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O. J. SUNDSTRAND

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FOUNTAIN PEN

Filed March 30, 1925

Fig. 1.

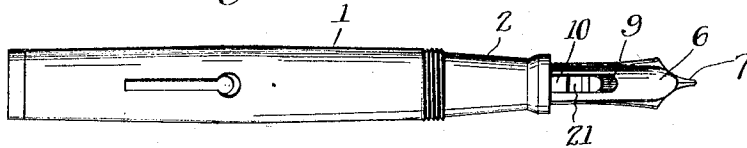


Fig. 2.

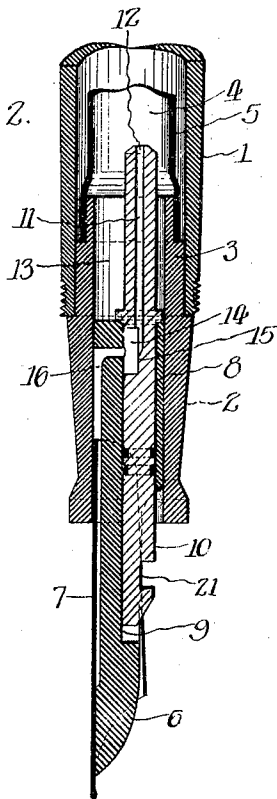
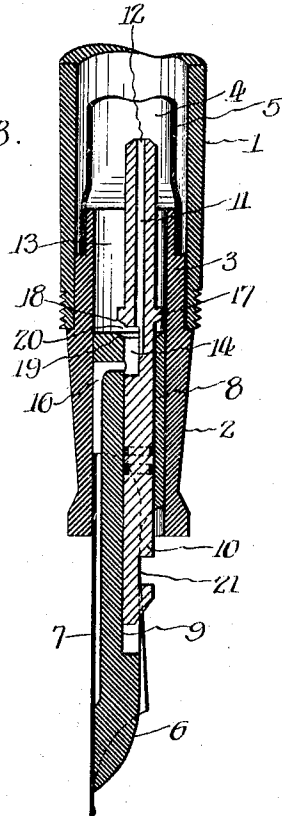


Fig. 3.



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FOUNTAIN PEN

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This invention relates to improvements in fountain pens.

A disadvantage of the fountain pens of the types now in general use is the lack of a preliminary warning that the pen is almost empty. No indication of the necessity for refilling is given the user until the ink is completely exhausted. This causes great inconvenience to the user especially if means for refilling are not immediately at hand.

One object of this invention is to provide means which indicate when refilling is required before the ink in the pen is completely exhausted.

Another object is to provide a reserve supply of ink which is available after the preliminary indication that refilling is required.

Another object is to provide simple and conveniently operable means to allow a reserve supply of ink to flow to the pen point.

In the accompanying drawings, Figure 1 is a longitudinal view of a fountain pen of the "self-filling" type (with the cap removed) in which my invention is incorporated.

Fig. 2 is a longitudinal sectional view of the lower portion of the same type of fountain pen showing the normal internal arrangement of parts with the form of my invention described herein.

Fig. 3 is a view similar to Fig. 2 showing the internal arrangement of parts when communication is established between the reserve reservoir and the pen point.

Referring to the accompanying drawings the fountain pen to which my invention is herein shown applied comprises preferably a barrel 1 having attached at its open or lower end a suitable sleeve or feeding plug 2 the upper portion 3 of said plug forming in this embodiment the lower side walls of an ink reservoir 4. Attached to the upper portion 3 of the plug 2 is a suitable ink sac 5 which forms the upper side walls and top of the ink reservoir 4.

Attached within the plug 2 is a feed bar 6 and a nib or pen point 7, said pen point being commonly inserted between the plug 2 and said feed bar and thereby effectively supported. The feed bar 6 contains a longitudi-

nal bore 8 which at its lower end opens into a groove 9.

In this bore 8 and groove 9 is slidably mounted a stem 10 which extends upward out of the bore 8 into the ink reservoir 4. This stem 10 is provided with a duct 11 opening at the top of said stem to form a normal outlet 12 within the ink reservoir 4 and at a distance above the bottom of said ink reservoir. The portion of the ink reservoir below this normal outlet 12 forms a reserve ink reservoir 13. The duct 11 at its lower end opens into a chamber 14 formed between a notch 15 in the stem 10 and the wall of the bore 8 in the feed bar 6. From this chamber 14 an ink discharge duct 16 through the feed bar 6 feeds the pen point 7.

A short distance above the notch 15 in the stem 10 is an annular collar 17 beveled on its under side to form a valve member 18, said bevel corresponding to the bevel of a valve seat 19 in the top of the feed bar 6 at the entrance to the bore 8. An auxiliary outlet to the ink reservoir 4 is thereby provided in the bottom of said ink reservoir at 20 as shown in Fig. 3. This outlet is normally closed as in Fig. 2 by the effective engagement of the valve member 18 with the valve seat 19 but may be opened by sliding the stem 10 upward to disengage said valve member from said valve seat. Near its lower end the stem 10 is provided with a notch 21 to permit the user to insert a finger or any accessible implement and, by exerting pressure in the desired direction, conveniently operate said stem.

To illustrate the operation of the fountain pen with my invention incorporated, assume that the pen has been filled in the usual manner and is in use, the stem 10 being in its normal or lowermost position as in Fig. 2. Ink flows from the ink reservoir 4 by gravity through the normal outlet 12, the duct 11, the chamber 14 and the duct 16, to the pen point 7. When the ink level in the ink reservoir 4 declines to the plane of the normal outlet 12 the supply of ink is cut off, the pen point becoming dry when the flow from the ducts 11 and 16 and the chamber 14 has ceased. If inconvenient to refill the pen at this time the ink in the reserve reservoir 13 below the normal out-

let 12 can be made available at the pen point 7 by sliding the stem 10 upward and thereby raising the valve member 18 which normally closes the auxiliary outlet 20 of the ink reservoir 4. Convenient means for the operation of the stem 10 is provided in the notch 21 as hereinbefore mentioned. Ink is thereby provided for immediate use to tide the user over until he can conveniently refill the pen.

Thus I have combined in a fountain pen means to reserve a supply of ink which is available after an indication has been given that filling is required and simple and effective means for making this reserve supply of ink available at the pen point.

Although I have shown my invention in a particular form and as embodied in the type of fountain pen commonly known as "self-filling", I have done so for purposes of description only. My invention is capable of embodiment in various forms and in other types of pens, and therefore I do not wish to limit its scope other than by the appended claims.

I claim as my invention:

1. A fountain pen having, in combination, an ink reservoir, a feed bar, a pen point, said feed bar having a longitudinal bore opening into said reservoir to provide an outlet therefrom, said feed bar also having an ink discharge duct leading from said bore to said pen point, a stem slidably mounted in said bar, said stem having thereon a collar forming a valve member to close said outlet, said stem also having a duct leading from the upper end of the stem to a point below said valve member and arranged to communicate with said ink discharge duct, the lower end of said stem being exposed upon the lower portion of the feed bar and said exposed portion being shaped for engagement by the finger of the operator whereby the stem may be slid to seat and unseat said valve member.

2. In a fountain pen having, in combination, an ink reservoir, a feed bar, a pen point, said feed bar having a longitudinal bore opening into said reservoir to provide an outlet therefrom, said feed bar also having an ink discharge duct leading from said bore to said pen point, a stem positioned in said bore normally closing said outlet and extending into said reservoir, said stem having a duct leading from a point above the bottom of said reservoir to said ink discharge duct, said stem being movable to open said outlet and establish communication from the bottom of said reservoir through said outlet to said ink discharge duct.

3. A fountain pen having, in combination, means forming an ink reservoir, a feed bar, a pen point, said feed bar and said pen point being mounted to close the lower end of said reservoir, a member movably mounted in said feed bar to establish communication between said reservoir and said pen point, said

member being arranged to provide two inlets at different levels in said reservoir and being further arranged to close the lower inlet in one position of said member.

4. In a fountain pen, a main ink supply chamber, a reserve ink supply chamber in open communication at its upper end with the lower part of the main ink supply chamber, ink feeding means in communication with the lower part of the main ink supply chamber and also in communication with the lower part of the reserve ink supply chamber, and means operable to prevent or permit flow of ink from said reserve supply chamber into said ink feeding means as desired.

5. A fountain pen comprising a barrel open at the normally lower end thereof, a main ink supply chamber within said barrel, said main ink supply chamber being open at its lower end, an ink feeding plug fitting in the lower end portion of the barrel and having a portion fitting in the open lower end of the main ink supply chamber, said ink feeding plug having an ink feeding passage extending longitudinally of the plug for conducting ink from said main supply chamber through said plug, said plug also having a reserve ink supply chamber formed therein, said reserve supply chamber being in open communication at its upper end with said main ink supply chamber and having a relatively small orifice connecting the lower part of the reserve supply chamber with said ink feeding passage, and means for controlling said orifice.

6. A fountain pen comprising a barrel open at the normally lower end thereof, a main ink supply chamber within said barrel, said main ink supply chamber being open at its lower end, an ink feeding plug fitting in the lower end portion of the barrel and having a portion fitting in the open lower end of the main ink supply chamber, said ink feeding plug having an ink feeding passage extending longitudinally of the plug for conducting ink from said main ink supply chamber through said plug, said plug also having a reserve ink supply chamber formed therein, said reserve ink supply chamber being in open communication at its upper end with said main ink supply chamber and having a relatively small orifice connecting the lower part of the reserve supply chamber with said ink feeding passage, and a manually operable valve within said reserve ink supply chamber for controlling said orifice.

7. A fountain pen comprising a barrel open at the normally lower end thereof, a main ink supply chamber within said barrel, said main ink supply chamber being open at its lower end, an ink feeding plug fitting in the lower end portion of the barrel and having a portion fitting in the open lower end of the main ink supply chamber, said

ink feeding plug having an ink feeding passage extending longitudinally of the plug for conducting ink from said main ink supply chamber through said plug, said plug also having a reserve ink supply chamber 5 formed therein, said reserve ink supply chamber being in open communication at its upper end with said main ink supply chamber and having a relatively small orifice connecting the lower part of the reserve supply chamber with said ink feeding passage, a slide 10 valve within the lower part of said reserve ink supply chamber movable to and from position to cover said orifice, and an operating handle for said valve, said handle extending 15 slidably in an opening in the lower portion of said ink feeding plug.

8. In a fountain pen, a main ink supply chamber, means for feeding ink from the 20 main ink supply chamber to the nib of the fountain pen, means normally forming an auxiliary chamber arranged for receiving ink from said main ink supply chamber so long as any ink remains in said main chamber, and means for releasably holding said 25 ink against passage through said ink feeding means comprising a valve member having a stem extending longitudinally in said feeding means and having a projecting portion 30 arranged for engagement by the finger of an operator.

9. A fountain pen having, in combination, an ink reservoir, a feed bar, a pen point, means forming an outlet duct communicating 35 with said reservoir at a point above the bottom of the latter and arranged to feed ink to the pen point and a valve to control the flow of ink from the bottom of said reservoir to the pen point.

40 In testimony whereof, I have hereunto affixed my signature.

OSCAR J. SUNDSTRAND.

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