

No. 651,735.

Patented June 12, 1900.

P. E. WIRT.
FOUNTAIN PEN.

(Application filed Oct. 19, 1899.)

(No Model.)

Fig. 1.

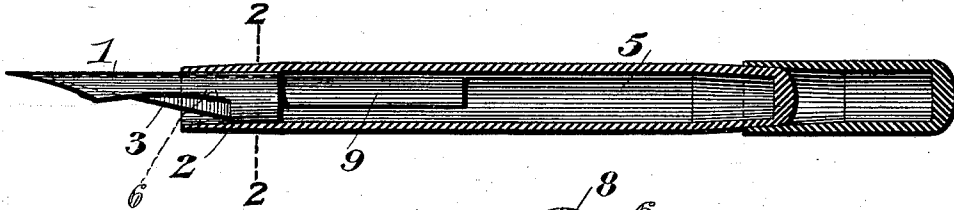


Fig. 2.

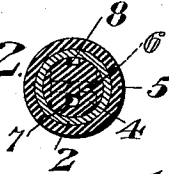


Fig. 3.

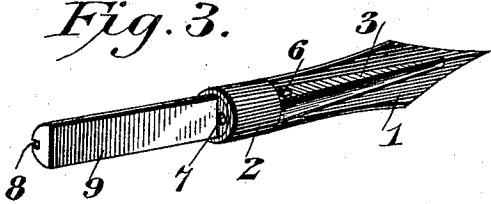


Fig. 4.

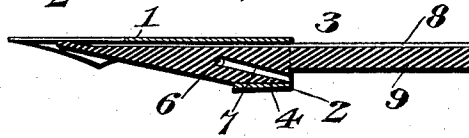


Fig. 5.

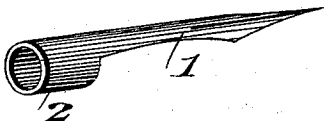


Fig. 6.

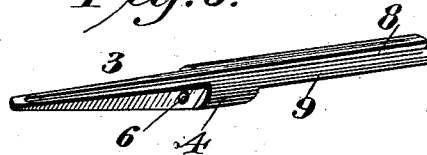


Fig. 7.

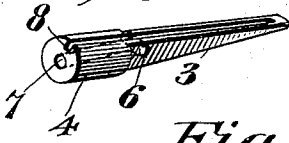


Fig. 8.

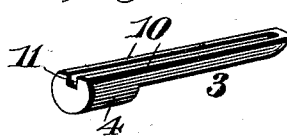


Fig. 9.

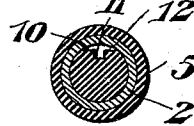


Fig. 10.



Fig. 11.

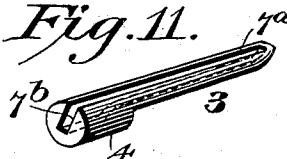
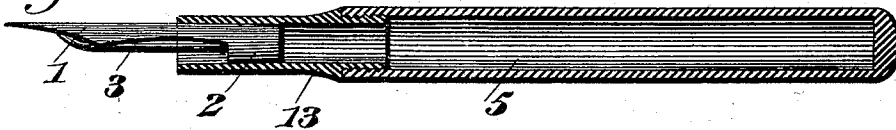


Fig. 12.



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UNITED STATES PATENT OFFICE.

PAUL E. WIRT, OF BLOOMSBURG, PENNSYLVANIA.

FOUNTAIN-PEN.

SPECIFICATION forming part of Letters Patent No. 651,735, dated June 12, 1900.

Application filed October 19, 1899. Serial No. 734,098. (No model.)

To all whom it may concern:

Be it known that I, PAUL E. WIRT, a citizen of the United States, residing at Bloomsburg, in the county of Columbia and State of Pennsylvania, have invented a new and useful Fountain-Pen, of which the following is a specification.

This invention relates to fountain-pens of the type which feed the ink, principally by capillary attraction, to the pen from a reservoir, and has special reference to the construction of the pen or pen-point, whereby the latter may be associated with a suitable feeder to constitute an attachment to an ordinary reservoir holder or barrel, such as is ordinarily used in fountain-pen structures, to form both the holder proper for the pen and a reservoir for the supply of ink.

To this end the main and primary object of the present invention is to provide a novel construction of pen having the usual point or nib formation, but so constructed in rear of its point or nib as to provide a complete and efficient holder for the ink-feeder associated therewith without the use of a separate holder, plug, sleeve, section, or other auxiliary device such as is resorted to in different types of fountain-pens for sustaining the feeder in proper relation both to the reservoir-holder and the pen.

A further object of the invention is to so construct the pen that the same will carry the feeder and will therefore constitute in effect a plug attachment comprising the pen and the feeder which may be readily fitted into and removed from the open end of the reservoir-holder, thereby greatly facilitating the handling of the instrument and the filling of the reservoir-holder, as well as the convenient removal, interchanging, and replacement of the pen or pen-point itself.

Another object of the invention is to provide the pen proper with suitable means for holding any efficient type of ink-feeder operating by capillary attraction, so that such feeder will always be held securely and accurately adjusted, while at the same time capable of ready removal with the pen to facilitate the refilling of the reservoir-holder with a minimum soiling of the fingers.

It is also the purpose of the invention to construct the pen proper in such a manner

that it will not only provide an efficient clasp or holder for the ink-feeder, but also to provide a reinforced construction whereby the pen will be much stronger than those ordinarily used and less liable to be strained out of position; and another object which is important to pen manufacturers is to provide a novel construction of pen which will afford a much greater opportunity to better proportion the shape of the reservoir-holder at the open end thereof, whereby different-sized pens may be used to the best possible advantage, while at the same time admitting of a neater construction of holder or case at the open end thereof than has heretofore been possible.

With these and many other objects in view, which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

The essential features of the invention involved in the construction of the pen proper or pen-point and the preferred form of ink-feeder associated therewith are necessarily susceptible to a wide range of modification without departing from the spirit or scope of the invention; but the preferred embodiment of the improvements is shown in the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view, partly in elevation, of a complete fountain-pen fitted with a pen attachment constructed in accordance with the present invention. Fig. 2 is a detail cross-sectional view on the line 2 2 of Fig. 1. Fig. 3 is a detail in perspective of the attachment consisting of a pen and feeder removed from the reservoir-holder. Fig. 4 is a detail view in section of a pen and the preferred form of feeder fitted together, showing more plainly the relative disposition of the main air-passage and the lateral vent or port in communication therewith. Fig. 5 is a detail in perspective of a pen or pen-point embodying the improvement contemplated by the invention. Fig. 6 is a detail in perspective of the preferred form of ink-feeder which is preferably combined with the pen. Fig. 7 is a similar view showing a modification of the preferred form of ink-feeder in which the

rear stem extension is omitted. Fig. 8 is a detail in perspective of another form of ink-feeder which may be used with the specially-constructed pen. Fig. 9 is a detail cross-sectional view similar to Fig. 2, showing the capillary fissures or passages formed by the flat capillary surface of the form of feeder shown in Fig. 8 of the drawings. Figs. 10 and 11 are details in perspective showing slight modifications which may be resorted to in using the type of feeder shown in Fig. 8. Fig. 12 is a sectional view showing an adaptation of the attachment to a reservoir-holder having a detachable screw-nozzle.

Like numerals of reference designate corresponding parts in the several figures of the drawings.

In carrying out the invention no change is made in the formation of the point proper or nib of the pen, as this part of the pen performs its function in the usual way, in connection with the feeder that may be associated therewith; but referring particularly to detail Fig. 5 of the drawings it will be observed that the pen, designated by the reference-numeral 1 and sometimes commonly called the "pen-point," is provided at its rear or heel end with a tubular portion 2, which constitutes a feeder-clasp designed to positively engage with a suitable ink-feeder to provide for retaining the latter in a proper working position entirely independent of any other means, as will be hereinafter more fully explained.

The shank of the pen 1 in rear of its point or nib has the usual taper or wedge shape, and the feeder-clasp 2 at the extreme rear or heel end of the tapering or wedge-shaped shank is preferably in the form of a cylindrical ferrule, ring, or band, and in the practical construction of the pen the said feeder-clasp preferably is an integral part thereof. Usually the pen or pen-point for fountain-pens is made of gold; but other non-corrosive metal or material may be utilized in the construction thereof, and in carrying out the present invention the feeder-clasp 2 is of the same material as the writing-point of the pen, and although, as previously stated, the said feeder-clasp preferably constitutes an integral part of the pen, yet the said clasp or holder for the feeder may be formed separately and soldered or otherwise connected with the shank or body of the pen by a permanent non-detachable joint. In either case the feeder-clasp will be a permanent and non-detachable part of the pen, so as to provide for positively holding the ink-feeder in place.

Although various forms of ink-feeders may be associated with the construction of pen above described, still the preferable forms essentially consist of an elongated bar 3, constructed of the usual material, preferably hard rubber, and provided with a laterally offset cylindrical plug portion 4, which is of a size commensurate with the tubular feeder-clasp 2 of the pen 1 and is designed to regis-

ter and be held within the said clasp, as plainly shown in detail Figs. 3 and 4 of the drawings. When fitted to the pen or pen-point, as shown in Fig. 3, the substantially-straight or main portion of the feeder-bar 3 extends in front of the clasp 2 to a point at one side of the nib of the pen, so as to serve its function of conducting the ink to the said point or nib. It will thus be seen that when the feeder is fitted to the pen these two parts constitute a complete plug attachment which may be readily inserted or slipped into the open end of the reservoir-holder 5. This reservoir-holder is of the usual construction, simply consisting of a hollow barrel or tube closed at one end and open at its other end to receive the pen and the parts usually combined therewith. In this connection it will also be observed that in carrying out the present invention only the simplest form of reservoir or reservoir-holder is required, inasmuch as the pen carrying its feeder is simply slipped into the open end of the reservoir-holder and wedges itself sufficiently tight therein for all practical purposes.

By reason of the tapering or wedge shape of the shank of the pen proper it will be observed that the same is prevented from passing too far within the reservoir-holder to be properly held, while at the same time insuring a sufficiently-snug fit to provide for preventing the displacement of the pen under normal conditions and also insuring the retention of the feeder within the clasp and body portion of the pen. In short the rear or heel end of the pen carrying the feeder has a slip-joint connection with the reservoir-holder, which permits of the pen, with its feeder, being readily lifted or withdrawn from the reservoir-holder with the fingers whenever it is necessary to refill the reservoir-holder or to remove, interchange, or replace the pen. The slight taper or wedge shape of the rear portion of the pen-shank also insures a snug fit of the cylindrical plug portion of the feeder within the feeder-clasp 2 of the pen.

All fountain-pens feeding ink by capillary attraction must necessarily have openings large enough about the pen and feeder at a suitable point to admit of the entrance of air to supply the partial vacuum created by the discharge of the ink. In other words, the whole line of effective capillary fountain-pens must involve in their construction openings or fissures of such a form as to provide ink-attracting channels or passages which are in effect separate from the channel or duct through which the air passes, so that there will be no interference whatever between the flow of ink and the circulation of the air, as it is now well understood in this art that both the ink and the air cannot circulate at the same time over the same course. Various expedients may be resorted to to accomplish this end, and the ink and air ducts may be provided for in the feeder 3 in many ways without affecting the novel function of the pen to

sustain its feeder in proper relation to both the reservoir-holder and the pen.

While the feeders adapted for use in connection with the novel form of pen may be provided with different arrangements of the ink and air ducts, still the preferred construction of feeder which is utilized is shown in Figs. 4, 6, and 7 of the drawings. In this feeder the feeder-bar 3, in front of the cylindrical portion 4, is provided with a transverse or lateral air-port 6, extending entirely through the feeder-bar, transversely thereof and at right angles to its length, said transverse or lateral air-port 6 opening upon both sides of the feeder-bar and being exposed to the air outside of the reservoir-holder. In addition to the transverse or lateral air-port 6 the feeder-bar 3 is provided with a longitudinally-arranged main air-passage 7, which extends entirely through the plug portion 4 of the feeder. The longitudinally-arranged main air-passage 7 has one end thereof intersecting and communicating with the transverse or lateral air-port 6, intermediate the ends of the latter; while the other end of said air-passage 7 opens into the reservoir at the rear or inner end of the plug portion 4. To provide for the proper communication of the main air-passage 7 with the interior of the ink-reservoir or reservoir-holder, the said passage is disposed obliquely with reference to the longitudinal plane of the feeder-bar; but it will be observed that the relative disposition of said main air-passage and the transverse or lateral air-port 6 provides a substantially T-shaped air-duct, which shape of air-duct has been found efficient to provide for properly supplying the reservoir with air, while at the same time preventing flooding of the ink to the point or the ready discharge thereof through the duct itself.

The preferred form of feeder just described, in addition to the T-shaped air-ducts 6 7, is provided in the upper side thereof with a capillary ink-channel 8, extending longitudinally from end to end thereof and lying next to the pen. In the construction shown in Figs. 4 and 6 of the drawings the feeder-bar is formed at its rear end with a semicylindrical stem extension 9, which projects a material distance in rear of the plug portion 4 and by reason of having the capillary channel 8 continued therein affords an extended capillary surface to increase the capillary attraction which draws the ink from the pen-point back into the reservoir when the writing is finished or when the pen is inverted and carried within the pocket. While it is desirable that the ink about the pen should be drawn back into the reservoir when the pen is not in use to prevent soiling or drying of the ink about the pen, still this is not entirely essential, for the preferred form of feeder may be constructed without the rear extension 9, as shown in detail, Fig. 7 of the drawings.

In connection with the preferred construction of feeder shown in Figs. 6 and 7 of the

drawings it may be further observed at this point that by reason of the T-shaped formation of the air-duct there is a tendency to less flooding of the ink to the point or the dropping off upon the paper. Furthermore, the ink will not so readily rush out of said air-duct as it frequently does in the ordinary pens upon a sudden jarring or jolting of the pen when the point is turned downward, this being due to the air-duct having a cross-channel or port which affords an impediment or obstruction to any ink that may enter from the reservoir. Also on account of the disposition of the main air-passage 7 with reference to the feeder-bar the air is admitted to the body of the ink in the reservoir at a point well down on the feeder instead of so far up within the reservoir, as is usually the case in most fountain-pen structures. By reason of lowering the point of air entrance into the reservoir as nearly as possible to the point where the ink generally flows from the pen the tendency to blotting is reduced to a minimum, on the principle that the further up toward the top of the column of the fluid that the air-vent is placed the more readily it runs out of the fluid-vent or place of exit.

Other slightly-modified forms of feeders may also be substituted for the preferred form just described without affecting the novel function of the construction of pen shown in Fig. 5 of the drawings. In Fig. 8 of the drawings a modified form of feeder is shown which involves providing the feeder-bar 3, upon one side thereof, with a flat capillary surface 10, extending longitudinally from end to end thereof and lying next to the pen 1, as plainly shown in Fig. 9 of the drawings, and also providing the feeder-bar, at the flattened side thereof, with an air duct or channel 11, extending longitudinally of the feeder-bar to provide communication between the interior of the reservoir-holder and the nib or writing portion of the pen. The form of feeder shown in Fig. 8 of the drawings has its straight bar portion lying at the side of the pen or pen-point, as this is the preferred way of applying the feeder for use, and in this position the flat capillary surface 10 will lie next to the pen-body, thereby leaving narrow capillary fissures or passages 12, through which the ink flows by capillary attraction from the interior of the reservoir-holder to the point or nib of the pen. The ink in its flow is confined to these fissures or passages 12, while the working of the point or nib of the pen permits air to readily enter the outer end of the air duct or channel 11 and to flow through this duct or channel into the reservoir-holder, and thus supply the partial vacuum created by the emission of the ink.

To illustrate the additional modifications that may be resorted to in providing the feeder with channels for the circulation of ink and air, reference may be made to the modified form of feeder shown in detail Fig.

10 of the drawings. In this modification the feeder-bar, including its plug portion, is rounded to conform to the curvature of the pen, and the same is provided with a single longitudinal duct or groove 7^a of a sufficient size and depth to insure the drawing of ink upon the pen by capillary attraction, assisted slightly by gravity. The form of feeder shown in Fig. 10 cannot be constructed to so closely fit the pen as to leave no capillary spaces, and there will be a sufficiently well defined space of this character between the pen and the form of feeder shown in Fig. 10 to permit enough ink to pass through the comparatively-short plug portion of the feeder, principally by gravity, to a point where it is taken up by the capillary fissure between the shank of the feeder and the pen, beyond the clasp portion thereof. Another modification involved in the form of feeder shown in Fig. 10 is illustrated in Fig. 11 of the drawings, and this modification simply consists in forming the longitudinal duct or channel 7^a with an enlarged portion 7^b at its extreme rear or inner end for the purpose of insuring the flow of ink to the pen-point. Other modifications in the form of the capillary passages or fissures and the air-ducts may be made without disturbing the novel combination between the peculiarly-constructed pen and the feeder, as already pointed out.

While it is preferable to use the attachment consisting of the pen and the feeder carried thereby with a plain reservoir-holder of the formation shown in Fig. 1 of the drawings, still it will be understood that the same could be applied to any type of reservoir-holder having an open end—such, for instance, as the type shown in Fig. 12 of the drawings— which is provided with a detachable screw-nozzle 13, within the open end of which the attachment is fitted in the same manner as previously described. In this construction either the nozzle 13 may be unscrewed to fill the reservoir or the attachment itself lifted or withdrawn from the open end of the nozzle.

From the foregoing it is thought that the advantages already pointed out for the herein-described construction will be readily ap-

parent to those skilled in the art without further description. It may be observed at this point that the lifting or slipping of the pen and its feeder from the open end of the holder is facilitated on account of the metal of the pen being less likely to adhere to the holder or barrel than the hard-rubber or other plugs which are usually employed in fountain-pen structures. Furthermore, dry ink or other matter will not bind the short tubular portion 2 of the pen so readily nor so tightly as where more extensive surfaces, usually of hard rubber, are employed.

It will also be understood that various changes in the form, proportion, and minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a fountain-pen, the combination with the barrel, and an ink-feeder, of a pen-point having a feeder-holding member of a size to fit within the barrel, and to also receive therein the feeder for holding the latter in position.

2. In a fountain-pen, the combination with the barrel, of an ink-feeder provided with a cylindrical plug portion, and a pen-point having a clasp of a size to fit within the barrel and adapted to encircle the plug portion of the feeder to constitute the holding and retaining means for the latter.

3. In a fountain-pen, the combination with the barrel, of the ink-feeder provided with a cylindrical plug portion, and a pen-point provided at its heel end with an integral ferrule of a size to fit within the barrel and completely encircling the plug portion of the feeder and constituting the holding and retaining means for the latter.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

PAUL E. WIRT.

Witnesses:

C. C. PEACOCK,
GEO. S. ROBBINS.