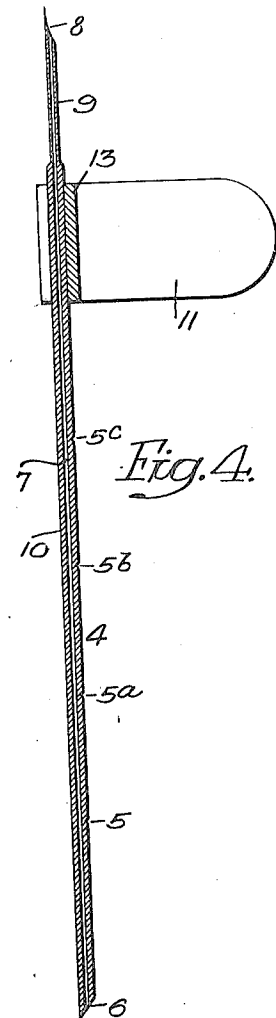
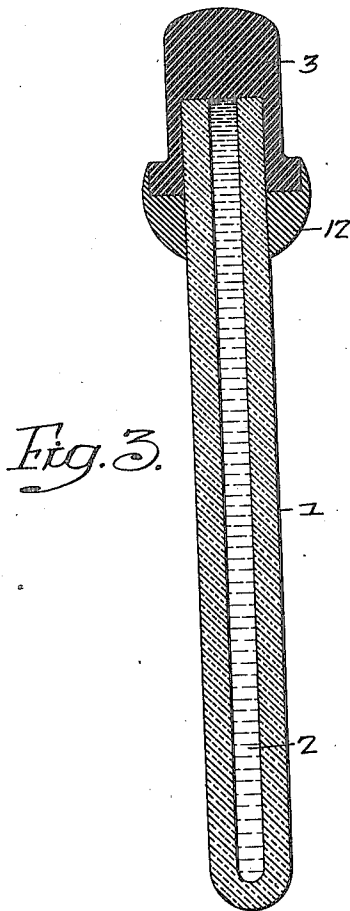
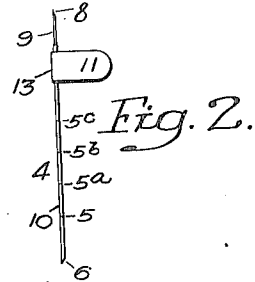
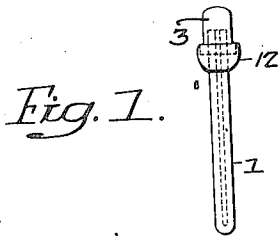


W. H. FURNESS.
INTRADERMIC SYRINGE.
APPLICATION FILED JAN. 14, 1915.

Patented Oct. 19, 1915.

1,157,524.



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UNITED STATES PATENT OFFICE.

WILLIAM H. FURNESS, OF NATIONAL PARK, NEW JERSEY, ASSIGNOR TO H. K. MULFORD COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

INTRADERMIC SYRINGE.

1,157,524.

Specification of Letters Patent.

Patented Oct. 19, 1915.

Application filed January 14, 1915. Serial No. 2,198.

To all whom it may concern:

Be it known that I, WILLIAM H. FURNESS, a citizen of the United States, residing in National Park, Gloucester county, State of New Jersey, have invented certain Improvements in Intradermic Syringes, of which the following is a specification.

One object of my invention is to provide a relatively simple and conveniently operated form of syringe particularly designed for the administration of vaccine, serum, etc., between the layers of the skin, though obviously it may be employed for other purposes, it being especially desired that the device while being of such a nature as to allow of highly accurate use, shall likewise be simple in construction and convenient to operate.

Another object of the invention is to provide a syringe having the above characteristics which may be easily maintained or rendered aseptic and in which relatively small doses of serum or the like may be administered in exactly the quantities desired.

A further object of the invention is to provide a syringe particularly designed for intradermic use, which shall include a needle of novel construction designed to cooperate in a novel manner with a suitable barrel or container, the invention also contemplating a novel form of package or holder for the serum or other substance required in making intradermic injections.

These objects and other advantageous ends I secure as hereinafter set forth, reference being had to the accompanying drawings, in which;

Figures 1 and 2 are side elevations of the syringe barrel, which also constitutes the container or package for serum or the like, and of the needle constituting my invention respectively, and Figs. 3 and 4 are respectively vertical longitudinal sections on a greatly enlarged scale, of the parts shown in Figs. 1 and 2.

In the above drawings 1 represents a relatively heavy or comparatively non-fragile tube of glass permanently closed at one end and open at the other, which while having a bore of relatively small diameter, does not require said bore to be accurately uniform throughout its length. The vaccine, serum

or other material which my invention is designed to administer is placed within the hollow space 2 of this container and is kept therein in an aseptic condition by a cap or cover 3 preferably of rubber which may if desired be sealed in place as shown at 12 by any suitable material, though this is not necessary in most cases since the cap itself if properly proportioned will make an air tight seal with the glass.

The needle for use with the above described barrel consists of an elongated tube 4 of metal or other material having a point portion 8, an intradermic portion 9 and a plunger portion 10. Of these, the plunger portion has by far the greatest length and is provided with any desired number of transverse marks or graduations 5, 5^a, 5^b, 5^c, etc., being so made that a section between any two adjacent graduations has a definite known volume. The diameter of this plunger portion 10, while it may be approximately the same as the interior diameter of the cavity 2, is usually of some other diameter less than this and while its end distant from the portion 9 is preferably more or less sharp as indicated at 6, it may be made blunt if desired. The intradermic portion 9 of the needle has any suitable length, for example one-fourth of an inch, and is of a diameter considerably less than that of the plunger portion, finally terminating at its extremity in a more or less elongated and relatively sharp point 8 in which the channel or passage 7 of said needle opens. A suitable handle for the needle is provided by a strip 11 projecting at right angles from the plunger portion adjacent the intradermic portion 9 and attached thereto in any desired manner. Obviously this handle may be of other forms without departing from my invention.

Under conditions of use the needle, which is kept in a sterile envelop or wrapping until required, is grasped by the handle 11 and its end 6 is forced through the rubber cap 3 into the cavity of the container or package 1. As it is moved into the latter the serum or other substance therein, being displaced by the plunger portion 10, is forced into the channel 7 thereof and finally flows out of the opening in the point 8, when the first

of the notches or graduations 5 is at or immediately adjacent the top surface of the cap 3. Thereafter the point 8 of the needle is introduced between the layers of the skin of a patient under treatment and the desired definite quantity of the substance in the cavity of the container 1 is injected by forcing the latter farther onto the plunger portion 10 of the needle until some other one of the graduations 5^a or 5^b is brought flush with the top surface of the cap 3, thus indicating that an amount of material has been administered exactly equal in volume to the predetermined volume of the plunger portion between the graduations 5 and 5^a or 5^b as the case may be. After the administration of one dose the container and needle may be discarded, or if desired may be used for the administration of other doses by forcing the plunger portion 10 farther into the container 1 and causing the discharge of additional amounts of material through the pointed portion 8. Under the above noted conditions the cap or closure 3 of the tube or package 1 effectually serves as a stuffing box for the plunger portion of the needle which is held and guided by the handle 11. There is thus no danger of contaminating the material administered or of infecting the wound made by the needle point.

It is to be understood that the handle or holding portion 11 is not necessarily permanently fixed to the needle 4 but may be held thereto by friction and it may be ap-

plied when the needle is to be used. For this purpose the end of the plunger portion 10 adjacent the portion 9 may be slightly tapered as shown, either with or without splitting the tubular portion 13. Under conditions of use I have found the flat radially extending form of this holding tab or handle 11 an important feature as it permits of the delicate manipulation of the needle necessary in inserting it intradermically, although any shape of handle permanently or removably attached adjacent the intradermic portion 9 may be employed without departing from my invention.

I claim:—

A package consisting of an elongated tube permanently closed at one end; a liquid to be administered within the tube; a puncturable cap sealing the open end of the tube; with a needle having an elongated plunger portion of substantially uniform diameter and having a volume substantially equal to that of the desired dose of liquid to be administered, for displacing the liquid in the tube when it is forced through the cap into the same.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

WILLIAM H. FURNESS.

Witnesses:

WILLIAM E. BRADLEY,
WM. A. BARR.