

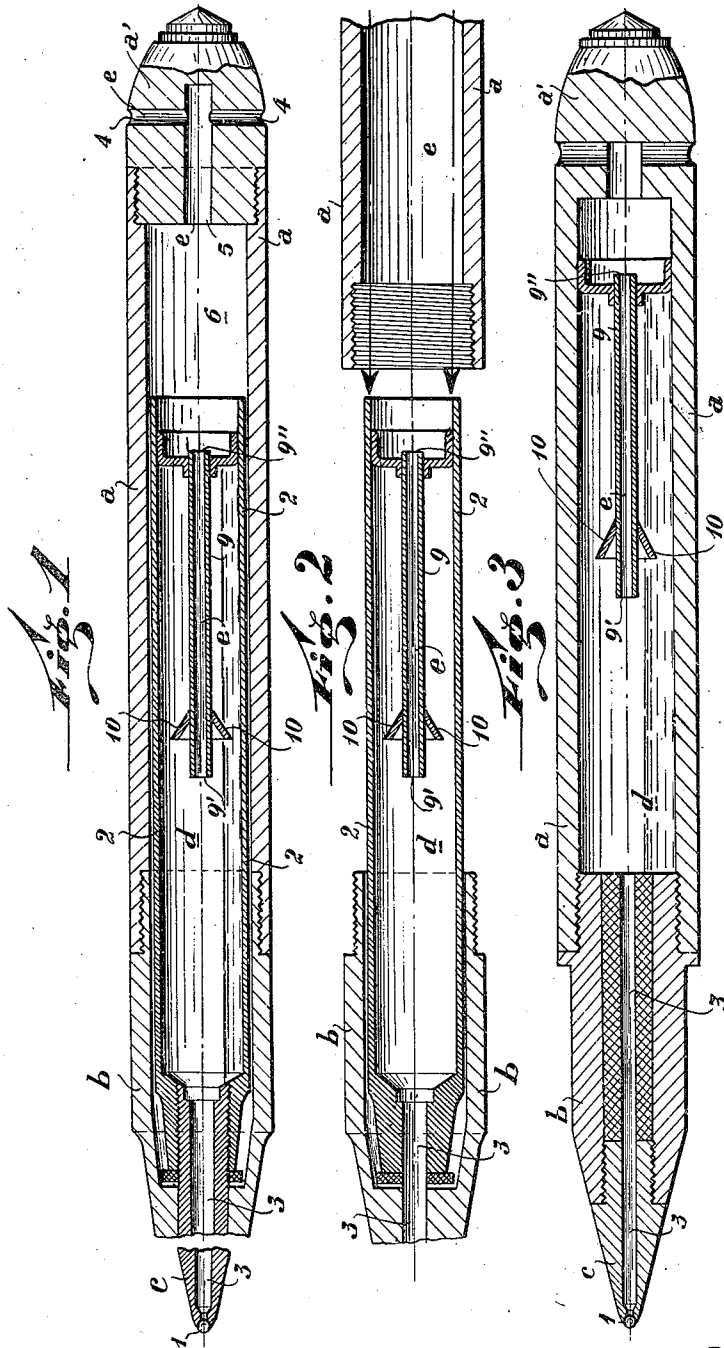
Aug. 6, 1946.

G. H. VAN SPANKEREN

2,405,381

WRITING INSTRUMENT

Filed Nov. 4, 1943



Inventor

G. H. van Spankeren

By *Grant Downings Reebold*
Attorneys

UNITED STATES PATENT OFFICE

2,405,381

WRITING INSTRUMENT

Gerardo Hendrik van Spankeren, Buenos Aires, Argentina, assignor, by mesne assignments, to "Eterpen" Sociedad Anonima Financiera, also known as Eterpen S. A., Buenos Aires, Argentina, a company of Argentina

Application November 4, 1943, Serial No. 508,977
In Argentina April 26, 1943

10 Claims. (Cl. 120—42)

1

This invention relates to writing instruments of the fountain-pen type, and particularly to novel means for feeding ink from the ink reservoir.

Several different fountain-pen systems are known, among which may be mentioned the ball-tip type, which is considered the most modern writing instrument. However, due to the fact that said devices generally require the use of means for impelling the ink to the active point thereof, such instruments are not really practical as pocket devices. Also, due to the irregularity of the ink feed, the marks obtained were imperfect.

In the case of fountain pens having the writing end closed by a ball, the reservoir will naturally require a corresponding air intake, the presence of which would possibly imply a leakage of ink, and therefore this system could only be used with the aid of means for overcoming this drawback.

The present invention overcomes the above drawbacks in a very simple manner.

The invention consists in an air intake, the passage of which comprises trap blocking means arranged so as to allow the permanent free passage of air, but having retention means which will prevent the outflow of ink through said passage.

To this end, the air intake comprises a conduit leading into the ink reservoir and terminating, at the central zone of said reservoir, in a mouth spaced from the side walls and ends of the cavity thereof, so that in charging said reservoir or barrel to a level below said mouth, the ink will be prevented from reaching said air intake. The air intake is complemented with means which will avoid the oozing out of the ink so that there will be no leakage of ink through the air intake, regardless of the position in which the instrument may be placed.

An object of the invention is to enable the use of dense semi-liquid ink for feeding the writing ball by gravity.

A still further object is to provide a simple and economical instrument which will be reliable and give good practical results.

Other objects and advantages of the invention will become apparent from the course of the following description, when read in conjunction with the accompanying drawing illustrating, by way of example, some of the preferred embodiments of the invention.

In the drawing:

Fig. 1 is a longitudinal sectional view of the

2

complete instrument, showing the interior of the ink reservoir with the air intake, the conduit of which terminates at the central zone of the cavity of said reservoir.

Fig. 2 is a partially expanded view of the instrument, showing the manner in which the tube constituting the main body of the fountain pen may be removed so as to disclose the reservoir which in the present instance is detachable relative to the walls of said tube; and

Fig. 3 is a longitudinal sectional view of a further embodiment of the invention, wherein the reservoir walls are constituted by the same walls of the main tube of the instrument.

The same reference characters are used to indicate like or corresponding parts or elements throughout the different drawing.

Referring now to the drawing, *a* indicates the tube constituting the main body of the instrument. This tube *a* is coupled to the body *b* terminating in a tip *c* provided with a spherical seat within which is rotatably mounted a corresponding ball *f* which is the writing element intended to make the marks with the ink charged in the fountain pen. The end of the tubular body *a* opposite that of said ball *f*, terminates in a head *a'* which may be either detachable and screwed thereto, as shown in Fig. 1, or integral therewith, as shown in Fig. 3.

Within said tubular body *a* is located a reservoir *d* which in the embodiment of Figs. 1 and 2 is constituted by a detachable tube *2* adapted to fit within the body *b*. In the embodiment of Fig. 3, however, the reservoir *d* is constituted directly by said tubular body *a*, so that the walls of the latter will constitute the walls of the reservoir.

A feed conduit *3* extends from the reservoir *d* to the concave where the ball *f* is set, so that the ink will be fed to said ball *f*; thus, in rolling said ball upon paper or the like, during the writing operation, the ink covering the surface thereof will define the strokes.

In order to replace the consumed ink by air, said reservoir *d* is provided with a corresponding air intake constituted by a conduit indicated at *e*. Said conduit *e* is formed by the air intake orifices *4*, axial channel *5*, chamber *6*, and tube *9*, the latter extending into the reservoir *d* and terminating in a mouth *9'* located at the central zone of said reservoir; that is to say, said mouth *9'* is substantially centered transversely of the side walls of reservoir *d* and occupies approximately a middle point axially relative to i. e. the total length of the cavity of said reservoir.

The purpose of locating the mouth 9' in the center of the reservoir *d* is to prevent the ink from passing out therethrough, since said reservoir is charged with dense ink to a level slightly below the middle of the reservoir *d*, so that whether the instrument is placed in horizontal, vertical or oblique position, the ink will not reach the point where said mouth 9' is located.

Inasmuch as otherwise the ink might at times flow down the outside of the tube 9 and in order to prevent the liquid from reaching the mouth 9', a deflector cap 10 is provided at a certain distance from said mouth. Said cap, which is conical, and also acts as a baffle starts at the walls of the tube 9 and is outwardly flared, terminating short of the wall of the reservoir *d*.

Thus, said cap 10 effectively prevents the leakage of ink through the tube 9, as any ink which may flow along the outer surface of said tube, is deflected from said tube before reaching said mouth 9', and thus will fall into said reservoir.

As may be clearly seen in the drawing, the tube 9 is provided with a further mouth 9'' projecting slightly within the chamber 6, so that the latter will act as a cell or trap in case a drop of ink should pass through the mouth 9' and tube 9, into the conduit *e*, in which event the ink would be retained in said chamber 8 and prevented from passing out of the instrument.

This means that the conduit *e* provides a free passage of air so that the ink contained in the reservoir may reach the ball, while at the same time no ink may leak out therethrough, since apart from the fact that the mouth of the tube reaches the central zone of the reservoir *d*, above the normal maximum ink level, same is also combined so that neither the drops of ink running off the outer surface of the tube, nor the effects of the handling of the instrument could cause the ink to enter said mouth 9'. This, together with the provision of blocking elements or traps, renders the writing instrument leakproof.

In short, the invention comprises a fountain pen the reservoir of which is provided with an air intake conduit *e* leading from the atmosphere and extending into said reservoir, said conduit terminating in a mouth 9' located near the axial and transverse center of said reservoir, above the normal maximum ink level. The tube 9, which is the portion of the conduit extending into the reservoir *d*, is provided with an ink deflecting cap 10 flared towards the reservoir walls. Said conduit *e* is also provided with a blocking chamber 8 suitably interpolated in the air passage and acting as a retention trap.

The invention, it should be noted, is used in conjunction with a dense or semi-fluid ink which, because of its consistency, cannot normally enter into conduit 9 whose diameter is of small dimensions. The invention is applicable to all types of pens utilizing semi-fluid inks.

It is evident that several modifications in construction and details will occur to those skilled in the art, without departing from the scope of the invention as clearly set forth in the appended claims.

I claim:

1. In a fountain pen, a hollow body constituting a reservoir for dense ink and having an air intake orifice therein, a writing ball freely rotatable in one end of said body and supplied with ink from said reservoir, and a conduit having one end located substantially at the axial and transverse center of the reservoir and having its other end communicating with said orifice.

2. In a fountain pen, a hollow body constituting a reservoir for dense ink and having an air intake orifice therein, a writing ball freely rotatable in one end of said body and supplied with ink from said reservoir, a conduit having one end located at the longitudinal and transverse center of the reservoir and having its other end communicating with said orifice, and an ink deflecting member projecting from the first mentioned terminal of said conduit.

3. In a fountain pen, a hollow body constituting a reservoir for dense ink and having an air intake orifice therein, a writing ball freely rotatable in one end of said body and supplied with ink from said reservoir, a conduit having one end located at the axial center of the reservoir and having its other end directed toward said air intake orifice, and air venting means in communication with the end of said conduit directed toward the air intake.

4. A fountain pen as claimed in claim 1 wherein said air intake orifice is formed in the end of the body opposite the writing ball.

5. In a fountain pen, a hollow body constituting a reservoir for dense ink, a writing ball freely rotatable in one end of said body and supplied with ink from said reservoir, a conduit having one end located substantially at the axial and transverse center of the reservoir and having its other end in communication with the atmosphere.

6. In a fountain pen, a hollow body constituting a reservoir for dense ink and having an air intake orifice therein, a writing ball freely rotatable in one end of said body and supplied with ink from said reservoir, a conduit having one end located at the axial and transverse center of the reservoir and having its other end communicating with said air intake orifice, and means interconnecting said conduit and said orifice for catching any ink which may pass through said conduit.

7. In a fountain pen, a hollow body constituting a reservoir for dense ink, a writing ball freely rotatable in one end of said body and supplied with ink from said reservoir, an air intake at the other end of said hollow body, and a conduit having one end located substantially at the axial and transverse center of the reservoir and having its other end communicating with said orifice.

8. In a fountain pen using dense ink, a hollow body constituting a reservoir provided with an air inlet at one end thereof and a conduit leading from said air inlet substantially to the longitudinal and axial center of the reservoir.

9. A pen according to claim 8 in which the conduit is provided adjacent the end thereof located at the longitudinal center of the reservoir with baffle means surrounding the conduit for diverting the downward flow of ink in the reservoir toward the writing portion of the pen.

10. In a fountain pen, a hollow body constituting a reservoir for dense ink and having an air intake orifice therein, a writing ball freely rotatable in one end of said body, means in communication with said ball and reservoir for supplying ink from said reservoir, a conduit having one end located at the axial and transverse center of the reservoir and having its other end communicating with said air intake orifice and an ink deflecting member surrounding said conduit near but spaced from the first-mentioned end thereof.