

PATENT SPECIFICATION

Application Date: April 8, 1936. No. 10400/36.

471612

Complete Specification Left: April 8, 1937.

Complete Specification Accepted: Sept. 8, 1937.



PROVISIONAL SPECIFICATION

Improvements in or relating to Self-Filling Fountain Pens

We, THOMAS DE LA RUE & COMPANY, LIMITED, a company organised under the laws of Great Britain, and EDWARD GIBSON KNIGHT, British subject, both of 5 110, Bunhill Row, London, E.C.4, do hereby declare the nature of this invention to be as follows:—

This invention relates to self-filling fountain pens of the type in which a 10 rubber sac is first deflated and then allowed to regain its normal form in order to fill the pen. Such a type includes not only those fountain pens wherein the rubber sac forms the ink chamber, but 15 also those wherein the sac forms a prolongation of the ink chamber and wherein an air tube leads up from the feed bar to the sac, the sac being deflated and allowed to inflate several times in order to 20 fill the ink chamber formed by part of the pen barrel.

According to the invention a pen of the type described is provided with a tong 25 device for deflating the sac, whereof the two arms lie one on each side of the sac and are brought together to deflate the sac.

The arms which may be in the form of 30 flat metal blades or strips are preferably controlled by a sleeve or collar, slidable over the upper ends of the arms to squeeze the arms together, and working like a plunger, preferably spring biased in a suitable mounting at the top of the pen.

This mounting may be partially 35 threaded into the top of the pen leaving however an extension on to which may be screwed a cap serving normally to cover the plunger. In one form the 40 mounting is slotted to receive the T-shaped heads of two flat metal blades forming the tongs, the heads being held close together in the slots but the blades or tong arms being thereafter splayed 45 outwardly to lie against the walls of the pen barrel one on each side of the sac. The operating plunger is prevented from being removed outwardly through the mounting by a small lip formed around 50 its inner end and is slit down each side to allow it to slide over the T-shaped heads of the tong arms, the slits being chamfered off at the inner ends to prevent

the liability of the plunger cutting the 55 sac. A spring is located in the plunger abutting at one end against the T-shaped heads and at the other against the outer closed end of the plunger so as to keep the plunger normally in a position such that 60 the sac is not deflated.

To fill the pen the plunger is pushed 65 downwardly or inwardly so as to slide over the tong arms at the point where they splay apart, thus squeezing the arms together with the sac between them where- 70 after the plunger is released and retracts under the action of the spring to allow the sac to regain its normal shape and thus to fill the pen. When this device is employed in a pen wherein the sac forms 75 a prolongation of the ink chamber, as set out above, the plunger needs to be operated sharply several times, small quantities of ink being sucked into the ink chamber each time the plunger 75 returns to its normal position.

Preferably that part of the pen barrel forming the ink chamber is made trans- 80 parent or translucent so that the amount of ink therein is always visible.

When the device is employed with a pen wherein the sac forms the ink chamber, 85 the sac in this case being longer than that in the pen previously referred to, the tong arms are similarly lengthened to extend again over substantially the whole length of the sac, and may if desired have 90 pivoted thereon flat presser bars which provide a more even pressure over the length of the sac when this is deflated.

If desired the cap covering the plunger instead of being screwed on to the 95 mounting, so that it has to be removed before the plunger can be operated, may be so connected to or formed integral with the plunger that after unscrewing it can 100 itself partake of the in and out movement of the plunger. For example, the cap may be a sliding fit on the extending portion of the mounting—which in this 100 case is not threaded—and may screw on to the plunger which is provided with a lip around its closed end normally to prevent removal of the cap and is prevented from rotation in its mounting by any 105 convenient means. With such a construc-

[Price 1/-]

tion the cap has first to be unscrewed along the plunger to provide a gap between the end of the pen barrel and the cap, and then pushed inwardly to operate the plunger and so deflate the sac as described above.

Dated the 8th day of April, 1936.

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COMPLETE SPECIFICATION

Improvements in or relating to Self-Filling Fountain Pens

We, THOMAS DE LA RUE & COMPANY, LIMITED, a Company organised under the laws of Great Britain, and EDWARD GIBSON KNIGHT, British subject, both of 110, Bunhill Row, London, E.C.4, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to self-filling fountain pens of the type in which a rubber sac is first deflated and then allowed to regain its normal form in order to fill the pen. Such a type includes not only those fountain pens wherein the rubber sac forms the ink chamber, but also those wherein the sac forms a prolongation of the ink chamber and wherein an air tube leads up from the feed bar to the sac, the sac being deflated and allowed to inflate several times in order to fill the ink chamber formed by part of the pen barrel.

According to the invention a pen of the type described is provided with a tong device and a plunger the arms of the tong device lying one on each side of the sac and being brought together by a movement of the plunger to deflate the sac.

In one construction the arms are pivoted and have extensions beyond their pivot points which extensions are adapted to be prised open by the plunger which is slidably mounted in the pen barrel, while in another construction the plunger is adapted to slide over portions of the arms which are splayed apart so as to bring the arms together to deflate the sac.

The invention is illustrated in the accompanying drawing in which figure 1 is a sectional elevation of one construction as applied to a pen in which the sac forms the ink chamber, figure 2 is a sectional elevation of a similar construction as applied to a pen in which the sac forms a prolongation of the ink chamber, figure 3 is a detail of the plunger and tong arms of figure 2, and figures 4 and 5 are sectional elevations at right angles to each other of a modified construction.

Referring to figures 1—3 of the drawing the pen barrel 1 has screwed therein a mounting 2 in which slides the plunger

3. A ring like member 4 in which the tong arms 5 are pivoted—the arms having lugs 5¹ apertured to allow a pivot pin 4¹ to pass therethrough—is held against a projection 6 in the barrel by the inner end of the mounting. The main portions of the arms normally lie against the inside of the barrel one on each side of the sac 7, but their outer ends 8 are brought together as shown.

In operation when the plunger is pressed inwardly its cone shaped end 9 will pass between the outer ends 8 of the arms and force these apart thus bringing the inner ends or main portions of the arms together to deflate the sac between them. When the plunger is released the sac will tend to regain its normal shape, forcing the main portions of the arms apart and returning the plunger to its original position.

In figure 1 the mounting 2 is extended beyond the end of the barrel and threaded to receive a cap 10 which normally covers the plunger and must be removed before the plunger can be operated. In figure 2, however, the cap 10 screws on to the plunger and slides over the mounting. In order to refill the pen, the cap is unscrewed along the plunger until the projection 11 abuts against the top 12 of the plunger and then the plunger is pressed inwardly by the cap. The plunger is prevented from rotating in the mounting by a pin 13 riding in a slot 14 formed in the plunger.

In figure 2 also the sac 7 forms a prolongation of the ink chamber 15—the walls of which are preferably formed as shown of transparent material—and communicates with the feed bar by an air tube 16. In this form the plunger must be operated sharply several times in order to fill the ink chamber.

It is to be understood that the construction of cap shown in figure 2 is applicable to the construction of figure 1 and vice versa.

Referring now to figures 4 and 5, the tong arms 5 are provided with T-shaped heads 17 which are held together in the lower end of a groove 18 formed in the mounting 2.

The arms 5 are splayed out from the heads so that they normally lie against

the inside of the barrel and the plunger 3 is slotted at 19 so that the plunger may be pushed inwardly over the heads and over the point where the arms 5 splay 5 apart, so as to bring the arms toward each other to deflate the sac. In order to ensure that the plunger returns to its original position a spring 20 is located within it and acts between the head 12 of 10 the plunger and the heads 17 of the tong arms. To prevent removal of the plunger outwardly from the mounting, a lip 21 is provided on the inner end of the plunger. Furthermore to prevent the sac being cut 15 by the edges of the slots 19, these are chamfered off as shown at 22.

The cap 10 may screw on to the mounting 2 as shown or on to the plunger in the manner shown in figure 2, whilst the tong devices shown in figures 4 and 5 are also 20 applicable to the type of pen shown in figure 2.

When the tong arms are employed with a pen wherein the sac forms the ink chamber they may if desired have pivoted 25 thereon or affixed thereto flat presser bars (as shown at 23 in figure 1) which provide a more even pressure over the length of the sac when this is deflated.

30 Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

35 1. A self-filling fountain pen of the type described wherein are provided a tong device and a plunger, the arms of the

tong device lying one on each side of the sac and being brought together by a movement of the plunger to deflate the sac. 40

2. A self-filling fountain pen as claimed in claim 1 wherein the tong device comprises pivoted arms and the plunger is slidably mounted in the pen barrel and is adapted to prise apart extensions of the 45 arms beyond their pivot points.

3. A self-filling fountain pen as claimed in claim 2, wherein the pivot for the tong arms comprises a ring shaped member held in the pen barrel and a pivot pin 50 in the member, the extension of the tong arms passing through the member and having lugs apertured to allow the pivot pin to pass therethrough.

4. A self-filling pen as claimed in claim 55 1, wherein the plunger is adapted to slide over portions of the arms where they splay apart so as to bring the arms together.

5. A self-filling fountain pen as claimed in claim 3 wherein the arms have T- 60 shaped heads which are held in the pen barrel and pass through slots in the plunger.

6. A self-filling fountain pen substantially as described and as shown in figures 65 1—3.

7. A self-filling fountain pen substantially as described and as shown in figure 4 or 5.

Dated the 8th day of April, 1937.

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[This Drawing is a reproduction of the Original on a reduced scale.]

