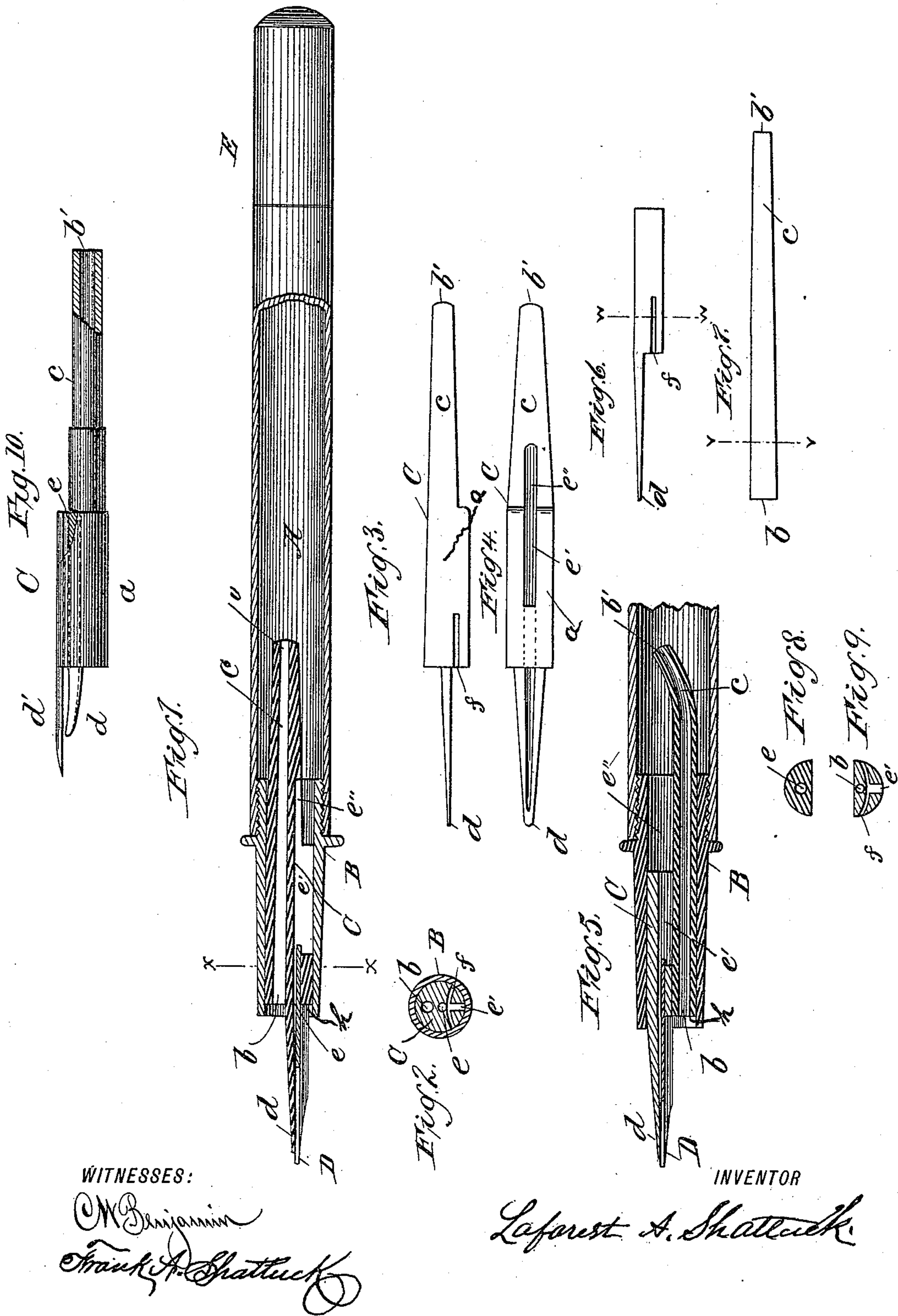


(No Model.)

L. A. SHATTUCK.
FOUNTAIN PEN.

No. 440,202.

Patented Nov. 11, 1890.



UNITED STATES PATENT OFFICE.

LAFOREST A. SHATTUCK, OF BLOOMSBURG, PENNSYLVANIA.

FOUNTAIN-PEN.

SPECIFICATION forming part of Letters Patent No. 440,202, dated November 11, 1890.

Application filed November 3, 1888. Serial No. 289,946. (No model.)

To all whom it may concern:

Be it known that I, LAFOREST A. SHATTUCK, a citizen of the United States, and a resident of Bloomsburg, in the county of Columbia and State of Pennsylvania, have invented certain new and useful Improvements in Fountain-Pens, of which the following is a specification.

My invention relates to fountain-pens; and it consists of an ordinary tubular case or holder, divisible or otherwise, which is hermetically sealed at one end and open at the other, in combination with a pen and an automatic regulator, which is reversibly and longitudinally adjustable in the open or nozzle end of the case, and provided with a body portion having an ink-passage through it, a supplementary ink-channel, a slot forming a seat for the pen, an anteriorly-tapering feed-bar, a tubular air-shaft extending in rear of the body, and one or more ink-grooves, as will be fully described.

Heretofore various principles have been employed in fountain-pens having an under feed for controlling the ink to prevent escape except when in use. In the modern construction of pens, having an upper feed, air is admitted generally beneath the pen at the mouth of the nozzle, or so near the forward end of the main column of ink as to make atmospheric pressure the main support of the ink—a principle too unreliable for perfect automatic action. In my applications for patents on improved fountain-pens filed April 6, July 28, and October 29, 1888, and in my patent, No. 390,039, I sought to apply the opposite principle—to wit, of ink-suspension *in vacuo*—by introducing the air through a passage independent of and generally arranged above the ink-passage and pen, making its point of entrance into the reservoir beyond a considerable body of ink. In this manner I reduced the necessity for air-pressure to the mere requirement of preventing the exit of ink through the air-passage, the main body of ink being sustained by suction caused by a partial vacuum in the upper or closed end of the reservoir, aided by the mechanical interference of and adhesion to a nicely-adjusted automatic regulator fitted in the nozzle. Heretofore I have constructed the air-vent outside of the ink-passage by a system of grooves formed either in the periphery of the body portion of the stop-

per or in the inner wall of the nozzle, or both, forming an air-passage independent of the ink-feeding channel the full length of the nozzle. In my present invention, though I transpose the location of the air and ink passages, I use the same principle, but in a greater degree, by making the point of air-passage through the ink farther back. I accomplish this by employing a tubular air-shaft extending for a considerable distance into the ink-chamber, which I consider an advantage with some grades of ink. Moreover, it enables me to avoid the necessity for extending the feed-bar into the reservoir, as well as the expense of employing a conductor, since the onward passage of air from the inner mouth of the air-shaft naturally forces the ink down to the heel of the pen.

In all other top-feed pens constructed upon the principle of air-pressure support for the ink it has been found necessary to extend the feed-bar back into the reservoir to draw the ink down or to provide a conductor to perform this service.

In my novel devices the feed-bars are employed simply to form with the pen a walled extension of the ink-channel, guide the ink over the center of the pen, and to hold it there ready for instant use.

Referring to the drawings, Figure 1 is a vertical longitudinal section of my pen. Fig. 2 is a cross-section on the line *xx* of Fig. 1. Fig. 3 is a side elevation of my combined feeder, pen-seat, and air-shaft, which I term an "automatic" regulator. Fig. 4 is a bottom view of the regulator. Figs. 5, 6, 7, 8, 9, and 10 represent other ways of constructing and arranging the regulator.

A is the reservoir or handle-section of the case, and is of ordinary construction, hermetically sealed at one end and open at the other, which is provided with a screw-thread to receive the corresponding end of the nozzle.

B is the nozzle-section of the case. It is a hollow tube open at both ends, one of which is adapted to fit the open end of the reservoir, and is designed merely to form a seat for the body of the regulator and provide a convenient means for filling the reservoir.

C is the automatic regulator. It has a cylindrical body portion *a*, of proper size to fit snugly within the bore of the nozzle, and is

held in position by friction. Through the body *a*, I make a small longitudinal channel *e* for an ink-passage. Immediately beneath this ink-passage I cut a transverse slot *f*, forming a seat for the heel of the pen, the back of which is on the same plane as the floor of the ink-passage. At the rear end of the body, on the under side, I cut a longitudinal slot *e'*, penetrating to the ink-passage and carry it forward far enough to intercept the pen-groove. This is to cause a more even supply of ink to the pen and to prevent skipping. Just above the ink-passage and on a line with it I arrange on the forward end of the body a thin tapering extension or lip *d*, which extends nearly to the point of the pen and in close contact with it. It is in cross-section concave on its pen-surface and convex or any desired form on its upper surface. This is the feed-bar designed merely to guide the ink from the ink-passage *e* over the center of the pen ready for use, and to prevent undue escape of the ink when the pen is not in use. Above the ink-passage I make a small longitudinal perforation through the body, as shown at *b*, for an air-shaft, and I preferably extend this for a considerable distance in rear of the body as a tapering tube *c*, terminating at the inner mouth *b'*, which is preferably smaller than the external mouth. By constructing the air-shaft in this manner it is independent of the ink-passage for a greater distance, making the point of air-passage through the ink so far back as to reduce to the minimum the necessity for air-pressure, and thus secure a more perfect automatic action. If desired, one or more grooves, as *e''*, may be cut on the lower side of that portion of the tube *c* which lies within the nozzle, to enable the ink to pass forward to the ink-passage *e*, though the tube *c* may be made small enough to allow the ink to pass without forming grooves. In order to adjust the pen at or slightly above the central longitudinal axis of the nozzle, as some prefer, the air-vent *b* may be arranged on the lower side beneath the ink-passage by arranging the ink-channel *c*, the slot *e'*, and the feed-bar *d* on the upper side, in which arrangement I preferably curve the inner end of the air-shaft up, so as to deliver the air on the upper side of the reservoir.

Though I have described the regulator constructed in one piece in Fig. 3, it may, if preferred, be constructed in separable parts, as shown in Figs. 6, 7, and 10; but I do not wish to be confined strictly to this division of the regulator when constructed in two parts, as I may gain the same object by dividing it beneath the ink-passage on a line with the pen-slot, thus making the feed-bar *d'* integral with the under lip of the air-shaft. The regulator may also be turned half-way round in the nozzle, so as to bring the feed-bar beneath the pen for an under-feed by conforming the pen-slot to the pen, and when so adjusted the groove *e'* may be extended to the forward end

of the body of the regulator, and a bar *d'* fitted therein to support the pen against undue force in heavy shading, as shown in Fig. 10.

D is the pen of ordinary construction, and may be either curved or flat. Its width should be equal to the diameter of the regulator, so that when slipped into the pen-slot its edges will engage the lateral walls of the nozzle, and is held firmly in position by friction.

E is the pen-shielding cap formed to fit either end of the case.

One great advantage in my pen is its simplicity of construction and the ease with which it may be taken apart for cleaning or for the insertion of a different pen and readjustment, as the regulator may be readily slipped out of the nozzle. As the regulator is adjustable longitudinally, its body portion may come out flush with the nose of the nozzle or may be pushed back to a greater or less extent, so as to form a recess *h* in the forward end of the nozzle, which serves as a finger-shield by preventing the ink from working out upon the periphery of the nozzle.

I do not broadly claim an independent air-tube fitted beneath the pen and extending into the reservoir when said tube is constructed separate and distinct from the feed-bar and ink-flowing medium and does not have a tapering internal end curved upwardly. In my device, to secure a perfect automatic ink-stopper, I have formed the air and ink passages through one cylindrical piece which fits the bore of the nozzle perfectly, thereby forming a perfect ink-stopper. Said passages are separated at their front end by a slot forming a seat for the pen, and that part of the stopper which contains the air-passage is extended in rear of the main body of the stopper as a tapering tube *c*, and terminating in a narrow mouth *b'*, said inner mouth being always arranged on the upper side of the reservoir, whether the air-shaft is either above or below the ink-passage, which I consider an advantage. In my patent for a fountain-pen, No. 390,039, an air-vent is shown above the ink-passage and pen; but said vent is formed by means of a peripheral groove on the stopper, which is different from my present device, which has its air-shaft formed entirely within the stopper.

In many known constructions of fountain-pens a system of bars arranged with adjacent surfaces intended to draw the ink down to the pen-point chiefly by capillary attraction has been employed, which method I deem defective, as such pens readily clog and are difficult to keep clean. It will be observed that I provide a direct passage for the ink from the reservoir to the pen-point, so that when the pen is inverted for writing the ink is precipitated to the front of the nozzle chiefly by gravity, and is prevented from spilling or bleeding from the pen mainly by the attraction of cohesion exceeding the attraction of gravitation.

I claim—

1. In a fountain-pen, the combination, with

the tubular case A B and pen D, of the automatic regulator C, having a cylindrical body, as *a*, a pen-slot *f*, the anteriorly-tapering feed-bar *d* in contact with the pen, the ink-passage *e*, the air-shaft *b*, passing through the body portion and extending beyond the same as a tapering tube *c* and terminating in a narrow mouth, as at *b'*, an ink-channel *e'*, and a supplemental channel *e²*, substantially as described.

2. A fountain-pen provided with the automatic regulator C, arranged to feed ink to the upper side of the pen by means of a bar, as *d*, and having an air-passage above the ink-passage and extending beyond the body of the regulator as a tapering tube *c*, substantially as described.

3. A fountain-pen provided with an automatic regulator, as C, having a body portion, as *a*, fitting the bore of the nozzle, an air-passage, as *b*, constructed within and passing through said body and extending beyond the same in reduced diameter as the tapering tube *c*, and having the ink-passage *e* formed in said

body portion outside of the air-passage and independent thereof, and having a feed-bar, as *d*, attached to the body of the regulator above the ink-passage, substantially as described.

4. A fountain-pen provided with the automatic regulator C, having its air-passage through the body *a* and extending beyond said body as a reduced portion *c*, substantially as and for the purpose described.

5. In a fountain-pen provided with an ink and air regulator, as C, the ink-channels *e e'*, having a feed-bar adjusted thereto so as to deliver ink therefrom to the pen-point, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 2d day of November, 1888.

LAFORST A. SHATTUCK.

Witnesses:

FRANK A. SHATTUCK,
B. T. BURNHAM.