

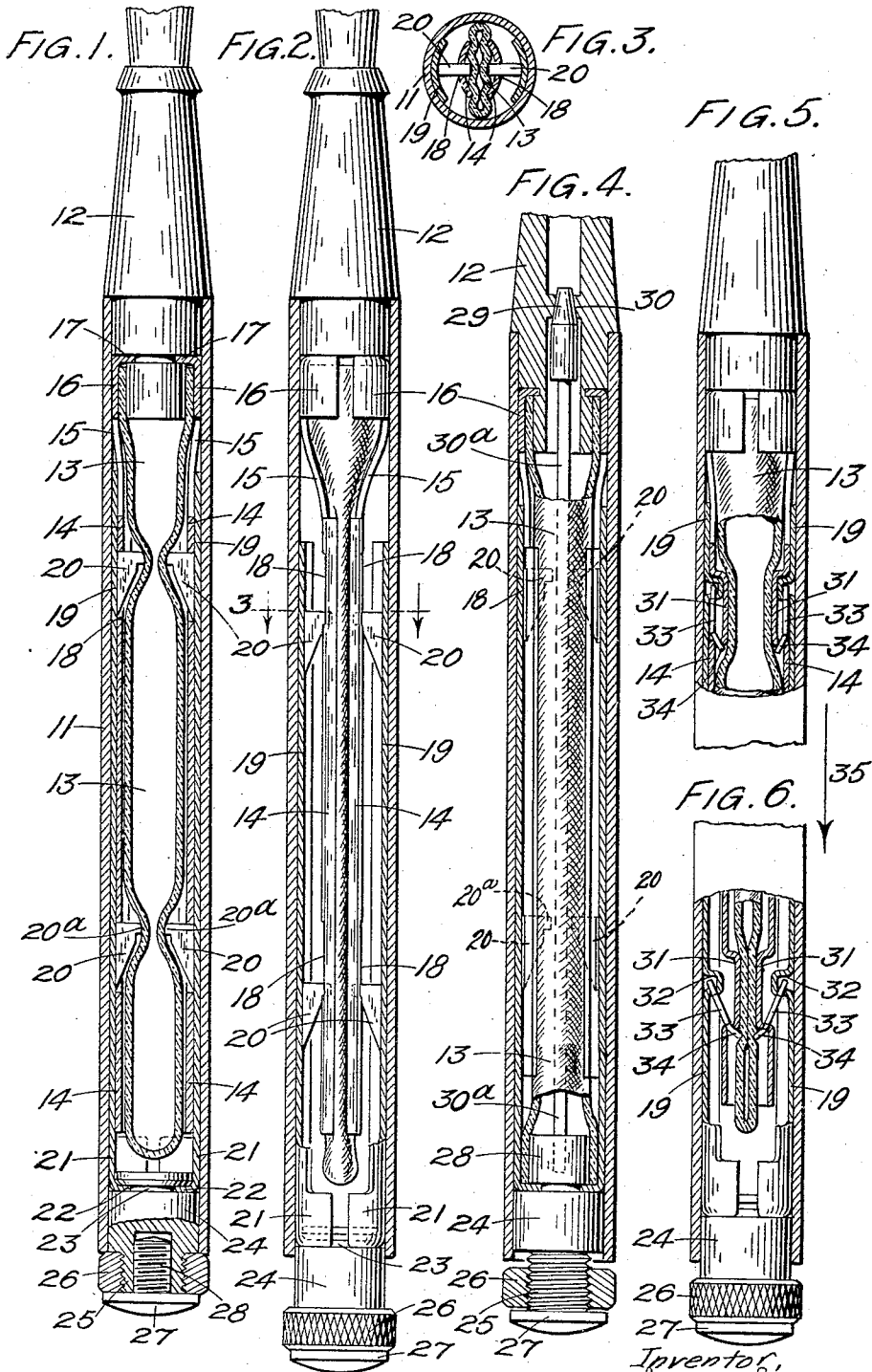
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SELF FILLING SAC PEN

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# UNITED STATES PATENT OFFICE

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## SELF-FILLING SAC PEN

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This invention has relation to reservoir pens of the self filling type in which the ink is contained in a collapsible sack which is deformed when replenishment of ink is necessary, by pressure applied through a pressure bar.

The invention further has relation to self-filling pens of the sack type in which the lateral or deforming movement of the pressure bar is effected by the longitudinal movement of an operating bar, the two bars being operatively connected together and the operating bar being actuated from, and by, a button mounted in the one end of the pen barrel.

The invention has for its object to provide improvements in self filling pens of the kind referred to, whereby certain advantages are obtained.

In a self filling pen of the kind referred to, in accordance with this invention, a pressure bar is anchored at one end within the pen barrel and an operating bar is disposed in parallel relationship therewith, interacting means comprising inclined planes being disposed between the two bars, and the operating bar being provided with means external to, and at one end of, the pen barrel to impart longitudinal movement thereto and through the inclined planes lateral movement to the pressure bar.

In one embodiment of the invention, the inclined planes are integral with or mounted on the operating bar and engage in slots in the pressure bar, the endwise movement of the operating bar causing the inclined planes as they ride up the ends of the slots to exert a lateral thrust on the pressure bar.

In order that the invention, the object and nature of which have been set forth, may be particularly described and ascertained, reference will now be made to the accompanying sheet of drawings on which three several embodiments are illustrated:—

Fig. 1 is a longitudinal sectional view of one embodiment with the parts in their normal position;

Fig. 2 a similar view to Fig. 1, but with the ink sack collapsed ready for filling; and

Fig. 3 a cross section on the line 3—3 of Fig. 2;

Fig. 4 is a longitudinal view partly in section of a second embodiment;

Fig. 5 is a sectional view of the upper part of a third embodiment with the parts in their normal positions, and

Fig. 6 is the lower part of the construction shown in Fig. 5, but with the ink sack in the collapsed condition.

Referring now to Figs. 1, 2 and 3.

The pen barrel 11 comprises a tube, open at both ends, and having frictionally mounted in one end the pen carrier 12 to which the ink sack 13 is attached as ordinarily. Interposed between the ink sack 13 and the inner wall of the pen barrel 11 are two pressure bars 14, which are in opposed relationship. Each of the pressure bars 14 is connected at one end by a springy member 15 to a collar 16, which is made in two parts and has an inwardly projecting flange 17. A part collar 16 and springy member 15 may be integral with a pressure bar 14. The collar parts 16 are placed to encircle that portion of the pen carrier 12 on which the ink sack 13 is mounted, the flanges 17 engaging a groove in the pen carrier 12 beyond the end of the ink sack 13. When the pen carrier 12 is passed into the pen barrel 11, the collar parts 16 are retained in position by the pen barrel 11. The pressure bars 14 are each provided with longitudinal slots 18, two are shown.

19, 19 are operating bars: these are each positioned between the inner wall of the pen barrel 11 and a pressure bar 14. The bars 19 are rounded in cross section to the inner radius of the pen barrel and each has, on the face which comes adjacent a pressure bar 14, projections 20 equal in number to the slots 18. The projections 20 enter the slots 18 and have inclined operating faces constituting the inclined planes. The inclined planes extend towards the pen carrier 12. The operating bars 19 have at their one ends collar parts 21 and flanges 22 similar to the collar parts 16 and flanges 17. The collar parts 21 are placed to encircle a button 24 that is mounted in the other end of the pen barrel and is a loose fit therein. The button 24 is formed near one end with a groove 23 in which the flanges 22 of the collar parts 21 engage. The

collar parts 21 are maintained in engagement with the groove 23 by the wall of the pen barrel 11. The other end of the button 24 is of reduced diameter and the stem 25 so formed is screw threaded externally. The stem 25 is also hollowed and screw threaded. On the stem 25 a milled ring 26 of the same external diameter as the pen barrel 11 is mounted; this ring is held in place by a button 27 having a screw threaded stem 28 to engage the inner threads of the stem 25. In the normal position of the parts, the ring 26 is screwed up against the end of the pen barrel 11.

To fill the pen, the milled ring 26 is grasped and through it a pull is exerted on the button 24 and operating bars 19. The endwise movement so imparted to the operating bars 19 causes the inclined planes 20 to bear against and ride up the ends of the slots 18 in the pressure bars 14. The pressure bars 14 under the action of the inclined planes 20 move towards each other and collapse the ink sack. The longitudinal movement of the operating bars 19 is limited by catches 20a provided on the inclined planes 20 engaging the ends of the slots 18. The ink sack 13 is allowed to return to its normal condition by pressure on the button 24 and consequent longitudinal movement in the opposite direction of the operating bars 19 and inclined planes 20. The springy members 15 assisted by the tendency of the ink sack to resume its normal condition ensure the return movement of the pressure bars 14.

In the embodiment illustrated in Fig. 4 the ink sack 13 comprises a length of elastic tubing secured at one end to the pen carrier 12 and at the other end to an extension 28 on the button 24 in similar manner. 29 is a valve adapted to seat on a valve seating 30 within the pen carrier 12. The valve 29 is mounted on one end of a rod 31 that extends longitudinally of and within the ink sack 13 and is mounted at its other end in the button extension 28. When the valve 29 is on its seating 30, the face of the button 24 that is contiguous to the stem 25 is within the pen barrel 11. Adjustment of the valve 29 for increased flow is made by screwing the milled ring 26 down the stem 25: adjustment in the opposite sense is made by screwing the milled ring 26 up the stem 25 and endwise pressure on the button 24. When filling the pen, the valve 29 is moved off its seating before the button 24 is pulled endwise.

In the embodiment illustrated in Figs. 5 and 6 the pressure bars 14 have stamped or pressed out portions 31 and the operating bars 19 have stamped or pressed out portions 32, the portions 32 entering the portions 31 towards one end thereof. Opposed walls of the portions 31, 32 are slotted and in the slots the ends or tongues of links 33 are received. The one end or tongue of a link 33 is inclined

as indicated at 34 and engages the slot in the portion 31: the other end or tongue is in line with the link 33. The inclined part 34 forms an inclined plane. The inclined planes 34 extend in the opposite direction to the inclined planes 20 in the other embodiments. When the operating bars 19 are moved in the direction of the arrow 35, the links 33 move therewith and as the inclined planes 34 move relatively to their slots they cause the links 33 to become slightly inclined so that pressure exerted on the links is not in a straight line. The continued pressure causes the links to turn about their connections with the portions 32 and move the pressure bars inwardly.

What I claim is:—

1. In a self filling pen of the kind referred to, ink sack collapsing means comprising, in combination, a pressure bar anchored at one end within the pen barrel, an operating bar disposed in parallel relationship therewith, interacting means comprising inclined planes disposed between the two bars, and means at one end of, and external to, the pen barrel to act on the operating bar, impart longitudinal movement thereto and through the inclined planes lateral movement to the pressure bar.

2. In a self filling pen of the kind referred to, ink sack collapsing means as claimed in claim 1, wherein the inclined plane is carried by the operating bar and the pressure bar is provided with a slot in which the inclined plane enters, the endwise movement of the operating bar causing the inclined plane to ride on the end of the slot and exert a lateral thrust on the pressure bar.

3. In a self filling pen of the kind referred to the combination with ink sack collapsing means as claimed in claim 1, of a regulating valve seated in the pen carrier and adjustable from the means by which the operating bar is moved longitudinally.

4. In a self filling pen of the kind referred to ink sack collapsing means as claimed in claim 1, wherein the inclined plane constitutes the one end of a parallel motion link by which the operating and pressure bars are connected together.

Dated this 31st day of October, 1929.

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