Jan. 2, 1940. A. BORLAND ET AL 2,185,536

SYRINGE

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Fig. 1.

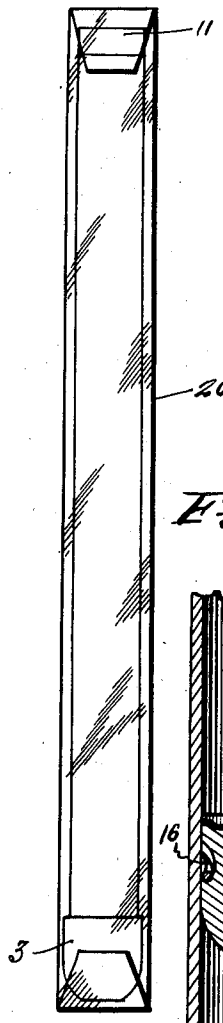


Fig. 2.

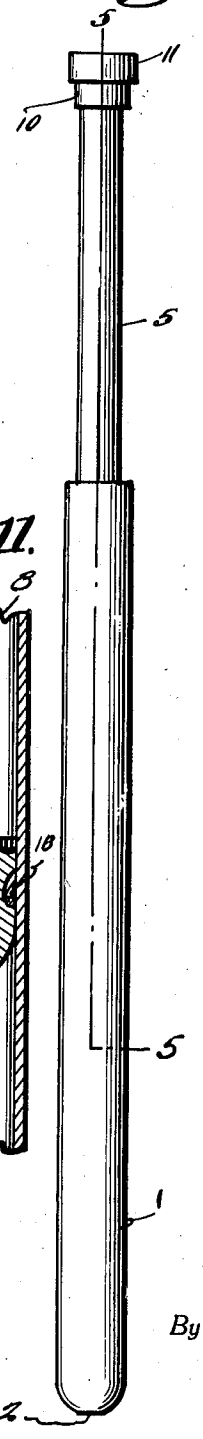


Fig. 7.

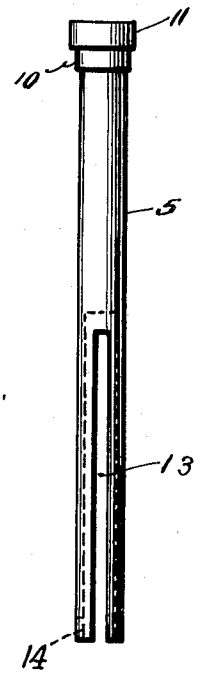


Fig. 11.

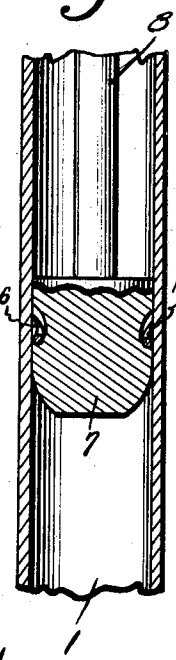


Fig. 3.

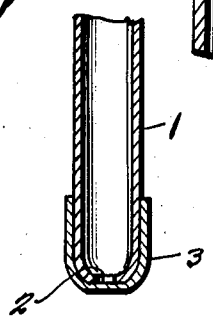
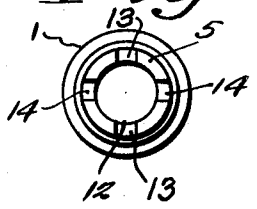


Fig. 8.



Inventor

Alexander Borland
A.W. Spencer
C.E. Hymers

By Clarence O'Brien
Hyman Berman

Attorneys

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Fig. 6.

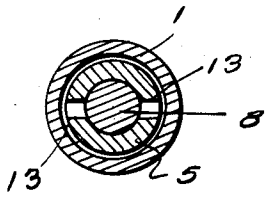


Fig. 5.

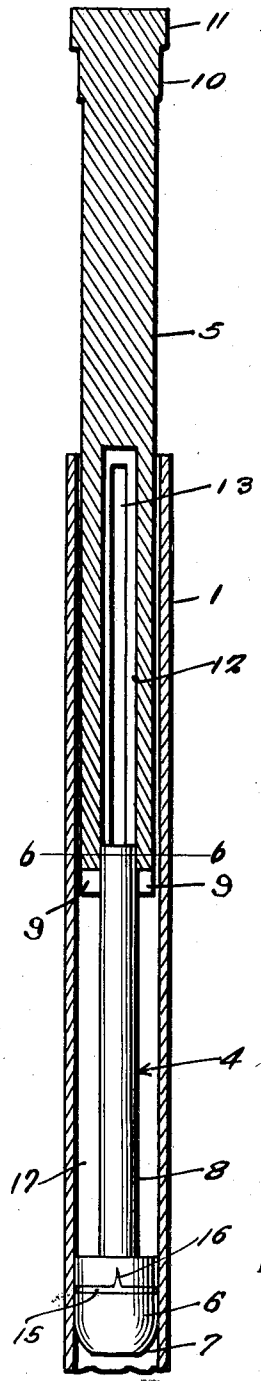


Fig. 10.

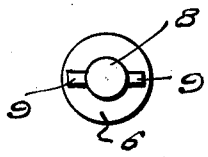


Fig. 4.

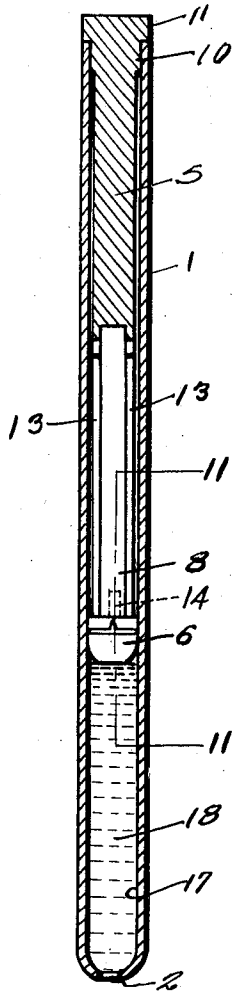
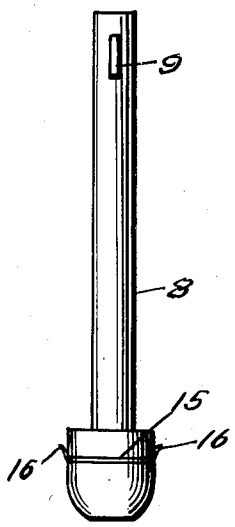


Fig. 9.



Inventor

Alexander Borland

A. W. Spencer

C. E. Hymers

By Clarence A. O'Brien

Hyman Berman

Attorneys

Patented Jan. 2, 1940 2,185,536

UNITED STATES PATENT OFFICE

2,185,536

SYRINGE

Alexander Borland and Cuthbert Elroy Hymers, Pontiac, and Arthur W. Spencer, Rochester, Mich.

Application March 18, 1938, Serial No. 196,784

1 Claim. (Cl. 128—261)

Our invention relates to improvements in syringes of the so-called pencil type for the injection of medicated compounds particularly of paste or salve form into orifices of the body.

The invention is designed with the particular purpose in view of providing a simply constructed inexpensive device of this character adapted for pre-loading with a fixed maximum amount of compound and which is non-refillable after ejection of the compound so that it may be used but once thereby reducing the hazards to health resulting from indiscriminate use of such devices without sterilizing the same.

Other, and subordinate objects, are also comprehended by our invention all of which together with the exact nature of our improvement will be readily understood when the succeeding description and claims are read with reference to the drawings accompanying and forming part of the specification.

In said drawings:

Figure 1 is a view in elevation illustrating our improved syringe with the wrapper imposed thereon.

Figure 2 is a similar view drawn to an enlarged scale with the wrapper removed and the manipulative section retracted,

Figure 3 is a fragmentary view in longitudinal section of the inner end of the barrel and the cap closing the same,

Figure 4 is a view in longitudinal section showing the plunger contracted and telescoped in the barrel,

Figure 5 is a fragmentary view in longitudinal section taken on the line 5—5 of Figure 2 and drawn to an enlarged scale,

Figure 6 is a view in transverse section taken on the line 6—6 of Figure 5 and drawn to a further enlarged scale, with the manipulative section of the plunger turned 90°.

Figure 7 is a view in side elevation of the manipulative section detached,

Figure 8 is a view in bottom plan thereof drawn to an enlarged scale,

Figure 9 is a view in side elevation of the ejector section,

Figure 10 is an end view of the outer end of said ejector section, and

Figure 11 is a fragmentary view in longitudinal section taken on the line 11—11 of Figure 4 and drawn to an enlarged scale, with the manipulative section of the plunger removed.

Referring to the drawings by numerals, the syringe of our invention comprises an elongated pencil-like barrel 1 of any suitable inexpensive material, such as Celluloid, rubber composition, or the like, having a nozzle-like front end 2 and open at its rear end. A cap 3 is provided for closing the end 2, the cap fitting over said end in a manner to seal the same. The barrel 1 contains a sectional rod-like plunger comprising a front ejector section 4 and a rear manipulative section 5. The ejector section 4 comprises a head 6 at the front end thereof slidably fitting snugly in the barrel 1 and preferably having a rounded front edge 7, and a reduced shank 8 provided adjacent the rear end thereof with a pair of lugs 9 extending laterally from opposite sides thereof respectively. The manipulative section 5 fits loosely in the barrel 1, for endwise and rotary movement relative thereto, with the exception of the outer end which is stepped to provide an enlarged part 10 adapted to fit snugly in the outer end of the barrel and close the same and a further enlarged finger grip part 11 adapted to abut the outer end of said barrel. Extending into the section 5, from the inner end thereof, is an axial bore 12 into which the shank 8 has a sliding fit and whereby said sections 4 and 5 are telescopically and rotatably related and the plunger adapted for extension and contraction. Manipulative section 5 is provided at opposite sides thereof with a pair of diametrically opposite longitudinal slots 13 extending from the inner end thereof and adapted to receive the lugs 9 and form together therewith a spline connection between the section 5 and shank 8. The inner end of the section 5 has a diametrical notch 14 therein extending at an angle of 90° to the plane of the slots 13. The head 6 has embedded therein an annular member 15 of resilient wire provided with rearwardly extending prongs 16 for biting into the inner face of the barrel 1 to prevent retraction of the section 4.

In the normal position of the parts the plunger is contracted and shoved into the barrel 1, that is to say, the section 4 is telescoped into the section 5 with its head 6 engaging the inner end of said section and its lugs 9 in the slot 12, and the section 5 is telescoped into barrel 1 with its part 10 fitting into and closing the outer end of the barrel and the part 11 abutting said end of the barrel and thereby limiting inward movement of said section 5. In this position of the parts the head 6 is spaced inwardly from the inner end 2 of the barrel 1 to form together with said end 2 a loading chamber 17 in the front end of the barrel of fixed capacity, it being understood that the sections 4 and 5 are properly di-

mensioned to fix the capacity of the chamber 17 as desired.

Prior to assembling the parts in the described relation but with the cap 3 positioned on the barrel 1 the latter is loaded, as at 18, to the capacity of the chamber 17, after which the plunger is inserted in said barrel with the parts in the normal position as set forth. The device is now ready for distribution to the trade preferably in a wrapper 20 of any suitable transparent material.

When it is desired to use the compound 18, the wrapper 20 and cap 3 are removed, the section 5 retracted out of the barrel 1 by means of the part 11 until it may be rotated relative to the section 4, it being understood that the section 4 is held against retraction by the section 5 through the medium of the prongs 16 functioning in the manner previously described. The section 5 is then rotated against the outer end of the shank 8 to approximately a quarter turn with pressure inwardly against said end and until the notch 14 aligns with lugs 9 at which point the section 5 is shoved inwardly to seat the lugs 9 in said notch whereby a one-way connection is formed between the sections 4 and 5 such that under further inward movement of section 5 the section 4 may be moved to the inner end of the barrel to eject the compound 18 from the chamber 17. At the end of ejecting movement of the section 8, said section is locked against retraction by the prongs 16 in a manner which will now be clear, and consequently the chamber 17 cannot be filled.

The foregoing will, it is believed, suffice to impart a clear understanding of our invention without further explanation.

Manifestly, the invention is susceptible of modification without departing from the inventive concept and right is herein reserved to all such modifications falling within the scope of the subjoined claim.

What we claim is:

In a syringe of the class described, an elongated barrel having an open rear end, a plunger in said barrel comprising a front ejector section and a rear manipulating section telescoping over the front section for movement relative thereto inwardly and outwardly of said barrel and rotatable relative to the front section in the outwardly moved position thereof into different positions, and means to establish a one-way driving connection between said sections under rotation of said rear section into one position whereby inward movement of the rear section will correspondingly move the front section, said means including a pair of lugs extending laterally from opposite sides of the front section, respectively, said rear section having a pair of longitudinally extending slots therein open at the inner end of the section and registering with said lugs under rotation of the rear section into another position to slidably receive the lugs whereby in said other position thereof said rear section may be moved inwardly and idly relative to the front section and means on the front section coacting with the inner face of the barrel to prevent outward movement of said front section comprising a split resilient ring counter-sunk in said front section and having prongs thereon.

ALEXANDER BORLAND.
ARTHUR W. SPENCER.
CUTHBERT ELROY HYMERS.