No. 651,736. Patented June 12, 1900.

P. E. WIRT.

FOUNTAIN PEN.

(Application filed Dec. 5, 1899.)

(No Model.)

Fig. 1.

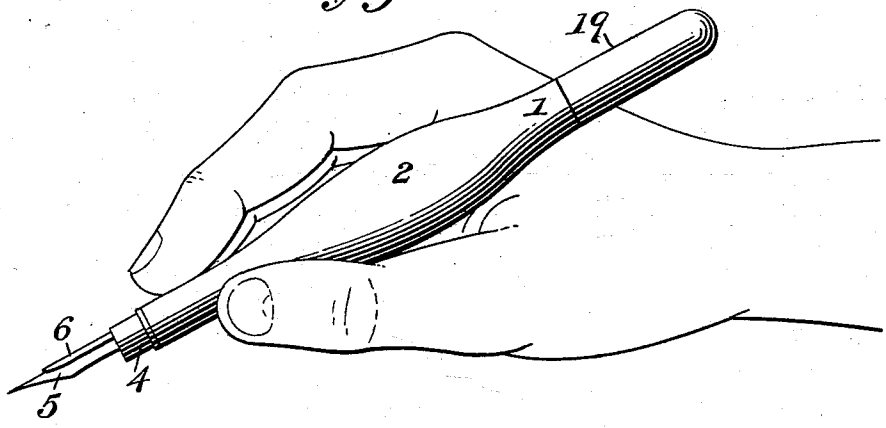

Fig. 2.

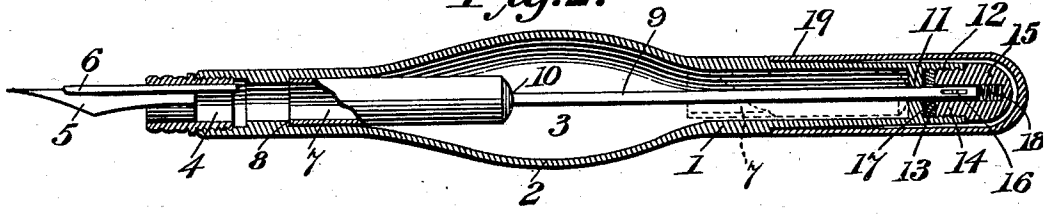

Fig. 3.

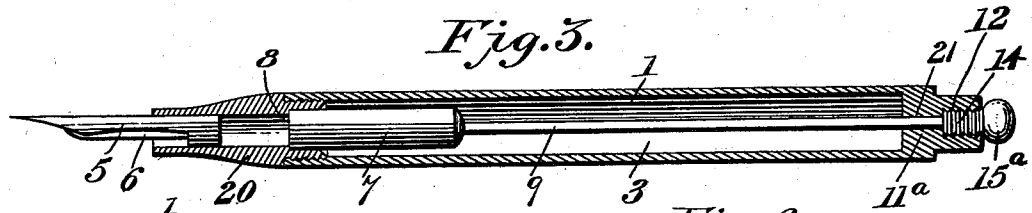

Fig. 5.

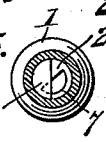

Fig. 6.

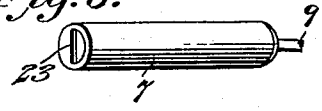

Fig. 4.

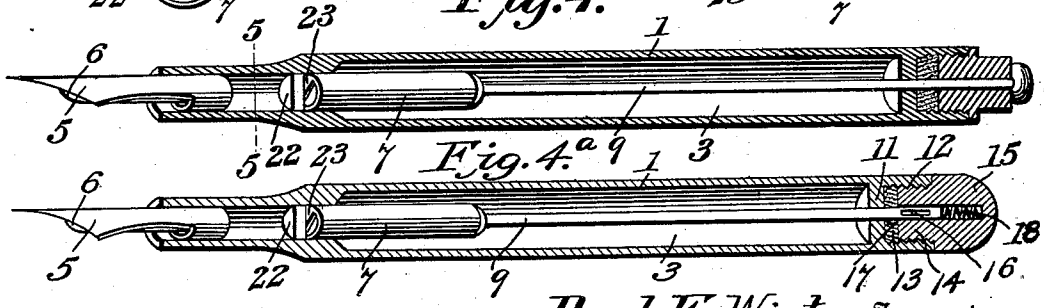

Fig. 4a.

Paul E. Wirt Inventor

Witnesses
Edwin G. McKee
S. Gallaudet Jr.

By E. G. Siggers Attorney

UNITED STATES PATENT OFFICE.

PAUL E. WIRT, OF BLOOMSBURG, PENNSYLVANIA.

FOUNTAIN-PEN.

SPECIFICATION forming part of Letters Patent No. 651,736, dated June 12, 1900.

Application filed December 5, 1899. Serial No. 739,298. (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, and has special reference to the construction of the holder or "barrel," as it is sometimes called, to afford practical means of carrying as much ink as possible without flooding when the pen is used.

To this end the invention primarily contemplates a novel construction of fountain-pen-reservoir holder having a maximum ink-holding or reservoir capacity to avoid constant refilling, while at the same time having suitable provision for positively preventing flooding or dropping of the ink from the pen-point, which is very likely to occur where ink-reservoirs are employed beyond a certain limited size or capacity in fountain-pens.

Heretofore in the construction of fountain-pens it has only been possible to construct the holders or barrels with a somewhat-limited ink-holding or reservoir capacity on account of the well-known fact that fluids are not so well retained within tubes or like spaces by atmospheric pressure in large chambers as in smaller chambers which are closed at one end; but the present invention obviates this difficulty that has been met with by fountain-pen manufacturers by providing the holder or barrel with well-defined separate interior ink-reservoirs in addition to the duct leading to the pen, said reservoirs respectively holding the main supply of ink and a predetermined supply for service.

It is of the greatest advantage to have a large supply of ink in a large reservoir in fountain-pens, inasmuch as the constant filling of small fountain-pen reservoirs, besides being annoying, frequently soils the fingers and is otherwise objectionable. The present invention renders it possible to secure a maximum ink-holding or reservoir capacity, so as to obviate these objections, while at the same time not necessitating an undue or unwieldy enlargement of the reservoir holder or barrel.

A further object of the invention is to provide, in connection with the main supply and service reservoirs of the holder, suitable means for permitting of the convenient replenishing of the supply of ink in the service-reservoir from the main supply-reservoir when this is necessary, while at the same time providing for totally cutting off communication between the two reservoirs when the pen is in use and as long as there is a sufficient quantity of ink in the service-reservoir for supplying the pen. In carrying out this object the invention provides means for positively preventing flooding or dropping of ink from the pen, while at the same time admitting of the use of a main supply-reservoir of as large proportions as the marketable sizes of the pen will permit.

Other objects and advantages will readily suggest themselves to those skilled in the art as the nature of the invention is better understood; and the same consists in the novel combination and relation of parts hereinafter more fully described, illustrated, and claimed.

The essential feature of the invention, involving the provision of the holder with a main supply-reservoir and a service-reservoir in the form of a tube apart from the ink-duct leading to the pen, in combination with suitable means for totally cutting off or opening up communication between said reservoirs, is necessarily susceptible to embodiment in a variety of modifications without departing from the spirit or scope of the invention; but the preferred embodiment of the improvement is shown in the accompanying drawings, in which—

Figure 1 is a general perspective view showing the position of the preferred form of holder in the hand, illustrating one of the useful features of the annular enlargement or swelled portion constituting a part of the main supply-reservoir in the preferred form of the holder. Fig. 2 is a longitudinal sectional view of the preferred form of the invention, showing in full lines the movable supplemental service-reservoir seated so as to constitute a cut-off between the two reservoirs and illustrating in dotted lines the position of said reservoir in the straight bore of the holder, at the outer end thereof, to facilitate filling of the service-reservoir. Fig. 3 is a similar view showing a modification involving the movable supplemental service-reservoir and showing the use thereof in connection with a holder having a detachable nozzle or pen bearing section and a plain

joint at the outer or upper end of the holder for the sliding stem of the movable reservoir. Fig. 4 is a perspective sectional view showing another modification involving the movable supplemental reservoir and the valve arrangement for controlling the discharge of ink from said reservoir into the ink-duct. Fig. 4ª is a view similar to Fig. 4, illustrating the construction disclosed therein as associated with the form of joint or closure shown in Fig. 2 of the drawings. Fig. 5 is a detail cross-sectional view on the line 5 5 of Fig. 4. Fig. 6 is a detail in perspective of the modified form of movable supplemental reservoir shown in Figs. 4 and 5.

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

The present invention contemplates as the essential feature thereof the provision of the holder or barrel of a fountain-pen with separate interior main supply and service ink reservoirs in addition to the usual ink-duct leading to the pen and combined with suitable means for totally cutting off communication therebetween when the service-reservoir is supplied with ink for the pen or opening up communication between the two reservoirs when the service-reservoir is depleted and it is desired to refill the same from the main supply in the other reservoir. This combination may be embodied in a variety of constructions without departing from the invention; but the preferred form of the invention involving the improvements is plainly shown in Figs. 1 and 2 of the drawings. In this construction the pen holder or barrel is designated by the numeral 1, and the same is of the usual cylindrical form in cross-section, but is preferably provided at a point intermediate the ends thereof with an annular enlargement or swelled portion 2, which produces an interior main supply-reservoir 3 of a maximum capacity and designed to contain a large supply of ink which is held in reserve for use in replenishing the service-reservoir, to be presently referred to. The intermediate annular enlargement or swelled portion 2 of the form of holder shown in Fig. 2 of the drawings not only provides an interior main supply-reservoir of maximum capacity, but also possesses several other advantages which are quite important in fountain-pen structures.

Although, as will hereinafter appear, the invention is thoroughly practical in connection with a holder straight throughout its length, still in order to provide for the two necessary reservoirs the straight holder may have to be made thicker than desired by some users. So it has been found advantageous to utilize the intermediate annular enlargement or swelled portion 2 not only to provide the large main supply-reservoir, but also to reduce the bulky appearance of the pen and to enable the user to clasp and hold it in writing more comfortably between the thumb and fingers. In short, the construction described provides for a maximum supply of ink with the least bulk at the clasping or holding point, and inasmuch as the enlarged or swelled portion comes above the point where the holder is held and is therefore out of the way the main ink-supply is located well above the heat from the fingers, and therefore reduces the possibility of the expansion of the fluid past the joints. The position of the pen in the hand with the swelled portion disposed above the clasping-point of the fingers is plainly shown in Fig. 1 of the drawings.

In the preferred form of holder just described, as shown in Fig. 2 of the drawings, the same may be provided at one end thereof with any suitable form of pen-bearing section 4, carrying the pen 5 and feeder 6; but it is not important to the successful carrying out of the invention what type of pen and feeder is employed, nor the special arrangement of these parts, it only being desirable that there be associated with the holder having the duplex or double reservoirs a feeder or feeding device providing for delivering ink to the pen by capillary attraction. However, it is one of the essential features of the invention to provide the holder or barrel with two ink-reservoirs entirely separate or apart from the duct leading to the pen, and in the preferred form of the improvement there is provided in addition to the main supply-reservoir 3 a supplemental service-reservoir 7. This supplemental service-reservoir 7 is made as large as possible and is ordinarily of about as great capacity as the average-sized chamber or space within the ordinary sizes of fountain-pens now on the market. The said supplemental service-reservoir 7 may be provided in different ways, but in the construction now being described is preferably in the form of a tube open at one end and closed at the other to provide a complete chamber or space for the reception of the ink to be supplied directly to the pen, while at the same time constituting a cut-off to close or open up communication between the two reservoirs at will. The open end of the tubular supplemental reservoir 7 is disposed toward the pen-bearing section of the holder and is adapted to register within an interior annular shouldered seat 8, formed within the holder at what may be properly termed the "lower extremity" of the main supply-reservoir 3. The tubular supplemental reservoir 7 is longitudinally movable within the holder, and when the open end thereof is seated against the seat 8 communication is entirely cut off between the interior of the said reservoir 7 and the main supply-reservoir 3, so that only that portion of the ink within the service-reservoir 7 will be supplied to the pen. As the service-supply of ink is no greater than that ordinarily placed within the usual fountain-penholders, there is no possibility of flooding or dropping of ink from the pen on account of overweight of ink in the reservoir supplying the pen.

To provide for replenishing or refilling the movable supplemental reservoir 7, it is necessary to make provision for moving this reservoir away from its seat 8 to open up communication between the two reservoirs. The expedient preferably employed for accomplishing this result is a sliding operating-stem 9, suitably connected at its inner end, as at 10, with the closed end of the tubular reservoir 7 and having the outer end portion thereof sliding through an opening in a closure-head 11 at the outer end of the holder 1. In the construction shown in Fig. 2 the extreme outer end of the holder 1, beyond the head 11 thereof, is provided with an interiorly-threaded socket 12, adapted to receive therein a suitable cork or fiber packing 13 and also engaged by the exteriorly-threaded portion 14 of the finger-knob 15. This finger-knob 15 is shown in Fig. 2 as having a slidable connection 16 with the outer extremity of the operating-stem 9 for the combined reservoir and cut-off 7, said sliding connection preferably consisting of a pin and slot which permit of the relative sliding movement of the parts and also of a rotary movement in unison. The said finger-knob 15 is provided with a central bore 17 to receive the outer extremity of the stem 9 and also accommodates therein a tension-spring 18, which relieves the tension or strain on the stem 9, so as to permit the knob 15 and also the combined reservoir and cut-off 7 to settle tightly in their seats. By unscrewing the finger-knob 15 out of the interiorly-threaded socket 12 the stem 9 will be drawn outward through the outer closed end of the holder 1, thereby carrying the combined service-reservoir and cut-off 7 out of the seat 8 and into the straight bore of the holder at the opposite side of the intermediate enlargement or swelled portion 2, as plainly shown in Fig. 2 of the drawings. In this latter position the ink is entirely displaced from the straight bore of the penholder at the outer end thereof and is compelled to run through into the uncovered open end of the movable service-reservoir 7. When the movable service-reservoir has thus been refilled, the stem 9 is moved inwardly to carry the open end of said service-reservoir into the seat 8, after which the threaded portion of the finger-knob is screwed into the socket 12, thereby providing for securing the service-reservoir in its closed position, and thus effectually cutting off communication between the two reservoirs until the service-reservoir is again depleted.

The usual cap 19 may be associated with the construction just described, said cap being reversible, like the ordinary cap, so as to be fitted over the pen-bearing section when the pen is not in use and upon the outer end of the penholder when the pen is in use, as plainly shown in Fig. 2 of the drawings. The tubular combined service-reservoir and cut-off 7 need not necessarily, though preferably so, be combined with a holder having an intermediate annular enlargement or swelled portion, as it is only necessary in all cases that the combined reservoir and cut-off 7 be of less width or diameter than the main portion of the holder, so that when it is drawn away from its seat the open end thereof will be uncovered, so as to receive a fresh supply of ink from the main supply-reservoir 3 of the holder. It will therefore be obvious that such a modification as illustrated in Fig. 3 of the drawings may be resorted to. In this modification the holder 1 is shown as being straight throughout, so as to have the appearance of an ordinary fountain-penholder, and provided at one end with a detachable nozzle 20, which necessarily constitutes a part of the holder and is counterbored to form the interior annular seat 8 for the said combined reservoir and cut-off, this seat coöperating with the said reservoir and cut-off in the manner already explained in connection with the construction shown in Fig. 2. The modification illustrated in Fig. 3 also shows that the invention may be carried out in connection with a plain sliding joint for the stem at the outer closed end of the holder or barrel, said joint simply consisting of the closing-head 11^a, provided with a central guide-opening 21 to slidably receive the stem 9, the latter being provided at its outer extremity with a plain finger-knob 15^a to facilitate the adjustment of the interior tubular combined reservoir and cut-off 7.

In one form of the invention the open end of the combined reservoir and cut-off 7 when closed onto the interior seat 8 is in complete communication with the adjoining ink-duct leading to the pen without any means for controlling the delivery of ink from the said reservoir 7. It is, however, within the purview of the invention to provide a suitable valve arrangement for controlling the discharge of ink from the service-reservoir 7 into the adjoining ink-duct at the lower end of the penholder. While different expedients may be resorted to for accomplishing this end, a simple construction for said purpose is shown in Figs. 4, 5, and 6, which construction involves providing the penholder within the plane of the interior seat 8 with an inwardly-projecting flat valve-shoulder 22, extending partly across the ink duct or passage and adapted to have seated directly thereagainst one end of the supplemental service-reservoir 7. To complete the valve arrangement, the supplemental service-reservoir 7 is provided at the open end thereof with a head 23, partly closing the said open end of the reservoir and cooperating with the flat valve-shoulder 22 when the reservoir is turned to provide for varying the size of the opening through which the ink may pass from the reservoir 7 into the ink-duct. By turning the reservoir 7 sufficiently to bring the opening at the lower end thereof directly opposite the valve-shoulder 22, so as to be covered thereby, the delivery of ink to the ink-duct may be completely cut off. It will thus be seen that the valve arrangement

described makes provision for placing the delivery of ink to the ink-duct entirely under the control of the operator, thereby affording protection against the ink leaking from the case when it is desired to carry the same in any position whatever.

Any form of joint or closure for the outer closed end of the holder or barrel may be associated with the construction shown in Fig. 4, preferably the form of joint or closure shown in Fig. 2 of the drawings.

Other modifications may be resorted to and will be readily apparent to those skilled in the art; but those set forth herein plainly illustrate the essential feature of the invention, and it will 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 holder or barrel having a main supply-reservoir, and a supplemental service-reservoir in the form of a tube extending within the main reservoir in spaced relation to the walls thereof, and having means whereby its interior is adapted to communicate with the ink-duct, and also with the main reservoir, said tube receiving its independent supply of ink from the said main reservoir, substantially as set forth.

2. In a fountain-pen, the penholder provided with a main supply-reservoir, a supplemental service-reservoir in the form of a tube arranged wholly inside of the holder independent of the ink-duct leading to the pen, and means for opening and closing communication between the said two reservoirs, substantially as described.

3. In a fountain-pen, the penholder provided with a main supply-reservoir, a supplemental service-reservoir in the form of a tube having an open and a closed end, said open end of the tube being adapted to communicate with the main supply-reservoir and also with the ink-duct, and means for opening and closing the communication between the said two reservoirs, substantially as described.

4. In a fountain-pen, the penholder provided with a main supply-reservoir, a supplemental service-reservoir in the form of a tube arranged wholly within the main reservoir and movable therein, said tube having an open end adapted to communicate with the main reservoir and also with the ink-duct, and means for opening and closing communication between the two reservoirs, substantially as described.

5. In a fountain-pen, the penholder provided with a main supply-reservoir and an interior seat, and a tubular supplemental combined service-reservoir and cut-off located wholly within the holder and coöperating with said seat, substantially as described.

6. In a fountain-pen, the penholder provided with a main supply-reservoir, and an interior seat, and a combined supplemental service-reservoir and cut-off movable within the main supply-reservoir and arranged wholly therein, said combined service-reservoir and cut-off being in the form of a tube open at one end and adapted to have the open end thereof moved onto and away from said seat, substantially as set forth.

7. In a fountain-pen, the penholder provided with an interior main supply-reservoir, and with an interior seat at the lower extremity of said main supply-reservoir, a tubular supplemental service-reservoir movable within the main reservoir, and open at one end for communication with the main reservoir and also with the ink-duct, said service-reservoir being located wholly within the penholder, and means for carrying the open end of said tubular supplemental reservoir onto and away from the interior seat, substantially as set forth.

8. In a fountain-pen, the holder provided with an interior main supply-reservoir, and at the lower extremity of said reservoir with an annular seat, said holder being further provided with an intermediate annular enlargement or swelled portion, and a tubular supplemental service-reservoir open at one end and longitudinally movable within the holder, said supplemental service-reservoir being adapted to have the open end thereof work onto and away from the said seat, and also movable into the straight bore of the holder, at the side of the enlargement or swelled portion opposite the seat, substantially as set forth.

9. In a fountain-pen, the penholder provided with an interior main supply-reservoir, and at one extremity of the main supply-reservoir with a valve-shoulder extending partly across the ink-duct, and a separate rotatable and longitudinally-movable tubular supplemental service-reservoir provided at one end with a partial closure working on the said valve-shoulder, substantially as set forth.

10. In a fountain-pen, the penholder provided with an interior main supply-reservoir, and at the closed end thereof with a socket to receive packing, a cut-off for closing the outlet of ink from the main supply-reservoir, said cut-off having a stem sliding through the closed outer end of the holder, a finger-knob having a slidable connection with the outer extremity of the stem, and detachably engaging in the socket at the outer end of the holder, and a spring exerting its force against the knob and the contiguous end of the stem, substantially as set forth.

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