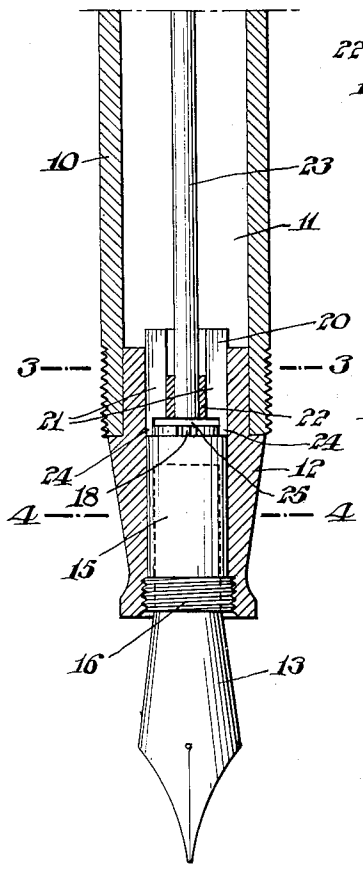
March 28, 1939. R. H. KOOS 2,152,436

FOUNTAIN PEN

Filed Nov. 26, 1937

Fig. 2.



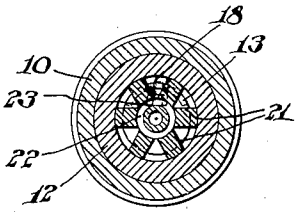


Fig. 3.

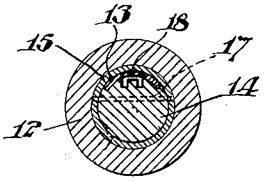
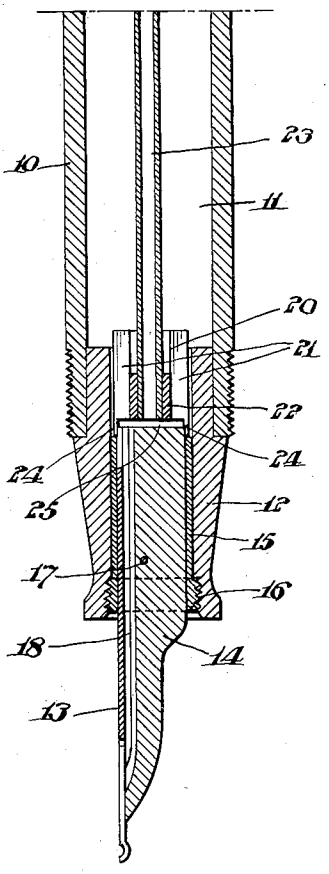


Fig. 4.

Fig. 1.



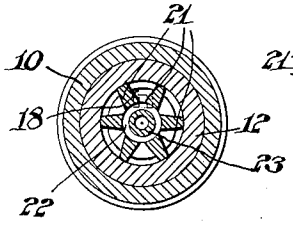


Fig. 6.

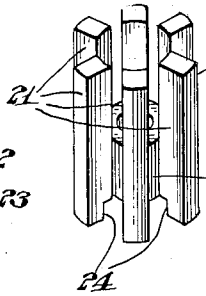


Fig. 5.

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FOUNTAIN PEN

Richard H. Koos, Gloucester, N. J., assignor to Leon H. Ashmore, Collingswood, N. J.

Application November 26, 1937, Serial No. 176,404

7 Claims. (Cl. 120—52)

This invention relates to fountain pens and it relates more particularly to improved means for insuring a proper flow of the ink to the pen point.

The invention is particularly adaptable to that type of fountain pen in which the pen point and feed member are secured to each other to provide a removable and replaceable pen point unit, although it should be understood that the invention is also applicable to various other types of fountain pens.

It is, of course, well understood that in order to insure a proper flow of ink to the pen point, it is necessary not only to provide a proper conduit for the ink to flow from the barrel to the pen point, but also to so construct the feed device as to permit the air to be admitted to the interior of the barrel in a sufficient amount to prevent a vacuum being formed in the barrel as the ink is fed to the pen.

It has long been known that one of the most efficient devices for the foregoing purpose comprises the provision, in the feed member, of a longitudinally extending groove of peculiar conformation, the same usually being of an inverted U-shape to provide a central pathway for the passage of the air, and two side channels for the passage of the ink in the opposite direction.

However, it has been found that many times an air bubble will be formed at the inner end of the aforesaid channel which will interfere with the free flow of the ink, and that this occurs particularly in those pens in which the pen point and feed member are positioned in a central bore in the nipple, which bore is necessarily of smaller diameter than the barrel of the fountain pen. The same condition is also likely to occur in those fountain pens in which the ink is contained within a rubber sac positioned within the barrel of the fountain pen, such, for example, as the self-filling types of pens, in which the filling is accomplished by first squeezing and then releasing the sac.

The object, therefore, of the present invention is to provide means, positioned within the inner end of the bore of the nipple, which will effectively serve to prevent the retention of air bubbles which tend to seal the inner end of the channel in the feed member and thereby prevent the free flow of the ink to the pen point.

A further object of the invention is to provide a device of the character aforesaid which is particularly adaptable for use in connection with fountain pens of the type having a removable and replaceable pen point unit, which unit is threaded or otherwise held in the end of the nipple, and which is likely to occupy varying relationships about the axis thereof with respect to the nipple.

With the foregoing objects in view, the present invention contemplates the provision of a device adapted to be positioned within the inner end of the bore of the nipple of a fountain pen for the purpose of preventing the retention of air bubbles at the inner end of the channel in the feed member, so that a free and proper flow of the ink to the pen point will be assured at all times.

The nature and characteristic features of the invention will be more readily understood from the following description, taken in connection with the accompanying drawing, forming part hereof, in which:

Figure 1 is a vertical central section of the lower portion of a fountain pen embodying the main features of the present invention;

Fig. 2 is a similar view, the section being taken transverse to that of Fig. 1, and certain parts being shown in elevation;

Fig. 3 is a horizontal section taken approximately on the line 3—3 of Fig. 2;

Fig. 4 is a horizontal section taken on the line 4—4 of Fig. 2;

Fig. 5 is a perspective view of a device constituting the principal novel element of the present invention; and

Fig. 6 is a view similar to Fig. 3, illustrating a modified form.

It should, of course, be understood that the description and drawing are illustrative merely, and that various modifications and changes may be made in the structure disclosed without departing from the spirit of the invention, and particularly that the invention is adaptable to the various types of self-filling pens, as well as to types which are filled by means of ink droppers or the like.

Referring to the drawing, the invention is shown as applied to a familiar type of fountain pen provided with a pen point unit which is easily and conveniently removable for the purpose of replacement by a similar unit when the pen point becomes worn or damaged.

In the structure there shown, 10 is the barrel of the pen providing an internal chamber 11 within which the ink is contained. At the lower end of the barrel is mounted a nipple 12 which is held in place by frictional engagement with the lower interior end of the barrel by a tight fit, although if desired the nipple may be threaded in the lower end of the barrel, but this is not ordinarily done in fountain pens of the self-filling type.

The removable pen point unit shown in the

drawing comprises the pen point 13 which is ounted upon the feed member 14, and is held in place with respect thereto by means of a surrounding sleeve 15. The lower end of the sleeve is provided, as at 16, with threads which are complemental to threads provided interiorly at the lower end of the nipple. The sleeve 15 is prevented from sliding longitudinally with respect to the feed member 14 by means of a transverse pin 17. The feed member 14 is provided with the usual channel 18 for the passage of the ink and to vent the air. The channel 18 extends from the inner surface of the pen longitudinally under the pen to a point within the nipple.

Mounted within the upper end portion of the nipple member, is the device 20 shown in perspective in Fig. 5 of the drawing, which device constitutes the principal novel element of the present invention. The device 20 is held in position within the nipple 12 preferably by frictional engagement therewith, although, if desired, it may be so held in any other preferred manner. Said device 20, as there shown, comprises a plurality of spaced longitudinally extending members 21 integrally joined to a central member 22. The central member may also serve as a support for the tube 23, which serves as an air vent, during the filling operation, in certain types of self-filling fountain pens. Said tube forms no essential part of the present invention.

While the spaced members 20 are shown as extending parallel to the longitudinal axis of the fountain pen, it should, however, be understood that the same need not necessarily be made straight and parallel to said axis, but may assume any desired form whereby there is provided a plurality of conduits or passageways extending from the inner end of the pen point unit to the interior of the barrel.

The lower ends of the members 21 are suitably shaped, as at 24, so as to extend into a space provided between the upper end of the feed member and the interior of the nipple. The sleeve 15 is usually positioned on the feed member so that the inner end of the sleeve 15 is located a short distance from the upper end of the feed member 14, thus leaving the aforesaid space between the upper end of the feed member 14 and the interior surface of the nipple 12.

It should also be noted that when the pen point unit is mounted in the nipple in its operative position, the inner end of the sleeve 15 will abut against the lower ends of the members 21, thereby to provide a space 25 between the inner end of the feed member 14 and the device 20. Also the members 21 are preferably of such length as to project a short distance into the interior of the pen barrel 10, although this is not absolutely essential for the proper functioning of the device.

By the arrangement hereinabove described, there is provided a series of passageways extending from the space 25 to the interior of the barrel 10 of the pen. It has been found that the passageways provided by the device 20 effectively prevent the formation of air bubbles at the inner end of the channel 18 of the feed member 14 which, as hereinbefore pointed out, often act as a seal to prevent the proper feed of the ink to the pen point.

It will be readily understood that when the removable pen point unit is threaded into position within the nipple 12, there can be no assurance that the channel 18 of the feed member 14 will occupy any definite radial position within the nipple, but the provision of a plurality of the passageways afforded by the device 20, as well as the space 25 between the inner end of the feed member 14 and the central member 22 of the device 20, will permit the venting air to pass to the interior of the pen barrel 10, and will also permit the ink to be fed downwardly through the channel 18, as it will be quite apparent that the inner end of the channel 18 will always be adjacent one of the passageways provided by the device 20.

In Fig. 6 of the drawing there is shown, in cross section, a modified form of the device 20 in which the longitudinally extending members 21 are differently shaped so as to provide larger air passages therebetween should the same be desired.

I claim:

1. In a fountain pen, a barrel portion adapted to serve as a reservoir for the ink, a nipple mounted in one end of said barrel, said nipple having a central bore, a pen point unit mounted in said bore, said pen point unit having a feed member provided with a channel extending to the inner end of said feed member for the passage of the ink and venting air, and a control device mounted within the inner part of the bore of the nipple, said control device having a plurality of members spaced around the interior of the bore to provide therebetween a plurality of passageways for the respective passage of ink and venting air.

2. In a fountain pen, a barrel portion adapted to serve as a reservoir for the ink, a nipple mounted in one end of said barrel, said nipple having a central bore, a pen point unit mounted in said bore, said pen point unit having a feed member provided with a channel extending to the inner end of said feed member for the passage of the ink and venting air, and a control device mounted within the inner part of the bore of the nipple having a plurality of members spaced circumferentially within the bore to provide therebetween a plurality of passageways for the passage of ink and venting air, said members being integrally united to a central member and having extensions against which a portion of the pen point unit abuts to space the lower end of the said central member from the inner end of the feed member of the pen point unit and to provide communication between the space and said passageways.

3. In a fountain pen, a barrel portion adapted to serve as a reservoir for the ink, a nipple mounted in one end of said barrel, said nipple having a central bore, a removable pen point unit threaded in said bore, said pen point unit having a feed member provided with a channel extending to the inner end of said feed member for the passage of the ink and venting air, and a control device mounted within the inner part of the bore of the nipple having a plurality of longitudinal members spaced within said bore to provide therebetween a plurality of passageways for the passage of ink and venting air.

4. In a fountain pen, a barrel portion adapted to serve as a reservoir for the ink, a nipple mounted in one end of said barrel, said nipple having a central bore, a removable pen point unit threaded in said bore, said pen point unit having a feed member provided with a channel extending to the inner end of said feed member for the passage of the ink and venting air, and a device mounted within the inner part of the bore of the nipple having a plurality of longitudinal members

spaced to provide therebetween a plurality of passageways for the passage of ink and venting air, and said device having extensions against which a portion of the pen point unit abuts to space the device from the inner end of the feed member of the pen point unit.

5. In a fountain pen, a barrel portion adapted to serve as a reservoir for the ink, a nipple mounted in one end of said barrel, said nipple having a central bore, a removable pen point unit threaded in said bore, said pen point unit having a feed member provided with a channel extending to the inner end of said feed member for the passage of the ink and venting air, and a device mounted within the inner part of the bore of the nipple having a plurality of members spaced to provide therebetween a plurality of passageways for the passage of ink and venting air, said members being integrally united to a central member and having extensions against which a portion of the pen point unit abuts to space the lower end of the said central member from the inner end of the feed member of the pen point unit.

6. In a fountain pen, a barrel portion adapted to serve as a reservoir for the ink, a nipple mounted in one end of said barrel, said nipple having a central bore, a pen point unit mounted in said bore, said pen point having a feed member provided with a channel extending to the inner end of said feed member for the passage of the ink and venting air, and a device mounted within the inner end of the bore of the nipple and having portions spaced to provide therebetween a continuation of said channel for preventing the retention of air bubbles at the inner end of the channel in the feed member.

7. In a fountain pen, a barrel portion adapted to serve as a reservoir for the ink, a nipple mounted in one end of said barrel, said nipple having a central bore, a removable pen point unit threaded in said bore, said pen point unit having a feed member provided with a channel extending to the inner end of said feed member for the passage of the ink and venting air, and a device mounted within the inner end of the bore of the nipple and having longitudinally disposed portions spaced to provide therebetween a continuation of said channel for preventing the retention of air bubbles at the inner end of the channel in the feed member.

RICHARD H. KOOS.