J. H. WEDIG.

HYPODERMIC SYRINGE.

APPLICATION FILED SEPT. 28, 1912.

1,100,799. Patented June 23, 1914.

Fig. 1.

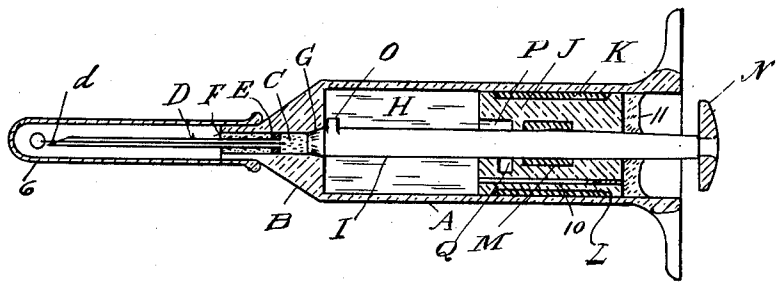


Fig. 2.

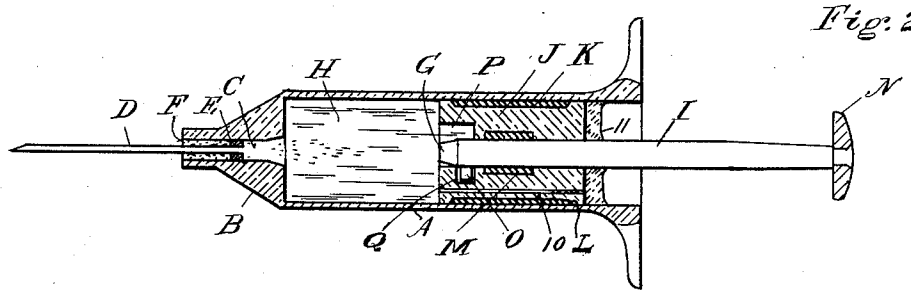
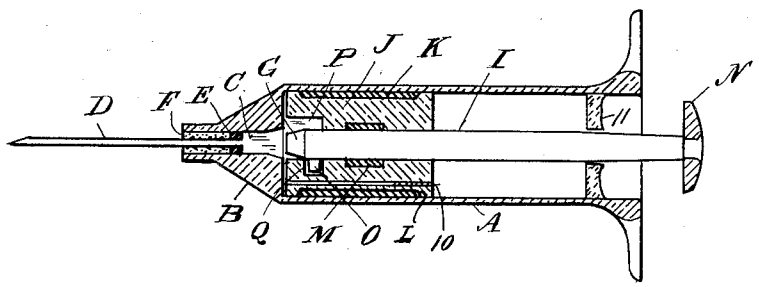


Fig. 3.



WITNESSES:

M. H. Raisted.

J. C. Steele

INVENTOR

John Harrison Wedig,

BY

H. M. Raisted,

ATTORNEY.

UNITED STATES PATENT OFFICE.

JOHN HARRISON WEDIG, OF GRANITE CITY, ILLINOIS.

HYPODERMIC SYRINGE.

1,100,799. Specification of Letters Patent. Patented June 23, 1914.

Application filed September 28, 1912. Serial No. 722,989.

To all whom it may concern:

Be it known that I, JOHN HARRISON WEDIG, a citizen of the United States, residing at Granite City, in the county of Madison and State of Illinois, have invented certain new and useful Improvements in Hypodermic Syringes, of which the following is a specification.

This invention relates to certain new and and useful improvements in hypodermic syringes.

In a prior application filed by me May 25, 1912, Serial No. 699772, I have described and claimed a two-chambered syringe with a plug seal dislodged by a stylet.

My present application relates to other means for establishing communication between two chambers, for securing greater compactness, and to other peculiarities hereinafter described and claimed.

In the accompanying drawing on which like reference letters indicate corresponding parts—Figure 1 represents a longitudinal sectional view of a syringe embodying my improvements, and in normal position of parts, Fig. 2, a similar view with the chambers communicating and the piston head and piston rod engaged ready to force out the charge—and Fig. 3, a similar view with the parts in position when the charge is expelled.

The letter A designates a cylindrical barrel forming the body of a syringe, having a forward end B, preferably tapered, and having an axial chamber C of cylindrical or other form at the outer end of which is mounted a suitable hypodermic needle D by a lead disk E or other means that holds the inner end of the needle and forms the variable outer wall of said chamber C. The needle is supported beyond said chamber by a filling of sealing wax or other suitable material F, that embraces the burred end of the needle. By adjusting the disk E farther forward or backward, a larger or smaller chamber C is respectively formed between the disk and a seal G that closes said chamber C from the main chamber H in the barrel. This seal G is preferably formed by the tapered recessed end (suitably packed by asbestos or otherwise) of a piston rod I, that fits a correspondingly tapered portion of the walls of the axial chamber C and limits the extent of this chamber C at its inner end when in the position shown in Fig. 1 A drug or other medicament is located in said chamber C, and is thus sealed from a hydro-alcoholic, or other solvent, which is located in the chamber H, that has a piston head J slidingly mounted in the rear of said barrel to constitute the rear wall of the chamber H. Asbestos or other suitable packing K, fills in a recess L in said head and bears against the barrel so as to make a snug sliding fit. The rod I passes through an axial opening in this piston head and is suitably packed by a ring of asbestos within a recess M, so as to make a tight sliding fit of the rod through the piston-head. A button N on the outer end of the rod, facilitates drawing back the rod through the piston head to the position shown in Fig. 2. The piston head does not move back when the rod is drawn back, but it is arranged to connect up the rod and piston head so that both will move forward under pressure on the rod, to force out the charge. This connection is effected by any suitable means, such as a lug O near the forward end of the rod, that enters a recess P in the piston head when the rod has been drawn out to its full length, and engages a notch Q by turning the rod.

In filling this syringe for sale, the size of the chamber C is determined according to the proper quantity of the drug to be used. The needle with its lead disk E, is adjusted farther out of or into the forward end B, to make the chamber C larger or smaller respectively, and the burred end of the needle is secured. The drug or medicament is deposited in the chamber C, and the tapered end of the rod with its packing, seals up the chamber. The solvent liquid is poured into the barrel around the rod, and the piston head is slipped over the rod to the position in the barrel that will provide a chamber H of the size to contain the suitable quantity of solution for the charge,—the excess passing out through the vent 10 which is then stopped by paraffin filling behind the piston head as shown at 11. The button N is fastened to the rod, the stylet *d* is inserted in the needle, and the casing 6 is slipped over the tapered end B. The drug and its solvent are kept separate until the solution is required for use, and the strength and uniformity are maintained.

When the syringe is to be used, the needle cap is removed, the stylet pulled out, and the piston rod drawn back through the piston head. This withdrawal of the rod

opens the seal G at the end of the rod, thus establishing communication between the drug chamber C and the solvent chamber H, so that the solvent has free access to the drug. Furthermore, the withdrawal of the rod from the solvent chamber causes a corresponding inrush of air through the needle that acts on the drug in the chamber C to force it inward into the chamber H and distribute it in the solvent whereby the outlet of the needle is cleared and the drug is caused quickly to dissolve in the solvent. Thus the drug is kept separate from the solvent until the charge is required, and the solution made with certainty and speed. A partial turn of the withdrawn piston rod in the construction shown engages it with the piston head. The needle is held upward and pressure on the thumb piece causes the rod and piston head to move outward together. When all the air is expelled, as shown by a drop or two of the solution appearing at the end of the needle, the needle is inserted into the subject and the charge is expelled by continued pressure on the thumb piece bringing the parts into the position shown in Fig. 3. Practically all of the charge is expelled, as only the small quantity remains that is contained in the needle itself, the drug chamber and recess P in the piston head.

The preferred material for the main parts of this syringe is glass on account of its aseptic qualities, freedom from corrosion and cheapness. The finger lugs at the rear of the body aid the fingers and thumb in operating the syringe. The taper of the outer-end of the rod acts to compress the packing M when the piston head is slipped over the rod and inserted in the barrel. I lay especial stress on this function of the seal rod of increasing the size of the solvent chamber when it is drawn outward, whereby the drug chamber is the more readily emptied of its contained drug or medicament. The sealing position of the rod locates all but the thumb piece and rear end within the body securing compactness and safety from breakage.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A hypodermic syringe comprising two chambers, a rod seal normally separating said chambers and extending through one chamber and outside the syringe, whereby the two chambers can be thrown into one to effect mixture of their contents and a piston head adapted to eject the charge.

2. A hypodermic syringe comprising two chambers, a rod seal to separate said chambers and extending through the rear wall of one chamber, a piston head forming the rear wall of said chamber and adapted to be engaged by said rod substantially as and for the purpose described.

3. A hypodermic syringe comprising a needle and a body containing a drug chamber adjacent to the needle and a solvent chamber adapted to communicate with said drug chamber, a seal rod normally sealing the drug from the solvent chamber and passing through the solvent chamber to be operated outside, whereby the increased volume of the solvent chamber corresponding to the withdrawal of the rod tends to displace the contents of the drug chamber and inject the drug into the solvent, and a piston head adapted to eject the charge through said needle.

4. A hypodermic syringe comprising a needle and a body containing a solvent chamber and an adjacent drug chamber, a piston head slidably mounted at the rear of the solvent chamber having an axial opening with a recess and a shoulder on the inner face, and a seal rod passing through said opening having a seal at its inner end to close said drug chamber from the solvent chamber and a lug near the seal end adapted to enter said recess and engage said shoulder when the rod is drawn back and rotated, whereby both will move forward in unison to eject the charge.

In testimony whereof I have affixed my signature in presence of two witnesses.

JOHN HARRISON WEDIG.

Witnesses:

WILLIAM H. MCCLELLAN, Jr.,

GRETCHEN LEGG.