

[54] CULTURE COLLECTING PACKAGE
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3,783,104 1/1974 Henshilwood et al. 195/104
 3,783,106 1/1974 Henshilwood 195/139
 3,835,834 9/1974 Brown et al. 128/2 W

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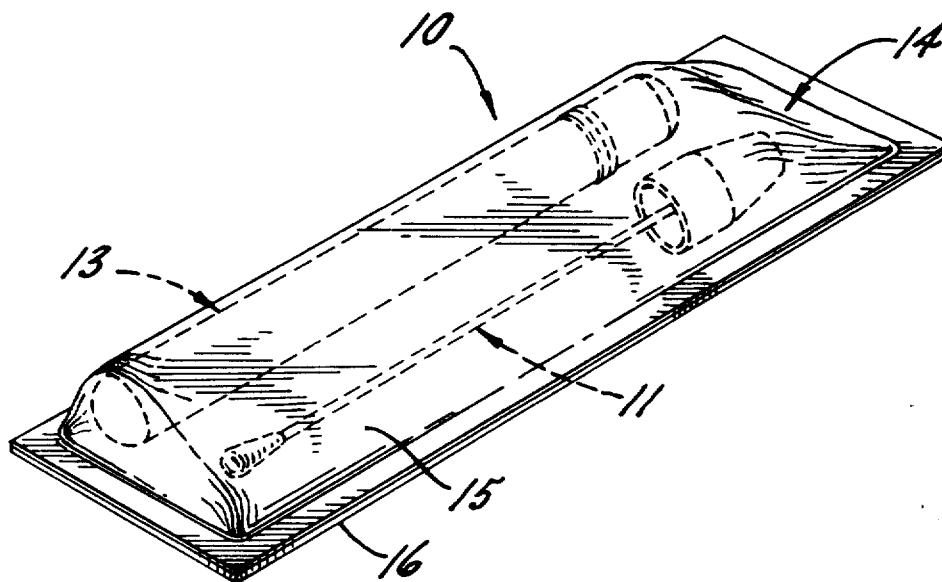
[52] U.S. Cl. 195/139; 128/2 W; 195/127
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 [58] Field of Search 195/127, 139, 109;
 23/230 B; 128/2 W

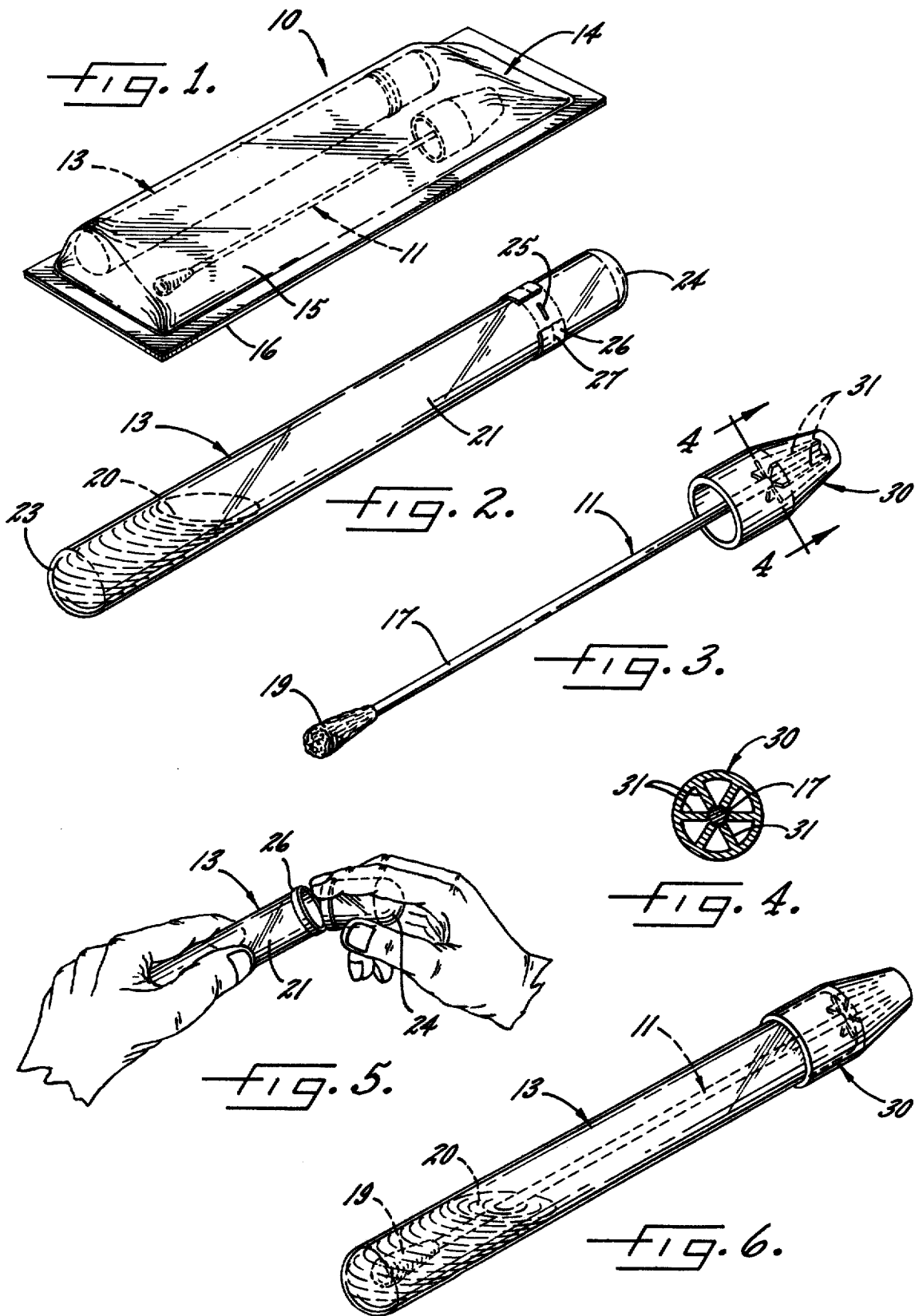
[57] ABSTRACT

A culture collecting swab and a sealed glass ampoule are packaged side-by-side within an envelope. After a culture has been collected on the swab, one end portion of the ampoule is broken off to open the ampoule and permit insertion of the swab into the ampoule and into contact with culture-sustaining media contained in the ampoule.

[56] **References Cited**
 UNITED STATES PATENTS
 3,450,129 6/1969 Avery et al. 128/2
 3,579,303 5/1971 Pickering 23/230
 3,773,035 11/1973 Aronoff et al. 128/2 W

5 Claims, 6 Drawing Figures





CULTURE COLLECTING PACKAGE

BACKGROUND OF THE INVENTION

This invention relates to devices used by physicians and the like for collecting a culture from various areas of a patient's body and for keeping the culture alive for a period of time after it has been collected. Such devices customarily include an absorbent swab upon which the culture is collected by swabbing a particular body area, and further include a container having its own supply of culture-sustaining media. After the culture has been collected, the swab is placed into the container and in contact with the media so as to keep the culture alive until it is subsequently tested. Devices of this general type are disclosed in Pickering U.S. Pat. No. 3,579,303; Aronoff, et al., U.S. Pat. No. 3,773,035; Henshilwood, et al., U.S. Pat. No. 3,783,104 and Henshilwood U.S. Pat. No. 3,783,106.

One of the most commercially successful culture collecting devices is of the type disclosed in Avery, et al., U.S. Pat. No. 3,450,129. Such a device includes a flexible outer tube within which is retained a frangible glass ampoule having a liquid culture-sustaining media sealed therein. After a culture has been collected on a swab, the latter is placed into the tube and the tube is squeezed to break the ampoule and release the liquid. The liquid moistens an absorbent plug which is disposed within the tube in engagement with the tip of the swab so as to keep the latter moist until the culture is tested.

A large part of the success of the Avery, et al., culture collecting device is attributable to the fact that the culture-sustaining media is originally sealed within an ampoule made of glass. The glass ampoule can be easily and effectively sterilized with steam and it does not react either with the culture-sustaining media or the culture.

SUMMARY OF THE INVENTION

One of the primary aims of the present invention is to provide a new and improved culture collecting device which retains all of the basic advantages of the prior Avery, et al., device while being simpler in construction, easier to use, and more readily adaptable to collect and sustain different types of cultures.

A further object is to provide a comparatively simple and inexpensive culture collecting device which may employ either a liquid or solid culture-sustaining media and which is capable of maintaining the culture in a substantially oxygen-free atmosphere.

A more detailed object is to provide a culture collecting device having a unique glass ampoule which not only holds the culture-sustaining media but which also serves as a container for the swab after the culture has been taken. By providing an ampoule of this type, the need for an outer tube and an absorbent plug such as used in the Avery, et al., device is eliminated completely and yet the advantages accruing from the use of a glass ampoule are retained.

The invention also resides in the novel construction of the ampoule to facilitate the gaining of access to the culture-sustaining media.

These and other objects and advantages of the present invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a new and improved culture collecting package embodying the novel features of the present invention.

FIG. 2 is a perspective view of the ampoule.

FIG. 3 is a perspective view of the swab.

FIG. 4 is a cross-section taken along the line 4—4 of FIG. 3.

FIG. 5 is a perspective view showing the ampoule being opened to enable access to the culture-sustaining media.

FIG. 6 is a perspective view showing the swab telescoped with the ampoule.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

As shown in the drawings for purposes of illustration, the invention is embodied in a package 10 whose components are used for collecting a bacterial specimen or culture from a patient's body and for maintaining the culture in a live condition until such time as it can be tested. The present invention contemplates the provision of a culture collecting package having new and improved components which are simpler, less expensive and easier to use than those available heretofore and which are capable of maintaining the collected culture in either a normal or an oxygen-free atmosphere while preserving the culture in either a liquid or solid culture-sustaining media.

More specifically, the package 10 includes a swab 11 and an ampoule 13 which initially are disposed side-by-side within an elongated and substantially flat envelope 14. The latter comprises a flexible transparent blister 15 which is releasably sealed to a peel-away backing 16. After the swab and the ampoule have been sealed in the envelope, the envelope may be autoclaved in order to sterilize the swab and the outside of the ampoule. The swab and the ampoule may be removed from the envelope by peeling away one end portion of the backing 16 and taking the swab and ampoule out of the opened end of the envelope.

The swab 11 comprises an elongated stem 17 (FIG. 3) made of plastic and having an absorbent swabbing tip 19 such as cotton on one end thereof. After a culture has been collected on the tip, it is necessary to place the tip in contact with a culture-sustaining media 20 in order to keep the culture in a live condition until it reaches a laboratory for testing.

In carrying out the invention, the culture-sustaining media 20 is originally sealed within the ampoule 13 which advantageously is made of glass and which serves as a container for the swab 11 after the culture has been collected. As shown in FIG. 2, the ampoule is of one-piece construction and includes an elongated tubular body 21 having a circular cross-section and having ends which are defined by generally hemi-spherical domes 23 and 24. The culture-sustaining media 20 is disposed within one end portion of the ampoule and, in this instance, is shown as being a liquid such as modified Stuart's transport media. The culture-sustaining media can, however, be a solid substance such as an agar slant which may be located in the end portion of the ampoule either with or without a charcoal filtering substance or other filtering agent. Some cultures can survive and grow only in an oxygen-free atmosphere and thus, in some instances, the ampoule also will be

filled with a non-oxidizing and preferably heavier-than-air gas such as nitrogen.

After the culture has been collected on the swabbing tip 19, the ampoule 13 is opened to permit the tip to be placed in contact with the media 20. For this purpose, a circumferentially extending score line 25 (FIG. 2) is scratched in the outside of the ampoule body 21 adjacent the dome 24, the score line being comparatively short and extending only part way around the circumference of the body. When the ampoule is held as shown in FIG. 5, one end portion of the ampoule may be snapped cleanly away from the other end portion at the break point defined by the short score line 25. After the ampoule has been thus opened, the broken away end portion is discarded and the swab stem 17 is inserted into the longer end portion to place the tip 19 into contact with the media 20 (see FIG. 6). To inform the user as to where to break the ampoule, a band of tape 26 (FIG. 2) with printed instructions may be wrapped around the body 21, the tape having end portions overlapping the end portions of the ampoule and having a perforated tear line 27 alined with the score line 25.

As an incident to inserting the swab stem 17 into the ampoule 13, the open end of the ampoule is closed to keep contaminants out of the ampoule and to prevent the nitrogen or the like from escaping from the ampoule. For this purpose, a closure or cap 30 (FIG. 3) is joined to the end of the stem 17 opposite the tip 19 and is sized to telescope tightly over the open end portion of the ampoule. The cap is made of plastic and includes a series of axially extending ribs 31 (FIG. 4) which are spaced circumferentially around the interior of the cap and which tightly grip the swab stem 17. If the cap is placed quickly on the ampoule just after the latter has been opened, the relatively heavy nitrogen will not escape from the ampoule and no substantial amount of air will enter the ampoule. After being closed by the cap 30, the ampoule 11 may be replaced in the envelope 14 and delivered to the laboratory for testing of the culture on the swab tip 19.

Formation of the ampoule 11 is effected much in the same way as the ampoule disclosed in the aforementioned Avery, et al., patent. That is, one end portion of the body 21 is flamed over to form the dome 23 and then the culture-sustaining media 20 is inserted into the ampoule along with a non-oxidizing gas if the latter is desired. Thereafter, the other end portion of the body is flamed over to form the dome 24 and seal the media within the ampoule. Filling and sealing of the ampoule are effected under sterile conditions and thus the interior of the ampoule is sterile when the ampoule is packaged in the envelope 14.

From the foregoing, it will be apparent that the present invention brings to the art a new and improved culture collecting device which possesses the basic advantages of the commercially successful Avery, et al., device presently being marketed and provides several additional advantages. That is, the new device does not require an outer plastic tube nor an absorbent plug. There is no danger of glass fragments from a crushed

ampoule collecting on the swab tip or piercing through an outer tube. The new device is capable of using both solid and liquid culture-sustaining media and of maintaining the culture in an oxygen-free atmosphere. Moreover, the cap 30 may be made shorter since the swab 11 assumes only a single position within the ampoule 13 rather than a pre-collecting position and a different post-collecting position as in the case of the swab within the outer tube of the prior Avery, et al., device.

I claim as my invention:

1. A culture collecting package, said package including a sealed one-piece ampoule made of glass, said ampoule having an elongated tubular body of circular cross-section and having domed ends, a culture-sustaining media contained within said ampoule, and a circumferentially extending score line formed in said body whereby one end portion of the ampoule may be broken away from the other end portion along said score line to allow access to said media, said package further including a swab comprising an elongated stem, a swabbing tip on one end of said stem, and a closure on the other end of said stem and sized to telescope with and close the open end of said other end portion of said ampoule after a culture has been collected on said tip and the latter has been placed in contact with said media.

2. A culture collecting package as defined in claim 1 including an elongated envelope, said ampoule and said swab being disposed side-by-side within said envelope prior to initial opening of the envelope.

3. A culture collecting package as defined in claim 1 in which said ampoule is filled with a gas which is heavier than air.

4. A culture collecting package as defined in claim 1 in which said score line extends only part way around the circumference of said body, and further including a flexible band wrapped around said body and covering said score line, one end portion of said band extending around one end portion of said ampoule and the other end portion of said band extending around the other end portion of said ampoule, at least one end portion of said band being secured to the corresponding end portion of said ampoule, and a circumferentially extending tear line formed around said band and alined axially with said score line.

5. A culture collecting package, said package including a sealed one-piece ampoule, said ampoule comprising an elongated tubular body having closed ends, a culture-sustaining media contained within said ampoule, and a circumferentially extending score line formed in said body to enable breaking of one end portion of the ampoule away from the other end portion to allow access to said media, said package further including a swab comprising an elongated stem, a swabbing tip on one end of said stem, and a closure for closing the open end of said other end portion of said ampoule after a culture has been collected on said tip and the latter has been placed in said other end portion in contact with said media.

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