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J. R. CUTTELL ET AL

2,655,280

BUNG OR STOPPER

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FIG. 1.

FIG. 2.

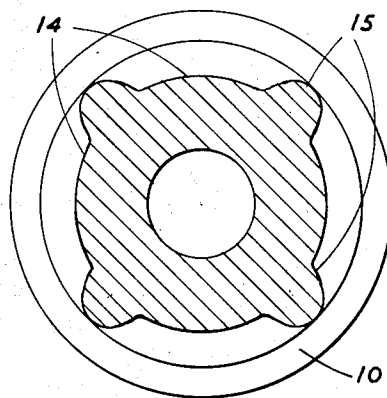
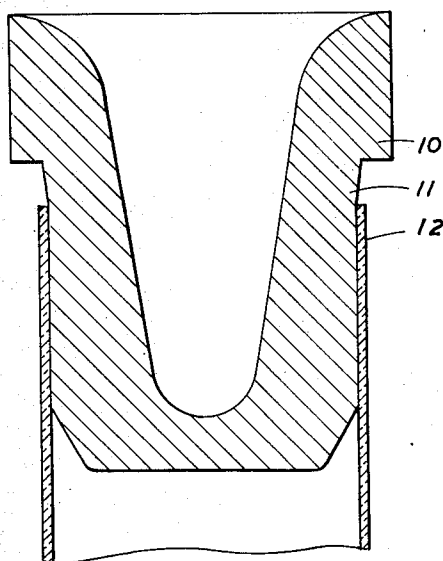
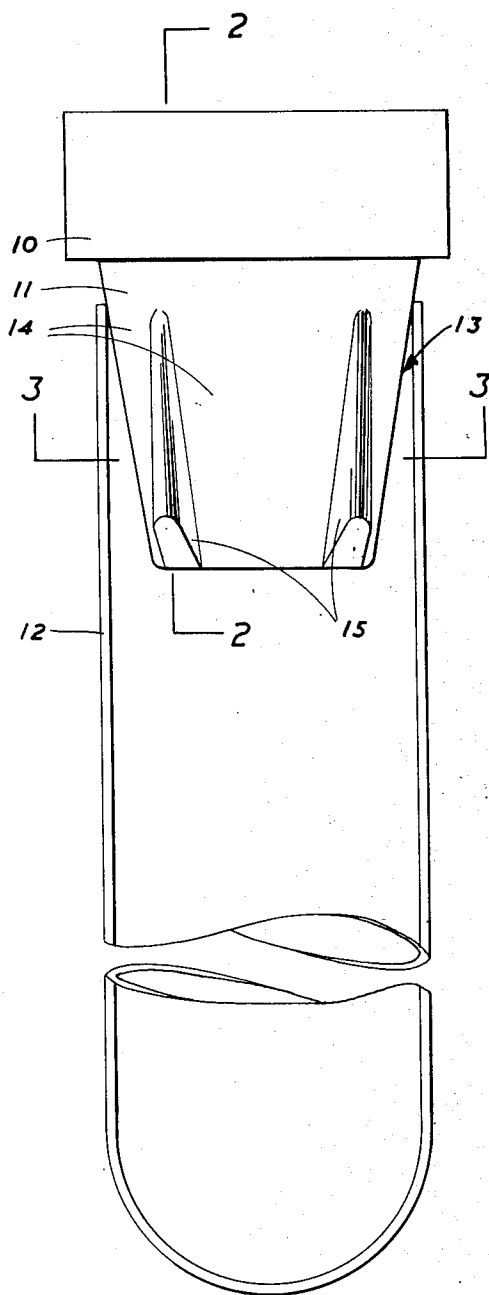


FIG. 3

Inventors

JOHN R. CUTTELL & THOMAS R. ASHTON

By

Spring, Green & Thompson
Attorneys

UNITED STATES PATENT OFFICE

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BUNG OR STOPPER

John R. Cuttall, Banstead, and Thomas R. Ashton, Eltham, London, England, assignors, by direct and mesne assignments, to Astell Laboratory Service Company Limited, London, England, a British company

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In Great Britain August 12, 1948

1 Claim. (Cl. 215—47)

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This invention relates to operations involving substances requiring to be heated or sterilised by heating in test tubes or other containers before further use. For example in the supply of bacteriological media in test tubes the medium in a test tube is generally covered with a cotton wool plug which permits escape of pressure when the test tube, medium, and plug, are together heated to effect sterilisation. However, the cotton wool plug has to be formed by hand and is normally discarded after use.

A normal rubber bung if used in place of cotton wool would fly off on heating and would require to be sterilised separately and subsequently replaced.

According to the present invention a bung or plug of resilient material is adapted to form a closure to a test tube or other container and is shaped to allow escape of vapour or gas under pressure after being displaced by such pressure without being pushed completely out of the container. Such a bung allows escape of vapour or gas under pressure during sterilising or heating without being pushed out of the container. The tube and its bung and contents can then be sterilised or heated together and no cotton wool plug need be provided.

The bung may comprise a part adapted to fit the interior open end of a test tube or other orifice of a container and an inner part having one or more grooves or recesses adapted to provide communication between the interior of the container and the exterior atmosphere when the bung is displaced partly out of the orifice whilst the parts of the bung adjacent to the grooves or recesses remain in contact with the interior surface of the orifice.

The invention will now be described by way of example with reference to the accompanying drawings wherein:

Figure 1 is an elevational view of a bung made in accordance with the invention;

Figure 2 is a sectional view on line 2—2 on Figure 1; and

Figure 3 is a sectional view on line 3—3 on Figure 1.

The bung consists of a one-piece rubber cup having an annular flange 10, a part 11 which is slightly tapered and adapted to fit the interior of the open end of a test tube 12, and a longer recessed part 13 formed with recesses 14. The recesses 14 leave radial ribs 15. The part 11 may have an axial length of say one eighth of an inch and the ribs may be of considerable axial length and of such a radius as to engage the inner sur-

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face of the tube. The axial length of the ribs may be at least three times that of the part 11, say about one half an inch. The recesses or gaps 14 between the ribs or fins provide for escape for air, steam, or the like when the plug is sufficiently out of the tube, i. e., when the tapered surface is above the top of the tube. An annular groove (not shown) may be provided between the fins and the tapered surface. The general resilience of the plug (dependent on the kind of rubber, wall thickness and other design features) is such as to enable the plug to move slowly out of the tube under the action of the increasing pressure during the usual heating of bacterial media until the gas or vapour pressure escapes through the gaps. Heating is then continued and the tube is then cooled and the plug can be pushed back into position.

The rubber bungs are less likely than cotton wool to be dislodged during handling and serve also to maintain a required humidity in the tubes better than cotton wool plugs.

If desired a wire basket may be provided to carry a larger number of tubes. The basket may be provided with numerous cell-like divisions to hold the tubes all in vertical position so that the tubes can all be easily handled. The basket of tubes can be placed in an autoclave for heating and the bungs will be slightly displaced to permit escape of vapour and when the basket is removed the bungs can be readily pushed home by inserting in the hollow end of the bung a small instrument consisting of a small rod carrying at one end a small block or plate acting as a thumb rest. Alternatively the bungs may be so dimensioned that on cooling the tubes, the reduced pressure in the tubes will draw the bungs back into the fully or partly pressed in position.

Artificial rubber, plasticised polyvinyl chloride, or similarly resilient materials may be used for manufacture of the bung or plug instead of rubber.

The bung or plug will be sufficiently resilient to accommodate normal variations in sizes of test tubes or other containers.

We claim:

A bung comprising a one-piece moulding of resilient material of cup shape form open at its upper end and closed at its lower end, said moulding having a closure part adapted to fit the interior open end of a container, a flange part at the outer end of the closure part said flange part being of greater radius than the closure part and an inner part having ribs which engage for a substantial distance the wall of the orifice of the

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container, said inner part between the ribs being of such reduced radial dimension as to be spaced from the container thereby providing for communication between the interior of the container and the exterior atmosphere when the bung is displaced partly out of the orifice of the container while the ribs remain in contact with the interior surface of the orifice, said ribs having a constant radius to fit the container over an axial length at least three times the axial length of said closure part, the resilience of the material of the bung in conjunction with the rib formation being arranged to enable the bung to be displaced partly out of the container by internal pressure without deformation of the ribs and without being pushed completely out of the container and to remain in such position to leave

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said recessed parts out of contact with the container to provide said communication.

JOHN R. CUTTELL.
THOMAS R. ASHTON.

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