Jan. 22, 1946. D. JUELSS 2,393,250

FOUNTAIN PEN

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Fig. 1.

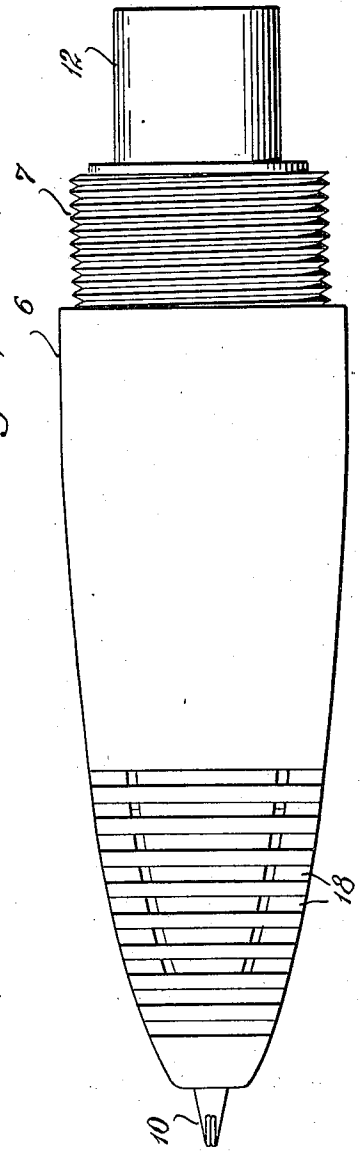

Fig. 2.

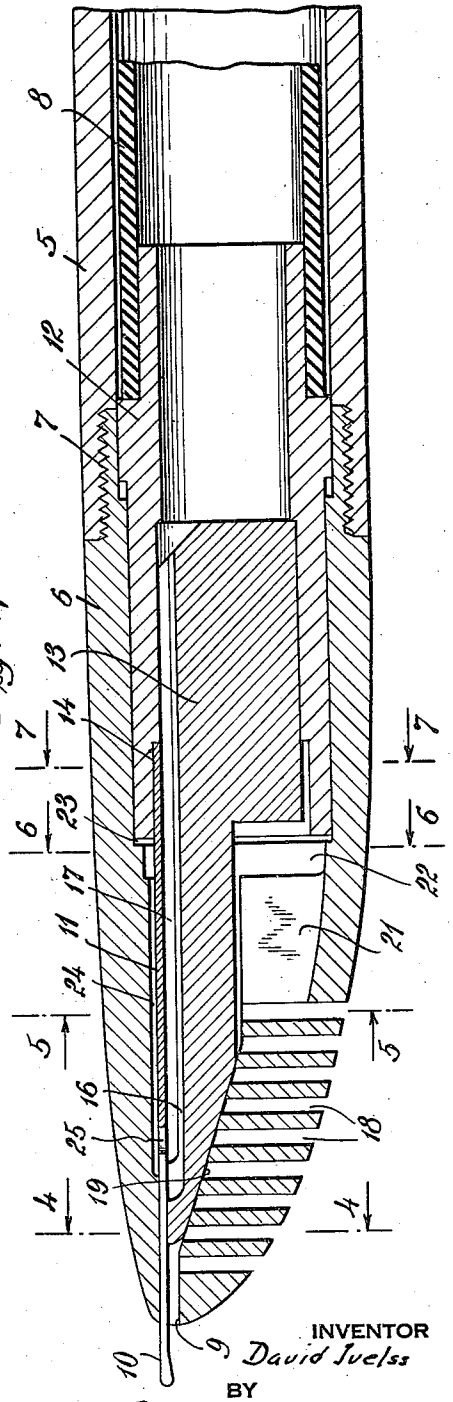

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Fig. 3,

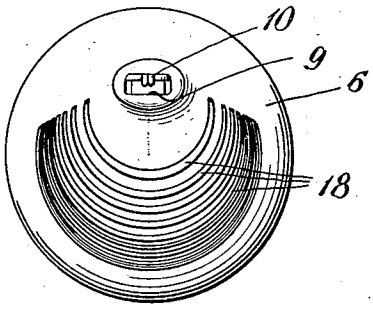


Fig. 4,

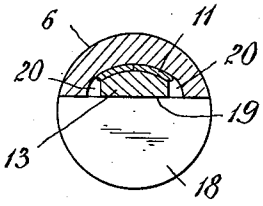


Fig. 5,

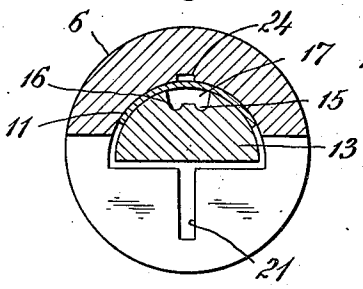


Fig. 6,

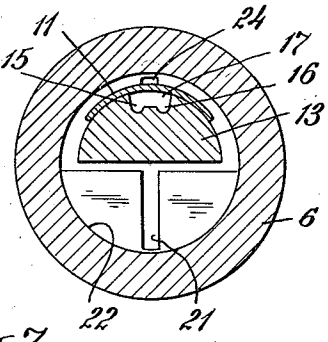


Fig. 8,

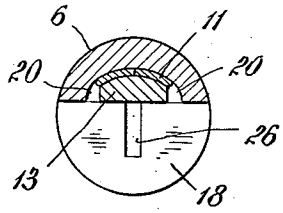


Fig. 7,

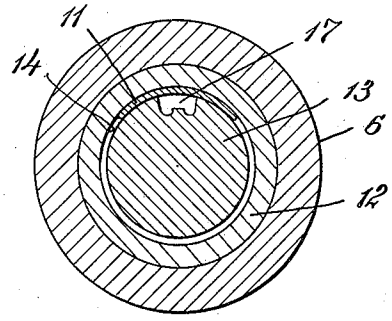
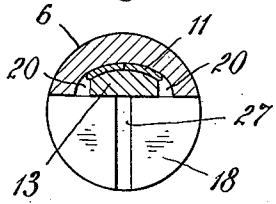


Fig. 9.



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UNITED STATES PATENT OFFICE

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FOUNTAIN PEN

David Juelss, Brooklyn, N. Y., assignor to American Lead Pencil Company, Hoboken, N. J., a corporation of New York

Application December 5, 1944, Serial No. 566,690

14 Claims. (Cl. 120—50)

This invention relates to fountain pens and more particularly to the ink feeding mechanism thereof embodying a pen nib, feed bar and an enclosing hood completely surrounding the nib and feed bar except for an opening through which the point of the nib projects. The hood protects the nib and feed bar from accidental damage, affords effective support for the nib adjacent the point, provides a collector for surplus ink which may pass through the ink channel in the feed bar and assures the continuous maintenance of humid conditions in the feed so that the pen is always in condition for writing so long as the ink supply lasts. It also facilitates handling of the pen which may be grasped without danger of smearing the fingers.

One of the primary disadvantages of fountain pens of the type heretofore in general use has been the difficulty of maintaining close contact between the feed bar and the pen nib. Under pressure exerted in writing, there is a tendency to deflect the nib away from the feed bar. As a result, more ink flows from the reservoir than is required for writing if the space between the nib and feed bar is of capillary dimensions. If greater, the supply of ink will be shut off so that frequent priming is necessary. Attempts have been made to remedy this defect by utilizing pen nibs of heavier section or by resorting to tubular pen nibs. Neither solution is entirely satisfactory.

Another characteristic of fountain pens is the tendency to flood under certain conditions. Some pens of recent design have included a multiplicity of annular cell-like structures with interlocking air and ink passages in an attempt to afford a collector for surplus ink. These are fragile and difficult to manufacture and assemble. Moreover, ink sedimentation often blocks the delicate passages which become useless for their intended purpose.

It is the object of the present invention to provide a pen feed mechanism of sturdy parts which are easy to manufacture and assemble, the structure being such as to avoid the difficulties hereinbefore mentioned and to afford numerous advantages in use.

Another object of the invention is to provide a fountain pen employing a hood extension substantially covering the writing nib and containing novel means for trapping and storing excess ink on the under side portion of the hood.

Another object of the invention is to provide means for ensuring contact of the feed bar and pen nib by wedging the feed bar between the nib and the inner surfaces of the hood extension.

Another object of the invention is to provide a fountain pen containing a hood extension of utmost simplicity which lends itself to molding technique and dispenses with the need for fragile and complicated cell structures usually embodied in the feed bars of such fountain pens for trapping and storing excess ink.

Another object of the invention is to provide a hood extension which will effectively reduce vaporization to a minimum by providing an almost total enclosure for the feeding means, the orifice at the extreme end of the hood being of capillary proportions where the nib protrudes through it.

Other objects and advantages of the invention will be apparent as it is better understood by reference to the following specification and the accompanying drawings, in which

Fig. 1 is a plan view of the under side of the feed mechanism;

Fig. 2 is a longitudinal section through the feed mechanism and a portion of the barrel;

Fig. 3 is a front elevation of the feed mechanism;

Fig. 4 is a section on the line 4—4 of Fig. 2;

Fig. 5 is a section on the line 5—5 of Fig. 2;

Fig. 6 is a section on the line 6—6 of Fig. 2;

Fig. 7 is a section on the line 7—7 of Fig. 2;

Fig. 8 is a section similar to Fig. 4 illustrating a slight modification of the structure; and

Fig. 9 is another section similar to Fig. 4, illustrating a further modification.

Referring to the drawings, 5 indicates the barrel of a fountain pen to which the hood extension 6 is secured in any suitable manner, as for example by threads 7. An ink sac 8 may be secured to the inner end of the feed mechanism within the barrel 5 in the usual manner. The hood 6 is preferably tapered or streamlined to its free end, where it is provided with an opening 9 through which the point 10 of the pen nib 11 projects. The size of the opening 9 is such that when assembled with the pen nib 11, a passage of capillary dimensions is exposed to the atmosphere.

A ferrule 12 is inserted in the barrel end of the hood 6 to receive the feed bar 13. The latter firmly holds the rear end of the pen nib 11 in a recess 14 provided in the ferrule 12. The feed bar is preferably of the type heretofore used in fountain pens, being generally cylindrical at one end and semi-cylindrical at the other, the latter end tapering to a blunt point. It is provided with ink and air grooves 15 and 16 merging into a groove 17. The groove 17 extends longitudinally

of the feed bar to a point near the tapered end and forms with the pen nib 11 a passage through which ink descends from the ink sac 8 and is replaced with air.

The hood 6 has at its forward end a plurality of transverse slots 18 of capillary width affording together a collector for surplus ink. The inner face of the under side of the hood 6 is shaped to engage the adjacent surface 19 of the feed bar 13, affording a wedging action when the parts are assembled to firmly hold the feed bar 13 and pen nib 11 against the opposing inner surface of the hood, particularly adjacent to the end of the pen nib. This wedging action avoids the difficulty experienced due to flexing of the pen nib away from the feed bar in ordinary fountain pens.

As will be noted in Fig. 4, the width of the feed bar 13 is somewhat less than the space within the hood 6 adjacent thereto; affording spaces 20 at each side through which surplus ink may pass into the slots 18. In normal operation, ink flows through the groove 17 to the point of the nib 11, where it is used in writing. In the event of conditions which cause flooding, the ink tends to form a drop in the opening 9 and is promptly drawn by capillary action into the transverse slots 18 where it is held. In writing, the ink is gradually drawn from the trapped surplus until normal conditions are restored.

Rearwardly, in the under side of the hood 6, a longitudinal slot 21 communicating with the rearmost of the transverse slots is provided to permit entrance of air. The air passes into a chamber 22 and thence through a channel 23 formed with the end of the ferrule 12 to a groove 24 in the hood 6 above the pen nib 11. Thence, the air passes through a breather opening 25 to the groove 17, permitting replacement of the ink as used with the air which enters the sac 8.

As indicated in Fig. 8, it may be advantageous to provide an additional longitudinal slot 26 in the under side of the hood 6, communicating with the transverse slots 18. Such a longitudinal slot, which should be of capillary dimensions, facilitates travel of the ink through and into the several transverse slots. As shown in Fig. 8, the longitudinal slot extends only partially through the wall of the hood 6. Alternatively, as shown in Fig. 9, a longitudinal slot 27, extending entirely through the wall of the hood 6, may be provided to afford communication between the transverse slots 18. The longitudinal slot in this case should also be of capillary dimensions. In either of the three forms of the invention as illustrated in Figs. 4, 8 and 9, surplus ink resulting from flooding is immediately picked up and held in the transverse slots 18 until it is utilized in writing. Since the transverse slots are exposed to the atmosphere, some of the surplus ink may be disposed of by evaporation. In any event, it has been found that pens constructed in accordance with the invention afford ample storage capacity for surplus ink delivered through the feed, so that ink will not drop from the pen point as it often does in the use of ordinary fountain pens.

In addition to this special advantage of the pen as described, the structure affords, as previously noted, a firm support for the pen nib which is wedged by the feed bar against the opposing inner surface of the hood. Moreover, the pen nib will remain moist under substantially all conditions, and is ready for operation without the necessity for priming.

In a pen constructed as described, it is possible to use ink of the instantaneous drying type, since gushing is inhibited and the ink is protected from the air until delivered by the pen point in writing. Surplus ink collected in the transverse slots may be partially evaporated by exposure to the atmosphere, but this does not affect the writing quality of the pen.

The structure is simple and adapted to construction by molding plastic materials and is easily assembled. It is to be understood that any materials adapted for fountain pen construction may be used. Molded plastics are preferred, but the parts may be formed from other material such as hard rubber or even metal.

Various changes may be made in the details of construction as described without departing from the invention or sacrificing the advantages thereof.

I claim:

1. In a fountain pen feed, a pen nib, a cooperating feed bar and a hood surrounding the pen nib and feed bar and having an opening through which the pen nib projects, and a plurality of transverse slots of capillary width on the under side of said hood adapted to receive and hold surplus ink.

2. In a fountain pen feed, a pen nib, a cooperating feed bar and a hood surrounding the pen nib and feed bar and having an opening through which the pen nib projects, a plurality of transverse slots of capillary width on the under side of said hood adapted to receive and hold surplus ink, and a longitudinal slot communicating with the transverse slots.

3. In a fountain pen feed, a pen nib, a cooperating feed bar and a hood surrounding the pen nib and feed bar and having an opening through which the pen nib projects, a plurality of transverse slots of capillary width on the under side of said hood adapted to receive and hold surplus ink, and a longitudinal slot communicating with the transverse slots, the longitudinal slot extending partially through the wall of the hood.

4. In a fountain pen feed, a pen nib, a cooperating feed bar and a hood surrounding the pen nib and feed bar and having an opening through which the pen nib projects, a plurality of transverse slots of capillary width on the under side of said hood adapted to receive and hold surplus ink, and a longitudinal slot communicating with the transverse slots, the longitudinal slot extending entirely through the wall of the hood.

5. In a fountain pen feed, a pen nib, a cooperating feed bar and a hood surrounding the pen nib and feed bar and having an opening through which the pen nib projects, and a plurality of transverse slots of capillary width on the under side of said hood adapted to receive and hold surplus ink, the inner surfaces of the hood being formed to wedge the pen nib and feed bar into firm engagement.

6. In a fountain pen feed, a pen nib, a cooperating feed bar and a hood surrounding the pen nib and feed bar and having an opening through which the pen nib projects, a plurality of transverse slots of capillary width on the under side of said hood adapted to receive and hold surplus ink, and a longitudinal slot communication with the transverse slots, the inner surfaces of the hood being formed to wedge the pen nib and feed bar into firm engagement.

7. In a fountain pen feed, a pen nib, a cooperating feed bar and a hood surrounding the pen nib and feed bar and having an opening through which the pen nib projects, a plurality of transverse slots of capillary width on the un-

der side of said hood adapted to receive and hold surplus ink, and a longitudinal slot communicating with the transverse slots, the longitudinal slot extending partially through the wall of the hood, the inner surfaces of the hood being formed to wedge the pen nib and feed bar into firm engagement.

8. In a fountain pen feed, a pen nib, a cooperating feed bar and a hood surrounding the pen nib and feed bar and having an opening through which the pen nib projects, a plurality of transverse slots of capillary width on the under side of said hood adapted to receive and hold surplus ink, and a longitudinal slot communicating with the transverse slots, the longitudinal slot extending entirely through the wall of the hood, the inner surfaces of the hood being formed to wedge the pen nib and feed bar into firm engagement.

9. In a fountain pen feed, a pen nib, a cooperating feed bar and a hood surrounding the pen nib and feed bar and having an opening through which the pen nib projects and a plurality of transverse slots of capillary width on the under side of said hood adapted to receive and hold surplus ink, and a longitudinal slot behind and communicating with the rearward transverse slot and with a breathing passage to permit entrance of air to the pen.

10. In a fountain pen feed, a pen nib, a cooperating feed bar and a hood surrounding the pen nib and feed bar and having an opening through which the pen nib projects and a plurality of transverse slots of capillary width on the under side of said hood adapted to receive and hold surplus ink, a longitudinal slot behind and communicating with the rearward transverse slot and with a breathing passage to permit entrance of air to the pen, and a longitudinal slot communicating with the transverse slots.

11. In a fountain pen feed, a pen nib, a cooperating feed bar and a hood surrounding the pen nib and feed bar and having an opening through which the pen nib projects and a plurality of transverse slots of capillary width on the under side of said hood adapted to receive and hold surplus ink, a longitudinal slot behind and communicating with the rearward transverse slot and with a breathing passage to permit entrance of air to the pen, and a longitudinal slot communicating with the transverse slots and extending partially through the wall of the hood.

12. In a fountain pen feed, a pen nib, a cooperating feed bar and a hood surrounding the pen nib and feed bar and having an opening through which the pen nib projects and a plurality of transverse slots of capillary width on the under side of said hood adapted to receive and hold surplus ink, a longitudinal slot behind and communicating with the rearward transverse slot and with a breathing passage to permit entrance of air to the pen, and a longitudinal slot communicating with the transverse slots and extending entirely through the wall of the hood.

13. In a fountain pen feed, a pen nib, a cooperating feed bar and a hood surrounding the pen nib and feed bar and having an opening through which the pen nib projects, and a plurality of slots of capillary width on the underside of said hood adapted to receive and hold surplus ink.

14. In a fountain pen feed, a pen nib, a cooperating feed bar and a hood surrounding the pen nib and feed bar and having an opening through which the pen nib projects, and a transverse slot of capillary width on the underside of said hood adapted to receive and hold surplus ink.

DAVID JUELSS.