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2,808,926

SINGLE DOSE VIAL ASSEMBLY OF ANIMAL SEMEN

Filed Nov. 10, 1954

2 Sheets-Sheet 1

Fig. 1.

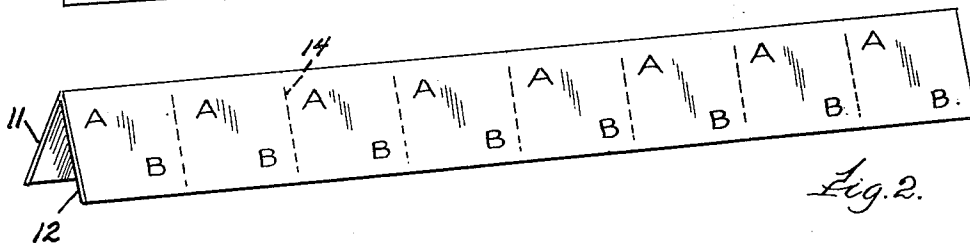
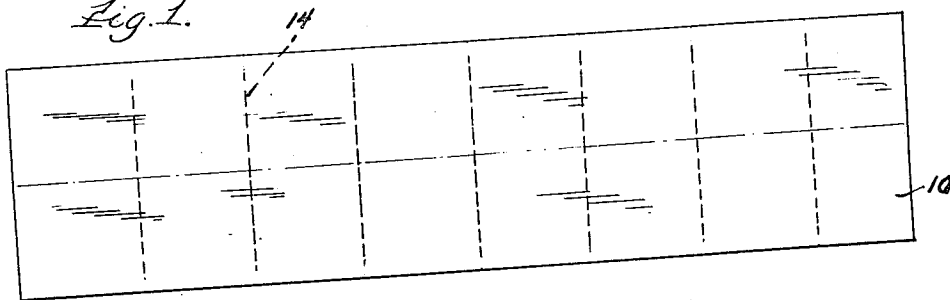


Fig. 2.

Fig. 3.

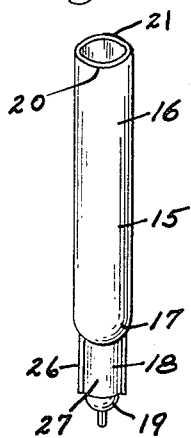


Fig. 6.

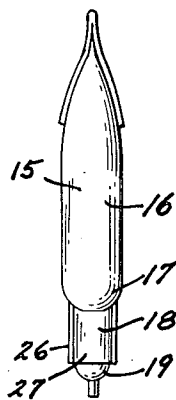


Fig. 7.

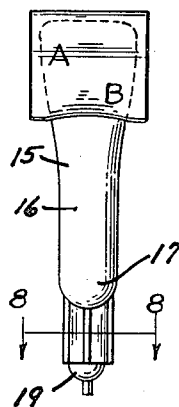
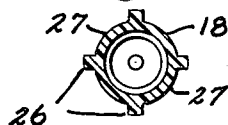


Fig. 8.



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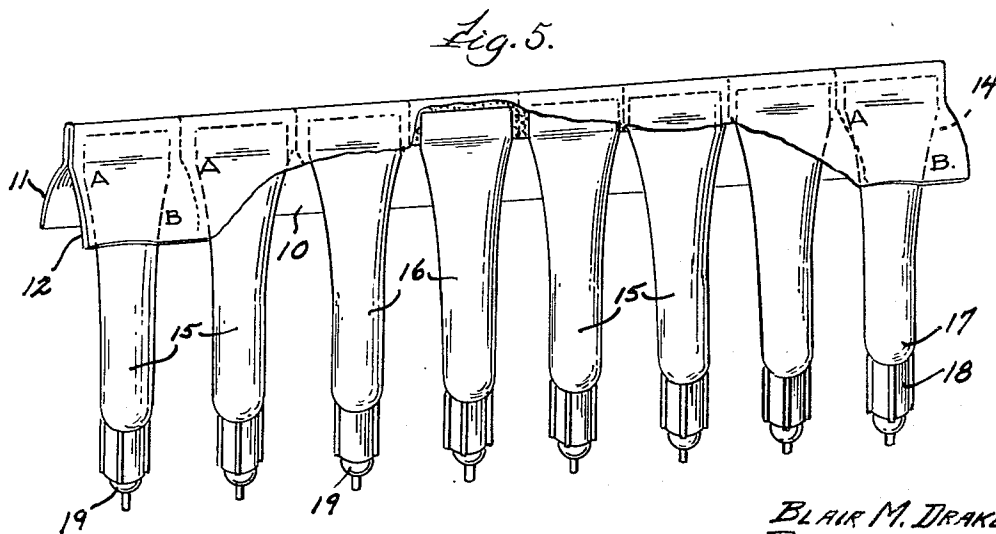
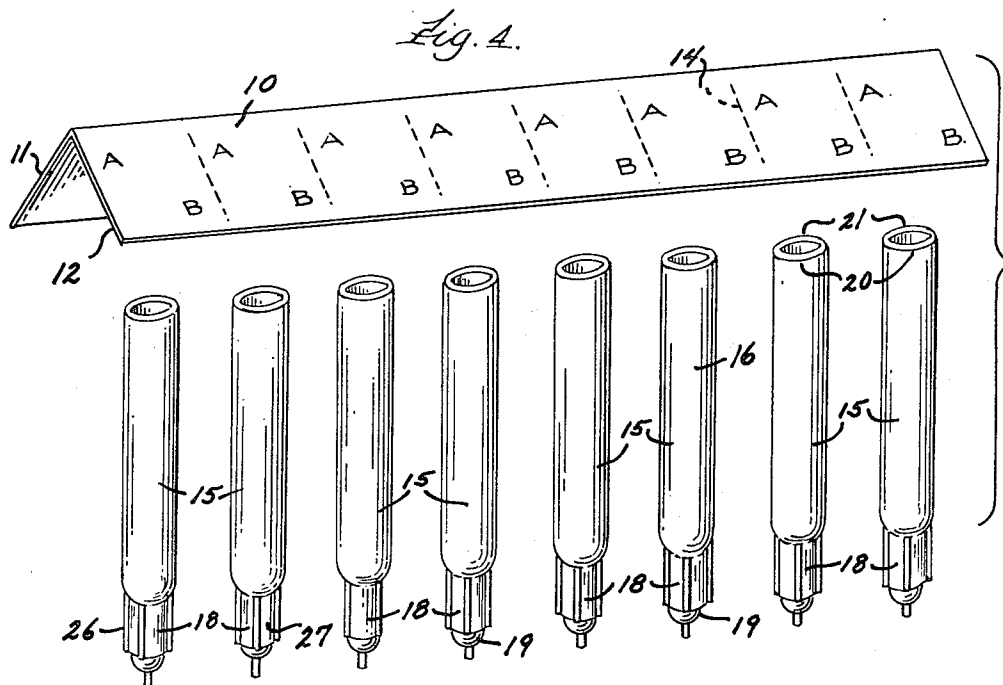
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1

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SINGLE DOSE VIAL ASSEMBLY OF ANIMAL SEMEN

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Application November 10, 1954, Serial No. 468,077

1 Claim. (Cl. 206—56)

This invention relates to a new and useful disposable inseminating vial for freezing, protecting, storing and/or shipping of semen prior to distribution and use, so that after the contents of said vial have been thawed and expelled therefrom, the vial may be discarded. In the preferred form, the vials are constructed and adapted to be filled and sealed and connected together in a long continuous series so that they may be labeled and stored in multiples, all of a series containing the same type semen.

It is a general object of the invention to provide an improved construction of series-connected, single-dosage, single-use, throw-away type vials so that they may be easily detached one after another from the series when the semen is to be used.

A further object of the invention is to provide a series of connected, single-dosage, throw-away type vials of the class mentioned having an improved arrangement for sealing and connecting them together in the series, each vial, when detached, having its own complete label attached thereto, said label providing space for advertising or other printed matter, and said label forming an insulation cover for the top end of each vial.

The invention relates particularly to a novel construction and arrangement of parts to facilitate the use of perforated labels for the sealing and labeling of vials filled with a metered dosage of semen; said labels being in strip form and folded as an inverted V along a center line, so that the strip may rest on, be guided by, and secure a series of vials together, by attaching itself to the opposite sides of said vials.

A still further object of the invention is to provide an improved construction of series-connected vials having a discharge end formed and suitable to have its tip end severed therefrom leaving a fluted collar to provide easy assembly with an inseminating tube; the tail end of the vial for affixing the label when it is closed and sealed.

The term "single-dosage" is used herein in a broad sense as referring to any contained material present in a predetermined or metered amount to be substantially totally expelled for a single use purpose. While the provision of a single-dosage dispenser is among the more important objects of the invention, the invention can also be used for storage of semen which has been hermetically, bacterially or sanitarially sealed.

The present invention provides a cheap and effective single-dosage vial for semen, and the like, which is effectively sealed until used, the tip end, or discharge end, being easily severed just prior to assembly with an inseminating tube.

It is also an object of the invention to provide a method of the character indicated wherein the seal of the vials arranged in series is rendered invisible by the use of a connecting strip, the seal being strong, durable, and highly efficient in its practical application, and yet the connecting strip is quickly and easily broken to form individual single-dose vials properly sealed and labeled.

Other objects and advantages of the invention will be in part pointed out in the following detailed description

2

of certain illustrative but preferred embodiments of the invention, and will be in part obvious as the disclosure proceeds.

The invention accordingly comprises the features of construction, combination of elements and arrangement, which will be exemplified in the construction hereinafter set forth and the scope of the application which will be indicated in the claim.

For a more comprehensive disclosure of the nature, objects and advantages of the invention, reference is had to the following detailed description of the illustrative embodiments, and to the accompanying drawings in which:

Figure 1 is a perspective view of a short section of a strip of foldable material suitable for forming a plurality of closure flaps and labels therefrom.

Figure 2 is a perspective view of the short strip shown in Figure 1 after it is folded along the center line thereof, the strip having perforations, or severance lines, and printing, arranged thereon to provide a plurality of labels.

Figure 3 is a perspective view of a desirable type plastic vial embodied in this invention, before it is filled with semen and hermetically sealed.

Figure 4 is a diagrammatic illustration of the arrangement of a plurality of vials filled with semen and a strip of foldable material for applying said folded strip of foldable material over the top of said vials so they may be sealed together as a unit.

Figure 5 is a perspective view of the parts described in Figure 4 after they have been sealed together, the strip of foldable material broken away in sections to more clearly show the sealed vials.

Figure 6 is an end view of a single vial hermetically sealed and with the label sealed to the tail portion thereof.

Figure 7 is a front view of the vial and label shown in Figure 6.

Figure 8 shows an enlarged section of the fluted collar taken on line 8—8 of Figure 7 looking in the direction of the arrows.

Before beginning a detailed description of the drawings, a word might be in order regarding the materials employed in the manufacture of the vials and labels contemplated by this invention. The vial is formed of a pliable, but substantially nonstretchable, thermoplastic material which can be sealed by heat and pressure when applied thereto. I have found that paper, or the like, which can be printed and perforated with severance lines, is suitable as a strip-foldable material. Neither of these materials need be coated with an adhesive because the folding together of the top portions of the vials, by clamping the strip of paper thereover and applying heat and pressure simultaneously, results in sealing of said top portions of said vials together and also seals said strip of paper to the outer top portions of the vials, forming a label assembled therewith.

This invention can best be described by the sequence of manufacture by views of Figures 1 through 5.

Figure 1 illustrates our preferred form of foldable strip material suitable to have a plurality of labels made therefrom, as above described. Said strip of material consists of a main body blank, indicated at 10. In Figure 2, the edges of the strip 10 are turned downwardly to form an inverted V by any desired means, forming sides 11 and 12. Said strip 10 is provided with transverse weakened severance lines 14 positioned in alignment and in accordance with the distance between vials to be arranged therewith. These severance lines 14 may be formed by perforating, scoring, creasing, etc., so that the connecting strip may be severed along these lines into individual vial closure flaps and labels without employment of a severing, or cutting, implement, while, at the same time, the weakening is not sufficient to interfere with the vial attaching function. The strip may be printed between said sever-

3

ance lines to indicate the contents of the vial to which it is to be attached, the amount, the name of the supplier or packager, the directions for using, and/or other pertinent information. Said printing is represented by the letters A and B in the drawings.

As shown in Figure 3, the vial is indicated at 15 having a tubular body portion 16, shoulder 17 at the base thereof with a fluted tubular collar portion 18 closed at its lower end by a hemisphere-shaped portion 19. The upper end of said vial 15 is shown open with cylindrical front wall portion 20 and rear wall portion 21. The vial is preferably transparent, or substantially transparent, as is shown in Figure 3, before being filled with semen, or the like.

As shown in Figure 4, a plurality of vials are arranged in a straight line and suitably spaced by any suitable means. Strip 10 is positioned above said vials 15 with its sides 11 and 12 turned downwardly so said sides may be pressed into contact with the front and rear wall sections 20 and 21 of said vials 15 after the vials are filled and ready to be hermetically sealed. The vials may be filled in any suitable, or well known, manner. For instance, the filling material may be dispensed from measuring instruments such as a syringe, a pipette, burette, and the like, containing the desired material and suitable to give the required amount for a single dosage thereof.

As shown in Figure 5, a plurality of single-dosage vials 15 are individually hermetically sealed, the front wall of each vial pressed into sealing engagement with the rear wall 21 of each, the group of vials further being sealed to the side walls 11 and 12 of the strip 15. Further, in Figure 5, a portion of the side wall 12 of said strip 15 is broken away showing the group of vials in a long, continuous service, each vial 15 positioned between severance lines 14 so that said strip 10 may be severed whereby one vial may be removed and, at the same time, remain completely sealed and labeled.

In Figure 6, an end view of single vial 15 is shown, the vial 15 filled with semen, or the like, and hermetically sealed. One section of the strip 10 is pressed into sealing engagement with the sealed portions of the vial 15 forming a label 25. The same vial 15 and label 25 are shown in Figure 7 showing a front view thereof. Upon the label 25 is shown the letter A and the letter B to represent printing, said printing indicating the contents of the vial, the amount and/or other pertinent information. Figure 8, being a sectional view, shows the configuration of the collar portion 18 of the vial 15. The interior of the collar portion is cylindrical while the exterior is formed with four longitudinal ribs 26 forming four hollow portions, or flutes, 27. Said collar portion 18 is closed at its lower end by hemispherical portion 19, suitable to be snapped, or severed, when the contents of the vial are to be removed. The vial 15 and component parts are made of desirable material to be effective and of value for the purposes stated above in the objects; they are non-toxic, sensitive to temperature changes, strong and sturdy enough to withstand handling, storage and usage, readily adaptable to be attached to inseminating tubes, simple in construction, and can be manufactured at a low unit cost. In use, a single vial 15 and label 25 are severed from the series by a slight pull along the transverse severance line 14. While still sealed, end portion 19 is severed and the collar portion slipped on or over the end portion of a suitable inseminating tube, not shown.

From the above, it is obvious that variations can be made in the construction of the invention. The invention has been described to disclose a process of constructing an assembly of liquid-tight plastic vials which includes the steps of providing a strip of foldable paper material folded to form an inverted V along its center line, provid-

4

ing a plurality of unsealed plastic vials filled with semen, arranging said vials in vertical position and in series formation, assembling said strip of paper material over the top portions of said vials while the surfaces of said vials and said strip are all in non-adhesive condition, and thereafter producing adhesion of all the contacting parts by the application of heat and pressure to the outer surface of said strip of paper material.

It is apparent that this invention provides an improved method and means of preserving active animal semen, the semen enclosed and sealed in a pliable, inert container which is substantially impervious to air, the sealed vial and contents being frozen and stored at substantially -110° F. to preserve the semen until time of administration, the vial with label attached removed from cold storage, the label forming insulating means between the fingers of the person severing one or more vials from the assembly of vials, the semen thawed prior to the time of administration, the vial being suitable for fitting to an inseminating tube, said container serving as the expulsion bulb for said thawed semen at the time and place of administration, the basic idea of preserving semen being disclosed in patent application, Serial No. 369,764, filed in 1953.

It is apparent that many different embodiments of this invention may be made without departing from the spirit and scope thereof; therefore, it is not intended to be limited except as indicated in the appended claim.

We claim:

30 A vial assembly adapted for hermetically storing and transporting a plurality of vials containing animal semen for dispensing a dosage of semen from each vial, said assembly including a plurality of hollow bodies containing animal semen, providing a storage zone for said animal semen, said bodies each having a closed lower end, said lower end provided with a tip portion suitable for severance to open same for dispensing a dosage of animal semen therefrom, said lower end having a shoulder with a fluted collar for ease of affixing a single vial to one end of an inseminating tube, said bodies having their top ends flattened and heat sealed, said top ends arranged in series formation and extending in alignment along the marginal portion of the assembly, a strip of flexible material with printed matter thereon folded over and covering said top ends of said vials and sealed thereto, whereby said printed matter will designate the type and grade of animal semen in each vial, transverse weakened severance lines longitudinally spaced along said strip and respectively positioned between adjacent vials for dividing said strip into individual sections with each section sealed permanently to each of said vials, whereby individual vials may be severed and removed from the other assembled vials for individual dispensing of animal semen from the lower end thereof and leaving the remaining vials grouped together for storage and transportation.

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