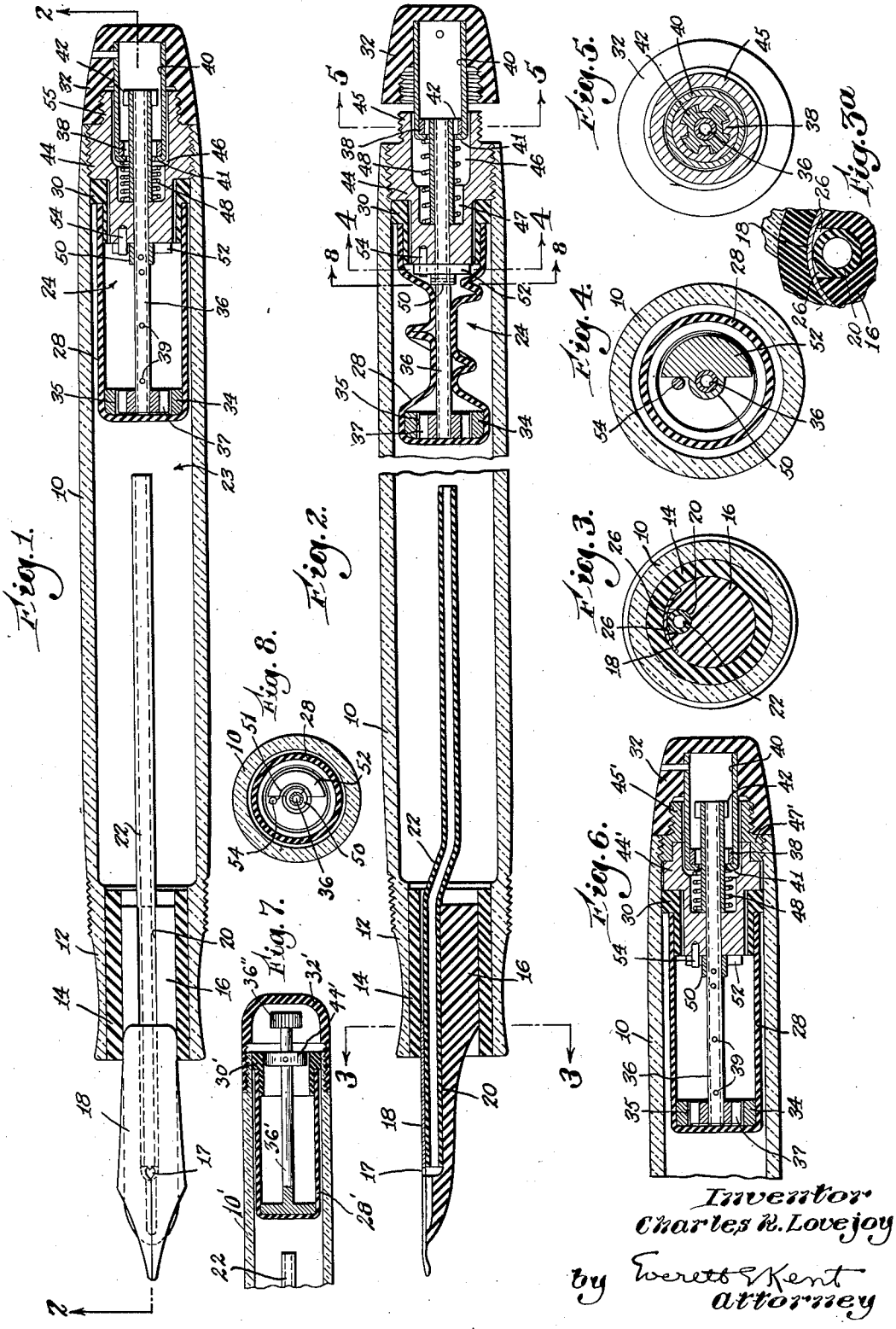
July 9, 1935. C. K. LOVEJOY 2,007,576

FOUNTAIN PEN

Filed Feb. 23, 1934



Inventor
Charles K. Lovejoy
by Everett C. Kent
Attorney

Patented July 9, 1935

2,007,576

UNITED STATES PATENT OFFICE

2,007,576

FOUNTAIN PEN

Charles K. Lovejoy, Roslindale, Mass.

Application February 23, 1934, Serial No. 712,556

16 Claims. (Cl. 120—46)

This invention relates to improvements in fountain pens.

More particularly it relates to fountain pens wherein the pen barrel constitutes the reservoir for ink, and wherein the expulsion of air and induction of ink for filling are accomplished by a series of back and forth movements of an element at the rear end of the reservoir. The invention provides an improved filling mechanism for such pens, and a generally improved pen structure.

Fountain pens wherein the barrel constitutes the reservoir have greater ink capacity than the so-called sack pens, in which a sack inside of the barrel continues to hold the ink that has been drawn in by its own expansion. In that type of barrel reservoir with which the invention is concerned, there is a pump action by which a few cycles of pump stroke accomplish a filling of the pen. Simple piston pumps are not satisfactory, because with lapse of time the packing is apt to leak and the valve to get out of order. Pumps are already known in which a deep flexible diaphragm replaces the piston, sealing the rear end of the pen barrel, with a piston rod there to push the middle part in and out. If valves are provided, or if the passages at the pen end are built so that air can escape more readily than ink, the barrel will retain approximately all of the ink which enters, and a succession of strokes will fill the barrel with ink.

The present invention dispenses with the piston and its strokes, although it still may be said to have a species of pump action, for it works by a succession of strokes, the effect of each of which is to change the volumetric capacity of the barrel. But these strokes are rotatory.

Numerous advantages follow from this, among which are a larger ink capacity in proportion to the outside dimensions of the pen barrel; a reduced requirement of longitudinal dimension for the installation and action of the filling apparatus; adequate clearances and elimination of disorders during use, so that parts do not need to be made removable; and better control by the operator of his executing of the filling strokes.

In a pen of this type the invention provides improvements in the constructing, mounting and actuating of elastic sack means for varying the displacement of the ink reservoir, including a clutch by which the barrel tip is convertible in function from cap to pump handle.

Also the invention provides improvements in the forward end of the pen, whereby the filling is efficient, and the feed of ink for writing is sure. A passage which serves both for vent of air in filling and for intake of air in normal use of the pen for writing, and for inflow of ink in filling, may be associated with the ink feed passages for writing, independent of these latter. This assures a flow of ink for writing which is both immediate and sure, because the said vent passage is always open for air to enter the barrel.

The pump is a twist-sack unit for which the invention provides anchorage in a readily accessible place close to the end of the barrel; or it may, indeed, be carried in a removable plug. The sack is a re-entrant ballooned wall of the reservoir which condenses toward the axis when its interior end is twisted by the operator's turning the exterior clutched handle of the twist-rod, thereby drawing ink into the reservoir; and which balloons when released, thereby reducing the reservoir capacity, driving out air, and making the sack ready for the sucking in of more ink.

Housed within the barrel cap is a clutch member on the twist-rod, at a lost-motion distance from its engaging clutch member that is on the barrel cap; during which lost motion the cap, by screw threads provided elsewhere, can be screwed to or from a firm seating against the end of the barrel. But when it is thus unscrewed from the barrel the clutch members are close together, and a spring drives them into mesh; and the cap then becomes a knob or handle for turning the interior twist rod of the sack; while an inturned flange prevents the cap from escaping, so that it cannot become mislaid, lost or accidentally roll off upon the floor.

The twist rod may have thrust bearings so as to prevent longitudinal movement of the end of the sack to which it is connected.

At the writing end small ink feed passages extend from the bottom of the reservoir beside a larger passage which comes from the top part of the reservoir where the air is when the reservoir barrel is held in filling position or in writing position. This larger passage being always open to atmosphere at the heart of the pen, the flow of air inward when the point of the pen is touched to paper, can be instantaneous, permitting equally instantaneous outward flow of ink for writing. Therefore ink cannot prevent air flow by becoming too viscous in a small passage, as sometimes happens when a pen has laid still for a time with its point open.

When the pump is operated for suction, ink entering the barrel finds less resistance in the larger passage, even though when entering there

it has to rise to near the top of the reservoir before it can escape from that tube into the reservoir. Therefore both the ink and the air works by the pump to move through this larger passage.

It is intended that the patent shall cover, by suitable expression in the appended claims, whatever features of patentable novelty exist in the invention disclosed.

In the accompanying drawing:

Figure 1 is a medial longitudinal section of a fountain pen embodying features of the invention, with all parts in place for normal use of the pen for writing;

Figure 2 is a medial longitudinal section on a plane at right angles to that of Figure 1, with the barrel cap backed away from the barrel and clutched to the twist-rod, the sack being shown as contracted by being twisted;

Figure 3 is a transverse section on 3—3 of Figure 2;

Figure 3ª is an enlarged fragmentary view, in transverse section across the ink feed passages;

Figure 4 is a transverse section on 4—4 of Figure 2;

Figure 5 is a transverse section on 5—5 of Figure 2;

Figure 6 is a medial longitudinal section of the barrel end portion of a fountain pen, showing a modified form of securing and guiding means for the pump actuating mechanism;

Figure 7 is a medial longitudinal section of the barrel end portion of a fountain pen, showing a simplified form of pump actuating means; and

Figure 8 is a transverse section through a pen barrel having a spring for aiding return of the twisted sack, the section being on a line corresponding to 8—8 of Figure 2.

Referring to the drawing, the barrel 10 may be of any suitable material, preferably sufficiently transparent to show how much ink is within. At the forward end is a finger grip portion 12, as is usual, with a bushing 14 fixed therein, for reception of the feed bar 16 and shank of the writing pen 18.

The feed bar 16 is represented as having a single rather large groove 20, best seen in Figure 3, in which lies a tube 22 which comes down from the remote end region of the reservoir 23, where one end of the tube is open, and runs through the groove to the heart 17 of the pen 18, where its other end is open. The shank of the pen directly overlies this lower part of the tube. The laying of this round tube 22 in the U-groove 20 results in side spaces 26, 26, Figure 3, between the tube and the walls of the groove; and these spaces, one on each side of the tube, constitute the feed grooves for ink to the heart 17 of pen 18. Ink for the feed never closes the end of the air tube. Therefore, upon the beginning of writing stroke the feeding of ink is never delayed by the inability of air to enter to replace that ink,—in contrast with other constructions in which the air has to enter through a body of ink at the feed, which, by a period of non-use, may become less fluid, and so may unduly obstruct the entrance of air which facilitates immediate starting of feed of ink.

Under normal conditions when writing, ink passes to the writing point through the passages 26; and air to replace this out-going ink enters through the tube 22. When filling the reservoir, with the heart 17 immersed in a well of ink, the air intermittently expelled by the pump which at the region 24 expands the reservoir by its own contraction to the form seen in Figure 2, and contracts the reservoir by its own ballooning to the form seen in Figure 1, escapes mostly through this same relatively large passage 22, which leads directly from the upper part of the barrel reservoir 23 where the air is when the pen is held with its point down; and the major portion of ink will enter the reservoir through this same larger and friction-free passage 22. Such little ink as may be forced out with the air through the small and high-friction passages 26 is so inconsiderable, that the repeated working of the pump now to be described fills the reservoir rapidly.

The pump operates by a twisting of a cartridge shaped flexible rubber sack 28 which, in the arrangement illustrated, is open toward the top end of the barrel 10 where the rim of this sack is sealed and secured to the barrel wall, either directly by any suitable means, or indirectly, this being the arrangement illustrated, by means of a ring piece 30 to which the rim of the sack can be secured such as by cement, while the ring piece itself is secured tightly to the interior wall of the barrel. The manner of effecting these connections is largely optional; and it may be considered that the ring 30 is so permanently secured in the barrel as to be not removable except by some process of destruction. The representation therefore may be considered to be a welding, if the barrel and ring piece be of materials which can be welded together; or it may be of such a tight pressed fit to be of like effect; and it is a feature that the place of union between the rim of the sack and the barrel of the pen is thus accessibly located close to the very end of the barrel where suitable operations can be executed. If, however, it be desired to have the pump sack removable that can readily be provided by making the ring 30 loose within the barrel 10 and either mounting it on a screw plug 44, which fills the open end of the barrel and seals the same by its screw joint which may be made tight by any suitable device and yet be removable, in which case the ring 30 and sack 28 would come out with it. Or the ring 30 may be integral with this plug 44. All of these alternative forms are illustrated by the same drawing, Figure 1 or Figure 6, where the ring 30 in immediate proximity to the barrel 10 and to the plug 44, or 44' of Figure 6, to either of which it may be secured by either of the methods mentioned, or by other methods.

When arranged as thus illustrated, however its mouth may be secured, the body of the sack constitutes a displacement of space from the reservoir 23, the volume of which displacement can be changed by shrinking the side walls of the sack toward the axis, as in Figure 2, by twisting the bottom of the sack while its mouth remains rigid with the barrel and the ring 30, without moving either end of the sack from its fixed location. This can be done by a back and forth turning of the barrel cap 32 when that cap is set to act as a pump or handle, as will now be described.

Interiorly of the sack, at its closed end, is a disk plate 34, which may be cemented or otherwise rigidly secured to that part of the sack. This plate may have a non-round recess of any sort to serve as a socket for receiving the end of an axial twist-rod 36 whose rotation can thus turn the disk 34 and so turn the attached portion of sack. As shown, this disk has internal teeth 35, and the end of rod 36 has teeth 37 for engaging in them.

The connection of barrel cap 32 to twist-rod 36 is provided at the other end of that rod by a clutch, one member of which, 38, is fast on the cap 32, being held in a little metallic interior extension tube thereof which is rigid therewith and is marked 40; and the other member of the clutch 42 is rigid on the end of the twist-rod 36. The tube 40 is housed within the cap 32, except as it projects thence toward the reservoir part of the barrel into a loose socket 46 for it in the exterior face of the sealing plug 44. This projecting end of the tube is fashioned inward toward the axis making an annular inturned flange 41, which serves the double purpose of engaging on the inward face of the clutch member 42 that is on the twist-rod, so that the tube 40 and cap 32 to which it is rigidly pinned or otherwise secured cannot escape from that twist-rod, and of furnishing a bearing on its face which is toward the reservoir for a helical spring 48 which is sprung upon the twist-rod 36 which at this region has a strengthening casing 47 tightly secured upon it for carrying the clutch member 42 and transmitting the rotary movement thereof to the rod 36. This spring urges the flange 41 with attached clutch member 38 and cap 32 outward from the pen barrel, tending to push clutch member 38 into engagement with the clutch member 42; and the latter is set far enough out, by making a suitable length of twist-rod 36 at whose end it is, so that this engagement does not occur until the cap 32 has been backed away from the pen barrel and becomes free of the thread on the projecting end 45 of the rigid plug 44. Therefore, to set the device for operation of the pump, the user merely unscrews the barrel cap 32 until it is free, so far as its screw mounting is concerned, whereupon the spring 48 sets the clutch members together and the cap is thus automatically connected to the disk 34 at the bottom of the sack in the interior of the reservoir. A turning of the cap 32 between one's fingers then twists the sack 28 from the position of sack, shown in Figure 1, to that shown in Figure 2, where the sack has been collapsed toward the axis by the twisting thus transferring space 24 into the reservoir 23 and producing a suction therein, with resulting in-rush of ink if the heart 17 of the pen be at that time immersed in a well of ink. Upon turning the cap 32 back again, or upon releasing it, the sack 28 will be turned back, or will elastically fly back, to its position of Figure 1, thus reducing the capacity of the reservoir 23 forcing out air through the tube 22, the frictional resistance to escape of air in this manner being greatly less than the frictional resistance to escape of any considerable body of ink through the small ink passages 26.

A collar 50 secured on the twist-rod 36 provides an abutment against the screw plug 44 which prevents the twist-rod from moving longitudinally outward; and this collar may carry a segmental flange 52 for engaging a fixed pin 54 in the plug 44 to limit the rotatory movement of the rod 36, thus protecting the sack 28 from too great tortional strain, and guiding the user as to what is an appropriate length of stroke.

The sack 28 may be of lively rubber, flexible enough to be wound closely on the axial rod when that rod and the cap clutched thereto are twisted, and to stretch as much as is necessary, considering that, in the construction illustrated, its ends continue at a fixed distance apart, and elastic enough to return promptly to its initial cartridge shell shape, although it is obvious that the shape is not necessarily cylindrical as shown. The passage of air from and to the sack, when thus collapsed and ballooned, the rod 36 may be tubular, having vent holes 39 within the sack, thus passing air to the interior of the cap 32 when it communicates freely with atmosphere past the loose-fitting clutch connection and other parts in that vicinity.

In the arrangement illustrated, if the sack 28 and its mouth ring are first secured together they can be inserted through the opening of the barrel 10 and the ring secured by welding or other permanent attachment in the position illustrated in Figure 1. The open end of the barrel being thus sealed by an irremovable sealing, the actuating mechanism may be put into place in the plug 44 before that is inserted in the barrel, the insertion being afterward accomplished by screwing the plug 44 to its seat against the ring 30, accomplished by use of a suitable manner tool, while the cap 32 is disengaged in the position of Figure 2, and while the bottom end of sack with its disk 34 is temporarily pulled toward the lower end of the pen by forceps inserted through that lower end, so that the clutch member 37 can rotate freely with the screwing of the plug 44 until that is seated, whereupon a releasing of the forceps will let the clutch member 34, having the socket, settle back into engagement with the non-round, tooth or other shaped element 37, on the twist-rod, where it will be held by elasticity of the sack 28. The actuating mechanism can then be withdrawn at any time for examination or repair by similar operations reversed, without touching the permanent seal. However, if it be desired that the sealing sack and joint at this end of the pen be removable that can easily be accomplished by a construction in which the sack is mounted on the plug 44 either directly or through a sealing ring, as illustrated, the screw joint of this plug 44 then constituting the barrel seal on the unscrewing of which the entire pumping apparatus comes out.

In Figure 6, a modified form of pump assembly is represented wherein the actuating mechanism may be inserted without the suggested drawing forward of the sack from the forward end of the barrel. Here the sack and the actuating mechanism may be exactly as in the first described form. The plug 44 of Figure 1 is in two parts, in Figure 6, one of which, the rod guiding the sleeve 44', fits loosely in the barrel against the mouth ring 30 of the sack, and does not rotate while the other 47' carries the screw thread and screws into the barrel and clamps the sleeve in place, and carries the thread 45' for reception of the end cap 32.

Although here shown with the sack mouth facing outward of the adjacent barrel end, and the sack open to atmosphere rather than open to the reservoir, it will be observed that the holding of one end of the sack rigid and the twisting of its other end, by a barrel cap with clutch which the described apparatus accomplishes, does not depend upon the direction in which the sack mouth lies, nor whether the rod 36 be long or short, to apply its twist at the far or the near end of sack; and that in a broad sense it does not matter which end is held and which is twisted.

Also there may be choice in the arrangement of the twist-rod, which, as illustrated, is detachable from its rotatory connection at both ends. As illustrated the attachment to the sack is in-

tended to remain during normal condition; and the attachment to the cap is made or broken operatively before the pen filling or the pen using. But the operative clutching and unclutching is not necessarily at this end of the rod; and the clutching and unclutching might be directly between the rod and the sack disk **34**, where one form of clutch is illustrated. In that case, and especially if the rod **36** were permanently attached to the bottom of the sack the plug **44** might be omitted, with its immediately adjacent parts on and around the rod and within the cap, leaving a simple sack **28** permanently sealed to the barrel at **30** and open toward the barrel end, with the cap screwing upon the barrel instead of upon the plug, and the rod **36** free to be turned by hand when the cap is removed, operating as a pump, in connection with the differential friction that is at the pen end of the barrel, by varying the displacement of the reservoir **23** as the rod **36** is twisted and the sack **28** is collapsed or ballooned.

Such a pump and actuator is shown in Figure 7 the sack **28'** being secured on a ring **30'** which may be welded in a celluloid barrel **10**. A simple twisting rod **36'** has its inner end secured to the inner end of sack, and reaches rearward beyond the barrel end to where its finger grip knob **36''** is accessible by removal of cap **32'**. A disk **44'** fast on the rod, centers it loosely in the ring **30'** and the pin which is shown holding this disk can cooperate with a shoulder (not shown) on the ring for limiting the extent of twisting.

Figure 8 which refers more especially to the type seen in Figure 2 has a hair spring indicated at **51**, for aiding return of the sack after a twisting.

In the working of the apparatus as a pump it is an especial feature that the tube **22** extends to the heart **17** of the writing pen. Therefore air can always freely reach and enter the tube during normal writing, without having to work its way along a narrow passage containing ink, with the occasional blocking of the passage by the skin tension surrounding a stranded air-bubble. This complete separating of air passage from ink feed passage makes a pronounced differential of friction of ink and air in their respective passages, which results in ready outflow of air rather than ink at each pressure stroke of the pump, and effective pen-filling, even though strokes be executed at only a moderate pace. The air does not have to be impelled with high velocity and pressure to burst its way out through a passage filled with ink, and this prevents any substantial outflow of ink during pump operation. The ink can flow freely during normal writing, because air vacuum of the reservoir, holding back ink, is kept low, since the tube **22** permits air to enter easily as needed for replacing the ink which is flowing out for writing. When being filled, the twisting of the sack draws the ink in mainly through tube **22**, over whose top it pours into the bottom part of the reservoir, leaving the top of the tube open in interior for air outgo on the next ballooning.

I claim as my invention:

1. In a fountain pen, an ink reservoir barrel, having at one end passages for ink and air, combined with a twist-sack located within, supported at, and vented toward the other end of the barrel, and having an impervious wall extending into the reservoir; and a rod reaching endwise into and engaging torsionally a deep part of the sack, thereby by twisting the sack to change displacement of the reservoir; there being a device movable in axial direction for connecting and disconnecting power.

2. In a fountain pen, an ink reservoir barrel, having at one end passages for ink and air, combined with a twist-sack located within, supported at, and vented toward the other end of the barrel, and having an impervious wall extending into the reservoir; and a rod reaching endwise into and engaging torsionally a deep part of the sack, thereby by twisting the sack to change displacement of the reservoir; there being a device movable in axial direction for connecting and disconnecting power; the said connecting device being located interiorly of the sack at the place of engagement of the rod therewith.

3. In a fountain pen, an ink reservoir barrel, having at one end passages for ink and air, combined with a twist-sack located within, supported at, and vented toward the other end of the barrel, and having an impervious wall extending into the reservoir; and a rod reaching endwise into and engaging torsionally a deep part of the sack, thereby by twisting the sack to change displacement of the reservoir; there being a device movable in axial direction for connecting and disconnecting power; there being a cap for the barrel end, and the said connecting device being located exteriorly of the sack and within said cap, whereby the cap constitutes an operating handle.

4. In a fountain pen, an ink reservoir barrel, having at one end passages for ink and air, combined with a twist-sack located within, supported at, and vented toward the other end of the barrel, and having an impervious wall extending into the reservoir; and a rotatable element engaging torsionally the sack, thereby by twisting the sack to change displacement of the reservoir; a cap for the sack end of the barrel; and means for connecting the cap operatively to the rotatable element as a handle for applying torsion.

5. In a fountain pen, an ink reservoir barrel, having at one end passages for ink and air, combined with a twist-sack located within, supported at, and vented toward the other end of the barrel, and having an impervious wall extending into the reservoir; and a rotatable element engaging torsionally the sack, thereby by twisting the sack to change displacement of the reservoir; a cap for the sack end of the barrel; and means for connecting the cap operatively to the rotatable element as a handle for applying torsion; said means being a clutch, in which the elements engage by relative movement in axial direction.

6. In a fountain pen, an ink reservoir barrel, having at one end passages for ink and air, combined with a twist-sack located within, supported at, and vented toward the other end of the barrel, and having an impervious wall extending into the reservoir; and a rotatable element engaging torsionally the sack, thereby by twisting the sack to change displacement of the reservoir; a cap for the sack end of the barrel; and means for connecting the cap operatively to the rotatable element as a handle for applying torsion; means holding the cap aligned both with the barrel and with the clutch, the positions of respective engagement being by movement in opposite directions from a neutral position.

7. In a fountain pen, an ink reservoir barrel, having at one end passages for ink and air, combined with a twist-sack located within, supported at, and vented toward the other end of the barrel, and having an impervious wall extending into the reservoir; and a rotatable element engaging tor-

sionally the sack, thereby by twisting the sack to change displacement of the reservoir; a cap for the sack end of the barrel; means holding the cap loosely to the barrel while removed from covering engagement therewith; and means for connecting the cap operatively to the rotatable element as a handle for applying torsion.

8. In a fountain pen, an ink reservoir barrel, having at one end passages for ink and air, combined with a twist-sack located within, supported at, and vented toward the other end of the barrel, and having an impervious wall extending into the reservoir; and a rotatable element engaging torsionally the sack, thereby by twisting the sack to change displacement of the reservoir; a cap for the sack end of the barrel; said rotatable element being a rod, axially located, protruding into the cap, and having a clutch member therein; said cap having an axial tube holding a cooperating clutch member; and there being lost motion of travel between the clutch elements coordinated with a position of the cap for screw engagement of the cap with the barrel.

9. In a fountain pen, an ink reservoir barrel, having at one end passages for ink and air, combined with a twist-sack located within, supported at, and vented toward the other end of the barrel, and having an impervious wall extending into the reservoir; and a rotatable element engaging torsionally the sack, thereby by twisting the sack to change displacement of the reservoir; a cap for the sack end of the barrel; a clutch in the cap, set to engage the rotatable element when the cap is removed from the barrel; and a spring urging the cap to clutch engaging position.

10. In a fountain pen, an ink reservoir barrel, having at one end passages for ink and air, combined with a twist-sack located within the other end of the barrel and constituting a flexible impervious wall of the reservoir; means for twisting the sack; a cap at the sack end of the barrel; and means whereby that cap is attachable to and detachable from the barrel, as an end cover, and is attachable to and detachable from said means for twisting the sack, to change displacement of the reservoir; each said attaching of the cap being at a position of the cap where the cap is free from its other said attachment.

11. In a fountain pen, an ink reservoir barrel, having at one end passages for ink and air, combined with a twist-sack located within the other end of the barrel and constituting a flexible impervious wall of the reservoir; a plug in the barrel end, and a rod therethrough to twist the sack; a removable barrel cap on the plug; and a clutch in the cap adapted for engaging the twist rod when the cap is backed away from the plug, and for disengaging the twist rod when the cap is seated on the plug.

12. In a fountain pen, an ink reservoir barrel, having at one end passages for ink and air, combined with a twist-sack located within the other end of the barrel and constituting a flexible impervious wall of the reservoir; a plug in the barrel end, and a rod therethrough to twist the sack; the sack being closed to the reservoir, and the rod being tubular and constituting an air vent to and from the sack; and a cap adapted both for closing the barrel end and for applying power to the twist rod.

13. In a fountain pen, an ink reservoir barrel, having at one end passages for ink and air, combined with a twist-sack located within the other end of the barrel and constituting a flexible impervious wall of the reservoir; a plug in the barrel end, and a rod therethrough rotatable therein and attached to one part of said sack to twist it; means holding another part of the sack still, opposing the twisting; a barrel cap; and a clutch for connecting and disconnecting the cap and rod.

14. In a fountain pen, an ink reservoir barrel, having at one end passages for ink and air, combined with a twist-sack located within, supported at, and vented toward the other end of the barrel, and having an impervious wall extending into the reservoir; means permanently securing one end of the sack to the barrel; a non-round socket at the other end of sack to receive a twist rod by axial movement of that rod and to transmit to the sack rotatory movement of the rod so received.

15. In a fountain pen, an ink reservoir barrel, having at one end passages for ink and air, combined with a twist-sack located within, supported at, and vented toward the other end of the barrel, and having an impervious wall extending into the reservoir; means permanently securing one end of the sack to the barrel; a non-round socket at the other end of sack to receive a twist rod by axial movement of that rod and to transmit to the sack rotatory movement of the rod so received; a cap for covering the sack end of the barrel; and a clutch for engagement between cap and rod, positioned to be disengaged when the cap is seated; and to become engaged after the cap has been backed away from its seat for a distance.

16. In a fountain pen, an ink reservoir barrel, having at one end passages for ink and air, combined with a twist-sack located within, supported at, and vented toward the other end of the barrel, and having an impervious wall extending into the reservoir; and a rotatable element engaging torsionally a deep part of the sack, thereby by twisting the sack to change displacement of the reservoir; and a spring for aiding return of the sack to its normal condition.

CHARLES K. LOVEJOY

CERTIFICATE OF CORRECTION.

July 9, 1935.

Patent No. 2,007,576.

CHARLES K. LOVEJOY.

It is hereby certified that the above numbered patent was erroneously issued to the inventor said "Lovejoy" whereas said patent should have been issued to The Moore Pen Co., Boston, Massachusetts, a corporation of Massachusetts, as assignee of the entire interest in said invention, as shown by the records of assignments in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 17th day of September, A. D. 1935.

Leslie Frazer

Acting Commissioner of Patents.

(Seal)