

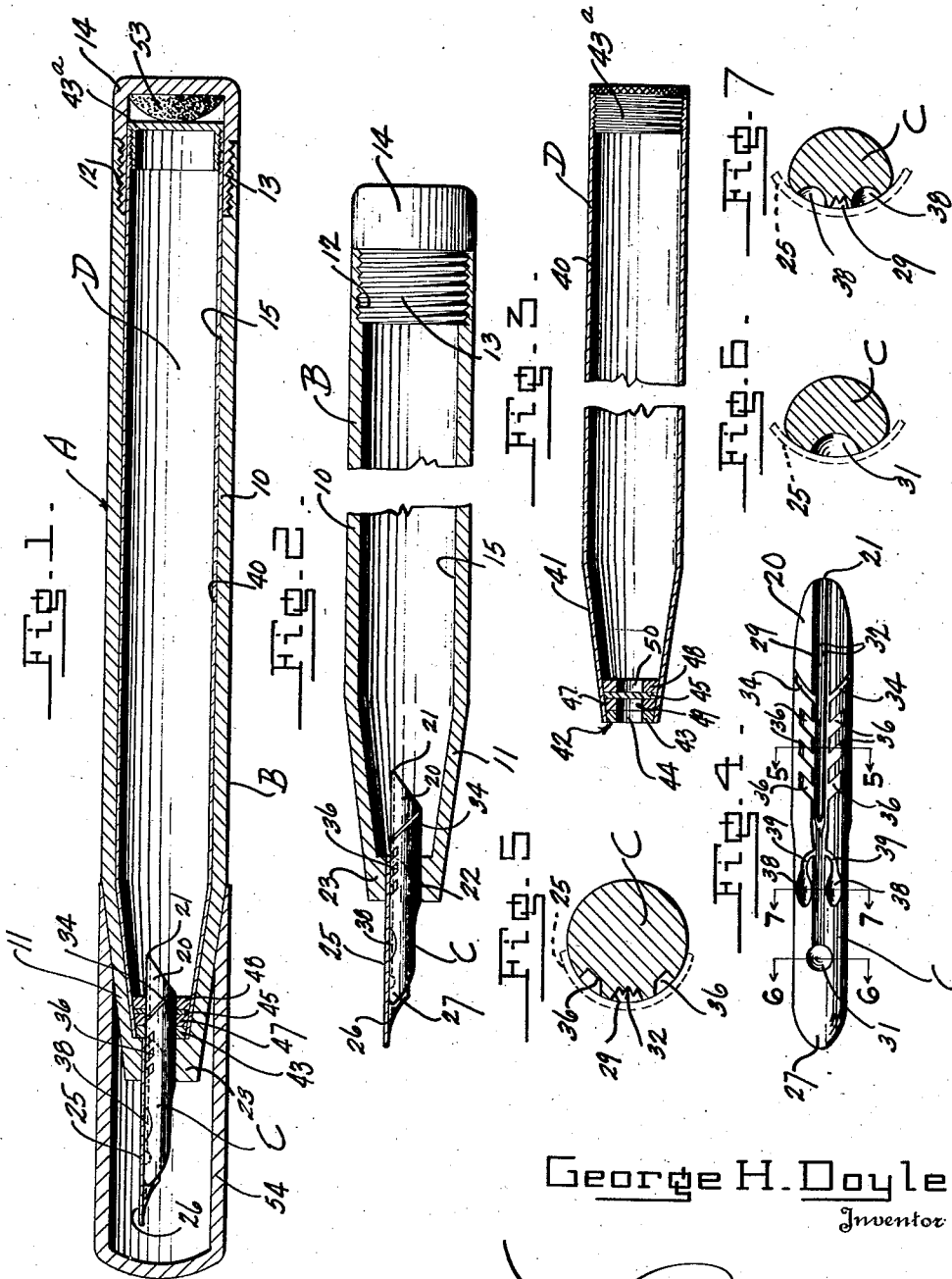
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FOUNTAIN PEN

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FOUNTAIN PEN.

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To all whom it may concern:

Be it known that I, GEORGE H. DOYLE, a citizen of the United States, residing at Holtsville, in the county of Suffolk and State of New York, have invented certain new and useful Improvements in Fountain Pens, of which the following is a specification.

This invention relates to improvements in fountain pens.

10 The primary object of the invention is the provision of a fountain pen embodying a cartridge of writing fluid, and having a novel feed bar associated therewith for uniform ink flow to a pen point, without liability of a stoppage of ink flow due to clog-
15 ging, such as is found in the ordinary types of fountain pens.

A further object of the invention is the provision of a novel type of fountain pen feed bar, so formed as to meet the various conditions under which a fountain pen is used, so that the same may maintain the fountain pen in good working condition at all times for uniform flow of writing fluid.

25 A further object of the invention is the provision of an improved cartridge for fountain pens, adapted to contain a supply of ink sealed therein for use in connection with replenishing an ink supply within the barrel
30 of a fountain pen.

Other objects and advantages will be apparent during the course of the following detailed description.

35 In the accompanying drawing, wherein similar reference characters designate corresponding parts throughout the several views.

Figure 1 is a longitudinal cross-sectional view taken through the improved fountain pen and showing the cooperation of various parts thereof.

40 Figure 2 is a fragmentary longitudinal cross sectional view through the fountain pen showing the supply cartridge removed therefrom.

45 Figure 3 is a fragmentary longitudinal cross section through a sealed cartridge used as a part of the improved fountain pen construction.

50 Figure 4 is an enlarged top plan view of the feed bar of the improved fountain pen and showing the formation thereof.

Figure 5 is a cross sectional view taken on the line 5—5 of Figure 4.

55 Figure 6 is a cross sectional view taken on the line 6—6 of Figure 4.

Figure 7 is a cross sectional view taken on the line 7—7 of Figure 4.

In the drawing, wherein for the purpose of illustration is shown a preferred embodiment of my invention, the letter A designates the improved fountain pen comprising the body portion B; the feed bar C; and supply cartridge D.

60 The casing portion B of the fountain pen A preferably comprises the barrel 10, which may vary in formation to various convenient designs. The stock portion 11 in the illustration, is formed integral with the barrel 10, and in reality constitutes a part thereof, although the provision of a detachable stock head is contemplated, as found in many types of fountain pen structures now on the market. The rear end of the barrel 10 is internally screw threaded as at 12 to receive the reduced externally screw threaded shank 13 of the end cap 14, provided as a closure member upon the barrel 10, and whereby access may be had to the interior bore 15 of the barrel 10 to insert or extract the cartridge D, which will be subsequently described in detail.

Referring now to the improved feed bar C, the same is provided with the inside end thereof tapering upwardly from one side to a point 21 at the opposite side, said feed bar C being provided for insertion into an opening 22 through the forward end 23 of the fountain pen stock 11, and in such manner that the ordinary pen point 25 is retained in determined relation to the feed bar C, and in the barrel 10, the nibs 26 extending forwardly from the outside end 27 of said feed bar C.

95 A longitudinal main channel 29 is formed in one side of the feed bar C extending from the extreme point 21 thereof to a circular depression 31 formed adjacent to the outside end 27, said depression 31, of course, having communication with the main channel 29. It is preferred, that the main channel 29 have a plurality of lesser grooves 32 formed longitudinally therein for properly guiding the flow of ink in the main channel 29, said flow being effected in a manner to be hereinafter described. An auxiliary feed groove 34 is provided upon each side of the main channel 29 communicating therewith, and disposed adjacent the inside end 20 of the feed bar C; said auxiliary channels 34 being relatively narrower than the main channel 29 and tapering in spiral manner

about the feed bar upwardly toward the end 20. A plurality of depressions 36 may be formed upon each side of the main channel 29, communicating therewith, and which incline from the main channel 29 upwardly toward the inside end 20, the same serving to retain a supply of writing fluid in the feed bar C when the fountain pen A is not being used, or is inverted. A pair of relatively large reservoirs 38 are provided in the feed bar C, elongated in the direction of the run of the main channel 29 and disposed immediately adjacent thereto. Relatively narrow channels 39 are provided for each of the reservoirs 38 communicating the reservoirs with the main channel 29. It is preferred that the reservoirs be disposed intermediate the depressions 36 and the outside end depression 31, and in such manner that the channels 39 extend from the reservoirs 38 upwardly toward the inside end 20 of the feed bar C in order to communicate with the main channel 29.

The pen point element 25 bears the same relation to the feed bar C as in ordinary fountain pen construction. However, the inside end 20 of the feed bar C extends interiorly of the barrel pocket 15 so that the main channel 29 and auxiliary feed channels 34 are in position to receive a supply of writing fluid for flow on to the pen point 25. It should be noted that the pen point 25 does not extend into the pocket of the barrel 10; the same merely covering a portion of the main channel 29, the depression 31, reservoirs 38, and the pockets or depressions 36.

Referring now to the construction of the cartridge D, the same is primarily adapted for containing a supply of writing fluid, and in this respect acting independently of any other portion of the fountain pen construction A, so that ink may be retained therein in a sealed condition ready for use in the pocket 15 of the fountain pen barrel 10. Various forms of cartridges can be provided. However, the same preferably comprises a cylindrical body 40 which may be of seamless metal, celluloid, paraffine paper, etc., having the forward end 41 thereof tapered for fitting within the fountain pen stock portion 11, to conform with the shape thereof. A stopper construction 42 may be disposed in the forward end of the cartridge portion 41, and a screw threaded plug 43^a detachably mounted in the end of the tube 40 opposite the stopper construction 42.

The stopper construction 42 is of such construction as to be capable of being opened by the pointed end 21 of the feed bar C as the cartridge D is inserted into the pocket of the fountain pen barrel 10. To this end, the same preferably comprises a disc 43 of felt, having the axial opening 44 therein. This disc 43 may conveniently

be called the wiper portion of the stopper construction 42, as the same, in fact, serves that function in connection with the feed bar C. It is preferred that the portion 43 of the construction 42 be exposed in the end of the cartridge D. A disc 45 of water proof paper, foil, or other material, impervious to the writing fluid within the cartridge D, is provided as a part of the stopper 42, being held between ring shaped members 47 and 48, preferably of cork, and respectively having the apertures 49 and 50 therein, which align with the aperture 44 of the felt construction 43. It can readily be seen that by this construction, the stopper member 42 is provided, having a way therein defined by the openings 44, 49 and 50 which is plugged up, so to speak, by the disc 45. The stopped construction 42 specifically described herein need not be strictly adhered to, since it is primarily desirable that this end of the cartridge D be sealed by some substance or element which may easily rupture upon inserting of the cartridge D into the barrel 10.

In assemblage, the cartridge D is disposed in the pocket 15 of the fountain pen barrel 10, substantially as illustrated in Figure 1. The inserting force will, of course, rupture the sealing disc 45, by reason of the pointed end 21 of feed bar C coming in contact therewith. The passageway defined by the stopper member 42 is relatively small for snug fitting about the inside end of the feed bar C which projects into the stock end 11 of fountain pen A. The cartridge D having been fully inserted into the fountain pen pocket 15, the bar end 20 will extend into the interior of the cartridge D, and above the stopper structure 42, so that the writing fluid within the cartridge D may readily flow into the main channel 29 and the auxiliary feed channels 34. It is preferred that a buffer 53 of any approved material, such as porous rubber be positioned upon the inside of the cap 14, so that the same may contact with the plug end 43^a of the cartridge D and whereby said cartridge D is maintained within the fountain pen barrel 10 against rattle or movement.

In operation, the ink contained in the cartridge D will flow through the minor grooves 32 of the main channel 29. Assuming the pen to be in use, the outside end 27 of the feed bar C will of course be lowermost. The writing fluid will then flow downwardly through the main channel 29 and not only filling the depression 31, but likewise pursuing a path through the relatively narrow channels 39 to supply the reservoirs 38 with ink. Under these conditions ink will, of course, flow to the nibs 26 of the pen 25 as long as the fountain pen A is being used for writing purposes. Under ordinary circumstances, it is the practice

of a fountain pen user to place the same in vertical position within a pocket or other container with the cap or pen point housing 54 uppermost. Immediately upon inverting of the pen A to so position the same, that portion of the fluid contained in the depression 31 and reservoirs 38 will flow downwardly through the main channel 29. Due to the peculiar positioning of the depressions 38, in that they are inclined toward the inside end 20 of the feed bar C, the ink in its return path to the cartridge D will be caught within said depression 36 and retained therein. Capillary attraction of the writing fluid will also insure that a small portion thereof will be retained in the reservoirs 38 and the main passageway 29. However, no matter how much the fountain pen A is subjected to shock when in its inverted position, the ink in the depressions 36 cannot flow outwardly thereof, since pockets are formed thereof by reason of the positioning of the pen point 25 in snug relation against the surface of the feed bar C. Thus, when a writer desires to use the pen A, the fluid from the pockets or depressions 36 will immediately flow down into the main channel 29 for wetting of the nibs 26 for writing purposes. Thus, the writer need not shake the pen A in order to start flow of the writing fluid toward the pen point 25, as is the practice with ordinary fountain pens.

From the foregoing, it can be seen that a fountain pen has been provided which includes a novel feed bar arrangement. Likewise the cartridge D for containing writing fluid is of novel formation and can be supplied as an accessory for use in connection with the barrel, since the ink or writing fluid in said cartridge D is securely sealed against liability of leakage, and only is released for use upon the pen 25, when the sealing material 45 is punctured in the manner above described.

When the writing fluid within a cartridge D has been exhausted, the cartridge D is extracted by removal of the fountain pen cap 14. Due to the positioning of the wiper element 43, residue ink about the feed bar C will be removed, to prevent any liability of the same dropping upon the operator's hand. When inserting a cartridge D, the same is preferably inserted upwardly into the barrel 10 when the latter is in a vertical position, so that the same may be properly inserted to have the pointed end 21 of the bar C rupture the disc of sealing material 45.

From the foregoing, it can be seen that a fountain pen structure has been provided which includes a number of novel cooperating parts. By means of the cartridge D, filtered ink free of dirt or other foreign material may be at hand for use in connection

with the fountain pen A at all times. It is a notorious fact that with the self filling fountain pen, sediment, dirt and other foreign material is drawn directly into the feed bar and interior of the fountain pen 70 construction, thus quite frequently clogging the feed bar and pen point to prevent uniform flow of writing fluid.

Various changes in the shape, size and arrangement of parts may be made to the form 75 of the invention herein shown and described, without departing from the spirit of the invention or the scope of the claims.

I claim:

1. As an article of manufacture, a fountain pen feed bar having a main channel formed longitudinally therein, and provided with a plurality of catch depressions formed on each side of said main channel and in communication therewith, said depressions being inclined away from said channel at an acute angle in relation thereto and in a general direction of the inside end of said bar.

2. As an article of manufacture, a feed bar for fountain pens having a main feed channel extending longitudinally thereof and provided with a reservoir depression formed in said bar adjacent the main channel and having an auxiliary channel communicating intermediate said reservoir and main channel.

3. As an article of manufacture, a fountain pen feed bar having a main feed channel extending longitudinally thereof and provided with an elongated reservoir depressed therein upon each side of said main channel, relatively narrow feed channels being provided in communication between said elongated reservoirs and the main channel so that the entrance from said main channel to the reservoir is at a point remote from the outside end of said bar, said reservoirs extending toward the outer end of said bar.

4. As an article of manufacture, a fountain pen feed bar having a main channel formed longitudinally therein and terminating adjacent the outside end of said bar, said bar having depressions inwardly thereof in communication with the main channel and inclining toward the outside end of said bar, and depressions in communication with said main channel inclining toward the inside end of said bar.

5. As an article of manufacture, a fountain pen feed bar having the inside end thereof tapered to a point and provided longitudinally thereof with a feed channel extending from said point to terminate short of the outside end of the feed bar, said feed bar having auxiliary channels in communication with said main channel and spiraling outwardly therefrom toward the inside end thereof, said feed bar having reservoirs formed therein adjacent the outside

end thereof and in communication at their
end remote from the outside end of the
feed bar with said main channel, said feed
bar furthermore having depressions formed
5 therein in communication with the main
channel and disposed intermediate the reser-
voir and the auxiliary feed channels and
inclining from the point of communication
with said main channel toward the inside
10 end of the feed bar.

6. As an article of manufacture, a foun-
tain pen feed bar including a main channel
extending longitudinally thereof and pro-
vided with a pocket having communication
15 with said main channel, said pocket ex-

tending from its communication with said
main channel toward the outer end of said
feed bar.

7. As an article of manufacture, a feed
bar for fountain pens having a main feed 20
channel grooved longitudinally inwardly of
the outer surface and extending to the rear
end thereof, and provided with auxiliary
feed channels adjacent the rear end thereof
grooved inwardly of the outer surface there- 25
of and leading from communication with
said main feed channel in diverging rela-
tion therewith to the rear end of said bar.

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