

[54] **HEAVY DUTY CONTAINER**

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[52] U.S. Cl. **229/23 R, 229/15**

[51] Int. Cl. **B65d 13/00, B65d 5/48**

[58] Field of Search **229/23 R, 29 R, 29 C, 229/29 D, 29 E, 29 F, 15 R**

[56] **References Cited**

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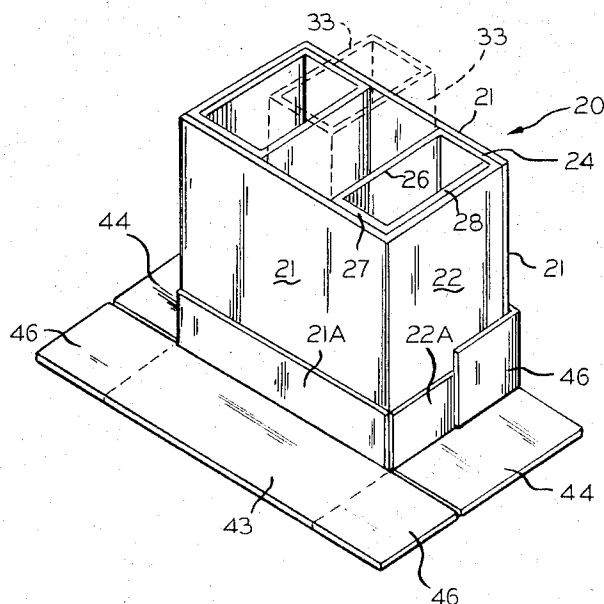
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Primary Examiner—Davis T. Moorhead
Attorney—Carpenter, Ostis & Lindberg

[57] **ABSTRACT**

A heavy duty container is formed from cut and scored paperboard sheet material and comprises first and second scored blanks each including main and side foldably connected panel elements with auxiliary panel elements foldably connected to each other. The auxiliary elements are foldable to position to define a tube with the side panel and having a double thickness wall therewith. The cut and scored blanks are placed and secured in position with respect to each other to define three tubes with the endmost of the tubes provided with double thickness side and end walls. A closure structure is provided for at least one of the so-connected tubes, and the tubes may be provided with flaps to provide additional thickness of material at the lower end of the container to cause same to be especially resistant to flowable materials within the container. The center of the three tubes may be provided with a liner so that it also has double thickness walls.

5 Claims, 11 Drawing Figures



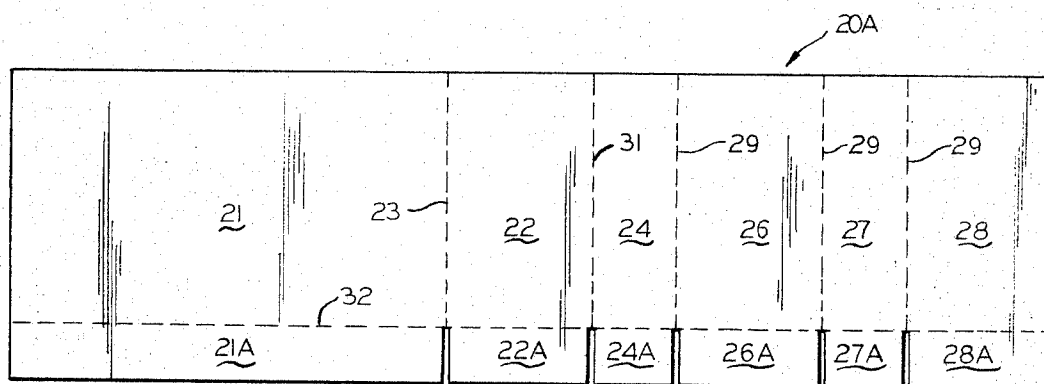


FIG. 2

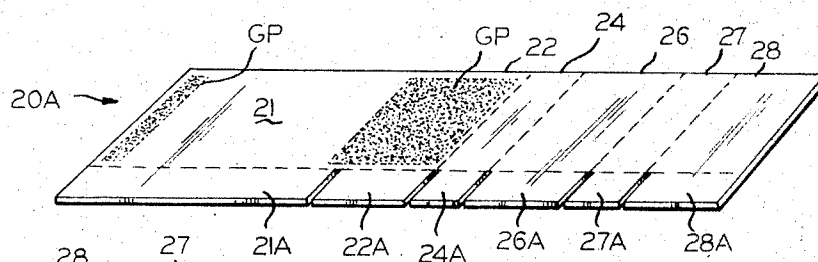


FIG. 3

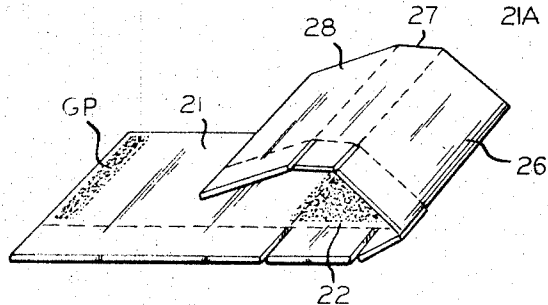


FIG. 4

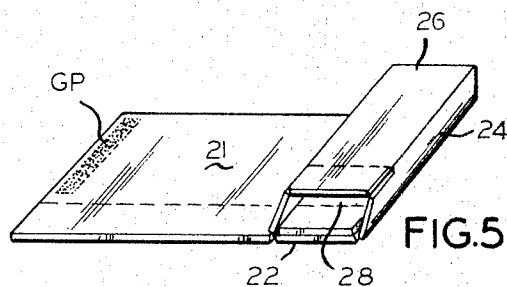


FIG. 5

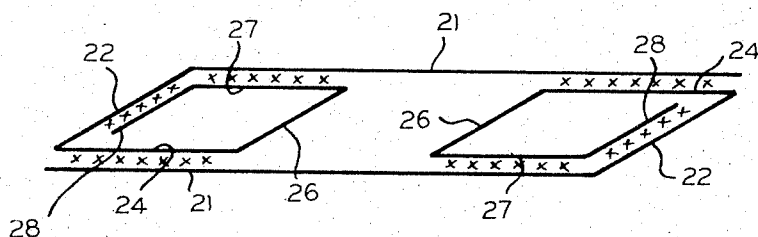


FIG. 6

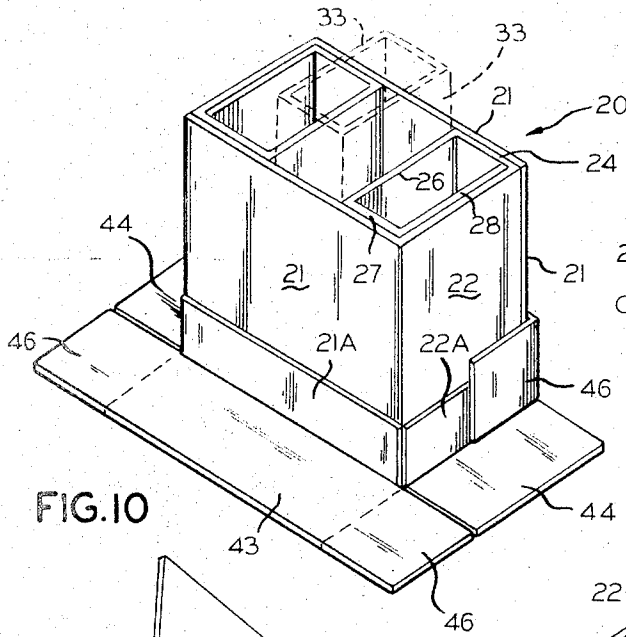


FIG. 10

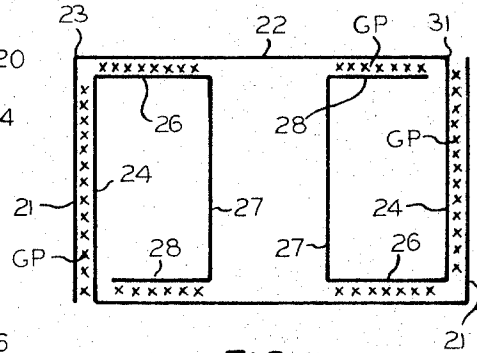


FIG. 11

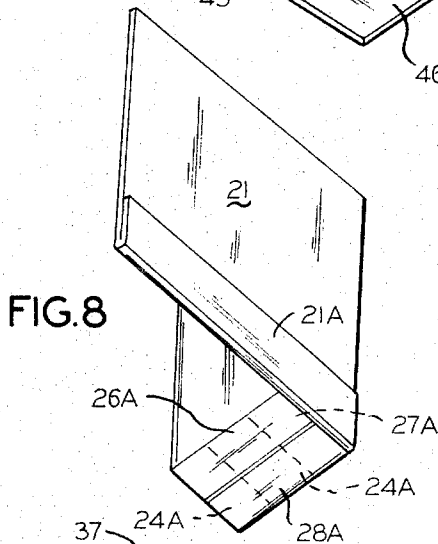


FIG. 8

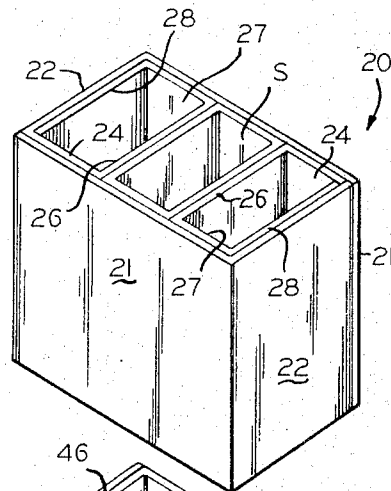


FIG. 1

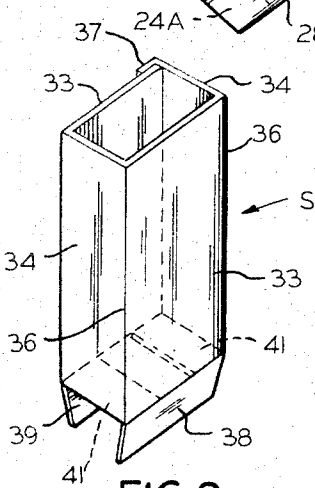


FIG. 9

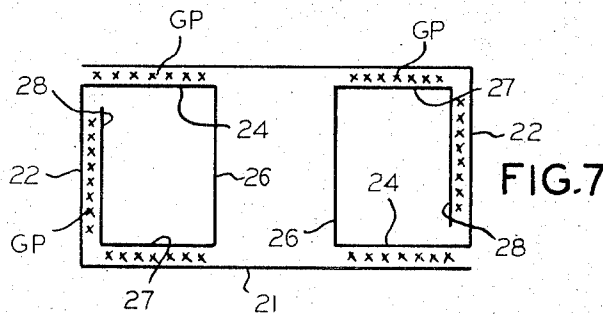
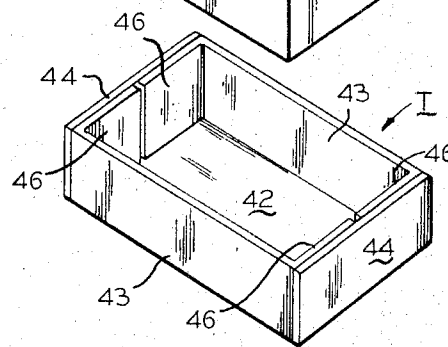


FIG. 7

HEAVY DUTY CONTAINER

BACKGROUND OF THE INVENTION

1. Field of the Invention

The structure according to the present invention is particularly suitable for heavy, flowable materials such as synthetic rubber polymers, which coalesce and impose large pressures against the walls of a container therefor.

2. The Prior Art

The closest prior art found in a search are the following U.S. Pats.:

Cantrell, Sr., No. 2,968,397, Jan. 17, 1961, 206/65; Rockefeller, No. 3,252,646, May 24, 1966, 229/15; Wood, No. 3,425,615 Feb. 4, 1969, 229/15; George, No. 3,543,991 Dec. 1, 1970, 229/15.

The structure herein distinguishes from said patents, it is believed, in that a pair of blanks are folded in such a fashion as to define three side-by-side tubes, the endmost tubes of which have double thickness side and end walls. The invention also comprehends flap structures extending from the so-connected tubes, these flap structures being folded to position to define bottoms of extra thickness or lower side walls of extra thickness to resist deformation imposed by the loads in the container.

THE DRAWINGS

FIG. 1 is an exploded view of a container constructed in accordance with the teachings of the present invention;

FIG. 2 is a plan view of one of a pair of cut and scored blanks for forming a container structure comprised of three connected side-by-side tubes;

FIG. 3 is an isometric view of the blank of FIG. 2, to a reduced scale, and showing glue patches placed thereon for the forming of tubes therefrom;

FIG. 4 is a view similar to FIG. 3 showing a folding and gluing step performed on the blank;

FIG. 5 shows the blank of FIG. 2 folded and glued to partly define one of the end tubes;

FIG. 6 is a schematic view showing a pair of blanks placed and secured into position to define a structure which may be unfolded to define three tubes having the endmost tubes thereof provided with exposed double thickness side and end walls;

FIG. 7 is a schematic view showing the structure of FIG. 6 unfolded, but when viewed from the opposite end;

FIG. 8 is an isometric view showing one of the blanks having the end flaps thereof folded to position to define bottom closure elements;

FIG. 9 is an isometric view of a sleeve adapted to be inserted into the structure seen in FIGS. 6 and 7 to provide double thickness walls in the center-most of the connected tubes;

FIG. 10 is an isometric view showing the manner in which the so-connected tubes may have a bottom closure structure placed therearound; and

FIG. 11 is a view similar to FIG. 7, but showing a different arrangement of the blanks and the gluing thereof.

The improved heavy duty container according to the present invention is denoted by the reference numeral 20 and is shown in combination with a bottom closure or tray T for reinforcing the lower end thereof. Container 20 is formed from a pair of cut and scored blanks

20A, each of said blanks including a main panel 21 and a side panel 22 foldably connected thereto along a fold line 23. Auxiliary panel elements 24, 26, 27, and 28 are foldably connected to each other along fold line 29, and auxiliary panel element 24 is foldably connected to the side panel 22 along a fold line 31. Each of the afore-said panel elements is provided with a flap, these being denoted by the reference numerals 21A, 22A, 24A, 26A, 27A and 28A, all of said flaps being connected to the panel elements along a common fold line 32.

The side panel element 22 has a glue patch GP thereon, and auxiliary panel element 28 is folded into face-to-face contact with side panel element 22 to provide a tube as seen in FIGS. 4 and 5. A pair of the structures seen in FIG. 5 are secured to each other, and main panel element 21 has a glue patch GP thereon which affords a means of securing it to an auxiliary panel 24 of the other of such cut and scored blanks 20A. The gluing operation is achieved as seen in FIG. 6 where the two blanks 20A are folded in the manner shown and pressure placed thereon to cause good adhesion therebetween.

As seen in FIG. 7, when the structure of FIG. 6 is unfolded, there will be defined three connected tubes, the endmost of such tubes having exposed double thickness side and end walls.

If it is desired to have the center of the connected tubes provided with double thickness walls, a sleeve S is provided, sleeve S having opposed main panel elements 33 and opposed side panel elements 34 foldably connected to each other along fold lines 36. The bottom end of the sleeve S may be closed by flaps 38 and 39 foldably connected to the lower ends of the panel elements 33 and by flaps 41 foldably connected to the side panel elements 34.

The structure thus far described lends itself to the shipping of such materials as rubber polymer which is extremely sticky and capable of adhering to corrugated container material. According to the invention herein, the exposed inner surfaces of the blanks 20A may be coated with a material, such as well-known silicone compounds to resist adhesion of the polymers. In like fashion, the inner surface of the sleeve S may be coated with such material so that all three of the tubes are properly lined with material resisting adhesion of the polymer.

As seen in FIG. 8, the closure elements 24A, 26A, 27A and 28A are folded to closing position to provide a bottom closure for the end tubes. When the sleeve S is formed as described and the closure elements 38, 39 and 41 thereof folded to closing position, all three of the so-connected tubes have the closure structures described.

The flaps 21A and 22A of the main and side panel elements 21 and 22 are folded up against the sides of the panel elements 21 and 22 as seen in FIG. 10 to provide additional thickness plies near the bottom of the container 20.

A bottom closure structure in the form of the tray T seen in FIG. 1 comprises a main rectangular panel 42 having opposed side elements 43 foldably connected thereto and foldable up into position against the flaps 21A. The tray T also comprises end panels 44, and the ends of the side panels 43 have flaps 46 extending therefrom which are foldable into position against the flap 22A, flap 44 being foldable against the flaps 46. It

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will be understood, of course, that the elements just described are glued or otherwise adhered.

Referring again to FIG. 1, the panels 20A may not be provided with the flaps 21A to 28A extending therefrom, and in such cases, the reinforcement of the lower end of the container is not as extensive as has been previously described. It will be appreciated, of course, that the top of the container seen in FIG. 1 may be closed by a similar tray T.

In FIG. 11 there is shown an alternate manner of arranging the panels forming the container body. Essentially panels 21 and 22 are interchanged and panels 27 and 24 made longer than their counterparts as in FIG. 7. The claimed subject matter is generic to both forms; this is believed evident.

It will be apparent that a heavy duty container has been provided having additional reinforcing structures along the bottom portions thereof where the pressures from a flowable material are the greatest, thus preventing distortion and rupture of the container under load.

I claim:

1. A heavy duty container formed from paperboard sheet material and comprising:

- a. first and second cut and scored blanks each including:
 - i. main and side foldably connected panel elements;
 - ii. auxiliary panel elements foldably connected to each other and to said side panel element;
 - iii. said auxiliary panel elements being foldable to

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and secured in position to define a tube with said side panel element and forming a double thickness wall of said tube with said side panel element;

b. said cut and scored blanks when so formed being placed and secured in position with respect to each other so that the tube formed from one of said blanks is placed in position on the main panel of the other of said blanks to define three tubes with the endmost of said tubes having exposed double thickness side and end walls;

c. a closure structure for said connected tubes.

2. A container according to claim 1 wherein said auxiliary panel elements are provided with flaps foldable to position to provide a bottom closure for the endmost of said row of tubes.

3. A container according to claim 1 wherein said center of said tubes is provided with a liner providing a double thickness wall for all of said tubes.

4. A container according to claim 3 wherein said liner is provided with flaps foldable to position to provide a bottom closure for said center tube to provide bottom closures for all of said tubes.

5. A container according to claim 1 wherein said main and side panel elements are provided with flaps foldable against said main and side panel elements and lie between the same and said closure structure to provide a four-ply wall thickness at the bottom portions of said container.

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