

1,145,657.

Fig. 1.

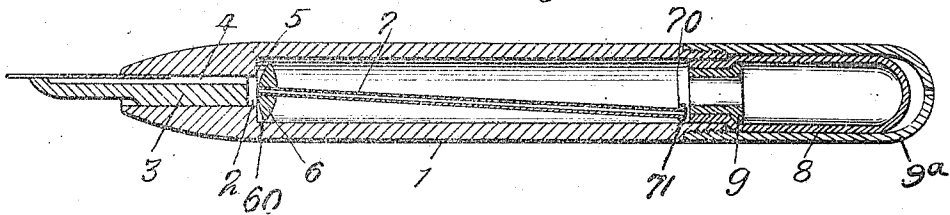


Fig. 2.

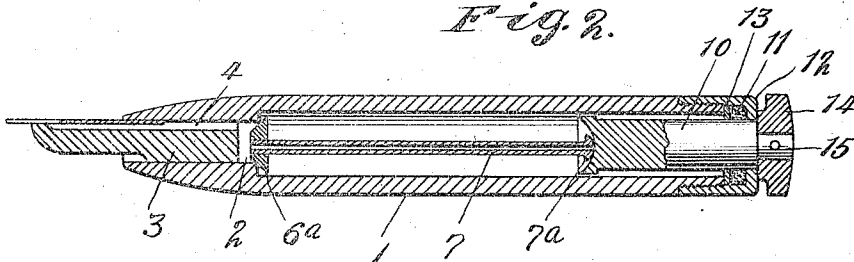
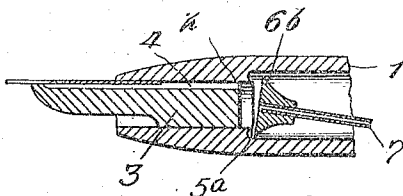


Fig. 3.

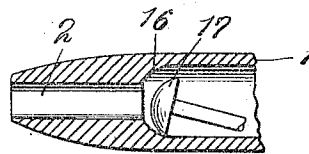


Fig. 1.

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UNITED STATES PATENT OFFICE.

FRANK M. ASHLEY, OF NEW YORK, N. Y.

FOUNTAIN-PEN.

1,145,657.

Specification of Letters Patent.

Patented July 6, 1915.

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To all whom it may concern:

Be it known that I, FRANK M. ASHLEY, a citizen of the United States, and a resident of New York city, borough of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Fountain-Pens, of which the following is a specification.

This invention relates to fountain pens, more particularly to the type known as self-fillers.

The principal object of this invention is to provide a self-filling fountain pen which is of durable construction and is efficient and certain in its operation.

In carrying out my invention, I provide an automatic valve which is freely movable longitudinally of its axis to close communication between the ink duct and the lower end of the barrel. A tube extends from this valve to the upper portion of the barrel to conduct the air which is forced out when the valve is automatically positioned to interrupt the communication as before stated. This valve is certain in its action and is totally free from any joints or other connections which may be liable to get out of order.

Further objects and advantages will appear from the description and the claims.

In the drawing Figure 1 is a longitudinal section through one form of my improved construction in which a flexible sack is used for the purpose of expelling the air. Fig. 2 is a longitudinal section of another form of my improved construction wherein a solid plunger is used for the purpose of expelling the air and being provided with means for shutting off all communication between the barrel and ink duct when the pen is not in use; the valve also being formed with a tapered head. Figs. 3 and 4 are sectional details illustrating different forms of valves which may be used.

Referring to Fig. 1, the barrel 1 has a bore 2 which receives the feed plug 3 having an ink duct 4 formed therein. The interior of the barrel is of larger diameter than the bore 2 and forms a shoulder 5 having a sharp edge which is engaged by a freely movable valve 6. The contacting surface of

this valve is formed substantially spherical, so as to snugly fit the edge of the shoulder 5 when pressed against the same in any position within the range of its movement and also to allow the ink to flow freely past the valve when the latter is out of engagement with its seat. The edge 60 of the valve is made sharp so as to avoid sticking to the barrel. A tube 7 is connected to the valve 6 preferably centrally thereof and extends through the same and back to the upper part of the barrel. This tube establishes communication between the ink duct and the upper end of the barrel when the valve is forced against its seat. The upper end of the tube is provided with a collar 70 having a sharp edge 71. This collar acts as a weight to keep the valve tilted in the position shown in Fig. 1, when the pen is in writing position. The sharp edge prevents the collar from sticking to the barrel. The upper end of the barrel is open and has clamped thereto, a sack 8 of flexible, elastic material such as soft rubber. This sack is clamped to the barrel by means of a sleeve 9 extending preferably in the interior of the barrel. A cap 9^a may be secured over the top of the barrel, so as to normally inclose the rubber sack.

When it is desired to fill the barrel, the pen is dipped into the ink and kept preferably vertical, with the level of the ink extending up to the tapering finger portion of the barrel. The rubber sack 8 is then alternately compressed and allowed to expand. When it is so compressed the air is forced out through the tube and the pressure thereof also seats the valve 6 against the edge of the bore 2, thus preventing the egress of ink past the shoulder into the bore and feed duct. When the sack is allowed to expand, the valve is forced upward away from its seat and ink flows up through the feed duct to replace the air which has been expelled. Several movements of this sort of the flexible sack are sufficient to fill the pen. When it is desired for any reason to expel the ink from the pen or to clean it by expelling water which has been previously drawn into the pen for this purpose, the sack may be worked in the same manner as before indicated, but

with the pen kept at an angle to the horizontal with the end of the finger portion out of the liquid. When the pen is kept in this position, the valve is prevented from seating and inasmuch as no liquid can be drawn in, a compression of the sack will serve to expel any liquid which may remain in the barrel.

In the form illustrated in Fig. 2, I substitute a plunger 10 in place of the rubber sack. This plunger is contacted by packing 11 clamped between the cap 12 and the washer 13, thus fitting snugly against the body of the plunger. A finger piece 14 is attached to the pintle 15 extending from the plunger. When it is desired to cut off all communication between the barrel and the ink duct, this plunger is moved inward to the limit of its travel, and in this position, it contacts the end of the tube 7 causing it to seat against the edge of the bore 2 and also closing the upper end of the tube. The end of the plunger is dished, forming a concave, spherical surface which is adapted to properly contact with the convex enlargement 7^a of the tube 7, in substantially any position. The valve 6^a in this form is shown as tapered instead of spherical.

In the form illustrated in Fig. 3, a form of valve is shown having a flat surface 6^b adapted to contact with a sharp edge 5^a about the bore 2. This sharp edge may be formed by forming an annular depression on the shoulder between the barrel and the bore.

In the form of valve illustrated in Fig. 4, the shoulder 16 is engaged by the spherical valve 17. This shoulder is of substantially spherical concave form and is thus readily engaged by the spherical valve 17.

It will be noted that in all of the forms shown, the valve is freely movable with respect to its seat and the construction is free from joints or other derangeable connections of any kind. The pen can be very quickly and easily filled or emptied and may be easily adjusted so as to close all communication between the interior of the barrel and the ink duct. If desired, all flexible material may be omitted in the construction as illustrated in Fig. 2. These features are all of practical importance in a fountain pen of this type.

Having thus described my invention, I claim—

1. A fountain pen comprising a barrel, a bore at one end thereof, a feed plug in said bore, there being a shoulder between said bore and barrel forming a valve seat, a longitudinally freely movable check valve engaging said seat, a tube extending from said valve to the further end of the barrel, and means for forcing the air from said barrel out through said tube.

2. A fountain pen comprising a barrel, a

bore at one end thereof, a feed plug in said bore, there being a shoulder between said bore and barrel forming a valve seat, a longitudinally freely movable check engaging said seat, said engaging surface being spherical so as to seat tightly in various positions, a tube extending from said valve to the further end of the barrel, and means for forcing the air from said barrel out through said tube.

3. A fountain pen having a bore at one end thereof, a feed plug in said bore having an ink duct, a freely longitudinal movable check valve for automatically closing communication between said bore and the adjacent end of the barrel, said valve having a tapering surface, a valve seat having a sharp edge which said tapering surface engages, and means for forcing air out from said barrel through said duct.

4. A fountain pen having a bore at one end thereof, a feed plug in said bore, a freely longitudinally movable check valve for automatically closing communication between said bore and the adjacent end of the barrel, a tube extending from said bore to the upper end of the barrel, and means for forcing air from said barrel through said tube.

5. A fountain pen having a barrel, a feed plug having an ink duct, a freely longitudinally movable and tiltable check valve for opening and closing communication between said ink duct and barrel, there being an air vent between the plug and barrel, and means for forcing the air out of the barrel through said vent, the valve seating on its seat to prevent egress of ink when the air is forced out.

6. A fountain pen having a barrel, a feed plug having an ink duct, and a freely longitudinally movable and tiltable valve for opening and closing communication between said ink duct and barrel, said valve comprising a head and a stem extending rearwardly therefrom within the barrel, said stem being of smaller diameter throughout than the head, said valve having a sharp edge adapted to contact the interior of the barrel.

7. A fountain pen comprising a barrel having a bore at one end thereof, a feed plug in said bore, there being a shoulder between said bore and barrel forming a valve seat, a longitudinally freely movable check valve engaging said seat, said valve comprising a head of smaller diameter than the interior of the barrel, a conduit extending from said head to the further end of the barrel, and means for forcing the air from said barrel out through said conduit.

8. A fountain pen comprising a barrel with a feed plug at one end thereof, a valve seat located adjacent the inner end of said plug, a longitudinally movable check valve

arranged to abut said seat and having a tube
extending therefrom to near the rear end
of said barrel, said valve being entirely dis-
connected from the barrel and plug, and
5 means for expelling the air from the barrel.

Signed at New York city, in the county of

New York, and State of New York, this 29th
day of July A. D. 1912.

FRANK M. ASHLEY.

Witnesses:

MINNIE S. MILLER,
MANUEL M. VOIT.