

March 1, 1966

R. W. OGLE

3,237,815

UNIVERSAL PLUNGER

Filed June 5, 1964

FIG. 1. → 2

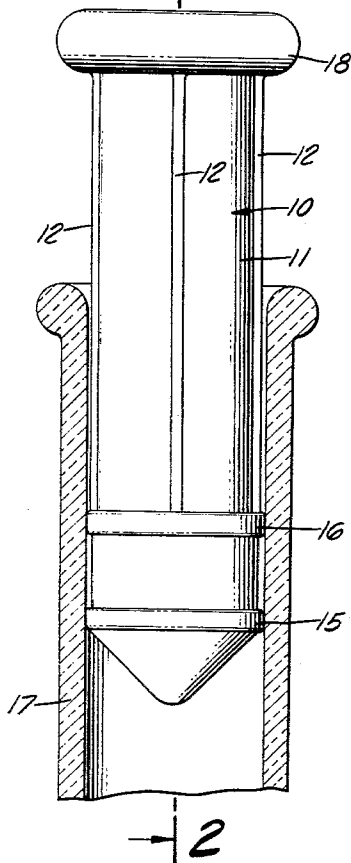


FIG. 2.

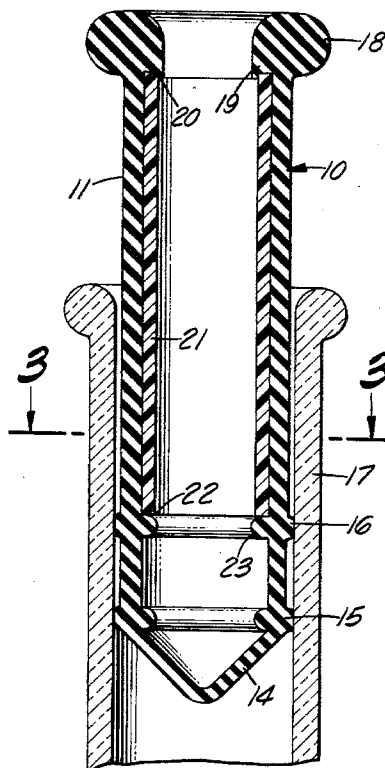


FIG. 3.

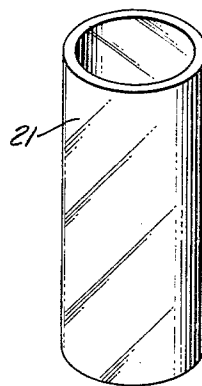
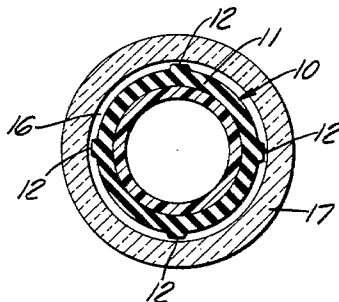


FIG. 4.

INVENTOR.
ROBERT W. OGLE
BY *Lyon & Lyon*
ATTORNEYS

1

3,237,815

UNIVERSAL PLUNGER

Robert W. Ogle, Phoenix, Ariz., assignor to V.P.P. Inc.,
a corporation of Delaware
Filed June 5, 1964, Ser. No. 372,875
5 Claims. (Cl. 222—386)

This invention relates to a plunger for a syringe adapted to be preloaded with a single dose of a medicament.

While more generally applicable, the plunger of this invention is particularly adapted for use in syringes having a glass barrel in which is preloaded a single dose of a medicament and therefore, while the barrel is formed of glass, the plunger is preferably formed of rubber, as both glass and rubber are compatible over long periods of time with most of the medicaments with which it is desired to load the syringe.

Experience has shown, however, that a hollow plunger formed of thin walled rubber is likely to be unstable when used in that it can bend or collapse.

Accordingly, it is a feature of this invention that a plunger is provided formed essentially of rubber, but having a stiff plastic or metal liner throughout the major portion of the plunger to prevent the same from bending or buckling.

These and other features, objects and advantages of the present invention will be apparent from the annexed specification in which:

FIGURE 1 is a side view partly in section through a fragmentary syringe barrel and the plunger embodying the present invention;

FIGURE 2 is a section taken along the line 2—2 of FIGURE 1;

FIGURE 3 is a section taken along the line 3—3 of FIGURE 2; and

FIGURE 4 is a perspective elevation of the liner.

Referring now more particularly to the drawings, the invention consists of a plunger 10 formed of rubber and having a wall 11 which is relatively thin compared to the dimension of the hollow interior of the plunger. The plunger has four stiffening ribs 12 running longitudinally thereof and at its bottom end is provided with a V-shaped closed end 14. A pair of rings 15 and 16 are formed near the bottom of the plunger 10 and the outer diameter of the rings 15 and 16 is received in the barrel 17 with a press fit and seals the plunger to the interior of the barrel.

The upper end of the plunger is provided with a bead 18 and an inwardly extending portion of the bead 19 forms a shoulder 20. A liner 21 preferably of a stiff plastic such as polystyrene, but if desired, formed of metal such as aluminum is provided. The liner 21 is in the shape of a hollow cylinder open at both ends and the upper end of the liner 21 seats on the shoulder 20 and the lower end seats on the shoulder 22 formed by the inwardly extending ring 23 opposite the ring 16. It has been found in practice that by using the liner 21 with respect to the otherwise all rubber plunger 10 any tendency to buckle is avoided, but still there is nothing in contact with the medicament other than the glass forming the barrel 17 and the rubber of the plunger.

While there has been described what is at present considered a preferred embodiment of the present inven-

2

tion, it will be appreciated by those skilled in the art that various changes and modifications can be made therein without departing from the essence of the invention and it is intended to cover herein all such changes and modifications as come within the true spirit and scope of the appended claims.

I claim:

1. A plunger for a syringe having a hollow barrel comprising: a generally cylindrical member having a closed lower end and an open upper end; near said lower end a plurality of outwardly extending rings on said cylindrical member adapted to engage the inner wall of a syringe barrel; a bead on the open end of said cylindrical member a portion of which extends inwardly and forms a shoulder; the uppermost of said rings having a portion extending inwardly and forming a shoulder and a stiff cylindrical liner in said cylindrical member, fitting the inner wall thereof and seated at each end on one of said shoulders.

2. A plunger as set forth in claim 1 in which said liner is formed of polystyrene plastic.

3. A plunger as set forth in claim 1 in which said liner is formed of aluminum.

4. A plunger for a syringe having a hollow barrel comprising: a generally cylindrical rubber member having a closed lower end and an open upper end; near said lower end a plurality of outwardly extending rings on said cylindrical member adapted to engage the inner wall of a syringe barrel; a bead on the open end of said cylindrical member, a portion of which extends inwardly and forms a shoulder; the uppermost of said rings having a portion extending inwardly and forming a shoulder, and a stiff cylindrical liner in said cylindrical member, fitting the inner wall thereof and seated at each end on one of said shoulders.

5. A plunger for a syringe having a hollow barrel comprising: a generally cylindrical rubber member having a closed V-shaped lower end and an open upper end; a plurality of stiffening ribs running longitudinally of said member; near said lower end a plurality of outwardly extending rings on said cylindrical member, said rings extending beyond the ribs and being adapted to engage the inner wall of a syringe barrel; a bead on the open end of said cylindrical member, a portion of which extends inwardly and forms a shoulder; the uppermost of said rings having a portion extending inwardly and forming a shoulder, and a stiff cylindrical liner in said cylindrical member, fitting the inner wall thereof and seated at each end on one of said shoulders.

References Cited by the Examiner

UNITED STATES PATENTS

2,607,342	8/1952	Abel	128—218
2,832,340	4/1958	Dann et al.	128—218
2,895,773	7/1959	McConnaughey	309—23
3,028,052	4/1962	Archer	222—386 X
3,050,059	8/1962	Wall et al.	128—218
3,098,483	7/1963	Nielsen	128—220
3,150,801	9/1964	Hamilton	128—218 X

LOUIS J. DEMBO, *Primary Examiner*.

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,237,815

March 1, 1966

Robert W. Ogle

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

In the grant line 2 and line 11, and in the heading to the printed specification, line 3, for "V.P.P.", each occurrence, read -- U.P.P. --.

Signed and sealed this 19th day of September 1967.

(SEAL)

Attest:

ERNEST W. SWIDER

Attesting Officer

EDWARD J. BRENNER

Commissioner of Patents