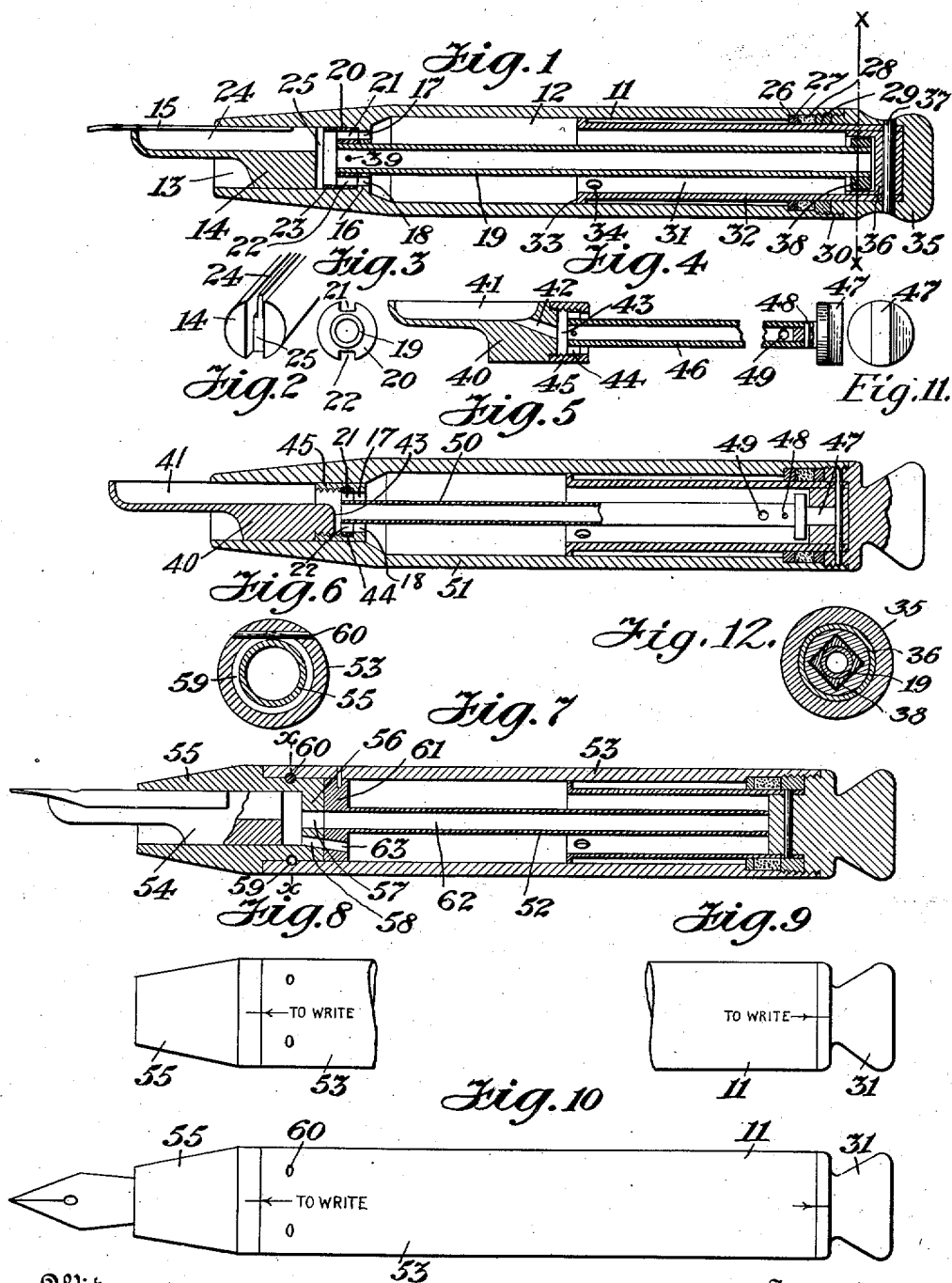


F. M. ASHLEY.
 FOUNTAIN PEN.
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FOUNTAIN-PEN.

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To all whom it may concern:

Be it known that I, FRANK M. ASHLEY, a citizen of the United States, residing at West Sixth street and Dewey avenue, Coney Island, New York city, New York, have invented certain new and useful Improvements in Fountain-Pens, of which the following is a specification.

My invention relates to fountain pens and particularly to that type known as self fillers.

The object of my invention is to provide a pen of this character which will be durable, easily filled, hold a large quantity of ink, and which may be adjusted to prevent flooding when the reservoir is nearly empty and in which the reservoir may be completely closed so that the pen may be carried in the pocket without danger of the ink escaping through the feed into the pocket of the wearer.

The broad feature of my invention consists in uniting in the construction a valve, and a conduit through which the air within the reservoir may escape when ink is drawn in the reservoir, and in the details of construction as hereinafter set forth and claimed.

Referring to the drawings which form a part of this specification, Figure 1, is a longitudinal sectional view of one form of my pen illustrating the valve operating means located at the rear end of the pen. Fig. 2, is a fragmental view of the rear end of the pen feed showing a vertical groove therein. Fig. 3, is an end view of the valve shown in Fig. 1 and tube connected thereto. Fig. 4, is a modified form of feed section with the valve connected thereto and also illustrating my preferred form for the end connection through which the valve is operated and which is shown in operative position in Fig. 5. Fig. 5, is a longitudinal sectional view showing a modified construction of feed section with the valve held in proper operative relation thereto, and with the tube extending to the rear end of the casing and in operative connection with the pumping mechanism which serves in this construction as a means for operating the valve. Fig. 6, is a cross sectional view of Fig. 7, on line $x-x$. Fig. 7, is a longitudinal view in section of another form of construction of the valve and the method of operating the same without the necessity of transmitting the movement through the instrumentality of

the tube. Fig. 8, is a partial view of the front end of the pen casing and section holder showing the line by which the alinement of the valve ports is indicated. Fig. 9, is a similar view illustrating the rear end of the casing of Figs. 1 and 5, and showing the alinement of the ports in this form of construction. Fig. 10, is an exterior view of Fig. 7 as it would appear in plan view, and illustrates the general appearance of the pen as a whole. Fig. 11 is a rear end view of Fig. 4. Fig. 12, is a cross sectional view through Fig. 1 on line $x-x$ thereof.

Referring to Fig. 1, 11 indicates a casing which is provided with a reservoir 12 and a hollow cylindrical portion 13 in which is fitted the pen section 14 and pen point 15. The casing is also provided with a flange 16 which is provided with two holes 17 and 18 located diametrically opposite to each other and a central opening through which the tube 19 projects and which it completely occupies, and mounted on the end of said tube is a disk valve 20 provided with passages 21 and 22 located at opposite sides thereof and adapted to register with the ports 17 and 18. The inner face of said valve 20 abuts the flange 16 and is held in position by a ring 23 which is held by friction in the hollow cylindrical portion 13. The pen section is provided with the usual feed duct 24 and is movable independent of the valve 20 or parts holding same in position, in this construction, but which is not so constructed in Fig. 5. The pen section is also provided with a vertical groove at its rear end indicated by 25 and if desired the ring 23 could be removed and the valve 20 held in position by the end of the pen section, but this construction is not recommended for the reason that the pen section should be movable longitudinally to provide for the adjustment of the pen point 15, and since the longitudinal movement of the valve in this figure is not provided for, I prefer to use the ring 23 as an abutment for the valve.

The rear end of the casing is provided with a shoulder 26 and a slightly enlarged inner diameter, and a ring 27 is fitted in the casing to abut said shoulder and is of slightly less interior diameter than the inner diameter of the casing 11. A packing ring of cork 28 abuts the ring 27 and a compression ring 29 is screwed in the end of the casing to hold said packing ring under proper tension and the thread which holds the ring

29 extends beyond the rear face of said ring and serves to engage the thread 30 formed on the rear end of the piston 31.

The piston 31 comprises a tube 32 provided with a flange 33 and a perforation 34 at its front end, and an end piece 35, a plug 36 having a recess, and a pin 37 which holds the said elements together as shown. The recess in the plug 36 is rectangular in form and fits over in sliding relation thereto, a rectangular shaped end piece 38 which is secured to the rear end of the tube 19, so that when the piston 31 is rotated, the tube 19 and valve 20 are turned thereby and the valve ports are in turn opened or closed as will be readily understood.

In assembling the parts, the tube 19 having attached thereto the element 38 is projected through the opening or reservoir in the casing 11 from the rear end so that the front end of the tube extends beyond the front end of the casing 11 and the valve 20 is then placed on the end of the tube and secured by a pin 39 which is passed transversely through the valve and tube to hold them firmly together and the ring 23 is then inserted in position. The tube 32 of the piston is next inserted in the casing 11 and the ring 27, packing 28 and ring 29 are then placed in position in the order named. The plug 36 is then placed in position together with the element 35, and the pin 37 is inserted to hold them together as shown. The pen section is next inserted together with the pen point, and the pen is then ready to be filled.

To fill, first force the piston within the casing as far as it will go before the screw threads engage. Should the piston strike against the end of the tube 19, by turning the piston on its axis a short distance, the rectangular formed portions of the piston and tube end will come opposite to each other and the piston may then be forced farther in the casing, thus engaging the tube end. Turn the end of the piston so that the line on its outer circumference is a quarter turn from the line on the exterior of the casing, thus closing the valve, (see Fig. 9.) and then insert the front end of the casing below the surface of ink and by reciprocating the piston relative to the casing about three times, the reservoir will be filled with ink. When the piston is reciprocated, the ink is drawn through the feed duct and tube and overflows into the reservoir on the out stroke of the piston and the air that is trapped above the surface of the ink is forced out through the tube on the in stroke thereof carrying with it the small amount of ink which remained in the tube, which is a very small amount compared to the amount drawn into the reservoir by the out stroke and thus the ink is introduced into the reservoir and the air expelled therefrom. The

thread at the end of the piston is adjusted so that when the piston is screwed in as far as it will go, the valve ports will be closed and the open end of the tube at its rear end will be closed by abutting the inner end of the piston, so that the reservoir is completely closed and the pen may be carried without danger of ink being spilled in the pocket of the wearer.

To write, turn the line on the piston in line with that on the casing, which will open the valve wide open and allow the ink to flow freely to the pen point. If flooding should occur when the reservoir is nearly empty, turn the casing slightly relative to the piston, thus partially closing the valve ports and thus restricting the flow of ink to the pen point.

Referring to Fig. 4, 40 indicates a modified form of pen section provided with a duct 41 and a central perforation 42 which extends to a groove 43 in the end of the pen section similar to that shown at 25 in Fig. 2, the projecting sides of which abut the front face of the valve 44 which valve is secured to the pen section in operable relation thereto by the cap 45 which screws onto the rear end of said pen section and the outer diameter of which is the same as that of the diameter of the pen section. The tube 46 which is connected to this valve in the same manner as that in Fig. 1 previously described, extends to the rear end of the pen casing when inserted therein, and is provided with a modified form of engaging device consisting of a disk having a short cylindrical projection on one face adapted to engage with the end of the tube 46 as shown, and having on its opposite face a rectangular projection 47 which is shown in end view in Fig. 5 in proper engagement with the slot in the inner end of the piston. A pin 48 secures the disk to the tube. The tube 50 is provided with a perforation 49 and the tube 46 is provided with a similar perforation to allow the ink to flow therethrough into the reservoir of the pen, the tube 46 being shown broken to save space on the drawing.

In Fig. 5, the construction of the piston is the same as that described in Fig. 1, and the construction described in Fig. 4, is adapted to fit in the casing 51 of Fig. 5, as will be easily understood, and the valve disk in Figs. 4 and 5 is provided with ports arranged in the same manner as that described for Fig. 1.

The difference in the construction between that of Fig. 1 and Figs. 5 and 4 is that the inner side of the cap 45, (Fig. 4.) serves as one element of the valve in place of the shoulder shown in Fig. 1 which is formed integral with the casing. The construction in Figs. 4 and 5 allows the valve and parts to be inserted in the casing from the front end, and allows the longitudinal

movement necessary in the pen section to adjust the pen in proper position and also allows of easy inspection and allows the parts to be made in complete working order relatively before the same are connected to the casing of the pen.

The operation is the same as that described for Fig. 1 for filling and writing, and the construction will be easily understood by those skilled in the art.

Referring to Figs. 6—7—8 and 10, I show a considerable change in the construction of the valve parts and the method of operating same. The piston construction and packing provision therefor may be made the same as that described in Fig. 1, except that no recess need be made in the inner end of the piston, since no coöperation takes place between the piston and valve in opening and closing the valve. The tube 52 extends to the inner face of the piston when the piston is in its locked position with the casing 53, so that the end of the tube is closed by abutment with the piston, as shown. In each of the constructions shown, the passage through the tube constitutes the filling passage and leads from the ink duct in the pen section to the rear end of the reservoir, and the valve ports or passages indicated by figures 17—21 and 18—22 in Fig. 1, and 63—58 in Fig. 7, constitute the supply passages which lead directly from the front end of the reservoir to the pen point, and it is, therefore, obvious that the supply passage in either of the constructions, may be closed or restricted without closing or restricting the filling passage. The ink duct in the pen section serves to lead the ink to the filling passage, and from the supply passage to the pen point. The pen section 54 is inserted in a holding section 55, and the rear end of the holding section is provided with a wall 56 having perforations 57 and 58. The rear outer portion of the holding section is preferably reduced in diameter and the forward end of the casing 53 is fitted to slidingly engage therewith. A groove 59 is formed in the casing and section holder, and a pin 60 is inserted transversely through the casing so that it will enter said groove and thereby prevent the casing and section holder from being accidentally separated and at the same time allow the casing to rotate relative to the section holder. A disk or plug 61 forming part of the valve construction, is connected to the casing 53 by a pin or other suitable means, and located so as to abut the end of the section holder 56 as shown, and the tube 52 is made integral with said disk and its conduit arranged in line with the perforation 57. The disk 61 is also provided with a passage 63 which may be brought in line with the perforation 58 by turning the casing 53 relative to the section holder 55. This construction allows the

pen section to be adjusted longitudinally without altering the position of the valve in the casing and also allows the pen to be filled without regard to the position of the piston relative to the valve, and allows the valve to be closed or opened instantly, and the valve port to be partly closed or restricted with exactness. To fill, the port or valve opening is closed and the piston operated as previously described.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is;

1. In a fountain pen, the combination with a reservoir having a filling passage which communicates with the reservoir at the rear end of said reservoir only, of a plug having an ink supply passage independent of said filling passage, leading from the reservoir to the pen point, means for controlling the area of said last passage, and filling means located at the rear end of said reservoir.

2. In a fountain pen, the combination with a reservoir having a tube communicating with the pen point and the reservoir and forming a filling passage which communicates with the reservoir at the rear end of said reservoir only, of a plunger located at the rear end of said reservoir for filling the reservoir through the tube, a supply passage independent of said filling tube leading from the reservoir to the pen section, a valve connected to the tube for controlling the supply passage independent of said filling passage, said valve being movable to vary the out-flow through said passage.

3. A fountain pen comprising a casing having a reservoir therein, a pen section, a valve, and a tube having a filling passage which communicates with said pen section at one end and with the reservoir at the rear end of said reservoir only, a separate passage independent of said filling passage leading from said reservoir to said pen section and controlled by said valve, and means for drawing ink into said reservoir and expelling air therefrom.

4. In a fountain pen, the combination with a casing having a reservoir provided with a filling passage having an opening located near the rear end of and within said reservoir, a separate passage independent of said filling passage leading from said reservoir to supply the pen, a valve for controlling said last named passage, and means for drawing ink into said reservoir and expelling the air therefrom.

5. The combination in a fountain pen with a casing having a reservoir for ink, of a pen section located at one end thereof, a filling tube extending therefrom to the opposite end of the casing, a plug having a valve controlled ink passage connecting the reservoir and the pen section to supply the

pen, a hollow plunger inclosing said tube and provided with a collar at its inner end, a separable abutment carried by the casing against which the collar on the plunger may
 5 abut, packing material located on the opposite side of the abutment on the casing and means for holding the same under compression.

6. A fountain pen comprising a casing
 10 having a reservoir therein, a pen section, a tube communicating with the pen section at one end and with the interior of the reservoir at its opposite end only, and extending
 15 nearly to the rear end of said reservoir, means for drawing ink through said tube into said reservoir and expelling air therefrom, a separate supply passage, and a valve
 20 controlling said passage, through which ink may flow from the reservoir to the pen section.

7. A fountain pen comprising a casing having a reservoir therein, a pen section, two separate passages, one of which extends
 25 from said pen section to the rear end of said reservoir and opens into the reservoir thereat only, and the other of which extends from said section to the end of the reservoir
 30 adjacent thereto, a valve for controlling said last passage, and means for drawing ink into said reservoir and expelling air therefrom.

8. A fountain pen comprising a casing having a reservoir therein, a valve controlled supply passage, a filling passage for
 35 said reservoir comprising a tubular conduit in constant open communication with said reservoir and extending to near the rear end thereof, means for drawing ink through said
 40 conduit and for ejecting air therethrough, and a closure member arranged to close the rear end of said conduit within said casing.

9. A fountain pen comprising a casing having a reservoir therein, a passage through which ink may flow from said reservoir
 45 to the pen, and a passage leading from one end of the reservoir to the other and in open communication therewith at its rear end only, means for drawing ink into said reservoir
 50 and then expelling air therefrom, a valve controlling said first passage and comprising two members, and means for operating said valve by rotating one of said members relative to the other.

10. A fountain pen comprising a casing
 55 having a reservoir therein provided with an outlet passage, a valve controlling said outlet passage, means comprising a tube and pump for first drawing and trapping ink
 60 in said reservoir and then expelling air therefrom, a section holder, and means for operating said valve by rotating said casing relative to said section holder.

11. A fountain pen comprising a casing having a reservoir therein provided with an
 65 outlet which communicates with the pen and

having a valve controlling the said outlet, a tube connected to the casing near its forward end and extending to near the rear end of the reservoir and in open communication
 70 therewith at its rear end only, and means for drawing ink through said tube and into said reservoir and trapping the ink therein.

12. A fountain pen comprising a casing having a reservoir therein, a pen section, a
 75 passage connecting the reservoir and pen section, a valve for controlling the flow of ink through said passage from said reservoir, a tube connected to said valve and extending
 80 nearly to the opposite end of said casing to serve as a conduit through which air may be driven from said casing, and means for opening or closing the said valve
 by rotating one of its parts relative to the other without closing said tube.

13. A fountain pen comprising a casing, 85
 pumping mechanism connected therewith, a pen section, a valve controlling a passage leading from said reservoir to said pen section and a tube connected with and extending
 90 from said valve to the rear end of said casing and in constant open communication with said pen section, and with said reservoir at one end only.

14. A fountain pen comprising a casing having a reservoir therein, a pen section on 95
 which said casing is rotatably mounted, a filling tube connected to said pen section, a valve comprising two parts adapted to rotate relative to each other, one carried by
 100 said section and one by said casing and controlling a passage leading from said reservoir to said pen section to supply the pen, said pen section having a groove in its periphery, and a pin connected to said casing
 105 and extending across same and cooperating with said groove to prevent the separation of the casing and pen section, and means comprising said filling tube and a pump for drawing and trapping ink into said reservoir
 110 and expelling air therefrom.

15. A fountain pen comprising a casing having a reservoir therein, a pen section, a
 115 valve controlling a passage leading from said reservoir to said pen section, a valve disk, a tube connected to said valve disk and extending through said reservoir in open communication therewith at one end
 120 and with the open section at its opposite end, means for closing one end of said tube and for drawing ink into said reservoir and expelling air therefrom.

16. A fountain pen comprising a casing having a reservoir therein, a pen section, a
 125 passage leading from the reservoir to the pen section, a valve controlling said passage between said reservoir and said pen section, a valve disk, a tube connected to said valve disk and extending through said reservoir in open communication therewith at one end
 130 and with the pen section at its opposite end,

and means for drawing ink into said reservoir.

17. A fountain pen comprising a reservoir, a pen section therefor, a tube extended within said reservoir from the front end thereof, a supply passage connecting the pen and said reservoir, and means rotatably related to said pen section to control the flow through said supply passage.

18. A fountain pen comprising a casing having a reservoir therein and an opening at its forward end, a pen section located in said opening and provided with an ink duct, a rotatable valve abutting the end of said pen section having a port normally in open communication with the duct in said section, and rotatable to bring the port out of register and thus shut off the ink supply, a tube extending from said valve toward the rear end of said casing and in open communication at one end with said ink duct and at its opposite end with said reservoir, and means for operating said valve through the medium of said tube.

19. A fountain pen comprising a casing having a reservoir therein and an opening at its forward end, a pen section located in said opening and provided with an ink duct, a rotatable valve abutting the end of said pen section having a port normally in open communication with the duct in said section and rotatable to bring the port out of register and thus shut off the ink supply, a tube ex-

tending from said valve toward the rear end of said casing and in open communication at one end with said ink duct and at its opposite end with said reservoir, and means for drawing ink within said reservoir and for expelling the air therefrom through said tube.

20. A fountain pen comprising a casing having a reservoir therein and an opening at its forward end, a pen section located in said opening and provided with an ink duct, a rotatable valve abutting the end of said pen section having a port normally in open communication with the duct in said section and rotatable to bring the port out of register and thus shut off the ink supply, and means for rotating said valve to close communication between the reservoir and said ink duct, said means comprising a tube which extends from said valve to the rear end of said reservoir, and pumping means for drawing ink into said reservoir and for expelling the air therefrom through said tube to the atmosphere.

In testimony whereof, I, FRANK M. ASHLEY, have signed my name to this specification in the presence of two subscribing witnesses.

FRANK M. ASHLEY.

Witnesses:

H. J. DORGELOH,
N. C. MILLEY.