

(No Model.)

J. W. LAUGHLIN.  
FOUNTAIN PEN.

No. 559,034.

Patented Apr. 28, 1896.

FIG. 2.

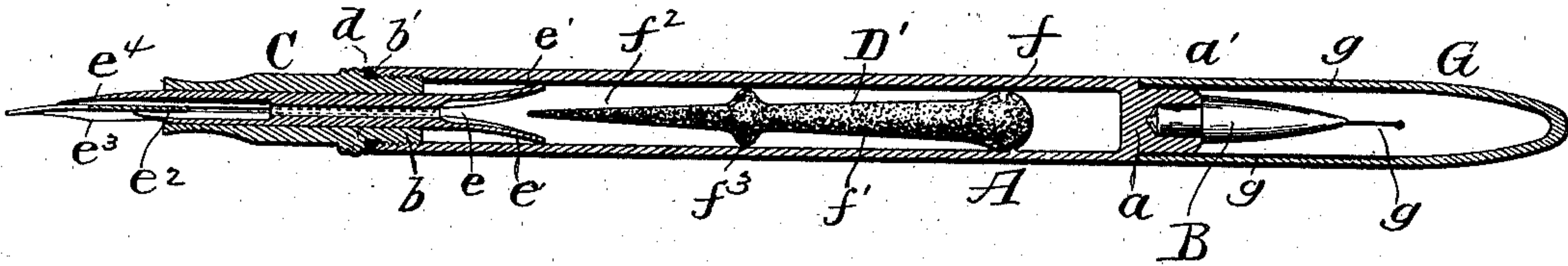


FIG. 1.

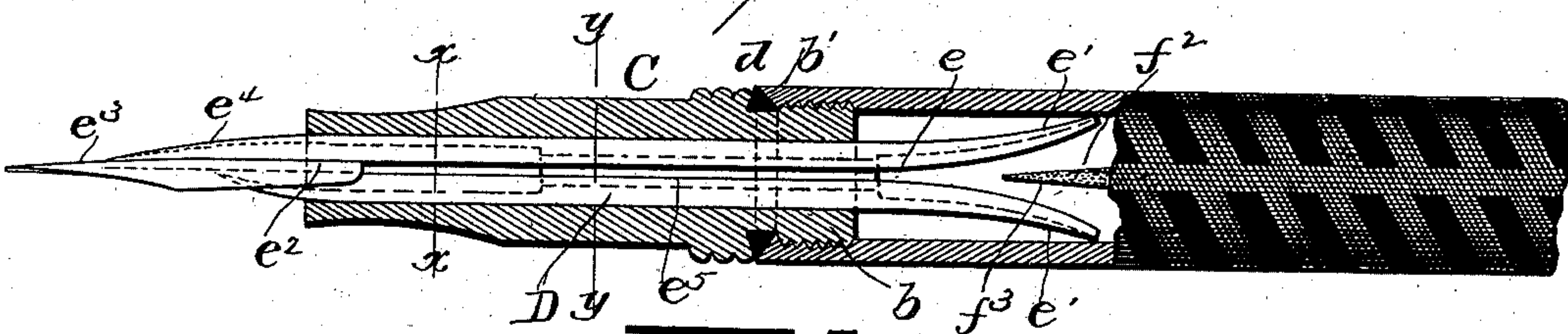


FIG. 6.

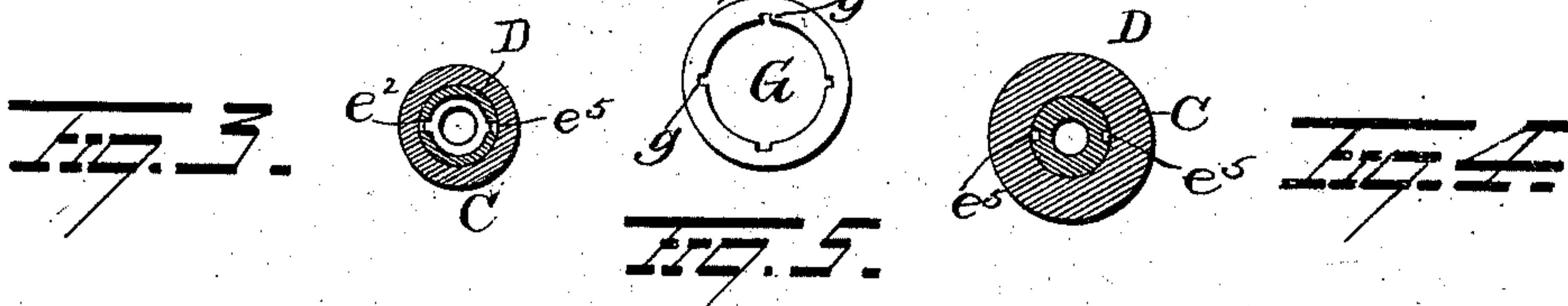
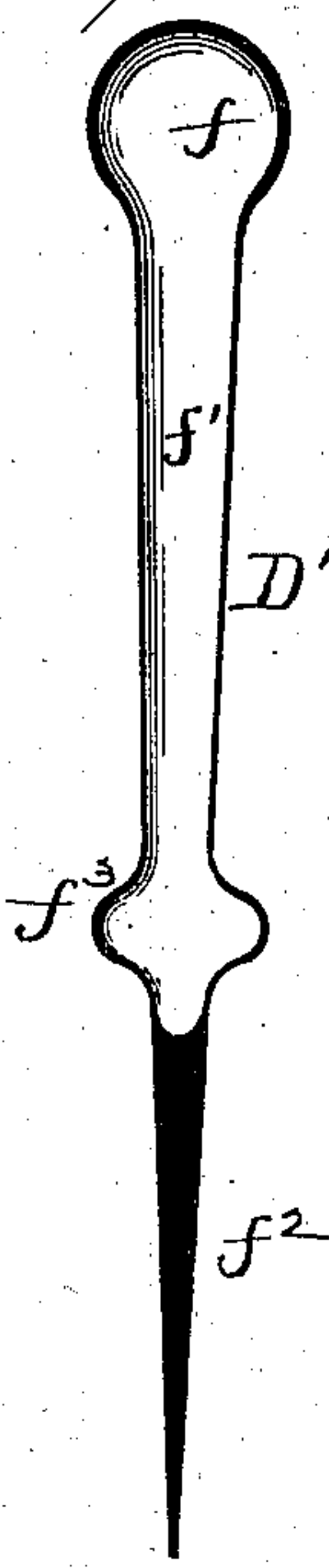


FIG. 5.



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# UNITED STATES PATENT OFFICE.

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## FOUNTAIN-PEN.

SPECIFICATION forming part of Letters Patent No. 559,034, dated April 28, 1896.

Application filed May 1, 1894. Serial No. 509,690. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES WILLIAM LAUGHLIN, a citizen of the United States, residing at New Haven, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Fountain-Pens; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in fountain-pens.

In fountain-pens as heretofore constructed, so far as I am aware, great inconvenience has occurred on account of inadequate feeding appliances. When the barrel or fountain of such prior devices has been filled with ink to within an inch or so of its capacity, it will operate fairly well until about one-third of the ink has been allowed to pass from the fountain. Then the ink begins to flow too freely on account of the vacuum behind it becoming filled with air and the absence of adequate feed mechanism to keep the flow even as long as any ink remains in the barrel or fountain. Another defect in fountain-pens as heretofore constructed is that the point-section is liable to become so tightly connected with the barrel or fountain that it cannot be detached when necessary to fill the barrel without serious injury to some part of the device; and, again, much annoyance has been occasioned owing to the "sticking" of the "cap," and in many cases the cap has been broken in the effort of the user to remove it.

It is the object of this invention to overcome the defects in fountain-pens as heretofore made and to construct a fountain in such manner as to insure a proper and accurate feeding of ink to the pen-point as long as any ink remains in the barrel or fountain, to prevent "flooding" of the pen, and to construct the cap and "point-section" in such manner as to permit their ready removal without injury to any part of the device and so that when they are in position on the barrel leakage of ink will be avoided.

A further object is to combine in a single device a pen and a stylus.

A further object is to produce a fountain-pen which shall be simple in construction,

not liable to get out of order, easy to manipulate, and which shall be effectual in all respects in the performance of its functions.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is an enlarged view, partly in section. Fig. 2 is a sectional view. Fig. 3 is a section on line *xx* of Fig. 1. Fig. 4 is a section on line *yy* of Fig. 1. Fig. 5 is an enlarged detached view of feed-section D'. Fig. 6 is an enlarged end view of cap G.

A represents the barrel or fountain of the pen, having one end closed by a head *a*, and said head is made with a socket *a'* for the reception of the shank of a stylus B. The interior of the barrel at the opposite end thereof is screw-threaded for the reception of the screw-threaded shank *b* of the point-section C.

The barrel A, at the end thereof into which the shank of the point-section enters, is beveled inwardly to produce a seat *b'* for a soft-rubber ring *d*, carried by the point-section C. This soft-rubber ring is inserted into a dovetail groove at the base of the shank *b* of said point-section and serves, when the parts are assembled, to prevent the point-section from sticking to the barrel and to prevent the leakage of ink between said parts. By thus connecting the point-section with the barrel the former may be readily removed when it is necessary to fill the latter with ink without any danger whatever of breaking either of said parts.

The feed mechanism of my improved pen comprises two parts—viz., an upper and a lower feed device or section—which, as will be hereinafter more fully explained, act in conjunction with each other to produce the proper feeding of the ink to the pen-point and to so regulate the feed that it will be uniform whether the barrel contains much or little ink.

The lower feed-section D is composed of a tube having its upper or butt end slotted, as at *e*, and made with flaring fingers *e'*, the inner faces of which are preferably made concave, the lower or forward end of said tube being made with a slot or slit *e<sup>2</sup>* for the recep-



tion of the pen-point  $e^3$  and with a finger  $e^4$ , which projects over the top or back of the pen-point, the free end of said finger being reduced somewhat in size and at its extremity reduced to a very thin or sharp edge. In diametrically-opposite sides of the feed-section D grooves  $e^5$  are made, one end of each groove communicating with the slot  $e$  and the other end with the slot  $e^2$ . These grooves  $e^5$  on the exterior of section D are of sufficient length so that they communicate at both their ends with the bore of the section, and as a result while ink is flowing through the bore air finds a passage through the grooves. While the grooves  $e^5$  are primarily for air, it is possible that on occasions some ink might find its way through them; but, as stated, the main supply of ink is intended to flow through the bore, and it is only when this is closed that the grooves conduct any ink to the pen.

The upper feed-section D' is preferably made in a single piece of hard rubber, the upper end constituting a hollow float  $f$ , from which an integral conical stem  $f'$  projects, said stem being made hollow throughout a portion of its length and having its lower end  $f^2$  made solid (to give it the necessary weight) and adapted to enter the upper end of the feed-section D, such entrance being insured by an enlargement  $f^3$ .

From this construction and arrangement of parts it will be seen that when the barrel is full of ink the upper section D' of the feed mechanism will be supported by the ink away from and out of contact with the lower feed-section D. As the quantity of ink in the barrel diminishes the pointed or conical end of the upper feed-section D' approaches the lower feed-section D and enters said lower feed-section, being guided therein by the flaring fingers  $e'$ . As the ink escapes from the barrel (during the use of the pen) the pointed end of the upper feed-section will move gradually into the upper end of the lower feed-section, thus gradually restricting the flow of ink through the latter as the pressure of air behind the ink in the barrel increases, and when nearly all of the ink has passed out of the barrel the upper feed-section D' will have moved into the lower feed-section D to completely close it and prevent any ink from passing through it. When this occurs, the ink remaining in the barrel will find its exit through the grooves  $e^5$ , and the pressure of the air within the barrel at this time will be amply sufficient to cause the ink to flow through these grooves in sufficient quantity and with necessary rapidity to insure a proper feeding of ink to the pen-point.

It will be observed that when the pen is placed in the pocket of the user, with the pen-point up, the pointed end of the float or upper feed-section D' will enter and close the exit through the lower feed-section D, thus preventing the pen from flooding. The same remarks apply when the stylus is being used, as at that time the point of the pen is up the

same as when the pen is placed in the pocket of the user.

As previously stated, much inconvenience and annoyance have been occasioned by the cap (which protects the point of the pen when not in use) sticking, it often being necessary to place the device in a vise before the cap can be removed. In order to overcome this defect and to permit the cap to be readily removable, I provide the inner wall of the cap G with grooves  $g$  for the admission and escape of air, thus precluding the possibility of the cap sticking and allowing it to be placed on and taken off with perfect freedom.

My improvements are very simple in construction, easy to manipulate, and effectual in every respect in the performance of their functions.

Various slight changes might be made in the details of construction of my invention without departing from the spirit thereof or limiting its scope, and hence I do not wish to limit myself to the precise details of construction herein set forth; but,

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, and point-section, of feed mechanism comprising two parts, namely, one a tube held in the point-section with an open bore and a flaring mouth, and the other a movable section constructed to float on the ink and enter the mouth of the tube when the ink shall have been sufficiently exhausted to permit it to drop to this point, substantially as set forth.

2. In a fountain-pen, the combination with a barrel, and a point-section, of feed mechanism comprising two parts, one a tube held in the point-section and projecting beyond the latter at both ends, and the other a float adapted to descend with the ink and close the tube, substantially as set forth.

3. In a fountain-pen, the combination with a barrel, and a point-section, of a tube held in the point-section, said tube having a longitudinally-grooved exterior, and a float located within the barrel and arranged to close the inner end of the tube when the height of the ink within the barrel will admit of it, substantially as set forth.

4. In a fountain-pen, the combination with a barrel and a point-section, of a tube adapted to receive a pen-point and to project through the point-section and into the barrel, said tube having grooves in its outer wall, and a float in the barrel having a pointed or conical end adapted to enter and close the end of the tube which projects into the barrel, substantially as set forth.

5. In a fountain-pen, the combination with a barrel and a point-section, of a tube having grooves in its outer wall or face, projecting through said point-section and into the barrel, said tube being split to receive a pen-point and provided with a finger to project over the back of said pen-point, and a float within the



barrel adapted to close the end of the tube which projects into the barrel when the ink in said barrel shall have become nearly exhausted, substantially as set forth.

5 6. In a fountain-pen, the combination with a barrel and a point-section, of a tube projecting through said point-section and into the barrel and having grooves in its outer face, one end of said tube being adapted to receive  
10 a pen-point and the other end being split and made with flaring fingers having concave inner faces, and a device within the barrel adapted to automatically enter the tube and close the passage of ink through it, substantially  
15 as and for the purposes set forth.

20 7. In a fountain-pen, the combination with a barrel and a point-section, of a feed mechanism comprising two sections, one section being adapted to receive and hold a pen-point and having grooves in its outer face, and the other section being movable and constructed

and adapted to automatically and gradually close the exit of ink as the ink diminishes in the barrel through the first-mentioned section, substantially as set forth.

25 8. In a fountain-pen, the combination with a barrel and a point-section, of a feed mechanism made in two sections, one of said sections being adapted to hold a pen-point and convey ink thereto from the barrel and the other section  
30 being made in the form of a float and provided with a conical shank adapted to enter the first-mentioned section and having an enlargement between its ends, substantially as set forth.

35 In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JAMES WILLIAM LAUGHLIN.

Witnesses:

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WILL D. GORRELL.