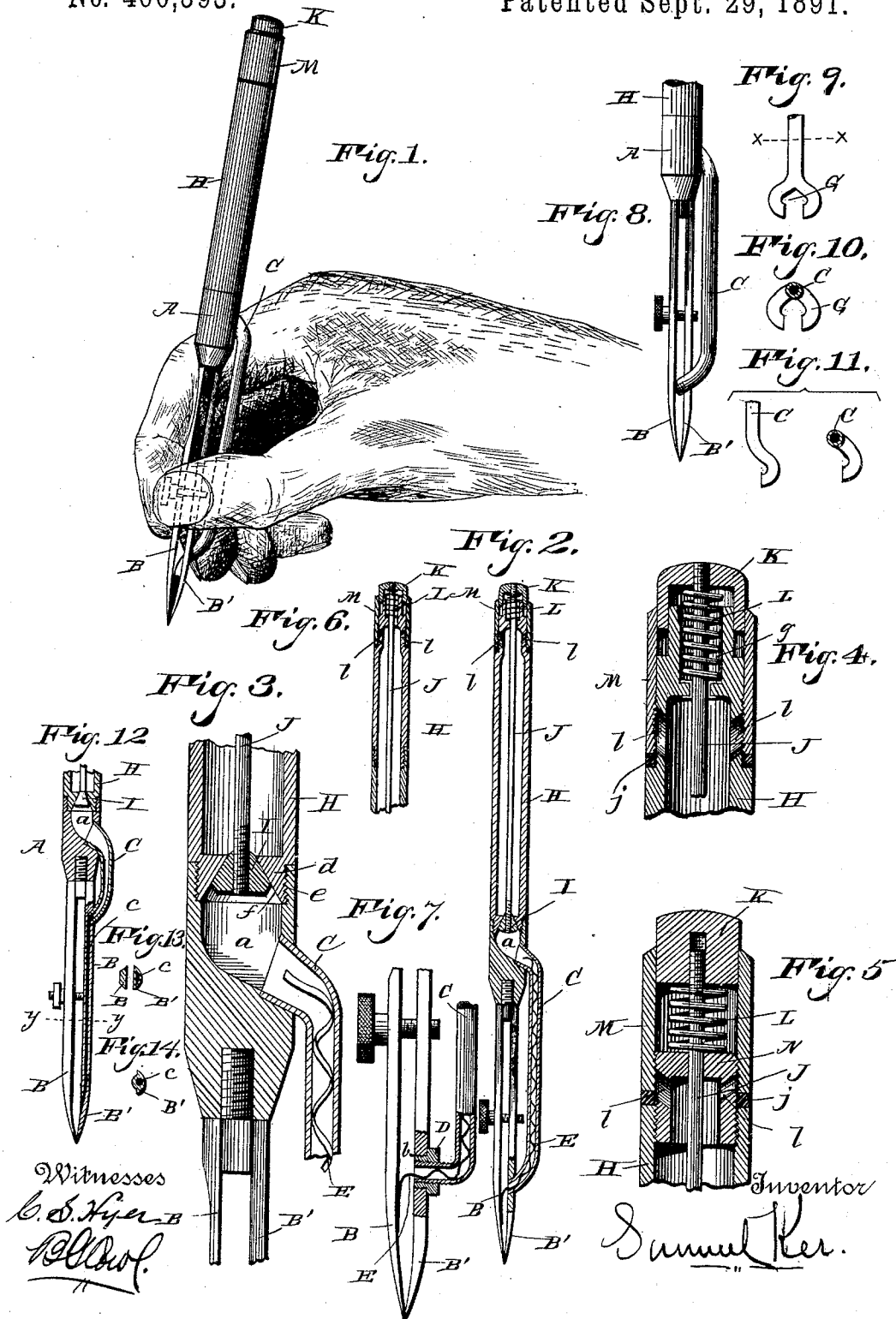


(No Model.)

S. KER.
SELF FEEDING DRAWING PEN.

No. 460,393.

Patented Sept. 29, 1891.



UNITED STATES PATENT OFFICE.

SAMUEL KER, OF WASHINGTON, DISTRICT OF COLUMBIA.

SELF-FEEDING DRAWING-PEN.

SPECIFICATION forming part of Letters Patent No. 460,393, dated September 29, 1891.

Application filed April 13, 1891. Serial No. 388,726. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL KER, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Self-Feeding Drawing-Pens; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain new and useful improvements in drawing-pens; and it has for its objects, among others, to provide an instrument of this class which shall be self-feeding, with the parts so arranged as to be easily cleaned when necessary, provision being made for the adjustment of the flow of the ink to the point.

The gist of the invention lies in the introduction of the ink from the reservoir to the point through a passage arranged exterior to the said parts. I provide a feeder-spring, which prevents too rapid flow of the ink. I provide means for detaching the ink-conduit for the purpose of changing the pen-points without disturbing the other parts. I provide a flexible tip to the conduit, which is so arranged as to be compressed by the adjustment of the pen-points when a fine line is desired, the said tip being expanded as the pressure on the points is relaxed to produce a heavy line.

Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be specifically defined by the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a perspective view showing the pen in position for use. Fig. 2 is a central longitudinal section through the same, with the pen-points in elevation, with a portion of one of them broken away. Fig. 3 is a sectional detail on an enlarged scale, showing the valve and the conduit with its feeder-spring. Fig. 4 is an enlarged detail of the cap end of the reservoir. Fig. 5 is a like view of a slightly-modified form, embodying, however, the same features. Fig. 6 is a detail in longitudinal section of a sectional reservoir.

Fig. 7 is an enlarged detail in elevation, with a portion broken away, showing a means of detachably connecting the ink-conduit to the pen-point. Fig. 8 is an elevation with the conduit provided with a flexible portion. Fig. 9 is a side elevation of a double tip. Fig. 10 is a cross-section on the line *x x* of Fig. 9. Fig. 11 shows, in side elevation and cross section, a single tip. Fig. 12 is a view, partly in longitudinal section and partly in elevation, of a modified form. Fig. 13 is a cross-section on the line *y y* of Fig. 12. Fig. 14 is a cross-section through a modified form of leg of a pen.

Like letters of reference indicate like parts throughout all the views in which they occur.

Referring now to the details of the drawings by letter, A designates a head carrying the pen-points B and B', which may be connected thereto in any desired manner, preferably, however, detachably, as shown in the various views, so that the points may be detached and replaced by others at any time. This head is chambered near its larger end, as shown at *a*, and C is a conduit communicating with this chamber, being connected to the head in any convenient manner. This conduit, which may be of any desired material and of the required size, extends outside the head, as seen in the different figures, and is designed to convey the ink from the reservoir, hereinafter described. The discharge end of this conduit may be arranged in various ways. It may be rigid, flexible, or semi-rigid. In Fig. 1 it is supposed to be rigid, and the discharge end is connected to the leg B' of the pen near its point by solder or any suitable means. It may be detachably connected to the pen-leg in a convenient manner. In Fig. 7 I have shown a suitable means. It consists of a plug D, which is externally and internally screw-threaded, as shown, the external threads engaging a threaded opening *b* in the leg B' and the interior threads being engaged by external threads on the end of the conduit. Screwing up on the plug draws the parts tight, and unscrewing permits me to detach the conduit from the pen-leg without disturbing the other parts and remove the leg for any desired purpose. Other means may, however, be provided for this purpose without in the least affecting the essential features of the invention.

The conduit may extend for a greater or less distance. I have found from experience, however, that it is best to have it extend so as to deliver the ink near the point of the pen.

5 Instead of having the conduit itself extend nearly to the point of the pen, I may sometimes arrange the parts as shown in Fig. 12, wherein the conduit terminates near the upper end of the pen-leg, the leg being formed with a
10 longitudinal passage *c*, with which the discharge end of the conduit communicates. The result is the same. The form of the hollow leg may be varied. In Fig. 14 I have shown one of the forms which suggests itself
15 at the present time.

When I employ a conduit which extends nearly to the end of the leg of the pen, as shown in Figs. 1, 2, 3, and 7, I employ a feeder-spring *E*, which is held in the conduit in any suitable manner, with its lower end extended
20 through the conduit and arranged to bear upon one of the legs between the points, as shown in Figs. 2 and 7. This spring is a fine spring corrugated or coiled, as shown, and
25 serves as a feeder for the ink, and at the same time it aids in preventing clogging of the conduit by the ink. Its extended end has sufficient resiliency not to interfere with the wiping of the pen-points when desired.

30 Instead of being rigid, the conduit may be flexible for the whole or a part of its length. In Fig. 8 it is shown as flexible, with the discharge end located between the legs of the pen. When the legs are brought nearer together, as when it is desired to make a fine
35 line, the end of the conduit will be compressed, and consequently the flow of the ink will be correspondingly lessened. When the points are opened to make a heavy line, pressure on the end of the conduit is removed or relaxed
40 and the ink flows freely.

The conduit may be rigid for a portion of its length and a separate removable or permanent flexible tip provided therefor. I have
45 shown such in Fig. 11. The operation is the same as above described in connection with Fig. 8. The conduit may be provided with two tips or a bifurcated tip, as shown at *G* in Figs. 9 and 10, one end arranged upon one side
50 of the leg and the other upon the other side. I think the single tip will be preferable.

H is the reservoir, which may be of any suitable material and as ornamental as desired. It is detachably connected with the
55 head *A*. It is shown as being provided with a threaded end *d*, which engages a threaded socket *e* in the head. The lower end of the reservoir is formed with a valve-seat *f*, as seen best in Fig. 3, to which is fitted the valve
60 *I*, opening downward. This valve controls the flow of ink from the reservoir to the chamber in the head. The valve is carried by a stem *J*, which extends through the reservoir, as seen in Fig. 2, which stem at its outer end
65 is screw-threaded, as seen in Figs. 2, 4, and 5, and engages a threaded hole in the cap *K*. This cap is free to play within certain limits,

as understood from Figs. 4 and 5, a spring *L* being provided to normally keep the cap outward and the valve closed. This may be accomplished in various ways. I have shown
70 two. In Fig. 4 the outer end of the reservoir is formed with a socket *g*, in which the spring is arranged, the cap sliding between the outer walls of this socket and a removable sleeve
75 *M*, which is screw-threaded and engaged with a screw-thread on the upper portion of the reservoir, which latter is offset, as shown at *h*, for the purpose of providing a smooth finish on the outside. A packing-ring of rubber or
80 any other suitable material may be provided to prevent leakage at the joint, as shown at *j* in Figs. 4 and 5. The construction shown in Fig. 5 produces the same effect. The cap, however, slides within the reservoir, and a plug
85 *N* is provided, through which the valve-stem passes and which forms one point of resistance for the spring. The plug is threaded to engage interior threads on the reservoir, and the sleeve is threaded to also engage the threads of the
90 plug, as shown. These details of construction may be varied to a considerable extent without departing from the spirit of the invention or sacrificing any of its advantages.

The upper end of the reservoir or the plug
95 *N*, when such is employed, is provided with filling-apertures *l*, as seen in Figs. 4 and 5, through which the reservoir is designed to be filled. These apertures are covered by the sleeve when the latter is in place.
100

The reservoir may be formed in sections, if desired, to aid in cleaning the same. Such construction is illustrated in Fig. 6, the sections being detachably held together, say, by being screw-threaded, as illustrated in this
105 view.

What I claim as new is—

1. A self-feeding drawing-pen provided with a feed-conduit connecting the reservoir and pen and arranged exteriorly thereto, the
110 blades of said pen being positively adjustable, as set forth.

2. A self-feeding drawing-pen provided with a chambered head, and a conduit leading therefrom outside thereof and arranged
115 to deliver the ink near the point of the pen, the blades of said pen being positively adjustable, as set forth.

3. A self-feeding drawing-pen provided with an exterior ink-conduit and a feeder
120 within the conduit, as set forth.

4. A self-feeding drawing-pen provided with an exterior conduit and a corrugated feeder-spring within the same, as set forth.

5. A self-feeding drawing-pen provided
125 with an exterior ink-conduit delivering the ink between the pen-points, and a feeder-spring within the conduit, as set forth.

6. A self-feeding drawing-pen provided with a chambered head with valve-controlled
130 communication with the reservoir, and an exterior ink-conduit from the chambered head, as set forth.

7. A self-feeding drawing-pen provided

with an exterior ink-conduit, the discharge end of which is detachably connected with a portion of the pen, as set forth.

5 8. A self-feeding drawing-pen provided with a chambered head, a reservoir with valve-controlled outlet communicating with the chamber of the head, an exterior conduit from the said chamber, and a detachable connection for the discharge end of the conduit
10 with the leg of the pen, as set forth.

9. A sectional reservoir for a self-feeding pen, combined with a valve-rod passing there-through and a removable cap, substantially as specified.

15 10. A self-feeding drawing-pen provided with a reservoir and a chambered head intermediate the reservoir and pen-points, a spring-actuated valve for controlling the flow of ink from the reservoir to the chamber of
20 the head, and a conduit leading from the said head outside thereof, as set forth.

11. In a self-feeding drawing-pen, the combination, with the reservoir, of a valve controlling the outlet therefrom, a valve-stem, a
25 movable portion connected with the outer end of the stem, a spring acting in opposition to the said movable portion, and a conduit leading from the reservoir to and exteriorly of the pen-blades, substantially as specified.

30 12. In a self-feeding drawing-pen, the com-

bination, with a reservoir, of a valve controlling the outlet therefrom, a valve-stem, a movable part connected with the stem, a spring acting in opposition to the movable portion, an adjustable surrounding sleeve, and a conduit
35 leading from the reservoir to and exteriorly of the pen-blades, substantially as specified.

13. In a self-feeding pen, a reservoir, combined with a valve therefor, a valve-stem, a
40 movable portion connected with the stem and closing the end of the reservoir, a plug within the reservoir and provided with filling-aperture, and a spring arranged between the plug and the movable portion, as set forth.

14. In a self-feeding drawing-pen, a reservoir, combined with a chambered head connected therewith, the pen-points, a conduit
45 connected with the head and arranged outside thereof and outside of the pen-points, 50 and a screw-threaded plug for detachably connecting the conduit with the pen-points, as set forth.

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

SAMUEL KER.

Witnesses:

CHARLES S. HARPER,
BENJ. G. COWL.