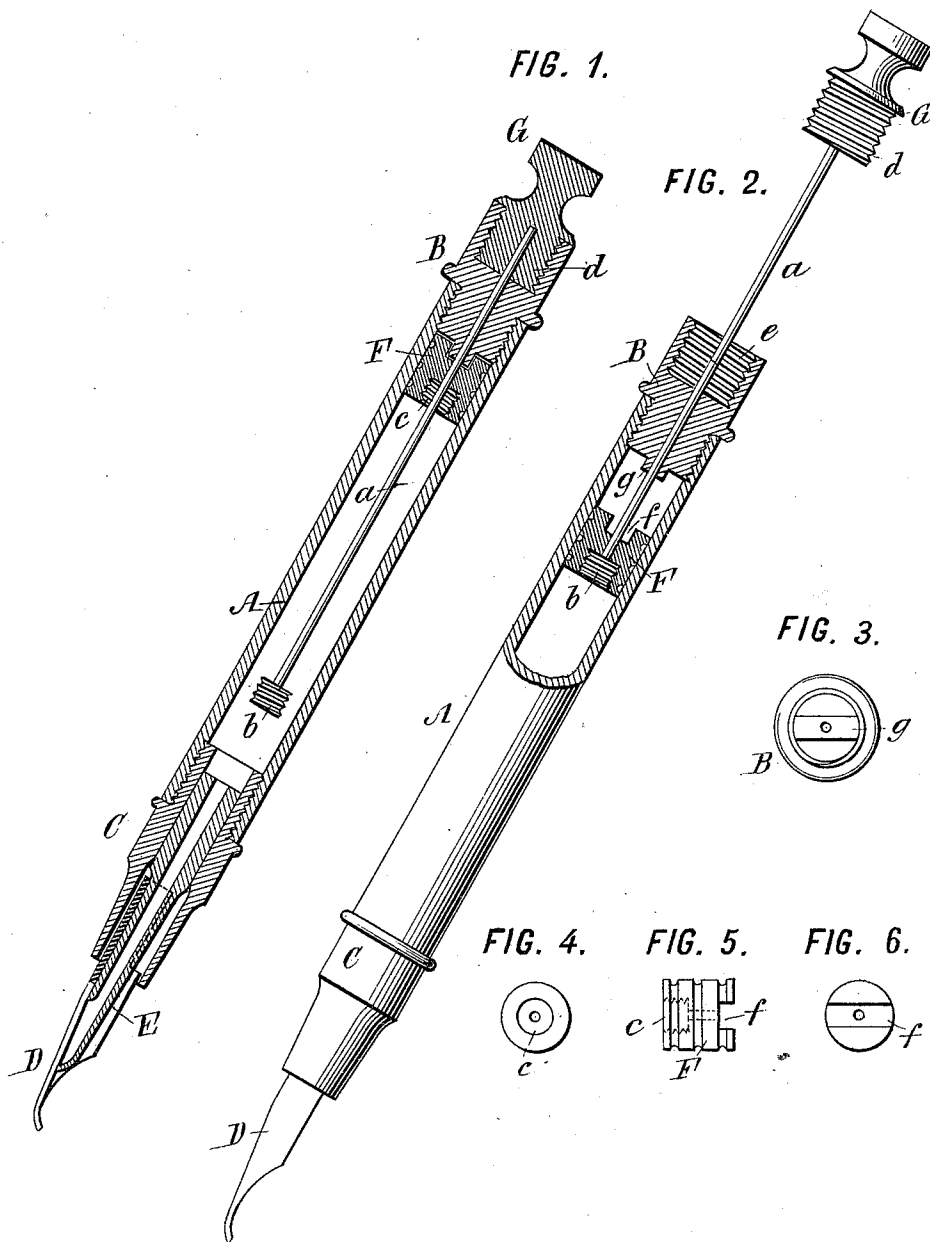


(No Model.)

N. C. STILES.
FOUNTAIN PEN.

No. 566,350.

Patented Aug. 25, 1896.



WITNESSES:

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UNITED STATES PATENT OFFICE.

NORMAN C. STILES, OF MIDDLETOWN, CONNECTICUT.

FOUNTAIN-PEN.

SPECIFICATION forming part of Letters Patent No. 566,350, dated August 25, 1896.

Application filed August 2, 1894. Serial No. 519,252. (No model.)

To all whom it may concern.

Be it known that I, NORMAN C. STILES, a citizen of the United States, residing at Middletown, in Middlesex county, Connecticut, have invented certain new and useful Improvements in Fountain-Pens, of which the following is a specification.

The object of this invention is to facilitate the filling of a fountain-penholder with ink as well as to provide convenient means for cleansing the pen or holder.

The ordinary mode of filling a fountain-pen is by unscrewing the nozzle from the holder or barrel and then spurring in ink by means of a filling-tube. The inconvenience of this mode of filling is recognized by all users of fountain-pens. My invention provides an improved means for enabling the pen to be filled with ink, consisting of a piston movable in the barrel of the holder, and the sliding stem or rod for operating it sliding through the plug, closing the upper end of the barrel and capable of attachment to and detachment from the piston.

Figure 1 of the accompanying drawings is a longitudinal mid-section of a fountain-pen fitted with my invention. Fig. 2 is an elevation thereof, partly in section, showing the piston in use. Fig. 3 is an under side end view of the upper plug or stopper of the holder. Fig. 4 is a view of the lower end of the piston. Fig. 5 is a side elevation of the piston. Fig. 6 is a view of the upper end of the piston.

Referring to the drawings, let A designate the tubular barrel or reservoir of the holder, closed at its upper end by a plug B and at its lower end by a nozzle C.

D is the writing-pen, and E is a feeder of any suitable sort adapted to convey ink down from the reservoir and deliver it to the slit in the pen. As numerous constructions of fountain-pens are now well known, and as my invention is applicable in connection with almost any of these constructions, I do not deem it necessary to describe or to show in detail any particular construction of feeder.

According to my invention I introduce into the barrel a loose and freely-movable piston F. (Shown detached in Figs. 4, 5, and 6.) I also modify the usual stopper B, constructing it by preference in the manner shown in

the drawings. This stopper has an axial hole through it, and the piston is also formed with a similar hole, and through these two holes passes a longitudinal stem or rod *a*. This stem has fixed on its lower end a head *b*, which is adapted to enter a socket *c* in the piston F, and is provided with means for firmly engaging this socket. Any sort of reciprocally-acting pin or projection and groove or depression on the respective parts would afford such an engagement as is requisite, but I prefer the construction shown, wherein the circumference of the head *b* is screw-threaded, and the socket *c* is also screw-threaded, so that the head may be screwed into the socket in the manner shown in Fig. 2. The stem should be a free or loose fit in the hole through the piston and a somewhat close fit in the hole through the plug B. The upper end of the stem *a* is provided with a head G, fixed firmly upon it and by which the stem may be slid longitudinally or rotated, as required.

In ordinary operation the parts are in the condition shown in Fig. 1, the piston being at the upper end of the reservoir and detached from the stem, which, to occupy as little room as possible, is slid down into the reservoir as far as it will go. To hold the stem and its head in this position, as well as to make an air-tight joint at the upper end of the barrel, I prefer to construct the head with a threaded neck *d*, which screws into a threaded socket *e* in the top of the plug B or otherwise in the top part of the barrel, since the plug B might be omitted, or any other construction for holding in the stem and closing the top of the barrel air-tight might be substituted. When the ink is all consumed and the pen requires refilling, the user has only to unscrew the head G from the socket *e*, slide up the stem until its head *b* reaches the piston, rotate the stem in order to screw the head *b* into the socket in the piston to engage the stem with the piston, then slide the stem in in order to force the piston down in the barrel, and then, while holding the lower end of the fountain-pen immersed in a body of ink, to pull up the stem, thereby drawing back the piston to the upper end of the reservoir and by suction drawing the reservoir full of ink. It is then desirable, in order to avoid the protrusion of the stem, to

again disconnect it from the piston and slide it down to its first position. To do this, the stem is turned to unscrew its head *b* from the socket in the piston, after which the stem is slid down and the head *G* again screwed into the socket in the plug *B*. The inner head *b* on the stem cannot be moved down into the reservoir far enough to obstruct the duct leading to the pen, being stopped at a suitable distance therefrom by any suitable stop. In the construction shown this stop consists of the head *G*, which, when screwed home, abuts against the plug *B*, closing the top of the barrel. It is apparent that the piston *F*, if not made too tight a fit with the barrel, would be liable to turn therein with the stem during the turning of the stem in the effort to screw its head *b* into or unscrew it from the socket in the piston. To prevent this, I provide means for locking the piston fast to the plug *B* during the acts of engaging and disengaging the stem and piston. To this end the piston and plug where they come together are constructed the one with a projection and the other with a depression which fit together and prevent the turning of the piston by locking it to the plug. The simplest and preferred construction consists in forming a diametrical groove *f* across the top end of the piston and forming the lower end of the plug *B* with a similar diametrical projection *g*, these being shown best in Figs. 3 and 6, respectively. When the piston is drawn up by the stem, the groove and projection interengage, as shown in Fig. 1, and while thus engaged the piston is held from revolving and the head *b* can be screwed into or unscrewed from it, as the case may be. Other arrangements of interlocking projections and depressions might be substituted to the same effect.

By making the upper head or handle *G* of hard rubber, the same as the remainder of the fountain-penholder, or of any other material of which the penholder may be made, a fountain-pen provided with my improve-

ments does not differ materially in appearance from ordinary fountain-pens, and my invention does not interfere in any way with the ordinary operation of the fountain-pen, and does not come into play except when it becomes necessary to recharge the reservoir with ink, or when it is required to rinse out the ink-passages. For this latter purpose the piston is operated to draw in water instead of ink, and is then used to expel the water, thus thoroughly cleansing the ink-passages of the feeder.

I claim as my invention the following-defined novel features or improvements in piston syringes or pumps applicable for filling fountain-pens or for analogous uses, substantially as hereinbefore specified, namely:

1. The combination of a barrel *A* having a screw-plug *B* at its upper end, a piston movable in said barrel, a sliding stem *a* passing through the plug *B* and through said piston, and constructed to detachably engage said piston, and an outer head *G* on said stem threaded to screw to a threaded portion of said plug so as to form a tight joint with the top of the barrel.

2. In a fountain-pen, the combination with the reservoir or barrel having at one end thereof the pen and a relatively small channel leading thereto, of a piston fitted to slide in said reservoir and having a perforation longitudinally thereof, a sliding stem passing through said perforation, means for actuating said stem, an inner head fixed on the stem and adapted to engage the inner end of the piston, and a stop for limiting the motion of the piston, to prevent its said head from closing the passage to the pen.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

NORMAN C. STILES.

Witnesses:

ARTHUR C. FRASER,
GEORGE H. FRASER.