

March 11, 1941.

R. F. IVERSON

2,234,256

PEN FILLING INK BOTTLE

Filed June 10, 1940

Fig. 1.

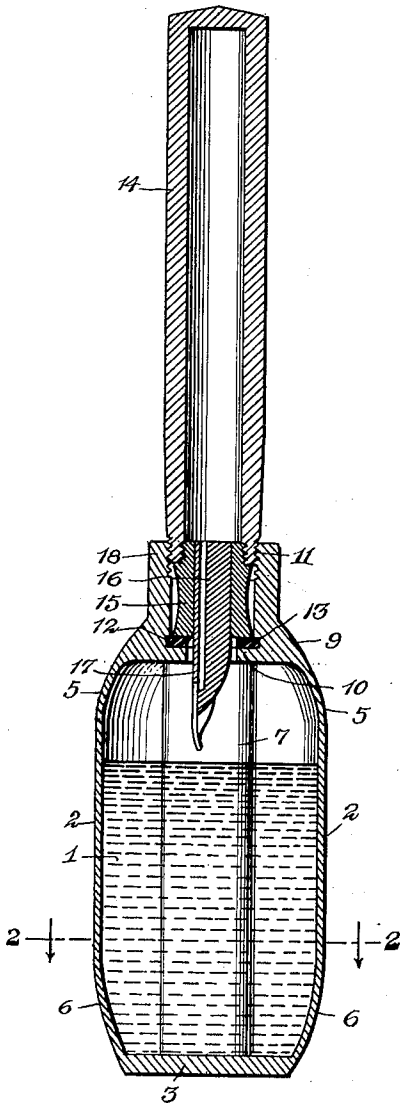


Fig. 2.

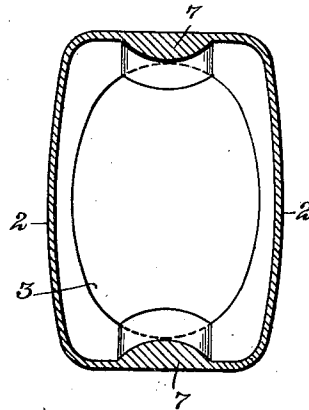
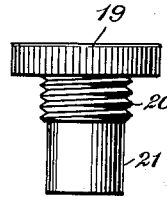


Fig. 3.

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2,234,256

PEN FILLING INK BOTTLE

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Application June 10, 1940, Serial No. 339,613

14 Claims. (Cl. 226—63)

This invention relates to ink bottles and particularly to the type designed to be the filling medium for fountain pens.

One of the principal objects of the invention is to eliminate the conventional filling mechanisms of fountain pens and thereby parts that are subject to wear, repair and replacement.

It is another principal object of this invention to provide an ink bottle whereby fountain pens can be filled by manipulation of the bottle.

Still another principal object of the invention is to provide a fountain pen adaptable for use with my ink bottle and which will also be adaptive for filling from other types of ink bottles.

A fourth object is to provide means whereby other types of ink bottles may be made adaptable for filling pens in accordance with certain principles and features of my invention.

A fifth object is to increase the ink capacity of pens without increasing the size thereof, or to decrease the size of pens without decreasing ink capacity.

A sixth object is to provide a cleaner method of filling fountain pens.

A seventh object of the invention is to eliminate or at least minimize the danger of injuring the pen point in the process of filling the pen.

And an eighth object of the invention is to provide a method of filling fountain pens whereby the ink bottle may be completely emptied of its contents in the pen filling process.

How these objects have been attained by my invention, and other features and advantages of the invention will be apparent from the following description with reference to the accompanying drawing in which:

Fig. 1 is a central longitudinal sectional view of the preferred embodiment of my pen filling ink bottle, and a fountain pen attached thereto in filling relationship;

Fig. 2 is a transverse sectional view taken on the line 2—2 Fig. 1;

Fig. 3 is an elevational view of a stopper for the bottle.

This invention involves the application and use of two fundamental principles: one, the insertion of the writing end of a fountain pen into the neck of an ink bottle in a leak-proof engagement and the inverting of the assembled elements, thus employing the principle of gravity in the filling of the pen; and two, the novel process of filling pens by the application of pressure to, and the compression of, the sides of the ink bottle.

With reference to the drawing, the numeral 1 denotes an ink bottle preferably made of plastic

material with two diametrically opposite flexible sides 2, 2 of the proper thickness and pliability to permit compression thereof under light manually applied pressure without cracking or breaking. In order to maintain the normal form of the bottle the other two sides thereof are reinforced as indicated by the numerals 7, 7. The bottom of the bottle is likewise reinforced as at 3 (Fig. 1).

It is to be noted that the lower extremity of the bottle tapers off as at 6, 6 Fig. 1 to the elliptical form bottom 3 Fig. 2; and that the upper extremity of the body of the bottle tapers off as at 5, 5 to a parabolic shaped shoulder denoted by the numeral 9. This tapered feature of construction is specially designed to facilitate smooth and easy longitudinal compression of the sides 2—2 of the bottle.

With reference to the neck 31 of the bottle 1, it will be noted that the lower portion thereof forms an internal shoulder 10; and that the upper portion thereof is provided with threads 11 that correspond to the external threading on the lower end of the fountain pen. On the shoulder and in the annular groove 13 which is formed or cut in the wall of the bottle neck is seated a washer 12 which is preferably of rubber or of composition of identical qualities.

The pen as shown comprises a barrel 14, the lower end of which is threaded internally to receive the usual section 15 into which feed bar 16 and a pen point 17 are fitted in the customary manner; and threaded externally to correspond with the threading 11 of the bottle neck substantially as shown.

Fig. 3 illustrates a stopper for my ink bottle. With reference thereto the number 19 denotes a knurled head, 20 denotes threading to correspond with the threading 11 of the bottle neck, and 21 denotes a shank designed to seat against the washer 12 to prevent splashing of ink into the bottle neck when the bottle is moved about or the contents thereof is shaken.

Having thus described the mechanical features of my invention I shall now describe and explain its operation in practice.

The pen is threaded into the neck of the bottle until its lower end contacts and seats securely on the washer 12 as shown in the drawing. Then, with the thumb and forefinger of one hand acting as the axis—thumb on one of the compressible sides of the bottle and forefinger on the other—the combination is turned to the filling position which is with the bottle bottom side up and the pen extending perpendicularly downward. The pen is then filled by a succession of pressure ap-

plications to the sides of the bottle by the thumb and forefinger of the hand in which the bottle is held.

Application of pressure to the sides of the bottle sets up reciprocal action whereby the pressure created within the bottle, combined with the influence of gravity upon the air and liquid contents of bottle and pen, causes the flow of a quantity of ink from the bottle into the pen.

Release of the pressure against the sides of the bottle results in a process of equalization of pressure within bottle and pen that causes a partial vacuum which in turn, causes a quantity of air to pass from the pen into the bottle.

To facilitate filling, especially when the ink supply in the bottle is low, the sides of the bottle may be partially compressed while the pen is being threaded into filling position. Releasing the pressure after the pen has been properly seated will create a partial vacuum within bottle and pen. Then, when pressure is applied to the sides of the bottle in the filling process, the forces of gravity, vacuum and pressure combine to cause a flow of ink from the bottle into the pen.

It should be obvious to those skilled in the mechanics of pen construction and operation that by this method of filling fountain pens there is not the danger of injuring the pen point by striking it against the sides or bottom of the bottle that is inherent in filling pens from ordinary ink bottles. It will also be obvious that if due care is exercised in handling the bottle and pen in the course of the filling operation no ink will get on the section part of the pen and therefore no cleaning or wiping of the part will be necessary after the filling operation. Obviously too, there is less danger of spilling ink or of soiling the hands. And it will be obvious that the bottle can be drained to the last drop in the pen filling process.

That my invention will be susceptible to modifications without departing from the spirit thereof should also be obvious.

What I claim is:

1. A filling bottle for fountain pens comprising a one piece reservoir and attaching neck formed of plastic material, the reservoir having integral thin flexible sides and the neck having an interiorly threaded upper end and a seat for engagement with the lower end of a fountain pen upon screwing the pen into the threaded upper end of the neck.

2. A filling bottle for fountain pens comprising a one piece reservoir and attaching neck formed of plastic material, the reservoir having flattened sides including integral thin flexible sides and the neck being relatively thick and rigid and having an interiorly threaded upper end and a seat for engagement with the lower end of a fountain pen upon screwing the pen into the threaded upper end of the neck.

3. A filling bottle for fountain pens comprising a one piece reservoir and attaching neck formed of plastic material, the reservoir having thin flexible sides integral with rib reinforced sides and the neck being relatively thick and rigid and having an interiorly threaded upper end and a seat for engagement with the lower end of a fountain pen upon screwing the pen into the threaded upper end of the neck.

4. A filling bottle for fountain pens comprising a one piece reservoir and attaching neck formed of plastic material, the reservoir having thin flexible sides and the neck being thick and relatively rigid and having an interiorly threaded upper

end and a seat for engagement with the lower end of a fountain pen upon screwing the pen into the threaded upper end of the neck.

5. A filling bottle for fountain pens comprising a one piece reservoir and attaching neck, formed of plastic material, the reservoir having flattened sides including thin flexible sides and rib reinforced sides and the neck being relatively thick and rigid and having an interiorly threaded upper end and a seat for engagement with the lower end of a fountain pen upon screwing the pen into the threaded upper end of the neck.

6. A filling bottle for fountain pens comprising a one piece reservoir and attaching neck formed of plastic material, the reservoir having flattened sides including integral thin flexible sides and rib reinforced relatively inflexible sides, the neck being relatively thick and rigid and having an interiorly threaded upper end and a seat for engagement with the lower end of a fountain pen upon screwing the pen into the threaded upper end of the neck, and a pliable washer on the seat.

7. A filling bottle for fountain pens comprising a one piece reservoir and attaching neck formed of plastic material, the reservoir having flattened sides including thin flexible sides and rib reinforced sides and the neck being relatively thick and rigid and having an interiorly threaded upper end and a seat for engagement with the lower end of a fountain pen upon screwing the pen into the threaded upper end of the neck, an annular groove adjacent the seat, and a pliable washer in the seat and fitting into the groove.

8. A filling bottle for fountain pens comprising a one piece reservoir and attaching neck formed of plastic material, the reservoir having flattened sides including thin flexible sides and rib reinforced relatively inflexible sides and the neck being relatively thick and rigid and having an interiorly threaded upper end and a seat for engagement with the lower end of a fountain pen upon screwing the pen into the threaded upper end of the neck, and annular groove adjacent the seat, a pliable washer on the seat and fitting into the groove, and a stopper having a knurled head, a threaded central portion, and a shank for engagement with the seat when the stopper is threaded into the threaded upper end of the neck.

9. A filling bottle for fountain pens comprising a one piece reservoir and attaching neck formed of plastic material, the reservoir having thin flexible sides and the neck being relatively thick and rigid and having an interiorly threaded upper end and a seat for engagement with the lower end of a fountain pen upon screwing the pen into the threaded upper end of the neck, and a pliable washer on the seat.

10. A filling bottle for fountain pens comprising a one piece reservoir and attaching neck formed of plastic material, the reservoir having flattened thin flexible sides and the neck being relatively thick and rigid and having an interiorly threaded upper end and a seat for engagement with the lower end of a fountain pen upon screwing the pen into the threaded upper end of the neck, an annular groove adjacent the seat, a pliable washer on the seat and fitting into the groove, and a stopper having a knurled head, a threaded central portion, and a shank for engagement with the seat when it is screwed into the threaded upper end of the neck.

11. A filling bottle for fountain pens comprising a one piece reservoir and attaching neck

formed of plastic material, the reservoir having flattened sides including integral thin flexible sides, the thin flexible sides being transversely convex and the neck having an interiorly threaded upper end and a seat for engagement with the lower end of a fountain pen upon screwing the pen into the threaded upper end of the neck.

12. A filling bottle for fountain pens comprising a one piece reservoir and attaching neck formed of plastic material, the reservoir having flattened sides including integral thin flexible sides, the sides tapering off from a point near the lower end of the reservoir to an elliptiform bottom and the thin flexible sides being transversely convex, and the neck having an interiorly threaded upper end and a seat for engagement with the lower end of a fountain pen upon screwing the pen into the upper end of the neck.

13. A filling bottle for fountain pens comprising a one piece reservoir and attaching neck formed of plastic material, the reservoir having integral flattened thin flexible sides and reinforced relatively inflexible sides, and tapering off from a point near its lower end to an ellipti-

form bottom, and the neck being relatively thick and rigid and having an interiorly threaded upper end and a seat for engagement with the lower end of a fountain pen upon screwing the pen into the threaded upper end of the neck, an annular groove adjacent the seat, and a washer on the seat and fitting into the groove.

14. A filling bottle for fountain pens comprising a one piece reservoir and attaching neck formed of plastic material, the reservoir having integral flattened thin flexible sides and reinforced relatively inflexible sides, and tapering off from a point near its lower end to an elliptiform bottom, and the neck being relatively thick and rigid and having an interiorly threaded upper end and a seat for engagement with the lower end of a fountain pen upon screwing the pen into the threaded upper end of the neck, an annular groove adjacent the seat, a washer upon the seat and fitting into the groove, and a stopper having a knurled head, a threaded central portion, and a shank for engagement with the seat when the stopper is threaded into the upper end of the neck.

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