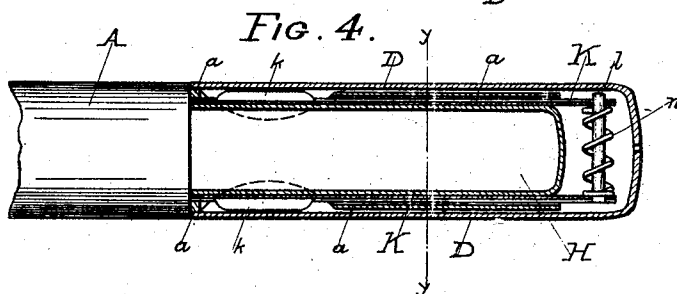
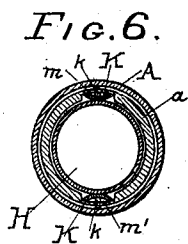
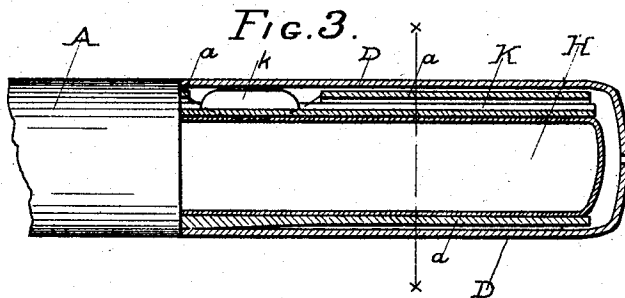
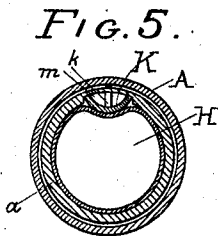
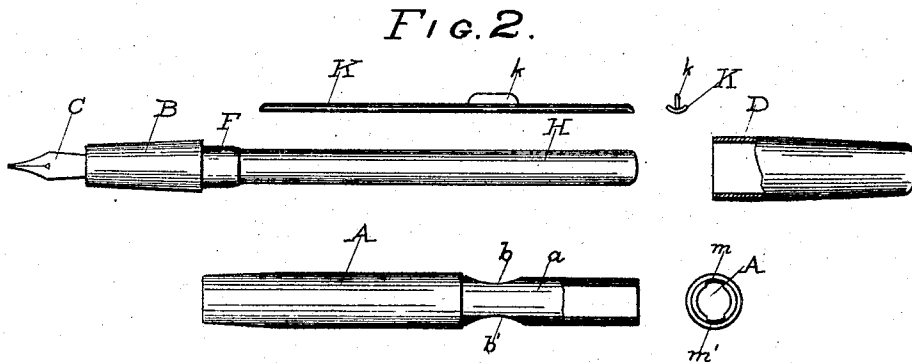
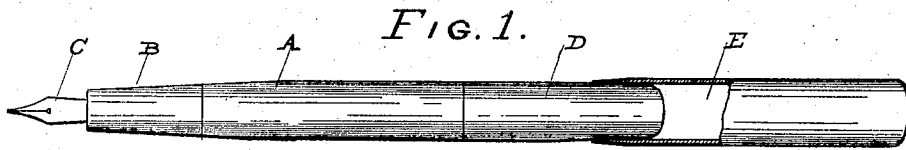


No. 800,129.

PATENTED SEPT. 19, 1905.

R. W. GORHAM.  
SELF FILLING FOUNTAIN PEN.  
APPLICATION FILED JAN. 18, 1905.



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# UNITED STATES PATENT OFFICE.

ROBERT W. GORHAM, OF SEYMOUR, CONNECTICUT.

## SELF-FILLING FOUNTAIN-PEN.

No. 800,129.

Specification of Letters Patent.

Patented Sept. 19, 1905.

Application filed January 18, 1905. Serial No. 241,618.

*To all whom it may concern:*

Be it known that I, ROBERT W. GORHAM, a resident of the town of Seymour, county of New Haven, and State of Connecticut, have invented a certain new and useful Improvement in Self-Filling Fountain-Pens, of which the following is a specification.

My invention relates to fountain-pens, and particularly to that class of fountain-pens which may be filled with ink without the aid of any separate mechanism, and for this reason are called "self-filling." In this class of pens a cylindrical-shaped ink-sack is located within the barrel of the pen and communicates at one end thereof with the pen-point. The ink-sack is smaller than the body portion of the pen and is inserted inside thereof, and heretofore it has been the custom to fill said ink-sacks by exposing some portion thereof to an aperture in the barrel through which the sack on account of its elasticity may be depressed intermittently, and thus fill itself by a pumping action similar to that of the ordinary rubber ball. In my invention this depression or pumping action is attained by the use of a bar or plunger placed longitudinally and substantially the entire length of the sack within the barrel of the pen, but exposed to an aperture whereby it may be depressed by the fingers or thumb in such a manner that the said depression will extend the entire length of the sack, and thus make the pumping action more efficient.

It is also the purpose of my invention to make the plunger more efficient by having a lug thereon within the aperture and also mechanism within the pen for returning the plunger to its normal position after being depressed, all of which mechanism for filling the pen is concealed within the interior of the casing thereof.

My invention consists in further details of construction and methods of operation, which will be specifically described in the following specification, reference being had therein to the accompanying drawings, in which like reference characters refer to corresponding parts.

In the drawings, Figure 1 is an elevation of my invention, showing the cap partly in section. Fig. 2 shows views of the separate parts before they are assembled. Fig. 3 is an elevation of a modification of a fragmentary portion of the pen, showing all the parts assembled, a part thereof being shown in longitudinal section. Fig. 4 is an elevation, partly

in section, of a fragmentary portion of the pen, showing all the parts assembled. Fig. 5 is a cross-sectional view taken on line  $x x$  in Fig. 3. Fig. 6 is a cross-sectional view taken on the line  $y y$  in Fig. 4.

Referring to Figs. 1 and 2, A is the body portion or barrel of the pen. That part of the casing in which the pen-point C, and within which the usual ink-flowing mechanism is inserted is represented by B. The end of the barrel or casing is represented by D, and the outer cap by E. This outer cap is shown slipped over the top portion of the barrel, but when the pen is not in use it may be slipped over the pen-point onto the barrel, as is the usual custom in fountain-pens. On the inner end of the casing B is a shoulder F, to which the ink-sack H is attached. Along one side of said ink-sack and longitudinally thereof is located the plunger K, which is concave in cross-section, and attached to which between its ends is the lug  $k$ . When assembling the pen, the main body of the barrel A may be passed over the end of the sack and plunger and slipped onto the lug F. The barrel A has a continuation at its outer end in a cylinder  $a$ , which is integral with the barrel itself and its interior surface coincident with that of the barrel, but its outer surface of smaller diameter. The interior surface of this cylinder  $a$  is broken by grooves  $m m'$ , which extend longitudinally thereof its entire length and into the barrel A to accommodate the space taken up by the plungers K. The inner end of the cylinder  $a$  has its surface cut away to form orifices  $b b'$  to expose the plungers and into which project the plunger-lugs  $k$ . These orifices or finger-holes  $b b'$  are of such a configuration as to admit the ball of the finger within a portion of the space occupied by the ink-sack. The plunger-lugs may be of such a configuration as not to extend beyond the inner surface of the cap D when the same is slipped over the barrel A to conceal the inner parts of the pen.

In Figs. 3 and 5 I have shown the pen constructed to form one plunger only, while in Figs. 4 and 6 the pen is constructed, as above described, to have two plungers one opposite the other. In the latter two figures I have also shown a spiral spring  $n$ , which is attached to one of the plungers, but not to the other, and within which is a retaining-pin  $l$ , which is attached to one of the plungers, but may pass through an aperture (not shown) in the other. This spring  $n$  is so constructed that

it does not in any way support the plungers nor by its resistance spread the same apart when they are in their normal position before being depressed; but upon depression of the plungers or when the same are brought together to compress the ink-sack the said spring is contracted on the rod *l* and by its resistance will, together with the resistance offered by the depression of the ink-sack, assist in returning the plungers to their normal position. When the plungers are thus depressed, the upper one, as shown in Fig. 4, slips down over the pin *l*, which pin being rigid has a tendency to keep a relative relation between the plungers and also to keep the spring from buckling.

Having now described the construction of my pen, I will proceed to describe the operation thereof.

When it is desired to fill the sack *H* of the pen with ink, the cap *D* is slipped far enough down the cylinder *a* to expose the apertures *b* *b'*. The pen-point is then immersed in ink while the pen is grasped between the thumb and finger of one hand by the two lugs in Figs. 4 and 6 or between the barrel and one lug, as shown in Figs. 3 and 5. In case the pen has only one plunger the lug *k* is depressed by the finger until its further depression is obstructed by the edges of the orifice or finger-hole *b* coming in contact with the finger. In the absence of the lug the finger would merely depress the plunger so far below the orifice as the curvature of the ball of the finger will permit, which in practical use is not always such as to bring the two walls of the ink-sack together. By the addition of the lug *k*, however, the plunger is depressed just so much farther as the top of the lug extends above the plunger. Thus the use of the lug permits a deeper depression and a more efficient pumping action. Necessarily the use of two lugs of the same dimension would produce twice as efficient pumping action as that of one lug; but as this is sometimes not essential, due to the proportions of the pen, I have illustrated the lugs when used in duplicate, as shown in Fig. 4, of smaller dimension than that shown in Fig. 3, thus enabling the remaining parts of the pen to be proportionately smaller and have the same efficiency. In practical operation, however, when two plungers are used it is desired to depress them until the walls of the ink-sack come together, in which case I may or may not use the spring shown in Fig. 4 for returning the plungers to their normal position.

In the above description I have used various terms—such as “barrel,” “cap,” “cylinder,” “pen,” “pen-point,” “plunger,” “lug,” “groove,” “spring,” “sack,” “pin,” &c.—yet I do not wish to confine my invention or any parts thereof to the exact construction of these parts as illustrated and described, but reserve the right to utilize or

modify any of the equivalents thereof so long as such use and modification are within the scope of my invention, and particularly that of the plunger, which may have a cross-section of any peculiar contour.

I am aware that in the prior art there exists self-filling fountain-pens wherein the ink-sack is depressed for the purpose of filling the pen. I am also aware that it is common to obtain such depression by the use of a plunger and a lug, the latter extending through a slot in the exterior of the pen and projecting outwardly from the casing thereof; but I am not aware that there exists in the prior art any pen which is illustrated or described within the specifications and accompanying drawings and which is covered by or included in the scope of the appended claims.

I claim—

1. A fountain-pen having a shoulder open at one end, a flexible tubular ink-sack fastened to the open end of said shoulder, a rigid plunger concave in cross-section and having both of its ends free to move downwardly when depressed to form a depression in the ink-sack, a barrel surrounding said ink-sack and plunger having apertures through which respectively the ball of the finger may be inserted to occupy a portion of the space occupied by the ink-sack and plungers respectively, a lug located on the intermediate portion of the plungers where the same are exposed respectively to the apertures.

2. A fountain-pen having a forward barrel portion terminating at its rear end in a shoulder, an open-ended lug attached to said forward barrel portion, a flexible tubular ink-sack attached at its open end to said lug, a rigid plunger concave in cross-section arranged longitudinally of said sack, but having both of its ends free to move downwardly when depressed to form a depression in the ink-sack; an intermediate barrel portion surrounding said ink-sack and plunger and adapted to be slipped over the aforesaid lug in such a manner as to make its exterior surface flush with the exterior surface of the forward barrel portion, the rearward end of said intermediate portion terminating in a shoulder and a lug, the latter having an aperture through which the ball of the finger may be inserted to occupy a portion of the space occupied by the ink-sack and plunger, a lug located on the intermediate portion of said plunger where the same is exposed to the said aperture and a rearward barrel portion adapted to be slipped over the lug of said intermediate barrel portion having its exterior surface flush with the exterior surface of the said intermediate portion and its rearward end closed with the exception of an air-vent for the admission of air into the barrel portion, all constructed in such a manner that when the rearward barrel portion is partially slipped back to expose the aperture in the lug of the intermediate por-

tion the said ink-sack plunger and lug may be operated by the thumb or finger to fill the ink-sack, and when the rearward barrel portion is slipped back again to its junction with the shoulder on the intermediate barrel portion the exterior surface of the pen will present a flush surface and the pumping mechanism will be concealed.

3. A fountain-pen having a forward barrel portion terminating in an open-ended lug, a flexible tubular ink-sack attached to the open end of said lug, a rigid plunger having both of its ends free to move downwardly when depressed to form a depression in the ink-sack, a barrel adapted to be detachably fixed over said open-ended lug and to surround said plunger and ink-sack the said barrel having an aperture through which the ball of the finger may be inserted to occupy a portion of the space occupied by the ink-sack and plunger, a lug located on an intermediate portion of the plunger where the same is exposed to the aperture.

4. A fountain-pen having a flexible ink-sack, a plunger arranged longitudinally of said ink-sack so that both ends of the same are free to move up and down, a barrel having an aperture therein adapted to admit the ball of the finger within the space occupied by the ink-sack and plunger the said barrel being open at its rear end a lug located on said plunger where the same is exposed to the aperture and a rearward barrel portion adapted to be slipped over the rearward portion of the first-mentioned barrel to conceal the aperture in the said first-mentioned barrel, the last-mentioned barrel being closed at its rear end but pierced to admit air into the interior thereof.

5. A fountain-pen having a flexible tubular ink-sack, two plungers each having both their ends free to move toward each other and ex-

tending longitudinally of said ink-sack but upon opposite sides of the same, a barrel having apertures therein through which respectively the ball of the finger may be inserted to occupy a portion of the space occupied by the ink-sack and plungers respectively, and a lug located on the intermediate portion of each of the plungers where the same are exposed respectively to the apertures.

6. A fountain-pen having a forward barrel portion terminating at its rear end in an open-ended lug of smaller exterior diameter than the forward barrel portion thus forming a shoulder, a flexible tubular ink-sack attached at its open end to said lug, a rigid plunger arranged longitudinally of said sack but having both of its ends free to move downwardly when depressed to form a depression in the ink-sack, an intermediate barrel portion surrounding said ink-sack and plunger and adapted to be detachably fixed to the forward barrel portion over said lug in such a manner as to make its exterior surface flush with the exterior surface of the forward barrel portion the rearward end of said intermediate portion having an aperture therein through which the ball of the finger may be inserted to occupy a portion of the space occupied by the ink-sack and plunger, a lug located on each plunger where the same is exposed to the said aperture and a rearward barrel portion adapted to be slipped over the rearward portion of the intermediate barrel portion the said rearward barrel portion having its end pierced to admit air into the interior of the barrel portion.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROBERT W. GORHAM.

Witnesses:

FREDERICK W. HOLDEN,  
ELSIE L. PAGE.