

(No Model.)

T. F. BOURNE.

FOUNTAIN PEN.

No. 397,413.

Patented Feb. 5, 1889.

Fig. 1.

Fig. 7.

Fig. 3.

Fig. 8.

Fig. 2.

Fig. 8.

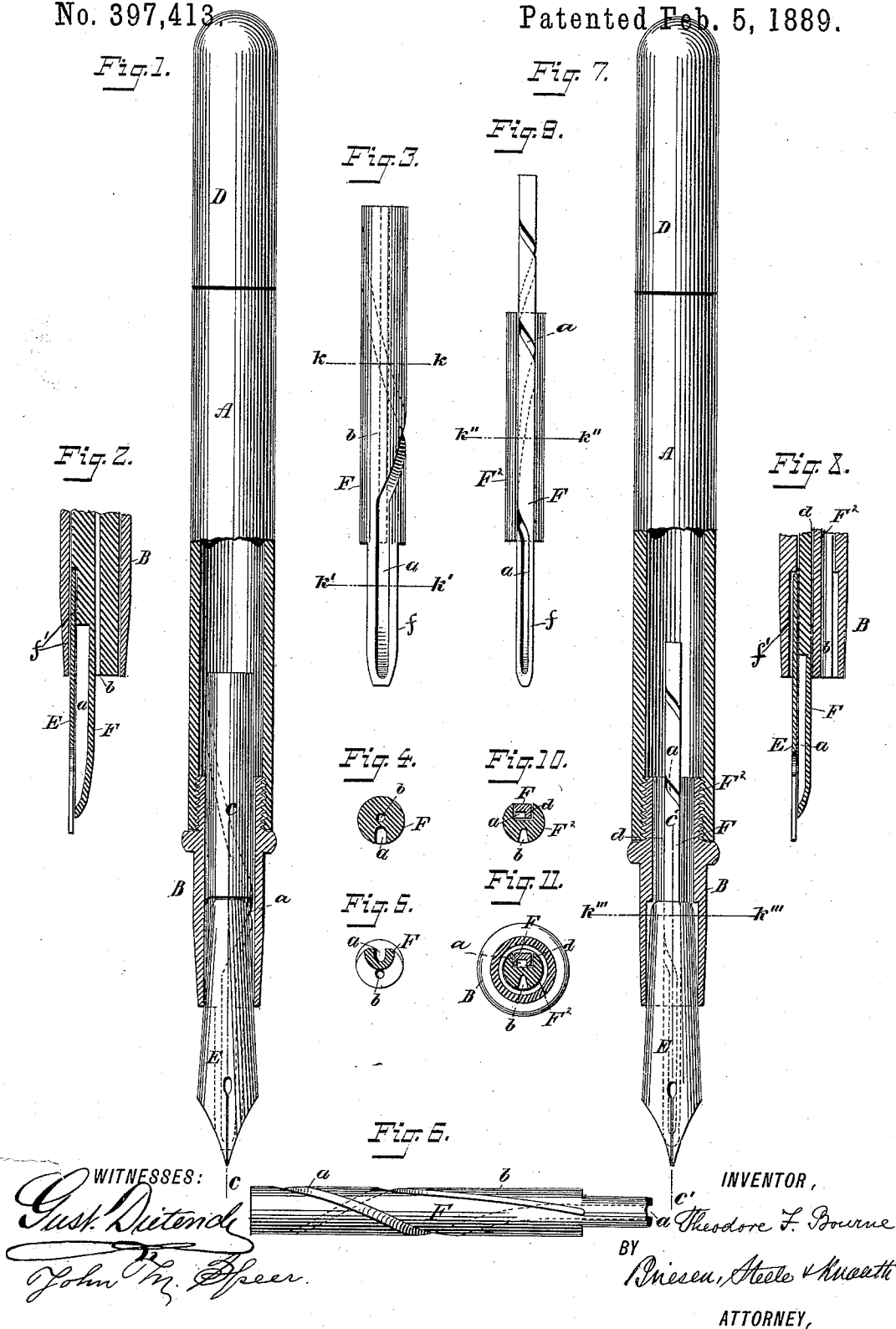
Fig. 4.

Fig. 10.

Fig. 5.

Fig. 11.

Fig. 6.



UNITED STATES PATENT OFFICE.

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FOUNTAIN-PEN.

SPECIFICATION forming part of Letters Patent No. 397,413, dated February 5, 1889.

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To all whom it may concern:

Be it known that I, THEODORE FREDERICK BOURNE, of Clifton, Richmond county, New York, have invented certain new and useful
5 Improvements in Fountain-Pens, of which the following is a specification.

The object of my invention is to provide a fountain-pen that shall be simple in construction and not liable to get out of order.

10 The invention consists in the novel details of improvement and the combinations of parts that will be more fully hereinafter set forth.

Reference is to be had to the accompanying drawings, forming part of this specification,
15 in which—

Figure 1 is an enlarged longitudinal view, partly broken, of a fountain-pen containing my improvements. Fig. 2 is a detail sectional view on the line *c c*, Fig. 1. Fig. 3 is a detail
20 view of the feeder-bar. Fig. 4 is a cross-section of the same on the line *k k*, Fig. 3. Fig. 5 is a cross-section on the line *k' k'*, Fig. 3. Fig. 6 is a detail view of the feeder having a spiral air-groove. Fig. 7 is an enlarged longitudinal view, partly broken, showing the
25 feeder-bar connected to the barrel by a separate plug. Fig. 8 is a detail sectional view on the line *c' c'*, Fig. 7. Fig. 9 is a detail view of the feeder-bar and plug shown in Fig.
30 7. Fig. 10 is a cross-section of the same on the line *k'' k''*, Fig. 9. Fig. 11 is a cross-section on the line *k''' k'''*, Fig. 7.

In the accompanying drawings, the letter
A represents a barrel or ink-reservoir, and B
35 represents a neck or tube at one end of the barrel A and communicating with the interior of said barrel. The neck or tube B may be secured to the barrel A by means of screw-threads in said tube and barrel, or by other
40 means.

D represents a cap that is adapted to fit over the neck or tube B to protect the pen E carried by the tube. Said cap may be placed at the free end of the ink-barrel when the
45 pen is being used.

The above parts are of the ordinary or suitable construction.

F represents my improved feeder. The feeder F is constructed of a bar or rod of hard
50 rubber or other suitable material. As shown in Fig. 1, the feeder-bar F passes through the

neck or tube B and extends from both ends of said tube, thereby forming a plug in the neck B; but the feeder-bar need not extend from the inner end of the neck B, if preferred.
55 The feeder-bar F, as shown in Fig. 1, fits closely within the neck or tube B, so as to prevent ink passing between the feeder-bar and the neck, and thus escaping. The lower end of the feeder has an extended arm, *f*, one
60 side of which is flattened to form a recess, *f'*, adapted to receive the pen. When in position in the holder, the heel of the pen E will pass within the neck or tube B, the pen lying on the flattened portion of the arm *f* of the
65 feeder-bar F and in close contact therewith. As shown in the drawings, the outer or free end of the feeder-bar F terminates near the end of the nibs of the pen. The ink from the holder or barrel A is fed to the pen along the
70 feeder-bar F.

For the purpose of conducting ink to the pen E in the proper quantity, I provide a groove, *a*, in the feeder-bar F, part of which groove comes directly beneath the pen. The
75 part of the groove *a* on the side of the bar F that is next to the pen I make straight, as shown, for a distance—say nearly to the heel or butt-end of the pen, although the straight part of the groove may extend slightly farther
80 along the feeder-bar than the heel of the pen. As will be seen, the straight part of the groove *a* in the feeder-bar does not enter the ink barrel or reservoir. From the point where the straight part of the groove ends, near the
85 heel of the pen, said groove extends in a spiral form around the feeder-bar, so as to communicate with the ink in the barrel or reservoir. As shown, the spiral part of the groove is against the inner wall of the neck or tube B,
90 the tube thereby covering the groove, and thus forming a spiral channel for the passage of the ink from the barrel to the part of the groove beneath the pen. By making the feeder-bar F fit closely within the neck or
95 tube B the ink on the feeder is confined in the spiral groove or channel, and thereby prevented passing along the sides of the feeder-bar, and thus escaping. As shown in the drawings, the straight part of the groove *a*
100 that is beneath the pen terminates close to the outer end of the feeder-bar, a small amount

of material being left between the end of the groove and the end of the feeder to prevent ink flowing off the end of the feeder-bar when using the pen. When the pen is in use, the ink passes from the barrel along the spiral groove to the straight part of the groove, and thence upon the nibs of the pen. The ink finds its way along the groove *a* by capillary attraction and by gravity. The action of the nibs of the pen in writing also serves to draw ink along the groove *a* to supply the pen.

In order to supply the barrel or reservoir A with air as ink is withdrawn from the barrel, so as to keep up an equilibrium in the barrel, I may perforate the feeder-bar F longitudinally, as at *b*, Fig. 2, said perforation extending from the outer part of the feeder-bar to its inner end, where it opens into the barrel or reservoir; but the air-duct *b* could be in the form of a spiral or other groove on the outer side of the feeder-bar F, as shown in full lines in Fig. 6. By making a spiral channel or duct for the ink any air that may pass along the channel with the outgoing ink will not have a free and uninterrupted straight course from the barrel, and thereby be permitted to force too much ink to the pen, but said air will meet with a resistance in the curved walls of the channel, and thereby be prevented from forcing the ink too freely along the channel. This construction will be found of advantage when the barrel is nearly empty of ink and when a comparatively large quantity of air is in the barrel, which air will be caused to expand by the heat of the hand of the person using the pen.

In Figs. 1 to 6 I have shown the feeder-bar F, having the groove *a*, to be in one piece and fitting closely within the neck or tube B to form a plug therein; but it is evident that the groove *a* may be in a bar separate from the plug for the neck. This construction is shown in Figs. 7 to 11. In said figures the feeder-bar F is a comparatively slender rod that extends along the inner wall of the neck or tube B. This slender rod F is provided with the groove *a*, the straight part of said groove being directly beneath the pen E, while the spiral part of the groove *a* extends around the feeder-bar and leads toward the ink in the barrel A.

F² is a plug that I place in the neck or tube B, so as to fill said tube and prevent ink flowing from the barrel A. On one side of this plug F² is formed a longitudinal groove, *d*, in which I place the slender feeder-bar F, as shown in Figs. 9 and 11. The bar F preferably fits closely in the groove *d*, so that the walls of the groove *d* will cover part of the spiral portion of the groove *a*. The upper side of the feeder-bar F also lies against the inner wall of the tube B, (see Fig. 8,) so that the wall of the tube B may cover part of the groove *a*, to prevent the escape of ink along the sides of the feeder-bar.

In order to admit air to the barrel A, I may perforate the separate plug F² longitudi-

nally, similarly to that shown in Figs. 2 and 3, or I may provide a groove, *b*, in the plug F², as in Figs. 8, 10, and 11. The passage of the ink along this slender feeder-bar is the same as that heretofore described. It is evident that the groove *d* could be replaced by a longitudinal hole in the plug F², and that the feeder-bar F could be passed into said hole, so that the walls of the hole in the plug could cover the spiral groove.

Care should be taken that the part of the feeder-bar that fits against the pen E to supply the pen with ink from its groove *a* should be in close contact with the pen to prevent ink passing to the sides of the pen from between the feeder-bar and the pen.

Although I have shown the spiral groove as extending entirely around the feeder-bar, it is evident that the spiral groove may be carried partly around the feeder-bar on one side and then pass upwardly and inwardly along the same side of the feeder-bar or be otherwise suitably arranged. It is also evident that the straight part of the groove *a* could be dispensed with, the spiral groove or channel terminating at the pen. If preferred, the neck or tube B could be dispensed with and the feeder-bar be passed within the barrel and closely fitted therein, similar to its fitting in the tube B.

Having now described my invention, what I claim is—

1. An ink-feeder for a fountain-pen having the flattened portion adapted to bear directly against the inner side of the pen, and the groove or channel made spirally around the feeder and extending to the flattened portion thereof, and thereby adapted to feed ink to the pen, substantially as described.

2. An ink-feeder having the extended arm, against which the pen is adapted to press, and the groove or channel made spirally around the feeder and extending longitudinally on the arm on the side next the pen, and the longitudinal air-inlet aperture extending through the feeder and communicating with the interior of the barrel, substantially as described.

3. In a fountain-pen, the combination of the barrel or reservoir, the neck or tube therein at one end, the feeder extending through and fitting in the neck or tube and entering the barrel, said feeder having the exterior spiral groove or channel, and the pen clamped in a recess in one side of the feeder between the latter and the neck and having its inner side communicating with the groove or channel, substantially as described.

4. In a fountain-pen, the combination, with a barrel and pen, of a feeder carried by said barrel and consisting of a bar having a groove that is straight on the side next to the pen and that extends from thence in a spiral along the bar toward the ink, substantially as described.

5. In a fountain-pen, the barrel A, having tube B and the independent and removable

pen E, combined with a separate feeder-bar, F, having a spiral groove or channel for conducting ink from the barrel to the pen, said groove or channel lying close against the inner walls of its support, substantially as described.

5 6. An ink-feeder for a fountain-pen consisting of a bar having a groove that is straight

at the part that is beneath the pen and that extends in a spiral along the bar toward the ink, substantially as described. 10

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Witnesses:

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