Dec. 13, 1949 L. J. BIRO 2,491,082

FOUNTAIN PEN

Filed May 25, 1944 2 Sheets-Sheet 1

Fig. 1

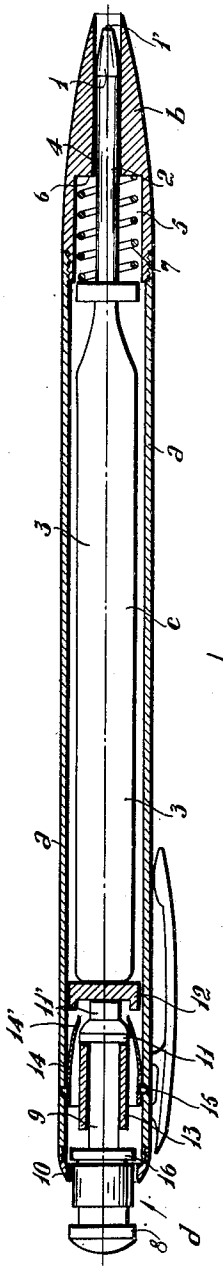
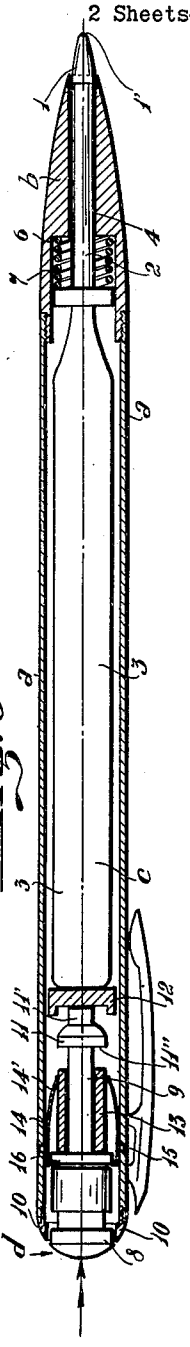


Fig. 2



Fig. 3



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Dec. 13, 1949 L. J. BIRO 2,491,082

FOUNTAIN PEN

Filed May 25, 1944 2 Sheets-Sheet 2

Fig. 4

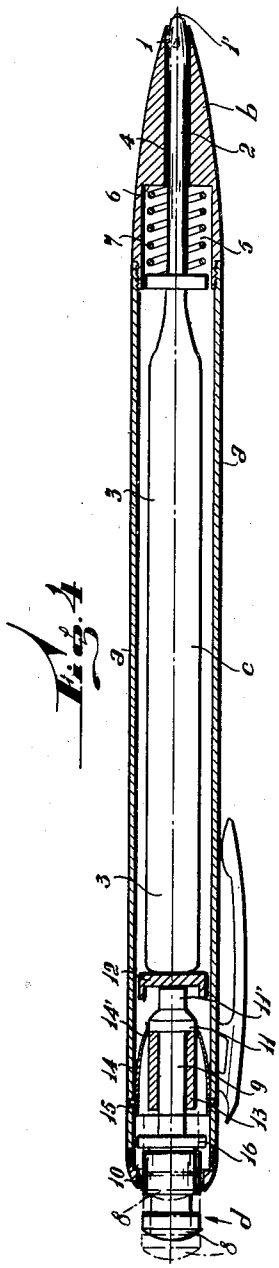
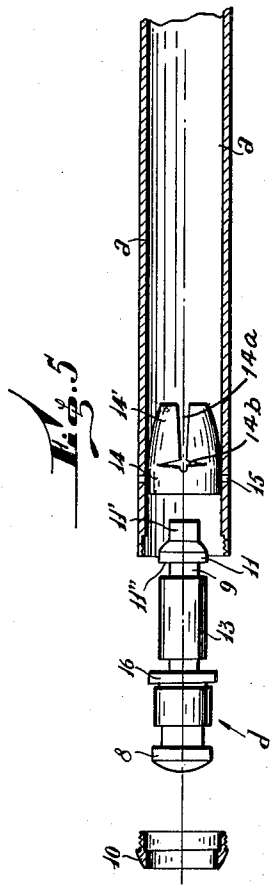


Fig. 5



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Patented Dec. 13, 1949

2,491,082

# UNITED STATES PATENT OFFICE

2,491,082

## FOUNTAIN PEN

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Application May 25, 1944, Serial No. 537,255
In Argentina April 29, 1944

4 Claims. (Cl. 120—42.03)

1

This invention relates to improvements in fountain pens, and particularly to fountain pens of the rolling-ball tip type.

Several types of devices have been suggested heretofore for the purpose of placing writing instruments in operative and inoperative positions, thereby dispensing with the ordinary detachable caps, and while such devices have been used with a certain amount of success in pencils of the "multi-color" type, they are not adapted for use in connection with fountain pens.

In my copending application Serial No. 536,011, filed May 17, 1944, there is disclosed a fountain pen comprising a tubular body with a slidable assembly consisting of the ink reservoir, the ink feeder, the writing tip and a push-button located at the end of said tubular body opposite said writing tip, said button serving to slide said slidable assembly into operative position, but in order to return the assembly to inoperative position, separate releasing means are required.

The improvements of the present invention consist of a mechanical combination whereby the same operating means, such as a push-button, will operate not only as the means for placing the pen in writing or operative position, but also as releasing means for returning the writing tip of said pen to concealed or inoperative position.

For this purpose, the operating button is provided with a stem, the free end of which contacts the above mentioned slidable assembly comprising the ink reservoir, the ink feeder and the writing tip, said stem being provided with means which, on being pushed to a certain extent will act as a stop for locking the slidable assembly in the operative or writing position assumed through this actuation. Said combination of means also comprises a movable member capable of engaging a depression for the purpose of locking the pen in writing position, whereby a second actuation of the push-button will release the slidable device which will return to concealed or inoperative position through the action of a spring.

Therefore, it is an object of the invention to provide a system responsive to a single control means, for the purpose of setting the fountain pen in operative and inoperative positions.

A further object of the invention is to provide a fountain pen which may be readily set in operative and inoperative positions through simple operations which may be carried out with the fingers of the same hand used in handling the pen for writing purposes.

A still further object of the invention is to simplify the construction of the fountain pen

2

and avoid the use of supplementary elements, apart from eliminating the necessity of providing the ordinary detachable cap for protecting the writing tip of the pen.

Other objects and advantages of the invention will become apparent from the course of the following description, when read in conjunction with the accompanying drawings illustrating same by way of example and in a preferred embodiment. In the drawings:

Fig. 1 is a longitudinal sectional view of the writing instrument in inoperative position.

Fig. 2 is a sectional view similar to that of Fig. 1, showing the fountain pen in writing or operative position.

Fig. 3 is a longitudinal sectional view of the fountain pen, with the control button pressed to the maximum depth into the tubular body of the instrument.

Fig. 4 is a sectional view showing the manner in which the spring causes the slidable device to move into inoperative position upon releasing the control button and

Fig. 5 is a fragmental, disassembled view of a portion of the fountain pen corresponding to the control button thereof, with certain of the parts, including the fingered locking spring element, shown in side elevation.

The same reference characters indicate like or corresponding parts of elements throughout the drawings.

As may be seen from the drawings, the fountain pen of the present invention comprises a tubular body *a* provided at one end with an end-piece *b* serving as a guide for the writing tip **1**. The writing tip **1** terminates in a small rolling ball **1'** mounted in a suitable setting and in contact with the ink supplied from the feed tube **2** deriving from an ink reservoir **3** housed within the tubular body *a*.

Said ink reservoir **3**, ink feeder **2**, and the writing tip **1** constitute a slidable device *c* which is operated by a push device *d*.

The tubular body *a* serves as a guide for the ink reservoir **3**, while the end-piece *b* is provided with an axial bore **4** also acting as a guide for the feed tube **2**, so as to allow the unit *c* to slide from the inoperative position as shown in Fig. 1 to the operative position shown in Fig. 2, and vice-versa.

Said end-piece *b* is provided with a further bore **5**, the diameter of which is larger than that of the bore **4**, thereby forming a seat **6** for a coiled spring **7** which normally urges the unit *c* towards the inoperative position shown in Fig. 1, in which the writing tip **1** remains housed within

the bore 4. In other words, the end-piece *b* will act as a holding cap, avoiding all possibility of contact with the ball 1', which will remain practically centered and spaced from the inner surface of said end-piece *b*.

The unit *c* may be readily set into operative position by means of the push device *d* provided with a push button 8 which on being pressed as shown in Fig. 2, will cause the unit *c* to slide longitudinally until the writing tip 1 projects outwardly to a sufficient degree, where it should be locked for writing purposes.

According to the present invention, the locking means, the release for the locking means and the entire control necessary for setting the fountain pen in operative and inoperative positions depend on the device *d*. For this purpose, said device *d* comprises a stem 9 provided at one end wth the above mentoned push-button 8 projectng outwardly from a collar 10 located at the extreme end of the tubular body *a* opposite that of the end-piece *b*, while the opposite end of said stem 9 terminates in a stop collar 11 which by means of an extension 11' is associated with a cap 12 arranged at the end of the ink reservoir 3 of the unit *c*. Thus, said unit *c* together with the cap 12, stop collar 11, stem 9 and button 8 will form a conjugate series which, urged by the spring 7, will normally be in inoperative position such as is shown in Fig. 1, but on pressing said button 8, this combination of elements will assume an operative or writing position as illustrated in Fig. 2.

Said stem 9 is provided with a bushing 13 which is shorter than the length of said stem and slidable about same, in such a manner that said bushing is capable of assuming at least two positions, one against the button 8, and another abutting against the stop collar 11.

Preferably, the bushing 13 is made of the same diameter as the stop collar 11, so that when it is positioned against the latter, the surface of said bushing will remain flush with the lateral surface of stop collar 11.

The tubular body *a* is provided with a locking element 14 fixed to the walls of said body as by means of rivets 15, said locking element 14 being preferably of tubular form at its point of attachment and affording a set of resilient fingers 14' obtained by suitable longitudinal and transverse slots 14*a* and 14*b* provided in the locking element 14, as clearly shown in Fig. 5.

The resilient fingers 14' tend to converge towards the longitudinal axis of the fountain pen and, therefore, with the latter in inoperative position as shown in Fig. 1, upon pressing the button 8 and causing the slidable device to move into the operative position as illustrated in Fig. 2, said fingers 14', after allowing the advance of the body of stop collar 11, will fit against the seat 11'' of stop 11, said fitting being facilitated by the bushing 13 which will be displaced towards the button 8. Once the ends of the fingers 14' have been seated on seat 11'' of stop collar 11, the unit *c* and device *d* will remain locked in writing or operative position.

When the user wishes to put away the pen, it will be sufficient to once more press the button 8 to cause the unit *c* to return to initial or inoperative position. In fact, upon further pressing the button 8 as shown in Fig. 3, the assembly *d* will be displaced inwardly to such an extent that the bushing 13, prevented from further backward displacement, will be interposed between the fingers 14' whereby the ends of said



fingers 14' will bear against said bushing, as clearly shown in Fig. 3, thus unlocking the locking element 14; and inasmuch as the surface of the bushing 13 is substantially flush with the lateral surface of the stop collar 11, upon releasing the button 8 the lock will also be released. Under such circumstances, when said button 8 is released, the pressure of the spring 7 will cause the backward movement of the unit *c*, with the consequent displacement of the stop 11, stem 9 and button 8, until stop 11 contacts the bushing 13. Said stop 11 will drive the bushing 13, and since the abutment of said stop and bushing offers no resistance, as shown in Fig. 4, the displacement of the assembly will continue until the unit *c* has assumed the inoperative position shown in Fig. 1. Thus, the bushing 13 operates to release the locking element 14.

It will be seen from the above that the button 8 controls the setting of the fountain pen into both the operative and inoperative positions thereof, and that once the device has been set in operative position as shown in Fig. 2, it will be sufficient to further press said button to cause the release of the locking means and the return of the device to its inoperative position as illustrated in Fig. 1, said position being obtained through the action of spring 7 and defined by the abutment of ring 16 against the collar 10.

Summarizing, the improved fountain pen of the present invention comprises a tubular body *a* provided with an end-piece *b* and housing a slidable unit or assembly *c* comprising the ink reservoir 3, the ink feeder 2 and the writing tip 1; with a push device *d* opposite said writing tip, in combination with means for urging said slidable assembly towards concealed or inoperative position of the writing tip (Fig. 1), means for locking the unit in the operative or writing position, and means for releasing said locking means, the main feature residing in the fact that the device *d* controlling the displacement of the movable unit *c* comprises a control button 8 having a stem 9 provided with a stop 11, with means 11'' for receiving the locking element 14 in the operative position of the fountain pen (Fig. 2), said stem also being provided with a slidable bushing 13 for the purpose of releasing said locking element 14. Said bushing 13 is so arranged that upon further pressing the device *d* towards the position illustrated in Fig. 3, said bushing will interpose between the fingers 14' of the locking element 14 and inasmuch as said bushing 13 and stop 11 are arranged so as to constitute a sliding surface, upon releasing the button 8, the pressure of the spring 7 will cause the release of the locking element 14, whereby the entire assembly will move backwardly as shown in Fig. 4, to the inoperative position illustrated in Fig. 1.

It is evident that in carrying the invention into practice, several changes, modifications and adaptations thereof 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 writing instrument, a tubular body, a unit slidably mounted in the body, said unit including a writing tip at one end thereof, and an ink reservoir connected with the tip behind the latter, a coil spring for moving the unit rearwardly in the body to retract the tip within the front end of the body, said spring being compressed between the reservoir and the front end of the body, and an exteriorly accessible

device operable to move the unit forwardly to expose the tip, and also to permit rearward movement of the unit to retract the tip, said device including a push member slidably mounted in the body behind the unit in direct endwise abutment but otherwise freely separable engagement with the reservoir, latching means for locking the push member in a pushed-in position to hold the tip projected in writing position, and release means operable to disconnect the latching means and permit rearward movement of the push member and tip.

2. In a writing instrument, a tubular body, a unit slidably mounted in the body, said unit including a writing tip at one end thereof, and an ink reservoir connected with the tip behind the latter, a coil spring for moving the unit rearwardly in the body to retract the tip within the front end of the body, said spring being compressed between the reservoir and the front end of the body, and an exteriorly accessible device operable to move the unit forwardly to expose the tip, and also to permit rearward movement of the unit to retract the tip, said device including a push member slidably mounted in the body behind the unit in direct abutment but otherwise freely separable engagement with the reservoir, latching means for locking the push member in a pushed-in position to hold the tip projected in writing position, and release means operable to disconnect the latching means and permit rearward movement of the push member and tip, said latching means consisting of a plurality of stationary spring fingers carried by the body, and a stop associated with said push member for locking engagement with the fingers, and said release means consisting of a bushing shiftably mounted on the push member for outwardly camming engagement with the fingers.

3. A fountain pen comprising a tubular body having a front end-portion, a slidable unitary device housed therein and formed by an ink reservoir, an ink feeder, and a writing tip, which device is movable between an inoperative position in which the tip is housed in the end-portion and an operative position in which the tip is exposed, a coil spring compressed between the body and said device for urging the tip into the inoperative position, a releasable detent for holding said device in the operative position, and a push device at the end of the pen opposite said tip, which push device is arranged in direct endwise abutment but otherwise freely separable engagement with the reservoir and comprises a push button provided with a stem, a stop thereon for engagement by the detent, and a sleeve slidably received on said stem and movable to release the detent and to permit movement of the slidable device to the inoperative position.



4. A ball point pen of the retractable tip type, comprising a tubular shell which is open at both ends and is tapered forwardly adjacent its front end, a writing unit centered within the shell for endwise movement therein, said unit consisting of a ball equipped tip of substantially the same size as the opening in the front end of the shell and an ink reservoir for the tip, which reservoir is connected with the tip and extends rearwardly in the shell to a point adjacent the rear end of the latter, a spring coiled about the unit and compressed between a rearwardly facing annular shoulder in the shell and a formation on the unit intermediate the ends of the latter for urging the unit rearwardly, said tip being projectable forwardly through the front end of the shell against the action of the spring into a normal writing position and also being projectable forwardly beyond such position into an abnormal release position, an exteriorly accessible push rod located in the shell adjacent the rear end of the latter for moving the unit forwardly to project the tip into first one and then the other of said positions, said rod extending forwardly into freely separable endwise abutment with the rear end of the reservoir and being provided intermediate its ends with an annular groove, a collar of less axial extent than the groove shiftably mounted in the latter, and a plurality of spring fingers secured within the rear end of the shell about the push rod, said fingers being engageable with the front end of the groove in the rod to latch the latter in a forwardly projected position corresponding to the writing position of the tip and being expansible by the collar to disengage the groove and release the rod in a further projected position corresponding to the release position of the tip.

LASZLO JOZSEF BIRO.


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The following references are of record in the file of this patent:

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| 628,418 | France | 1927 |

## Certificate of Correction

Patent No. 2,491,082 December 13, 1949

LASZLO JOZSEF BIRO

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows:

Column 5, line 26, after the word "direct" insert *endwise*;

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 9th day of May, A. D. 1950.

[SEAL]

THOMAS F. MURPHY,
*Assistant Commissioner of Patents.*