Feb. 8, 1927. 1,616,551

A. ROSENBERG

MANIFOLDING PEN

Filed Jan. 7, 1926 2 Sheets-Sheet 1

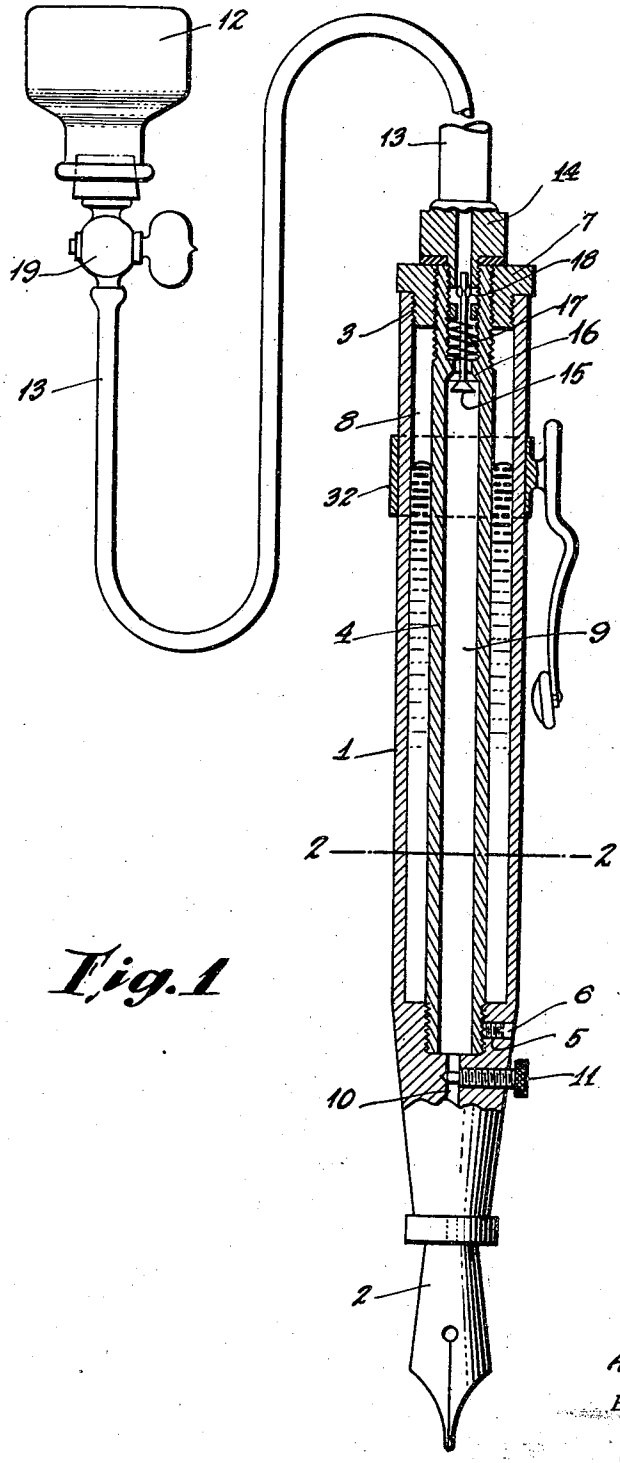


Fig. 1

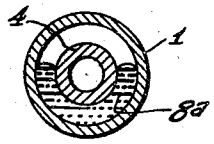


Fig. 2

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Fig. 3

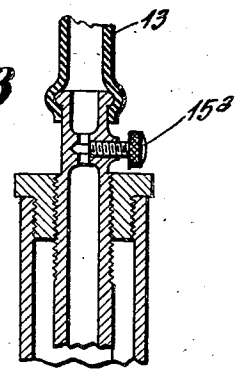


Fig. 4

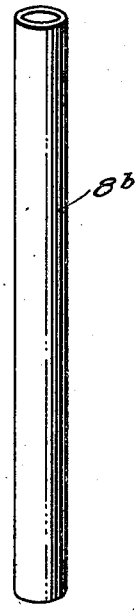
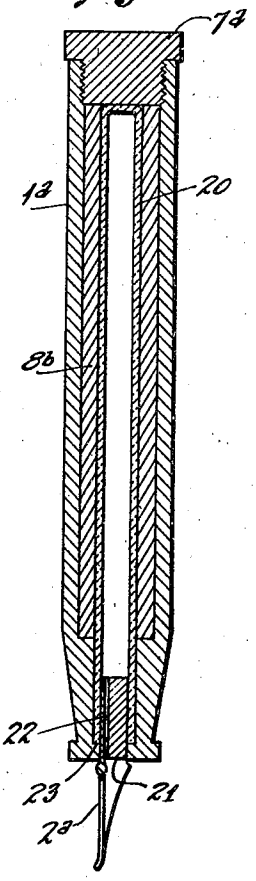


Fig. 5



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Patented Feb. 8, 1927. 1,616,551

UNITED STATES PATENT OFFICE.

ABRAHAM ROSENBERG, OF FAR ROCKAWAY, NEW YORK.

MANIFOLDING PEN.

Application filed January 7, 1926. Serial No. 79,716.

This invention is, primarily, a fountain pen adapted for general use though more particularly intended to be employed when it is desired to make a number of carbon copies of an original notation or entry. It has long been the universal tendency to manufacture fountain pens of as light a weight as possible and to use therein nibs relatively flexible or "soft", to the end that the pen may be light to handle and may write easily. Such a pen will make very satisfactory original notations, but it is practically impossible to make the satisfactory carbon copy under these conditions.

In some pens, the nib is relatively stiff and in such a pen a carbon copy may be made if the writer will bear down hard on the pen. In practice, however, this method of writing very quickly tires because of the pronounced muscular exertion and strain involved and even then one clearly readable carbon cannot be obtained.

The primary object of this invention is to provide a pen by which a plurality of carbons may be produced without the use of muscular strain or fatigue and carbons thus produced will be clear and legible. I obtain this result, generally speaking, by the weighting of the pen so that the pressure imparted to the nib by such weight will obviate the necessity of muscular strain by the writer. When using such a pen, the pen may be held to its work in the usual manner, but the added weight of the pen itself will be sufficient to insure proper manifolding.

The weighting of the pen may be accomplished in different ways within the purview of this invention, but, in one of its preferred practical forms, the barrel of the pen is constructed with two concentric chambers, one of which contains the ink supply for the nib and the other of which contains a suitable weight. A single solid weight or a number of smaller weights may be employed, but I find in practice that it is highly advantageous to employ mercury as the weighting medium. Because of its mobile nature, and high specific gravity, it will not only adapt itself to the different positions of the pen, and thus produce a nicely balanced implement, but when the pen is laid upon a desk or other support, the inertia of the mercury will preclude rolling of the pen.

A pen is thus produced which will have sufficient weight to properly function in the production of manifold copies without excessive strain on the writer.

In order to employ a weighted pen of the character described, a relatively stiff or rigid nib is necessary and the invention includes an especially constructed nib well able to stand the strain, and also non-corrosive. I find that a steel pen is best adapted to my purposes and to preclude corrosion, the surfaces of the pen nib are preferably coated with a baked enamel or porcelain finish, although gold plating has been found to give very satisfactory results. The invention also consists in a nib employed in conjunction with this pen.

Another important feature of the invention resides in the automatic feed of ink to the barrel or reservoir of the pen. In all fountain pens heretofore employed, it has been the practice either to fill the ink reservoir with a dropper or to provide levers, pistons and the like to produce suction within the reservoir for the purpose of drawing ink through the nib feeding channel when it is desired to charge the reservoir.

My experience has shown that the latter practice although more convenient than the former, usually results in damage to the nib and in accordance with this invention simple and efficient means is provided for the charging of the reservoir through the opposite end of the pen and without any tendency to spill the ink.

According to this phase of the invention, the top end of the pen is provided with a valved ink inlet which valve may be either adapted for manual or automatic operation and through this inlet the reservoir is adapted to be charged with ink. The ink is supplied primarily from a suitable external source which may be of any suitable capacity. In practice, the ink at the source of supply is preferably maintained in relatively large bulk and is adapted to flow into the reservoir of the pen when said reservoir needs recharging, through a flexible duct or tube. This tube may, in practice, be permanently secured to the pen or may be detachably associated therewith. In the former case, it may serve as a retainer for the pen to maintain it against loss or theft. In the second place, the pen is adapted to be carried from place to place and to be charged when desired through a temporary attachment to the feed tube.

By this arrangement, the pen may be

readily and expeditiously filled with ink without any spilling or waste of ink. It will of course be understood in this connection that when the reservoir is filled the valve is closed to preclude spilling of the ink from the top of the pen.

Features of the invention, other than those specified, will be apparent from the hereinafter detailed description and claims, when read in conjunction with the accompanying drawings.

The accompanying drawings illustrate different practical embodiments of the invention, but the constructions therein shown are to be understood as illustrative, only, and not as defining the limits of the invention.

Figure 1 shows a pen embodying the present invention with a portion of the pen in central section.

Figure 2 is a section on the line 2—2 of Figure 1.

Figure 3 is a fragmental section of the pen showing a permanent attachment of the pen to an ink feed tube, and illustrating a modified form of valve arrangement.

Figure 4 shows a modified form of weight illustrated as a lead tube; and,

Figure 5 shows a modified form of pen in central section.

Referring to the drawings, 1 designates the barrel of the pen, which is provided at one end with a nib 2 and is open at its other end and interiorly threaded at 3. The major portion of the barrel is hollow and in this hollow portion is positioned a sleeve 4, the inner end of which is threaded and is screwed into a threaded pocket in the forward portion of the barrel. The sleeve is held against removal by a set screw 5 which, in practice, is covered over by wax as shown at 6, so that when the pen is polished the presence of the set screw will not be apparent. This screw locks the parts together, so that they can not be removed and tampered with.

The sleeve 4 extends slightly beyond the upper end of the barrel and is centralized by means of a bushing 7 which screws into the barrel and also screws on to the sleeve.

The sleeve 4 divides the interior of the barrel into two chambers 8 and 9, the former of which is adapted to contain suitable weighting means and the latter of which is adapted to contain ink to be fed to the nib 2.

In practice, different forms of weights may be employed without departing from this invention, and I find it very practical to employ mercury in this connection. The mercury is introduced into the chamber 8 when the bushing 7 is removed and thereafter the bushing is replaced to preclude the escape of mercury from the chamber. The requisite amount of mercury is placed in the chamber to impart the desired weight to the pen, so that by its own inherent mass, sufficient weight will be applied to the nib to insure the desired number of carbon copies. The advantage of employing mercury is that when the pen is laid down on a flat surface, the mercury will assume the position shown in Figure 2 and its inertia will preclude rolling of the pen, so that the latter will not fall off of the surface and become damaged.

It is within the scope of this invention to employ weights other than mercury such for example as the lead tube shown in Figure 4 or shot or any other liquid or solid which will impart the desired weight to the pen.

In order to make a plurality of carbon copies, it is necessary that the nib 2 be relatively rigid and I preferably employ for this purpose a hard brass or steel pen. In order to eliminate corrosion, the pen is preferably coated or plated with some non-corrosive substance, such, for example, as gold. I have found, however, that very satisfactory results may be obtained if the pen is coated with a baked porcelain or enamel finish. Such a pen will never corrode and will moreover be sufficiently stiff or rigid or withstand the pressure necessary for the making of the carbon desired.

Ink is fed from the chamber 9 to the pen 2 in the construction of Figure 1 through an ink feed channel 10 which, if desired, may have associated therewith a manually operable valve 11, so that the supply of ink can be positively shut off if desired. In practice, the ink in the chamber 9 may be replenished from time to time in any suitable way, since in one of its aspects the present invention embodies a weighted pen. However in another aspect, the invention provides for the easy and convenient filling of the chamber 9 with ink. This may be accomplished in several different ways, one of the most satisfactory of which for general purposes, is the feed of ink from a suitable source or reservoir wherein the ink is normally maintained in bulk. Thus, in Figure 1, I have, for the purpose of illustration, shown a relatively large bottle of ink 12 supported in any suitable manner in convenient location and with this bottle is associated the tube 13 through which ink can be fed to the chamber 9.

The tube 13 may be either permanently or detachably secured to the barrel of the pen. In Figure 1, the detachable connection is shown as embodying a suitable union 14 having a threaded shank adapted to screw into the threaded interior of the upper end of the sleeve 4, so that ink may flow from the bottle 12 through the tube and into the chamber 9. It is desirable, however, to provide against the spilling of ink from the channel after the filling operation and in the event that the tube is removed from the

barrel. Accordingly, a valve 15 is provided adapted to cooperate with the seat 16 and normally held in engagement therewith by means of a spring 17. The spring normally forces the valve to a seat, but when the coupling is screwed on to the sleeve 4 for the purpose of filling the chamber 9, laterally projecting ears 18 formed on the valve stem, will be engaged by the union 14, and the valve will be unseated to permit the flow of ink into the chamber. A valve 19 is preferably associated with the tube 13, so as to control the flow of ink through said tube. In some instances where the bottle or other container 12 is large and it may not be desirable to feed by gravity, suitable means may be provided for placing the ink in the receptacle 12 under pressure so that as soon as the valve 19 is open, it will be fed under pressure to the chamber 9.

In Figure 1, the tube is shown as having a detachable connection with the pen, but, in Figure 3, the connection between the tube 13 and the pen is shown as permanent and instead of employing a spring actuated valve, the construction of Figure 3 embodies a manually operable valve 15^a. The structure of Figure 3 is particularly adapted for use where it is desired that the pen should be attached in such manner as to preclude its misplacement or theft. So long as the tube is attached to the pen, it will be properly secured against loss or theft.

The construction of Figure 1 is particularly adapted for use on a pen adapted to be carried about since the pen can be removed from the tube and this operation will automatically effect the sealing of the valve 15. In the arrangement of Figure 1, moreover, it is highly practical to employ a single supply reservoir for a large number of pens. For example, a large ink bottle in an office may be equipped to supply all the pens in the office and this method of supplying pens from a common source either by gravity or pressure does not only apply to weighted pens, but is equally applicable for use in pens which are not weighted. The advantage of this arrangement is that pens may be quickly and easily filled without any spilling of ink and without soiling the hands, furniture or other extraneous articles.

Figure 5 of the drawings shows a modified arrangement of a weighted pen. In this embodiment of the invention, the sleeve 4 is omitted and the top of the pen is adapted to be closed by a solid plug 7^a. A tubular lead weight 8^b such as shown in Figure 4, is positioned in the barrel and in lieu of the sleeve 4, a tube 20 of glass, celluloid or other material is adapted to be received in the barrel.

The upper end of the tube is closed and the lower end of the tube carries a nib 2^a which may conveniently be held in the open end of the tube by a cork 21 of rubber, cork or other suitable material. The cork is provided with an ink channel 22 through which ink is fed to the nib. The use of the cork as shown is very economical. The tubes 20 can be filled with ink and corked in any suitable manner.

When it is desired to use the tube to feed ink to a pen, the conventional cork is removed and the nib 2^a and cork 21 introduced in its stead. The plug 7^a is then removed and the assembled tube and nib introduced into the barrel, whereupon the plug 7^a is returned to position. The lower end of the barrel is arranged to permit the nib to project therethrough, while the shoulder 23 serves as a stop for the tube 20. This construction is very simple and economical to manufacture and yet provides a thoroughly efficient weighted pen adapted for manifolding purposes.

In the pen as thus for described, the barrel is provided with two chambers, one of which contains the weighting medium and the other the ink. I am aware, however, that the pen may be weighted by slipping over the exterior of the barrel a tubular sleeve of the desired weight, such, for example, as a lead sleeve and this sleeve may be made to fit the barrel snugly and with a nice sliding fit or threaded connection therewith, so that it can be adjusted longitudinally of the barrel to properly balance the pen to the particular taste of the user.

The foregoing detailed description discloses the invention in its preferred practical forms. I am aware, however, that the invention embodies numerous novel features, some of which may be employed without necessarily employing them all. For these reasons, the invention is not limited to the specific showings of the drawings, but is to be construed as fully commensurate with the appended claims.

Having thus fully described the invention, what I claim as new and desire to secure by Letters Patent is:

1. A manifolding pen embodying a barrel, a nib associated with one end thereof, an ink reservoir within and coaxial with the barrel and communicating with the nib, and a weight positioned within and also coaxial with the barrel to facilitate the making of carbon copies.

2. A manifolding pen embodying a barrel, a nib associated with one end thereof, an ink reservoir within and coaxial with the barrel and communicating with the nib, and an annular weight carried by the barrel and coaxial therewith to facilitate the making of carbon copies.

3. A manifolding pen embodying a barrel provided therein with a plurality of coaxial chambers, one of which is adapted to contain

ink, and a heavy material positioned in another of said chambers to impart sufficient weight to the pen to facilitate the making of carbon copies.

4. A manifolding fountain pen, the barrel of which is formed with a plurality of coaxial chambers, one of which is adapted to constitute the ink reservoir for the pen and the other of which contains mercury in sufficient quantity to impart the desired weight to the pen.

5. A manifolding fountain pen embodying a hollow barrel provided at one end with a nib, a sleeve fitted into the barrel and coaxial therewith to form within the barrel two coaxial chambers, the center of which is adapted to contain ink to be fed to the nib, a weighting medium contained within the other chamber, and means for closing the top ends of both chambers.

6. A manifolding fountain pen embodying a hollow barrel provided at one end with a nib, a sleeve fitted into the barrel and coaxial therewith to form within the barrel two coaxial chambers, the center of which is adapted to contain ink to be fed to the nib, a quantity of mercury contained in the other chamber, and means for sealing said latter chamber against the inadvertent escape of mercury.

7. A fountain pen embodying a hollow barrel provided at one end with a nib and constituting a reservoir having an ink passage leading to the nib, a source of ink supply exteriorly of and separate from the barrel, a conduit extending from the ink supply to the reservoir and communicating therewith through a valved inlet.

8. A fountain pen embodying a barrel provided at its lower end with a nib and hollow to provide within the barrel an ink reservoir having a valved ink inlet at the upper end of the barrel through which ink may be introduced into the reservoir, in combination with a source of ink supply, a flexible tube leading from said supply and provided at its free end with a union adapted for detachable connection to the valved inlet of the pen, whereby ink can be fed from the said supply to the valved inlet when it is desired to charge the reservoir of the pen.

In testimony whereof I have signed the foregoing specification.

ABRAHAM ROSENBERG.