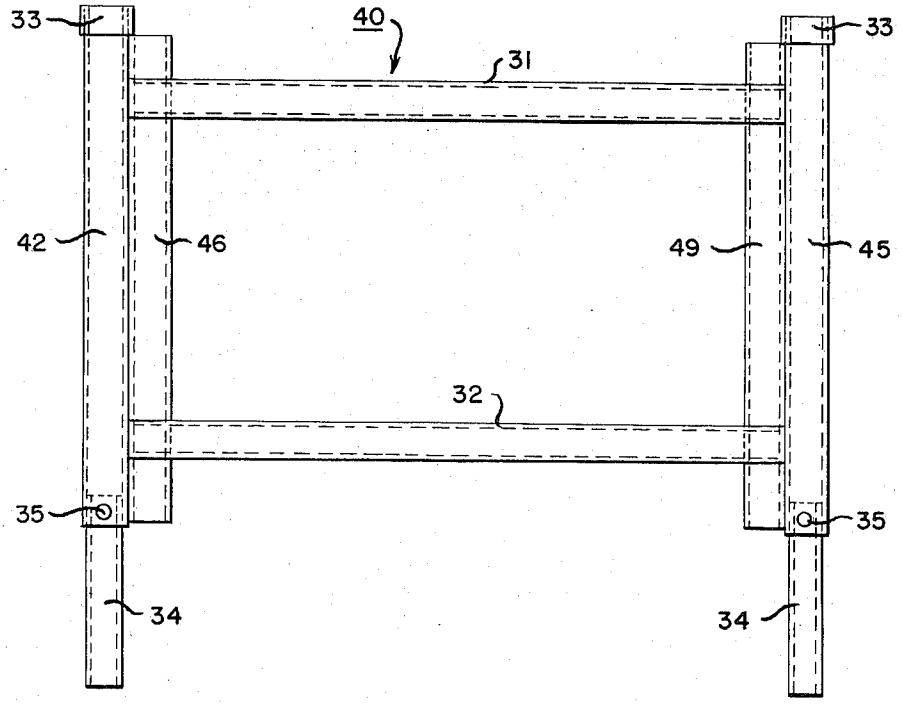
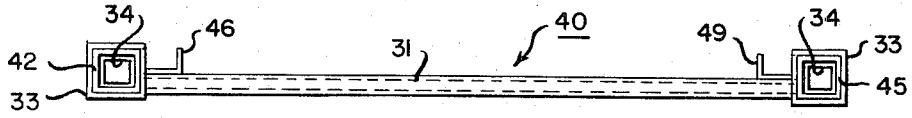


Fig. 8.



MODULAR RACK ASSEMBLY

BACKGROUND OF THE INVENTION

This invention relates to a novel modular rack assembly for storing and shipping articles of manufacture. More specifically, this invention relates to a knock-down, self-storing, returnable type of modular rack assembly which is particularly suitable for storing and shipping massive durable articles such as automotive axles.

The use of wooden pallets and modular rack assemblies as some of the more sophisticated storage and shipping units have become known, is well known in the field of material handling. Such units have enjoyed great success in providing for unitized storage and transportation of many types of products because they can be easily moved by modern material handling equipment and can be stored in a manner which takes maximum advantage of the space available in warehouse facilities and transportation vehicles. The modular unit concept has become so well accepted that many types of relatively expensive modular rack assemblies which can be stacked on top of similar racks for storing and shipping articles of manufacture and then partly disassembled or knocked-down to provide a returnable unit of considerably less volume are presently in use.

Many of the prior art rack assemblies incorporate a rectangular base member and a pair of end frames which are slidably received in upright position in the leg members disposed at opposite ends of the base to provide a modular unit for shipping and storing articles. After the articles have been delivered, some of these rack assemblies can be partly disassembled by removing the end frames and stacking them on the base to provide a relatively compact knocked-down unit which is then returned to the shipper or manufacturer. Several such modular rack assemblies are disclosed in U.S. Patent No. 2,956,763, issued Oct. 18, 1960; U.S. Pat. No. 3,499,398, issued Mar. 10, 1970 and U.S. Pat. No. 3,565,018 issued Feb. 23, 1971.

In many instances such modular rack assemblies have provided substantial economic advantages over the wooden pallets, packing boxes or crates in which many articles of commerce were previously stored and shipped. Unfortunately such advantages have not been effected in all areas of manufacture and there are many areas in which wooden crates or other wooden structures are still employed because the heretofore known modular rack assemblies have been inadequate for one reason or another.

One such area involves the storing and shipping of massive products such as automotive axles. Notwithstanding many advances in material handling techniques and equipment, many such products are shipped and stored on wooden frame structures because the heretofore known modular rack assemblies have either lacked sufficient strength to adequately support a number of such articles or, when fabricated from metal members strong enough to support such a load, the metal supporting members failed to provide adequate dunnage to prevent damage to the surfaces of the metal articles. Such articles have traditionally been shipped in boxes or crates constructed of hardwood. The wooden supporting members of such boxes or crates have traditionally provided sufficient resiliency to

cushion the load supported thereby and restrain lateral displacement of the article. A modular rack assembly incorporating metal supporting members will not cushion the articles supported thereby and may even induce surface damage. Moreover, the relatively low coefficient of friction between a metal supporting member and a metal article supported thereby is such that it will not effectively restrain lateral movement of the metal article in the same manner that a wooden supporting member will.

It is therefore an important object of this invention to provide a modular rack assembly which incorporates the material handling advantages of a returnable metal rack assembly and the load bearing supporting characteristics of hardwood supporting members.

It is also an object of this invention to provide a returnable, modular rack assembly employing wooden side members which can be quickly and easily assembled and disassembled.

It is a further object of this invention to provide a returnable, modular metal rack assembly employing wooden load bearing side walls which can be quickly assembled and disassembled without the necessity of using any fastening elements or tools.

Another object of this invention is to provide a modular storage rack incorporating wooden load bearing side walls and which is collapsible and permits storage of the disassembled parts in a minimum of space.

A still further object of this invention is to provide a modular storage rack assembly incorporating wooden load bearing side walls arranged to support a plurality of massive metal articles disposed horizontally across the load bearing walls at different horizontal levels.

SUMMARY OF THE INVENTION

The novel metal rack assembly of this invention attains these and other objects through the combination of a rigid rectangular base member having a vertically disposed leg fixed at each corner thereof, a post member extending vertically above and supported by each leg, and the provision of a pair of open, interfacing vertically aligned grooves associated with the pair of post members and legs at each side of the rack assembly to slidably receive and laterally support the opposite ends of side members disposed on edge along each side of the rack assembly. In one embodiment of the invention, separate groove means are provided to each leg and post member, the grooves provided to each member being arranged to be in vertical alignment when each post member is supported by its respective leg, and a number of hardwood boards are disposed on their edges on each side of the rack assembly with the boards at each side being superimposed one on top of the other with their opposite ends laterally supported by the pair of vertically extending grooves provided at that side of the rack assembly.

Other objects, features and advantages of the invention will become apparent from the following description, taken in conjunction with the accompanying drawings.

DESCRIPTION OF THE DRAWINGS

In the drawings, wherein like reference numerals refer to like parts:

FIG. 1 is a perspective view of the modular rack assembly of this invention;

FIG. 2 is a perspective view of the rack assembly of FIG. 1 with the end frames removed and stacked on the base;

FIG. 3 is an exploded view of the rack assembly of FIG. 1;

FIG. 4 is a plan view of the base of the rack assembly of FIG. 1;

FIG. 5 is a side elevation of the rack base of FIG. 4;

FIG. 6 is an end elevation of the rack base of FIG. 4;

FIG. 7 is an end elevation showing one of the end frames of the rack assembly of FIG. 1; and

FIG. 8 is a plan view of the end frame of FIG. 7.

DESCRIPTION OF AN EMBODIMENT OF THE INVENTION

Referring now to the drawings, and particularly to FIGS. 1–3, the modular rack assembly **10** of this invention generally includes a base **11**, a pair of oppositely disposed end frames **40, 41** and a plurality of side members **50** disposed along the opposite sides of the rack assembly.

The base **11** is rectangular in shape and includes a pair of oppositely disposed horizontally extending side rails **12, 13**, a pair of oppositely disposed horizontally extending end rails **14, 15**, and a vertically disposed leg member **16, 17, 18** and **19**. The leg members **16–19**, side rails **12, 13**, and end rails **14** and **15** are preferably provided by appropriate lengths of hollow steel tubing of square cross section and each leg member is vertically disposed at one corner of the base where it is secured, preferably by welding, to one end rail and one side rail. The base **11** is structurally reinforced at each corner by a pair of gusset plates **28, 29**. The gusset plates **28** are welded to the outer end surfaces of an end rail and a leg member at each corner of the base **11**. The gusset plates **29** are welded along two intersecting edge surfaces **30, 30'** to the side surface of a leg member and the outer surface of a side rail at each corner of the base **11**. The portion of the gusset plate **29** intermediate the edges **30, 30'** and extending toward the opposite end of the base **11** is formed outwardly from the edges **30, 30'** for a purpose which will be described more fully herebelow.

The base **11** is further reinforced by inboard side members **22** horizontally disposed between the end rails **14** and **15** and cross supports **23** horizontally disposed between the inboard side members **22** and their respective side rail **12, 13**. The upper horizontal surfaces of the side rails **12, 13**, inboard side members **22**, cross supports **23** and end rails **14, 15** are preferably disposed in a common horizontal plane with the leg members **16, 17, 18** and **19** and gusset plates **28, 29** extending vertically a substantial distance above that plane.

The lower ends of each of the leg members **16–19** are provided with a rectangular truncated insert **20** press fitted therein which are adapted to seat within the upper ends of the leg members of a similar base **11** or in the upper ends of the end frames of a similar modular rack assembly **10**. The upper end of each leg member **16–19** is reinforced with a metal band **21** suitably shaped to fit around the exterior surface of the leg member where it is fixed in place by welding.

The base **11** is provided at its opposite ends with metal runner bars or skids **24** extending between the leg members **16, 19** and **17, 18** for supporting the rack on a floor surface with the lower ends of the truncated inserts **20** spaced slightly above the supporting surface. Each runner bar **24** is formed with a substantially flat center support portion **25** and upwardly directed end portion **26** secured to the respective end rail **14** or **15** as well as to the inwardly directed surfaces of the leg members. Vertically disposed reinforcing angles **27** are secured between the bars **25** and end rails **14** and **15**. The angles **27** are suitably spaced from one another to provide openings for receiving the fork of a conventional lift truck.

The leg members **16, 17, 18** and **19** are provided with a vertically disposed channel shaped element **36, 37, 38** and **39** respectively. The channel elements are preferably formed from a suitably bent metal plate and each channel element is welded to its respective leg member along a substantial length thereof to provide a groove of rectangular cross section associated with each leg member and open in a direction facing an oppositely disposed channel element at the opposite end of the base **11**. The channel elements are so disposed that the grooves provided by channel elements **37** and **38** respectively fixed to leg members **17** and **18** are open toward and in vertical alignment with the grooves provided by the oppositely disposed channel elements **36** and **39** which are respectively fixed to leg members **16** and **19**. The channel elements **36, 37** provide a pair of open interfacing vertically aligned grooves at the side of rack base **11** between the leg members **16** and **17**, and the channel elements **38, 39** provide a pair of open interfacing vertically aligned grooves at the opposite side of the rack base between leg members **18** and **19**.

The end frames **40, 41** are each comprised of a pair of upstanding post members **42, 45**, and **43, 44**, respectively fixed together in parallel spaced relation by a pair of horizontally disposed tubular elements **31, 32**. The upstanding post members **42, 43, 44** and **45** are preferably formed from the same hollow tubular stock as the leg members **16–19** of the base **11**. The lower end of each post member **42–45** is provided with an appropriate length of a hollow tubular extension **34** slidably received within the post member and permanently fixed thereto by means of a circular or button type weld **35** effected through a hole provided near the lower end of the post member. The upper end of each post member is reinforced by a metal band **33** formed to fit around the periphery of the post member and welded thereto.

Each post member **42, 43, 44, 45** is provided with a vertically disposed, channel shaped element **46, 47, 48, 49**, respectively. Each channel shaped element **46–49** is welded to the inner side of its respective post member along a substantial length thereof. The channel elements **46–49** like the channel shaped elements **36–39** are preferably formed from a suitably bent metal plate to provide each post member with a vertically extending groove of substantially rectangular cross section which is open in a direction facing the opposite end of the rack base **11**.

The horizontally disposed cross members **31, 32** are of a length which will permit the tubular extensions **34** of the post members of each respective end frame **40, 41** to be slidably received in a pair of hollow tubular leg members **16, 19**, or **17, 18**, with the post members of that end frame supported by that pair of leg members.

The channel members **46, 49** and **47, 48** associated with each respective end frame **40, 41** are so disposed that the vertically extending grooves provided thereby will be in vertical alignment with the grooves provided by the channel element **36, 39** or **37, 38** respectively associated with the leg members **16, 19** and **17, 18** at opposite ends of the base **11.**

With particular reference to the rack assembly **11** as shown in FIG. **1,** the vertically extending grooves provided by channel members **46** and **47** associated with the post members supported by legs **16** and **17** are arranged to be in substantial vertical alignment with the groove means provided by channel members **36** and **37** to conjointly provide a pair of open interfacing and oppositely disposed grooves at the side of the rack assembly **10** between the leg members **16** and **17.** The grooves provided by channel members **48, 49** associated with the post members **44, 45** supported by leg members **18** and **19** are likewise disposed to be in substantial vertical alignment with the grooves provided by channel elements **38** and **39** to provide a pair of open interfacing grooves at the side of the rack assembly **11** between leg members **18** and **19.**

The two pair of open interfacing vertically aligned grooves extending along the leg members and post members at each side of the rack assembly serve to receive and support a number of side members **50.** The side members **50** are preferably formed of hardwood 2 × 4's cut to a suitable length to permit the opposite ends thereof to be slidably received in a pair of the open interfacing vertically aligned grooves at one side of the rack assembly.

With reference to FIGS. **1** and **3,** the rack assembly **10** is assembled by positioning the hollow tubular extensions **34** of each end frame **40, 41** in a pair of hollow upstanding leg members **16, 19** or **17, 18** at one end of the base **11.** A pair of load bearing side walls are then provided at each side of the rack assembly **10** by disposing an appropriate number of hardwood side members in the open interfacing vertically aligned grooves provided at each side of the rack assembly. Each hardwood side member **50** is disposed on its edge with its opposite ends laterally supported by the legs of the channel members providing the pair of vertically aligned grooves at that side of the rack assembly. The lowermost side member **50** at each side of the rack assembly is supported by a portion of the end rails **14, 15** and the cross supports **23** disposed between the side rails **12, 13** and the inboard side members **22.** Each successive hardwood member **50** is disposed with its lower edge in contact with and supported by the preceding hardwood side member. The hardwood side members **50** are thus superimposed one on top of the other to provide a hardwood side wall at each respective side of the rack assembly to provide a load bearing, wooden side wall of a height satisfactory to accommodate the articles of manufacture to be supported thereby.

In the case of automotive axles such articles of manufacture are usually about eight foot in length and, although the center section of an axle may be on the order of about 4 to 8 inches square, the outer extremities are formed to a complex shape to accept a wheel assembly. The rack assembly of this invention, although it may be fabricated with the leg and post members at the corners of a 3 ½ foot square, is particularly suitable for storing and transporting massive automotive axle assemblies because of the novel load bearing, hardwood side wall structure provided by the hardwood side members **50.**

As pointed out previously, the side members **50** may be superimposed one on top of the other to provide a load bearing side wall section of any suitable height. With reference to FIG. **1** it will be noted that the brackets identified by the numerals **52** and **53** designate a lower load bearing wall section provided by three wooden side members **50** disposed on edge along each respective side of the rack assembly **10.** The lowermost side member **50** of each wall section **52, 53** is supported by the cross supports **23** and the uppermost side member **50** of each wall section is disposed with its opposite ends laterally supported across the telescopic joint between a post member and a leg member by a portion of the channel member associated with each respective post and leg member. The lower wall sections **52, 53** are so disposed to accommodate several axles laid horizontally thereacross with their relatively complex shaped outer ends spaced outwardly at each side of the rack assembly **10.** After a first layer of axles has been disposed across the load bearing wall sections **52, 53,** a second wall section identified in FIG. **1** by bracketed numerals **54, 55,** is provided above the first layer of axles at each side of the rack assembly to provide a second level wall section at each side of the rack assembly to support another horizontally disposed layer of axles. The wooden side members **50** of the second level wall sections **54, 55** are assembled one by one in superimposed layers with the lowermost wooden side member **50** supported directly on top of the first layer of axles. After the second wall sections **54, 55** have been built to a suitable height, a second layer of axles are disposed horizontally across the uppermost wooden side members **50** of the wall sections **54, 55.** The horizontal rows of axle assemblies are then suitably secured by conventional metal strapping and the loaded modular rack assembly is then ready for storage or transportation to some other location.

The modular rack assemblies are designed to permit them to be stacked one on top of the other, the truncated inserts **20** provided at the base of each leg of one rack base **11** being slidably received within the hollow upper end of a post member reinforced by the metal bands **33.**

Once a shipment has been completed and the axle assemblies have been removed, the modular rack assembly of this invention can be readily disassembled for return by removing the wooden side members **50,** the end frames **40** and **41** and stacking or nesting the same on the base **11.**

With reference to FIG. **2** the end frames **40, 41** are fabricated to such dimensions as will permit them to be stacked one on top of the other along the side rails **12, 13** of the base **11.** The post members **42–44** are preferably formed from the same hollow tubular stock material as the side rails **12, 13** and leg members **16–19.** The laterally disposed tubular elements **31, 32** of each end frame **40, 41** are of such a length as permits the post members associated with each respective end frame to be vertically aligned with the leg members at one end of the base **11** and, when disassembled, to be supported directly above the side rails **12, 13** as shown in FIG. **2.** The length of the post members **42–45** including the hollow tubular extension members **34** provided at the lower ends thereof is preferably about 1 inch short of

the length of the side rails **12, 13** to permit the post members to be disposed horizontally between the leg members provided at opposite ends of the base **11.**

The gusset plates **29** provided at each end of the side rails **12, 13** are formed outwardly a distance d as best shown in FIGS. **4** and **6** to provide a slight clearance to permit easy stacking of the post members **42–45** of the end frames when they are nested on top of the base **11** as shown in FIG. **2.** In the embodiment just described the distance *d* is preferably about three-eights inch to accommodate the one-fourth inch thickness of the metal reinforcing bands **33** and allow sufficient clearance to easily stack the end frames **40, 41** on the base **11.**

With reference to FIG. **2** the hardwood side members **50,** although not shown, may be horizontally disposed on top of the end frame **40** with their opposite ends supported by the upper surfaces of post members **42–45** to provide a very compact, knocked-down modular rack which can be strapped to secure the wooden side members thereto and returned to the point of origin. The compact, knocked-down modular rack as shown in FIG. **2** may be stacked on top of another similar rack base **11** with the truncated inserts **20** provided at the lower end of each leg member of the rack base **11** slidably received in the hollow upper ends of the leg members of a similar rack base.

The foregoing has described the provision of a rigid metal rack assembly incorporating novel means for quickly and easily providing and disassemblying wooden load bearing side walls without the necessity of using any fastening elements or tools. As such, this invention has incorporated a quick and inexpensive means for providing a rigid, metal modular rack assembly with hardwood load bearing wall sections to support a number of massive metal articles of manufacture to take advantage of the supporting characteristics of wooden frame members and the efficiency of modern material handling techniques and equipment.

This invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The embodiment of this invention described hereinabove is therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

What is claimed and described to be secured by letters patent is:

1. A modular rack assembly for storing and shipping massive metal articles comprising,

a rectangular shaped rigid metal base including a pair of oppositely disposed side rails, a pair of oppositely disposed end rails, and a vertically disposed leg member fixed at each corner of said base,

each of said leg members including means providing a vertically extending leg groove open in a direction facing the opposite end of said base and in substantial vertical alignment with a leg groove at the opposite end of said base,

an upstanding metal post member at each corner of said rack assembly and means engaging each of said post members with the leg member at that corner to support said post members above said leg members,

each of said post members including means providing a vertically extending groove open in a direction facing the opposite end of said rack assembly and in substantial vertical alignment with the leg groove therebelow to provide a pair of open interfacing vertically aligned grooves extending along a substantial length of said leg members and post members at each side of the rack assembly, and

a plurality of wooden boards disposed along each side of said rack assembly to provide a load bearing wall at each respective side thereof, the plurality of boards at each respective side being superimposed one on top of another with each successive board supported on its edge above a preceding board and with the opposite ends of each board laterally supported by the means providing said pair of grooves at that side of said rack assembly.

2. A modular metal rack assembly for storing and shipping massive metal articles comprising,

a rectangular shaped base including a pair of oppositely disposed horizontally extending side rails, a pair of oppositely disposed horizontally extending end rails, and a vertically disposed leg member fixed at each corner of said base and extending above said side and end rails,

each of said leg members including means providing a vertically extending leg groove open in a direction facing the opposite end of said base and in substantial vertical alignment with a leg groove at the opposite end of said base,

an upstanding post member at each corner of said rack and means engaging each of said post members with the leg member at that corner to support said post members above said leg members,

each of said post members including means providing a vertically extending groove open in a direction facing the opposite end of said rack assembly and in substantial vertical alignment with the leg groove provided by the leg member supporting that post member to provide a vertically extending continuation of each of said leg grooves, said leg grooves and said continuations thereby providing a pair of open interfacing vertically aligned grooves at each side of the rack assembly whereby at least one side member may be disposed on its edge along each side of said rack assembly with the opposite ends of each side member slidably received in said pair of grooves provided at that side of the rack assembly and laterally supported by said means providing said grooves.

3. The modular metal rack assembly defined by claim **2** wherein the pair of upstanding post members provided at each end of said rack are fixed together in parallel spaced relation in alignment with the leg members provided at each end of said base and a channel shaped metal element is fixed to each respective post member along a substantial length thereof to provide said vertically extending groove.

4. The modular metal rack assembly defined by claim **3** wherein a channel shaped metal element is fixed to each leg member along a substantial length thereof to provide a vertically extending leg groove of substantially rectangular cross section.

5. The modular metal rack assembly defined by claim **2** wherein a plurality of side members are disposed along each side of said rack assembly to provide a pair of oppositely disposed load bearing side walls, the side

members at each respective side of the rack assembly being superimposed one on top of another with each successive side member supported on its edge above the preceding side member and with the opposite ends of each side member laterally supported by the means providing said pair of open interfacing vertically aligned grooves at that side of said rack assembly.

6. The modular rack assembly defined by claim 5 wherein the plurality of side members provided along each side of said rack assembly supports at least one massive metal article disposed horizontally thereacross and at least one additional side member is disposed on edge along each side of said rack assembly, the lower edge of each said additional side member being supported by said massive metal article and the opposite ends of each said additional side member being laterally supported by the means providing said pair of open interfacing vertically aligned grooves at that side of said rack assembly.

7. The modular rack assembly of claim 5 wherein said side members are comprised of a plurality of wooden boards disposed on edge to support a heavy durable metal article without damaging the surface thereof.

8. A modular rack assembly for storing and shipping a plurality of massive metal articles comprising,

a rectangular shaped rigid metal base including a pair of oppositely disposed horizontally extending side rails, a pair of oppositely disposed horizontally extending end rails, and a vertically disposed leg member fixed at each corner of said base and extending above said rails,

a pair of rectangular shaped metal end frames, each end frame including a pair of post members fixed together in parallel spaced relation and each post member including means providing a vertically extending groove open in a direction facing the opposite end of said base,

the upper ends of said leg members and the lower ends of said post members being respectively provided with first and second means for slidably receiving said end of one of said members within said end of the other of said members in telescopic relation,

said post members of each end frame being spaced to vertically align said post members of each end frame with a pair of said leg members at opposite ends of said base and to align each of the grooves included with the post members of one end frame with one of the grooves included with the post members of the other end frame to provide a pair of open interfacing vertically aligned grooves at each side of the rack assembly when the post members of each end frame are telescopically engaged with a pair of leg members at opposite ends of said base, and

at least one side member disposed along each side of the rack assembly, the opposite ends of each side member being slidably received in said pair of grooves provided at that side of the rack assembly and being laterally supported by said means providing said pair of grooves.

9. The modular rack assembly of claim 8 wherein said means providing said vertically extending groove to each of said post members comprises a channel shaped element fixed to each respective post member and extending along a substantial length thereof.

10. The modular rack assembly defined in claim 8 wherein each of said leg members include means providing a vertically extending leg groove open in a direction facing the opposite end of said base and said means providing each of said leg grooves is disposed in vertical alignment with the means providing said vertically extending groove to the post member telescopically engaged with that respective leg member to provide a pair of open interfacing leg grooves at each side of the base in substantial vertical alignment with the pair of grooves provided at that side of the rack assembly by said post members.

11. The modular rack assembly defined by claim 10 wherein said means providing said vertically extending groove to each of said post members and said means providing a vertically extending leg groove to each of said leg members are comprised of a formed metal element fixed to each respective post member or leg member along a substantial length thereof to provide a vertically extending groove of substantially rectangular cross section.

12. The modular rack assembly defined by claim 8 wherein said base rails and leg members are hollow metal tubular members of rectangular cross section fixed together at each corner of said base and reinforced at each corner by a formed gusset plate two intersecting edges of which are respectively welded to the outer surface of a side rail and the side surface of a leg member at that corner of said base, that portion of the gusset plate which extends toward the leg member at the opposite end of said base being formed outwardly to space the interior surface of said gusset plate outward of said side surface of said leg member, and

said post members of said end frames are formed from the same tubular stock as said leg members and are of a length less than the length of said side rails to enable said end frames to be stored horizontally one on top of the other on said base with said post members supported by said side rails between the leg members at each end of said base and restrained from substantial lateral movement by said outwardly formed gusset plates which provide lateral clearance at each side of the rack assembly.

13. The modular rack assembly defined by claim 12 wherein each of the tubular post members are reinforced by a metal band positioned around and fixed to the external surface thereof and said gusset plates are formed to space their respective interior surfaces a sufficient distance outward from the side surface of its respective leg member to accommodate the thickness of said band when said end frames are stored between said gusset plates.

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