Dec. 9, 1958 H. HARRISON 2,863,596

FIBERBOARD CONTAINER

Filed Aug. 18, 1953 3 Sheets-Sheet 1

Fig. 1.

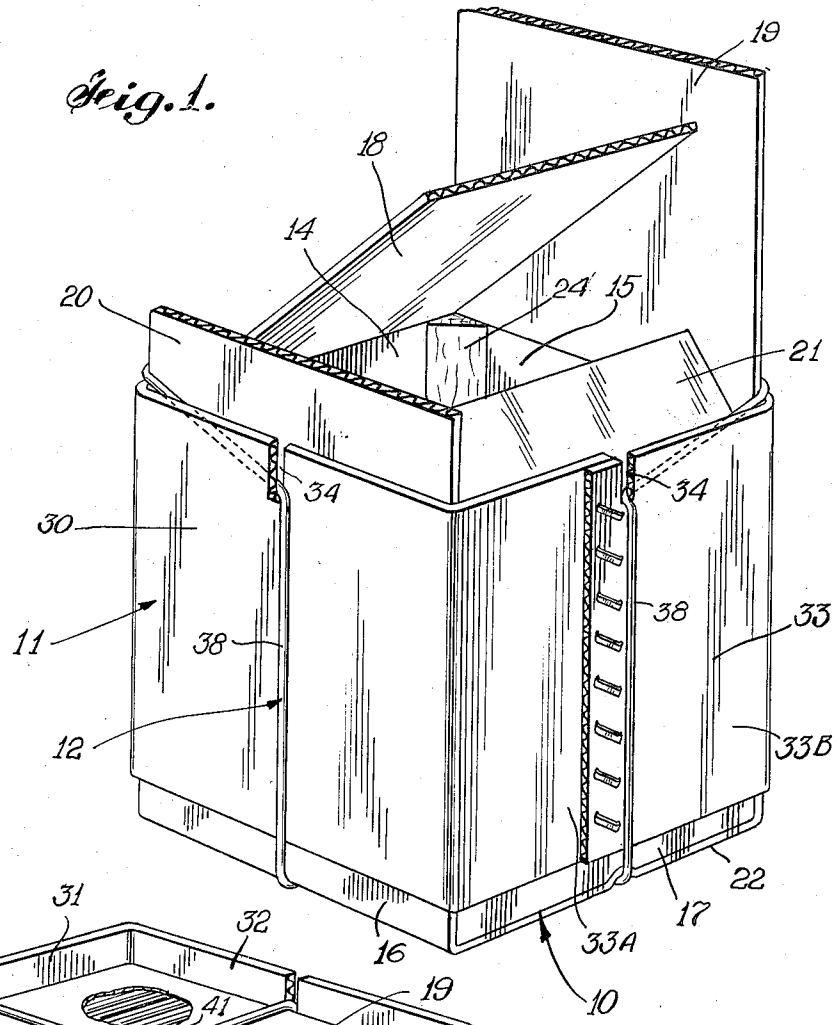
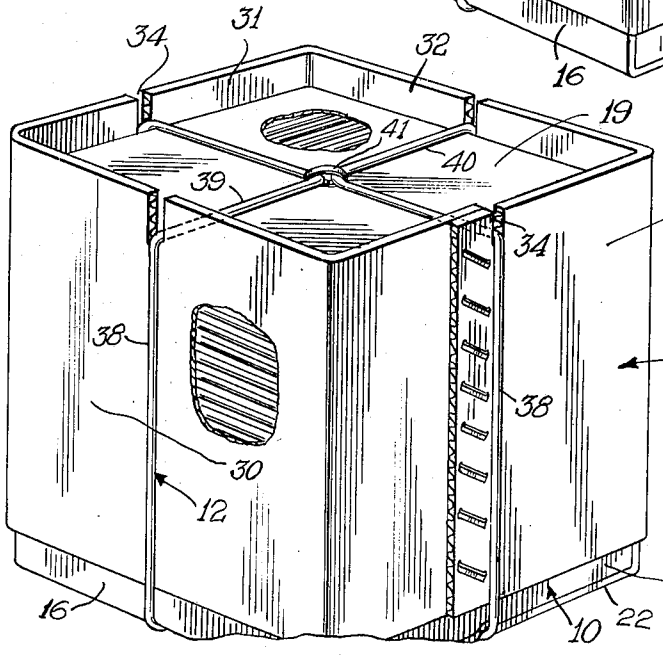


Fig. 2.



INVENTOR.
HENRY HARRISON
BY Kane, Dalsimer & Kane
ATTORNEY

Dec. 9, 1958 H. HARRISON 2,863,596

FIBERBOARD CONTAINER

Filed Aug. 18, 1953 3 Sheets-Sheet 2

Fig. 3.

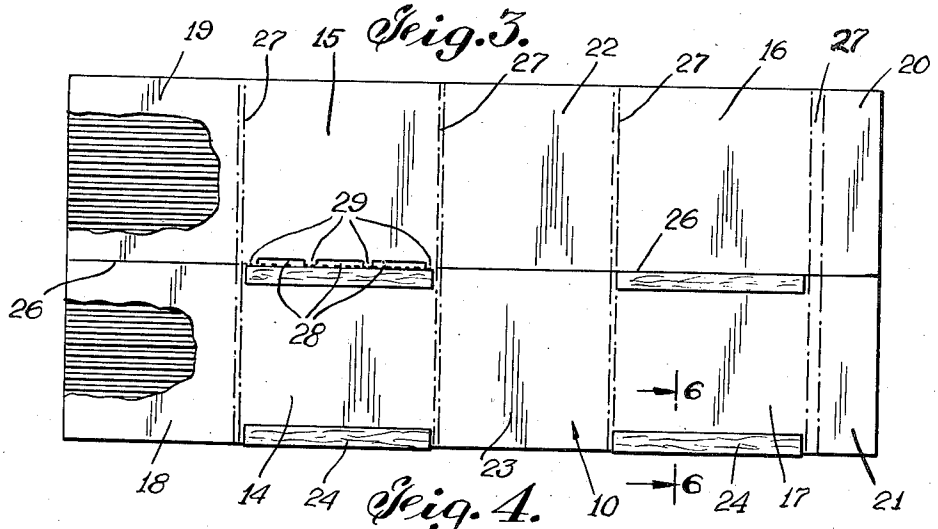


Fig. 4.

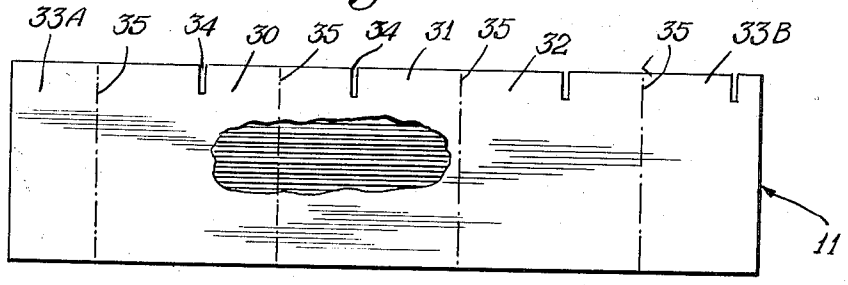


Fig. 7.

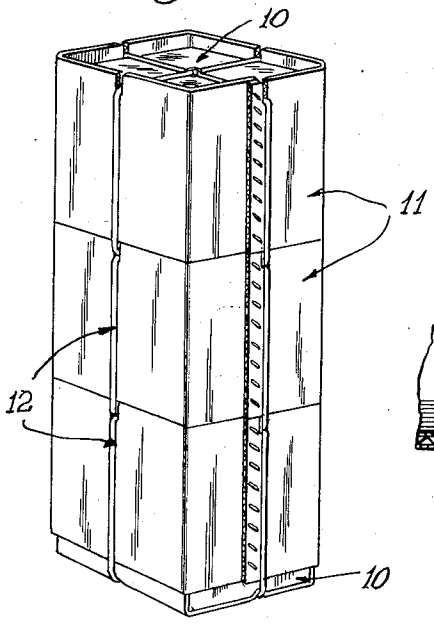
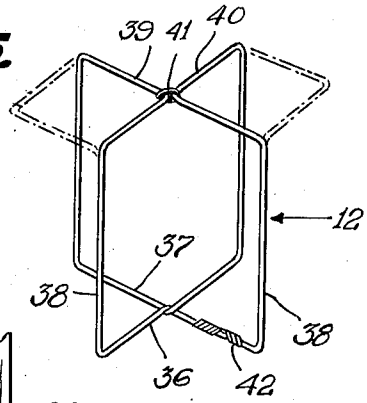


Fig. 5.



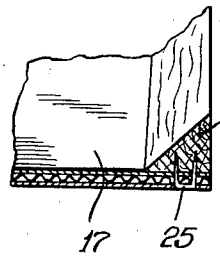


Fig. 6.

INVENTOR.
HENRY HARRISON
BY Kane, Dalsimer & Kane

ATTORNEY

Dec. 9, 1958 H. HARRISON 2,863,596

FIBERBOARD CONTAINER

Filed Aug. 18, 1953 3 Sheets-Sheet 3

Fig. 9.

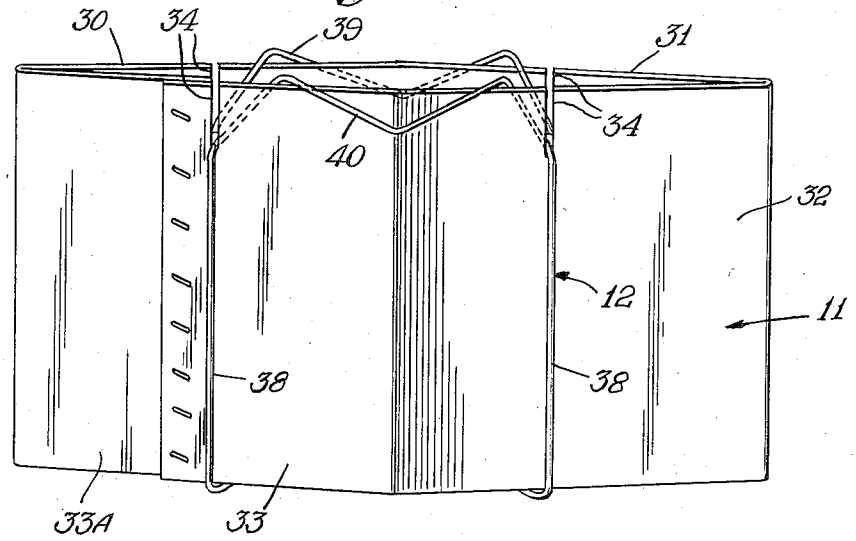
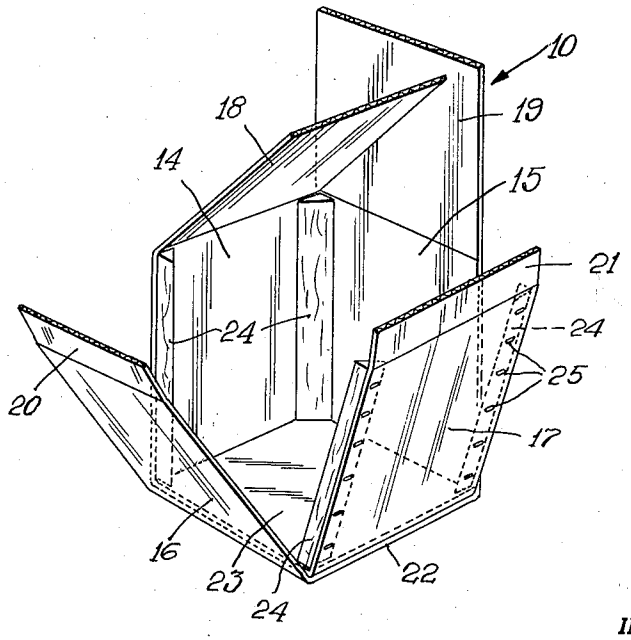


Fig. 8.



INVENTOR.
HENRY HARRISON
BY Kane, Dalsimer & Kane

ATTORNEY

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2,863,596

FIBERBOARD CONTAINER

Henry Harrison, Port Washington, N. Y., assignor to The Greif Bros. Cooperage Corporation, Delaware, Ohio, a corporation of Delaware

Application August 18, 1953, Serial No. 374,919

5 Claims. (Cl. 229—23)

This invention relates to improvements in fibreboard containers and more particularly to reinforced, corrugated fibreboard boxes of great strength.

The shipping and storing of many articles and materials such as nails and other hardware items requires containers of high strength. In this connection, in order to economize on shipping and storage space the fully loaded containers are frequently stacked one on top of another and, accordingly, must be able to withstand large vertical crushing loads. In addition, the containers are frequently dropped from platforms, the tailboard of trucks, etc., and they must be strong enough to withstand impacts and shocks of this type. During shipment and storage, unfavorable weather conditions are inevitably encountered and the containers must be able to withstand water and moisture along with large fluctuations in temperature.

Another important requirement of containers of this type is that they be relatively light in weight and that they occupy a minimum amount of space when empty, preferably being of the collapsible "knock-down" type. If they are of the collapsible or "knock-down" type they should be so constructed that they can be readily assembled.

It is an object of the present invention to provide an improved container, particularly a corrugated fibreboard box of inexpensive construction which is strong so as to be able to withstand vertical crushing loads and also impacts and shocks; which can withstand unfavorable weather conditions such as moisture, water and large fluctuations in temperature; which is relatively light in weight and which can be shipped in collapsed or "knock-down" form thereby occupying a minimum amount of space in shipment and storage; which can be readily assembled in a simple and convenient manner when it is desired to fill the container and use it; and which when assembled and loaded can be conveniently stacked one on top of another.

In the accompanying drawings—

Fig. 1 is a perspective view of a container embodying my invention showing it assembled, but with the cover flaps open;

Fig. 2 is a similar perspective view of the assembled container in closed position;

Fig. 3 is a plan view of the blank for the inner casing prior to folding and assembling;

Fig. 4 is a plan view of the blank for the outer casing;

Fig. 5 is a perspective view of the harness which is assembled around the container to reinforce it;

Fig. 6 is a detailed, sectional view in the direction of the arrows on the line 6—6 of Fig. 3 showing one of the corner reinforcements;

Fig. 7 is a perspective view of a plurality of closed containers stacked one on top of another;

Fig. 8 is a perspective view of the blank for the inner casing showing it in partially assembled condition so as to illustrate the manner in which it is folded; and

Fig. 9 is a view of the outer casing with the harness assembled therearound but showing it in collapsed or "knock-down" form prior to assembly with the inner casing.

My improved container is in the form of a reinforced corrugated fibreboard box having an inner casing 10, and an outer casing 11 in the form of a sleeve assembled around and tightly embracing the inner casing and a harness 12 adapted to extend around and tightly bind the assembled container. The container is preferably rectangular in cross-section and in the completely assembled container all of the side, top and bottom panels are preferably of reinforced construction having a plurality of layers extending throughout substantially the entire area of each of the panels. Both the inner and outer casings are preferably made of corrugated cardboard with the corrugations of the two casings disposed at right angles to each other. Thus, the outer casing is illustrated with the corrugations disposed horizontally and the inner casing with the corrugations disposed vertically.

The inner casing is formed of a plurality of side panels (in the illustrated embodiment four) 14, 15, 16 and 17 which are arranged in abutting relationship at right angles to each other when assembled so as to form a complete side enclosure.

Cover flaps 18, 19, 20 and 21 are hingedly connected to the upper ends of the respective side panels. The cover flaps 18 and 19, connected to the panels 14 and 15 are preferably large enough to extend completely across the top of the container, whereas the flaps 20 and 21, connected to the panels 16 and 17, are preferably somewhat shorter, as shown. When the flaps are folded inwardly in the assembled container in the manner illustrated in Fig. 1 and 2, a plurality of layers of fiberboard will extend over the entire top of the container.

The bottom of the inner casing consists of a plurality of panels (in the illustrated embodiment two) 22 and 23 arranged in superimposed relationship and each extending completely across the bottom of the container. The bottom panel 22 preferably extends between and is hingedly connected to the side panels 15 and 16 and the bottom panel 23 preferably extends between and is hingedly connected to the side panels 14 and 17.

The container is preferably reinforced so as to be able to withstand vertical stresses and loads by providing reinforcement members 24 in the form of elongated wooden pegs, triangular in cross-section, disposed in each of the corners of the inner casing and extending from top to bottom thereof. The reinforcing members may be suitably secured in place as by means of staples 25 extending through the side panels into the wooden body of the members as shown in Fig. 6. Each of the pegs need only be secured to one of the side panels and in the illustrated embodiments two of the pegs are shown as secured to panel 14 and the remaining two pegs are secured to the panel 17.

The inner casing may conveniently be formed from a single blank. The blank is generally rectangular in shape, and has been divided into the several panels forming the sides, top and bottom of the inner casing. This is accomplished by partially or completely severing the flaps 18 and 19 from each other along the line 26 and then providing a transverse fold line 27 between the two flaps 18 and 19 and the side panels 14 and 15. The side panels 14 and 15 are separated by a plurality of cutouts or slots 28 having pre-folded connecting tabs 29 extending therebetween. I have found that it is more convenient to form the entire inner casing of a single blank and I provide the connecting tabs 29 for this purpose. On the other hand, I have also found that when the assembled container is subjected to impact such as when it is dropped, better results are obtained when the side panels can spread apart and slide past one another slightly. The small connecting tabs 29 will break and permit the panels 14 and

15 to separate when the container is subjected to an impact of this type.

The line of severance 26 is continued from the end of panels 14 and 15 between the bottom panels 22 and 23, side panels 16 and 17, and cover flaps 20 and 21. Also, transversed fold lines 27 are provided between side panels 16 and 17 and the bottom panels 22 and 23, and also between the side panels 16 and 17 and the cover flaps 20 and 21. The inner casing may be shipped and stored in the "knock-down" or blank form shown in Fig. 3. When it is desired to assemble the inner casing it is accomplished in the manner shown in Fig. 8 by first completing the severance along the lines 26 (if they have been only partly severed). Thereafter, tabs 29 are folded so that the panels 14 and 15 are disposed at right angles to each other and the blank is folded along the remaining fold lines 27 so that the two bottom panels 22 and 23 are disposed in superimposed relationship across the bottom of the casing and all of the side panels 14 and 17 are arranged with their side edges in abutting relationship to provide a complete side enclosure. The cover flaps will then be arranged to extend across the top of the casing with the flaps 20 and 21 extending only partially across and the flaps 18 and 19 extending completely across. It will be noted that the corrugations in the superimposed bottom panels 22 and 23 and the corrugations in the superimposed cover flaps are disposed at right angles to each other thereby further strengthening and reinforcing the inner casing.

The reinforcing members 24 are preferably pre-assembled with the inner casing when it is in blank or "knock-down" form and this can be accomplished by stapling two of the members to one of the panels, as for instance, panel 14 and the other two members to the opposite panel. When the inner casing is assembled in the manner described above, the reinforcing members are properly located in the corners of the casing and will provide vertical support and reinforcement.

The outer casing 11 is in the form of a sleeve which can be telescoped over the inner casing so as to tightly embrace the same. It is of the same rectangular construction and is provided with four side panels, 30, 31, 32 and 33. The side panels of the outer casing may be of substantially the same size as the side panels of the inner casing but are preferably slightly shorter in length and when the outer casing is assembled around the inner casing it is disposed in offset relationship with respect thereto as shown in Figs. 1, 2 and 7 so that the lower end of the outer casing is spaced a short distance above the lower end of the inner casing and the upper end of the outer casing projects a corresponding distance above the inner casing. This arrangement permits the containers to be stacked one on top of another in partially telescoping relationship as shown in Fig. 7.

Each of the side panels of the outer casing is formed with a slot 34 extending downwardly from the upper edge thereof for susbtantially the same distance that the outer casing projects beyond the inner casing and these slots are adapted to receive the harness 12 when the container is fully assembled. The slots 34 preferably are not centered in the panels but are offset towards each other in pairs to facilitate assembly of the outer casing over the inner casing when the harness is already in place on the outer casing.

The outer casing is likewise preferably formed of a single blank of material as shown in Fig. 4 which is generally rectangular in shape. The panel 33 is preferably formed in two portions 33A and 33B at the opposite ends of the blank which are overlapped and stapled together as shown. Fold lines 35 are provided between the respective panels as shown.

The outer casing is formed by folding the blank shown in Fig. 4 along the fold lines 35 overlapping the panel sections 33A and 33B, and then suitably securing the overlapped edges together as by stapling. In the drawing section 33B is illustrated as overlapped over section 33A. However, this relationship may be reversed if desired. The outer casing is preferably pre-assembled in this fashion and then folded to the flat form shown in Fig. 9 for shipping or storing purposes. Also, as shown in Fig. 9, the harness 12 may be pre-assembled with the outer casing prior to shipment.

The harness 12 is made of wire and is preferably formed of a single strand of wire connected together in continuous or endless form as shown in Fig. 5. At the lower end of the harness I provide two interlocked right angular wire forms 36 and 37 of a size and shape to extend across the bottom of the inner casing. Integral with and extending upwardly from the ends of the wire forms 36 and 37 are the four vertical members 38 adapted to embrace the sides of the assembled container. The upper ends of the vertical members connect integrally with the two right-angular wire forms 39 and 40 which may be folded outwardly prior to assembly to permit the container to be opened. Wire forms 39 and 40 are folded inwardly over the top of the container when it is closed and they are held in assembled relationship by a small link 41 thereby retaining the container in closed position. The two ends of the wire are twisted together as shown at 42 so as to form a continuous or endless member. The harness is of a size and shape to fit around the assembled container and tightly bind it together.

The harness 12 may be shipped and stored as a separate member, or it may be pre-assembled with outer casing 11, as shown in Fig. 9, by extending the right angular wire forms 36 and 37 across the bottom of the outer casing and the vertical members 38 lengthwise of the side panels thereof. The wire is extended through the slots 34 formed in the panels of the outer casing and the right angular wire forms 39 and 40 are folded outwardly over the adjacent corners of the casing.

As previously pointed out, the slots 34 are offset in pairs towards each other, rather than being centered in the side panels of the outer casing. This facilitates the folding of the right angular forms 39 and 40 over the corners of the casing and also facilitates the assembly and closing of the casing.

When it is desired to assemble the complete container the inner casing is first assembled in the manner previously explained and the outer casing is opened to tubular form with the wire harness extending across the bottom and longitudinally of the side panels thereof and the right angular forms 39 and 40 folded backwardly over the corners as shown in Fig. 1. The inner casing is then inserted from the top into the outer casing and arranged in the illustrated, offset relationship with the lower edge of the outer casing spaced a short distance above the lower edge of the inner casing. The container may then be filled and the cover flaps folded downwardly. Thereafter, the right angular wire forms 39 and 40 are folded inwardly over the closed cover flaps and secured together as by means of the small link 41.

It will be seen that the outer casing tightly embraces the inner casing and covers substantially the entire area of the side panels thereof to provide additional strength and reinforcement. Also the corrugations of the outer casing are disposed at right angles to the corrugations of the inner casing.

It will also be seen that the bottom of the container has two panels arranged in superimposed relationship with corrugations at right angles to each other and that the top has a plurality of superimposed flaps also with the corrugations at right angles to each other. The harness extends across the top and bottom and longitudinally over all of the side panels and tightly binds the assembled container so as to provide considerable reinforcement and additional strength thereto.

The corner reinforcing members 24 also provide additional strength, particularly in a vertical direction so that when the containers are stacked one on top of the other

the load will be borne primarily by the reinforcing members.

Due to the offset relationship of the outer and inner casings they may be stacked one on top of another as shown in Fig. 7 in partially telescopic relationship. This serves to maintain the stacks in proper order and in addition the bottom of one container will rest directly upon the top of the inner casing of the lower container thereby insuring that the load will be carried by the corner reinforcing members.

Due to the reinforcement provided by the harness **12** and the outer casing **11** the containers can withstand considerable impacts such as those resulting from dropping.

When it is desired to open the container, link **41** is first opened and the right angular wire forms **39** and **40** are folded back to the position shown in Fig. 1. The cover flaps may then be raised to expose the interior of the container.

It will thus be seen that I have provided an improved reinforced, corrugated fibreboard box which is relatively inexpensive, which uses a minimum amount of fibreboard, which is strong, which can withstand unfavorable weather conditions, which is relatively light in weight and can be shipped in collapsed or "knock-down" form, which can be readily assembled and loaded and can be conveniently stacked one on top of another.

Modifications may, of course, be made in the illustrated and described embodiment of my invention without departing from the invention as set forth in the accompanying claims.

The expressions "top" and "upper end" and "bottom" and "lower end" are not used in the claims in a limiting sense so as to indicate the relative horizontal planes in which the respective ends are located. The expressions are merely used to indicate the respective opposite ends of the container.

I claim:

1. A container comprising: an inner casing having side abutting panels forming a complete enclosure for the sides of the casing, top closure flaps hingedly connected to at least some of the side panels and cooperable to provide a plurality of superimposed layers extending across the top of the casing, and a plurality of bottom panels cooperable to extend across the bottom of the casing in superimposed relationship with one bottom panel hingedly connected to one side panel and another bottom panel hingedly connected to another side panel; an outer casing in the form of a tubular sleeve disposed around the inner casing and embracing substantially the entire area of the side panels thereof, said outer casing being of substantially the same length as the inner casing and being offset with respect thereto so that the lower end of the outer casing is spaced a short distance above the lower end of the inner casing and the upper end of the outer casing projects a corresponding distance above the upper edge of the inner casing, said projecting upper end of the outer casing being formed with vertical slots; and a wire harness disposed around the bottom and sides of the assembled container and through the slots in the outer casing and across the top of the inner casing to reenforce the container and retain the inner and outer casings in their assembled offset relationship whereby the container may be stacked in partially telescoped relationship upon another similar container.

2. A reinforced fibreboard container comprising: an inner casing having four corrugated fibreboard side panels with their edges arranged in abutting relationship forming a complete enclosure for the sides of the casing, top closure flaps integral with and hingedly connected to at least some of the side panels and cooperable to provide a plurality of superimposed fibreboard layers extending across the top of the casing and a plurality of bottom panels cooperable to extend completely across the bottom of the casing in superimposed relationship with one bottom panel integral with and hingedly connected to two opposite side panels and another bottom panel integral with and hingedly connected to the other two opposite side panels; and an outer casing in the form of a tubular sleeve having four corrugated fibreboard panels corresponding in shape to the shape of the inner casing and disposed around the inner casing and embracing substantially the entire area of the side panels thereof, said outer casing being of substantially the same length as the inner casing and being disposed in offset relationship with respect thereto so that the lower end of the outer casing is disposed a short distance above the lower end of the inner casing and the upper end of the outer casing projects a corresponding distance above the corresponding end of the inner casing and slots are provided in the projecting portion of the outer casing and a wire harness is provided around the assembled container in tightly binding relationship with portions extending across the bottom and side panels and through the aforesaid slots across the top of the container.

3. A reinforced fibreboard container comprising: a collapsible inner casing formed of a unitary foldable sheet of fibreboard material and having four corrugated fibreboard side panels with their edges arranged in abutting relationship forming a complete enclosure for the sides of the inner casing with two of the adjoining panels being integrally hinged together along their abutting edges, the other two of said panels being movable from each other and said two integrally hinged panels, top closure flaps integral with and hingedly connected to at least some of the side panels, said flaps providing a plurality of superimposed fibreboard layers extending across the top of the inner casing, said closure flaps being flat and being free from any tucking flaps connected thereto, and a pair of bottom panels extending completely across the bottom of the inner casing in superimposed relationship with one bottom panel integral with and hingedly connected to two opposite side panels and another bottom panel integral with and hingedly connected to the other two opposite side panels, said side and bottom panels and top closure flaps all being of substantially uniform width so that the unfolded blank from which the inner casing is made is substantially rectangular; and an outer casing in form of a tubular sleeve formed of a unitary sheet of fibreboard material having four corrugated fibreboard panels corresponding in shape to the shape of the inner casing and disposed around the inner casing and embracing substantially the entire area of the side panels thereof, and the outer casing being of substantially the same length as the inner casing and being disposed in offset relationship with respect thereto so that the lower end of the outer casing is disposed a short distance above the lower end of the inner casing and the upper end of the outer casing projects a corresponding distance above the upper end of the inner casing whereby the container may be stacked in partially telescoping relationship upon another like container.

4. A reinforced fibreboard container as set forth in claim 3, in which a wire harness is disposed around the container in tightly binding relationship and is provided with portions extending across the bottom panel and the top closure flaps of the inner casing and over each of the sides of the outer casing.

5. A container as set forth in claim 3, in which rigid reinforcing members are disposed in the corners of the inner casing and extend the entire height thereof.

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