

March 23, 1943.

W. K. OLSON

2,314,551

FOUNTAIN PEN

Filed June 16, 1941

Fig. 1.

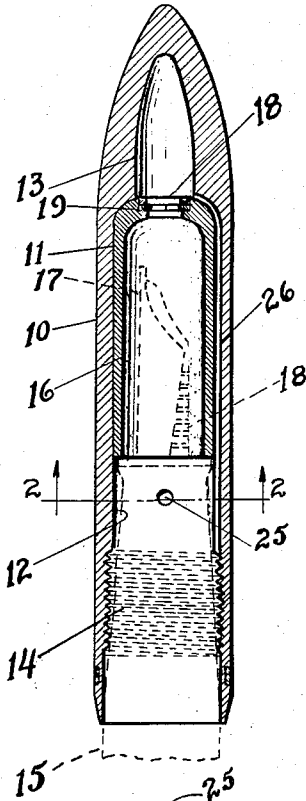


Fig. 2.

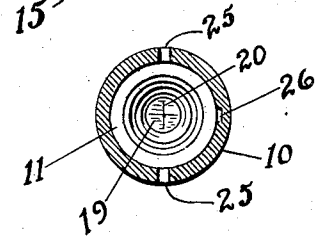


Fig. 3.



Fig. 4.

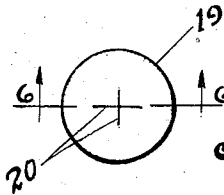


Fig. 5.

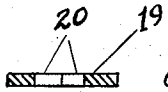


Fig. 6.

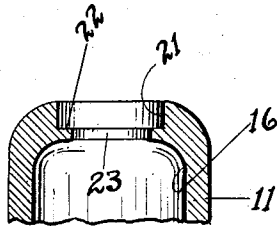


Fig. 7.

INVENTOR:

Wilbur K. Olson

UNITED STATES PATENT OFFICE

2,314,551

FOUNTAIN PEN

Wilbur K. Olson, Fort Madison, Iowa, assignor to
W. A. Sheaffer Pen Company, Fort Madison,
Iowa, a corporation of Delaware

Application June 16, 1941, Serial No. 398,185

7 Claims. (Cl. 120—42)

This invention relates to a fountain pen and has special reference to a closure for the writing point and fluid-feeding means of a fountain pen.

More particularly, this invention relates to a closure for a fountain pen comprising an inner and an outer cap in which the outer cap is provided with an open end and connecting means adjacent thereto for detachably engaging connecting means on the end of a fountain pen, the inner cap having an open end providing a chamber for receiving and for hermetically sealing the writing point and fluid feeding means of a fountain pen. A normally closed bleeder valve is provided in the inner cap, the valve automatically functioning to permit communication with the atmosphere for equalizing pressure variations within the chamber and within the reservoir of the fountain pen.

In order that a fountain pen may be available for use immediately upon removing the cap and touching the writing point to the writing surface, it is essential that the writing point and fluid feeding mechanism be hermetically sealed apart from the atmosphere so that no drying action can obtain. In the usual fountain pen construction, an outer cap is provided for housing an inner cap, the outer cap carrying the clip for preventing accidental displacement of the fountain pen from the pocket of the user and also carrying a connecting means for detachable engagement with the barrel of the fountain pen. The inner cap provides a chamber for receiving and for hermetically sealing the writing point and fluid feeding means of the fountain pen.

When partially filled, the reservoir contains a substantial amount of air as likewise does the chamber formed in the inner cap. It is well known that heat from the hand, when the pen is held in a writing position, expands the air within the reservoir and this expansion frequently causes flooding at the writing point, since the writing fluid is moved by the expanding air. Changes in altitude likewise cause pressure variations within the reservoir and the inner cap, and whether due to change in altitude or to change in temperature conditions, it has been found desirable to equalize the pressure variations to prevent leakage of fluid into the inner cap or, when the inner cap is removed, onto the writing surface in writing condition.

The present invention contemplates the equalization of pressure variations within the chamber of the inner cap and within the reservoir of the fountain pen by providing a bleeder valve

in the inner cap which automatically functions to permit communication with the atmosphere upon a change in pressure variations. As above stated, it is desirable to hermetically seal the writing point and fluid feeding means of the fountain pen and yet it is likewise desirable to permit an equalization of the pressures outside the reservoir and the pen housing chamber and inside thereof. The bleeder valve is normally closed so that the fluid feeding means and writing point are hermetically sealed away from the atmosphere and drying of the fluid at the writing point is obviated. However, when a variation in pressure is had outside of the chamber and the reservoir, such variation automatically opens the bleeder valve to equalize the outside pressure with the inside pressure. In this manner the hermetic sealing of the fluid feeding means and the writing point is obtained and pressure variations may be equalized.

One of the objects of this invention is to provide a closure for a fountain pen of the type hereinabove mentioned wherein the writing point and fluid feeding means of the fountain pen may be hermetically sealed and yet permit of an equalization of pressure variations within the sealing chamber and the reservoir of the fountain pen.

A further object of this invention is to provide a fountain pen of the character indicated above which is comparatively inexpensive to manufacture, is simple in operation and is durable.

Other objects and advantages will hereinafter be more particularly pointed out and for a more complete understanding of the characteristic features of this invention, reference may now be had to the following description and the accompanying drawing in which latter:

Figure 1 is a central longitudinal sectional view of a closure incorporating the features of this invention;

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a plan view of a lockwasher incorporated in the construction of Fig. 1;

Fig. 4 is a side elevational view of Fig. 3;

Fig. 5 is a plan elevational view of the bleeder valve incorporated in the present invention;

Fig. 6 is a sectional view taken on the line 6—6 of Fig. 5; and

Fig. 7 is an enlarged fragmentary sectional view of the upper end of the inner cap shown in Fig. 1, the bleeder valve thereof being removed therefrom.

Referring now more particularly to the draw-

ing, the present invention is incorporated in a closure preferably of a plastic material comprising an outer cap 10 and an inner cap 11, the outer cap having a bore of enlarged diameter 12 and of a reduced diameter 13. The inner cap 11 is housed in the bore of enlarged diameter within the outer cap 10.

The outer cap has an open end with connecting means 14 adjacent to the open end thereof for detachably engaging connecting means on the end of the fountain pen 15. In the present invention, the connecting means are shown as being screw threads although it is to be understood that various means may be substituted for the threaded means for the purpose of detachably connecting the cap and the barrel of the fountain pen.

The inner cap 11 has an open end and provides a chamber 16 for receiving the writing point 17 and writing fluid feeding means 18 of the fountain pen 15, the end of the barrel of the fountain pen butting against the end of the inner cap. A bleeder valve 18 is disposed preferably in the other end of the inner cap 11 adjacent the bore 13 of reduced diameter.

The bleeder valve may preferably comprise a diaphragm 19 of rubber or other flexible or resilient material, the diaphragm being provided with cross slits 20. The diaphragm is received in an enlarged opening 21 and rests against a shoulder 22 formed by the opening 23, communicating with opening 21 and being of reduced diameter. The diaphragm is held against the shoulder 22 by a lockwasher 24 which may be cemented or frictionally held in the recess 21.

The outer cap 10 is provided with diametrically opposed apertures 25 outside of but adjacent to the open end of the inner cap 11. These apertures are ordinarily provided to prevent sweating of the lower end of pen section of the fountain pen. In the present invention the apertures 25 have the further function of providing a communication between the outside atmosphere and a passage 26 which latter communicates with the reduced bore 13 of the inner cap.

The bleeder valve 18 is normally in a closed position in order that the inner cap may hermetically seal the writing point 17 and fluid feeding means 18 of the fountain pen, the end of the barrel of the pen sealing the open end of the inner cap. When pressure variations are had between the outside atmosphere and the air in the chamber 16 and in the reservoir of the fountain pen, then such pressure variations automatically function to permit communication between the outside atmosphere and the chamber and reservoir to equalize the pressure therein, the air passing through the apertures 25, the passage 26, into the reduced bore 13 and thence through the bleeder valve into the chamber 16.

It is, of course, not essential that a passage 26 be provided in the particular manner shown in the drawing and described herein since an aperture may be provided in the outer cap communicating directly between the bore 13 and the outside atmosphere, or there may be sufficient leakage of air about the inner cap since the inner cap is not fitted in the enlarged bore of the outer cap.

While but a single embodiment of this invention is herein shown and described, it is to be understood that various modifications thereof may be apparent to those skilled in the art without departing from the spirit and scope of this

invention and, therefore, the same is only to be limited by the scope of the prior art and the appended claims.

I claim:

1. A closure for a fountain pen comprising an outer and an inner cap, said outer cap having an open end with connecting means adjacent thereto for detachably engaging connecting means on the end of said fountain pen, said inner cap having an open end providing a chamber for receiving and for hermetically sealing the writing point and writing fluid feeding means of said fountain pen, and a normally closed bleeder valve in said inner cap automatically functioning to permit communication with the atmosphere for equalizing pressure variations within said chamber and within the reservoir of said fountain pen.

2. A closure for a fountain pen comprising an outer and an inner cap, said outer cap having an open end with connecting means adjacent thereto for detachably engaging connecting means on the end of said fountain pen, said inner cap having an open end providing a chamber for receiving and for hermetically sealing the writing point and writing fluid feeding means of said fountain pen, and a bleeder valve in said inner cap comprising a diaphragm of flexible material having a normally closed slit automatically functioning to permit communication with the atmosphere for equalizing pressure variations within said chamber and within the reservoir of said fountain pen.

3. A closure for a fountain pen comprising an outer and an inner cap, said outer cap having an open end with connecting means adjacent thereto for detachably engaging connecting means on the end of said fountain pen, said inner cap having an open end providing a chamber for receiving and for hermetically sealing the writing point and writing fluid feeding means of said fountain pen, and a normally closed bleeder valve in said inner cap comprising a rubber diaphragm having normally closed cross slits automatically functioning to permit communication with the atmosphere for equalizing pressure variations within said chamber and within the reservoir of said fountain pen.

4. A closure for fountain pen comprising an outer and an inner cap, said outer cap having an open end with connecting means adjacent thereto for detachably engaging connecting means on the end of said fountain pen, said inner cap having an open end providing a chamber for receiving and for hermetically sealing the writing point and writing fluid feeding means of said fountain pen, a normally closed bleeder valve in said inner cap, and a passage adjacent said bleeder valve and in communication with the atmosphere, said bleeder valve automatically functioning to permit communication with said passage for equalizing pressure variations within said chamber and within the reservoir of said fountain pen.

5. A closure for a fountain pen comprising an outer and an inner cap, said outer cap having an open end with connecting means adjacent thereto for detachably engaging connecting means on the end of said fountain pen, said inner cap being open ended and providing a chamber for receiving through one open end and for hermetically sealing the writing point and writing fluid feeding means of said fountain pen, and a normally closed bleeder valve in the other open end of said inner cap automatically func-

tioning to permit communication with the atmosphere for equalizing pressure variations within said chamber and within the reservoir of said fountain pen.

6. A closure for a fountain pen comprising an outer and an inner cap, said outer cap having an open end with connecting means adjacent thereto for detachably engaging connecting means on the end of said fountain pen, the bore of said outer cap being of enlarged and reduced diameters, said inner cap being disposed in the bore of enlarged diameter and having an open end providing a chamber for receiving and for hermetically sealing the writing point and writing fluid feeding means of said fountain pen, a passage communicating between said reduced bore and the atmosphere, and a normally closed bleed-

er valve in said inner cap communicating with the bore of reduced diameter automatically functioning to equalize pressure variations within said chamber and within the reservoir of said fountain pen.

7. A closure for a fountain pen comprising a cap having a chamber therein with an open end through which the writing point and fluid feeding means may be extended, said chamber normally hermetically sealing said writing point and fluid feeding means, and a normally closed bleed-er valve in said cap automatically functioning to permit communication with the atmosphere for equalizing pressure variations within said chamber and within the reservoir of said fountain pen.

WILBUR K. OLSON.