J. H. WEDIG.

HYPODERMIC SYRINGE.

APPLICATION FILED SEPT. 12, 1914.

1,154,677.

Patented Sept. 28, 1915.

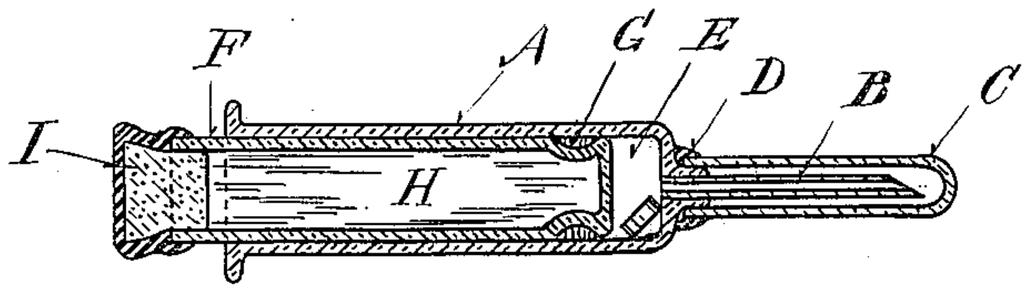

Fig. 1.

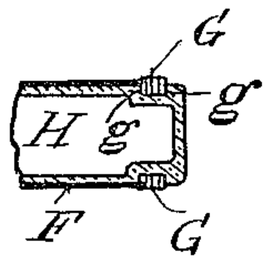

Fig. 3.

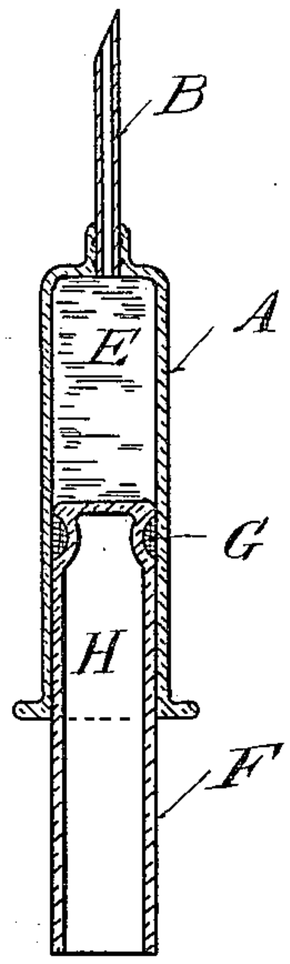

Fig. 2.

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HYPODERMIC SYRINGE.

1,154,677. Specification of Letters Patent. **Patented Sept. 28, 1915.**

Application filed September 12, 1914. Serial No. 861,409.

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, reference being had therein to the accompanying drawing.

This invention relates to certain new and useful improvements in hypodermic syringes in which one of the chambers is located in the plunger as distinguished from the constructions shown in my prior applications S. N. 699772 filed May 25, 1912, and S. N. 722989, filed Sept. 28, 1912,—both issued June 23, 1914, Nos. 1,100,798 and 1,100,799 respectively.

The main object of this invention is to increase the adaptability of my hypodermic syringe and to simplify construction.

In the accompanying drawing on which like reference letters indicate corresponding parts, Figure 1 represents a longitudinal section of a syringe embodying my improvements; Fig. 2, a similar view showing its operation; and Fig. 3, a modified recess for packing.

The letter A designates a cylindrical barrel having a needle B connected to one end and covered with a protecting case C, attached by sealing wax or other fragile fastening D so the case may be readily removed from the needle. Within the barrel is a chamber E communicating with the needle, and having a plunger F mounted therein, provided with asbestos or other suitable packing G at its recessed forward end, which is slightly reduced at the tip to aid insertion in the barrel. The plunger is hollow,—the forward end being closed by a wall matching the front wall of the chamber E, while the rear end is provided with a seal I of rubber, cork and sealing wax, or other suitable material that can be readily opened with thumb and finger. A sealed chamber H is thus provided in the plunger in which a predetermined quantity of a dissolvent (such as hydro-alcoholic) is kept separate from a medicament that may be deposited in the chamber E till required for use. The plunger normally reduces the chamber E to a size little more than enough to contain the medicament, and being substantially the length of the barrel projects a short distance beyond the rear end of the barrel A, to secure compactness as shown in Fig. 1, and affords no finger hold for withdrawal when seal is removed and the plunger has made its full operative stroke. This is the preferred construction, but the arrangement may be altered without departing from the spirit of my invention.

When the syringe is to be charged with hypodermic solution, the plunger is withdrawn, the seal removed and the dissolvent poured into the chamber E upon the medicament. The plunger is inserted again in the barrel, the case C removed and the syringe held needle upward while the air is driven out, and the medicament dissolves, as indicated in Fig. 2. Thus the combination is effected. A drop or two is generally ejected and then the needle is inserted hypodermically. A full stroke of the plunger then entirely discharges the solution from the barrel and fully sheaths the plunger in the barrel so as practically to lock the plunger therein and prevent its further use on another patient, or with another medicament. It will be observed that ready access can thus be had to the medicament chamber E, as above described; this construction allows of carrying any number of vials of different medicaments, selecting the proper medicament for the special case and dropping it into the chamber E; then pouring the dissolvent from the other chamber H upon it, as before described. A single syringe is thus made adaptable to any case, and more suitable for an emergency outfit than a plurality of syringes already charged with different medicaments, as in the prior applications referred to. The preferred material is glass except as otherwise described. This construction is furthermore adapted to yet another method of use, viz: drop the selected medicament into the dissolvent after unsealing the hollow plunger, and then pour the solution into the chamber E. In the case of the medicament being in the form of a liquid, this method is evidently preferable to dropping the liquid medicament into the chamber E, as a drop or two would leak through the needle, and vary the strength of the solution by that much.

Thus I provide a simple, cheap and sanitary syringe that may be readily charged with any desired medicament and dissolvent forming a medicated solution of definite strength, predetermined quantity, and freshly prepared just prior to the occasion

for use and which is limited to one such use only for sanitary reasons.

The recess for packing at the inner end of the plunger may be rounded as in Fig. 1, which tends to wedge the packing G against the barrel; or it may be square-shouldered as *g g* in Fig. 3; or may be otherwise adapted for holding the packing in place.

Another point of sanitary importance is the fact that this syringe is adapted for but one discharge, since the tube-plunger is practically the same length as the barrel and when pushed in after the projecting seal is removed, its end is flush with the open end of the barrel and cannot be grasped to pull it out again. A single hypodermic application of this syringe is thus secured, and the danger of imperfect cleansing and promiscuous use is avoided. On the other hand, before the seal is broken to release the liquid hermetically sealed therein, the sealed plunger which thus constitutes an ampul, can be readily taken out, or replaced by a fresh one, by using the unbroken seal as a handle. As the date of filling the ampul can be readily impressed on the seal, or otherwise shown, there is no excuse for using one that is not fresh,—in the case where the freshness of the sealed liquid is important; for instance, in the case of using an ampul plunger of antitoxin serum, such can be readily replaced by one freshly filled should the date show that the former ampul is old. Thus only the plunger is changed and either a new serum-filled ampul plunger, or one filled with some other liquid as may be required, can be quickly and safely used for hypodermic injections. In either case, after once discharging the contents of the barrel through the needle by the full forward stroke of the plunger, the plunger cannot readily be withdrawn and is therefore useless for more than one hypodermic discharge.

It is understood that the needle, its case, the barrel, and the ampul plunger, are rendered aseptic before being assembled as shown in Fig. 1. The needle, the chamber E, and the other chamber H, are thus preserved in an aseptic condition till occasion for use arises.

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

1. An improved hypodermic syringe comprising a barrel open at one end, a hypodermic needle fixed in the other end of said barrel, a protecting case hermetically sealed over said needle, a hollow plunger of substantially the length of said barrel, and a projecting seal detachably secured to the outer end of said plunger, whereby a predetermined quantity of a liquid can be hermetically sealed in said plunger, quickly opened, poured into said barrel and discharged, and the pushed-in plunger thereby incapacitate the hypodermic syringe for further injections.

2. An improved hypodermic syringe comprising a plain cylindrical barrel open at its rear end, a needle secured to the front end of the barrel, a protecting case attached by a fragile fastening over the needle, a plain cylindrical hollow plunger of substantially the length of the barrel, fitting operatively therein and open at its rear end only like an ampul, and a fragile seal hermetically closing the rear end of said plunger and adapted to be broken in order to discharge the contents of the plunger into the barrel, substantially as described.

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

JOHN HARRISON WEDIG.

Witnesses:
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