Dec. 5, 1933. F. S. BROMER 1,938,314

FOUNTAIN PEN

Filed Aug. 22, 1933

Fig. 1.

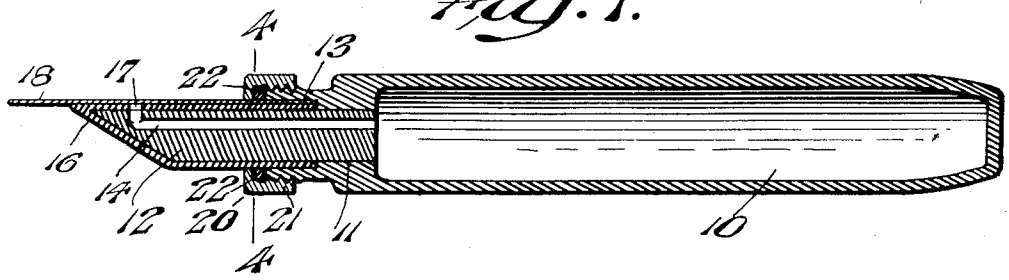


Fig. 2.

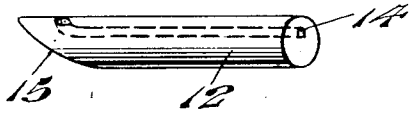


Fig. 3.

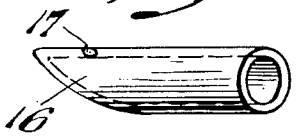
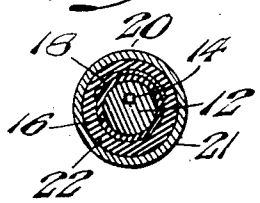


Fig. 4.



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FOUNTAIN PEN

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6 Claims. (Cl. 120—52)

The present invention relates to fluid feeding devices and more particularly to a fluid control for fountain pens, ruling pens, color applying instruments and the like.

In fountain pens and other devices supplied with ink or other fluid from a contained reservoir there have heretofore been many objectionable defects, such for example as failure of the fluid to feed; uneven feeding causing too free flow and flooding; lack of control over the feeding; difficulties attending the replacement of pens; and impractical assembly construction which makes access for cleaning practically impossible for the average user.

Some of the objects of the present invention are to provide an improved mechanism for distributing ink or other fluid to a pen point or other applying instrumentality; to provide a feed control for fountain pens wherein a substantially uniform flow of ink is obtained to meet all requirements of use; to provide a fountain pen assembly wherein the danger of ink leakage is reduced to a minimum; to provide a fountain pen construction wherein the pen point can be changed without danger of leakage and also without taking the feed control apart; and to provide other improvements as will hereinafter appear.

In the accompanying drawing Fig. 1 represents a longitudinal section of a fountain pen embodying one form of the present invention; Fig. 2 represents a detail in perspective of the feeder element; Fig. 3 represents a detail in perspective of the feed control and leak preventing member; and Fig. 4 represents a section on line 4—4 of Fig. 1.

Referring to the drawing one form of the present invention is shown as applied to the barrel 10 of a fountain pen, which is of tubular construction having a bore 11 at the discharge end for receiving the feeder element 12. This feeder 12 preferably has a snug push fit in the bore 11 so that the parts are assembled in leak-proof relation. The discharge end of the barrel 10 also has a bore 13 of larger diameter than the bore 11 in order to provide a space circumferentially encircling the feeder 12 for a purpose to be presently described. In the form of the invention here shown by way of example the barrel 10 serves as the reservoir for the ink or other fluid and can be filled in any well known manner. If desired the feeder 12 can have the usual rubber reservoir sac attached but the present invention is more particularly desirable for use with the barrel as a reservoir as one filling lasts much longer than where the relatively small rubber reservoirs are employed.

For directing the ink from the barrel 10 to a discharge point, the feeder 12 is provided with a feed channel 14 which opens at its inner end into the barrel 10 and extends longitudinally of the feeder body to turn outwardly through one face thereof. The outer end of the feeder 12 is preferably bevelled as indicated at 15 to give the usual free clearance for proper manipulation of the pen.

In order to prevent leakage of ink about the feeder 12 and also to control the feed of ink therefrom, an envelop 16 is provided to encase and fit about the major portion of the feeder 12. Preferably this envelop 16 is of a shape to conform to the contour of the feeder 12 and is of rubber to stretch snugly about the outside of the feeder. The thickness of the envelop 16 is such as to fill the bore 13 and at which point its inner end terminates. The envelop 16 is provided with a discharge port 17 arranged in assembled condition of the parts to register with the outlet of the channel 14. The size of the port 17 is such as to give the desired flow of ink for the purpose intended and its sectional area is therefore related to the sectional area of the channel, so that a definite flow control is obtained.

The pen point 18 is attached to the barrel 10 in operative relation to the feeder 12 by pushing its body end into the bore 13 and employing a stuffing box 20 to prevent leakage. This box 20 consists of a coupling sleeve nut 21 threaded upon the end of the barrel 10 and arranged to press a ring of packing 22 against the barrel end and about the joint formed by the pen 18, the envelop 16, the barrel 10, and the feeder 12, and as a result any fluid or ink which leaks inwardly between the pen 18 and the feeder 12 is prevented from reaching the outside. The resiliency of the packing 22 and the rubber envelop 16 makes it possible to readily pull the pen point out for replacement without removing the feeder or any other of its parts.

In use the flexing of the pen point reacts against the elastic envelop 16 to maintain the discharge port 17 open to permit a free flow from the channel 14 and there is no opportunity for clogging of the outlet. This construction will be further appreciated when it is noted that the pen point, when at rest, seats across the port 17 and prevents air from reaching the ink to cause evaporation and coagulation. As soon, however, as the point is flexed in a writing operation the air seal over the port 17 is broken and a free

feed takes place. Also the envelop 16 serves as a complete casing for the feeder 12 so that no ink can find its way to the parts which are grasped by the hand or fingers of the user.

While in the preferred construction an envelop encloses the discharge end of the feeder 12 it is to be understood that this is only one form of the invention and that it is possible to obtain the same result by various modified structures wherein provision is made for maintaining a pressure of the pen point upon the feeder element.

Having thus described my invention, I claim:—

1. A fountain pen comprising a barrel, a feeder element attached to said barrel, having a channel therethrough for the passage of ink, an envelop about the outer end of said feeder element having a port in register with said channel, a pen point arranged to seat on said envelop to normally cover said port, and means to mount said point in operative association with said feeder and said envelop.

2. A fountain pen comprising a barrel, a feeder element attached to said barrel having a channel therethrough for the passage of ink, an envelop of resilient material about the outer end of said feeder element having a port in register with said channel, a pen point arranged to seat on said envelop to normally cover said port, and means to mount said point in operative association with said feeder and said envelop.

3. A fountain pen comprising a barrel, a feeder element attached to said barrel having a channel therethrough for the passage of ink, said channel terminating in an outlet in the top of said element, a pen point, means to mount said point across said outlet, and a control member interposed between said pen point and said feeder element having a port in register with said outlet.

4. A fountain pen comprising a barrel, a feeder element attached to said barrel having a channel therethrough for the passage of ink, said channel terminating in an outlet in the top of said element, a pen point, means to mount said point across said outlet, and a flexible rubber control member interposed between said pen point and said feeder element having a port in register with said outlet.

5. A fountain pen comprising a barrel, a feeder element attached to said barrel having a channel therethrough for the passage of ink, a pen point, means for mounting said pen point across the path of the outlet of said channel, and flexible means for causing said pen point to seal said channel when said point is not in use.

6. A fountain pen comprising a barrel having a bore in one end thereof, a feeder element seating in said bore, a pen point mounted in said bore between said element and the wall of said bore, and resilient means for holding said pen point in assembled condition.

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