

No. 770,612.

PATENTED SEPT. 20, 1904.

A. J. & J. E. SCRITCHFIELD.

FOUNTAIN PEN.

APPLICATION FILED JUNE 16, 1904.

NO MODEL.

*Fig. I.*

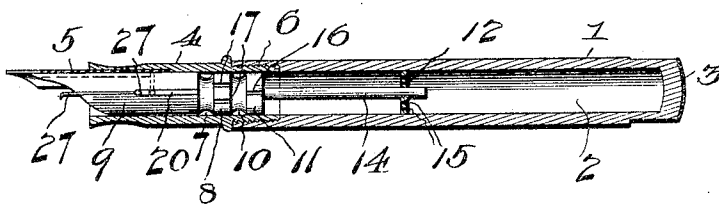


*Fig. II.*

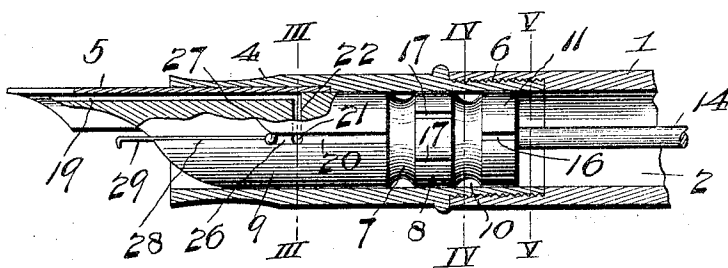


*Fig. III.*

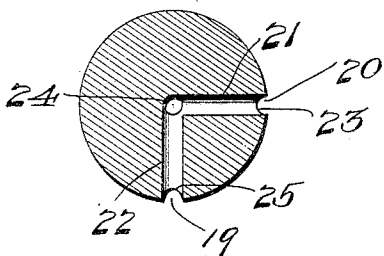


*Fig. IV.*

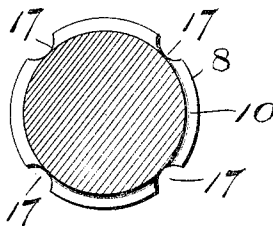
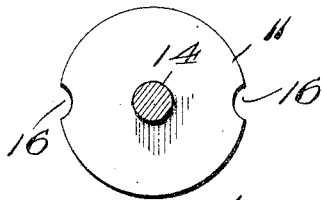


*Fig. V.*



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# UNITED STATES PATENT OFFICE.

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## FOUNTAIN-PEN.

SPECIFICATION forming part of Letters Patent No. 770,612, dated September 20, 1904.

Application filed June 16, 1904. Serial No. 212,871. (No model.)

*To all whom it may concern:*

Be it known that we, AMOS JACKSON SCRITCHFIELD and JULIA ELLA SCRITCHFIELD, of Janesville, in the county of Rock, State of Wisconsin, have invented certain new and useful Improvements in Fountain-Pens, of which the following is a complete specification, reference being had to the accompanying drawings.

The object of our invention is to produce such improvements in fountain-pens as shall have the effect of promoting the flow of ink therefrom in use, but without waste or excess; of keeping the ink clean and free of sediment at its point of contact with the pen proper; of preventing the formation of bubbles, whose tendency is to interrupt the flow of ink to the pen-point in use, and to positively shut off communication between the barrel of the pen and its point whenever desired.

What constitutes our invention will hereinafter more fully and at large appear, and be succinctly set forth in the appended claims.

In the accompanying drawings, Figure I is a diametrical longitudinal section, partially in elevation, of one form of embodiment of our invention. Fig. II is a similar view of the lower end of our pen, shown on a magnified scale, the feed-plug being partially in elevation and partially in section. Fig. III is an inverted transverse section as on line III III of Fig. II. Fig. IV is a similar section on line IV IV of Fig. II, and Fig. V is a section on the line V V of Fig. II.

Referring to the numerals on the drawings, 1 indicates the barrel of our pen, which may be of any ordinary or preferred shape, dimensions, or material and which is provided with a suitable bore 2 to hold a supply of ink. One end of the barrel 1 is closed, preferably, by an integral cap 3 and the other end, preferably, by a detachable foot-piece 4, which carrying a pen-point 5 is made permeable under certain limitations to flow of ink from the bore 2 of the barrel to said pen-point 5. To afford convenient means of uniting and detaching the barrel and its foot-piece, they are preferably provided with complemental threaded

members, (designated by the numeral 6 in Figs. I and II.)

As the means of imposing requisite limitations upon the flow of ink from the bore of the barrel to the pen-point, so that it may be free without excess, we prefer to employ a plurality of communicating compartments, which are preferably annular in form and whose means of communication one with another are preferably varied. Now it is obvious that the dimensions of any member, which may be properly designated a "foot-piece," as has been the part 4, are of necessity narrowly restricted and that in order to obtain space for the accommodation in a pen of more than one or two compartments aforesaid, in conjunction with a foot-piece, recourse must be had to the barrel or corresponding member connected with the said foot-piece; but in order at the same time to provide conveniently feasible and simple means for cleaning the compartment that is within the barrel we prefer to combine all but one of the walls of said compartment with the foot-piece, thereby accomplishing the end in view without in any wise modifying the simple tubular form of the barrel.

Proceeding accordingly upon the foregoing general observation with the specifications of details, 7 indicates the lowermost of the compartments aforesaid, of which, for example, three are illustrated. The intermediate compartment is separated from the compartment 7 by an annulus 8 upon the feed-plug 9 and is designated by the numeral 10. The uppermost compartment being located chiefly within the barrel 1, which constitutes the outer wall of it, is otherwise defined by an annulus 11, which separates it, on the one hand, from the compartment 10, and by a disk 12, which separates it, on the other hand, from the remainder of the bore 2 of the barrel. The said disk is assembled with and carried by the plug 9, as upon a stem 14, attenuated so as to occupy little space within the bore of the barrel. It may be added by way of description that we find that in the employment of a plurality of compartments there is an advantage

derived in the employment of one of comparatively smaller size nearer the point of discharge of the feed or outflow of the ink.

Means of communication between the several compartments in order to promote the proper flow of ink without excess or interruption, as by formation of bubbles, are, as has been specified, preferably varied. For instance, we prefer to provide a number of minute perforations 15 in the disk 12, by which the disk is constituted a strainer as well as a permeable partition-wall. The longitudinal extent of the uppermost compartment as determined by the distance between the annulus 11 and the disk 12 is preferably such as to render it feasible to employ an indeterminate number of perforations 15, provided only that they are such in point of size and distribution as to qualify the disk 12 for the discharge of its functions as a strainer. The annuli 8 and 11, on the other hand, being separated only by the narrow compartment 10, are therefore penetrated by means of communication that are preferably disalined and consist, for example, of two ducts 16 through the annulus 11 and four ducts 17 through the annulus 8.

The tip of the plug 9 is provided with a suitable means of ink-supply to the pen-point 5—such, for example, as the usual gutter 19, of which the pen-point itself constitutes a fore-wall or cover. The means of operative communication between the lowermost compartment 7 and the gutter 19 is preferably a flexuous duct, consisting, preferentially, of three distinct sections 20, 21, and 22, united in consecutive order by two intermediate abrupt turns or angles 23 and 24, respectively. The conjunction of the duct-section 22 with the gutter 19 adds, in effect, a third angle 25 to the flexuosity of the duct aforesaid.

In addition to the various means above specified for controlling in use the flow of ink from its reservoir within the barrel 1 to its final discharge from the point of the pen we prefer also to employ means of positively interrupting said flow to prevent possibility of accidental discharge or leakage of ink, as when the pen is carried in the pocket. We prefer to employ for that purpose a valve and to locate it for the facilitation of its function in proximity to one of the angles of the aforesaid sinuous feed-duct. The angle 23 affords a convenient point for the location of the valve-seat 26, (see Fig. II,) that is adapted to accommodate a valve 27, which is movable to and from its seat within a track 28 by aid of a stem 29. The track 28, valve-seat 26, and groove within which the stem 29 works being all formed in the periphery of the plug 9, it is a simple matter to assemble the parts by laying the valve and its stem in position and afterward slipping about them and the plug the foot-piece 4 as a case or wrapper.

The operation of our device may be briefly

described, as follows: In practice the barrel 1 is unscrewed from the foot-piece 4 and the parts separated, the stem 14 carrying with it the perforated disk 15, and thereby exposing said disk and its stem to facilitate the cleansing of them, if necessary. The disk 15 fits snugly within the bore of the barrel 1, and with each insertion of it into the barrel tends to force back any sediment which the ink may contain into the top of the bore above said disk 15, which is, as has been specified, a strainer. The presence of the perforated disk 15 divides the bore of the barrel into two chambers, from the lower one of which, which is the uppermost feed-compartment of the pen, the feed-supply of the pen is drawn. The ink of said feed-supply passing through the ducts 16 enters the annular compartment 10, whence by the ducts 17 it proceeds into the annular compartment 7. Thence by the single vertical duct 20 it descends toward the duct 21, into which the current is deflected. At the angle 24 the current is again deflected into the duct-section 22 and at the angle 25 is finally deflected into the gutter 19. The arrangement of ducts and compartments serves to admit the necessary supply of air to the bore of the barrel, while the flexuosity of the composite passage made up of the aforesaid ducts and compartments effectually restrains the flow—so far as to prevent excessive discharge or leakage. The positive shut-off for the flow, to wit, the valve-seat 26 with its valve 27—is located at one of the abrupt bends of the duct, which tends to assist the function of the valve in the deflection of flow which is imposed at the point of location of the valve and valve-seat.

What we claim is—

1. In a fountain-pen, the combination with its barrel and detachable foot-piece provided with a pen-point and feed-plug, of a compartment within the barrel, all of whose walls but one are combined with the foot-piece.

2. In a fountain-pen, the combination with its barrel, detachable foot-piece, and feed-plug, of a stem upon the plug, a perforated disk secured to the stem, and fitting within the bore of the barrel, which it divides into chambers.

3. In a fountain-pen, the combination with its barrel and foot-piece, of a feed-plug provided with a plurality of communicating annular compartments of different sizes, of which a smaller is located near the point of discharge of the feed.

4. In a fountain-pen, the combination with a feed-plug, pen-point, and incasing member, of a plurality of communicating annular compartments in the feed-plug, and a flexuous means of communication between said compartments and the pen-point.

5. In a fountain-pen, the combination with a feed-plug, pen-point, and incasing member, of a plurality of communicating compartments in the feed-plug, and a flexuous means of com-

munication between said compartments and the pen-point, said means of communication between said compartments increasing in number from the uppermost to the lowermost compartment.

5 6. In a fountain-pen, the combination with its feed-plug, pen-point, and incasing member, of a feed-duct in the plug, and a valve adapted to positively open and close said duct, said  
10 valve being located in the side of the plug, between it and the incasing member.

7. The combination with a barrel, foot-piece, pen-point, and feed-plug provided with a flexuous duct in its lower part, and with  
15 a lowermost compartment communicating therewith, of an annulus in said plug defining said compartment, a second compartment, and a second annulus, and ducts in said annuli respectively, affording means of communication between the respective compartments and the bore of the barrel.  
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8. The combination with a barrel, foot-piece, pen-point, and feed-plug provided with a flexuous duct in its lower part, and with  
25 a lowermost compartment communicating therewith, of an annulus in said plug defin-

ing said compartment, a second compartment, and a second annulus, and ducts in said annuli respectively, affording means of communication between the respective compartments and the bore of the barrel, the ducts in the several annuli being disalined. 30

9. The combination with a barrel, foot-piece, pen-point, and feed-plug provided with a flexuous duct in its lower part, and with  
35 a lowermost compartment communicating therewith, of an annulus in said plug defining said compartment, a second compartment, and a second annulus, and ducts in said annuli respectively, affording means of communication between the respective compartments and the bore of the barrel, the number of ducts in the lower annulus being greater than in the upper annulus. 40

In testimony of all which we have hereunto  
45 subscribed our names.

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Witnesses:

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