

Sept. 21, 1965

J. S. HEISLER ET AL

3,207,359

BARREL

Filed July 24, 1963

2 Sheets-Sheet 1

FIG. 1

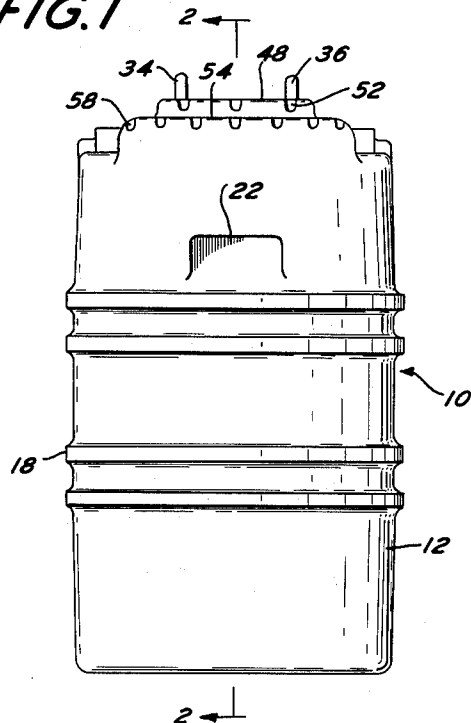


FIG. 2

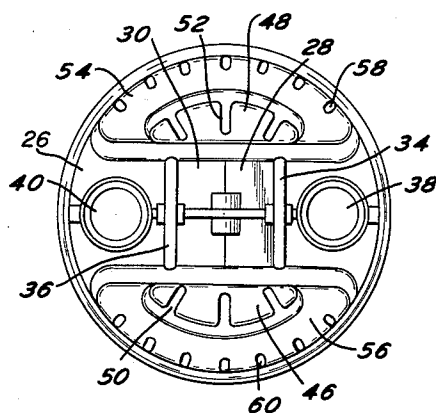
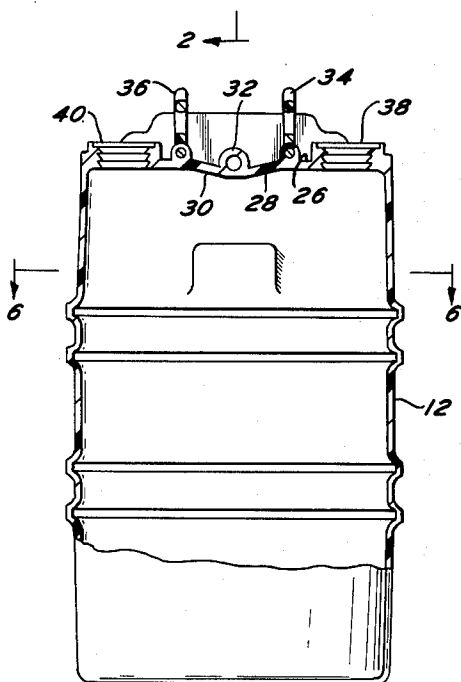
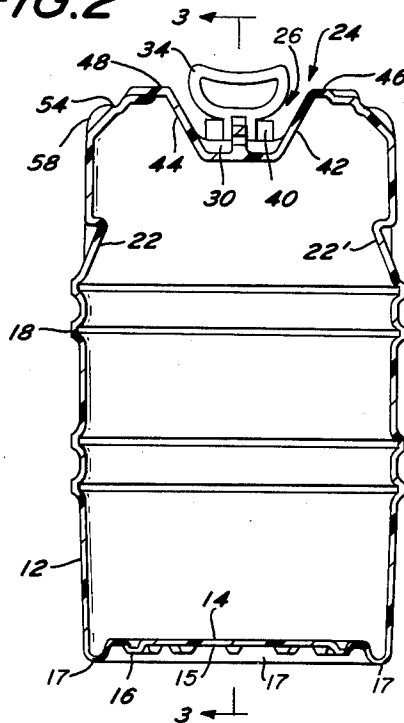


FIG. 4

FIG. 3

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FIG. 5

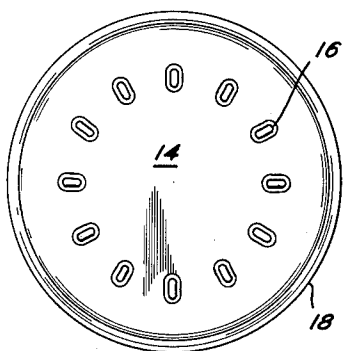


FIG. 7

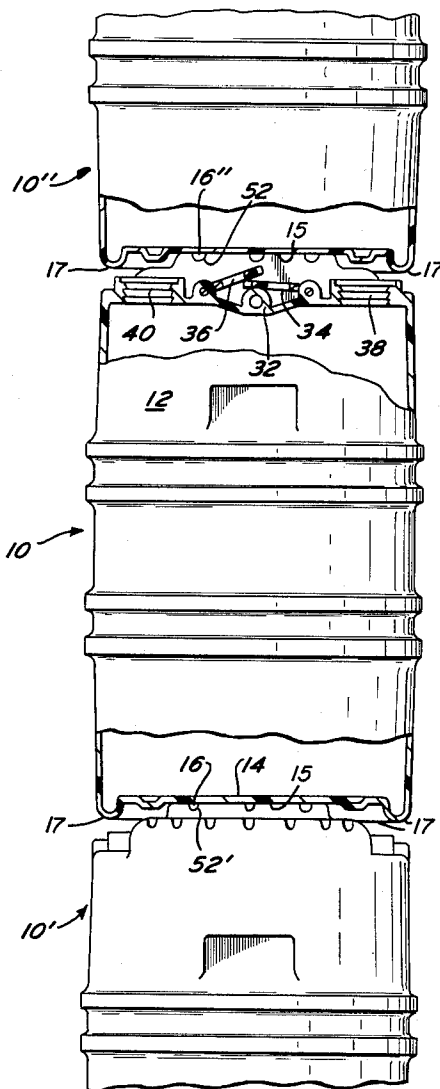
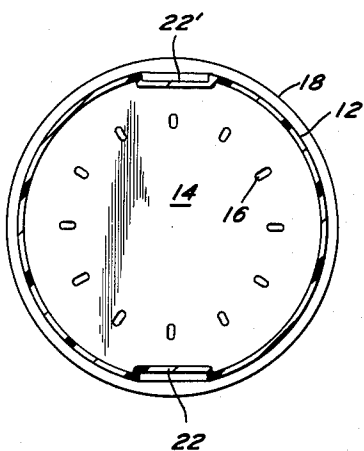


FIG. 6



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3,207,359 BARREL

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Filed July 24, 1963, Ser. No. 297,415
5 Claims. (Cl. 220-97)

This invention relates to a barrel-like shipping and storage container, and more particularly to a barrel which is self-supporting, can be stacked and locked, easy to carry, and made from a tough lightweight material.

The barrel of the present invention is preferably made from a high-density, high-molecular weight, copolymer material such as polyethylene having a density of about .945 to .96. The barrel of the present invention preferably has a double-ended truncated profile for high strength and toughness and is provided at its ends with structure to facilitate locking barrels disposed one above the other. The locking structures improve stacking stability and prevent relative rotary motion between barrels disposed one above the other. The structure which facilitates locking barrels also aids in preventing cold flow due to static load when the barrels are filled and under pressure.

The barrels may be provided with annularly disposed grooves located on the top shoulder which provide a serrated surface into which a person's fingers may be disposed when rolling or moving the barrel. The last-mentioned grooves prevent slipping which normally occurs when a drum is wet. The barrel may be provided with balanced annular reinforcement ridges which enable the barrel to be rolled like a hoop. The barrel of the present invention is preferably an integral cylindrical barrel having no welds, seams or joints. This one-piece barrel provides the strongest container possible in plastic materials. Barrels made in accordance with the present invention are capable of being handled easily by one person, require no maintenance, are non-corrosive, lightweight, do not require overpacks, are completely self-supporting, do not include seams or welds, and may be internally pressurized while being protected against cold flow under static loads applied over substantial periods of time.

It is an object of the present invention to provide a novel barrel having the above characteristics.

It is another object of the present invention to provide a one-piece barrel from polymeric materials which may be handled by a worker without requiring the worker to bend over to reach the barrel.

It is another object of the present invention to provide a novel barrel wherein locking structure is provided on the top and bottom walls to facilitate stacking of barrels in a manner whereby the barrels will not be subject to relative rotary movement.

Other objects of the barrel will appear hereinafter.

For the purpose of illustrating the invention there is shown in the drawings a form which is presently preferred; it being understood, however, that this invention is not limited to the precise arrangements and instrumentalities shown.

FIGURE 1 is a side elevation view of a barrel in accordance with the present invention.

FIGURE 2 is a sectional view taken along the line 2-2 in FIGURE 1.

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FIGURE 3 is a sectional view taken along the line 3-3 in FIGURE 2.

FIGURE 4 is a top plan view of the barrel illustrated in FIGURE 1.

FIGURE 5 is a bottom plan view of the barrel illustrated in FIGURE 1.

FIGURE 6 is a sectional view taken along the line 6-6 in FIGURE 3.

FIGURE 7 is an elevation view, partly in section, illustrating a stacking arrangement for the barrel of the present invention.

Referring to the drawing in detail, wherein like numerals indicate like elements, there is shown in FIGURE 1 a barrel designated generally as 10.

The barrel 10 may be a 15 gallon barrel preferably made from a high-density, high-molecular weight, copolymer material such as polyethylene and having a density of .945 to .96. Excellent results have been obtained using material having a density of .96. The barrel 10 has a cylindrical body 12, an integral bottom wall 14 and top wall 24. The bottom wall 14 is recessed inwardly from the bottom end of the body 12 to form a recessed bottom face 15 above the lowermost peripheral edge at 17. The bottom face 15 is provided with axially extending outwardly projecting integral projections 16 at spaced points as illustrated more clearly in FIGURE 5. The purpose of projections 16 will be made clear hereinafter.

The cylindrical body 18 is provided with a plurality of radially outwardly extending ridges 18. As illustrated, body 12 is provided with four such ridges 18. A greater or lesser number may be provided as desired. The ridges 18 facilitate rolling the barrel 10. It will be noted that the outer peripheral surface of the ridges 18 are axially extending surfaces coaxial with the longitudinal axis of the body 12. As illustrated, the body 12 is a true cylinder between the second and third of the ridges 18 and tapers slightly inwardly toward the ends from the first and fourth of the ridges 18.

The overall height of the barrel 10 is approximately 26 inches. Approximately 18 to 20 inches from the lowermost end, the barrel 10 is provided with diametrically opposite indentations or recesses 22 and 22'. The recesses 22 and 22' facilitate carrying the barrel 10 by one or more persons. Thus, the recesses 22 and 22' extend inwardly for a sufficient distance to enable one's fingers to enter the same. It will be noted that the recesses terminate in a radially outwardly directed top wall.

The top wall 24 of the barrel 10 lies in a plurality of planes. Top wall 24 includes the central recessed channel portion 26 which extends diagonally across the center of the barrel 10. Central channel portion 26 is substantially planar and is provided with angularly disposed surfaces 28 and 30 in a central portion thereof as shown more clearly in FIGURE 3. An integral lug 32 is formed at the intersection of the angular surfaces 28 and 30. The lug 32 facilitates lifting the barrel 10 by a winch and cable. The angular disposition of surfaces 28 and 30 facilitates the prevention of rupture or pullout of the central recessed channel portion 26 of the top wall 24 when the barrel 10 is being suspended by a cable cooperating with lug 32.

The central recessed channel portion 26 is provided with a pair of identical lugs on opposite sides of the lug 32. Said identical lugs are individually coupled to one of the handles 34 and 36. The handles are coupled to their

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respective lugs in the same manner. Thus, handle 36 is coupled to its lug by a pin which extends through apertures in a bifurcation at the lowermost end of the handle 36 and the hole in the lug which is integral with the central recessed channel portion 26. The free end of the pin may then be deformed by application of heat or the like when the pin is made from the same material as the remainder of the barrel 10. The pin is preferably made from the same material as the barrel 10 so as to provide a barrel which is completely non-corrosive.

The central channel portion 26 of the top wall 24 is provided with access openings at opposite ends thereof. A plug assembly 38 closes one of the access openings. A plug assembly 40 closes the other access opening. The plug assemblies 38 and 40 are preferably provided with buttress threads which cooperate with buttress threads on the surface defining the access openings. The desirability of such structure and the advantages flowing therefrom are more clearly pointed out in Patent 2,962,185, the disclosure of which is incorporated herein by reference.

As shown more clearly in FIGURE 2, the top wall 24 includes angularly disposed wall portions 42 and 44 which extend upwardly and outwardly from the central channel portion 26. The upper edges of the wall portions 42 and 44 are integral with upper surfaces 46 and 48 respectively. As shown more clearly in FIGURE 4, the upper surfaces 46 and 48 are segmental surfaces spaced radially inwardly from the outer peripheral surface of the body 12. Upper surface 46 is provided with a plurality of short grooves 50 at spaced points and lying along a radius of the top wall. While three such grooves are illustrated, a greater or lesser number of grooves may be provided. An equal number and similarly disposed grooves 52 are provided on the surface 48.

The spacing and radial position of the grooves 50 and 52 corresponds with the spacing and radial disposition of the projections 16. The top wall 24 is also provided with segmental lower surfaces 54 and 56 which are radially outwardly from the upper surfaces 48 and 46, respectively. The former surfaces are larger than the latter and disposed in a plane closer to the recesses 22 and 22' than the upper surfaces 46 and 48. See FIGURE 2. The lower surfaces 54 and 56 are provided with peripheral recesses or grooves 58 and 60 respectively. The grooves 58 are closer to one another than the grooves 52. Grooves 58 and 60 are spaced a sufficient distance apart so that a worker may place his fingers in the grooves and roll the barrel 10. The grooves 58 and 60 are particularly useful when the barrel is wet since wet plastic is slippery.

Safety committees of various insurance companies, chemical manufacturers and trade groups have proven that one of the most flagrantly violated safety rules resulting in lost time, bad feelings and money is the design of barrels requiring the worker to bend over when lifting the same. Many times a hernia, strained back or muscles, etc. result from trying to move short squat containers. The barrel 10 of the present invention is of a height which does not require the worker to bend. Thus, the handles 34 and 36 are at fingertip height. The truncated profile allows easy tipping by one man. The two handles 34 and 36, symmetrically disposed with respect to the longitudinal axis of barrel 10, allow two men to lift the drum with ease. The off-center location of the handles 34 and 36 prevent one man from trying to pick up the barrel 10 by the handles. The grooves 58 and 60 facilities tipping or rolling the barrel 10 upright whereas the ridges 18 enable the barrel to be rolled on its side.

The barrel 10 of the present invention will stack and be locked for maximum stability. The inter-locking feature is illustrated more clearly in FIGURE 7. Thus, it will be noted that the projections 16 on the bottom wall of the barrel 10 fit into the grooves 52' on the top

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wall of the barrel 10'. Grooves 52' correspond with the grooves 52 on the barrel 10. Likewise, the grooves 52 on the barrel 10 receive the projections 16' on the barrel 10'. Thus, the barrels 10, 10' and 10'' are locked against angular relative rotation. Barrels locked in this manner are less likely to tip over due to vibration in transit and will not accidentally fall over on personnel in warehouses and the like.

The barrel 10 is preferably molded from the polymeric material referred to above. Thus, the barrel 10 will be a one piece barrel of the strongest possible construction and structurally interrelated in a manner to provide for maximum safety and versatility while taking into consideration the safety and inherent limitations of workers that must handle the barrel. While the barrel 10 described above is a 15 gallon barrel, the capacity and size of the barrel may be varied if desired.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof and, accordingly, reference should be made to the appended claims, rather than to the foregoing specification as indicating the scope of the invention.

We claim:

1. A barrel comprising a generally cylindrical body having integral top, bottom and side walls, said bottom wall being inwardly recessed to form a bottom face above a lowermost peripheral edge at said side wall, said edge providing a protective ring beneath said recessed bottom face, said top wall including a lower surface and an upper surface and also having a recessed channel formed across a diameter thereof, said lower and upper surfaces being concentric arcuate segments on opposite sides of said channel, said upper surface projecting above said lower surface and channel, the entirety of said upper surface being closer to the longitudinal axis of said barrel than the innermost periphery of said ring, said channel having an access opening therethrough into said barrel proximate said side wall, a first means at said upper surface for cooperation with a bottom face of another barrel stacked thereon to prevent relative rotation therebetween, and a second means at said bottom face for cooperation with an upper surface of another barrel stacked therebelow to prevent relative rotation therebetween said first means being radial grooves on said upper surface, said second means being projections radially spaced on said bottom face in corresponding relation to said grooves whereby said projections and grooves of respective stacked barrels may engage to prevent rotation therebetween.

2. A barrel in accordance with claim 1 wherein a handle is provided at said channel between said access opening and the longitudinal axis of said barrel.

3. A barrel in accordance with claim 2 wherein said lower surface is fluted along its periphery at said side wall to provide finger grips for rolling of said barrel.

4. A barrel comprising a generally cylindrical body having integral top, bottom and side walls, said bottom wall being inwardly recessed to form a bottom face above a lowermost peripheral edge at said side wall, said edge providing a protective ring beneath said recessed bottom face, said top wall including a lower surface, an upper surface and also having a recessed channel formed across a diameter thereof, said lower and upper surfaces being concentric arcuate segments having flat sides at opposite sides of said channel, said upper surface projecting above said lower surface and said channel, the entirety of said upper surface being closer to the longitudinal axis of said barrel than the innermost periphery of said protective ring, said channel having a pair of access openings therethrough into said barrel, said openings spaced apart at opposite ends of said channel, a lifting lug in said channel at said axis, a pair of spaced handles connected at said channel on opposite sides of said central axis through said barrel, said upper surface having radial grooves, and ridges on said bottom face reinforcing same and projecting downward with lowermost portions thereof above said

protective ring, said ridges spaced radially in corresponding relation with said grooves whereby said grooves and ridges of respective interstacked barrels may engage to prevent relative rotation therebetween.

5. A barrel in accordance with claim 4 wherein said body, top and bottom walls are integrally formed of polyethylene having a density of approximately .96.

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