

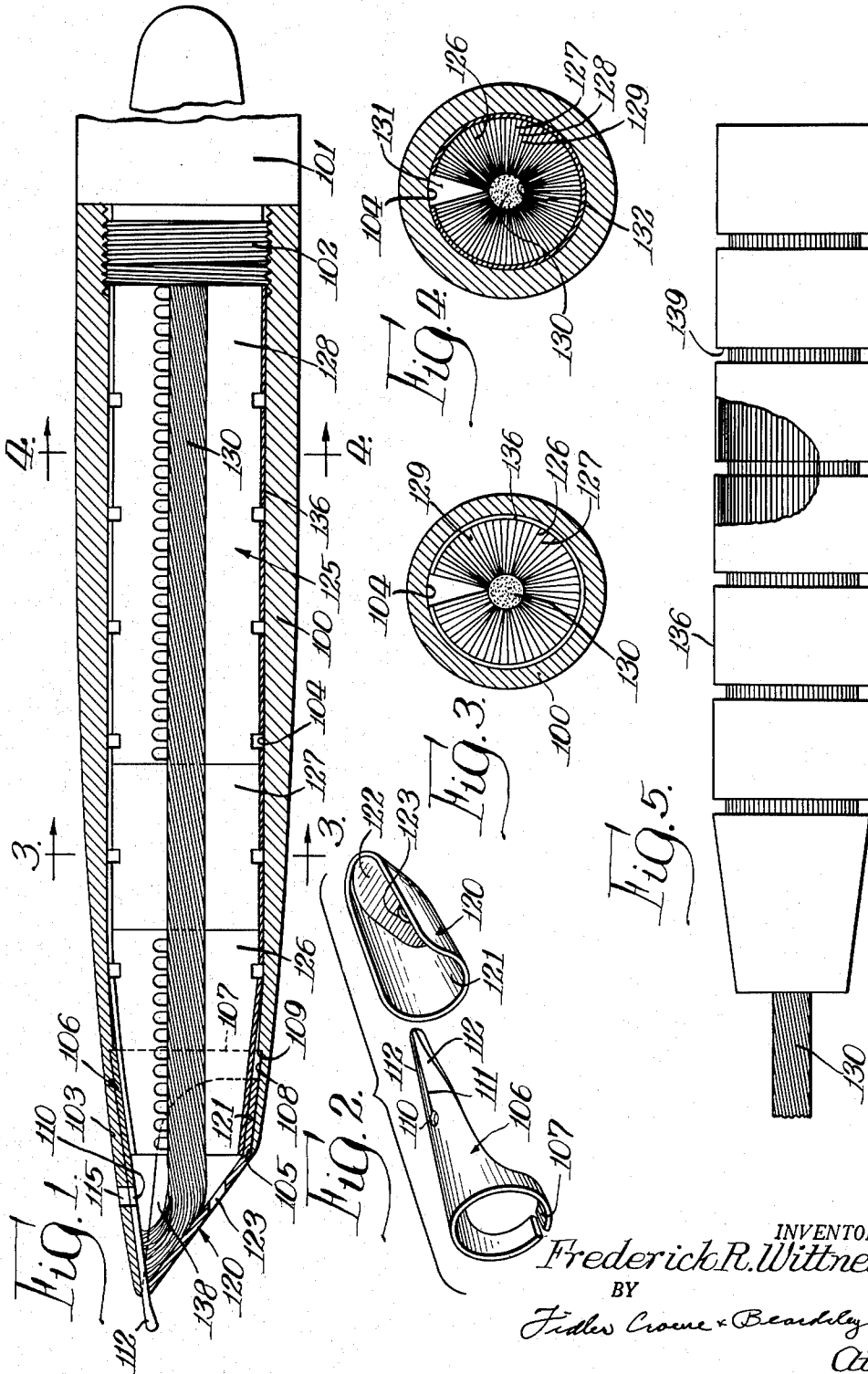
Nov. 22, 1955

F. R. WITNEBERT
FOUNTAIN PEN

2,724,367

Original Filed Sept. 13, 1947

2 Sheets-Sheet 1



INVENTOR,
Frederick R. Wittnebert,
BY
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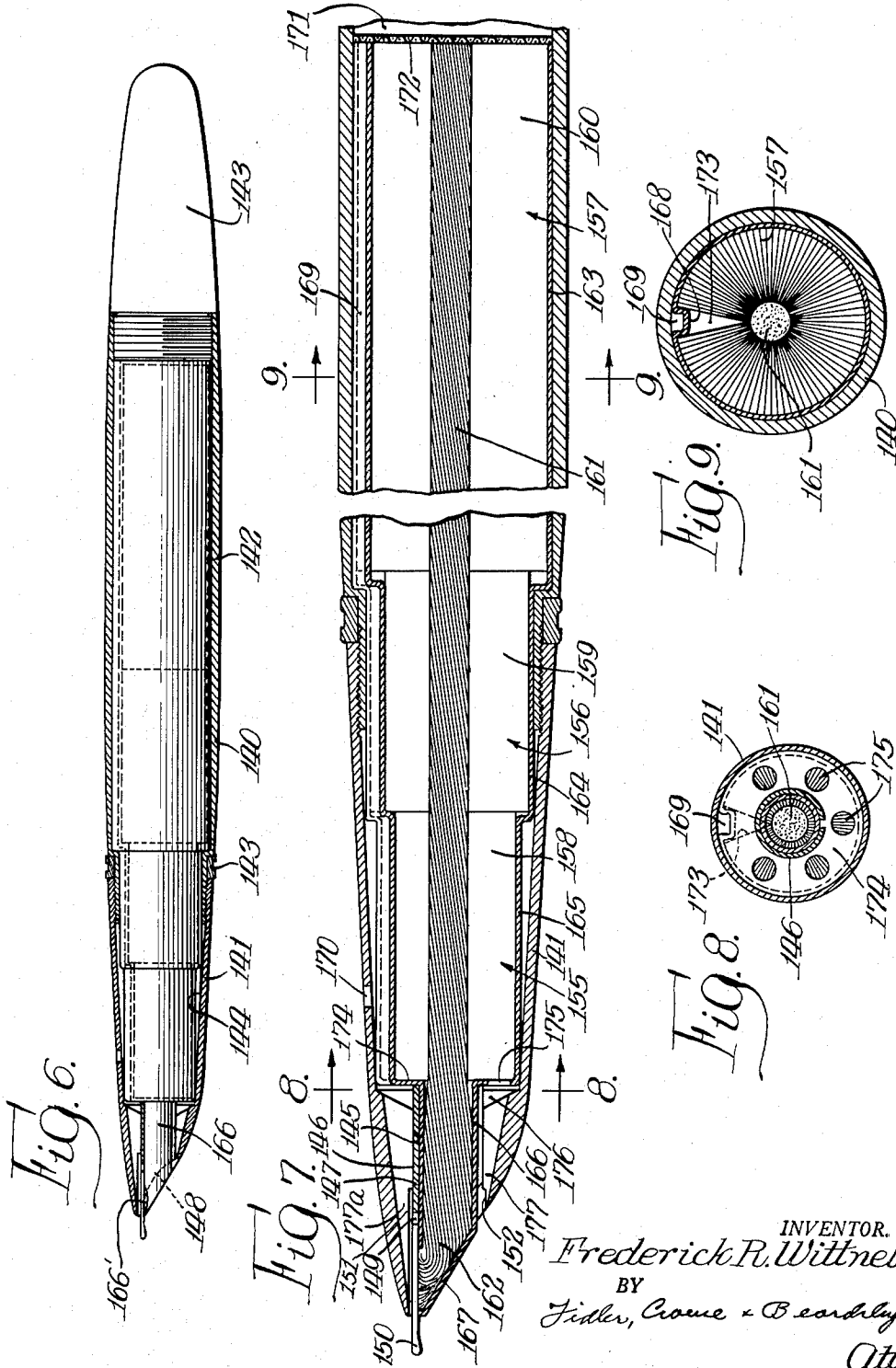
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FOUNTAIN PEN

Frederick R. Wittnebert, Chicago, Ill., assignor to The Parker Pen Company, Janesville, Wis., a corporation of Wisconsin

Original application September 13, 1947, Serial No. 773,815, now Patent No. 2,670,711, dated March 2, 1954. Divided and this application February 17, 1953, Serial No. 337,310

12 Claims. (Cl. 120—50)

My invention relates to fountain pens and has to do particularly with fountain pens of the type wherein the ink reservoir is adapted to be filled by capillary action, the ink is held in the reservoir by capillary action and the ink is fed therefrom by capillary action to a writing surface when the pen is used in writing.

One of the objects of my invention is to provide an improved fountain pen of the foregoing character.

A further object is to provide a fountain pen of the capillary filling type having a filler element defining a plurality of capillary ink storage spaces or cells, and wherein the cell-forming members occupy a minimum portion of the total volume of the ink reservoir space, thereby providing a maximum volume of ink storage capacity for an ink reservoir space of any overall size.

Still another object is to provide a capillary filler element for a fountain pen having a plurality of capillary spaces or cells extending longitudinally thereof and so formed that the capillarity of the spaces at the various portions of the filler element increases generally with the distance of such portions from the writing end of the pen.

Another object is to provide an improved fountain pen of the capillary filling type having a removable cartridge including a capillary filler-and-reservoir element and feed inclosed and formed as a unit with a protective cartridge casing.

Another object is to provide an improved fountain pen of the capillary filling type and having a removable cartridge including a filler-and-reservoir element, feed, nib and protective casing, all of which cartridge members are maintained in predetermined unitary relation.

Another object is to provide an improved fountain pen of the capillary filling type and having a removable cartridge including a filler-and-reservoir element and a protective casing wherein the arrangement provides for rapid filling of the pen when the end of the pen is inserted in a supply of ink.

Another object of the invention is to provide an improved fountain pen of the type referred to having a relatively large refill and write-out capacity.

Other and more specific objects of the invention are to provide: a fountain pen having a capillary filler element wherein the capillarity thereof is graded longitudinally thereof and which can be readily and accurately predetermined and maintained; a fountain pen of the capillary type having an improved venting means for maintaining the interior substantially at atmospheric pressure; an improved arrangement for substantially closing the writing end of the pen body; an improved arrangement for maintaining a wick-like feed element in ink feeding relation to the nib of the pen; a novel arrangement for maintaining a series of fin-like partitions in predetermined, spaced relation to define a plurality of capillary ink storage spaces or cells; and a simple and readily assembled structure for providing capillary cells of graded sizes.

Other objects of the invention will appear from the following description taken in connection with the appended drawings wherein:

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Figure 1 is a fragmentary view, partially in longitudinal cross-section, of a fountain pen constructed in accordance with my invention;

Fig. 2 is an exploded perspective view of a nib and an end closure member forming a portion of the pen shown in Fig. 1;

Fig. 3 is a transverse, cross-sectional view taken along line 3—3 of Fig. 1;

Fig. 4 is a transverse, cross-sectional view taken along line 4—4 of Fig. 1;

Fig. 5 is a side elevational view of a capillary filler element and feed element forming a portion of the pen shown in Fig. 1;

Fig. 6 is a longitudinal view partially in cross section of a pen embodying a modified form of my invention;

Fig. 7 is an enlarged, fragmentary, longitudinal sectional view of a portion of the structure shown in Fig. 6;

Fig. 8 is an enlarged, transverse cross-sectional view taken along line 8—8 of Fig. 7; and

Fig. 9 is an enlarged, transverse cross-sectional view taken along line 9—9 of Fig. 7.

The fountain pen of the present invention may be made as a pocket pen having the usual cap or it may be made as a desk pen having the usual elongated tailpiece, or if desired it may be made as a convertible pen which can be used either as a pocket pen or a desk pen.

Referring now particularly to Fig. 1 of the drawings, the pen includes a pen body or barrel including a front section 100 and a rear section 101, detachably connected to the front section as by a threaded joint 102. The body may be formed of any suitable material such as metal or a plastic and preferably is formed from a plastic such as "Lucite" (methyl methacrylate resin). The forward body section 100, which preferably terminates at its forward end in a tapered portion 103, is formed with a bore 104 extending longitudinally therethrough and opens to the exterior of the pen in a forward opening 105.

Carried at the forward end of the pen body is a writing element which preferably takes the form of a pen nib 106. The pen nib 106 (Fig. 2) has the general form of a portion of a cone and at its rear end is provided with a split ring portion 107 adapted to resiliently and frictionally engage against a tapered portion 108 of the bore and to bear against a shoulder 109 for the purpose of positioning the nib within the forward end of the body with only the forward writing tip projecting therefrom. The nib 106 is formed with a slit 111 providing two flexible nib sections 112, and with a pierce 110 which registers with an air opening 113 formed in the upper wall of the forward pen body for a purpose which will hereinafter appear.

For the purpose of substantially closing the open forward end of the pen body and for retaining the feed element, hereinafter described, in ink feeding relation with the nib, an end piece or shoe 120 is provided which has a generally trough shaped body 121 adapted to fit into the tapered portion 108 of the bore forwardly of the nib 106. The edges of the body portion 121 are generally complementary in shape to the edges of the nib so that the end piece fits against the nib when these two members are in position in the pen body. The end piece is provided with a forward end wall 122 preferably inclined, as illustrated, forming a space of capillary dimensions between itself and said nib closely adjacent the point of convergence of the end wall and the nib and having its periphery conforming generally to the periphery of the opening 105 in the end of the pen body and providing, in effect, a continuation of the external contour of the pen body. The end wall 122 is formed with an ink inlet opening 123 below the center thereof for the purpose of admitting ink into the interior of the pen as hereinafter more fully described.

The interior of the forward body section 100 provides

an ink reservoir chamber or space in which is located a capillary filler-and-reservoir element 125 (hereinafter called a "filler element") which is adapted to be filled with ink by capillary action when the writing end of the pen is inserted in a supply of ink. The capillary filler element 125 has a plurality of passages or ink storage spaces therein suitably connected and adapted to be placed in communication with the supply of ink and to draw ink therein by capillary action. The capillary ink spaces are of such capillarity that they retain ink therein by capillary action when the pen is not in use and permit ink to be withdrawn therefrom when the pen is used in writing. The capillary storage spaces, together with the ink feed means connected between these spaces and the nib slit maintain the ink in the pen entirely under capillary control at all times and there is no free body of ink within the pen subject to influence which tend to cause leakage in fountain pens of the type having a reservoir containing a free body of ink.

The capillary filler element 125 includes a plurality of elongated partitions or fins 126 extending longitudinally of the pen body and disposed in generally radial arrangement to define therebetween a plurality of longitudinal spaces or passages 129 of generally wedge-shaped cross-section and of capillary width. The fins 126 terminate inwardly short of the center of the capillary filler element 125 to define a longitudinally extending central space 132 which provides intercommunication between all of the capillary spaces 129.

The capillary spaces 129 are each connected in ink feeding relation with the nib slit 111 by a feed element 130 which is so formed as to provide a plurality of capillary passages extending from the inner open longitudinal edges of the spaces 129 to the nib slit 111. The feed element 130 may be formed in various ways but preferably is formed as a wick consisting of a large number of fibers or threads of suitable material. In one specific embodiment of my invention excellent results were obtained by forming the wick as a bundle of essentially parallel spun glass filaments. Other materials which have been found suitable for forming the wick are animal or vegetable fibers, or nylon and in one embodiment the wick was formed of 20 denier nylon threads each consisting of 20 filaments. Preferably the material should be one which is not absorbent and which is not detrimentally affected by inks of the types used with the pen. The feed element extends preferably throughout the entire length of the capillary filler element and at the forward end thereof projects beyond the end of the capillary filler element and into direct contact with the underside of the pen nib adjacent the slit therein. Preferably the feed element is of sufficient length so that it is held against the underside of the pen nib and capillary passages are maintained in ink feeding relation with the nib slit.

Equalization of pressure between the interior and exterior of the pen is effected by providing an air pressure equalizer or vent passage which extends longitudinally of the capillary filler element preferably throughout the length thereof and communicates with all of the capillary ink spaces in the capillary filler element. The vent passage preferably is provided by so forming the capillary filler element that a generally wedge shaped passage 131 is provided which extends inwardly into communication with the central space 132. The vent passage 131 communicates with ink of the cells in a manner hereinafter described in detail. The vent passage 131 extends to the space forwardly of the filler element which is in communication with the atmosphere through the nib pierce 110 and the air inlet port 115. In certain cases it may be found desirable to provide a space within the interior of the pen body at the rear of the capillary filler element which serves to connect the rear ends of each of the capillary spaces 129 with the rear end of the air vent passage 131.

The width of each portion of each cell at any point

throughout the length of the cell theoretically should be such as to provide the necessary capillarity to lift a column of ink to that particular point of the cell during filling. However, for convenience in manufacturing, the cells are not dimensioned so that they increase in capillarity continuously from the writing end of the pen toward the rear end of the pen; but the capillary filler element is formed in a plurality of longitudinally adjacent sections in each of which the cells are of greater capillarity than the section next nearer the writing end of the pen.

This progressive increase in capillarity may be accomplished conveniently in a capillary filler element of the construction illustrated in Fig. 5 by providing a greater number of cells in the sections in which it is desired the cells shall have the greater capillarity. For example, the capillary filler element 125 is formed by three sets of fins 126, 127 and 128, the fins in the three sets being of different lengths. Thus, the cells provided in the forward section of the capillary filler element are defined only by the long fins 126; the cells provided in the second or intermediate section of the capillary filler element are defined by the long fins 126 and the fins 127 of intermediate length and the cells formed in the third or rear section of the filler element are defined by the fins 126, 127 and the short fins 128.

The foregoing will be understood somewhat more clearly from my copending application, Serial No. 773,815, filed September 13, 1947, now Patent No. 2,670,711, of which the present application is a division and which contains a description of one mode of forming the filler element.

The capillary filler element 125 is so formed that its external contour conforms substantially with the internal shape of the interior of the forward body section whereby the capillary filler element is snugly held in the pen body and the maximum utilization of space within the pen body is insured. Thus, when the forward end of the reservoir is tapered, and the filler element extends into such tapered portion, that end of the filler element is similarly tapered.

The capillary filler element is of such length that it terminates short of the extreme forward end of the pen body and therefore a space 138 is provided between the forward end of the capillary filler element and the forward end wall 122 of the end piece, which accommodates the projecting end of the feed element 130. This projecting end is brought into abutment with the underside of the nib and the inner face of the end wall 122 and the capillary passages defined by the feed element are placed in ink-feeding communication with the nib slit.

Communication between the air vent passage 131 and each of the several capillary cells 129 is provided, preferably at spaced points throughout the length of the capillary filler element, by longitudinally spaced annular passages 139 in the outer surface of the element and extending into the outer marginal portions of the fins.

The pen is filled by inserting the writing end of the pen into a supply of ink preferably a sufficient depth to immerse the ink inlet opening 123 and place the capillary passages 129 in the filler element 125 in direct feeding relation with the supply of ink. Ink is drawn into the filler element 125 and also the feed element 130 by capillary action and rises therein by capillary action to fill the capillary spaces therein.

Air which is in the capillary spaces 129 is forced therefrom by the incoming ink and finds its way out of the pen through the circumferential vents 139, air vent passage 131, the nib pierce 110 and the air port 115. If desired, an air outlet passage and port may be provided in the rear body section 101 for additional venting of the pen, such as shown in Fig. 17 of the parent Patent No. 2,670,711, referred to above. Where the end of the pen is inserted into the supply of ink to such an extent that the air port 115 is below the level of the ink such manipulation will not prevent filling of the pen inasmuch as the capillary force exerted on the ink tending to raise it in the capillary

filler element is sufficient to overcome the head of ink above port 115 in the ink supply and cause air to bubble up through the ink supply. However, it may be preferable to open the rear port, when such is provided, by slightly unscrewing the end section 101 during filling.

Even though one or more of the cells should for any reason become blocked or fail to fill, the remaining cells will fill, owing to the fact that each of the cells is placed in direct communication with the ink supply. However, owing to the construction of the cells, there is virtually no possibility of any of the cells becoming blocked, as for example by the formation of an air bubble which if allowed to form in the cell might prevent ink from being drawn upwardly in that cell. The present invention substantially eliminates any possibility of an air bubble forming in any of the cells and causing an "air lock." Each of the cells is of wedge-shaped cross-section and therefore the inner edge portion of the cell is narrower and of greater capillarity than the outer portion of the cell. Accordingly, ink tends to rise along the inner portion of each cell in advance of the ink at the outer portion of the cell. Thus, if an air bubble should tend to form at any portion of the cell, the ink would rise along the inner portion of the cell past such point and establish a continuous body of ink longitudinally of the cell thereby breaking up any such incipient air bubble.

In writing, when the point of the pen nib is placed in contact with the writing surface, the ink which is held in the nib slit by capillarity is withdrawn therefrom by the capillarity established between the nib and the writing surface, this capillarity being sufficient to overbalance the capillarity of the capillary system within the pen which holds the ink in the pen. The pen nib slit has a greater capillarity than the feed element 130 and draws ink from the latter to replace ink withdrawn from the nib slit. In a similar manner the capillary passages in the feed element 130 have a greater capillarity than the capillary cells of the filler element and thus withdraw ink from the latter to maintain the feed element 130 in substantially saturated condition, at least to the height above the writing end of the pen to which ink stands in the several capillary cells. Inasmuch as the capillarity of the several cells increases inwardly toward the feed element 130, ink is drawn inwardly of the pen and toward the inner side edges of the capillary cells at which point it is drawn into the feed element 130. The capillary cells 129 in general are emptied from the rear toward the front end of the pen and therefore ink stands in the forward end of the cells until they are substantially emptied.

Because of the fact that each cell has an increasing capillarity toward the inner side edge portion thereof which is in communication with the feed element and since the passages in the feed element have greater capillarity than the cell, ink is drawn from the cell toward and into the feed element and is delivered thereby to the nib. Thus, even after long periods of nonuse, during which the pen may be maintained in inverted position, a continuous column of ink will extend from the cells to the nib and the pen will remain in condition for substantially instant writing. This cell construction also insures substantially complete withdrawal of ink from the cells since the ink is drawn from the outer portions of lesser capillarity toward the inner portions of greater capillarity and thence into the feed element. In addition, each cell is connected substantially throughout its length directly to the feed element which construction insures that ink will be drawn directly from the cells into the feed element throughout the principal portion of the length of the feed element. This contributes toward certainty of feed and substantially complete withdrawal of the ink from the cells. Moreover, there is substantially no possibility of air locking of ink in the cells such as might otherwise prevent substantially complete withdrawal of ink and thus reduce the effective capacity of the pen.

Air to replace ink which is withdrawn in writing enters

the pen through the air port 115, the nib pierce 110 and the air passage 131. From the air passage 131 air is drawn into the cells at the rear ends thereof and also by way of the circumferential air passages 139. Thus, ink is fed to the nib under capillary control at all times and the pen is not subject to any blocking of the flow by reason of a decrease in the air pressure within the pen.

In certain cases it may be found preferable, instead of forming the capillary filler element from a plurality of fins of different lengths, as above described, to form it in a plurality of separate but abutting sections in each of which there are a different number of fins providing a different number of capillary cells of correspondingly different capillarity. That is to say, the several sections forming such capillary filler element define cells of different capillarities, the cells in the rearwardmost section being the most numerous and of the greatest capillarity and the cells in the forwardmost section being the fewest and having the least capillarity and the cells in the intermediate section or sections having intermediate capillarities progressively increasing from the forward toward the rearward end of the pen.

A pen embodying the foregoing type of capillary filler element is illustrated in Figs. 6-9 of the drawings, to which reference now is made. The pen may embody any suitable type of casing or body but preferably the body includes a main or central section 140, a forward section 141, preferably tapering toward its forward end, an intermediate section 142, and a rear section 143; all of the sections preferably are connected by threaded joints, as illustrated. A friction ring 143 may be provided if desired at the juncture of the central and forward sections for cooperation with a slip cap of known construction. The central and forward sections of the pen body are of generally hollow form and together define a chamber 144 adapted to receive either a capillary filler element or a cartridge structure of the type hereinafter described in detail and including a capillary filler element and feed.

The forward end of the forward body section 141 is provided with a bore 145 which extends through the forward end of the pen body and is adapted to receive a writing element which preferably takes the form of a pen nib 146. The pen nib may be of known form and includes a split cylindrical body portion 147 and a tapered writing end portion 148 provided with a pierce 149 and a slit 150. For the purpose of permitting flexing of the writing end of the pen nib and for maintaining a body of ink adjacent the nib pierce and slit, whereby the same are always maintained filled with ink and in condition for instant writing, a slight space 151 of capillary thickness is provided above the pen nib. This space may be provided by forming a counterbore 152 in the forward end of the pen which counterbore is of slightly greater diameter than the pen nib.

A capillary filler element is disposed in the chamber 144, which filler element is constituted by a plurality of sections 155, 156 and 157. While three such sections are shown in the present application it will be understood that any suitable number might be provided and that the capillary filler element may consist of two, three or more sections as desired. Each of the sections of the capillary filler element is formed preferably in a manner generally similar to the capillary filler element 125 except that the fins in any one section are of the same length and therefore all of the cells in any section are the same. That is, the fins 158 forming the section 155 are all of the same length. In a similar manner the fins 160 forming the section 157 are all of the same length although preferably they are of a different length from the fins 158.

A feed element 161, which may be generally similar to the feed element 130 shown in Fig. 1 of the drawings, extends centrally of the several sections 155, 156 and 157 of the capillary filler element. Preferably the feed element 161 is formed as a single element extending substantially throughout the length of the entire capillary filler

element and has a forward portion 162 which extends into abutment with the pen nib adjacent the slit 151.

For the purpose of retaining the several sections of the capillary filler element and the feed element in assembled relation I preferably provide an inner or cartridge casing member 163 formed of suitable material such as a plastic or thin metal, and preferably the latter. The cartridge casing 163 is shaped and dimensioned to snugly receive the several sections of the capillary filler element and to fit snugly within the pen body. Accordingly, the cartridge casing 163 may be tapered at its forward end but preferably it is formed with a plurality of cylindrical sections 164 and 165 of progressively decreasing diameters, suitably dimensioned so that they fit within the tapered forward body section 141. The sections 164 and 165 are of cylindrical rather than tapered form thereby permitting the use of capillary filler sections of cylindrical shape which as will be understood are somewhat easier to manufacture than sections of tapered form. The several sections 155, 156 and 157 are made to fit snugly in the corresponding sections of the cartridge casing and thus are held in proper position. In order to insure that the capillary cells in each of the sections of the filler element are maintained in communication with the cells of the next adjacent section, the sections are held in firm abutment. This is insured by making the sections 155 and 156 of slightly greater length than the corresponding portions of the casing so that these sections project rearwardly from such portions. The screen 172 abuts the rear section 157 to maintain all the sections in abutment.

The cartridge casing 163 is provided with a forward, generally cylindrical extension 166 of reduced diameter adapted to extend through the cylindrical nib 146 which extension serves to confine the portion of the feed element 161 which extends beyond the forward end of the capillary filler element and at the same time to retain the forward portion 162 of the feed element in contact with the underside of the nib. The extension 166 is provided with a forward end wall 167 conforming generally to the contour of the pen body at this portion, forming a space of capillary dimensions between itself and said nib closely adjacent the point of convergence of the end wall and the nib, and which serves to confine the end 162 of the feed element. An opening 166' is provided in the upper wall portion of the extension 166 at the forward end thereof which permits the forward portion 162 of the feed element 161 to abut the underside of the pen nib 146.

The cartridge casing 163 is provided with an inwardly projecting, grooved portion or bead 168 which extends preferably throughout the length of the casing 163. The bead 168 thus provides between the casing 163 and the adjacent portion of the pen body a passage 169 which extends forwardly to an air port 170 and which extends rearwardly to the end of the cartridge. The passage 169 thereby constitutes an air vent passage which is in communication with the exterior of the pen through the port 170 and is in communication with the rear ends of the capillary cells defined by the capillary filler element through the space 171 rearwardly of the capillary filler element. Preferably a perforated plate or screen 172 extends across the rear end of the cartridge casing 163 for the purpose of retaining the capillary filler element in the casing and is suitably held in place, as by abutment of the end section 142. The screen is sufficiently open to permit air to pass freely therethrough between the rear ends of the capillary cells and the chamber 171.

The bead 168 may be utilized to maintain the desired spacing between the endmost fins of each section of the capillary filler element to thereby provide an air vent passage 173 which extends along each of the sections of the capillary filler element.

The feed section 165 of the inner casing 163 is provided with an end wall 174 formed with a plurality of openings 175 and the adjacent end wall of the chamber 144 in the forward body section is forwardly inclined to provide a

space 176 which is in communication with the bore 145. A plurality, preferably two grooves 177 and 177a of U-shaped cross-section are formed in the walls of the bore 145 and extend from the space 176 to the end of the body; thus ink may enter the interior of the casing 163 through the forward end of the pen during filling.

In filling the pen the forward end of the pen is inserted in a supply of ink preferably of sufficient distance to immerse the end of the pen at least as far as the ends of the fins 153. Ink is drawn into the pen through the counter-bore 152, the passage 177, the space 176 and the openings 175 and thence into the capillary filler element; ink also is drawn into the pen through the passage 177a above the nib 146 and into the space 176. Ink rises in the capillary spaces in a manner similarly to that described hereinbefore. Air which is in the capillary spaces at the beginning of the filling operation is expelled by the incoming ink and passes out of the capillary spaces through the screen 172, the chamber 171 and thence through the air vent passage 169 and out through the air port 170.

In writing, ink is drawn to the nib from the capillary spaces in a manner generally similar to that described in connection with the embodiment of the invention illustrated in Fig. 1 of the drawing. Air to replace ink which is withdrawn in writing is drawn into the pen through the air port 170 and passes to the capillary cells in a direction reverse to that in which air is expelled from the cells during filling.

I claim:

1. A fountain pen comprising a hollow pen body having an opening at its forward end and an air port adjacent but rearwardly of its forward end, a writing element carried at the forward end of said pen body and extending through said opening, a cartridge disposed in said pen body and including a casing having an opening at its rear end and having a reservoir section and a feed section, a capillary filler-and-reservoir element in said reservoir section defining the principal ink storage space of said pen, and capillary ink feed means in said feed section for connecting said principal ink storage space in ink feeding relation to said writing element, said casing defining an air passage between itself and the wall of said body extending longitudinally of said body from said air port to adjacent said rear opening.

2. A fountain pen comprising a pen body having a reservoir section and a feed section, a writing element carried at the forward end of said body, a capillary filler-and-reservoir element in said reservoir section formed by a plurality of separate, juxtaposed, axially aligned sections, each section having a plurality of capillary cells extending longitudinally thereof, said cells together forming the principal ink storage space of said pen, the number of cells and the capillarities of the cells in the respective sections progressively increasing from the forward-most section to the rearmost section, and ink feed means connecting at least the capillary cells in the rearmost section in ink feeding relation to said writing element.

3. A fountain pen comprising a pen body having a reservoir section and a feed section and having an inclined opening at its forward end opening from the feed section to the exterior, a cartridge in said reservoir section including a casing and a capillary filler-and-reservoir element in the casing, said casing having a reduced extension projecting into said feed section, a pen nib in said feed section having a writing tip projecting through said opening, capillary feed means in said extension connecting said filler-and-reservoir element in ink feeding relation with said nib, and cover means on said extension substantially closing said opening.

4. A fountain pen comprising a pen body having a reservoir section and a feed section and having an inclined opening at its forward end opening from the feed section to the exterior, a cartridge in said reservoir section including a casing and a capillary filler-and-reservoir element in the casing, said casing having a reduced extension

projecting into said feed section, said extension having an opening therein, a pen nib in said feed section having a tubular body telescoped with said extension and a writing tip projecting through said inclined opening in the pen body, a capillary feed means in said extension connecting said filler-and-reservoir element in ink feeding relation with said nib, and a forward end wall on said extension inclined substantially complementally to the inclination of said opening and serving to retain the forward end portion of said feed means in engagement with said nib, and said end wall forming a space of capillary dimension between itself and said nib closely adjacent the point of convergence of the end wall and nib and thus adjacent the tip of the nib and adjacent the forward extremity of the feed means.

5. A fountain pen comprising a pen body having a reservoir section and a feed section and having an opening at its forward end opening from the feed section to the exterior, a pen nib in said feed section having its writing tip projecting through said opening, a cartridge in said reservoir section including a casing and a capillary filler-and-reservoir element in the casing, said casing having a reduced extension projecting into said feed section, feed means in said extension connecting said filler-and-reservoir element in ink feeding relation with said nib, said extension and pen body being so relatively proportioned as to form a passage therebetween of greater than capillary dimension leading from said opening rearwardly, and said casing having an opening of greater than capillary dimension adjacent the rear end of said extension communicating with said passage.

6. A cartridge for a capillary fountain pen comprising a casing having a forward end with an opening therein and an open rearward end, a filler-and-reservoir element in said casing formed by a plurality of separate, juxtaposed, axially aligned sections, each section having a plurality of capillary cells extending longitudinally thereof and opening through the ends of the casing, said cells together forming the principal ink storage space of said pen, the number of cells and the capillarities of the cells in the respective sections progressively increasing from the forwardmost section to the rearmost section, capillary ink feed means connected with at least the capillary cells in the rearmost section and exposed through said opening in the forward end of the casing for engagement with a writing element, and a perforated member at the rearward end of the casing for engagement with the adjacent section of the filler-and-reservoir element and retention of adjacent sections in mutual abutment.

7. A cartridge for a capillary fountain pen comprising a casing having a forward end with an opening therein and an open rearward end, said casing also having a plurality of substantially cylindrical, longitudinally spaced portions of progressively increasing diameter from the forward end to the rearward end, a filler-and-reservoir element in said casing formed by a plurality of separate, juxtaposed, axially aligned sections in the respective cylindrical portions of the casing and dimensioned for snugly fitting therein, each section having a plurality of capillary cells extending longitudinally thereof and opening through the ends of the section, each section except the rearmost projecting rearwardly beyond its said cylindrical portion, and the rearmost section terminating substantially flush with the rear end of the casing, and capillary ink feed means connected with said capillary cells and exposed through said opening in the forward end of the casing for engagement with a writing element.

8. A cartridge for a capillary fountain pen comprising a casing having openings in its ends, a filler-and-reservoir element in said casing having a plurality of radially extending thin-walled fins defining capillary spaces therebetween opening through the ends of the element, said casing having a longitudinal bead defining an outwardly facing groove extending substantially the entire length of and opening through the rearward end of the casing, said bead forming an inwardly extending rib operative for

spacing apart in circumferential directions the fins adjacent thereto and forming between said latter fins an air vent passage extending longitudinally of the filler-and-reservoir element.

9. A cartridge for a capillary fountain pen comprising a casing having a main portion and a reduced forward extension, said extension having an opening on an upper side, a writing nib having a tubular portion telescoped on said extension and engageable with said main portion, and a writing end portion overlying said opening and projecting forwardly beyond the extension, said extension having a forward end wall inclined downwardly and rearwardly from adjacent the forward edge of said opening, a filler-and-reservoir element in said casing having longitudinally extending capillary cells opening through the ends of the element, and flexible capillary ink feed means connected with said cells and engaging said writing element, said forward end wall serving to retain the adjacent portion of the ink feed element in engagement with the writing element, said casing having an opening at its rearward end communicating with said cells.

10. A fountain pen comprising a pen body having a reservoir section and a feed section and having an opening at its forward end opening from the feed section to the exterior, a cartridge including a casing in said reservoir section with a reduced extension in said feed section, a pen nib in said feed section having a body portion telescoped with said extension, said extension and pen nib being so relatively proportioned that when the rear end of the body portion of the nib abuts said casing the forward end of the nib projects through said opening, a capillary filler-and-reservoir element in said casing, and capillary feed means connecting said filler-and-reservoir element in ink feeding relation with said pen nib.

11. A cartridge for insertion in the barrel of a capillary pen, said cartridge comprising a rigid casing having a reservoir section and a feed section of smaller transverse dimension than said reservoir section projecting forwardly therefrom, a capillary filler-and-reservoir element in said reservoir section defining a capillary, principal ink storage space, and a feed element extending from said reservoir element substantially to the forward end of said feed section and defining a capillary ink feed passage connected to said principal ink storage space, said casing having an end wall at the forward end of said feed section extending across the forward end of said feed element and substantially closing the forward end of said feed section.

12. A fountain pen comprising a barrel having a bore providing a reservoir section and a feed section of smaller transverse dimension than said reservoir section and a rearwardly facing shoulder at the juncture of the reservoir and feed sections, a cartridge removably disposed in said bore including a rigid casing having a reservoir section in the reservoir section of said bore, a feed section of reduced transverse dimension in the feed section of said bore, and a forwardly facing shoulder at the juncture of the reservoir and feed sections and abutting the rearwardly facing shoulder in said barrel, means retaining said cartridge in said barrel with said shoulders in abutting relation, a capillary filler-and-reservoir element in the reservoir section of said casing defining a principal, capillary ink storage space, a writing nib telescoped with the feed section of said casing and having a capillary ink passage, and a feed element extending from the reservoir section of said filler-and-reservoir element to said nib and defining a capillary ink feed passage connecting said ink storage space and the capillary ink passage of said nib.

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