

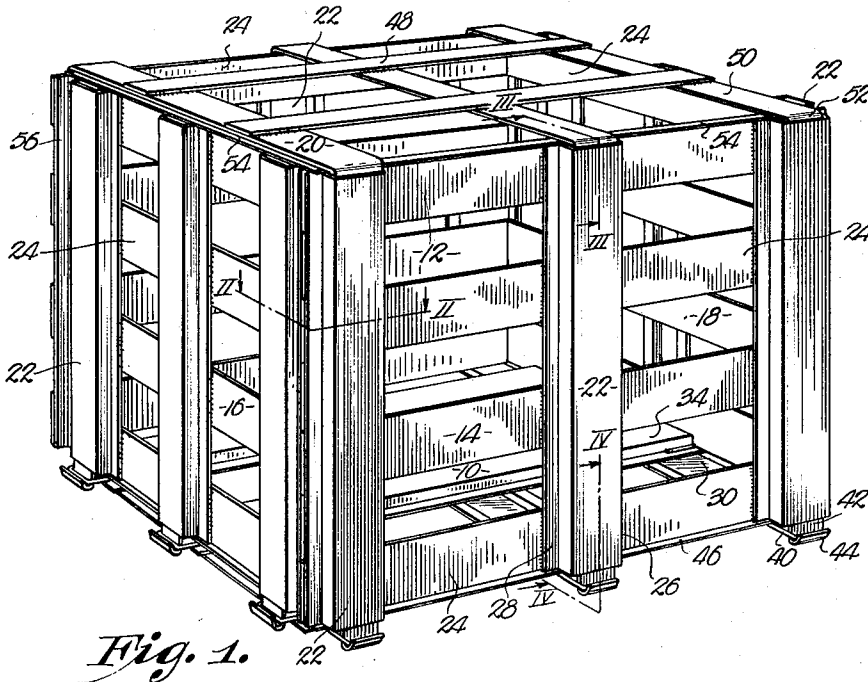
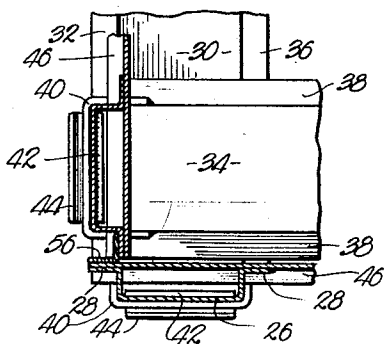
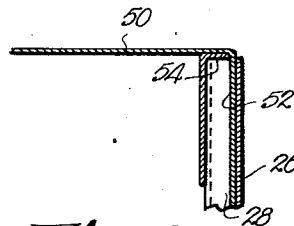
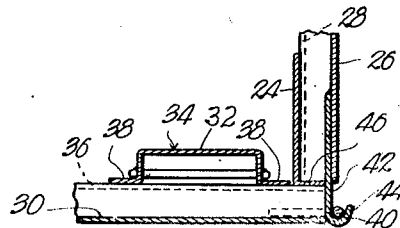
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COLLAPSIBLE SHIPPING CRATE

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COLLAPSIBLE SHIPPING CRATE

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This invention relates to packing structure particularly adaptable for encasing various types of articles for transportation and especially to shipping crates of a collapsible nature having interconnecting means as a part thereof permitting quick assembling and disassembling without manipulation of complicated parts.

The primary object of this invention is to provide a collapsible shipping crate having a number of separable sections, which when operably interconnected form a polygonal structure that is light in weight, capable of withstanding excessive stresses and pressures, and that is easily constructed and inexpensive to manufacture.

An important object of this invention is the provision of a collapsible shipping crate having a platform formed of a number of beams joined by a series of spaced apart cross-bars, all of which beams and cross-bars are formed in a channel-like manner to provide raised, underlying supports for the crate and to present an effective and sturdy means for fastening loop members at the ends thereof to cooperate with hooks on the side walls of the crate when the same is placed in an assembled condition.

Another object of this invention is to provide a shipping crate that includes a platform having a number of U-shaped loops extending outwardly from the periphery thereof, and side walls, each having corresponding hook members for each of the loops, which hooks are formed by rebending the free ends thereof whereby a quickly releasable, interlocking assembly is presented that is capable of maintaining the crate in an assembled condition and adapted to permit collapsing the walls for storage or shipment in a superimposed, stacked relation.

A further object of this invention is to provide in a shipping crate having the aforesaid platform, side walls and interlocking assembly, a top wall having a number of overlapping flaps for holding at least two of the walls in spaced apart relation at the uppermost edges thereof, and means inherent in those side walls for receiving the flaps.

A still further object of this invention is to provide a collapsible shipping crate having out-turned flanges at the upper and lower edges of the side walls thereof to maintain the aforementioned interlocking means in rigid interengagement, and to present a tight fit between the said flaps and the side walls that they overlap.

Other objects of this invention include the unique construction of the sections forming the walls of the crate as well as many other objects

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that will become apparent throughout the following specification, referring to the accompanying drawings wherein:

Figure 1 is a perspective view of a collapsible shipping crate made in accordance with the present invention.

Fig. 2 is a cross-sectional view taken on line II—II of Fig. 1.

Fig. 3 is a cross-sectional view taken on line III—III of Fig. 1; and

Fig. 4 is a cross-sectional view taken on line IV—IV of Fig. 1.

The walls forming the enclosed, polygonal crate illustrated in Fig. 1, comprise a number of separable and independently constructed sections, which when completely assembled, present a bottom wall or platform 10, a pair of side walls 12 and 14, a pair of end walls 16 and 18 and a top wall 20. Each of the six walls just described is constructed in a substantially like manner in that none are completely solid but comprise a number of spaced-apart members to present a light weight structure capable of packing material needing a maximum amount of ventilation.

The side walls 12 and 14 and the end walls 16 and 18 are substantially identical, each including a number of spaced-apart, upright members or studs 22 and a number of cross-bars 24 that are also disposed in spaced-apart relation and welded or otherwise fixed to the studs 22. Each of the studs 22 comprises a U-shaped portion 26 and a pair of laterally extending flanges 28 on each side of portion 26. The cross-bars 24 lie flatly against the flanges 28 to present a partially closed channel throughout the length of studs 22, the ends of which are open.

All of the members forming the platform 10 have the same cross-sectional contour as the stud members 22, just described, and consist of a number of beams 30, spaced apart as in clear in Fig. 1, and disposed with the channel portion thereof opening upwardly to present a number of legs formed by the outer faces of U-shaped portions 32 thereof. These beams 30 have their ends open in the same manner as studs 22 and are joined by a number of cross-bars 34 formed in the same manner but disposed with the channel thereof opening downwardly where the flanges 36 and 38 of the beams 30 and the cross-bars 34 respectively are contiguous and held together by spot welding or otherwise fusing the same to form the complete section 10.

Extending outwardly from each end of all the beams 30 and the cross-bars 34 of the platform

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10 is a U-shaped loop 40, the legs whereof straddle the outer wall of the U-shaped portions 32 thereof and are fixed thereto. A number of hook members 42 on each of the studs 22 of the sides 12 and 14 and the end walls 16 and 18 cooperate with respective loops 40 to provide an interlocking attachment of the side and end walls to platform 10.

These hook members 42 are fixed to the bottom wall of the channel formed in the studs 22 and extend from the lowermost, open end thereof to terminate in a rebent portion 44 after first passing through its corresponding loop 40.

The lowermost cross bar 24 of each wall 12, 14, 16 and 18 is turned outwardly at its bottom edge as at 46 to a point partially covering the open end of studs 22 for presenting a firm support of the walls on the platform 10 and to add support to the hooks 42 if breaking away from the studs 22 should begin.

The top wall 20 is formed of a number of bars 48 and 50 respectively disposed in crossed relation and joined together as shown in Fig. 1. The bars 50 are in alignment with the studs 22 of side walls 12 and 14 respectively and the ends thereof are turned down to present a flap 52 extending into the uppermost, open end of each respective stud 22. The uppermost cross bar 24 of each wall 12 and 14 is turned outwardly to present a flange 54 in the same manner as at 46 with respect to the lower bar 24. When the top wall 20 is placed in position therefore, the flaps 52 are disposed between the flange 54 and studs 22 and lateral displacement of the side walls 12 and 14 is prevented. An L-shaped member 56 fixed to each side walls 12 and 14 and near each end thereof prevents outward movement of the end walls 16 and 18 when the crate is filled for shipment. Any suitable means for tying the top 20 securely in place may be used if such is found desirable or additional binding around the entire crate utilized in the usual manner.

It is clear from the foregoing that by removing the top wall 20, the entire assembly may be collapsed by swinging all the side and end walls outwardly until the hooks 42 and the loops 40 may be disengaged. All the separate sections of the crate may be then stacked together and tied into a compact bundle for reshipment to the point of further use, or stored until needed without requiring a large amount of space.

It is notable that the ends of the bights of each of the cross-bars 34 of the platform 10 terminate inwardly of the outermost edge of proximal beams 30 and that all the loops 40 thereon have their legs disposed at the line of joinder between portions 32 and corresponding flange portions 36 and 38 respectively. Thus, the flange portion 46 of the lowermost cross-bar 24 of each end section 16 and 18 rests directly on the legs of underlying loop members 40, and the inner faces of said lowermost cross-bar 24 are in abutting relation with the ends of the cross-bars 34 respectively. This feature in cooperation with the interlocking loop and hook members 40 and 42 prevents inward movement of the end members 16 and 18.

The form of the platform 10 as above described wherein the beams 30 raise the crates above the surface of the floor is its adaptability for use with finger lifts as are commonly used in warehouses and by shipping companies. The fingers of such a lift are easily moved under the crate between the beams 30 to a position for engaging the series of cross bars 34 whereby the entire crate and its contents can be moved about or several

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crates stacked one on another for storage. Obviously in many types of goods wherein the side walls are not needed for support and where the goods are relatively durable in nature, the platform 10 may be used as a pallet as is common where finger lifts are employed.

In any event, whether or not platform 10 is so used as a pallet and the goods stacked in superimposed pallet loads, the crate may be filled and emptied more conveniently with the walls of the crate entirely removed. After a number of articles sufficient to fill a crate are placed in position, the side and end walls and the top are subsequently placed in assembled position. Conversely, when the crate reaches its destination the sections may be all removed and then the goods taken from the platform 10, or the same bodily lifted by a finger lift to a point of storage.

The length of the flaps 52 on the top section 20 is such as to permit the same to pass into respective loop members 40 when the sections are stacked in superimposed relation with the end walls 16 and 18 and the side walls 12 and 14 interposed between the top 20 and the bottom 10 for holding the entire assembly in a compact bundle when reshipment is made.

It is contemplated that the crate just described be used primarily for fire brick and the same has been designed in a strong and durable manner with that end in view. Obviously many other types of articles may be accommodated by the crate however and all the advantages above set forth will nevertheless emanate from its use in such manner.

While a large number of advantages have been set forth, it is understood that those made possible by the formation of a collapsible shipping crate as herein illustrated and described are contemplated hereby. It is therefore desired to be limited only by the spirit of the invention and the scope of the appended claims.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a collapsible shipping crate of the kind described comprising a plurality of sections forming the walls of said crate; and a plurality of down-turned flaps on the section forming a top wall for maintaining certain of said side walls in spaced-apart relation, said side walls each having hollow open end stud members forming a part thereof, said flaps extending into one open end of corresponding stud members.

2. A collapsible shipping crate of the kind described comprising a plurality of sections forming the walls of said crate; interlocking loop and hook members on the normally bottom wall and the side walls respectively for connecting the latter to said bottom wall; and means on the section forming a top wall for maintaining certain of said side walls in spaced-apart relation, said means comprising a number of flaps overhanging said certain side walls, said side walls having a plurality of hollow, open-end stud members, said flaps extending into one open end of corresponding stud members.

3. In a collapsible shipping crate of the kind described comprising a plurality of sections forming the walls of said crate; and interlocking loop and hook members on the normally bottom wall and the side walls respectively for connecting the latter to said bottom wall; a plurality of open-end stud members, said hooks extending from within each of said stud members respectively

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and extending outwardly from one open end thereof.

4. A collapsible shipping crate of the kind described comprising a plurality of sections forming the walls of said crate; interlocking loop and hook members on the normally bottom wall and the side walls respectively for connecting the latter to said bottom wall; and means on the section forming a top wall for maintaining certain of said side walls in spaced-apart relation, said means comprising a number of flaps overhanging said certain side walls, said side walls each comprising a plurality of open-end stud members and a number of cross-bars fixed to the stud members, said flaps extending into one open end of corresponding stud members, the uppermost cross-bar of each side wall having a longitudinal flange partially closing said open ends having flaps therein for holding the latter against lateral displacement.

5. A collapsible shipping crate of the kind described comprising a plurality of sections forming a platform, side walls and end walls extending upwardly therefrom, and a top wall, said side walls each comprising a number of open-end, U-shaped stud members, and a series of interconnecting cross-bars; interlocking means for attaching the side walls and end walls to the platform; a number of flaps on said top wall and extending into one open end of corresponding stud members for maintaining the side walls in spaced-apart relation; and means on the side walls for holding the end walls against outward movement.

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6. A collapsible shipping crate of the kind described comprising a plurality of sections forming the walls of said crate; interlocking loop and hook members on the normally bottom wall and the side walls respectively for connecting the latter to said bottom wall; and means on the section forming a top wall for maintaining certain of said side walls in spaced-apart relation, said means comprising a number of flaps overhanging said certain side walls, said side walls having a plurality of hollow, open-end stud members, said flaps extending into one open end of corresponding stud members.

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