(No Model.)

F. S. COOLEY.

FOUNTAIN PEN.

No. 538,481. Patented Apr. 30, 1895.

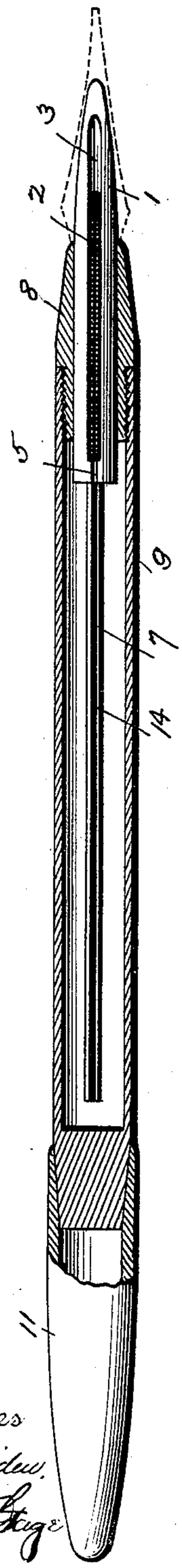

Fig. 1.

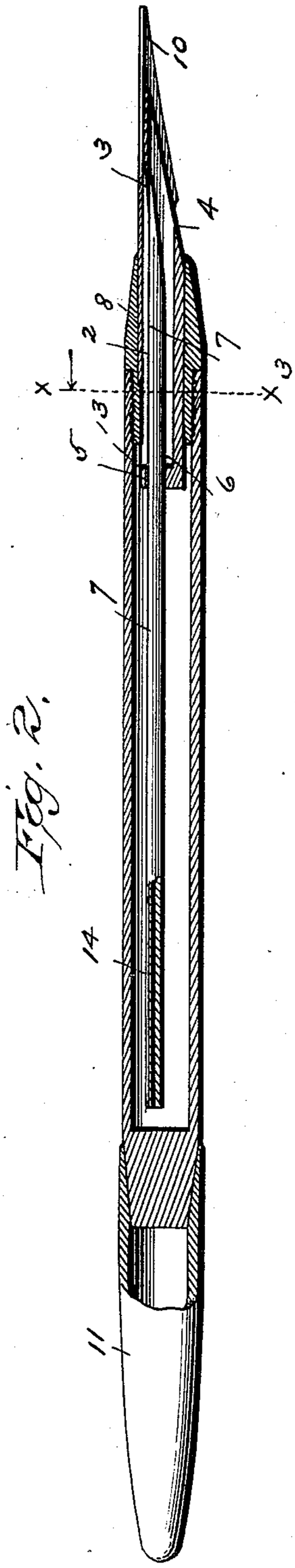

Fig. 2.

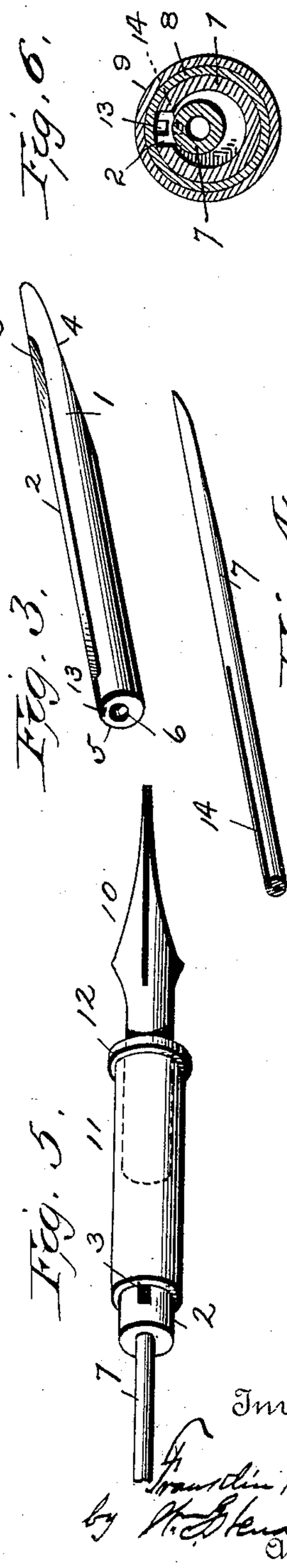

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Witnesses
Wm. F. Sheidow.
Alfred L. Boyce

Inventor
Franklin S. Cooley
by W. G. Henderson
Attorney.

UNITED STATES PATENT OFFICE.

FRANKLIN S. COOLEY, OF PHILADELPHIA, PENNSYLVANIA.

FOUNTAIN-PEN.

SPECIFICATION forming part of Letters Patent No. 538,481, dated April 30, 1895.

Application filed February 1, 1895. Serial No. 536,973. (No model.)

To all whom it may concern:

Be it known that I, FRANKLIN S. COOLEY, a citizen of the United States, residing at Germantown, (Philadelphia,) in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Fountain-Pens; and I do 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to fountain pens, and it has for its object to provide an improved capillary feed of simple construction and adapted to furnish an adequate and continuous feed of ink to the pen proper without the liability of the flow being stopped by reason of the formation of air bubbles in the pen barrel or reservoir, and in which the natural flexibility of the pen will be preserved.

The special features and advantages of the construction will be hereinafter fully pointed out, and to the accomplishment of the objects in view the invention will be fully described and then sought to be specifically defined by the claims, reference being had to the accompanying drawings forming a part hereof, and in which—

Figure 1 is a longitudinal horizontal section through the pen, with parts in full lines. Fig. 2 is a vertical longitudinal section through the pen. Fig. 3 is a perspective of the slotted tubular shell through which will extend the tubular air-duct. Fig. 4 is a perspective detached view of the air-duct tube, and Fig. 5 is a perspective of a modified form of the invention. Fig. 6 is a transverse section on the line $x x$ of Fig. 2, on an enlarged scale.

In the drawings the numeral 1 designates a hollow tube or shell having formed in its top a longitudinally extending slot 2 which at its forward end merges into a groove or gutter 3 which terminates short of or back from the front end of the tube or shell. The lower portion of the tube or shell on its lower face at its front end is cut away in a slanting direction toward the tip or front end of the tube itself, as shown at 4, and the rear of the tube or shell is formed with a solid end 5 in which is formed an aperture or opening 6. Through this hollow tube or shell extends a small tube 7 which forms an air duct and which passes through the opening 6 in the forward end of the shell 1 and extends along the slot 2 in that shell. It lies close to the slot or inner wall of the shell along the slot and terminates at its forward end at the junction of the slot and the gutter 3. By extending this small tube 6 along the slot 2 and causing it to terminate at the junction of the slot and the gutter a capillary feed for the ink to the pen is afforded by capillary action and the ink is caused to flow to the gutter and into the same without interruption which result is not attained with the same satisfaction and results under other constructions. The tube 7 not only serves as a part of the capillary tube but also serves as an air duct for the passage of air from the pen point to the rear of the barrel or reservoir which contains the supply of ink.

To complete the capillary feed or flow of the ink, the tube or shell 1 is inclosed in a casing or shell which may be formed by the nozzle 8 of the pen holder or barrel, the inside wall of the shell or nozzle covering a portion of the slot 2 in the tube or shell 1, and by lying across the slot in the tube or shell the capillary feed of the ink to the pen along the walls of the slot, the surface of the air duct tube and the inner wall of the outside nozzle or shell is made perfect.

The rear portion of the tube or shell 1 is extended back of the inner end of the outside shell or nozzle 8 as illustrated so that a portion of the slot 2 will extend back of the inner end of the outer shell or nozzle and thereby admit the ink from the reservoir or barrel into the slot in order that it may be fed forward to the pen proper. By this feature of construction is obtained a better feed of the ink in the reservoir or barrel into the tube or shell 4. It also enables the rear end of the tube or shell 4 to be made solid so that a stronger and better union can be effected between the tube or shell 4 and the air duct tube 7 which passes through the solid end of the shell or tube 4, thus insuring greater strength and durability of parts. By uniting the air duct tube to the shell or tube 4 in this manner the inside diameter of the tube or shell 4

can be made larger than otherwise so as to afford an air space between the inside wall of the shell or tube 4 and the under portion of the air duct tube 7 where it passes through the shell or tube 4 thus insuring a better flow of the ink by capillary attraction along the air duct tube and walls of the slot in the tube or shell 4 and rendering easier access to the interior of the shell or case for the purpose of cleaning the parts.

The reservoir or barrel of the pen is indicated by the numeral 9 and the pen proper by the numeral 10.

Instead of the nozzle 8, I may employ a nozzle in the form of a plain tube or shell 11 to inclose the tube or shell 4 as illustrated in Fig. 5 of the drawings, and this tube or shell 11 may be strengthened at the end where the pen proper enters by a rib or shoulder 12, and this form will admit of the tube being used with any ordinary hollow holder by simply inserting the end of the shell or tube 11 into the open end of the hollow handle, which handle may be filled with ink, or not as desired.

I prefer to form a groove 13 in the top of the solid end portion 5 of the shell 4 and have it in line with the slot 2 and with a groove 14 which I prefer to form in the tube 7 and which extends longitudinally along the top surface of the said air-duct tube 7, the grooves 13 and 14 and slot 2 being in line with each other. The purpose of this is to effect an instantaneous flow of the ink to the pen proper as directed along the groove 14 to the groove 13 and through the slot 2 to the pen proper and thus avoid the necessity of shaking the pen in order to start the flow of ink. This construction also causes the ink to flow quickly away from the pen proper and back into the pen-barrel or reservoir when the pen is put into the pocket, thus avoiding the tendency of the ink getting around the end of the nozzle and soiling the fingers. This same construction can be employed even if the tube 7 and shell 1 were made in one piece but having the groove or slot 2, the groove 13 and groove 14 in line with each other.

Having described my invention and set forth its merits, what I claim is—

1. In a fountain pen, the combination with the barrel and the end nozzle, of a hollow tube formed with a solid end and a gutter at the opposite end and having a longitudinally extending slot, said slot at one end merging in said gutter and at the other end terminating back from the hollow end of the tube and lying outside of the end of the nozzle, and an air tube extending through the solid end of the slotted tube and lying along the slot in said tube and terminating at the junction of said slot and gutter, substantially as and for the purposes described.

2. In a pen, the combination of a tube having a longitudinally extending slot formed in the wall thereof, a gutter at one end of said tube into which said slot merges, an inner tube within said slotted tube extending along said slot and terminating at the junction of the slot and gutter, and an outer nozzle whose inner end lies back from the inner end of said slot so that a portion of the slot will lie outside of the inner end of the nozzle, substantially as and for the purposes described.

3. In a pen, the combination with the barrel, of a tube formed with a gutter at one end and having a longitudinally extending slot in its wall merging in said gutter, an air tube extending through said slotted tube along the slot therein so as to leave a space between the lower surface of said air tube and the inner wall of the slotted tube, and an outside nozzle around the slotted tube and having its inner end lying back from the end of the slot so that a portion of the slot will lie outside of the inner end of said outside nozzle, substantially as and for the purposes described.

4. In a fountain pen, the combination with the barrel and the end nozzle, of a hollow tube having a longitudinally extending slot in the wall thereof, said slot terminating at its inner end beyond the inner end of the outside nozzle so as to have a portion of the slot lie outside of the inner end of said outside nozzle, and an air tube passed through the slotted tube and lying along the slot therein, substantially as and for the purposes described.

5. In a fountain pen, the combination with the barrel, of a feed portion 1 having a channel in its top surface extending longitudinally thereof, and an air tube extending rearwardly from the feed portion 1, and having in its top surface a longitudinally extending groove in line with the longitudinally extending channel of the portion 1, substantially as and for the purposes described.

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

FRANKLIN S. COOLEY.

Witnesses:
GEO. C. JACKSON,
WAT COHN.