

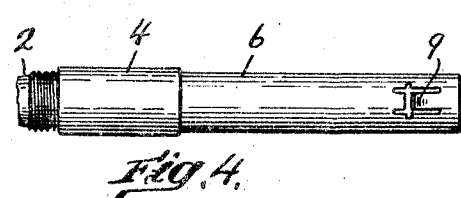
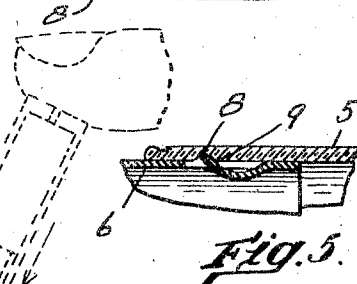
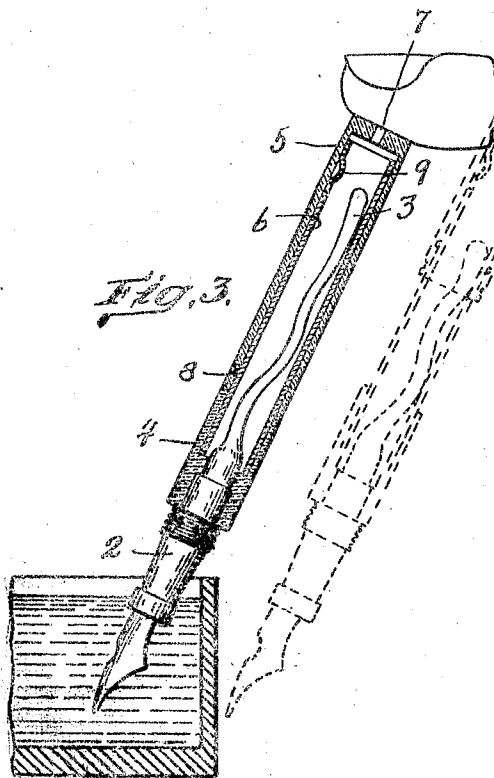
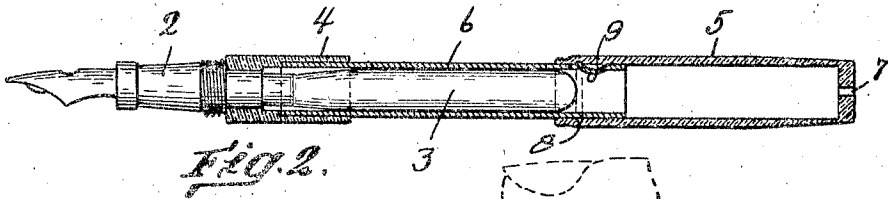
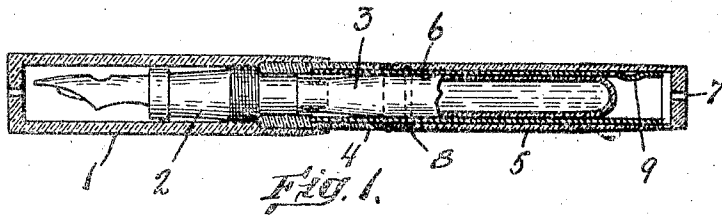
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D. J. LA FRANCE

FOUNTAIN PEN

Filed Feb. 29, 1924



Inventor.
David J. LaFrance
by *[Signature]*
Atty.
[Signature]

UNITED STATES PATENT OFFICE.

DAVID J. LA FRANCE, OF CAMBRIDGE, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, OF ONE-HALF TO SETH S. CROCKER, OF WOLLASTON, MASSACHUSETTS, AND ONE-HALF TO OCTAVIA B. CROCKER, OF BROOKLINE, MASSACHUSETTS.

FOUNTAIN PEN.

Application filed February 29, 1924. Serial No. 695,924.

To all whom it may concern:

Be it known that I, DAVID J. LA FRANCE, a citizen of the United States, a resident of Cambridge, in the county of Middlesex and State of Massachusetts, have invented an improvement in Fountain Pens, of which the following is a specification.

This invention relates to that class of fountain pens in which a rubber sack is connected to the pen section and arranged within the barrel, so that when the air pressure in the barrel is sufficiently raised above atmospheric to cause the sack to collapse, on removal of the excess air pressure, the sack will resume its former shape by its resiliency and draw up the ink, such devices being distinguished from those in which mechanical means are employed for positively engaging and collapsing the sack.

Prior to my invention, various means have been employed for temporarily increasing the air pressure within the pen barrel, such as a sliding piston or a rubber bulb, which are temporarily attached to the pen barrel, and which are primarily objectionable, because they are liable not to be at hand when needed.

The objects of my invention are to provide a simple and effective arrangement for producing an increased pressure within the pen barrel which is permanently a part of the pen, but does not change its size or exterior appearance from the type now generally in use, which enables the use of a resilient ink sack which will be of but slightly, if any less size than that which would otherwise be employed, which will be effective in causing the sack to be collapsed to the fullest extent and will enable the sack to be quickly and conveniently filled.

I accomplish these objects in the manner hereinafter described and as illustrated in the accompanying drawings in which:—

Fig. 1 is a central longitudinal sectional view of a fountain pen embodying my invention.

Fig. 2 is a similar view showing the parts in position for beginning the sack compressing operation.

Fig. 3 is a similar view showing advanced stages of the operation.

Fig. 4 is a detail view of the inner barrel which I employ, and

Fig. 5 is a detail sectional view of the stop

which is interposed between the inner barrel and movable barrel section.

In the drawing, the pen illustrated is of a type similar to those in most common use, and comprises a cap 1 which is adapted to be screwed onto the pen section 2, to the inner end of which the usual resilient rubber ink sack 3 is attached.

According to my invention, the pen barrel which, as a whole, is of the usual form, is divided into two sections 4 and 5, the section 4 being relatively short and being tightly connected to or practically fixed on the pen section by an air tight joint, a slip joint being shown, although the ordinary screw joint may be equally desirable. These parts are all preferably made of hard rubber, as is customary.

I further provide an inner barrel 6, which consists of a tube of thin metal which is open at one end and has its opposite end tightly and securely fitted into the opposite end portion of the barrel section 4 from the pen section about the mouth of the sack 3. The sack 3 fits as closely within the tube 6 as practicable and the tube extends somewhat beyond the bottom end of the sack. The barrel section 5 is slidably fitted on the tube 6 so as to make a close and practically air tight connection therewith, the length of its bore being sufficient to receive the tube portion which projects beyond the section 4, whereby the ends of the sections 4 and 5 may be engaged and will form, when the pen is in use, a smooth continuous exterior, so that the joint between the sections is not readily observable. The opposite end of the barrel section 5 is closed, but is provided with a central aperture, or air vent 7, which is adapted to be readily closed with a finger, or thumb, by pressing against the end, as indicated in Fig. 3. An annular internal groove 8 is formed in the barrel section 5, adjacent its end next the section 4, and a spring finger 9 is struck out from the metal of the tube 6 and is bent outward so that its end portion will engage the section 5 within its groove 8, as shown in Figs. 4 and 5. The finger 9 is arranged to extend obliquely towards the pen section end, so that when the barrel section 5 is slid onto the tube 6, the finger will be pressed inward and permit the section to be readily slid onto the tube into its normal position, and

when the section is drawn from the tube, this movement will not be impeded by the finger 2 until the groove 8 is opposite the end of the finger and then the finger will spring into said groove and engage the outer side thereof, so as to act as a stop and will prevent the barrel from being withdrawn from the tube, except by the exercise of considerable force.

The section 4, which has a fixed connection with the pen section, ink sack and inner barrel or tube 6, is hereinafter referred to for convenience as the "fixed" barrel section and the section 5 is referred to as the movable barrel section. The cap 1 may have its threaded connection with either the pen section or the fixed barrel section, but in either case overlaps the latter to some extent as shown in Fig. 1. In unscrewing the cap, it is necessary to hold the barrel in one hand, and, as the movable section turns easily on the tube 6, the fixed section is extended beyond the end of the cap, when in position thereon, a sufficient distance to provide a firm finger hold when the cap is to be removed. The extent to which the fixed section extends beyond the cap is made no longer than is necessary to provide a suitable finger hold, as it is desirable to have the length of the movable barrel section and the extent to which it may be slid on the inner barrel as great as possible, for reasons which will appear.

With the above described construction, the manner of filling the ink sack is as follows:— The cap 1 will be entirely removed and laid aside and the barrel section 5 will be drawn from the tube 6 until it is engaged by the spring finger 9 as shown in Figs. 2 and 3. The operator then closes the aperture 7 by pressing a finger or thumb of the right hand against the otherwise closed end of the movable barrel section 5, and while holding the pen section in the left hand, the section 5 is then pushed quickly down on the tube 6 until it engages the end of the fixed section 4, and as the aperture 7 is held closed during this movement, the air within the section 5 will be compressed and forced into the open end of tube 6, causing the ink sack to be compressed and practically all the ink expelled therefrom, as shown in the full line position of Fig. 3. The pen section will then be dipped in the ink and the finger removed from the aperture 7, permitting the compressed air to escape and the sack to expand by resiliency, so that it will be filled with ink. It is, of course, immaterial whether the pen is dipped in the ink before or after the sack has been collapsed, but it is often convenient to do this before, as indicated in the dotted line position of Fig. 3, to avoid possibility of damage of the pen point against the bottom of the ink well.

After the sack has been filled the parts are

permitted to remain in the normal position until it is necessary to repeat the operation.

The above described construction has numerous practical advantages over prior constructions which operate on the general principle disclosed, partly from a manufacturing standpoint and partly from the standpoint of convenience to the user.

By providing an inner barrel on which the movable barrel section may slide for nearly the entire length of the sack, the forcing of sufficient air into the inner barrel, to cause practically complete collapse of the sack, is assured, even allowing for some leakage between the barrel section and inner barrel. None of the parts of the pen are increased in size, in order that the result may be secured, and no parts are added, except the thin metal inner tube, which is not visible from the exterior and does not appreciably increase the weight of the pen, as a whole, or necessitate substantial reduction in size of the ink sack. While the inner barrel or tube might be made of the same materials as the outer barrel, and might even be integrally attached to the fixed barrel section 4, yet the employment of the separate metal tube has important advantages, as it not only enables the walls of the inner barrel to be made very thin so that its presence will necessitate little or no reduction in the size of the sack, but it also enables a more nearly air tight sliding fit to be secured between it and the hard rubber outer barrel section 5 than could be secured between two hard rubber tubes, and the closeness of fit is less likely to become impaired by long usage. The metal tube also enables the formation, at small expense, of the spring finger for providing a convenient and effective means for preventing separation of the sliding barrel section from the other parts. Also, the manufacturing cost is but slightly increased over a construction which is not provided with the inner barrel and is substantially less than if the latter were made of hard rubber.

I claim
1. A fountain pen comprising a barrel divided to provide continuously extending fixed and movable sections, said fixed section having a pen at one end and a resilient ink sack having its mouth portion within its opposite end and connected thereto, a cap for enclosing the pen arranged to be connected to the adjacent end portion of said fixed section, the opposite portion of said fixed section extending beyond the end of the cap, when in enclosing position, to provide a finger hold, an open ended tube having one end portion disposed within said fixed section and having a fixed air-tight connection therewith, said tube enclosing said sack and being extended beyond said fixed section to a point adjacent the closed

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end of the sack and said movable barrel section being slidably mounted on the extended portion of said tube and having an air-tight connection therewith and a vent aperture at its opposite end from said fixed section arranged to be closed to confine the air therein.

2. A fountain pen comprising a pen section having a resilient ink sack connected thereto, a fixed barrel section having a fixed connection with said pen section and enclosing the mouth portion of said sack; a cap arranged to enclose said pen section and the adjacent end portion of said barrel section and to be connected thereto, said barrel section extending beyond the end of the cap, when in position, to provide a finger hold, an open ended tube enclosing said sack having one end portion disposed within, and having an air-tight connection with said barrel section, the opposite portion of said tube being extended beyond said barrel section to a point adjacent the bottom end of the sack, a movable barrel section mounted on the extended portion of said tube and having an air-tight slidable connection therewith at its end adjacent the fixed section permitting movement thereon between a position in which its inner end engages the adjacent end of said fixed section, to form a continuation thereof, and one in which it is nearly withdrawn from said tube, and a vent at the opposite end of said movable section adapted to be temporarily closed to confine the air therein.

In testimony whereof, I have signed my name to this specification.

DAVID J. LA FRANCE.