

W. W. SANFORD.
RESERVOIR PEN.
APPLICATION FILED SEPT. 2, 1904.

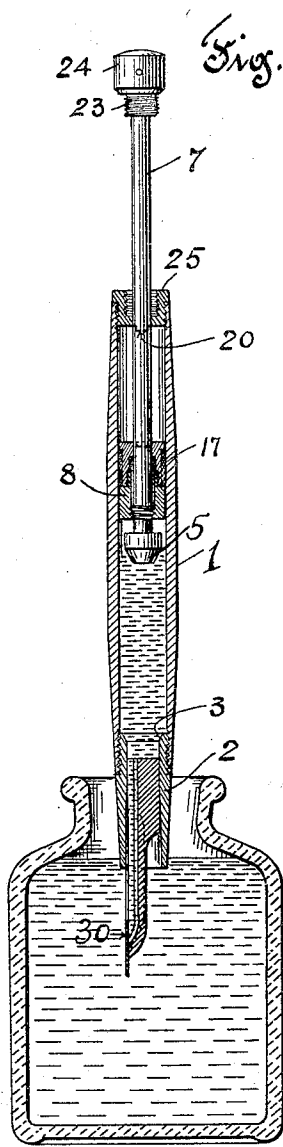


Fig. 2.

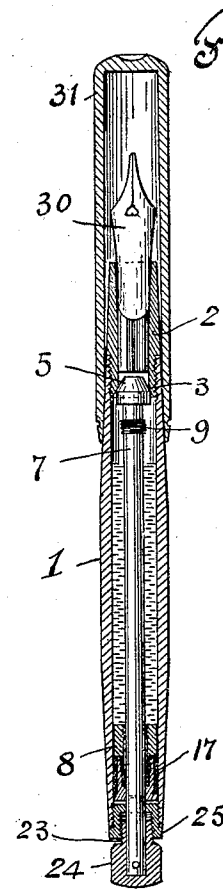


Fig. 1.

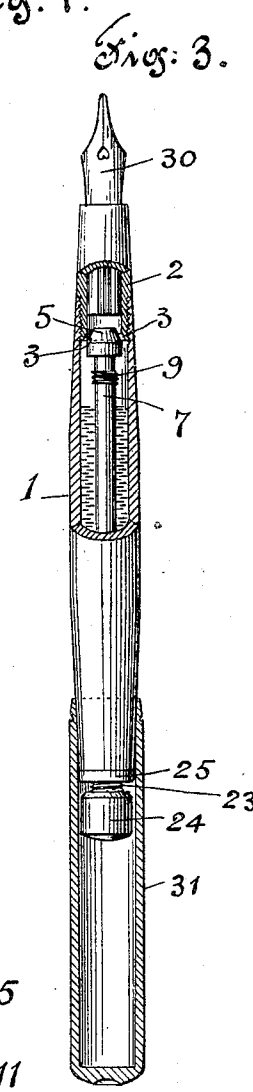


Fig. 3.

Fig. 4.

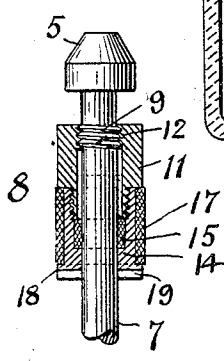
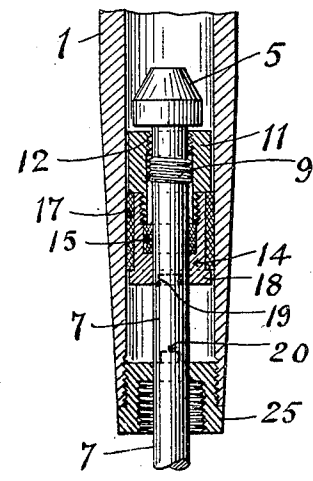


Fig. 5.



Witness
Samuel S. Gosson
Frederick Snow Kellogg

Inventor
William W. Sanford
 By the Attorney
Walter Brown

UNITED STATES PATENT OFFICE.

WILLIAM W. SANFORD, OF NEWARK, NEW JERSEY, ASSIGNOR OF ONE-HALF TO FREDERICK D. BENNETT, OF FREEHOLD, NEW JERSEY.

RESERVOIR-PEN.

SPECIFICATION forming part of Letters Patent No. 794,814, dated July 18, 1905.

Application filed September 2, 1904. Serial No. 223,164.

To all whom it may concern:

Be it known that I, WILLIAM W. SANFORD, a citizen of the United States of America, and a resident of Newark, in the county of Essex, State of New Jersey, have invented certain new and useful Improvements in Reservoir-Pens, of which the following is a specification.

This invention relates to improvements in reservoir-pens, as well of the kind known as "fountain-pens" as of the kind known as "stylographic" pens; and the invention particularly relates to improvements in the self-filling devices of such pens.

The invention aims to provide such a construction of the pens that the reservoir can be filled with ink simply by drawing up a plunger in the reservoir and that after the reservoir is full of ink the stem of the plunger may be disengaged therefrom by a simple movement and carry a valve to a seat at the pen end of said reservoir, so as to tightly close that end, while at the same time the said plunger remains at and tightly closes the other end of the reservoir, thereby effectually preventing leakage and also permitting the stem of the said plunger to be pushed down into the reservoir after said reservoir is filled, whereby the length of the pen and caps is greatly reduced and the inconvenience in the use of plunger-pens as heretofore constructed is overcome.

The invention also avoids the necessity of two caps, one for the pen and one for the stem, when the pen is not in use, since no cap is now required for the stem, which is pushed into the reservoir.

Therefore this invention consists, essentially, in the combination in reservoir-pens of a plunger and stem therefor which are only temporarily connected together, so that at one time the stem will operate the plunger to draw in ink or to carry the plunger down to the pen end of the reservoir to begin the suction and at another time will be disengaged from the plunger, so that the stem and the valve it carries may be operated without moving the plunger, and my invention broadly covers the combination in reservoir-pens of a plunger, stem, and means of temporary connection be-

tween them however the connection may be effected.

Referring to the drawings which accompany the specification, and which show the invention applied to a fountain-pen, Figure 1 is a longitudinal section of the pen with the parts in the position for carrying the pen in the pocket. Fig. 2 is a longitudinal section of the pen with the parts in the position of filling the reservoir. Fig. 3 is a broken sectional elevation with the valve slightly retracted from its seat. Fig. 4 is an enlarged sectional detail of the plunger engaged with the threads of the stem. Fig. 5 is a similar view of the plunger disengaged from the threads on the stem. This view also shows part of the reservoir and the threaded plug which closes the end thereof.

Referring to Figs. 1 to 5, in the reservoir 1 is threaded the pen-section 2, which is provided with a conical valve-seat 3, on which seats a valve 5, which is carried on the end of the plunger-stem 7. Said valve-seat might of course be formed on the end of the reservoir. Said stem 7 extends axially through the plunger 8 out through the female threaded plug 25, which closes the end of said reservoir 1, and has on its outer end a knob 24, provided with male threads 23, which engage with the threads of said plug 25 when the valve 5 is forced home to its seat, Fig. 1. At a point a little distant from said valve 5 said stem 7 is provided with threads 9, which sometimes engage with and at other times are disengaged from corresponding threads on said plunger 8, said threads on said stem and plunger constituting one form of the means for connecting said stem and plunger. The said plunger 8 preferably comprises a shouldered hollow plug 11, provided with female threads 12 to engage with said threads 9. The said threaded part of said plug 11 is shorter than the distance between said valve 5 and said threads 9, Fig. 5, and behind said threads 12 said plug 11 has a larger through-bore without threads to freely admit the said threads 9 in a certain position of said stem, Fig. 5. Said plug 11 threads into a sleeve 14, which is chambered to admit a ring 15, of rub-

ber, prepared cork, or other suitable material, which makes a water-tight joint around said stem 7. A ring 17 of similar material positioned on said sleeve 14 between the shoulder of said plug 11 and the head 18 of said sleeve makes air-tight fit with the truly cylindrical inner surface of said reservoir 1. As an additional provision for certainly freeing said plunger 8 from said stem 7 I prefer to provide a groove 19 in the head 18 of said sleeve 14, which is adapted to engage a rib 20 on the end of said plug 25, as will be hereinafter more particularly explained.

The operation of the parts hereinbefore described is as follows: When it is desired to fill the reservoir 1 with ink, the threads on stem 7 being preferably then engaged with the threads on the plunger 8, the said stem is pushed inwardly, carrying the plunger with it. The pen 30 then being inserted in ink, the said stem and plunger are pulled up, sucking ink into said reservoir 1 until said plunger comes against said plug 25. Now turning the said stem 7 a few turns to the right will carry the threads 9 on said stem 7 out of plunger 8, the friction of the plunger in the reservoir 1 and the engagement of the said groove 19 with the said rib 20 preventing said plunger from turning. Then the stem is pushed inwardly without displacing the ink in the reservoir, the plunger remaining at the upper end thereof until the valve 5 is just coming to its seat 3, when the threads 23 on said stem 7, coming into mesh with the threads in said plug 25, enable the said valve to be pressed tightly to its seat. The reservoir is now tightly closed at both ends and may be carried in the pocket without fear of leakage of ink, the usual cap 31 being provided to protect the pen 30 and to cover the knob 24 when writing, as is usual. To use the pen, the valve 5 is withdrawn from its seat by giving the knob 24 a few turns to the left and ink then flows to the pen. To refill the reservoir, the stem is drawn up until the threads 9 are arrested by the plunger 8. Then by giving a few turns to the left said threads 9 mesh with threads 12 on said plug 11 of said plunger and the said stem and plunger are reengaged. Now by pushing the stem inwardly the plunger will also be carried inwardly to a position for again sucking in ink. Should the operator turn the stem too long when seeking to engage the stem with the plunger, the said threads 9 will merely be carried into the unthreaded chamber in said plug 11 and no harm

will be done, while the stem and plunger will still be in engagement, though the stem can now be freely turned round and round in the plunger. Should the plunger stick on the stem, yet the engagement of the said groove 20 with said rib 19 preventing said plunger from turning will enable the stem to be disengaged from the said plunger.

Now having described my improvements, I claim as my invention—

1. In a reservoir-pen, the combination of a stem provided with short threads, and a plunger provided with corresponding short threads adapted to engage with the threads on the stem in one position thereof and with a chamber adapted to freely receive the threads of said stem in another position of said stem, substantially as described.

2. In a reservoir-pen, the combination of a reservoir, a stem movable therein, a plunger movable on said stem, means for engaging said stem with said plunger in one position whereby said stem can move said plunger, and a shouldered chamber in said plunger adapted to receive said means in another position, whereby said plunger may turn freely on said stem and be moved thereby, substantially as described.

3. In a reservoir-pen, the combination of a reservoir, a stem movable therein and provided with male threads, a hollow plunger movable on said stem and provided with female threads adapted to engage said male threads in one position of said plunger, and also provided with an unthreaded chamber adapted to receive said male threads in another position of said plunger whereby said plunger may turn freely on said stem and be moved thereby, substantially as described.

4. The combination in a reservoir-pen, of a reservoir, a stem provided with a valve movable in said reservoir, a plunger movable on said stem and provided with packing having a suction fit on said stem and in said reservoir, means for engaging said plunger with said stem in one position, and a chamber for said means in said plunger whereby said plunger may turn freely on said stem in another position and yet be moved thereby, substantially as described.

Signed at New Jersey this 25th day of August, 1904.

WILLIAM W. SANFORD.

Witnesses:

HARRISON T. SLOSSON,
FREDERICK SNOW KELLOGG.