

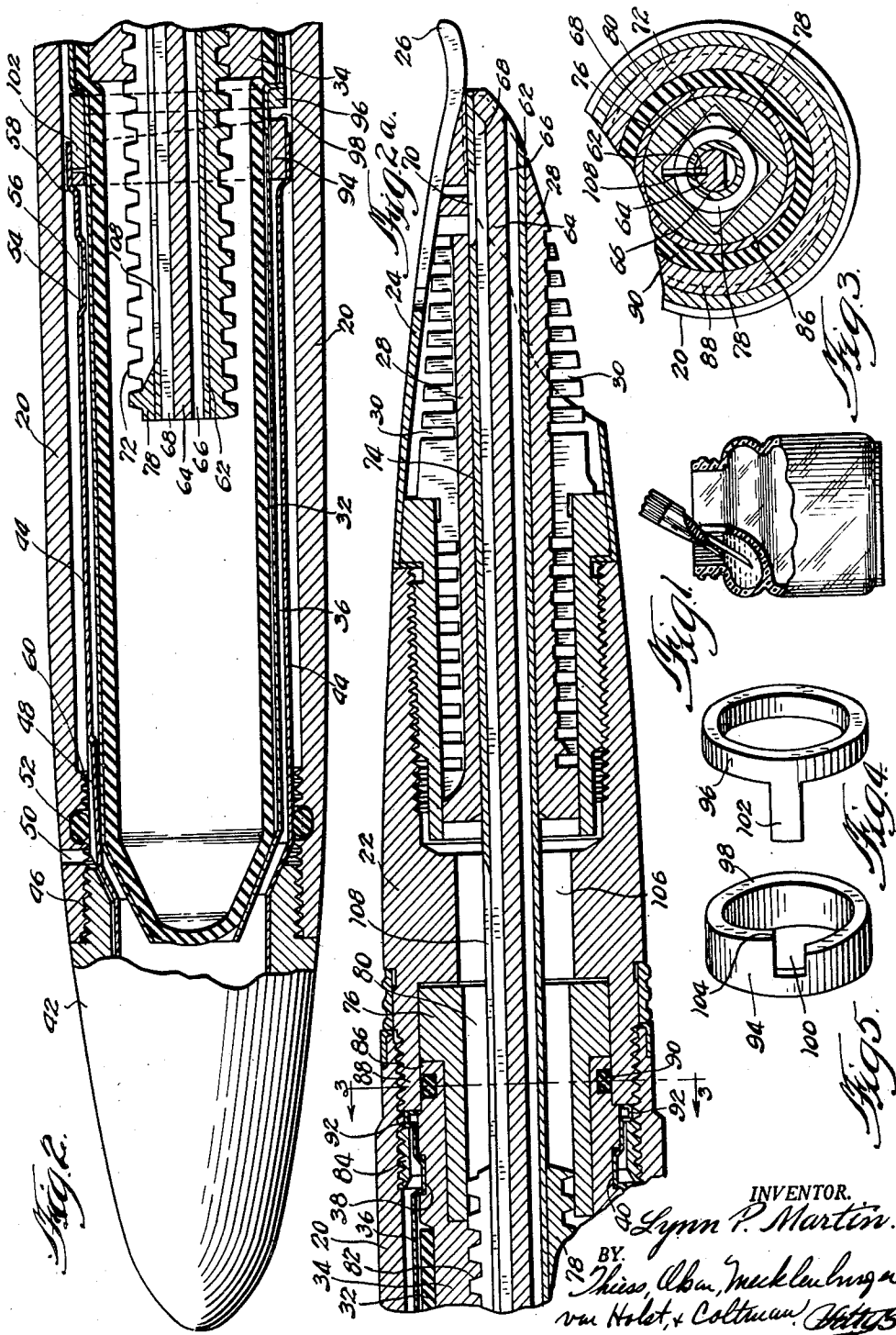
July 16, 1957

L. P. MARTIN
WRITING IMPLEMENTS

2,799,246

Original Filed Nov. 17, 1951

2 Sheets-Sheet 1



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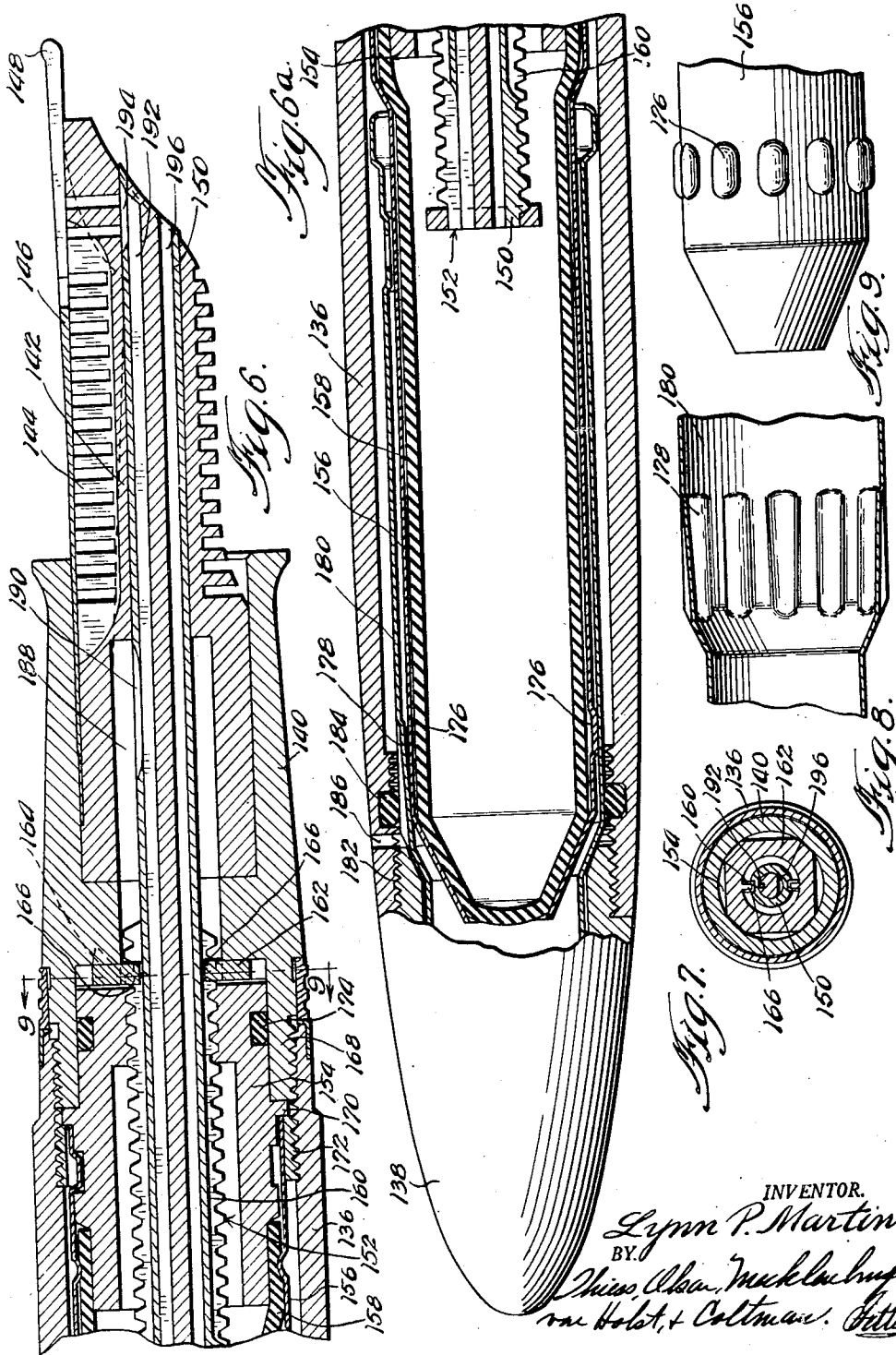
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1

2,799,246

WRITING IMPLEMENTS

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Original application November 17, 1951, Serial No. 256,897, now Patent No. 2,769,427, dated November 6, 1956. Divided and this application June 1, 1954, Serial No. 433,519

7 Claims. (Cl. 120—47)

This invention relates to writing implements and has for an object the provision of a filling device for a writing implement of the fountain pen type. This application is a division of my co-pending application Serial No. 256,897, filed November 17, 1951, now Patent Number 2,769,427 which in turn is a continuation-in-part of my prior application Serial No. 124,328, filed October 29, 1949 (now abandoned).

In the filling of ordinary fountain pens with a writing fluid, the construction of the pen has ordinarily been such that it is required that the pen nib be completely immersed in a body of the fluid during the filling operation in order to insure that a full charge of fluid will be drawn into the reservoir. Thus when the filling operation is complete, there is usually a substantial amount of residual writing fluid adhering to the pen nib which generally must be wiped off with a cloth or tissue in order to prevent such residual fluid from blotting the paper or coming into contact with the user's hands during a normal writing operation. Also the excess fluid present in the expansion chambers should be removed by blotting in order to permit the expansion chambers to function properly immediately after filling. These problems have long been recognized in the art and various suggestions have been made for their solution. For example, it has in the past been proposed that the manufacturer supply replaceable ready-filled ink cartridges in order to eliminate the necessity for the user to fill the fluid reservoir when the fluid is exhausted. Also it has been proposed to fill the fluid reservoir by a separate means extending through the rear end of the writing implement, thereby avoiding the direct insertion of the writing nib into the writing fluid during a filling operation. However, these proposals have met with little or no commercial success either because of the expense involved in supplying separate cartridges when the instrument is to be refilled, or because of the complications arising from attempting to fill the fluid reservoir by any means other than through the forward writing end.

Accordingly it is one of the objects of this invention to provide a filling device for a fountain pen which may be operated in such a manner that the adherence of excess writing fluid to the nib portion of the pen is eliminated after the filling operation has been completed.

A further object of this invention is the provision of a filling device which eliminates the necessity of wiping excess writing fluid from adjacent the nib of the pen after filling has been completed.

A still further object of this invention is the provision of a filling device for a fountain pen which may be adapted to commercial forms of fountain pens now being manufactured.

A still further object of this invention is the provision of a new type of filling device which requires few parts and which may be readily operated without undue care on the part of the user.

A still further object of this invention is the provision of a filling device for a fountain pen in which the various parts are so arranged that the filling device automatically

2

becomes operative during the usual manipulative steps carried out to condition the instrument for the normal filling operation but which device automatically returns to a nonfilling or inoperative position when the pen is reconditioned for use after filling.

A still further object of this invention is the provision of a filling device for a fountain pen which is normally concealed and does not interfere with the use of the pen during writing.

Further and additional objects will be apparent from the following description, the accompanying drawings and the appended claims.

In accordance with one embodiment of this invention, the filling device is incorporated into a writing instrument including a fluid reservoir and a writing element mounted forwardly thereof. The filling device itself comprises an elongated tubular member providing communication between the reservoir and an open end of the tubular member adjacent the writing element. The tubular member is longitudinally reciprocable with respect to the main body portion of the instrument so that its open forward end may be manually projected for a substantial distance forwardly of the writing element to a filling position and may be manually retracted to a nonfilling position rearwardly of the writing element. When the tubular member is in the projected or extended position it is dipped into a writing fluid and the fluid is drawn through it to the reservoir in the usual manner commonly employed for filling fountain pens. Thus it is unnecessary to insert the nib itself into the writing fluid during the filling operation. When the tubular member is thereafter reciprocated to the retracted position, the forward end thereof is positioned rearwardly of the tip end of the writing element for a sufficient distance so that it does not interfere during a normal writing operation. In accordance with this invention the filling tube is reciprocated by a relative turning motion of two coaxial portions constituting the casing of the writing implement itself whereby the resulting relative rotary motion is transmitted to the filling tube as a longitudinally reciprocating motion. This translation of motion may be likened to the projection of a writing lead in the usual mechanical type pencil wherein the holder constitutes two coaxial parts, one of which is relatively rotatable with respect to the other whereby the relative rotation of the two parts effects a projection or retraction of the pencil lead.

This invention has particular application to the type of writing implement disclosed in my Patent No. 2,610,612 issued September 16, 1952. In that patent there is disclosed a writing implement in which the fluid reservoir comprises a normally distended but collapsible sac which is collapsed by air pressure exerted by a pair of telescoping tubular members. In the operation of the device disclosed in that application, the telescoping tubular members are held in fixed position while the instrument is in use by threadable engagement of one of the tubular members or barrel with a cap having the other tubular member secured thereto. Thus when it is desired to fill the writing implement disclosed in that application, it is necessary to unscrew the cap for a certain distance prior to the time that the tubular members are pulled apart to an extended condition. In accordance with one embodiment of this invention, the screwing motion of the cap has been associated with a mechanism in such a manner that the filling tube may be projected or retracted from a forward portion of the instrument as the cap is unscrewed or screwed. Thus in accordance with this invention, the filling tube is automatically projected while the instrument is being conditioned for filling and the filling tube is automatically retracted after the filling operation has been completed and the rearward cap is screwed into place.

For a more complete understanding of this invention, reference will now be made to the accompanying drawings in which:

Fig. 1 is an elevational view taken partially in section of a bottle of writing fluid and the forward end of a writing implement showing the manner in which the device of this invention operates during a filling operation;

Fig. 2 is a longitudinal partial section view of the rear portion of a writing instrument constructed in accordance with one embodiment of this invention;

Fig. 2a is a longitudinal sectional view of the forward portion of the writing instrument shown in Fig. 2;

Fig. 3 is a fragmentary sectional view taken along the line 3—3 of Fig. 2a;

Figs. 4 and 5 are perspective views of a pair of collets which cooperate during the operation of the device shown in Figs. 2 and 2a to form a clutch mechanism;

Fig. 6 is a longitudinal sectional view of the forward portion of a writing instrument constructed in accordance with another modification of this invention;

Fig. 6a is a longitudinal partial sectional view of the rearward portion of the writing instrument shown in Fig. 6;

Fig. 7 is a reduced sectional view taken along the line 7—7 of Fig. 6, and

Figs. 8 and 9 are detail views showing the structure of the two parts constituting the clutch mechanism of the device shown in Figs. 6 and 6a.

With reference to Figs. 1 through 5 of the drawings, there is provided a writing implement of the character disclosed in my Patent No. 2,610,612. Briefly this implement comprises an outer casing or barrel 20, a forward gripping section 22 threadably engaged therewith, and a writing nib 24 having a writing element or point 26. There is provided a body portion 28 or so-called feed between the nib 24 and the gripping section 22 which has the usual passageways and comb cuts 30 which serve as an expansion chamber or temporary writing fluid storage means, as is well known in the art. Within the barrel 20 is provided a fluid reservoir section which includes a normally distended collapsible sac 32. The sac is adhesively or otherwise secured at its forward end to a bushing 34. The sac 32 is also surrounded by a vented sheath 36 which serves to protect the sac against accidental displacement in a longitudinal direction when the filling device is operated. The sheath is secured at its forward end to the bushing 34 by means of a circumferential indentation 38 engaged in an annular groove 40 formed in the bushing.

A cap 42 is threadably engaged with the rear portion of the barrel 20 and has secured thereto a tubular member 44 which is adapted to telescope into the barrel 20 in the annular space between the barrel and the sheath 36. The cap 42 may be unscrewed from the barrel 20 by virtue of the threads 46 and then fully extended to initiate a filling operation. As explained in my Patent No. 2,610,612, one or more longitudinal indentations or channels 48 are provided in a rearward portion of the tubular member 44 which in cooperation with a vent 50 and a loosely mounted packing gland 52 which is spanned by the channels 48 serve to vent the interior of the barrel 20 when the cap 42 is in the fully retracted position. Also a forward portion of the tubular member 44 is provided with one or more longitudinal indentations 54 and with one or more apertures 56, both of which serve freely to vent the inner portion of the barrel 20 when the tubular member 44 and the cap 42 are fully extended. Thus in the operation of this device the cap is unscrewed and withdrawn to its outer limit determined by abutment of a shoulder 58 on a forward portion of the tubular member 44 against an inner shoulder 60 on a rear portion of the barrel 20. At this point the barrel is vented to the atmosphere through the aperture 56 which is then positioned rearwardly of the packing gland 52 as well as through the channel formed by

the deformation 54 spanning the packing gland 52. It will, of course, be apparent that either the aperture 56 or the deformation 54 will provide the desired venting in this position. Then the forward end of the implement is immersed in a writing fluid and the cap 42 and the tubular member 44 are moved forwardly to a retracted position which movement, by virtue of the packing gland 52 forming a seal between the barrel and the tubular member, causes an increase of air pressure exteriorly of the sac 32 which in turn causes the sac to collapse. After the cap 42 has thus been moved to the position at which the threads 46 just begin to engage, the channels 48 then span the packing gland 52, thus venting the interior of the barrel 20, allowing the sac to expand to its normally distended condition whereby a full charge of fluid is drawn thereinto. Thereafter the cap 42 is screwed into the position indicated in Fig. 2. In this latter position the interior of the barrel is vented at all times through the vent 50 and the channels 48 to equalize pressure in the barrel upon any change in temperature, as disclosed in my prior patent.

With particular reference to the present invention as applied to the foregoing described structure, there is provided a longitudinally extending filling tube 62 in communication at its rearward end with the interior of the sac 32 having a forward end adjacent to but spaced rearwardly from the writing point 26 when the instrument is in a nonfilling position as shown in Fig. 2a. As will be apparent from Fig. 3, the filling tube 62 is provided with a circular opening extending throughout its length and has inserted therein a circular rod 64 flattened on one side to provide a lower air passageway 66 and provided with a capillary groove 68 on the upper side thereof forming a capillary ink channel within the tube 62. The capillary groove extends to a forward portion of the filling tube and communicates with a slot 70 formed in an upward side wall thereof. During the filling operation to be described, ink is drawn into the ink sac 32 directly through passageway 66 and through slot 70 and channel 68 but when the pen is actually being used, the channel 66 serves to vent air into the sac as fluid is withdrawn during writing, such withdrawal taking place through the capillary passage 68. The slot 70 communicates with the comb cuts and other fluid passageways 30 in the feed bar 28 providing an expansion chamber or temporary storage means for the writing fluid forwardly of the fluid reservoir, as is well known in the art.

The filling tube 62 is reciprocally mounted in a central axial bore 74 in the body portion or feed 28 and extends rearwardly through a pair of registering apertures or bores in bushings 76 and 34, the rearward end of the tube extending into and communicating with the interior of the sac 32. The rear end of the tube 62 has secured thereto by brazing or otherwise, an elongated threaded member 78. This threaded member has a substantially square-shaped exterior cross section. As will be apparent from an examination of Fig. 3, the threads 72 of the member 78 are circular but are cut primarily through the corners of the square of its cross section. Thus it will be apparent that the threaded member 78 can be rotated in a circular threaded aperture of the proper size but at the same time can be held against rotation in an aperture having a square cross section. The bushing 76, as will be apparent from Fig. 3, has a square cut bore 80 which receives the forward end of the threaded member 78 and will permit of its axial movement therethrough but will prevent relative rotation with respect thereto. Inasmuch as the bushing 76 is firmly secured to the gripping section 22, the threaded member 78 and consequently the filling tube 62 may be reciprocated longitudinally thereof but are incapable of rotation with respect thereto.

The bushing 34, on the other hand, is provided with a circular threaded bore 82 adapted to engage the threads 72 of the threaded member 78 in such a manner that the threaded member may be screwed back and forth through

5

the bushing 34. The bushing 34, being a part of the reservoir section including the sheath 36 and the sac 32, rotates therewith. On the other hand, the bushing 34 is rotatable with respect to the bushing 76 and the other parts including the gripping section 22 and the barrel 20 to which the bushing 76 is firmly secured. It will thus be apparent that when the reservoir section including the bushing 34 is rotated relatively to the section including the barrel 10 and the gripping section 22, then the threaded means 78 and the filling tube 62 will be reciprocated axially of the writing implement. Thus by screwing the reservoir section in one direction the filling tube may be extended to a filling position, such as indicated in Fig. 1, and by screwing in another direction may be reciprocated in the opposite direction to a non-filling position, such as indicated in Figs. 2 and 2a. The path of relative movement of the several parts during this rotation is that defined between the barrel 20 and the sheath 36, between a ring or collar 84 secured within the barrel and the forward portion of the sheath 36, between a rearward portion 88 of the gripping section 22 and a forward portion 86 of the bushing 34, and between the line of contact between the bushing 76 and the bushing 34. A ring gasket 90 is provided to prevent possible leakage of writing fluid at this point. Likewise it will be noted that the foremost end 92 of the sheath 36 is provided with an annularly outwardly extending portion abutting the ring 84 to prevent longitudinal separation of the reservoir section from the gripping section 22 and the barrel 20.

In the operation of the device as thus far described, it will be apparent that the rotation of the reservoir section will reciprocate the filling tube back and forth through the gripping section 22 of the instrument. However, it is preferable that the filling tube not be so reciprocated while the cap member 42 and the tubular member 44 are being moved to their fully extended position rearwardly of the pen during filling. Accordingly a clutch mechanism has been provided between the tubular member 44 and the reservoir section so that the filling tube will be reciprocated when the cap 42 is turned but only while the cap 42 is threadedly engaged with the threads 46 at the rear portion of the barrel 20. This clutch mechanism comprises a pair of collets 94 and 96 shown in detail in Figs. 4 and 5. Collet 94 is soldered or otherwise secured to the forward end of the tubular member 44 and is provided with a forwardly extending cam surface 98 and a notch 100, the cam surface having substantially the same pitch as the screw threads 46. The collet 96 is soldered or otherwise secured to the forward end of the sheath 36 and is provided with a rearwardly projecting tongue member 102. Thus it will be apparent that the cap member 42 and the tubular member 44 are longitudinally reciprocable and rotatable independently of the reservoir section including the sheath 36 until such time as the tongue member 102 on the collet 96 engages the stop surface 104 on the surface of the collet 94. When such engagement takes place, then the two collets will rotate together whereby a rotation of the cap member 42 will cause the reservoir section to rotate with it. The collets 94 and 96 including the stop surface 104 and the tongue member 102 are relatively formed so that they will come into engagement at about and preferably shortly after the time the threads 46 take hold when the cap 42 is being screwed on the barrel 20. The collets do not provide an airtight fit around the sheath 36 and air is permitted to pass between the collet 94 and the sheath 36 when the tubular member is reciprocated within the barrel 20.

The writing implement disclosed in Figs. 1 through 5 is shown in Figs. 2 and 2a in its normal writing or non-filling position. When it is desired to fill the pen the cap 42 is unscrewed from the barrel 20. As this is done the clutch mechanism previously described causes the reservoir section to rotate with respect to the barrel and

6

gripping section thereby driving the filling tube forwardly so that its forward end projects well beyond the writing point 26 to a position such as that indicated in Fig. 1. The clutch mechanism is formed to disengage just prior to the time at which the threads 46 disengage since at this point the stop 104 is pulled out of abutting engagement with the tongue member 102, the filling tube then being extended to its forward limit. After further rotation and consequent disengagement of the threads 46 the cap 42 and tubular member 44 are pulled back rearwardly to the limit determined by the abutment of the shoulder 58 with the shoulder 60 on the barrel 20. The filling tube is then inserted into a body of writing fluid in the manner indicated in Fig. 1 to immerse the open end of the channel 66 and the slot 70. Thereafter the cap 42 is pushed downwardly in order to collapse the sac 32 in the manner disclosed in my prior patent. When the cap has been pushed to the point where the threads 46 are just coming into engagement, that is, a first retracted position, then the channels 48 span the packing gland 52 to vent the reservoir chamber, thereby permitting the sac to expand whereby writing fluid is drawn into the sac through the channel 66 and the slot 70 and the channel 68 of the filling tube. Thereafter the end of the filling tube is removed from the body of fluid and there is no excess writing fluid on the pen nib since the nib itself has not been immersed in the fluid. Likewise, no excess amount of fluid is present in the expansion chamber defined by the comb cuts and passageways 30 since the feed bar has not been immersed in or contacted with the body of fluid during filling. Thereafter the cap 42 is screwed home to a fully retracted position and during this operation the clutch mechanism engages and the filling tube is retracted to the position shown in Figs. 2 and 2a.

It will be noted that the forward end of the filling tube is formed to the contour of the forward portion of the body member 28, thus resulting in a pleasing appearance and preventing interference by the filling tube when the instrument is employed in writing. During the writing operation the fluid flows to the pen nib and the expansion chamber or temporary fluid storage means through the capillary passageway 68 and the slot 70 in the filling tube and air necessary for replacing the fluid as it is withdrawn from the reservoir passes upwardly through the passageway 66. It will be noted in Fig. 2a that there is a small chamber 106 positioned in the gripping section 22 between the feed bar or body portion 28 and the bushing 76. In order to provide proper communication between this chamber 106, the ink sac and the filling tube, the latter is provided with a slit 108 which extends for a substantial distance longitudinally thereof and communicates with the channel 68. As indicated, this slit also extends through a portion of the threaded member 78.

Referring now to Figs. 6 through 9, there is shown another embodiment of the invention applied to a somewhat modified form of pen structure but in many respects similar to the device shown in Figs. 2 and 2a. This device includes a barrel or casing 136, a screw cap 138 mounted rearwardly thereof, a forward gripping section 140, a forwardly positioned feed bar 142 containing comb cuts 144 and a pen nib 146 having a writing point or element 148. In this form of the device a reciprocable filling tube 150 is provided having an enlarged externally threaded cylindrical portion 152. This enlarged portion 152 is threadably engaged within a central bore of a bushing 154 which serves to support a reservoir section including a sheath 156 and a collapsible sac 158 within the barrel 136. The enlarged portion 152 of the filling tube is provided with a pair of longitudinally extending broaches 160 which serve to guide the filling tube and to prevent its rotation with respect to the gripping section 140. This latter is accomplished by the provision of a plate 162 firmly secured to the rear end of the gripping section 140 by a

plurality of tangs 164 embedded in the material of the gripping section. Only one of these tangs is shown in Fig. 6.

The plate 62 has a central circular aperture through which the filling tube including the threaded end 152 passes and there are a pair of extensions 166 in the plate which ride in the broaches 160 to prevent the filling tube from rotating with respect to the gripping section 140. It will be understood that the gripping section 140 and the barrel portion 136 rotate as a unit as in the device disclosed in Figs. 2 and 2a and that the filling tube 150 will be longitudinally reciprocated upon the relative rotation of the reservoir section (including the bushing 154) with respect to the barrel 136 and the gripping section 140. Thus when the filling device is to be reciprocated, the path of relative movement of the various parts is between the barrel 136 and the sheath 156, between ring 172 and the forward end of the sheath 156, between the rearwardly extending portion 168 of the gripping section 140 and the bushing 154, and between the plate 162 and the forward surface of the bushing 154. The bushing 154 is prevented from longitudinal displacement within the barrel 136 by means of an annular shoulder 170 abutting against a ring 172 securely threaded within a forward end of the barrel 136. A packing ring 174 is provided between the bushing 154 and the extension 168 in order to prevent possible leakage of writing fluid.

The mode of operation of the device disclosed in Figs. 6 through 9 is similar to that of the device shown in Figs. 2 and 2a, a clutch mechanism being provided which comes into operation while the rear cap 138 is being unscrewed from the barrel prior to conditioning the instrument for a filling operation. In this instance the clutch mechanism comprises a plurality of peripherally extending deformations or embossments 176 formed on the rear surface of the sheath 156 which embossments are adapted to mate with a plurality of similar embossments 178 on the tapering rear end of a telescoping tubular member 180. The details of the clutch mechanism including the cooperating embossments are shown in Figs. 8 and 9. Thus when the cap is engaged with the rearward threads 182 on the barrel portion and is being turned with respect thereto, the embossments 176 and 178 are engaged thereby also to turn the reservoir section which results in the reciprocation of the filling tube. The embossed portion of tubular member 180 may be tapered somewhat as illustrated in Fig. 8 whereby accurate meshing of embossments 176 and 178 is insured. However, when the threads 182 become disengaged from the cap 138, then the embossments 176 and 178 also become disengaged because of relative lateral movement and the cap may be pulled out for conditioning for filling without further effect on the filling tube. After the filling operation has been completed, the cap is screwed on, the clutch elements 176 and 178 become engaged and the filling tube is retracted to the position shown in Fig. 6 which is the normal or nonfilling position. It is here noted that the embossments 178 provide the necessary venting means around the packing gland 184 at the time that the collapsible sac expands to draw writing fluid thereinto during the filling operation. The vent 186 serves to equalize the pressure within the barrel when the instrument is carried in the pocket of the user.

The operation of the device disclosed in Figs. 6 through 9 is thus substantially the same as the operation of the device disclosed in Figs. 2 to 5, important differences being in the clutch mechanism and in the specific means for preventing the axial rotation of the tubular member with respect to the gripping section. Further, it will be noted that in this construction there is a chamber 188 within the gripping section which may contain writing fluid, but this may be exhausted during writing through

a slit 190 provided in a side wall of the tubular member 150. It will also be understood that the fluid normally flows to the nib 146 and the comb cuts 144 in the body member 142, through an upper capillary passageway 192 (which terminates short of the forward end of the tube) and a slit 194 in the filling tube. During writing, air is vented to the interior of the sac through the lower passageway 196 in the filling tube.

It will be apparent from the foregoing that a filling tube has been provided which may be adapted for use in connection with many types of pens now being marketed commercially. Furthermore, the device is particularly adaptable in a type of structure where relative axial rotation of several parts of the instrument is normally incident to conditioning it for a filling operation since by this invention this relative axial rotation may be readily employed or extending the filling tube.

While two particular embodiments of this invention are shown above, it will be understood, of course, that the invention is not to be limited thereto, since many modifications may be made, and it is contemplated, therefore, by the appended claims, to cover any such modifications as fall within the true spirit and scope of this invention.

I claim:

1. A fountain pen comprising an elongated casing having a rear cap portion and a forward portion secured together in relatively rotatable relationship, a writing fluid reservoir including a collapsible sac having an open forward end within said casing, a bushing having a first axial bore mounted for rotation with said rear portion and longitudinally fixed within said casing supporting said sac, the open end of said sac sealingly engaging said casing, a gripping section having a second axial bore positioned forwardly of said bushing and mounted for rotation with said forward portion, sealing means between said bushing and said gripping section, a feed bar supported within said second bore and having a third axial bore extending therethrough, a writing point positioned forwardly of said bar and in fluid communication with said third bore, a longitudinally reciprocable filling tube having an open forward end and extending through said first, second and third axial bores, said tube communicating with the interior of said sac, means on said forward portion for holding said filling tube against rotation relative to said forward portion when the rear portion is being rotated relative thereto, and corresponding threaded means on a rear portion of said filling tube and in said first axial bore cooperating with said holding means to reciprocate the open forward end of said tube with respect to said casing between a filling position forwardly of said writing point and a nonfilling position rearwardly of said point when said forward and said rear portions are relatively rotated.

2. A fountain pen comprising a casing, cap means secured to a rear portion of said casing for rotation relative thereto, a fluid reservoir section including an open ended collapsible sac and a supporting bushing therefor within said casing mounted for rotation with said cap and longitudinally fixed within said casing, the open end of said sac sealingly engaging said casing, a gripping section on said casing having a central bore positioned forwardly of said sac and said bushing, a writing point positioned forwardly of said gripping section, a longitudinally reciprocable open ended filling tube extending through said bore providing a fluid passageway communicating with said sac, said filling tube being adjacent to and in fluid communication with said writing point, means on said casing for holding said tube against rotation with respect thereto, and cooperating threaded means on said tube and on said bushing to reciprocate the forward end of said tube to an extended position forward of said writing point and to a retracted position rearward of said writing point.

3. A fountain pen comprising a casing, a fluid reservoir

section including a collapsible sac and a support for said sac longitudinally fixed and rotatable within said casing, plunger means including a cap engaged with a rear end of said casing for axial movement from a first extended position to a first retracted position and threadably engageable with said casing for axial and rotative movement from said first retracted position to a fully retracted position, a clutch mechanism between said plunger means and said reservoir section disengaged during said axial movement but engaged during said axial and rotative movement whereby said reservoir section is rotated with said cap, a writing element positioned adjacent a forward end of said casing, a longitudinally reciprocable open ended filling tube providing a fluid passageway with said sac, said filling tube being adjacent to and in fluid communication with said writing point, means in said casing for holding said tube against axial rotation with respect thereto, and cooperating threaded means on said tube and on said support to reciprocate the forward end of said tube to an extended filling position forward of said writing element and to a retracted nonfilling position rearward of said writing element upon rotation of said cap during rotary movement thereof between said first retracted position and said fully retracted position.

4. A fountain pen comprising a casing, a fluid reservoir section including a collapsible sac and a support for said sac longitudinally fixed and rotatable within said casing, plunger means including a cap engaged with a rear end of said casing for axial movement from a first extended position to a first retracted position and threadably engageable with said casing for axial and rotative movement from said first retracted position to a fully retracted position, said plunger means including a reciprocable tubular member telescopically mounted in and sealingly engaging said casing and surrounding said sac for collapsing the sac during a filling operation comprising movement of said plunger between said first extended and said first retracted positions, a clutch mechanism between said tubular member and said sac support disengaged during said axial movement but engaged during said axial and rotative movement whereby said reservoir section is rotated with said cap, a writing element positioned adjacent a forward end of said casing, a longitudinally reciprocable open ended filling tube providing a fluid passageway between said sac, said tube being adjacent to and in fluid communication with said writing element when said tube is in the rearward position, means in said casing for holding said tube against rotation with respect thereto, and cooperating threaded means on said tube and on said support to reciprocate the forward end of said tube to an extended filling position forward of said writing element and to a retracted nonfilling position rearward of said writing element upon rotation of said cap during axial movement thereof between said first retracted position and said fully retracted position.

5. A fountain pen comprising a casing, a fluid reservoir section within said casing including an open ended collapsible sac, an axially bored member secured in the open forward end of said sac, a vented sheath support surrounding said sac and secured to said member, and a collar having a rearwardly facing projection on one end surface forming one part of a clutch mechanism encompassing and secured to said sheath support adjacent a forward portion thereof; plunger means including a cap engaged with a rear end of said casing for axial movement from a first extended position to a first retracted position and threadably engageable with said casing at its rear end for axial and rotative movement from said first retracted position to a fully retracted position; said plunger means including a reciprocable tubular member telescopically mounted in and sealingly engaging said casing and surrounding said sheath support for collapsing said sac during longitudinal motion between said first extended and said first retracted positions which comprises a filling operation, said tubular member having a

second collar secured to a forward end thereof having a forwardly facing cam and stop surface cooperating with said first collar to form said clutch mechanism; said projection and said stop surface being disengaged during said axial movement but engaged during said axial and rotative movement whereby said reservoir section is rotated with said cap during said last mentioned movement; a writing element positioned adjacent a forward end of said casing; a longitudinally extending reciprocable open ended filling tube extending through the bore of said bored member providing a fluid passageway with said sac; means in said casing for holding said filling tube against rotation with respect thereto; and cooperating threaded means on said filling tube and in the bore of said bored body member to reciprocate the forward end of said tube between an extended filling position forward of said writing element and a retracted nonfilling position rearward of said writing element upon rotation of said cap during axial movement thereof between said first retracted position and said fully retracted position, said filling tube being adjacent to and in fluid communication with said writing point in said retracted position.

6. A fountain pen comprising a casing; a fluid reservoir section within said casing including an open ended collapsible sac, an axially bored member secured in the open forward end of said sac, and a vented sheath support surrounding said sac and secured to said member, said sheath having a plurality of first deformations extending circumferentially of a rearward portion thereof forming one part of a clutch mechanism, plunger means including a cap engaged with a rear end of said casing for axial movement from an extended position to a first retracted position and threadably engageable with said casing at its rear end for axial and rotative movement from said first retracted position to a fully retracted position; said plunger means including a reciprocable tubular member telescopically mounted in and sealingly engaging said casing and surrounding said sheath for collapsing said sac during a filling operation, the rearward interior end of said tubular member being provided with a plurality of second circumferentially extending deformations cooperating with said first deformations to form said clutch mechanism; said first and second deformations being disengaged during said axial movement but engaged during said axial and rotative movement whereby said reservoir section is rotated with said cap during said last-mentioned movement; a writing element positioned adjacent a forward end of said casing; a longitudinally extending reciprocable open ended filling tube extending through the bore of said bored member providing a fluid passageway with said sac; means in said casing for holding said filling tube against axial rotation with respect thereto; and cooperating threaded means on said filling tube and in the bore of said bored body member to reciprocate the forward end of said tube between an extended filling position forward of said writing element and a retracted nonfilling position rearward of said writing element upon rotation of said cap during axial movement thereof between said first retracted position and said fully retracted position, said filling tube being adjacent to and in fluid communication with said writing element in said retracted position.

7. A writing implement comprising a barrel, a writing nib at the forward end of said barrel, a reservoir section including a pneumatically collapsible fluid reservoir and a support therefor, said section being mounted for rotation within said barrel but being held against longitudinal reciprocation therein, a forwardly extending open ended filling tube communicating with said reservoir and mounted for longitudinal reciprocation within said barrel and held against axial rotation therewith, said filling tube being adjacent to and in fluid communication with said nib, threaded means cooperating between said tube and said section for reciprocating said tube upon rotation of said section within said barrel, a reservoir collapsing

11

plunger sealingly engaging said barrel and including an exteriorly accessible cap member mounted for axial rotation and longitudinal reciprocation to projected and retracted positions between said barrel and said section, and a clutch mechanism cooperating between said plunger and said section for connecting said section with said cap when said cap is in the retracted position whereby rotation of said cap produces corresponding rotation of said section.

12**References Cited in the file of this patent****UNITED STATES PATENTS**

Re. 23,683	Segre -----	July 7, 1953
1,557,357	Gornell -----	Oct. 13, 1925
2,610,612	Martin -----	Sept. 16, 1952

FOREIGN PATENTS

114,801	Great Britain -----	Apr. 18, 1918
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