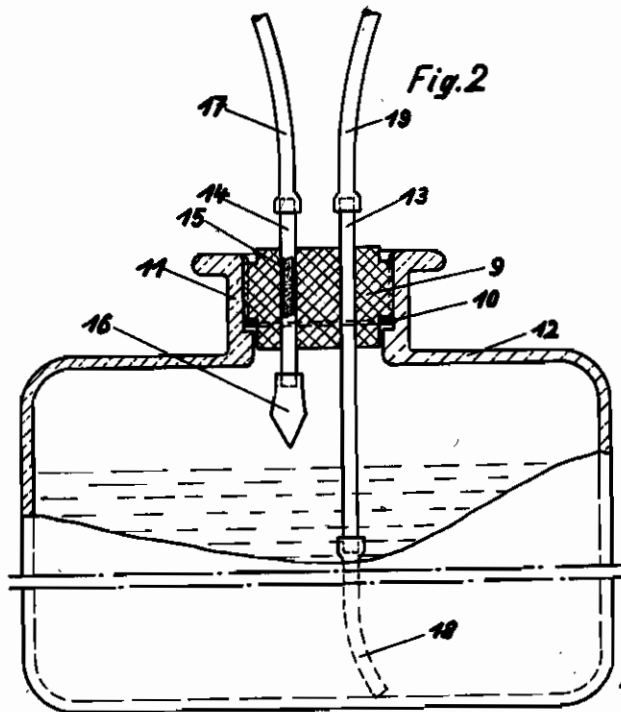
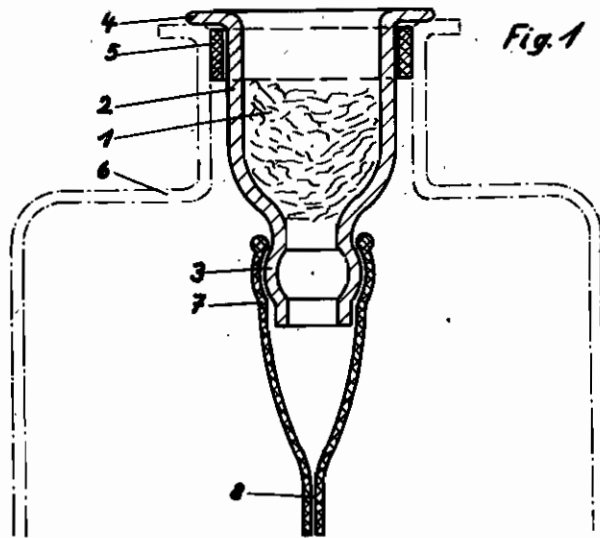


PUBLISHED
MAY 25, 1943.
BY A. P. C

A. SCHADE
GERM-PROOF CLOSURES FOR CONTAINERS
Filed Jan. 31, 1939

Serial No.
253,936



Inventor,
A. Schade

By Glasgow Downing & Lebold
Attys

ALIEN PROPERTY CUSTODIAN

GERM-PROOF CLOSURES FOR CONTAINERS

Arno Schade, Dusseldorf, Germany; vested in the
Alien Property Custodian

Application filed January 31, 1939

This invention relates to a germ-proof closure for containers, such as bottles, cans, barrels or the like. Closures which allow the entrance of germ-free air, but make the outflow of the contents impossible when the container is in an inclined position, for instance during transport, have hitherto not been available in a useful form.

The invention therefore proposes a closure which consists of an insertable body for containing the germ filter and of a lip-like non-return valve of a known kind, which is drawn over the end of the insertable body. This insertable body may be made of glass or other material and be filled with any germ filter, for instance salicylic cotton wool. The lip-like valve placed on the lower end of the insertable body allows the entrance into the container of air rendered germ-free in the germ filter, but makes the outflow of contents impossible, whatever the position of the container.

When there is a discharge opening at any place of the container, for instance at the bottom, the insertable body for the air inlet opening, which contains the germ filter, may be provided with a flanged rim, below which a sealing ring of elastic material is arranged. This form of seal is extremely simple and occupies no space outside the container. It supports the filter by means of the container itself, cannot be damaged during transport and is easily cleaned.

When there is only a single opening in the upper part of the container, the tubular insertable body provided with the germ filter and the lip-like valve may be taken alongside a closable outlet tube through a stopper. On the container being placed at an inclination after the outlet tube which extends to the bottom of the container has been opened, the contents can flow out, when the air can flow in through the filter of the tubular insertable body, that is free from germs. The insertable body which serves as the air inlet opening may of course be connected to a compressed air or compressed gas pipe, so that the liquid will be forced out of the container in a known manner. In this constructional form as well the lip-like valve will prevent the liquid entering the filter.

In Figs. 1 and 2 of the accompanying drawing two different constructional forms of the new germ-proof closure are shown in section.

The insertable body 2 of the closure, which is fitted with the germ filter 1 and may be closed by a stopper or the like, has an extension 3 of smaller diameter and at the top a flanged rim 4 by means of which the insertable body provided with the slipped on sealing ring 5 may be pushed into the bottle neck 6 serving as the air inlet opening or be caused to rest on it. Over the extension 3 the lip-like valve consisting of the rubber tube 7 with the lip 8 is slipped, which valve opens only inwards, that is to say allows germ-free air to enter the bottle, but prevents the outflow of the bottle contents through the filter. The bottle is emptied in a known manner through an emptying arrangement provided at any part of the bottle.

When there is no special discharge opening, then, as shown in Fig. 2, there is taken through a stopper 9 which is either screwed into or pressed for instance into the neck 11 of a bottle 12 both an outflow tube 13 for the liquid and the cylindrically formed insertable body 14 with the germ filter 15 and the lip-like valve 16. The upper end of the insertable body 14 may be connected by tubing 17, with or without a further interposed germ filter, to a compressed air producer, a compressed gas bottle, for instance a carbon dioxide bottle, or the like. The outflow tube 13 extends directly or with an attached piece of tubing 18 or the like to the bottom of the bottle 12. The other end of the outflow tube 13 may be provided with an attached piece of tubing 19 which leads to the place of delivery and may be closed by any closing member. On the latter being opened, the compressed air or the like entering the bottle through the insertable body 14 in a germ-free state will force the liquid out through the tubing 18, the outflow tube 13 and the attached tubing 19.

During transport or, when the container is not in use for some time, the outflow tube 13 and the insertable body 14 will preferably be tightly closed at the top with any sealing device, for instance with stoppers, rubber caps, cocks or the like.

These germ-free closures are particularly suitable for transportable containers containing liquids which are sensitive to bacteria, such as fruit juices, milk and the like.

ARNO SCHADE.