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PROTECTIVE DEVICE FOR VALVED FITTINGS OR THE LIKE

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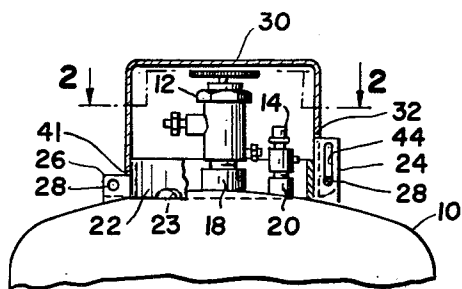


Fig. 1

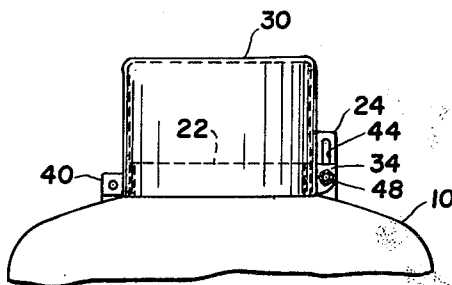


Fig. 4A.

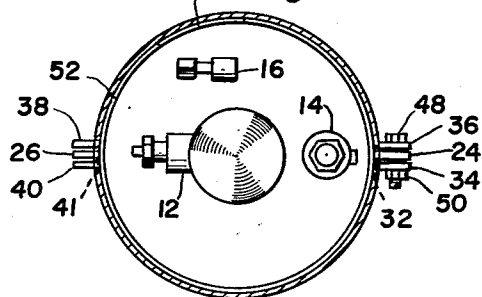


Fig. 2.

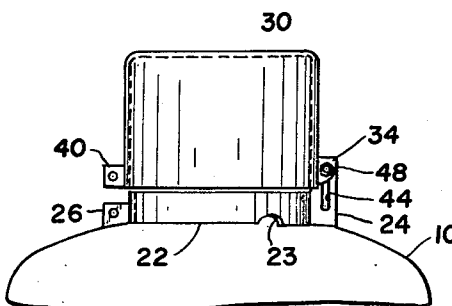


Fig. 4B.

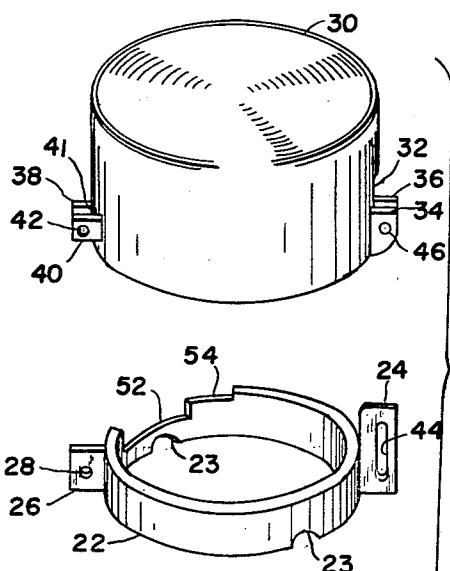


Fig. 3.

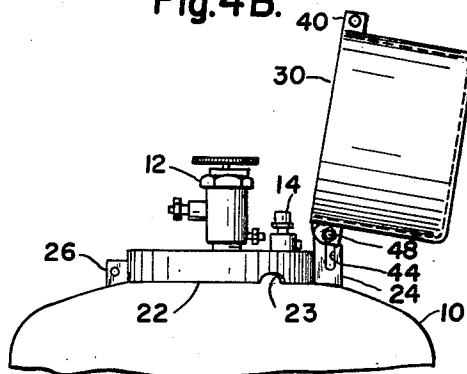


Fig. 4C.

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PROTECTIVE DEVICE FOR VALVED FITTINGS OR THE LIKE

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1 Claim. (Cl. 220—38)

This invention relates to protective devices for valved fittings projecting outwardly from a container for liquids or fluids. More particularly, the invention relates to a protective device of the type described which is tamper-proof and which gives virtually absolute protection against the possibility of damage to, or breakage of, the fitting.

Although not limited thereto, the present invention is particularly adapted for use in the protection of valved fittings on shipping containers for acids and noxious or highly flammable liquids and gases. In such cases, it is absolutely essential to prevent breakage of valved fittings which project from the container. Otherwise, the fittings may be broken in transit with serious consequences.

In the past, various devices have been used in an effort to protect the fittings on containers for noxious and highly flammable liquids and gases; however all have been deficient in one manner or another, either because they do not provide the required protection against jars or shocks, or because they can be opened by other than authorized personnel qualified to handle the highly dangerous contents.

Accordingly, as an overall object, the present invention seeks to provide a protective device for valved fittings on containers for dangerous liquids or gases, which device affords absolute protection against damage to the fittings in contrast to prior art devices of this type.

Another object of the invention is to provide a protective device of the type described which can be readily and economically fabricated.

In accordance with the invention, a protective device is provided comprising an annular collar projecting upwardly from the top of a container for liquids and surrounding the fittings to be protected, a cup-shaped cap adapted to fit over the collar, and a slotted, hinged connection between the collar and the cap permitting the cap to be fitted over the collar by straight-line downward movement where it may be locked in position or moved upwardly above the collar by straight-line upward movement and thereafter rotated to expose the fittings. In this manner, the cap can be positively locked to the container with the collar preventing lateral movement of the same. However, by virtue of the slotted, hinged connection, the fittings may be readily exposed.

The above and other objects and features of the invention will become apparent from the following detailed description taken in connection with the accompanying drawings which form a part of this specification, and in which:

FIGURE 1 is a partially broken-away cross-sectional view of the protective device of the invention, showing its orientation on a container for liquids;

FIG. 2 is a cross-sectional view taken substantially along line II—II of FIG. 1;

FIG. 3 is an exploded perspective view of the collar and cap of the protective device of the invention; and

FIGS. 4A, 4B and 4C illustrate the manner of operation of the invention.

Referring now to the drawings, and particularly to FIGS. 1, 2 and 3, a container 10 for flammable or noxious fluids is shown having valved fittings 12, 14 and 16 projecting upwardly from its top surface. Each valved fitting is threaded into a coupling preferably welded around the periphery of an opening in the top of the container 10,

two of such couplings 18 and 20 being shown in FIG. 1.

As was explained above, containers such as that shown in FIG. 1 are often given rough treatment during shipment, with the result that in the absence of some type of protective device for the fittings they may break, thereby permitting the escape of the noxious or highly flammable contents of the container. Furthermore, there is always the possibility of unauthorized personnel opening the valved fittings and permitting noxious fumes, for example, to escape.

Accordingly, the protective device of the present invention is provided which includes an annular collar 22 which surrounds the valved fittings 12-16 and is welded or otherwise secured securely fastened to the top of the container 10. Semi-circular openings 23 are provided at the lower edge of the collar 22 to permit the escape of liquids such as water and, thus, prevent their accumulation within the area defined by the collar. Welded or otherwise securely fastened to one side of the collar 22 and projecting radially outwardly therefrom is a slotted guide lug 24. Spaced 180° from the guide lug 24 and also welded to the periphery of the collar 22 is a radially-extending locking lug 26 provided with a central, circular opening 28.

Adapted to fit over the annular collar 22 is an inverted cup-shaped cap 30 which, of course, covers the valved fittings 12-16. It will be noted that the inner peripheral diameter of the cap 30 is slightly larger than the outer peripheral diameter of the collar 22 in order to permit the cap to slide over the collar into the position shown in FIG. 1. An axially-extending slot 32 is provided in the edge of the cap 30 to receive the guide lug 24; while slot 41 on the other side of the cap receives locking lug 26.

As best shown in FIGS. 2 and 3, ears 34 and 36 project radially outwardly from the periphery of cap 30 on either side of the slot 32 and, hence, on either side of the guide lug 24 when the cap 30 is slipped over the collar 22. In a similar manner, locking ears 38 and 40 are spaced 180° from the ears 34 and 36 and are positioned on either side of the locking lug 26 with the cap slipped over the collar 22. Openings 42 are provided in the locking ears 38 and 40; and these openings register with opening 28 when the cap is inserted over the collar such that the shackle of a padlock or the like, not shown, may be passed through all openings in order to secure the two together.

Passing through the slot 44 in guide lug 24 and circular openings 46 in ears 34 and 36 is a bolt 48 having a nut 50 threaded onto its one end. The nut 50 is preferably locked to the bolt 48 by means of a cotter pin or the like, not shown.

As best illustrated in FIG. 3, the collar 22 is provided with slotted openings 52 and 54 in its upper peripheral surface to facilitate hose connections to certain ones of the valved fittings 12, 14 and 16.

The operation of the protective device of the invention may best be understood by reference to FIGS. 4A, 4B and 4C. As shown in FIG. 4A, the cap 30 is slipped over the collar 22 such that the openings 42 in locking ears 38 and 40 are aligned with the opening 28 in locking lug 26. In this position the shackle of a padlock or the like may be passed through openings 28 and 42 to prevent removal of the cap 22. Note that even though the bolt 48 is removed from openings 46 and the slot 44 with the lock in position, the cap cannot be removed from the collar 22 by virtue of the fact that the collar 22 will prevent rotation of the cap 30 about the openings 28 and 42 in the locking lug 26 and ears 38 and 40. Furthermore, the collar 22 gives lateral support to the cap 30 so that it cannot be dislodged by jars and shocks during shipment as is the case, for example, with prior art protective devices.

In order to remove the cap 30 and expose the fittings 12-16, the padlock must be removed from the locking

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lug 26 and ears 38 and 40, and the cap 30 moved upwardly along a straight-line path. That is, even after the lock is removed, the cap cannot then be rotated about the axis of bolt 48 for the reason that it will bind with the collar 22. Accordingly, the slot 44 in lug 24 permits upward movement of the shank of bolt 48 to the position shown in FIG. 4B where the cap 30 may then be rotated about the bolt 48 into the position shown in FIG. 4C where the fittings 12, 14 and 16 are exposed. In order to again protect the valved fittings, the foregoing process is, of course, reversed with the cap 30 first being rotated about the axis of bolt 48 with the bolt at the upper end of slot 44, and the cap thereafter moved downwardly into the locking position shown in FIG. 1.

Although the invention has been shown in connection with a certain specific embodiment, it will be readily apparent to those skilled in the art that various changes in form and arrangement of parts may be made to suit requirements without departing from the spirit and scope of the invention.

I claim as my invention:

In a container for liquids, having a main body portion within which said liquids are contained, valved fittings projecting from a wall of said main body portion, and protective means for preventing breakage of said valved fittings, the improvement in said protective means comprising: an annular collar secured to said wall of said main body portion and surrounding said valve fittings; a cup-shaped cap slideable over said annular collar, said cup-shaped cap encasing said valved fittings to protect the same; said cup-shaped cap having an inner diameter which is larger than the outer diameter of said annular collar whereby said cup-shaped cap is guided by said annular collar along a straight-line path parallel to the central axis of said annular collar; and a slotted, hinged connection

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between said cup-shaped cap and said annular collar comprising a lug rigidly secured to the outer surface of said collar and projecting thereabove, said lug having a slot therein extending parallel with the central axis of said annular collar; a pair of spaced, radially projecting ears secured to the outer periphery of said cup-shaped cap and adjacent to the open end thereof; and a bolt device extending through said ears and said slot; the wall of said cap having an axially extending slot positioned between said ears to receive said lug; said slotted, hinged connection permitting reciprocal movement of said cup-shaped cap along said straight-line path and pivotal movement of said cup-shaped cap transversely of said annular collar; said annular collar having an axial length which is a minor portion of the axial length of said cup-shaped cap; the length of said slot in said lug being substantially equal to the axial length of said collar and being axially offset above said collar by an amount sufficient only to permit disengagement of said cup-shaped cap from said collar and thereafter only pivotal movement about an axis defined by said bolt device and disposed above said collar and transversely of the central axis of said collar.

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