

Description

The invention concerns a liquid container of one type comprising a base and side walls to support a thin, liquid-tight membrane and a rectangular cover, said cover and a pair of opposed side walls being provided with co-operating fittings to fix partly the cover in an upward direction and partly said side walls in an outward direction. Such a container is known e.g. from DE-AS 1 155 054.

Containers of this type can be used for the transport of liquids, and the invention concerns the type where the liquid-tight membrane is thin so that the external faces of the container must be capable of supporting the load of the liquid, both statically and when the liquid is subjected to acceleration. The container may consist of a laterally open box with an associated cover, but in the preferred embodiment of the invention the container is adapted to be disassembled so that it can be returned in a very compact state.

The object of the invention is to provide a liquid container of the above-mentioned type which comprises a very simple and inexpensive combination of the structure of the cover and the position of the lock fittings so as to provide great rigidity against the extraordinarily great loads which may be caused by the liquid upon acceleration.

This object is achieved in that the container is constructed as stated in the characterizing portion of the claim, the position of the locking means being related to the direction where projections on the underside of the cover dampen surface movements in the liquid most effectively. The structure defined in the claim provides the advantage that the surface movements of the liquid are dampened most effectively in the direction of the greatest extent of the surface, and at the same time that the cover and side wall portions subjected to the greatest liquid pressure, i.e. the portions of greatest span, are interconnected particularly effectively.

Preferably, the projections on the underside of the cover are in the form of corrugations transverse to the long side of the cover. This results in great rigidity because of the profile height of the cover, and when the profile portions extend between the long sides of the cover, the greatest possible rigidity is obtained, as mentioned, between opposed ones of the double-acting locking means.

The invention will be explained by the following description of an embodiment with reference to the perspective figures of the drawing, in which

fig. 1 shows an embodiment of a liquid container according to the invention,

fig. 2 shows a base for the container,

figs. 3 and 4 show a rear member and a side member for the container, respectively, and

fig. 5 shows an embodiment of the cover for the container according to the invention.

Fig. 1 shows the preferred embodiment in an

assembled state. To understand how the container is assembled, the portions shown in figs. 2-5 will first be explained more fully, it being observed that no plastics bag is shown for mounting in the container, it being generally known how to place a liquid-tight lining in a container of the type shown in fig. 1 for transport of liquids.

Fig. 2 shows a container base 1 shaped as a pallet. The base 1 has an upper side 2 which is entirely smooth, so that the thin liquid-tight of the bag will not be damaged. The underside of the base 1 is provided with 3 U-profiles which serve to support the base together with other braces (not shown) on the inner side, said U-profiles being arranged to co-operate with lifting arms on a fork truck. The figure also shows the corner tubes 3 having holes at the upper end to co-operate with fittings on the side members, which will be explained more fully below. Finally, a plurality of upwardly extending engagement plates 4 is provided along the rim of the base to support the side members.

The side member 5 shown in fig. 4 comprises a metal frame consisting of corner tubes 6, 7, an upper edge 8, and a lower edge 9. The side member 5 is seen from the internal side, which is entirely smooth owing to the plastics bag, and which is supported externally by a pair of bars, 10, 11, as appears from fig. 1. It also appears from fig. 1 how the lower edge 9 is supported by the fittings 4. Downwardly, the corner tubes 6, 7 have a hook-shaped projection 12 and 13, respectively, which is adapted to engage the base corner tube 3 from fig. 2, so that the side member is to be mounted in an inclined position and then erected to a vertical position, in which it is secured against movement in parallel with and at right angles to the plane of the base. The rear member 14 shown in fig. 3 also consists of a frame structure like the one shown in fig. 4, but the side member 14 comprises other coupling means for assembling of the liquid container. Thus, the side member is not adapted to be coupled directly to the pallet base, but instead its corner tubes 15, 16 are provided with some fishplates 17, which are adapted to co-operate with projections 18 on the corner tubes 6 and 7 on the side member from fig. 4. It will thus be appreciated that the container is mounted in that a pair of opposed side members of the type shown in fig. 4 are first mounted on the pallet base, as explained above, and then a rear member from fig. 3 and a front member 33 (fig. 1) are placed in position by co-operation between fishplates 17 and coupling fittings 18. When these parts are mounted, the plastics lining may be placed in the container which can then be filled with the liquid to be transported.

When the container is filled with liquid, it is to be closed by means of a cover, preferably of the type shown in fig. 5. The shown cover 19 comprises a frame consisting of a pair of opposed side edges, 20, 21, and a pair of opposed end

edges 22, 23 which are shorter than the side edges, and a corrugated plate 24. Owing to the corrugations the underside of the cover has a plurality of ribs facing the liquid surface and extending between the side edges 20 and 21, said ribs serving as a brakewater which dampens surface waves on the liquid whose level is disposed in closely spaced relationship below the ribs. Since, as mentioned, the side edges 20, 21 are longer than the end edges 22, 23, movements in the liquid surface may be strongest in the direction of the side edges 20, 21, and it is therefore expedient to position the dampening ribs as stated. However, both the cover and the side edges are subjected to great loads when the filled container is subjected to acceleration, typically in connection with transport. If the load is uniform, the portions of greatest extent will of course be subjected to the greatest deflection, which will be the side edges 20, 21, and the upper edges 8 of the side members from fig. 3. However, these parts are subjected to an additional strong load, in that the effect of the dampening ribs is poor against liquid movements perpendicular to the long side members, and according to the invention special measures therefore have been taken to effectively fix the cover and the side members, especially along these particularly exposed edges. In the shown embodiment, the locking means of the invention comprise a first part 25-28, which is placed on the cover to co-operate with a second part of the side members, the parts 29 and 30 of these being visible on the side member 5. The engagement between these parts is shown clearly in fig. 1, from which it will be seen that the lock fittings not only retain the cover 19 against upward movement, but also retain the upper edge 8 of the side members against outward movement with respect to the cover. In the embodiment shown, the locking means are in the form of slidable fittings so that the cover can be slidably moved into position, with its one end edge engaging a pair of fittings 31, 32 on the rear member from figure 3, so that the fittings protrude inwardly over the cover and retain it against upward movement, while the other end edge of the cover preferably has as hole 34 to receive the container lock which can fix this end edge with respect to the upper edge of the front member 33. Thus, the container or a corresponding component is the only loose member to be handled when the container is mounted and closed, which is a great saving in time. It is observed that the parts 25-28 extend a distance above the upper side of the cover 19, and that also some plates extending above the upper side of the cover are provided along the end edges 22, 23, the purpose of which being to guide another container which is placed on top of the container cover. This enables stacking of a plurality of filled containers on top of each other.

In the embodiment shown, the dampening means are, as explained, formed by a plurality of parallel ribs extending between the long sides of the cover. It will be appreciated that the dampen-

ing means might also be provided in another manner so that they preferably dampen liquid movements in the direction where the liquid has the greatest extent, which, however, involves a relatively greater liquid load on the container parts of relatively great span. It is moreover observed that the cover is particularly rigid against deflection between the side edges 20 and 21, partly because this is where the short dimension on the covers is found, and partly because the ribs involve a considerable bracing in this direction. When precisely the side edges are particularly effectively secured with respect to the side members, an expedient structure is obtained. Conclusively, the invention provides a very simple solution to a plurality of problems in liquid containers of the type described.

Claim

A liquid container of the type comprising a base (1) and side walls (5, 14) to support a thin, liquid-tight membrane, and a rectangular cover (19), said cover and a pair of opposed side walls (5) being provided with co-operating fittings (25-28; 29, 30) to fix the cover in an upward direction and said side walls in an outward direction, characterized in that the cover (19) comprises a plurality of ribs which face the cavity of the container and which extend between the opposed, long side edges (20) of the cover, and that the co-operating lock-fittings (25-28) are positioned along said long side edges.

Patentanspruch

Flüssigkeitsbehälter mit einem Boden (1) und Seitenwänden (5, 14) zum Abstützen einer dünnen, flüssigkeitsdichten Membrane, und mit einem rechteckigen Deckel (19), wobei der Deckel und ein Paar einander gegenüberliegende Seitenwände (5) mit zusammenwirkenden Beschlügen (25-28; 29, 30) versehen sind, um den Deckel nach oben und die Seitenwände nach aussen zu fixieren, dadurch gekennzeichnet, dass der Deckel (19) mehrere, dem Hohlraum des Behälters zugekehrte Rippen aufweist, die sich zwischen den gegenüberliegenden Längskanten (20) des Deckels erstrecken, und dass die zusammenwirkenden, formschlüssigen Beschlüge (25-28) entlang der genannten Längskanten angeordnet sind.

Revendication

Conteneur pour liquides du type comprenant une base (1) et des parois latérales (5, 14) pour supporter une membrane mince et imperméable, et un couvercle rectangulaire (19), le couvercle et une paire de parois latérales étant munis de garnitures (25-28; 29, 30) coopérantes pour fixer le couvercle dans une direction vers le haut et les

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parois latérales vers l'extérieur, caractérisé en ce que le couvercle (19) comprends une pluralité de nervures tournées vers l'intérieur du conteneur et s'étendant entre les bords longitudinaux (20)

opposés du couvercle, et en ce que les garnitures à fermeture géométrique coopérantes (25-28) sont disposées le long des dits bords longitudinaux.

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