

RESERVE COPY
PATENT SPECIFICATION

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COMPLETE SPECIFICATION

Improvements in or relating to Fountain Pens

We, GEHA-WERKE G.M.B.H., a body corporate organised under the laws of Germany, of 225, Podbielskistrasse, Hannover, Germany, 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 :—

The invention relates to a fountain pen in which a reserve ink chamber is provided in front of the main ink chamber. Reserve ink chambers in fountain pens have already been proposed in order to enable the user of a pen, when not positively reminded to refill it with ink, to continue to write with the pen until it fails to function, i.e. until the whole ink supply is exhausted. Since in many cases ink is not immediately available, irritating difficulties are frequently caused to the users of fountain pens.

There are three conditions which must be fulfilled by a reserve ink chamber, viz :—

1. The user of the fountain pen must be positively reminded, by the introduction into service of the reserve ink chamber, that the fountain pen must be filled with ink.

2. The reserve ink supply must be capable of being put into service without any trouble.

3. The transfer of the ink from the auxiliary ink chamber to the pen nib must take place at substantially atmospheric pressure, so that it is impossible for an ink-air mixture to be formed.

It has already been proposed to arrange a reserve ink chamber in the main ink chamber, the ink flowing from the reserve ink chamber without any action on the part of the writer after the contents of the main ink chamber are used up. In this case, the writer is not reminded that he must fill his pen. In other constructions, the ink is forced out of the reserve ink chamber in some way or other. By this means, an ink-air mixture is partially formed which passes, as such, into the ink duct and which causes continued interruptions in the flow of ink during writing. In addition, excess pressure

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in the ink chamber and ink duct causes blotting and sputtering of the pen.

The present invention aims at obviating the foregoing drawbacks.

To this end, the present invention provides a fountain pen having a main ink chamber and a reserve ink chamber disposed in advance of said main ink chamber in the direction of the nib and in direct communication with said main ink chamber, from which reserve ink chamber ink is adapted to be supplied to an ink duct in the feed bar when the main ink chamber has been emptied, comprising a manually operated valve which after the ink supply in the main ink chamber has been exhausted is adapted, when opened, to connect the reserve ink chamber with the ink duct in such a manner that thereafter the contents of the reserve ink chamber flow under substantially atmospheric pressure directly to the ink duct.

In order to enable the invention to be more readily understood, reference is made to the accompanying drawings which illustrate diagrammatically and by way of example three embodiments thereof, and in which :

Fig. 1 is an axial section through part of one embodiment ;

Fig. 2 is a plan of a detail of Fig. 1 ;

Fig. 3 is an axial section of part of a second embodiment ; and

Fig. 4 is an axial section of part of a third embodiment.

In the embodiment shown in Fig. 1, the nib section and body of the fountain pen are screwed together and the reserve ink chamber is denoted by *a*. Holes *c* are formed in the cover *b* of the reserve ink chamber. Through these holes, the reserve ink chamber *a* is filled with ink from the main ink chamber *d* located above it. Arranged about the axis of the pen is a piston *f* which closes the flow aperture *g* when it is in the position shown in Fig. 1.

A plan view of the piston *f* is shown in Fig. 2. The piston *f* is shown with a central bore through which passes the control rod *h*.

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The piston *f* has three further bores, through which the ink from the main ink chamber *d* flows and passes to the nib *j* via the ink duct *i*. The fountain pen illustrated is filled with ink in known manner, by moving the piston *k*. During the filling operation, the ink passes through the ink duct *i* and through the bores in the piston *f* into the main ink chamber *d*. The body enclosing the main ink chamber *d* is advantageously made of transparent material so that the writer can determine, as with an ordinary fountain pen, when the ink in the main ink chamber *d* is exhausted. This is the case when the ink has flowed through the passage *m* and reached the level of the cover *b*.

If the writer omits to attend to the refilling of the pen, the latter will no longer write. The writer however can now connect up the reserve ink chamber. The suction piston *k* is moved downwardly a few millimetres in known manner. The control rod *h* secured thereto carries the piston *f* downwardly with it by frictional engagement. The flow aperture *g* is uncovered and the contents of the reserve ink chamber now flow, just as did previously the contents of the main ink chamber, through the piston *f* to the nib in the manner already described. The writer is thus given a positive opportunity to refill his pen prior to the contents of the reserve ink chamber being exhausted.

When moving the suction piston *k* in a downward direction, the control rod *h* disappears into the bore *l* of the ink duct member. Upon moving the piston *k* upwards, the piston *f* is brought into the initial position in which it closes the flow aperture *g* and again makes the reserve ink chamber *a* ready to receive ink.

Fig. 3 shows an embodiment in which the neck and body of the fountain pen are moulded in one piece and the cover *b* is subsequently introduced. The reserve ink chamber *a* has a flow aperture *g* which, by way of example, is made conical. The valve is represented by a small tube *q* which is conically flared at its lower end and thus closes the flow aperture *g* in the position shown. At its upper end, the small tube has holes *r* through which the ink from the main ink chamber *d* is supplied to the ink duct (not shown) so long as the ink is in the vicinity of these holes. The valve tube *q* is secured to the control rod *h* and the latter again extends into the hollow piston rod *p*. The hollow space of the piston rod is wholly or partially lined with elastic material *o*, for example, rubber. With movement of the piston rod, the control rod is positively carried along therewith by frictional engagement. If the piston rod *p* is moved in the normal manner only slightly downwards, the control rod *h* moves with it and opens

the flow aperture *g* of the reserve ink chamber. If the piston *k* moves the full distance downwards during the filling of the fountain pen, the small valve tube *q* becomes seated on the ink duct member (not shown) and the control rod *h* is pushed into the cavity of the piston rod *p*. With the upward movement of the piston, the flow aperture *g* is immediately closed, the ink flows through the valve tube *q* and the holes *r* into the reserve ink chamber, and finally also fills the main ink chamber through the holes *c* in the cover *b*. Because of the elastic mass *o*, the control rod is always under tension and the flow aperture thus remains reliably closed.

Fig. 4 shows a further embodiment in which the whole of the body or stem of the fountain pen *l* is moulded in one piece. The reserve ink chamber *a* is disposed underneath the main ink chamber *d*. The outlet opening *s* of the reserve ink chamber *a* is closed in the position shown, by a flexible tube-like slide valve *t*, which may consist of rubber or a suitable thermoplastic material. This tube-like valve is pushed upwards by means of the slide member *u*, by sliding the latter upwards by the gripping point *v*. By this means, the flow aperture *s* is uncovered. The ink from the reserve chamber *a* now flows to the nib *j* via the ink duct *i*.

When filling the fountain pen with ink, the suction piston *k* must first of all be moved downwards in well known manner. During this movement, the slide member *u*, which has previously been in the operative position, is forced with the slide valve *t* into the normal position. In this way, the flow aperture *s* in the reserve ink chamber is again closed, and the ink finds its way from the main ink chamber to the ink duct via the bore *w* in the flexible tube-like valve.

With the arrangements provided, the ink flows out of the reserve ink chamber entirely at substantially atmospheric pressure. Any blotting when coupling up the reserve ink chamber is out of the question. After connecting up the reserve ink chamber, the pen writes on without interruption and without any kind of trouble. Moreover, neither the shape nor the appearance of the pen is changed by this arrangement. In addition, the fountain pen is handled in exactly the same way as any other fountain pen. The writer can also omit to connect up the reserve ink chamber and, upon duly noting the lack of ink, can fill the pen again in the normal manner. The reserve ink chamber is always ready for use again without any special operation being necessary.

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

1. A fountain pen having a main ink chamber and a reserve ink chamber disposed in advance of said main ink chamber in the direction of the nib and in direct communication with said main ink chamber, from which reserve ink chamber ink is adapted to be supplied to an ink duct in the feed bar when the main ink chamber has been emptied, comprising a manually operated valve which after the ink supply in the main ink chamber has been exhausted is adapted when opened to connect the reserve ink chamber with the ink duct in such a manner that thereafter the contents of the reserve ink chamber flow under substantially atmospheric pressure directly to the ink duct.

2. Fountain pen as claimed in claim 1, in which the reserve ink chamber is integral with the neck and body of the fountain pen.

3. Fountain pen, constructed, arranged and adapted to operate, substantially as described with reference to Figs. 1 and 2 of the accompanying drawings.

4. Fountain pen, constructed, arranged and adapted to operate, substantially as described with reference to Fig. 3 of the accompanying drawings.

5. Fountain pen, constructed, arranged and adapted to operate, substantially as described with reference to Fig. 4 of the accompanying drawings.

Dated this 16th day of November, 1949.

W. H. A. THIEMANN,
14 to 18, Holborn,
London, E.C.1.
Agent for the Applicants.

This Drawing is a reproduction of the Original on a reduced scale

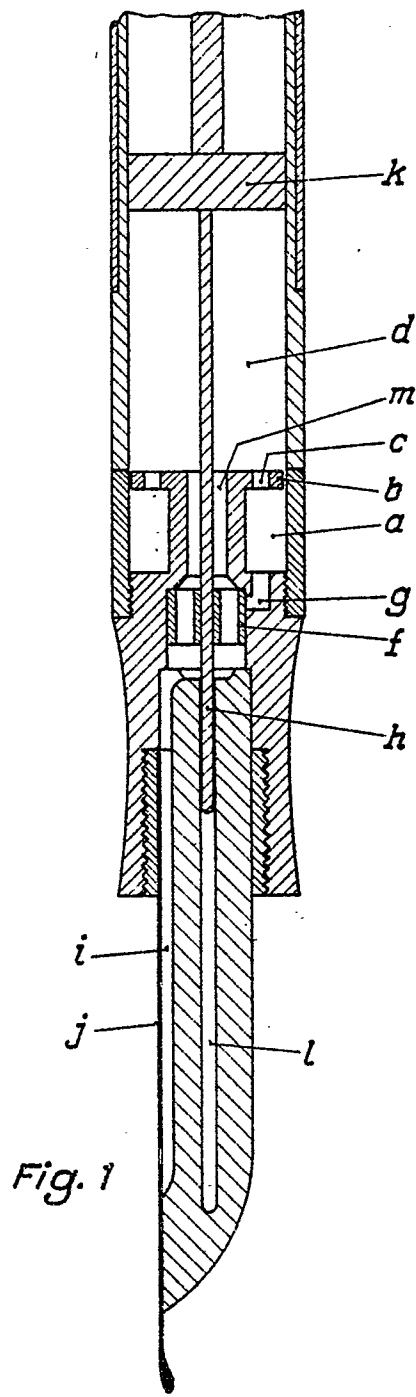


Fig. 1

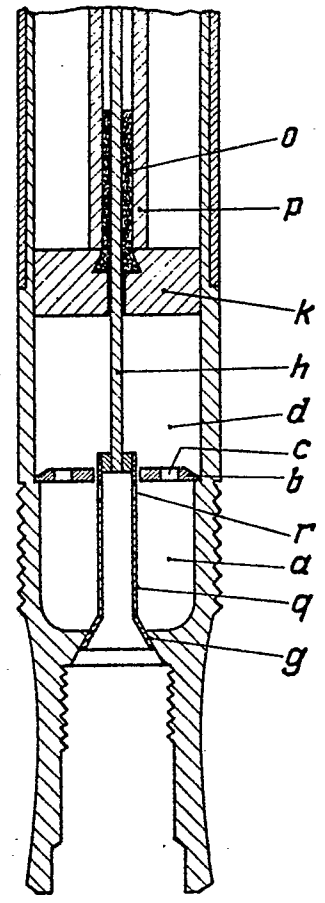


Fig. 3

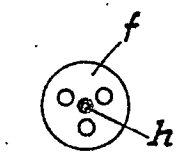
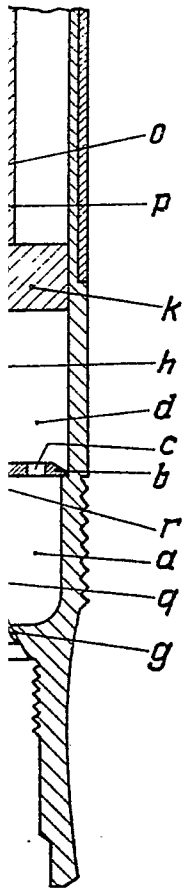


Fig. 2

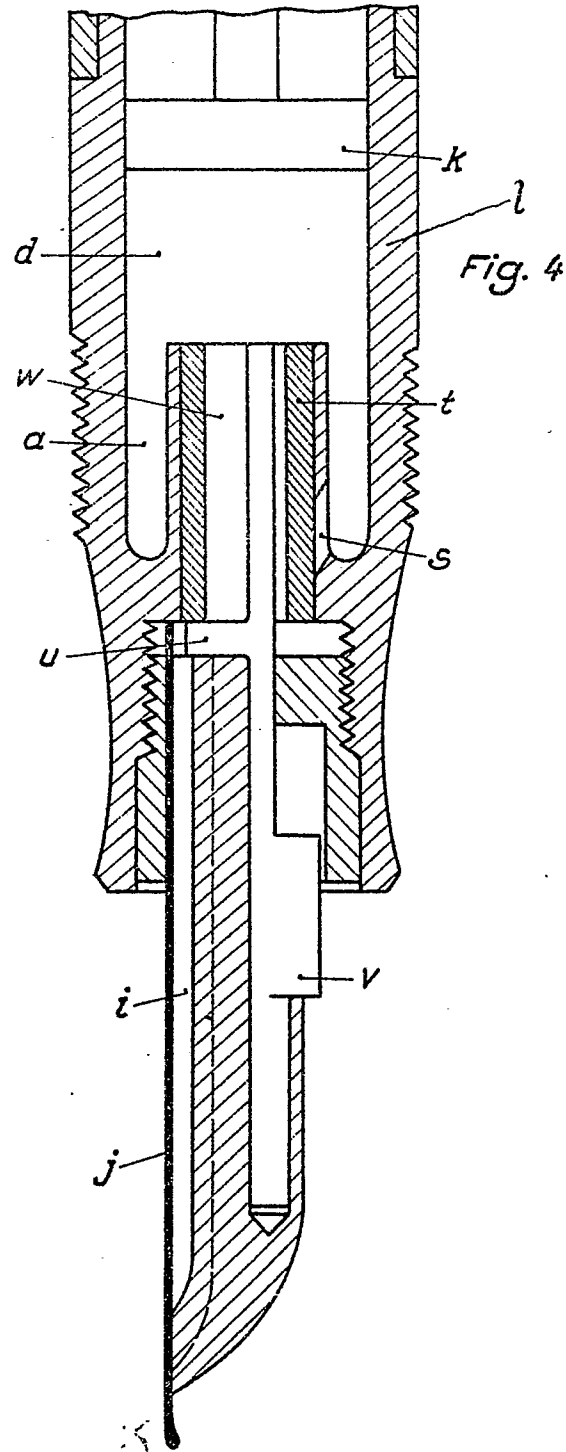


3

f

h

2



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