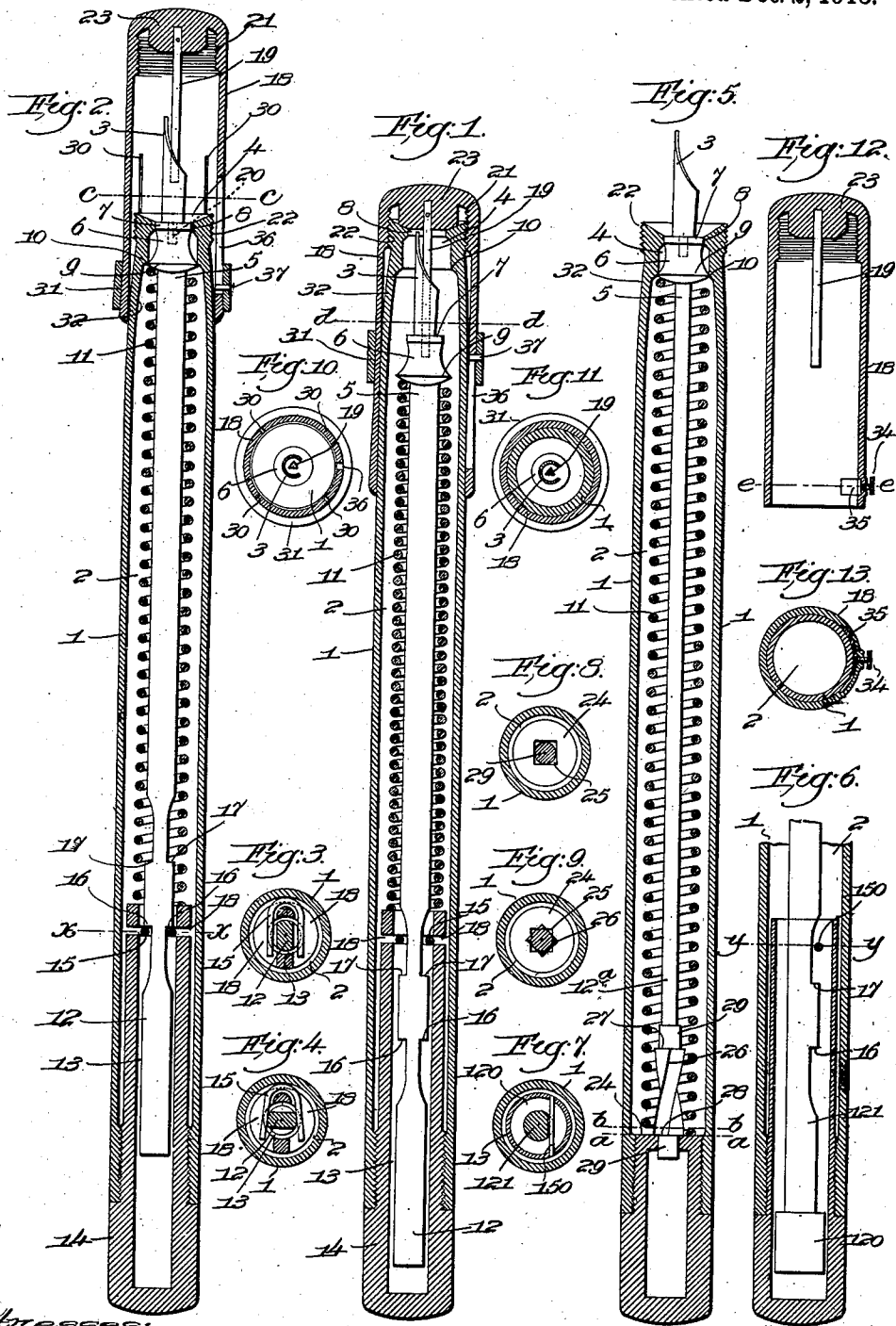


J. G. COFFIN.
 FOUNTAIN PEN.
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1,080,197.

Patented Dec. 2, 1913.



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UNITED STATES PATENT OFFICE.

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FOUNTAIN-PEN.

1,080,197.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOSEPH G. COFFIN, a citizen of the United States, residing at New York, county of New York, State of New York, have invented an Improvement in Fountain-Pens, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

10 This invention relates to fountain pens and particularly to that class of fountain pens in which the pen point is arranged to be carried back into the barrel or ink reservoir and to remain therein when the pen is not in use and is closed, and to be projected from said reservoir when the pen is to be used. Some fountain pens of this type are provided with automatically-operative means, such as a spring, for forcing the pen point out from the reservoir when the cap is removed, and while these pens have the advantage that no separate manual operation is required for projecting the pen point after the cap has been removed because this movement of the pen point is secured automatically by the action of the spring, yet as heretofore made such pens have the disadvantage that if in writing the operator applies sufficient pressure to the pen point in the direction of its length the pen point is likely to be pushed back into the barrel more or less, thus allowing some of the ink to escape, this being because the pen point is held projected solely by the action of the spring; and have also the further disadvantage that when the pen is to be filled the operator has to hold the pen point retracted against the action of the spring while dropping the ink into the open end of the barrel either by using a stiff wire or other implement, or by using the push pin in the cap, in which latter case the cap is usually provided with an aperture in its side through which the ink can be introduced.

45 One of the objects of my invention is to overcome these disadvantages by providing a pen of this nature with means for locking the pen point either in its retracted or projected position, and other objects of the invention are to provide a novel construction whereby the pen point may be unlocked to permit it to be moved into or out of the reservoir by the operation of screwing the cap onto or removing it from the barrel.

50 In a pen embodying my invention the pen point is locked in its retracted position with-

in the ink reservoir when the pen is closed, but the operation of removing the cap will unlock the pen point so as to permit it to be projected outwardly into writing position by the automatic action of the spring, and when the pen is in such position it will become locked and will be positively held in its projected position until it is unlocked again by some suitable manual manipulation.

Another object of the invention is to provide a fountain pen of the above-described type with a cap that is constructed to close the pen either when the pen point is projected or when it is retracted so that if a person is using his pen frequently he can simply apply the cap thereto and cover the pen point without taking the time to retract the pen point and screw the cap onto the barrel, while if the fountain pen is to be laid away for a longer time or is to be carried he can close it in the usual way.

Further objects of my invention are to improve generally pens of this type, all as will be more fully hereinafter described and then pointed out in the appended claims.

In order to illustrate the principle of the invention, I have shown some selected embodiments thereof in the accompanying drawings which will now be described, it being understood that no attempt has been made to illustrate all possible embodiments of the invention.

In the drawings; Figure 1 is a longitudinal sectional view of a fountain pen made in accordance with my invention, said figure showing the pen point retracted and the cap screw-threaded to the barrel and closing the open end thereof; Fig. 2 is a similar view showing the pen point projected and the cap in position to cover said pen point; Fig. 3 is a section on the line $x-x$, Fig. 2; Fig. 4 is a view similar to Fig. 3 showing the lock released; Fig. 5 shows a different embodiment of my invention which employs a lock of a different construction from that shown in Figs. 1 and 2; Fig. 6 shows still another embodiment of my invention; Fig. 7 is a section on the line $y-y$, Fig. 6; Fig. 8 is a section on the line $a-a$, Fig. 5; Fig. 9 is a section on the line $b-b$, Fig. 5; Fig. 10 is a section on the line $c-c$, Fig. 2; Fig. 11 is a section on the line $d-d$, Fig. 1; Fig. 12 is a sectional view of a cap embodying my invention but constructed differently from that shown in Figs. 1 and 2; Fig. 13 is a section through

the cap shown in Fig. 12 on the line *e—e*, showing it applied to the barrel of the pen.

The barrel or holder of my improved fountain pen is shown at 1 and this is provided with the interior ink reservoir 2 as usual and with the open end 4 through which the pen point 3 is moved when said point is being retracted or projected as usual in pens of this general type. The pen point is carried by a pen-carrying member 5 which is provided with an enlarged portion 6 which is adapted to close the open end 4 of the barrel when the pen is projected, and which is acted upon by a spring 11 which tends normally to force the pen point outwardly. This enlarged portion 6 may have any suitable shape or construction, but I will preferably employ that shown in my Patent No. 896,086, dated August 18, 1908, and which comprises a cylindrical portion 7 adapted to fit within the cylindrical bore 8 at the terminus of the open end 4 and an annular portion 9 larger than the cylindrical portion 7 and which fits against the interior seat 10 within the barrel 4. In my said patent the pen point has connected thereto a retractable rod which carries a plunger at its inner end that operates in a cylindrical chamber, one purpose of this plunger being to retard the projecting movement of the pen point due to the action of the spring. In my present invention I also employ a retarding means, and in the embodiment shown in Figs. 1 to 3, this is in the nature of a plunger 12 which projects rearwardly from the enlarged portion 6 and which enters and plays in a chamber 13. This chamber 13 may be made in a variety of ways without departing from my invention. In Figs. 1 to 3, for instance, it is formed in a separate section 14 which is adapted to screw into the barrel 1 and which forms the end thereof. The plunger 12 does not tightly fit the chamber 13, but instead there will be sufficient space between said plunger and the walls of the chamber so as to permit the plunger to displace the ink as the pen point is forced inwardly, and so as to permit the ink to enter behind the plunger when the pen point is projected outwardly by the action of the spring 11, all as described in by former patent.

As stated above, one of the objects of the present invention is to provide means for locking the pen point in either its retracted or its projected position so that the pen point cannot be either projected or retracted until the locking device is released. The advantage of this is that when the point is projected and is locked in its projected operative position there will be no danger that any pressure which may be applied to the pen in writing will cause the pen point to retract sufficiently to allow ink to run out of the holder, and that when the pen point

is retracted and locked in its retracted position the pen can be readily filled without the necessity of the user holding the pen point retracted during the filling operation.

While it is within my invention to employ any suitable locking means adapted to hold the pen point positively in either of its two positions, yet I prefer for many reasons to use a lock which is automatic in the sense that it will automatically become operative when the pen point is brought into either of its two positions. The lock shown in Figs. 1-4 comprises a resilient locking member 15 which is adapted to engage either the shoulder 16 on the plunger 12 to hold the pen point projected, or the shoulder 17 on said plunger to hold the pen point retracted sufficiently to permit the ink reservoir to be filled. In Figs. 1, 2 and 3 the locking member is shown in the form of a U-shaped wire, the arms of which occupy notches or slots 18 cut through the side walls of said chamber 13. When this construction of locking member is used I may make the plunger 12 with two shoulders 16 and two shoulders 17 on opposite sides thereof so that each of the arms of the locking device will engage a shoulder. The locking member 15 is loosely sustained by the walls of the chamber 13 so that it can readily adapt itself to different positions of the plunger. With this construction it will be seen that when the pen point is retracted into its inoperative position the locking member will automatically snap over the shoulder 17 thereby locking the pen point retracted, while when the lock is released and the pen point is projected and reaches its operative position the locking device will automatically snap over and engage the shoulder 16. The locking device can be disengaged from either shoulder by giving the pen point and plunger a partial turn, for it will be observed that the shoulders 16 and 17 do not extend clear around the plunger so that when said plunger is turned from the position shown in Fig. 3 to that shown in Fig. 4 the shoulders are carried out of alinement with the locking device, and as soon as the smooth, unnotched portion of the plunger comes in line with the locking device, as shown in Fig. 4, the plunger will be released so that it can be moved longitudinally. It will thus be seen that the locking device shown in Figs. 1-4 is one which will automatically lock the pen point in either of its positions and which can be released by a partial turn of the plunger. In Figs. 6 and 7 I have shown another form of locking device which is in the form of a resilient pin 150 carried by the walls of the chamber 13 and adapted to engage the shoulders 16 and 17 formed on the stem 121 of the plunger 120. In this embodiment the plunger 120 is larger than the plunger 12 in Figs. 1 and 2 and there will

be plenty of room between the stem 121 and the walls of the chamber 13 to permit the locking pin to give when the plunger is turned to release the lock as above described.

5 It would be within my invention to give the plunger its partial turn in any suitable way. One convenient way, however, is to do this by means of the cap 18. The cap is provided with a push pin 19 which is adapted to engage the feed bar or enlarged portion 6 and force the pen inwardly when the cap is inserted over the end of the barrel, all as described in my aforesaid Patent No. 896,086. In the present invention I have made said push pin 19 non-circular in cross section and have provided the end of the head or enlarged portion 6 with a non-circular recess 20 adapted to receive the end of the push pin so that when the cap is placed over the end of the barrel the push pin will enter the recess. When the parts are in this position the plunger can be readily turned by simply turning the cap on the barrel. The cap is provided with screw-threads 21 as usual in fountain pens of this nature which are adapted to have screw-threaded engagement with the screw-threads 22 on the barrel when the fountain pen is closed.

To open the pen the cap is first unscrewed in usual manner and during this operation the pen point and plunger 12 will be rotated with the cap, it being observed that the locking device is such as to permit this rotary movement of the plunger. When the cap is unscrewed from the barrel the turning movement thereof will be continued until the locking device is released when the cap will be removed and the spring 11 will operate automatically to project the pen point and the latter will become automatically locked in its projected position as above described. When the pen is to be closed the cap is placed over the end of the barrel so as to bring the end of the push pin 19 in the recess 20, and said cap is then turned thereby to turn the plunger and release the lock when the pen point may be retracted by forcing the cap downwardly over the end of the barrel. The open end 4 of the reservoir will be closed by screw-threading the cap onto the barrel in usual manner, it being noted that the cap is provided with the valve portion 23 which seals the open end 4 of the valve as usual in fountain pens of this nature.

In Figs. 5 and 6 I have shown another form of locking device. In this embodiment a partition 24 is provided in the ink reservoir through which the plunger 12^a extends, and this partition is provided with a non-circular opening 25 and the plunger is provided with the non-circular portion 26 at each end of which there is provided a shoulder, said shoulders being designated 27 and 28. The spring 11 is confined between

the enlarged portion 6 and the partition 24. The non-circular portion 25 of the plunger is of such a length that when the pen point is retracted the shoulder 27 is carried beneath the partition 24, while when the pen point is projected the shoulder 28 is carried above said partition. The locking of the pen point in either of its positions is effected by turning the plunger 12^a so that the shoulders 27 and 28 will engage the partition. In the illustrated embodiment of my invention the aperture 25 is square and the portion 26 of the plunger is also square, and the plunger is provided with the circular portions 29 at each end of the portion 26, which circular portion has the same diameter as that of the aperture 25. So long as the sides of the aperture are in alinement with the sides of the portion 26 the pen point can be retracted or projected, but if the plunger is turned so as to bring the sides of the portion 26 out of alinement with the sides of the aperture the pen point will be locked, as will be readily understood. If desired I may make the portion 26 with a slight twist or spiral shape so that during the retracting and projecting movement of the pen point the latter will be turned slightly. This is an advantage in fountain pens of this nature as it tends to prevent the formation of bubbles at the open end 4. There are various other ways in which the pen point might be locked in its two positions and which I have not illustrated herein as the constructions shown are sufficient to disclose the principle of the invention.

In pens of this nature it is sometimes desirable to be able to place the cap on the pen without withdrawing the pen point into the barrel. This is especially true where the pen is to be used frequently and it is desired to close the pen temporarily after it has been used each time. In most pens of this nature where the cap is provided with screw-threads to engage other screw-threads on the barrel the cap cannot be secured to the barrel except by first withdrawing the pen point into the barrel and then screwing the cap thereon. I have provided a novel cap which can be secured to the barrel in the usual way by screwing thereon after the pen point has been retracted, or can be firmly secured to the barrel without the necessity of withdrawing the pen point into the barrel. I arrange this by providing a cap with a mouth of a variable diameter whereby when the diameter of the mouth is reduced the cap will frictionally engage the barrel and thus be held in place to cover the pen point even though the latter is projected, while when the mouth is expanded the cap can be screw-threaded to the barrel in the usual way. There are various ways in which the cap with the variable mouth can be made. In Fig. 2 the cap is shown as

slit longitudinally at 30 and a ring 31 is slidably mounted thereon for movement toward and from the open end of the cap. When the ring is moved toward the open end of the cap said end will be contracted in size so that it will frictionally engage the tapered portion 32 of the barrel and thus be firmly held in place. The contracted size of the mouth of the cap is such that it will have engagement with the tapered portion 32 of the barrel before the push pin 19 engages the end of the portion 6 so that the cap may be applied to the barrel with the pen projected, as shown in Fig. 2. When the ring is retracted in the position shown in Fig. 1 the open end of the cap will expand sufficiently to permit the cap to be screw-threaded to the barrel after the pen is retracted, as shown in Fig. 1 the ring 31 is shown as having a pin 37 extending inwardly therefrom, which operates in a guiding slot 36 formed in the cap, said pin and slot being for the purpose of guiding the ring in its movement. Another way of varying the size of the mouth of the cap would be to provide the latter near its mouth with a screw 34 bearing at its inner end a head or clamping member 35 which normally occupies a recess inside of the cap. When the mouth of the cap is to be reduced in diameter the screw can be advanced, thus projecting the friction pad inwardly radially so as to cause the cap to engage the tapered portion 32 of the barrel. There are various ways in which the diameter of the mouth of the cap could be varied and my invention is not limited to any particular construction.

The resistance to the retracting and projecting movement of the pen point which is secured by the operation of the plunger 12 in the chamber 13 is of considerable importance in the successful operation of the pen. In the construction herein shown as well as that shown in my former patent this resistance is due to the viscous friction incident to the movement of the ink into and out of the chamber 13 around the plunger. This retarding movement, however, might be secured in various other ways, such as by properly packing the plunger 12, without departing from the invention. Furthermore it is not essential to the invention that the spring 11 should be situated as illustrated, as it might be placed in any location where it would act to project the pen point.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a fountain pen, the combination with a barrel having an ink reservoir open at one end, of a pen point adapted to be projected through said open end or retracted into the reservoir, means to move the pen point relative to the barrel, locking means located within the reservoir to hold the pen

point positively in fully projected position, and means to render said locking means inoperative when the pen point is only partially projected.

2. In a fountain pen, the combination with a barrel having an ink reservoir open at one end, of a pen point adapted to be projected through said open end or retracted into the reservoir, means to move the pen point relative to the barrel, locking means within the reservoir to hold the pen, positively in either its projected or its retracted position, and means to render said locking means inoperative when the pen point is in an intermediate position.

3. In a fountain pen, the combination with a barrel having an ink reservoir open at one end, of a pen point adapted to be projected through said open end or retracted into the reservoir, means to move the pen point relative to the barrel, and automatically operative means located within the reservoir to lock the pen in its projected position.

4. In a fountain pen, the combination with a barrel having an ink reservoir open at one end, of a pen point adapted to be projected through said open end or retracted into the reservoir, means to move the pen point relative to the barrel, and automatically-operative means located within the reservoir to lock the pen in one of its two positions.

5. In a fountain pen, the combination with a barrel having an ink reservoir open at one end, of a pen point adapted to be projected through said open end or retracted into the reservoir, means to move the pen point relative to the barrel, and automatically-operative means located within the reservoir to lock the pen in either of its two positions.

6. In a fountain pen, the combination with a barrel having an ink reservoir open at one end, of a pen point adapted to be projected through said open end or retracted into the reservoir, a spring for projecting said pen point, means located within the reservoir to hold the pen point positively in projected position, said means being operative to prevent retracting movement of the pen point only when the pen point is fully projected, and means to release said lock by a turning movement of the pen point relative to the barrel.

7. In a fountain pen, the combination with a barrel having an ink reservoir open at one end, of a pen point adapted to be projected through said open end or retracted into the reservoir, means to give the pen point its movement relative to the barrel, means within the reservoir to hold the pen point positively in either its projected or its retracted position, said means being operative to prevent movement of the pen point

longitudinally of the barrel only when the pen point is fully projected or fully retracted, and means to release said locking means by a partial turning movement of the pen point relative to the barrel.

8. In a fountain pen, the combination with a barrel having an ink reservoir open at one end, of a pen point adapted to be projected through said open end or retracted into the reservoir, means to move the pen point relative to the barrel, means within the reservoir to lock said pen point in its projected position, a cap for the pen, and means to release said lock by or through turning movement of the cap when it is applied to the open end of the barrel.

9. In a fountain pen, the combination with a barrel having an ink reservoir open at one end, of a pen point adapted to be projected through said open end or retracted into the reservoir, means to move the pen point relative to the barrel, means within the reservoir to lock said pen in either its retracted or projected position, and means to release the pen by or through a turning movement of the cap when it is applied to the open end of the barrel.

10. In a fountain pen, the combination with a barrel having an ink reservoir open at one end, of a pen point adapted to be projected through said open end or retracted into the reservoir, means to move the pen point relative to the barrel, means within the reservoir to lock the pen point in either of its two positions, which lock is released by a turning movement of the pen point, a cap for the pen, and means operated by the cap to turn said pen point thereby to release the lock.

11. In a fountain pen, the combination with a barrel having an ink reservoir open at one end, said barrel being tapered exteriorly at said end, of a pen point adapted to be projected through said open end or retracted into the reservoir, a cap having a mouth which is normally of a size to slide freely over the barrel, and manually operable means to contract said mouth to a size to fit and frictionally engage the tapered part of the barrel or to permit it to have its normal size whereby when the mouth of the cap is contracted and said cap is placed over the open end of the barrel said tapered portion will limit the telescoping movement of the cap over the barrel while when the mouth has its uncontracted normal size it can be freely telescoped over the barrel.

12. In a fountain pen, the combination with a barrel having an ink reservoir open at one end, of a pen point adapted to be projected through said open end or retracted into the reservoir, a spring for projecting said pen point, and means within the reservoir to lock the pen point in its projected position.

13. In a fountain pen, the combination with a barrel having an ink reservoir open at one end, of a pen point adapted to be projected through said open end or retracted into the reservoir, a spring for projecting said pen point, a stem or rod associated with the pen point and extending longitudinally of the barrel within the latter, and means cooperating with said stem to lock the pen point in its retracted position against the action of the spring.

14. In a fountain pen, the combination with a barrel having an ink reservoir open at one end, of a pen point adapted to be projected through said open end, or retracted into the reservoir, a spring for projecting said pen point, a stem or rod associated with the pen point and extending longitudinally of the barrel within the latter, and means cooperating with said stem to lock the pen point in its projected position.

15. In a fountain pen, the combination with a barrel having an ink reservoir open at one end, of a pen point adapted to be projected through said open end or retracted into the reservoir, means to move the pen point relative to the barrel, a stem or rod associated with the pen point and extending longitudinally of the barrel within the latter, and automatically-operative means cooperating with said stem to lock the pen point in its retracted position.

16. In a fountain pen, the combination with a barrel having an ink reservoir open at one end, of a pen point adapted to be projected through said open end or retracted into the reservoir, means to move the pen point relative to the barrel, a stem or rod associated with the pen point and extending longitudinally of the barrel within the latter, and automatically-operative means cooperating with said stem to lock the pen point in its projected position.

17. In a fountain pen, the combination with a barrel having an ink reservoir open at one end, of a pen point adapted to be projected through said open end or retracted into the reservoir, means to move the pen point relative to the barrel, a stem or rod associated with the pen point and situated within the barrel, said stem having a locking shoulder, and a locking member to cooperate with said shoulder to hold the pen point in its retracted position.

18. In a fountain pen, the combination with a barrel having an ink reservoir open at one end, of a pen point adapted to be projected through said open end or retracted into the reservoir, means to move the pen point relative to the barrel, a stem or rod associated with the pen point and situated within the barrel, said stem having a locking shoulder, and a locking member to cooperate with said shoulder to hold the pen point in its projected position.

19. In a fountain pen, the combination
with a barrel having an ink reservoir open
at one end, of a pen point adapted to be
projected through said open end or retracted
5 into the reservoir, means to move the pen
point relative to the barrel, a stem or rod
within the reservoir and connected to and
movable with the pen point, said stem hav-
ing a locking shoulder, and a resilient lock-
10 ing member to engage said shoulder and
lock the pen point in its retracted position,
the turning movement of the stem relative to
the locking member releasing the latter.

20. In a fountain pen, the combination
15 with a barrel having an ink reservoir open
at one end, of a pen point adapted to be

projected through said open end or retracted
into the reservoir, means to move the pen
point relative to the barrel, a stem or rod
within the reservoir and connected to and 20
movable with the pen point, said stem hav-
ing two opposed locking shoulders, and a
resilient locking member cooperating with
said shoulders to lock the pen point in either
its retracted or projected position. 25

In testimony whereof, I have signed my
name to this specification, in the presence of
two subscribing witnesses.

JOSEPH G. COFFIN.

Witnesses:

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