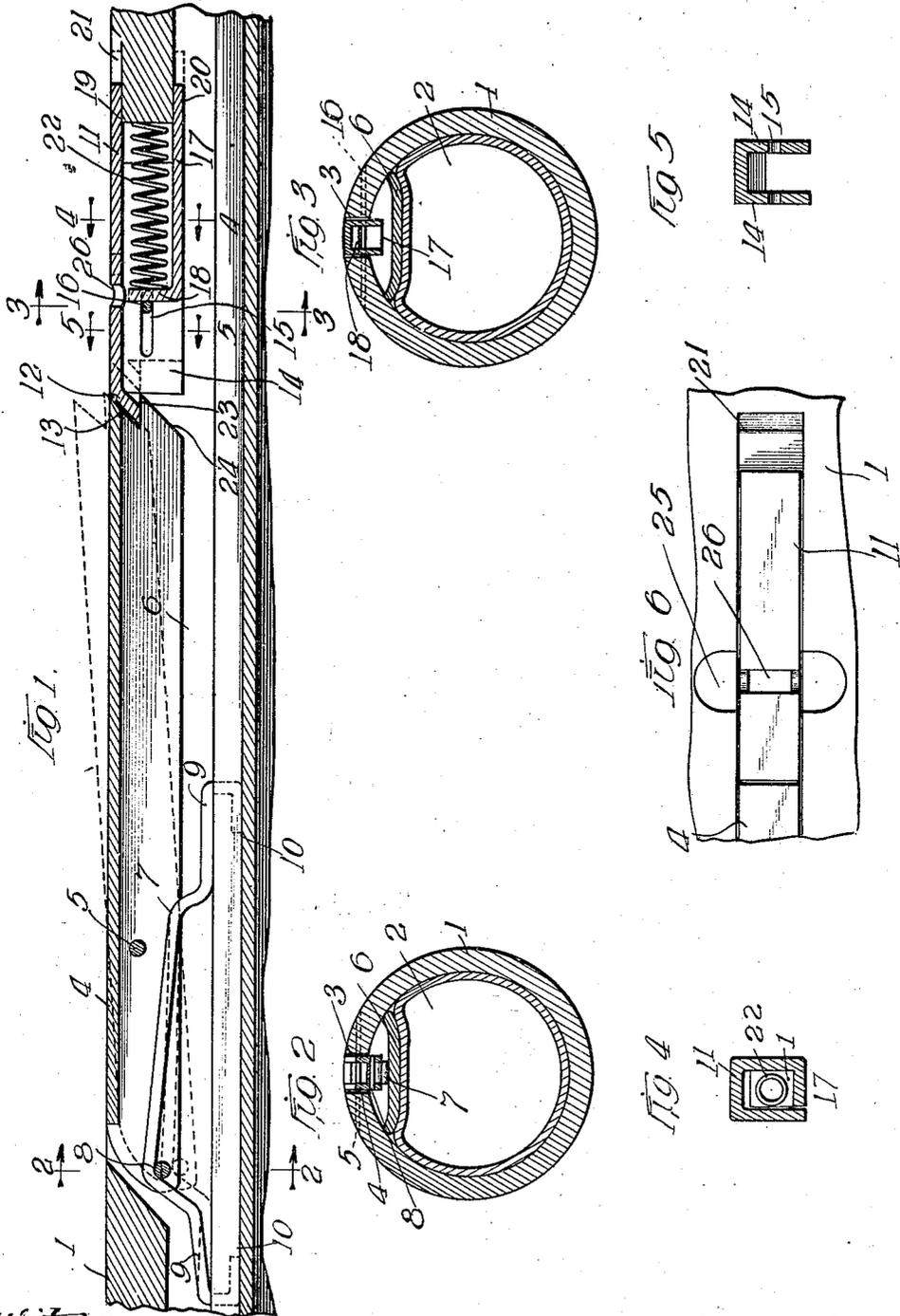


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 FOUNTAIN PEN.
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FOUNTAIN-PEN.

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To all whom it may concern:

Be it known that I, RUDOLPH WM. LOTZ, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Fountain-Pens; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in fountain pens, and more particularly to so-called lever operated self-filling fountain pens. It has for its several objects:

First: To provide a fountain pen of this character in which the lever when closed, after being operated to collapse the ink reservoir is automatically positively locked in its closed position.

Second: To provide a fountain pen in which the lever when closed and locked is so housed by the slot in which it lies as to be inaccessible for operation to reopen the same until the locking device therefor is released from engagement therewith.

Third: To provide means for locking the lever as aforesaid in combination with means whereby the lever is initially automatically moved to a partially open position so as to render it very easily accessible to the finger nail or finger tip for moving the same to its completely open position.

Fourth: To provide such a connection between the lever and the pressure bar of the pen as will cause the pressure bar to be held in such close contact with a contiguous surface of the inner wall of the barrel when the lever is in closed position as to insure maximum ink capacity of the ink reservoir within the fountain pen barrel.

Fifth: To provide means on the lever and its lock for readily enabling these parts to be accurately positioned with relation to each other in assembling the pens to insure their proper operation.

The invention consists in the features of construction and combinations of parts hereinafter fully described and claimed.

In the accompanying drawings illustrating a suitable embodiment of the invention:

Figure —1— is a fragmentary detail central longitudinal section of a fountain pen constructed in accordance with my invention.

Figs. —2— and —3— are vertical transverse sections of the same on the lines 2—2 and 3—3 respectively, of Fig. —1—.

Figs. —4— and —5— are fragmentary detail transverse sections on the lines 4—4 and 5—5 respectively, of Fig. —1—.

Fig. —6— is a fragmentary detail top plan view of that portion of a fountain pen containing the slot housing the locking element for the lever.

Referring now to said drawings, 1 indicates the cylindrical barrel of a fountain pen which is of the usual construction employed in pens of the character referred to. Disposed within said barrel 1 is a collapsible ink sack 2 also of the ordinary and well-known construction, the open end of which is connected with what is known as the "pen section" containing the nib or point and the feed for feeding ink to the point, all of which parts are well-known in the art, and are omitted from illustration for that reason. The said barrel 1 is provided with a longitudinal slot 3 in which the lever 4 is pivotally mounted between its ends upon a pin 5 spanning the slot between the ends thereof. The lever is U-shaped in cross-section and the flanges thereof extend inwardly from the middle portion which is disposed practically flush with the outer circumferential face of the barrel 1. Mounted within the barrel between the slotted side thereof and the rubber reservoir 2 and normally resting upon the latter is a pressure bar 6 which is movable diametrically of the barrel for collapsing the reservoir 2 to expel air or fluid contained therein preparatory to immersing the pen section and nib into an ink-well for the purpose of filling or refilling a pen. The said bar 6 is provided substantially midway between its ends with an elastic wire loop 7 extending upwardly from the bar and which is connected with one end of the lever 4 by means of the pin 8 or similar device spanning one end of said lever contiguous to the lower edges of the flanges thereof, and at one end of the latter. The loop 7 is preferably made of an elastic wire and, in order to render the same sufficiently flexible for the purposes of the present invention, it is extended at its ends to provide portions 9 normally lying flat upon the upper face of the bar and having their ends passed through perforations in the bar and turned over on the lower face of the same into small longi-

tudinal grooves 10 provided for the purpose. It will be noted that when the pressure bar 6 is at the upper limit of its movement its side edges lie in contact with the inner circumferential wall of the barrel at portions disposed at either side of the slot 3. When the lever is in closed position, as shown in full lines in Fig. —1—, the pin 8 serves to distort the loop of wire 7 on the bar, including one of the end portions 9 thereof, thus yieldingly forcing the bar more firmly into contact with the inner circumferential wall of the barrel at portions disposed at either side of the slot 3. When the lever is in closed position, as shown in full lines in Fig. —1— the pin 8 serves to distort the loop of wire 7 on the bar, including one of the end portions 9 thereof, thus yieldingly forcing the bar more firmly into contact with the inner circumferential wall of the barrel and tending to normally hold the lever in the position shown in dotted lines in Fig. —1—. When the lever is turned from the position shown in Fig. —1— through an arc of about ninety degrees the pressure bar 6 will be moved diametrically of the barrel to collapse the sack. At this time the pin 8 will be disposed at the opposite end portion of the loop 7 from that in which it lies when the lever is closed, said end of said loop constituting a stop to limit the opening movement of the lever. The latter will now be held in the vertical position until manually turned through an arc of substantially twenty or thirty degrees toward closed position; whereupon the expansive force of the sack will draw it back to the position substantially as shown in dotted lines in Fig. —1—.

The slot 3 is of greater length than the lever 4 and in one end thereof there is mounted a sliding latch member 11 consisting of a U-shaped member having a top wall disposed flush, or substantially flush, with the outer circumferential wall of the barrel, and having two parallel side flanges extending into the slot. The top wall of said member 11 is projected beyond the ends of the flanges and bent downwardly to form a sharp lip 12 which is adapted to engage in the recess 13 in the opposed ends of the flanges of the lever 4. In the flanges 14 of the member 11 are longitudinal slots 15 through which a pin 16 passes; the latter spanning the slot. The rear end portion of the member 11 is further provided with a closure element 17 preferably consisting of a flange disposed at the inner edge of one of the flanges 14, and bent over at right angles thereto into contact with the opposite flange. The said closure member 17 terminates in a lip 18 extending upwardly between the flanges 14 and preferably intersecting the slots 15. This said closure member 17 and the top wall of the member 11

terminate in rearwardly extending projections 19 and 20 which extend beyond the ends of the flanges 14. The projection 19 engages in a longitudinal recess 21 in the outer circumferential wall of the barrel constituting what may be termed an extension of the slot 3. The projection 20 engages the inner circumferential wall of the barrel and coacts with the projection 19 and the slots 15 and pin 16 to guide the member 11 in its longitudinal movements in the slot. A spring 22 is interposed between the lip 18 and the contiguous end wall of the slot 3 and serves to normally hold the member 11 in the position shown in full lines in Fig. —1—.

The recesses 13 in the flanges at the contiguous end of the lever 4 present shoulders 23 which are parallel with the axis of the barrel 1 and below said shoulders 23 are inclined surfaces 24 which are adapted to engage the inclined outer face of the lip 12 as the lever 4 is forced toward its closed position to effect retraction of the member 11 against the action of the spring 22 until the meeting surfaces of the shoulder 23 and inclined portions 24 have passed the forward edge of the lip 12 whereupon the spring 22 will cause the member 11 to move to the position shown in Fig. —1— to positively lock the lever 4 in its closed position. In the outer circumferential wall of the barrel there is provided a transverse recess 25 and in the top wall of the member 11 is a transverse slot 26 which is disposed between the ends of the recess 25 when the member 11 is in the position shown in full lines in Fig. —1—. A finger nail is adapted to be inserted into the slot 26, and the member 11 moved against the action of the spring 22 to release the lever. Thereupon the lever will automatically move to the position shown in dotted lines in Fig. —1—, thus permitting the same to be readily engaged by the finger-nail or finger-tip for turning said lever through the aforesaid arc of about ninety degrees to effect complete collapse of the ink reservoir 2.

When the lever 4 is in closed position, as shown in full lines in Fig. —1— the space between the outer inclined surface of the lip 12 and the opposed end portion of the lever 4 there will be no space between said surfaces sufficient to permit a fingernail to be inserted; thus preventing the lever from being forcibly moved to open position by distorting or bending the lip 12.

In assembling the pens it sometimes happens that the pivot pin 5 is not quite accurately positioned, that is to say, said pin may be moved a few thousandths of an inch to either side of its intended position by improperly drilling the holes in the barrel to receive the same. This is also true with respect to the position of the pin 16. Accordingly, it may happen that some adjust-

ment is required, and I provide means for effecting such adjustment by rendering the lip 12 bendable to a limit extent, and further by enabling the lip 18 to be bent to either side of the position shown in Fig. —1—, thus varying the position of the latch member with respect to the end of the lever so as to effect an accurate fit such as is shown in Fig. —1—. Said lip 18 constitutes an adjustable stop-formation coacting with the pin 16 to determine the normal position of the member 11.

While I have shown the preferred embodiment of the invention in the accompanying drawings, it will be understood, of course, that the same may be changed and varied in immaterial details as mechanical skill may dictate without departing from the invention as defined in the appended claims.

I claim as my invention:

1. In a self-filling fountain pen including a barrel, having a longitudinal slot, a collapsible ink-reservoir within the barrel, a pressure bar within the barrel, a lever pivotally mounted between its ends in the slot in the barrel, one end of the lever engaging the pressure bar for moving the latter diametrically of the barrel as said lever is turned from closed to open position, a manually operable plunger slidably mounted within one end of the slot, and interengaging formations on said plunger and one end of said lever for locking the latter against movement relatively to the barrel when in its closed position.

2. In a self-filling fountain pen including a barrel, having a longitudinal slot, a collapsible ink-reservoir within the barrel, a pressure bar within the barrel, a lever pivotally mounted between its ends in the slot in the barrel, one end of the lever engaging the pressure bar for moving the latter diametrically of the barrel as said lever is turned from closed to open position, a spring-held manually releasable latch element movably mounted in one end of said slot, and coacting formations on said latch element and one end of said lever for automatically engaging said element with said lever as the latter is forced to its closed position for automatically positively locking said lever against movement until said element is manually released from engagement with said lever.

3. In a self-filling fountain pen including a barrel, having a longitudinal slot, a collapsible ink-reservoir within the barrel, a pressure bar within the barrel, a lever pivotally mounted between its ends in the slot in the barrel, one end of the lever engaging the pressure bar for moving the latter diametrically of the barrel as said lever is turned from closed to open position, a spring-held latch plunger mounted to reciprocate in one end of said slot for auto-

matically engaging one end of said lever to lock the same in its closed position as said lever is forced thereto against the resistance of said plunger.

4. In a self-filling fountain pen including a barrel, having a longitudinal slot, a collapsible ink-reservoir within the barrel, a pressure bar within the barrel, a lever pivotally mounted between its ends in the slot in the barrel, one end of the lever engaging the pressure bar for moving the latter diametrically of the barrel as said lever is turned from closed to open position, a manually operable plunger slidably mounted within one end of the slot, interengaging formations on said plunger and one end of said lever for locking the latter against movement relatively to the barrel when in its closed position, the engagement of said bar with said lever including means coacting with the bar and the inner wall of the barrel for yieldingly resisting closure of the lever and automatically partially opening the same as it is released from engagement with said plunger.

5. In a self-filling fountain pen including a barrel, having a longitudinal slot, a collapsible ink-reservoir within the barrel, a pressure bar within the barrel, a lever pivotally mounted between its ends in the slot in the barrel, one end of the lever engaging the pressure bar for moving the latter diametrically of the barrel as said lever is turned from closed to open position, a spring-held manually releasable latch element movably mounted in one end of said slot, and coacting formations on said latch element and one end of said lever for automatically engaging said element with said lever as the latter is forced to its closed position for automatically positively locking said lever against movement until said element is manually released from engagement with said lever, the engagement of said bar with said lever including means coacting with the bar and the inner wall of the barrel for yieldingly resisting closure of the lever and automatically partially opening the same as it is released from engagement with said latch element.

6. In a self-filling fountain pen including a barrel, having a longitudinal slot, a collapsible ink-reservoir within the barrel, a pressure bar within the barrel, a lever pivotally mounted between its ends in the slot in the barrel, manually releasable means for positively locking the lever in its closed position, and connection between one end of said lever and said pressure bar for reciprocating the latter diametrically of the barrel as said lever is turned from closed to open position and vice versa, said connection including means coacting with the bar and the inner wall of the barrel for yieldingly resisting closure of the lever and automatically

partially opening the same as it is released preparatory to turning the same to effect collapse of the ink reservoir.

7. In a self-filling fountain pen including
 5 a barrel, having a longitudinal slot, a col-
 lapsible ink-reservoir within the barrel, a
 pressure bar within the barrel, a lever piv- 60
 otally mounted between its ends in the slot
 in the barrel, manually releasable means for
 10 positively locking the lever in its closed po-
 sition, an elastic loop on the bar, a pin in one
 end of said lever passing through said loop
 for effecting a sliding connection between the
 bar and lever for reciprocating said bar dia- 70
 15 metrically of the barrel as said lever is
 turned through an arc approximating ninety
 degrees, said bar adapted to engage the in-
 ner wall of the barrel before said lever at-
 tains its closed position and said loop adapt- 75
 ed to yield as said lever is forced to closed
 20 position to cause the bar to firmly engage
 the inner wall of the barrel and to automati-
 cally effect partial opening of the lever as
 the latter is released from said locking
 25 means.

8. In a self-filling fountain pen including
 a barrel, having a longitudinal slot, a col-
 lapsible ink-reservoir within the barrel, a
 pressure bar within the barrel, a lever piv- 30
 otally mounted between its ends in the slot
 in the barrel, one end of the lever engaging
 the pressure bar for moving the latter dia-
 metrically of the barrel as said lever is
 turned from closed to open position, a man- 35
 ually operable plunger slidably mounted
 within one end of the slot, interengaging
 formations on said plunger and one end of
 said lever for locking the latter against move- 40
 ment relatively to the barrel when in its
 closed position, said plunger adapted to pre-
 vent digital engagement of the lever when
 the latter is in closed position.

9. In a self-filling fountain pen including
 45 a barrel, having a longitudinal slot, a col-
 lapsible ink-reservoir within the barrel, a
 pressure bar within the barrel, a lever piv-
 otally mounted between its ends in the slot
 in the barrel, one end of the lever engaging
 the pressure bar for moving the latter dia- 50
 metrically of the barrel as said lever is
 turned from closed to open position, a spring-
 held manually releasable latch element movably
 mounted in one end of said slot, and coact-
 ing formations on said latch element and one
 55 end of said lever for automatically engaging

said element with said lever as the latter is
 forced to its closed position for automatically
 positively locking said lever against move-
 ment until said element is manually released
 from engagement with said lever, said 60
 manually releasable means adapted to pre-
 vent digital engagement of the lever when
 the latter is in closed position.

10. In a self-filling fountain pen including
 a barrel, having a longitudinal slot, a col- 65
 lapsible ink-reservoir within the barrel, a
 pressure bar within the barrel, a lever piv-
 otally mounted between its ends in the slot
 in the barrel, one end of the lever engaging
 the pressure bar for moving the latter dia- 70
 metrically of the barrel as said lever is
 turned from closed to open position, a spring-
 held manually releasable latch element mov- 75
 ably mounted in one end of said slot, coact-
 ing formations on said latch element and one
 end of said lever for automatically engaging
 said element with said lever as the latter is
 forced to its closed position for automatically
 positively locking said lever against move- 80
 ment until said element is manually released
 from engagement with said lever, and means
 associated with one of said elements and a
 part rigid with the barrel for effecting ad-
 justment of said coacting formations with 85
 respect to each other to insure inter-engage-
 ment thereof as said lever is closed.

11. In a self-filling fountain pen includ-
 ing a barrel, having a longitudinal slot, a col- 90
 lapsible ink-reservoir within the barrel, a
 pressure bar within the barrel, a lever piv-
 otally mounted between its ends in the slot
 in the barrel, one end of the lever engaging
 the pressure bar for moving the latter dia- 95
 metrically of the barrel as said lever is
 turned from closed to open position, a spring-
 held manually releasable latch element mov-
 ably mounted in one end of said slot, coact-
 ing formations on said latch element and
 one end of said lever for automatically en- 100
 gaging said element with said lever as the
 latter is forced to its closed position for
 automatically positively locking said lever
 against movement until said element is
 manually released from engagement with
 said lever, and bendable means on one of 105
 said parts in said slot for effecting adjust-
 ment thereof to insure their inter-engage-
 ment to lock said lever as the latter is
 closed.

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