

D. MACKINNON.
 FOUNTAIN-PEN.

No. 174,965.

Patented March 21, 1876.

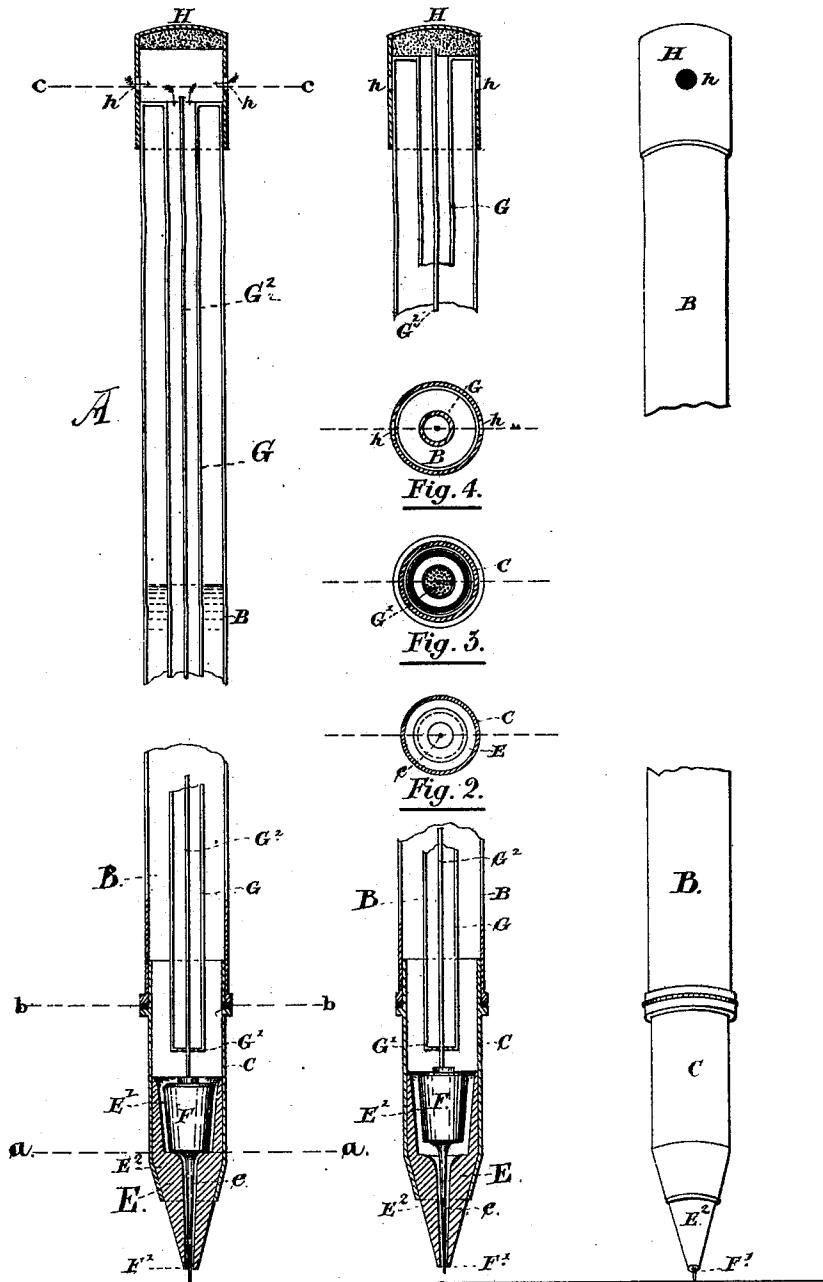


Fig. 1.

Fig. 5.

Witnesses.

Inventor.

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UNITED STATES PATENT OFFICE.

DUNCAN MACKINNON, OF STRATFORD, CANADA.

IMPROVEMENT IN FOUNTAIN-PENS.

Specification forming part of Letters Patent No. 174,965, dated March 21, 1876; application filed June 18, 1875.

To all whom it may concern :

Be it known that I, DUNCAN MACKINNON, of the town of Stratford, in the county of Perth, in the province of Ontario, Canada, have invented an Improvement in Fountain-Pens, of which the following is a specification :

The pen in which is embodied my invention, as hereinafter set forth, is provided with a tapering writing-point made of glass, metal, or other suitable material, placed at the foot of and in combination with a reservoir of ink, the said writing-point being held in a detachable holder and centrally perforated with a fine bore or hole, through which the ink is led down from the reservoir to the paper in a thin thread-like stream. An automatically-acting valve is seated on the top of the writing-point proper, closing the ink bore or duct, and a spindle attached to the said valve, passing downward through the bore of the writing-point, the duty of the valve being to shut off the flow of ink when the operator ceases writing, and the duty of the spindle, in combination with the valve, being to start and keep up a continuous and even flow of ink. The valve consists of a properly weighted and fitted head, to which is attached a fine tapering spindle of metal passing downward through the bore of the writing-point, and extending a short distance beyond the extremity of the said writing-point when the pen is not in use. Thus the operator, when he places the point on the paper, lifts the valve, allowing the ink to flow; and the said valve being of sufficient weight and moving in a chamber corresponding somewhat with it in form, again rests in its seat when the point is raised and shuts off the flow of ink.

An air-conducting tube passes downward through the center of the ink-reservoir and terminates near the lower end of the said reservoir. This air-tube is either left open or partly closed by a perforated diaphragm at its lower end. The object of the air-tube is to assist the downward flow of the ink from the reservoir, and at the same time to steady the regular flow therefrom. A rod is placed within and extends down the whole length of the air-tube, the lower enlarged end resting on the top of the writing-point valve, in combination

with a screwed cap, the object of the rod being to enable the valve to be held to its seat, to prevent the escape of ink when the pen is not in use.

In the accompanying drawings, Figure 1 is an enlarged sectional view of an instrument constructed according to my invention. Fig. 2 is a sectional plan at *a a* of the same. Fig. 3 is a sectional plan at *b b* of the same. Fig. 4 is a sectional plan at *c c* of the same. Fig. 5 is an elevation.

B is the instrument, consisting of the two main parts; B, the reservoir, and C the writing-point holder. The reservoir B is a tube of any suitable diameter hermetically closed at the upper end, and constructed preferably of a metal, or other material, non-corrosive under the action of ink. The tube is tapped at the lower end to receive the threaded end of the detachable, writing-point holder C, which holder is also preferably composed of a non-corrosive substance. The upper portion of the holder for a suitable distance is a parallel cylinder, the remainder tapering regularly to a smaller diameter, forming a seat for and containing the major portion of the writing-point E. The writing-point E is made of glass, of a non-corrosive metal, or of any other non-corrosive material suitable for the work. It is a hollow parallel cylinder at its upper end E' for a suitable distance, but finishes downward therefrom to a point of suitable fineness in a regular taper centrally perforated by a fine bore or ink duct, *e*, which bore is closed at the upper end by a valve, F. The entrance of this bore is funnel-shaped. To the valve F is attached a fine spindle, F', which passes downward through the bore *e*, projecting a short distance beyond the extreme end of the writing-point. A suitable seat is formed for the valve F to rest upon, in order that there may be no leakage when the valve is in place. The sides of the valve may be plain, grooved, or tapering, as desired. G is an air-conducting tube leading from the top of the reservoir and terminating at a point a short distance above the top of valve F. The lower end of this tube is either left open or partly closed by a perforated diaphragm, G¹. G² is a rod passing upward through the tube G. H is a capping-piece screwed on the outside

of the upper end of ink-reservoir and perforated with one or more inlet air-holes, *h*. The inner face of the crown of this cap is lined with rubber or other suitable material, and may be adjusted by screwing the cap up or down to relieve or bear against the top of the rod G^2 , with the object of firmly closing the ink-valve on its seat to prevent the escape of ink, when the pen is not in use, from the point and further to close the top of the air-tube to prevent the leakage of ink when the pen is laid in position from the top.

Having now defined the parts of my invention, its operation may be described as follows: For the purpose of this description the reservoir is supposed to be filled with ink and the pen in the hand of a writer. The moment the paper is touched to commence writing the spindle F' is pushed up, lifting the valve F and allowing the ink to flow to the point in a thin thread-like stream of a uniform size, which stream is transferred to the paper and fashioned into words by the motions of the operator, in the usual way. Every time the operator lifts his pen the valve F closes immediately, shutting off the supply of ink, if only for the instant, between the formation of detached letters. This constant lifting and lowering of the valve and spindle in combination with the air admitted by the tube, starts and keeps up an even flow of ink down the bore to the point of pen, and also prevents any granular or sticky accumulation or deposit.

To replenish the reservoir, unscrew the part C , nearly fill the chamber around the air-tube, and screw the piece C on again. The joint

between the two pieces is made water-tight by any of the usual means, such as a leather or rubber washer.

In the construction of the different parts of my invention, I do not wish it to be understood that I confine myself to the use of any specified material, but I prefer and advise that non-corrosive substances should be employed, especially in the construction of the writing-point and operating valve. Further, while the cylindrical portion of the writing-point is not necessary to the perfect operation of the instrument, still it is preferred that it should be used, both because it affords a means of fastening the point to the holder and a suitable receptacle for the ink-valve.

I claim as my invention—

1. The air-tube G , extending to a point in the ink-reservoir near the writing-point, combined with said writing-point E , having the valve-chamber E' , ink-duct e , and gravitating valve F , substantially as herein described.
2. The writing-point E having a valve-chamber and ink-duct, as described, the gravitating valve F , rod G^2 , and the tube C , combined in a detachable manner with the tube B , having the air-tube G , substantially as and for the purposes specified.
3. The perforated cap H , combined with the tube or ink-reservoir B C , tube G , rod G^2 , writing-point E , gravitating valve F , and spindle F' , substantially as and for the purposes described.

DUNCAN MACKINNON.

Witnesses:

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JAMES PEACOCK.