An airtight recycling barrel for bulk chemicals includes upper barrel and lower barrel fitted respectively with connecting circles by welding on their peripheries. An O-shaped seal ring is placed at the butt-joint of two barrels. For the lower barrel, an O-ring seal groove is turned out on the connecting circle, an eyelet bolt junction piece is welded to the outer wall of the connecting circle, and the junction piece is fitted with wrist and linchpin. For the upper barrel, a junction piece is also welded to the reinforced plate on the periphery. When these two barrels are butted mouth to mouth for use, they are fixed firmly with eyelet bolt that goes through press plate, and sealed with O-ring. Thus this invention possesses advantages of recycling use, saving of much steel material, convenience of loading and unloading. It is especially suitable for packing and transportation of bulk chemicals.
AIR-TIGHT RECYCLING BARREL FOR BULK CHEMICALS

FIELD OF THE INVENTION

The present invention relates to a packing container for bulk materials, especially an improved airtight recycling barrel for bulk chemicals.

BACKGROUND OF THE INVENTION

At present, the outer packing of hydros produced in China adopts mainly steel barrels with carrying capacity of 50 kg or 100 kg, made of 0.5-0.8 mm cold rolled steel plate. It is sealed by air pressure or with locking rings. And the inner packing uses two plastic film bags. This kind of steel barrel is for one-time use. For packing one ton of hydros, about 120 kg of steel is consumed, which are disposed as waste after barrels are opened. It causes material wastes and difficulties in environmental protection. Besides, they are not suitable for mechanical loading and unloading due to their small volume and carrying capacity, which brings about inconvenience for many users. Furthermore, they are easy to be deformed by collision in long distance transportation because of their thin wall, which causes reduced scaling performance that brings about potential safety hazard.

SUMMARY OF THE INVENTION

The objective of the present invention is to overcome the shortage of the existing technology and provide a kind of airtight recycling barrel for bulk chemicals, which can decrease packing cost, reduce wastes, increase carrying capacity, ease labor intensity, and facilitate mechanical operations. Besides, other packing can be added to make even safer and more reliable transportation.

The objective of the present invention is realized in the ways mentioned below. An improved airtight recycling barrel for bulk chemicals includes two truncated cone barrels, namely, upper barrel 1 and lower barrel 3. The upper and lower barrels are fitted respectively with connecting circles by welding on their peripheries. An O-shaped seal ring 12 is placed at the butt-joint of two barrels. For the lower barrel, an O-ring seal groove is turned out on the connecting circle, eyelet bolt junction piece 7 is welded to the outer wall of the connecting circle, and the junction piece is fitted with wrist 14 and linchpin 15. For the upper barrel, a junction piece is also welded to the reinforced plate on the periphery. When these two barrels are butted mouth to mouth for use, they are fixed firmly with eyelet bolt 7 that goes through press plate 13, and sealed with O-ring.

There is inlet A on top of said upper barrel, which is sealed and fastened by cap 11 and seal ring 8 as well as eyelet bolt 9.

Said lower barrel is fitted or not fitted with discharge outlet on its bottom. If there is a discharge outlet, it will be scaled and fastened also by cap 11 and seal ring 8 as well as eyelet bolt 9.

Said lower barrel is fitted with support leg 16, forklift eyes 17 and reinforced ribs 18 on its bottom.

In use, before charging up, place internal packing (plastic bag or flexible containing bag) into the barrel through the inlet. For discharging, unscrew the bolts at connection between upper and lower barrels first and move away the upper barrel, then lift the whole containing bag for discharging. Or, bulk material can be discharged from the outlet on the lower barrel if necessary. After discharging, turn over the upper barrel and stack it on the lower barrel. And by this way all middle-sized barrels can stack together. Sizes of barrels can be changed according to transportation conditions. For example, a standard cargo container of 20 feet can carry 10 mid-size barrels with loading weight of 18 tons and carry 50 barrels with weight of 15 tons in recycling. This shows that the present invention possesses the below-mentioned advantages in comparison with the existing technology.

The first of its main features of this middle size barrels is the butt-joint of upper and lower truncated cone barrels, which saves two covers and therefore reduces self-weight and saves occupied space. The second feature is the use of O rings for sealing and eyelet bolts for fastening. The eyelet bolt goes through the press plate that hooks in the upper barrel to prevent bolt from moving and ensure relative position of upper and lower barrels. This structure brings about reliable sealing, firm joint and convenient loading and discharging. The third feature is the installation of explosion relief opening and explosion relief film on its top of the upper barrel, which will relieves explosion when pressure and temperature inside the barrel increase rapidly (pressure exceeds 0.2 Mpa) to avoid explosion of the barrel and personnel injury. In addition, it has large loading capacity of single piece, which is convenient for mechanical operation. Upper and lower barrels can be turned over and stack up, which saves recycling cost. It is provided with three discharging ways (lifting up the flexible containing bag, discharging from outlet on bottom, and discharging from the top inlet after it is turned over by mechanics), which can meet various users’ conditions. And according to the property of contained material, internal packing can be added to increase the safety, or it is not added to reduce the cost.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is the sectional view of a specific structure in accordance with the present invention.

FIG. 2 is the top view of upper barrel in accordance with the present invention.

FIG. 3 is the schematic diagram of connecting circle of upper and lower barrels in accordance with the present invention.

FIG. 4 is the bottom view of the lower barrel in accordance with the present invention.

FIG. 5 is the enlargement view of FIG. 1A.

FIG. 6 is the enlargement view of FIG. 1B.

In FIG. 1 to FIG. 6, 1 is upper barrel, 2 is nameplate, 3 is lower barrel, 4 is safety press cap, 5 is nut, 6 is safety film, 7 is eyelet bolt, 8 is seal ring of cover, 9 is eyelet bolt, 10 is nut, 12 is seal ring, 13 is press plate, 14 is wrist, 15 is linchpin, 16 is support leg, 17 is forklift eye, and 18 is reinforced ribs.

DETAILED DESCRIPTION OF THE INVENTION

Refer to FIG. 1, upper barrel 1 and lower barrel 3 of the present invention are truncated barrels, made of steel...
plate of 3-4 mm by welding, which increase greatly their resistance to deformation. The upper and lower barrels are fitted respectively with connecting circles by welding on their peripheries, which increase the wide of the barrel periphery that is convenient for butt-jointing. An O-shaped seal ring 12 is placed at the butt-joint of two barrels. For the lower barrel, an O-ring seal groove is turned out on the connecting circle, eyelet bolt (M12×40) junction piece 7 is welded to the outer wall of the connecting circle, and the junction piece is fitted with wrist 10×45 (Type B) and linchpin (205×30). For the upper barrel, a junction piece is also welded to the reinforced plate on the periphery. When these two barrels are butted mouth to mouth for use, they are fixed firmly with eyelet bolt M12×40 that goes through press plate 13, and sealed with O-ring. There is inlet A on top of said upper barrel 1, which is sealed and fastened by cap 11 and seal ring 8 as well as eyelet bolt (M12×100). The lower barrel 3 is fitted with forklift eyes 17, supporting leg 16, and reinforced ribs 18 on its bottom for convenience of transportation and handling. Besides, the lower barrel is fitted or not fitted with discharge outlet on its bottom according to the conditions and requirement of the user. If there is a discharge outlet, it will be sealed and fastened in the same way as top opening.

0018 The present invention is mainly utilized for packing and transportation of hydros. It is also suitable for packing of bulk chemicals.

What is claim is:

1. An improved airtight recycling barrel for bulk chemicals, which is characterized by the fact that it includes two truncated cone barrels, namely, upper barrel (1) and lower barrel (3). The upper and lower barrels are fitted respectively with connecting circles by welding on their peripheries. An O-shaped seal ring (12) is placed at the butt-joint of two barrels. For the lower barrel, an O-ring seal groove is turned out on the connecting circle, eyelet bolt junction piece (7) is welded to the outer wall of the connecting circle, and the junction piece is fitted with wrist (14) and linchpin (15). For the upper barrel, a junction piece is also welded to the reinforced plate on the periphery. When these two barrels are butted mouth to mouth for use, they are fixed firmly with eyelet bolt (7) that goes through press plate (13), and sealed with O-ring.

2. The recycling barrel as described in claim 1 is characterized by the fact that there is inlet A on top of upper barrel, which is sealed and fastened by cap (11) and seal ring (8) as well as eyelet bolt (9).

3. The recycling barrel as described in claim 1 is characterized by the fact that the lower barrel is fitted or not fitted with discharge outlet on its bottom. If there is a discharge outlet, it will be sealed and fastened also by cap (1) and seal ring (8) as well as eyelet bolt (9).

4. The recycling barrel as described in claim 1 is characterized by the fact that the lower barrel is fitted with supporting leg (16), forklifts eye (17) and reinforced ribs (18) on its bottom.

* * * * *