PATENT SPECIFICATION

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COMPLETE SPECIFICATION.

Self-filling Fountain Pen.

I, GIUSEPPE TIBALDI, Industrialist, a subject of the King of Italy of 3, Via della Querce, Florence, Italy, 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 pens of the so-called fountain type, comprising a reservoir or sac of elastic material arranged to be flattened or compressed by the manipulation of a member or members forming a part of the pen, the said reservoir when released drawing into itself a supply of ink as it regains its normal shape.

In accordance with the principal feature of the invention the distortion of an element which effects the flattening of the reservoir is effected by the rotation in one direction of a member engaging with the body of the pen by a thread of rapid pitch, rotation of this member being effected by rotating a second member such as the end-piece of the pen in the opposite direction.

In order that the invention may be readily understood it will now be described, by way of example with reference to the accompanying drawings, in which

Figure 1 shows the closed pen;

Figure 2 shows, separately, in vertical section, the cap of the pen,

Figure 3 shows the body of the pen in vertical section;

Figure 4 shows the nib-section with the elastic reservoir or sac attached thereto;

Figure 5 shows, in side and front view, the reservoir-flattening device, i.e. spring and presser-bar;

Figure 6 is a detail view of the member by means of which the spring shown in Figure 5 is distorted;

Figure 7 shows in vertical section, the end-piece of the pen;

Figure 8 shows in vertical section on an enlarged scale the assembled pen in vertical section, with the spring and presser-bar at rest; and

Figure 9 is a similar view of the same pen with the reservoir flattened under the action of the presser-bar.

Referring now to the drawings it will be seen that the pen comprises a tubular body *a* provided at its nib end with an external screw-thread *b* for receiving and securing a cap *c* (Figure 2).

Internally and at the same end, the body *a* is provided with a second screw-thread *d* with which cooperates the screw-thread *e* of the nib-section *f*.

Rearwardly, the body *a* is also provided with an external screw-thread *g* of normal slow pitch, to which is screwed the end-piece *h* (Figure 7).

The body *a* is further provided at its rear end with a longitudinal aperture provided with a rapid left-handed thread *i* into which is screwed a correspondingly screw-threaded plug *k*, (Figure 6).

The nib-section *f* has attached to its inner end a cylindrical reservoir or sac *l* of elastic material which is arranged to be contained within the internal space *m* of the body *a*.

In Figure 5 is illustrated the device by means of which the flattening of the reservoir *l* is effected, this device being composed of a blade spring *o* crooked rearwardly, to which is rivetted a rigid presser-bar *n*.

The elbow-shaped or crooked part o^1 of the spring *o* is slightly bent in the direction of its length, to ensure its rigidity.

To the body *a* is screwed at *i* the plug *k*, the head of which, as will be seen from Figure 6, has a longitudinal slot k^1 and is furthermore provided at the opposite end with a central cavity k^2. This cavity k^2 may contain a small loose block also hollow for the reception of the crooked extremity o^1 of the spring *o*. This small block being loosely located within the cavity k^2 would prevent torsion of the spring *o* due to rotation of the plug *k*.

In assembling the pen, the plug *k* is screwed into the thread *i* of the body *a*, until the head k^2 and a small portion of the neck of the plug project from the body *a*. Then the end-piece *h* is screwed on to the thread *g*, care being taken that at or near the end of the screwing operation, two diametral apertures h^1 provided in the end-piece *h* coincide with the slot k^1

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of the plug k, thus permitting a pin p to be passed through the apertures h^1 and the slot k^1. In this manner the two members (end-piece and plug) by means of which automatic filling of the pen is effected, are readily connected to the body of the pen. The small spring o (Figure 5) may be introduced either through the mouth of the pen, the nib-section f being previously unscrewed, or at the opposite end, after previously unscrewing the plug k. The crooked part o^1 of the spring o will in each case readily enter the cavity k^2 of the plug k. The spring o being of predetermined length, the forward end o^2 thereof will rest near or against the shoulder formed by the inner end of the screw threaded portion e of the nib-section.

When the end-piece h is unscrewed less than one turn, the pin p located within the slot k^1 of the plug k compels the latter to rotate, and as this cylinder is provided with a thread the direction of which is the reverse of that of the end piece h and very steep, it follows that while the end-piece h moves but slightly outwards, less than one millimetre, for instance, the plug k will on the contrary move inwards considerably, for instance, about five millimetres, as far as is required to press and flex, to the necessary extent, the spring o, the extremity o^2 of which abuts against the shoulder of the screw-threaded portion e. The spring is thus compelled to flex at its central part, carrying along with it the rigid presser-bar n which bar will press against the reservoir l and flatten the same, as will be seen in Figure 9. At this point, the nib is dipped into a receptacle containing ink. Then when the end-piece h is screwed up again, the plug k moves outwardly, releasing the spring o, which, on returning to its position of rest, will, in its turn, leave the elastic reservoir l free to regain its normal shape and draw in ink until it is filled. The protuberance with which the head k^3 of the plug k is provided, is intended to abut at the end of the inward movement of the plug, against the end a^1 of the body a, so as thus to limit the movement of the plug to the required extent, it thus being impossible, even by forcing to cause the plug to move inwards further than is necessary for flattening the reservoir l.

It will be understood that the drawings illustrate an embodiment of the invention given solely by way of example, it being possible for the said invention to be varied as regards construction and arrangement without, however, departing from the scope of the invention. It should moreover be understood that wherever it is stated that the screw-threads are right-handed, or left-handed, the terms may be inverted without departing in any way from the characteristic features of the invention. In fact in putting the invention into practice there is nothing to prevent the direction of the threads from being the reverse of that illustrated, provided of course, that their relative directions are unaltered.

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 self-filling fountain pen of the kind described, comprising a reservoir or sac of elastic material, in which the distortion of an element which effects the flattening of the reservoir is effected by the rotation in one direction of a member engaging with the body of the pen by a thread of rapid pitch, rotation of this member being effected by rotating a second member such as the end-piece of the pen in the opposite direction.

2. A self-filling fountain pen as claimed in claim 1, in which the second member engages the body of the pen by a screw-thread of opposite direction to and of less steep pitch than that of the first member.

3. A self-filling fountain pen as claimed in claim 1 or 2, comprising a plug engaging the body of the pen at one end by a screw-thread of rapid pitch, the other end of the plug being provided with a groove through which passes a pin, the ends of which are secured to the second member, substantially as and for the purpose specified.

4. A self-filling fountain pen as claimed in any of the preceding claims in which the member provided with the thread of steep pitch has an enlarged portion, substantially as and for the purpose specified.

Dated this 16th day November, 1931.

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Agents for the Applicant,
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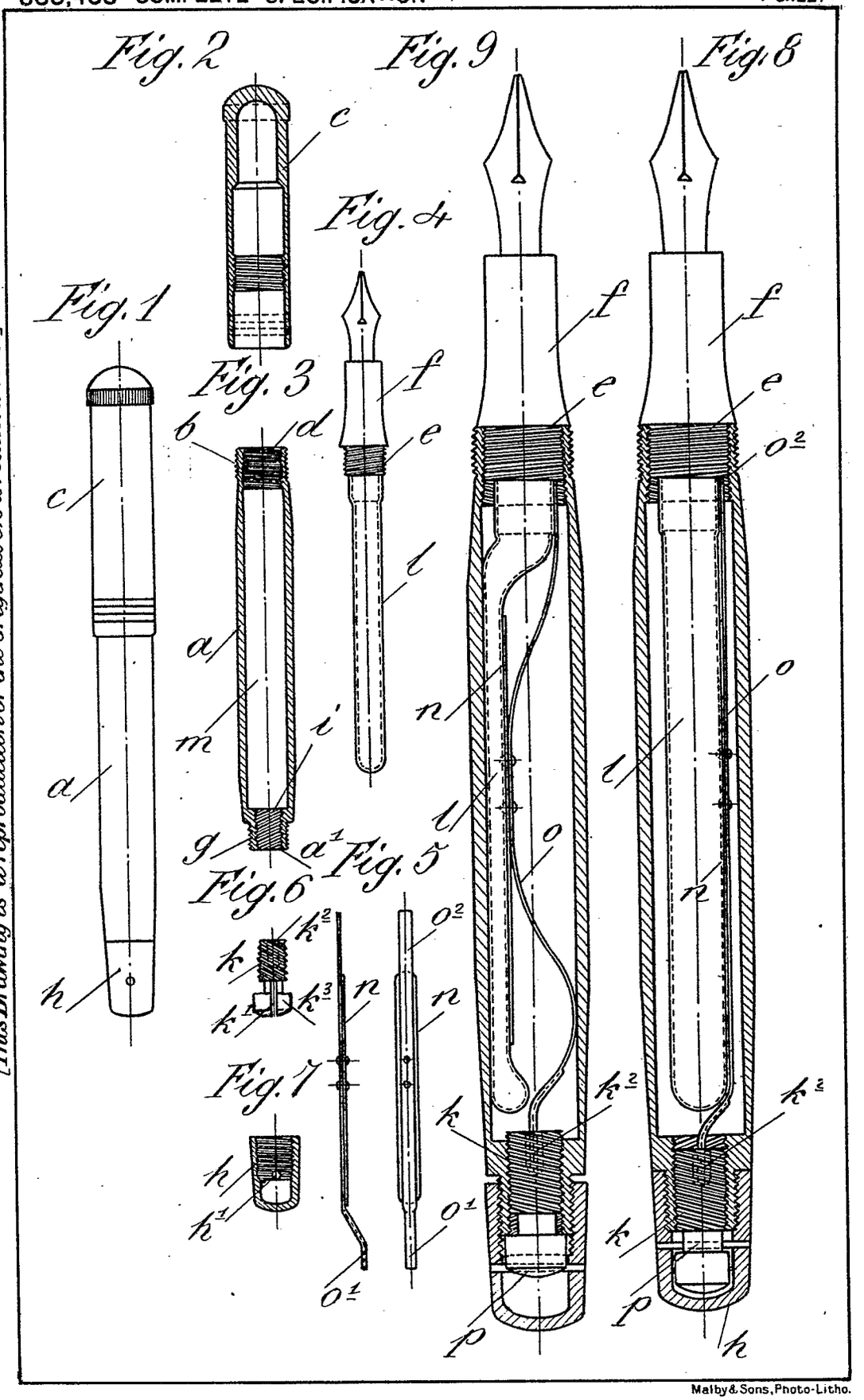

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