

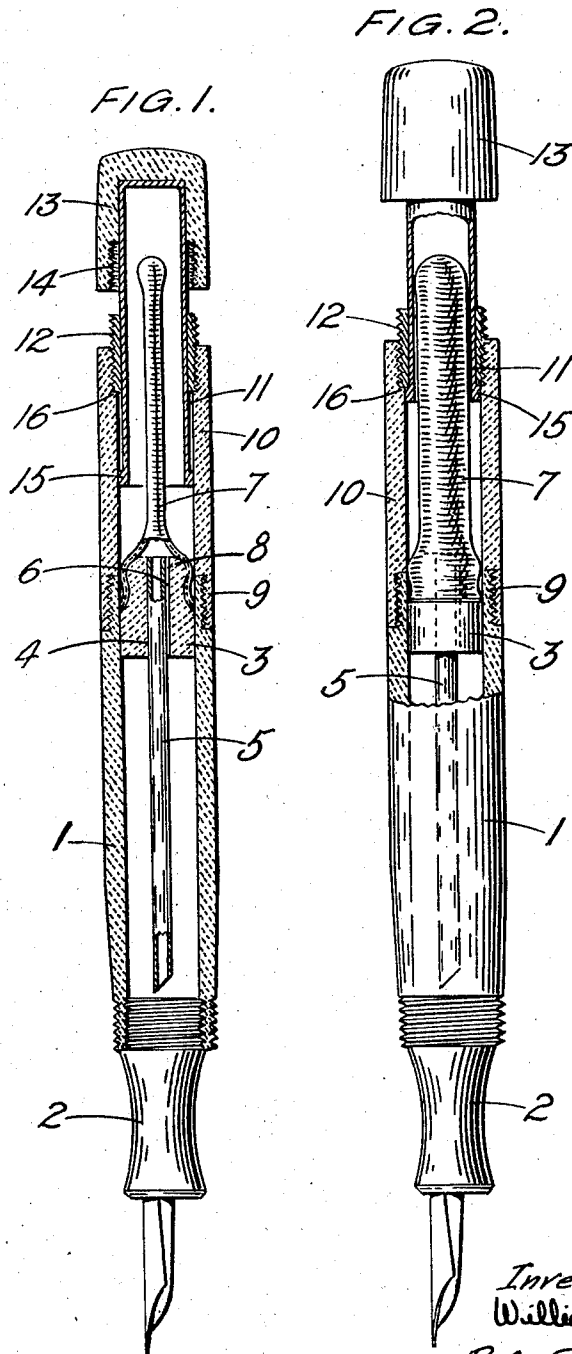
July 5, 1938.

W. F. JOHNSON

2,123,110

SELF FILLING FOUNTAIN PEN

Filed June 1, 1937



Inventor,
William Frederick Johnson
Per, Peck & Peck

ATTORNEY

UNITED STATES PATENT OFFICE

2,123,110

SELF-FILLING FOUNTAIN PEN

William Frederick Johnson, London, England,
assignor to Mentmore Manufacturing Co. Limited,
London, England, a company of Great
Britain

Application June 1, 1937, Serial No. 145,901
In Great Britain June 6, 1936

3 Claims. (Cl. 120-47)

This invention relates to self-filling fountain pens of the type in which a collapsible bag is collapsed and expanded for self-filling purposes by pneumatic action produced by telescopically engaged parts enclosing the said bag. An object of the invention is to provide a pen of this type which is of inexpensive and robust construction and which is easy to operate.

According to the invention a self-filling fountain pen comprises a barrel which itself constitutes the principal part of the ink reservoir, an extension of the said barrel, a collapsible bag contained in the said extension, a longitudinal air tube opening into the bag at the end thereof which is adjacent to the barrel and into the barrel at the end thereof remote from the bag, a restricted passage communicating between the said bag and barrel, and a displaceable member freely engaged telescopically with the extension so as to enclose the bag and adapted by its displacement for collapsing and expanding the bag by pneumatic action and without contact therewith. The displaceable member may have the form of a plunger cylinder adapted to telescope inside the extension and over the collapsible bag.

In order that the nature of the invention may be clearly understood, one way in which it may be carried into effect will now be described by way of example and with reference to the accompanying drawing, in which:—

Fig. 1 is a longitudinal axial section of a pen in accordance with the invention with the bag shown in the collapsed condition, and

Fig. 2 is a similar view, showing the bag expanded.

A pen having a translucent or transparent barrel 1, which itself acts as an ink reservoir, is provided at the one end (hereinafter referred to as the lower end) with a feed section 2 of usual form that carries the feed and nib. Fitted in or formed integrally with the upper end of the barrel is a plug 3 through which is a central hole 4 having engaged therein the upper end of an air tube 5 that extends longitudinally of the barrel to terminate adjacent the feed section 2. A breathing or choke channel 6 is formed in the wall of the hole 4 or in the outer surface of the tube 5 to provide a small breathing hole connecting the interior of the upper end of the barrel 1 with the interior of an elongated collapsible bag 7 fitted over an upwardly directed reduced portion 8 of the plug 3. This plug-portion may be waisted, as illustrated, to facilitate attachment of the bag. The bag is preferably of rubber and

constructed so that it normally tends to retain its bag form.

The upper end 9 of the barrel 1 is screw-threaded externally for the reception of a tubular element 10 which constitutes an extension of the said barrel and surrounds the collapsible bag 7. Alternatively, if the un-reduced portion of the plug 3 projects above the edge of the barrel 1, the former may be externally threaded for the purpose stated. Within the element 10 is telescoped, with a fairly tight fit, a plunger member 11 which is preferably, as illustrated, a cylinder or tube having its upper end closed or suitably plugged. The hollow part of the plunger 11 is adapted to accommodate the collapsible bag 7 when the parts 10, 11 are telescoped together. The plunger is guided in an externally threaded bushing 12 screwed into the upper end of the barrel-extension 10. At its upper end, the plunger is secured in a cap 13 which is internally threaded at 14 to screw upon the upper end of the bushing 12 projecting from the barrel-extension 10. Alternatively the plunger itself may be externally threaded at its upper end so that it may be screwed into an internally threaded mouth of the barrel-extension after it has been pushed right home in the said extension. The parts 10 or 12 and 11 are provided with suitable flanges, shoulders or the like to limit their movement relatively to each other in the separating direction. As shown, the plunger has a flange 15 which abuts against a shoulder 16 formed by the lower edge of the bushing 12 (Fig. 2).

In filling the pen illustrated, the cap 13 is unscrewed from the bushing 12 and the plunger 11 is drawn out from the barrel-extension 10 to its fullest extent and then reciprocated a few times. Each inward movement of the plunger causes a rise of pressure in the space surrounding the collapsible bag 7 and the latter is thereby collapsed (Fig. 1), whereas each outward movement of the plunger again reduces the pressure and allows the bag to expand due to its own inherent tendency (Fig. 2). By this means, ink can be drawn into the barrel 1, as will be understood.

No valve-controlled opening or special vent is necessary between the space surrounding the bag 7 and the outside atmosphere, the fit of the plunger 11 in the bushing 12 being sufficiently free to permit some air to pass. This is all that is necessary.

It is to be understood that ink may also pass into the bag 7 during the filling of the pen, after the barrel 1 itself has been filled.

What I claim is:—

1. Self-filling fountain pen comprising a barrel which itself constitutes the principal part of the ink reservoir, an extension of the said barrel, a collapsible bag contained in the said extension, a longitudinal air tube opening into the bag at the end thereof which is adjacent to the barrel and into the barrel at the end thereof remote from the bag, a restricted passage communicating between the said bag and barrel, and a displaceable member freely engaged telescopically with the extension so as to enclose the bag and adapted by its displacement for collapsing and expanding the bag by pneumatic action and without contact therewith.
2. Self-filling fountain pen comprising a barrel which itself constitutes the principal part of the ink reservoir, an extension of the said barrel, a plug in the barrel at the end adjacent to the extension, a collapsible bag mounted upon the said plug and contained in the said extension, a longitudinal air tube mounted in the plug, opening into the bag at the end thereof which is adjacent to the barrel and into the barrel at the end thereof remote from the bag, a restricted

passage communicating through the plug between the said bag and barrel, and a plunger-cylinder freely engaged telescopically in the extension over the collapsible bag.

3. Self-filling fountain pen comprising a barrel which itself constitutes the principal part of the ink reservoir, an extension of the said barrel, a collapsible bag contained in the said extension, a longitudinal air tube opening into the bag at the end thereof which is adjacent to the barrel and into the barrel at the end thereof remote from the bag, a restricted passage communicating between the said bag and barrel, an externally threaded bushing partly screwed into the end of the extension remote from the barrel, a displaceable member freely guided in the bushing and telescopically movable in the extension, an internally threaded cap on the end of the displaceable member remote from the barrel and securable upon the external thread of the bushing, and stop means provided at the other end of the displaceable member and engageable with the bushing for limiting the displacement of the said member.

WILLIAM FREDERICK JOHNSON. 25