

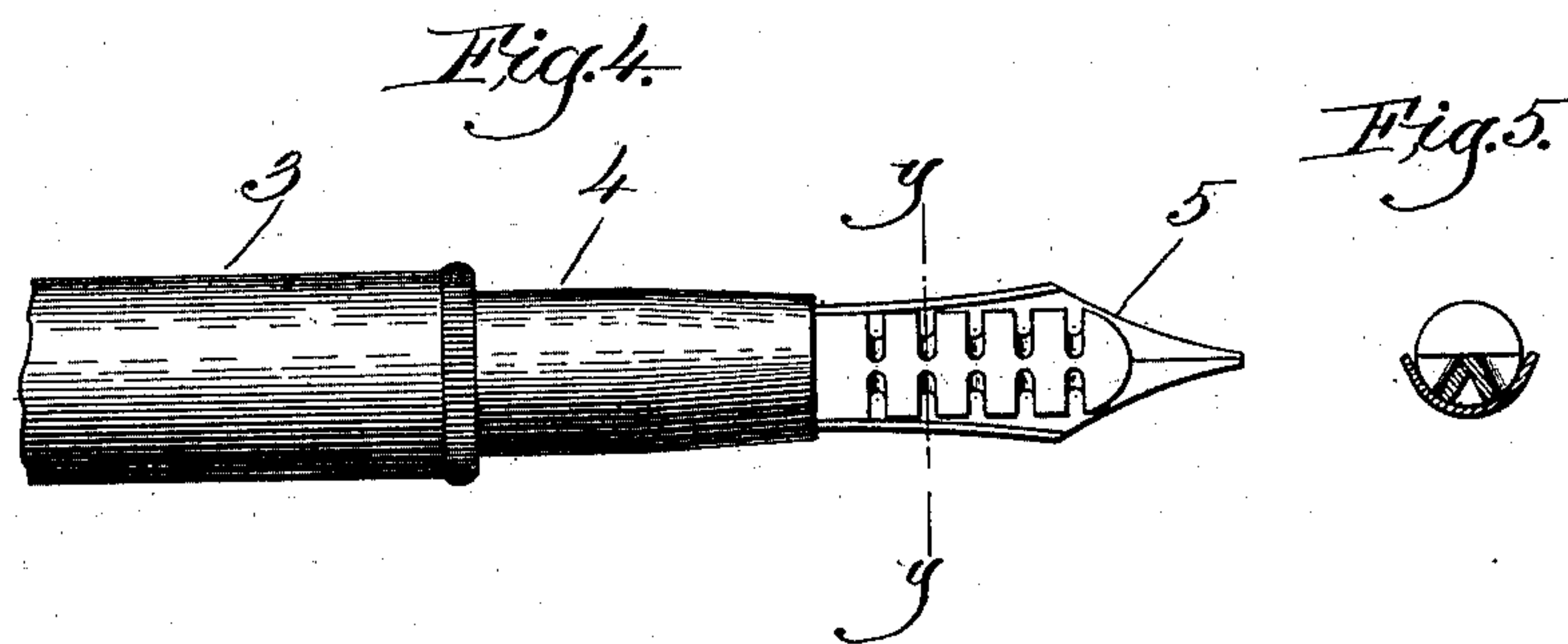
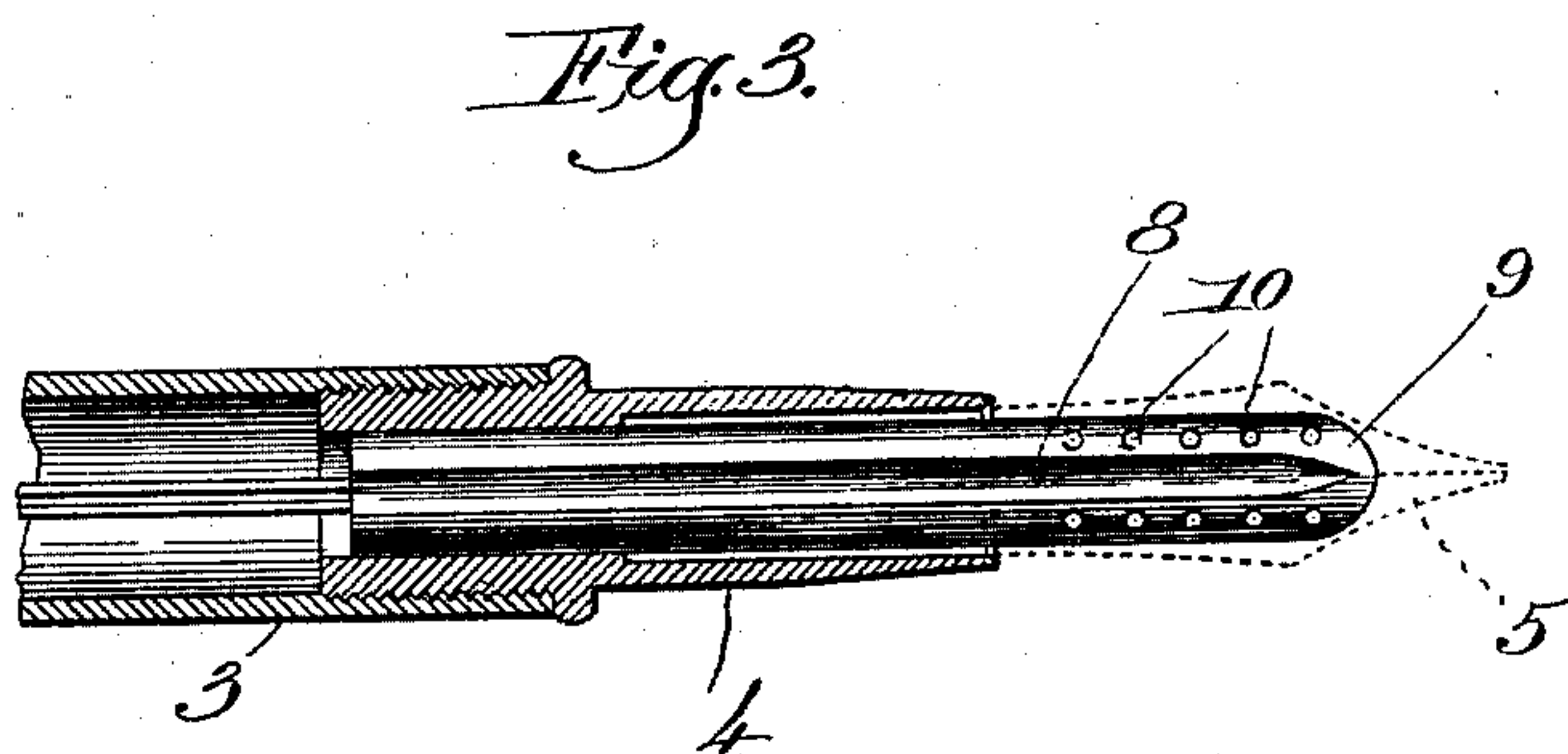
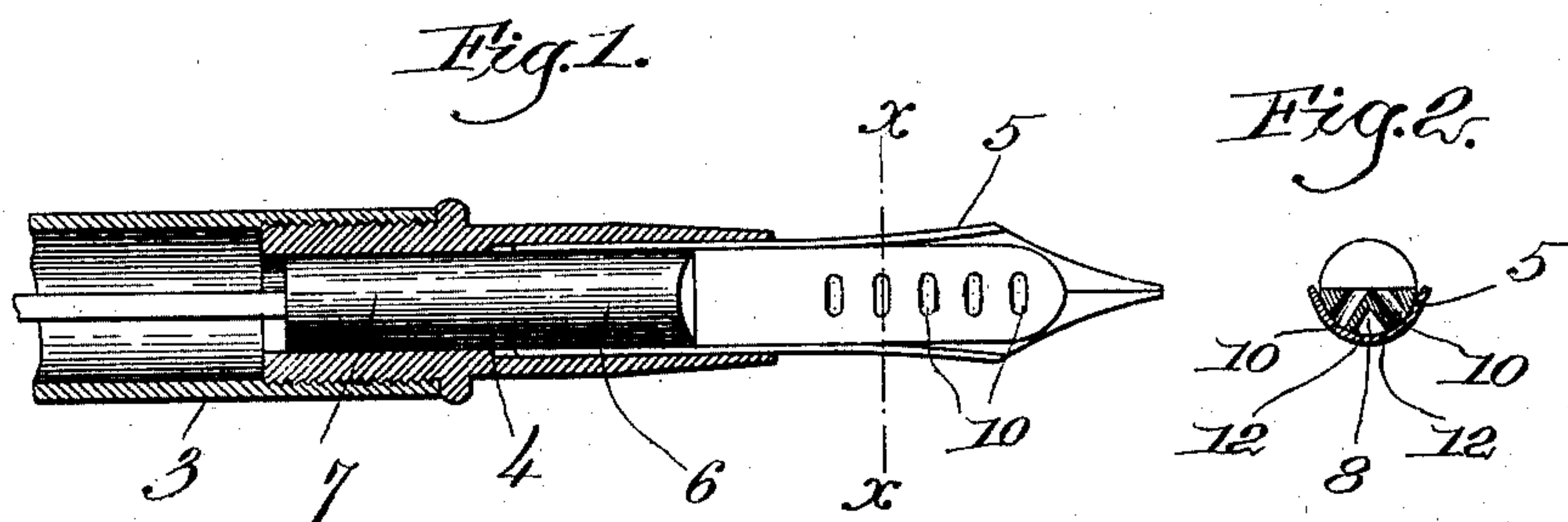
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A. EBERSTEIN.
FOUNTAIN PEN.

APPLICATION FILED SEPT. 4, 1902. RENEWED OCT. 13, 1903.

NO MODEL.



Witnesses:

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UNITED STATES PATENT OFFICE.

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FOUNTAIN-PEN.

SPECIFICATION forming part of Letters Patent No. 750,271, dated January 26, 1904.

Application filed September 4, 1902. Renewed October 13, 1903. Serial No. 176,851. (No model.)

To all whom it may concern:

Be it known that I, AUGUST EBERSTEIN, a citizen of the United States, and a resident of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Fountain-Pens, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.

This invention relates to that part of a fountain-pen which conducts or feeds the ink from the reservoir in the barrel to the nibs of the pen; and it has for its object to provide a novel form of pen in which all the danger of gushing or flooding will be overcome.

As most fountain-pens are commonly constructed a feed-bar is inserted in the nozzle of the pen and has formed therein a feeding groove or duct, through which the ink is fed from the reservoir in the barrel to the nibs of the pen as required during the use of the pen. It frequently happens, however, that a slight jar or the expansion of the air in the barrel due to the heat of the hand of the person using the pen or some other abnormal condition forces the ink to the nibs of the pen faster than it can be used, with a result that the surplus ink drops off from the pen, thus forming blots, this being called "flooding" or "gushing." Various expedients have been resorted to to overcome this difficulty, such as providing overflow-pockets or surplus-reservoirs, into which the surplus ink which is forced to the pen-nibs can flow and by which it is retained to prevent its dropping off from the pen. In some instances these overflow-pockets have been formed by providing the feed-bar where it extends beneath the pen with a transverse piece which forms, with the pen and with the feed-bar, an overflow-pocket situated out of the direct line of conduction from the reservoir in the barrel of the pen to the pen-nibs, but in indirect communication therewith, whereby any surplus ink which is conducted through the capillary channel of the feed-bar is forced into said overflow-pockets instead of off from the end of the pen.

These pockets as heretofore constructed have been comparatively large—that is, of a

size to hold three or four drops—and it has been found in practice that while the pockets serve to receive the surplus ink as it is forced through the capillary channel of the feed-bar yet when such comparatively large pockets become filled with ink a jarring of the pen will often dislodge some of the ink to thereby cause blots. To overcome this difficulty and to provide a pen which will prevent any flooding or gushing under all circumstances, I have provided the feed-bar of my pen with one or more capillary reservoirs, which are situated out of the direct line of conduction from the main reservoir in the barrel to the pen-nibs, but which are in indirect communication therewith. These capillary reservoirs may either be in the form of small capillary apertures, which are drilled through or formed in the feed-bar or may be in the nature of recesses or slits. In either case it is essential that each reservoir shall have such a small cross-sectional area that any ink which finds its way into the capillary reservoir shall be retained therein by capillary attraction. This is essential in order to prevent the surplus ink from being dislodged from the reservoir by a jar or other cause. With my improved pen whenever from any cause the ink is conducted from the main reservoir to the pen-nibs faster than it can be used the surplus ink finds its way into the capillary reservoir or reservoirs largely by capillary attraction, and owing to the small cross-sectional size of the areas of the reservoirs such surplus ink is held therein by capillary attraction. This capillary attraction is sufficient so that when the capillary reservoir or reservoirs once become filled all further flooding of the pen is effectively stopped.

In the drawings, Figure 1 is a longitudinal sectional view of a portion of a pen having my improvement applied thereto. Fig. 2 is a section on the line *x x*, Fig. 1. Fig. 3 is a top view of a portion of a fountain-pen having my improvement with a pen shown in dotted lines to better show the structure of the feed-bar. Fig. 4 shows a modified form of my invention; and Fig. 5 is a section on the line *y y*, Fig. 4.

My invention is applicable to any fountain-pen, whether the barrel has the old-fashioned screw-threaded engagement with the nozzle or whether the nozzle has secured thereto an
 5 expansible reservoir for holding the ink. For convenience I have shown the first type of pen in the drawings accompanying this application, and 3 designates the usual barrel, which has a common screw-threaded connection with
 10 the nozzle 4 of any suitable construction, which carries at one end a pen 5, as usual.

The feed-bar is designated by 6, and, as usual in fountain-pens, the end 7 thereof is substantially cylindrical and fits snugly with-
 15 in the nozzle 4, the said feed-bar having the usual feed-groove 8, which may be of any suitable shape and which extends from the inner end of the feed-bar nearly to the outer end 9 thereof in order to conduct the ink to the slit
 20 in the nibs of the pen. The parts thus far described are or may be all as usual in fountain-pens.

One feature of my invention consists in providing the portion of the feed-bar beneath
 25 the pen with one or more capillary reservoirs into which the surplus ink is forced and by which it is retained by capillary attraction, and another feature consists in making the portion of the feed-bar which is immediately
 30 under the pen of such a shape that it will have a considerable extent of surface in substantial contact with the under side of the pen.

Referring to the drawings, it will be seen that the portion 9, or the outer end of the feed-
 35 bar, is substantially semicylindrical in cross-section and has substantially all its semicylindrical surface in contact with the under side of the pen, the semicylindrical end 9 being of sufficient size to have the capillary reservoirs,
 40 hereinafter described, formed therein.

In the form of my invention shown in Figs. 1, 2, and 3 the capillary reservoirs are in the form of small apertures 10, which are bored or otherwise formed in the feed-bar and which, as illus-
 45 trated, extend through the feed-bar from the under side to the upper side thereof. Such reservoirs are shown as being situated out of line with the feed-duct 8 and as having no direct communication therewith. These reservoirs,
 50 however, have an indirect communication with the feed-groove 8 between the pen and the dividing-wall 12, which separates the feed-groove from the reservoir. Any number of such reservoirs or chambers may be employed,
 55 and they may have any relative arrangement desired. In Figs. 1 to 3 said reservoirs are shown as being situated on both sides of the feed-duct, the reservoirs on one side being situated directly opposite those on the other side.
 60 It is within the scope of my invention to employ the reservoirs only on one side of the feed-duct, if desired, and also to arrange the two series of reservoirs on opposite sides of the feed-duct in staggered relation to each other
 65 or in any other relative position.

In Figs. 4 and 5 the reservoirs are given a slightly different shape—that is, they are in the form of slits or notches cut into the sides of the feed-bar. I would state, however,
 70 that such slits or notches should have only such a cross-sectional area that the ink will be held therein by capillary attraction. This is one of the important features of my invention—that is, making the capillary reservoirs
 75 of such a size or having such cross-sectional area that the ink will be retained therein by capillary attraction.

Another important point in my invention is the comparatively large area of the feed-
 80 bar and pen which are in substantial contact. While the pen is in contact with the semicylindrical surface of the feed-bar, yet such contact is not such as to prevent the ink filling the slight space between the pen and feed-bar and being held therein by capillary attraction.
 85 While this space is comparatively small, yet it does, nevertheless, form a capillary reservoir having quite a large area, and the film of ink which fills the said space is held between the pen and feed-bar with sufficient capillary at-
 90 traction that any ordinary pressure which may exist in the barrel of the pen or any ordinary jarring will not force the ink around the feed-bar. This construction of feed-bar also pre-
 95 vents the air from entering the fountain-pen as rapidly as if the feed-bar were only wide enough at this point to have the feeding-groove formed therein, and as a consequence any tendency to gush or flood is prevented by
 100 the formation of a partial vacuum in the barrel. This comparatively large area of capillary surface, however, prevents the pen from getting dry and maintains the “wet line” even though the pen is seldom used.

In the use of my improved pen the ink will
 105 ordinarily be conducted to the pen-nibs as usual in this class of devices; but when for any reason the pen tends to flood the surplus ink will be forced from the feeding-groove into the capillary reservoir or reservoirs,
 110 where it will be retained by capillary attraction.

Since each one of the reservoirs contains only a small quantity of ink and since such ink is held in the reservoir by capillary at-
 115 traction, it is impossible to dislodge it by a jar or any other means except by a proper use of the pen, as would be the case if the reservoirs were of a size to hold three or four drops. Such flooding or gush is also pre-
 120 vented, as above stated, by the comparatively large area on the surface of the feed-bar either side of the feed-groove, which is in substantial contact with the pen and which prevents too rapid admission of air to the feed-groove.
 125

While I have herein shown some ways in which my invention may be embodied, yet I do not wish to be limited to the precise construction shown, as the capillary reservoirs may be given various other shapes and posi-
 130

tions than that herein illustrated without in any way departing from the spirit of my invention. It will also be obvious that some features of my invention are applicable to
5 other pens than fountain-pens.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

10 1. In a fountain-pen, a feed-bar having the usual feed-groove and provided with one or more capillary reservoirs situated out of the line of conduction from the main reservoir to the pen-nibs, but in indirect communication therewith.

15 2. In a fountain-pen, a main reservoir, and a pen, combined with a feed-bar having in addition to the ordinary feeding-groove, one or more capillary apertures which are independent from said feeding-groove.

20 3. In a fountain-pen, a main reservoir, and

a pen, combined with a feed-bar having in addition to the usual feed-groove for conducting the ink from the main reservoir to the pen, a plurality of capillary reservoirs situated on each side of the feed-groove and in indirect
25 communication therewith.

4. In a fountain-pen, a main reservoir, and a pen, combined with a feed-bar having in addition to the usual feeding-groove one or more capillary apertures which are independent
30 from said feeding-groove, the said feed-bar being shaped to contact with substantially the entire outside of the pen.

In testimony whereof I have signed my name to this specification in the presence of two sub-
35 scribing witnesses.

AUGUST EBERSTEIN.

Witnesses:

MARCUS W. FELDMAN,
LOUIS C. SMITH.