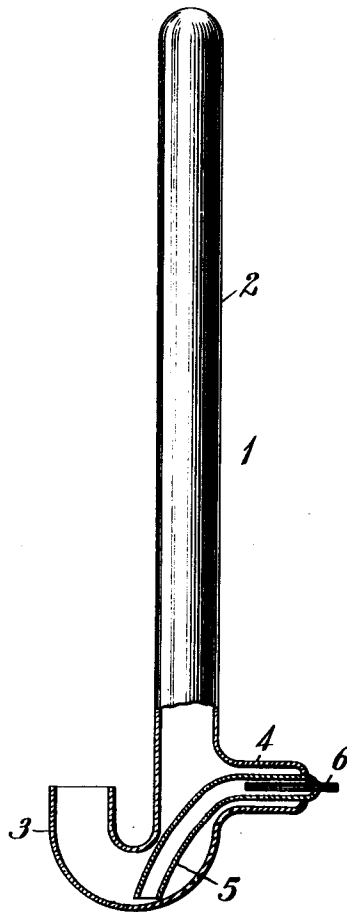


P. MacGAHAN.
RESERVOIR PEN.
APPLICATION FILED AUG. 2, 1909.

1,064,754.

Patented June 17, 1913.



WITNESSES:
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ELECTRIC AND MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

RESERVOIR-PEN.

1,064,754.

Specification of Letters Patent.

Patented June 17, 1913.

Application filed August 2, 1909. Serial No. 510,853.

To all whom it may concern:

Be it known that I, PAUL MacGAHAN, a citizen of the United States, and a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Reservoir-Pens, of which the following is a specification.

My invention relates to marking pens, and particularly to pens of the reservoir type which are adapted for use with graphic or recording instruments.

The object of my invention is to provide a pen of the character above indicated that shall be simple in construction and capable of operating for very long periods without refilling and that shall be adapted to produce a line of uniform width irrespective of the amount of ink it contains.

Reservoir pens have heretofore been constructed in which the ink is led directly from the reservoir through a constricted opening which constitutes the marking point, as in the pen illustrated and described in Patent No. 896,193, granted August 18, 1908, to Henry S. Baker.

The pen set forth in Patent No. 841,222, granted January 15, 1907, to Francis H. Bowman, assignor to Stanley-G. I. Electric Manufacturing Company illustrates another type in which a capillary action is depended upon for feeding the pen point. In both of the pens referred to, the flow of ink is more or less dependent upon the quantity of fluid contained in the pen.

According to my present invention, I provide a novel pen structure which combines the desirable features of both the capillary and the reservoir pens, while at the same time, I obtain a perfectly uniform flow of ink from the marking point.

The single figure of the accompanying drawing is a partially sectional elevation of a reservoir pen constructed in accordance with my invention.

Referring to the drawing, the pen here shown comprises a U-shaped tube 1 having one relatively long closed arm 2 and one short open arm 3, a protuberance 4 extending outwardly from the longer arm opposite the end of the shorter arm, a capillary tube 5 and a metal tube 6, of very fine bore, constituting the pen point. The capillary tube 5 is sealed into the protuberance 4 and is of such form and dimensions that it may be

inserted into the U-shaped tube 1 and terminate at the bend therein. The metal tube 6 is preferably made of an alloy of the platinum group of metals or of some other hard substance which will not corrode and which has substantially the same coefficient of expansion as glass, and is sealed into the outer end of the capillary tube 5, the inner end of which is open.

When the U-shaped tube 1 is filled with ink or any suitable writing fluid, the longer arm 2 constitutes a reservoir in which the fluid is sustained by the external air pressure upon the open end of the short arm 3. The ink is fed from the lowest portion of the U-shaped tube and, consequently, the total quantity of the ink may be used before it is necessary to refill the pen. Furthermore, the pressure of the column of writing fluid is exactly balanced by the pressure of the atmosphere and of the writing fluid in the short arm, so that the capillary action is not disturbed by the level of the ink in the reservoir arm, and it is therefore, capable of supplying a constant quantity of ink to the pen point.

In pens which are similar to that shown in Patent No. 896,193, to which reference has been made, the ink is not fed from the pen point by capillary action but is forced from the orifice by hydrostatic pressure. It is therefore essential that the orifice should be very small, making the pen hard to construct and be maintained in operating condition. Moreover, the rate at which the fluid is fed depends upon the level in the open part of the U-shaped tube and it is therefore influenced by the temperature of the air above the ink in the closed reservoir, which expands and contracts and varies the level in the open arm.

My pen not only has none of the disadvantages just referred to, but it has many advantages not heretofore obtained.

Variations in size and arrangement of parts may be effected within the spirit and scope of my invention.

I claim as my invention:—

1. A pen comprising a substantially hook-shaped tube containing a column of ink sustained by external air pressure, a pen point fed therefrom and a capillary tube projecting from said pen point to the bottom of said column.

2. A pen comprising a U-shaped tube hav-

ing arms of unequal length, the longer arm
being closed to constitute a reservoir in
which the ink is sustained by external air
pressure and a short arm which is open, a
5 pen point and a capillary tube forming com-
munication between the bend of the U-
shaped tube and the pen point.
3. A pen comprising a substantially U-
shaped tube having arms of unequal length,
10 a protuberance in the longer arm approxi-
mately opposite the end of the short arm,
a capillary tube terminating at the bend of

the U-shaped tube and sealed into the pro-
tuberance, and a metal tube of small bore
sealed into the end of the capillary tube to 15
constitute a pen point.

In testimony whereof, I have hereunto
subscribed my name this 30th day of July,
1909.

PAUL MACGAHAN.

Witnesses:

CHARLES W. MCGILKE,
R. J. DEARBORN.