Dec. 5, 1950 J. H. BREWER ET AL 2,533,089

PETRI DISH COVER

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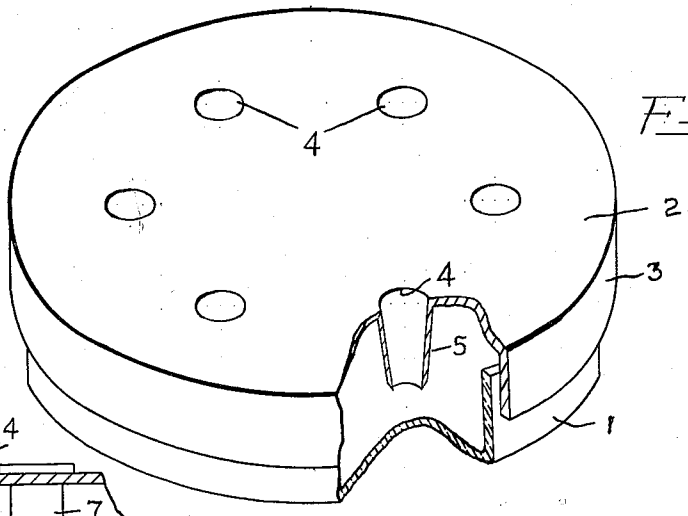


Fig. 1.

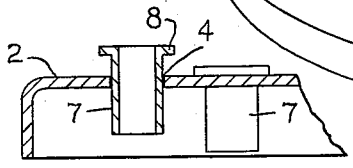


Fig. 4.

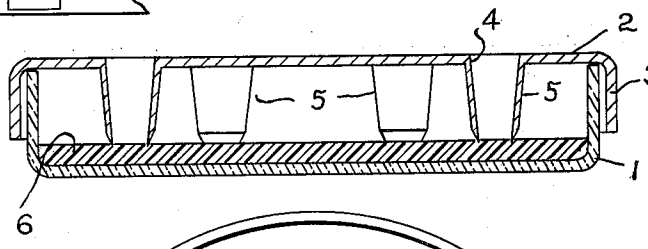


Fig. 2.

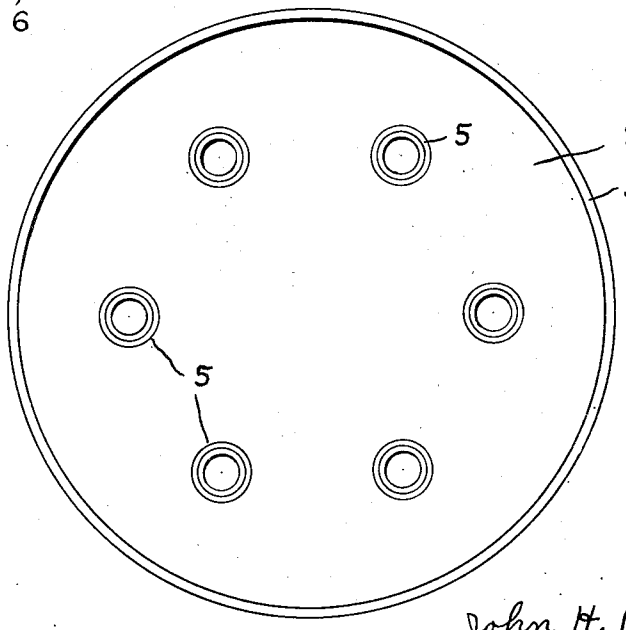


Fig. 3.

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PETRI DISH COVER

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4 Claims. (Cl. 195—139)

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For determining the strength or concentration of growth inhibiting substances such as antibiotics, e. g. penicillin, the customary procedure is to provide a layer of agar nutrient inoculated with a suitable micro-organism in a Petri dish, apply the solution to be tested at a point or area of the agar, incubate and determine the concentration of substance by measuring the size of the area surrounding the point of application of the solution where growth of the micro-organism has been inhibited. Various procedures and devices have been employed for applying the solution to be tested to the inoculated agar. For example, one method is to stand a small tube on its end on the agar and drop the solution to be tested in the tube.

An object of our invention is to facilitate the application of the solution to be tested to the inoculated agar and our invention resides in a novel Petri dish cover provided with one or more openings, usually six, and depending tubes adapted when the cover is placed on a Petri dish containing the inoculated agar to contact the surface of the agar. The solution or solutions to be tested are then dropped or poured into the tube or tubes, the assembly incubated and the inhibited areas measured as usual. A second cover may be placed over the cover having the opening or openings if desired to avoid contamination.

Our invention therefore resides in the provision of a Petri dish cover having one or more openings therein surrounded by depending tubes.

The invention is illustrated in the accompanying drawings in which:

Fig. 1 is a perspective view of a Petri dish and cover with a portion broken away the better to show the arrangement and relative positions of the parts;

Fig. 2 is a central vertical section of a Petri dish and cover with the inoculated agar nutrient in place;

Fig. 3 is a bottom plan view of the cover, and

Fig. 4 is a vertical section of a portion of a modified form of cover.

Referring to Figs. 1, 2 and 3, 1 is the Petri dish, 2 the flat circular portion of the cover, 3 the flange portion of the cover, 4 the openings in the cover, 5 the depending tubes and 6 the inoculated agar.

The cover may be formed of any suitable material, e. g. metal, synthetic resin, glass, or the like, being preferably a non-porous and relatively non-fragile material capable of withstanding sterilization. It may be made in any suitable

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manner, e. g. it may be cast as a unit or the disc 2 and flange 3 may be formed without the openings 4 or the tubes 5 and the openings 4 subsequently provided by drilling and the tubes 5 inserted and secured in any suitable way as by soldering, or welding. Many methods of fabricating the cover will be apparent to persons skilled in the manipulation of the material or materials selected for the construction of the cover. It is suggested, for instance, that the body of the cover may be formed of one material, e. g. synthetic resin, and the tubes of another material, e. g. metal or glass.

The cover 2, 3, aside from the openings 4 and the tubes 5 is of the conventional shape of Petri dish covers. The size of the openings 4 and the size and shape of the tubes 5 may vary widely within the scope of my invention, the only requirement being that the tubes 5 shall be of sufficient length to contact or rest upon the agar. In the preferred form of the invention illustrated the cover is made of a non-corrodable metal such as stainless steel, the tubes are about 5 mm. in diameter at their free or lower ends and are slightly tapered so that the internal diameter at the upper end is about 7 mm. (the drawings are somewhat larger than actual size). The bottom opening of the tube (5 mm.) is the size customarily used in penicillin assay and the slightly larger upper opening facilitates the introduction of the solution to be assayed. It is apparent, however, that the tubes 5 may be of any other desired shape and size, e. g. cylindrical. The walls of the tubes 5 may be sufficiently thin that their lower edges will cut or penetrate into the agar or, as illustrated, the lower ends of the tubes 5 may be sharpened to cutting edges. Or, the tube walls may be thick as illustrated in Figs. 1 and 2 with the lower ends flat as illustrated in Fig. 4 to rest upon but not cut into the agar. In the form illustrated in Figs. 1, 2 and 3, the tubes are integral with the body of the cover, but as stated above, a variety of other constructions may be used, e. g. the tubes 5 might simply be pressed into openings in the body of the cover or they might be more positively secured by being screwthreaded and so secured in screwthreaded openings in the cover.

It will be appreciated that the layer of agar 6 may vary slightly in depth but it will be sufficiently soft that if the tubes 5 have cutting edges they will cut into it under slight pressure. The cover should be fairly accurately made and the tubes of such a length that with a fairly accurately measured supply of the inoculated agar

the tubes will at least firmly engage the surface of the agar or penetrate slightly into it when the body of the cover is forced down so as to rest on the edge of the Petri dish. If the tubes were so short, the Petri dish so deep or the agar filling so thin that the tubes did not contact the agar the solution introduced into the tubes would spread promiscuously over the surface of the agar and spoil the assay.

The form of the invention illustrated in Fig. 4 is designed to avoid the necessity referred to above of accurately determining the depth of the Petri dish, the length of the tubes 5 and the depth of the agar in the Petri dish so that the tubes will make firm contact with or slightly penetrate into the agar. The cover of Fig. 4 includes two features, (1) that the lower ends of the tubes 7 are flat as described above so that they may rest on the agar and (2) that the tubes 7 are slidable through the holes 4 in the circular portion 2 of the cover.

With a cover like that illustrated in Fig. 1 having a plurality of tubes sufficiently long to reach the agar filling regardless of such variations in the depth of the Petri dish and the depth of the agar filling as ordinarily may occur but said tubes having flat ends instead of cutting edges the tubes will rest on the agar whether or not the flat circular portion 2 of the cover rests on the edge of the Petri dish. On the other hand, with the cover structure illustrated in Fig. 4 the tubes 7 may be made sufficiently long that they will make contact with the agar regardless of such variations as ordinarily may occur in the depth of the Petri dish and the depth of the agar filling and due to the fact that the tubes 7 are slidable through the holes 4 in the cover the circular portion 2 of the cover will rest on the edge of the Petri dish.

In the cover illustrated in Fig. 4 the tubes 7 are cylindrical and are made to snugly fit the holes 4 but to be slidable therein. They are provided with the flanges 8 to prevent them from sliding through the openings 4 when the cover is lifted. In this form of the invention the lower ends of the tubes 7 preferably are flat and designed to rest on the agar but they may be thin walled or sharpened as illustrated in Fig. 1 so as to cut more or less into the agar.

We claim:

1. A Petri dish cover comprising a substantially flat circular top portion and a depending integral flange, an opening through said circular portion and a depending open tube surrounding said opening.

2. A Petri dish cover as defined in claim 1 in which the depending tube is tapered from top to bottom and the bottom edge thereof is sharpened to cut into an agar nutrient medium for micro-organisms.

3. A Petri dish cover comprising a circular disc top portion with a depending integral flange, a circular opening through said disc portion and an open tube surrounding and depending from said opening, the edge of the lower end of the tube being flat and adapted to rest upon an agar nutrient medium for micro-organisms.

4. A Petri dish cover comprising a flat circular top portion with an integral depending flange, an opening through said cover and an open cylindrical tube extending downwardly through said opening and slidable therein.

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