Sept. 8, 1953 J. S. JOHNSON 2,651,431

PACKING CRATE

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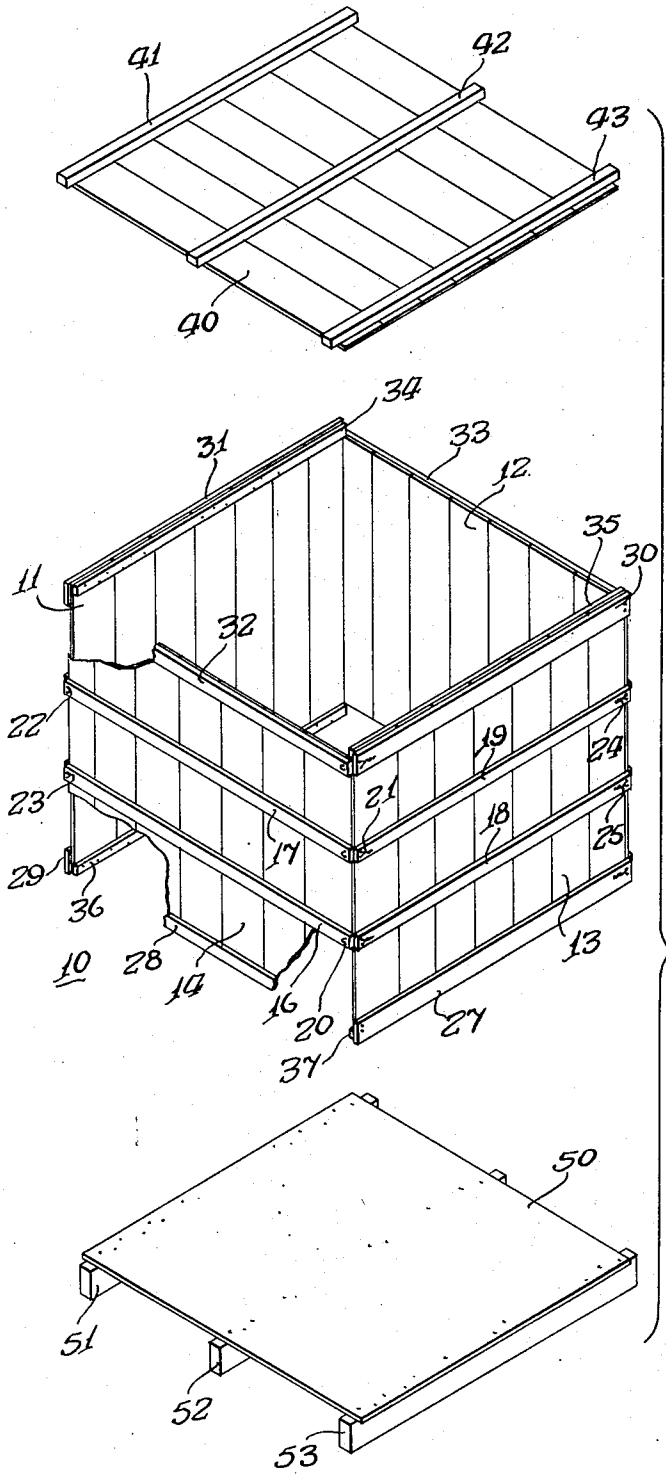


Fig. 1.

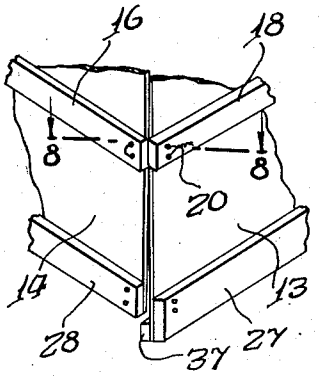


Fig. 2.

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Fig. 2.

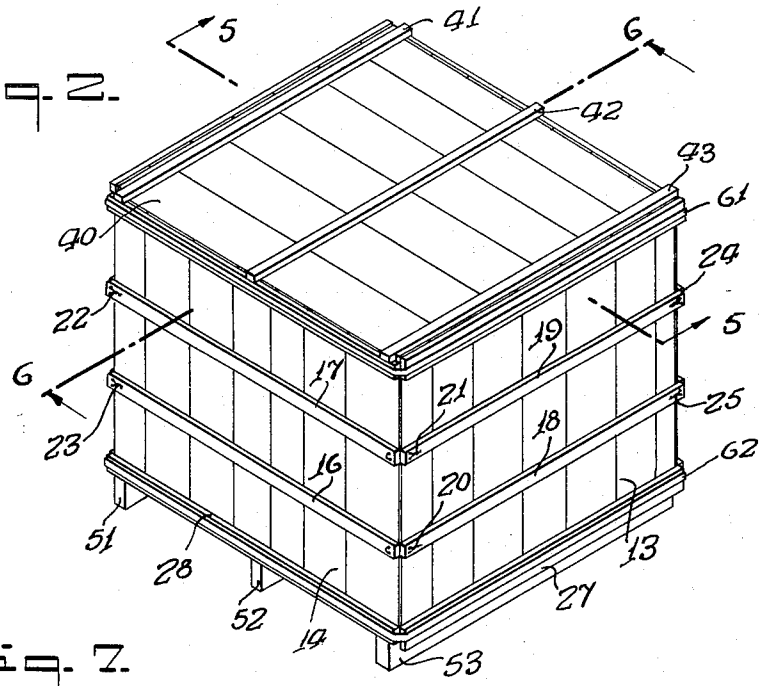


Fig. 7.

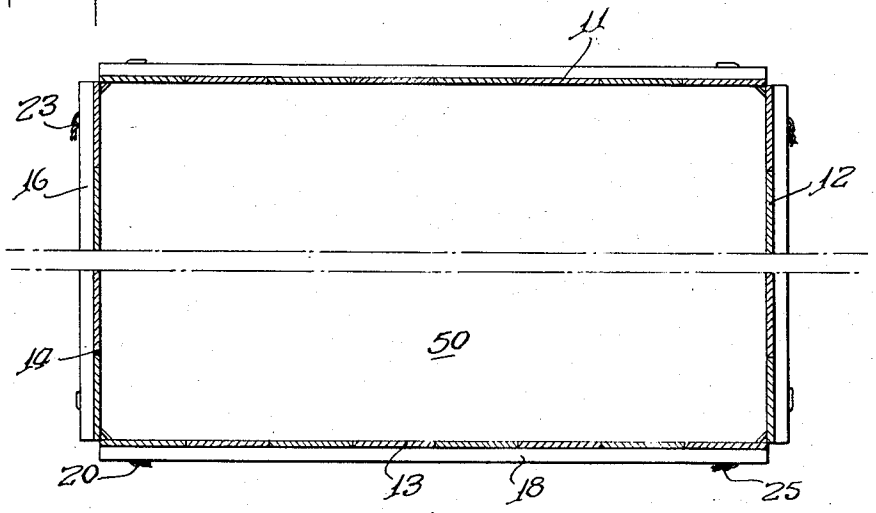
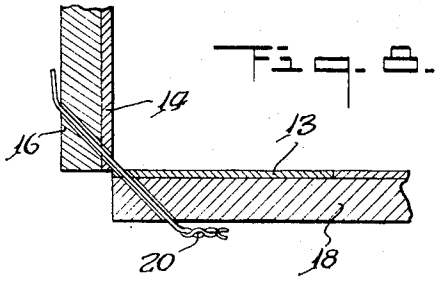


Fig. 8.



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Fig. 4.

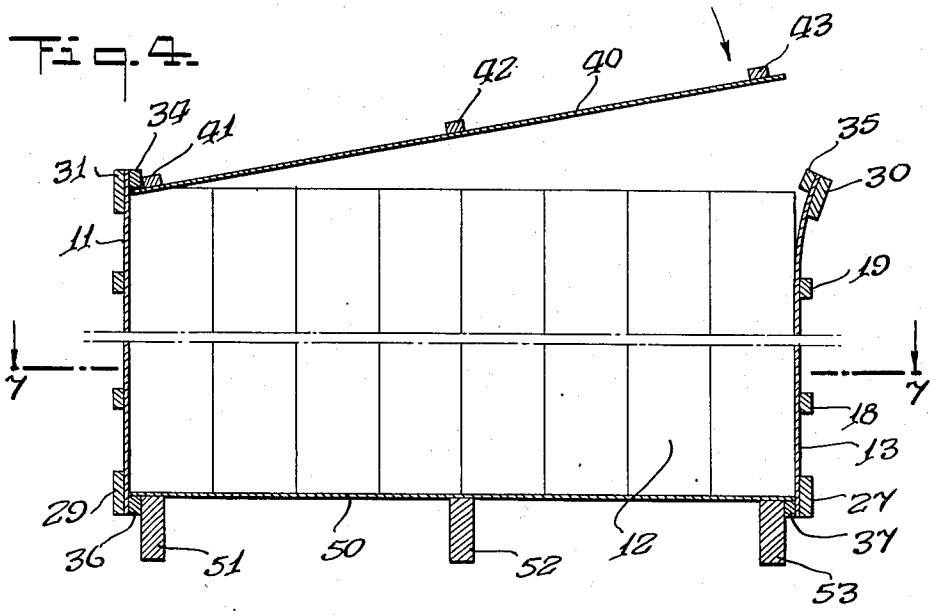
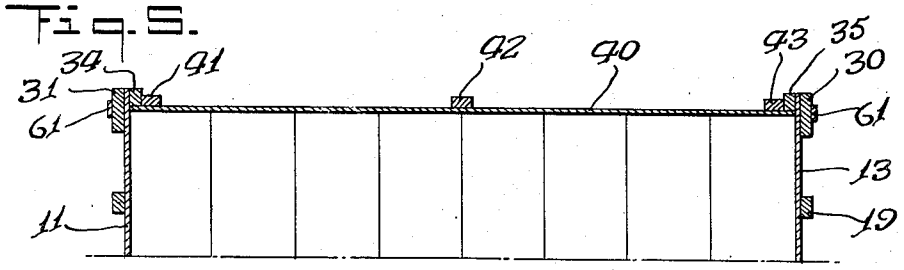


Fig. 5.



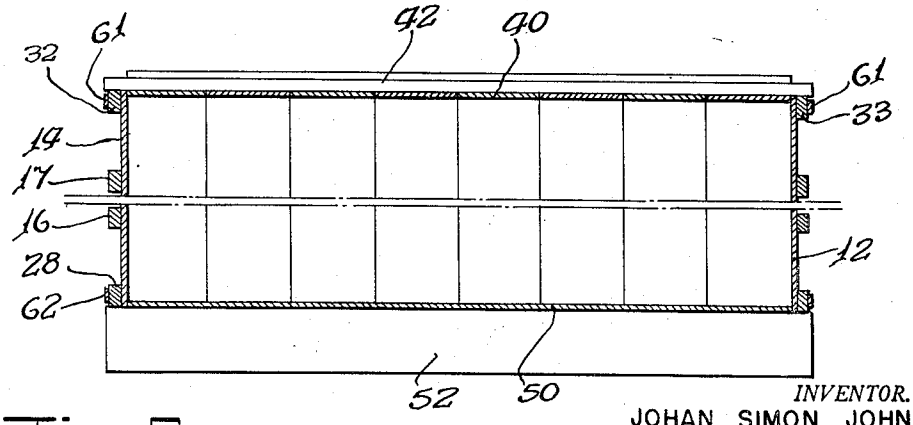


Fig. 6.

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Patented Sept. 8, 1953

2,651,431

UNITED STATES PATENT OFFICE

2,651,431

PACKING CRATE

Johan Simon Johnson, Chicago, Ill., assignor to Bigelow-Garvey Lumber Co., Chicago, Ill., a corporation of Illinois

Application October 12, 1950, Serial No. 189,804

1 Claim. (Cl. 217—16)

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This invention relates to a crate or wood container for packing and shipping materials, and, in particular, relates to a collapsible container wherein the sides may be collapsed into a flat package.

It is a fundamental object of the instant invention to provide a collapsible wood container which is recoverable for repeated use, having the sides hinged together so that it can be collapsed into a compact package.

It is another object of the instant invention to provide a top and bottom construction which permit the locking of the top and bottom pieces in place, whereby they function to hold the container in its desired shape and the container conversely serves to hold the top and bottom locked in place.

It is a further object of the invention to provide a wood container which is collapsible and can be readily assembled with its top and bottom without the use of nails.

It is another object of the invention to provide a collapsible wood container having top and bottom capable of being assembled as a unit so that top or bottom may be slipped in place readily.

Other objects and advantages of the invention will in part be obvious and in part appear hereinafter.

The invention, accordingly, comprises a collapsible wood container having a unique structure which is characterized by its being made of four panels held together to form a unit defining the sides of the container and having around the top and bottom structural members or battens forming a ledge for supporting a flat top and bottom inserted therein. The top and bottom elements used also have battens applied thereto which cooperate with the similarly applied battens on the side members, thereby to hold and lock the piece in place. The invention thus is embodied in a container having the features of construction, combinations of elements and arrangement of parts hereinafter to be described in greater detail.

In the figures which constitute a series of drawings illustrating the invention and its assembly:

Figure 1 is an exploded view showing in perspective the several panels used to form the sides of the container and the top and bottom oriented in appropriate relationship for assembly therewith;

Figure 2 is a perspective view of the assembled container showing the top and bottom in place;

Figure 3 is a detailed section showing the relationship of side panels at a corner of the device;

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Figure 4 is a vertical section through the device showing the manner of assembling the top with the sides;

Figure 5 is a section taken along the line 5—5 of Figure 2 showing the top in place;

Figure 6 is a section through the device taken along the line 6—6 of Figure 2;

Figure 7 is a section taken along the line 7—7 of Figure 4, and presents substantially the mid-section of the device; and

Figure 8 is a section across one corner of the device taken along the line 8—8 of Figure 3.

Referring now to Figure 1 for a more detailed exposition of the construction of the invention therein, 10 represents the box composed of the four side elements, 11, 12, 13 and 14, which are formed of a plurality of boards, or they may be of plywood in single sheets, and bear as lateral binding elements a batten or plurality of battens on each, such as 16, 17, 18, 19. The side panels thus formed are hinged together by flexible connectors 20, 21, 22, 23, 24, 25, which are preferably wire, which may be of the form shown in United States Patent 2,008,762. These flexible connectors are placed at joints formed by the meeting of battens but are omitted from diagonally opposite corners of the top and bottom. The top and bottom edges of the side panels are reenforced with battens 26, 27, 28, 29, 30, 31, 32, 33. Opposite faces of the box are of the same height and in the embodiment of the invention preferred, two of these opposite faces will exceed the other two in height by the width of an inside batten applied to that face and the thickness of the top or bottom piece. In this instance faces 11 and 13, respectively, have applied to the inner top edges thereof battens 34 and 35 and, in a corresponding manner, the bottom edges thereof have battens 36 and 37 applied thereto. Figure 1 at the corner formed by sides 13—14 and Figure 3 show the relationship of the length of the side to the placement of the battens.

The top of the box 40 is constructed likewise of a plurality of boards or a single sheet of plywood (as shown in the illustration of the bottom) reenforced with a series of battens 41, 42 and 43. In the assembly of the top, the outermost batten members in this case 41 and 43 are applied inside those edges a distance equal to the thickness of the battens applied to the inside edges of the sides, in this instance, battens 34 and 35. Also the several battens applied to the top exceed the width thereof by at least the thickness of the several sides of the box.

In this manner the rectangle formed by the

outside edges of the battens 41 and 43 and the free edges of the top piece 40 corresponds in size to the rectangle defined by the inside edges of the battens 34 and 35 applied to the sides of the box and the other sides of the box.

For the construction of the bottom element 50 the same considerations apply, that is, it may be made of a plurality of boards or a single sheet of plywood and has applied thereto the battens 51, 52 and 53.

To provide the desired flexibility to make the box collapsible, the side panels are fastened together by means of flexible connectors, which are preferably of wire, and as shown in some detail in Figure 3, where battens 16 and 18 come together to be held in desired relationship. In this view also there is shown in greater detail the structure of the typical top or bottom corner. The inside portion of the bottom corner where battens 27 and 28 come together to hold sides 13 and 14 in their proper relationship is shown and also the inside batten 37 appears in its desired spot.

Details of the manner in which the top and bottom fit together to form the interlocking sections are best seen from an examination of Figures 5 and 6. Thus, in Figure 5 top element 40 has its battens 41 and 43 offset from the edges of the top piece itself by an amount equal to the width of the inside battens 34 and 35. In this fashion battens 34 and 35 serve to keep the top member from being drawn or pushed down from the box, once it has been assembled.

Figure 6 which is a view taken at right angles to that of Figure 5 shows batten 42 in full length and therefrom it will be seen that with the other battens similarly overhanging the sides of the box the top fits within the rectangle formed by the sides and the battens overhanging the sides sufficiently to prevent the top from falling in.

Reference to Figures 3 and 4 illustrate the manner in which the box is assembled. Briefly, the collapsed container is first opened out so that the four sides form a square much like that shown in Figure 1. It is then set over the base or bottom piece 50 substantially as appears in Figure 1 and it is sprung open at the unconnected corners thereof. That is, side 13 is sprung outwardly slightly and the corner formed by the meeting of sides 13 and 14 is pulled outwardly so that the inside base of batten 37 will slip over the edge of the bottom 50 and contact the bottom batten 53.

Similar springing of the opposite corners formed by sides 11 and 12 permits batten 36 to slip over the corresponding end of the bottom 50 to contact the face of batten 51. With respect to the assembly of the top piece the same procedure is used but it will be observed that in the preferred embodiment shown, it is the diagonally opposite corners which are left open so that the springing is done from sides 12—13 and 11—14 to bring batten 35 into contact with 43 and 34 into contact with 41. Upon completion of this

operation of assembling the top and bottom around the goods to be packaged, the box can be strapped to form a complete sealed unit by running a steel strap around the top and bottom courses of battens as shown at 61 and 62 in Figure 2. Upon completion of such unit, though the separate parts forming the side are very flexible collapsible elements, a rigid packing crate is formed that serves for shipment of heavy and large amounts of material.

Though instant invention has been described in connection with only a single preferred embodiment, reasonable variation thereof may be accomplished by those skilled in the art without departing from the spirit or scope of the invention.

What is claimed is:

A shipping container of rectangular configuration comprising side walls flexibly connected together and top and bottom closure sections therefor, each side wall comprising a wooden panel and exterior vertically spaced horizontally extending wooden battens along the top and bottom edges of said side walls and also their mid-sections, two opposite side walls being longer than the remaining two, battens along the inner edges of said longer side walls, the inwardly facing longitudinal edges of said last named battens lying in the plane of the adjacent end edges of the other two walls of said box, wire loops hingedly connecting said side walls at their mid-sections through the battens, said side walls being further hingedly connected together at two diagonally opposite top corners through the ends of the top battens and at two diagonally opposite bottom corners through the ends of the bottom battens, the hinged top corners being diagonally positioned with respect to the hinged bottom corners, the remaining top and bottom corners being free and unconnected, said top and bottom sections each carrying edge battens spaced inwardly from opposite edges by an amount about equal to the thickness of the battens carried along the top and bottom inner edges of the longer side walls, the ends of the battens of the top and bottom sections also overhanging and contacting the ends of the shorter side walls, whereby upon insertion into place said top and bottom sections are held by resiliency of the sides under the battens along the inner top edges of said longer side walls.

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