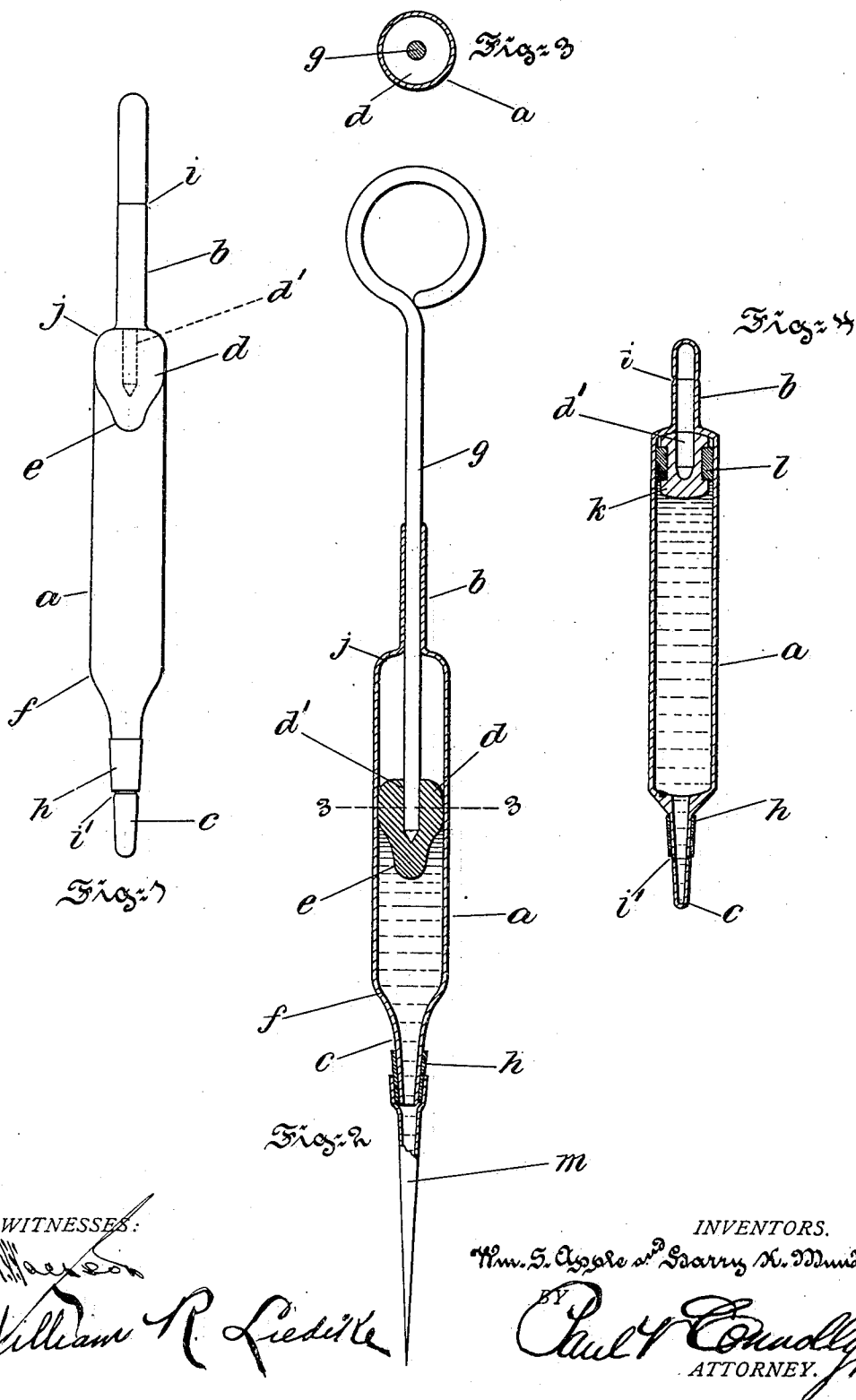


No. 758,949.

PATENTED MAY 3, 1904.

W. S. APPLE & H. K. MUNDORF.  
DEVICE FOR STORING AND ADMINISTERING SERUMS.  
APPLICATION FILED MAR. 7, 1903.

NO MODEL.



# UNITED STATES PATENT OFFICE.

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## DEVICE FOR STORING AND ADMINISTERING SERUMS.

SPECIFICATION forming part of Letters Patent No. 758,949, dated May 3, 1904.

Application filed March 7, 1903. Serial No. 146,779. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM S. APPLE and HARRY K. MUNDORF, citizens of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Devices for Storing and Administering Serums; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

It is one object of the present invention to hermetically seal in a glass vial fluid, semi-fluid, or powdered substances in order to facilitate their preservation and to prevent their mixture or association with foreign substances.

Another object of the present invention is to provide light, convenient, and comparatively inexpensive means for attaining this end.

A further object is to provide simple and efficient means for attaching to hypodermic needles and the like syringe-vials that are of the hermetically-sealed type.

Other objects will appear hereinafter.

The invention consists of the improvements hereinafter described and finally claimed.

The nature, characteristic features, and scope of the invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, and in which—

Figure 1 is an elevational view of a vial constructed in accordance with the invention. Fig. 2 is a central sectional view showing the seals broken and illustrating the plunger and hypodermic needle in application thereto. Fig. 3 is a sectional view taken on the line 3 3 of Fig. 2, and Fig. 4 is a modified form of the invention.

In the drawings, *a* is a vial, as glass, preferably of elongated and cylindrical shape, provided at its top and bottom with stems *b* and *c*.

*d* is a plunger, which may be of any suitable substance and fits the vial snugly and is somewhat pear-shaped, being provided with the part *e* in order to permit it to conform to the

shape of the part designated *f* of the vial. This construction permits the plunger to make a full stroke. The plunger is also provided with an aperture *d'* for the insertion of the plunger-rod *g*. As shown, the rod is provided with a ring at its top in order to enhance manipulation of the device. Obviously the rod will be of longer dimension than the vial. The stem or nipple *c* is closed and may be provided with a rubber band *h*, whose function will appear hereinafter.

The syringe-vial may be assembled as follows: The vial being first sterilized, the plunger is inserted in the vial, being pushed firmly against the part *j* thereof, after which the injecting substance is poured into the vial. Subsequently the lower portion of the vial is drawn or shaped into the stem or nipple *c*. The upper stem is also closed and when the seal is broken affords a guide for the plunger-rod *g*. Both of the stems may be marked, scratched, indented, or have otherwise indicated thereon, as at *i* and *i'*, means for facilitating the even breakage of the stems when necessary.

The syringe-vial may be used as follows: The upper stem is broken at the point indicated *i*, and the plunger-rod *g* is then inserted in the aperture *d'* of the plunger *d*. The lower stem or nipple is thereupon broken at the point indicated *i'*, which, as shown, is at the extreme end of the rubber band *h*. The hub of a hypodermic needle *m* is then fitted over the rubber band on the lower stem or nipple *c*, and the contents of the vial are ejected by pushing upon the plunger-rod, the stem *b* acting as a guide therefor. By placing the band *h* in the relation to the part *i'* as shown strength is added to the vial when breaking the seal.

In the modification shown in Fig. 4 the plunger *k* is of solid glass, with a cylindrical aperture in the center of its upper end of proper shape and depth to contain the end of the plunger-rod. The plunger is cylindrical in shape and is slightly smaller than the inside of the vial. Around this plunger is a seat, to which is fitted a band of rubber or of other suitable substance *l* to increase its size, so

that it will fit exactly into the vial, thus making the same air-tight.

Among the advantages claimed for the above-described device may be recited the following: The plunger fitting snugly to the vial, the contents of same may be ejected therefrom in a steady stream and free from the ill effects of air entering into the vial. The plunger will descend into the lower portion of the vial, thus ejecting the full amount of the contents thereof. The hypodermic needle may be readily fitted to the stem of the vial, and the rubber band or ring serves to form a tight connection. The stems are readily broken at the points indicated and the plunger-rod and needle quickly applied. The contents of the vial are absolutely protected from contact with foreign substances, and thus kept absolutely aseptic.

It will be obvious to those skilled in the art to which the invention appertains that modifications may be made in detail without departing from the spirit thereof. Hence we do not limit ourselves to the precise construction and arrangement of parts hereinabove set forth, and illustrated in the accompanying drawings; but,

Having thus described the nature and objects of the invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A device of the character designated comprising a vial fitted with a plunger, said vial having reduced and closed extensions at its respective ends forming hermetical seals and adapted to be broken transversely, whereof one of the said extensions is arranged for application of a hypodermic needle and whereof

the other forms a guide for a plunger-rod, and marks or indentations upon said stems to facilitate breakage, substantially as described.

2. A device of the character indicated comprising a vial, stems at the top and bottom of the vial forming hermetical seals, marks or indentations upon said stems, a plunger fitted to the vial, a plunger-rod adapted for engagement with the plunger upon the breaking of the seals and a hypodermic needle adapted to be fitted to the lower stem substantially as described.

3. A device of the character indicated comprising a hermetically-sealed vial, a plunger-rod, a plunger fitted to the vial and constructed for engagement with the plunger-rod, a stem extending upward from the vial and a second stem extending downward from the vial and provided with an attachment for application to a hypodermic needle and marks or indentations upon said stems, to facilitate breakage, substantially as described.

4. A syringe of the type specified comprising a hermetically-sealed vial, a plunger, a plunger-rod, stems extending upward and depending from the vial, indentations or scratches indicated thereon a band or attachment applied to the depending stem and a hypodermic needle adapted to be fitted to said band, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM S. APPLE.  
HARRY K. MUNDORF.

Witnesses:

WM. J. JACKSON,  
WILLIAM R. LIEDIKE.