

PATENT SPECIFICATION

610,253



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(Under Section 6 (1) (a) of the Patents &c. (Emergency) Act, 1939, the proviso to Section 91 (4) of the Patents and Designs Acts, 1907 to 1942 became operative on April 2, 1946.)

Index at acceptance:—Class 146(iii), A11(b:e1).

COMPLETE SPECIFICATION.

Improvements relating to Self-Filling Fountain Pens.

We, SOCIETE ANONYME DES ETABLISSEMENTS STYLOMINE, a Body Corporate organised under the Laws of France, of 2 rue de Nice, Paris, France, 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:—

The present invention relates to fountain pens and especially to the construction and arrangement of the reservoirs thereof.

Such fountain-pens as are filled by repeated operation of a filler button contain a deformable reservoir from which air is expelled by operating the filler button several times in succession whereby the volume of the reservoir is reduced for a time, said reservoir returning each time to its initial value; the air is expelled through a central tube and, under the effect of the suction produced when the button is released, the ink runs into the reservoir through the central tube and through the passage that feeds ink to the pen. Each operation expels a certain volume of air, which determines the number of operations necessary for complete filling.

Such fountain-pens are known in which the reservoir is a rubber bag or sac; in said fountain-pens the variation of volume is obtained under the crushing action applied on that end of the bag opposed to the pen nib, said crushing action being often performed by means of the fingers; in which case the end of the bag becomes easily accessible by merely unscrewing a member which covers and protects said bag. In other embodiments the crushing action is performed by means of a small metallic blade operated by a lever.

Many other types of fountain-pen are known which make use of small pumping devices which have the disadvantage of a considerable clearance, or non-pumped volume, so that the number of operations required completely to fill the pen is considerably increased because each small stroke sucks in only a small quantity of ink.

The present invention relates to a fountain-pen in which the reservoir is made up of a

thin and elastic envelope, folded to form a bellows throughout its length like a concertina; under the pressure applied on the end of the reservoir opposed to the pen nib the convolutions, or rings, of the bellows contract one towards the other, the inside volume of the reservoir being thus greatly reduced. When the pressure exerted on that bellows ceases, the bellows of the concertina, owing to its form and of the elasticity of the material of which it is composed, recovers its initial shape. That is to say in consequence of its shape, it behaves as a compressible spring, the stroke and the elastic power of said spring being considerable and nearly constant.

Since the volume of the air expelled by each operation is very considerable the number of the operations necessary for complete filling is very much reduced.

In order to make easier the compression of the reservoir, the latter will be provided at one of its ends with a rigid filler knob or pusher, hollow or not, but preferably hollow, in order to increase the available stroke, the central tube through which air is expelled being thus able to penetrate into the interior of said filler knob.

Among the materials suitable for manufacturing the reservoir, india rubber, or the like, is considered to be the most suitable. Sufficiently thin sheets of metal may also be used.

The reservoir is disposed in the inside of a rigid barrel which forms the body of the fountain-pen and thus takes the shape of said barrel. Consequently its general shape may be that of a cylinder, a prism, or the like, according to the circumstances.

The folds which form the bellows of the concertina may be shaped according to the most various profiles and dispositions; they may be made up with a shape similar to that of a helical screw with a triangular thread, for instance, or with a thread the angles of which are rounded. They may also be made up, in such a manner that they form superposed rings in the manner of a ribbed or

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corrugated tube; said rings may also present a triangular profile with sharp or rounded angles, or a circular profile owing to which they appear as portions of a toroid generated by the rotation of a circle round the axis of the reservoir.

Should a rubber bag be used as reservoir, said bag might be manufactured by moulding on a core, the profile of which being the same as that of the reservoir to be obtained.

In the annexed drawing various examples are given as embodiments of the invention.

Fig. 1 shows a section through the axis of a fountain-pen provided with a reservoir, in the shape of a concertina according to the invention.

Figs. 2, 3 and 4 show partial sections of the various embodiments of the reservoir.

Fig. 5 illustrates the section of a hollow pusher.

The fountain-pen shown in Fig. 1, comprises the normal barrel 1, and a threaded plug 2 is screwed at its lower end, said piece bearing the feed bar 3 through which passes the duct 4 designed to feed the pen nib 5. The reservoir 6 is made up of a rubber bag closed at its upper end and folded all along its length, like the bellows of a concertina, and is disposed in such a manner that it fits exactly to a cylindrical extension of plug 2 which penetrates in its opening. A tube 7 designed to expel the air, is placed in the interior of the reservoir; said tube passes through the feed bar 3 and reaches the duct 4 through a channel perpendicular to said duct, for example opposite to the eye of the pen nib. The bag 6 is provided, at its upper end, with a pusher 8 which may slide through the top of the barrel. The part of said pusher which stands beyond the barrel is normally protected by means of the removable cover 9.

In order to fill the fountain-pen, cover 9 is removed, the pen is plunged into the ink

and the pusher 8 depressed; reservoir 6 is crushed or compressed all along its length; its convolutions, or rings, come partially into contact one with the other, the inside volume being thus reduced to a very little value and air escapes through tube 7. The pusher is then released and the reservoir, owing to its elasticity, takes again its original form. In consequence of the suction thus obtained, ink is forced by the atmospheric pressure through tube 7 and duct 4 and enters the reservoir. If necessary, that operation may be effected again several times to obtain complete filling.

Fig. 2 shows a portion of a reservoir folded in the shape of a screw with a rounded triangular profile.

Fig. 3 shows a portion of a reservoir composed of a number of superposed ribs with rounded triangular profile.

Fig. 4 shows a portion of a reservoir composed of a number of superposed ribs in the shape of a toroid.

Fig. 5 shows the case where the pusher 8 of Fig. 1 is replaced by a hollow-pusher 8', which is fixed on top of the reservoir 6.

Having now particularly described and ascertained the nature of our said invention 70 and in what manner the same is to be performed, we declare that what we claim is:—

1. A fountain-pen comprising a deformable reservoir folded along its length like a concertina and made up of a thin elastic material, in such a manner that it may be compressed under the effect of a stress exerted at one end and expand again to its initial volume when said stress is relaxed.

2. A fountain-pen having a deformable reservoir according to Claim 1 above and as illustrated in the accompanying drawings.

Dated the 2nd day of April, 1946.

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229/230, Strand London, W.C.2.

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

Fig.1

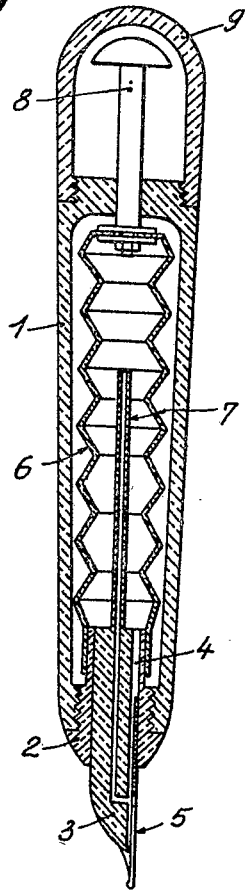


Fig.5

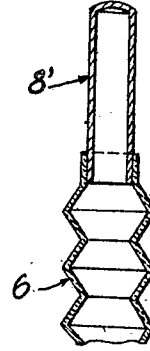


Fig.2

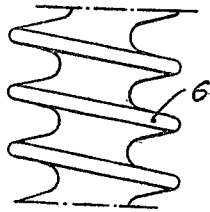


Fig.3

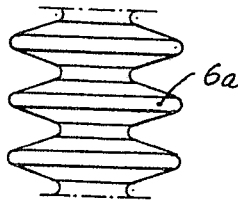


Fig.4

