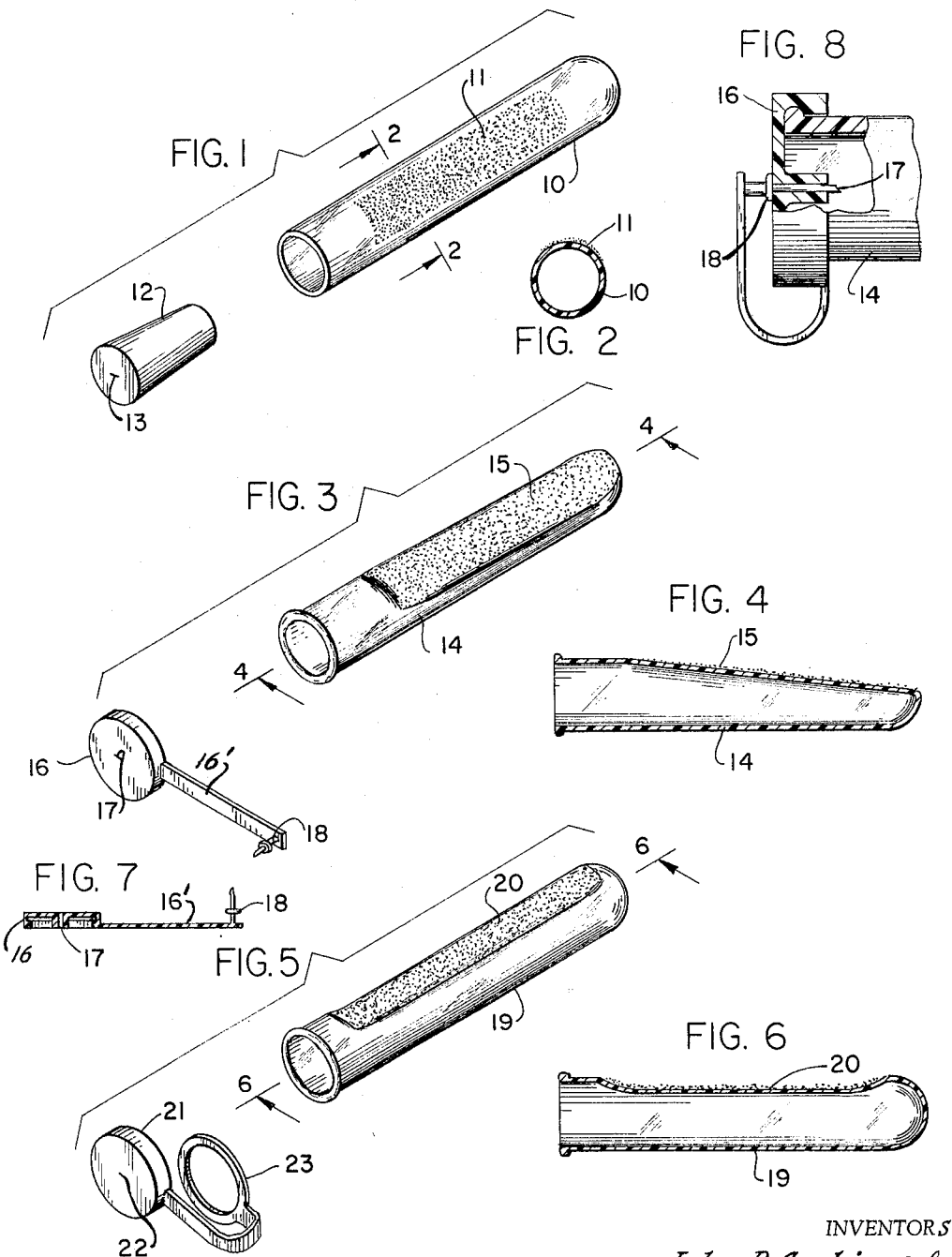


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FLEXIBLE PLASTIC VIAL
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FLEXIBLE PLASTIC VIAL

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5 Claims. (Cl. 215-7)

This invention relates to containers or receptacles of various kinds including a plastic container and closure therefor intended for various uses among which are the storing and transporting of medical specimens such as blood.

The invention relates particularly to an inexpensive, unbreakable plastic vial or container for use in obtaining or receiving samples of blood and other fluids from farm animals and herds for purposes of diagnosis and subsequent treatment.

The sampling of herds by veterinarians and herd owners has entailed the preparation of glass tubes, the fitting thereto of suitable closures, and as specimens are obtained the identification thereof by tagging or labeling. In addition there is the physical work of identifying and assembling of the animals plus the actual withdrawal of the sample. These steps are time consuming and therefore expensive. The glass tubes are relatively expensive necessitating their reuse which further entails the washing, sterilization and other handling thereof. In the case of breakage of a glass tube during handling prior to analyzing the contents it is necessary to spend considerable time and money to obtain a new sample by repeating the aforementioned steps.

It is an object of this invention to provide an unbreakable plastic sampling vial to eliminate the expense of resampling of animals in case of breakage.

Another object of this invention is to provide an inexpensive specimen vial which can be discarded after use thereby eliminating the cost of washing, sterilization, handling and stoppering of a glass tube.

A further object of this invention is to provide a vial sufficiently flexible so as to allow air to escape by pressing on the vial thereby permitting the fluid sample to enter.

A further object of this invention is to provide a plastic specimen vial equipped with a plastic closure having an area of a character and composition readily to admit the introduction therethrough of a long slender tubular needle, thus to eliminate the cost of supplying and installing rubber stoppers in glass tubes.

A further object of this invention is to provide a plastic vial a portion of the exterior surface of which is frosted to provide a suitable writing surface so that pertinent identifying information can be written thereon thereby eliminating the need for separate labels.

Other objects and advantages of the invention will be apparent from the following description taken in conjunction with the accompanying drawing wherein:

FIG. 1 is an exploded view of a plastic vial with one type of closure in the form of a plug or stopper;

FIG. 2, a transverse section along the line 2-2 of FIG. 1;

FIG. 3, an exploded view of a plastic indicia-receiving vial or container illustrating a snap-on type of hermetic seal or closure with a needle-receiving area;

FIG. 4, a longitudinal section along the line 4-4 of FIG. 3;

FIG. 5, an exploded view of a plastic indicia-receiving vial with a snap-on closure and retaining ring connected by a strap to such closure;

FIG. 6, a longitudinal section along the line 6-6 of FIG. 5;

FIG. 7, a longitudinal section through the closure of FIG. 3; and

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FIG. 8, an enlarged fragmentary detail partly in section of the open end of the tube and closure illustrating the needle received in a self-sealing opening.

Briefly stated the invention is a plastic vial or container which can be of any desired shape with closures which likewise can be of different configurations and provided with areas of a character or combination readily to permit the introduction therethrough of a long slender tube or needle on the order of a hypodermic needle for the taking of blood or other specimens from animals and the introduction of such specimen into the vial.

With continued reference to the drawing, FIGS. 1 and 2 illustrate by way of one example a plastic vial 10 of generally cylindrical shape with one end closed in a semi-spherical contour. One area 11 of the cylindrical portion may be frosted for receiving identification information of any desired character, for example the particular animal, the date, etc., and a stopper type plastic closure 12 provided with an aperture 13 to receive a long slender tube or hypodermic needle.

FIGS. 3 and 4 disclose an alternative shape of plastic vial 14 with a portion 15 flattened to prevent rolling and frosted for receiving pertinent data or information; also disclosed is a plastic snap-on type closure 16 with a needle-receiving area or opening 17 and a small plug 18 for sealing the aperture made by the tube or needle. A strap 16' connects the plug 18 with the cap 16.

FIGS. 5 and 6 disclose another shape of plastic vial 19 with a depressed protected writing area 20 frosted to receive pertinent information. Also shown is a plastic snap-on type closure 21 with a needle-piercing area 22 and with a ring-type retainer 23.

FIG. 7 is a cross section of closure 16 of FIG. 3 showing the thickened needle-receiving area after the needle has been inserted and removed and the plug 18 for sealing the hole.

FIG. 8 is an enlarged view of the end of the vial 14 and the closure 16 illustrating the use of the plug 18 to close the opening 17 produced by the needle and also the plug or seal 18 formed by snap-on closure 16 and the vial 14.

In operation the herd owner, veterinarian, or other person, desiring to extract blood from an animal for use as a specimen introduces the long slender tube or hypodermic needle into the vein or blood vessel of the animal and upon withdrawal of the tube or hypodermic needle from the vein of the animal such tube or needle is inserted through the closure into the plastic tube. In the event the plastic vial contains air sufficient to prevent the introduction of the specimen, due to the flexible nature of the plastic vial it may be squeezed or compressed to discharge the air and lower the internal pressure. Whereupon the tendency of the vial to return to normal will assist in the introduction of the specimen into the vial.

Where a stopper 12 is employed, the opening 13 normally will be closed except when the needle is inserted therethrough. With the closure in the form of either of the caps 16 or 22, an opening may be provided in the area 17 or 22 by the needle or previous thereto with such opening closed except at the time the needle is within the same. If desired to insure sealing of the aperture through the closure, the aperture sealing plug 18 may be provided. Necessary date or identification information may be noted on the frosted areas 11, 15 or 20 of the external surface of the vial.

One alternative form of vial 14 is of a configuration to prevent rolling off a table or work area and also to maintain the information-providing frosted area in a substantially upright and visible position for easier identification.

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It will be obvious to those skilled in the art that various changes may be made in the invention without departing from the spirit and scope thereof and therefore the invention is not limited by that which is illustrated in the drawing and described in the specification but only as indicated in the accompanying claims.

What is claimed is:

1. An unbreakable disposable flexible plastic specimen vial of generally cylindrical shape with one end rounded and closed and the other end open for the receipt of a specimen, said vial having a flattened portion along its length to resist rolling, said flattened portion being frosted to provide a relatively broad plane surface for the receipt of identifying information or indicia, a flexible plastic tight fitting closure on said vial having an area through which a needle can be inserted for the introduction of a specimen into the vial, and means to seal the opening produced by the needle upon the withdrawal of said needle.

2. The structure of claim 1 in which said last mentioned means includes a plug insertable in the opening formed by said needle.

3. An unbreakable flexible plastic sampling vial of substantially cylindrical shape for receiving medical specimens, one side of which vial is flattened to prevent rolling and frosted to provide a relatively flat writing surface, said vial being provided with a flexible plastic closure of the snap-on type, such closure being provided with a needle-receiving area and a means for sealing said area.

4. A flexible plastic vial for receiving medical speci-

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mens, said vial having one area inset and frosted to provide a protected writing area, a flexible plastic closure on said vial, said closure having a needle-receiving aperture, a plug, a retention member connecting said closure and plug, whereby said plug may be located in position to close said needle opening or not.

5. A flexible plastic vial of a substantially cylindrical shape for receiving medical specimens, one side of which is flattened to prevent rolling and frosted to provide a relatively flat writing surface.

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