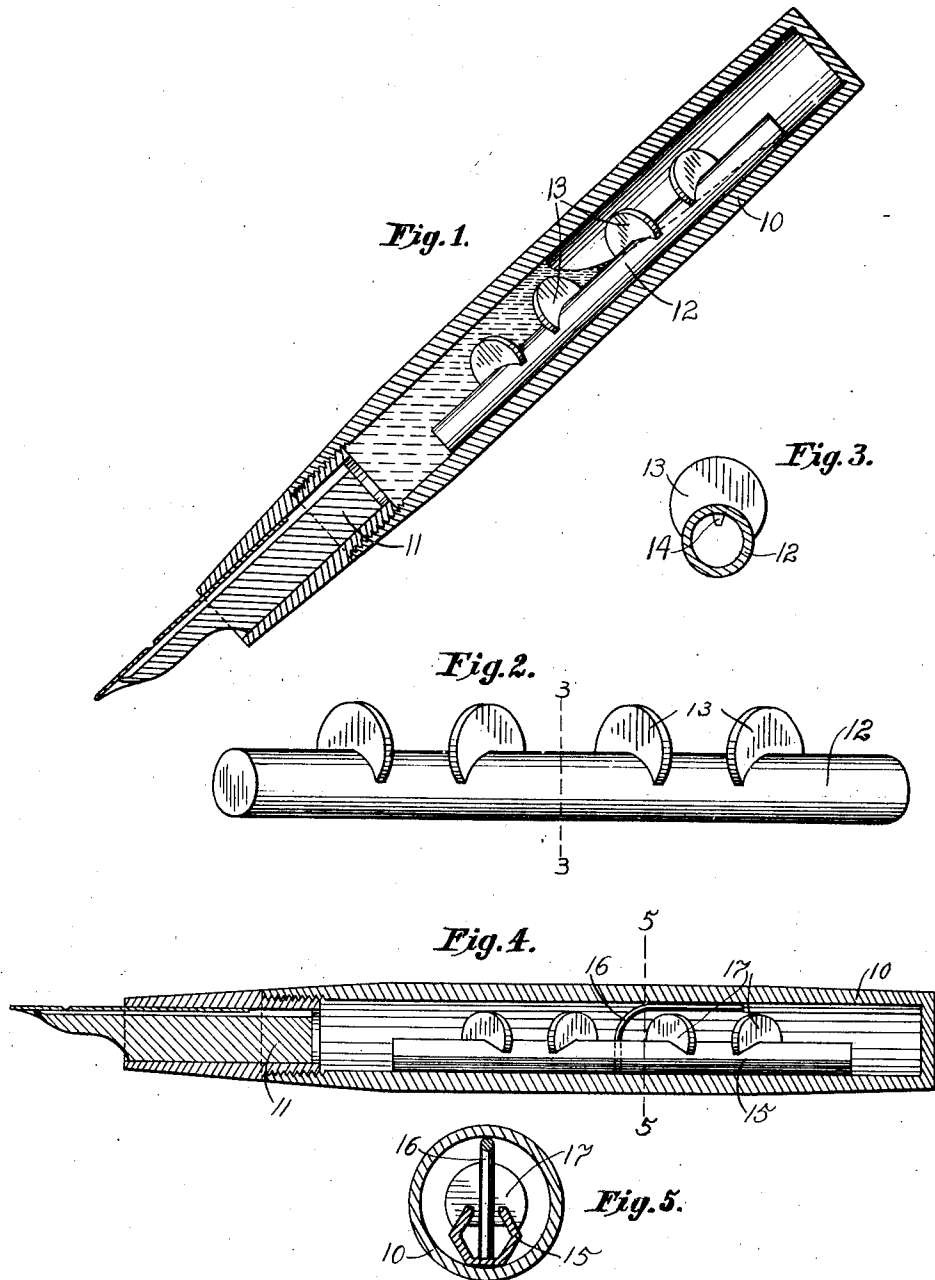


T. E. NIELSEN.
 FOUNTAIN PEN ATTACHMENT.
 APPLICATION FILED MAR. 21, 1913.

1,112,409.

Patented Sept. 29, 1914.



WITNESSES:

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FOUNTAIN-PEN ATTACHMENT.

1,112,409.

Specification of Letters Patent.

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Application filed March 21, 1913. Serial No. 755,925.

To all whom it may concern:

Be it known that I, THORVALD E. NIELSEN, a citizen of the United States, residing at Washington, District of Columbia, have invented certain new and useful Improvements in Fountain-Pen Attachments, of which the following is a specification.

This invention has for its object to provide a device for use in connection with fountain pens designed to prevent an excessive flow and leakage of ink from the barrel or reservoir of the pen, and also to cause the ink to feed freely until the supply is entirely exhausted.

The invention also has for its object to provide an extremely simple and inexpensive device of the kind stated, and one which is entirely separate and independent of the pen, so that it may be applied to any ordinary fountain pen without in the least altering or modifying the structure thereof.

In order that the invention may be better understood, reference is had to the accompanying drawing in which—

Figure 1 is a longitudinal section of a fountain pen provided with the device; Fig. 2 is a perspective view of the device removed from the pen; Fig. 3 is a cross-section on the line 3—3 of Fig. 2; Fig. 4 is a longitudinal section of a fountain pen provided with a modified form of the device, and Fig. 5 is a cross-section on the line 5—5 of Fig. 4.

Referring specifically to the drawing, 10 denotes the barrel or ink reservoir of an ordinary fountain pen provided with the usual nib-holding part 11.

The device for preventing excessive flow and leakage of ink from the barrel 10, in its preferred form, as shown in Figs. 1 to 3, comprises a slender rod 12 made of some material which will not absorb ink. The rod is also buoyant so that it will float. Buoyancy may be obtained by making the rod hollow and closed at its ends. The rod carries laterally projecting blades or fins 13 which are secured by means of tapered pins 14 extending from the base thereof and driven into apertures in the rod to make a tight fit. The blades are set obliquely on the rod and extend alternately in opposite directions.

The modified form of device shown in Figs. 4 and 5 comprises a rod 15 which is hexagonal in cross-section and is held stationary in the barrel 10 by a spring 16 se-

cured at one end to the rod and pressing at its other end against the wall of the barrel, thus holding the rod in frictional contact against that portion of the wall of the barrel which is diametrically opposite the portion of said wall against which the free end of the spring bears. This form of device also has wings 17 which may be dovetailed into a slit in one side of the rod as shown in Fig. 5. The rod may be made of a strip of suitable non-absorbent material which is bent to the cross-sectional shape shown, and the wings are held in place by friction.

When a fountain pen is in constant use and when there is a constant flow or ink, there is gradually formed a partial vacuum above the ink in the barrel, assuming the barrel is held in writing position at all times, and in consequence of the vacuum, the air rushes through the feed duct, and as the suction due to the vacuum is destroyed, the ink held by such suction is free to move down so that it presses suddenly with its entire weight against the nib-holding part and its feed duct, and a portion of the ink is forced out of said duct and escapes over the nib. This flow continues until an equilibrium is again established under the new volume of air entering the barrel, but from the beginning of the excess flow, until the barrel is empty, the pen will feed in excess of the amount required for ordinary writing. This objectionable feature, which is common, more or less, in all fountain pens, is entirely overcome by the device herein described. The rod exerts a capillary attraction on the ink, which prevents an excessive flow, when the pen, otherwise, would feed too fast and permit the ink to fall in drops. The wings on the rod tend to further retard the motion of the ink by deflecting it, and by the additional capillary attraction they exert on the ink.

The upward pull on the ink due to the capillary attraction tends to decrease the weight of the entire column of ink, but this upward pull must be overcome before the ink can move down in the barrel, and the force exerted by the volume of air rushing in and destroying the vacuum, is gradually and nearly exhausted before the upward capillary pull has been overcome, and consequently there is no sudden downward movement of the ink itself as a whole, but a gradual adjustment takes place and no ink

is forced out of the feed duct since the ink is never violently agitated. The device adds a capillary force inside the barrel, and as said force is exerted at the upper surface of the ink, it acts as a membrane which must be moved by the in-rushing volume of air before any downward movement of ink is possible, and since this is only gradually effected, it follows that there will be a gradual downward movement of the ink, and the entire column of ink is at rest before any part of it can force its way out of the feed duct.

The floating rod 12 adjusts itself to the changed positions of the pen and clings to the side of the barrel, and the rod 15 is held against the side of the barrel by the spring 16. Thus the maximum capillary action caused by the rods and the side of the barrel is obtained at all times. With the floating rod, the wings cause the rod to move more or less with the ink and consequently it takes up a position in which it can act with the greatest advantage. The lower ends of the rods are in proximity to the nib-holding part 11, so that the capillary action, due to the proximity of said ends of the rod to the feed duct, empties said duct of all the ink contained therein except that which is held at the extreme outer end between the feed bar and the pen-nib. Thus, the ink is prevented from being forced out into the pen-nib protecting cap when the pen is carried in the pocket and the air within the barrel expands by the heat from the person's body.

The device is entirely independent of the pen and may be applied to any ordinary fountain pen. It will, of course, be understood that the device as illustrated can be varied in construction within considerable

limits, without departure from the spirit and scope of the invention, and I do not, therefore, wish to be considered as limiting myself to the specific details of construction except as pointed out in the claims.

I claim:

1. The combination with the barrel of a fountain pen, of a feed-controlling device comprising a rod-like member wholly within the barrel, and attracting the ink in the barrel by capillarity, said member normally seating against one side of the barrel and having a relatively small diameter, and being of such length as to extend throughout the major portion of the length of the barrel, one end of the member being normally in proximity to the nib end of the barrel.

2. The combination with the barrel of a fountain pen, of a feed-controlling device comprising a buoyant, rod-like member of relatively small diameter, wholly within the barrel, and attracting the ink in the barrel by capillarity, said member being of such length as to extend throughout the major portion of the length of the barrel, one end of the member being normally in proximity to the nib end of the barrel.

3. As a new article of manufacture, a feed-controlling device for fountain pens comprising a rod-like member attracting the ink by capillarity, said member being independent of the pen and adapted to be placed in the barrel thereof, and having laterally projecting deflecting wings.

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

THORVALD E. NIELSEN.

Witnesses:

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