

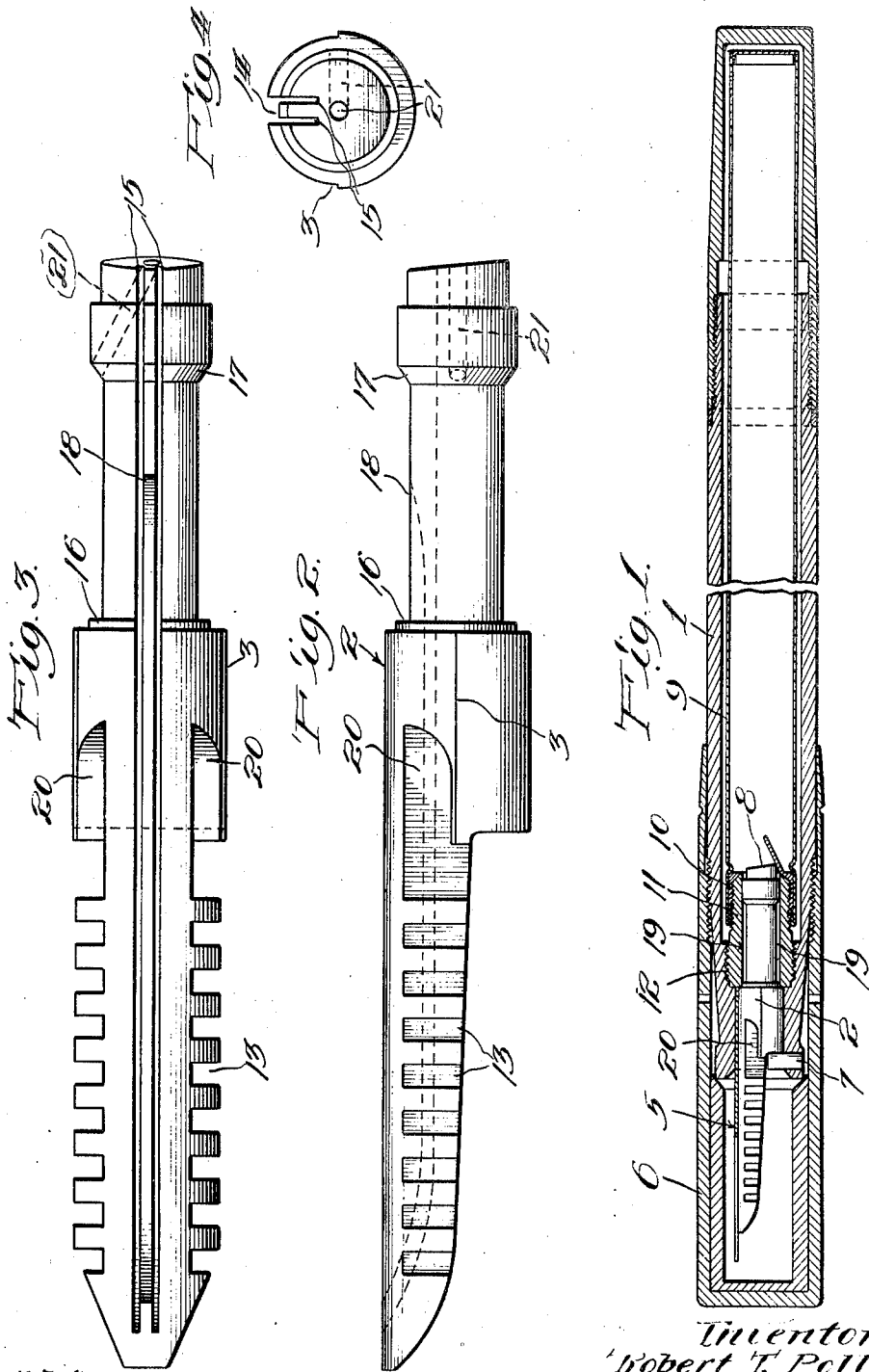
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FOUNTAIN PEN

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FOUNTAIN PEN.

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This invention relates to improvements in fountain pens and refers more particularly to a fountain pen feed which prevents flooding of the ink and fouling of the pen point and writing end of the pen.

Among the objects of the invention are to provide a feed which has provision for expansion of the ink due to changes in temperature, also space in which excess ink may flow and be held while a uniform stream is being supplied to the pen point; to provide a feed which supplies means for permitting the air to pass to and from the ink reservoir separately from the ink duct, thereby obviating uneven feed often caused by pocketing of the air in the feed and ink containing portion of the pen.

Fig. 1 is a sectional view of the writing end of the pen showing the feed in place.

Fig. 2 is a side elevational view of the feed.

Fig. 3 is a plan view of the feed shown in Fig. 2.

Fig. 4 is an end view of the feed.

Referring to the drawings, the pen comprises a barrel 1 in which is inserted a feeding element 2 which has mounted on a saddle portion, shown at 3 in Fig. 4, a pen point 5. The writing end of the pen is enclosed by a screw cap 6.

The pen feed is pressed in place in the barrel and is held in position by a plug 7 which positions the feed accurately in the pen barrel so that the puncturing point 8 will be accurately positioned relative the cartridge 9 which is screwed on to the threaded portion 10 of a bushing 11, threaded on its opposite end, as shown at 12, and screwed into the barrel of the pen.

That portion of the feed which supports the pen is milled to form narrow slots shown at 13 and producing the usual type of comb feed well known in the art. In the top of the feed is cut an ink duct 14, shown in Figs. 3 and 4, with deep ink grooves 15 cut somewhat deeper than the duct 14. It has been found that the ink will feed more uniformly and more positively through narrow slots of this character than through a regular square slot. It will be noted also that the larger duct shown at 14 extends only back as far as mid-way of the expansion space formed between the shoulders 16 and

17 and shown by the dotted line which terminates at a point designated as 18.

When the bushing 11 is in place on the feed and the feed inserted in the pen barrel, there is a considerable expansion space between the shoulders 16 and 17, as shown at 19 in Fig. 1. This, together with the milled cavities 20 in the sides of the feed, permits the expansion of the fluid and allows this excess fluid to accumulate in the expansion space and milled cavities of the feed.

It has been found that the liquid when subjected to different temperatures has the faculty of expanding considerably in volume and if provision is not made for taking up this excess fluid it flows from the end of the pen point and fouls both the feed and interior of the cap as well as the finger grip of the writing end of the pen.

As an example of the temperatures which will cause this flooding, when the pen is left over night in a cold room in the pocket of a coat or other garment and in the morning is placed against the body where the warmth of the body will immediately raise the temperature of the ink, the fluid will expand sufficiently to cause considerable flooding of the pen if provision is not supplied for taking up the expansion of the liquid.

As a further precaution in addition to assure a positive and uniform feed and to eliminate the objection of air pockets in the feed and liquid reservoir, a small duct 21 is drilled diagonally from the rear end of the feed to the shoulder 17 where it communicates with the expansion space 19 in which excess ink may collect. With the normal functioning of the pen there will be no appreciable accumulation of ink in this expansion space.

Another factor which is of importance in assuring a proper feed to the pen point is to have a relatively blunt flat end of the ink feed exposed to the body of the ink in the container 9. For this reason the puncturing point 8 is made short and wide to present a flat surface to the fluid body, thus assisting in preventing the tendency to flood. The feed is removable from the barrel by withdrawing the plug 7 when the cartridge 9 is removed from the pen barrel and sliding the feed 2 from the bushing 11. The feed is adapted to supply ink uniformly and posi-

tively to the pen point, and when not in use or when subjected to varying conditions of temperature the provision for expansion of the liquid prevents flooding. The feed is particularly adapted to cartridge fountain pens, such as that shown in Fig. 1, but the novel elements may be incorporated into a feed used in any type of fountain pen.

I claim as my invention:

10 1. In a fountain pen, the combination with a barrel and a feed bar in the forward end thereof, of a sealing collar engaging the rear end of the feed bar and having its forward end threaded into the bore of the barrel to
15 hold the feed bar against rearward displace-

ment, and a removable ink-container threaded to the rear end of the sealing collar.

2. In a fountain pen, the combination with a barrel, of a feed bar fitted in the forward end of the barrel and having a circumferential shoulder facing the rear, a sealing collar snugly fitted on the feed bar in rear of the shoulder and threaded in the bore of the barrel to bear firmly against the said shoulder and having a rearward threaded portion of reduced size, and a tubular ink-container threaded internally at its forward end and screwed on the threaded rearward portion of the sealing collar.

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