No. 703,323. Patented June 24, 1902.

O. WALL.

FOUNTAIN PEN.

(Application filed Sept. 24, 1901.)

(No Model.)

Fig. 1.

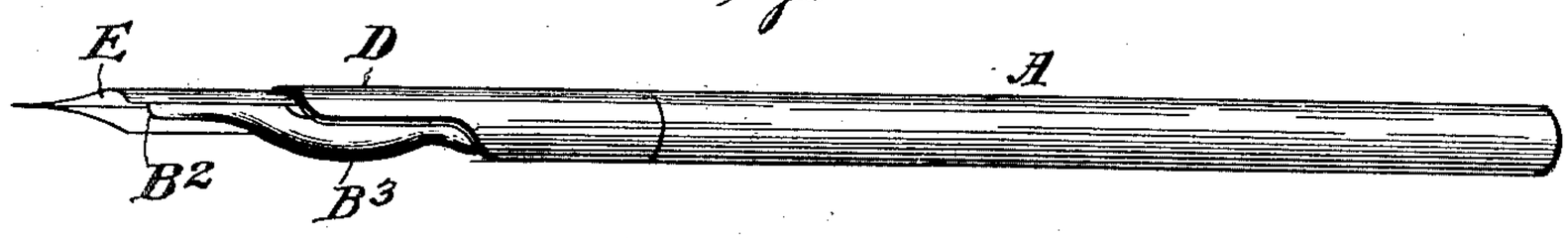


Fig. 2.

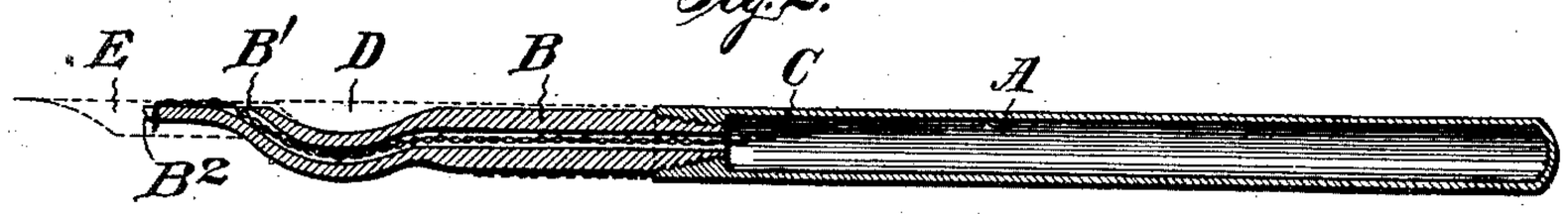


Fig. 3.

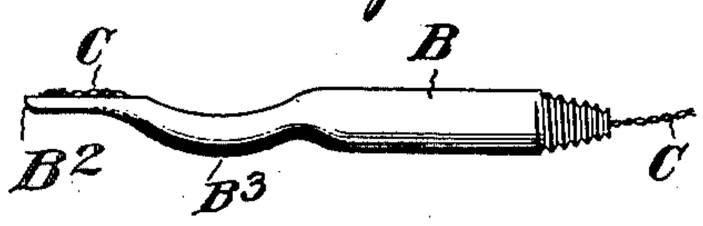
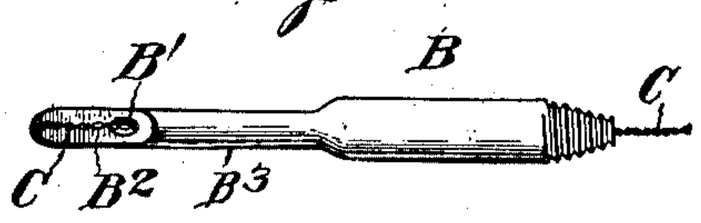


Fig. 4.



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UNITED STATES PATENT OFFICE.

OSBORNE WALL, OF NEW PLYMOUTH, NEW ZEALAND, ASSIGNOR OF ONE-THIRD TO ROBERT CLINTON HUGHES, OF NEW PLYMOUTH, NEW ZEALAND.

FOUNTAIN-PEN.

SPECIFICATION forming part of Letters Patent No. 703,323, dated June 24, 1902.

Application filed September 24, 1901. Serial No. 76,419. (No model.)

To all whom it may concern:

Be it known that I, OSBORNE WALL, a subject of the King of Great Britain and Ireland, and a resident of Devon street, in the town of New Plymouth, in the Provincial District of Taranaki, in the Colony of New Zealand, 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to provide an improved fountain-pen of simple and effective construction to which any ordinary writing-nib can be easily fitted when required, from which there is no leakage, and which is always ready for instant use.

The novelty of my invention consists in the employment of a feed-tube, curved downward and upward, attached to a holder or reservoir and containing a controlling-conductor composed of interwoven strands of hair which emerge from the feed-tube through an exit-hole and are fixed in the point of a feed-bar extension of the feed-tube, so that when an ordinary penholder and nib are fitted over the feed-tube the ink flows through the latter to the nib in a regulated flow when the pen is in use.

Referring to the drawings herewith, Figure 1 represents a perspective view of my invention; Fig. 2, a sectional view of reservoir, feed-tube, and controlling-conductor; Fig. 3, a side view of feed-tube and controlling-conductor; Fig. 4, a plan view of same.

I provide first a holder and reservoir constructed of any suitable non-corrosive material, preferably brass, as shown at A, at the bottom of which is screwed, by means of a taper screw, the feed-tube B, slightly curved downward and upward, as shown at B^3. The channel of the feed-tube terminates at the exit-hole B′, and the remainder of the feed-tube beyond the exit-hole is solid to form a feed-bar B^2, whose upper face is flat and its outer end split, while the feed-duct in the tube is of comparatively small but uniform cross-sectional area throughout. I then provide the hair conductor C, which passes through the feed-tube B, one end projecting loosely into the reservoir A a little beyond the junction of the latter with the feed-tube B and the other end passing through the exit-hole B′. The end of the feed-bar B^2 is split or cleft, as shown, to allow the end of the hair conductor to be inserted. The cleft ends of the feed-bar are then pinched together, thus fixing the conductor securely. This hair conductor is composed of a suitable number of strands of hair, preferably horsehair. The strands are suitably interlaced by plaiting. I have used five horsehairs plaited three ply. Before being passed through the feed-tube B the hair conductor should be knotted at both ends to preserve the plaiting, the knot beyond the point of the feed-bar being cut off after the conductor has been pinched and fitted into the split or cleft of the feed-bar. Any ordinary penholder D and nib E may be employed in my fountain-pen by simply sliding the penholder over the feed-tube B in such manner that the inside surface of the nib comes into contact with and exerts a slight pressure upon the hair conductor C, and the nib can be readily changed when required. The pen is supplied with ink from the reservoir. A point-protector may be provided to fit over the nib and prevent its injury when the pen is being carried about.

The operation of my invention is as follows: The ink flows from the reservoir A through the feed-tube B to the exit-hole B′ and thence by means of conductor C over feed-bar B^2 to the nib. The flow of ink to the nib is caused mainly by the capillary action of the conductor aided by the vibration of the nib, by the sloping position of the pen, and by the motion of the pen in the act of writing. The reverse flow of ink into the reservoir is due mainly to air-pressure, partly to reversed capillary action of conductor induced by changed position of the pen, and partly to cessation of vibration of nib and motion of pen. It is important that the conductor C should extend right through the feed-tube B and project into the reservoir A,

because the ink is more readily conducted to the nib preparatory to use, and the unused ink on the feed-bar B^2 and in the feed-tube B will more readily return into the reservoir.

An important feature of my invention is the curve of the feed-tube B, terminating at the exit-hole B′, as shown. This curve prevents capillary action between the feed-tube and the nib and penholder at rear of feed-bar, thus preventing accumulation of ink around the pen and consequent soiling of fingers. This result is assisted by the fact that the only means of outflow of the ink from the reservoir is through exit-hole B′, whence it is delivered only to the inner surface of the nib. If the feed-tube B were straight, the ink would flow back along it and along the pen and penholder and soil the writer's fingers, while the curve or bend also destroys capillary action or interrupts it between the pen and that part of the feed-tube at the rear of the feed-bar. For example, if the pen after writing were held pen upward and the bend were absent the ink from the feed-bar would flow down along the feed-tube and penholder and soil the latter. By forming the bend in the feed-tube the atmospheric pressure at the rear of the feed-bar extension—namely, at the outlet-port B′—confines the ink to the point of contact between the nib and feed-bar, prevents too free a flow of ink, and thus insures cleanliness. I have found also that a hair conductor is most efficient for the purposes to which it is applied, as it is a better conductor of ink than any other medium, and, further, it has the quality of springiness, which insures that part of the conductor on the feed-bar being always in contact with and so feeding the nib when the pen is in use. The conductor should be cleaned from greasiness after plaiting and before placing it in position. It is also desirable to plait the hair and insert it in the feed-tube in such manner that the coarser or root ends of the hair shall be in the reservoir and the finer ends of the hair shall extend to the point of the feed-bar. It may be observed that the length and width of the feed-bar, coupled with the corresponding length of the conductor on the feed-bar, regulates the flow of ink, the flow being increased or decreased, respectively, by the lengthening or shortening of the feed-bar and conductor.

Any suitable penholder adapted to be slipped onto the feed-tube and any suitable pen may be used. In practice I prefer, however, to use a pen without an opening at the rear end of the split nib, so that no ink can reach the upper face of the pen. The penholder may be of the well-known double-tube type, the outer tube being split, so as to firmly clamp it to the feed-tube.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a fountain-pen, the combination with the ink-font, of a feed-tube having the curved portion B^3, having a substantially flat, straight feed-bar extension B^2, a feed-duct of uniform diameter in said feed-tube and non-absorbent means for conducting ink from the feed-duct to the feed-bar extension, whereby ink is delivered to the end of the pen and the ink prevented from creeping rearward along the pen, substantially as set forth.

2. A fountain-pen comprising a pen, an ink-font, a feed-tube having the curved portion B^3, a solid feed-bar extension B^2, a feed-duct in said tube and terminating in the extension and of uniform sectional area throughout, and a non-absorbent ink-conductor in said feed-duct secured at one end to the feed-bar extension and its opposite end extending into the font, that portion of said conductor within the feed-bar extension adapted to lie against the under side of the pen at the point of ink-supply, substantially as set forth.

3. A fountain-pen comprising an ink-font a rigid feed-bar having a bent or concavo-convex portion intermediate of its ends and provided with a feed-duct having its outlet on the upper face near the outer end of said bar, an ink-conductor composed of a braid of horsehair extending from near the outer end of the feed-bar through the duct into the font, and means for holding a pen in said outer end of the bar, for the purpose set forth.

4. A fountain-pen, comprising an ink-reservoir, a feed-bar having its outer end split longitudinally, said bar provided with an undulating feed-duct having its discharge on the upper face near the outer end of said bar, a filamentous ink-conductor extending through the duct into the reservoir and having its outer end secured in the split end of the bar, and means for holding a pen on the outer end of the bar, for the purpose set forth.

5. The combination with the feed-bar of a fountain-pen, of an ink-conductor consisting of a braid of horsehair, for the purpose set forth.

6. The combination with a fountain-pen, of a feed-bar having an undulating feed-duct therein with its outlet on the upper face near the outer end of the bar, and an ink-conductor consisting of a braid of horsehair secured to the outer end of the bar and extending through the feed-duct thereof, for the purpose set forth.

In testimony that I claim the foregoing as my invention I have hereunto signed my name in presence of two subscribing witnesses.

OSBORNE WALL.

Witnesses:
CHARLES WILLIAM NIELSEN,
WILLIAM JOHN ATKINSON.