Dec. 27, 1938. J. R. WATKINS 2,141,497

CONTAINER

Filed Aug. 13, 1936 2 Sheets-Sheet 1

Fig. 1.

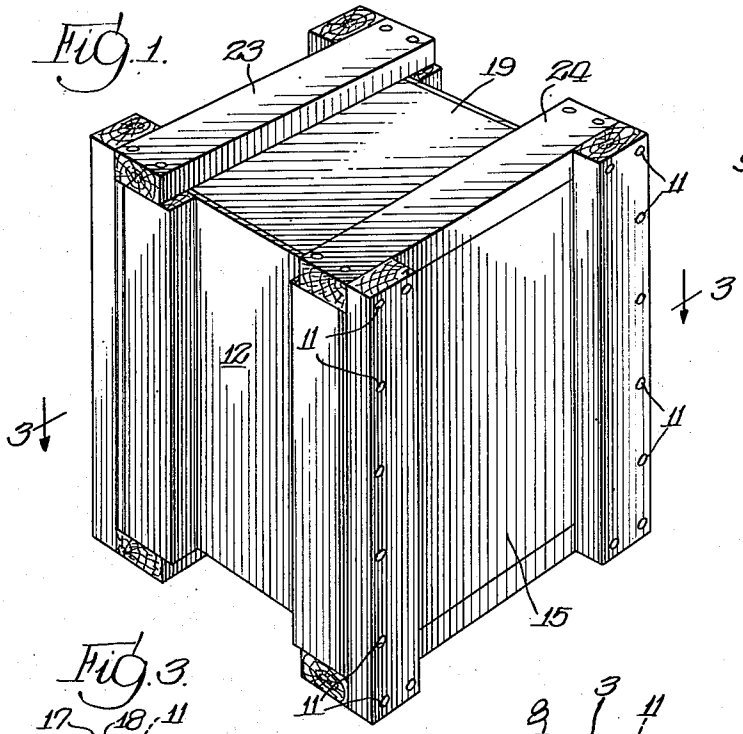


Fig. 2.

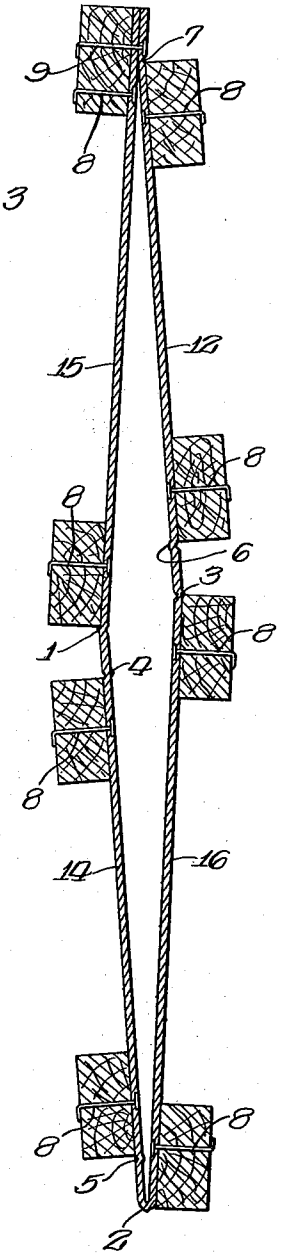
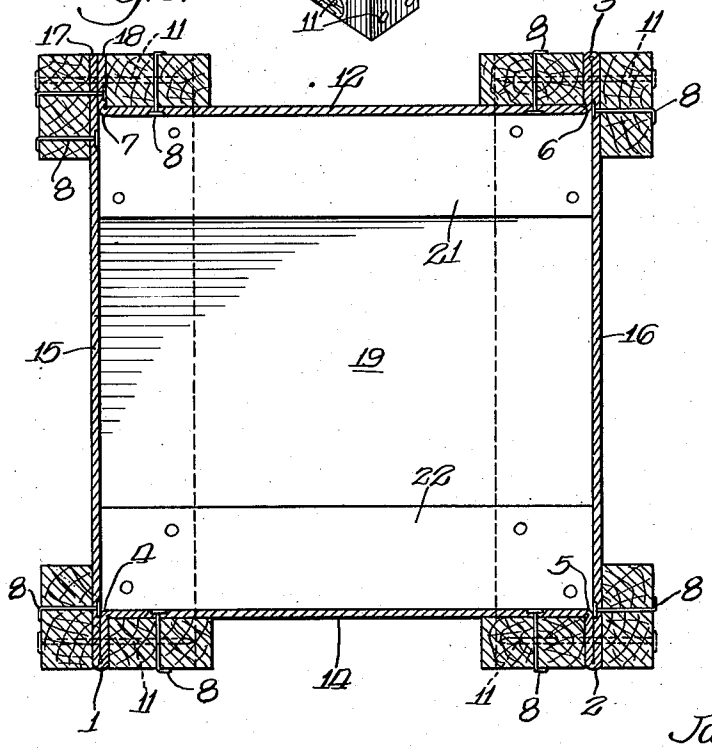


Fig. 3.



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Filed Aug. 13, 1936 2 Sheets-Sheet 2

Fig. 4.

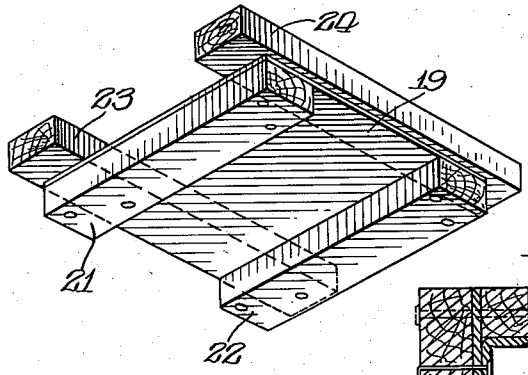


Fig. 7.

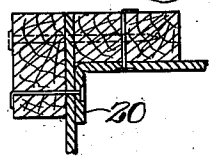


Fig. 6.

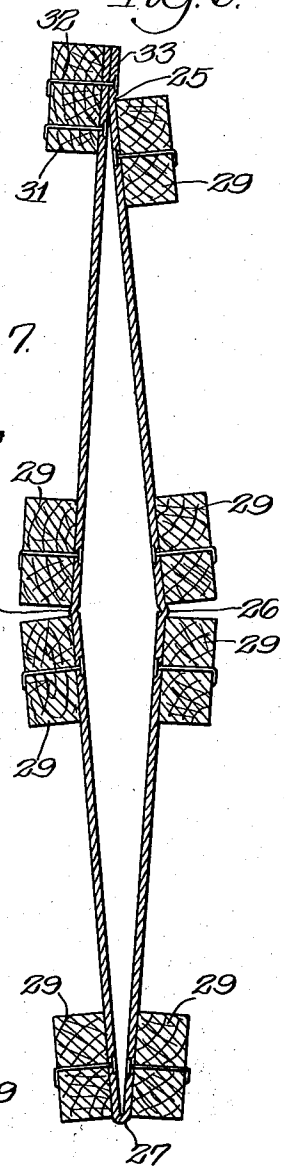
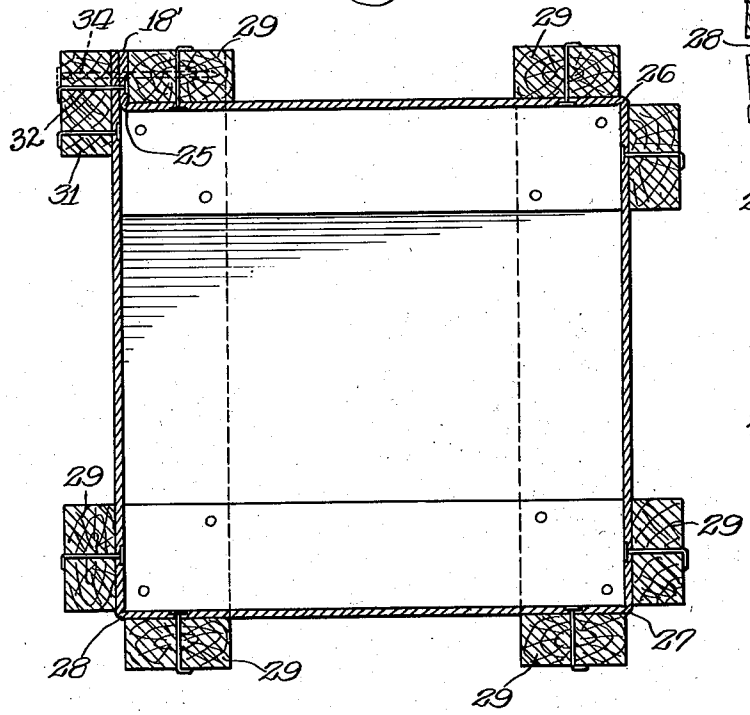


Fig. 5.



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CONTAINER

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Application August 13, 1936, Serial No. 95,764

6 Claims. (Cl. 217—48)

This invention pertains to collapsible containers and particularly to those which employ sheet material such as fiber board, corrugated board or other suitable fibrous composition boards, in combination with wood cleats or other suitable cleat material for forming structures of exceptional strength and rigidity despite their lightness.

In my prior United States Letters Patent No. 1,955,107, issued April 17, 1934, I have disclosed a collapsible container having fibrous walls and wood cleats thereon. The present invention shows a modified form of a collapsible container of the same general class, the distinguishing differences being principally in the manner of forming and protecting the corners of the crate.

One of the objects of the present invention is to provide a collapsible container which, when distended and assembled ready for use, has its hinged corners enclosed by cleats which are so positioned that the enclosing cleats at each corner may be nailed to each other to increase the rigidity of the crate.

Another object of the invention is to provide a method for economically manufacturing a container having the above described feature.

Other objects and advantages of the invention will be specifically alluded to hereinafter or will become apparent merely from a reading of the description of the invention.

In the drawings:

Fig. 1 is a perspective view of an assembled container constituting one embodiment of the invention;

Fig. 2 is a longitudinal central section of the collapsible tubular portion of the same container as it appears after manufacture and partially distended;

Fig. 3 is a sectional view on the plane of the line 3—3 of Fig. 1;

Fig. 4 is a perspective view of an end closure for top and bottom which may be employed in combination with the tubular portion of the container shown in Figs. 1 to 3, inclusive;

Fig. 5 is a transverse sectional view of a modified form of the container;

Fig. 6 is a sectional view of the same modification showing the container only partially distended; and

Fig. 7 is a detail view of one corner of the container showing a modified mode of forming the side walls into a tubular structure.

Referring further to the drawings, the side walls of the container, which are formed to constitute a collapsible tubular structure, are made preferably of fiber board, corrugated board or other suitable fibrous sheet material. The invention will be illustrated by describing the manner of making it from ordinary solid fiber board. A sheet, such as is shown in Fig. 2, is first scored on parallel lines at 1, 2 and 3 and is then reversely scored at 4, 5, 6 and 7. While the sheet is extended flatly in a single plane, all of the cleats shown in Fig. 2 may be attached thereto, all on one side of the sheet. For example, by aligning the cleats in the proper relationships, as shown, on the underside of the sheet of fiber board, they and the board may be passed simultaneously through a multiple head nailing machine and rows of nails, such as 8, may then be driven through the fiber board into the cleats and clinched, as shown. Thereafter the sheet may be folded in half into the position shown in Fig. 2, but flatly rather than partially distended, and another row of nails, such as 9, may then be employed to secured the two cut edges of the board, which are parallel to the score lines, together, they being, as shown, secured to the same cleat.

The above described operation is the preferred manner of manufacturing the tubular portion of this form of the container. In this collapsed position this tubular portion may be shipped from the box factory to a manufacturer who intends to employ it for crating his merchandise.

It is contemplated that the manufacturer, when he is ready to use the container, will open up the tubular portion, drop it down over the merchandise, and arrange the four side walls of the tube into the position shown in Fig. 3 with double thicknesses of the fiber board lying between the cleats which enclose each of the four corners of the container. The afore-mentioned scoring and reverse scoring makes possible the bending of the fibrous sheet into this position. Thereafter nails, such as 11, may then be driven through adjoining corner cleats to lock them together and clamp the extensions of the fiber board walls between them. Thus a rigid tubular structure is formed with the corners protected and enclosed by wooden cleats, with these cleats at the corners being rigidly secured to each other.

It will be noted that the opposite side walls 12 and 14 have offset extensions which extend into the space between the corner cleats, the angle of each such offset extension constituting the internal corner of the container. The other two side walls 15 and 16 likewise have extensions beyond the internal corner of the container which protrude into the space between the corner cleats as far as what may be termed the outer corners

of the container at the score lines 1, 2, 3 and the registered edges 17 and 18.

To complete the container, two opposite end closure means of identical construction may be employed and Fig. 4 shows a type which is advantageous to use for this purpose. It consists of a sheet 19 of fiber board having inside cleats 21 and 22 secured thereto and outside cleats 23 and 24. This end closure device is shown at the top of Fig. 1 and a similar one may be employed at the bottom of the container.

When using this device it is customary to place the merchandise to be encased first upon the bottom closure member and possibly securing it thereto. Thereafter the tubular portion of the container is dropped down around the machine or other article of merchandise and the corner cleats nailed to each other as described above. Thereafter the top closure member is fitted into place with the cleats 21 and 22 dropped down inside of the vertical container walls and fitting snugly thereagainst. The cleats 23 and 24 then extend into the position shown in Fig. 1 and obviously the outside cleats of the top and bottom closure members may readily be nailed to the vertical cleats on the various side walls, producing a rigid light weight crate.

A modification of the invention is shown in Figs. 5 and 6. In this form only one of the four corners of the crate is completely enclosed by cleats which are mutually nailed together. A single sheet of fibre board is scored at 25, 26, 27 and 28. Cleats are secured thereto as shown, while the fiber board is extended flatly in a single plane, with the cleats 29 paralleling the adjoining score lines, while the cleat 31 adjoins one edge of the sheet. After having attached the cleats, preferably simultaneously, by passing them and the board through a multiple head nailing machine, the sheet is doubled into the relationship illustrated in Fig. 6, but flatly rather than partially distended, and a row of nails 32 is then driven through one edge portion 33 of the sheet into the cleat 31, thus finally forming the cleated sheet into a collapsible tube which may be distended into a square tube, as shown in Fig. 5. When so distended a row of nails 34 will then be employed as shown to secure cleat 31 to the adjoining cleat 29.

End closure members, such as are shown in Fig. 4, may be used at the top and bottom of the tubular container which is illustrated in Figs. 5 and 6, and preferably the end closure members will fit into the tube and occupy substantially the same relationships as is illustrated in Fig. 1.

It should be understood that Figs. 2 and 6 illustrate the tubular structure partially distended merely for clarity of illustration. However, when these structures are being made and shipped, the tube is flatly collapsed.

Fig. 7 shows a modified manner of closing the container to form a tubular structure from the flat sheet. Instead of closing the container, as shown, at the upper left-hand corner of Fig. 3 or 5, the edge portion 18 or 18' of the sheet may be turned inwardly, as shown at 20 in Fig. 7, and secured to the adjoining wall by nailing into the cleat carried on that wall.

Furthermore, while in this specification and in the drawings I have described and illustrated the preferred manner of attaching the various cleats to their wall surfaces by means of nails, other securing means may be employed, for example stitching or gluing may be utilized with considerable success. While wood cleats are mentioned, other materials may be employed instead of wood.

In general it should be recognized that the present disclosure shows certain forms of the invention which have been selected for the purpose of illustrating the principles and the nature of the invention, but that the scope of the invention is not limited to the precise embodiments herein described, but is to be determined rather from the scope of the claims which follow.

Having shown and described my invention, I claim:

1. In a container, a tubular portion thereof comprising a sheet of fiber board scored to form four side walls hingedly connected at the score lines, three of the corners of the container having closely spaced reversely scored lines, cleats secured to said side walls adjoining said three corners so arranged that upon forming the side walls into a square tubular structure a portion of the fiber board extends folded back upon itself at each corner between overlapping cleats to permit the driving of nails through one cleat and the folded back portion into the adjoining cleat, the fourth corner of the container having overlapping cleats enclosing the corner with a portion of each adjoining side wall extending between the overlapped cleats to be engaged by nails driven through one cleat into the other, the tubular structure being free from projections on its inner surface.

2. A collapsible tubular portion of a four-walled container comprising a sheet of fiber board having four parallel score lines located to constitute the internal corners of the completed container and permitting the sheet to be sharply folded around the corners of cleats adjoining and parallel to each score line, a cleat adjoining each said score line, said cleats being secured to two opposite walls of the container, a pair of cleats on each of the other two opposite walls, the latter two walls and said cleats thereon extending laterally outwardly beyond said corners far enough to permit nails or the like to be passed through the last four cleats and into the correspondingly adjoining first four cleats outside of said internal corners, the two edge portions of the sheet paralleling said score lines being embraced between two such corresponding cleats at one outside corner of the container, the sheet having three reversely scored score lines at the other three outside corners of the container embraced by the corresponding cleats of adjoining walls.

3. A collapsible tubular portion of a container having four side walls parallel to its tubular axis comprising a sheet of fiber board having three parallel score lines and registered edges of the sheet defining the outer corners of the container, four reversely scored score lines on two of the side walls constituting the internal corners of the container and spaced from the corresponding outer corners substantially the thickness of the cleats adjoining the last said score lines, four cleats on the said two side walls adjoining said score lines, four cleats on the opposite two side walls extending out to the outer corners of the container and parallel thereto, whereby nails or the like may be driven through the last said four cleats into the first four cleats when the container is extended into a square tube, and means securing said registered edges of the sheet together.

4. In a container, a tubular portion thereof comprising a sheet of fiber board having three

pairs of closely spaced parallel score lines, the score lines of each pair being oppositely scored from opposite surfaces of the sheet whereby upon arranging the sheet in a square tubular form a marginal portion of each pair of adjoining side walls will project outwardly from the tubular structure, said marginal portions being parallel with said score lines and disposed in contiguous relation outside the confines of said walls at one corner of the container, and a pair of cleats at each of the corners of the container embracing the projecting portions of said sheet, said cleats being nailed to each other through said projecting portions and also secured to the side walls.

5. A container comprising four side walls formed of a single sheet of fiber board and scored and folded at the corner walls, a cleat secured to each side wall adjoining each corner, each side wall being provided with an extension projecting outside the confines of the container, said extensions being disposed between the cleats of each pair at each corner, and nails or the like securing the cleats of each pair and the interposed projecting side wall extensions together at each wall corner.

6. A collapsible container body comprising a plurality of hingedly connected side walls formed of fiber board, two marginal edge portions of each wall being extended outwardly beyond the confines of the body, cleats secured to the outer face of each wall at the corners of the body in position to embrace said extended marginal edge portions of the walls, and means penetrating said adjacent cleats and interposed edge portions for fastening the adjacent cleats and interposed marginal edge portions securely together at each corner of the body.

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