METAL SHIPPING BARREL

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The invention relates to metal barrels, drums, etc., particularly adapted for shipping and handling solids, and liquids.

The transportation of liquid in barrels or drums over any appreciable distances has heretofore been relatively expensive particularly to the shipper and carrier and thus ultimately to the consumer. Especially has this condition been prevalent in the oil industry, since in order to withstand the rigors of shipping, the carriers and various governmental commissions, have made freight rulings which require the barrels or drums to be of relatively heavy gauge or thickness of material for different capacities and contents. A particular disadvantage in the use of the type of barrels and drums at present in use, resides in the necessity of leaving the barrels with the customer or user until emptied. It will thus be clear that for long periods in the life of the barrel, it is merely utilized for storage purposes or subject to handling in a manner out of all proportion to the rough treatment to which it is exposed during shipment. On the one hand, therefore, a heavy duty barrel is required, and on the other hand a lightweight drum of simple and inexpensive construction is ample. Then too the heavy duty barrel or drum is extremely light for its bulk and therefore its reshipment as an empty is naturally quite unprofitable to the carrier.

With the foregoing in mind, I have aimed at providing a barrel or drum which could profitably and to a large extent be a one-time shipper, that is, a drum furnished and filled at the refinery and shipped to and kept permanently by the customer.

At the same time the drum when undergoing the process of shipping would have all of the elements of strength, safety, etc., required under the rulings, and any reshipment of parts would concern only the shipper and carrier and not result in any burden on either of them.

In carrying out the invention in its preferred form, I utilize as one of the elements, a metal inner container in which the oil, liquid or other substance may be confined and sealed, and which is formed with walls of a relative light gauge and suitable material to permit of normal handling of the container and contents but not sufficient under the rulings aforesaid for shipping as of itself when filled. In order that the inner drum may be shipped with contents, I arrange for the removable positioning thereon, of a metal enclosing housing or jacket which is metal enclosed housing or jacket which has walls of a gauge considerably heavier than that of the inner container and well within that required by the rulings. The enclosure or jacket, being readily positionable on or removable from the container, is placed on the container before the latter is filled and is thereafter not removed until the container is shipped to its destination, when the carrier retains the jacket and delivers the container to the customer. By reason of the fact that the jacket is made in sections which may be readily nested one within the other, return of the jacket to the shipper, particularly in numbers, will be a matter of small expense to the shipper and profitable to the carrier. It will thus be seen that while the inner container or drum is designed for a single shipment, the protecting jacket owing to its relatively sturdy construction, may be used over and over indefinitely and at no time need the shipper carry a supply of such jackets in excess of what is required for actual shipping.

The invention has aims and features in addition to those brought out in the foregoing, and such additional aims and objects 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 perspective view of the container and sectional enclosing jacket, the latter being shown disengaged from the container.

Figure 2 is a fragmentary longitudinal sectional view of an end and side portion of the container.

Figures 3 and 4 are plan and side views respectively of the assembled shipping unit, parts being broken away and shown in section.

Figure 5 is an enlarged fragmentary detail view of the means for guiding and locking the jacket sections together.

Figure 6 is a transverse sectional view of the parts as shown in Figure 8, taken on the line 6-6.

Figure 7 is an end view of a plurality of the jacket sections nested together for shipping or storage, in knock-down form.

Figure 8 is a fragmentary view showing the container wrapped in a sheet of covering material.

In the embodiment of the invention illustrated in the drawings, the shipping unit comprises three main parts, to wit, an inner container 10, and a protective jacket 11 composed of a pair of sections 12 and 13. The container or drum 10 is formed with end walls 14 and cylindrical side 15.
walls 16 connected at their edges by a double seam joint 17 which is reinforced by a chime angle ring 18. On one of the end walls 15 there is provided an opening fitting 19 through which the container may be filled or its contents emptied. A plane 20 is shown for closing the opening. If desired the end walls may be formed with offset portions 22 so as to increase the resistance of said walls to flexure and also to permit a limited amount of radial expansion or contraction of the wall without undue strain on the joint 17. Both the end and side walls of the drum are formed of sheet metal of as light a gauge as possible to afford the container the strength and rigidity necessary to insure safe handling under normal conditions and particularly while the drum is full. To facilitate the rolling of the drum when removed from the jacket, a pair of spaced outwardly extending annular beads 23 is formed in the middle portion of the walls 16, and such beads in cooperation with corrugations 24 formed between the beads and the ends of the walls, serve to materially strengthen the drum against sidewise collapse or distortion.

The sections 12 and 13 comprising the shipping protective jacket for the drum, are here shown as like semi-cylindrical segments of such size and form as capable of completely enclosing the sides of the drum when the sections as applied thereto in circumferential and transverse alignment. The walls of the sections as will be clear from the drawings, are formed of sheet metal of a gauge much heavier than that of the container walls, and as before explained, the thickness of the metal is such as to be well within the requirements stipulated by the regulatory powers to permit shipping of drums with various contents. It is important to note that in the preferred embodiment of the invention the jacket is designed to forcibly embrace the side walls of the drum so that not only will the drum be firmly held in position, but both walls, that is of the drum and jacket, will combine and reinforce each other in the standing forces applied to them. Furthermore the tension set up between the drum and jacket by reason of the embrace of the latter, is of a resilient nature so that the embracing relation may be maintained notwithstanding deformations in the members and without unduly straining the members. Resiliency in the engagement of the jacket and drum walls is afforded largely by reason of the engagement of the jacket walls with the outer peripheries of the corrugations in the drum walls; the latter owing to its relative thinness permits a certain flexure particularly at such corrugations.

In order that the jacket sections may engage or embrace the drum walls over practically the entire surface thereof, the jacket sections are formed with annular outwardly extending depressions 26 in which the rolling beads 23 of the drum may seat when the sections are operatively disposed on the drum. By reason of the depressions 26 there is provided on the exterior of the sections corresponding annular beads 27 on which the unit may be rolled when necessary. The positioning of the beads 23 in the depressions 26 also serves when the former have contact with sides of the depressions to hold the inner and outer members from relative longitudinal displacement in opposite directions. Holding of the container within the sections against displacement is also afforded by means of beads 28 extending inwardly from the longitudinal ends of the sections and designed to overlie and engage the ends of the container. As here shown the beads 28 are designed to contact with a protective plate or reinforcement 29 covering the end of the container. Preferably the portion of the plate, contacted by the bead bears directly on the chime ring 18 so that the container will be firmly confined between the beads at the opposite ends. It will be clear that with the beads 28 effectively engage the container against longitudinal displacement in the jacket may have been even though the rolling beads 23 are out of contact with the sides of depressions 26, it being noted that under some circumstances in order to insure better resilient engagement between the container and jacket, said beads 28 are formed to avoid actual contact with the jacket.

Where the end walls 14 of the container are formed of relatively heavy material, the plate 28 or other form of reinforcement may be dispensed with, but in most instances it is desirable that a member similar in form and size to the plate be provided to afford a convenient surface for the representation of identifying matter of one kind or another. In any case where the plate is used, an opening 31 is preferably provided therefor in so as to avoid interference with the use of the bung opening and the positioning of the closure 30 plug 21 therein. It is important to note that while the portion of the fitting 19 on the exposed side of the container end wall is within the longitudinal confines of the chime ring, the closure plug is usually of necessity left to extend beyond the ring. When the plug is so positioned, it is, in the unit of my invention, still protected since the beads 28 are designed to extend well beyond the outermost point of the plug. Another important advantage in the use of the beads 28 is that they serve to reenforce the sections to a degree rendering the mutilation or deformation of the sections practically impossible even under the abuse to which they are subject in shipping, either in the standing position or while in dissociation therefrom, it being understood that the portion of the sections usually most subject to deformation is at the ends.

Near each of the ends of the jacket sections are also provided annular outwardly offset portions 32 while being imparted a strong longitudinal structure. In the first place such offset appreciably reenforces the sections; in the second place the inner container walls are afforded greater security from damage by any inward buckling of the jacket walls; and in the third place, by reason of the greater expansibility of this portion of the jacket and the provision of a space therebetween and the portion of the container side walls at the periphery of the end walls, any folding or pinching of such container portion, as usually occurs when the unit is dropped on end, may take place without the crushing force of the jacket being directed against the folds so as to cause the cracking of the metal at the creases. Desirably the offsets 32, while formed near the outer edge of the jacket walls, are located sufficiently inwardly of the beads 28 to permit a portion of said walls to bear against the chime ring.

Since in the present embodiment of the invention, the jacket sections are designed to permit complete detachment of the sections from each other as well as from the container, means are provided on the sections for the guiding of
the sections into proper alignment with each other when moved into place about the container for operative positioning thereon. Such a means is here shown as a part of the beads 28 at the ends of the sections. By reference particularly to Figure 3, it will be seen that from one end of each of the beads 28 there extends a stud 33 which is anchored within the bead and is arranged for inaction in the free end of the adjacent head of the complementary section. With this arrangement, by thus entering and moving the studs into the beads, the sections will of necessity be moved into proper alignment, both circumferentially and transversely.

Additional means for guiding the sections together in operative alignment is provided at a plurality of intermediate points along the longitudinal edges of the sections, such means being desirably associated with means for locking the sections together in operative and embraced relation about the container. Both means are preferably carried at each of said points, on plates 36 and 37, one plate being affixed to one section while the other is affixed to the other section. On one of the plates, here shown on plate 36, is secured a stud 38 positioned so as to enter an opening 39 in the plate 37 in substantially the same manner and at the same time that the stud 33 moves into the bead. For locking the sections together there is provided a lever 41 which is here shown pivoted to the plate 36 and formed with a hook end 42 designed for releasable engagement with a shoulder 43 on the plate 37.

In order that the lever may be locked in engaged position, a pin 44 may be inserted into openings 48 and 49 in the lever and plate 37 respectively. To break such seal and release the lever, a blow is struck against a protrusion 51 on the lever so as to shear the pin.

It will be understood that in assembling the jacket sections on the container, the former are held against the container with considerable pressure applied from an extraneous force, and in order that the sections will remain forcibly embraced with the container, the levers are hooked in position while the sections are so held and the relationship of the lever and shoulders are such that no appreciable distention of the sections may occur after the said extraneous force is removed. If desired, a small space may be left between the adjacent edges of the sections and of the plates so that the tensional embrace of the container by the jackets will be assured. Also if desired, the container may be fully or partly covered with a wrapping of paper or other material for the purpose of insulating or otherwise protecting the container or its contents. As shown in Figure 8, the side walls of the container are covered with a sheet 52 of paper or the like, while a sheet 53 of similar material is fitted over the end wall of the container and provided with a slitted or circular rim 54 which overlies the adjacent end of the sheet 52. Preferably the sheets 52 and 53 are thin and flexible so that they may be provided on the container without interfering with the proper engagement and embrace of the jacket with the container.

As before explained, the jackets are designed to be removed from the containers when the contents are delivered to the customer, and thereupon reshipped to the refinery or other point where the jackets are to be re-used or assembled. In this connection it is important to note that the sections of the dismembered jackets may be readily nested one within the other as for example indicated in Figure 7, and in this state placed and retained on the carrier during re-shipment. Thus the otherwise bulky and relatively light structure is shipped in compact form advantageous for shipping both to the shipper and carrier.

I claim:

1. In a metal-barrel shipping unit, an inner container designed for holding liquid etc. and having side and end walls of sheet metal of relatively light gauge, a protective enclosure for said container comprising separable semi-cylindrical open-ended sections adapted for assembly by lateral movement in circumferential alignment about said side walls to surround and hold the container fixed therebetween and engaging said side walls over substantially the full length thereof, and means for releasably attaching said sections together with their edges substantially meeting.

2. In a barrel shipping unit, an inner container formed with relatively easily deformable annular side walls, an enclosure for said container comprising a plurality of semi-cylindrical open-ended sections presenting relatively non-deformable side walls arranged for contraction about said container to engage said container walls at portions extending substantially around the entire circumference thereof, means including portions on said said sections for holding the sections against relative axial displacement in opposite directions, and means for releasably attaching said sections together at their meeting edges.

3. In a barrel shipping unit, an inner container formed with relatively easily deformable annular side walls having a rolling bead formed thereon, and a collapsible outer container comprising cylindrical sections separated along a longitudinal element and formed of relatively non-deformable side walls arranged to engage said container walls and having an attachment arranged to receive said bead and providing a rolling bead on the exterior of said outer container.

4. In a barrel shipping unit, an inner container formed with relatively easily deformable cylindrical side walls having a rolling bead and annular corrugations formed thereon, an enclosure for said side walls comprising separable cylindrical segmental sections arranged to engage said corrugations, said enclosure having an annular portion designed to receive said bead and providing a rolling bead on the exterior of said enclosure, and means to removably secure said sections together along longitudinal lines and about said container in gripping contact with said corrugations.

5. In a shipping barrel, an inner container having end walls and cylindrical side walls formed of comparatively readily deformable sheet material and a removable jacket for said container comprising like segmental sections formed of side walls arranged to be assembled on the side walls of the container to embrace same and having inwardly extending flanged ends designed to overlie and substantially engage the end walls of the container, the side walls of the segments having formed therein outwardly offset annular
portions arranged to lie spaced from the side walls of the container adjacent the ends thereof when the segments are operatively positioned on the container.

6. In a shipping barrel, an inner container having relatively light cylindrical side walls and an end wall with portions offset so as to afford relatively ready expansion or contraction of the end wall radially thereof, a removable protective shell for said container comprising relatively heavy semi-cylindrical open-ended side walls laterally movable against the container to embrace and completely enclose the side walls of the container and having an annular outwardly offset portion designed to surround the inner container substantially at the periphery of said end wall, and means for releasably attaching said sections together at their meeting edges.

7. In a shipping barrel, a container for the barrel contents having sides and ends, a protective shell for said container comprising separable sections designed to embrace the sides of the container when assembled thereabout, a bead formed in each end of the sections and extending inwardly so as to overlie the end of the container and hold the container against longitudinal displacement within the shell, means extending from an end of each bead of each section, arranged to engage in an end of a bead of the other section for guiding the sections into and holding them in operative association with each other, and cooperative parts on the different sections for locking them together against separation and relative displacement longitudinally and transversely.

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