

PATENT SPECIFICATION

141,071



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COMPLETE SPECIFICATION.

Improvements in or relating to Fountain Pens.

I, (Miss) JEANNE MALLAT, of 53, Boulevard de Strasbourg, Paris, France, a citizen of the Republic of 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:—

This invention relates to a fountain pen with automatic filling, and in which the nib has no axial movement.

Automatically-filled fountain-pens have been heretofore proposed in which the ink reservoir was a rubber tube closed except for a feed outlet at the nib end and fixed at that end to the casing of the pen. The other end of the tube was free to rotate in the casing so that the tube could be emptied by twisting its free end, and by untwisting the latter, or allowing it to untwist, could be caused to fill with ink.

The pen according to the invention is shown by way of example in the accompanying drawings, in which—

Figure 1 is a sectional view, except for the nib, and

Figures 2—9 are detail views.

The instrument comprises a casing A (Figure 1) of ebonite (or any other material such as for instance metal) provided at one end with an inner screwthread *b*, and at the other end with an outer screwthread *c*. In the interior of the said casing, at the top of the screwthread *c*, a projection *d* is provided which forms a stop for the part *f*, during turning, by engaging with a projection *t* hereinafter described.

A cap *g* of ebonite (or any other material such as for instance metal) which

[Price 1/-]

Price 2s. 6d.

is screwed on the thread *c* closes the end of the casing.

The reservoir *h* constituted by a rubber tube, contains the ink. It is secured at the end to the part *f*, and at the nib end to the part *k* (ink conduit) by metal rings D.

The ink conduit *k* (Figures 1 and 4) closes the nib end of the shell by the screwthread *l*. It is locked in its normal position by a metal nut *n* screwed on the thread *m* and engaging the end edge of the shell A.

The part *f* which constitutes a plug and closes the ink tube, has a projection *t* intended to strike against the stop *d* in its return movement. Through the said plug passes a screw *s s* (Figure 2) which secures it to the cap *g*.

The ink conduit *u v* (Figure 4) is bored through the ink nozzle, it is cylindrical and provided with fine longitudinal grooves for the admission of air.

The nib has a fixed position assured by the grooves *x* which are adapted to receive projections on the pen and so prevent the nib from turning and when the projection on the pen engages with the grooves *x* a metal collar or clip *z* (Figure 1) which is a tight fit is forced over the extension of *q* and keeps the nib in position.

The operation of the pen is as follows:

When the cap *g* is unscrewed the part *f* is secured to it by the screw *s s* is also unscrewed and the ink reservoir *h* is lengthened, at the same time being twisted as its other end is fixed at *k*. Three turns are sufficient to expel the ink and air within it. When the cap *g* is released, the reservoir *h* resumes its original shape owing to the elasticity of

the rubber, which is sufficiently strong to bring about the screwing back of the cap *g* without any assistance of the hand which merely gives the last turn.

- 5 If before this screwing back, the pen is dipped into ink up to the nut *n*, the reservoir will be completely filled except for the few millimetres representing the volume of the ink conduit *u, v* (Figure 4).
 10 The air which makes up this volume is necessary for the working of the pen.

It should be pointed out:

- (1) that the shell *A* is completely closed; in the event of an accident to the reservoir *h*, the ink cannot escape;
 15 (2) that the distance *E F* (Figure 1) has been made slightly smaller than the length of the screw *c*. The cap *g* cannot therefore come off its screwthread by pulling the reservoir *h* excessively.
 20 It is stopped by the shoulder *t* striking the stop *d* which makes it safe from any carelessness and want of attention of the operator;

- 25 (3) the torsion stress of the reservoir *h* produces only an insignificant elongation at the end of a long period of use (2 or 3 millimetres). This is got rid of in the following manner; the nut *n* (Figure 1) is slightly unscrewed and as soon as it no longer rests on the edge of the shell *A*, the screw *k* is released (it has a slow pitch), the tube *h* causes it to turn, automatically resuming its length in its free
 30 state. The nut is then tightened again;

- 35 (4) the reservoir *h* is of best quality rubber, about 0.8 millimetres thick. It has an indefinitely long life. Nevertheless an accident does not render the pen useless. If it is impossible to repair it at once, the reservoir is taken out by removing the screw *s s*, it is cut, and the screw *s s* is screwed home again. The pen holder then works normally, after previous filling by means of a filler, until an opportunity is found to put in a tube;

- 40 (5) Figures 6—8 show the method of mounting the collars *D* for securing the reservoir *h*. The rubber is tightly held at *A, B* by the left hand on to the part designated *w*, which may be either of the parts *f, k*. At the same time the rubber is stretched by the right hand and the ring *D* is pushed towards the left hand
 45 into place on the reduced end of the part *w*. The excess of rubber is then cut off along the dotted line (Figure 8). At *p* (Figure 3) is shown the shape of the end of the part for ensuring solidity of attachment. It is moreover grooved for the purpose of giving a better hold to the rubber. This attachment can carry 2 kgs. without any material deformation, which is a guarantee of its strength.

A screwthreaded cap which is not shown in the drawing, closes the pen for carrying it in the pocket, and may be placed on the other end during use. 65

The material used is preferably ebonite, except for the nib which is of gold, and for the tightening collars and the nut *n* which are of metal: aluminium or aluminium bronze, which is stronger. 70

The screw *s s* is of ebonite, with a head and square core of metal, to strengthen it. 75

It should be pointed out that, except for the parts *f* and *k* which terminate the ink reservoir, none of the parts comes into contact with the ink. The shell and the cap *g* may therefore be made of any desired material. Solid metal of a much smaller thickness than that necessitated by the use of ebonite, makes it possible to have the most varied dimensions. It appears advisable to use inoxidisable aluminium bronze of a nice gold colour, which can be maintained bright simply by rubbing, as it is light, strong, easy to stamp, and turn, etc. 80

The filling of the pen is effected in practice in the following manner: 85

The pen is held above an ink pot in order to avoid spilling the ink not taken up by the pen.

The pen is seized with the left hand, with the nib downwards, and the index finger and thumb pressing on the bottom of the cap, the small finger at the same side as the thumb. A slight pressure with the thumb and the index finger during the unscrewing, prevents the cap from being screwed up again under the action of the twisted rubber. The unscrewing (3 or 4 turns) finished, the pen is dipped into the ink, and the first two fingers are loosened. The cap then automatically screws up again. After a few seconds, to give the ink the time to rise, the screwing home of the cap (the point of the same is indicated by two lines marked on the said parts) is completed by means of the thumb. 90 95 100 105 110

In practice, the reservoir is held with the left hand, the cap between the thumb and the index finger of the right hand, the pen is then dipped into the ink up to and including the nut *n*, and unscrewed with both hands. The cap will then be unscrewed and automatically screwed up again. This quick operation, without any preparations or precautions, results in turning the reservoir to the extent of one turn and a half, which fills it up to three quarters—an amply sufficient quantity. 115 120

This operation is very simple. Nevertheless, if it is not desired to utilise the torsion of the reservoir for the purpose of 125

closing the said closing might be effected in a slightly modified manner by the device shown in Figure 9.

5 The part *f*, instead of a hole for the passage of the screw *s s*, is provided with a slot enabling it to slide on the said screw.

10 A pin *H* and the projection *t* secure it and it can then turn only, without rising. The cap however turns and rises, its screw *s s* rising in the slot of the part *f* until it is stopped at the upper part of *M N*. Under the pin *H* a thin rubber washer compressed between two metal washers by 15 the pressure of the pin, forms a brake and cancels the action of the torsion of the reservoir *h*. The cap then remains in the position given by the unscrewing, without it being necessary to hold with 20 the first two fingers of the left hand.

In order to fill with this device, it is merely necessary to unscrew, then to screw up again, the cap above an ink pot, without any other precaution. But the 25 tube *h* not being pulled out longitudinally, it is necessary to give an extra turn of the cap in order to give it sufficient compression.

30 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:—

1. A fountain pen with automatic filling and in which the nib has no axial 35 movement, comprising a casing of ebonite or of any other suitable material with an inner screw thread at the nib end and an outer screw-thread at the other end, a tube of rubber or any other material used as 40 an ink reservoir and secured at one end to a part secured to a screw cap which engages with the said outer screw-thread, a stop for limiting the outward movement of the said part, an ink conduit secured 45 to the other end of the tube and closing the nib end of the casing, the inner conduit for the passage of the ink being provided with fine longitudinal grooves facilitating the admission of air and a nib 50 secured to the ink conduit by any suitable means, the torsion of the inner reservoir producing the vacuum for filling the pen when the said reservoir resumes its shape 55 owing to its resiliency.

2. The complete fountain pen substantially as described or substantially as 60 illustrated in the accompanying drawings.

Dated this 31st day of March, 1920.

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Fig.1.

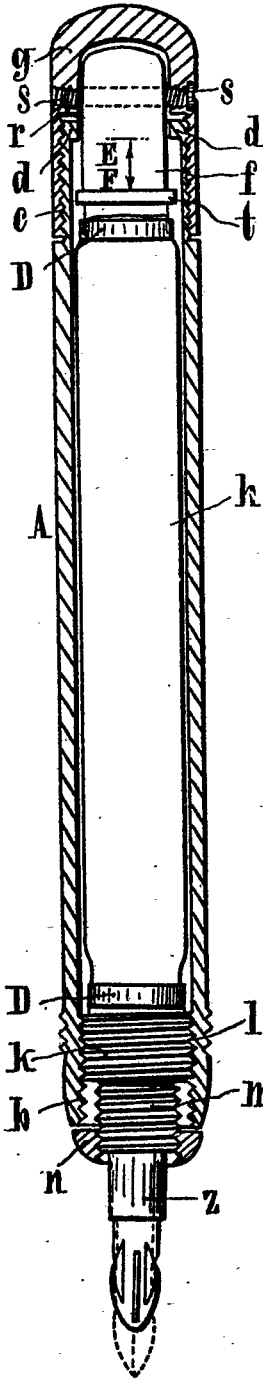


Fig.2.

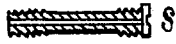


Fig.9.

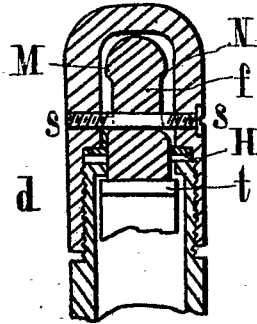


Fig.3.

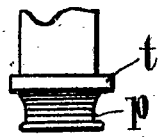


Fig.6.

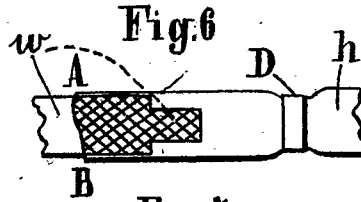


Fig.7.

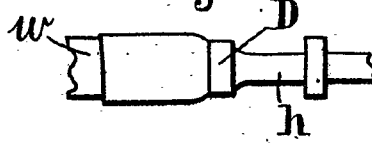


Fig.4.

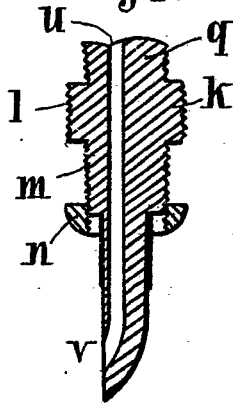


Fig.5.

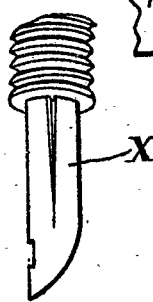


Fig.8.

