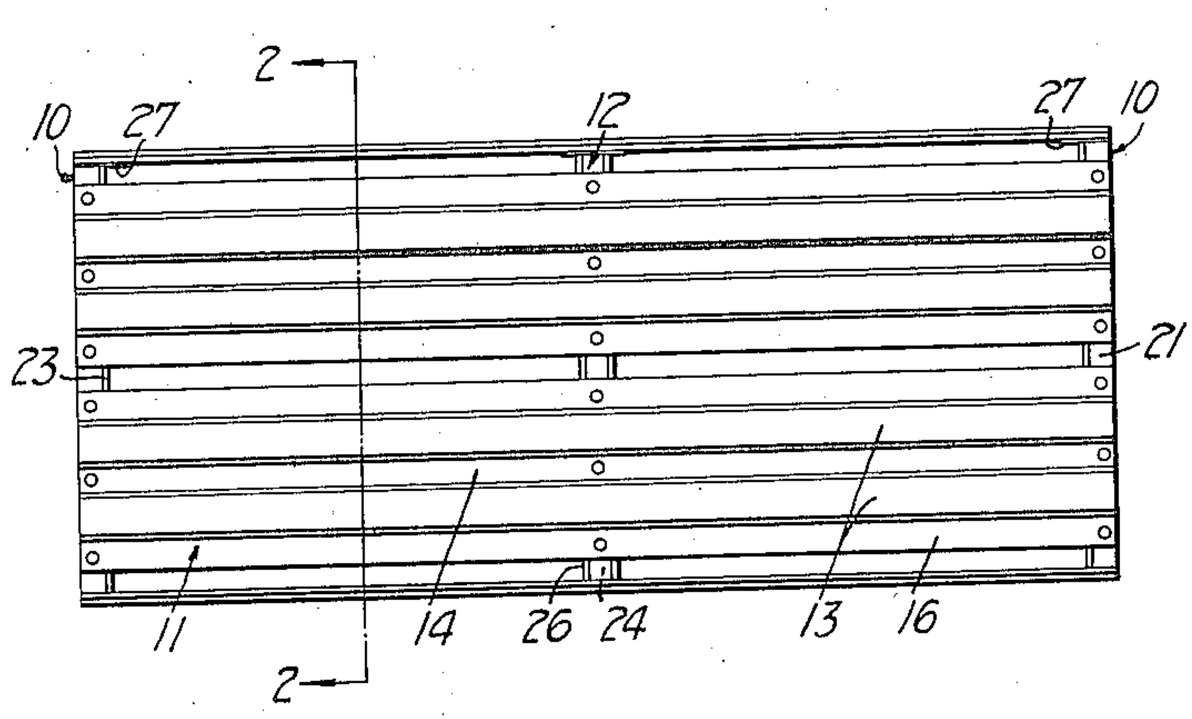
Aug. 20, 1935. O. DENNY 2,011,801

CRATE CONSTRUCTION

Filed May 14, 1934

FIG. 1



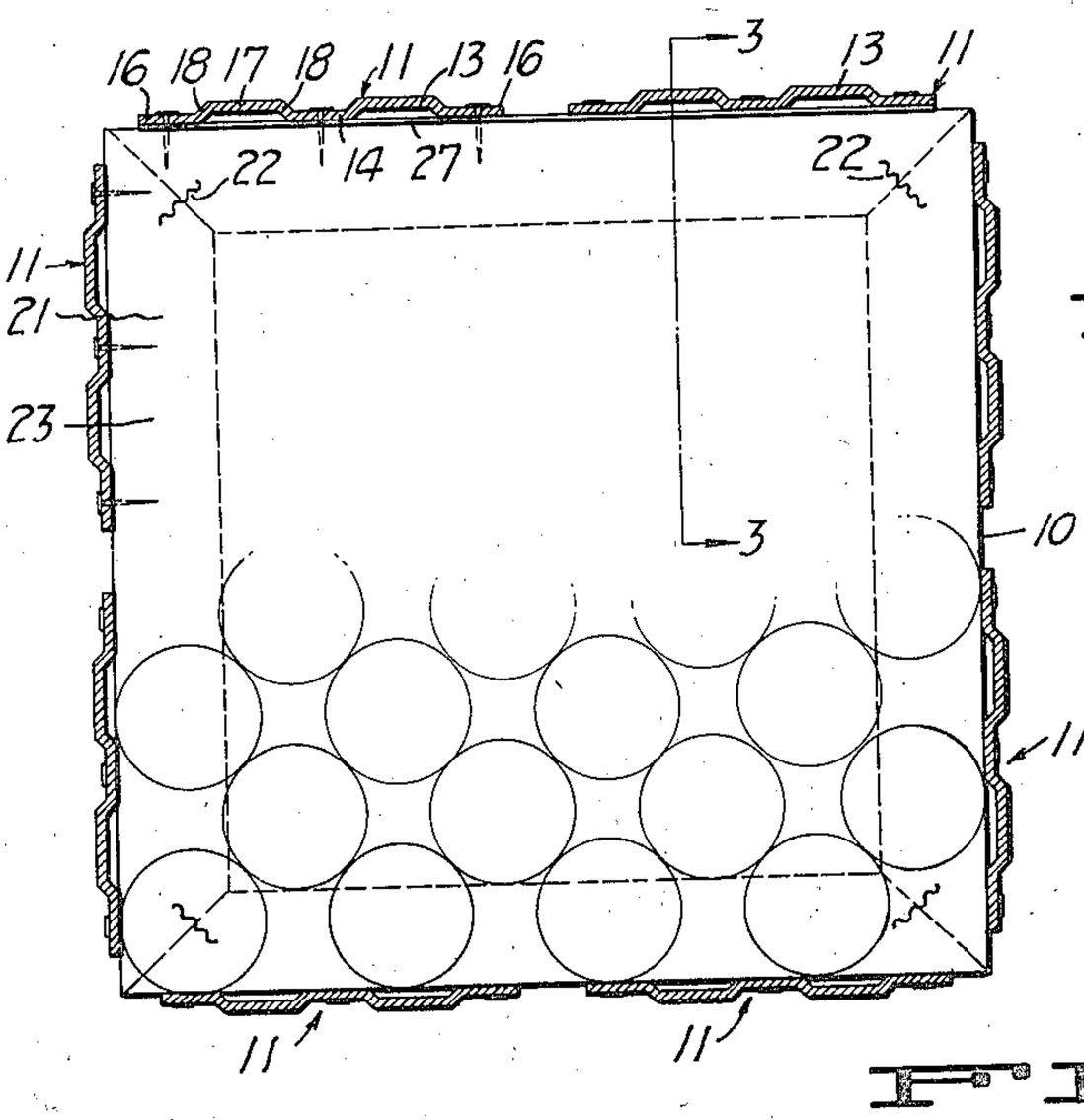
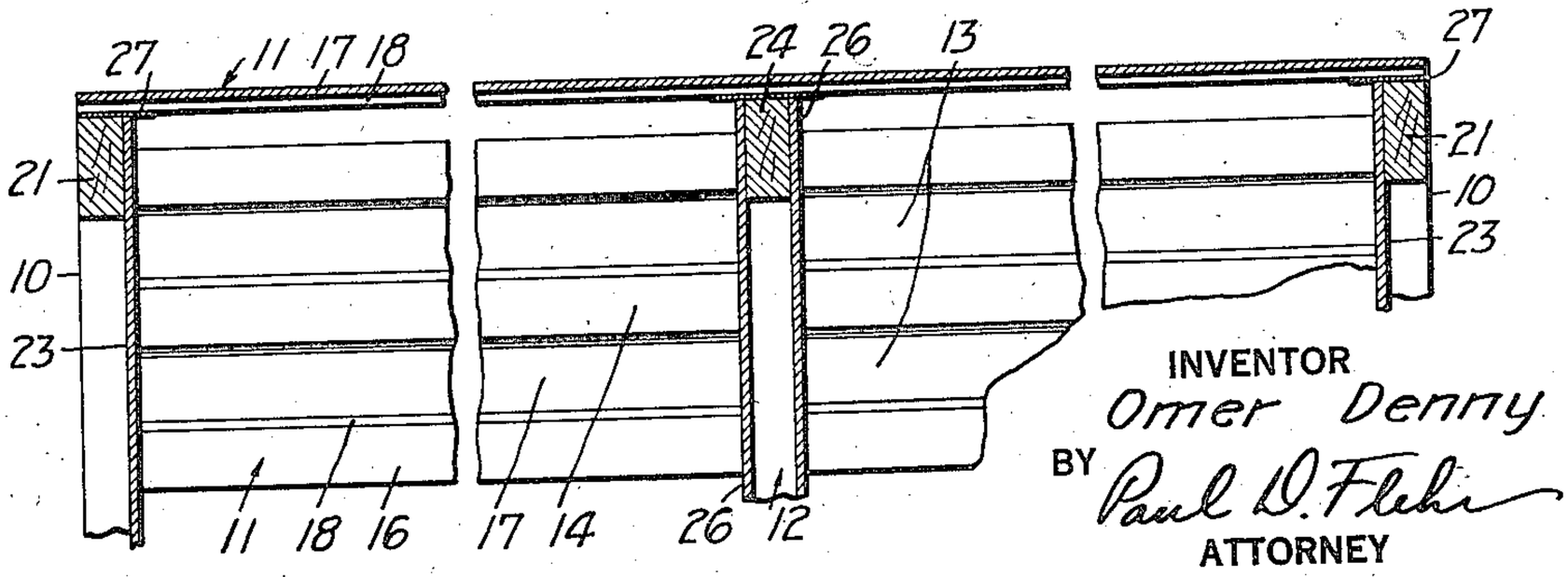


FIG. 2

FIG. 3



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CRATE CONSTRUCTION

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3 Claims. (Cl. 229—6)

This invention relates generally to the construction of crates such as are commonly used in the transportation and marketing of various products.

In the past, crates of the above character have been made with wooden slats secured to rectangular end walls. While such crates have been practically universally adopted, in many respects wood is not an ideal material for their construction. Wood is more expensive than materials such as fiber board, aside from the consideration of weight. Likewise, wooden crates may cause some injury to the contents, as for example when the contents are of such a character that they are readily bruised or injured by contact with rough splintery surfaces.

Any proposal for the substitution of materials for wood in the construction of crates, must take into consideration the fact that much machinery now exists for the manufacture and handling of wood crates. For example, the industry is equipped with nailing machines which are used for constructing the crates and for applying lids to the crates after packing. Likewise, the industry is equipped with metal wire or ribbon binding machines which serve to more effectively secure lids. Therefore it is apparent that if a crate made of material such as fiber board is to be successful, it should make possible use of the same machines which have heretofore been utilized in connection with wood crates.

It is an object of the present invention to provide a successful crate made mainly of fiber board, which can be manufactured at a relatively low cost and which will afford a crate superior in many respects to the wood crates heretofore employed. The construction to be presently described affords adequate strength, comparable to the use of wood slats, and at the same time minimizes injury to certain classes of products, such as fruit. Furthermore, my crate construction makes it possible to utilize the same nailing and binding machines which are now being employed for wood crates.

Further objects of the invention will appear from the following description in which the preferred embodiment of the invention has been set forth in detail in conjunction with the accompanying drawing.

Referring to the drawing:

Fig. 1 is a side elevational view of a crate constructed in accordance with my invention.

Fig. 2 is a vertical cross-sectional view, the section being indicated by the line 2—2 of Fig. 1.

Fig. 3 is a cross-sectional detail, the section being along the line 3—3 of Fig. 2.

The crate illustrated in the drawing consists of a pair of end walls 10, connected by the slats 11. Intermediate the end walls there may be an intermediate or partition wall 12. Each of the slats 11 is formed of relatively stiff fiber board, preferably of multi-ply construction.

In order that the slats 11 may have sufficient rigidity and strength, and in order to impart other characteristics to be presently explained, the fiber board of each slat is formed with spaced longitudinal corrugations 13, which in one successful embodiment have a depth substantially equal to the thickness of the board. With slats of standard dimensions, such as are used in fruit crates, it is convenient to employ two corrugations for each slat. The intermediate portion 14 between the corrugations, and also the longitudinal marginal edge portions 16, are thus conveniently spaced and available for nailing the slats to the end walls.

The construction afforded for each of the corrugations is such as to afford adequate strength against crushing, as well as to impart rigidity. Thus, each corrugation is made up of a portion 17 extending substantially parallel to the plane of the slat, and portions 18 which serve to merge or connect the longitudinal edge portions 16 with the remainder of the board. Portions 18, although they may be curved somewhat, extend generally at opposite inclinations to the plane of the slat. In practice, this inclination may vary from, say 25° to 45°.

With the slat construction described above, corrugations 13 adequately stiffen or reinforce the fiber board in a direction against flexing or bending. Furthermore, these corrugations, although they afford a certain amount of cushioning for the bottom of the crate, are sufficiently strong to avoid crushing when subjected to severe, externally-applied compressional forces, which are encountered when packed crates are stacked one upon the other. This is largely because of the strength afforded by the oppositely-inclined portions 18, which are like the elements of a truss in resisting compressional forces. The flat exterior surfaces presented by the corrugations also facilitate sliding packed crates upon rough supporting surfaces, whereas narrow corrugations would tend to catch.

It is desirable to construct the end walls 10 partly of wood and partly of fiber board. Thus, as shown, each end wall is constructed of a wood frame 21, the elements of which are secured to-

gether by suitable fastening devices 22. Secured to the inner face of this frame there is a rectangular sheet of fiber board 23. The intermediate or partition wall 12 can likewise be formed of a wood frame 24, having fiber board sheets 26 secured to its opposite faces.

The ends of the slats forming the sides and bottom of the crate are secured to the wood frames 21 by suitable means such as nails or like fastening devices. In this connection it may be noted that the nails may be spaced and applied in the same manner as in crates utilizing wood slats, so that the same nailing machinery is applicable. The top slats may, if desired, be secured together by lateral tie strips 27, to form a lid. The ends of this lid are shown nailed to the end walls 10 and, if desired, the intermediate part of the lid may be held down by means of a binding wire or strap.

Aside from low cost of manufacture, it is apparent that the crate described above has many inherent advantages over crates of conventional construction using wood slats. In general, my crate is lighter in construction, thus making possible a material saving in shipping costs. As previously indicated, the cushioning afforded by the corrugated fiber board slats, and the absence of rough or splintery surfaces, minimize the possibility of injury to the contents. The corrugations also promote internal ventilation, which is desirable in handling perishable products such as fruit. The end walls also afford considerable give and cushioning effect because of the use of fiber board sheets 23. The outer surfaces of these end sheets can be directly printed or lithographed, thus avoiding the use of separate labels for pasting upon the end walls. My construction also permits inspection of the contents, the same as crates using wood slats, for the reason that one end of a fiber board slat can be readily loosened and bent back. Such inspection is not possible with conventional fiber board cartons.

I claim:

1. In a crate construction, a slat formed of fiber board, said fiber board being formed with spaced longitudinal corrugations, each corrugation consisting of a portion extending substantially parallel to the plane of the slat, and oppositely-inclined portions merging the first portion with the remainder of the board, whereby each corrugation imparts rigidity and has sufficient strength to avoid crushing.

2. In a crate construction, a slat formed of fiber board, said fiber board being provided with spaced longitudinal corrugations, each corrugation consisting of a portion of substantial width extending substantially parallel to the plane of the slat, and oppositely-inclined portions merging the longitudinal edges of the first portion with the remainder of the board, whereby each corrugation imparts rigidity and has sufficient strength to avoid crushing, the depth of each corrugation being substantially equal to the thickness of the fiber board.

3. In a crate construction, a pair of end walls, and fiber board slats secured to said end walls and forming the walls of the crate, the fiber board of each slat being provided with spaced longitudinal corrugations, each of the corrugations consisting of a portion of substantial width extending substantially parallel to the plane of the slat, and oppositely-inclined portions merging the longitudinal edges of the first portion with the remainder of the board, whereby the corrugations of all of the slats have sufficient strength to avoid crushing.

OMER DENNY.