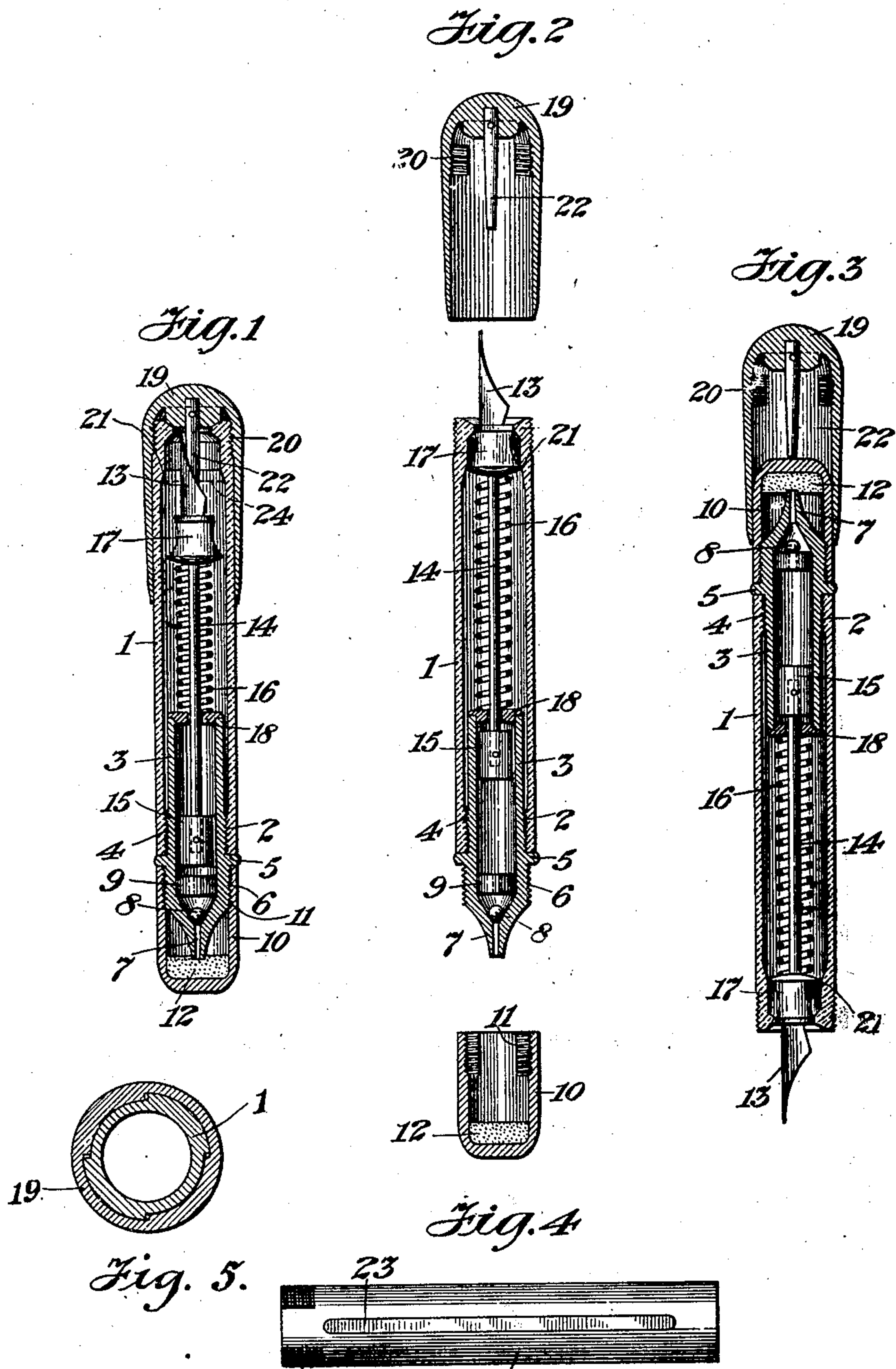


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PATENTED AUG. 18, 1908.

J. G. COFFIN.
FOUNTAIN PEN.

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Witnesses
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UNITED STATES PATENT OFFICE.

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FOUNTAIN-PEN.

No. 896,086

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOSEPH G. COFFIN, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Fountain-Pens, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates broadly to improvements in pen constructions, but, as it more particularly concerns certain adaptations therein whereby they may be employed with eminent advantages as so-called "self-filling" pens, it will be conducive to clearness to disclose an illustrative embodiment of the invention in such form.

Accordingly, this invention has in view, among other objects, the provision of a simple and effective construction which is adapted to be filled without the employment of extraneous appliances for the purpose.

Another object residing within the contemplation of this invention is to improve the construction of self-filling pens that, by the exercise of new functions, they may be made subject to easy manipulation to a greater degree than has heretofore obtained.

Another object of this invention is to produce a fountain pen in which the pen portion will normally be contained within the ink reservoir and thereby be preserved in a condition which is especially suitable for use in writing, and whereby such pen portion will be prevented from drying or the ink caking in the interstices thereof.

Another object is to devise a self-filling fountain pen which, from a mechanical standpoint, will in usage possess a high degree of effectiveness and which, structurally considered, will be of the greatest possible simplicity consonant with the ends attained thereby.

A broad object is to provide an efficient, durable, non-leaking fountain pen of simple and inexpensive construction.

Many other objects and advantages will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of parts and arrangements of elements which will be exemplified in the embodiment there-

of hereinafter set forth, and the scope of the application of which will be indicated in the appended claims.

In order that this invention may be more clearly understood and made comprehensible to others skilled in its relating arts, drawings illustrating such embodiment of the same are appended as a part of this specification, and while the controlling principles of the invention may be otherwise applied by modifications falling within the scope of the claims, the herein disclosed type is that which will ordinarily be preferable to employ in practice and which with respect to its purposes and application is regarded as a substantial improvement over the many implied and obvious variations of the same.

In the accompanying drawings, wherein are set forth one or more of the various possible embodiments of my invention, Figure 1 is a median section showing the arrangement of parts when the fountain pen is entirely closed for being carried in the pocket. Fig. 2 is a similar section showing the position of the various parts when the caps at both ends are removed preparatory to filling the device. Fig. 3 is a like section showing the pen cap removed and positioned upon the inlet closing cap, which is normally fixed in place upon the lower end of the reservoir to close the same against the outflow of ink. This view furthermore shows the pen portion in a protruded position and ready for writing. Fig. 4 is a side view of a barrel embodying a translucent panel through which the height of the ink therein may be observed. Fig. 5 is a sectional view showing the form of threads preferably employed in holding the caps in position.

In carrying out this invention, by means of the specific embodiment thereof here employed for illustrative purposes, a main barrel portion 1 having open ends is employed. At its lower end such barrel is interiorly screw-threaded, as indicated by 2, adapting it for engagement with a subsidiary cylinder 3 which to that end is exteriorly provided with screw-threads 4. This subsidiary cylinder carries an annular shoulder 5, which normally abuts with the main barrel, thereby locking the subsidiary cylinder tightly in place. By this arrangement, the subsidiary cylinder may be readily removed from the

main barrel so that access to the working parts may be conveniently had and the same may accordingly be easily cleaned or replaced. The lower end of the subsidiary chamber is also provided with threads at 6, and therebelow it reduces to a nozzle 7, the orifice of which is normally closed by a small ball valve 8 of rubber or other suitable material.

This valve is properly restrained so as to move within the desired limits, by means of a perforate collar 9 which is located thereover a sufficient distance to afford the necessary free movement of the ball valve. To guard against any possible leakage at this end, a closure cap 10 is detachably secured upon the nozzle by means of interiorly running threads 11 which engage with the aforesaid threads 6 on the subsidiary cylinder. The bottom of the cap may preferably be furnished with a cork or rubber disk 12, to effect a positive closure of nozzle 7 by contacting with the orifice thereof, as shown in Fig. 1.

It may here be noted that terms of the nature of "upper" and "lower" are used throughout this description and the following claims as referring to the portions of the pen which would ordinarily be indicated thereby in the normal position shown in Fig. 1 of the drawings.

The pen nib 13 is mounted upon a retractile rod 14, at the lower end of which is a piston 15 adapted to reciprocate within the aforesaid subsidiary cylinder. A helical spring 16 normally tends to protrude the pen through the end opening of the main barrel and, to accomplish this purpose, this spring abuts at its upper end a shoulder or enlargement 17 upon which the pen is mounted, and at its lower end such spring rests upon a restraining perforate cap 18. This enlargement 17 is preferably provided with an annular depression for a purpose hereinafter described.

When out of use, the parts comprising the fountain pen are in the position shown by Fig. 1, in which a nib protecting cap 19 is shown upon the upper end of the main barrel, being removably secured in place through the instrumentality of suitable screw threads 20 which are positioned at the inner end of the bore of the cap, the retaining portion of which is smooth. These screw threads are preferably of a fractional type and as shown comprise two threaded portions upon opposite sides of the member upon which they are positioned and extending something less than ninety degrees about the circumference thereof. It will readily be seen that by means of such construction the caps may be securely fixed in position with a single turn. It is to be noted in this connection that the end of the main barrel is provided with an integrally formed annular portion 21, which is tapering in cross-section on both the inner and outer surfaces. The outer surface is designed to be

brought into abutment with a corresponding surface afforded by the inner end of the protective cap 19 so as to effect a complete closure of the upper end when the pen is not in use. When such cap is so positioned, it will depress the pen and mountings therefor as shown in Fig. 1, this being the result of abutment with a stud 22 which is adapted to contact with the end of the pen as shown and retract the same into the barrel. Upon a removal of such protective cap, the pen will, through the elasticity of spring 16, at once rise and protrude until checked by the abutment of the head 17 with the annular shoulder 21, such abutment, however, entirely closing the pen against leakage. The outward movement of the pen is retarded by piston 15.

The mode of filling the device, while quite obvious, may be briefly explained. The end caps 19 and 10 will be removed, as shown in Fig. 2. The nozzle end 7 may now be inserted into a suitable supply of ink, and by means of the cap 19, the pen and parts affixed thereto will be reciprocated after the fashion of a pump. This will very quickly draw ink into the pen to the desired extent, as the valve 8, while permitting ink to flow into the cylinder, will not allow such ink to return.

It is to be understood of course that the piston 15, as well as the rod 14, upon which it is mounted, fit within the parts wherein they slide with a sufficient degree of looseness to permit the flow of the ink past the same and into the main reservoir upon the piston being forced downwardly into the ink imprisoned beneath the same in the filling of the pen. This looseness of fit, as will be obvious, does not interfere with the slight suction required to draw ink into the lower chamber, as there is no appreciable resistance to this flow, and the wet surfaces of the moving parts are sufficient to seal the joints to accomplish the object in view.

In order to easily ascertain the exact amount of ink within the pen, I prefer to employ a narrow panel 23 of some suitable transparent material such as celluloid or the like. In some instances it may be advisable to construct the entire pen of such transparent material, which may be given any desired surface ornamentation to give the same a more attractive appearance. The filling of the pen should stop as soon as the ink has reached a level such that the pen is either wholly or partially submerged when retracted and therefore it will be kept in excellent condition for writing, not drying up or caking as in the ordinary construction. It will also be observed in this connection that the body of the pen will displace sufficient ink so that no over-flow will take place when it is opened for use.

By reason of the annular depression within the enlargement 17, this part may be thrust

within the ink reservoir without a tendency of the ink to spurt out about the edges thereof, the displaced fluid merely flowing over the lower shoulder and into the recessed portion.

It will thus be seen from the foregoing that an embodiment has been formulated which is well adapted to attain the several ends and objects of this invention. The complete device is free from all undesirable projections and it is therefore well-suited for being conveniently carried without any liability of becoming disarranged through inadvertent pressures upon such projections. An advantage also follows, inasmuch as the labor of constructing this pen is reduced to a minimum, owing to the fact that the parts are all so formed as to be capable of being readily made in accordance with usual constructional operations and therefore no unusual skill or elaborate instructions with respect to the artisans is necessary, nor is expensive machinery required.

As many changes could be made in the above construction and many apparently widely different embodiments of my invention could be made without departing from the scope thereof, I intend that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

I desire it also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention, which, as a matter of language, might be said to fall therebetween.

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

1. In a fountain pen, a reservoir providing a pump cylinder having an inlet, a check valve for said inlet, a piston adapted to be reciprocated within said pump cylinder, and an expansile spring normally maintaining said piston in a predetermined position.

2. In a fountain pen, a reservoir providing a pump cylinder having a suitable inlet, a detachable cap adapted to close said inlet, a check valve for said inlet, and a piston adapted to be reciprocated within said pump cylinder to fill the reservoir with ink through said inlet when said cap is detached.

3. In a fountain pen, an ink reservoir providing a pump cylinder having an inlet, a cap adapted to be attached to said reservoir to close said inlet, a check valve for said inlet, a piston adapted to be reciprocated within said pump cylinder, and an expansile spring normally maintaining said piston in a predetermined position.

4. In a fountain pen, a reservoir, a pen reciprocating therein and normally protruding

through an end opening in said reservoir, a spring tending to maintain said pen in said position whereby a closure of said end opening will be effected, and a detachable cap having interrupted threads adapted to interfit with complementary threads positioned on said reservoir and having an interiorly protruding rod adapted to abut with and retract said pen and simultaneously effect a closure of said opening.

5. In a fountain pen, a reservoir providing a pump cylinder having a suitable inlet, a detachable cap providing a sealing pad adapted to close the end of said inlet, a check valve for said inlet, and a piston adapted to be reciprocated within said pump cylinder to fill the same with ink through said inlet when said cap is detached.

6. In a fountain pen, a reservoir providing a pump cylinder having an inlet, a detachable cap having a sealing pad adapted to close the end of said inlet, a piston mounted to reciprocate within said pump cylinder and a spring normally maintaining said piston in a predetermined position.

7. In a fountain pen, an ink reservoir providing a pump cylinder having an inlet, a cap adapted to be attached to said reservoir and having a sealing pad to close said inlet, a check valve for said inlet, a piston adapted to be reciprocated within said pump cylinder near said inlet, and an expansile spring normally maintaining said piston in a predetermined position.

8. In a fountain pen, a reservoir providing a pump cylinder having a suitable inlet, a check valve for said inlet, a piston adapted to be reciprocated within said pump cylinder to fill the reservoir with ink through said inlet, and a pen carried by said piston and normally protruding through an opening in said reservoir.

9. In a fountain pen, a reservoir providing a pump cylinder having an inlet, a piston mounted to reciprocate within said pump cylinder to fill the reservoir, a pen carried by said piston and adapted to protrude through an opening in said reservoir, and a spring normally maintaining said piston in said protruded position.

10. In a fountain pen, an ink reservoir providing a pump cylinder having an opening at one end, a piston mounted to reciprocate within said pump cylinder to fill the reservoir through an inlet at its other end, a pen carried by said piston and normally protruding through said opening and adapted to thereby effect a closure thereof, and an expansile means urging said pen into such position.

11. In a fountain pen, a reservoir having at opposite ends an opening and an inlet respectively and providing a pump cylinder, a piston mounted to reciprocate within said pump cylinder to fill the reservoir, a pen fixed to said piston and adapted to protrude

through said opening, a spring normally urging said pen into such position, and a detachable cap adapted to be positioned on said reservoir to retract said pen therewithin and simultaneously effect a closure of said openings.

12. In a fountain pen, a reservoir having at opposite ends an opening and an inlet and providing a pump cylinder, a piston adapted to reciprocate within said pump cylinder to fill the reservoir through said inlet, a pen movable with said piston and adapted to protrude through said opening, a spring normally urging said pen into said position to effect a closure of said opening, and a detachable cap adapted to be affixed to said reservoir and having an extension adapted to abut with and retract said protruding pen into said reservoir.

13. In a fountain pen, a reservoir having at opposite ends an opening and an inlet and providing a pump cylinder, a check valve for preventing return flow through said inlet, a piston adapted to reciprocate within said pump cylinder to fill the reservoir through said inlet, a pen movable with said piston and adapted to protrude through said opening, a spring normally urging said pen into said position to effect a closure of said opening, and a detachable cap adapted to be positioned on said reservoir and having an interiorly protruding rod adapted to abut with and retract said pen into said reservoir and

simultaneously effect a closure of said opening.

14. In a fountain pen, a reservoir, relatively movable pen-carrying means adapted to project from said reservoir into operative position and to be forced within said reservoir, and means adapted to retard the movement of said pen-carrying means.

15. In a fountain pen, a reservoir, relatively movable pen-carrying means adapted to project from said reservoir into operative position and to be forced within said reservoir, a spring tending to force said pen-carrying means outwardly with respect to said reservoir, and means adapted to retard the movement of said pen-carrying means.

16. In a fountain pen, a reservoir, relatively movable pen-carrying means adapted to project from said reservoir into operative position and to be forced within said reservoir, a spring tending to force said pen-carrying means outwardly with respect to said reservoir, and means adapted to retard the movement of said pen-carrying means, said pen-carrying means being adapted in operative position to seal said reservoir.

In testimony whereof I affix my signature, in the presence of two witnesses.

JOSEPH G. COFFIN.

Witnesses:

FREDK. J. BARNARD,
EDWARD B. GLASGOW.