

No. 723,113.

PATENTED MAR. 17, 1903.

P. E. WIRT.  
FOUNTAIN PEN.

APPLICATION FILED APR. 15, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

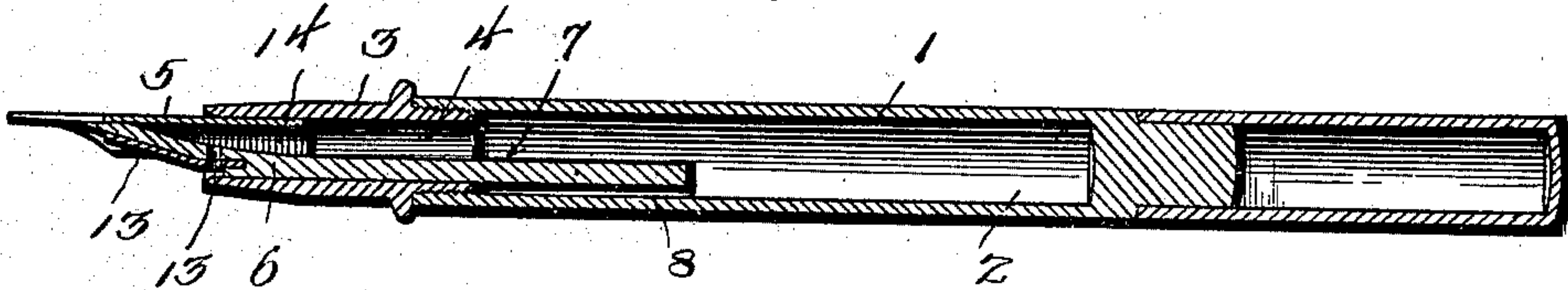


Fig. 2.

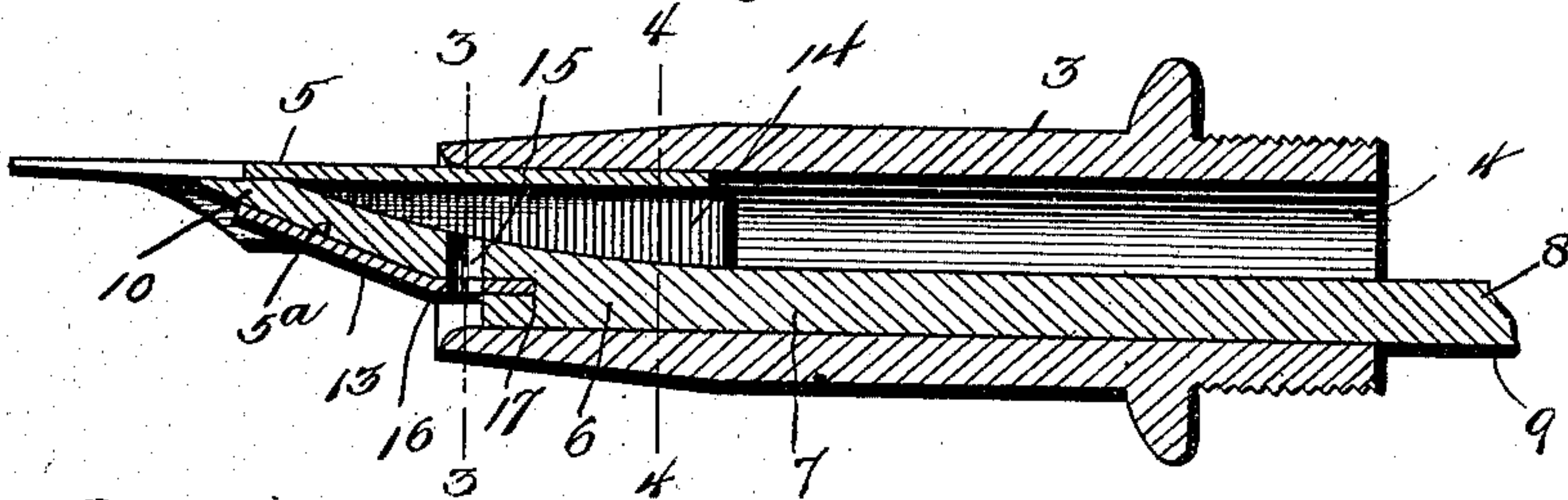


Fig. 3.

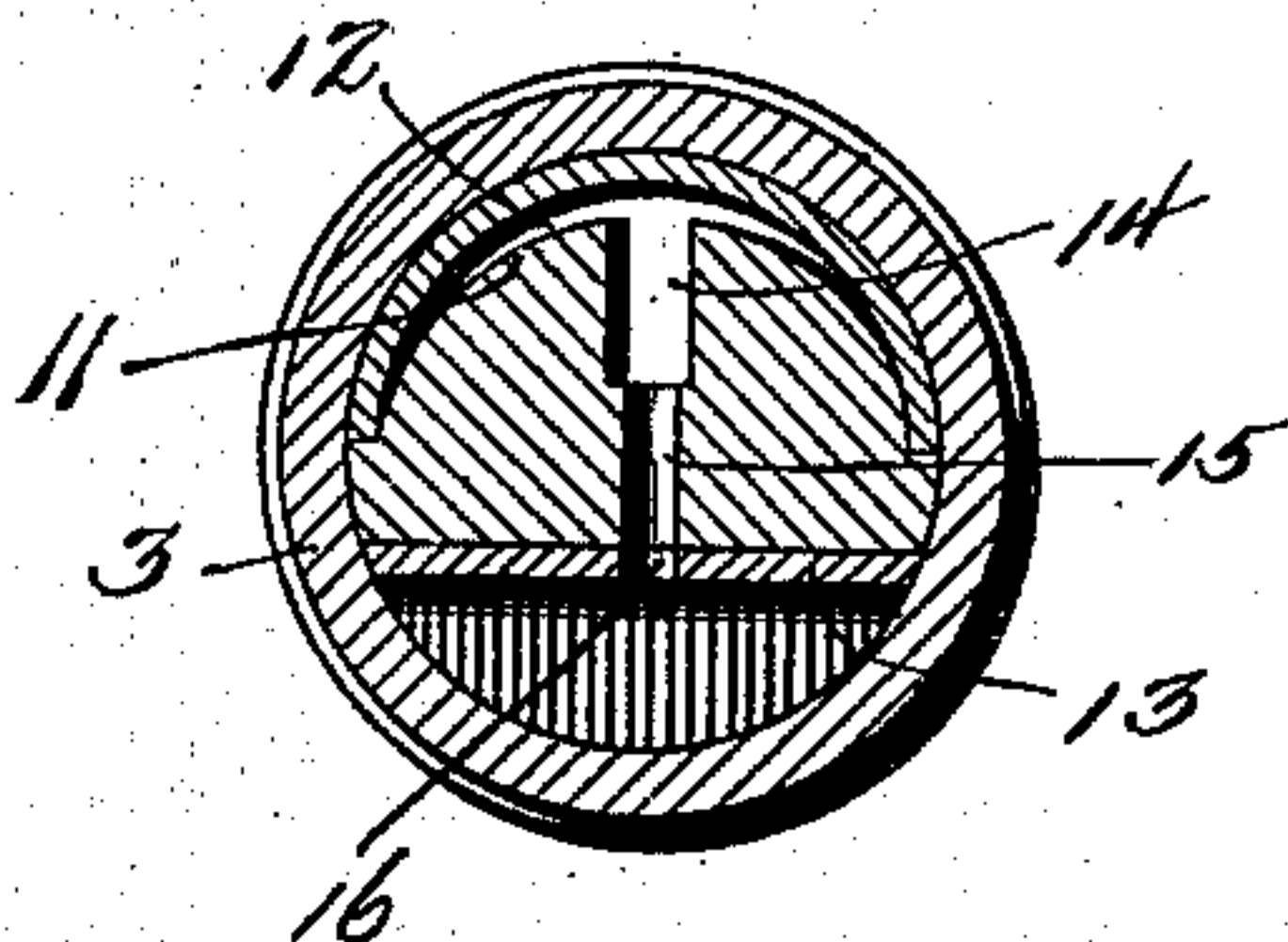


Fig. 4.

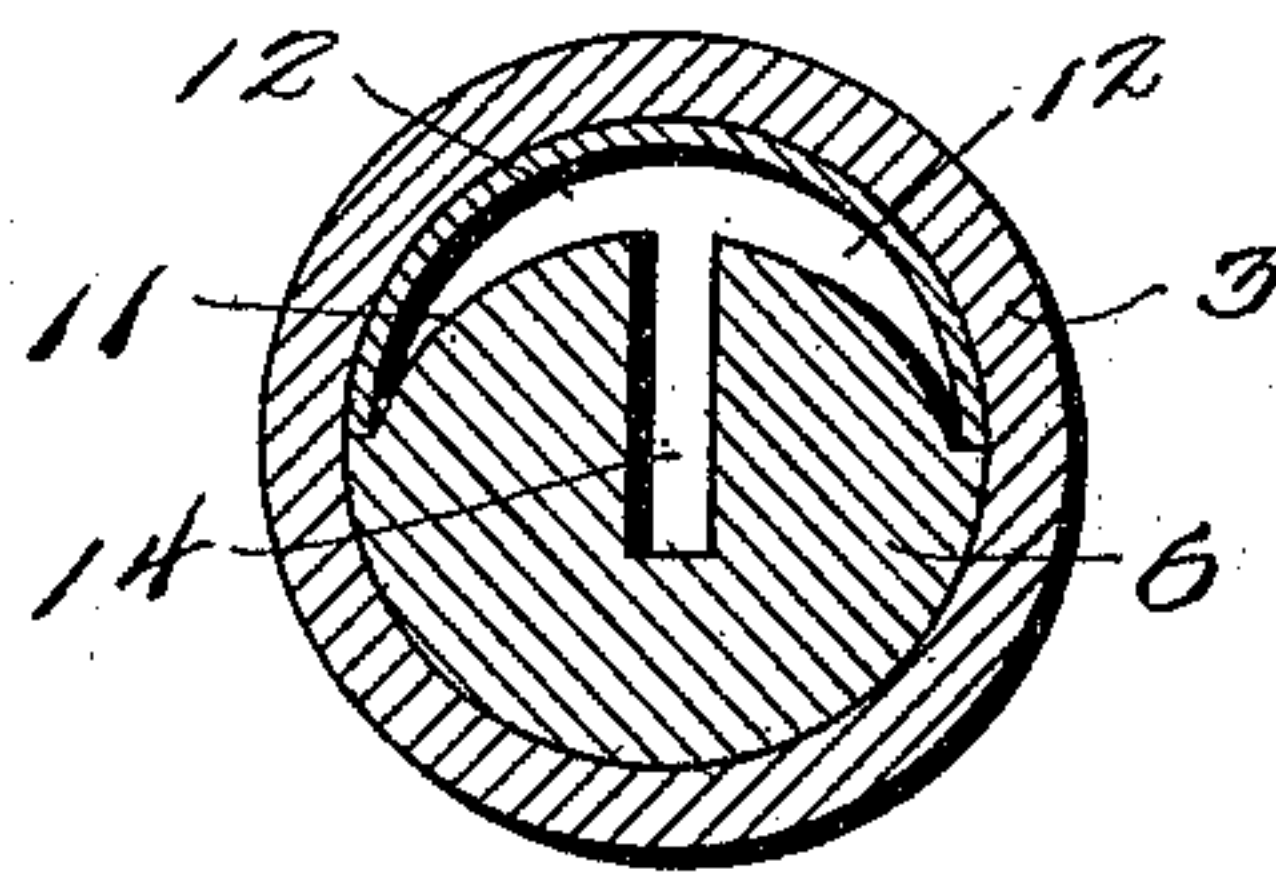
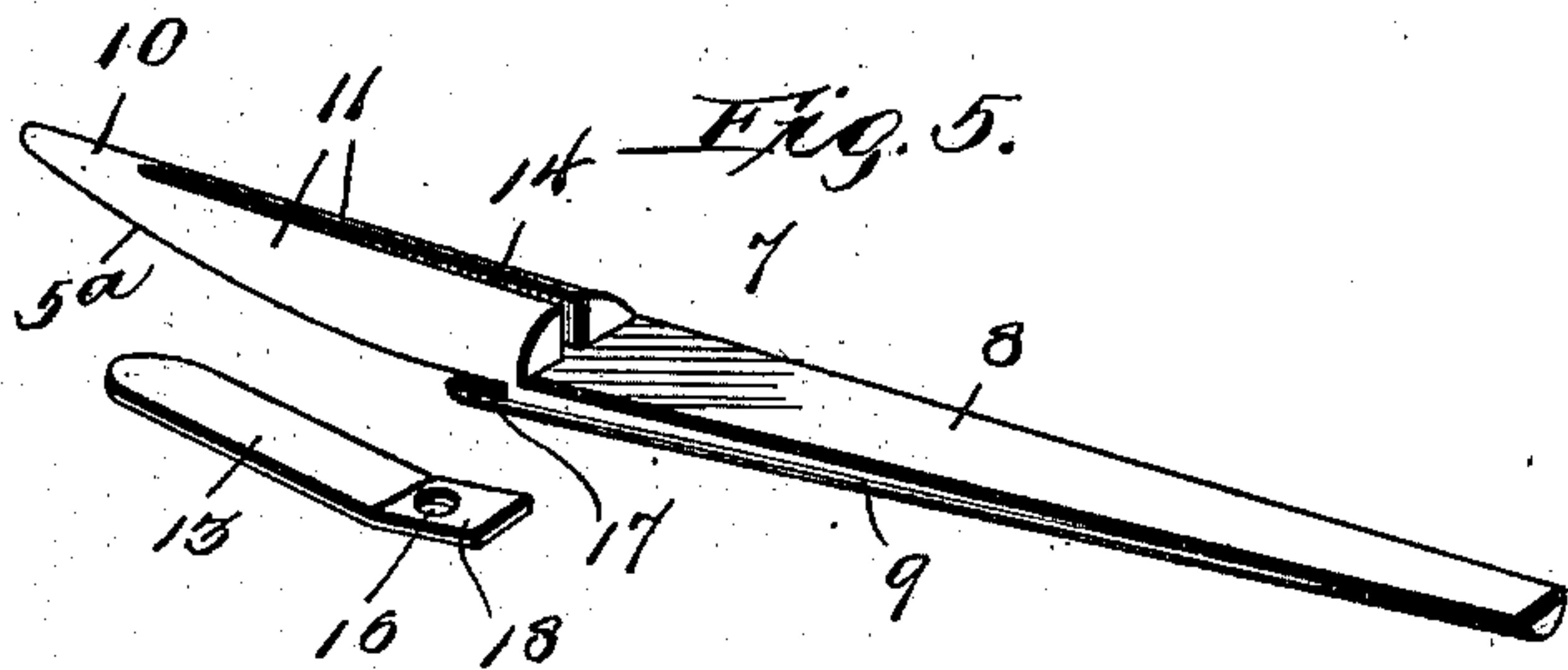


Fig. 5.



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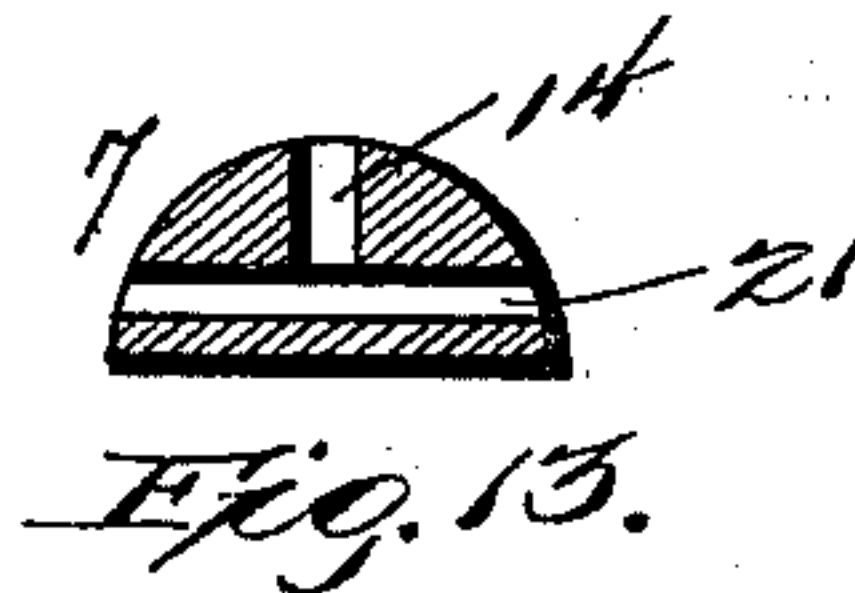
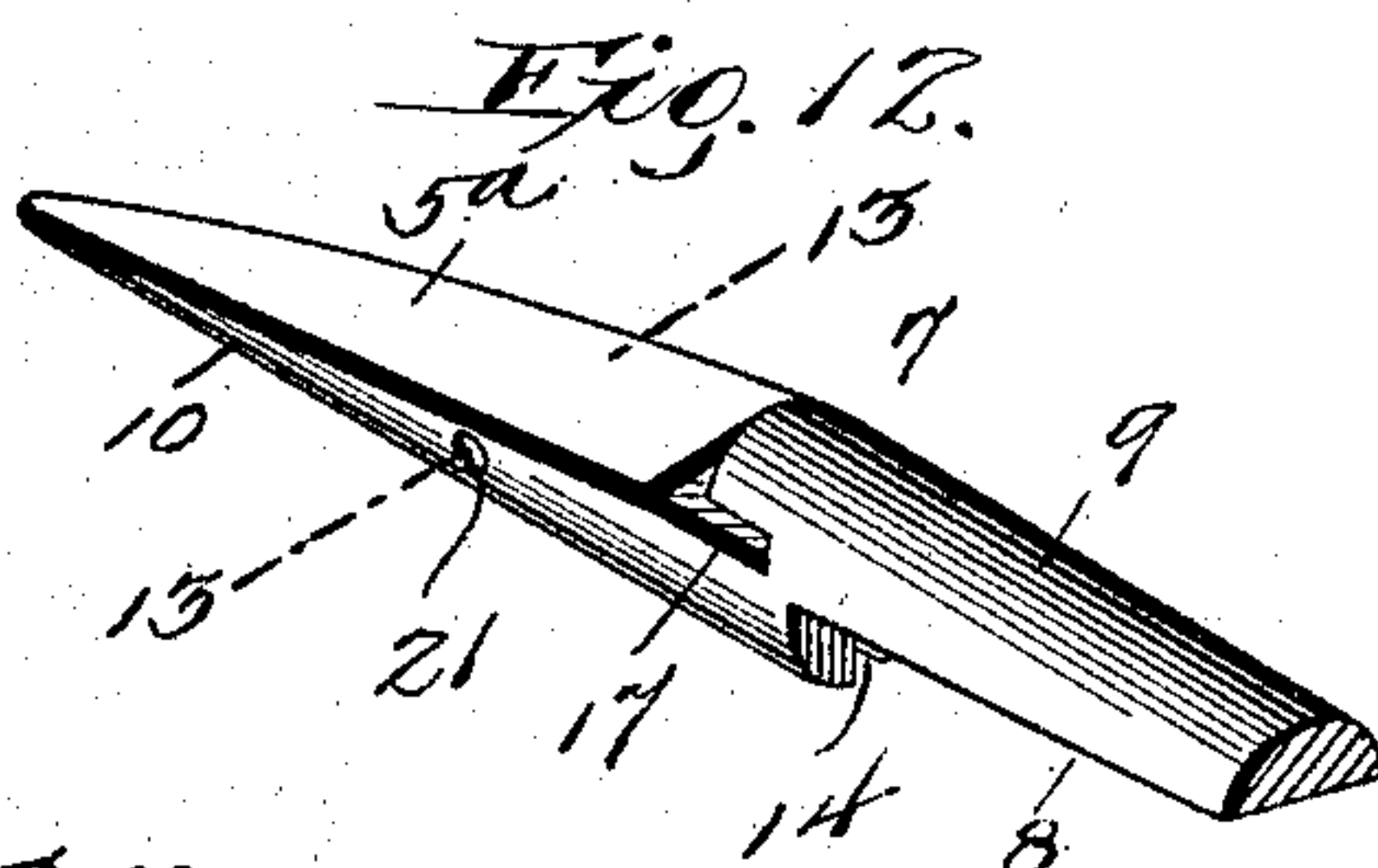
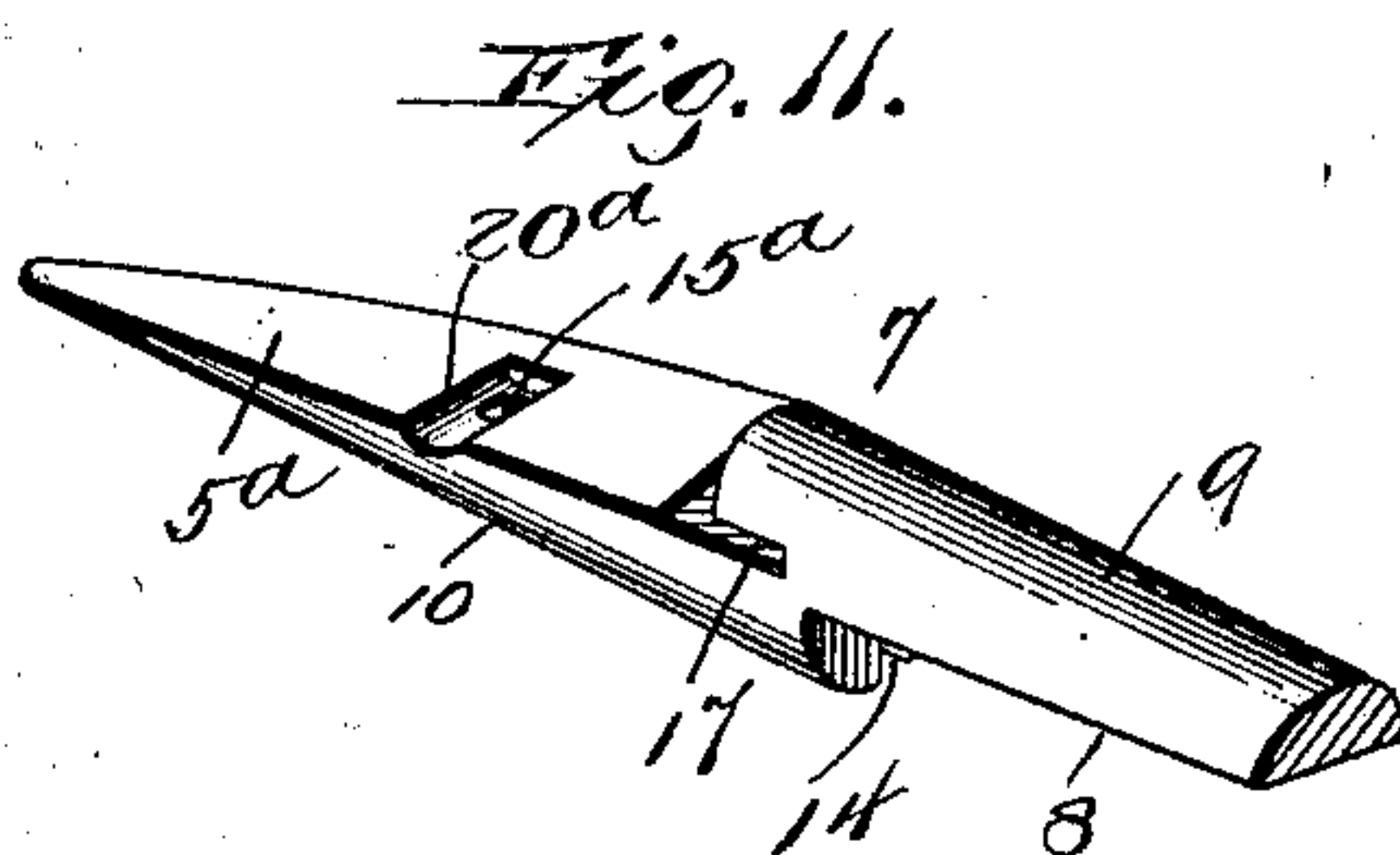
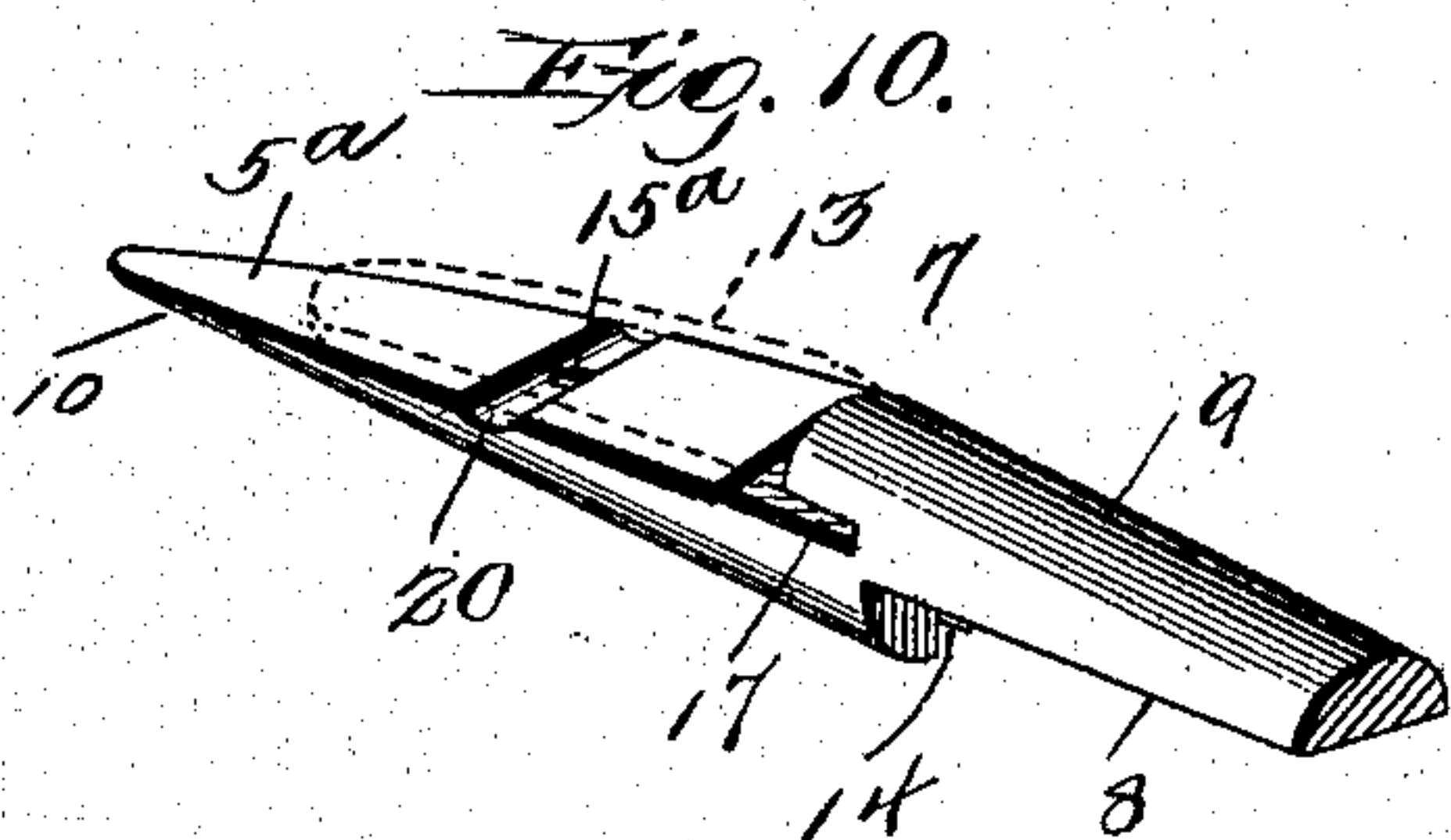
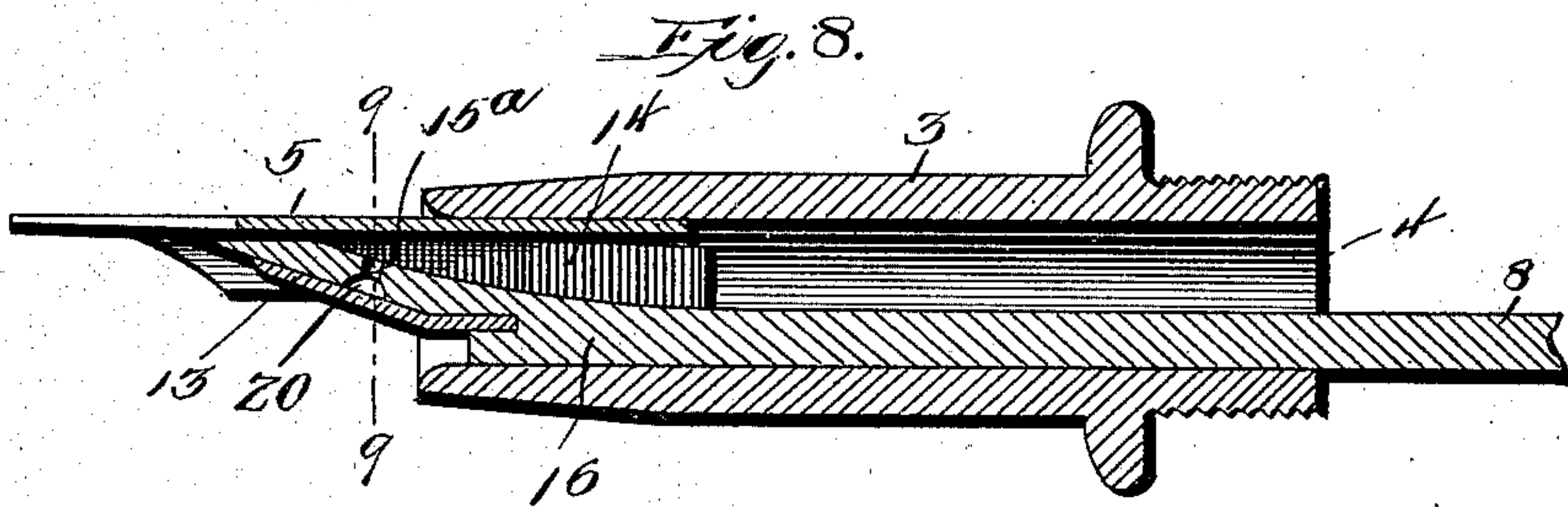
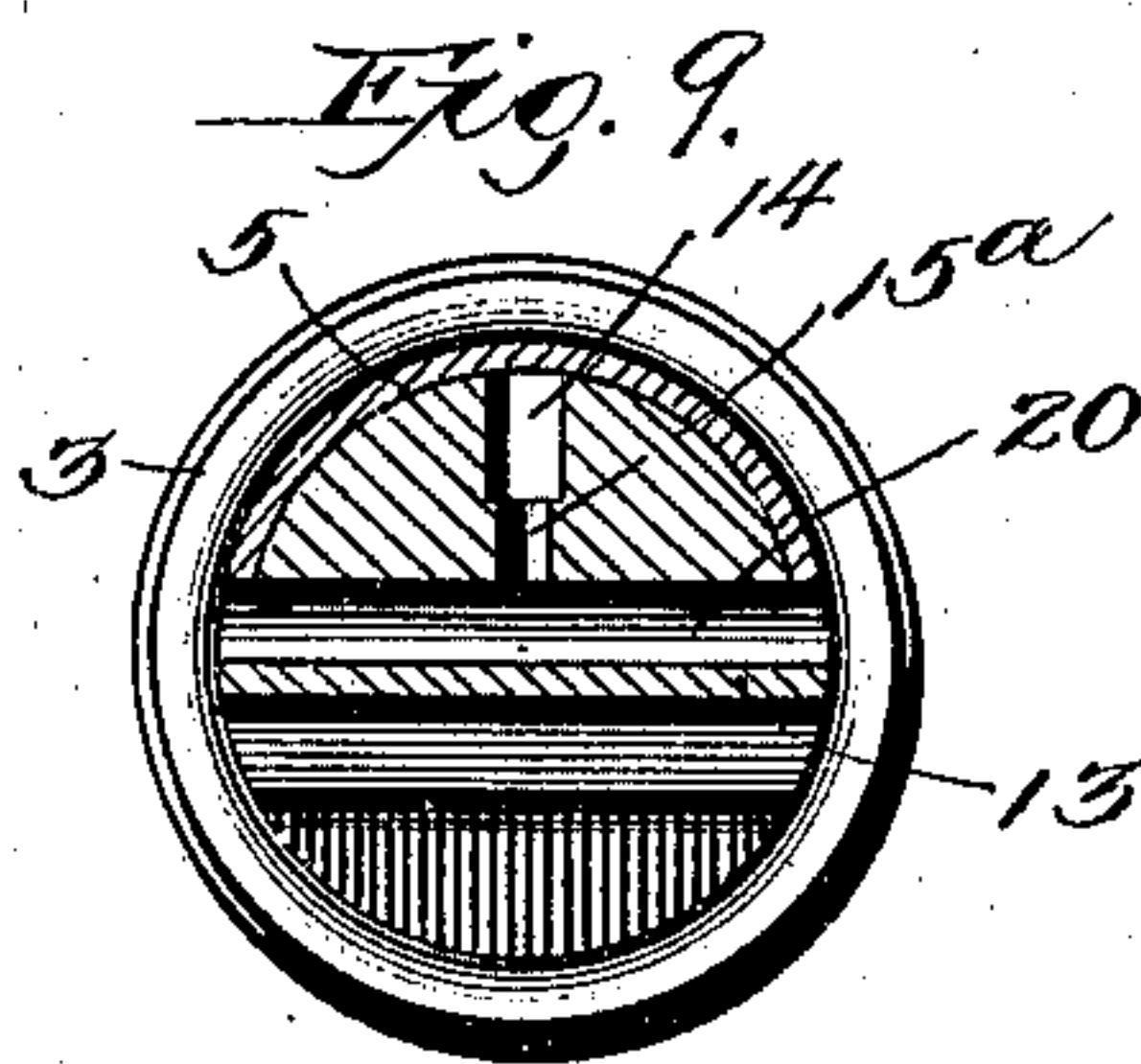
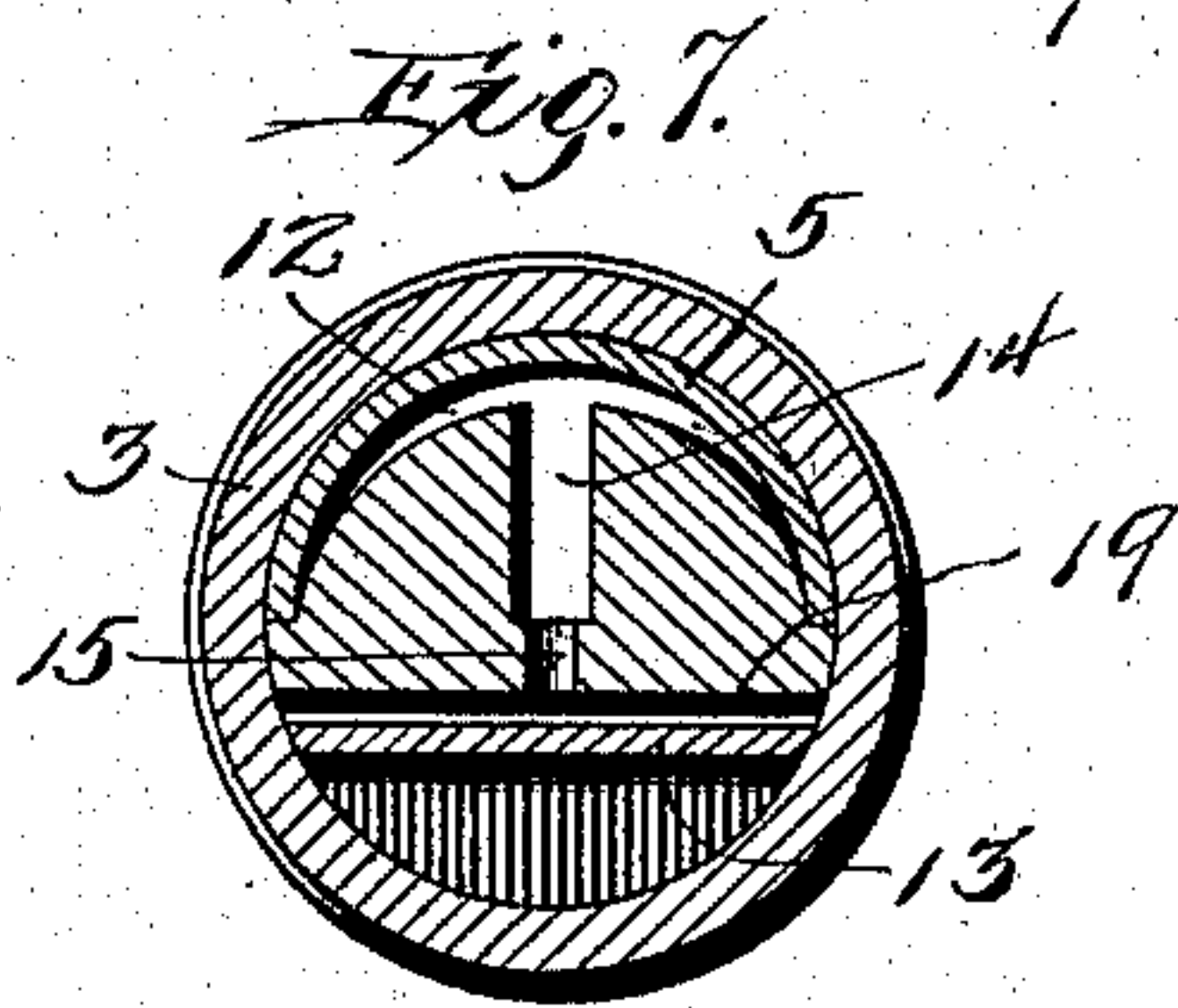
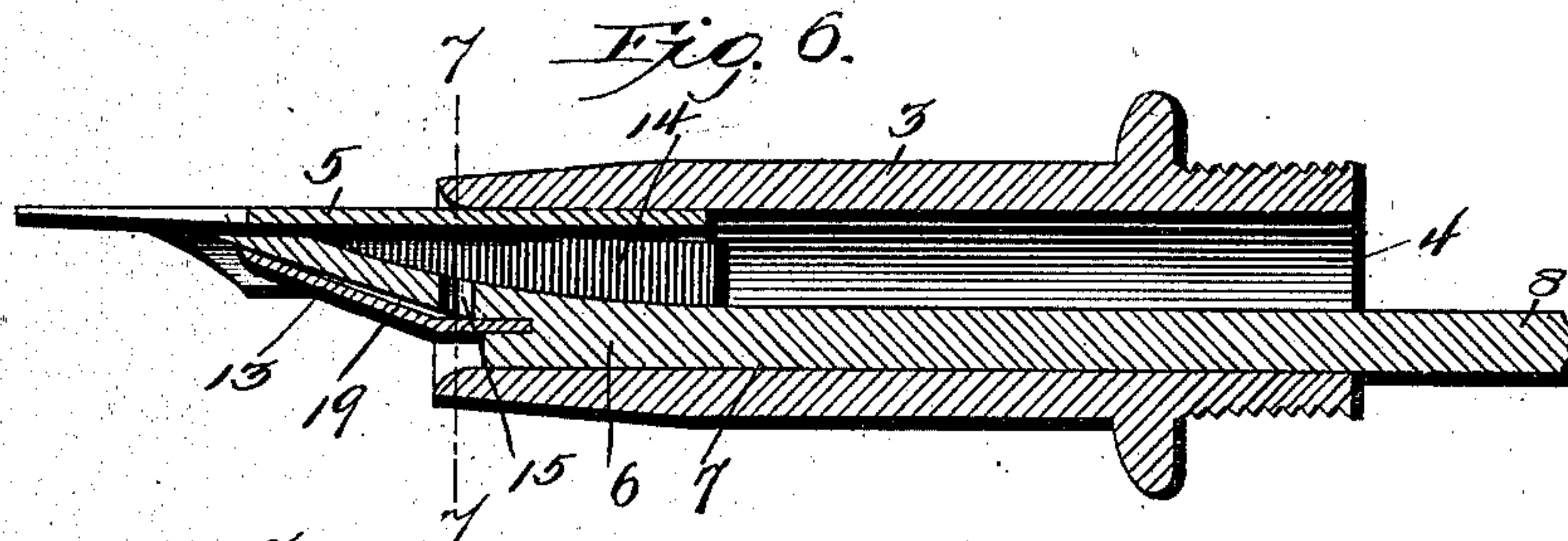
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NO MODEL.

2 SHEETS—SHEET 2.



Witnesses

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# UNITED STATES PATENT OFFICE.

PAUL E. WIRT, OF BLOOMSBURG, PENNSYLVANIA.

## FOUNTAIN-PEN.

SPECIFICATION forming part of Letters Patent No. 723,113, dated March 17, 1903.

Application filed April 15, 1902. Serial No. 103,042. (No model.)

*To all whom it may concern:*

Be it known that I, PAUL E. WIRT, a citizen of the United States, residing at Bloomsburg, in the county of Columbia and State of Pennsylvania, have invented certain new and useful Improvements in Fountain-Pens, of which the following is a specification.

This invention relates to fountain-pens of the type in which the flow of ink is controllable largely by capillary attraction, and particularly has reference to improvements in the feeding means for the pen.

The invention has specially in view the provision of certain practical embodiments of the invention disclosed and covered in my application filed January 16, 1902, Serial No. 90,061, and is therefore intended as a companion to the latter.

In the case referred to it is pointed out that a very common objection to many of the ordinary types of fountain-pens upon the market resides in the fact that just within the nozzle and about the pen and its feeder the ink will ordinarily dry when the pen is not in use, with the result of an incrustation or sediment forming about the inner and outer surfaces and even about the surface where no attraction is required. The result of such incrustation or sediment is either a material interference with the flow of the ink or with the operation of the pen. To overcome this objection, the purpose of the invention, as set forth in the aforesaid application, is to make suitable provision whereby sediment or deposit of solid matter will not so readily form at the mouth of the pen-bearing section, as well as about the external or exposed portion of the feeder, of whatever type the latter may be. To secure this result, the invention aforesaid comprehends, broadly speaking, a feeder having an outer or external non-adherent surface, preferably in the form of a non-corrodible polished metallic sheath constituting an external covering or lining for the feeder, feeding bar, shaft, or tongue. Said sheath while primarily providing a surface which will better clear itself of ink when through using the pen at the same time subserves other auxiliary useful functions. The same general objects are preserved in the present invention; but the latter comprehends several novel forms of construction in-

volving a useful and practical arrangement of the metallic sheath or covering for the exposed portion of the feeder, and particularly embodying constructions providing an efficient form of "under-feed" pen, wherein the feeder or feeding-bar lies at the lower or under side of the pen-point.

With these and many other objects in view, which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

The essential features of the present invention embodying the employment of a sheath or lining of a flat-plate type and novel arrangements of the latter, in connection with the provision of means for the admission of air, as well as the provision of an overflow-space, are necessarily susceptible to embodiment in various forms of construction without departing from the scope of the invention. However, for illustrative purposes the preferred embodiments of the improvements contemplated by the present case are shown in the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view of a fountain-pen of the under-feed type, showing the feeder or feed-bar fitted upon the exposed surface thereof, with a metallic outer sheath or lining, such as contemplated by the present invention. Fig. 2 is an enlarged sectional view of the same construction, showing the pen-bearing section and the feeder parts associated therewith. Figs. 3 and 4 are detail cross-sectional views, respectively, on the lines 3 3 and 4 4 of Fig. 2. Fig. 5 is a detail in perspective of the form of feeder illustrated in Figs. 1 and 2 and the flat-plate type of sheath or lining associated therewith. Fig. 6 is a view similar to Fig. 2, illustrating an adjustment or mounting of the sheath or lining to make provision for a well-defined overflow-space between the sheath or lining and the external surface of the feeder. Fig. 7 is a cross-sectional view on the line 7 7 of Fig. 6. Fig. 8 is a view similar to Fig. 6, illustrating a modification in the means which provide for the admission of air. Fig. 9 is a detail cross-sectional view on the line 9 9 of Fig. 8. Fig. 10 is a detail in perspective of



the modified form of feeder shown in Figs. 8 and 9. Fig. 11 is a detail view similar to Fig. 10, showing another modification in the provision for admitting air to the reservoir. Fig. 12 is also a detail sectional view showing still another modified view of admitting air to the reservoir. Fig. 13 is a detail cross-sectional view on the line 13 13 of Fig. 2.

Like numerals of reference designate corresponding parts in the several figures of the drawings.

The invention in its broad aspect is set forth in the application aforesaid, Serial No. 90,061, and is applicable to all types of fountain-pens involving a feeder in the form of a feeding bar, shaft, or tongue, usually lying next to the pen-point and extending into the reservoir to provide for controlling the supply of ink by capillary attraction. The invention is likewise applicable to either the top or under feed pen, wherein the feeder or feeding element either lies on the upper or lower side of the pen-point. The present invention, however, contemplates certain forms which possess special utility in connection with an under-feed pen, although it should be understood that the invention is, even in the aspect represented by the present case, not restricted to a particular type of pen.

Like in the other case, the essential feature of the invention resides in the employment of a non-corrodible polished sheath (preferably metallic) constituting an external covering or lining for the rubber feeder, feeding bar, shaft, or tongue. While the term "sheath" has been applied to this improvement, it has already been indicated in the other case that as a covering or outer lining for the feeder the said sheath may or may not extend over the entire external surface of the projecting or exposed portion of the feeder, and consequently may be of any shape, size, or arrangement so long as it preserves the primary and important function of a non-corrodible polished surface which will freely clear or clean itself of ink when through using the pen and to which surface the ink will not so readily cling and dry as upon rubber and equivalent attractive surfaces such as found in the ordinary fountain-pen.

To exemplify the fact that the outer sheath, covering, or lining may be of any shape, size, or arrangement, as well as being adapted for use in connection with various types of feeders and the different means for admitting air to the reservoir, particular reference will now be made to the embodiments of the invention shown in the various figures of the drawings.

Referring particularly to the drawings, and especially to Figs. 1 to 5, inclusive, thereof, the numeral 1 designates the tubular holder, having the usual interior ink-reservoir 2 of the required capacity for holding a supply of ink. The holder 1 carries at its lower or feeding-out end a pen-bearing section or nozzle of some form. In the drawings this pen-bearing section or nozzle is designated by the nu-

meral 3 and is illustrated as being of the detachable-nozzle type, although it is understood that this detail constitutes no part of the present invention. The said pen-bearing section 3 is provided with the usual bore or passage-way 4, which is in direct communication with the interior reservoir 2 and, in effect, constitutes the lower part or chamber of such reservoir. As usual, the pen-bearing section 3 receives therein the heel of the pen-point 5, which in the construction shown is detachably held in place by the plug portion 6 of the feeder 7. This plug portion 6 of the feeder 7 is of an approximately cylindrical shape and has a wedging fit within the outer end portion of the pen-bearing section 3 to provide for not only securely holding the feeder in operative position, but also for firmly retaining the pen-point within the pen-bearing section and in operative relation to the feeder.

In the construction shown the feeder 7 essentially consists of a rubber feeding-shaft 8, having a rounded side 9, fitting one side of the bore of the pen-bearing section 3, said feeding-shaft extending longitudinally through the pen-bearing section and into the reservoir 2 to provide means for aiding the drawing out of the ink from the reservoir by capillary attraction.

The plug portion 6 of the feeder, as shown in the drawings, has extended therefrom a tapered feed-tongue 10, projecting outside of and beyond the lower end of the pen-bearing section and being disposed within the concavity of the pen-point at the underside of the latter. The said tapered feed-tongue 10 extends up to the nibs of the pen-point and is preferably provided with a rounded upper surface 11, conforming to the curvature of the pen-point, but preferably disposed in sufficient spaced relation thereto to leave intervening ink-flowing spaces 12 between the said rounded upper surfaces 11 and the under side of the pen-point, as may be plainly seen from Figs. 3 and 4 of the drawings. Also the tapered feed-tongue 10 of the feeder 7 is provided with an outer or under inclined face 5<sup>a</sup>, which in the present invention is designed to be covered or lined by the external sheath or covering 13, which will be presently more particularly referred to.

Various expedients may be resorted to in making provision for the admission of air into the reservoir in order to supply the vacuum or space left by the ink drawn out of the reservoir by capillary attraction of the feeder. In the preferable formation of the feeder being described the plug of the tongue portion thereof is provided in the upper side, next to the pen-point, with a longitudinally-disposed groove or slit 14, constituting an air-channel closed in upon the upper side by the pen-point and communicating at its inner end with the reservoir within the holder. Air may be admitted into the said channel 14 in many different ways. One of these ways is suggested



in the construction shown in Figs. 1 to 5 of the drawings, wherein the outer feed-tongue 10 of the feeder is pierced in the lower side thereof by an air vent or opening 15, which provides direct communication between the outer air and the channel 14, it being observed that the said air vent or opening 15 is located below or in advance of the plug portion of the feeder. In the construction shown in said figures of the drawings, wherein the metallic sheath or covering 13 is illustrated as fitting closely the inclined face of the feed-tongue, said sheath or covering is also provided with an air-port 16, registering with the vent or opening 15, so as not to interfere with the free admission of air to the pen.

Referring more particularly to the sheath, covering, or lining 13, employed in connection with the construction shown in Figs. 1 to 5 of the drawings, it is to be observed that the same lies quite close or flat upon the under or outer side of the exposed portion or tongue of the feeder, and inasmuch as the said sheath, covering, or lining is preferably formed from a plate of polished gold the same necessarily provides a protective surface for the feeder, and especially upon the portion thereof where no attraction is required. Also in the construction referred to the sheath 13, which constitutes an outer covering or lining for the exposed part of the feeder, preferably consists of a flat plate which does not extend about or envelop the side portions of the feeder-tongue, but yet at the same time effectively provides the action referred to.

The manner in which the polished non-corrodible metallic plate 13 is held in place upon the feeder may be varied greatly. A simple expedient, however, is shown in the drawings and resides in providing the plug portion 6 of the feeder at the base of the projecting tongue 10 with a holding-notch 17, receiving therein the upper or heel end 18 of the plate 13, said upper or heel end 18 in the construction just described being provided with an air-port 16. Also in the construction described it will be observed that the said plate 13 is angled or bent between its ends to conform to the inclination of the lower or outer side of the feed-tongue 10 and permitting the plate to closely hug or fit the said side of the feeder.

A modification is suggested in Figs. 6 and 7 of the drawings, wherein it is not necessary to perforate the sheath-plate 13 to provide for the admission of air, while at the same time provision is made for a distinct and well-defined overflow-space which serves to receive and retain superfluous ink if it flows too freely from the reservoir, thus preventing blotting. As plainly shown in Fig. 6 of the drawings, the sheath-plate 13 may be held in position in substantially the manner previously described; but instead of lying close or perfectly flat against the under or exposed face of the feeder-tongue 10 the intermediate portion of the plate is held away and spaced

from the adjacent face of the feed-tongue to provide an intervening overflow-space 19. Furthermore, in this arrangement the rear portion of the sheath-plate is sufficiently spaced from that portion of the feeder having the air vent or opening 15 therein as to provide direct communication between said vent or opening and the outer air through the said space 19, thus obviating the necessity of perforating the sheath-plate and leaving the same imperforate throughout.

The modification just described is of special importance by reason of not only providing the non-corrodible polished metallic external surface for the feeder, but also by reason of the provision of the overflow-space which will accommodate a superfluous flow of ink from the reservoir and retain the same about the feeder until written off.

Irrespective of the provision of the overflow-space various other means may be employed to provide a free air admission into the reservoir without perforating the feeder-plate. Out of a great number of means for accomplishing this result a few expedients are illustrated in Figs. 8 to 13, inclusive, of the drawings. In Fig. 8 the flat sheath-plate 13 is illustrated as lying closely against the outer face of the feed-tongue; but the latter is provided in such outer face with a transverse vent-groove 20, extending entirely across the feed-tongue and communicating with the outer air beneath and at both side edges of the sheath-plate 13, said transverse vent-groove also being in communication with an air-vent port 15<sup>a</sup>, piercing the body of the feed-tongue and communicating with the air-channel 14 therein. While in Figs. 8, 9, and 10 the groove 20 is shown as extending across the outer face of the feed-tongue, such groove may only extend part way across, as indicated by the reference-number 20<sup>a</sup> in Fig. 11 of the drawings, in which modification the said groove would therefore communicate with the outer air at one side only of the feed-tongue.

Instead of employing grooves extending entirely or part way across the feed-tongue, as suggested in Figs. 10 and 11 of the drawings, the said feed-tongue may have the body portion thereof pierced transversely by an air-inlet opening 21, which intersects the interior air-circulating channel 14 and which may or may not open at both sides of the feed-tongue. Other expedients will suggest themselves to those skilled in the art, but none of the same affect or interfere with the functions of the feeder-sheath, covering, or lining, as herein indicated.

In connection with the means described to provide the necessary air vent or vents it is to be observed particularly of the forms involving an open groove covered by the feeder-sheath or protective plate the said groove or even the opening shown in Figs. 12 and 13 are not designed for the storage of a superfluous flow of ink, but are simply intended specific-



ally for the admission of air. Such grooves, openings, or slots are just sufficient in size for that purpose, and while they may be filled at times, as occurs with any and all open spaces in a feeder of any capillary pen, still the function intended to be performed is simply to provide a proper supply of air to the reservoir to take the place of the withdrawn ink.

The air-admission opening or groove when cut into the feeder between the latter and the plate, as shown in Figs. 8, 9, 10, and 11, secures the desired result, while at the same time enhancing the neatness and appearance of the plate without necessity of a hole or perforation piercing the same, and it is only where it is desired to provide the feeder with a single hole and to have the sheath-plate flat or closely upon the feeder that the provision of a hole in the sheath-plate is resorted to, as suggested in that form of the invention shown in Figs. 1 to 5, inclusive, of the drawings.

Referring more particularly to the advantages and functions of the flat sheath-plate constituting the essential feature of the invention herein described, it may be further stated that the said sheath-plate constituting an outer covering or lining for the feeder is placed upon the latter primarily to aid in cleaning the ink from and about the general body of the rubber feed-tongue or feed-bar under it. The said sheath-plate, covering, or lining also assists in retaining the ink or moisture upon and about the under surface of the feeder, so that when the pen is put to use there are moistened surfaces for the ink to readily descend to the point of the pen and cause the pen to write immediately without the shaking or starting required in so many of the ordinary types of fountain-pens.

The sheath-plate, although it may lie flat against the under face of the rubber feeder, necessarily provides a capillary space between itself and the rubber feeder, so as to retain a slight film or moisture of ink. The latter affects the superficial parts of the feed-bar lying next to the pen and keeps the parts moist for a longer time than ordinarily, so that ink may flow downward to the point of the pen more readily and not slowly over a dry surface, as would be the case where too great an opportunity is provided to allow the ink to drain back into the reservoir completely. In the construction shown in Fig. 2 it is true that very little ink is retained between the sheath-plate and the feeder, but yet at the same time a sufficient quantity to prevent the parts next to the under side of the pen from drying too readily and so retarding the flow.

The principal function of the sheath-plate is of course as a polished non-corrosive metal surface which will readily clear or clean itself of ink when through using the pen, and while superfluous ink will not so readily be attracted over the smooth metal sheath when in the form shown in the former application

aforesaid this is especially the case in the present application, where the edges of the sheath-plate are not sunken or inlaid flush with the under surface of the feeder, but lie upon the feeder, or where the edges overhang it. The crowding of ink from the reservoir will not creep so readily over the edges of the metal plate, even though thin and spread over the plate upon its under side. It should also be emphasized at this point that the metal will retain its polish and cleanliness better than the usual rubber feeder, especially at its surfaces, which are not intended as attractive surfaces.

The function which the sheath-plate may be made to serve to provide an overflow-space has been already set forth. It should be further observed that the provision which the sheath-plate makes for an overflow-space does not involve cells, cuts, or spaces of any kind whatever between the feeder proper and the pen and upon the feeder itself, which are designed to retain superfluous ink. In this respect the invention is sharply distinguished from any prior construction heretofore developed or patented.

In addition to the self-cleansing function it is obvious that the sheath acts somewhat in the capacity of a supplemental feeder, although the plate itself or any intervening fissure between it and the feeder may not directly communicate with the ink in the reservoir; yet there would still be the slight downward draw attraction or capillary pull to induce more ready flow from the point of the pen when in use. This is particularly the case where there is communication between any intervening capillary space between the sheath-plate and the feeder and the reservoir.

From the foregoing it is thought that the construction and many advantages of the herein-described improvements in fountain-pens will be readily understood by those familiar with the art without further description, and it will be also understood that various changes in the form, proportion, and minor details of construction may be made within the scope of the invention without departing from the spirit of the invention or sacrificing any of the advantages thereof.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a fountain-pen, the combination with the feeder for the pen-point extending outside of the holder, of a non-corrodible flat sheath arranged to constitute a lining for the exposed face of the feeder and having an outer non-adherent surface.

2. In a fountain pen, the combination with the feeder for the pen-point extending outside of the holder, of a non-corrodible flat metallic sheath arranged to constitute an outer lining for the exposed portion of the feeder and provided with a polished surface.



3. In a fountain-pen, the combination with the feeder for the pen-point having an exterior feed-tongue, of a flat metallic polished plate fitting over the outer side or face of the  
5 said tongue and constituting an outer lining therefor.

4. In a fountain-pen, the combination with the feeder for the pen-point having an exterior feed-tongue provided with the inclined  
10 outer face, and a flat metallic polished plate fitted over the said face and constituting an outer lining therefor.

5. In a fountain-pen, the combination with the feeder for the pen-point having an exterior feed-tongue provided with an outer inclined  
15 face, of a flat metallic sheath-plate having a fastening connection with the feeder and extending over the said inclined face.

6. In an under-feed fountain-pen, the combination with the pen-bearing section and the pen-point, of a feeder having a feed-tongue  
20 underlying the pen-point, and a flat polished metallic sheath-plate fitted over the outer exposed face of the said feed-tongue.

7. In a fountain-pen, the combination with the feeder-bar for the pen-point, of a non-adherent sheath constituting an outer lining for the exposed part of the feeder-bar and arranged to provide between the opposing faces  
25 of the two elements an overflow-space for superfluous or superabundant ink.

8. In a fountain-pen, the combination with the feeder for the pen-point, of a polished metallic sheath-plate constituting an outer covering or lining for the exposed part of the  
35 feeder and spaced in relation to the outer sur-

face of the latter to provide an overflow-space for superfluous or superabundant ink.

9. In a fountain-pen, the feeder having an exterior feed-tongue provided with an air  
40 vent or opening therein, and a flat sheath-plate arranged over the outer surface of the feed-tongue and spaced in relation to such surface to provide an overflow-space for ink and also to provide communication between  
45 the said vent or opening and the outer air.

10. In a fountain-pen, the combination with the feeder for the pen-point having an exterior feed-tongue provided therein with an air  
50 vent or opening in communication with the outer air, and a flat metallic sheath-plate arranged over the outer surface of the feed-tongue to constitute an outer covering or lining therefor.

11. In a fountain-pen, the combination with  
55 the pen-bearing section and the pen-point, of a feed-bar extending through the pen-bearing section and having a plug portion for holding the pen-point in place, said plug portion of the feed-bar having extended therefrom an  
60 exterior feed-tongue provided with an inner air-channel, an outer inclined face and an air vent or opening in communication with said channel, and a flat metallic sheath-plate secured to the feeder and extending over the  
65 said inclined face of the feed-tongue.

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

PAUL E. WIRT.

Witnesses:

R. L. ORANGE,  
KARL F. WIRT.