

Oct. 13, 1925.

1,557,357

H. GORNELL

FOUNTAIN PEN

Filed Sept. 14, 1923

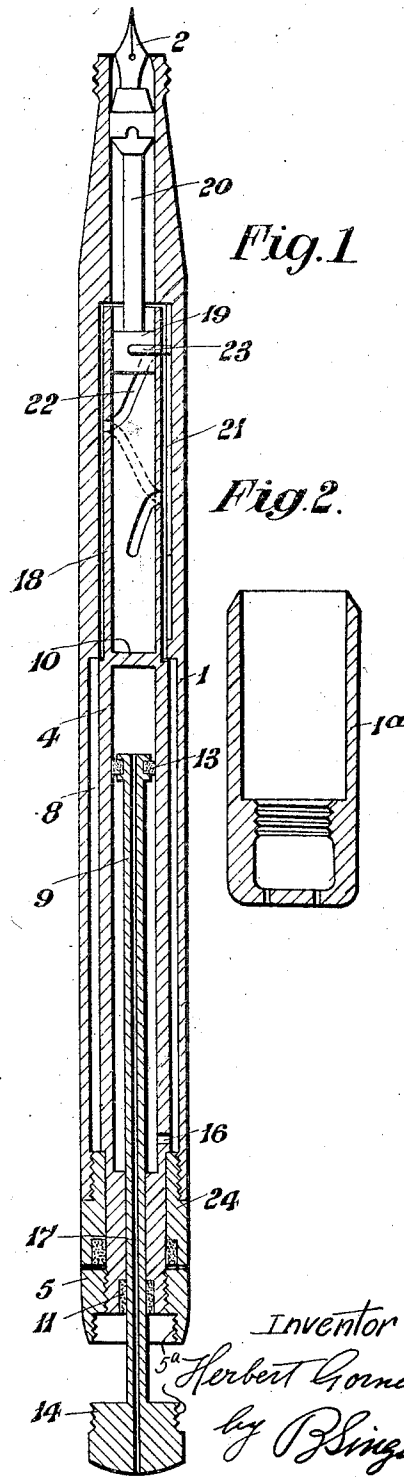


Fig. 1

Fig. 2

Inventor

Herbert Gornell

by P. Singer

1924

UNITED STATES PATENT OFFICE.

HERBERT GORNELL, OF TWICKENHAM, ENGLAND.

FOUNTAIN PEN.

Application filed September 14, 1923. Serial No. 662,689.

To all whom it may concern:

Be it known that I, HERBERT GORNELL, a subject of the King of Great Britain, and a resident of Twickenham, Middlesex, England, have invented a certain new and useful Improvement in or Relating to Fountain Pens, of which the following is a specification.

This invention relates to fountain pens and more particularly to fountain pens of the kind in which filling means are incorporated in the structure thereof so that the usual filling squirt or syringe may be dispensed with.

One object of the invention is the provision of improvements in connection with such filling means.

Another object is the provision of such filling means in a fountain pen of the safety type (i. e. a fountain pen in which the nib is adapted to be withdrawn to a safety position within the pen).

Other objects and advantages will appear hereinafter.

The invention may be said to consist broadly in the arrangement according to which ink is adapted to be drawn in at the nib end of the pen in response to the movement of a longitudinally reciprocable piston towards said nib end of the pen.

An embodiment of the invention is illustrated in the accompanying drawing and same will now be described, it being understood that the particular construction illustrated is susceptible of various modifications without departing from the scope of the appended claims.

In the drawings:—

Figure 1 is a central sectional view of a fountain pen constructed in accordance with my invention.

Figure 2 is a detail sectional view of the cap.

In the drawing 1 is the main body or barrel, 1^a is the usual end cap and 2 is the nib. The said main body or barrel is constructed with an open end at the end remote from the nib and this open end is closed by means of a closed hollow cylinder 4 and collar 24, said hollow cylinder extending longitudinally within said barrel as shown.

The extreme end of the boss 5, as shown is of the same diameter as is the barrel

1 and forms virtually a continuation thereof. Also it will be seen that the hollow cylinder is of such diameter that an annular clearance 8 is left between the same and the internal periphery of the barrel.

Passing axially into the cylinder 4 is a piston rod 9, said piston rod forming sliding fluid tight joints with the end of said cylinder by virtue of suitable packing 11; and this piston rod bears the piston 13 in response to the sliding of which within the cylinder 4 the ink is adapted to be drawn into the pen. The piston rod terminates at its outer end in an operating knob or handle 14 (which is of the same diameter as the boss 5 and is adapted to be screwed into engagement therewith).

At or near to the end of the cylinder 4 remote from the nib, said cylinder is afforded communication with the surrounding annular space 8 by means of a small orifice 16 and the portion of the cylinder to the nib side of the piston is afforded communication with the atmosphere (the cap 1^a having the usual ventilation holes) by means of a passage 17 passing longitudinally through the piston rod and operating handle in the manner shown. The whole of the space within the barrel outside of the closed cylinder 4 is preferably of the same or substantially the same volume as is the interior of said closed cylinder 4.

The closed cylinder 4 is rotatably mounted in the barrel 1 of the pen and it is by rotation of said cylinder that the nib is adapted to be withdrawn to its safety position and returned to its operative position. For this purpose the said cylinder 4 extends integrally in the form of a sheath 18 and within said sheath 18 the bearing end 19 of the nib feed rod 20 is adapted to reciprocate. In the inner periphery of the pen barrel 1 adjacent this sheath 18 is cut a longitudinal groove 21, and a helical slot 22 of the same projected length is cut in the sheath 18. A transverse pin 23 passes from the groove 21 through the slot 22 to the interior of the sheath 18 where it is rigidly secured to the bearing end 19 of the feed rod.

Thus when the cylinder 4 is rotated the feed rod 20 will be slid longitudinally in one direction or the other according to the direction of rotation of the feed rod.

In order to render the cylinder 4 rotatable,

it is necessary to provide a fixing collar 24 screwed or otherwise secured within the open end of the pen barrel, and it is also necessary for reasons that will be obvious
 5 that the enlarged boss 5 should be separately secured to and not made integral with the cylinder 4. It is thought that the other details of the construction will be sufficiently obvious from the drawing.

10 The manner in which the pen is to be filled is obvious. The operating handle 14 is unscrewed from the boss 5 and is drawn together with the piston 13 outwardly to the extreme end of its stroke remote from
 15 the nib.

This has the effect of forcing the air which was within the cylinder through the orifice 16 and into the remainder of the interior of the pen barrel, with the result that the air
 20 which was in the barrel, together with any remaining drops of ink, is forced out through the pen nib. The nib end of the pen is then dipped into an ink well and the operating handle 14 is depressed together
 25 with the piston 13 to the extreme end of its stroke nearest to the nib; and this last operation has the effect of sucking air back from the barrel interior through the orifice 16 into the cylinder 4 and therefore of sucking ink
 30 from the inkwell through the nib and into the interior of the barrel. Then the operating knob is again screwed into engagement with the boss 5.

35 The part played by the passage 17 during this operation is that of obviating the necessity of creating compression or suction within the part of the cylinder on the nib side of the piston, as would obviously be the case if this part of the cylinder were completely
 40 closed.

What I claim and desire to secure by Letters Patent is:—

A fountain pen comprising, in combination, a pen nib, a hollow holder therefor having its end nearest the butt end of the pen open, a collar secured within said open
 45 end, an inner hollow cylindrical member rotatably bearing within said collar and extending into said holder, said cylindrical member having an annular shoulder engaging
 50 with said collar to prevent said cylindrical member moving longitudinally towards the butt end of the pen, a second collar secured on the outside of said hollow cylindrical member, at a part thereof which
 55 is outside said holder, said second collar forming manually operated means for rotating said cylindrical member, packing to prevent flow of fluid from the annular space between said cylindrical member and said
 60 holder past said collars to the atmosphere, a piston and piston rod for said hollow cylindrical member, said hollow cylindrical member having an opening between said annular space and the interior of said hollow
 65 cylindrical member adjacent the butt end of said annular space and hollow interior, so that by moving said piston to the nib end of said cylindrical member ink may be sucked into said holder through the nib end thereof
 70 and an operative connection formed between said cylindrical member and said pen nib, such that rotation of said cylindrical member within said holder in reverse directions
 75 respectively effects movement of said nib to and from an operative position and a protected position within said holder.

In witness whereof I affix my signature.

HERBERT GORNELL.