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H. K. BROWN

SELF POSITIONING AMPUL AND SYRINGE

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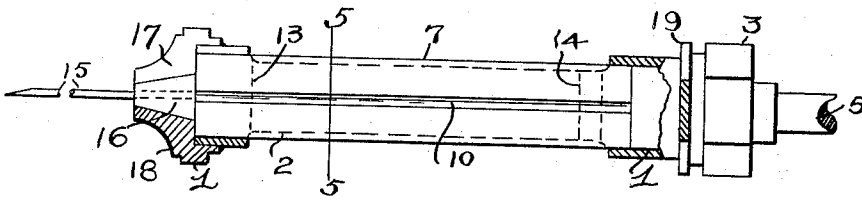
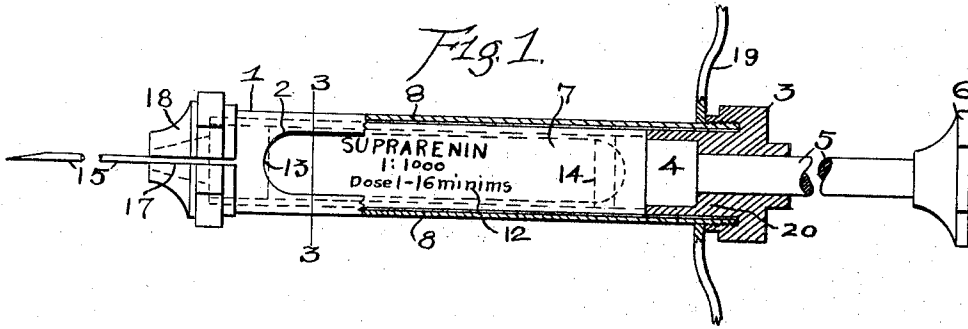


Fig. 2.

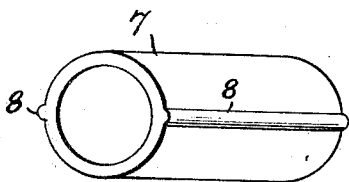
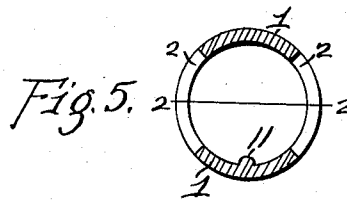
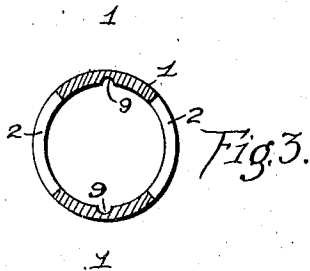


Fig. 4.

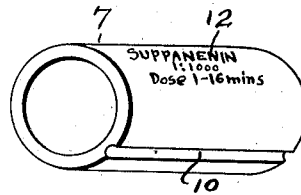


Fig. 6.

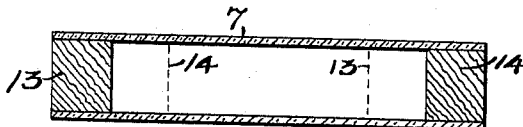


Fig. 7.

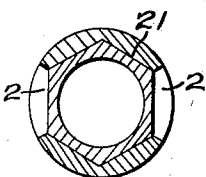


Fig. 8.

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SELF-POSITIONING AMPUL AND SYRINGE.

Application filed September 16, 1922. Serial No. 588,694.

My invention relates to improvements in self-positioning ampul and syringe and it more especially consists of the features hereinafter pointed out in the annexed claims.

5 The purpose of my invention is to provide a hypodermic syringe and related ampul that will safeguard the production and use of syringes and ampuls; that provides related self-positioning means on the ampul and the syringe which cooperate with each other to invariably position an ampul which is inserted in the syringe in a predetermined position so that the designation of contents, measured portions, etc., may be easily as-
10 15 20 25

certain by inspecting the ampul after it is placed in the syringe; that safeguards the use and authenticates the preparation of the ampul contents; that prevents the use of unstandardized ampuls for syringes; that makes provision for these advantages without adding to the complexity of construction or manipulation of the related parts; and that provides an ampul or carpule unit which may be used in a reversible manner, in either case insuring that the legend of contents etc., will be visible through the side openings of the syringe barrel or casing.

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With these and other ends in view, I illustrate in the accompanying drawing such instances of adaptation as will disclose the broad underlying features without limiting myself to the specific details shown thereon and described herein.

Figure 1 is a side elevation partly in section on line 1—1 of Fig. 3 of a syringe with an ampul in position therein.

Fig. 2 is an elevation in section on line 2—2 of Fig. 5.

Fig. 3 is a cross section of Fig. 1 on line 3—3.

Fig. 4 is an isometric view of an ampul adapted to a cylinder shown in Fig. 3.

Fig. 5 is a cross section of Fig. 2 on line 5—5.

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Fig. 6 is an isometric view of an ampul adapted for use in the cylinder barrel of Fig. 5.

Fig. 7 is a longitudinal elevation in section of an ampul with slidable closures at each end illustrating that the ampul may be used, if desired, in a reversible manner.

Fig. 8 illustrates in cross section a hexagonal shaped ampul and syringe barrel with a similar interior conformation.

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In practically carrying out my invention, I

may use any desired form of syringe barrel or casing 1 which has side openings 2, and plunger cap 3, and a needle end cap 18. The barrel is provided with usual finger extensions 19 and the cap 3 has a hub 20 which passes into the barrel and abuts the end of an inserted ampul 7. The cap 3 has a recess for the plunger 4 which engages one of the ampul closures. It has an opening of reduced diameter for the plunger rod 5 that terminates in a thumb piece 6. This cap 3 may be screwed on to the barrel 1 or placed thereon in any other desired manner so as to be retained without accidental removal therefrom. The needle cap 18 may be slotted at 17 to admit of the insertion of the needle 15 as the needle enlargement 16 passes through a connected open side 2 of the barrel.

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The self-positioning feature of the ampul in the syringe barrel is not limited to the details of the barrel caps, plunger, needle enlargement, etc., but is claimed in its broadest aspect whether the ampul itself is or is not reversible. To effect this result, the ampul itself may have a lengthwise bead 8 formed thereon which will engage a lengthwise groove 9 formed in the interior of the barrel 1. Such a groove may be readily formed in the barrel before the needle cap 18 is secured thereon by soldering or otherwise, through the use of what is known in mechanics as a "drift". In case these self-positioning means are to be used as shown in Figs. 2, 5 and 6, the groove 9 of the barrel 1 will become the groove 10 of the ampul 7 and the bead 8 of the ampul in Fig. 8 will become the barrel bead 11 of Fig. 5.

95 100 105 110

By reason of these self-positioning means, an ampul can only be placed within a related barrel so as to leave the graduations and the legend 12 of contents, etc., visible through either of the side openings 2. If the bead 11 is formed on the interior of the barrel by exterior rolling or otherwise it will be impossible to use any ampul that is not provided with a corresponding groove, whereas if a groove 9 is formed in the barrel any ordinary unauthenticated ampul can be used therein but since only standardized and authenticated ampuls will be provided with a corresponding bead 8 such ampuls cannot be used in syringes which are not provided with the groove 9. In this way the users of ampuls will be safeguarded against

inferior syringes and possible deleterious ampul contents which without such provision would make it extremely difficult to guarantee the contents of ampuls as to purity, quality, kind and source of production, thus insuring the safe and rapid use of hypodermic syringes under the most stressing circumstances.

If desired, the ampuls may be used in a reversible manner in their end to end relation as shown in Fig. 7. The closures 13 and 14 may be of whatever form is found best and the reversibility may be understood by assuming that the closure 13 in the first position is penetrated by the inner end of the needle 15. In this position the closure 14 will be pushed by the plunger 4 toward the closure 13 as far as the dotted line 14. On the other hand if the closure 14 is penetrated by the short end of the needle 15, then the plunger 4 will move the closure 13 toward the closure 14 as far as indicated by the dotted line 13.

It is of course understood that any form of expedient for defining the circumferential relation of the ampul to the barrel may be used, for instance, as is shown in Fig. 8 wherein the barrel 21 has a hexagonal interior to conform to a hexagonal ampul 22. The barrel 21 has side openings 2 through which the ampul is visible. One of these openings may be large enough to admit of the ampul being inserted sideways if desired. There is a disadvantage in the use of an ampul and cylinder whose related self-positioning means in cross section are in multiple diametrical pairs as exemplified in Fig. 8 because such a cross section will not always definitely position an ampul in the barrel in a predetermined circumferential relation, hence the advantage of forming the self-positioning means approximately as shown. There may, of course, be a plurality of beads 8 or grooves 10 on each ampul as instanced in Figs. 3 and 4.

As this invention is of commanding and humanitarian importance it is claimed in its broadest interpretation regardless of the variable exigencies of materials, production etc., which may cause modifications of one kind or another without affecting the purpose of my invention.

What I claim is:

1. An open ended tubular ampul adapted to be used in a tubular syringe having a slot in its wall, suitable slidable closures for said ends and means formed on the exterior of the ampul to predeterminedly position the same in the syringe against rotation.

2. An ampul comprising a tubular container having slidable means for closing the ends thereof, a cooperating syringe barrel having an opening in its walls and means comprised in the adjacent surfaces of the ampul and syringe adapted to maintain their

assembled relation to each other against rotation.

3. An ampul comprising a reversible tubular container, movable closures for the ends of the ampul, means on the circumference of such ampul adapted to retain the same in use, and a tubular syringe having an opening in its wall, and cooperating means on its interior adapted to hold the ampul against rotation so as to leave certain parts of it visible.

4. An ampul provided on its outer surface with indications of its contents, etc., and means on such surface in relation to said indications adapted to so position the ampul in a cooperating tubular syringe that the indications will be visible through an opening in the syringe wall.

5. In hypodermic syringes, a barrel or casing, a removable ampul unit having indications thereon, a hollow needle cooperating with one end of the ampul, a plunger cooperating with the other end of the ampul, slidable means for closing the ampul ends, and cooperating means between the barrel and the ampul for defining their relation to each other against rotation in a predetermined position so as to leave the indicating portions of the ampul visible.

6. In hypodermic syringes, a barrel or casing, a needle cap at one end, a plunger cap at the other end, a slidable plunger in the latter, a needle in the other end, a tubular ampul open at both ends and having indications thereon placed within the barrel between the needle and the plunger, and cooperating means between a barrel having an opening in its side wall and the ampul adapted to limit the ampul to a predetermined non-rotative position in the barrel to thereby leave certain parts of the ampul visible through the said opening.

7. In hypodermic syringes, a suitable barrel having an opening in its wall, means for controllably closing the ends of the barrel so as to form an ampul chamber therebetween, and means within such chamber for defining the non-rotative relation of a cooperating ampul inserted therein to so position the ampul in the syringe that indications on the ampul may be visible.

8. A combined tubular hypodermic syringe having an opening in its wall, a removable ampul having self-positioning means on its exterior surface adapted to predeterminedly hold the ampul in the syringe against rotation so as to prevent the use of unauthorized ampuls.

9. A combined hypodermic syringe and ampul comprising a syringe having a lengthwise bead and an ampul having a cooperating groove adapted to prevent the use of substitute ampul.

10. A combined hypodermic syringe and ampul comprising radially formed cooper-

ating means between the syringe and ampul adapted to prevent the use of substitute ampuls.

11. In hypodermic syringes, a combined
5 barrel and an insertable ampul adapted to
enter the barrel, and cooperating means on
the exterior of the ampul between the barrel
and ampul for preventing the use of non-
cooperating and unauthorized ampuls in said
10 barrel.

12. A self authenticated ampul, comprising an open ended tubular member having closures for the same the wall of said member having means formed thereon to predeterminedly locate the member in a syringe in
15 a definite position to guard against the use of substitute ampuls.

In testimony whereof I affix my signature.

HENRY KINSEY BROWN.