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COMPLETE SPECIFICATION.

Improvements in Nib Sections for Fountain Pens.

We, MABIE TODD & CO. LIMITED, of Swan House, Whitby Avenue, Park Royal, London, N.W.10, a Company organised under the laws of Great Britain and Northern Ireland, and EDWARD STEPHEN SEARS, of the Company's address, a British Subject, 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:—

This invention relates to nib-sections for fountain pens and has for its chief object the provision of an improved nib-section of simple construction and capable of being easily assembled with the minimum of skill and in particular to provide a nib-section in which the nib can be interchanged in a simple and expeditious manner with a certainty that the nib will be correctly positioned in relation to the feed bar and holder of the nib-section.

The present invention has particular reference to the construction of nib-section disclosed in the Specification of Patent Application No. 25194 of the 27th September, 1948 (Serial No. 656,673) wherein a nib-section for a fountain pen comprises a tubular holder, a feed bar and a nib having a smooth shank, said holder having a countersunk front end to fit a corresponding shoulder formed on the feed bar intermediate its ends, a shoulder on the nib formed by a reduction in the size thereof, the holder and the feed bar being provided with co-operating screw threads at their rear ends to clamp the nib in place with the shoulder thereon between the shoulder on the feed bar and the countersunk front end of the holder.

The object of the present invention is to modify the foregoing construction in order to still further simplify the nib-section described.

This invention therefore provides a nib-section for a fountain pen, comprising a tubular holder, a feed bar within the holder, a nib having a shank, said holder having a countersunk front end to fit a corresponding shoulder formed on the feed bar and co-operating with a shoulder on the nib, characterised in that the means for locating the feed bar against forward axial movement and for clamping the nib in place comprises a nut screwed on to the rear end of the feed bar to bear directly (or indirectly through at least one washer) against the rear end of the holder.

In the case of a nib-section for use in a fountain pen of the sac filled type, the nut may form means for attachment of the reservoir sac. However, in order to prevent leakage at the joint face between the nut and the end of the holder, or at the joint faces that are formed at this location, if a washer or washers are interposed between the nut and the holder, it is preferred that the construction shall be such as to permit the sac to overlap part of the rear end of the holder.

The foregoing and other features of the invention set out in the appended claims are incorporated in the constructions which will now be described in detail, as examples, with reference to the accompanying drawings in which:—

Figure 1 is a side elevation of one construction of nib-section with the nut partly unscrewed;

Figure 2 is a longitudinal section therethrough;

Figure 3 an underneath view of the protruding forward end of the feed bar and the adjacent parts of the nib-section;

Figure 4 is a cross-section on the line 4—4 (Figure 1) through the holder, feed bar, and nib shank;

Figures 5 and 6 are views of the nib;

Figure 7 is a view of the feed bar; and

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Figure 8 is a further view of the feed bar with the nib in position.

Referring to the drawings the nib-section consists of the following main parts:— the holder 1, the feed bar 2, the nib 3, and the locking nut 4, all made of material appropriate for their purpose.

The holder 1 is in the main of truncated conical form having at its rear end a shank 5 of reduced diameter for attachment to the barrel of a fountain pen (this attachment may be by means of a push fit or by means of a screw thread). It is pierced from end to end with an axial bore 6 which has a countersunk portion 7 at its forward end and may also have a countersunk portion 8 at its rear end to receive the nut 4. A part 7^1 of the countersunk portion 7 may be formed with a radius as shown in Figure 2.

The feed bar 2 comprises a forward portion 9, a shank 10 with a shoulder 11 between said parts 9 and 10 and a screw threaded rear end 12. The rear face of the shoulder 11 may be radiused at at 11^1 to match the radius 7^1 of the countersunk portion, the purpose of the rounded formations as at 7^1 and 11^1 being to grip a shoulder on the nib (hereinafter referred to). The usual or common formation of air and ink channels 13 of suitable width and depth are along the top of the feed bar 2 and extend from the rear end of the latter to a point adjacent to the front end. The forward part 9 of the feed bar has a series of slots 14 cut on opposite sides of it so as to produce baffles and to leave the central backbone 15 on the underside of said part 9.

The nib 3 comprises the forward writing part 16 slit at 17 and formed with an air hole 18 in known manner and a smooth shank or stepped-down part 19, parts 16 and 19 being joined by a shoulder 20 which is of curved form so as to match the curved part 11^1 of the shoulder 11 on the feed bar and the curved part 7^1 of the countersunk portion 7 in the holder 1.

The front part 16 of the nib 3 may be tapered at an angle corresponding to the taper of the holder 1 as shown in side elevation in Figures 1 and 2 and in inverted plan form in Figure 3.

In assembling the three components of the nib-section, the nib 3 is applied to the feed bar 2 as shown in Figure 8 and the two are inserted into the holder 1 through the front end of the bore 6 thereof. The smooth shank 19 of the nib is therefore located between the feed bar and the holder and may be received either in an appropriately shaped recess 21 in the holder or in an appropriately shaped recess in the feed bar. The shoulder 20 of the nib is gripped between the radius part 11^1 of the shoulder 11 and the radius part 7^1 of the countersunk portion 7. Moreover, the feed bar 2 is positioned by engagement of its shoulder 11 with the countersunk portion 7.

It will thus be seen that the extent to which the feed bar 2 and the nib 3 protrude from the holder 1, and the disposition of the feed bar and the nib in relation to one another, is determined without the necessity for skilful assembly or the use of gauges.

The nut 4 is screwed on to the threaded end 12 of the feed bar 2 and at its forward part enters into the countersunk portion 8 in the holder 1. A washer or washers may be interposed between the nut and holder. Thus the feed bar is drawn home and it and the nib are securely clamped in the holder 1.

In the case of a nib-section intended for use in a fountain pen of the sac filled type, the sac is preferably attached to the nut 4 for which purpose the latter is provided with an enlarged rib or bead 22.

The invention is similar in construction to the nib section disclosed in the Specification accompanying Patent Application No. 9937 of the 5th April 1954 (Serial No. 729,729) and is applicable generally to the type of nib-section disclosed in the aforesaid Specification No. 656,673 and also to the nib-section disclosed in the Specification of Patent Application No. 21646 of the 1st September, 1950 (Serial No. 679,783), in which the invention consists in boring longitudinally through the feed bar, and forming an ink channel along an inner core member which fits inside the said bore, an aperture being provided to give access for the ink to the underside of the nib. This aperture lies wholly at the front of the back end of the nib, and preferably wholly in front of the shouldered part of the nib.

With such an arrangement the ink ducts in the feed bar would be dispensed with, and either the nut or the feed bar could support the ink sac.

What we claim is:—

1. A nib-section for a fountain pen, comprising a tubular holder, a feed bar within the holder, a nib having a shank disposed between the exterior of the feed bar and the interior of the holder, and means for locating the feed bar within the holder against rearward axial movement and against forward axial movement so that the assembly constitutes a complete unit, characterised in that the means for locating the feed bar against forward axial movement comprises a nut screwed onto the rear end of the feed bar to bear directly or indirectly through at least one washer, against the rear end of the holder.

2. A nib-section according to Claim 2, for use in a fountain pen of the sac type, wherein the nut forms means for attachment of the sac.

3. A nib-section according to Claim 3,

wherein the construction is such as to permit the sac to overlap a part of the rear end of the holder.

4. Nib-sections for fountain pens, substantially as described herein with reference to the accompanying drawings.

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PROVISIONAL SPECIFICATION.

Improvements in Nib Sections for Fountain Pens.

We, MABIE TODD & Co. LIMITED, of Swan House, Whitby Avenue, Park Royal, London, N.W.10, a Company organised under the laws of Great Britain and Northern Ireland, and EDWARD STEPHEN SEARS, of the Company's address, a British Subject, do hereby declare this invention to be described in the following statement:—

This invention relates to nib sections for fountain pens and has for its chief object the provision of an improved nib section of simple construction and capable of being easily assembled with the minimum of skill and in particular to provide a nib section in which the nib can be interchanged by the user in a simple and expeditious manner with a certainty that the nib will be correctly positioned in relation to the feed bar and holder of the nib section.

The present invention has particular reference to the construction of nib section disclosed in the Specification of Application for Patent No. 25194 of the 27th September, 1948 (Serial No. 656,673) wherein a nib section for a fountain pen comprises a tubular holder, a feed bar and a nib having a smooth shank, the holder having a countersunk front end to fit a corresponding shoulder formed on the feed bar intermediate its ends, the holder and the feed bar are screw connected at their rear ends so that a shoulder on the nib formed by a reduction in the size of the shank part thereof is clamped between the shoulder on the feed bar and the countersunk front end of the holder when the parts are assembled.

The object of the present invention is to modify the foregoing construction in order to still further simplify the nib section described, and to this end the feed bar has the rear end screw threaded to receive a nut, circlip, or other locking device which in the locking position of the parts bears against the rear end of the holder, so that the whole assembly can be locked together with the nib clamped in place.

The nut conveniently forms the means for attachment of the fountain pen ink sac, the nut having a neck extension for this purpose. Alternatively the feed bar may extend through the nut or other locking means and be shaped to form the means for attachment of the fountain pen ink sac.

One preferred construction of nib section according to the invention comprises a holder or bush formed with a shank for attachment to the barrel of the pen, and this attachment may be a push fit or by a screw thread. The holder is countersunk at the front end into which the nib and feed bar are introduced, the feed bar and nib both having shoulders which mate with the countersunk part of the holder.

The end of the feed bar remote from the nib has a screw threaded part to engage a nut which in turn abuts the inner end of the holder so that when the latter and the feed bar are fitted one within the other with the nib between, the whole can be drawn together by tightening the nut and thus clamp the nib in place.

The front end of the feed bar is of substantially conical form and a series of slots producing baffles are cut on opposite sides to leave a central back-bone on the underside of the forward part of the feed bar. The rear part of the cone merges into the reduced portion of the feed bar to form a stop or shoulder which limits the inwards movement of the feed bar and co-operates with the countersink of the holder to form a clamping means to hold the nib in position when the feed bar and the locking means are connected one with the other.

The top of the feed bar has cut therein a longitudinal ink feed channel or channels of suitable form and depth.

The nib is formed with a shank or stepped-down portion the shoulder so formed being of arcuate shape to conform with the shape of the shoulder part of the feed bar and the countersink of the holder. This shank portion of the nib is plain and gradually enlarged to form the writing or slit part of the nib and tapers towards the point, the angle conforming to the contour or taper of the conical part of the feed bar and culminating in conjunction with equal radials at the tip of the nib. The nib is slit and formed with an air-hole in the known manner. The shank portion of the nib may be fitted to a correspondingly shaped recess provided in

the reduced portion of the feed bar; with this arrangement the bore of the holder is not enlarged and the nib and feed bar have a good fit within the bore. This arrangement reduces the chance of leakage from the back of the nib round the edge thereof.

When assembling the three components the feed bar is positioned in the hollow or underside of the nib and in alignment with the point, both nib and feed are then inserted in the holder and the nut on the feed bar screwed home until it abuts the rear end of the holder so that the parts come firmly together and clamp the nib in place, the whole presenting a simple straightforward method of overcoming what has hitherto been a rather difficult and definitely a skilled operation in assembling a nib section, and the replacing of a nib by unskilled hands in a satisfactory manner is achieved.

The external shape or contour of the nib holder should conform with the general line of the pen and is made with a taper whereby the appearance is enhanced, but may be arcuate or otherwise shaped according to requirements.

The nut may be recessed into the back end of the holder which provides a seating. In place of the nut, a spring circlip can be used to fit a groove in the end of the feed bar, or other locking means for preventing longitudinal movement of the feed bar may be employed. The nut is conveniently extended to form an ink sac connection or feed bar itself may be shaped to this end.

The invention has the further advantage that the construction lends itself not only to producing modern streamline effects, but from the shape of the nib and the support given thereto, flexibility is given to the nib which ensures comfortable writing that a large or fairly large nib, with every movement of the point visible during writing, will give to the user; a larger nib flexible under the hand, places less strain on the hand and arm during an extended period of use.

It will be appreciated that the invention is not limited to the precise construction described as the shape of the nib, feed bar and holder may differ from the streamline effect achieved; the ink duct and "laddering" of the feed bar may be modified and the terminal end of the feed bar shaped to meet the needs of both self-filling and non-self-filling pens.

The invention is applicable generally to the type of nib section disclosed in the aforesaid Specification No. 25194/48 (Serial No. 656,673) and also to the nib section disclosed in the Specification of Application for Patent No. 21646 of the 1st September, 1950 (Serial No. 679,783), in which the invention consists in boring longitudinally through the feed bar, and forming an ink channel along an inner core member which fits inside the said bore, an aperture being provided to give access for the ink to the underside of the nib: this aperture lies wholly at the front of the back end of the nib, and preferably wholly in front of the shouldered part of the nib.

With such an arrangement the ink ducts in the feed bar would be dispensed with, and either the nut or the feed bar could support the ink sac.

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729,639 COMPLETE SPECIFICATION

1 SHEET

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

FIG. 1.

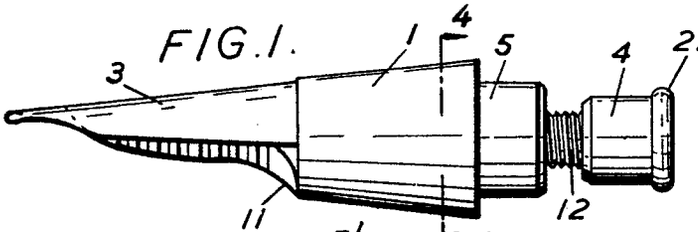

FIG. 2.

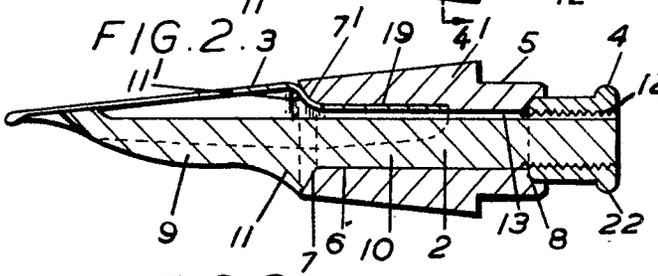

FIG. 3.

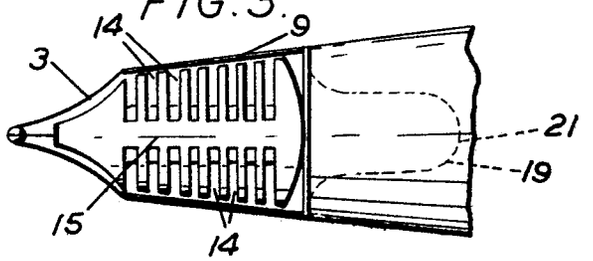

FIG. 4.

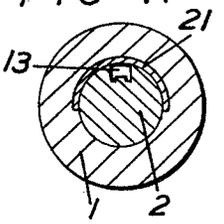

FIG. 5.

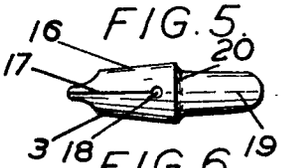

FIG. 6.

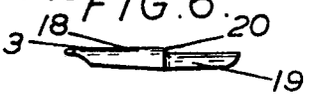

FIG. 7.

FIG. 8.