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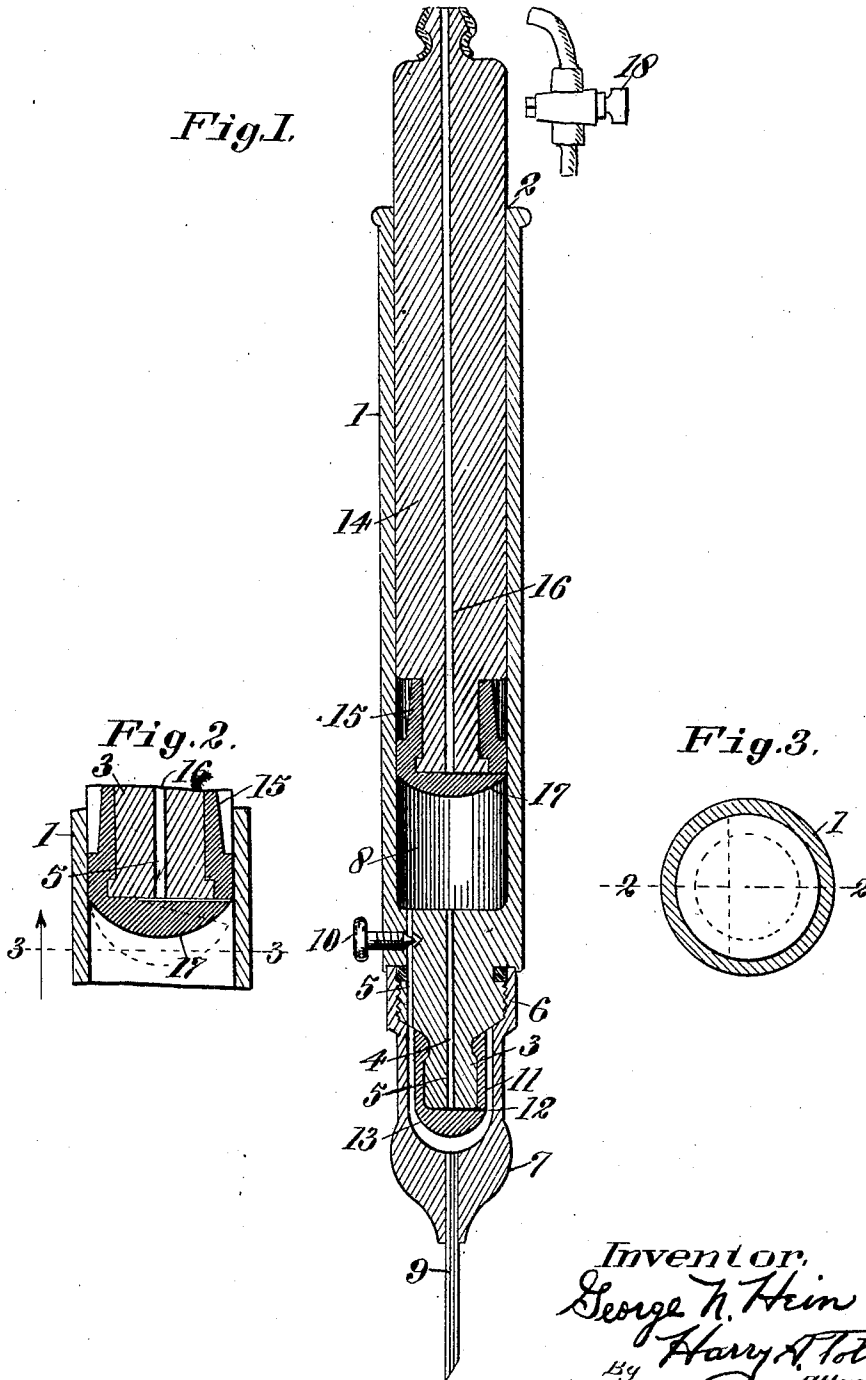
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POSITIVE BLOOD LETTING HYPODERMIC SYRINGE

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Fig. 1.



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POSITIVE BLOOD-LETTING HYPODERMIC SYRINGE.

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This invention relates to hypodermic syringes, and has for its objects to provide a syringe construction wherein a positive withdrawal of blood from the body of the user is capable of being made; to insure the proper location of the needle point by a simple outward movement of the syringe piston; to provide a construction wherein two valve controlled passages are provided between the interior of the barrel and one end of the needle, one of which is controlled by an automatic or check valve and the other of which is controlled by a positively operated valve. A further object is to provide a structure of the previously described type which is capable of operation as a syringe of the continuous pump type. In addition to the above mentioned objects, the invention contains novel structure in the form of the type of combined piston packing and check valve associated with the piston.

With the above mentioned and other objects in view, the invention consists in the novel construction and combination of parts hereinafter described, illustrated in the accompanying drawings, and set forth in the claims hereto appended, it being understood that various changes in the form, proportion, size and minor details of construction within the scope of the claims may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

To more fully comprehend the invention, reference is directed to the accompanying drawings, wherein:—

Fig. 1 is a view in longitudinal central section illustrating the preferred embodiment of my invention with the blood letting valve raised from its seat.

Fig. 2 is a view in detail of the combined piston packing and check valve at the inner end of the piston.

Fig. 3 is a transverse sectional view on line 3—3 of Fig. 2.

In the drawings, 1 indicates a conventional syringe barrel open at one end as at 2, and provided at its opposite end with an extension 3 formed with a bore 4 disposed preferably longitudinally of the center thereof, and a bore 5 disposed preferably at one side of the bore 4. Removably threaded, as at 6, to the end 3 of the barrel 1 is a needle base 7 formed with an interior chamber 8 with which communicates the inner end of a conventional form of hypo-

dermic needle 9. One end of the bore 5 is in direct communication with the chamber 8, and the fluid flow therethrough from the chamber 8 to the interior of the barrel 1, is controlled with a manually operated needle valve 10, threaded in the body of the barrel 1. Fitted over the end of the tubular extension 3 of the barrel 1 is an elastic cap 11, cut transversely at 12 in a line with the outer end of the extension 3 providing a check valve flap 13, adapted to seat on the end of the extension 3 and control the fluid passage through the bore 4. It will be observed that the operation of the flap 13 will admit of fluid flow in but one direction through the bore 4. Reciprocably mounted within the chamber in the barrel 1, and receivable into said chamber through the open end 2 of the barrel, is a tubular open ended piston 14 carrying on its inner end an elastic packing 15 in the form of a hood stretched thereover, the peripheral walls of which are adapted to frictionally engage the inner wall of the barrel chamber, as in the drawing. Fluid flow through the bore 16 in the piston is controlled by a flexible check valve 17 formed by sliding the hood 15 inwardly on the line of the end of the piston 14. A valve 18 precludes the passage of fluid in either direction through the bore 16 of the piston 14.

It is preferable that the syringe and its barrel be constructed of glass or other transparent material facilitating the sterilizing and cleaning thereof, and when in use the device operates in the following manner.

With the valve 18 closed and the needle valve 10 in open position, the operator inserts the point of the needle 9, and to insure the location of the needle point within the blood flow, it is only necessary that the piston 14 be drawn outwardly causing the blood flow inwardly through the bore 5. When the proper location of the needle point is assured, the valve 10 is closed, and a reciprocation is imparted to the piston 14 insuring the intermittent charges of desired fluid being injected into the patient.

Having thus described my invention what I claim as new and desire to protect by Letters Patent of the United States is:—

1. A blood letting hypodermic syringe including a barrel; a needle base; a hypodermic needle carried thereby, said barrel provided with a main discharge bore, and an auxiliary bore, said main discharge bore

provided with a one way check valve, said auxiliary bore provided with a manually operated control valve, said discharge and auxiliary bores opening directly into the needle base; and a piston in the barrel adapted for the movement in one direction to draw fluid through the needle into the barrel through one of said bores.

2. A blood letting hypodermic syringe including a barrel; a needle base, a hypodermic needle carried thereby, said barrel provided with a main discharge bore, and an auxiliary bore, said main discharge bore provided with a valve admitting fluid flow in one direction therethrough and precluding fluid flow therethrough in another direction, a manually operated valve associated with the auxiliary bore to control fluid flow in either direction through said bore, said main and auxiliary bores opening directly into the needle base; a piston reciprocally mounted in the barrel, and a valve controlled fluid inlet communicating with the interior of the barrel.

3. A blood letting hypodermic syringe including a barrel provided with a main discharge bore and an auxiliary bore, a valve associated with one bore admitting fluid flow in one direction therethrough and precluding fluid flow therethrough in another direction, a valve associated with the other bore and manually operable to control fluid flow in either direction through said bore, a hypodermic needle carried by the barrel and communicating with the interior thereof through the bores, a piston reciprocally mounted in the barrel, and a valve

controlled fluid inlet communicating with the interior of the barrel longitudinally through the piston.

4. A blood letting hypodermic syringe including a transparent barrel provided with a main discharge bore and an auxiliary bore, a hypodermic needle associated with the barrel and communicating with the interior thereof through both of said bores, a check valve precluding the passage of fluid inwardly into the barrel through one bore, a manually operated valve for controlling the blood flow from the needle to the barrel through the other bore, a piston within the barrel, and a valve controlled fluid inlet passage communicating with the interior of the barrel.

5. A blood letting hypodermic syringe including a barrel; a piston reciprocally mounted within the barrel; a needle base; a hypodermic needle carried thereby, said barrel provided with a main discharge bore and an auxiliary bore; valve controlled means associated with the piston for admitting fluid into the barrel on the outward reciprocation of the piston and for ejecting the same through the needle on the inward reciprocation of the piston, and manually operated valve control means associated with the auxiliary bore for affording a positive blood withdrawal through the needle on the outward reciprocation of the piston, the fluid ejection and blood withdrawal passing through the same needle.

In testimony whereof I have signed my name to this specification.

GEORGE N. HEIN.