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FIBRE CONTAINER

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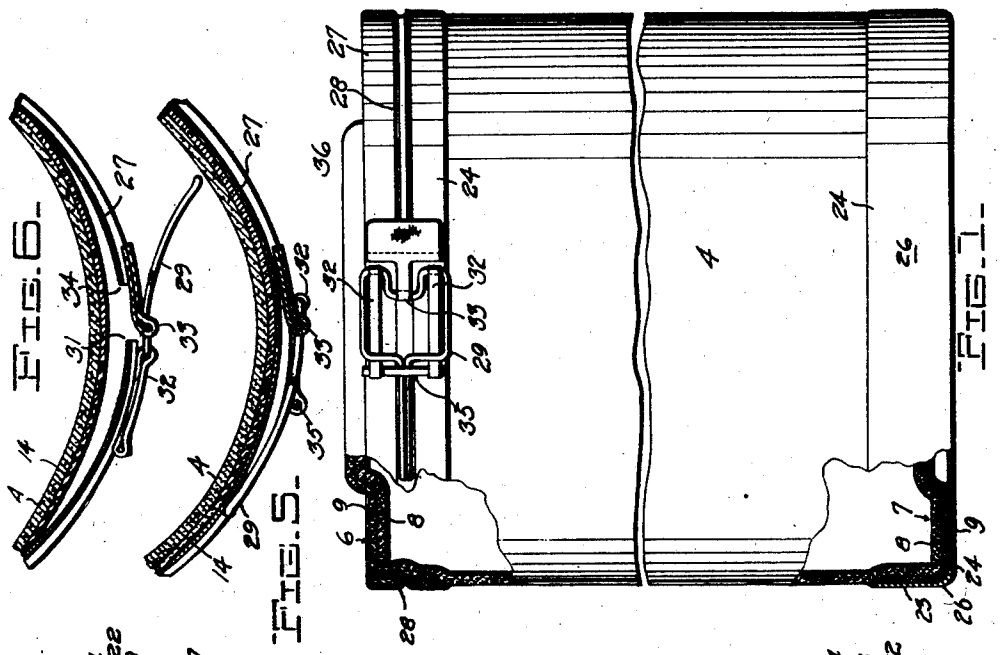


FIG. 6

FIG. 5

FIG. 1

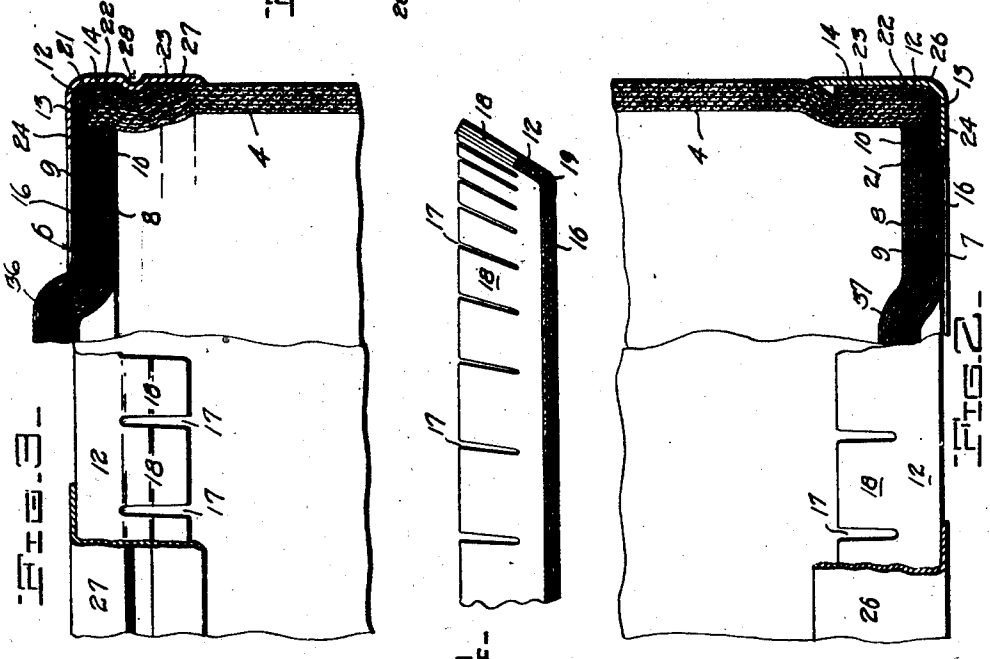


FIG. 3

FIG. 4

FIG. 2

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FIBRE CONTAINER

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3 Claims. (Cl. 229—5.5)

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The invention relates to containers and more particularly to containers formed of sheet material such as fibre, cardboard, and paper.

An object of the invention is to provide a container of the character described having an end wall construction which will provide for a strong attachment and tightly sealed joint between such wall and the body of the container and will serve as a means of effectively reinforcing the wall and body at such joint.

A second object of the invention is to provide an end wall construction for the container which will permit the wall to be made from relatively thick flat fibre stock and bent to provide a deep peripheral flange for engagement with the sides of the container body, without the necessity of utilizing heat and moisture to avoid rupturing the material in the flange forming operation.

A third object of the invention is to provide an end wall construction and securing arrangement with the features above set forth, in which the attachment between the end wall and container body and the seal therefor is provided by forming the parts for attachment by gluing.

A fourth object of the invention is to provide an end wall construction and arrangement for attachment of the wall to the body of the container, which will serve when the wall and container are operatively attached together, to prevent detachment of the wall and body or the impairment of the seal therebetween, against the usual shocks and jolts of shipment and handling, but which will permit such detachment with relative facility without requiring mutilation of the attached parts when desired, and at the same time permit the use and replacement of the end wall for service as a cover.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred form of the invention which is illustrated in the drawings accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by the said drawings and description may be adopted within the scope of the invention as set forth in the claims.

Referring to said drawings:

Figure 1 is a side elevation of a container constructed in accordance with our invention.

Figure 2 is an enlarged fragmental detail internal view partly in elevation, of the lower end portion of the container.

Figure 3 is a view similar to Figure 2, but of the cover for the upper end of the container.

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Figure 4 is a fragmentary sectional view of a part of the container end wall.

Figure 5 is a fragmentary transverse sectional view of the container taken on the line 5—5 of Figure 1.

Figure 6 is a view similar to Figure 5 but showing some of the parts in a different position.

In the embodiment of the invention illustrated in the drawings, the container is formed with cylindrical side walls 4 preferably of fibreboard or laminated fibre and having end walls 6 and 7 at the top and bottom respectively. The walls 6 and 7 are here shown of similar construction except that the latter is designed to be permanently secured in position while the former is arranged to serve as a cover and be removed when necessary.

Each of the end walls is formed with inner and outer discs 8 and 9, the inner disc being inserted within the container body with its peripheral edge 10 fitting against the inner side of the walls 4. The outer disc 9 is secured to the inner disc such as by gluing and is formed of larger diameter than the inner disc so as to provide, with respect to the latter, a marginal extension 12. The inner portion 13 of the extension 12 is arranged to lap the associated end of the side walls while the outer portion is bent to form a skirt or flange 14 for engagement with the outer side of the walls.

In order that the flange will fit against the walls 4, it is necessary that the flange extend perpendicular to the body portion 16 of the disc. This means that to provide engagement of the extension 12 with the end and side surfaces of the walls 4 without any interruption in the engagement, a sharp bend will have to be formed in the disc, and it has been found particularly where a deep flange is desired, that to subject the fibreboard to a bending or drawing operation sufficient to give the flange a permanent set of ninety degrees to the disc body, a rupture or crack would invariably occur in the outer layer of the fibre, unless the operation was effected while the fibre was heated and moistened—a treatment which materially slowed up the operation and added considerably to the cost involved. We have found that a flange of considerable depth may be formed and bent to the desired angle with a dry and cold drawing operation, by simply drawing the fibre stock to provide a permanent setting for the flange at an angle to the wall body of considerably less than ninety degrees, and then, as a part of the assembly operation, pressing the flange inwardly to the re-

quired perpendicular position and retaining same in position by attachment to the side walls of the container. An important part in this method of forming the flange is the provision of slits in the outer portion of the flange which serves to appreciably relieve the strain on the fibre stock imposed by the drawing operation, permits the ready final bending of the flange to engage the container body, and facilitate the easy and effective attachment of the flange to the body such as by simple gluing operation.

In forming the disc 9, the peripheral edge is slitted prior to the flange forming operation, that is, while the disc is flat, and as will be clear from the drawings, the slitting is effected so as to provide open notches or slits 17 which extend radially inward from the edge of the disc and define a series of tabs 18 around the full periphery of the disc. The slitted disc is subjected to a drawing operation providing, as will be clear from Figure 4, a relatively sharp somewhat outwardly offset bend 19 extending in a circle around the disc inwardly of the inner extremity of the slits 17. The draw is sufficient to provide, as also shown in the said figure, an inherent set of approximately sixty degrees to the body 16 for the portion of the disc between the bend and the outer edge, which portion is to form the flange 14. After the aforesaid drawing operation is completed the inner disc 8 is attached by gluing to the outer disc so as to lie within the bent portion or flange with the edge 10 spaced inwardly from the bend 19, the spacing being such that when the flange is brought to full right angle position as shown in Figures 2 and 3, there will be defined by such edge and the opposing portion of the flange and the inner portion 13 of the extension, a relatively deep annular well or groove 21 for the reception of the end portion of the walls 4, it being noted that the inner end of the slit terminates short of the well portion so that the sides of the latter will be left imperforate.

In assembling the end wall on the walls 4, the well 21 is filled with a seaming glue, and the end portion of said latter walls inserted in the well, the relation of the parts being such and the glue being sufficient in amount to provide a relatively thick coating 22 of the glue between the inserted end of the walls 4 and all of the surfaces of the well. At the same time the inner surface of the rest of the flange is covered with a relatively light coat of glue and the flange then bent and held to perpendicular position against the side walls. As a means of assisting in retaining the flange in position against the side walls and at the same time reenforcing the corners or rim of the container, there is provided a band preferably of sheet metal and formed with angular portions 23 and 24 arranged to respectively cover the flange and the contiguous portion of the body 16. The portion 23 is made large enough to enclose the entire outer surface of the flange and its outer extremity is preferably bent inwardly so as to be partially embedded in the side wall stock. Where the band is utilized for the bottom wall of the container, it is desirably in the form of a continuous ring member 26, but when used in connection with the top wall, it is conveniently in the form of a split ring member 27 so that it may be removed and replaced should the end wall 6 be detached and repositioned to serve as a convenient cover. In this connection, it may be noted that while the end wall 6 is designed to be secured in place by gluing in substantially the same as in the case of the wall 7, in the event

it is desired to remove the wall 6, this may be accomplished without material mutilation of the container, by pulling the tabs to rupture their attachment with the side walls and then inserting a suitable instrument between the inner portion of the flange and the side walls and then prying off the end wall when the bond between the side walls and the well forming surfaces of the end wall is broken. In replacing the end 6, it will ordinarily be utilized simply as a cover and not reglued and sealed.

In order that the ring member as well as the end wall may be more effectively held in place against longitudinal displacement, the walls 4 and correspondingly the flange 14 and the portion 23 of the ring member may be formed as shown in Figure 3, with an inward offset or bead 28, and desirably at both the top and bottom of the container, the side walls as a whole are contracted for the thickness of the flange 14 so that the outer sides of the flange and side walls will be flush when the end walls are applied. To carry out the smooth exterior scheme of the container, a novel form and design of locking means is provided for the top ring 27. This means as will be clear from the drawing includes a lever 29 pivotally attached at an end to one end 31 of the ring by means of an ear 32, and pivoted inwardly of its end to an ear 33 extending circumferentially outwardly from the other end 34 of the ring. As will be understood, when the lever is extended outwardly, shown in Figure 6, the ends of the ring may be removed or replaced, and when the lever is held inwardly as shown in Figure 5, the ends will be drawn together and retained in such position by reason of the over-center position of the pivotal connection at 33. In this latter position the lever as well as the ear 33, will rest largely within the inward offset 28 in the ring, and thus provide a minimum protrusion when the ring is in locked operative position on the container. The lever is retained in locked position by means of a pin 35.

In order that the containers may be readily stacked and held secure in stacked relation during shipping or storage, the top and bottom end walls are formed with corresponding offset portions 36 and 37 extending outwardly and inwardly respectively, the amount of offset being such that adjoining ends of superposed containers may be nested with the rings in contact.

We claim:

1. An end wall construction for a container with side walls, comprising a body formed of fibre sheeting and having an inner portion and an outer portion with a peripheral angular extension providing at its inner portion a receiving groove for said side walls and slitted at the outer portion to provide a plurality of tabs to engage the outer side of the side walls, the slits defining said tabs having their inner end immediately adjacent but outward of said groove, said groove arranged to receive the end portion of said side walls and said inner portion and a part of the outer portion of said extension glued to said side walls, a retaining ring engaging said walls including said inner and outer portions of said extension including said tabs, and means for securing said ring to embrace said tabs and grip to said side walls.

2. An end wall construction for a container with cylindrical side walls, comprising a body formed of fibreboard and including an inner disc with its periphery at the inner sides of said side walls, an outer disc secured to said inner disc

and having a marginal angular extension spaced from said periphery to define therewith an annular well receiving said side walls, the surfaces of said walls within said well being glued to the opposing surfaces of the well, said extension having slits extending inwardly from the outer edge thereof toward but terminating immediately adjacent and short of said well, said well being filled with glue except for the portion of the side walls inserted therein, a contractible closure ring positioned to embrace said extension including the tabs, said side walls and said extension and ring being formed with inwardly offset interfitting beads, and means on said ring to contract said ring and retain same in contracted position including a lever seated within the bead in the ring when the ring is in said position.

3. A wall construction for the opposite ends of a fibreboard container having cylindrical side walls, comprising inner and outer discs secured together, the inner disc formed to fit within said walls with the periphery in engagement with the inner sides, the outer disc having a marginal portion lapping the end of said side walls and terminating in a flange embracing the outer side of said walls, said flange being slitted at its outer portion to provide separated tabs and being glued throughout its entire inner surface to the outer side of said walls, the slits defining said tabs having their closed end immediately adjacent the inner end portion of the flange, and a band embracing said flange and having an inner portion lapping the marginal portion at the end of said side walls, the portion of the side walls opposite said flange being offset inwardly and said flange being of such thickness that the portion of the band opposite the flange will be substantially flush with the outer side of the remainder of said side walls, the end wall for the top and bottom of the container being offset corresponding outwardly and inwardly respectively to permit nesting of the ends of stacked containers with the bands of adjoining containers in contact.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
453,844	Meisle	June 9, 1891
2,081,759	Moore	May 25, 1937
2,304,539	Carpenter	Dec. 8, 1942
2,203,271	Rigerman	June 4, 1940
2,150,998	Warshaw	Mar. 21, 1939
2,089,185	Colvin	Aug. 10, 1937
2,026,047	Kreider	Dec. 31, 1935
1,469,067	Coates	Sept. 25, 1923
2,071,340	Hothersall	Feb. 23, 1937
1,851,287	Moore	Mar. 29, 1932