

No. 764,652.

PATENTED JULY 12, 1904.

P. E. WIRT.
FOUNTAIN PEN.

APPLICATION FILED OCT. 17, 1903.

NO MODEL.

Fig. 1.

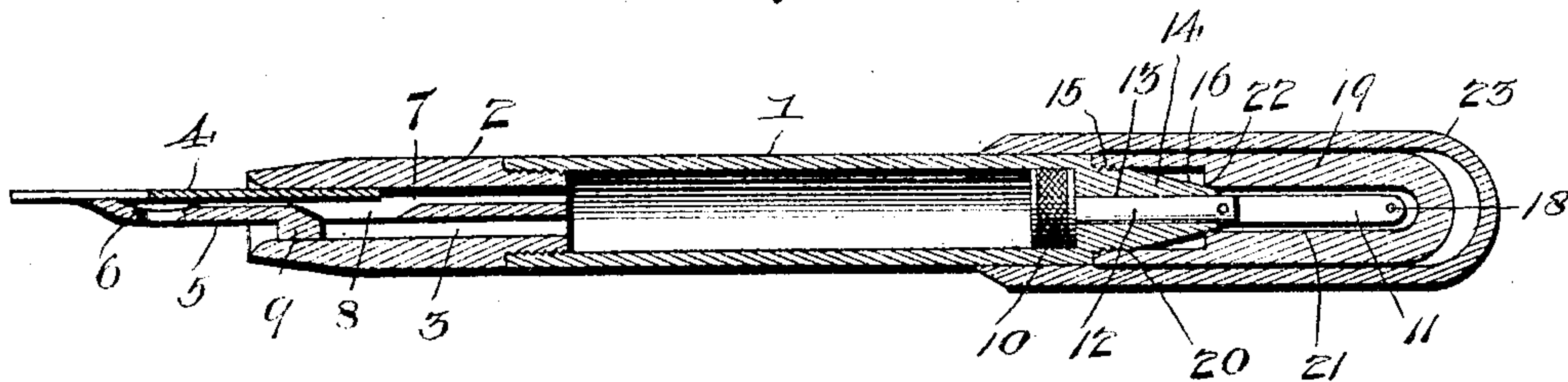


Fig. 2.

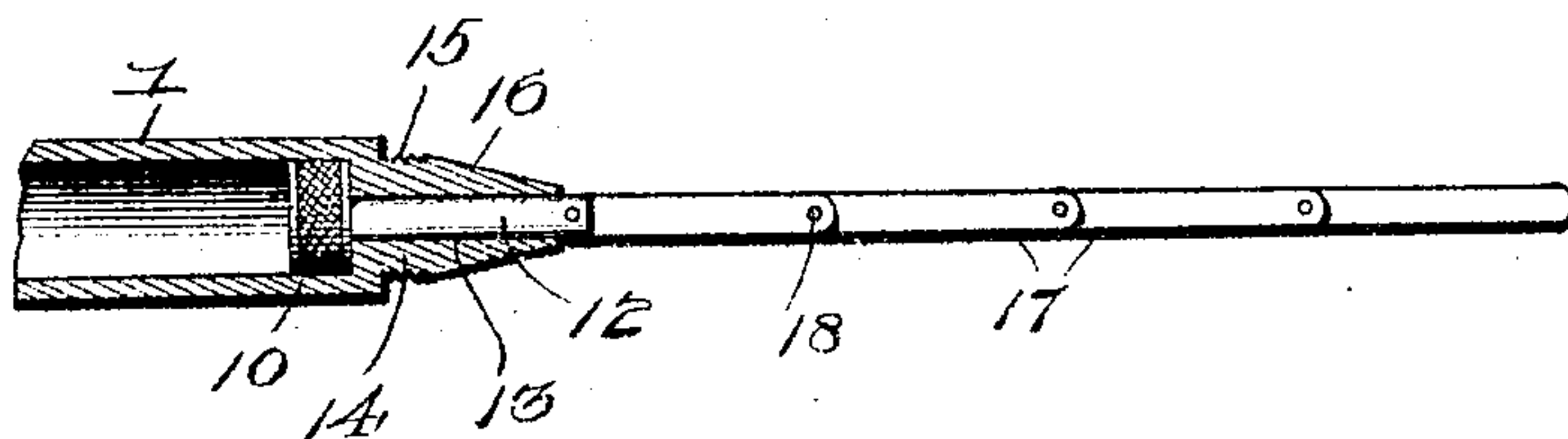


Fig. 3.

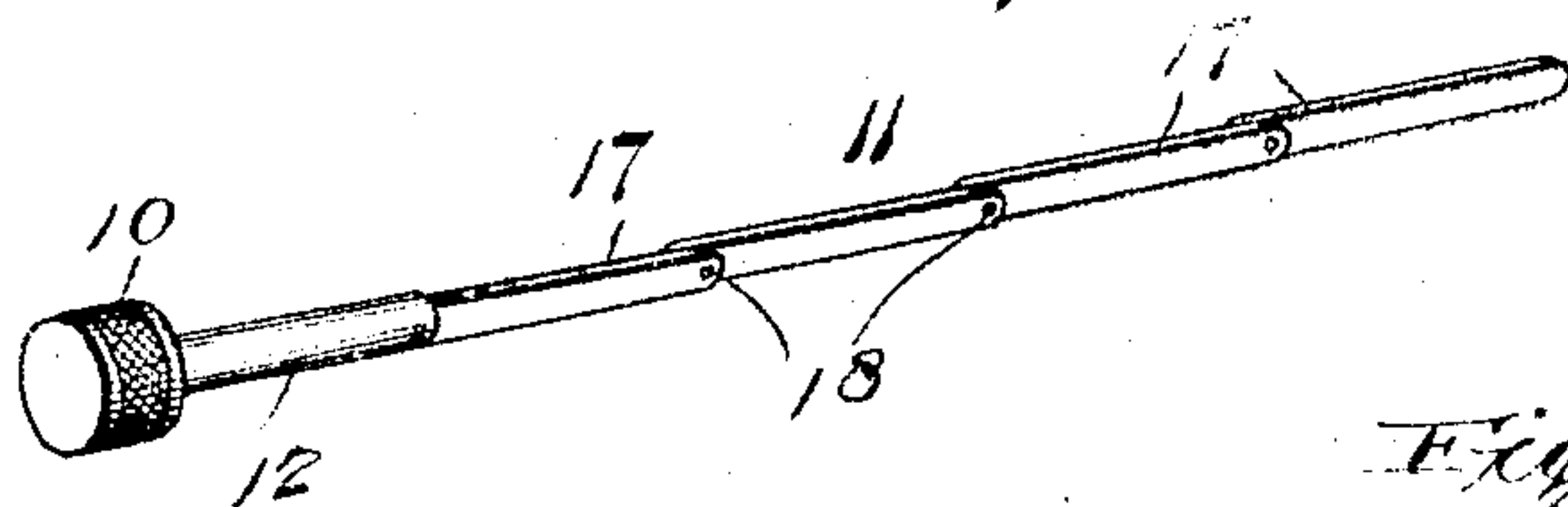


Fig. 4.

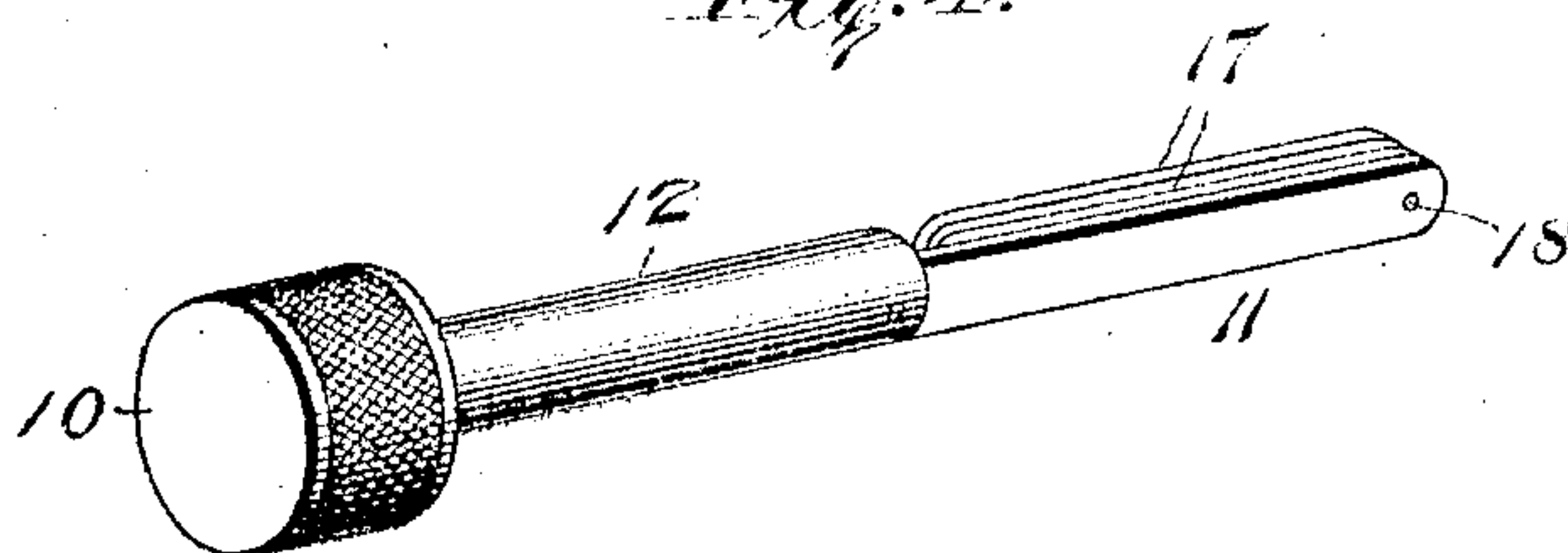
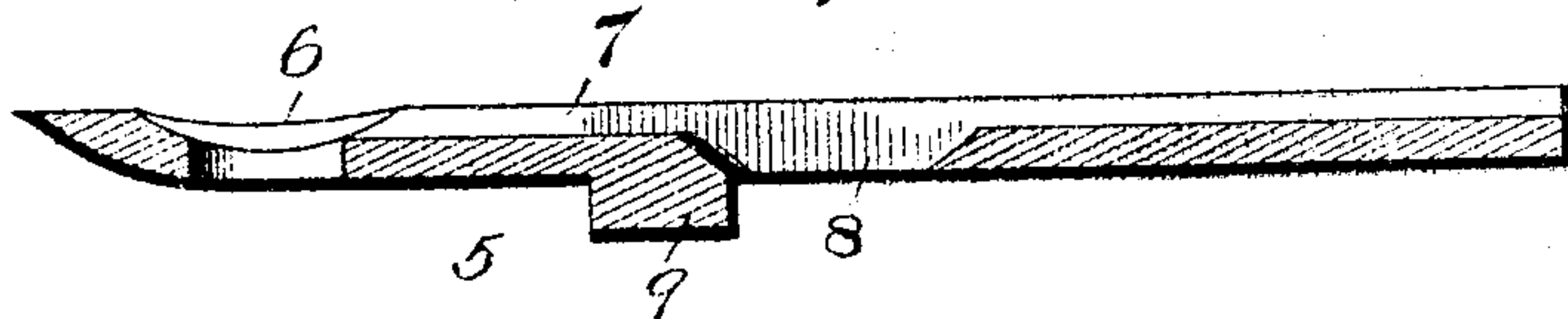


Fig. 5.



WITNESSES:

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FOUNTAIN-PEN.

SPECIFICATION forming part of Letters Patent No. 764,652, dated July 12, 1904.

Application filed October 17, 1903. Serial No. 177,408. (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, particularly of the type embodying means for filling the reservoir thereof; and the primary object in view is to provide a simple, durable, and practical filling device or appliance constituting a part of the fountain-pen equipment.

To this end the invention contemplates a filling attachment constituting a permanent part of the pen and embodying means whereby the reservoir may be refilled with facility without soiling the fingers or occasional leakage in the joints or other parts of the pen. In this connection the invention also has in view a filling means or attachment which will not increase the size or appearance of the pen and at the same time will admit making the fountain-pen case in the most desirable shape and with a maximum space within the reservoir to hold an ample supply of ink.

Another object is to provide a filling device or attachment which may be arranged in a very compact compass when not in use and entirely housed from view while a supply of ink remains in the reservoir.

A general object of the invention is to provide practical improvements in the filling means, while at the same time preserving neatness in the construction of the holder and full capacity of space therein for ink.

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, which will be hereinafter more fully described, illustrated, and claimed.

The essential features of the invention involved in the carrying out of the objects above indicated are necessarily susceptible to structural modification without departing from the scope of the invention; but a preferred embodiment thereof is shown in the accompanying drawings, in which—

Figure 1 is a sectional view of a fountain-pen embodying the improvements contemplated by the present invention and illustrating the parts of the filling device in their inactive compactly-related positions. Fig. 2 is a sectional view through the upper end portion of the pen, illustrating the multijointed operating-stem extended in the position to which it is opened up for thrusting the piston-head downward or outward and then drawing it inward or upward to draw in the supply of ink by suction. Fig. 3 is a detail in perspective of the filling device *per se*, illustrating the collapsible operating-stem in its extended position. Fig. 4 is a similar view illustrating the several sections or links of the stem collapsed in their folded relation side by side. Fig. 5 is an enlarged detail sectional view of the feeder preferably employed in the carrying out of the invention.

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

The present invention is applicable to any of the ordinary types of fountain-pens such as employ a reservoir-barrel, and will also operate with any practical construction of feeder having an adequate vent permitting of both the inlet and outlet of ink and air through the pen-bearing section or nozzle. Hence pens of variously-modified types may be equipped with the improvements; but for illustrative purposes a simple and practical application of the invention is shown in the drawings.

In the drawings the numeral 1 designates the "reservoir-barrel" or "holder," as it is usually termed, to which there is fitted at the lower outer end thereof the pen-bearing section or nozzle 2. The pen-bearing section or nozzle 2 is fitted to the outer end of the barrel or holder 1 through any of the common expedients, and is provided with the usual longitudinal passage-way or bore 3, which accommodates therein both the pen-point 4 and the feeder 5. To secure the best results in both the feeding of the ink for writing purposes and for the venting of the pen-bearing section or nozzle for filling purposes, the invention preferably employs a feeder of the improved construction. This feeder essen-

tially consists of a bar or shaft lying at the under side of the pen-point 4, within the concavity thereof, and usually extending through the bore or passage-way 3 of the pen-bearing section into the reservoir. Said bar or shaft is provided at its outer end with a vented feed-loop 6, substantially of the construction disclosed in my former patent, No. 724,984 and embodying means for separating the stream or film of ink and holding a loop thereof in suspense across and beneath the nibs of the pen-point. In connection with the feed-loop 6 the bar or shaft from which the feeder 5 is constructed is usually provided in the upper side next to the pen-point with a longitudinal feed-duct 7, extending from the loop 6 into communication with the reservoir and providing a channel for feeding ink downward to the nibs and for the admission of air upward into the reservoir to replace the ink. In connection with these features of the loop type of feeder 5, as shown in the drawings, the present invention preferably contemplates the provision of the feeder bar or shaft with the supplemental venting-fissure 8, piercing the body of the bar or shaft at a point in rear of the holding-plug member 9 thereof and serving to maintain direct communication between the duct 7 and the part of the open bore 3 above the said holding-plug member 9. The latter may be integral with the feeder bar or shaft or separate therefrom; but in either construction it is designed to wedge tightly in the open section 2 at the under side of the feeder bar or shaft, thereby serving to firmly secure both the pen-point and the feeder in operative relation.

As contemplated by my patent aforesaid, the longitudinally-arranged duct or groove 7 provides a channel through which the air enters into the reservoir and along the edges of which ink will also be drawn by capillary attraction when the pen is in use. The addition of the supplemental venting-fissure 8 materially aids these functions of the duct or groove 7 by providing a better and more reliable flow of ink downward, at the same time facilitating the ascent of the air upward to the proper extent. This is specially desirable in connection with the filling device to permit of the necessary suction action for drawing a supply of ink through the pen-bearing section or nozzle into the reservoir.

The filling device or attachment essentially consists of two elements—namely, a reciprocatory piston-head 10 and an operating-stem 11. The piston-head 10 may be of any suitable construction having a tight sliding fit within the reservoir-barrel and may be provided with any practical type of packing to maintain the proper fit with the reservoir. Directly adjoining the head 10 the piston device or attachment includes a short rigid plug or stem section 12, rigidly united to the pis-

ton-head and adapted to move into the guiding-bore 13, piercing the fixed guide-head 14, carried at the upper end of the reservoir barrel or case 1. The fixed guide-head 14 may constitute an integral or separate part of the reservoir barrel or case, but in every construction is a rigid part thereof. Said head is provided contiguous to the main part of the barrel or case with an exteriorly-threaded shouldered base portion 15 and beyond said base portion 15 is extended into a conical sealing-nose 16. This exterior surface tapers upwardly for a purpose to be presently explained. The operating-stem proper (designated by the reference 11) may be properly termed a "collapsible multijointed member," consisting of a plurality of folding jointed sections 17, a suitable number of which are employed to provide a stem of sufficient length to move the piston-head the full length of the reservoir. The individual sections or elements 17 of the collapsible operating-stem preferably consist of thin flat metal links bearing an overlapping relation to each other at their adjoining extremities and at such points connected permanently by the pivots 18, consisting of rivets or equivalent means for pivotally uniting the several sections or links, whereby the same may be readily folded together or unfolded into a straightened-out condition. When the collapsible stem 11 is straightened out into the unfolded condition, as shown in Figs. 2 and 3, the same may be readily moved into the reservoir to provide for forcing the piston downward by simply clasping the stem between the thumb or finger at or near the joints or pivots as they pass into the guiding-bore 13 at the upper end of the cone 16. After this movement the piston-head is drawn upward to the upward end of the reservoir or case, and the jointed sections or links of the stem 11 are simply collapsed or folded upon themselves until they occupy a nested side-by-side relation, as shown in Figs. 1 and 4 of the drawings, in which collapsed condition the same are designed to be entirely concealed and housed by the shield-cap 19. The shield-cap 19 is an extra-small cap, provided with an interiorly-threaded open end 20, adapted to engage with the threaded base portion 15 of the guide-head 14. The said shield-cap 19 is also counterbored, as at 21, to produce an interior annular binding-shoulder 22, adapted to bind upon the conical nose 16 as the cap is screwed in place, thereby tightening such nose about the rubber plug-section 12 of the piston-head, so as to produce an ink-tight joint to prevent the ink running out when the pen is carried. When the shield-cap is applied, the collapsed or folded stem 11 lies housed within the counterbored portion thereof. The usual pen-cap 23 is also utilized and is designed to be placed over either end of the case, according as the pen is being used or carried in the pocket.

It may be further stated in reference to the

collapsible multijointed stem that the same is flat and thin, so as not to any appreciable extent fill up the orifice or opening through which it moves at the top of the cone. By reason of this clearance for the stem there is not so much likelihood of withdrawing ink as there would be about a solid round stem fitting an opening more or less closely. Besides, the short portion 12 of the stem constitutes a plug which assists in closing or sealing the opening or bore through the guide-head when the filling device is not in use, as already explained. A further point of advantage to note in connection with the operating-stem 11 is that the multijointed formation thereof permits it to fold in separate directions.

Various changes in the form, proportion, and minor details of construction may be resorted to 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 holder, of a filling device comprising a piston-head, a collapsible multijointed stem portion connected with the head, and means for retaining the sections of said stem portion in nested relation.

2. In a fountain-pen, the combination with the holder, of a filling device comprising a piston-head, a collapsible multijointed stem portion connected with the head, and means supported by the holder for retaining the sections of said head portion in nested relation.

3. In a fountain-pen, the combination with the holder or reservoir, of a filling device comprising a piston-head having a short stem-section, a collapsible multijointed stem portion connected with the said short section and foldable into the longitudinal plane thereof.

4. In a fountain-pen, the combination with

the holder or reservoir, of a filling device comprising a piston-head having a short stem-section, a collapsible multijointed stem portion connected with said short section and embodying a plurality of link elements pivotally connected, said multijointed portion being foldable into the longitudinal plane of and into alinement with the short stem-section, and a cap carried by the holder and having means for retaining the links of the multijointed stem portion in nested relation.

5. In a fountain-pen, the combination of a reservoir having at its upper end a guide-head, and a filling device comprising a piston-head, a short plug-section adjoining the piston-head and fitting in the bore of the guide-head and a main collapsible multijointed operating-stem connected with said plug-section.

6. In a fountain-pen, the combination with the reservoir, of a filling device comprising a piston-head working in the reservoir, a collapsible multijointed operating-stem connected with the head and consisting of a plurality of thin flat, metal links pivotally united and foldable one upon the other in separate directions, and a shoulder-cap designed to inclose the stem when collapsed.

7. In a fountain-pen, the combination with the reservoir provided at one end with a guide-head having a conical sealing-nose, a filling device comprising a piston, and a collapsible stem movable through the guide-head, and a shield-cap for the stem when collapsed, said shield-cap having a detachable connection with the reservoir and provided with an interior binding-shoulder working upon the conical sealing-nose.

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

PAUL E. WIRT.

Witnesses:

C. W. FUNSTON,
R. L. ORANGE.