

April 7, 1942.

M. S. BAKER
FOUNTAIN PEN

2,278,907

Filed July 26, 1940

FIG. 1.

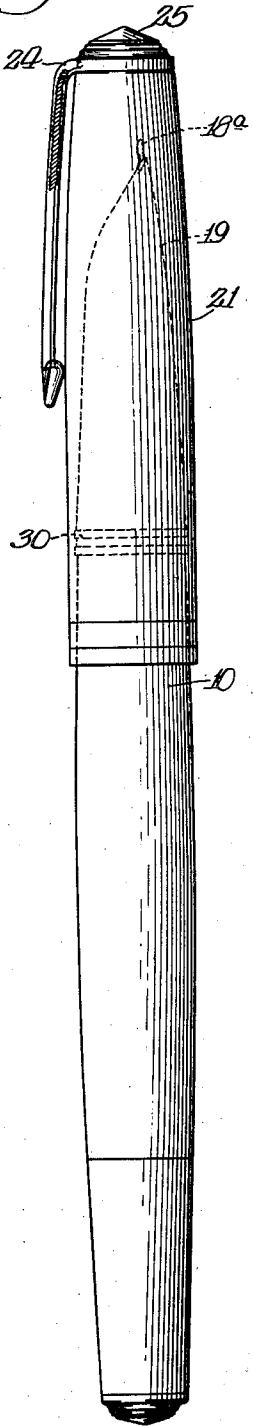


FIG. 2.

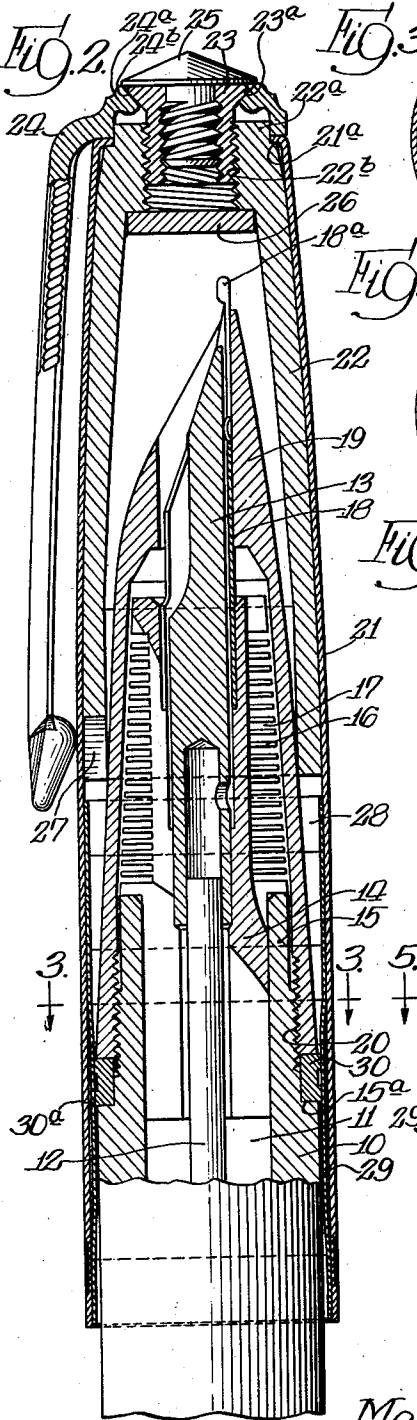


FIG. 3.

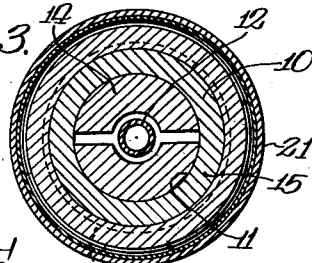


FIG. 4.

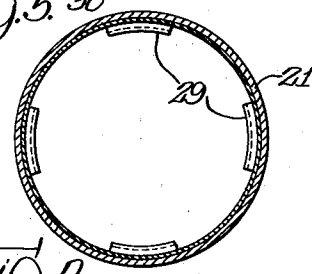
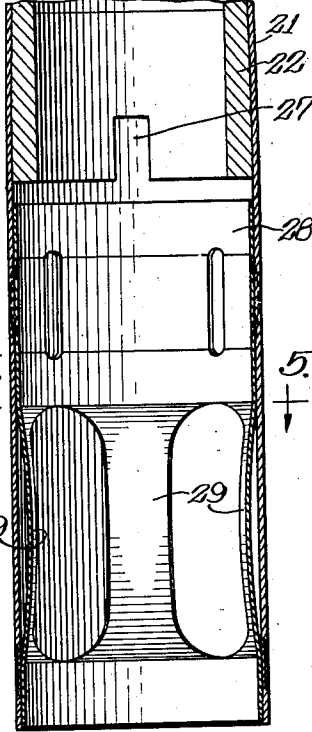


FIG. 5.



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UNITED STATES PATENT OFFICE

2,278,907

FOUNTAIN PEN

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Application July 26, 1940, Serial No. 347,586

9 Claims. (Cl. 120—42)

My invention relates to fountain pens and it has to do particularly with cap structure adapted for closing the writing end thereof.

One of the objects of my invention is to provide an improved fountain pen.

Another object is to provide an improved cap structure of the foregoing character for fountain pens.

A further object is to provide a closure cap for a fountain pen that may be easily and quickly applied to and removed from the writing end of the pen by a single push or a pull movement, the cap being yieldably retained upon the pen in its applied position.

Still another object is to provide a closure cap of the foregoing character which is adapted to enclose and conceal the writing end of the pen and which is provided with concealed means for venting to atmosphere that portion of the cap which encloses the writing end of the pen.

Another object is to provide cap structure of the foregoing character adapted to be slip-fitted upon the writing end portion of a fountain pen to a predetermined extent sufficient to enclose the external writing end portion of the pen in spaced relation, the cap being provided with internal stop means cooperating with the writing end portion of the pen for determining said predetermined extent of cap application thereto.

An additional object is to provide stop means of the foregoing character adapted to ventilate that portion of the cap enclosing the writing end portion of the pen when the cap is applied to the pen.

A more specific object is to provide a closure cap particularly well suited for use with a fountain pen of the type disclosed in my copending application Serial No. 249,617, filed January 6, 1939, which pen embodies a non-leak feed mechanism adapted to maintain a substantially constant wet condition for instant writing purposes, the arrangement being such that the closure cap eliminates the necessity of a threaded or the like connection between the cap and the pen barrel, it avoids any tendency for flooding of the pen upon removal of the cap, it practically eliminates the possibility of leakage under air travel conditions, it avoids tendency for formation of condensate upon the cap and enclosed writing end portion of the pen, and it tends to insure instant writing of the pen at all times.

An additional object is to provide a cap of the foregoing character which may be formed of very thin metal without any substantial increase in the weight of the pen, and the cap may be read-

ily given any suitable or desirable shape for enhancing the appearance of the pen as a whole.

Other objects and advantages will become apparent as this description progresses and by reference to the drawing wherein—

Figure 1 is an elevational view of one form of pen embodying my invention;

Figure 2 is an enlarged longitudinal sectional view of the cap of Fig. 1 and the pen structure enclosed thereby;

Figure 3 is a section taken substantially on line 3—3 of Fig. 2;

Figure 4 is a fragmental sectional view of the forward end portion of the cap as detached from the pen barrel; and

Figure 5 is a section taken substantially on line 5—5 of Fig. 4.

My invention is well suited for use in connection with a pen of the type shown in the drawing but it is to be understood that my invention has utility with respect to any pen wherein the conditions of use herein set forth exist.

The structure illustrated includes a barrel 10 having an ink reservoir 11 adapted to be filled by mechanism of the type disclosed in Letters Patent No. 1,904,358, granted on April 18, 1933, to Arthur O. Dahlberg, which mechanism includes a breather tube 12 mounted in the rear end of a feed bar 13 forming part of the feed mechanism. The forward end of the reservoir 11 is connected to a feed mechanism which, preferably, though not necessarily, takes the form of feed mechanism disclosed in my said pending application Serial No. 249,617.

Generally speaking, the feed mechanism includes a tubular ink collector 14 slip-fitted in the forward reduced portion 15 of the barrel 10, which collector is provided with a series of exterior, circular and longitudinally spaced fins 16 providing a plurality of surplus ink-receiving capillary cells 17; as set forth in my said pending application. The tubular portion of the ink collector 14 is provided with different diameters to frictionally receive the rear end of the feed bar 13 and to frictionally receive the rear end of a tubular nib 18 which surrounds the forward portion of the feed bar 13 in spaced relation thereto. The feed unit consisting of the collector 14, feed bar 13 and nib 18 are surrounded by a forwardly tapering shell 19, the rear end of which is internally threaded for detachable securement to the threaded portion 20 of the reduced barrel extension 15. These parts, as explained in my said pending application, are so related that the ink reservoir 11 is connected to the writing tip

18^a of the nib 18 by a series of capillary passages through which the ink is normally fed for normal writing purposes and, when the flow of ink from the reservoir exceeds that required for the existing writing needs, the excess ink is fed into the capillary cells 17, thereby preventing the flow of excess ink to the writing tip and consequent flooding, as well as creating a condition, as explained in my said pending application, wherein the flow of ink from the reservoir 11 is stopped. Thusly, there is provided a non-leak feed mechanism which, through the relation of the parts, including the forward end of the shell 19 above the forward slotted end of the nib 18, except the writing tip 18^a, is maintained in a wet condition ready for instant writing. This arrangement tends to prevent the drying out of the feed mechanism even though the writing end of the pen be exposed to the air for ventilation or other purposes.

It is desirable, during periods of non-use of the pen, that the writing end portion be covered to protect the pen point against injury, to prevent a person's clothing from contacting the point in the event that the pen should be carried in one's clothing, and for other reasons well known to those skilled in the art. My invention is particularly concerned with a closure cap for enclosing the writing end portion of the fountain pen during periods of non-use, which cap may, if desired, during periods of use, be applied to the rear end of the pen for the usual reasons.

Specifically, the cap structure shown in the drawing includes an outer, thin-walled, metallic tube or shell 21. The end of the shell 21, in which the forward end of the pen barrel is received, is of slightly larger diameter than the pen barrel so that it may readily be received therein and air may circulate therepast. The shell 21 may readily be given any desired shape, such as shown in the drawing, for improving the appearance of the pen or otherwise.

The inner or so-called closed end of the cap shell is adapted to receive an inner cap 22 formed, preferably, of a plastic material of any suitable kind which will not be materially affected by the corrosive action of ink. The end of the shell 21 at the closed end of the cap is flanged inwardly at 21^a, providing a reduced opening through which a reduced end portion 22^a of the inner cap 22 projects. The projecting portion 22^a of the inner cap 22 is provided with an axial threaded opening 22^b for reception of the threaded portion of a metallic bushing 23 adapted to anchor and secure a metallic clip 24 upon the cap. Specifically, the clip 24 is provided with an annular head 24^a adapted to fit around the projecting portion 22^a of the inner cap 22 and seat upon the outer end of the shell flange 21^a. The outer edge of this ring portion is provided with a beveled wall 24^b against which the beveled edge 23^a of the bushing 23 seats, whereby, when the bushing 23 is screwed home, the clip 24, as well as the inner cap 22, is securely anchored in place. The bushing 23 is internally threaded for reception of the threaded stem of a decorative tip 25. The threaded part of the bushing 23 is of such length that it extends only part way through the threaded opening 22^b of the inner cap, and the inner end of this inner cap opening 22^b receives a plug 26, preferably, cemented in place in such a way as to prevent ink that may be deposited in the inner cap 22 from reaching the bushing 23 with consequent corrosive effect.

The forward or open end of the inner cap 22

serves as a stop for limiting the extent to which the cap may be moved or pushed longitudinally upon the pen. To this end, the forward end of the inner cap has an inside diameter greater than the diameter of the forward end of the tapered shell 19 and less than the diameter of the rear end of the shell 19 so that, when the cap is applied to the front end of the pen, the forward end of the inner cap 22 will strike against the tapered wall of the shell 19 at about midway the length of the latter. The inner cap 22 is of such length that when its forward end is abutted by the pen shell 19 the forward end of such shell and the writing tip 18^a are held in spaced relation to the closed end of the cap 22, thereby preventing injury to the pen point when the cap is applied.

It will be seen that, in an arrangement of the foregoing character, the writing end portion of the pen, when the cap is applied thereto, will be confined in a relatively small space and, unless guarded against, condensate will form within the inner cap 22 and upon the enclosed writing end portion for reasons well understood. This, if it should exist, is highly objectionable, particularly in a pen of the character described, due to the fact that the forward portion of the pen is so shaped that it may be grasped in close proximity to the writing tip 18^a for writing purposes, and the formation of condensate may result in the smearing of moisture and possibly some ink upon the hand of the user.

One of the features of my invention has to do with the prevention of the objectionable condensate condition above mentioned. To this end, the open or stop end of the inner cap 22 is provided with a longitudinal slot 27 extending from its extreme pen-engaging or stop edge toward its closed end to such an extent that, when the inner cap 22 is engaged with the shell 19, air can pass through the slot 27 and circulate in the pen-enclosing chamber portion of the inner cap, this circulation being facilitated by the non-seal fit between the pen barrel 10 and the open end of the cap and by the cap retaining clutch means which will now be described.

Although the open end of the cap is freely received upon the pen barrel and will permit the circulation of air therepast when the cap is applied, the cap is centered and yieldably retained upon the barrel by ventilated clutch structure carried by the cap and cooperating with a clutch element carried by the pen. More particularly, a thin-walled metallic sleeve 28 is press-fitted into the forward portion of the cap shell 21 and this clutch shell is provided, adjacent the open end of the cap, with an annular series of inwardly bowed spring portions, or fingers, so to speak, 29 which provide yieldable gripping surfaces. These spring portions 29 are so located that, when the cap is fully applied, as shown in Fig. 2, their bowed portions are in alignment with the joint between the shell 19 and the reduced barrel extension 15, at which point the barrel supports a metallic clutch ring 30. Specifically, the clutch ring 30 is adapted to fit against a shoulder 15^a between the main barrel 10 and its extension 15 and is adapted to be abutted and confined by the inner or threaded end of the shell 19 when it is screwed upon the barrel extension. The outer surface of the metallic ring 30 is channeled circumferentially, providing a pair of spaced circumferential ribs 30^a which project slightly outwardly beyond the barrel wall providing surfaces adapted to be engaged by the bowed portions 29 of the metallic clutch member 28. It will thus

be seen that, when the cap is applied to the forward end of the pen and pushed thereupon until the inner cap 22 strikes the shell 19, the spring portions 29 will, prior to that time, frictionally and yieldably engage the ring 30 and thereby provide a yieldable grip between the cap and the pen when the cap is fully applied, as illustrated in Fig. 2.

It is believed that the operation and advantages of my invention will be fully understood from the foregoing description. A metallic cap may be employed, the same being formed from very thin metallic tubing, thereby minimizing weight. The cap may be easily and quickly applied or removed by a single push or pull movement, conventional screw threads and other cap attachment means requiring manipulation being eliminated. Condensation within the inner cap which encloses the writing end of the pen is eliminated. A free circulation of air through the cap is permitted at all times so that changes in air pressure, as may occur through change in altitude, are compensated for, thereby making the pen more adaptable for use during air travel. The cap structure as a whole is quite sturdy and durable, and its parts are so constructed and arranged that their manufacture and assembly are facilitated. The utility of the pen as a whole is increased materially by my invention.

I claim:

1. In a fountain pen, a barrel, ink feed mechanism including a pen nib mounted in the forward end of said barrel, an elongated cylindrical cap open at one end and closed at its other end, said cap being adapted to receive said barrel and enclose the forward end thereof, stop means within and carried by said cap and adapted to engage the enclosed barrel portion and thereby limit the extent that the barrel may be received within said cap, and means between said cap and said barrel and engageable prior to engagement of said stop means for yieldably retaining said cap upon said barrel in its stop-engaged position, and whereby the cap may be applied to or removed from said barrel by a single push or pull movement, respectively.

2. In a fountain pen, a barrel, ink feed mechanism including a pen nib mounted in the forward end of said barrel, an elongated cylindrical cap open at one end and closed at its other end, said cap being adapted to receive said barrel and enclose the forward end thereof, stop means within and carried by said cap and adapted to engage the enclosed barrel portion and thereby limit the extent that the barrel may be received within said cap, and clutch means, including a clutch element carried by said barrel and a clutch element carried by the open end portion of said cap, adapted to be engaged just prior to engagement of said stop means for retaining said cap upon said barrel and for permitting full application of and removal of said cap by a single push or pull movement, respectively.

3. In a fountain pen, a barrel having a writing end portion tapered toward the writing end thereof, an elongated cylindrical cap closed at one end and open at its other end and adapted to receive the writing end portion of said barrel, a continuous annular stop member within and carried by said cap and adapted to stop-engage the enclosed tapered wall of said writing end portion when said cap is applied to a predetermined extent, and separate means between said barrel and said cap for frictionally retaining said cap upon said barrel at all times when said stop

member is engaged merely by insertion of said tapered end portion within said cap whereby said cap may be fully applied and removed solely by a push or pull movement, respectively.

4. In a fountain pen, a barrel having a writing end portion tapering toward the writing end thereof, a closure cap for the writing end of said barrel comprising a tubular outer shell member, an inner cap member within said shell and adapted to receive and enclose the tapered writing end portion of said barrel, said inner cap having a fixed stop portion adapted to engage the enclosed tapered wall of said writing end portion to limit the extent to which said cap may be moved upon said barrel when it is engaged with said stop portion, and clutch means between said cap and barrel for yieldably retaining said cap upon said barrel and enabling said cap to be applied and removed by a push or pull movement, respectively.

5. In a fountain pen, a barrel having a writing end portion tapering toward the writing end thereof, a closure cap for the writing end of said barrel comprising a tubular outer shell member, an inner cap member within said shell and adapted to receive and enclose the tapered writing end portion of said barrel, said inner cap having a stop portion adapted to abut the tapered wall of said writing end portion to limit the extent to which said cap may be moved upon said barrel, a clutch ring carried by said barrel inwardly of said tapered writing end portion, a spring clutch member carried by said cap outwardly of said inner cap and adapted to yieldably engage said clutch ring when the stop portion of said inner cap is engaged.

6. In a fountain pen, a barrel having a writing end portion, a closure cap adapted to fit freely upon said barrel to receive and enclose said writing end portion, a fixed annular stop member carried by said cap and adapted to be engaged by said writing end portion to limit the extent to which said cap may be moved upon said barrel, said stop member having a vent opening permitting circulation of air through said cap when it is in its stop-engaged position, and separate means for releasably retaining said cap upon said barrel in its stop-engaged position.

7. In a fountain pen, a barrel having a writing end portion, a closure cap adapted to fit freely upon said barrel to receive said writing end portion, a stationary annular stop member in said cap and adapted to surround and engage said writing end portion to limit the extent to which said cap may be moved upon said barrel, said stop member having a vent opening therein connecting the different portions of said cap on opposite sides of said stop member when said cap is applied to said barrel to permit circulation of air throughout said cap when it is applied, and separate ventilated means yieldably retaining said cap upon said barrel in its stop-engaged position.

8. In a fountain pen, a barrel having a writing end portion tapering to the writing end thereof, a closure cap having an open end and a closed end with its open end adapted to fit freely upon said barrel to enclose said writing end portion, a stationary annular stop member in said cap adapted to engage the tapering wall of said writing end portion to limit the extent to which the cap may be moved upon the barrel, said stop member having means for ventilating said cap and permitting the circulation of air therein when the cap is freely applied, and separate means spaced from said stop member for yieldably re-

taining said cap upon said barrel in its fully applied position, said means permitting the circulation of air therepast.

9. In a fountain pen, a barrel having a writing end portion, a closure cap therefor which comprises a tubular thin-walled metallic shell, an inner cap formed of plastic material carried within said shell and adapted to receive and enclose said writing end portion, said inner cap being adapted to engage the writing end portion

of said barrel at a point inwardly of the writing end thereof to limit the extent to which said cap may be applied to said barrel, and means located outwardly of said inner cap for retaining said cap upon said barrel when said cap is fully applied, said means including members that flex and thereby permit said cap to be fully applied to and removed from said barrel by a single push or pull movement, respectively.

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