PATENT SPECIFICATION

450,343

Application Date : June 4, 1935. No. 16172/35.

Complete Specification Accepted: July 15, 1936.

COMPLETE SPECIFICATION

Improvements in or relating to Reservoir Pens

We, THE NAMIKI MANUFACTURING COMPANY LIMITED, a British Company, of 87, Bishopsgate, London, E.C.2, do hereby declare the nature of this invention, which has been communicated to us by Kabushiki Kaisha Namiki Seisakusho, a Company organised under the laws of Japan, of 1356, Sugamo-Machi, Kitatoyoshima, Tokyo, Japan, 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 reservoir pens of the type in which a piston is provided, said piston being movable between stops on the piston rod, the upper stop being adapted to close an axial passage through the piston to enable a vacuum to be created in the reservoir when the piston is pushed in and the other stop being arranged to leave the passage open to permit the passage of air or ink.

In such pens the movement of the piston between the stops is caused by the piston being held back by friction on the wall of the reservoir.

In order that pens of the above-mentioned type shall function properly it is imperative that the piston be made to fit the reservoir correctly, that is to say, there must not be any gap or space between the periphery of the piston and the surrounding wall. Furthermore, in order that there shall be friction it is preferable that either the periphery of the piston or the surround wall of the reservoir be roughened.

In the Specification of our prior Patent No. 410,437, it is stated that the wall of the reservoir may be provided with a lining of india-rubber or the like against which the piston is adapted to contact.

The provision of this lining is not always practicable.

In pens of the above-mentioned type, the rod on which the piston is mounted is adapted to slide through a packing gland situated in the end of the pen remote from the nib section. It has been found in practice that very often the said rod becomes jammed in the packing and it is difficult to manipulate the pen during the re-filling operation.

The objects of the present invention are to provide an improved construction of reservoir pen of the type set forth.

To this end, a self-filling reservoir pen of the type set forth is characterized in that the piston is composed of a ring or annulus of soft india-rubber.

The packing gland through which the piston rod slides may be provided with lubricating means for said rod.

The invention will now be described with reference to the accompanying drawings in which Figure 1 is a longitudinal section of one form of self-filling reservoir pen constructed in accordance with this invention. Figures 2 and 3 are similar views shewing the position of the piston during the outward and inward strokes respectively of the piston rod.

The pen comprises a barrel *a* inside of which is the ink reservoir a^1, a^2. To the said barrel is screwed the nib section *b* and a knob *c* to which is secured one end of the rod *d*. To the other end of this rod is fitted a piston which consists of an annulus or ring *e* composed of soft india-rubber. The central hole in the ring *e* is of a diameter larger than that of the rod so that it can slide thereon.

The said ring is movable axially between two stops, both of which are mounted on the rod *d*. One stop *f* is in the form of a cone-shaped head adapted to fit into a correspondingly shaped recess *g* in the ink passage *h*.

The portion of the head which contacts with the ring *e* is formed with a transverse passage *j*.

The other stop *k* is in the form of a flange which is recessed at *l*.

The india-rubber ring or annulus *e* should be of sufficient thickness to remain flat when being moved axially and should be of a diameter sufficient to make just a sliding fit in the barrel *a*.

Screwed into the end of the barrel *a* and disposed between the end of the ink reservoir and knob *c* is a cup-shaped gland *m* to hold a lubricant *n*.

The lubricant is prevented from escaping by means of the single india-

[Price 1/-]

rubber pad *o* and the three india-rubber pads *p*, *p*, *p*. All of these pads *o* *p*, fit tightly against the rod *d* and serve as scrapers when the said rod is moved axially.

The pad *o* prevents the escape of lubricant to the knob *c* and the pads *p*, *p*, *p*, which can be compressed by rotation of the gland *m*, prevent the escape of the lubricant into the ink reservoir.

The said pads also prevent air from passing through the gland *m* into and out of the ink reservoir a^1.

Any suitable lubricant may be provided, for example, it may consist of grease, oil or oil laden pads.

In use, in order to fill the pen, the nib is placed in the ink and the knob *c* is unscrewed and the rod *d* is gradually pulled out. By so doing the ring *e* as it contacts with the wall of the reservoir a^1 will move axially until it abuts against the stop *f*. The air and/or ink inside the reservoir will escape through the ring *e* and the transverse passage *j* in the head.

After the rod *d* has been pulled out to its full extent it is then pushed in and in so doing the ring *e* moves against the stop *k* as seen in Figure 3. On further movement a vacuum is created in the reservoir a^1 until the ring *e* passes into the enlarged portion a^2 of the reservoir when the ink will be drawn into the reservoir a^1.

When the knob *c* is screwed down, the cone-shaped head *f* will seal the recess *g* in the ink passage *h* thus making the pen leak-proof.

By lubricating the rod *d* the longitudinal movement thereof will be greatly facilitated.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, as communicated to us by our foreign correspondents, we declare that what we claim is:—

1. A self-filling reservoir pen of the type set forth, characterized in that the piston is composed of a ring or annulus of soft india-rubber.

2. A self-filling reservoir pen as claimed in claim 1, characterized in that the rod which carries the said piston is slidably mounted in a gland which is provided with lubricating means.

3. A self-filling reservoir pen constructed, arranged and adapted to operate substantially as hereinbefore described with reference to the accompanying drawings.

Dated the 4th day of June, 1935.

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Leamington Spa: Printed for His Majesty's Stationery Office, by the Courier Press.—1936.

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