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FOUNTAIN PEN

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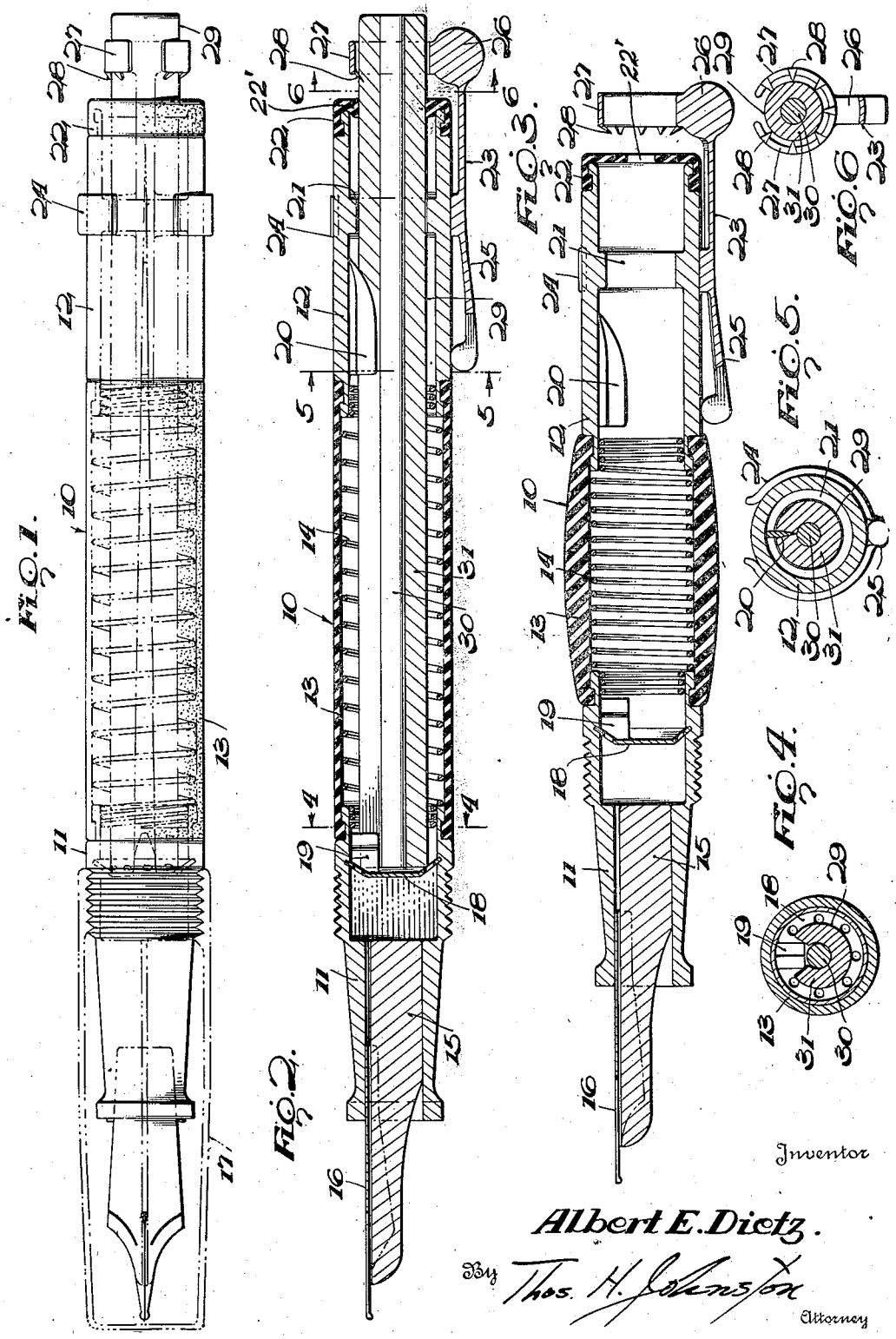


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

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FOUNTAIN PEN

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11 Claims. (Cl. 120—42)

This invention relates to an improved fountain pen.

An object of the invention is to provide a pen embodying a barrel in which a conventional copying pencil may be installed, after which water or other suitable solvent may be drawn into the barrel to dissolve the lead of the pencil and provide a writing fluid.

And the invention seeks, as a still further object, to provide a pen wherein, as the lead pencil is inserted into the barrel, the pencil will be split longitudinally, after which it will be held open to expose the lead for a considerable portion of the length of the pencil to access by the solvent so that an effective writing fluid may be provided.

Other and incidental objects will appear during the course of the following description of the invention, and in the drawing:

Figure 1 is a plan view of my improved fountain pen, showing a lead pencil installed therein.

Figure 2 is a longitudinal section through the pen, the cap being removed.

Figure 3 is a longitudinal section showing the pen before the pencil is installed therein, the cap being removed.

Figure 4 is a transverse section on the line 4—4 of Figure 2.

Figure 5 is a transverse section on the line 5—5 of Figure 2.

Figure 6 is a transverse section on the line 6—6 of Figure 2.

In carrying the invention into effect, I preferably form the pen barrel, indicated as a whole at 10, of three complemental sections comprising a forward end sleeve 11, a rear end sleeve 12, and an intermediate connecting sleeve 13 removably but firmly gripped at its ends about the inner ends of the end sleeves. Suitably fixed at its ends within the inner ends of the sleeves 11 and 12 to more or less snugly fit within the sleeve 13 is a coil spring 14 adapted to resist elongation of the barrel. The sleeves 11 and 12 may be of plastic or other suitable material while the sleeve 13 is of rubber and is more or less highly elastic so that it may be stretched to permit elongation of the barrel.

Removably fitting in the sleeve 11 is a feed plug 15 which may be of any conventional construction, and removably gripped between the plug and sleeve is a pen point 16 which, likewise, may be of any conventional construction adapted to function in conjunction with the plug, the plug being channeled, as is usual, for feeding a writing fluid to the pen point and permitting the pen to be refilled by drawing a fluid inwardly through the feed channel of the plug into the barrel 10. Detachably engaged over the sleeve 11 to enclose the pen point is a cap 17 which is removed while the pen is in use. This cap may be screwed onto the sleeve, as shown, or, if preferred, may have a slip, friction fit thereon.

Embedded at its periphery in the material of the sleeve 11 or otherwise rigidly mounted in said sleeve is a reticulate, preferably dished stop wall 18, and rising from said wall near the periphery thereof, as best seen in Figure 4, is a wedge 19. Aligned with said wedge is a splitting blade 20 embedded in the wall of the sleeve 12 or otherwise fixed thereto to extend longitudinally of said sleeve. As will be observed, the blade is tapered to provide a cutting edge curving from the tip at the outer end of the blade downwardly and inwardly toward the axis of the sleeve, and formed on the wall of said sleeve to lie in the rear of the blade tip is an annular centering boss 21. Removably but firmly gripped over the outer end of the sleeve 12 is a rubber closure ring 22 which is highly elastic and is provided with a center opening 22'.

Removably fixed on the sleeve 12 is a clamp 23 which is of resilient metal, and extending from the stem of said clamp, medially of said stem, is a pair of arcuate spring fingers 24 gripping about the sleeve for firmly holding the clamp against sliding movement therealong. At its inner end portion, the clamp stem provides a spring clip 25 for securing the pen in a pocket of the user, as will be well understood, and formed at the outer end of the stem is a flattened head 26 which may be grasped between the thumb and finger for withdrawing the pen from the pocket. Extending from the head 26 is a pair of arcuate spring jaws 27 provided at their inner edges, as best seen in Figure 6, with radially converging, inclined teeth 28.

In conjunction with the barrel 10, I have shown a conventional lead pencil 21 having a center lead 30 surrounded by a shell 31 of wood, and for the purposes of the present invention, a lead pencil of the so-called indelible or copying type is employed in preference to a pencil embodying a conventional graphite lead. The term "lead pencil" as used in the appended claims shall accordingly be construed to refer to a pencil the lead of which is more or less readily soluble. The pencil is installed by inserting it between the jaws 27 of the clamp 23 and through the center opening 22' of the closure ring 22 into the sleeve 12 and through the boss 21, when the pencil is

pushed forwardly until it seats against the stop wall 18. As will be perceived, the inclination of the teeth 28 of the jaws 27 will permit the pencil to slide forwardly between the jaws while the closure ring 22 will be stretched by the pencil to provide a seal between the barrel 10 and the pencil.

As the pencil is pushed forwardly into the barrel, the boss 21 will center and support it to ride into engagement with the blade 20 and, in this connection, it will be noted that the blade is of a major effective width approximating the thickness of the wooden shell 31 of the pencil. The shell of the pencil will thus be split longitudinally at the adjacent side of the pencil by the blade so that, as the pencil seats against the stop wall 18, the wedge 19 will enter said split at the forward end of the pencil for holding the split open from the wedge to the blade 20 and thus exposing the lead 30 for the major portion of the length of the pencil.

After the lead pencil 29 is installed, the forward end of the pen is immersed in water or other suitable solvent when, by holding the sleeve 11 stationary by one hand of the operator and pulling on the sleeve 12 with the other hand while also holding the pencil 29 stationary, the sleeve 13 and spring 14 are stretched relative to the pencil to the approximate position shown in Figure 2, for elongating the barrel 10 and drawing the water or other solvent into the barrel to partially immerse the pencil. Incident to this operation, the shell of the pencil 29 will be further split longitudinally by the the blade 20, as previously described, or, if preferred, the shell of the pencil may be previously split the full distance possible. Upon the release of the sleeves 11 and 12, the teeth 28 of the jaws 27 of the clamp 23 will then bite into the wood of the pencil sleeve 31 for holding the barrel 10 elongated against the tension of the spring 14 and the elastic pull of the sleeve 13, when the pen is ready for use.

As will be appreciated from the foregoing, the pen may be easily and conveniently loaded and when so loaded, the water or other solvent in the barrel 10 will dissolve the lead 30 of the pencil to provide a writing fluid which, while the pen is in use, will be fed to the pen point 16 for writing purposes. The rubber sleeve 13 of the spring 14 will, of course, exert a more or less constant tension tending to sink the teeth 28 of the jaws 27 of the clamp 23 into the wood of the pencil shell so that the barrel 10 will be prevented from accidental collapse. Furthermore, said spring will also provide a skeleton core for the sleeve 13, which core, as compared with the sleeve, will be much more rigid than the sleeve and of a stiffness tending to maintain the sleeve straight as well as maintain the cylindrical shape of the sleeve. Thus, when the pen is held in the hand, casual pressure on the sleeve 13 will not serve to bend or crush the sleeve sufficiently to expel the writing fluid at the pen point. The same would be true when the pen is carried in the pocket and, of course, the closure ring 22 will, at all times, prevent leakage of the writing fluid at the rear end of the pen.

Having thus described my invention, what I claim is:

1. A fountain pen including an extensible barrel formed to receive a lead pencil having a wooden shell, the barrel being adapted to be elongated relative to the pencil for drawing into the barrel a solvent adapted to dissolve the lead of the pencil and provide a writing fluid, means mounted in the barrel for splitting the shell of the pencil and exposing the lead thereof as the barrel is elongated, and a pen point carried by the barrel.

2. A fountain pen including an extensible barrel formed to receive a lead pencil having a wooden shell, the barrel being adapted to be elongated relative to the pencil for drawing into the barrel a solvent adapted to dissolve the lead of the pencil and provide a writing fluid, means mounted in the barrel for splitting the shell of the pencil and exposing the lead thereof as the barrel is elongated, means mounted in the barrel and disposed to enter the split in said shell and hold said split open to afford access of said solvent to the lead of the pencil, and a pen point carried by the barrel.

3. A fountain pen including a barrel adapted to receive a lead pencil, a pen point carried by the barrel, the barrel including elastic means which may be stretched to permit the barrel to be elongated relative to the pencil for drawing into the barrel a solvent adapted to dissolve the lead of the pencil and provide a writing fluid, and means carried by the barrel to engage the pencil for holding the barrel elongated against the tension of said elastic means when stretched.

4. A fountain pen including an extensible barrel formed to receive a lead pencil and adapted to be elongated relative to the pencil for drawing into the barrel a solvent adapted to dissolve the lead of the pencil and provide a writing fluid, resilient means tending to shorten the barrel when elongated, means carried by the barrel to engage the pencil for holding the barrel elongated against the tension of said first mentioned means, and a pen point carried by the barrel.

5. A fountain pen including a barrel formed to receive a lead pencil and embodying an elastic sleeve which may be stretched to permit the barrel to be elongated relative to the pencil for drawing into the barrel a solvent adapted to dissolve the lead of the pencil and provide a writing fluid, a flexible core within said sleeve adapted to resist bending and crushing thereof, means carried by the barrel to engage the pencil for holding the barrel elongated against the tension of said sleeve when stretched, and a pen point carried by the barrel.

6. A fountain pen including a barrel formed to receive a lead pencil and embodying an elastic sleeve which may be stretched to permit the barrel to be elongated relative to the pencil for drawing into the barrel a solvent adapted to dissolve the lead of the pencil and provide a writing fluid, a coil spring extending within the sleeve and adapted to stretch when the barrel is elongated as well as tend to shorten the barrel when so elongated, said spring providing a flexible core within the sleeve adapted to resist bending and crushing thereof, means carried by the barrel to engage the pencil for holding the barrel elongated against the tension of said sleeve and spring when stretched, and a pen point carried by the barrel.

7. A fountain pen including an extensible barrel formed to receive a lead pencil in a position having one end portion thereof exposed at one end of the barrel, the barrel being adapted to be elongated relative to the pencil for drawing into the barrel a solvent adapted to dissolve the lead of the pencil and provide a writing fluid, means tending to shorten the barrel when elongated, a clamp carried by the barrel to engage the exposed end portion of the pencil for holding the

barrel elongated against the tension of said means, and a pen point carried by the barrel.

8. A fountain pen including an extensible barrel formed to receive a lead pencil having a wooden shell, the barrel being adapted to be elongated relative to the pencil for drawing into the barrel a solvent adapted to dissolve the lead of the pencil and provide a writing fluid, a blade mounted in the barrel for splitting the shell of the pencil and exposing the lead thereof as the barrel is elongated, and a pen point carried by the barrel.

9. A fountain pen including an extensible barrel formed to receive a lead pencil having a wooden shell, the barrel being adapted to be elongated relative to the pencil for drawing into the barrel a solvent adapted to dissolve the lead of the pencil and provide a writing fluid, a blade mounted in the barrel for splitting the shell of the pencil and exposing the lead thereof as the barrel is elongated, a wedge mounted in the barrel and disposed to enter the split in said shell and hold said split open to afford access of said solvent to the lead of the pencil, and a pen point carried by the barrel.

10. A fountain pen including a barrel adapted to be elongated, means tending to shorten the barrel when elongated, the barrel being formed to receive a lead pencil operatively coacting with the barrel for maintaining the barrel elongated against the action of said means and being adapted to contain a solvent for dissolving the lead of the pencil and providing a writing fluid, and a pen point carried by the barrel.

11. A fountain pen including a barrel formed to receive a lead pencil having a wooden shell, means carried by the barrel for splitting the shell of the pencil and exposing the lead thereof, the barrel being adapted to contain a solvent for dissolving the lead of the pencil and providing a writing fluid, and a pen point carried by the barrel.

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