

PATENT SPECIFICATION

948,431

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Inventor: DERRICK JOHN SILVER.

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International Classification:—B 43 c.

COMPLETE SPECIFICATION

DRAWINGS ATTACHED

Improvements in or relating to Fountain Pens

WE, MENTMORE, MANUFACTURING CO. LIMITED, a Company registered under the laws of Great Britain, of Platignum House, Tudor Grove, London, E.9., England do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 This invention relates to fountain pens of the kind (hereinafter referred to as "the kind specified") in which capillary action alone is utilised for filling the ink reservoir, for retaining ink therein and for feeding ink
15 from the reservoir to a writing surface when the pen is in use.

Various types of fillings for the ink-storage spaces of such pens have previously been proposed, such as fabrics woven or knitted
20 from fibres which in some cases are ink-absorbent and in other cases are themselves incapable of absorbing ink, porous masses of a solid material which is itself non-absorbent or spirally rolled sheets of a non-absorbent material providing relatively fixed
25 rigid walls defining capillary ink storage spaces. The fillings of woven or knitted fabric may be in the form of stacks of discs cut from the fabric and a convenient
30 arrangement has the reservoir space filled with such a stack while the space within the nib section is filled with a spirally rolled length of the same fabric, both fillings being in close contact with each other. Ink is
35 generally conducted between the nib of the pen and the filling of the ink-storage spaces by way of a wick which is in contact both with the nib, usually on the back thereof, and with the filling.

40 In pens of the kind specified the feed from the ink-storage spaces to the writing tip of the nib is controlled ultimately by the capillary action of the slit in the nib and it

is preferred therefore to employ relatively stiff nibs so that the width of the nib slit, when once determined by the manufacturer, will remain substantially unaltered by the pressures exerted on the nib during writing.

Although such pens are entirely satisfactory in normal use, there are occasions when prolonged exposure of the nib to the atmosphere, other than in the course of writing with the pen, may lead to difficulty due to the ink in the exposed portion of the nib slit drying out and depositing the solids of the ink in the slit. This drying out may make it difficult to restart a flow of ink to the writing point when required and may necessitate prolonged soaking in ink or water before the solids are dissolved sufficiently to permit the nib to function.

It is the object of the present invention to provide an improved pen of the kind specified which shall be less susceptible to drying out at the nib so that the latter may be left exposed to the atmosphere for longer periods than has been possible hitherto without difficulty being encountered in writing with the nib when required.

According to the invention, in a pen of the kind specified having means separate from the normal means of feeding ink from the reservoir to the nib for maintaining a body of ink in contact with the nib slit, this separate means is an element fitted against the underside of the nib and formed with a well or depression in its surface facing the nib.

This well is preferably filled with a capillary element such as a strip of an absorbent material composed of cellulosic or other fibres or a wick composed of braided nylon fibres.

One example of a pen embodying the invention will now be described in greater detail, reference being made to the accom-

panying drawings, wherein:—

Fig. 1 is a longitudinal section of the complete pen.

Fig. 2 is a fragmentary view to an enlarged scale showing the nib end of the pen, partly in longitudinal section and partly in elevation.

Fig. 3 is a plan view of the auxiliary "feed" element employed in the pen of Fig. 1.

Fig. 4 is an under plan view of this element.

Fig. 5 is a side elevation thereof.

Fig. 6 is an end view of the nib section of the pen, taken from the barrel-engaging end thereof but with the auxiliary element in position.

Fig. 7 is a view of the nib section taken from the opposite end thereof, the auxiliary element not being in position, and

Fig. 8 is a similar view of the nib section but with the nib, auxiliary element and wick in position.

The pen illustrated in Figs. 1 and 2 comprises a barrel 1 with a closed end 1a having a hollow nib section 2 screwed into its open end, the barrel being filled for about one-third of its length with a stack of discs 3 cut from a knitted nylon fabric and the nib section being filled with a spirally rolled length 4 of the same fabric. The stack of discs 3 is preferably held in compression between endmost discs 3a which are attached at their peripheries to rings 5 press-fitted into the barrel, the unoccupied portion of the latter constituting an air chamber 6 and being of an internal diameter such that the ink used in the pen cannot form a stable meniscus therein. An air vent opens into the air chamber through the wall of the barrel, it being fitted with a small bore tube 7 which extends to about the axis of the barrel.

The rolled filling 4 in the nib section 2 has a wick 8 of braided fibres, preferably nylon fibres, interposed between it and the internal wall of the section, the wick extending across the end of the filling remote from the nib so that it is in close contact both with the stack of discs and the rolled filling. The wick, which constitutes the normal means of feeding ink from the reservoir to the nib, extends in contact with the back of the nib 9 of the pen down to the extremity of the nib section, the extreme end of the nib projecting from the latter and preferably being turned up somewhat at the writing point.

A non-circular opening 10 is formed at the nib end of the nib section, see Figs. 6 to 8, the nib and wick fitting closely to one curved wall 10a of the opening between two opposed parallel flat walls 10b of the latter. Against the underside of the nib 9 fits the correspondingly shaped surface 11a of an element 11 (see Figs. 3 to 5) somewhat

resembling the feed bar of a conventional fountain pen, the side walls 11b of this element fitting tightly against the flat walls 10b of the opening of the nib section and the remaining wall of the element being grooved longitudinally, at 11c, to a depth greater than the height of a transverse ridge 10c formed at the inner end of the opening against which the element abuts when pressed into position. The element 11 is recessed, at 11d, at its inner end opposite its nib-engaging surface so that it will receive the ridge 10c in its recess, the groove 11c in the element establishing communication between the interior of the nib section and the outer air.

The element 11 is also formed with opposed lateral lugs 11e at its inner end so that notches 9a (Fig. 2) formed in the longitudinal edges of the nib 9 may be engaged by these lugs to anchor the nib against displacement relative to the element under the action of the pressures exerted during writing.

It will be appreciated that the element 11 and nib 9 are first assembled together before being inserted in the nib section 2. The outer extremity of the element, which latter may be tapered appropriately both in width and thickness extends to within a short distance of the writing point of the nib, generally somewhat beyond the extremity of the nib section.

In the surface 11a of the element 11 which fits against the underside of the nib is formed a well or depression 11f (Fig. 3) which is entirely surrounded by a marginal portion of the surface and extends beneath the slit 9b in the nib. The well 11f may (as shown) extend for some distance from the closed end of the slit towards the root of the nib and also extends as far as possible towards the writing point, the marginal portion of the nib-engaging surface 11a being made very narrow at this end of the element.

The well 11f is tapered to a point at the end adjacent to the writing point of the nib and is filled, or substantially so, with a capillary element 12 (Figs. 1 and 2) which may be a strip of thick filter paper or a length of a wick formed from braided fibres, particularly nylon fibres.

In the use of the pen, the filling thereof is effected in the usual manner by immersing the nib end of the nib section in ink. The ink gains ready access to the capillary filling 4 of the nib section 2 by way of the groove 11c formed in the element 11 at the side thereof remote from the nib. At the same time the capillary element 12 in the well 11f beneath the nib takes up ink so that the well is fully charged therewith.

Should the pen be left with the nib exposed for a considerable period of time, the charge of ink in the well will substantially

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- extend the period over which the ink in the nib slit will remain fluid since evaporation of the solvent from the ink can only occur at the exposed edges of the slit in the nib.
- 5 The relatively large body of ink held in the well sufficiently modifies the drying characteristics and prevents solid encrustation in the nib slit over considerable periods of exposure.
- 10 It will be appreciated that the body of ink in the well 11f is isolated from the interior of the pen and normally plays no part in feeding the nib.
- WHAT WE CLAIM IS:—
- 15 1. A pen of the kind specified having means separate from the normal means of feeding ink from the reservoir to the nib for maintaining a body of ink in contact with the nib slit, wherein this separate means is an element fitted against the underside 20 of the nib and formed with a well or depression in its surface facing the nib.
2. A pen according to claim 1, wherein the well is filled with a capillary element.
- 25 3. A pen according to claim 2, wherein the capillary element is a strip of an absorbent material composed of cellulosic or other fibres.
4. A pen according to claim 2, wherein the capillary element is a wick composed of 30 braided nylon fibres.
5. A pen according to any one of the preceding claims, wherein the element and the nib are formed with inter-engageable 35 formations whereby the element and nib may be interlocked prior to the insertion thereof into the nib section.
6. A pen according to claim 1, constructed and arranged substantially as herein described with reference to the accompany- 40 ing drawings.
- Reference has been directed in pursuance of Section 9, subsection (1) of the Patents Act 1949, to Patent No. 732463.
- For the Applicants,
 RAWORTH, MOSS & COOK,
 Chartered Patent Agents,
 75 Victoria Street, London, S.W.1.,
 and
 38 Sydenham Road, Croydon, Surrey.

Fig.

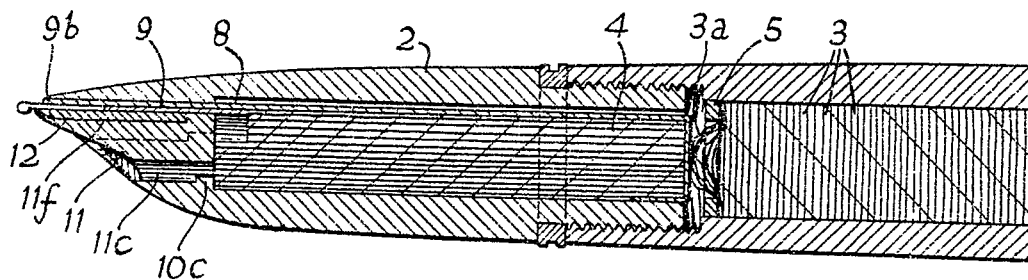


Fig. 2.

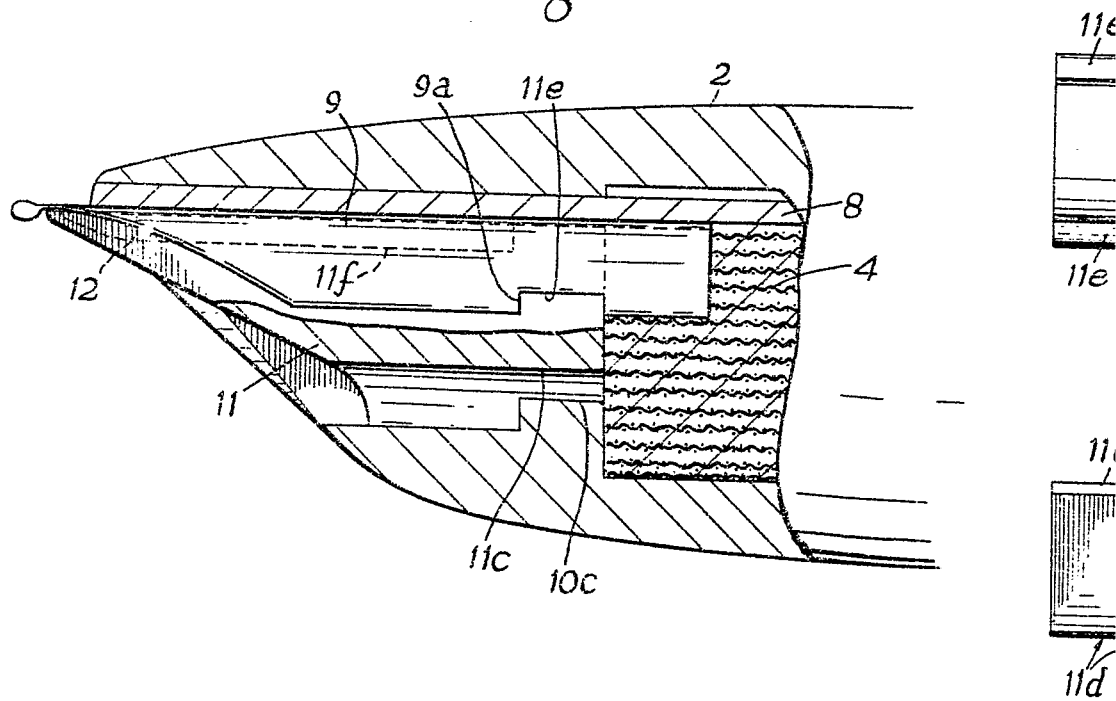


Fig. 1.

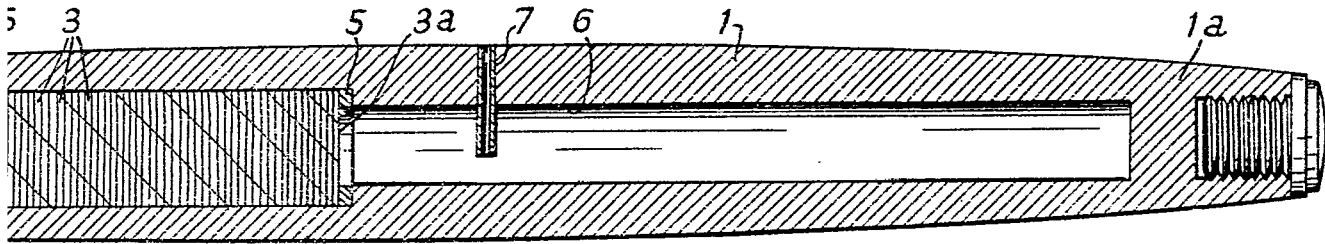


Fig. 3.

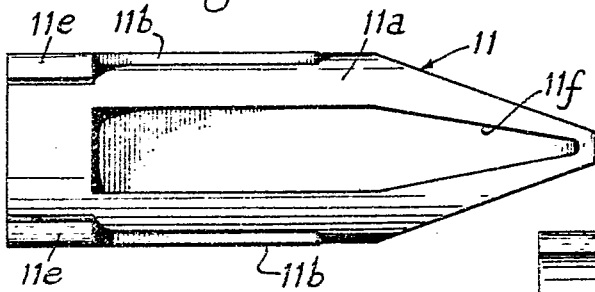


Fig. 4.

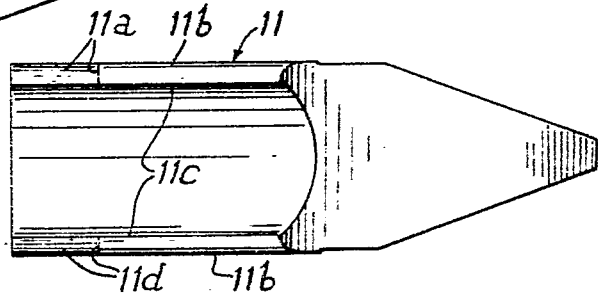


Fig. 5.

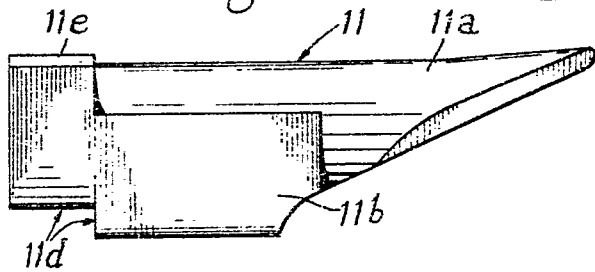


Fig. 1.

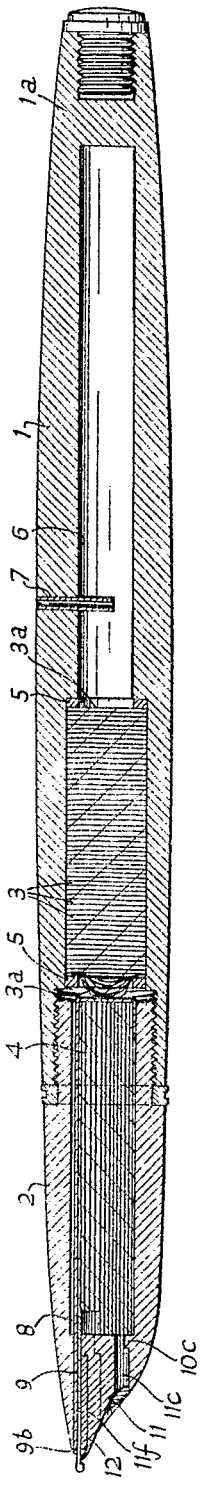


Fig. 2.

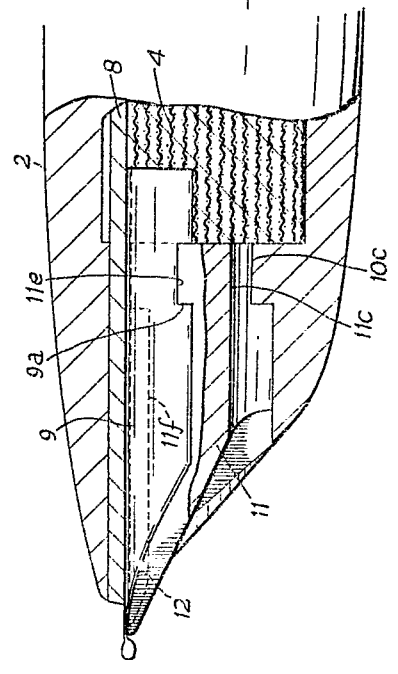


Fig. 3.

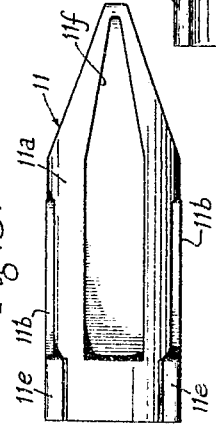


Fig. 4.

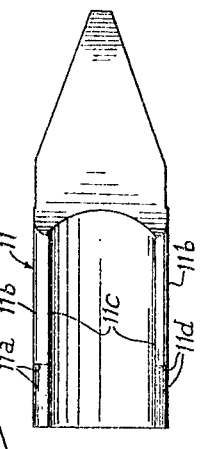
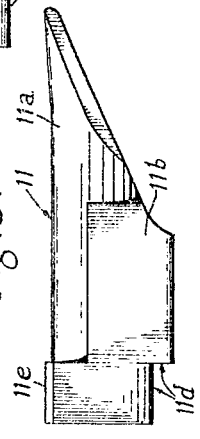


Fig. 5.



This drawing is a reproduction of
the Original on a reduced scale.
SHEET 2

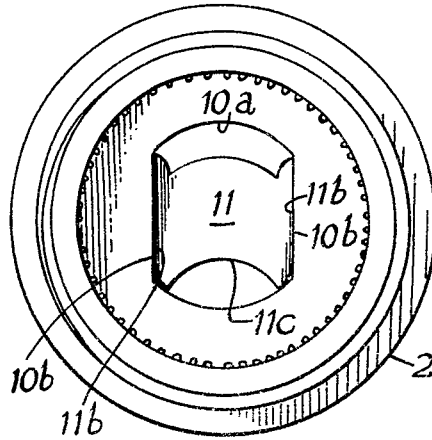


Fig. 6.

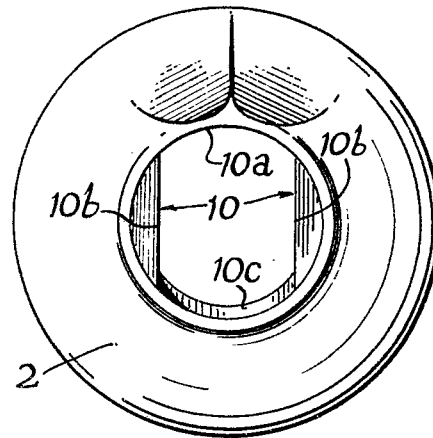


Fig. 7.

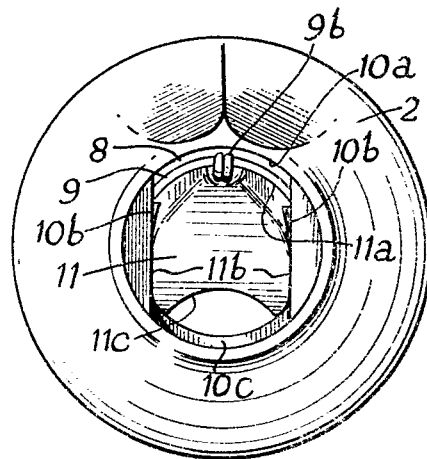


Fig. 8.