

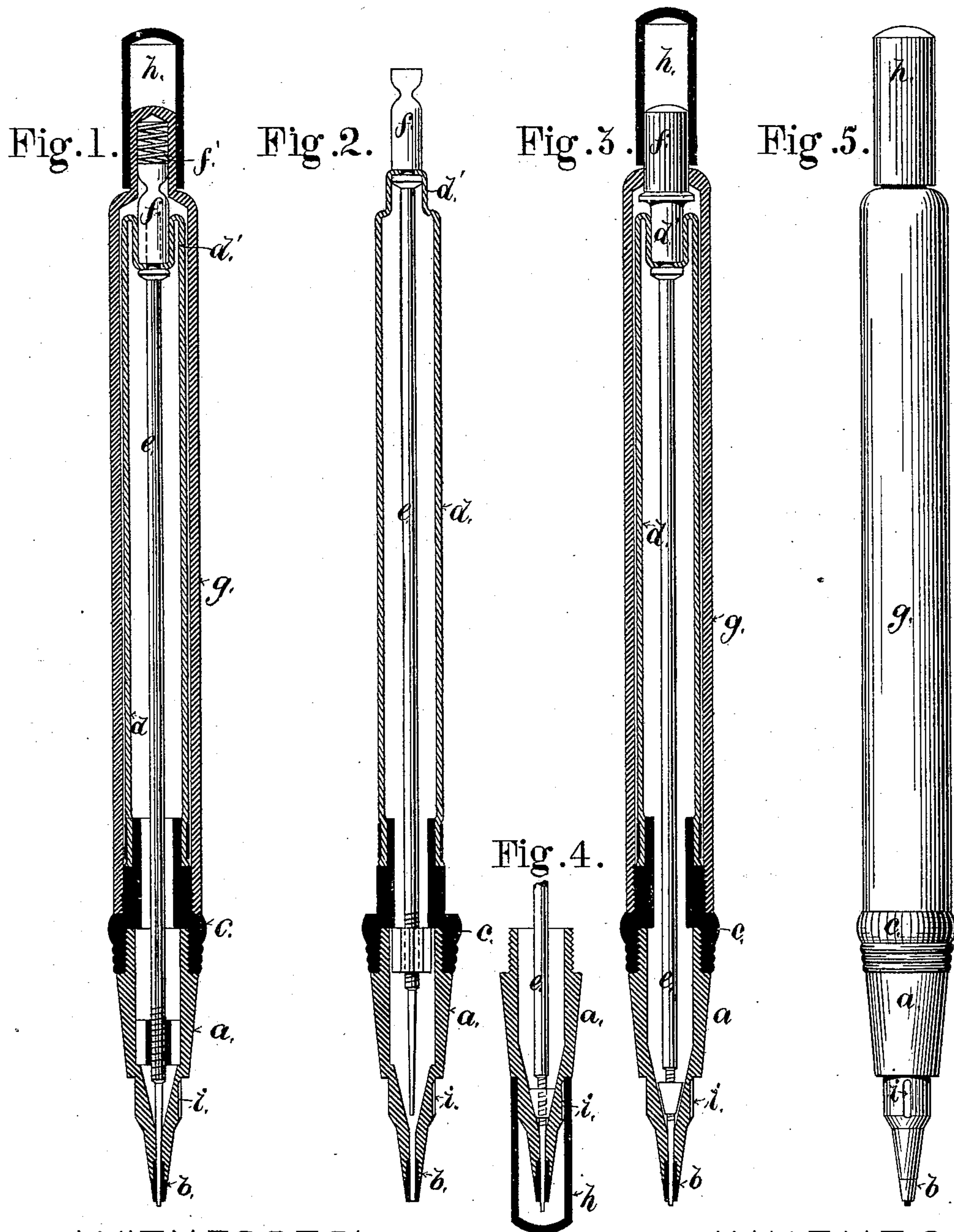
(No Model.)

J. A. MILLER, Jr..

STYLOGRAPHIC PEN.

No. 250,937.

Patented Dec. 13, 1881.



WITNESSES:

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STYLOGRAPHIC PEN.

SPECIFICATION forming part of Letters Patent No. 250,937, dated December 13, 1881.

Application filed March 9, 1881. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH A. MILLER, Jr., of the city and county of Providence, and State of Rhode Island, have invented a new and useful Improvement in Stylographic Pens; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention has reference to that kind of pens in which a pin or stylus projects from the writing-point of an ink-chamber, so that writing with ink can be done for a long time without dipping the point into ink.

The invention consists in the peculiar and novel construction of the pen-case and in the novel construction of the ink-reservoir, as will be more fully set forth hereinafter.

In the stylographic pens as at present constructed two serious defects exist. The first is that in filling the pen with ink a special device is required to introduce the ink into the case, the operation being unclean and difficult. The second defect is that these pens are all liable to leak.

To remove these defects and produce a cheaper and better pen is the object of this invention.

Figure 1 is a sectional view of one style of my improved stylographic pen; Fig. 2, a sectional view of the portion of the pen forming the ink-reservoir, shown in the position when the pen is to be filled with ink. Fig. 3 is a sectional view of a modification, consisting in extending the piston to which the stylus is secured through the casing, so that the stylus can be drawn in and projected out to clear the ink-aperture. Fig. 4 is a sectional view of the writing-point and its cap, showing a groove covered by the cap, by which the air is allowed to escape in placing the cap, but a tight joint is secured, the usual air-hole in the cap is avoided, and the leaking of the pen prevented. Fig. 5 is a view of the pen when in use.

In the drawings, *a* is the pointed end of the case. *b* is the writing-point, usually made of durable metal. *c* is a union-piece secured to the piece *a*. The elastic tube *d* is firmly secured to the union-piece *c*, the upper end, when in use, being inverted, as shown in Figs. 1 and 3, and when not in use and extended, as shown

in Fig. 2, having at its upper end the contracted neck *d'*. Within this tube *d*, and secured to the contracted neck *d'*, is the pin or stylus *e*, the writing end of which projects from the point *b* and nearly fills the hole in the point. The inverted neck *d'* acts as a spring, the tube *d* being made of soft rubber, and therefore in writing with the pen the stylus is moved in and out by the pressure on the same. This motion of the stylus and capillary attraction cause the ink to follow the stylus or writing-pin and cause ink tracings to be produced.

The piston *f* is secured to the end of the stylus *e*, and may have the spring *f'* placed on its end, as shown in Fig. 1; or the piston *f* may extend through the outer case and be made of such form as to receive the cap *h*, as is shown in Fig. 3, when the pen is in use.

To allow the cap *h* to be readily placed onto the writing-point to protect the same, and also allow of the ready removal of the cap from the writing-point and the piston *f*, I make a groove, *i*, in either or both, and on the writing-point I make a tight joint immediately beyond the groove by forcing the cap against the shoulder formed on the point, so that no ink can leak through the same, as shown in Fig. 4.

The lower end of the stylus *e* may be provided with a valve, as shown in Figs. 3 and 4, so as to close the aperture when the pen is not in use.

The operation of this pen is as follows: To fill the reservoir with ink the case *g* is removed from the union *c*, the cap *h* is removed from the writing-point, and the stylus is withdrawn from the opening in the writing-point by pulling the contracted end *d'* of the elastic tube *d* upward, as is shown in Fig. 2, thus giving a free inlet or outlet at the writing-point. The elastic tube *d'* is now flattened to expel the air, or a large portion of the same, the point *b* is inserted into the ink, the elastic tube is released, and in expanding draws in the ink, filling, or nearly filling, the tube *d*. The stylus is now pushed down, the case *g* secured over the tube *d*, and the pen is ready for a long use in writing.

Ink may be drawn into the tube *d* by placing the writing-point into ink, pulling the stylus inward, and thereby the inverted portion

of the tube *d* outward, as shown in Fig. 2. If the point is now raised so that the ink can run to the end of the tube and air escape, the neck *d'* can be pushed into the tube *d* by the piston *f* and the same operation repeated. The pen shown in Fig. 3 can be arranged to thus pump in the ink without removing the case *g*.

This improved stylographic pen is simple and cheap in construction, is self-filling, contains more ink in equal size than other similar pens, requires no air-vents, is not liable to leak, and furnishes a more uniform flow of ink when in use than other pens, and will not run or form drops on the writing-point, as other stylographic pens do.

Air may be admitted to the collapsible ink-reservoir from time to time by inverting the pen, or it may be admitted into the case by slightly loosening the screw-joint connecting the case to the union *c*.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, substantially as before set forth, of the collapsible ink-reservoir and the stylus having a stem connected with the upper end of said ink-reservoir.

2. The combination, substantially as before set forth, of the collapsible ink-reservoir, the

surrounding case, and the stylus having a stem connected with the upper end of said ink-reservoir and projecting through the case.

3. The combination, substantially as before set forth, of the collapsible ink-reservoir having a contracted neck adapted to be inverted, and the stylus having a stem connected with said contracted neck of the ink-reservoir.

4. The combination, with the points *a* and *b*, the union *c*, and case *g*, of the stylus *e* and the elastic tube *d*, constructed to form an ink-reservoir and a yielding resistance to the stylus, as described.

5. The combination, with the point *a*, having the point *b*, the union *c*, and the case *g*, of the stylus *e* and the elastic tube *d*, having the contracted neck *d'* and the piston *f*, constructed to operate the stylus and draw the ink into the reservoir, as described.

6. In a stylographic pen, the combination, with the writing-point and the cap *h*, of the groove *i*, constructed to form an air-vent, and a shoulder arranged to make an air-tight joint between the cap and the point, as described.

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Witnesses:

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