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A. G. HATCH

2,218,027

CONTAINER AND METHOD OF MAKING SAME

Filed March 31, 1938

Fig.1

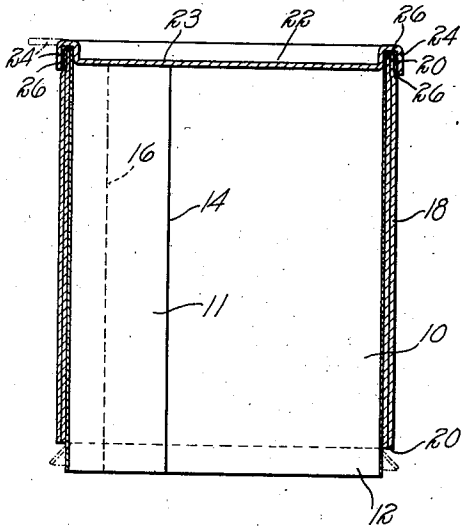


Fig. 6

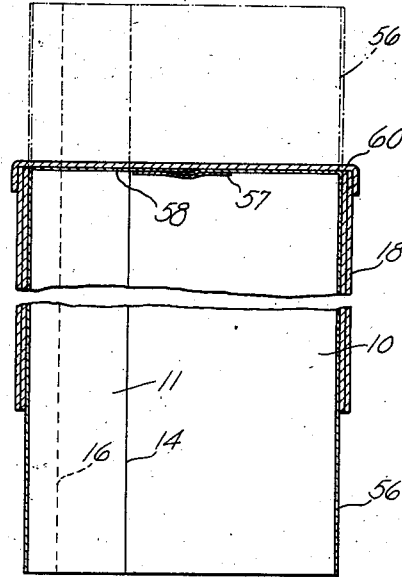


Fig. 2

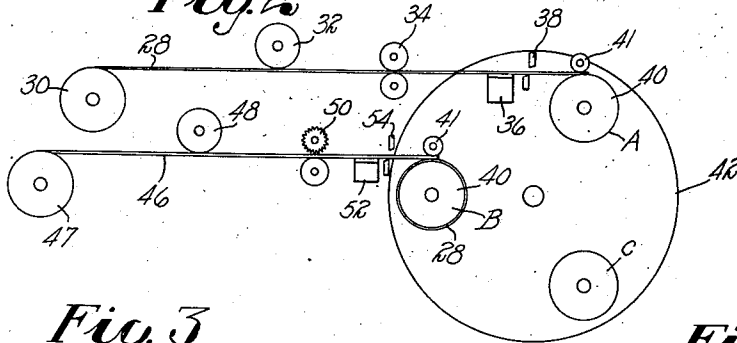


Fig. 3

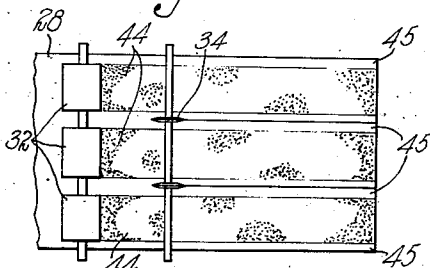
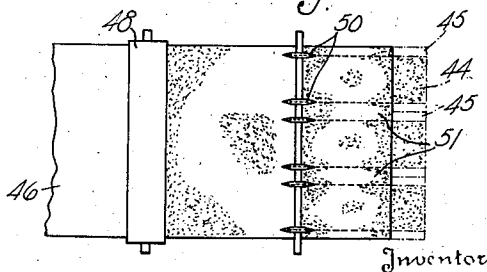


Fig. 4



Inventor

ALEXANDER G. HATCH

By *H. Clay Lindsey*

Attorney

UNITED STATES PATENT OFFICE

2,218,027

CONTAINER AND METHOD OF MAKING
SAMEAlexander G. Hatch, Rutland, Vt., assignor to
Fibre Can Machinery Corporation, Rutland, Vt.,
a corporation of Vermont

Application March 31, 1938, Serial No. 199,137

15 Claims. (Cl. 93-94)

The present invention relates to improvements in the construction and the method of making containers and more particularly to the construction of fibre can bodies wherein there is provided a lining within an outer container.

Heretofore in the manufacture of fibre bodied containers, which may be provided with either fibre or metal closures, it has been necessary, in order to make such containers suitable for holding fluids or products having an oily content, to treat same to prevent wicking at the point where the closure meets the body. In doing this, it has been customary to dope the ends by dipping same in a solution, such as cellulose acetate, and then applying the closure over the dipped ends, or by applying to the closure a thermo-plastic solution adapted to flow over the ends of the container as the closure is spun onto same.

It is an object of the present invention to manufacture containers wherein there is provided a complete seal between the closure and the body without resorting to the prior practices; thus materially reducing the cost of manufacture by eliminating therefrom the cost of the solution and the steps necessary in applying it.

A further object is to produce a fibre bodied can which is suitable for holding fluids or products containing oil or fat by using a gasket which is made integrally with the can body.

A still further object is to provide a container with a readily removable closure for holding highly pulverized products without the danger of their "dusting" through the joint between the can ends and the closure by providing a lining underlying the closure and integral with the can body.

A still further object is a container wherein there is provided a seal underlying the closure, thus making it impossible to tamper with the contents if the closure is temporarily removed.

A still further object is the method of manufacturing containers of the above-mentioned type.

Other objects will be in part obvious and in part pointed out more in detail hereinafter.

The invention accordingly consists in the features of construction, combination of elements, and arrangement of parts which will be exemplified in the construction hereafter set forth and the scope of the application of which will be indicated in the appended claims.

In the accompanying drawing:

Figure 1 is a sectional view of a fibre can made in accordance with the present invention;

Figs. 2, 3, and 4 are diagrammatic views to il-

lustrate one method of manufacturing said fibre cans;

Fig. 5 is a diagrammatic view illustrating a modification of the method of manufacturing said cans; and

Fig. 6 is a sectional view of another fibre can made in accordance with the present invention.

Referring to the drawing, there is shown in Fig. 1 one embodiment of a container made in accordance with the present invention. The container comprises an inner lining 10 and outer body 18 adhesively joined thereto and of less width than the lining 10; the extending marginal portions or overlays 12 of lining 10 being of sufficient length to be flared outwardly and over the ends of the outer body to seal the ends thereof beneath a suitable closure 22.

The lining 10 is preferably made of relatively thin material of a nature best suited for the particular type of product to be packed within the finished container. In the particular can illustrated, the lining 10 comprises a single convolution of material plus an overlap 11 adhesively joined to the outer surface of the underlying portion of the sheet, thus securing the inner lining into a tube. Preferably the adhesive is also applied to the entire outer surface of lining 10 intermediate of the marginal portions 12 to define an adhesively treated area, which area extends the entire length of the lining strip from the inner edge 14 to the outer edge 16.

The outer body 18 may be made of any suitable fibre material, such as chip board or the like, which is convolutely wound one or more times around the lining 10. As indicated, the outer body 18 is slightly narrower than the lining 10 and is of such width as to overlie and become joined to the adhesively treated area of the lining 10, thus firmly securing the lining and outer body into a unit. As the outer body 18 is wound about the lining 10, the outer surface thereof is likewise treated with adhesive from end to end, whereupon each successive convolution of the body will be adhesively joined to the preceding convolution. When completely wound, a label may be applied to the wet outer surface of the container body. However, if adhesive has only been applied to the lining beneath the overlap, then the under surface of the outer body 18 is treated with adhesive, whereupon the first convolution will become adhesively joined to the lining and each successive convolution adhesively joined to the preceding convolution. If desired, the outer surface of body 18 may also be adhesively treated to permit the application of a label thereto.

With the lining 10 and outer body 18 wound into a unit, the outer body 18 covers the adhesively treated areas of the lining and the marginal portions 12 extend beyond the ends 20 thereof, as shown at the lower end of the container of Fig. 1. The marginal portion 12 is then flared outwardly and over the ends 20 of the outer body 18 to form an overlay or gasket covering the ends of the outer body, which overlay may be of sufficient length to extend downwardly around the outer periphery of the outer body 18.

The body unit may be closed by any suitable closure 22, which, as indicated in Fig. 1, may have a centrally depressed portion 23 and an outwardly extending flange 24. The closure is applied to the end of the can by spinning the outer projecting portion of flange 24 over the overlay or marginal portion 12, thus causing it to overlie the raw ends 20 of the outer body and underlie the flange 24 of the closure. When so constructed, the gasket 26 completely seals the can and thus eliminates the necessity of applying sealing compound to the closure flange 24 or of dipping the ends 20 of the container in a composition, or of otherwise treating the can ends to prevent seepage resulting from capillary attraction between the raw edges of the chip board body and the contents of the can.

It is desirable in making up cans of the above type to manufacture a plurality at one time in order to reduce production costs, and this may be done on the type of machine fully described and set forth in the co-pending application of Alexander G. Hatch and Robert S. Condon, Serial No. 166,598 and diagrammatically illustrated in Figs. 2 to 4, in which machine there is provided a turret which is indexible to successive stations and the mandrels rotatable at each station; there being associated with the turret suitable gluing devices, stripping devices, feed tables, shearing means, and lay-down rolls, all of which are operated in timed relationship to the indexing of the turret and the rotation of the mandrels. It is understood, however, that any suitable mechanism may be used, such as a single mandrel; the type illustrated being preferred because of the increased capacity obtainable on it.

As indicated in Fig. 2, a suitable sheet of lining material 28 is drawn from a parent roll 30 and beneath a gluing device 32, which gluing device is shown as a plurality of spaced rolls. Thus as the lining 28 passes beneath the gluing rolls, glue will be applied thereto to define a plurality of longitudinally extending, adhesively treated areas 44 over which outer bodies are to be wound and spaced apart by longitudinally extending dry marginal areas 45 intermediate each area 44 and to outsides thereof.

After the sheet 28 is adhesively treated, the sheet may be drawn beneath cutting or severing means 34 which subdivide the sheet 28 into predetermined widths for a lining 10. The cutting means 34 are so positioned that they will sever the paper longitudinally along the dry areas to cut proper width margins, thus dividing the sheet into three strips suitable for linings; each strip having longitudinally extending adhesively treated areas and dry marginal areas to each side thereof. The adhesively treated areas have been shown as of equal width to the outer body which is to be joined thereto; however, the adhesive may be applied in any suitable way intermediate of the dry marginal areas. The sheet 28 is then drawn over a feed table 36, and

through the shearing device 38, and onto the mandrel 40 beneath a lay-down roll 41 at the first, or station A. Upon rotation of the mandrel, the sheet is convolutely wound onto the mandrel, and when a predetermined length of paper has been drawn onto the mandrel (in this case, a single convolution), the shearing device 38 severs the paper transversely and the rotation of the mandrel continues until the trailing edge is laid down to form an overlap and join the tube into a sheet.

Following this operation, the mandrel 40 stops rotating and the turret 42 is indexed to carry the mandrel from the first, or station A, to the second, or station B. There is here provided a sheet 46 of equal width to the lining and of a suitable fibre material, such as chip board or the like. The sheet 46 is drawn from a parent roll 47 and initially passes beneath a gluing roll 48 which applies adhesive to the entire upper surface thereof, which surface becomes the outer surface of the outer body upon winding. The sheet 46 then passes beneath suitable dividing means, such as the perforators 50, which subdivide the sheet into a plurality of widths without necessarily severing same; there being sufficient material 51 intermediate of the perforations to maintain the sheet in contact for further operations. The perforators 50 are so spaced as to divide the sheet into three widths suitable for outer bodies with a double marginal portion widths intermediate of each of the body widths and single marginal portion widths along each edge.

The sheet 46 is then drawn over the feed table 52, through the shearing device 54, and between the lay-down roll 41 and the mandrel 40 at station B. Upon rotation of the mandrel 40 at station B, the sheet 46 will be convolutely wound over the lining 28. The body widths thereof will overlie and be wound in contact with the adhesively treated areas of the lining material and be firmly joined thereto, and each successive convolution of the sheet 46 will adhere to the preceding convolution. The smaller widths will also be convolutely wound around the dry areas or marginal portions of the lining material, but each successive convolution will adhere to the preceding convolution to form a plurality of non-adhering collars; in this particular case there being four; two intermediate of the outer bodies and two at the ends thereof; the intermediate collars being double the width of the end collars.

As at the preceding station, when the proper length of material is drawn through the shears, the shears are tripped to cut same and the mandrel continues to rotate to lay down the trailing edge. The turret 42 will then be indexed to carry the mandrel 40 to the third station, or station C, where the tubes are ejected from the mandrel. It will be observed that with the collars interposed between the outer bodies and at the ends thereof there will be, in effect, a continuous outer tube, whereupon the tube may be ejected either by pulling it bodily from one end of the mandrel or by having a suitable means pushing it from the other end; the collars serving to prevent any buckling of the overlay or marginal portions of the lining. When removed from the mandrel, the outer tube is broken along the perforations and the collars removed; thus providing three container units comprising a lining and an outer body of less width than the lining.

The marginal portions may then be flared out-

wardly by any suitable means to overlay the edges of the container and form the gaskets 26, such as shown in the container of Fig. 1, whereupon the closure may be placed on one end and the flange spun over to secure same. After the container is filled, the other closure may be applied.

There is illustrated in Fig. 5 a modified method of producing the can bodies, and like parts to Figs. 2, 3, and 4 have been similarly numbered. In carrying out the method as illustrated in Fig. 5, the lining sheet 28 passes beneath a gluing roll 80, which gluing roll is provided with a segmental portion 82 adapted to lay a transverse strip of glue onto the sheet 28; the travel of the sheet 28 being such that the strip applied by the segment 82 will underlie the overlap when the tube is wound. Thus when wound on the mandrel, the outer surface of the tube will be dry but adhesively joined into a tube at the overlap. After having the glue applied by the segment 82, the sheet is drawn beneath the cutting device, over the feed table, and through the shearing device, and wound upon the mandrel as in the previous embodiment.

The sheet 46 for the outer body passes under a glue roll 85 and over a glue roll 84, which roll 84 is of similar construction to the glue roll 32 in Fig. 2. The glue roll 84 applies adhesive strips to the under surface of the sheet 46, which surface, when wound, is the inner surface of the outer body, to define a plurality of longitudinally extending, adhesively treated areas spaced apart by dry marginal areas. The roll 85 may adhesively treat the entire upper area, though it is only necessary to apply adhesive above the dry marginal areas of the under surface.

After the sheet 46 is adhesively treated, it is drawn through the perforators, over the feed table, and through the shearing device to the mandrel, as in the previous method. As the sheet is wound over the lining 28, the first convolution thereof will be adhesively joined to the lining and each succeeding convolution will be adhesively joined to the preceding convolution. However, the dry portions of the under surface of sheet 42 will not adhere to the lining, but due to the adhesive coating on the upper surface thereof each succeeding convolution will adhere to the preceding convolution to form collars intermediate of the can bodies. The mandrel is then carried to the next station and the tube removed and severed as previously described.

It will be observed that the lining material 28 could be wound as a single tube and that subsequent to the application of the outer sheet the tube could be severed into the three separate container bodies by cutting intermediate of the collar portions. It is likewise apparent that scoring knives could be used to partially sever the chip board, thus making it readily breakable, or, if desired, to completely sever the board instead of perforating it.

There is shown in Fig. 6 another embodiment of a container made in accordance with the present invention. The container in general is similar to Fig. 1, having a lining completely covering and adhesively joined to the inner wall of an outer body and is made in like manner to the embodiment of Fig. 1. However, instead of having short projecting marginal portions, there are provided substantially long marginal portions 56, which marginal portions, instead of being flared outwardly and over the edges, are turned inwardly to form a closure 58 at the ends of the container, which closure will underlie the under

surface of a closure member 60 and form a lining beneath same. This type of construction is particularly desirable when it is intended that the container be used to hold finely pulverized materials; it being evident that they will be entirely enclosed within the lining 10. If desired, there may be provided a seal 57 adhesively securing the intumed marginal portions 56 beneath the closure 60. Thus if the closure, which preferably is readily removable, should be removed, it will be impossible to tamper with the contents without destroying the seal.

It will be observed that in either embodiment the contents of the can cannot come in contact with the raw edges of the outer container, and, therefore, no seepage will result intermediate the ends of the container and the closure members. Likewise, in both cases the lining completely covers the inner wall of the container and is adhesively joined thereto, and the marginal portions, which either serve as gaskets or inner closures, are coextensive with the lining and of the same material.

By using the method of manufacturing described, the cans may be made with great rapidity and relatively low cost, and such waste as results from the discarding of the collars is inconsequential in comparison to the cost of treating the ends with sealing composition. Likewise, by merely varying the point of cutting, the length of the marginal edges may be varied as desired.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

I claim as my invention:

1. The method of forming a can body, which comprises winding into a tubular lining a sheet of material having an adhesively treated outer surface; then winding into contacting engagement therewith a second sheet of less width than the first sheet to form an outer body over same; then flaring the projecting ends of the first sheet over the ends of the second sheet.

2. The method of forming a can body, which comprises winding into a tubular lining a sheet of material having a centrally located adhesive portion on its outer surface; then winding into contacting engagement therewith a second sheet of equal width to the adhesively treated portion of the first sheet to form an outer body over same; then flaring the projecting ends of the first sheet over the ends of the second sheet.

3. The method of forming a can body, which comprises winding into a tubular lining a sheet of material having an adhesively treated outer surface; then winding into contacting engagement therewith a second sheet of less width than the first sheet to form an outer body over same; then flaring the projecting ends of the lining at the edge of the outer body.

4. The method of forming can bodies, which comprises winding into a tubular lining a sheet of material having on its outer surface adhesively treated portions and dry portions; then wind-

ing around said tube a second sheet of material having an adhesively coated outer surface and of equal width to the first sheet to provide outer bodies over the adhesively treated portions; then removing the non-adhering portions of the outer sheet intermediate of the outer bodies.

5. The method of forming can bodies, which comprises winding into tubular form a sheet of material having adhesively coated portions and dry portions on its outer surface while severing said sheets into predetermined widths; then winding around said tube a second sheet of equal width to the first sheet and having an adhesively coated outer surface while dividing said second sheet into predetermined widths to provide outer bodies adhering to the adhesively treated portions of the first sheet and removable collars intermediate thereof.

6. The method of forming can bodies, which comprises winding into tubular form about a supporting mandrel a sheet of material having adhesively treated portions and dry portions on its outer surface while severing said sheet into predetermined widths; moving the tube and mandrel bodily to a second position; then winding about said tube a second sheet of equal width to the first sheet and having an adhesively coated outer surface while dividing said second sheet as it is drawn onto the mandrel into predetermined widths to provide outer bodies adhering to the adhesive portions of the first sheet and removable collars intermediate thereof; removing said tube from the mandrel, and then removing said collars from the tube.

7. The method of forming can bodies, which comprises leading a sheet past a plurality of spaced adhesive devices to apply a plurality of adhesively coated portions spaced apart by dry portions; then leading the sheet past severing devices to divide the sheet centrally of the dry portions; then winding said divided sheet into tubular form; then leading a second sheet past an adhesive applying device to adhesively coat the outer surface thereof; then leading said sheet past dividing means to divide said sheet into widths corresponding to the adhesively coated portions and the dry portions of the first sheet; then winding said second sheet about said first sheet to form outer bodies over the adhesive portions and removable collars over the dry portions; then removing said collars from the dry portions.

8. The method of forming can bodies, which comprises winding a sheet into tubular form while applying to the surface thereof a plurality of adhesively coated portions spaced apart by dry portions; then winding around said first sheet a second sheet having an adhesively coated outer surface while perforating said sheet into widths equivalent to the widths of the adhesively coated portions and dry portions to provide outer bodies adhering to the adhesively treated portions and removable collars overlying the dry portions.

9. The method of forming can bodies, which comprises winding into tubular form a sheet of material having applied to its outer surface adhesively coated portions and dry portions and while severing said sheet intermediate of the dry portions; then winding around said first sheet a second sheet of equal width to the first sheet and having an adhesively coated outer surface

while perforating said sheet into strips of equal width to the adhesive and dry portions of the first sheet to provide outer bodies adhering to the adhesively treated portions and removable collars intermediate thereof.

10. The method of forming can bodies, which comprises applying to a sheet of material a plurality of adhesively coated strips spaced apart by dry strips; winding said sheet into tubular form; subdividing a second sheet into strips of equal width to the adhesive strips and dry strips of the first sheet; then winding said second sheet about said first sheet and into contacting engagement therewith.

11. The method of forming can bodies, which comprises winding a sheet of material into tubular form; subdividing a second sheet into predetermined widths; then winding said second sheet around the first sheet and adhesively treating one of said sheets to cause adherence of some of the widths of the second sheet thereto, and treating said second sheet to cause the successive convolutions of the other widths to be adhesively joined to the preceding convolution.

12. The method of producing can bodies, which comprises applying a transverse strip of adhesive to the outer surface of the sheet and winding the sheet to overlap said adhesive strip and join said sheet into a tube; then winding a second sheet around the first sheet while applying to the under surface of said second sheet a plurality of adhesively treated portions spaced apart by dry portions; and applying adhesive to the upper surface of said sheet above said dry portions, while dividing said sheet into the adhesively treated widths and the dry widths to form outer bodies adhering to said first sheet and non-adhering collar portions intermediate thereof.

13. The method of forming can bodies, which comprises applying a transverse strip of adhesive to a sheet of material; then winding said sheet to overlap said adhesive strip and join said sheet into a tube; then winding a second sheet of narrower width than the first sheet around same while applying adhesive to the under surface thereof to cause said sheet to be adhesively joined to said first sheet to form an outer body thereon; then flaring the projecting ends of the inner sheet over the edges of the outer sheet.

14. The method of making containers which consists of forming a tubular body out of plural layers of paper stock, with a glued interface between the layers, the outer layer being of narrower width than the inner layer, whereby a portion of the inner layer will extend beyond the ends of the outer layer, then flaring the projecting ends of the inner layer over the edge of the outer layer.

15. The method of making containers which consists of forming a tubular body out of plural layers of paper stock with a glued interface between the layers, the inner layer being an extremely thin material and providing a lining, and the outer layer being a heavy rigid material of narrower width than the inner layer and providing a rigid supporting body therefor, and flaring the projecting end of the lining over the edge of the outer body.

ALEXANDER G. HATCH.