

Oct. 6, 1959

M. J. COHEN
HYPODERMIC SYRINGE
Filed Jan. 26, 1955

2,907,329

Fig. 1.

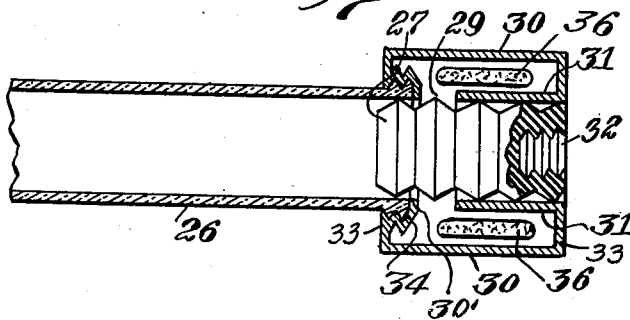


Fig. 2.

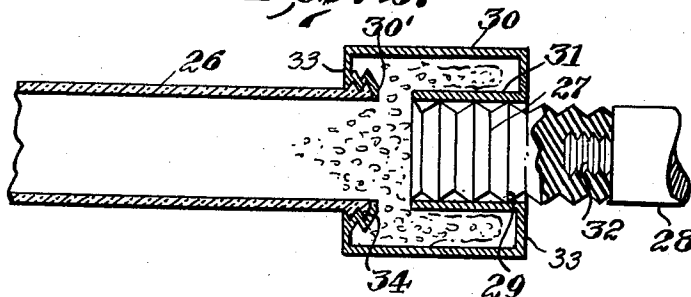
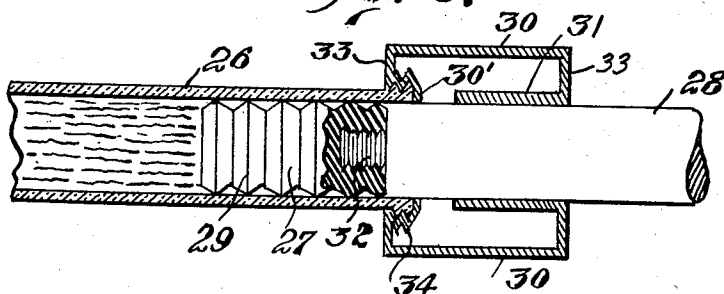


Fig. 3.



INVENTOR.
MILTON J. COHEN.

BY

M. W. Oakley,
Attorney.

1

2,907,329

HYPODERMIC SYRINGE

Milton J. Cohen, Washington, D.C.

Application January 26, 1955, Serial No. 484,160

1 Claim. (Cl. 128—218)

This invention relates to the treatment of human ailments and to the physical facilities employed in such procedure and more particularly to equipment used in the combining and administering of certain substances into the human body.

The invention relates specifically to hypodermic syringes by means of which injections including those containing fluid with medicament therein are administered in a manner that the substances injected may be readily received in the blood stream.

It has been customary to prepare solutions and use portions of such solutions over an extended period of time but this has been unsatisfactory due to deterioration, loss of strength, and in some cases the substances becoming toxic. It has been found that the best way of prolonging the satisfactory useful condition or "shelf life" of a medicament has been in maintaining the liquid and medicament separate. The medicament may exist in any desired state such as fluid or dry including powder or tablet form.

The maintenance of the components of the medication separate has created problems in the combining thereof and in the time required therefor and has caused the desirability of a solution to such problems. Disposable hypodermic syringes have been provided however, these have not completely solved the problem. In the ever-increasing field of disposable hypodermic medication it is necessary under many conditions for the hypodermic syringes to remain filled and ready for use but allowed to remain unused for a substantial period of time but this has not been possible with certain substances in an unstable solution or condition.

It is an object of the invention to provide a disposable hypodermic syringe having the constituents of the medication contained in the syringe in a manner that they will be kept separate until immediately prior to their actual use, whereupon in such condition or state of preservation the constituents can be commingled when needed immediately prior to the time of application and within the body of the hypodermic syringe.

Another object of the invention is to provide a disposable hypodermic syringe in which the shelf life of the medicament will correspond to the life of the medicament individually kept in a sealed container and regardless of whether the medicament is fluid or solid, powder or tablet.

Another object of the invention is to provide a disposable hypodermic syringe which is readily available though unused for a long period of time and in which the medication is contained separately in the desired portions but from which a fresh combination of ingredients can be made of the desired proportions and with full potency at the time of need for the injection and mixing can be accomplished within without exposure to unsterile exterior conditions.

Another object is to utilize multi-chambered effects within a syringe in which each of several chambers is

2

filled with an ingredient and all of such ingredients are to be combined immediately prior to actual use as well as a syringe which requires little attention, experience and with a minimum expenditure of time and effort.

A further object is to provide a syringe with medicaments within the same which are independently maintained or not in contact with each other and not commingled, to maintain them in a stable condition for an indefinite period of time, instead of in commingled condition in which their stability would be only for a relatively short period of time and in many cases, so short that the actual use of the compound is impracticable.

A still further object of the invention is to provide a container for medicament in the form of a novel ampule or compartmented ampule that may readily function as the body of a filled syringe by the combination of the contained ingredients.

Another object of the invention is to provide a hypodermic syringe having novel means for holding a drug in position for and at will placing the same in solution in a vehicular fluid or medium carried by the syringe and in which syringe one of the compartments serves as a mixing chamber, as well as substantial economies in the manufacture of disposable syringes.

Other objects and advantages of the invention will be apparent from the following description taken in conjunction with the accompanying drawings wherein:

Figs. 1 to 3 are fragmentary longitudinal sections illustrating the construction of a hypodermic syringe and the method of use thereof, parts of the devices being broken away for purposes of illustration.

Briefly stated, the hypodermic syringe is composed of a cartridge or barrel with a piston therein providing independent compartments at opposite sides thereof in one of which a fluid is adapted to be contained and a medicament in the other so that the movement of the piston may first cause commingling of the fluid and the medicament and thereafter the administration or injection thereof.

In the form of the invention shown in Figs. 1 to 3, the syringe consists basically of a cartridge or barrel 26 preferably transparent and which may be of glass. A needle assembly (not shown) may be mounted at the left end of the barrel. A finger grip is formed on the barrel by the forward end of the head 30. A rubber piston 27, having circumferential ridges 29, is mounted on a plunger 28 for movement through the barrel 26, the piston being connected to the plunger by screw threads at 32. The plunger 28 and piston 27 movable lengthwise of the barrel 26 are guided lengthwise of the head 30 by a reverse flange 31 integral with the outer circumferential head 30 and with the ends 33 that connect the concentric parts 30 and 31 to form a pocket for a capsule 36. The metallic or plastic or glass head 30 is mounted on the glass tube 26 by means of threads 34. A solid medicament may be used and may consist of a solid ring of materials, or may be of any other suitable shape.

In the position of the parts prior to use, there may be a liquid in the barrel 26 and the pocket holding the tablet 36 is closed by engagement between barrel 26 and the periphery of the rubber piston 27 whose corrugations coact with the tubular barrel in the position of Fig. 1 to seal the liquid away from the tablet 36.

Movement of the piston 27 away from the body of the syringe opens a gap between such piston and the adjacent surface of the head at 30' and allows fluid to enter the head and contact the tablet whereupon the tablet is dissolved (Fig. 2).

The syringe may then be upended to permit the solution to pass to the needle end of the same after which the piston may be moved to make the injection.

3

It will be obvious to those skilled in the art that various changes may be made in the invention without departing from the spirit and scope thereof and therefore the invention is not limited by that which is illustrated in the drawings and described in the specification, but only as indicated in the accompanying claim.

What is claimed is:

A disposable hypodermic syringe comprising a barrel or cartridge adapted to contain a liquid vehicle, a piston having circumferential ridges of elastic material in intimate contact with the interior of said barrel, a plunger secured to said piston by screw threads, a head of larger diameter than said barrel attached to one end of the latter, a reverse flange integral and concentric with the outer diameter of said head to form a pocket between said flange and said head for containing a medicament, said piston being adapted to be moved rearwardly to allow said liquid vehicle and said medicament to commingle immediately prior to administering the

4

medicament, and a hollow injection needle on the end of said barrel opposite said piston.

References Cited in the file of this patent

UNITED STATES PATENTS

1,573,648	Sheeley	Feb. 16, 1926
1,705,256	Krusi	Mar. 12, 1929
2,032,559	Barton	Mar. 3, 1936
2,100,157	Chandler	Nov. 23, 1937
2,284,774	Smith	June 2, 1942
2,317,558	Smith	Apr. 27, 1943
2,520,605	Maynier	Aug. 29, 1950
2,549,417	Brown	Apr. 17, 1951
2,590,900	Sommerstein	Apr. 1, 1952
2,591,046	Brown	Apr. 1, 1952
2,705,956	McLaughlin	Apr. 12, 1955
2,717,601	Brown	Sept. 13, 1955
2,761,447	Hersee	Sept. 4, 1956