Dec. 23, 1941. F. M. ASHLEY 2,267,363

FOUNTAIN PEN

Filed April 29, 1939

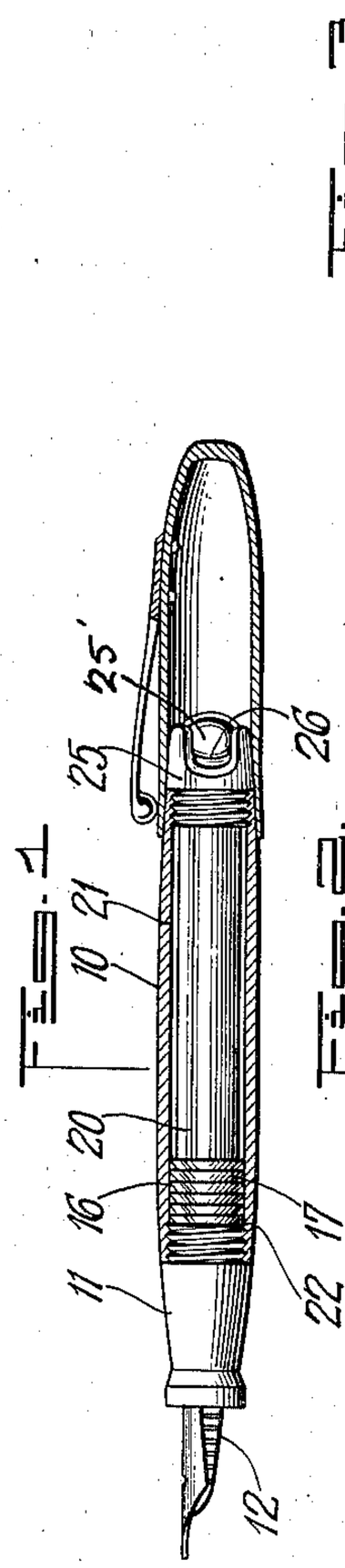

FIG. 1.

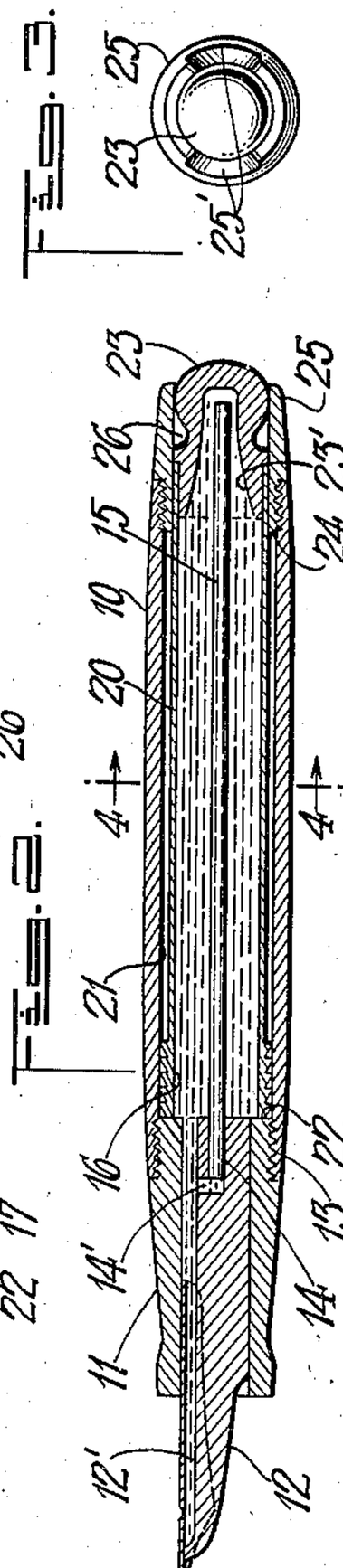

FIG. 2.

FIG. 7.

FIG. 8.

FIG. 9.

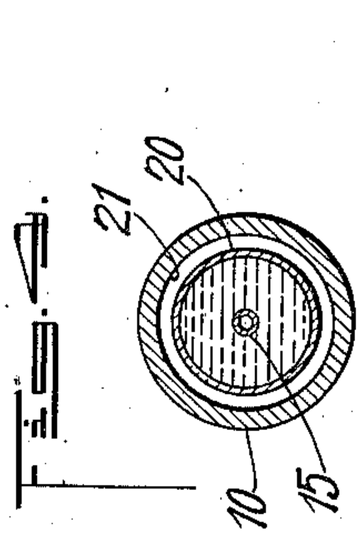

FIG. 4.

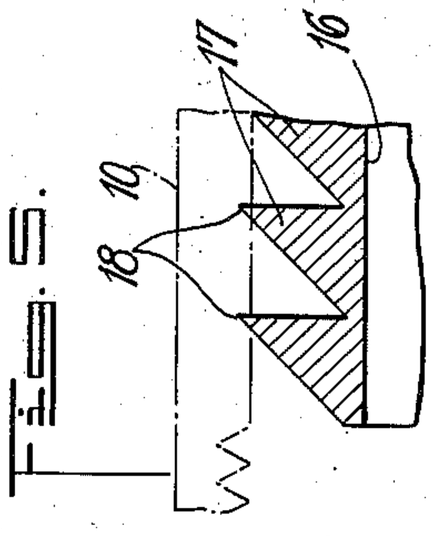

FIG. 5.

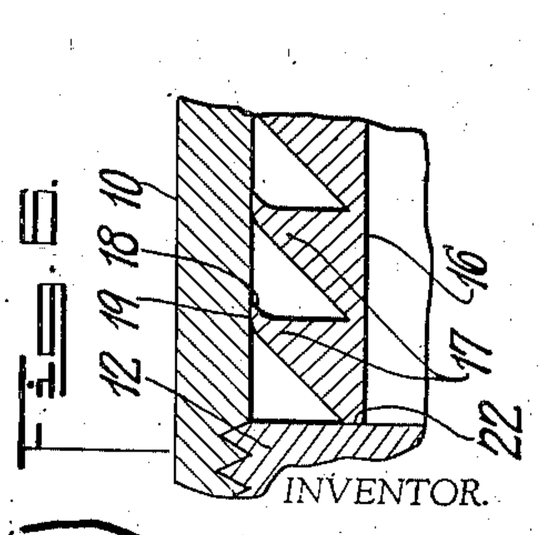

FIG. 6.

INVENTOR.

Frank M. Ashley

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2,267,363

FOUNTAIN PEN

Frank M. Ashley, Great Kills, N. Y., assignor to Lewis Gompers, New York, N. Y., as trustee

Application April 29, 1939, Serial No. 270,711

4 Claims. (Cl. 120—47)

My invention relates to fountain pens.

The object of my invention is to provide a self filling fountain pen that is strong in all of its parts and is composed of relatively few parts compared with pens of the piston type now on the market.

Further objects of my invention is to provide a pen having a tubular piston rod on which a piston is carried at its inner end and is preferably formed integral therewith.

Also to provide a construction in which the tubular rod is spaced from the inner wall of the barrel in which it rests, and thus provides an annular chamber for air which acts as a heat insulation.

The said annular chamber also serves as an overflow for ink in case the piston should become worn, and ink leaks past the piston, thus preventing the ink from escaping to the atmosphere at the rear end of the barrel.

A further object is to provide a piston pen in which no stuffing-box is required, and no end cap is needed to protect the end of the piston rod.

A further object is to provide a pen in which the ink may be viewed thruout the entire length of the reservoir.

A further object is to provide a construction in which the reservoir portion may be closed by a valve action to confine the ink entirely within the hollow piston rod, in one form of construction.

Referring to the drawing which forms a part of the specification:

Fig. 1 is a longitudinal sectional view of a pen disclosing an abutment member carried on the rear end of the barrel which is shown as it appears to view when the pen cap mounted thereon, and shown in section, is removed.

Fig. 2 is a longitudinal sectional view showing the entire combination of elements assembled, with ink in the chamber of the piston rod.

Fig. 3 is a rear end view of the pen in which the rear end abutment is illustrated, and showing the said abutment formed to provide oppositely disposed slots which permit the end of the piston-rod to be grasped by the fingers in the act of filling the reservoir of the pen with ink.

Fig. 4 is a cross sectional view, taken on line 4—4 of Fig. 2.

Fig. 5 is a sectional fragmental view illustrating the preferred form of flange used in the piston construction; shown on an enlarged scale.

Fig. 6 is a sectional fragmental view of the flanges as they rest in contact with the inner wall of the barrel of the pen.

Fig. 7 is a longitudinal sectional view showing a modified construction in which the tubular piston-rod extends into the barrel of the pen, a distance less than the length of the rod, and in which the barrel is used as a portion of the reservoir.

Fig. 8 is a longitudinal sectional view of a modified form of construction.

Fig. 9 is a longitudinal sectional view of the piston and tubular piston-rod, the piston being made separately and thereafter joined to the rod, thus permitting a thicker wall and deeper flanges to be used in making the piston, and also permitting a piston to be made of a different material from that of the rod.

10 indicates the barrel of the pen, and 11 the front section which is secured thereto in the usual manner by screw threads 13, or otherwise.

12 indicates the feed-plug which is provided with the usual feed-duct 12', and with the usual passages 14 and 14' and air-tube 15, used in pens of multi-stroke constructions.

Fitted to slide in air-tight relation with the inner wall of the barrel, is a piston 16, made of resilient material, such as hard rubber or Celluloid, or other suitable material that is not affected by the acids of ink used in writing.

The outer edges of the flanges are formed, preferably, as illustrated in Fig. 5, and shaped to provide sharp edges 18 which bend as illustrated in Fig. 6, when the piston is inserted in the barrel, and present flattened surfaces 19, 19, etc. to the inner wall of the barrel at all times, the shape of the flanges not being changed by the alternate strokes of the piston.

The piston may be formed integral with the piston-rod 20 on which it is mounted, or may be separable, as illustrated in Fig. 9, and in either case it is made with a diameter greater than that of the interior diameter of the barrel and thus serves to provide an annular space or chamber 21 between the barrel and piston-rod wall, which serves as an insulating means to prevent transmission of heat from the hand of a user to the ink reservoir formed in the hollow piston rod, and also serves as an overflow chamber in case the piston should become leaky from any cause.

In Figs. 1, 2, 6, and 8, the piston normally rests in abutment with the end of the pen section at 22 in ink-tight relation and forms a valve which will prevent ink from leaking by the piston in case it should become leaky from long wear, and in said figures the piston-rod is of uniform outer

diameter from the piston to its outer end, together with the plug **23** which closes the rear end of the piston-rod chamber. The end abutment element **25** serves as an abutment for the piston on its outward stroke, the piston striking the end wall of said plug at **24**.

The inner end of the plug **23** is recessed to receive the adjacent end of the air-tube **15** and is belled as shown at **23'** to insure the entrance of the air-tube in the event that the air tube is not in alignment with the longitudinal axis of the barrel.

The abutment plug **25** is slotted on opposite sides as illustrated at **25'** in Fig. 3, and the end plug **23** is formed with an annular groove **26** which rests in position relative to the abutment element as illustrated in Fig. 1, the arrangement being such that the end of the plug **23** is covered while permitting the said end to be grasped by the fingers to operate the piston-rod in the act of filling the pen with ink.

In the construction shown in Fig. 8, the tubular piston-rod is made in two sections, **20**, and **20'** joined at **27**, and the end of section **20** indicated by **28** abuts the end **24** in the filling operation.

The construction shown in Fig. 7, includes a ring **29** which serves an an abutment valve for the piston **16**, the piston-rod being shortened relative to those shown in the other figures, and the barrel adjacent the inner end of the piston serves as a part of the reservoir for ink, thus permitting a greater quantity of ink to be stored in the pen.

The outer surface of the ring is cemented to the inner surface of the barrel, or held in fixed position by friction.

The inner diameter of the abutment plug **25** corresponds to the outer diameter of the piston-rod which slides therethru and guides the piston in true alignment with the axis of the barrel in the filling operation.

By covering the outer end of the piston-rod in the manner shown in Fig. 1, there is no danger of the said end catching in the clothing in removing it from a pocket or other receptacle, and no separate cap is required to shield it.

The pen is filled in the usual manner of filling pens of the plunger type of construction, that is, by reciprocating the piston one or more times, depending upon the length of the stroke of the piston, as will be readily understood by those skilled in the art to which this invention relates.

It will be understood that the barrel and piston-rod may both be made of transparent or translucent or opaque material suitable for such use.

It will also be understood that by making the wall of the piston quite thin, it will conform to minor changes of form of the inner wall of the barrel.

Having thus described my invention, I claim as new:

1. A fountain pen comprising a barrel, a pumping mechanism comprising a piston-rod slidable within said barrel, the rear end of said barrel being provided with oppositely disposed slots through which the end of said piston rod may be grasped and freely moved.

2. A construction as defined in claim 1, in which said slots are open at their outer ends.

3. The construction as defined in claim 1, together with the outer end of said piston-rod being of bulbous form to permit easy grasping.

4. A fountain pen comprising a barrel, a tubular piston-rod, and a ring-shaped piston mounted thereon, formed to provide a plurality of thin resilient flanges arranged in juxtaposed relation and of slightly larger diameter than the inner diameter of said barrel and having backwardly directed sharp edges adapted to slide in close contact with the inner wall of the barrel.

FRANK M. ASHLEY.