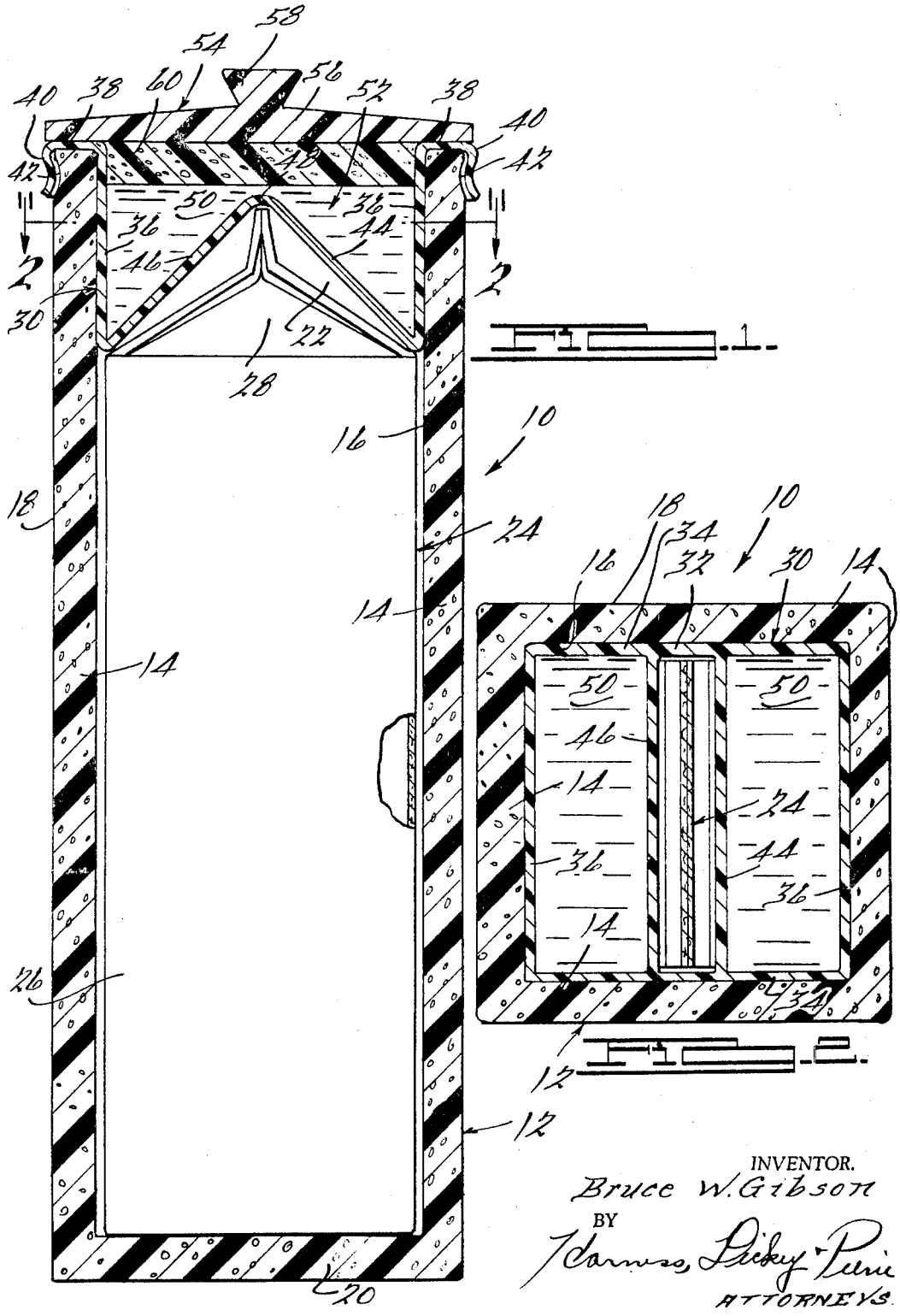
Sept. 20, 1966 B. W. GIBSON 3,273,354

THERMAL INSULATING AND COOLING RECEPTACLE FOR DISPOSABLE FLUID CONTAINERS

Filed Aug. 10, 1965



INVENTOR.

Bruce W. Gibson

BY

Parmes, Dickey & Pine

ATTORNEYS.

United States Patent Office 3,273,354 Patented Sept. 20, 1966

3,273,354

THERMAL INSULATING AND COOLING RECEPTACLE FOR DISPOSABLE FLUID CONTAINERS

Bruce Wellington Gibson, 44904 Gratiot Ave., Mount Clemens, Mich.

Filed Aug. 10, 1965, Ser. No. 478,687
1 Claim. (Cl. 62—457)

This invention relates generally to thermal insulating containers and, more particularly, to a new and improved combination thermal insulating and cooling receptacle for use in transporting and storing disposable fluid containers such as milk cartons and the like.

The continuously increasing use of disposable fluid containers for packaging fluid foods, such as milk, fruit juices and the like, has resulted in the need for development of some type of means for temporarily maintaining the temperatures of such containers at a relatively low level to prevent the fluid foods contained therewithin from becoming spoiled. Such means for thermally insulating containers of the above type has heretofore been in the form of relatively large and complex units constructed of one or more separate insulating and/or protective housings that are relatively bulky and usually adapted to contain a multiplicity of such fluid containers. Accordingly, such thermal insulating means or receptacles have been somewhat impractical for single fluid containers from a cost standpoint, lack of portability and insulating effectiveness, the latter undesirable feature resulting from the fact that such heretofore known and used receptacles have had relatively large internal volumes.

Broadly speaking, the present invention is directed toward a novel receptacle adapted to contain a single disposable fluid container and which is characterized by the provision of a highly effective thermal insulating medium that surrounds the container, and also by the provision of a cover member for selectively closing the open upper end of the receptacle, which cover member includes means defining an enclosed fluid reservoir located adjacent the upper end of the fluid container disposed within the receptacle. The aforesaid reservoir is adapted to contain a refreezable fluid such as water or the like which, when in a frozen condition, provides cooling means for maintaining the interior of the receptacle and therefore the fluid container and fluid disposed therewithin at a somewhat lower temperature than the ambient temperature conditions surrounding the receptacle. By virtue of the relatively simple design of the receptacle of the present invention, it may be commercially manufactured at a relatively low cost and hence will exhibit a desirable marketability.

It is, therefore, a general object of the present invention to provide a combination thermal insulating and cooling receptacle for disposable fluid containers and the like.

It is a more particular object of the present invention to provide a new and improved receptacle of the above character that features a fluid reservoir containing a refreezable fluid which, when frozen, provides means for maintaining the temperature within the receptacle at a relatively low level.

It is still another object of the present invention to provide a new and improved receptacle of the above character that is of an extremely simple design, is easy to assemble and economical to commercially manufacture.

It is yet another object of the present invention to provide a combination thermal insulating and cooling receptacle which is adapted to accommodate fluid containers of varying sizes and configurations and is therefore characterized by universality of application.

Other objects and advantages of the present invention

will be apparent from the following detailed description taken in conjunction with the accompanying drawing, wherein:

FIGURE 1 is a longitudinal cross-sectional view of an exemplary embodiment of the receptacle of the present invention shown in operative association with a conventional disposable fluid container, and

FIGURE 2 is a transverse cross-sectional view of the structure illustrated in FIGURE 1, taken along the line 2—2 thereof.

Referring now to the drawing, the combination thermal insulating and cooling receptacle 10, constructed in accordance with an exemplary embodiment of the present invention, is shown as comprising a main housing 12 which, as illustrated in FIGURE 2, is rectangular in transverse cross section and includes four identical side wall sections, generally designated by the numeral 14 and defining inner and outer surface portions 16 and 18, respectively. The housing 12 also includes a bottom section 20 which, together with the inner surface portions 16, defines an elongated open ended fluid container receiving cavity 22 that is illustrated herein as containing a disposable fluid container 24 having a rectangular shaped body section 26 which terminates at its upper end in an inverted V-shaped dispensing section 28. The construction per se of the container 24, which is of a type commonly used for packaging fluid foods such as milk, fruit juices and the like, does not constitute a material part of the present invention and is mentioned herein merely to clarify the descriptive portion of the specification. The housing 12 is constructed of a thermal insulating material such as styrafoam or its equivalent and is preferably formed as by molding, whereby the side wall sections 14 and bottom section 20 are integral with one another, as illustrated in FIGURE 1.

Disposed within the upper end of the cavity 22 is a liner member 30 that comprises two pair of identical side wall portions 32 and 34 which are arranged opposite one another and are all of a size such that the outer surfaces thereof contiguously engage the upper ends of the inner surface portions 16 of the housing side wall sections 14. The upper ends of the side wall portions 34 and 36 are formed with outwardly extending flange sections, generally designated 38, which sections 38 terminate at their outer ends in downwardly projecting retaining sections, generally designated 40. As illustrated in FIGURE 1, the sections 40 are generally arcuate shaped in transverse section and are adapted to matingly engage complementary shaped concave surface portions 42 formed in the outer surface portions 18 adjacent the upper end of the housing 12, whereby to releasably secure the liner member 30 within the upper end of the housing member 12. The lower ends of the side wall portions 36 terminate in upwardly and inwardly inclined bottom portions 44 and 46 which intersect at their upper ends, as seen at 48 in FIGURE 1, the portions 44 and 46 being arranged so as to be complementary to the upper end section 28 of the container 24. As best seen in FIGURE 2, the side wall portions 34, 36 and bottom portions 44, 46 are integral with one another and define a fluid containing reservoir 50 comprising two sections that are arranged one on each side of the upper end 28 of the container 24. In a preferred construction of the present invention, the liner member 30 is constructed of a somewhat flexible, fluid impervious material such as plastic, vinyl or the like, the member 30 preferably being constructed as by vacuum molding or similar well known techniques.

The reservoir 50 is adapted to contain a predetermined quantity of a refreezable fluid 52 such as water or the like which, when in a frozen condition, is adapted to provide means for reducing the temperature within the cav-

ity 22, whereby to cool the fluid within the container 24, as will later be described.

The upper end of the reservoir 50 is closed by a cover member, generally designated by the numeral 54, which comprises an upper cover section 56 that extends entirely across the top of the housing 12 and normally bears upon the upper surfaces of the flange sections 38 of the liner member 30. The upper cover section 56 is formed with an integral gripping handle portion 58 which functions to facilitate convenient removal of the member 54 from the housing 12, as will be apparent. The cover member 54 also includes an insulating layer 60 which is preferably constructed of styrafoam or an equivalent thermal insulating material. The insulating layer 60 is preferably of such a size that the outer edges thereof contiguously engage the inner surfaces of the side wall portions 34 and 36 of the liner member 30 so that a substantially fluid-tight seal is provided therebetween, thus preventing any of the freezable fluid 52 from leaking out of the reservoir 50. In a preferred construction of the present invention, the lower side of the cover section 56 is permanently affixed to the upper surfaces of the flange section 38, as by any suitable means such as an epoxy cement or the like, so that the liner member 30 and cover member 54 are provided in a unitized assembly with the refreezable fluid 52 permanently contained therewithin. It may be noted, however, that if desired, the liner member 30 and cover member 54 may be separate component members to be successively mounted on the upper end of the housing 12 after the container 24 has been inserted therewithin.

Prior to the receptacle 10 being used to transport or store a fluid container, such as the container 24 illustrated herein, the unitized assembly comprising the cover member 54, liner member 30 and fluid 52 is placed within suitable means for effecting freezing of the fluid 52, such as within an ice box or the like. After such time as the fluid 52 has become frozen, the container 24, which is preferably in a pre-cooled condition, is placed within the cavity 22 of the housing 12. Thereafter, the assembly comprising the cover member 54, liner 30 and frozen fluid 52 is mounted on the upper end of the housing 12 in the manner illustrated in FIGURE 1. By virtue of the fact that the styrafoam layer 60 and housing 12 completely surround the container 24, the pre-cooled temperature conditions of the fluid contained therewithin will be maintained relative to the ambient temperature conditions outside of the receptacle 10. Moreover, the temperature of the fluid within the container 24 will remain at this relatively low level for an extended period of time by virtue of the fact that the frozen fluid 52 will function to withdraw and absorb the heat energy from the container 24 in a manner consistent with well known heat transfer principles, resulting in the fluid within the container 24 remaining at a desirable cool temperature.

A particular feature of the receptacle 10 of the present invention resides in the fact that it is of an extremely simple design and is constructed of relatively inexpensive and easily workable materials. Accordingly, the receptacle 10 of the present invention may be economically manufactured with a minimum amount of tooling expenses and material costs. Since a substantially fluid type seal is provided between the outer surface of the

side wall portions 34, 36 of the liner member 30 and the inner surface portions 16 of the housing 12, another feature of the receptacle 10 of the present invention resides in the fact that fluid may be carried directly within the housing 22 of the housing 12, i.e., without the use of a separate container such as the container 24.

While it will be apparent that the exemplary embodiment illustrated herein is well calculated to fulfill the objects above stated, it will be appreciated that the combination thermal insulating and cooling receptacle of the present invention is susceptible to modification, variation and change without departing from the proper scope or fair meaning of the subjoined claim.

What is claimed is:

In a combination thermal insulating and cooling receptacle for disposable fluid containers,

a substantially rectangular cross section housing comprising upwardly extending side wall sections which include inner surface portions defining a fluid container receiving cavity substantially co-extensive of said housing,

said housing also comprising a bottom section closing the lower end of said cavity,

said side wall sections and said bottom section being integral and constructed of a thermal insulating material,

a liner member disposed in the upper end of said cavity and having side wall portions contiguously engaged with the top of said inner surface portions,

the upper ends of said side wall portions terminating in outwardly and downwardly projecting flange sections adapted to nestingly receive the upper ends of said side wall sections,

the lower ends of said side wall portions terminating in a bottom portion of a complementary shape with respect to the upper end of the fluid container disposed within said cavity and together with said side wall portions defining a fluid reservoir within the upper end of said cavity above the container,

said reservoir containing a freezable substance which when frozen provides means for reducing the temperature of said cavity, whereby to cool the fluid container disposed therewithin, and

a cover member removably mounted on the top of said housing,

said cover member comprising an upper cover section secured to the top of said outwardly projecting flange portions of said lining member and having gripping handle means integrally formed thereon,

said cover member also comprising an insulating layer constructed of a thermal insulating material which is secured to the lower side of said upper cover section and is disposed within the upper end of said reservoir tightly engaging the inner surfaces of said side wall portions of said lining member.

References Cited by the Examiner

UNITED STATES PATENTS

2,652,698	9/1953	Schlumbohm	62—457 X
3,006,165	10/1961	Mittelberger	62—457 X

LLOYD L. KING, *Primary Examiner.*