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PATENTED MAR. 13, 1906.

J. R. ROBINSON.
FOUNTAIN PEN.

APPLICATION FILED MAR. 18, 1905.

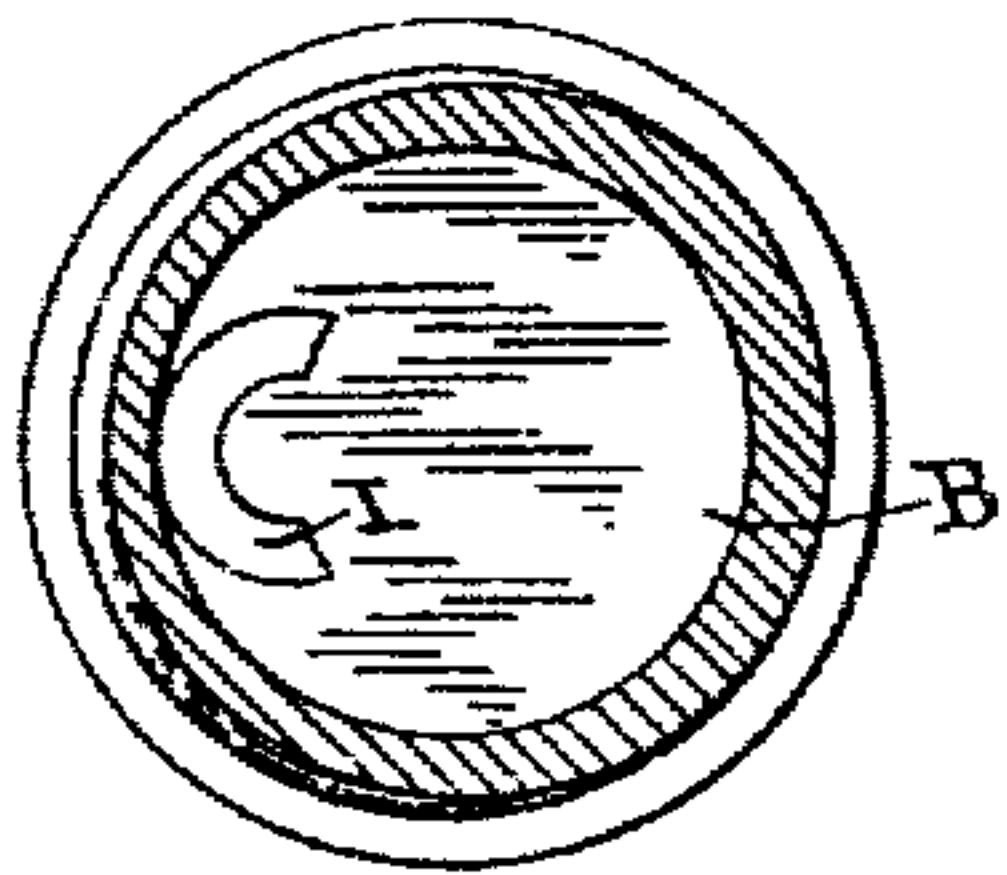


Fig. 2.

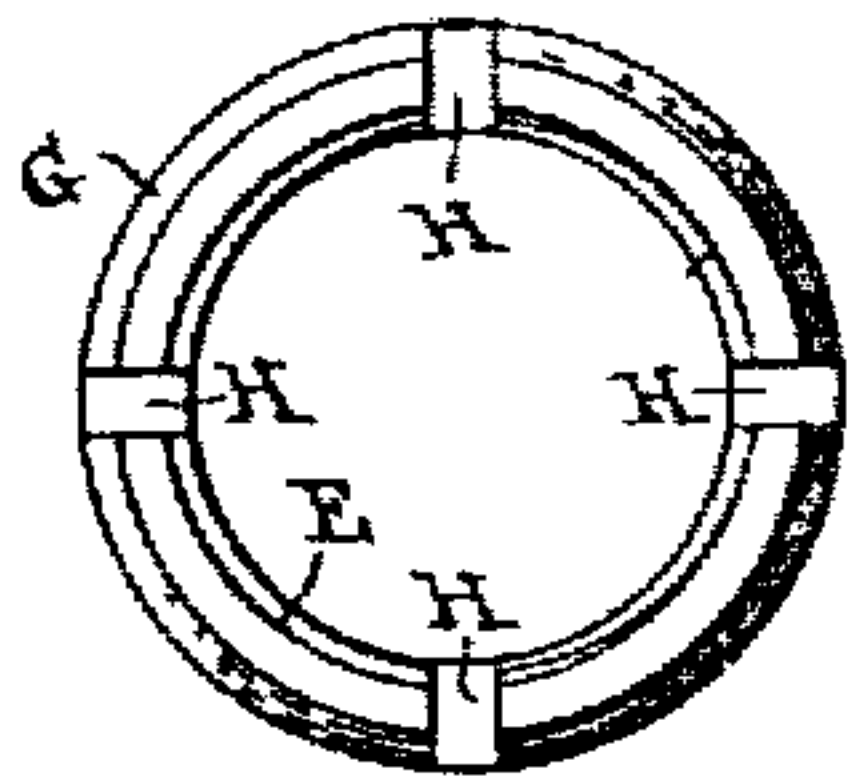


Fig. 3.

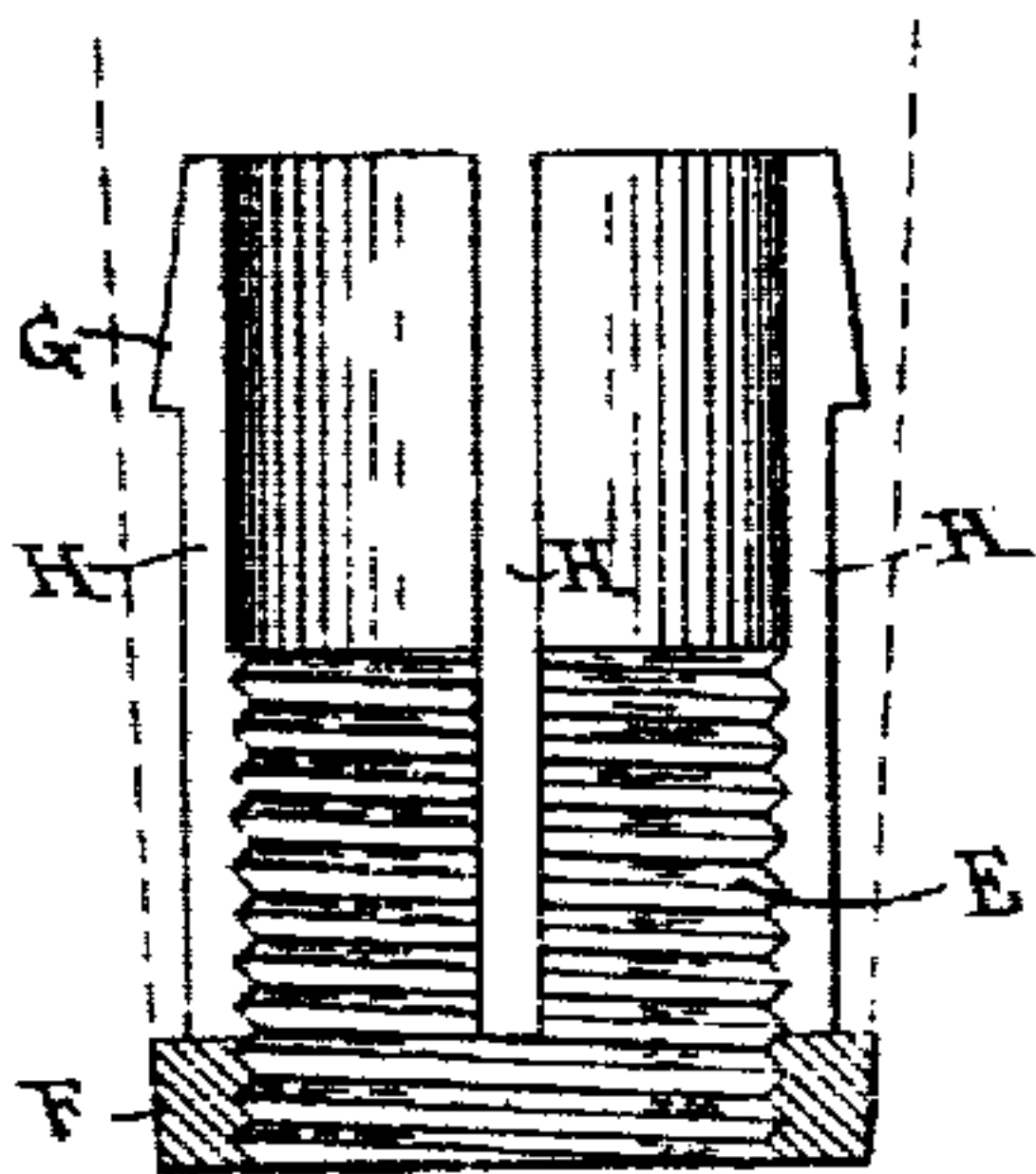


Fig. 4.

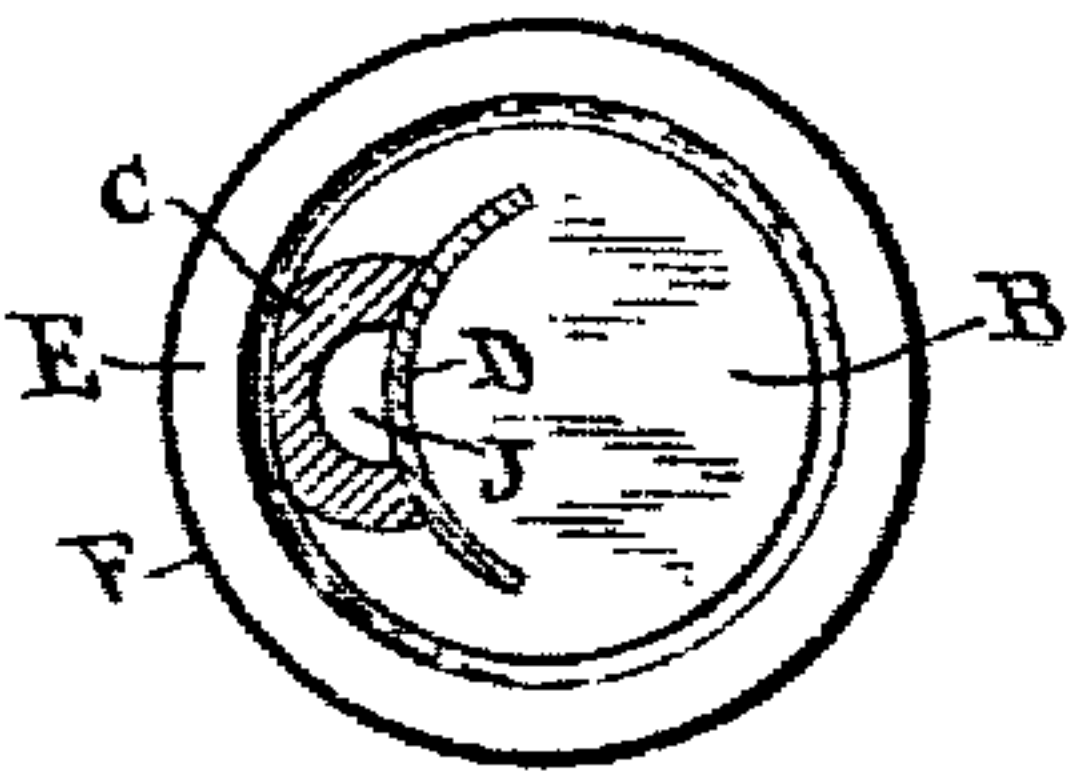


Fig. 5.

WITNESSES

M. S. Verbeek.

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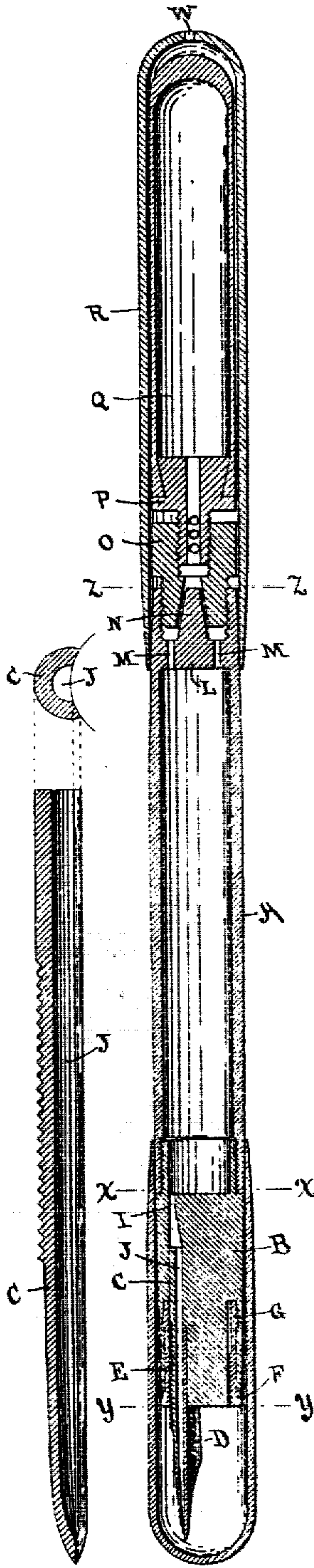


Fig. 6.

Fig. 1.

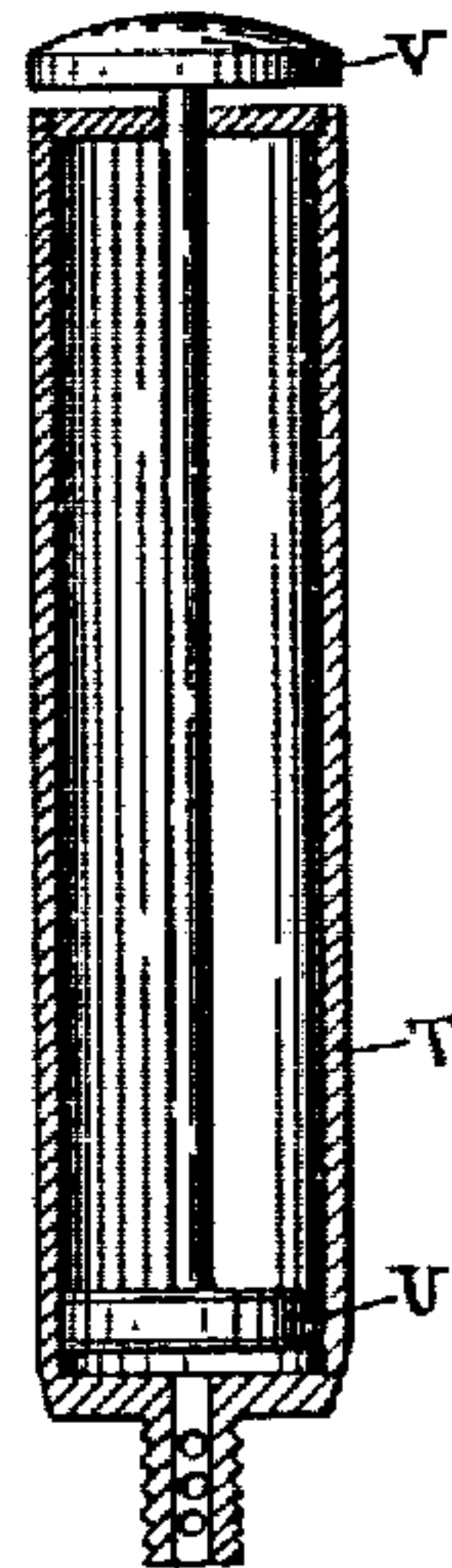


Fig. 9.

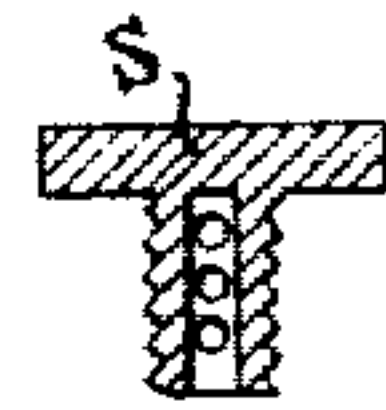


Fig. 8.

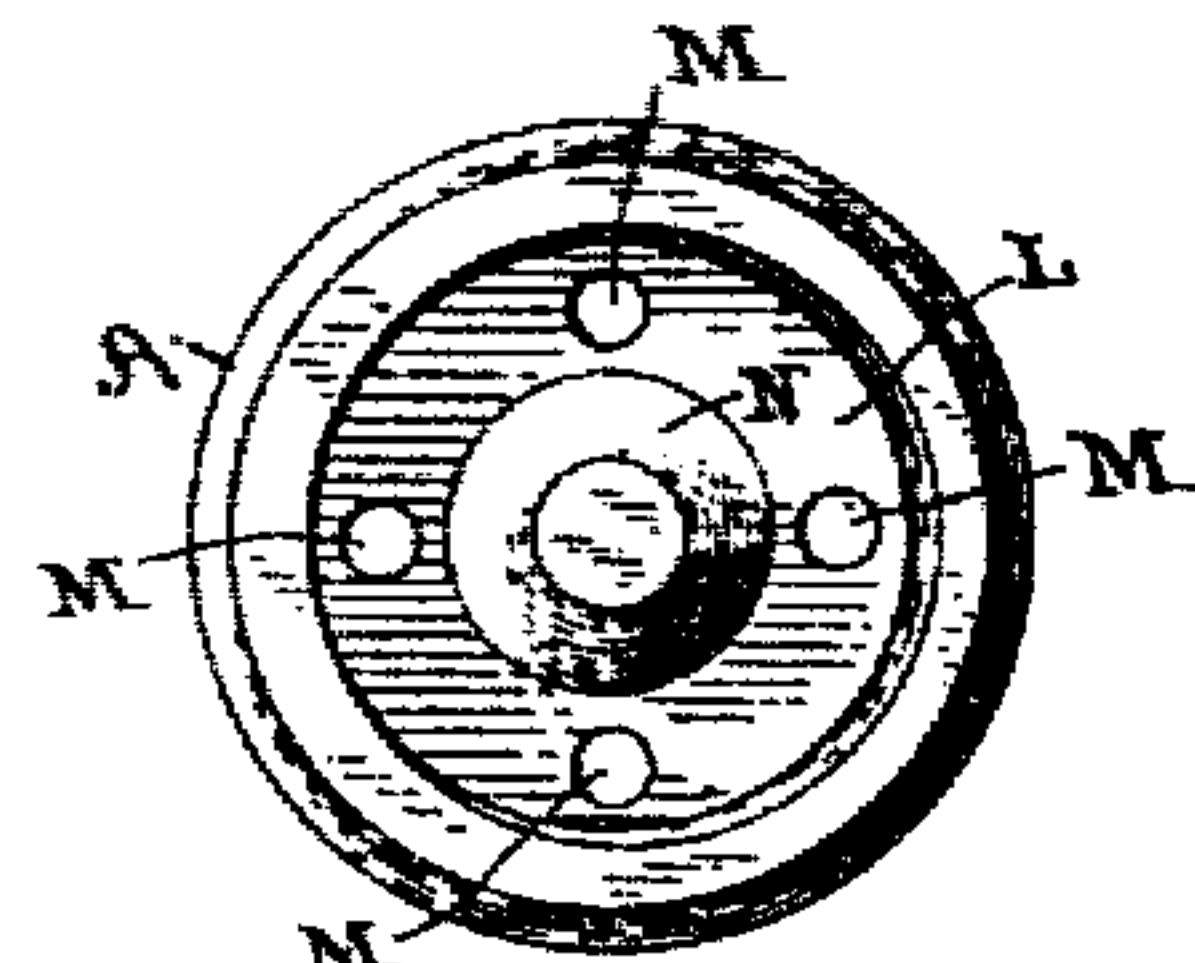


Fig. 7.

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FOUNTAIN-PEN.

No. 815,217.

Specification of Letters Patent.

Patented March 13, 1906.

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To all whom it may concern:

Be it known that I, JOHN R. ROBINSON, a citizen of the United States, residing at Elmira, in the county of Chemung and State of New York, have invented certain new and useful Improvements in Fountain-Pens, of which the following is a specification.

This invention relates to improvements in penholders, wherein a barrel for containing a writing fluid is provided at one end with a pen and with means for feeding the fluid from the barrel to the pen; and the objects of my improvements are to provide means for adjusting the feed-bar along the pen to regulate the flow of ink to the nibs, to provide means for regulating the admission of air to the top of the barrel, and, finally, to provide a filling device which may be carried attached to the holder or may be detached therefrom and whereby the barrel may be charged with the writing fluid without detaching the point-section and without fear of soiling the fingers or spilling the fluid.

I attain my objects by arranging the several parts of the penholder as illustrated in the accompanying drawings, in which—

Figure 1 represents a longitudinal section of a complete fountain-pen embodying my improvements upon an enlarged scale; Fig. 2, a transverse section of the same on the line xx , drawn to a still larger scale; Figs. 3 and 4, a rear end view and longitudinal section, respectively, of the feed-adjusting sleeve; Fig. 5, an end view of the point-section and adjusting-sleeve with the pen and feed-bar in transverse section on the line yy in Fig. 1; Fig. 6, longitudinal and transverse sections of the feed-bar; Fig. 7, an end view of the barrel on the line zz in Fig. 1 with the cap O removed; Fig. 8, a sectional view of an auxiliary cap for use when the filler is detached from the holder, and Fig. 9 a modified form of the filler.

Like letters of reference designate like parts in the several views.

The body of the penholder consists of a barrel A, made of hard rubber or other suitable material and forming a reservoir for the writing fluid. Into the end of this barrel is screwed the point-section B, which is provided with a longitudinal duct or passage-way adapted to receive the feed-bar C and with a socket to receive the pen D. Within the outer end of the point-section is a revoluble sleeve E, provided with internal screw-threads adapted to engage correspond-

threads cut upon the outside of the feed-bar C. In order to hold said sleeve in revoluble relation to the point-section, I provide the sleeve with flanges F and G at front and rear, the flange G being adapted to engage a corresponding internal groove formed in the point-section when the flange F is brought into engagement with the outer rim of said section, and in order to so assemble the parts I provide the sleeve with longitudinal slits H, whereby the sides of the sleeve may be sprung together sufficiently to allow the flange G to be slipped into place within the point-section. The feed-bar is provided with the longitudinal channel J, through which the ink flows to the pen, the ink being admitted to said channel from the barrel by way of the orifice I at the inner end of the duct in the point-section. This orifice I corresponds in shape to the rear end of the feed-bar, and the curved central portion thereof is projected into the duct toward the outer end of the point-section in the form of a wedge, until the full opening to the channel J in the feed-bar is attained, as shown in Fig. 1.

To adjust the feed, the sleeve E is turned by means of the flange F, thereby moving the feed-bar C toward or away from the point of the pen. As the feed-bar is retracted it will be evident that by reason of the wedge formed below the orifice I the duct leading from the barrel to the pen will be gradually constricted until the rear end of the feed-bar is moved inward a sufficient distance to completely fill the orifice, in which position of the feed-bar flow from the barrel will be completely shut off. By this arrangement of the feed-bar and the gradually-constricted fluid-conduit I obtain a double adjustment for the flow of ink to the pen, since it will be evident that as the end of the feed-bar is advanced nearer the point of the pen (which naturally causes the ink to flow more freely from the nibs) the passage-way from the orifice I to the channel J will also be increased in size, thereby admitting a larger supply of ink to said channel to meet the demand at the point of the pen. As the feed-bar is moved inward or away from the point of the pen the passage-way to the channel J will be restricted in size, thereby causing a lessened delivery of the ink to the pen in conformity with the lessened demand. The feed-bar C therefore acts also as a valve, and the point of delivery to the pen is moved toward or away from the nibs with a corresponding increase or decrease of

flow from the barrel. When moved to its innermost position, the feed-bar stops the flow completely, and the pen may be carried point downward or in any other position without fear of leakage. In order that the ink may flow from the barrel readily and in conformity with any adjustment of the feed-bar, I provide means at the top of the barrel for admitting air above the fluid in proportion to the flow through the feed. For this purpose I provide, near the upper end of the barrel, a diaphragm L, through which pass a number of holes M around a central conical plug N. A screw-cap O is fitted into the end of the barrel beyond the diaphragm and is provided with a central conical bore to fit the plug. A screw-threaded hole passes from this conical bore to the top of the cap, and it will be evident that air passing through this opening will be admitted to the top of the barrel through the holes N to a greater or less degree, depending upon the position of the cap O with relation to plug N. When the cap is screwed into close engagement with said plug, the air admission will be entirely closed off, and by turning the cap slightly a very small amount of air may be admitted, the quantity increasing with the degree of rotation imparted to the cap. Into the screw-threaded end of the cap O is screwed a second cap P, which in Fig. 1 is shown provided with a rubber bulb Q for use in filling the barrel. This cap P has its screw-threaded stem provided with a number of transverse holes, and thereby air in greater or less quantities may be admitted to the bore of the cap O. In order to protect the parts as so arranged, especially the bulb Q, I provide a cap R, which will be retained in place upon the barrel, except when adjusting the air-vent or when filling the pen. This cap is provided at W with an air-vent by which air is admitted around the bulb to the holes in the cap P. By this arrangement the amount of air admitted into the first cap O through the second cap is regulated by the number of holes exposed by screwing the cap P outward, and the amount of air admitted to the barrel is in turn regulated, as before stated, by the adjustment of the cap O with respect to the plug N. By the use of these two caps therefore the amount of air admitted can be regulated to a very fine degree. If desired, however, the cap P may be dispensed with when using the pen, the vent adjustment being accomplished entirely through the cap O. Also instead of using the cap P, provided with the filler-bulb Q, I may use a plain cap, as shown in the cap S in Fig. 8, this cap being removed and the filler-cap P inserted when it is required to fill the pen.

To fill the pen, the cap P will be screwed out sufficiently to give a vent for the air in the bulb Q, the cap O will be screwed in tight, the bulb will next be compressed, and the

cap P screwed in to close the vent-holes. The pen will then be placed with the lower end of the feed-bar in the ink, and the cap O being turned to open position the expansion of the bulb will cause the ink to be drawn into the barrel. If the bulb does not fill the barrel at one operation, by again unscrewing cap P, closing cap O, and compressing the bulb the air may be expelled from the bulb without driving the ink from the barrel, and more ink may be drawn into the barrel upon properly adjusting the caps and again expanding the bulb.

Instead of using a collapsible rubber bulb for the filler I may use a cylinder, such as shown at T in Fig. 9, provided with a piston U, adapted to be operated by means of a button V, attached to the end of a piston-rod passing out through the end of the cylinder, the ink being drawn into the barrel of the pen by reciprocating the piston U after adjusting the vent through the screw-threaded stem of the cylinder T in the same manner as described in connection with the bulb-filler. With this cylindrical type of filler the protecting-cap R will not be required. It will be understood that either form of filler may be detached from the penholder when using it in writing, and the cap, which is shown in Fig. 1 as covering the point-section, may be transferred to the upper end of the barrel, as in the pens now in common use. This vent and filling device is made the subject-matter of a separate application.

With a pen so made a very fine adjustment of the feed may be attained to conform with the different characters of work to be done, and the ink will flow to the last drop in the barrel. The vents at both ends of the barrel may be closed when the pen is not in use, so that the pen can be carried in any position without fear of leakage. Preferably all the parts of the penholder will be made of hard rubber, although other materials may be used if found desirable. The pen and feed-bar may also be otherwise arranged relatively to one another than as I have herein described and illustrated.

Having thus described my improvements, what I claim as my invention, and desire to secure by Letters Patent, is—

1. In a fountain-pen, the combination, with a barrel and a pen fixed at one end thereof, of a point-section for carrying said pen having a duct leading from the barrel to the pen, a feed-bar movable in said duct provided with screw-threads on its outer side, and a revoluble sleeve mounted on the end of the barrel and provided with screw-threads in engagement with the threads on the feed-bar.

2. In a fountain-pen, the combination, with a barrel, of a point-section screwed into one end thereof and having an annular groove running in from the outer end and terminating

in an enlarged bore, a pen fixed in the point-section, said point-section having a duct leading from the barrel to the pen, a feed-bar movable in said duct provided with screw-
5 threads on its outer side, a sleeve having a split flanged portion adapted to be sprung into revoluble engagement with the groove in the end of the point-section, and screw-threads on the sleeve to engage the threads
10 on the feed-bar.

3. In a fountain-pen, the combination, with a barrel and a pen fixed at one end thereof, of a point-section for carrying said pen having a semicircular duct provided

with a wedge-shaped bore which forms a
gradually-increasing passage-way from the
barrel to the pen, a semicylindrical feed-bar
movable in said duct, the inner end of said
bar being adapted to close the orifice of said
duct when in retracted position, and means
20 for projecting and retracting the feed-bar.

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

JOHN R. ROBINSON.

Witnesses

M. E. VERBECK,
A. S. DIVEN.