

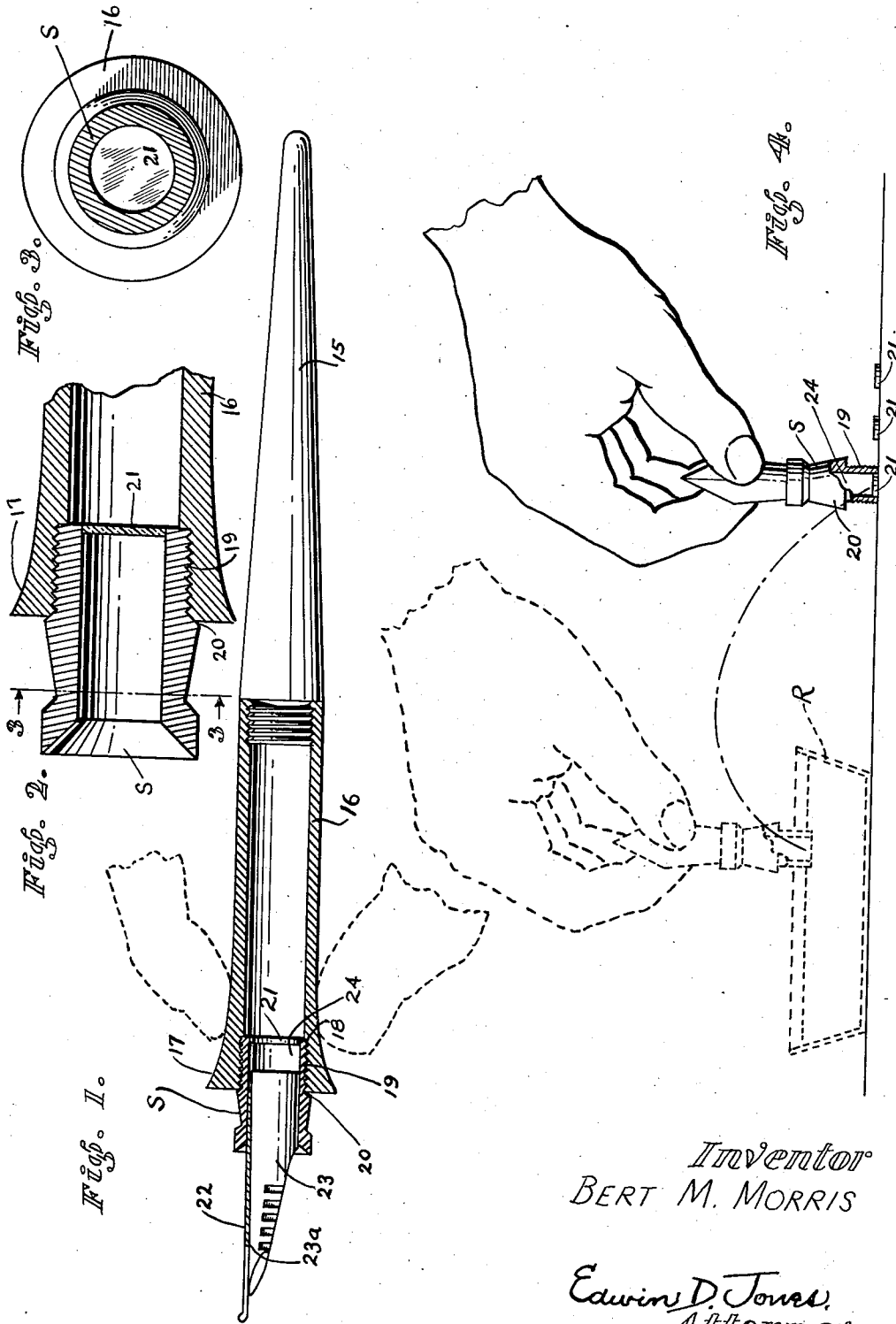
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SELF-FILLING FOUNTAIN PEN

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# UNITED STATES PATENT OFFICE

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## SELF-FILLING FOUNTAIN PEN

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2 Claims. (Cl. 120—113)

My invention relates to fountain pens of that character adapted for use in conjunction with an ink well, the two being commonly referred to as a desk set, and the pen when dipped into the well functioning through capillary action to fill itself with ink in quantity sufficient for writing.

Such self-filling pens as heretofore proposed provide the objections of (I) being so extremely slow in filling as to necessitate the pen remaining immersed in the ink for a relatively long period and thus precluding filling by a mere dipping operation; (II) causing flooding of the nib with ink by reason of the large quantity of air back of the ink expanding from the heat of the writer's fingers or otherwise; (III) and or where a vent is provided to allow expansion of the air the ink is subjected to the pressure of atmospheric air and to cause nib flooding.

It is a purpose of my invention to provide a self-filling dip type of fountain pen having a chamber for receiving the ink taken up by dipping, which is contained wholly within the pen section of the pen and by closing or sealing off the inner end of the pen section. Such a pen section prevents air from entering the chamber through the inner end of the pen section to exert a pressure on the ink in the chamber and cause flooding of the nib. Also, because of the restricted area of the chamber, the air entering the latter through the conventional feeder as the ink is dispensed to the nib when writing, is at a pressure less than atmosphere. Therefore, the ink is held in suspension in the chamber against possible flooding of the nib, and yet it is allowed to be properly fed to the nib when writing.

It is also a purpose of my invention to provide a pen section of the above described character which when placed within the pen holder, the chamber is situated below the finger gripping area of the holder and thus beyond any possible heating influence of the writer's fingers to expand the air in the chamber and thus produce flooding of the nib.

I will describe only one form of self-filling fountain pen embodying my invention, and will then point out the novel features thereof in claims.

In the accompanying drawing:

Fig. 1 is a view showing in longitudinal section and partly in elevation, one form of self-filling fountain pen embodying my invention.

Fig. 2 is an enlarged sectional view of the pen section shown in Fig. 1.

Fig. 3 is a transverse sectional view on the line 3—3 of Fig. 2.

Fig. 4 are two (one in full lines and the other in dash lines) views of the pen section with the feeder and nib therein, illustrating the manner in which the chamber closing partition is adapted to be permanently secured in the pen section body.

Referring to the drawing wherein similar parts are designated by similar reference characters in each of the several views, my invention in its present embodiment, comprises a handle 15, preferably tapered and of solid material such as Celluloid, having its large end formed with a reduced extension which is screw-threaded to engage the screw-threads within the confronting end of a tubular holder 16. The holder may likewise be formed of Celluloid and flared outwardly at its nib end to provide an abutment 17 which not only limits inward movement of the pen into an ink well of a desk set when dipping, but serves to position the writer's fingers when gripping the pen at a point on the holder which is spaced upwardly from the lower end of the holder and thus removed from the zone of the ink receiving chamber as will be more fully described hereinafter.

The bore of the holder 16 at its abutment end is interiorly screw-threaded as at 18 to receive the exteriorly screw-threaded part 19 of a pen section designated generally at S. This part 18 is of reduced outside diameter to form the usual annular shoulder 20 which, when the pen section is screwed home in the holder abuts an edge of the holder to form a fluidtight joint. From the shoulder 20 outwardly the pen section S is exteriorly shaped in the conventional manner shown.

Interiorly, however, the pen section is of uniform bore and its body as originally formed is open from end to end. In its final form the pen section is permanently and completely closed at its inner end by a partition 21. In practise, the pen section body and the partition are made of Celluloid or a similar material, and the partition is permanently secured within the bore of the body by the process illustrated in Fig. 4. As here shown, the end of the pen section body is dipped into a quantity of acetone contained in a receptacle R and then immediately placed over any one of several partitions reposing on a support. The partition is of disk form to fit within the end of the pen section body. Hence, under the dissolving and highly volatile properties of the acetone in respect to the Celluloid, the edge

of the partition is bonded to and becomes an integral part of the pen section body to completely seal the inner end thereof.

5 Preferably, prior to this partition-applying process, a nib 22 of the inexpensive variety and a conventional ink feeder 23 are inserted and properly adjusted in the other end of the pen section body. Such adjustment is maintained permanently by applying acetone to the edge of the pen section body following adjustment of the feeder 23 so as to bond the feeder to the pen section.

10 With the nib and feeder adjusted and permanently secured in the pen section body, and the partition applied and permanently and completely closing the other end of the body, a chamber 24 is formed in the pen section between the confronting end of the feeder 23 and the partition 21. This chamber constitutes the ink receiving and storing chamber of the pen, and such chamber being contained wholly within the pen section and the nib and feeder wholly carried by the pen section, it becomes manifest that a unitary structure is provided which is adapted for insertion into any suitable form of holder 16.

15 This unitary structure is insertable into the holder to form therewith a self-filling fountain pen, by screwing the threaded end of the pen section into the open end of the holder. Through the medium of the feeder 23 which is provided with the usual capillary feed channel 23<sup>a</sup>, the chamber 24 may be instantly and completely filled with ink by a mere dipping of the nib into an ink well. Because of the fact that the inner end of the chamber is closed or sealed off from the pen holder, either by the partition 21 or in any other suitable manner, no air can enter that end of the chamber. Hence, the ink drawn into the chamber under the capillary action of the feed channel is not subjected to the pressure of the atmospheric air to expel ink therefrom and flood the nib. On the contrary, the ink is held in suspension within the chamber and can be dispensed therefrom only under the writing action exerted on the nib, and in such manner that at all times when writing there is an even flow of ink from the nib. Because of the restricted area of the chamber, the ink entering

the latter through the feeder is at a pressure less than atmosphere. Therefore, the ink in the chamber is held in suspension against possible flooding of the nib and yet proper feeding of ink to the nib when writing is at all times assured.

5 As previously stated herein and as illustrated with particularity in Fig. 1, the chamber 24 is so positioned in the holder that its inner end is below or spaced outwardly from that area of the holder normally gripped by the fingers of the writer. In consequence, the air admitted to the chamber as the ink is dispensed in writing, is not subject to the heat from the fingers, and, hence, will not expand to cause flooding of the nib with ink.

10 Although I have herein shown only one form of self-filling fountain pen embodying my invention, it is to be understood that various changes and modifications may be made herein without departing from the spirit of my invention and the spirit and scope of the appended claims.

I claim:

1. In a self-filling fountain pen; a holder; a pen section in the holder with its inner end permanently closed; and a feeder in the pen section spaced from the inner end thereof to form an intervening ink receiving and storing chamber, the inner end of said chamber being spaced outwardly from the normal pen gripping area of the holder.

2. In a fountain pen; a tubular pen holding member one end of which is open; a relatively short pen section of tubular form insertable into the open end of said member, and having its inner end closed so as to separate the interior of said member and pen section and when a capillary feeder and nib are fitted into the open end of the pen section an ink receiving and storing chamber is formed which can be instantly and completely filled with ink upon dipping the feeder into ink by virtue of the smallness of the chamber in comparison with the capillary feeding action of the feeder, and to thereby expel all air from said chamber to hold the ink in suspension therein and permit its discharge therefrom only when the nib is brought into writing contact with a surface.

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