

PATENT SPECIFICATION



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PROVISIONAL SPECIFICATION.

Improvements in Self-filling Reservoir Pens.

I, ALEXANDER MUNRO, of No. 65, Preston Road, Winson Green, Birmingham, British subject, do hereby declare the nature of this invention to be as follows:—

5 On the piston, or other means used as a piston, in a self filling pen to effect the filling, I use a loose rubber ring in lieu of the usual packing. The loose
10 rubber ring rolls between the inner wall of the barrel of the pen and the outer surface of a plunger or inner tube. Preferably a solid plunger is placed within the upper end of the barrel of the pen,
15 having a small head projecting beyond the end of the barrel by which it may be pulled out and pushed in to give the necessary reciprocal motion. The rubber ring in this case rolls between the plunger
20 and the inner surface of the barrel. A shoulder or collet at the inner end of the plunger prevents the rubber ring from slipping off at that end of the plunger. The rubber ring is prevented from
25 slipping off at the other end by the constricted internal diameter of the barrel at its extreme upper end. A collar screwing into the barrel at its upper end may be used to provide the constricted
30 diameter. I find that the loose rubber ring form of piston is particularly suitable for use in a fountain pen on account of the greater ease in moving it as compared with the usual form of piston with

packing. In cases where the rubber ring
35 rolls between the inner wall of the barrel and an internal tube, shoulders or collets as already described are formed to keep the rubber ring in place and to limit the longitudinal movement. The internal
40 tube referred to is sometimes used in self filling pens to form a piston with the usual packing between barrel & internal tube, and I use the loose rubber ring in lieu of packing.

45 The plunger with loose rubber ring may be used in such self filling pens as those shown in Figure 7 of Patent No. 6570 of year 1915. Any central rod or tube in the pen may be utilised for the
50 purpose of holding the plunger in place. Thus the long central tube referred to in Figure 7 of the aforesaid patent may be utilised by making the upper end of the tube cone shaped and allowing it to
55 take into a cone shaped hollow formed at the inner end of the plunger. When the plunger is pressed inwards with a moderate pressure it forms a valve closing the upper end of the tube, and is able
60 to stick to the upper end of the tube with sufficient tenacity to prevent the plunger from moving outwards and thus it also serves to prevent the accidental opening
65 of the valve.

Dated the 25th day of April, 1923.

ALEXANDER MUNRO.

COMPLETE SPECIFICATION.

Improvements in Self-filling Reservoir Pens.

I, ALEXANDER MUNRO, of 65, Preston Road, Winson Green, Birmingham,
70 British subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to

[Price 1/-]

be particularly described and ascertained in and by the following statement:—

75 Instead of a piston or plunger with packing or other means used in a self-filling reservoir pen to effect the filling,

I use a loose rubber ring which rolls between the inner wall of the barrel of the pen and the surface of a plunger or the outer surface of an inner tube.

5 On the accompanying drawing Fig. 1 shows the position of the rubber ring when a plunger at the upper end of the barrel of the pen has been pressed inwards.

10 Fig. 2 shows the position of the rubber ring when the plunger has been pulled outwards as far as it will come.

Fig. 3 shows a different form of head for the plunger.

15 Fig. 4 shows a more detailed drawing of the plunger, rubber ring, and other parts.

Fig. 5 shows one position of the rubber ring when an inner tube is used in lieu of a plunger.

20 In Figs. 1 and 2, (1) is the upper end of the barrel of the pen, (2) is the plunger having a head consisting of a knob or other shaped projection at its
25 outer end by which it can be grasped and moved in and out, and (3) is the loose rubber ring. It follows from this arrangement that if the plunger has, for instance, a movement of three quarters
30 of an inch, the movement of the rubber ring will be three eighths of an inch, or always half the distance moved by the plunger. Any slight tendency of the rubber ring to wander from its proper
35 position is rectified by the knob of the plunger occasionally getting a strong pull outwards. In such case, as shown in Fig. 2, the rubber ring is jammed between the shoulder formed at the outer
40 end of the barrel and the shoulder formed at the inner end of the plunger and thus it is forced to take its proper position.

In lieu of a projecting head or knob at the outer end of the plunger as shown
45 in Figs. 1 and 2, any suitable head or projection may be used, and such head or projection may be free to revolve. In Fig. 3, a revolving sleeve (4) is used in lieu of a knob. The revolving knob,
50 sleeve, or other such projection may also be made to affix itself, as in former pens, by means of a screw or other means to the outer end of the barrel after the plunger has been pressed inwards, and
55 thus keep the plunger from working outwards when the pen is carried in the pocket.

In Fig. 4, a collar (5) is used which forms the shoulder at the outer end of
60 the barrel (1). Fig. 4 also shows that a cone shaped hollow (6) at the inner end of the plunger may be used so as to take on to the cone shaped end (7) of a fixed central tube (8) which extends the length
65 of the barrel in some self-filling pens

and such as those shown in Fig. 7 of Patent Specification No. 6570 of year 1915. When the plunger is pressed inwards with a moderate pressure, it forms a valve closing the upper end of the tube (8), and the plunger adheres to the tube with sufficient tenacity to prevent the accidental opening of the valve. The adherence of the plunger to the tube also serves, when these parts are made of vulcanite, to prevent the plunger from moving outwards when the pen is carried in the pocket, although in some cases it may be desirable to also use other means, such as the revolving knob or sleeve already described, to secure the plunger in its pressed inwards position.

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95 There are many former self-filling fountain pens provided with pistons or plungers which move for the whole or for part of the length of the barrel of the pen, and my improved plunger with loose rubber ring may be used in most of these cases in lieu of the pistons or plungers formerly used. These former pistons and plungers also had various forms of heads and various ways of being affixed in the pressed inwards or the pulled out position, and such various heads and ways of affixing may, in many cases, be adapted for use with my invention.

As compared with former pistons and plungers my invention is particularly suitable, from its greater ease in movement and from its greater sensitiveness to the touch, to be used for the purpose of closing the upper end of a fixed central tube in a self-filling pen as already described.

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115 When instead of a fixed central tube in the barrel of the pen there happens to be a fixed central rod, the plunger may be caused to adhere to the rod in the manner described and for the purpose of preventing the plunger from working loose and moving outwards when the pen is carried in the pocket. Or a fixed central rod may be formed in the barrel for the particular purpose of retaining the plunger in position or for limiting its inward movement.

I prefer the use of a plunger at the upper end of the barrel to the use of an inner tube used in a piston or plunger like manner in a self-filling pen. But as many pens of the latter kind are described in former patents, I point out that my invention is also applicable to them. Fig. 5 shows an outer tube (9) moving over an inner tube (10). In former pens a packing is used between the two tubes. In lieu of the packing I interpose the loose rubber ring (3) which rolls between the two tubes when one tube is moved over the other. Fig. 5 does not show the
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means by which the two tubes are kept in alignment.

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

10 1. In a self-filling reservoir pen, a loose rubber ring on a plunger, as and for the purposes set forth.

15 2. In a self-filling reservoir pen, a loose rubber ring on a plunger, and a cone shaped hollow formed at the inner end of the plunger which may take on to the cone shaped end of a fixed central

tube or rod, as and for the purposes set forth.

3. In a self-filling reservoir pen having an outer tube capable of moving over an inner tube to form a piston or plunger like arrangement, a loose rubber ring interposed between the two tubes, as and for the purposes set forth. 20

4. In a self-filling reservoir pen, the arrangement, construction and combination of parts, or their modification, substantially as herein set forth and illustrated in Fig. 4 of the accompanying drawing. 25

Dated this 25th day of January, 1924. 30
ALEXANDER MUNRO.

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

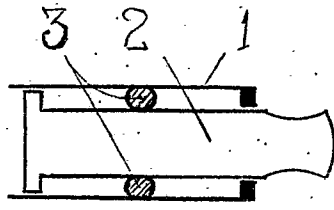


FIG. 1.

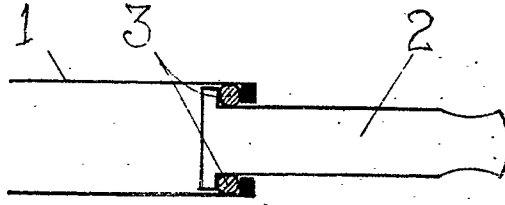


FIG. 2.

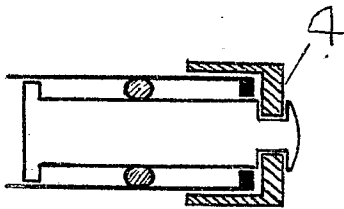


FIG. 3.

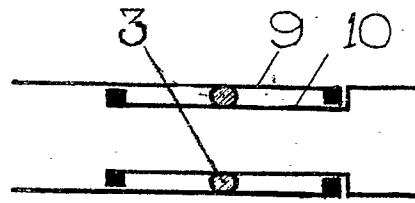


FIG. 5.

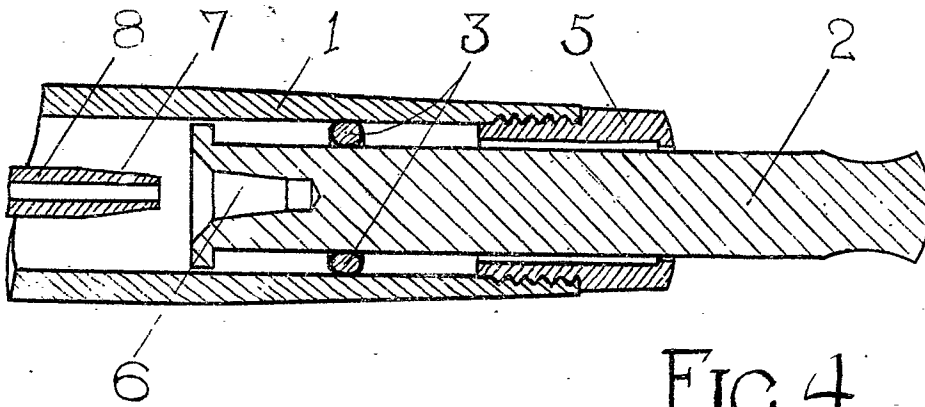


FIG. 4.