Jan. 23, 1945. H. A. WANSKER 2,367,705

TUBULAR CONTAINER

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Fig.1.

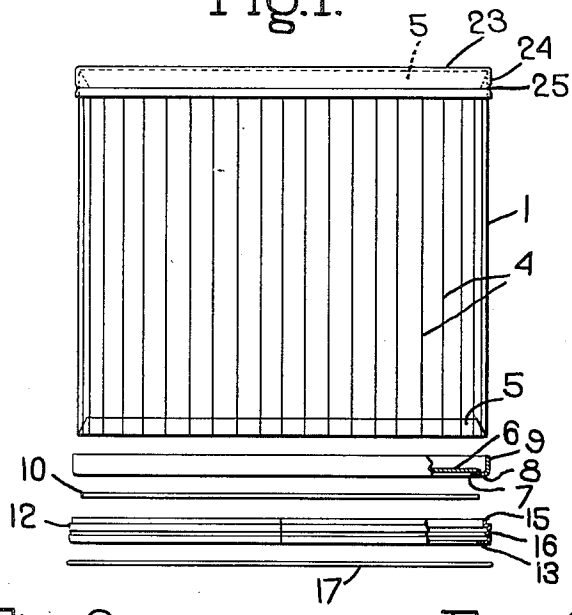


Fig.2.

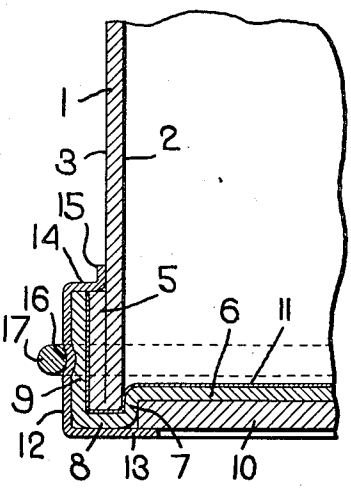


Fig.3.

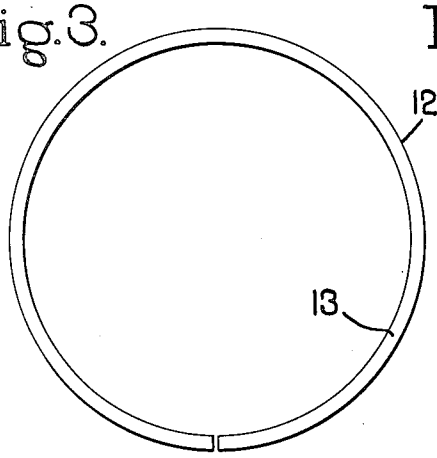


Fig.4.

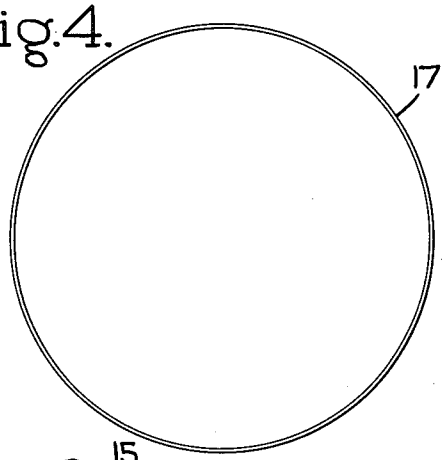


Fig.5.

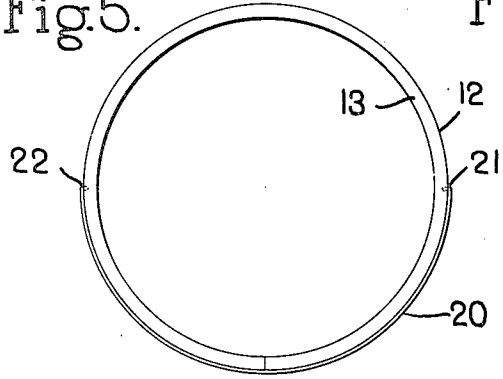
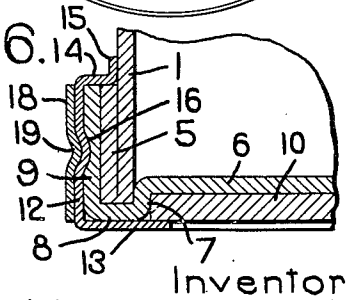


Fig.6.



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Fig 7.

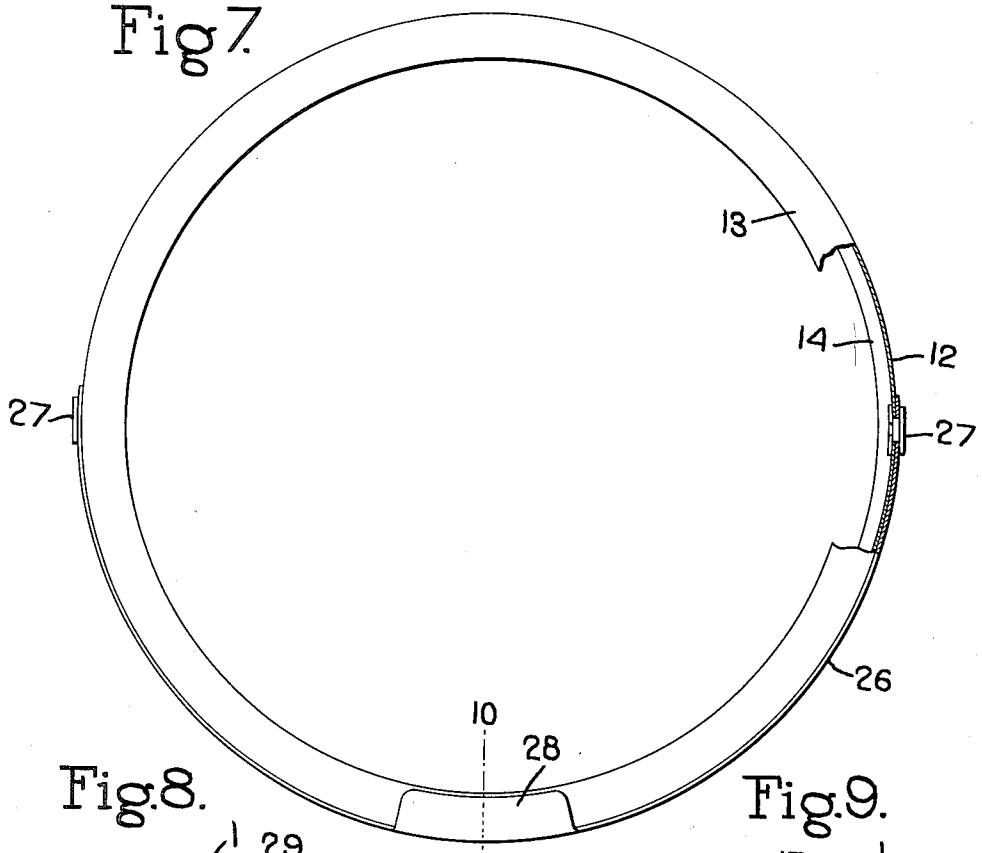


Fig.8.

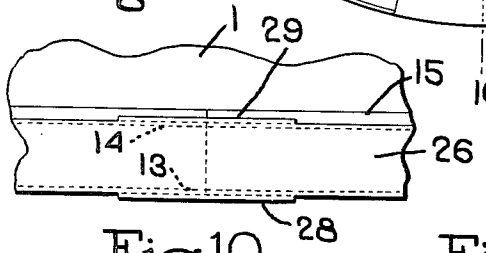


Fig.9.

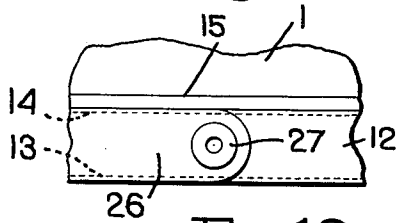


Fig10.

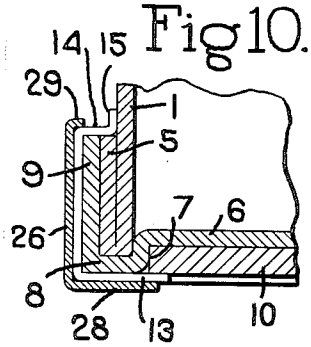


Fig.11.

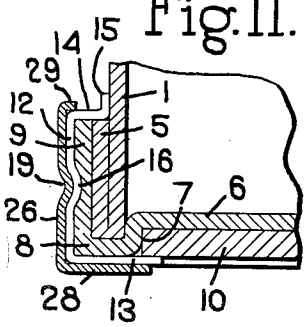
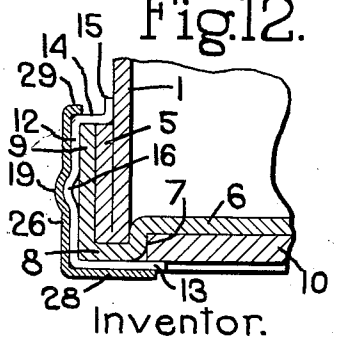


Fig.12.



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UNITED STATES PATENT OFFICE

2,367,705

TUBULAR CONTAINER

Harry A. Wansker, Newtonville, Mass.

Application October 14, 1942, Serial No. 461,971

11 Claims. (Cl. 229—5.7)

This invention relates to improvements in knockdown containers and the principal object thereof is to provide a tubular knockdown container having a closure member for one or both ends of the container which can be readily assembled upon the tubular body, which will be of rigid construction, and when assembled tightly clamped upon the body.

Another object of the invention is to provide a novel form of knockdown container in which the body portions can be collapsed and superimposed one upon the other to form a convenient package, together with a closure member or closure members which can be packed flat-wise and provided with split retaining bands which may be concentrically packaged.

More particularly the object of the invention is to provide a food package for dehydrated or frosted foods having impervious surfaces providing approximately a vacuum pack with a minimum amount of moisture vapor transmission.

Another object of the invention is to provide novel means for securing the closure member to the end of a tubular container in such manner as to provide a moisture and vaporproof seal and which can be detached from the container to permit collapse thereof.

These and other objects and features of the invention will more fully appear from the following description and the accompanying drawings and will be particularly pointed out in the claims.

Preferred embodiments of the invention are illustrated in the accompanying drawings, in which,

Fig. 1 is a side elevation of a container having a usual form of cover and illustrating the opposite end of the container in an exploded manner with the several elements of the end closure in separated relation and in the succession in which they are applied to the end of the body;

Fig. 2 is a detail vertical sectional view of a portion of the end of the container and closure mechanism in assembled position;

Fig. 3 is an underneath plan view of the split retaining band;

Fig. 4 is a plan view of the inextensible clamping or locking ring illustrated in Fig. 2;

Fig. 5 is an underneath plan view of the retaining band having a different form of clamping and locking mechanism;

Fig. 6 is a detail vertical sectional view of an end portion of the container and closure member showing a different form of clamping ring.

Fig. 7 is an underneath plan view of a retaining band having another form of clamping and locking mechanism for the split retaining band.

Fig. 8 is a detailed side elevation of a portion of the locking mechanism which overlies the junction of the ends of the split ring.

Fig. 9 is a detailed view showing in side elevation the pivotal connection between an end of the clamping ring and the split retaining ring.

Fig. 10 is a detailed vertical sectional view on an enlarged scale on lines 10—10 Fig. 7.

Fig. 11 is the similar view of a modified form of the invention in which the retaining band and clamping band are provided with a longitudinally extending stiffening deformation in the form of an internal rib, and

Fig. 12 is a similar view showing the deformation in the form of an external bead.

The knockdown container may have any suitable tubular body of uniform cross sectional area throughout its length capable of being collapsed into substantially flat condition. Preferably the body of the container is of the character disclosed in my prior application Serial Number 375,238, filed January 21, 1941, comprising a cylindrical wall of paperboard 1, which preferably is provided with an inner surface or lamination 2 of impervious material and also desirably with a similar outer surface or lamination 3 and having thin longitudinal lines 4 pressed therein to substantially equal depth without breakage of the fibre of the body, with diametrically opposite lines adapted to form fold lines and with the spaces between the impressed lines of each quadrant from the respective fold lines decreasing in width for the purpose set forth in the aforesaid application.

The ends of the body desirably are provided with external upper and lower ribs 5 constructed by partially severing the walls of the container from the inner side outwardly, then folding the rib 5 thus partially severed outwardly against the outer wall of the body, as illustrated in Figs. 2 and 6.

The present invention relates particularly to mechanism forming the closure for the end of the tubular body and is illustrated herein as applied to the bottom thereof although it will be understood that the same construction may be applied to the top of the body or any other cover employed according to the use to which the container is to be employed.

The closure member as illustrated herein comprises a disk 6 which may be of relatively thin material, such as paraffined paperboard, waxed paper, parchment paper, paper laminated to

moistureproof cellophane, or parchment laminated to moistureproof cellophane.

A peripheral margin of the closure, which will hereinafter be defined as its rim, is formed by die pressing or otherwise, to provide a circumferentially reversely bent rim providing a circumferential channel having an inner wall 7 tightly fitting within the inner wall of the body with a portion 8 extending over the edge thereof and tightly engaging the end of the body and its external rib and an outer wall 9 extending alongside and tightly embracing the rib 5 of the end of the body.

A supplemental reenforcing disk 10 tightly fits within the inner wall 7 of the closure member. This reenforcing member may be of stiff cardboard or any other suitable material and desirably is relatively thicker than the closure member with its outer face flush with the portion of the reversely bent rim which underlies the edges of the body and the rib.

The closure member desirably is provided with an impervious coating or lamination 11 which in cooperation with the impervious surface of the body will, when the closure member is assembled upon the body, form an impervious moisture and vaporproof seal.

The closure member is held in place by a preferably split retaining band 12 which extends alongside and engages the outer wall 9 of the closure member and is provided with a flange 13 which overlies the periphery of the reenforcing disk 10. The retaining band desirably is provided at its opposite edge with an inwardly extending flange 14 which overlies and engages the upper end of the outer wall of the closure member and the rib and has an extension 15 which tightly embraces the body 1 of the container, thereby serving to support the closure member on the rib 5 and also to divert any condensation of water which may occur upon the outer surface of the body away from the joint formed by the closure member and body.

The retaining member may be of metal or extruded or molded thermoplastic material such as vinylite, cellulose acetate, aceto-butyrate (the latter of which is thoroughly moistureproof and will age without discoloration), or any other suitable substantially inextensible material.

The split retaining band may be of such length that when assembled upon the container the ends will abut and be held in place by suitable clamping means, preferably means being provided for preventing displacement of the clamping means when in assembled position.

In the construction illustrated in Figs. 1, 2 and 6, the retaining member 12 is provided preferably midway of the flanges 13 and 14 with a stiffening deformation 16 and as illustrated in Figs. 1, 2 and 4 the clamping member is in the form of a continuous inextensible wire 17 of slightly smaller diameter than that of the retaining ring and slid or sprung over the retaining ring thereby forcing and holding it tightly into engagement with the outer wall 9 of the reversely bent rim of the closure member and contracting the end of the circumferentially flexible body tightly upon the periphery of the reinforcing disk 10.

Desirably the stiffening member of the retaining ring is formed by creasing the retaining ring longitudinally intermediate of its width to provide on one side a groove and upon the other side a stiffening rib. In the construction illustrated in Fig. 2 the retaining ring is thus deformed to provide an external groove and an internal rib but it will be understood that the deformation may be reversed so that the rib will be external and the groove internal.

In either event the deformation will provide means for retaining the clamping ring in place upon the retaining band.

As illustrated in Fig. 2, the clamping ring 17 is seated in the groove of the deformed portion 16 and retained thereby in position.

The clamping ring instead of being a continuous integral wire as illustrated in Fig. 2 may be in the form of an inextensible flat band 18 (Fig. 6) preferably provided with an internal rib 19 complementary to and adapted to engage the groove in the deformed portion 16 of the split retaining ring.

Another form of clamping or locking means for the split retaining ring is illustrated in Fig. 5 and comprises a wire 20 of slightly shorter radius than that of the retaining band 16 having inturned ends 21 and 22 pivotally and detachably mounted in substantially diametrically opposite portions of the retaining band and at equidistances from the adjacent ends of the retaining band.

By reason of this construction the wire 20 may be swung about its pivots to permit the retaining band to be applied to the end of the container and thereupon swung into the horizontal central plane of the band and if the retaining band is provided with an annular groove of the character above described may be slidably seated in the groove and thereby prevented from displacement.

In any of the foregoing constructions the several parts can be readily assembled and if desired can be knocked down by removal of the locking band or wire so that the split reinforcing band, the reinforcing disk, and the impervious closure member can be removed.

As before stated the top of the container may be provided with similar closure mechanism when it is desired to provide substantially a vacuum pack in which dehydrated or frosted foods may be preserved indefinitely, or if desired the container may be provided with a cover of a usual type one of which is illustrated herein as comprising a cover 23 of fiberboard or other suitable material having a flange 24 embracing the upper end of the body and provided with an external groove 25 producing an internal rib adapted when the cover is pressed in place to snap beneath the edge of the rib 5 on the upper end of the body.

Obviously by reason of this construction the bodies when disassembled may be superimposed and bound or wrapped into a suitable package, the closure member for the top or bottom can be conveniently packed in superimposed relation, the retaining members may be concentrically packaged because of the elasticity of the split rings which enable them to be circumferentially nested, and the clamping wires or bands may be packaged flat-wise into a minimum bulk. As a matter of fact all of the members of a large number of containers may be assembled into a single package occupying a minimum space for storage or shipment.

Other forms of locking mechanism for the retaining band are illustrated in Figs. 7–12 inclusive. In the construction illustrated in these figures, the split retaining band 12 may be and is of the character above described. The locking means comprises an arcuate preferably semicircular

clamping band 26 of slightly shorter radius than that of the split retaining band 12, the ends of the clamping band 26 being pivotally connected by rivets 27 or other suitable means to the vertical walls of the retaining band preferably at diametrically opposite points. The clamping band 26 is provided with a flange portion 28 adapted to overlie the junction between the adjacent ends of the split retaining band 12 and is also provided with a relatively narrow flange 29 adapted to overlie the inwardly extending flange 14 of the retaining band so that when in clamping position, the clamping ring will be held from displacement.

By reason of this construction, the adjacent ends of the split retaining ring will be held in close abutment and the retaining ring tightly clamped upon the end portion of the tubular container and the closure member within the end thereof, so as to provide a moisture and vaporproof seal for the closed end of the container.

It will be understood that the particular embodiments of the invention shown and described herein are of an illustrative character and not restrictive and that various changes in form, construction and arrangement of parts may be made within the spirit and scope of the following claims.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is:

1. A knockdown container comprising a longitudinally rigid circumferentially flexible tubular body of fibrous material having at its end a narrow external peripheral rib, an end closure therefor having a circumferential reversely bent rim providing an inner wall tightly fitting within the end portion of said body and an outer wall tightly embracing said peripheral rib, a stiff reenforcing disk tightly fitting within and directly engaging the inner wall of the rim of said closure member, a split retaining band tightly encircling the outer wall of said rim having a flange overlying the periphery of said reenforcing disk, provided with an edge flange overlying the rim of said closure member and rib and extending alongside said body, the outer wall of said retaining band having an annular groove midway of its width, and a substantially inextensible clamping member sprung into the groove of said retaining band tightly clamping said band upon the body and the end portion of said circumferentially flexible body upon the periphery of said reinforcing disk.

2. A knockdown container comprising a longitudinally rigid circumferentially flexible tubular body of fibrous material having at its end a narrow external peripheral rib, an end closure therefor having a circumferential reversely bent rim providing an inner wall tightly fitting within the end portion of said body and an outer wall tightly embracing said peripheral rib, a stiff reenforcing disk tightly fitting within and directly engaging the inner wall of the rim of said closure member, a split retaining band tightly encircling the outer wall of said rim having a flange overlying the periphery of said reenforcing disk, provided with an edge flange overlying the rim of said closure member and rib and extending alongside said body, the outer wall of said retaining band having an annular groove midway of its width, and a substantially inextensible endless clamping ring sprung into the groove of said retaining member.

3. A knockdown container comprising a longitudinally rigid circumferentially flexible collapsible tubular body of fibrous material having an impervious surface and a narrow external peripheral rib integrally joined thereto, an end closure therefor comprising a relatively thin sheet of flexible fibrous material having an impervious inner surface provided with a circumferentially reversely bent rim providing a channel having an inner wall tightly fitting within the end portion of said body, and an outer wall tightly embracing the outer wall of the peripheral rib of said body, a stiff fibreboard disk tightly fitting within the inner wall of the rim of said closure member, a split retaining band encircling the outer wall of said channel and the rib of the body within it and having a flange overlying the periphery of said reinforcing disk and another flange overlying the upper edge of the peripheral rib of said body having an extension tightly embracing the wall of the body acting to reinforce the wall of the body and to prevent liquid from entering the joint connecting the closure to the body.

4. A knockdown container comprising a longitudinally rigid circumferentially flexible laminated collapsible tubular body having one or more impervious walls and an integral peripheral rib, a laminated end closure therefor having an inner thin impervious lamination and a reversely bent rim providing a channel having an inner wall tightly fitting within the end portion of said body and an outer wall extending alongside and tightly embracing said body, a stiff reenforcing disk of fibrous material tightly fitting within the inner wall of the rim of said closure member, a split retaining band encircling the outer wall of said rim having a flange overlying the periphery of the reenforcing disk, and a flange overlying the edge of said rim and rib and extending vertically alongside the body in intimate contact therewith and having an annular groove substantially centrally of the width of said retaining band, and a ring of slightly smaller diameter than that of said retaining ring sprung into the groove of said retaining band tightly clamping the same upon the rib of said body.

5. A container comprising a longitudinally rigid circumferentially flexible cylindrical body of moisture-proofed fibrous material having at its end a peripheral reinforcing rib, a closure disk of stiff moisture-proofed material tightly fitting within the reinforced end of said body, a split retaining band fitting and encircling said reinforcing rib having an upper flange overlying the upper edge of said rib and extending upwardly tightly fitting said body and a lower flange overlying and engaging the lower edge of said rib and a marginal portion of said closure disk, an arcuate clamping band of slightly shorter radius than that of said retaining band tightly embracing the adjacent ends of said split retaining band and pivoted to said band at equal distances from the adjacent ends of said retaining band and having short flanged central portions respectively complementary to the upper and lower flanges of said retaining band overlying the junction of the ends of said retaining band, said clamping band acting when in clamping position to constrict said retaining band and hold the ends thereof in abutment and to lock said clamping band from displacement thereby providing a moisture and vaporproof seal.

6. A container comprising a longitudinally rigid circumferentially flexible cylindrical body of moisture-proofed fibrous material having at its end a

peripheral reinforcing rib, a closure disk of stiff moisture-proofed material tightly fitting within the reinforced end of said body, a split retaining band fitting and encircling said reinforcing rib having an upper flange overlying the upper edge of said rib and a lower flange overlying and engaging the edges of said rib and provided midway of its width with a longitudinally stiffening deformation, an arcuate clamping band of slightly shorter radius than that of said retaining band tightly embracing the adjacent ends of said split retaining band and pivoted to said retaining band at equal distances from the adjacent ends of said retaining band and provided with a longitudinally extending deformation complementary to that of said retaining band and having short flanged central portions respectively complementary to the upper and lower flanges of said retaining ring overlying the junction of the ends of said retaining ring said clamping band acting when in clamping position to constrict said retaining band and hold the ends thereof in abutment and to lock said clamping band from displacement thereby providing a moisture and vaporproof seal.

7. A moisture-proof knockdown container comprising a longitudinally rigid circumferentially flexible collapsible body of impervious fibrous material of uniform tubular cross sectional area throughout its length having at its bottom end a narrow external peripheral rib, a bottom closure member therefor of impervious material having a reversely bent rim portion providing a channel embracing the end of the body and the peripheral rib thereof with its inner wall fitting within the end portion of said body and its outer wall surrounding the peripheral rib of said body, a stiff reinforcing disk tightly fitting within the inner wall of said channel, a split retaining band encircling the outer wall of said channel having a flange engaging and overlying the closure member and a peripheral portion of said reinforcing disk and having an inwardly extending flange overlying the upper edges of the closure member and said peripheral rib acting to support the closure member and reinforcing disk firmly upon the lower end of the tubular body, and having an upwardly extending flange tightly embracing said body to prevent liquid from flowing downwardly from the surface of said body into the union of the body and its closure member, and means for releasably constricting the retaining band thereby to clamp tightly together the external ribbed bottom end portion of the circumferential flexible body, the rim of the closure member and the periphery of the reinforcing disk.

8. A knockdown container comprising a longitudinally rigid circumferentially flexible collapsible tubular body of fibrous material having at its bottom end a narrow external peripheral rib fixedly united thereto, an end closure therefor having a circumferential reversely bent rib portion providing a channel with the base of the channel engaging said body end, the inner wall of said channel extending into and tightly fitting within the end portion of the body, and the outer wall of said channel tightly embracing the peripheral rib of the body, a stiff reinforcing disk tightly fitting within and directly engaging the inner wall of said channel within the end portion of the body, a split retaining band encircling the outer wall of said channel and the external rib of the body within it and having a flange overlying and engaging the periphery of said reinforcing disk, and a flange overlying and fitting the opposite edge of said rib, and releasable constricting means encircling said retaining band and acting to constrict the retaining band and the ribbed lower end of the body and the walls of the closure member upon and clamping the same firmly upon the periphery of the reinforcing disk.

9. A knockdown container comprising a longitudinally rigid circumferentially flexible collapsible tubular body of fibrous material having at each end a narrow external periphery rib fixedly united thereto, an end closure therefor having a circumferential reversely bent rib portion providing a channel with the base of the channel engaging said body end, the inner wall of said channel extending into and tightly fitting within the end portion of the body, and the outer wall of said channel tightly embracing the peripheral rib of the body, a stiff reinforcing disk tightly fitting within and directly engaging the inner wall of said channel within the end portion of the body, a split retaining band having an annular groove midway of its width encircling the outer wall of said channel and the external rib of the body within it and having a flange overlying and engaging the periphery of said reinforcing disk and a flange overlying and fitting the opposite edge of said rib and releasable constricting means encircling said retaining band with a portion thereof engaging the groove thereof and acting to constrict the retaining band and the rib of the body and the walls of the closure member upon and clamping the same firmly upon the periphery of the reinforcing disk.

10. A knockdown container comprising a longitudinally rigid circumferentially flexible collapsible tubular body of fibrous material having at its bottom end a narrow external peripheral rib fixedly united thereto, an end closure therefor having a circumferential reversely bent rib portion providing a channel with the base of the channel engaging said body end, the inner wall of said channel extending into and tightly fitting within the end portion of the body, and the outer wall of said channel tightly embracing the peripheral rib of the body, a stiff reinforcing disk tightly fitting within and directly engaging the inner wall of said channel within the end portion of the body, a split retaining band encircling the outer wall of said channel and the external rib of the body within it and having a flange overlying and engaging the periphery of said reinforcing disk, and a flange overlying and fitting the opposite edge of said rib, and releasable constricting means therefor comprising a semicircular clamping band of slightly shorter radius than that of said retaining band embracing the adjacent edges of said split retaining band and pivoted at its ends to said retaining band at diametrically opposite points and having a flange underlying the junction of the ends of said retaining band and acting when in clamping position to cause said retaining band to clamp the ribbed end of the tubular body firmly upon the periphery of the tubular member and to prevent displacement of the adjacent ends of said split retaining band.

11. A knockdown container comprising a longitudinally rigid circumferentially flexible collapsible body of fibrous material of uniform tubular cross section throughout its length having at its end a narrow external peripheral rib fixedly united thereto, a closure member therefor of tough sheet material having a reversely bent rim portion providing a channel with the base of the

channel engaging the end of the body, the inner wall of the channel fitting within the end portion of the body and its outer wall surrounding the peripheral rib of the body, a stiff reinforcing disk tightly fitting within and directly engaging the inner wall of the channel, a split retaining band encircling the outer wall of the channel having a circumferential deformation intermediate of its width, a flange engaging and overlying the channel of the closure member and the peripheral portion of the reinforcing disk, and a flange overlying the opposite edge of the external body rib, and a flat constricting band slidably mounted upon said retaining band having means engaging and normally retained in position by said deformation acting to constrict the retaining band, the rib end of the body and the walls of the closure member upon and firmly to clamp the same upon the periphery of the reinforcing disk.

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