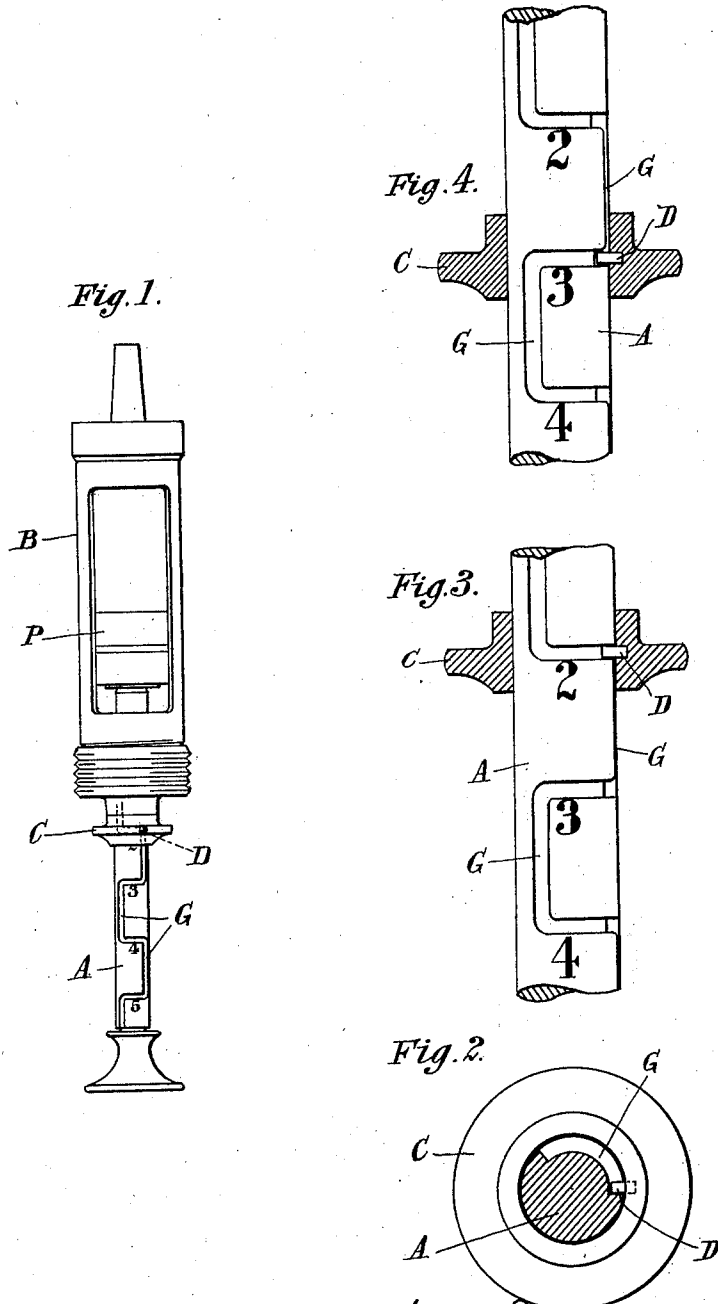


H. LOMAS AND J. MORTIMER.
HYPODERMIC SYRINGE.
APPLICATION FILED AUG. 22, 1917.

1,393,720.

Patented Oct. 11, 1921.



Witnesses:
Bertha Mueller
Clarence Frank

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UNITED STATES PATENT OFFICE.

HARRY LOMAS AND JAMES MORTIMER, OF LONDON, ENGLAND.

HYPODERMIC SYRINGE.

1,393,720.

Specification of Letters Patent.

Patented Oct. 11, 1921.

Application filed August 22, 1917. Serial No. 187,597.

(GRANTED UNDER THE PROVISIONS OF THE ACT OF MARCH 3, 1921, 41 STAT. L., 1313.)

To all whom it may concern:

Be it known that HARRY LOMAS and JAMES MORTIMER, subjects of the King of Great Britain and Ireland, residing at Hampden Residential Club, King's Cross, London, N. W., England, have invented a new and useful Hypodermic Syringe (for which I have filed application in England, July 26, 1916, Patent No. 107,833,) of which the following is a specification.

This invention relates to improvements in hypodermic syringes of the kind in which the fluid to be injected is contained in a tube between an outlet at one end thereof and a liquid-tight piston adapted to be pressed upon the said fluid to force it through the said outlet which is generally in a nozzle forming a reduced part of the tube and adapted for attachment to a needle and our invention has for its object to provide a means in such syringes whereby predetermined doses of the fluid may be automatically and successively measured during administration.

We attain this object by grooving the piston-rod alternately lengthwise and transversely at its exterior, each lengthwise part corresponding in length to a part of the length of the tube having the capacity for the corresponding pre-determined dose and the transverse part of the groove being adapted to connect successive longitudinal parts and also to form stops for a gage-pin carried in a loose collar on the piston rod and adapted to cooperate with the grooves in automatically measuring the successive doses.

The accompanying drawings illustrate a syringe made in accordance with our invention.

Figure 1 is a front view of the instrument. Figs. 2 and 3 are front views partly in section of portions of the same drawn to an enlarged scale and

Fig. 4 is a plan view, also partly in section, of the portions as shown in Fig. 3.

It will be seen that the syringe comprises the usual barrel B and piston P and that it also has a piston rod A provided with the usual thumbpiece. This rod A, according to our invention has a groove, the longitudinal parts G of which are connected together by transverse parts, shown as numbered 2, 3, 4 and 5.

Adapted to cooperate with the groove in

the piston rod A is a collar C made to slide on the said piston-rod and provided with a pin D which projects radially on to the said groove.

Supposing the syringe to be charged and ready for the administration of a dose of a predetermined quantity of fluid contained in a length of the barrel B represented by the length of the groove G shown between the numbered parts of the groove 2 and 3. The collar C is then set in the position shown in Fig. 1, that is to say upon the neck of the barrel B and with its pin D in the junction of the right-hand lengthwise part of the groove G with the transverse part thereof marked 2. The needle on the nozzle of the syringe is inserted where the injection is required. The thumbpiece is then pressed until the travel of the piston rod is arrested by the pin D, against which the rearward wall of that part of the groove marked 3 then abuts as shown in Fig. 4. Then the exact predetermined quantity of fluid has been injected.

To inject the next successive dose the collar C, still resting on the neck of the barrel B, is turned so that the pin D is located in the groove at the junction of the left hand lengthwise part of the groove with the transverse part thereof marked 3, and the pressure on the thumbpiece repeated.

The syringe is charged in the manner usual for charging such syringes; the collar C being maintained at the free end of the piston rod P throughout the suction strokes, and preferably this piston rod P is graduated in the usual way, in minims or the like markings, so that the instrument may be used in the ordinary way, and in this case also the collar C is retained at the free end of the piston rod.

This invention provides a hypodermic syringe occupying but the minimum of space and by means of which exact doses may be administered with absolute certainty, the quantity ejected not being dependent on an approximation, as when a given number of more or less equal turns of a screw have to be relied upon. This syringe moreover, when a dose has been discharged, may be laid aside and is not liable to eject any of the contained following dose if its piston be accidentally moved, yet, after a turn through a small angle of the piston rod, and without any rearward movement of it, the in-

strument is ready for the next forward pressure of the rod and will then give another absolutely exact dose.

We claim:—

5 1. In a hypodermic syringe comprising in combination a barrel, a delivery nozzle, a piston, a piston-rod secured to said piston and having a groove running alternately lengthwise and transversely at its periphery
10 and a collar loosely fitting said piston rod and having a pin adapted to project into and engage said groove, substantially as described.

2. A hypodermic syringe comprising in
15 combination, a barrel, a delivery nozzle, a piston in said barrel, a piston rod secured to said piston and having a groove running alternately lengthwise and transversely at its periphery, a neck on said barrel, a collar
20 loosely fitting said piston rod and adapted

to abut against said neck and having a pin projecting into and engaging said groove, substantially as and for the purposes set forth.

3. A hypodermic syringe embodying 25 therein a barrel, a delivery nozzle, a piston slidably and rotatably mounted in said barrel, a piston rod, and cooperating means carried by said piston rod and said barrel, whereby the movement of said rod and said 30 piston, is limited to an alternate axial, and rotative movement.

In witness whereof we have signed this specification in the presence of two witnesses.

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Witnesses:

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