

Nov. 3, 1925.

1,560,375

A. E. BLACKMAN
TEMPERATURE MAINTAINING VESSEL

Filed Sept. 23, 1924

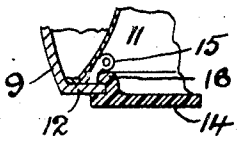
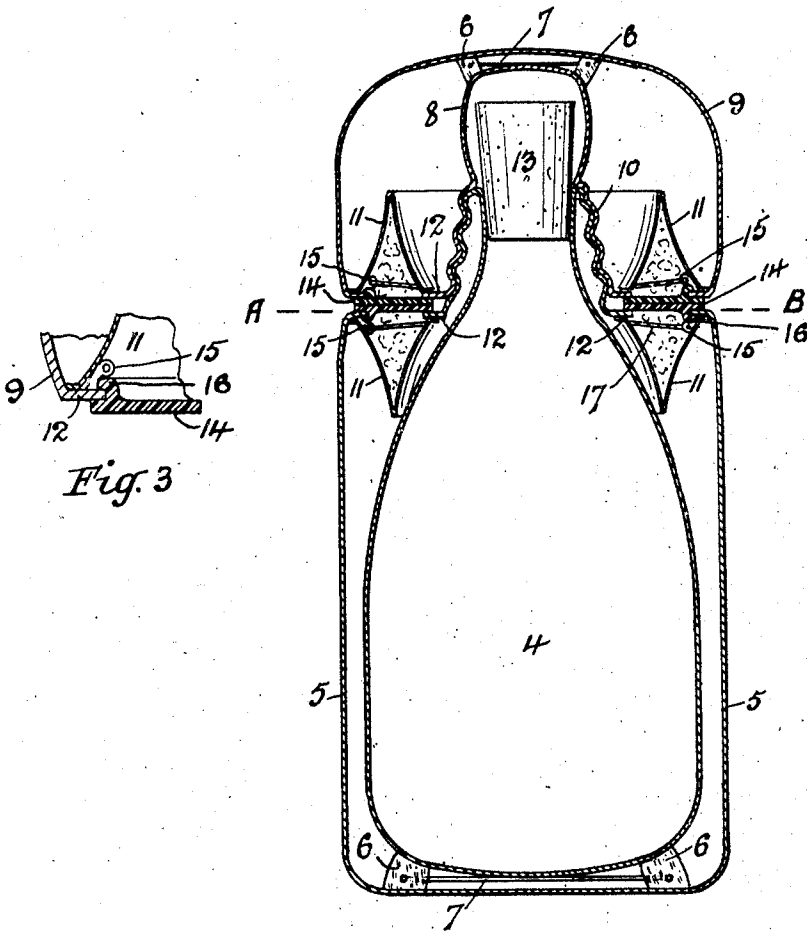


Fig. 3

Fig. 1

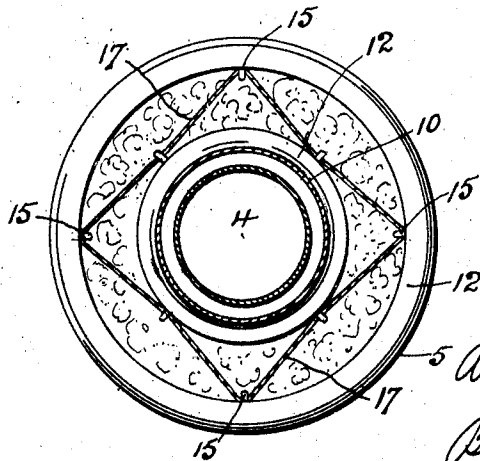


Fig. 2

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UNITED STATES PATENT OFFICE.

ARTHUR EDWARD BLACKMAN, OF FRANKLIN, AUSTRALIA.

TEMPERATURE-MAINTAINING VESSEL.

Application filed September 23, 1924. Serial No. 739,403.

To all whom it may concern:

Be it known that I, ARTHUR EDWARD BLACKMAN, a subject of the King of Great Britain, residing at Franklin, in the State of Tasmania, Commonwealth of Australia, having invented certain new and useful Improvements in and Connected with Temperature-Maintaining Vessels do hereby declare that the following is a specification.

This invention relates to the construction of temperature maintaining vessels such as thermal flasks and has for its object to provide for a less fragile article, as when the flask is made of glass, and for more effectively maintaining the temperature therein whether such temperature resides in a hot or cold substance.

In this invention, the inner vessel or retainer is made of rustless steel and highly polished to minimize conduction. The metal shell is also of advantage in that it may be made thinner than a glass shell.

Experiment has shown that in flasks hitherto made the losses by conduction mostly occur through the neck of the flask, and as steel, and particularly highly polished steel, is a bad conductor of heat, it follows that if conduction near the neck can be minimized, a satisfactory vessel will be provided that will retain food substances for a long time at their predetermined temperatures.

A further object of this invention is to so construct the neck and cap of the flask as to safeguard the tendency to losses by conduction. With this object, therefore, I partly occupy the annular space about the neck of the flask with an inset of steel foil, V-shape in section. One such inset, but inverted, is in the container of the flask cap and the other in the flask container, both the cap and container being insulated, in vacuo, in the ordinary way. When the cap is screwed down the bases of said insets will be coincident and operate to more effectively avoid leakages through the joint between the insulated cap and body. The steel foil insets may be suitably reinforced and supported to reduce torsional strains thereon.

In the accompanying drawings—

Fig. 1 is a longitudinal sectional elevation of the improved flask.

Fig. 2 is a sectional plan of same on line A—B of Fig. 1, and

Fig. 3 is a sectional detail of the reinforcing means.

The flask or retainer 4 is made of rustless steel and highly polished. It seats in its container 5 on asbestos chocks 6 of which there are, say, three that are connected together by the wires 7. The flask has a cap 8 that is within the cap container 9 between which and the cap are like asbestos chocks 6 and wires 7. A vacuum is maintained within each of the containers in the usual way. The cap 8 screws on to the flask 4 through the worm 10.

It will be observed that the flask cap 8 continues downwards through the worm and terminates, after being turned outwards, to provide a flange 12, opposite a like inwardly turned flange on the cap container 9. The wall of the flask 4 is bent upon itself and turned over through the worm and bent to provide a flange 12 just below the flange of the cap 8 while the wall of the container 5 is likewise inwardly disposed. This arrangement leaves a space to be bridged and closed in the container cap 9 and the container 5 by a heat non-conducting material if the vacuum in each is to be maintained. This can be effected by means of the strips 11 of steel foil arranged annularly about the flask neck, in the member 9 in section like an inverted V, and in the container 5 annularly in section like the letter V so that, when the parts 9 and 5 are screwed together the bases of the V-shaped parts are coincident. The legs of each member 11 are securely attached to the aforementioned flanges, the one to the flanges 12 in the member 9 and the others to the flanges in the container 5. The annular space within the V-members is filled with a suitable material such as glass wool and thus conduction of heat to and from the metal parts of the flask will be greatly minimized.

In operation, the cap container 9 is screwed off the worm 10 to leave the cork 13 exposed: this is then withdrawn to obtain access to the flask which, when filled, is re-corked and the cap again screwed on. Between the parts 9 and 5 are rubberoid or other like washers 14 that further assist in completing the joint.

The annular V members, being attached to the flanges 12 are subjected to certain torsional strains when the cap container is manipulated. To stay said members I have provided a cleat 15 at, say, four points around the member 9 and at a like number of points around the container 5, preferably

integral therewith. The washers 14 are each made with a knuckle 16 against which the flanges of the parts 9 and 5 and the cleats 15 come to a neat fit, so far as the container 9 is concerned, when the container cap is screwed home. To the cleats in the container 5 silken cords 17 are attached and taken and secured to the flask 4 while the cords in the cap container are attached to the cleats and taken and secured to the flask cap 8.

Thus, a flask is provided of a less fragile nature than glass and one into which very hot liquids can be poured without risk of fracture. The improved flask will also be in vacuo and well guarded against loss of temperature by conduction or convection. The asbestos chocks 6 will safeguard the appliance against damage through falls and the wires 7 tend to strengthen the whole.

Having now described my invention what I claim as new and desire to secure by Letters Patent is:—

1. In flasks of the kind indicated, an inwardly flanged vacuum container in which a rustless steel highly polished flask is placed, a turned over worm threaded neck to the flask, a flange thereon opposite its container flange, a cap to the flask having a worm and a flange on its lower edge, a vacuum container over the cap, an inwardly turned flange on the cap container opposite that on the cap, annular members of steel foil V-shaped in section in the container and cap container respectively secured to the flanges and filled with glass wool and ruberoid washers between the cap container and the container.

2. In flasks of the kind indicated, an inwardly flanged vacuum container in which a rustless steel highly polished flask is placed, a turned over worm threaded neck to the flask, a flange thereon opposite its container flange, a cap to the flask having a worm and a flange on its lower edge, a vacuum container over the cap, an inwardly turned flange on the cap container opposite that on the cap, annular members of steel foil V-shaped in section in the container and cap container respectively secured to the flanges and filled with glass wool, ruberoid washers between the cap container and the container, and means for staying said annular members against torsional strains.

3. In flasks of the kind indicated, an inwardly flanged vacuum container in which a rustless steel highly polished flask is placed, a turned over worm threaded neck to the flask, a flange thereon opposite its container flange, a cap to the flask having a worm and a flange on its lower edge, a vacuum container over the cap, an inwardly turned flange on the cap container opposite that on the cap, annular members of steel foil V-shaped in section in the container and cap container respectively secured to the flanges and filled with glass wool, ruberoid washers between the cap container and the container, means for staying said annular members against torsional strains, asbestos chocks between the flask and its container and the flask cap and container and light wires between and linking up said chocks.

In witness whereof I affix my signature.
ARTHUR EDWARD BLACKMAN.