

UNITED STATES PATENT OFFICE.

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SELF-FILLING FOUNTAIN-PEN.

1,281,194.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANK H. MOONEY, a 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 Self-Filling Fountain-Pens; and I do 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 that class of fountain pens in which the ink reservoir comprises a flexible tube which is compressed to exclude the air and is permitted to expand and draw in a supply of ink, and the invention relates more particularly to the actuating lever for the reservoir compressor.

The object of the invention is to provide a simply constructed and efficient operating lever for the compressor bar of a fountain pen which when in closed position, will be securely locked against accidental opening and the consequent depression of the compressor bar.

With the above and other objects in view, the invention consists of certain novel features of construction and combination hereinafter more fully described and claimed.

In the accompanying drawings:—

Figure 1 represents a plan view of a fountain pen equipped with this improvement;

Fig. 2 is a longitudinal section thereof showing the compressor bar actuating lever in closed locked position;

Fig. 3 is a similar view, the tongue of said lever in the act of being depressed to disengage the free end thereof from the forward end of the slot;

Fig. 4 is a similar view showing the lever in the position it assumes after said tongue has been disengaged from the wall of the slot, said lever being tilted for compressing the reservoir;

Fig. 5 is a similar view showing the lever in raised position which it assumes when the reservoir has been compressed.

Fig. 6 is a similar view showing the lever in the position which it assumes during the closing movement and just prior to the engagement of the front end of the tongue with the front end of the slot, said tongue being bent for this purpose;

Fig. 7 is a transverse section taken on the line 7—7 of Fig. 2;

Fig. 8 is a similar view taken on the line 8—8 of Fig. 2;

Fig. 9 is a detail perspective view of the compressor bar showing this improved actuating lever connected therewith;

Fig. 10 is a detail transverse section showing a slightly modified form in which a wearing plate is placed in the front end of the slot.

In the embodiment of the invention illustrated in the drawings, 1 denotes the usual barrel or casing, 2 the pen point holding member, and 3 the ink reservoir usually in the form of an elastic rubber tube or bag. The latter is compressed by any suitable compressing member 4 which is actuated by a lever 5. While any suitable form of compressing device may be used in carrying out my invention, the form here shown consists of a bar or plate extending longitudinally alongside of the ink reservoir within the casing and having a suitable loose pivotal connection with the operating lever, whereby when the latter is moved to operative position, the compressor bar will uniformly compress the reservoir substantially from end to end; and when the lever is moved to its closed or normal position, the compressor bar will be lifted off of the elastic ink reservoir and held in retracted position so that the reservoir will be free to suck in ink in the filling operation.

The lever 5 may be varied in form and fulcrumed in any suitable manner to the casing so that it has a free end to move toward and from the casing and an end portion or member 6 to enter through a longitudinal slot 7 formed therein when it is desired to actuate the compressor 4. My invention contemplates broadly a locking arrangement between the member 6 and some part of the casing 1, preferably one wall of the slot 7 whereby the lever when in closed position, will be retained and locked in such position against casual movement which would result in the discharge of ink from the pen point when that is not desired. In the specific embodiment of the lever and its locking mechanism illustrated in the accompanying drawings, the locking member 6 is shown in the form of a resilient arm or tongue carried by and preferably forming an integral portion of the body part of the lever and adapted for interlocking engagement with the front flat end

wall 8 of the slot 7, although such locking engagement between the member 6 and the casing 1 may be carried out in other ways. In this specific embodiment, I have also shown the main portion of the lever of U-shape and it is also preferably but not necessarily made crescent shape to give it strength and to add to its ornamental qualities. When made in this manner, it closely hugs the curved exterior of the cylindrical casing or barrel 1 when the lever is in its closed position shown at Fig. 1. It is to be noted that the main portion or body of the lever is U-shaped when viewed from the top as in Fig. 1 and it is also curved transversely so that it is U-shaped when viewed from the end as in Fig. 8. When viewed in side elevation as in Fig. 5, the lever body with its tongue or extension 6 is substantially V-shaped and this construction enables more effective spring action to be obtained than would be the case if the pivotal axis of the lever was closer to the longitudinal axis of the tongue 6.

The pivotal mounting of the tapered and curved ends 9 of the lever is preferably effected by forming their extremities with in-turned pivots 10 to be sprung into holes 11 drilled at suitable points, preferably at diametrically opposite points in the casing 1 in rear of the front end of the slot. When the locking member or tongue 6 is made of sheet metal and integral with the body portion of the lever, it is channeled in cross section as shown in Fig. 8 to give it strength and it projects from the center of the concaved edge of the crescent-shaped body. When the lever is in closed position, the locking member or tongue 6 is disposed substantially within the slot 7 and its free end is entirely within said slot so that there is no likelihood of said end being caught upon the clothing or being casually depressed. This free end of the resilient tongue 6 is adapted to spring into engagement with the wall 8 of the slot when the lever is in closed position to effectively lock the lever in such position. When the locking engagement between the lever and the casing is effected by contact between the free end of the resilient tongue 6 and the end wall of the slot in the casing, it is essential that the distance between the pivotal axis of the lever and the end of the tongue 6 be greater than the distance between such axis and the end wall 8 of the slot 7. To permit the lever to be unlocked, the upper surface of the free end of the tongue 6 is formed with a finger-nail receiving notch 12 so that said end may be readily sprung downwardly to disengage it from and cause it to move out of the slot and into the casing to the position shown in Fig. 4.

The loose connection between the lever and the compressor bar 4 is here shown in

the form of a link or hook and eye connection and is detachable to permit the parts to be assembled as hereinafter explained. This connection is arranged at a slight distance from the extremity of the tongue 6 and is preferably effected by forming short integral arms on opposite edges of the tongue and bending them downwardly and inwardly into engagement as shown in Fig. 7 to form an eye or loop 13. The latter is engaged by a loop or hook-shaped end 14 of a spring strip or plate 15 riveted or otherwise suitably secured at its opposite end as at 16 to the compressor bar 4. This connection is also preferably arranged midway the length of the bar 4 so that the pressure which it exerts on the ink reservoir will be substantially uniform throughout its length.

The end wall 8 of the slot 7 may be provided with a metallic wear plate 17 which as shown in Fig. 7, is U-shape and made of resilient metal with a thickened portion or enlargement 18 at one end to spring into a suitable depression in the casing 1, whereby the wear plate will be retained in position.

In assembling the parts, a suitable instrument is inserted under the resilient hook or loop 14 to hold its end off of the bar 4 and the bar is then inserted in the open end of the pen casing. The member or tongue 6 of the lever is then inserted through the slot 7 so that its eye 13 may be engaged with the hook 14, whereupon the instrument is removed to permit said bar 4 to spring to its closed position, thereby loosely linking or connecting the compressor to the lever. When this has been done, the pivots 10 may be sprung into the openings or sockets 11.

In the operation of this device, when the parts are in the position shown in Figs. 1 and 2 and it is desired to depress the lever for compressing the reservoir 3, pressure must be exerted on the free end of the tongue 6 of said lever which will cause said lever to bend into the position shown in Fig. 3 and thus permit the free end to be sprung out of engagement with the front end of the wall of the slot 7 into the position shown in Fig. 4 and the rear end of the lever may then be readily raised by inserting the finger-nail under the rear portion thereof and turning it on its pivots into the position shown in Fig. 5, whereby the reservoir may be compressed for forcing out air and ink contained therein in the usual manner. After this has been accomplished and it is desired to close the lever to raise the compressor bar and permit the expansion of the reservoir, pressure is exerted on the rear end of said lever to force it downwardly and to raise the tongue 6 thereof into normal locking position. When the free end of said tongue engages the lower edge of the front end of the slot 7, said lever is bent longitudinally into the position shown in Fig. 6,

owing to the fact that the distance between the pivotal axis of the lever and the free end of the tongue is longer than the distance from the front end of the slot 7 to said axis or fulcrum of the lever with the casing. When said end passes beyond the slot end 8, the tongue will spring up into the slot owing to the resilient material from which it is composed and the free end of the tongue abutting against the front end of the slot as shown in Fig. 2 will reliably lock said lever in closed position and prevent all possibility of its being again opened until sufficient pressure is exerted on the free end of the tongue to force it into the casing out of engagement with the end wall of the slot. When said lever is locked in this position, it will be obvious that the compressor bar connected therewith will be raised into close engagement with the casing 1 and held securely thereagainst and thus all danger of the reservoir being accidentally compressed is avoided.

While I have shown and described in detail, one specific embodiment of the invention, I wish it understood that I do not restrict myself to the specific details set forth, since changes may be made within the spirit and scope of my invention.

I claim as my invention:—

1. A fountain pen including a casing having a slot, a lever fulcrumed to the casing and having a free end movable toward and from said casing, a resilient locking member carried by the lever and movable into the casing through said slot, said member having a resilient locking engagement with said casing on the closing of the lever by the sole means of which said lever is retained in its closed position.

2. A fountain pen including a casing having a slot, a lever fulcrumed to the casing and having a free end movable toward and from the casing, and a resilient locking member carried by the lever and movable into the casing through said slot, said member when in normal position being disposed in said slot and having a locking engagement with one wall thereof by the sole means of which said lever is retained in its closed position.

3. A fountain pen including a casing having a slot, a substantially U-shaped lever having the ends of its arms fulcrumed on the casing, the cross or intermediate portion of the U-shaped lever being movable toward and from the casing and a resilient member carried by said intermediate part of the lever and movable with the same, said member being adapted to enter the casing through said slot and to be positioned in the same in locking engagement with one of its walls to lock the U-shaped lever in its normal closed position against the exterior of the casing.

4. A fountain pen including a casing having a slot, a lever of substantially V-shape when viewed in side elevation and having one of its extremities fulcrumed to the casing and its other extremity forming a tongue which is movable into the casing through said slot, the last mentioned end or tongue of the lever being resilient and having a locking engagement with the casing when the lever is in its closed position, whereby the latter will be retained in such position.

5. A fountain pen including a casing having a slot, one end wall of the latter being flat, a lever fulcrumed to the casing and having a free end movable toward and from the casing, and an outwardly bowing resilient locking member carried by the lever and movable into the casing through said slot, the free end of said resilient member springing into engagement with the flat end wall of the slot when the lever is in its closed position, by the sole means of which the latter is locked in such position.

6. A fountain pen including a casing having a slot, one end wall thereof being disposed at right angles to the inner and outer faces of the casing, a lever fulcrumed to the casing and having a free end movable toward and from the casing, and a resilient outwardly bendable locking member carried by the lever and movable into the casing through said slot, the distance between the end of said locking member and the pivotal axis of the lever, being longer than the distance between said axis and the right angular end wall of the slot in the casing with which the free end of said locking member is sprung into engagement when the lever is closed and which constitutes the sole means of locking said lever in closed position.

7. A fountain pen including a casing having a slot, an elastic reservoir in the casing, a compressor bar for the reservoir, a lever fulcrumed to the casing and having a free end movable toward and from the same, a resilient locking member carried by the lever and movable into the casing through said slot, and a loose connection between said compressor bar and said locking member, the distance between the free end of the latter and the pivotal axis of the lever being greater than the distance between said axis and one end wall of the slot in the casing, whereby when said lever is moved to its closed position, the resilient locking member will spring into the slot in locking engagement with said end wall and the compressor bar will be held in retracted position.

8. A fountain pen including a casing having a slot therein, a member curved to conform to the transverse curvature of said casing and pivotally connected thereto at diametrically opposite points in rear of the

front end of the slot, and a resilient tongue positioned in said slot, and projecting from the member, the distance between the free end of said tongue and the pivotal axis of the member being longer than the distance between said axis and the front end of the slot in the casing.

9. A fountain pen including a casing having a slot therein, a member pivotally connected at diametrically opposite points to said casing on opposite sides of said slot and in rear of the front end thereof, and a resilient tongue extending forwardly from said member in position to enter said slot, the distance between the free end of said member and the pivotal axis of the member being greater than the distance from said axis to one end wall of the slot.

10. A fountain pen including a casing having a longitudinally extending slot therein, an elastic reservoir in said casing, a compressor bar disposed between said reservoir and casing, a substantially U-shaped lever pivoted at its free ends to said casing on opposite sides of said slot and curved to conform to the curvature of said casing, a resilient tongue extending longitudinally from the inner edge of the cross bar of said lever, the distance between the free end of said lever and the pivotal axis of the lever being greater than the distance from said axis to one end wall of the slot.

11. A fountain pen including a casing having a longitudinally extending slot therein, an elastic reservoir in said casing, a compressor bar disposed between said reservoir and casing, a substantially U-shaped lever pivoted at its ends to said casing on opposite sides of said slot and curved to conform to the curvature of said casing, a resilient tongue extending longitudinally from the inner edge of the cross bar of said lever, the distance between the free end of said lever and the pivotal axis of the lever being greater than the distance from said axis to one end wall of the slot, and a loose connection between said tongue and said compressor bar.

12. A fountain pen including a casing having a longitudinally extending slot therein, an elastic reservoir in said casing, a compressor bar disposed between said reservoir and casing, a substantially U-shaped lever pivoted at its ends to said casing on opposite sides of said slot and curved to conform to the curvature of said casing, a resilient tongue extending longitudinally from the inner edge of the cross bar of said lever, the distance between the free end of said lever and the pivotal axis of the lever being greater than the distance from said axis to one end wall of the slot, and a detachable connection between said tongue and said compressor bar.

13. A fountain pen including a casing hav-

ing a longitudinally extending slot therein, an elastic reservoir in said casing, a compressor bar disposed between said reservoir and casing, a substantially U-shaped lever pivoted at its ends to said casing on opposite sides of said slot and curved to conform to the curvature of said casing, a resilient tongue extending longitudinally from the inner edge of the cross bar of said lever, the distance between the free end of said lever and the pivotal axis of the lever being greater than the distance from said axis to one end wall of the slot, an eye on the free end of said tongue, and a loop on said bar between its ends for engagement with said eye.

14. A fountain pen including a casing having a longitudinally extending slot therein, an elastic reservoir in said casing, a compressor bar disposed between said reservoir and casing, a substantially U-shaped lever pivoted at its ends to said casing on opposite sides of said slot and curved to conform to the curvature of said casing, a resilient tongue extending longitudinally from the inner edge of the cross bar of said lever, the distance between the free end of said lever and the pivotal axis of the lever being greater than the distance from said axis to one end wall of the slot, an eye on the free end of said tongue, and a resilient loop on said bar laterally movable in relation thereto for detachable engagement with said eye.

15. A fountain pen including a casing having a longitudinally extending slot therein, an elastic reservoir in said casing, a compressor bar disposed between said reservoir and casing, a substantially U-shaped lever pivoted at its free ends to said casing on opposite sides of said slot and curved to conform to the curvature of said casing, a resilient tongue extending longitudinally from the inner edge of the cross bar of said lever, the distance between the free end of said lever and the pivotal axis of the lever being greater than the distance from said axis to one end wall of the slot, an eye on the free end of said tongue, a spring strip secured at one end to the outer face of said bar and having a loop at its free end for engagement with the eye on said tongue.

16. A compressor bar actuating lever for self-filling fountain pens comprising a crescent-shaped member curved transversely into substantially U form and having a tongue extending from the center of its concaved edge and pivot means carried by the arms of its crescent-shaped portion.

17. A compressor bar actuating lever for self-filling fountain pens comprising a U-shaped member having a tongue extending from the inner edge thereof, the ends of said member being bent laterally inward to form pivots therefor.

18. A fountain pen including a casing hav-

ing a slot, a lever of substantially V-shape when viewed in side elevation and having one of its extremities fulcrumed to the casing and its other extremity forming a tongue
 5 which is movable into the casing through said slot, the distance between said extremities being greater than the distance between the pivoted extremity and the front end of the slot whereby effective spring action is
 10 obtained to hold the terminal of said tongue in locking engagement with the front end of the slot when the lever is in closed position.

19. A compressor bar actuating lever for fountain pens having a body portion, a pair
 15 of longitudinally curved arms projecting transversely from the body portion and in opposite directions, and pivot means on said arms and arranged in axial alinement.

20. In a fountain pen, a barrel having an opening in the side thereof, a reservoir compressing bar disposed in said barrel, a lever
 20 fulcrumed to said barrel to one side of said slot and having an end for projecting there-through and acting on said bar to compress
 25 it when the lever is moved from its inoperative position, the axis of the lever fulcrum being offset transversely with respect to the longitudinal axis of the lever and intersecting the longitudinal axis of the barrel.

30 21. In a fountain pen, a barrel having an opening in the side thereof, a reservoir compressing bar disposed in the barrel, an angled lever pivoted at one end to the barrel and having its other end adapted, when the
 35 lever is rocked in one direction, to project through said opening and impart compress-

ing movements to said bar, the axis of the lever fulcrum intersecting the longitudinal axis of the barrel.

22. In a fountain pen, a barrel having an opening in the side thereof, a compressing
 40 bar actuating lever of angled form pivoted at one end to the barrel and having its other end positioned to swing through said opening into the barrel when the lever is
 45 rocked from its normal inoperative position and also adapted to coact with a wall of said opening to releasably retain the lever in inoperative position, the axis of the lever fulcrum intersecting the longitudinal axis of
 50 the barrel.

23. In a fountain pen, a barrel having an opening in the side thereof, a pressure bar depressing lever of angled form pivoted at
 55 one end to said barrel and having its other end positioned to swing into and out of the barrel through said opening when the lever is rocked, said free end of the lever when in normal inoperative position having end-thrust contact with a registering wall of said
 60 opening to prevent a movement of the lever from inoperative position until its free end has been sprung inward out of end-thrust contact with the opening wall.

In testimony whereof I have hereunto set
 65 my hand in presence of two subscribing witnesses.

FRANK H. MOONEY.

Witnesses:

J. A. GRIESBAUER,
 C. A. GIOVANNETTI.