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DISPOSABLE CULTURING DEVICE

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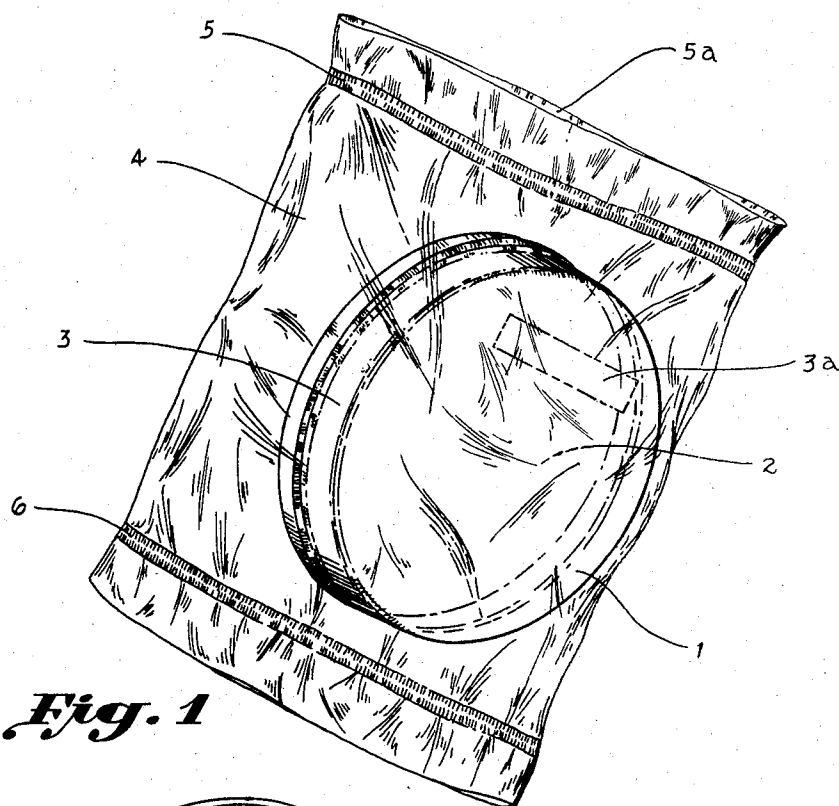


Fig. 1

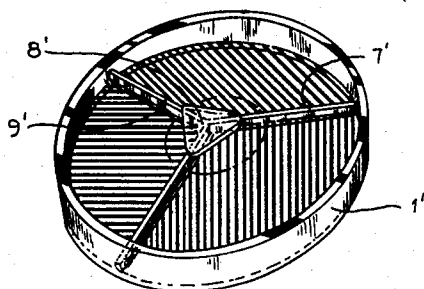


Fig. 2

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1

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DISPOSABLE CULTURING DEVICE

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5 Claims. (Cl. 195—139)

This invention relates to a disposable culturing device and, more particularly, to a disposable culturing device provided in packaged form.

For many years, the most widely-used Petri dish culturing device was constructed of glass. This dish was essentially an open-top cylinder with the diameter of the cylinder substantially greater than the height. When a particular organism was desired to be cultured, material capable of supporting growth was placed in the shallow vessel and inoculated with the organism. In order that the organism would develop without outside help or hindrance, it was essential that the dish and the growth medium be completely sterile. This included autoclaving, soaking, scraping, descaling, washing, rinsing, and baking. In the past, the need to render the device sterile as well as its breakable character made use of glass Petri dishes quite time-consuming and burdensome.

By the device of my invention I have eliminated the burdensome and time-consuming chores of washing, sterilizing, and careful handling to prevent breakage that has been associated with glass Petri dishes. Essentially, my invention includes the provision of a disposable cylinder of the Petri-dish design constructed of a thermoplastic material in which the growth medium has already been placed. The dish is provided with a loose-fitting cover and the assembly so achieved is then housed and sealed in a sterile, flexible transparent envelope.

My invention will be explained in conjunction with the accompanying drawing in which Fig. 1 shows a perspective view of the packaged unit, and Fig. 2 shows a variation of the Petri dish contained therein.

Referring now to the drawing, the numeral 1 indicates a Petri dish which, as described above, is a transparent cylinder constructed of styrene plastic material and having a much larger diameter than height. A conventional Petri dish may have a diameter of about 3 inches and a height of 1/2 inch. Contained within Petri dish 1 is a culture medium 2 such as a combination of blood and agar wherein 10% defibrinated sheep blood in a special nutrient base is combined with agar.

The numeral 3 indicates a cover for Petri dish 1 which has substantially the same structure as Petri dish 1 but is somewhat larger in diameter so as to fit loosely over the top of Petri dish 1.

The assembly achieved by Petri dish 1 and cover 3 is housed in an envelope 4 which is constructed by heat-sealing the ends as at 5 and 6 of a length of polyethylene tubing. The envelope housing is, therefore, flexible and transparent, as well as substantially impervious to penetration by microorganisms. In addition, the envelope preserves the "freshness" of the medium by retaining its associated moisture within the envelope. This effectively extends the storage life of the device and/or its period of useability, an important factor in the provision of disposable laboratory equipment. Should such equipment, especially the nutrient medium in this case, become unuseable as in becoming stale, the cost advantage arising

2

from labor-savings through employing disposable equipment is lost.

In addition, the envelope 4 provides the important function of maintaining the top 3 in place over Petri dish 1. This protects the culture medium, too, from physical damage as might occur upon inadvertent displacement of top 3.

The combination of the disposable Petri dish herein described with its protective envelope renders the entire device virtually unbreakable as contrasted to the fairly readily shatterable glass Petri dish previously employed.

A relatively inexpensive, light-weight culturing device can be provided by filling sterile dishes with a sterile culture medium at the proper temperature and under aseptic conditions. The dish, thus filed, is equipped with a sterile cover and placed within a sterile envelope which is immediately heat-sealed closed to preserve sterility of the unit. This eliminates the above-mentioned burdensome operations of autoclaving, soaking, scraping, descaling, washing, rinsing, and baking that were necessary to prepare glass Petri dishes. The device as presented also provides a sterile unit that was difficult to achieve in the previous practice where the user had to prepare his own culturing medium. Not only is the unit sterile, but it is immediately ready for use merely by opening one of the ends of envelope 4 as at 5a.

The thin layer of culture medium is found to cling tightly to the plastic dish and tends to remain in situ even when the resilient dish flexes under strain during travel conditions. Thus when the medium is streaked with an organism, the medium, together with the resilient dish, retains the organism in position for growth and without dislodgement during shipment and handling. At the same time, the heat-sealed polyethylene envelope protects the medium from contact with exterior microorganisms while also preserving the tacky or adhesive culture medium against change as might otherwise occur through evaporation.

After the device has been inoculated, it is possible to reseal envelope 4, as at 5 and thereby preserve the specimen in a moist environment, free from contamination by undesirable microorganisms. In addition, the danger of accidental contamination of other equipment during storage and handling is substantially prevented and the device herein described effects the preservation and protection of valuable specimens.

The device then can be shipped by mail for consideration elsewhere and after proper findings have been derived from the growth, the entire device can be destroyed. This eliminates the danger of contamination of other devices or persons with the inoculated microorganism.

My invention has the additional advantage of supplying the market with a uniform device so that many users in different portions of the country can duplicate results by culturing a microorganism in an identical environment.

It is important to note that the provision of envelope 4 of such a size and construction as to contain the Petri dish-cover assembly in such a manner as to prevent inadvertent dislodgement of cover 3 which is of special interest when the medium has been "streaked" with an organism and then the device shipped to another point for consideration. By being able to retain cover 3 in position on dish 1, envelope 4 prevents a medium 2 from breaking up or slipping out of the bottom of dish 1.

Fig. 2 shows a modification of my invention in which the Petri dish 1' is provided with divider 7' permitting filling dish 1' with a plurality of culture media as indicated by the numerals 2'. In the particular embodiment shown, divider 7' has three radially-extending arms,

3

united at their point of juncture in the axis of dish 1', and rigidified by stiffening plate 8'. Plate 8' also provides convenient locations for marking to specifically identify the medium contained within a pair of divider arms 9'.

Contained within the three chambers thus achieved are three different culture media, especially useful in the isolation of enteric pathogens. A specific example of such media, designed for culturing stool specimens, would include Mac Conkey Agar, Salmonella-Shigella Agar, and Eosin Methylene Blue Agar.

The dish portion of my invention as pictured in Fig. 2 can be inexpensively achieved by bonding, as with a styrene monomer bonding agent, a styrene divider to the dish, which results in a solid, leak-proof compartmented dish.

The foregoing detailed description has been given for clearness of understanding only and no unnecessary limitations are to be inferred therefrom.

I claim:

1. In a disposable culturing device, a transparent, resilient Petri dish, said dish being generally in the nature of a shallow cylinder, a cover on said dish constructed of like material and having the same shape but of a greater diameter to fit loosely thereon, a layer of culture medium adhesively bonded to the inner bottom of said dish, and a microorganism-impenetrable, transparent, flexible, heat-sealed plastic envelope about the assembled dish and cover, said envelope being sized to permit ready insertion and removal of the assembly and to prevent disassembly when the assembly is sealed within said envelope.

2. The structure of claim 1, in which the said envelope is constructed of a length of polyethylene tubing with the ends heat-sealed to provide a generally pillow-shaped container, the diameter of said tubing being great enough to accommodate the assembled dish and cover but in-

4

sufficient to accommodate the dish and cover when the same are in spaced-apart relation.

3. The structure of claim 1 in which said tubing is sufficiently longer than said assembly to permit resealing after said dish is inoculated.

4. In a disposable culturing device, a transparent, resilient, plastic Petri dish having the shape of a shallow cylinder, a cover on said dish constructed of the same plastic material and having the same shape but having a greater diameter so as to fit loosely on said dish, a layer of culture medium adhesively bonded to the inner bottom of said dish, said dish having integrated with the interior thereof divider means extending from wall to wall thereof and providing a plurality of isolated medium-containing compartments, and a microorganism-impenetrable, transparent, flexible, heat-sealed plastic envelope about the assembled dish and cover, said envelope being sized to permit ready insertion and removal of the assembled dish and cover and to prevent disassembly when the assembly is sealed within said envelope.

5. The structure of claim 4, in which said divider means comprises a plurality of radially-extending arms mounted in said dish, each of the compartments provided thereby containing a different culture medium.

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