Oct. 6, 1931. W. J. BAKER 1,825,931

FOUNTAIN PEN

Filed Jan. 24, 1927 3 Sheets-Sheet 1

Fig. 1.

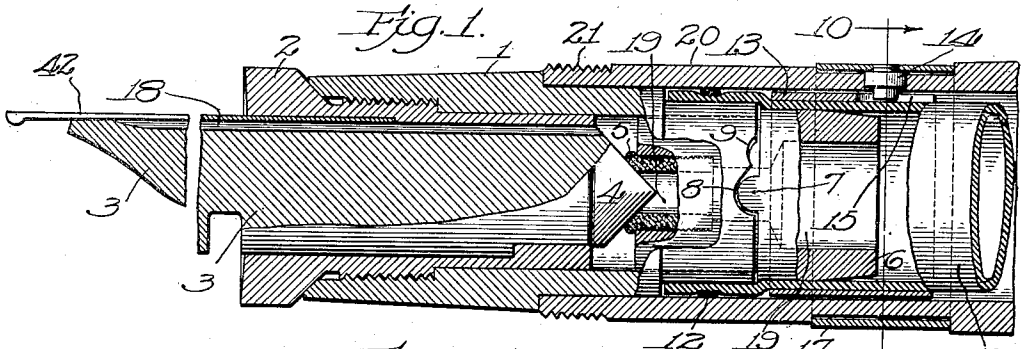


Fig. 2.

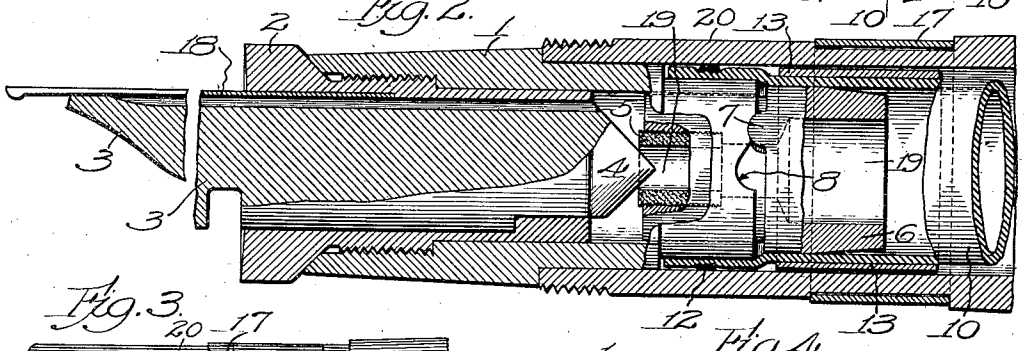


Fig. 3.

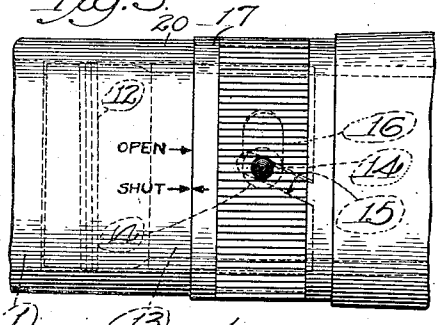


Fig. 4.

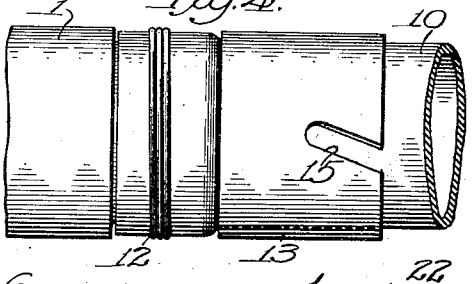


Fig. 5.

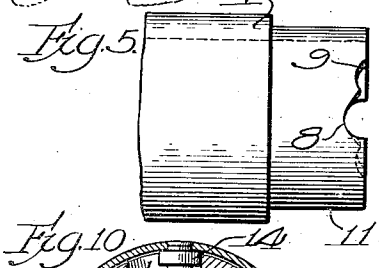


Fig. 6.

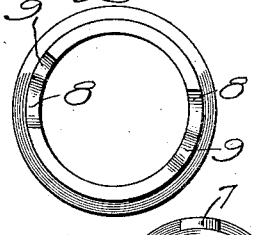


Fig. 7.

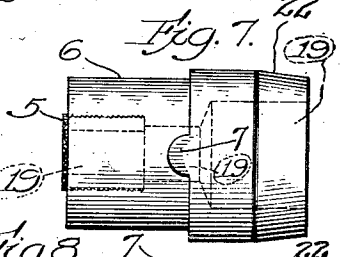


Fig. 10.

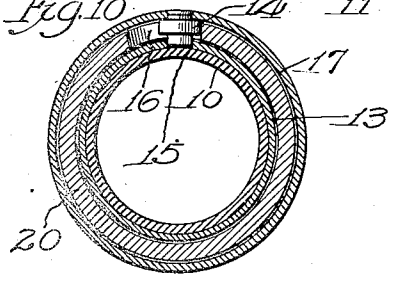


Fig. 9.

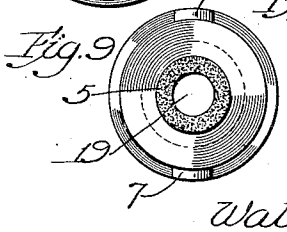
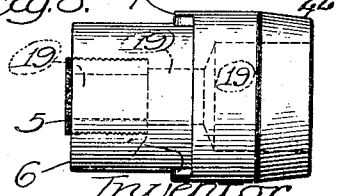


Fig. 8.



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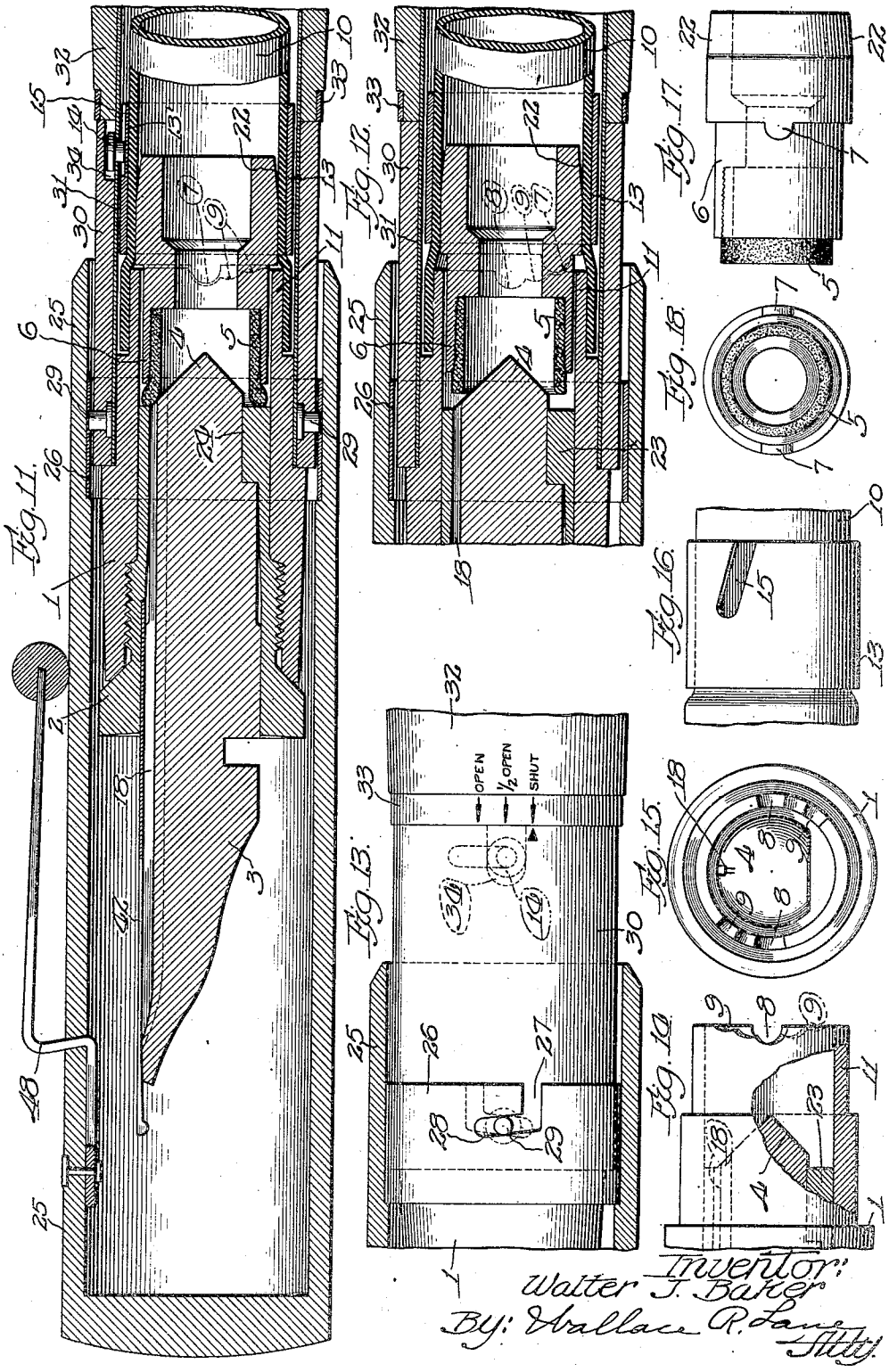
Oct. 6, 1931. W. J. BAKER 1,825,931

FOUNTAIN PEN

Filed Jan. 24, 1927 3 Sheets-Sheet 2



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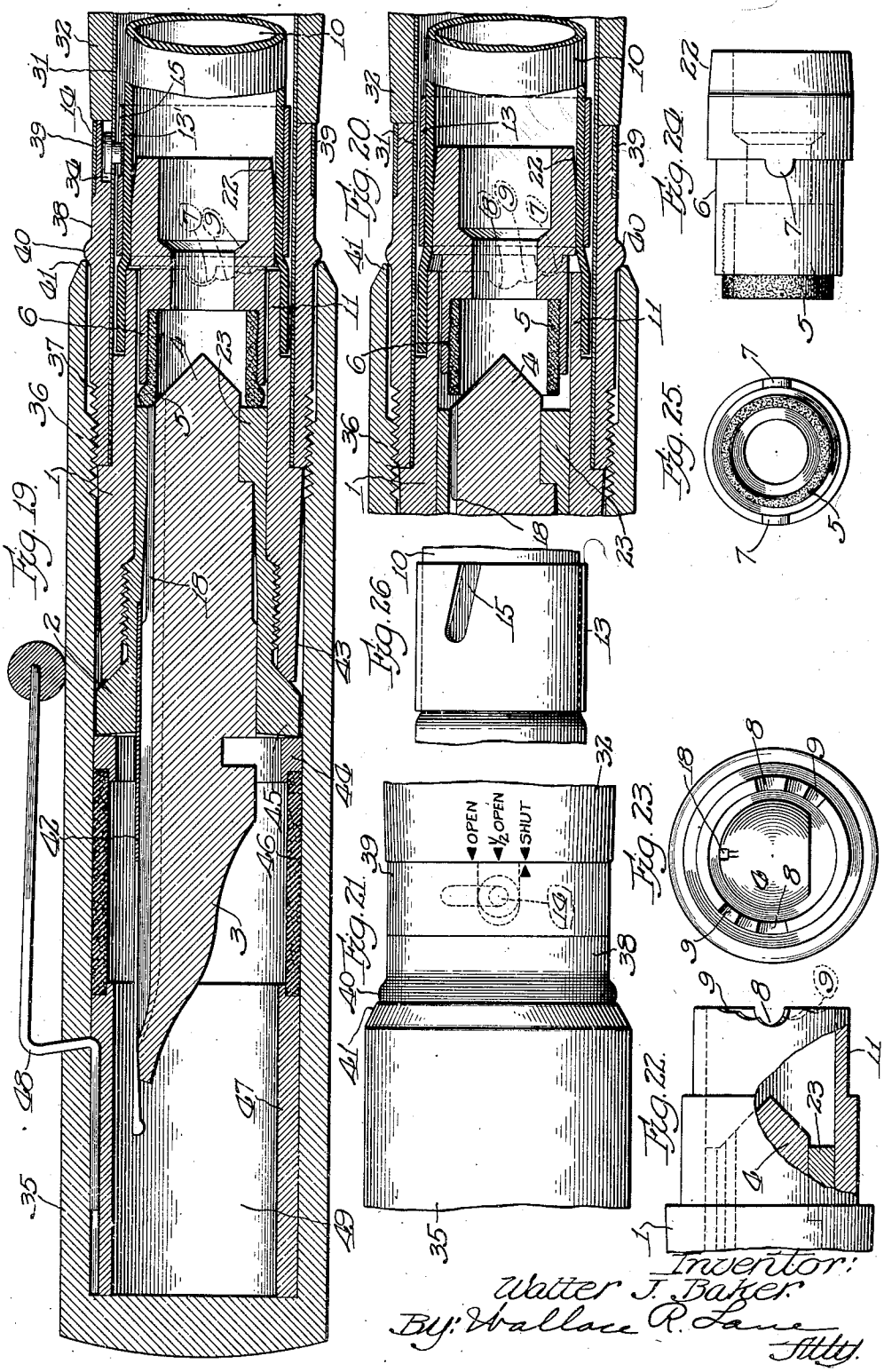
Oct. 6, 1931. W. J. BAKER 1,825,931

FOUNTAIN PEN

Filed Jan. 24, 1927 3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

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FOUNTAIN PEN

Application filed January 24, 1927. Serial No. 163,034.

This invention relates to a fountain pen having novel means for the regulation of ink flow and for the prevention of leakage when the pen is not in use. Hitherto a fountain pen when not in use has been found to have a tendency to accumulate an excess of ink around the nib and on the inside of the cap. The result of this accumulation of ink during disuse has been a great annoyance to pen users as the pin is frequently found to be in a messy condition when taken up for writing.

One of the objects of this invention is to provide in a fountain pen means for positively preventing any flow of ink when the pen is not in use.

Another object of this invention is to provide a valve having variable means for regulating the flow of ink in a fountain pen.

Another object of this invention is to provide a valve having the above capabilities, which is non-corrodible, and which is capable of being seated properly in spite of the presence of foreign particles on the valve seat.

Another object of this invention is to provide means for effecting a flow of ink in a fountain pen between the nib and reservoir, said means being dis-associated from and apart from the reservoir.

Another object of this invention is to provide means for automatically closing a valve in a fountain pen whenever the cap is secured in place over the nib.

Another object of this invention is to provide means for forcing ink back from the nib toward the reservoir whenever the cap is secured over the nib.

Another object of this invention is to provide means for forcing ink back from the nib toward the reservoir when the cap is secured over the nib and at the same time closing a valve between the reservoir and the nib to prevent subsequent return of the ink toward the nib.

Another object of this invention is to provide means for starting a flow of ink toward the nib when the cap is removed from a fountain pen.

Another object of this invention is to provide, in a fountain pen having a valve, means for locking a cap to the fountain pen casing, the locking means being further adapted to close the valve.

Further objects, advantages and capabilities will later appear and are inherently possessed by the invention.

My invention further resides in the combination, construction and arrangement of parts illustrated in the accompanying drawings, and, while I have shown therein a preferred embodiment, I wish it understood that the same is susceptible of modification and change without departing from the spirit of my invention.

Referring to the drawings, Fig. 1 is a longitudinal sectional view of a portion of the pen showing parts of the feed bar in section and part in elevation, part of the pen section in section and part in elevation, part of the member 6 in section and part of it in elevation, and part of the reservoir in section and a part of it in elevation. This figure shows the valve in closed position.

Fig. 2 is generally a longitudinal sectional view with parts broken away as in Fig. 1 but showing the valve in open position.

Fig. 3 is an elevation of a portion of the pen showing the manually rotatable valve control sleeve rotated to closed position as indicated by the arrows and the word "shut".

Fig. 4 is a detailed view showing the manner of attaching the reservoir to the rear end of the pen section.

Fig. 5 is an elevation of the rear portion of the pen section showing the recesses which engage the rotatable valve member.

Fig. 6 is an end elevation of Fig. 5.

Fig. 7 is an elevation of the rotatable valve member.

Fig. 8 is another elevation of the same rotatable valve member.

Fig. 9 is an end elevation of Fig. 8.

Fig. 10 is a transverse sectional view on the line 10—10 of Fig. 1 and showing the valve actuating pin in elevation.

Fig. 11 is a longitudinal sectional view of a modification of the invention showing means for locking the cap to the valve actuating sleeve. In this view the valve is shown in closed position.

Fig. 12 is a longitudinal sectional view of the pen shown in Fig. 11 with the valve rotated to open position and showing how a portion of the reservoir is extended as the valve is rotated to open position.

Fig. 13 is an elevation of part of the pen barrel and a sectional view of part of the cap showing the position of the parts when the valve is shut and the cap is locked to the fountain pen barrel.

Fig. 14 is an elevation of the rear portion of the pen section with a cut out to show the rear end of the feed bar. This view shows the pen section and feed bar removed from the pen barrel.

Fig. 15 is an end elevation of Fig. 14.

Fig. 16 is an elevation of the slotted sleeve which clamps part of the reservoir onto the rotatable valve member, showing a portion of the reservoir.

Fig. 17 is an elevation of the rotatable valve member.

Fig. 18 is an end elevation of Fig. 17.

Fig. 19 is a longitudinal sectional view of another embodiment of my invention showing the same type of valve illustrated in Figs. 11 and 1 with a rotatable valve actuating sleeve which is rotated by means of a fountain pen cap together with a specially constructed interior of the cap to cooperate with this rotatable sleeve. This view shows the valve closed.

Fig. 20 is a longitudinal sectional view of the pen shown in Fig. 19 showing the valve in open position.

Fig. 21 is an elevation of part of the fountain pen showing the cap locked on the rotatable sleeve and showing the sleeve in the position where the valve is shut.

Fig. 22 is an elevation of the rear portion of the pen section with a cut out to show the rear end of the feed bar. This view shows the pen section and feed bar removed from the pen barrel.

Fig. 23 is an end elevation of Fig. 22.

Fig. 24 is an elevation of the rotatable valve member which is illustrated in Fig. 19.

Fig. 25 is an end elevation of Fig. 24.

Fig. 26 is an elevation illustrating the sleeve which clamps a portion of the reservoir to the rotatable valve member.

Referring now in greater detail to the drawings a pen section 1 is disposed about a feed bar retaining sleeve 2. Within the feed bar retaining sleeve is removably secured a feed bar 3.

The rear end of the feed bar is provided with a tapered portion 4 serving as a valve which cooperates with the seat 5 in the rotatable valve member generally indicated as 6. The valve seat 5 is preferably made of a resilient material such as rubber but may be made of other material which will insure perfect seating of the valve at all times. The valve seat is retained within the valve member 6 frictionally by means of roughened or cooperating threaded surfaces as illustrated.

A pair of projections 7, diametrically opposed, are provided on the rotatable valve member 6. The projections 7 are adapted to be seated in any of the recesses which are provided on the rear end of the pen section for positioning or locking the valve seat 5 relative to the tapered portion 4 to provide various adjustments of the ink flow. In Figs. 5, 14 and 22 the recesses are plainly shown, the deeper recesses 8 cooperating with the projections 7 when the valve is closed. The projections 7 seat in the shallowest recesses 9 when the valve is open. In Figs. 14 and 22 recesses of intermediate depth are shown for positioning the valve at half open position. It is understood that any number of recesses may be provided to secure various adjustments of the ink flow, or other means for maintaining relative relation between the pen section and the rotatable member 6 may be provided. Figs. 1, 11 and 19 show the valve closed, while Figs. 2, 12 and 20 show the valve wide open.

The rotatable valve member 6 is inserted into the reservoir 10 which may be the usual expansible rubber reservoir, the open end of the reservoir is then slipped over the reduced portion 11, shown in Figs. 5, 14 and 22, and may be secured thereto by a number of wires 12, as shown in Fig. 2 or by other means.

A slotted sleeve 13 is then placed about the exterior of the reservoir and moved into position where it clamps the reservoir against the peripheral surfaces of the rotatable member 6. This relation is clearly shown in Figs. 2, 12 and 20.

It is evident that whenever the sleeve 13 is rotated the valve member 6 must rotate with it. In order to rotate the sleeve 13 a pin 14 extends into a slot 15 which is provided in the sleeve 13. It is preferable that the inner end of this pin should not come into contact with the rubber reservoir and this undesired contact may be prevented by means of the short pin shown in Fig. 1 or by interposing a thin wall 13′ between the end of the pin 14 and the interior of the sleeve 13.

In the embodiment of the invention illustrated in Figs. 1 to 10 inclusive, the pin 14 extends through a slot 16 which is located transversely of the length of the fountain pen barrel. The outer end of the pin is then suitable engaged with a rotatable sleeve 17 which is mounted on the outside of the barrel. The sleeve 17 may then be rotated manually in order to move the rotatable valve member 6 from closed to open position or the reverse. The length of the slot 16 is sufficient to permit such movement.

The flow of ink from the reservoir to the feed channel 18 in the feed bar takes place through the passage 19 which extends

through the rotatable valve member. When the valve is rotated into closed position by means of the manually operated sleeve 17 the soft seat 5 seats against the tapered end 4 of the feed bar 3 and cuts off all further flow of ink between the nib and reservoir. This valve closure is illustrated in Figs. 1, 11, and 19.

The fountain pen casing 20 may be provided with suitable threads 21, or other means, for engaging a fountain pen cap for the protection of the nib. Any suitable fountain pen cap may be used in connection with the embodiment shown in Fig. 1 as well as the fountain pen cap shown in Fig. 19. A special cooperation and a new result may be obtained by using the cap shown in Fig. 19 with the fountain pen illustrated in Fig. 1. The advantages of such a combination are explained hereinafter and it will be readily understood how this cap could be applied either to the construction shown in Fig. 1 or Fig. 19 to produce the new result hereinafter set forth.

It is preferable to provide a slight taper 22 on the rear end of the valve member 6 as is illustrated in Figs. 1, 7, 17, and 24 in order that the flexible reservoir 10 may not become pinched against the rear end of the rotatable valve member with resultant damage to the reservoir.

In any embodiment of the invention, whether it be the one shown in Fig. 1, Fig. 11, or Fig. 19, the engagement of the pin 14 with the spirally arranged slot 15 shown in Figs. 4, 16 and 26 will cause the forward movement as well as the rotation of the valve member when the valve is being moved into closed position. The valve member is mounted within the reservoir and the reservoir engaged over the end of the pen section preferably in such a way as to provide normally some considerable tension along the walls of the reservoir tending to draw the valve member forward in order to cause a tight engagement of the valve seat. Consequently, when the valve is rotated to open position the valve member is moved rearwardly also, away from the end of the pen section and so increases the tension in the reservoir which tends to urge it forwardly. Entire reliance however is not placed upon the resiliency of the reservoir, the spiral cutting of the slot itself causing the pin to urge the valve member forwardly when the pin 14 is rotated toward closed position. This special cooperation between the pin and spiral slot is important wherever there is a tendency for the resiliency of the reservoir to be lost due to the effect of time, temperature or other influences.

In Fig. 11 it will be noted that a valve seat 5 of larger diameter than the one shown in Fig. 1 is provided. A portion of the edge of this valve seat then is caused to seat directly against the rear entrance of the feed channel 18. It will be noted also that the contact of this valve seat with the cooperating part of the pen is a wiping contact which further insures perfect seating. Also in the construction shown in Figs. 11 and 19 a part of the pressure of the valve seat member being exerted toward the nib end of the pen is exerted upon the inwardly extending projection 23, which projection is a part of the feed bar retaining sleeve 2. This projection 23, which cooperates with the flat surface 24 in the inner end of the feed bar, not only prevents the feed bar from rotating but in the embodiments of the invention illustrated in Figs. 11 and 19 this projection also serves to withstand part of the forward thrust of the valve seat 5. In thus relieving some of the thrust of the valve seat from the feed bar there ensues a less tendency for the feed bar to be moved forwardly toward the outer end of the fountain pen. Distribution of the pressure of the feed bar is of more importance as the tendency of the feed bar to move forwardly is increased by any condition such as the increase of pressure exerted on the valve member by a different adjustment of the reservoir or some other yieldable means for urging the valve member forwardly. It should be noted that in any case the wiping contact between the valve seat and the cooperating part of the feed bar is effected in two ways, that is, by a wiping motion in a circular path and also a wiping motion radially from the center of the feed bar as the valve seat approaches the feed bar and is distended by the sloping surfaces.

In Fig. 11 a fountain pen cap, generally indicated as 25 is illustrated and is provided with a sleeve 26 suitably located and secured within the cap. Sleeve 26 is provided with a pair of slots having a longitudinal portion 27 and an offset portion 28 as illustrated in Fig. 13. Adapted to fit into these slots in the sleeve is a pin 29 which is suitably secured in a rotatable sleeve 30. The rotatable sleeve 30 is provided with an inner shell, or sleeve 31 which is immovably secured to the rotatable sleeve 30. A portion of the sleeve 31 extends into the barrel 32 of the fountain pen far enough to provide a proper bearing for this rotating part and to retain the sleeve 31 in frictional engagement with the barrel 32. A ferrule 33 may be provided on the barrel 32 in order to strengthen this part, or for decorative purposes. In this embodiment of the invention the head of the pin 14 rests in a longitudinal recess 34, from which recess it may be removed by drawing the sleeve 30 forwardly off from the sleeve 31 when the pen is disassembled. It is apparent that this pin 14 will therefore rotate with the sleeve 30 and sleeve 31 and thereby cause the rotation of the sleeve 13 and the rotatable valve member.

In the operation of the embodiment shown

in Fig. 11, assuming the valve to be open and the cap off the fountain pen, the cap is applied over the end of the nib and pin to bring the pins 29 into engagement with the diametrically opposed slots 27 in the sleeve 26. The cap is pushed on until the pins reach the beginning of the offset slot 28 whereupon the cap is then rotated. The pen is so designed that the external diameter of the sleeve 30 closely approximates the internal diameter of the sleeve 26, and as the sleeve 26 advances on to sleeve 30, suitable friction takes place which is increased as the engagement of the pins 29 in the slots 28 causes the cap to be drawn further upon the fountain pen. The friction between the contact surfaces will therefore cause the sleeve 30 to rotate somewhat with the rotating fountain pen cap and will quickly move the valve member into closed position. This is of course the desired result, that is, to have the valve closed when the pen is locked upon the fountain pen valve. The shape of the slots aids in locking the cap to the pen. It follows therefore that when the cap is removed the initial reverse rotation of the cap will cause the fountain pen valve to open and when the cap is removed the pen is ready again for use. It should be understood that the sleeve 30 is of course rotatable manually even when the cap is not in place, this feature being provided so that the valve may be closed directly with one's finger while the cap is removed.

In Fig. 19 another construction is shown which provides a different manner for rotating the external sleeve which causes the operation of the valve. A cap generally indicated as 35 is provided with internal threads 36 adapted to engage with the external threads 37 on a rotatable sleeve 38. As shown in Fig. 19, the sleeve 38 is disposed about the shell 31, the shell 31 extending into the interior of the barrel 32. The sleeve 38 and the shell 31 are immovably secured together and as they rotate the shell 31 has its bearing on the interior of the barrel 32. The pin 14 having its head resting in the slot 34 of the sleeve 38 extends through the shell 31 and engages with the slot 15 of the shell 13. The internal parts of this pen are the same as is shown in Fig. 11 and the valve closure is effected by rotating the sleeve 13 to thereby cause the rotation of the valve member 6. A ferrule 39 may be placed about the sleeve 38 at the point indicated for decorative purposes or to strengthen the sleeve.

In order that the cap may be used to rotate this valve out of or toward closed position, a circumferential bead 40 is provided on the surface of the rotatable sleeve 38. As the cap is advanced onto the sleeve 38 to cover the nib, the engagement of the threads 36 and 37 causes the edge 41 of the cap to come into contact with the bead 40. The reaction between the threads and the bead thereupon causes the cap to lock on the sleeve 38 and as the cap is further rotated the sleeve 38 rotates with it and by means of the pin 14 causes the rotation of the valve member.

It is desirable to provide means for sealing the nib 42 apart from the rearward surface portions of the fountain pen, such as the surface 43 of the pen section, which ordinarily contacts with the fingers of the writer when the pen is in use. It is a well known fact that accumulations of ink upon the end of a feed bar, such as feed bar 3, and on the nib 42 sometimes are communicated to the interior surfaces of a fountain pen cap or to the rearward exterior surface of the fountain pen by capillary action or otherwise. In order to prevent an occurrence like this in a pen of this type a sleeve 44 is provided and is slidable longitudinally along the interior of the fountain pen cap 35. This sleeve 44 may be made of hard rubber or other suitable material and abuts against the shoulder 45. When this contact is established as shown in Fig. 19, the nib and feed bar are thus sealed apart from the rearward surface portions of the fountain pen casing.

If the sleeve or ring 44 were immovably secured within the fountain pen cap, inequalities of manufacture or inequalities of wear might cause the open end 41 of the cap to lock upon the bead 40 before a tight seal had been formed between the ring 44 and the shoulder 45. Due to wear or other causes the reverse condition might be true, that is, the ring 44 and shoulder 45 might be forced into tight contact by the threads 36 and 37 before a sufficient engagement could be established between the edge 41 and the bead 40. To remove such possibility a compressible ring 46 composed of soft rubber or other suitable material is located as illustrated in Fig. 19 and tends to urge the ring 44 towards the outer end of the pen. This sleeve 46 which is compressible in the direction of its axis therefore permits the ring 44 to move longitudinally and yet at all times maintain a tight seal against the shoulder 45. The rear edge of the sleeve 46 is held in place by means of the sleeve 47, which latter may also serve to retain the inner end of the fountain pen clip 48.

The complete operation of the embodiment of the invention shown in Fig. 19 is as follows. It should be assumed that the feed channel 18 is filled with ink and that the reservoir 10, all of the reservoir not being shown, is not entirely full of ink. Assuming the valve to be open, the cap is placed over the nib and the cooperating threads 36 and 37 are engaged. Further rotation of the threads soon causes the shoulder 45 to contact with the ring 44 and establish a seal between the abutting surfaces. Continued advancement of the thread 36 onto the thread 37 will cause the shoulder 45 and ring 44 to longitudinally compress the soft rubber ring 46, thereby re-

ducing the volume of the sealed chamber between the shoulder 45 and the closed end of the cap. The consequent increase of pressure in this chamber generally indicated as 49 will cause a flow of ink rearwardly in the feed channel 18 toward the reservoir. The fountain pen parts and the cap may be so designed as to cause the volume of this chamber 49 to be sufficiently reduced before the engagement of the edge 41 with the bead 40 to force all the ink from the feed channel 18 back through the valve to reservoir. As soon as sufficient contact is established between the edge 41 and the bead 40 the valve will be closed in the manner described heretofore. This closure of the valve will then prevent return of the link into the feed channel and will prevent the leakage and general messy condition which occurs in fountain pens not having this feature.

When the cap is being removed, its initial rotation will cause the rotation of the sleeve 38 and the opening of the valve. When the rotation of the sleeve 38 is stopped by its associated parts the edge 41 unlocks from the bead 40 and as the threads 36 back off from the threads 37 the chamber 49 begins to expand. However, a tight seal is still being maintained between the ring 44 and the shoulder 45, hence, as the air pressure in the chamber is being reduced, the lowering pressure in the chamber will have a tendency to draw ink from the reservoir through the open valve back into the feed channel toward the nib. The parts of this pen and cap may be so designed as to cause a sufficient flow of ink from the reservoir into the feed channel as to prepare the pen for instant use at the time it is finally withdrawn from the cap.

In the construction shown in Fig. 19 the exposed ends of the nib and feed bar are entirely sealed away from the outside atmosphere while the cap is locked upon the fountain pen. Not only are these exposed ends kept away from the dust, but also evaporation of ink remaining upon them is largely prevented. Due to the peculiar construction of the device illustrated in Fig. 19, the atmospheric pressure within the chamber 49 is somewhat higher than the outside atmosphere due to the compression which took place when the cap was placed over the end of the fountain pen, and as a consequence of this higher pressure evaporation of the ink will not take place readily, even under the influence of the small amount of air in this chamber.

It should be understood that the word "nib", as used in this specification and in the claims refers to the member 42 and is used in preference to the word "pen" to clearly distinguish this member from the entire structure which is also called a pen.

Having shown and described my invention, I claim:—

1. In a fountain pen a barrel, a reservoir within the barrel having an outlet and provided with a valve member, and means extending to the exterior of the barrel to operate the valve for regulating said outlet.

2. In a fountain pen, valve members for regulating the flow of ink in the pen, and means normally tending to move one of said members relatively to the other when said members are in their open position.

3. In a fountain pen, valve members therefor, and means for locking one of said members in a plurality of predetermined positions whereby the flow of ink in the pen is regulated.

4. In a fountain pen, valve members for regulating the flow of ink in the pen and means normally tending to rotate one of said members toward closed position when the valve is open.

5. In a fountain pen, a barrel, a valve in said barrel for regulating ink flow, means for actuating the valve, and means on said valve for locking the valve in a predetermined position.

6. In a fountain pen, a pen section, a feed bar retained in said section, an ink reservoir attached to said section, a valve seat connected to said reservoir, and means for moving said reservoir and valve seat to effect the seating of said feed bar on said valve seat and to regulate the flow of ink in the fountain pen.

7. In a fountain pen, a casing, a reservoir in said casing and provided with a valve member, and means for moving the member relative to the casing.

8. In a fountain pen, a barrel, a feed bar having a feed channel, an ink reservoir in said barrel, and a rotatable valve in said reservoir and barrel comprising a central member having a passage for establishing communication between the feed channel and reservoir when the valve is open, and means for regulating the flow of ink through said passage.

9. In a fountain pen, a feed bar having a feed channel, and ink reservoir, and a valve in said reservoir and comprising a member having a passage for establishing communication between the feed channel and the reservoir when the valve is open, means for moving said member in contact with the feed bar to close one end of said passage, and means for locking said member in said position of closure.

10. In a fountain pen, a feed bar having a feed channel, an ink reservoir, and a valve comprising a member having a passage for establishing communication between the feed channel and the reservoir when the valve is open, means for moving said member into contact with the feed bar to close one end of said passage, said reservoir resiliently holding said member in said position of closure.

11. In a fountain pen, a feed bar having a feed channel, an ink reservoir, a movable valve member having a passage for establish-

ing communication between the feed channel and the reservoir when said member is out of contact with the feed bar, and means associated with said member and extending to the exterior of the pen for moving said valve member into and out of contact with said feed bar.

12. In a fountain pen, a barrel, a cap, a nib, an ink reservoir, a valve for regulating ink flow from the reservoir to the nib, a rotatable sleeve connected to said barrel, valve actuating means connected with said sleeve and said valve, and means for locking the cap to the sleeve and for causing rotation of the cap to rotate the sleeve.

13. In a fountain pen, a cap, a nib, an ink reservoir, a valve for regulating ink flow from the reservoir to the nib, a casing for housing the reservoir and valve, means for engaging the cap with said casing, and means operative when the cap is so engaged and upon rotation of the cap to move the cap further onto the casing and to actuate the valve.

14. In a fountain pen, a barrel, a cap, a nib, a reservoir, a valve for regulating ink flow from the reservoir to the nib, rotatable valve actuating means connected to the barrel and valve, cooperating means on the cap and valve actuating means for connecting the cap to the barrel and for rotating the valve actuating means.

15. In a fountain pen, a nib, an ink reservoir, a member having a feed channel for feeding ink from the reservoir to the nib, a casing, a cap having means cooperating with the casing for forcing ink back through the feed channel toward the reservoir.

16. In a fountain pen, a nib, an ink reservoir, a member having a feed channel for feeding ink from the reservoir to the nib, a casing, a cap having means cooperating with the casing for forcibly effecting a reversal of flow of ink through the feed channel.

17. In a fountain pen, a nib, an ink reservoir, a member having a feed channel for feeding ink from the reservoir to the nib, a casing, a cap having means cooperating with the casing for pneumatically effecting a reversal of flow of ink through the feed channel.

18. In a fountain pen, a nib, an ink reservoir, a member having a feed channel for feeding ink from the reservoir to the nib, a casing, a cap having means cooperating with the casing for pneumatically forcing ink back through the feed channel toward the reservoir.

19. In a fountain pen, a nib, an ink reservoir, a casing, a member protruding from an end of the casing and having a feed channel, a cap having means for sealing the protruding member apart from the rearward surface portions of the casing when the cap is secured over the nib, and means cooperating with the cap, casing and first said means for pneumatically effecting a flow of ink through the feed channel.

20. In a fountain pen, a nib, an ink reservoir, a feed member having a feed channel, a valve for regulating the flow of ink from the reservoir to the nib, a valve actuating member, and a cap having means functioning as the cap is being secured to the pen for effecting a flow of ink rearwardly in the feed channel toward the reservoir and having a second means functioning in succession after the operation of the first said means for operating the valve actuating means.

21. In a fountain pen, a nib, an ink reservoir, a feed member having a feed channel for feeding ink from the reservoir to the nib, a valve for regulating the flow of ink from the reservoir to the nib, means apart from the reservoir for effecting a flow of ink rearwardly in the feed channel and means operatively connected with the first said means for closing said valve.

22. In a fountain pen, a nib, an ink reservoir, means for feeding ink from the reservoir to the nib, a valve for regulating the flow of ink from the reservoir to the nib, and means apart from the reservoir for effecting a flow of ink rearwardly from the nib toward the reservoir.

23. In a fountain pen, a nib, an ink reservoir, means for feeding ink from the reservoir to the nib, means interposed between the reservoir and nib for stopping a flow of ink between the reservoir and the nib, means apart from the reservoir for effecting a flow of ink rearwardly from the nib toward the reservoir, and means for actuating the second said means in a predetermined relation to the functioning of the third said means.

24. In a fountain pen, a nib, an ink reservoir, means for feeding ink from the reservoir to the nib, means interposed between the reservoir and nib for stopping a flow of ink between the reservoir and the nib, means apart from the reservoir for forcing rearwardly of the stopping means a quantity of ink lying in between the nib and stopping means, and means for actuating the stopping means in a predetermined relation to the said rearward flow of ink.

25. In a fountain pen, a nib, an ink reservoir, means for feeding ink from the reservoir to the nib, a casing, a removable cap having means for attaching it to the casing and having an expansible chamber open at one end, means on the casing for engaging the open end of the cap to close said open end, and means for varying the volume of said chamber for increasing the pressure therein to cause a flow of ink in said feeding means.

26. In a fountain pen, a nib, an ink reservoir, means for feeding ink from the reservoir to the nib, a barrel for housing the reser-

voir, a valve for regulating ink flow between the reservoir and nib, a removable cap having means for connecting it to the barrel and having an expansible chamber open at one end, means connected with the barrel for engaging said open end to close it, means for varying the volume of said chamber to increase the pressure and to effect a flow of ink in said feeding means, and means for closing and opening said valve in predetermined relation to a given volume of the chamber.

27. In a fountain pen, a nib, an ink reservoir, means for feeding ink from the reservoir to the nib, a removable cap for covering the nib, and means for effecting a substantial flow of ink in the feeding means toward the nib as said cap is being removed from over the nib.

28. In a fountain pen, a nib, an ink reservoir, means for feeding ink from the reservoir to the nib, a valve for regulating the flow of ink between the reservoir and nib, a barrel, a rotatable sleeve connected to the barrel for actuating the valve, a removable cap for covering the nib, a slidable sleeve in said cap, a circumferential shoulder connected to the barrel contactable with said sleeve for sealing an exposed outer end of said feeding means apart from the atmosphere surrounding the cap, resilient means normally urging said slidable sleeve toward said shoulder, and cooperating means on said rotatable sleeve and cap for locking the cap to said rotatable sleeve to make said cap and sleeve rotatable together, the locking and unlocking of the last said means cooperating with said shoulder and said slidable sleeve to pneumatically effect ink flow in the feeding means.

29. In a fountain pen having a barrel, an ink reservoir in the barrel and a nib, means for manually regulating the flow of ink from the reservoir to said nib, said means including a pair of valve members, one of said members being rotatable and mounted in said reservoir, said rotatable member being provided with a seat.

30. In a fountain pen, a barrel, a nib, means for feeding ink to said nib, and means for manually regulating the feeding of said ink, said means including valve members, one of which is rotatable in said barrel and provided with locking means for locking said member in predetermined position.

31. In a fountain pen, a barrel, a reservoir within the barrel having an outlet and provided with a valve member, means movable with said valve member, and means on the exterior of the barrel and operatively associated with said means for movement of said member and for regulating said outlet.

32. In a fountain pen, a barrel, a reservoir within the barrel having an outlet and provided with a valve member, a valve sleeve movable with said valve member, and means operatively associated with said sleeve for movement thereof and for regulating said outlet.

33. In a fountain pen, a barrel, a reservoir within the barrel having an outlet, a valve member in said outlet, means movable with said valve and reservoir, and means engaging with said means for movement of said member and for regulating said outlet.

In witness whereof, I hereunto subscribe my name to this specification.

WALTER J. BAKER.