R. W. SPRINGER.

FOUNTAIN PEN.

APPLICATION FILED AUG. 16, 1906.

1,104,567. Patented July 21, 1914.

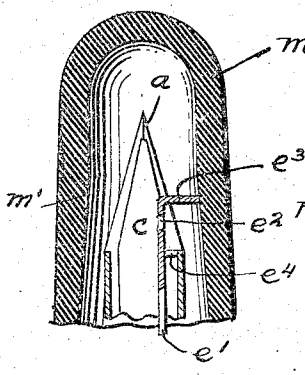


Fig. 4.

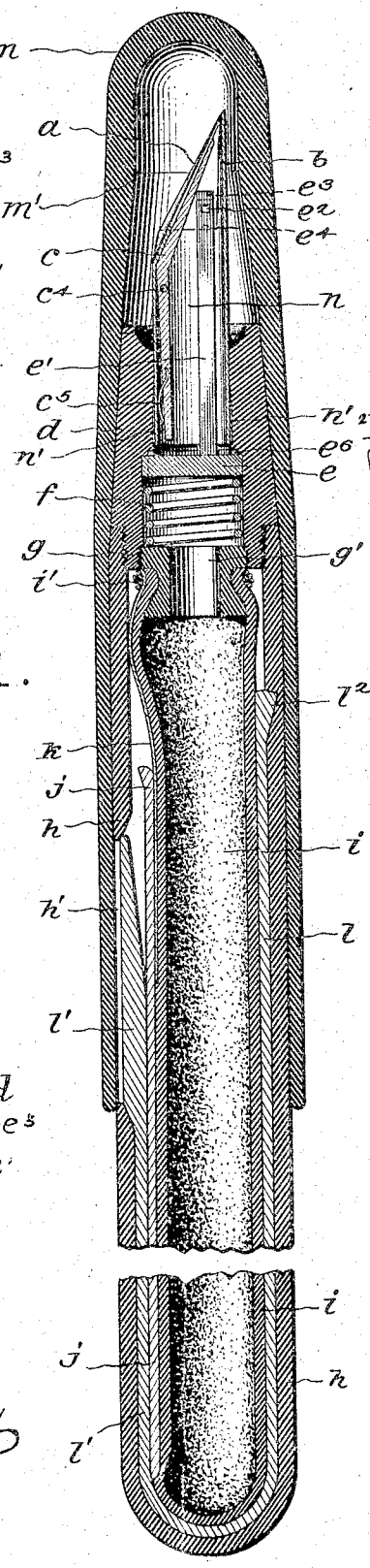


Fig. 1.

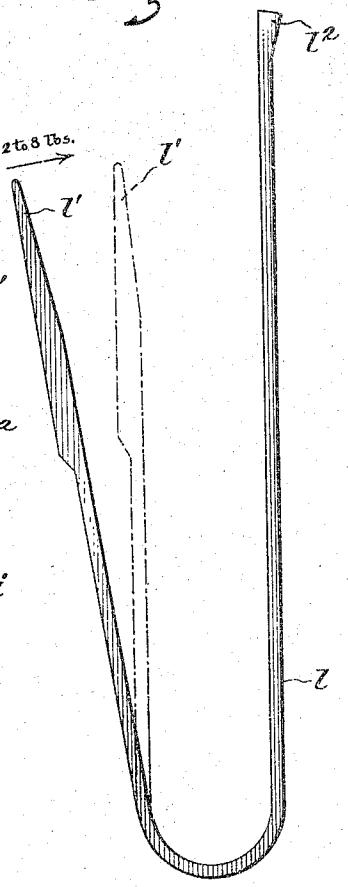
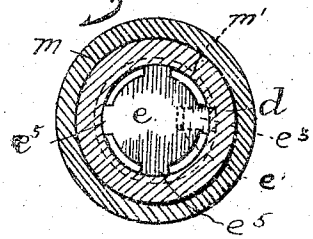


Fig. 2.

Fig. 3.



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UNITED STATES PATENT OFFICE.

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FOUNTAIN-PEN.

1,104,567. Specification of Letters Patent. Patented July 21, 1914.

Original application filed January 18, 1906, Serial No. 296,500. Divided and this application filed August 16, 1906. Serial No. 330,843.

To all whom it may concern:

Be it known that I, RUTER W. SPRINGER, a citizen of the United States, residing at Springfield, in the county of Sangamon and State of Illinois, have invented certain new and useful Improvements in Fountain-Pens, of which the following is a specification.

The object of my invention is to provide certain improvements in fountain pens, so as to obviate many of the present defects and adapt them to ordinary use, and especially to the use of shorthand writers.

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

Figure 1 is a longitudinal vertical section, partly broken away, of my invention;—and Figs. 2 and 3 are detail views of the spring door and the ink valve, respectively. Fig. 4 is a detail sectional view of the nib end of the pen taken on a plane at right angles to that on which Fig. 1 is taken.

My improvements are especially applicable to self-filling fountain pens. Such pens are provided with some means for sucking the ink up into the handle. To fill them, the end of the pen-holder (as well as the pen) must be inserted in the ink, while the suction is being produced. This dirties the end of the pen-holder, so that it has to be wiped off after every filling. To obviate this, I provide a tubular portion (n); which may be a part of the pen, or a part of the ink-feed, or entirely separate. This tubular portion fits the pen-holder quite snugly; and may be further sealed by vaseline, or cement (n'). The ink is drawn up through the tube; and the pen-holder does not have to be dipped into the ink.

My improvements further consist in devices for sealing the magazine tube, so that the ink shall not escape when the pen is carried in the pocket. Back of the opening in the end of the handle, which is intended for the reception of the pen proper, is a slightly enlarged chamber, containing a valve (e) and its operating spring (f). A small collar (g), having an ink passage (g'), is screwed into the inner end of the point section (d) of the pen-holder, pressing the spring against the valve. The valve has small projections (e^5), as shown in Fig. 3, permitting the ink to pass around the valve; and a small packing ring (e^6) is interposed between the valve and its seat. An operating rod (e'), preferably attached toward the right hand side of the valve, passes into the tubular pen (n); and, turning to the right at (e^3), projects outward so as to be struck by the point cover (m) at its contracted portion (m'), when the said cover is placed in position. The valve rod (e') has a small hole (e^2), near its lower end; and a small lug (e^4) on the rim of the tube (n) is bent inward to engage in said hole when the valve is open.

In operation:—When the pen is removed from the pocket, the point cover is drawn off; and the lower end of the point cover, or the finger nail, is used to press the projecting part (e^3) of the valve rod back and upward until the lug engages in the hole. The pen is then ready for writing. When the pen is to be replaced in the pocket, the point cover (m), as it is placed over the writing point, strikes the projecting portion of the valve rod, automatically disengages it, and allows the valve (e) to close. The ink is thus securely confined in the reservoir of the pen-holder; and the pen may be carried in any position, or even dropped, without the ink spilling. If the cap should slip off, while the pen is in the pocket, any accidental pressure upon the door l' would also be ineffective to cause the pen to leak. Before covering the pen point, the handle may be inverted and tapped gently on the table, so as to jar as much as possible of the ink out of the writing point.

My improvements further consist in automatic filling devices. A small rubber tube (i), closed at one end, is stretched over the knob-like inner end of the collar (g); and tied with a small thread or rubber (i'). To the side of this tube (i) which is next the back surface of the pen-holder, are cemented, or vulcanized, a small tape (k), and a flat bar (j). The tape is to prevent undue stretching of the rubber tube (i) beyond the end of the bar (j). This tube (i) is covered by the handle section (h) of the pen-holder, which is screwed into the point section (d). This handle section (h) has a small opening (h'), directly over the bar (j). A strong steel spring (l), having a slight enlargement (l') made to fit the opening (h'), is thrust into the handle (h); and engages therewith, so as to be securely held at its other end (l^2). The spring is preferably made (see Fig. 2) so that, when free, it opens out con-

siderably more than it is able to do when in the handle (*h*); so that perhaps from two to eight pounds' pressure will be required to further collapse it. Thus the opening (*h'*), which does not lie in such a position as to be ordinarily struck by the fingers, is fairly well protected against accident. A weaker spring may be used for a lady's pen, which would not be subjected to such hard usage. The point cover (*m*) is made long enough to cover this opening, when the pen is closed; but it does not cover it when the pen is open. In operation:—To fill the pen, the tubular part (*n*) is dipped into the ink; the thumb, for an instant, presses the door (*l'*) and releases it again; and the pen is ready for further writing, without unscrewing or shifting any parts, using any extraneous apparatus or having to wipe off the end of the pen-holder.

Having thus fully described my invention, and the manner of making and using it, I claim, as my invention:—

1. A self-filling fountain pen having a handle containing an ink-retaining collapsible tube from which ink is supplied to the writing point, a door capable of yielding to pressure, in the outer portion of the handle, and bearing upon the said ink-retaining tube so that when pressed inwardly it collapses the tube, in combination with a self-closing air-tight valve adapted to cut off communication between the ink-retaining tube and the writing point when after the pen has been filled the said door is pressed inward to collapse the tube, and means under the control of the user for positively holding the valve open when desired.

2. A self-filling fountain pen, having a handle containing an inner ink-retaining tube, and provided with an inwardly-opening door in the handle, said door being under an original strain of outward pressure, so that it will not yield until a certain specified pressure is applied.

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

RUTER W. SPRINGER.

Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."