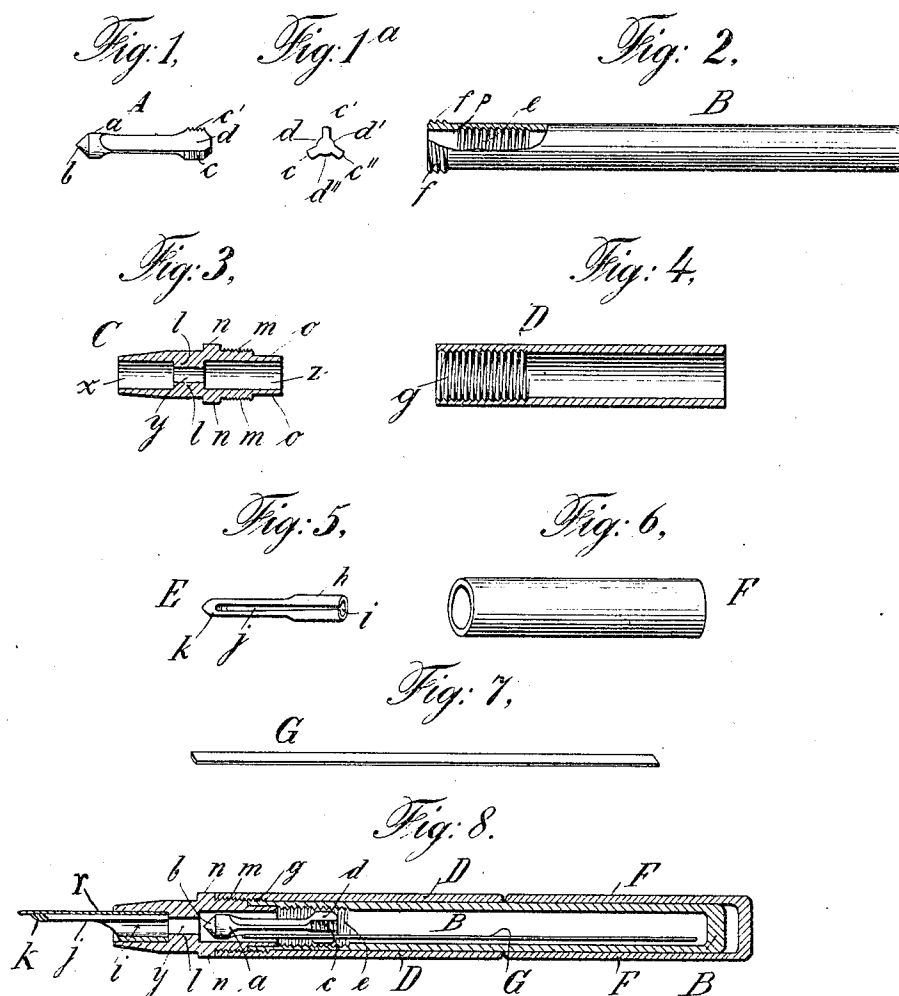


F. W. BENDER.
FOUNTAIN PEN.
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FOUNTAIN-PEN.

SPECIFICATION forming part of Letters Patent No. 784,538, dated March 14, 1905.

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To all whom it may concern:

Be it known that I, FREDERICK WILLIAM BENDER, a citizen of the United States, residing at Hoboken, in the county of Hudson and State of New Jersey, have invented new and useful Improvements in Fountain-Pens, of which the following is a specification.

The objects of my invention are, first, to provide a locking device to prevent the ink from escaping; second, to provide a means to break up the air-bubbles; third, to feed the ink rapidly to the pen-point.

My invention relates to a valve which screws into the reservoir and may be moved forward and back in the feed-pipe by turning the reservoir. Near the center of the feed-pipe is a shoulder which narrows the passage into a small circular passage. The conical end of the valve fills the mouth of this small passage when it is moved forward, and thus prevents the ink from escaping.

My invention also relates to a ribbon-like shaft which is longer than the reservoir and projects from the interior of the reservoir through one of several depressions in the valve-bar into the feed-pipe, so that when the reservoir is turned the shaft turns round in the feed-pipe, and thus prevents the air-bubbles.

My invention also relates to a slotted tube which, together with the pen-point, fits into the feed-pipe. The feed-tube is a circular tube with an ear-like projection from one side which fits under the pen-point. The projection is convex at the extremity on both sides. The slot cuts through the tube and extends almost to the end of the projection. Different sized pens may be used with this feed-tube. When the maximum size is used, the sides of the slot away from the projection are pressed together. This slotted tube produces an easy rapid flow of ink to the pen-point.

I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side view of the bar-valve. Fig. 1^A is an end view of the bar-valve. Fig. 2 is a view of the reservoir. Fig. 3 is a cross-section of the feed-pipe. Fig. 4 is a cross-section

of the outer tube. Fig. 5 is a perspective view of the slotted feed-tube. Fig. 6 is a perspective view of the cap. Fig. 7 is a perspective view of the long shaft. Fig. 8 is a cross-section of the entire device with parts assembled.

The valve-bar A consists of the bar *a*, conical at the extremity *b*. At the other end the bar enlarges, so that there are three equidistant raised portions which are threaded at *c* and *c' c''*. Between the said raised portions are three depressions or fissures *d d' d''*.

The reservoir B is open at one end and threaded in the interior at *e* and about the exterior at *f*. Between the threads *e* and the open end is the smooth space *p*.

The outer tube D is threaded in the interior at *g*.

The feed-pipe C has a circular channel *x* and *z*, with the shoulder *l* in the middle, through which is a small circular passage *y*. About the exterior near the middle is the collar *n*. The raised threads *m* occupy one-half of the exterior space between the collar and the end of the feed-pipe. Between the raised threads *m* and the end of the feed-pipe is the smooth space *o*.

The slotted feed-tube E is a cylindrical tube with a circular passage *i* through its length. From one end extends the ear-like projection *k*. A slot *j* cuts through the tube to the circular passage and extends on almost to the end of the flat ear-like projection *k*.

The cap F fits on the end of the reservoir or on the feed-pipe.

The shaft G is a slender ribbon-like shaft longer than the reservoir and thin enough to go through one of the depressions *d d' d''*.

The valve-bar A is screwed on the threads *e c' c''* into the threads *e* of the reservoir B. The shaft G extends through the depression *d* of bar A into the reservoir.

The slotted feed-tube E is wedged into the passage *x* of the feed-pipe with the pen-point *v*, so that the entire slot *j* opens on the pen and the projecting ear of the feed-tube *k* is near the outer point of the pen. The smooth end of the feed-pipe C fits into the open end of the reservoir B. The outer tube D screws

with its interior threads *g* upon the threads *f* of the reservoir B and the threads *m* of the feed-pipe C.

When the closed end of the reservoir is turned or screwed, the reservoir moves in through the outer tube D until the conical end *b* of the valve A enters and closes the passage *y* in the feed-pipe. When the reservoir turns, the shaft G, which protrudes from the reservoir into the feed-pipe passage *z*, moves about and breaks the air-bubbles.

When the reservoir is unscrewed, the valve moves back from the collar *l*, and the ink flows through the passage *y* into the feed-bar and thence to the pen-point.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a fountain-pen the combination of the bar A having the bar portion *a* which ends in the cone *b* and at the other end the three equidistant raised and threaded portions *c c' c''* and between the said raised portions the depressions *d d' d''*, the reservoir B having an opening at one end and having the threaded portion *f* about the outside and having the threaded portion *e* in the interior into which fits the threaded portions *c c' c''* of the valve A, the outer tube D open at both ends having the threaded portion *g* inside into which fit the threads *f* of the reservoir and the threads *m* of the feed-pipe, the feed-pipe C having the passage *z* the shoulder *l* in the interior of the said passage and the small circular passage *y* through the shoulder *l* and having the collar *n* about the outside and the threaded portion *m* about the outside which threads fit in threads *g* of the outer tube, the thin ribbon-like shaft G which is longer than the reservoir and protrudes from the interior of the reservoir, the slotted feed-tube E having the slotted tube part *h* which fits into the passage *x* of the feed-pipe and having the ear-like projection *k* and having the circular interior passage *i* and having the slot *g* which cuts through the tube and almost to the end of the projection *k* substantially as described.

2. In a fountain-pen the locking device consisting of a valve-bar A having the conical end *b* and the raised threaded portions *c c' c''* which screw into the reservoir B, the reservoir B threaded interiorly at *e* and exteriorly at *f* which screws into the outer tube D, the outer tube D having the interior threads *g*,

the feed-pipe C having the interior passage *z* and the shoulder *l* and the passage *y* through the shoulder and the exterior collar *n* and the exterior threads *m* which screw into the outer tube D, so that when the closed end of the reservoir is turned the conical end of the valve *a* moves forward and closes the passage *y* of the feed-pipe C thus locking the device and preventing the egress of ink substantially as described.

3. In a fountain-pen the device to aid the easy flow of ink consisting of a valve-bar A having raised threaded portions *c c' c''* and depressed portions *d d' d''* between the raised portions, the reservoir B having the interior threads *e* into which screw the raised threaded portions *c c' c''* of the valve and having the exterior threads *f*, the outer tube D having the interior threads *g*, the feed-pipe C having the passage *z* the exterior collar *n* and the exterior threads *m* which screw into the outer tube D, the ribbon-like shaft G longer than the reservoir which passes out of the reservoir through one of the openings made by the depressions *d d' d''* of the valve-bar into the passage *z* of the feed-pipe, so that when the reservoir is turned at the closed end the shaft G moves about in the feed-pipe and breaks the air-bubbles thus permitting an even flow of ink substantially as described.

4. In a fountain-pen the slotted feed-tube E having an ear-like projection *k* and a slot cleaving the tube and extending almost to the end of the projection *k* and having the interior passage *i* substantially as described.

5. In a fountain-pen the combination of the feed-pipe C having the collar *n* and the threaded portion *m* and the smooth space *o*, with the reservoir B having the inner threads *e* and the inner smooth space *p* and the outer threads *f*, so that the smooth space *o* of the feed-pipe fits tightly into the smooth space *p* of the reservoir B and so prevents an overflow of ink into the outer tube D substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FREDERICK WILLIAM BENDER.

Witnesses:

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CHARLES W. McCANDLESS.