

F. RIESENBERG.
SELF FILLING FOUNTAIN PEN.
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Patented Apr. 25, 1916.

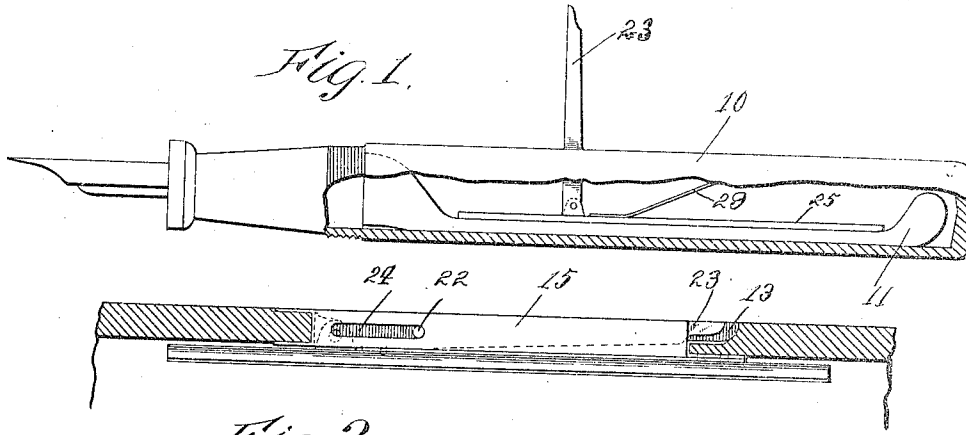
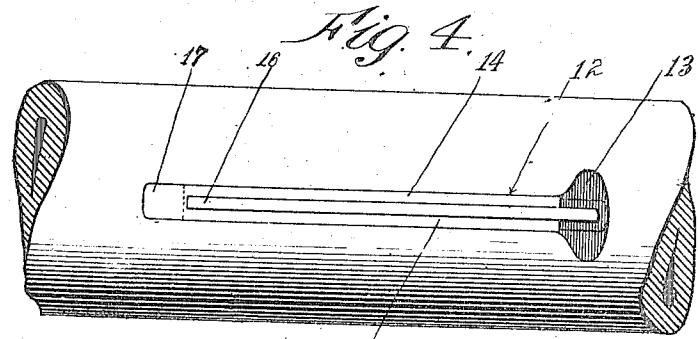
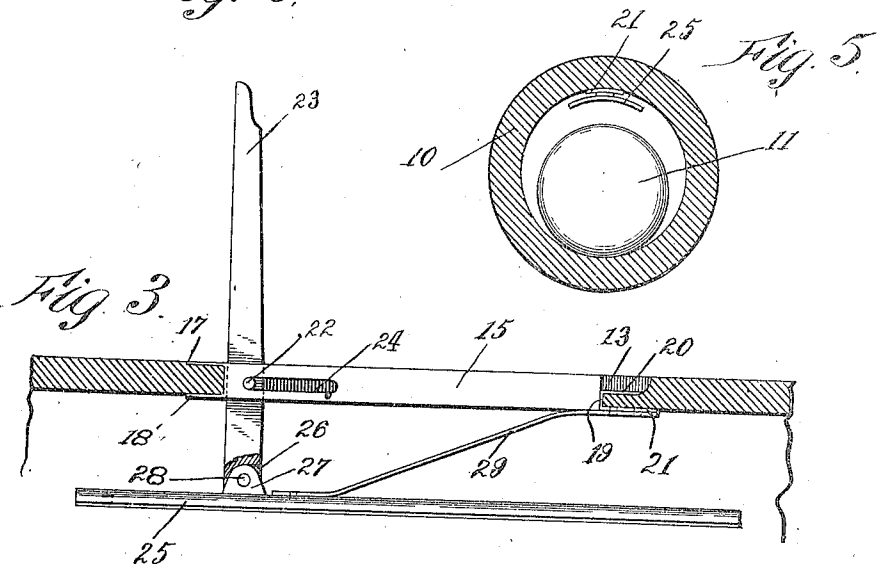


Fig. 2.



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UNITED STATES PATENT OFFICE.

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SELF-FILLING FOUNTAIN-PEN.

1,180,946.

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To all whom it may concern:

Be it known that I, FELIX RIESENBERG, a citizen of the United States, residing in borough of Queens, city, county, and State of New York, have invented certain new and useful Improvements in Self-Filling Fountain-Pens, of which the following is a full and clear specification.

My invention relates in general to self-filling attachments for fountain pens and more particularly to that class of self-fillers in which an operating lever projecting through the barrel of the fountain pen actuates a presser bar to collapse a flexible tube forming the ink reservoir. In such filling attachments it is desirable to have the attachment as inconspicuous as possible, while at the same time consuming as little of the interior space of the pen barrel as possible and lying snugly within the contour of the pen barrel when in normal position.

The object of my invention is to provide a self-filler attachment in which direct movement of a presser bar toward and away from the collapsible ink reservoir is accomplished in a positive and efficient manner without undue obstruction of the reservoir space during normal use of the pen and without disfiguring the appearance of the pen.

A further object is to provide a device which possesses ample strength and is not liable to get out of repair or break the pen barrel.

A still further object is to provide a device of this character, which can be readily inserted, as a unit, in a pen barrel suitably provided for its reception and one in which the operating lever will be provided with a positive stop or limit of movement in tube collapsing position to prevent injury to the tube and which, on the other hand, will be normally maintained within the contour of the pen barrel and not subject to accidental operation.

I accomplish this and other objects of the invention by providing a frame in which the fulcrum pin of the operating lever is adapted to slide, the swinging motion of the lever taking place about a pivotal connection of the inner end of the operating lever with the presser bar, a resilient limit piece serving to confine the movement of the inner end of the lever substantially to a di-

rection at right angles to the frame, while at the same time serving to restore the lever to normal position and maintain it normally within the contour of the pen barrel. The fulcrum of the operating lever slides preferably within a longitudinal slot formed in the frame referred to and the downward movement of the inner end of the lever is limited by the arrival of the fulcrum pin against the end of this slot or by engagement of the fulcrum portion of the lever against a portion of the frame for this purpose. In this position the resilience of the limit piece operates against a dead center so that the elastic ink reservoir remains collapsed until the outer end of the lever is engaged by the operator and the lever is swung in the direction of normal position past the dead center, whereupon the resilient limit piece completes the return of the lever. The parts are all so connected together that the device may be inserted as a unit in a pen barrel, which is provided with a longitudinal slot for the reception of the frame.

An embodiment of the invention is illustrated in the accompanying drawing in which—

Figure 1 is a side elevation of parts broken away, illustrating the complete device in tube collapsed position; Fig. 2 is a sectional elevation of the attachment in normal position; Fig. 3 is a similar view with the parts in tube collapsed position; Fig. 4 is an outside detail view illustrating the pen barrel with the parts mounted therein in normal position, and Fig. 5 is a transverse section of the entire device in normal position.

Referring more specifically to said drawing, 10 indicates the pen barrel and 11 the collapsible elastic sack, forming the ink reservoir. The barrel 10 is slotted longitudinally at 12, the slotted portion having an enlarged finger space 13 at its rear end. The fountain pen in this form is now ready for the reception of the self-filling attachment.

The several elements of the filling attachment are joined together, so as to be inserted as a complete unit into the slotted pen barrel. This unit comprises a frame having side bars 14 and 15, united and spaced apart at their forward end by a web or wall 16 having forwardly projecting upper and lower plate 17, 18, and at their rear ends by a web or wall 19 having rearwardly pro-

jecting upper and lower plates 20, 21. The web or wall 19 at the rear of the frame does not extend to the upper surface of the side bars 14, 15, but terminates about midway between the bottom and top of the frame and from this midway around the upper plate 20 projects. Upper plates 17 and 20 are initially erect, so as to permit the frame to be inserted into the slot of pen barrel 10, after which they are turned down flat, as shown clearly in Figs. 2 and 3, whereby the frame is secured to the pen barrel. The side bars 14, 15 are formed to accommodate a longitudinal movement of the fulcrum pin 22 of an operating lever 23. The preferred form of this connection comprising longitudinal slots 24 in the bars 14, 15, in which the fulcrum 22 of lever 23 can slide fore and aft. The lower end of operating lever 23 is suitably connected with a presser bar 25, as by means of the bifurcated end 26 of lever 23 and the ear 27 of bar 25, inserted in said bifurcated end of lever 23 and secured therein by pivot pin 28. To confine the movement of presser bar 25 to a direction at right angles to the ink reservoir and to the filler frame, I provide a distance piece 29, which in the present instance is secured at its rear end to plate 21 and at its forward end to the presser bar 25. This distance piece 29 thus maintains the movement of the pivot pin 28 to substantially an up and down movement and about this point the lever 23 swings, its fulcrum pin 22 moving from one end of slot 24 to the other. It will be apparent that when the fulcrum pin 22 is at the rear end of slot 24, the lever 23 will lie flat within the contour of the pen barrel, with the presser bar 25 raised into its uppermost position. This constitutes the normal position of the device. In order to positively return and normally retain the parts in this position I prefer to form the limit piece 29 as a yielding spring member tending to assume a position flat against the under side of the side bars 14 and 15. The limit piece 29 thus performs a double function. When the parts are in the position shown in Fig. 3, with the presser bar 25 depressed and the fulcrum 22 at the forward end of the slot 24 the lever 23 is in a position of dead center, so that the return tendency of distance piece 29 is effective only to hold the parts in that position and is unable to initiate the return movement of the parts into normal position. This movement is started by the operator swinging the upper end of lever 23 toward the rear, whereupon the pressure of the fulcrum pin 22 against the upper wall of slot 24 is directed at an incline to the slotted wall and the parts snap back into normal position under the influence of the leaf spring 29.

It will be apparent that the invention is

not limited to the two functions of leaf spring 29 being performed by a single element, although I regard this as an important specific feature of the invention in its more limited aspect.

The operation of the device will be clearly understood from the above description. The outer end of operating lever 23 normally rests within the finger opening 13, where it is readily accessible for actuation by the operator. The entire downward movement of the presser bar 25, which bears against the collapsible tube 11, containing the ink, is effected by the operator against the tension of the leaf spring 29 and the resistance of the tube 11. The air is expelled from the tube by this operation, the operator moving the lever 23 upward and forward until the fulcrum pin 22 arrives at the forward end of the slot 24 where further movement of the lever is positively arrested, so that undue pressure is positively prevented. The parts are firmly held in this position by the influence of leaf spring 29, until the operator initiates the return movement by swinging the upper end of the lever 23 toward the rear and moves the fulcrum pin 22 off the dead center, after which the spring 29 completes the return to normal position and holds the parts in that position. The spring 29, as above described, also performs the function in this embodiment of the invention of confining the movement of presser bar 25 substantially to a straight line, so that rubbing friction or longitudinal movement of bar 25 upon the tube 11 is avoided. It will be apparent that to gain a straight up and down movement of presser bar 25 from a lever action either the point of application of the lever must have a sliding engagement with the part actuated or the fulcrum of the lever must be capable of movement transversely of the direction traversed by the presser bar. Furthermore the presser bar will require some confining member to so limit its movement. By the construction selected by me, these conditions are satisfied without inducing a tilting effect in the presser bar from sliding friction, and at the same time maintain a positive connection of the actuating lever with the presser bar. The parts are all thus firmly united to act as a unit while at the same time relative motion between the various parts in the direction described is permitted. Furthermore the point of application of the lever 23 to presser bar 25 is maintained constant, and this connection can thus be more secure.

It will be understood that many of the functions performed in my improved filler are new in themselves, and that the invention is therefore not limited to the precise mechanism herein shown for accomplishing the action described.

I claim:

1. In a fountain pen, the combination of a barrel having a slot, a frame set into the slot, a lever fulcrumed in the frame, a presser bar depressed by the lever, a yielding member rigidly connected with the presser bar and with one end of the frame, and an ink sack under the presser bar. 40
2. In a fountain pen, the combination of a barrel having a slot, an ink sack in the barrel, a frame element in the slot, a presser bar element for the sack, a lever having a fixed pivotal connection with one element and a sliding pivotal connection with the other element, and a leaf spring having its ends connected with the respective elements. 45
3. In a fountain pen, the combination of a barrel, having a slot, an ink sack in the barrel, a presser bar, a frame in the slot, and two elements connected with the presser bar at points adjacent each other and connected respectively with opposite ends of the frame, one element being an operating lever for the presser bar and the other a leaf spring for restoring the presser bar and lever. 50
4. In a fountain pen, the combination of a barrel having a slot, an ink sack in the barrel, a presser bar, members lining opposite sides of the slot and each having a longitudinal slot, a lever in the slot, a fulcrum pin in the lever and slidably engaged in the slots of the members, a pivotal connection between the lever and presser bar, and a spring acting on the presser bar to restore the same. 55
5. In a fountain pen, the combination of a barrel having a slot, a frame in the slot and having lugs internally and externally engaging the barrel at the ends of the slot, a leaf spring anchored on one of the internal lugs of the frame, a presser bar to which the leaf spring is connected, an actuating device mounted in the frame and adapted to depress the presser bar, and an ink sack under the bar. 60
6. In a fountain pen, the combination of a barrel having a slot, a frame in the slot and including side members having longitudinal slots adjacent one end, a lever having a fulcrum pin disposed in the slots of the side members, said pin being so positioned that when it engages the ends of the slots the lever will engage the end of the frame, whereby the lever is arrested in a position at right-angles to the barrel, a presser bar acted on by the lever, and a sack under the presser bar and adapted to be depressed thereby. 65
7. An ink sack deflating device for fountain pens, comprising a unitary structure consisting of an open rectangular frame, a lever permanently slidably mounted in the frame, a presser bar permanently and hingedly connected with the lever, and a spring permanently connected with the frame and with the presser bar. 70
8. An ink sack deflating device for fountain pens, comprising a unitary structure consisting of an open rectangular frame, a lever slidably fulcrumed in one end of the frame, a leaf spring connected with the opposite end of the frame, and a presser bar pivotally connected with the lever and fixedly connected with the spring. 75

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Witnesses:

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