

3,229,949

Filed July 16, 1964

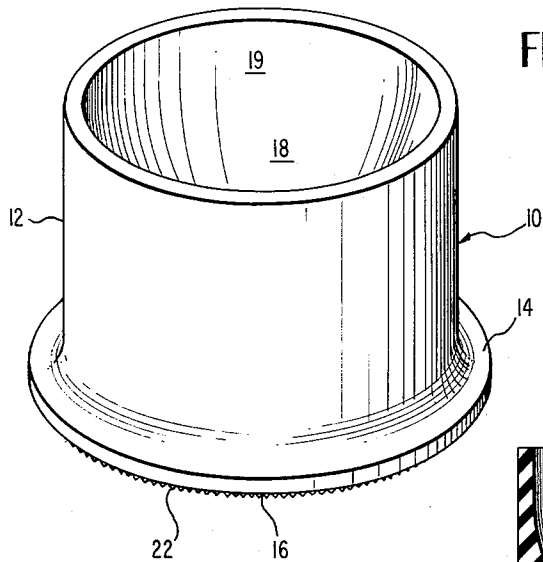


FIG. 1

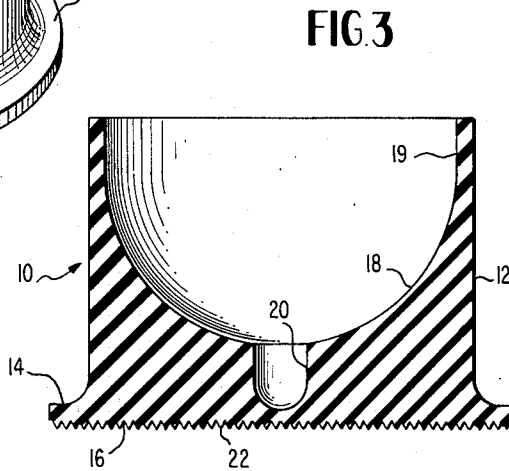


FIG.3

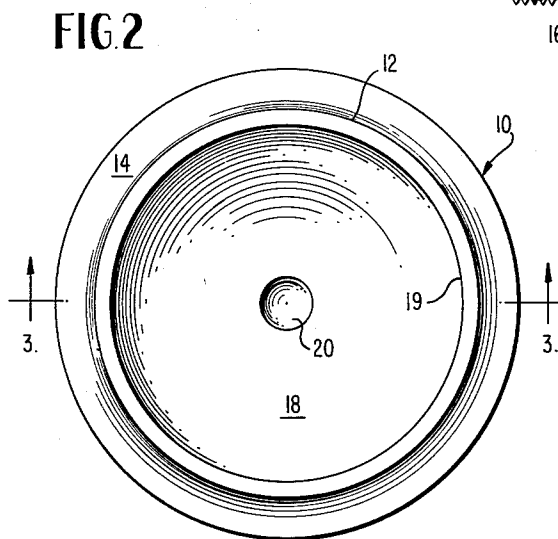


FIG.2

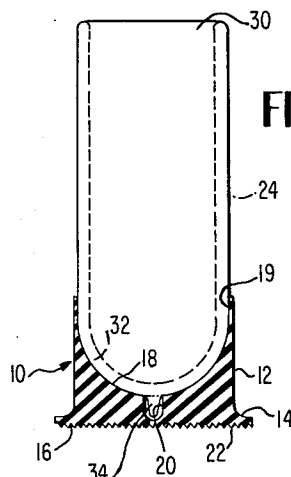


FIG.4

INVENTOR
PETER G. CHACONAS

BY *Henson, Palmer, Starnes & Edlabrook*
ATTORNEYS

1

3,229,949

DEWAR FLASK HOLDER

Peter G. Chaconas, Washington, D.C.

(4977 Battery Lane, Apt. 404, Bethesda, Md.)

Filed July 16, 1964, Ser. No. 383,108

2 Claims. (Cl. 248—346.1)

This invention relates generally to container holders and in particular to an elastomeric base holder for Dewar flasks and the like.

Dewar flasks are, at present, generally in use throughout the scientific community as an insulating container for liquefied nitrogen, hydrogen, oxygen and similar substances. The Dewar flask is generally made up of a double-wall glass container having an open upper end and a rounded hemispherical bottom thereto with the zone between the walls of the container sealed and evacuated to produce a low heat transfer medium therebetween. During the fabrication process, vacuum is drawn through a tube forming the base portion of the flask, the tube being heated, closed and detached, after a sufficient vacuum exists between the walls, to seal the evacuated space. The material and formation left at the bottom of the flask after the tube is removed therefrom is generally referred to as the "tip off" and it represents an untempered, highly fragile area of the structure. Since the bottom of the Dewar flask is generally hemispherical in shape and has, protruding therefrom, the above-mentioned "tip off," the flask must be provided with some sort of base to provide both a stand for the flask and to protect or hold the "tip off" spaced from contact with the support on which the flask may be placed.

In the prior art, it has been common to provide Dewar flasks with a coaxially disposed tubular base of metal or like material which is approximately equal, in inside diameter, to the outer diameter of the flask the components being connected, by pitch or other suitable adhesive, at the base of the flask. One of the primary disadvantages of this prior art base is that the "tip off" is not fully protected in that protrusions, which may extend from the surface on which the Dewar may be placed, may still, through the open bottom of the tubular holder, hit and fracture the "tip off." Furthermore, once the flask is damaged in any manner, the base is not easily recoverable and is usually disposed of along with the broken flask. Another problem, extant in the prior art bases, involves the base diameter of the tube forming the base. This tube is not greatly in excess of the total diameter of the flask itself thereby affording only a minimum amount of stability for the flask. A further deficiency existing in the prior art bases is the problem of shock transmittal through the rigid metal or hard material which, where sufficient impact is imposed on the base through accidental or careless mishandling, it will transmit sufficient force to fracture the flask itself.

It is an object of this invention to avoid the disadvantages of the prior art Dewar flask bases by providing an elastomeric base which substantially conforms to the lower surface of the flask to provide both total protection for the flask base and "tip off" area and a shock absorbing base for the flask.

It is another object of this invention to provide an elastomeric base for fragile containers such as Dewar flasks which, through proper dimensioning and configuring thereof, is adapted to be removably self attaching to the base of a flask by vacuum so that it may be interchanged between flasks if necessary.

It is still a further object of this invention to provide a base support for fragile containers such as Dewar flasks which incorporates an extended base area thereon to provide increased stability for the flask.

It is yet a further object of this invention to provide

2

a simple, durable base for fragile containers such as Dewar flasks which may be economically fabricated from an inexpensive material and which may be affixed or removed from the flasks with a minimum effort.

It is still another object of this invention to provide an elastomeric base for fragile containers such as Dewar flasks which are provided with a roughened, continuous lower surface to furnish total coverage of the flask base and yet avoid adhesion of the base to wet or smooth surfaces.

These and other objects of this invention will become more clearly understood by reference to the following detailed description when considered in the light of the accompanying drawings in which like numerals indicate like parts throughout the figures thereof and wherein:

FIGURE 1 is a perspective view of a flask support in accordance with the invention;

FIGURE 2 is a planform view of the flask support of FIGURE 1;

FIGURE 3 is an elevational view, in section, of the flask support of FIGURE 2 taken along the line 3—3 thereof; and

FIGURE 4 is an elevational view in section of a flask support in a configuration for engaging and supporting a flask.

Referring now to FIGURES 1 and 3 of the drawings for a more complete understanding of the invention, a flask support in accordance with the invention shown generally at 10, is formed with a generally cylindrical outer surface or wall 12, the wall flaring proximate the base thereof to form an outwardly extending flange 14 terminating at a bottom face 16. An inner face 18 of the support, comprises a generally hemispherical or dome-shaped cup, which conforms to the normal shape of the base of a Dewar-type flask. The inner face or cup 18 is provided with a centrally located recess 20 at the bottom thereof for purposes to be described below. The interior of the support is also provided with a cylindrical surface 19 extending tangentially upward from the upper edge of the surface 18.

The bottom face 16 is furnished with a series of ridges 22 across the face thereof to avoid sticking of the flask holder to wet or highly polished surfaces. These ridges may take any form, may be continuous or discontinuous or may consist of designs, raised lettering, tags or other suitable projections on the bottom face 16 so long as the planar continuity of the face is interrupted to provide the desired effect. The face could, also, be furnished flat or in a configuration which would adhere to the wet or polished surfaces if so desired.

Referring to FIGURE 2, the general cylindrical shape of the flask holder is shown. Other than the inner cup face 18 and the cylindrical surface 19, the planform configuration of the remaining surfaces or walls may be cylindrical as shown, or rectangular, triangular, octangular or any other suitable desired shape without altering the working of the invention.

Although the outer surface or wall 12, is shown generally as a straight cylinder in elevation, this wall could be in the form of a truncated cone, pyramid or any other suitable configuration if aesthetic or particular use requirements so dictate. The configuration shown is preferred, however, since it provides increased stability with a minimum increase in weight as compared to a pure cylindrical or conical support of equivalent stability.

Referring now to FIGURE 4, the holder or flask support 10 is illustrated in a configuration for supporting a Dewar flask 24. The flask is made up of a cylindrical body having an open mouth 30 and hemispherical base 32 terminating in a "tip off" 34 centrally disposed thereon.

3

This "tip off," as before described, constitutes the remaining material of an evacuating tube which is sealed off during the formation of the Dewar flask. The "tip off" represents an extremely delicate and fragile, untempered portion of the flask and any object fracturing the "tip off" destroys the utility of the flask as a whole.

The inner face 18 of the flask support 10 contacts the base 32 substantially throughout the entire surface thereof and the "tip off" 34 is received into the recess 20 to be accommodated thereby. The cylindrical surface 19 of the flask support encloses a portion of the cylindrical body 28 of the flask as shown.

The dimensions of the support 10, in its relaxed condition, are such that the act of placing the flask into the support expands the support elastically expelling the air therefrom and thereby enables the creation of a vacuum resistance to removal of the flask from the support when the flask is fully seated therein. The contact of the cylindrical surface 19 with the cylindrical body 28 also tends to frictionally retain the flask within the holder. The relative dimensions of the holder with respect to the flask could, of course, be of any magnitude suitable to provide the above results, however, as an example, a support having the diameter of the cylindrical surface 19 equal to 68.50 mm. and the diameter of the outer surface or wall 12 equal to 74.50 mm. with the radius of the inner face 18 equal to 34.25 mm. will effectively hold a Dewar flask having an outer diameter of the cylindrical body equal to 70.00 mm. without requiring additional adhesive or other connection between the support and the flask.

Although it is contemplated that any common elastomer suitable for this purpose may be used in the fabrication of the flask support, a material having specialized temperature or corrosion resistance properties may be used if required by environmental conditions in which the support is to be used. Materials other than those commonly classified as elastomers may also be used if they have suitable deflection and recovery properties to frictionally adhere to the flask.

What has been set forth above is intended to be exemplary of a teaching of the invention to enable those skilled in the art in the practice thereof and it should therefore be understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically described.

What is new and desired to be protected by Letters Patent of the United States is:

4

1. The combination of a support with a cylindrical flask having a convex hemispherical base with a member projecting therefrom comprising:

an elastomeric holder having a flask-receiving upper portion and a lower base portion, said flask-receiving portion comprising a cup coaxially formed in the upper portion, said cup having a continuous concave hemispherical configuration engaging the entire hemispherical surface of the base of the flask for supporting it, said cup being sufficiently smaller in radius than the flask to coact therewith to provide vacuum retention thereof when the flask is inserted therein;

said cup terminating in an annular cylindrical wall coaxially disposed around the upper periphery thereof and adapted to engage the cylindrical portion of the flask and provide substantially all of the lateral support therefor, said wall being sufficiently smaller in radius than the cylindrical wall of the flask to coact therewith to provide frictional retention thereof when the flask is inserted therein; said cup having a recess therein disposed to receive and contain the member projecting from the base of the flask;

said lower base portion being substantially greater in area than the corresponding cross sectional area of the flask and having a bottom face thereto.

2. A holder in accordance with claim 1 wherein a plurality of projecting members are disposed on said bottom face to provide a discontinuous bottom surface thereto.

References Cited by the Examiner

UNITED STATES PATENTS

511,617	12/1893	Howard	248—346
1,603,954	10/1926	Huston	248—346 X
1,672,033	6/1928	Mallins	248—346
2,565,793	8/1951	Weismantel	248—362
2,634,998	4/1953	Flower	248—363 X

FOREIGN PATENTS

191,611	1/1923	Great Britain.
---------	--------	----------------

References Cited by the Applicant

UNITED STATES PATENTS

1,388,189	8/1921	Meikle.
-----------	--------	---------

CLAUDE A. LE ROY, *Primary Examiner.*

J. PETO, *Assistant Examiner.*