July 11, 1933. B. F. WUPPER 1,917,568

FOUNTAIN PEN

Filed Nov. 15, 1929

Fig. 1

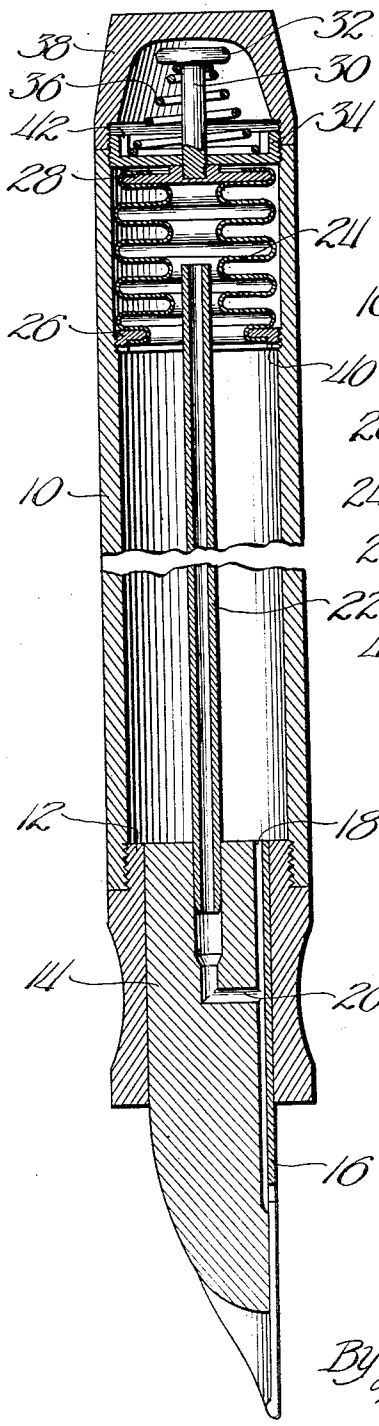


Fig. 2

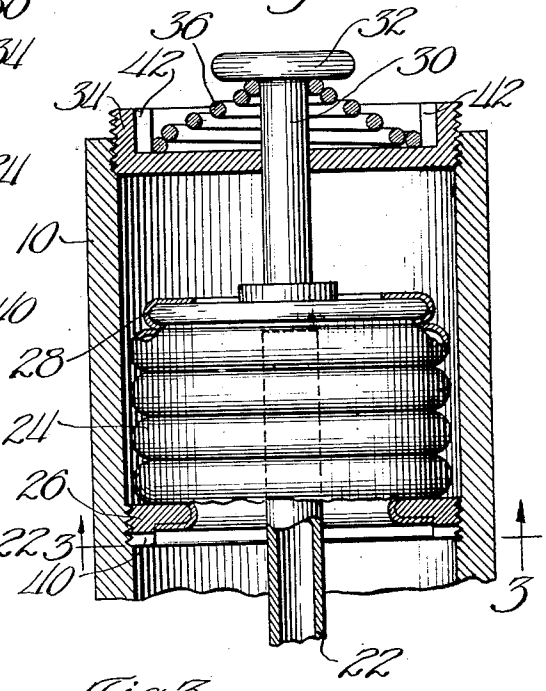
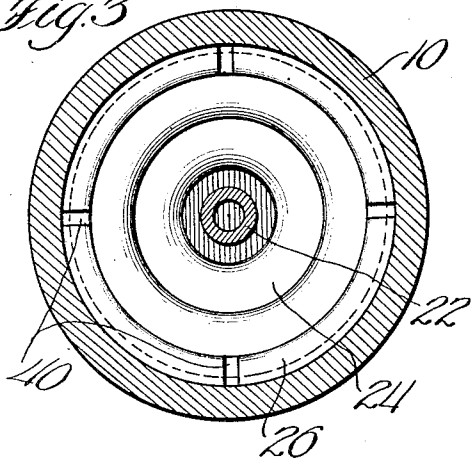


Fig. 3



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UNITED STATES PATENT OFFICE

BENJAMIN F. WUPPER, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE PARKER PEN COMPANY, OF JANESVILLE, WISCONSIN, A CORPORATION OF WISCONSIN

FOUNTAIN PEN

Application filed November 15, 1929. Serial No. 407,315.

My invention relates generally to fountain pens and more particularly to improvements in filling devices therefor.

It is the object of my invention to provide an improved filling device for fountain pens in which a flexible metallic member is utilized to create differential pressures in the barrel.

A further object is to provide an improved fountain pen filling device employing a flexible bellows for increasing and decreasing the pressure in the barrel.

A further object is to provide an improved fountain pen filling device which is of simple construction, may be economically manufactured, which will be extremely durable and which will be easily operable.

Other objects will appear from the following description, reference being had to the accompanying drawing, in which

Fig. 1 is a central vertical section of a fountain pen in which my improved filling device is incorporated;

Fig. 2 is a greatly enlarged central vertical sectional view of the filling device shown in operated position; and

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

The fountain pen comprises the usual barrel 10 into which a section 12 is threaded, a feed bar 14 and pen point 16 being secured in the section. The feed bar has a longitudinal ink duct 18 extending along its surface beneath the pen point 16 and has an L-shaped passageway 20 communicating with the mid portion of the ink duct 18. An air tube 22 is secured in the upper end of the passageway 20 and extends to a point adjacent the upper end of the barrel.

The means for creating differential pressures in the barrel comprises a flexible metallic bellows 24, the lower end of which is secured to a ring 26 threaded in the barrel and the upper end of which is secured over the edge of a disc 28. The bellows 24 is preferably made of a metal which is sufficiently resilient so that it will resume its normal position (Fig. 1) through its own resiliency and preferably has its inner surface coated with a thin layer of rubber applied by a process of electrodeposition, or may be plated with gold or other suitable material to prevent corrosive action of the ink. A stem 30 having a knob 32 at its upper extremity is secured to the disc at 28 and is guided for longitudinal movement in a cup-shaped member 34 which is threaded in the end of the barrel. A conical compression spring 36 is seated between the member 34 and the knob 32 and thus normally holds the stem 30 and the bellows 24 in the position shown in Fig. 1. It will be understood that ordinarily the spring 36 will be omitted, the bellows usually having sufficient resiliency to return it to normal position. A cap 38 is threaded over the member 34 and is adapted to be removed when it is desired to operate the filling device.

The filling means is assembled in the following manner: The spring 36 and the member 34 are slid over the stem and the stem screwed into the disc 28; then by sliding the member upward on the stem 30 (compressing the spring 36) the device is inserted in the end of the barrel and a wide screw-driver engaging the kerfs 40 formed in the ring 26 is used to screw the ring firmly into the barrel. The member 34 is then tightly screwed into the barrel, this member having suitable slots 42 adapted to receive a spanner wrench for this purpose. After the filling means has been thus secured in the barrel the pen section, with its associated parts, is screwed to the lower end of the barrel, thereby completing the assembly operation.

In filling the pen barrel with ink with my improved filling device the pen point is inserted in a suitable supply of ink and, having removed the cap 38, the stem 30 is pressed downwardly, thereby compressing the bellows to the position indicated in Fig. 2. The bellows may conveniently be operated by holding the barrel in one hand, using one of the fingers to depress the plunger 30. Upon compression of the bellows air will be forced outwardly through the air tube 22, passageway 20 and the lower portion of the ink duct 18. Upon release of the knob 32 the bellows will expand due to its resiliency and also due

to the resiliency of the spring 36, and reduce the pressure within the barrel to less than atmospheric pressure. Ink will thereupon be forced into the barrel under atmospheric pressure through the duct 18. Upon subsequent depression of the knob 32 and compression of the bellows, this operation will be repeated except that upon each compression stroke a small quantity of ink will flow outwardly through the ink duct 18.

The quantity of ink thus escaping is, however, comparatively small due to the fact that the air within the barrel will flow through the air tube and the air passageway 20 much more rapidly than the ink can flow through the duct 18. Thus upon each reciprocation of the bellows a small quantity of ink will be ejected but a much greater quantity drawn into the barrel. Upon several reciprocations of the bellows the barrel will be filled with ink, which fact may be sensed by the additional pressure necessary to depress the stem 30, this additional pressure being caused by the fact that ink only is being forced from the pen, and that the passageway and duct offer greater resistance to the flow of ink than to the flow of air.

As previously intimated, the bellows is preferably made of resilient metal, and if a metal having sufficient resiliency is used the spring 36 and the member 34 may be omitted. If desired the bellows may be formed entirely of gold or a gold alloy, in which case it will be advisable to use the spring 36 since the gold alloy will ordinarily not have sufficient resiliency to cause the bellows to resume its normal position after it has been compressed.

While I have shown and described a single embodiment of my invention, I do not wish to be limited to the specific construction shown but desire my invention to include all such variations and modifications as will be apparent to a person skilled in the art.

I claim:

A fountain pen, the combination with a barrel serving as an ink reservoir, of means providing an air passage leading from atmosphere at the forward end of the barrel to the inner rear portion thereof, and unitary structure for varying the air pressure in the barrel through said passage comprising a metallic bellows having only one end open and constituting an extension of said reservoir in all of the different movable positions of the bellows, means for detachably securing the open end of said bellows in said barrel, exteriorly accessible means connected to the closed end of the said bellows for collapsing the same, a second means detachably secured to the end of the barrel for guiding said bellows-collapsing means and serving as an abutment for the end of the bellows to limit the outward movement thereof and another means detachably secured to and supported by said second means for concealing said bellows-collapsing means, said bellows being resilient whereby it tends to return itself to normal position following the collapsing thereof.

In witness whereof, I hereunto subscribe my name this 11th day of November, 1929.

BENJAMIN F. WUPPER.