N° 9634 A.D. 1902

Date of Application, 25th Apr., 1902—Accepted, 29th May, 1902

COMPLETE SPECIFICATION.

Improvements in Fountain Pens.

We, WILLIAM WELLS SANFORD and FREDERICK DODDRIDGE BENNETT, both of 51 Maiden Lane, City of New York, County and State of New York, U.S.A., Manufacturers, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to improvements in fountain pens. In particular it relates to the combination with the pen of a collapsible expansible ink reservoir in the barrel and an air inlet therein for forcing air into the same to produce sufficient excess of pressure to collapse the said reservoir, which is usually a sack of sheet rubber. When the excess of pressure is released the sack expands again to its normal size and shape, and the pen being at the time inserted into a bottle of ink, the expansion of the sack draws in ink. The air inlet is preferably controlled by a valve which the user opens when he is about to force air into the barrel, which is most conveniently done by blowing into the barrel with the mouth. Said valve is left open long enough to allow the excess of air pressure to escape, while the sack expands and draws in ink. When the sack is full, the valve is closed, so as to prevent the accidental admission of excessive air pressure into the barrel, which would cause the ink to spurt out, soiling papers and clothing.

The use of the elastic reservoir has great advantages. It facilitates filling of the pen with ink, obviating the necessity of taking out the pen section; as all the ink is contained in the reservoir the threads on the pen section are kept dry and clean so that the section can be handled when necessary without soiling the hands or clothing of the user; and the fact that the ink is in a reservoir which is separated from the walls of the barrel of the pen by an air space prevents the heat of the users hand from causing the ink to drop too freely from the pen; while the combination with the reservoir and barrel of the air valve, allows the reservoir to be used in the most advantageous manner.

Referring to the drawings which accompany the specification, to aid the description.

Fig. 1 is a longitudinal elevation of the pen as seen from behind,.

Fig. 2 is a longitudinal section thereof as seen from in front,

Fig. 3 is an enlarged detail of the valve shown in Fig. 2,

Fig. 4 is a detail on an intermediate scale of a modification of the valve.

Referring to Figs. 1, 2 and 3, A is the barrel of the pen, B is the pen section, which threads or forces tightly into the lower end of barrel A, C is the "feed", or feed bar, and D the pen. J is the cap which fits on the lower end of the barrel when the pen is not in use, and on the upper end when the pen is in use.

On the inner end of said pen section B is a conical or under-cut neck, on which is tightly stretched the open end or neck *e* of an elastic sack E, which is preferably made, as said, of thin sheet rubber, and which fits loosely within said barrel A. There is preferably a narrow annular air space all around said sack E between it and the wall of barrel A, and the upper end of said sack E is preferably cone shaped as shown, to facilitate the passage of the air which is blown into said barrel down the sides of said sack, so as to produce lateral and not end compression thereof.

Said barrel A is provided with an air inlet, and this is preferably effected by providing said barrel with an open upper end in which fits a valve F. Said valve F has a tight working fit, or threads into the end of said barrel A, (and preferably the latter as shown), and the stem is partly cut away or grooved on one side, as at *h*, a shoulder *i* being left above the grooved or cut-away

[*Price* 8*d*.]

part, and which makes air tight fit with said barrel A when the valve is closed.

To fill the sack with ink, the valve is opened, and then the user either puts the valved end of the barrel into his mouth and blows into the barrel, or preferably puts the cap J on the end of the barrel, the other end *j* of said valve F being small enough to permit the cap to go on the end of said barrel, and blows through the air inlet *k*. The excess of air pressure collapses said sack E, and, the pen D and feed C being inserted into an ink reservoir, when the user draws his lips from the end of said cap J, or from valve F, the excess of pressure escapes from the barrel A, the elasticity of the sack E causes it to expand to its normal size and shape, and ink is drawn into said sack. The valve F is then closed, so that no accidental admission of excessive air pressure into the barrel can collapse the sack and spurt out the ink.

Instead of blowing into the barrel, the pressure necessary to collapse the sack, when it is desired to fill the same with ink, may be produced by closing the hole *k* in cap J with the finger, and then pushing said cap quickly home on the end of barrel A, the valve F having been first opened. Then by removing the finger from said hole *k* the excess of pressure will escape from said barrel A, and the sack E will expand and fill as hereinbefore stated.

The valve can be arranged in many different ways, and either outside of the barrel A or inside of it as shown in the drawings. Fig. 4 shows one modification of the valve, wherein the stem g^1 is not cut away, but there is an air hole *l* in the side of the barrel. By giving the valve a turn or two upward, said hole *l* will be opened. Manifestly the valve might fit around outside out of the barrel A, and equally well open and close said hole *l*.

Instead of making the pen section B in a piece separate from barrel A it might be in one piece with said barrel, and the feed bar C might be provided with the conical neck, on which fits the mouth of the sack E, but the construction shown in the drawings and hereinbefore described is preferable.

Having now particularly described and ascertained the nature of the said invention, and in what manner the same is to be performed, we declare that what we claim is:—

1. The combination in a pen of a barrel provided with an ink feed and a collapsible expansible reservoir in said barrel and an air valve in said barrel.

2. The combination in a pen of a barrel provided with an ink feed, an elastic collapsible sack in said barrel having its mouth communicating with said ink feed, and a valve on said barrel adapted to admit air into the barrel to collapse said sack, to release excess of air pressure from said barrel, to permit said sack to expand and fill, and to exclude external air pressure from the barrel after the sack is filled.

3. The combination in a pen, of a barrel, a pen section provided with an ink feed and with a neck projecting into the barrel, an elastic expansible sack in the barrel attached at one end to said neck, and an air valve on said barrel adapted to admit air into the barrel to collapse the sack and to exclude external air pressure from the barrel when the sack is filled.

4. The combination in a pen, of a barrel provided with an ink feed, a collapsible expansible reservoir in said barrel communicating with said ink feed at one end, and having the other end narrowed to permit air to flow between the side of the reservoir and the barrel, and an air valve on said barrel, substantially as described.

Dated this 25th day of April, 1902.

DAY, DAVIES & HUNT,
Chartered Patent Agents,
321, High Holborn, London, W.C.
Agents for the Applicants.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1902.

Fig. 1

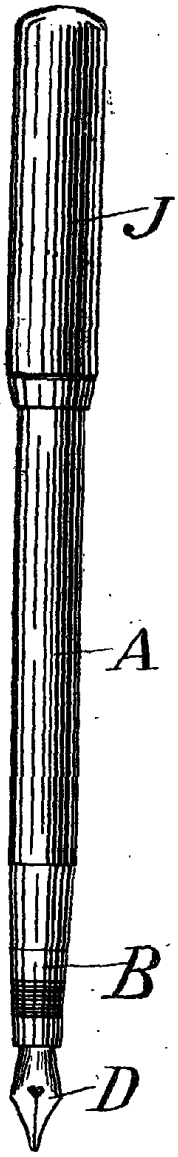


Fig. 3

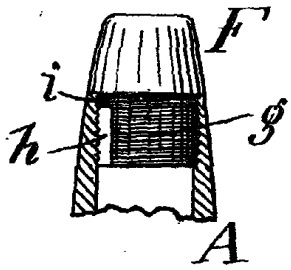


Fig. 2

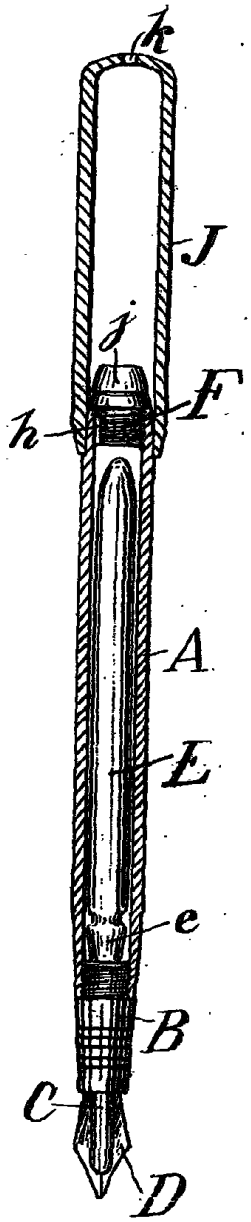
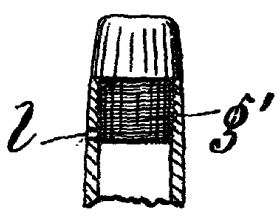


Fig. 4



[This Drawing is a reproduction of the Original on a reduced scale.]

Malby&Sons, Photo-Litho.