O. H. BLACKWOOD AND F. PEARSON.

FOUNTAIN PEN.

APPLICATION FILED JUNE 20, 1918.

1,313,056.

Patented Aug. 12, 1919.

Fig. 1.

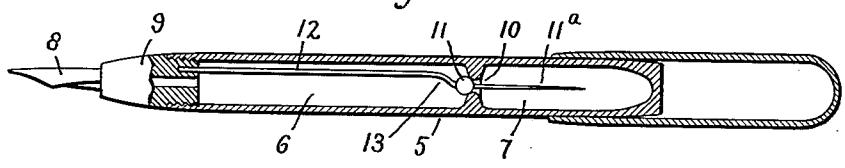
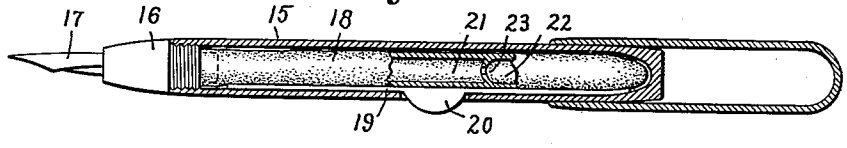


Fig. 2.



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UNITED STATES PATENT OFFICE.

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FOUNTAIN-PEN.

1,313,056. Specification of Letters Patent. **Patented Aug. 12, 1919.**

Application filed June 20, 1918. Serial No. 240,978.

To all whom it may concern:

Be it known that we, OSWALD H. BLACKWOOD and FRED PEARSON, citizens of the United States, residing, respectively, at Rolla, in the county of Phelps, State of Missouri, and at Chicago, in the county of Cook, State of Illinois, have invented certain new and useful Improvements in Fountain-Pens, of which the following is a specification.

The present invention relates to fountain pens and is applicable to such pens, whether of the ordinary type which is filled by removing the pen and pen carrying section, or of the so-termed self-filling type.

One of the most annoying troubles in connection with the use of fountain pens is that they go dry without warning and at unexpected and sometimes most inconvenient times. Often they go dry when a supply of ink is not readily available for filling them immediately, and under such circumstances may cause great inconvenience to the user. Usually the first indication that a fountain pen is empty is when ink stops flowing, and then it must be refilled before it can be of further service.

The object of our invention is to provide an improved structure or arrangement in a fountain pen which will give a sure and positive indication or warning that the pen is nearly dry and needs refilling, but which still leaves available a limited supply of ink for use until such time as the pen can be conveniently filled.

For a consideration of what we believe to be novel and our invention, attention is directed to the following specification and the claims appended thereto.

In the accompanying drawing, Figure 1 is a view partly in section of a fountain pen embodying our invention, and Fig. 2 is a similar view of another embodiment of our invention.

In carrying out our invention, we provide the barrel of the fountain pen with two reservoirs, a main reservoir which is the reservoir that normally supplies ink to the pen, and an auxiliary reservoir which has a limited capacity, preferably much less than that of the main reservoir, and is connected to the main reservoir by a suitable opening or passage, the arrangement being such that when the main reservoir becomes empty the contents of the auxiliary reservoir may, by a suitable simple manipulation, be discharged into the main reservoir. By this arrangement, when the main reservoir becomes empty, the fact that the pen refuses to write serves as an unmistakable indication that it needs refilling. The user, however, is not immediately deprived of the services of his pen, for he has simply to empty the contents of the auxiliary reservoir into the main reservoir when he can again use it.

Referring to Fig. 1, 5 indicates the barrel of a fountain pen, 6 the main reservoir therein, and 7 the auxiliary reservoir. The main reservoir 6 supplies ink to the pen 8 carried by the plug 9 which screws into the end of the barrel in the usual manner. The auxiliary reservoir 7 is in communication with the main reservoir through an opening 10 adapted to be closed by a suitable valve member 11. Valve member 11 is preferably carried by the plug 9, and in the present instance is shown as being in the form of a ball carried on one end of a rod or wire 12, the other end of which is supported from the plug 9. On the valve member 11 is arranged preferably a projector 11^a which extends through the opening 10 and which has for its purpose to assist the flow of ink from one reservoir to the other. The arrangement is such that when the plug 9 is screwed entirely down to its seat, the valve closes opening 10 and shuts off communication between the main reservoir 6 and the auxiliary reservoir 7.

In use, the pen 8 and plug 9 are unscrewed and removed for filling the pen, the rod 12 and valve member 11 being also wholly or partly removed from the barrel along therewith. The two reservoirs 6 and 7 are then filled in the usual manner, the ink of course readily flowing from reservoir 6 through opening 10 to reservoir 7. The plug 9 is then replaced. When the plug 9 is screwed into place, the valve member 11 closes opening 10 and traps a supply of ink in the auxiliary reservoir 7. Now when the ink in the main reservoir is all used, the pen of course will refuse to write, and the user thus has the fact that his pen needs filling positively and unmistakably brought to his attention. If, however, it is not convenient to fill the pen at the moment, the user is not deprived of the use of it, for by partly unscrewing the plug 9 he can move valve member 11 away from opening 10, and thus per-

mit the ink in the auxiliary reservoir 7 to flow into main reservoir 6, after which the plug is again screwed down. The pen can then be put into service again. The user will realize, however, that the pen is practically empty, and will of course fill it at the first opportunity.

With a general arrangement as shown in Fig. 1, we have found that the surface film in the opening 10 may under some conditions be strong enough to interfere with or even prevent the ink from running through the opening from the auxiliary reservoir 7 to the main reservoir 6, and to avoid this difficulty we preferably curve or bend the rod or wire 12, as indicated at 13, so that is comes very close to, but not quite into contact with, the inner surface of the reservoir 6. By this means the surface film will be broken and the ink will readily flow along the rod or wire 12 into reservoir 6. The projection 11^a also assists in breaking the surface film and causing the ink to flow. The bend in the rod or wire 12 also gives it a slight amount of spring so that the valve member will be firmly seated in opening 10 and without requiring an exact adjustment in the length of the rod or wire 12.

The connection of the valve member 11 to plug 9 has the substantial advantage that when the plug is removed to fill the pen the valve will always be opened, so that the auxiliary reservoir 7 is sure to be filled with ink; and when the plug 9 is screwed back again, the ink in the auxiliary reservoir 7 is sure to be trapped therein. The filling of the auxiliary reservoir 7 is thus in a sense automatic, requiring no special act or manipulation on the part of the user. With this arrangement, therefore, the user cannot forget to fill the auxiliary reservoir, and when the pen goes dry, indicating that it needs filling again, the user is assured of having the limited supply in the auxiliary reservoir 7 for immediate use. In other words, in the use of our improved arrangement, no manipulations are necessary other than those already required for filling a pen with ink.

In Fig. 2 we have shown our invention embodied in a fountain pen of the self-filling type. 15 indicates the barrel of the pen and 16 the plug which carries the pen 17. Connected to the plug 16 is a collapsible tube 18, usually constructed of rubber, which carries the ink supply, and 19 is a plate adapted to be pushed against the tube 18 by a thumb piece 20 to collapse the tube for filling the pen reservoir in the well understood manner. This structure may be taken as typical of a self-filling fountain pen. Now in applying our invention thereto, we provide the tube 18 with two reservoirs, a main reservoir 21 and an auxiliary reservoir 22 which correspond to reservoirs 6 and 7 respectively, of Fig. 1, and they are in communication with each other through the opening 23. The opening 23 is so small that ordinarily the ink will not leak through it from one reservoir to the other. The plate 19 is preferably arranged so that when thumb piece 20 is depressed, the end of tube 18, remote from plug 16, is depressed or collapsed first. That is, the wall of the auxiliary reservoir 22 is first collapsed, after which the wall of main reservoir 21 is collapsed. The pen is filled in the usual and well understood manner by pressing the plate 19 in to collapse the walls of the reservoirs 22 and 21, and forcing the air out of them, after which the end of the pen is inserted into ink and the plate 19 released. The walls of the tube 18 then dilate and draw the ink into the reservoirs 21 and 22. The pen may then be used in the ordinary manner, the ink being supplied from reservoir 21. The ink in reservoir 22 will be trapped therein, since the opening 23 is so small that it cannot run out, being held by a surface film. Now, when all the ink in reservoir 21 is used up, the pen will of course refuse to write and the user will be apprised of the fact that his pen needs filling. If it is not convenient to fill the pen immediately, however, he will not be deprived of the use of it, for by depressing somewhat the plate 19, the ink in auxiliary reservoir 22 can be forced through opening 23 into the main reservoir 21, from which it will be fed to the pen 17.

From the foregoing, it will be seen that our invention can be carried out in connection with any type of fountain pen, and without complications or much added expense. In fact, it requires but slight modifications to embody the invention in any of the usual types of pens now found on the market. And in any case, the arrangement is a simple one and not likely to become deranged.

The relative sizes of the main reservoir and the auxiliary reservoir may of course be varied as found desirable. In general, however, we prefer to have the main reservoir substantially larger than the auxiliary reservoir the latter holding only enough ink to permit of the use of the pen a reasonable time after the user is warned that the pen needs refilling.

In accordance with the provisions of the patent statutes, we have described the principle of operation of our invention, together with two forms of apparatus which we now consider to be the best embodiments thereof, but it will be understood that the structures shown are only illustrative, and that the invention can be carried out by other means.

What we claim as new and desire to secure by Letters Patent of the United States, is:—

1. In a fountain pen, the combination of an ink carrying member, a wall extending

transversely thereof, dividing it into a main reservoir adjacent the pen which holds the main supply of ink for the pen and an auxiliary reservoir which holds a supply of ink less than the main reservoir, said wall being provided with a passage through which the two reservoirs are in communication and through which ink may pass from one to the other, whereby both reservoirs are filled when the pen is filled, and when the ink in the main reservoir is all used indicating that the pen needs filling, the ink in the auxiliary reservoir serves as a temporary supply, and means for preventing ink from running freely from the auxiliary reservoir to the main reservoir.

2. In a fountain pen, the combination of an ink carrying member, a wall extending transversely thereof, dividing it into a main reservoir adjacent the pen which holds the main supply of ink for the pen and an auxiliary reservoir which holds a supply of ink less than the main reservoir, said wall being provided with a passage through which the two reservoirs are in communication and through which ink may pass from one to the other, a valve for said passage, and means for opening and closing the valve, whereby when the supply of ink in the main reservoir is all used, the contents of the auxiliary reservoir may be discharged into it.

3. In a fountain pen, the combination of a barrel, a plug which carries a pen and fastens into one end of the barrel, a transverse wall in the barrel which divides it into a main reservoir and an auxiliary reservoir of a capacity less than the main reservoir, said wall having a passage through it, and a valve member carried by the plug, which closes said passage when the plug is fastened into the end of the barrel, whereby when the ink in the main reservoir is all used indicating that the pen needs filling, said valve may be opened to feed the contents of the auxiliary reservoir to the main reservoir.

4. In a fountain pen, the combination of a barrel, a plug which carries a pen and fastens into one end of the barrel, a transverse wall in the barrel which divides it into a main reservoir and an auxiliary reservoir, said wall having a passage through it, and a rod carried by the plug and having on its end a valve member adapted to close said passage, said rod being shaped so that adjacent to the valve member it is nearly in contact with the inner surface of the barrel.

In witness whereof, OSWALD H. BLACKWOOD has hereunto set his hand this 8th day of June 1918, and FRED PEARSON has hereunto set his hand this 15th day of June 1918.

OSWALD H. BLACKWOOD.
FRED PEARSON.