April 19, 1932. J. H. LAMBERT 1,854,993

CONTAINER WITH REMOVABLE COVER

Filed July 20, 1931

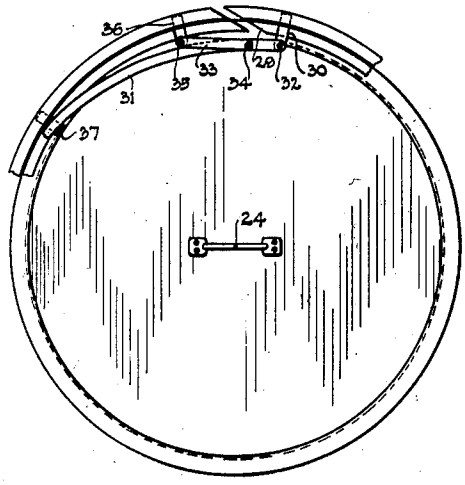


Fig. 2

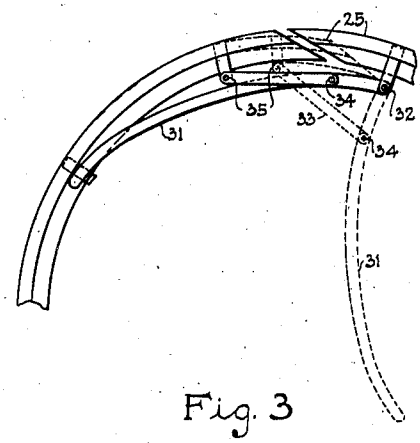


Fig. 3

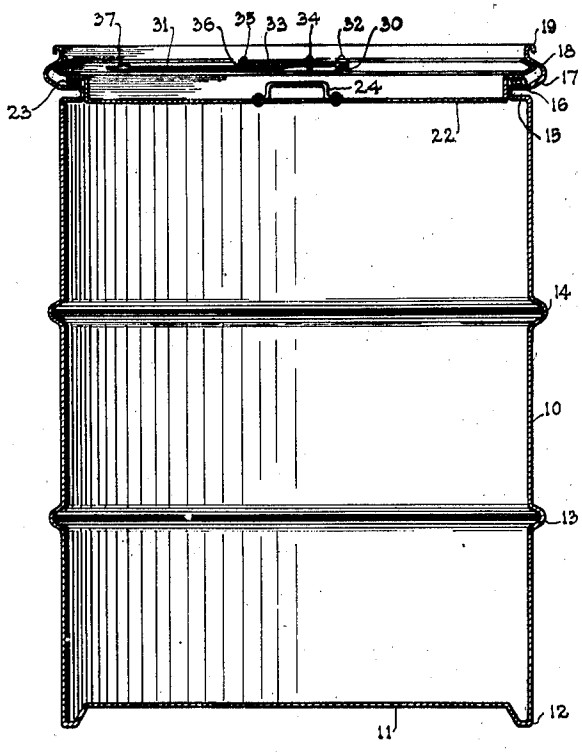


Fig. 1

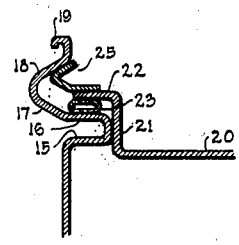


Fig. 4

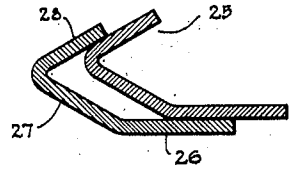


Fig. 5

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UNITED STATES PATENT OFFICE

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CONTAINER WITH REMOVABLE COVER

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This invention relates to an improved container and a removable cover therefor, and it pertains more particularly to steel barrels used for the transportation of grease and oil.

The object of my invention is to provide a steel barrel which will withstand rough handling and which may, therefore, be reused repeatedly without expensive repair. A further object is to provide a steel barrel with a removable cover so that the inside of the barrel may be easily and thoroughly cleaned before it is reused. A further object is to provide an improved series of rolls for the top of a steel barrel whereby it is effectively reenforced and whereby it may cooperate most effectively with an expansion ring. A further object is to provide an improved expansion ring which will not have a tendency to warp, and which will have cross section flexibility as well as circumferential flexibility. A further object is to provide an improved linkage system for operating the expansible ring whereby the cover may be secured in place or removed with a minimum amount of effort, whereby the linkage system is adjacent the periphery of the ring in closed position and whereby the ring is caused to contract without warping when the cover is to be removed. Other objects will be apparent from the following detailed description.

Generally speaking my invention comprises a steel barrel having an inner roll, an outer roll, and a reenforcing roll adjacent its open top. The space between the inner and outer rolls forms a flat cover seat and a space between the outer and reenforcing rolls forms a frusto-conical bearing surface. The outer flange of the cover plate rests on a compressible gasket and a vertical cover flange coacts with the inner roll to center the cover plate. The cover is forced against the gasket and held in place by an expansible ring which has a flat surface adapted to rest on the cover and an inclined flange adapted to bear against the frusto-conical bearing surface, the cross section of the ring being designed to offer a certain amount of resilience. The linkage system for expanding the ring is pivoted at points just inside the ring so that when the expansible ring is contracted the ends thereof will move in the desired path and the contracted ring will not warp.

The invention will be more clearly understood from the following description of a preferred embodiment thereof, which is illustrated in the accompanying drawings, wherein

Figure 1 is a vertical section to my improved container cover and expansion ring.

Figure 2 is a top view thereof showing the ring in expanded position.

Figure 3 is a detail of my linkage system showing how the ring may be contracted.

Figure 4 is an enlarged detail of the cooperation of my improved expansion ring with my improved container and cover therefor, and

Figure 5 is a cross section of my expansion ring in overlapped position.

The steel barrel 10 is of the conventional type which is used for the transportation of oil and grease. The bottom plate 11 may be welded thereon or crimped in place in any convenient manner. This forms no part of my present invention and will not be described in detail. The sides of the barrels are provided at spaced points, with annular rolls 13 and 14 which act as spacers when the barrels are in a vertical position and on which the barrels roll when in a horizontal position. At the top of these barrels I provide a plurality of rolls which cooperate with my improved cover and expansion ring and thereby form a part of my invention.

I first provide an inner roll 15, the top wall 16 of which acts as a cover seat. The next roll 17 extends outwardly so that the bottom wall thereof is an extension of the annular seat 16 and the top wall 18 thereof forms an annular frusto-conical bearing surface. This bearing surface forms a given angle, preferably about 30°, with the annular seat. Finally I provide a top reenforcing roll 19 which strengthens the top of the barrel and prevents deformation of frusto-conical bearing surface 18.

A cover plate 20 is adapted to fit inside the inner roll 15, a vertical flange 21 on the cover plate fitting against roll 15 for centering the

cover plate and reenforcing the top of the barrel. An outwardly extending annular cover flange 22 extends from the upward flange 21 to cover a portion of the seat 16 and it rests on a compressible gasket 23. The cover is preferably provided with a handle 24.

The cover is forced against the gasket and held in place by an expansion ring 25. I have found that ordinary wires or bent rods have a tendency to warp, and that they do not accurately conform to the bearing wall 18. I have discovered that remarkably improved results are obtained when this expansion ring is in the form of a channeled strip, one side 26 of which is adapted to fit against the cover, the intermediate portion 27 of which allows some resilience, and the other side 28 of which is adapted to bear against the frusto-conical surface 18. The channel structure of the ring makes it extremely strong and able to withstand the most severe shocks and pressures. At the same time the sides of the section may conform to slight irregularities in the surface of flange 22 or bearing surface 18.

The ring is split along an inclined line 29. Adjacent the inner obtuse end of the split ring I weld a lug 30 on which I pivot a lever 31 by means of pivot pin 32, which is preferably about one-half inch from the inner side of ring 25. This lever 31 may be about ¼ or ⅕ of the circumference of the expansion ring and it may be circular in form to fit against the ring, as shown in Figures 2 and 3. A link 33 is pivoted to lever 31 by pin 34 a short distance from pivot pin 32. The other end of link 33 is pivoted by means of pin 35 to the end of lug 36 which is welded to the other end of the expansion ring, pivot pin 35 being about one-half inch inside the inner diameter of the expansion ring. When the ring is in expanded position lever 31 rests in proximity to the expansion ring and it is held in place by a lug 37 which is also welded to the extension ring.

I have found that the leverage system as above described is particularly advantageous for sealing the covers to containers of this type and that by mounting pivot pins 32 and 35 inside the expansion ring I obtain a new and advantageous motion between the ends of the flexible ring. When lever 31 is pulled from the solid line to the dotted line position in Figure 3 it will be noted that the outer obtuse corner of the split ring is first disengaged from the bearing surface 18. Continued clockwise motion of lever 31 causes the one end of the ring to fit inside the other end thereof and since the ring is of channeled cross section the two ends of the ring fit inside of each other, as shown in Figure 5. This prevents warping and when the ring is in this position it may be roughly handled without deformation or injury.

When it is desired to secure the cover to the lid the gasket is preferably secured underneath flange 22 and cover 20 is put in place, flange 21 cooperating with inner roll 15. The contact ring 25 is next placed on the top of flange 22 and lever 31 is moved from the dotted position of Figure 3 counter clockwise to the full line position. This motion of the lever causes a powerful expansive force to be exerted against the ring. The upper side 28 of the ring coacts as frusto-conical bearing surface 18 to exert a downward component of force and to thereby compress gasket 23 and form a liquid tight seal. At the end of its motion lever 51 is secured to lug 37 to which it may be sealed or held in place by any suitable means. It should be noted that when the lever is moved against the side of the barrel, the toggle (link and lever) passes dead center so that the inward pressure of the ring tends to hold the lever in its outward position. This is another advantage that is obtained by pivoting the links and the lever to the ring at points inside the diameter of the ring.

While I have described in detail a preferred embodiment of my invention it is understood that I do not limit myself to any of said details except as defined by the following claims which should be construed as broadly as the prior art will permit.

I claim:

1. In apparatus of the class described a steel barrel, a plurality of rolls one formed inwardly and one formed outwardly at the top of said barrel forming an annular cover seat, a frusto-conical bearing surface, and a reenforcing edge, a compressible gasket on said seat, a cover on said gasket, an expansion ring of channel cross section on said cover, one side of said channel resting on said cover and the other side bearing against said bearing surface, and a linkage system for expanding and contracting said ring whereby the gasket may be compressed to hold the cover in place or the ends of the ring may be placed one inside of the other to prevent warping.

2. In a device of the class described, a metal container having a cylindrical side wall, an annular bearing surface adjacent the top of said cylindrical side wall, a cover having an annular rim adapted to rest on said bearing surface, a frusto-conical surface on said cylindrical wall at an acute angle to the plane of the annular rim, an expansible ring of channel cross section, one side of said channel fitting against said rim and the other side of said channel fitting against the frusto-conical surface, and means for expanding and contracting said ring, one side of said channel forming substantially the same angle with the other as the frusto-conical bearing surface forms with the plane of the rim.

3. In a device of the class described a metal container having a cylindrical side wall, an inner roll near the top of said side wall, said inner roll forming an annular seat for the

rim of a cover, a cover having a rim adapted to fit over said seat, an outer roll in said cylindrical side wall above said inner roll, the upper side of the outer roll forming a frusto-conical section at an acute angle with the plane of the cover rim, a reinforcing roll for preventing deformation of said frusto-conical section, an expansible ring having a surface adapted to bear on the cover rim and another surface adapted to bear against the frusto-conical section, the angle between said surfaces being substantially the same as the angle between the plane of the rim and the frusto-conical section, and means for expanding and contracting said ring to force the rim of the cover against the annular seat and to hold it in locked position.

In witness whereof I have affixed my signature.

JOSEPH H. LAMBERT.