

Sept. 13, 1949.

D. I. McKENZIE
SHIPPING CONTAINER

2,481,855

Filed June 8, 1946

4 Sheets-Sheet 1

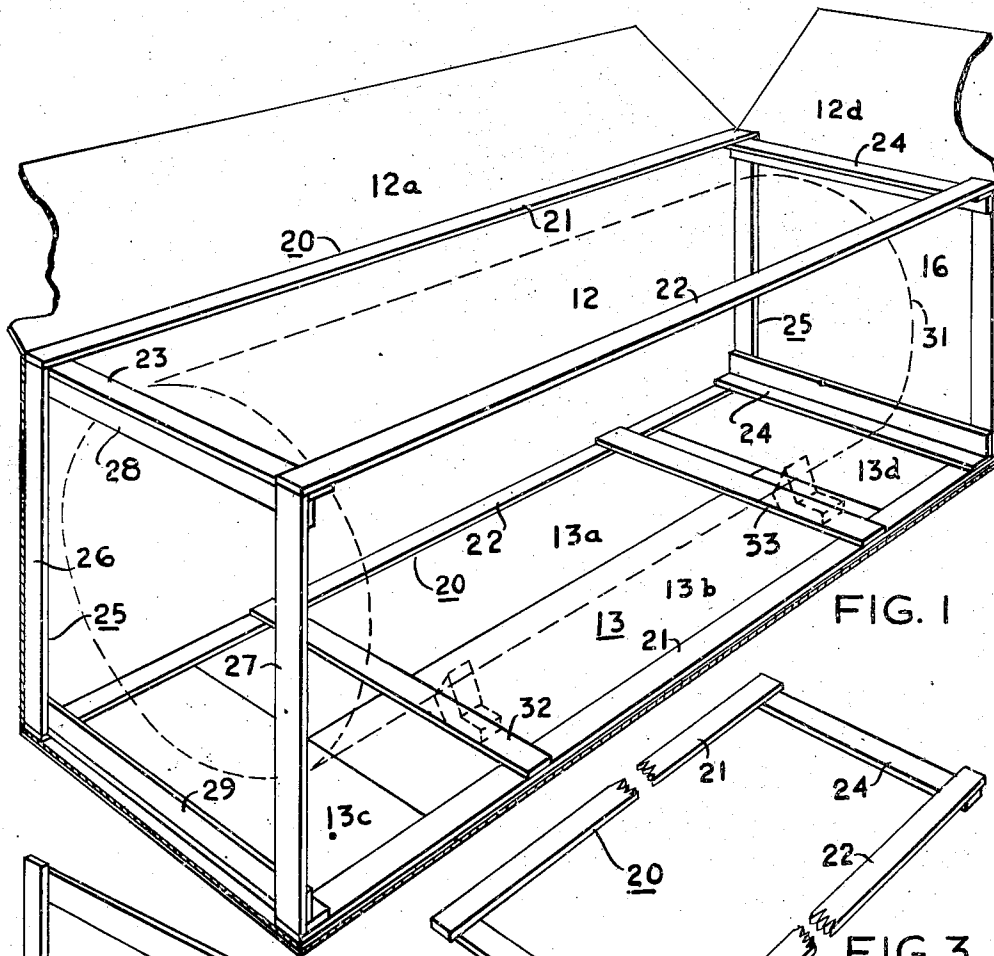


FIG. 1

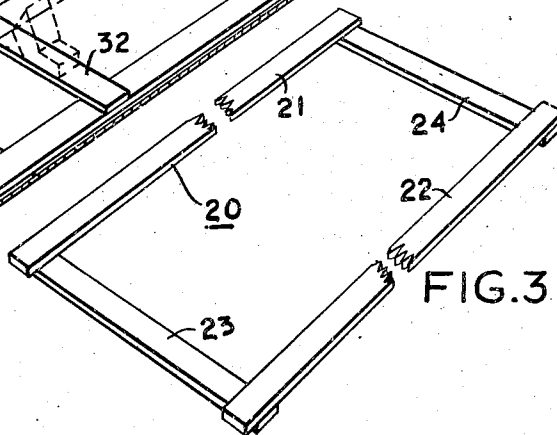


FIG. 3

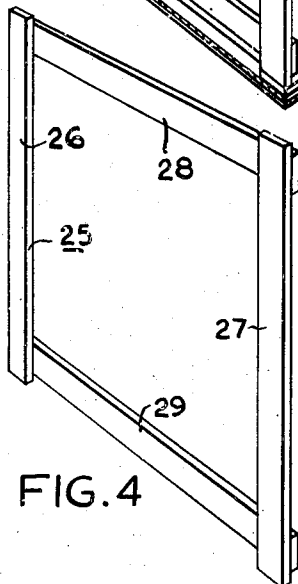


FIG. 4

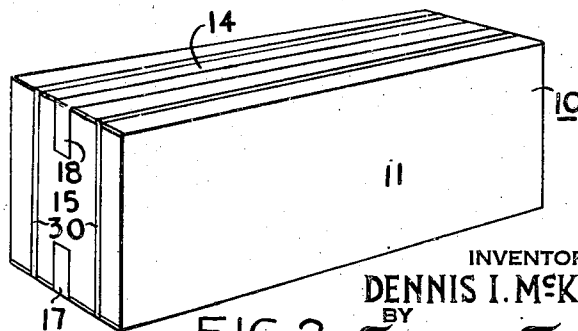


FIG. 2

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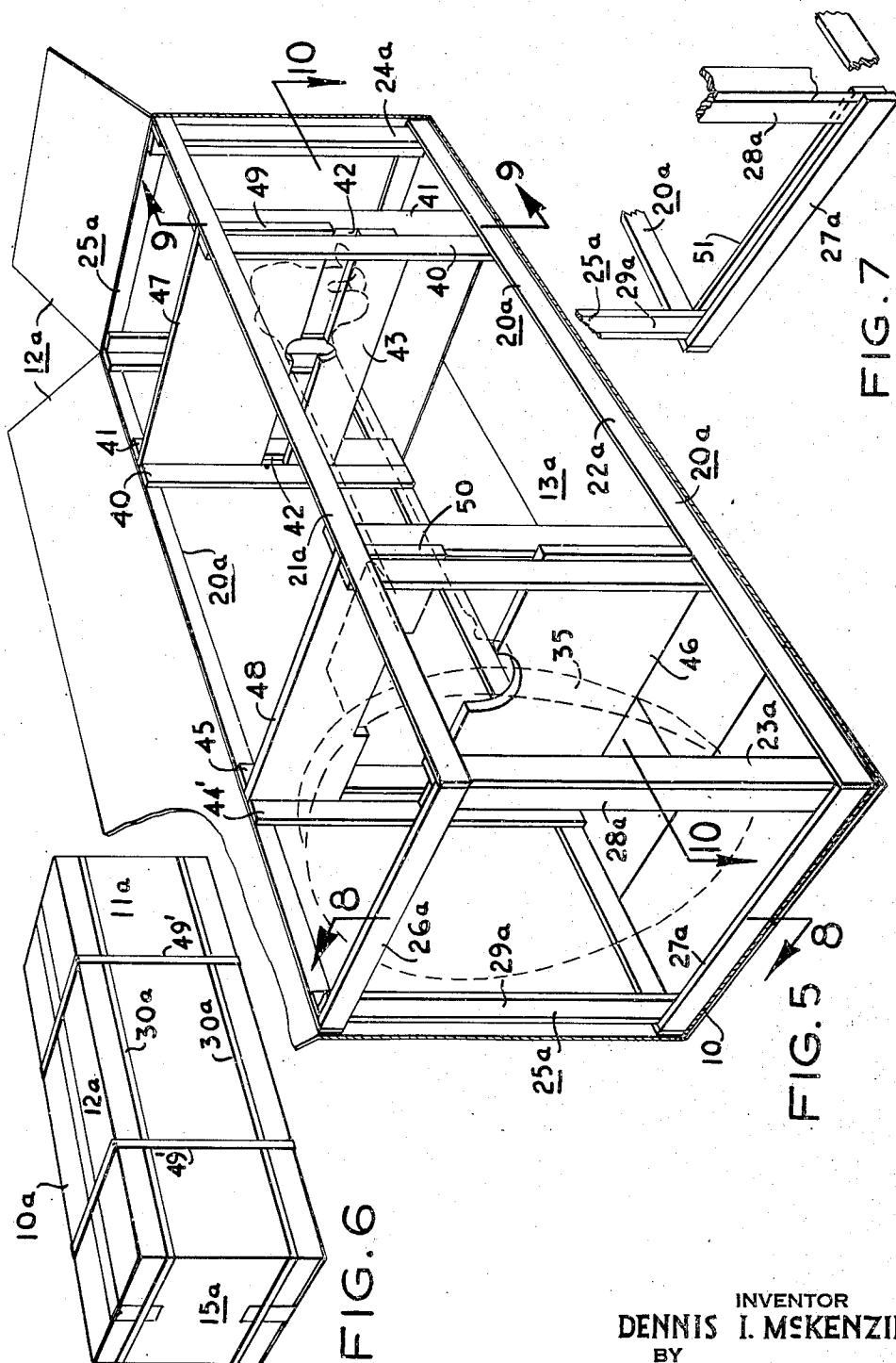
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4 Sheets-Sheet 2



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4 Sheets-Sheet 3

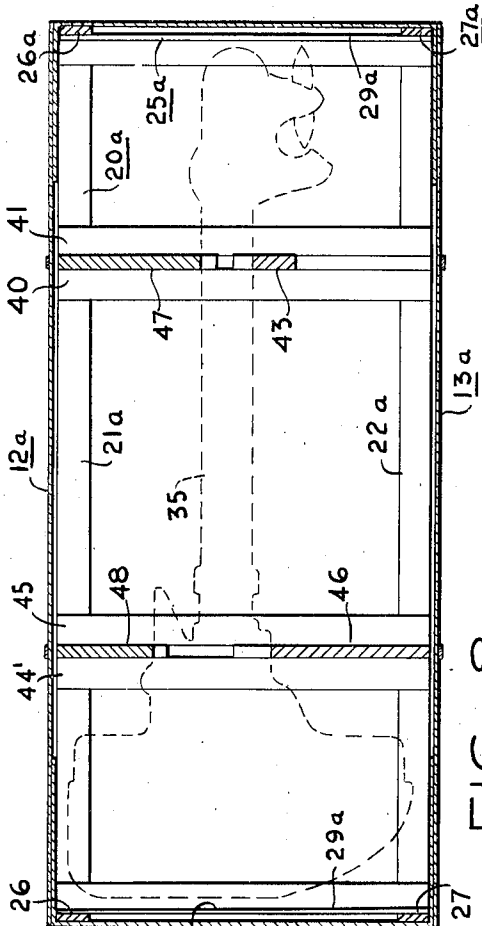


FIG. 8

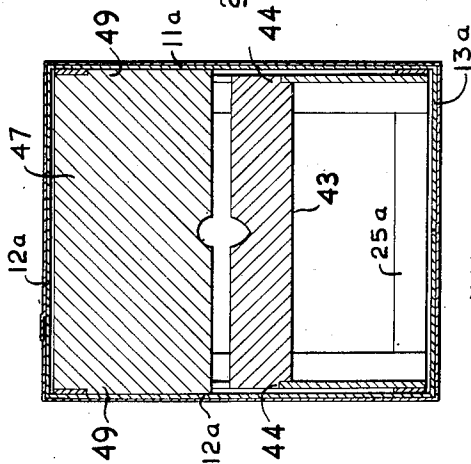


FIG. 9

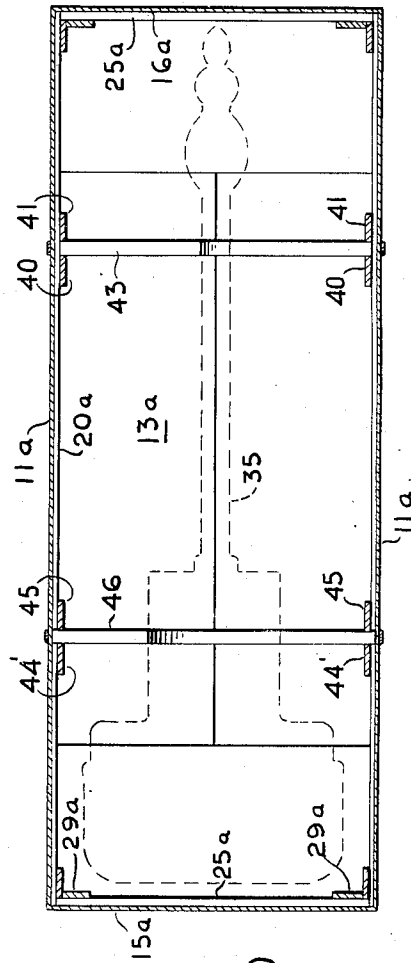


FIG. 10

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SHIPPING CONTAINER

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2 Claims. (Cl. 229--23)

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This invention relates to containers, and particularly to cardboard containers and means for supporting a device within the container during shipment so that the supporting means carries the weight of the device and the cardboard container serves as a protective covering for the device during shipment of the same.

An object of the invention is to provide a shipping container or carton of the fiber board type having a wall reinforcement therein which carries the weight of the article to be placed within the shipping container.

It is another object of the invention to provide a shipping container in accordance with the foregoing object wherein the reinforcing and support members for the same are assembled within the container without the use of any fastening means, and wherein metal straps placed around the outside of the shipping container hold the assembly together.

Still another object of the invention is to provide shipping container in accordance with the foregoing object wherein the corners of the support members are interlocked in such a manner that when the straps are placed around the outside of the container a rigid structure is obtained which cannot spread in any direction to thus relieve the walls of the fiber board shipping container of substantially all load carrying stress.

Still another object of the invention is to provide wall reinforcement members for a fiber board shipping container that are constructed and arranged in such a manner that they can be assembled within a shipping container to allow for opening of any selected side or end wall of the shipping container for insertion or removal of an article contained therein.

Still another object of the invention is to provide wall reinforcement members in accordance with the foregoing object wherein the wall members comprise four basic units provided with interlocked corners for assembly in the fiber board container without auxiliary fastening means between the support members, and which basic units allow for various arrangements thereof in the fiber board container to permit any selected side wall or end wall to be opened for insertion or removal of an article placed in the container.

Another object of the invention is to provide a fiber board shipping container in accordance with any of the foregoing objects wherein auxiliary support members may be carried by the wall reinforcing members for supporting various objects within the container, and which reinforcement members are retained in position without

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the use of auxiliary means between them and the reinforcement members;

Another object of the invention is to provide a fiber board shipping container in accordance with the foregoing object wherein the apparatus carried within the container may be supported therein without engaging the walls of the container.

Another object of the invention is to provide a fiber board shipping container in accordance with any of the foregoing objects wherein the walls of the shipping container are reinforced by wood frame members that are constructed and arranged with interlocking corners when assembled within the container, and which assembly is occasioned without the use of any auxiliary fastening means and the frame members provide the support for the walls of the shipping container to prevent crushing thereof during shipment, and which frame members can be used to directly support an apparatus for shipment in the container.

Further objects and advantages will become apparent from the drawings and the following description.

In the drawings:

Figure 1 is a perspective elevational view, partially in cross-section, illustrating a fiber board container and the reinforcing frame for the same in accordance with this invention, and wherein the reinforcing frame forms a bottom, top and end walls of the container.

Figure 2 is a perspective elevational view of the carton illustrated in Figure 1 but showing the location of retaining straps around the container.

Figure 3 is a perspective elevational view illustrating the basic frame member for a top or side wall of the carton.

Figure 4 is a perspective elevational view illustrating a basic frame member for the end walls of a carton, such as that illustrated in Figure 1.

Figure 5 is a perspective elevational view of a shipping container similar to that illustrated in Figure 1, but wherein the basic unit illustrated in Figure 3 now forms the side walls of the shipping container instead of the top and bottom walls as illustrated in Figure 1, and also illustrates auxiliary supports for carrying an article within the container.

Figure 6 is a perspective elevational view of the container shown in Figure 5 illustrating the arrangement of the retaining straps around the same.

Figure 7 is a partial elevational perspective view of the lower left hand corner of the structure illustrated in Figure 5 showing the manner

in which articles may be supported within the container without the use of auxiliary supports but wherein the basic units illustrated in Figure 3 still form the side walls of the container.

Figure 8 is a vertical longitudinal cross-sectional view of the structure illustrated in Figure 5, taken along line 8—8 of Figure 5.

Figure 9 is a vertical transverse cross-sectional view of the structure illustrated in Figure 5, taken along line 9—9 of Figure 5.

Figure 10 is a top horizontal cross-sectional view of the structure illustrated in Figure 5, taken along line 10—10 of Figure 5.

Figure 11 is a perspective elevational view similar to Figure 1 illustrating a slightly modified arrangement of the end wall structure thereof for placing an article within the container supported by guiding spacers at the corners of the shipping container.

Figure 12 is a top plan view of the carton shown in Figure 11 with the carton flaps open and top frame section removed.

Figure 13 is a perspective elevational view of the shipping container illustrated in Figure 11 showing the arrangement of the retaining straps around the same.

With reference to Figures 1 to 4 of the drawings, the shipping container 10 is a conventional fiber board, or corrugated cardboard carton having the side walls 11 and 12, a bottom wall 13, a top wall 14 and end walls 15 and 16. The bottom wall 13 of the carton 10 is closed by the flaps 13a and 13b that extend from the side walls 12 and 11 respectively and the end flaps 13c and 13d which extend from the end walls 15 and 16 respectively. The top wall 12 is closed by corresponding flaps arranged in the same manner as those referred to in the bottom wall, however flaps 12a and 12d are illustrated in Figure 1.

The fiber board container is adapted to be sealed by the usual type of paper or seal straps 17 and 18, in a conventional manner.

It will thus be seen that the cardboard container, or shipping carton, forms a conventional container constructed in the usual manner for such containers.

It is not commercially practical to ship heavy articles in a fiber board or corrugated cardboard carton because of the danger of rupture to the walls upon engagement of the article with the wall of the container. Also, such containers are subject to crushing.

In this invention therefore a wood frame is placed within the shipping container for reinforcing the walls of the container and for carrying the weight of an article contained therein. The wood frame is constructed and arranged with interlocked corners in such a manner that the frame is assembled within the shipping container without the use of auxiliary fastening devices.

The wood frame is constructed of two basic units illustrated in Figures 3 and 4, when the carton or shipping container is of rectangular shape. The unit 20, illustrated in Figure 3, is adapted to be used for either the side walls 12 and 11 or the top and bottom walls 13 and 14 of the shipping container illustrated in Figure 1. The unit 25, illustrated in Figure 4 forms the end walls 15 and 16 of the reinforcing frame.

The unit 20 consists of the side rails 21 and 22 joined together by the end rails 23 and 24, suitable nails or screws being utilized for holding the respective rails together. It will be noted that the end rails 23 and 24 are inset relative to the ends of the side rails 21 and 22 by an amount

equal to the thickness of the side rails 26 and 27 of the unit 25, as illustrated in Figure 1. The end rails 23 and 24 of the unit 25 are also inset relative to the ends of the side rails 26 and 27 of the unit 25 an amount equal to the thickness of the end rails 23 and 24 of the unit 20, as illustrated in Figure 1.

From the foregoing description of the units 20 and 25 it will be quite apparent that if the shipping container is a square container, instead of rectangular as illustrated, that four of the units 25 can be utilized for reinforcing four linearly contiguous walls of the shipping container.

To assemble the frame sections within a shipping container preparatory to placing an article therein for shipment, a frame section 20 is placed upon the bottom wall 13 of the container 10 in an inverted position from that illustrated in Figure 3. Thus the end rails 23 and 24 will be facing upwardly in this instance. A pair of units 25 are then placed adjacent the end walls 15 and 16 of the container 10, with the lower ends of the side rails 26 and 27 supported upon the extending ends of the side rails 21 and 22 of the frame section 20 and confined between the end walls of the shipping container and the end rails 23 and 24 of the unit 20 and with the end rail 29 of the unit 25 resting upon the end rails 23 and 24 of the unit 20. Thus, there is provided an overlapping and interlocking joint between the units 20 and 25 along the bottom edges of the end walls 15 and 16.

A second section 20 is then placed upon the upper edges of the sections 25 with the extending ends of the second section 20 overlapping the upper ends of the sections 25 in the same manner as heretofore described with reference to the lower corner.

It will of course be understood that before the top wall section is put in position, the article to be shipped is placed within the shipping container.

The flaps for the top wall 12 are then closed upon the top frame section 20 in the same manner of arrangement as the flaps for the bottom wall 13.

A pair of retaining straps 30 are then placed around the closed shipping container 10, as illustrated in Figure 2, with the retaining straps extending around the container in a direction linearly contiguous with the side rails of the frame units 20 and 25, thus preventing the end frame sections 25 breaking through the end walls 15 and 16 of the shipping container, the straps 30 binding the joints at the four corners of the box into a rigid structural unit.

To support a heavy object, such as the tank 31 illustrated in dotted lines in Figure 1, directly upon the frame, auxiliary support members 32 and 33 may be provided between the side rails 21 and 22 of the bottom frame unit 20, the tank 31 being securely fastened to the auxiliary support members 32 and 33 to prevent shifting thereof within the shipping container.

Referring now to Figure 5, the shipping container 10a is of identical construction with that disclosed in Figure 1, but in this instance the frame units 20 and 25 have been arranged around the four linearly contiguous walls of the container consisting of the side walls and end walls in place of the four linearly contiguous walls consisting of the top and bottom walls and end walls as illustrated in Figure 1. In Figure 5 the frame sections and the side and end rails thereof have been given the same ref-

reference numerals as the corresponding members of the frame sections disclosed and described with reference to Figure 1 but with the suffix *a* added thereto.

It will be noted that in Figure 5 the assembly of the two end frame sections 25*a* and the two, now side wall frame sections 20*a*, is identical with that of the assembly of the corresponding sections in Figure 1, but the assembly has been rotated clockwise 90° from the position of the assembly illustrated in Figure 1. Thus, the frame sections 20 and 25 are basic to the two shipping containers and to the two methods of assembly thereof.

Also, it will be noted that the retaining straps 30*a* on the shipping container 10*a*, illustrated in Figure 6 are positioned 90° from the position illustrated in Figure 2 to thus retain the assembly together in the same manner as heretofore described.

From the foregoing description of the arrangement of the basic frame sections 20 and 25, it will also be apparent that either end wall 15 or 16 of the shipping container 10 could be a top wall with the side walls of the shipping container reinforced by the frame sections 20 either in the position illustrated in Figure 1 or in the position illustrated in Figure 5. In either instance the end frame sections 25 are removable to allow insertion and removal of an article to be shipped in a container.

Thus, by the use of the basic units 20 and 25 in the instance of a rectangular container or by the use of all of the units 25 in the instance of a square shipping container, it is apparent that any selected side of the shipping container can be left open for insertion and removal of the article to be shipped and may be arranged for selective support of the article within the container.

With the frame sections 20 and 25 placed in the shipping container in the manner illustrated in Figure 5, it is possible to support an article within the shipping container between opposite side walls or end walls of the container while allowing entry of the article into the container through the top wall thereof.

As illustrated in Figure 5, the shipping container has been adapted for shipment of an outboard motor 35, illustrated in dotted lines therein. Each of the frame sections 20*a* are provided with a pair of cross members 40 and 41 that form a slot 42 therebetween. A transversely extending support member 43 is positioned between the members 40 and 41, a flange 44 being provided on each end of the member 43 for positioning in the slots 42. The member 43 is retained in an elevated position upon engagement of the flanges 44 with the bottoms of the slots 42.

As will be noted in Figure 5 members 44' and 45 corresponding to members 40 and 41 are placed at the opposite end of the container 10*a* and a member 46 corresponding to member 43 extends therebetween.

The members 43 and 46 are adapted to support the article, such as the outboard motor 35.

To provide for entry of the flanges 44 into the slots 42, and corresponding flanges on the member 46 into the corresponding slot between members 44 and 45, the side walls of the shipping container are spread slightly to allow entry of the members 43 and 46 into their respective slots.

After placement of the article within the

shipping container, members 47 and 48 are placed in the slots between the members 40, 41, 44' and 45. The members 47 and 48 are provided with flanges 49 and 50 respectively which enter the respective slots for the same when the side walls of the container are spread slightly. The upper ends of the flanges 49 and 50 engage the upper side rails of the frame sections 20*a* to thus prevent removal of the members 47 and 48 from their respective positions. The structure, therefore, is such that the outboard motor, or other article is retained within the shipping container fully supported by the frame sections and without engagement of the article with the walls of the container in such a manner that would allow the article to break through the walls of the container.

To prevent the side walls 11*a* and 12*a* of the container 10*a* from spreading during shipment, metal retaining straps 49' are provided around the container in substantial alignment with the members 43, 46, 47 and 48.

While the article illustrated within the container has been referred to as an outboard motor yet it will be understood that by merely changing the configuration of the edges of the members 43, 46, 47 and 48 that engage the article to be supported within the container, that any article having any contour can be retained in the container in the same manner as heretofore illustrated and described.

In Figure 7 there is shown a slightly modified arrangement of the auxiliary support means for carrying an article within the shipping container, as for example, when it is desired to support a device at the four corners thereof. In this arrangement the frame sections 20*a* and 25*a* are the same as heretofore disclosed and described and are arranged in the same manner as that shown in Figure 5.

However, in Figure 7 a support member 51 is provided parallel to the side rail 27*a* on the opposite side of the end rails 28*a* and 29*a*. With the frame sections 20*a* and 25*a* assembled as illustrated in Figure 5, a device having corners thereon may be guided by the four vertical corners of the assembled frame sections and be supported upon the support members 51.

In Figures 11 to 13 there is illustrated a shipping container in most respects similar to that disclosed in Figure 1 except that the end frame sections 25 illustrated in Figure 1 are modified slightly in structure and location to provide for a vertical guiding support of an object placed within the shipping container.

In the form of the device illustrated in the Figures 11 to 13 the shipping container 10*b* is identical to that disclosed and described in Figure 1. Also, the frame sections 20*b* forming the top and bottom walls of the shipping container are constructed in the same manner as the frame sections 20 illustrated in Figures 1 and 3.

Under certain circumstances it may be desired to provide for a definite spaced guiding support for an object of manufacture. In this instance the end frame sections 60 corresponding to the end frame sections 25 are provided with end rails 61 and 62 that have the side edges thereof extending beyond the ends of the side rails 63 and 64. Also, it will be noted that the position of the end rails 61 and 62 is reverse of that of the end rails 28 and 29 illustrated in Figure 1, thus placing the side rails 63 and 64 toward the inside of the shipping container 10*b*. Auxiliary support and guide members 65 and 66 are secured to the rails 63

and 64 respectively to thereby form a right angle corner at each side of the frame section 60 for receiving opposite corners of an object. The arrangement is such that when the object is placed in the assembled frame there can be no relative movement of the object in the frame or spreading of the frame because of the retaining straps 67 that are placed around the outside of the shipping container in the same manner as heretofore illustrated.

In the arrangement of the shipping container illustrated in Figure 11 the vertical weight of the object placed therein will be carried by the bottom frame section 20b, or the top frame section depending upon the position of the shipping container, and transverse thrust of the object will be taken by the L-shaped guide supports formed on the end frame sections 60.

While the structure of the device disclosed and described herein constitutes a preferred form of the invention, yet it will be understood that the device is capable of mechanical alteration without departing from the spirit of the invention, and that all modifications that fall within the scope of the appended claims are intended to be included herein.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In combination, a container having non-self-supporting walls when placed under load of the article adapted to be carried therein, a skeleton frame structure removably disposed in said container consisting of a plurality of individual unattached frame sections positioned adjacent linearly contiguous walls of the container, each of said frame sections consisting of a pair of spaced side rails joined by end rails disposed in inset relationship to the ends of said side rails, said sections disposed in endwise engaging relationship with the side rails and end rails thereof in overlapping interlocking engagement to prevent inward collapse of the separable frame structure and prevented from outward separation by the walls of said container, a retaining strap around the exterior of said container engaging said linearly contiguous walls normal to the engaging edges of said frame sections to bind said overlapping joints together and relieve the walls of said container of pressure of said frame sections upon tendency of them to separate when loaded with the weight of the article for shipment in the container, removable support members extending between frame sections disposed against opposite walls of said container and carried wholly by the said frame sections for fully

supporting an object in the container thereon, said support members having extensions thereon making said support members of greater length than the distance between the side rails of said opposite frame sections for engaging the side rails to lock the said support members therebetween.

2. In combination, a container having non-self-supporting walls when placed under load of the article adapted to be carried therein, a skeleton frame structure removably disposed in said container consisting of a plurality of individual unattached frame sections positioned adjacent linearly contiguous walls of the container, each of said frame sections consisting of a pair of spaced side rails joined by end rails disposed in inset relationship to the ends of said side rails, said sections disposed in endwise engaging relationship with the side rails and end rails thereof in overlapping interlocking engagement to prevent inward collapse of the separable frame structure and prevented from outward separation by the walls of said container, a retaining strap around the exterior of said container engaging said linearly contiguous walls normal to the engaging edges of said frame sections to bind said overlapping joints together and relieve the walls of said container of pressure of said frame sections upon tendency of them to separate frame sections disposed against opposite walls of said container and carried wholly by the said frame sections for fully supporting an object in the container thereon, said support members having extensions thereon making said support members of greater length than the distance between the side rails of said opposite frame sections for engaging the side rails to lock the said support members therebetween, and guide rails on said opposite frame sections for disposing said support members in predetermined position between said opposite frame sections.

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