PATENT SPECIFICATION

623,767

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Index at acceptance:—Class 146(iii), A11(k: x).

PROVISIONAL SPECIFICATION

Improvements in or relating to Fountain Pens

We, MABIE TODD & COMPANY LIMITED, a Company organized under the Laws of Great Britain and Northern Ireland, LESLIE WILLIAM JOHNSON (British Nationality), and EDWARD STEPHEN SEARS (British Nationality), all of 41, Park Street, Mayfair, London, W., do hereby declare the nature of this invention to be as follows:—

This invention relates to fountain pens, particularly of the type in which a hardened ball or, preferably, a plurality of hardened balls, are utilized as a direct means of writing or marking, and characterised in that said means is preferably for use with a viscous ink of either type i.e. soluble dye or pigment.

The degree of wear occasioned by the use of an abrasive ink, such as that containing a pigment, is greatly reduced by the use of a plurality of balls, as against annular seating as in the case of a single ball point as heretofore.

Pens of this type, have previously been almost completely restricted to formations in which the holder, or body of the pen, and the balls have been located entirely on the main axis, thus restricting the angle at which the pen could be used. By the tangential method of construction hereinafter described, the scope is greatly increased, with regard to the angles adopted by various users in writing.

According to our invention, the point section is bored longitudinally with suitable drill angle for almost its entire length, stopping short with the point of the drill just protruding at the point end. Said gore is for the accommodation of the feed tube and a ball case said point section is formed externally of suitable shape and tapering to a point: the opposite end, or the end remote from the point, is adapted by any suitable means, such as a thread etcetera for attachment to the main body of the pen.

The point of the holder is ground or cut at an angle of approximately 50° to the main axis so that the angle on the shorter side meets the shoulder formed by the drill, leaving the angle on the longer side intact to function as a stop to limit the extent to which the ball case protrudes, whilst the shorter side provides a parallel seating for the feed tube.

Said feed tube is preferably of metal and comprises a tube of common form, with suitable bore to form the capillary connection between the ball case and the main ink supply, and is attached to the ball case by means appropriate to the material used. Said ball case is formed in the shape of an elongated cylindrical box open at one end only, and its bore being of suitable size to accommodate freely the two balls.

Attached to the feed tube on one side, is said ball case set at an angle more or less corresponding to the angle of the drill point, the point of attachment of the feed tube coinciding approximately with the point between the two balls. The open end of the case is spun inwards to hold the balls in known manner.

Ease and simplicity of manufacture and assembly are apparent in addition to the advantages foresaid: we, therefore, do not desire to restrict ourselves within the scope of the invention.

Dated this 25th day of September, 1946.

JOHN HINDLEY WALKER,
125, High Holborn, London, W.C.1, and
139, Dale Street, Liverpool, 2,
Chartered Patent Agent.

COMPLETE SPECIFICATION

Improvements in or relating to Fountain Pens

We, MABIE TODD & COMPANY LIMITED, a Company organized under the Laws of Great Britain and Northern Ireland, LESLIE WILLIAM JOHNSON (British

Nationality), and EDWARD STEPHEN SEARS (British Nationality), all of 41, Park Street, Mayfair, London, W., 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 fountain pens, particularly of the type in which a hardened ball is utilized as a direct means of writing or marking, preferably with a viscous ink of either type i.e. soluble dye or pigment.

The degree of wear occasioned by the use of an abrasive ink, such as that containing a pigment, is greatly reduced by the use of a plurality of balls in mutually revoluble contact, as against an annular seating as in the case of a single ball point, as heretofore. Further, pens of this type have previously been almost completely restricted to formations in which the holder or body of the pen and the ball has been located entirely on the main axis, thus restricting the angle at which the pen could be used. By the tangential method of construction hereinafter described the point's responsiveness is substantially increased with regard to the angles adopted by various users in writing.

A fountain pen, according to our invention, is characterised by a plurality of hardened balls suitably positioned in mutually revoluble contact, and the lowermost whereof constitutes the writing point, and the line joining the centres of said balls being at an angle or inclination in relation to the main axis of the pen: and a capillary feed tube housed in the pen, the upper end of which tube communicates with the main ink supply, whilst its lower end opens to and between the two lowermost of said balls in a direction substantially tangential to both balls at their point of contact.

Preferably, said balls are accommodated in a cylindrical box open at the lower end only and positioned at an angle or inclination to the main axis of the pen, and with which box the capillary tube communicates.

We will further describe our invention with the aid of the accompanying explanatory drawings which illustrate by way of example and not of limitation one mode of embodying same.

In said drawings:—

Fig. 1 is a section of the lower portion of a pen body prepared for the insertion therein of components before referred to.

Fig. 2 is a view of a ball-containing box and connecting capillary feed tube prior to fitment in the pen, and

Fig. 3 shows the parts *in situ*.

a denotes the lower portion or nose of the pen body and *b* is an axial bore thereof. *c* represents a metal box containing two hardened balls *d*, *e*; and *f* is a capillary feed tube communicating with the main ink supply: the lower end of said tube *f* opens to said box *c* and between said balls at c^1 in a direction substantially tangential to the balls at their point of contact. The lowermost ball *d* constitutes the writing point.

To provide for the fitment of said ball box *c* the nose section *a*—which is formed externally of suitable shape and tapers towards the point—is bored longitudinally, with suitable drill angle, for almost its entire length, stopping short with the point of the drill just protruding at the nose's end: bore *b* is for the accommodation of the feed tube *f* and ball containing box *c*. The opposite end of nose *a*, i.e. the end remote from the point, is adapted by any suitable means, such as screw-threading, moulding, etcetera, for attachment to the main body of the pen.

Said nose section *a* is ground or cut at an angle or inclination of approximately 50° to the main axis X of the pen, so that the angle on the shorter side meets the shoulder b^1 formed by the drill, leaving the angle on the longer side intact to function as a stop b^2 to limit the extent to which the ball containing box *c* protrudes, whilst the shorter side provides a flush seating for the adjacent end of the capillary feed tube *f*.

Said feed tube is preferably of metal and of conventional form, with suitable bore to provide the capillary connection between the ball box *c* and the pen's main ink supply, and is attached to the ball box by means appropriate, to the material used. Said ball box *c* is formed in the shape of an elongated cylindrical casing open at the lower end only, and its bore being of suitable size to accommodate freely the balls *d*, *e*.

Attached and opening to the feed tube *f* on one side is said ball box *c* set at an angle to the main axis of the pen and more or less corresponding to the angle of the drill point, the point c^1 of opening of the feed tube *f* with box *c*, and, therefore, the feed of ink thereto, coinciding approximately with a point between the two balls *d*, *e*. The lower open end of box *c* is spun inwards to hold the contacting balls in known manner, whilst permitting revoluble movement of same within the box.

It will be obvious that more than two balls may be employed in a pen embodying our invention, but, in all cases, the

ink will be directed between the two lowermost balls.

Ease and simplicity of manufacture and assembly are apparent, in addition to the advantages aforesaid, and we, therefore, do not desire to restrict ourselves within the scope of the invention.

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 including a plurality of hardened balls suitably positioned in mutually revoluble contact and the lowermost whereof constitutes the writing point, and said balls being located so that a line joining their centres is at an angle or inclination in relation to the main axis of the pen; and a capillary feed tube housed in the pen, the upper end of which tube communicates with the main ink supply, whilst its lower end opens to and between the two lowermost balls in a direction substantially tangential to both balls at their point of contact.

2. A fountain pen as claimed in the preceding claim, in which there is provided in its lower portion or nose, and at angle or inclination to its main axis, a box open at the lower end only and accommodating said balls, the lower end of the feed tube opening to said ball-containing box between the two lowermost balls, in a direction substantially tangential to the balls at their point of contact.

3. A fountain pen substantially as hereinbefore described and illustrated in the accompanying drawings.

Dated this 12th day of June, 1947.

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

Fig. 1.

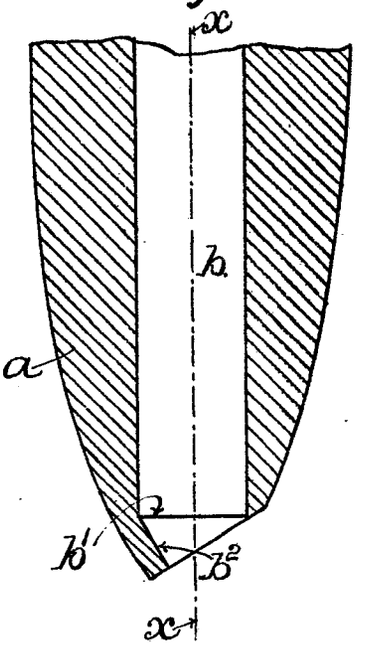


Fig. 3.

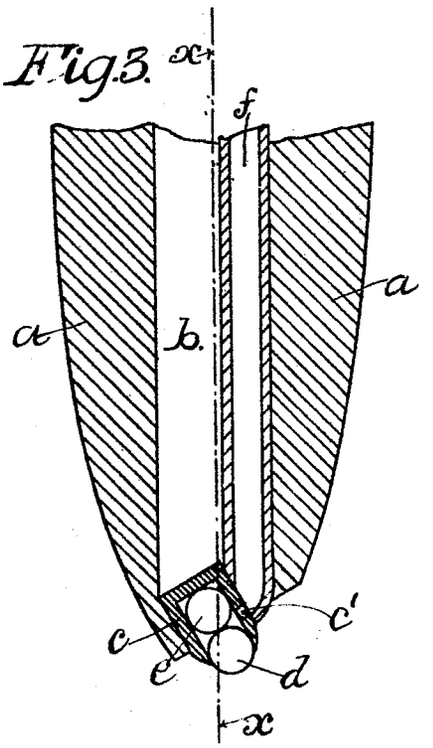
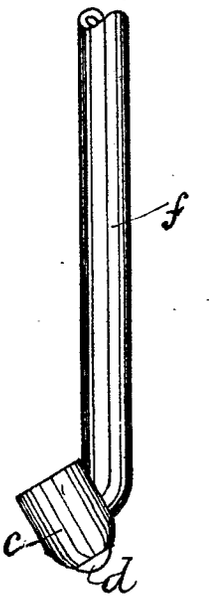


Fig. 2.



H.M.S.O. (Ty. P.)