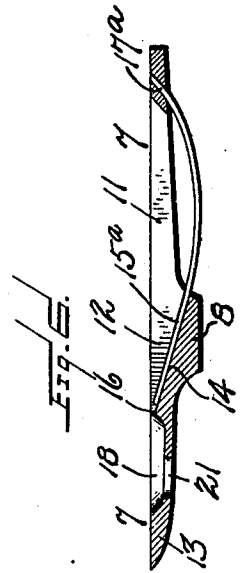
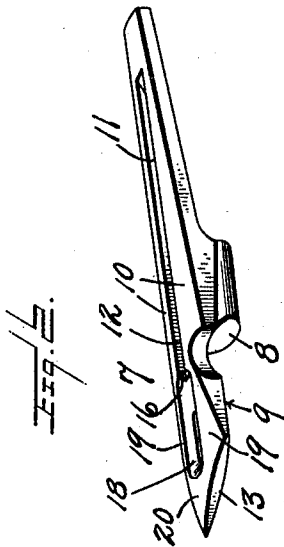
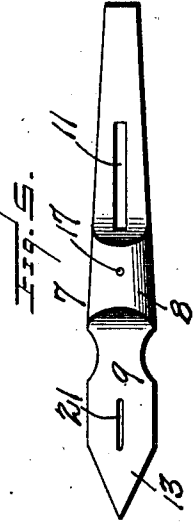
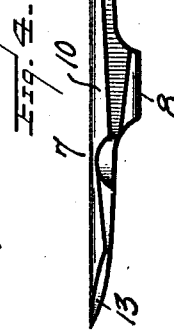
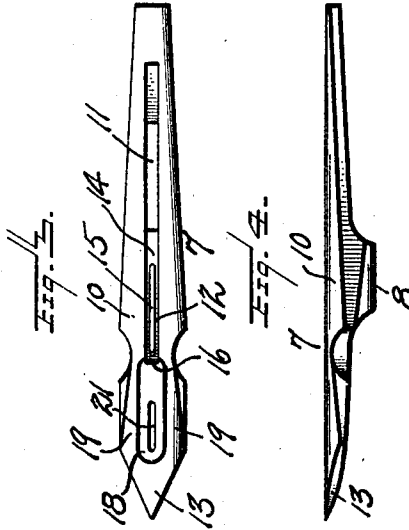
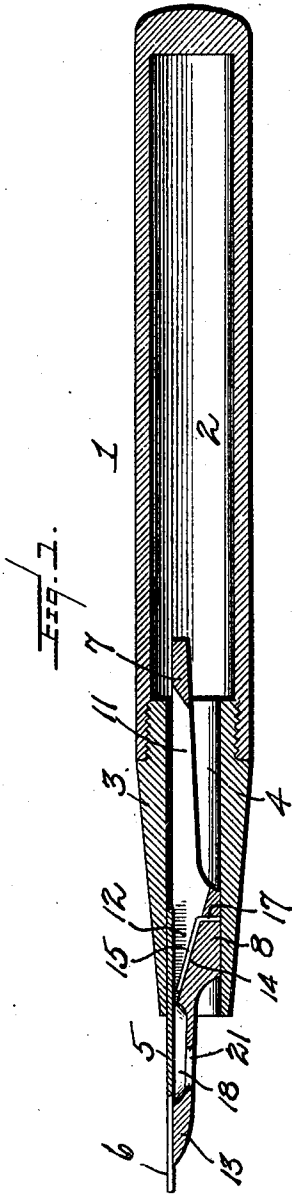


P. E. WIRT.
FOUNTAIN PEN.

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978,420.

Patented Dec. 13, 1910.



WITNESSES:

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PAUL E. WIRT, OF BLOOMSBURG, PENNSYLVANIA.

FOUNTAIN-PEN.

978,420.

Specification of Letters Patent.

Patented Dec. 13, 1910.

Application filed October 31, 1908. Serial No. 460,394.

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 certain new and useful Improvements in Fountain-Pens, (Case B,) of which the following is a specification.

This invention relates to fountain pens, and more particularly to the feeding means therefor.

To this end the invention has in view certain novel and practical improvements in the ink feeding means for fountain pens which shall provide satisfactory and reliable means for supplying the nibs of the pen point with sufficient ink for writing purposes, while at the same time regulating the flow of ink in such a manner as to entirely obviate flooding or skipping.

In brief, the improvement contemplated by the present invention is to provide an ink feeder for fountain pens with regulating or controlling means, in combination with other elements, for the better control of the ink supply to the pen point, and at the same time providing thoroughly reliable means for draining the pen when not in use so that the pen and the feeder may be kept clean and free from sediment, and more generally to keep the pen from soiling the interior of the cap and the exterior of the nozzle or pen bearing section.

The special improvement claimed herein is necessarily capable of general application to feed bars having well defined circulating ducts or channels leading to the nibs of the pen, and in communication with an air vent, but possesses special utility in connection with the type of feeder disclosed in my former Patent No. 724,984, dated April 7, 1903.

With these and many other objects in view, which will more readily appear to those familiar with the art 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 carrying out the objects above indicated, are necessarily susceptible to embodiment in different forms of feeders and in a variety of constructions without departing from the spirit or scope of the invention, but

a preferred embodiment of the latter is shown in the accompanying drawings, in which:

Figure 1 is a longitudinal sectional view of a fountain pen constructed in accordance with the present invention. Fig. 2 is a perspective view of the preferred form of feeder which is utilized in carrying out the invention. Fig. 3 is a top plan view thereof. Fig. 4 is a side view thereof. Fig. 5 is a bottom plan view thereof. Fig. 6 is a longitudinal sectional view illustrating a modification in the form of the non-corrodible regulating strand.

Like references designate corresponding parts in the several figures of the drawings.

As above indicated, the improvements forming the present invention may be embodied in different forms of feeders for fountain pens. However, the same possess special utility when embodied with a feeder or feed bar of the type disclosed in my former patent aforesaid, and hence, for illustrative purposes the invention is shown applied to a feed or feed bar of that construction.

Referring to the application of the invention shown in the drawings, the numeral 1 designates the usual reservoir holder inclosing the ink reservoir 2 and having suitably fitted thereto the pen bearing section 3 provided with the usual bore or passageway 4. The pen bearing section receives in the outer lower end portion thereof the pen point 5 having the usual nib portion 6 and designed to be detachably held in position by any suitable holding or fastening means, although as shown in the drawings, the pen point may be conveniently held in place by the feeder 7 which is arranged to underlie the pen point and lie within the bore or passageway of the pen bearing section.

The illustrated form of feeder, designated in its entirety by the numeral 7, essentially consists of a bar or shaft provided at a point intermediate its ends with a cylindrical holding plug portion 8 snugly fitting within the bore of the pen bearing section, and serving to clampingly hold the heel of the pen point against the inner wall of the pen bearing section, thus providing means whereby the feeder is so constructed as to provide fastening or holding means for the pen point as well as for itself. However,

this is a detail that is not important in the present invention, and may be changed or varied without affecting the same.

Referring more particularly to the formation of the feeder 7 shown in the drawings, it will be observed that the said feeder, in certain respects, is similar to the feeder or feeder bar disclosed in my former patent referred to, and the bar or shaft constituting the body portion of said feeder is preferably formed with a flattened under side 9, and a convexed upper side 10, whereby the feeder as a whole, may be arranged to fit within the concavity of the pen point with its top, lateral, and outer terminal surfaces or edges in continuous contact with the pen point, thereby producing capillary attracting channels or fissures along the line of said contact. However, in addition to the continuous line of capillary attracting surfaces provided between the feed bar and the pen point, the said bar is preferably further provided, within that portion lying within the pen bearing section, with a longitudinally arranged venting slot 11 piercing the bar throughout a greater portion of its length, and in communication with a circulating duct or channel 12 which is preferably formed in that part of the feed bar or shaft which is formed with the cylindrical holding plug portion 8. This circulating duct or channel 12, for ink and air, is a distinctive and important feature of the present invention, and it will be observed that the same is of a flaring depth inwardly, that is, toward the reservoir 2 of the pen, but is of a tapering depth toward the outer distributing foot 13 of the feed bar. Also, the said circulating duct or channel 12 is of a spacious size for accommodating a full and free flow of ink, while at the same time permitting of the inward or upward passage of air globules, and by reason of its flaring depth, the said duct or channel is formed with an inclined base 14, directly on which base, and longitudinally thereof, is fitted a non-corrodible regulating strand 15. The regulating strand 15 is made of any suitable non-corrodible material and is located directly on the bottom or base of the circulating duct or channel 12, and is of such an extent or length as to have the lower or outer terminal thereof lie approximately at or near the outer open end or mouth 16 of the said duct 12, and preferably at or close to one side of the same.

In connection with the mounting of the non-corrodible regulating strand 15, it will be noted that, as shown in Figs. 1 and 3 of the drawings, the same consists of a comparatively short length of wire or equivalent material and is rigidly held in place by having one terminal thereof deflected as at 17 and fitted in an opening provided therefor in the body of the feed bar or shaft. How-

ever, various modifications may be resorted to, both with respect to the regulating strand itself, and with respect to the manner of fastening the same in place, as for instance suggested in Fig. 6 of the drawings. In the latter figure of the drawings, the regulating strand is designated by the reference number 15^a and is in the form of a bowed wire strand or shaft having one end portion lying flatly upon the inclined base or bottom 14 of the duct 12, and the other end portion fitted, as at 17, in an opening provided therefor in the extreme inner end portion of the feed bar or shaft. Furthermore, in this modification, it will be seen that between its fastened end 17 and the portion lying within the duct 12, the main bow of the regulating strand 15^a is disposed within the longitudinal plane of the venting slot 11, thus contributing materially to the free flow of ink through the feeder to the pen point, and the free venting of the air globules upward through the feeder and up into the reservoir 2.

In the embodiment of the invention shown in the drawings, the outer open mouth 16 of the duct 12 opens directly into the non-attracting basin 18 formed in the upper side of the distributing foot 13 of the feeder directly beneath the nibs of the pen. As shown, this non-attracting basin is formed by a prolate concavity dished out of the upper side of the outer end portion of the feed bar, and which therefore provides a well defined space, chamber, or basin beneath the nibs of the pen point and which has no attractive influence on the ink, and hence serves to divide or separate the ink film as it is drawn downward along the capillary surfaces above the basin, and causes it to separate into lateral streams along the lateral attractive feeding surfaces 19, which constitute narrowed continuations of the convexed surfaces of the feed bar and which are continued directly into the terminal surface 20 of the distributing foot 13. The said distributing foot 13 is also pierced by an air vent hole 21 which opens through the basin 18 and, hence, is in communication with the circulating duct or channel 12 and the venting slot 11.

The construction described provides for separating the stream of ink and holding a loop of ink in suspense across the nibs, according to the general plan of the invention disclosed in my former patent aforesaid.

As herein indicated, the circulating duct 12 is of a flaring depth and provides a spacious circulating channel for both the ink and the air, so that the ink flows readily to the open mouth 16 of said duct and thence to the pen point. It is for the purpose of preventing the precipitate fall or flow and to regulate or govern the pulsations from the mouth of said duct in the feeder to the nibs

of the pen that the small regulating strand 15 is employed. The said strand is preferably made of thin gold or silver wire and purposes to flow or attract ink instantly to the mouth of the duct after a globule of air, taking the place of withdrawn ink has been formed, and has ascended within the reservoir above the ink. If the regulating strand 15 were not in the duct as shown, ink would run at intervals precipitately and unreliably, but by utilizing the said strand in the position herein pointed out, and properly determining the relative size of the open mouth 16 of the duct, the said construction will be very effective in restraining the ink from precipitate flow as the pen is used, while at the same time permitting of an ample and copious supply of ink for the pen. To have the pen most effective, the extent or size of the open mouth of the duct should be as great as possible, and in the practical manufacture of the pen, this extent is determined by having the mouth or opening 16 at the outer end of the duct as great as the regulating strand will be effective in checking ink from precipitant flow as the pen is used.

To obtain a sensitive supply of ink upon the nibs of the pen in order that writing may be done with greatest facility or evenness of flow, as in a dipping pen, an unimpeded ink supply for the nibs should be located as far down toward the point of the pen as possible. By so locating the ink supply for the nibs, as provided for by the present invention, and with the use of the regulator herein described located in a comparatively wide and deep open circulating duct, other practical advantages are obtained in the use of the feeder forming the subject matter of the present application. At this point it may be noted that the said regulator or regulating strand is provided to attract ink immediately within the mouth of the duct (where air also enters), while ink is being taken from about the feeder at the nibs, and while or after the globule of air is being formed at the mouth of the duct to ascend within the reservoir. In short, the regulator attracts, restrains or holds the ink supply at the mouth of the ink-duct well down toward point of the pen in an enlarged channel to be drawn thence upon the pen without flooding. It always maintains a

more susceptible ink supply within a capacious ink channel and at its mouth. It is attractive or controlling in effect and regulates the pulsations of ink to the nibs without flooding when the pen is in use, and when the pen is inverted it assists in attracting ink back within holder, thus insuring a cleaner pen after use or when carried. In other words, the improvements contemplated provide a construction by which ink is held in properly defined sensitive supply within an orifice above the feeding surfaces of the feeder in proportion as the same is required for writing.

In operation, the ink in my feeder descends readily within the wedge-shaped channel or opening in the enlarged portion, being assisted in so doing by the small regulator. From thence it is carried by capillary attraction principally between pen and feeder to the under side of nibs. The point of distribution, control and pulsation is directly within the mouth of the channel. It is at that point only that the regulator serves its best. It positively checks, attracts and controls at this point by reason of its location, and the affinity of ink and air for it at that point. Ink is drawn downward in proportion as capillary attraction is provided by the outlying portion of feeder.

Other features of advantage for the improved construction described will be readily apparent to those skilled in the art without further description.

I claim:

In a fountain pen, the pen bearing section carrying the pen point, a feed bar having attractive surfaces fitting the pen point, an air vent, and a longitudinally disposed ink duct, said ink duct being of a flaring depth and terminating at its outer end in an open mouth communicating with said attractive surfaces and with said air vent, and an inclining regulating strand lying on the bottom of said duct longitudinally of the latter and terminating at one end contiguous to the mouth thereof, said strand being of less width than the duct bottom or base.

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

PAUL E. WIRT.

Witnesses:

C. W. FUNSTON,
E. H. TROXELL.