

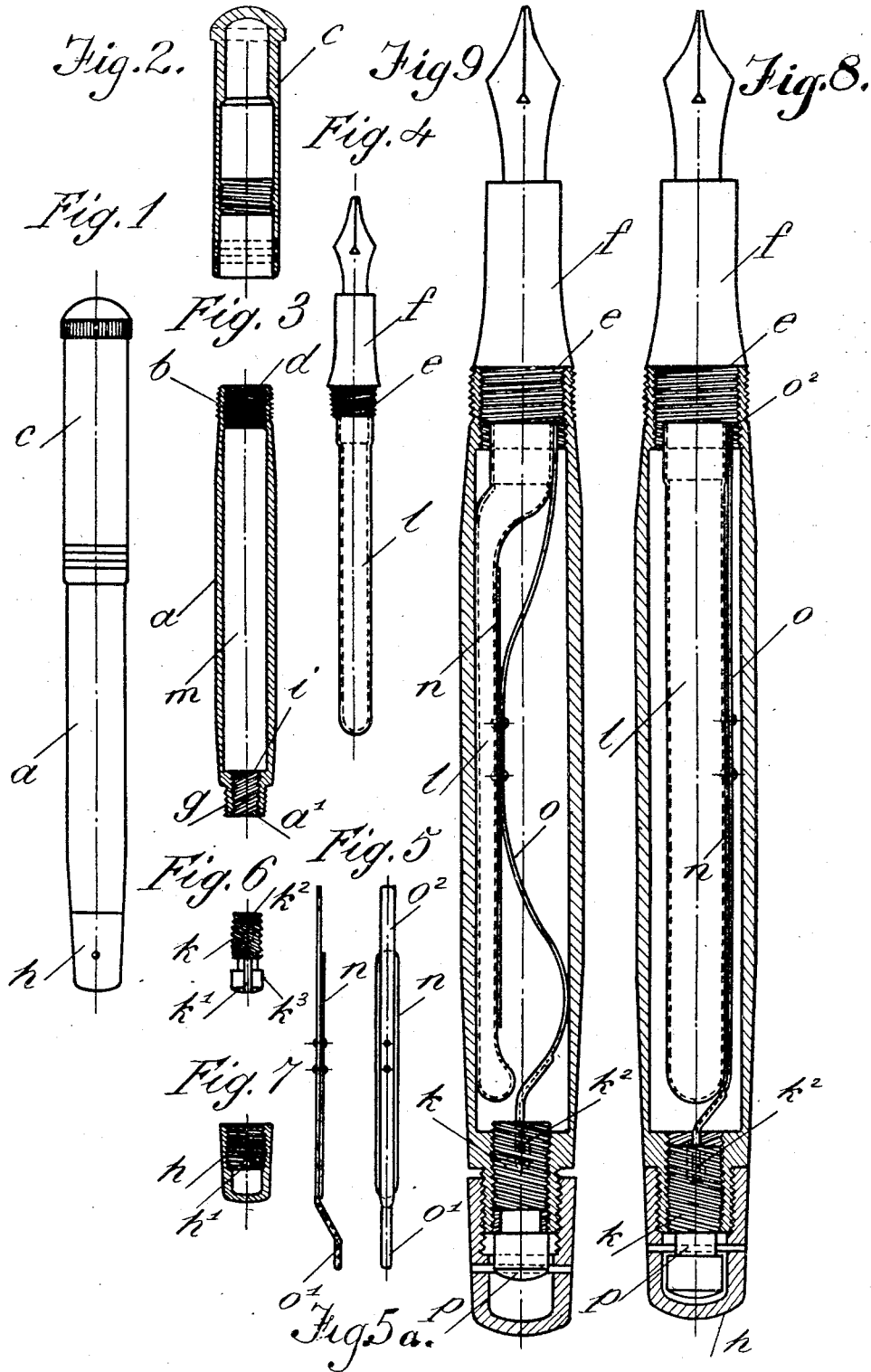
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SELF FILLING FOUNTAIN PEN

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SELF-FILLING FOUNTAIN PEN

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The pen forming the subject matter of the present invention is of the so-called fountain type, the filling of the reservoir being effected through the manipulation of elements which form a part of the pen itself.

This pen, of the self-filling type, is of extreme simplicity. The filling of the reservoir, which comprises a sac of elastic material, such as rubber, is effected according to the well-known method by flattening or contracting the sac, placing the point of the pen into a receptacle containing ink and manipulating the means which compresses and then releases the sac, whereby the latter draws in the ink as it expands.

It is the object of the present invention to provide an improved pen construction embodying the use of a single, simple arrangement, preferably made of metal which is carried by a rotary end-piece of the pen, and which actuates a flat spring with a presser jaw united thereto, the latter being adapted to bring about the flattening of the reservoir or sac.

This object is achieved by the combination of parts hereinafter described in detail, and illustratively exemplified in the accompanying drawing, in which,

Figure 1 is an elevational plan view of my improved pen;

Figure 2 is a substantially longitudinal sectional view of the pen-cap;

Figure 3 is a substantially longitudinal sectional view of the barrel;

Figure 4 is an elevational view of the nib-carrying joining piece provided with the elastic sac or reservoir;

Figure 5 is an elevational view of the sac flattening device, and

Figure 5a is a side view of the same;

Figure 6 is an elevational view of the cylinder having the left hand rapid pitch screw;

Figure 7 is a substantially longitudinal sectional view of the rotary end piece of the pen for manipulating the presser;

Figure 8 is a substantially longitudinal sectional view of the pen showing the sac in normal position; and

Figure 9 is a view similar to that shown in

Figure 8 except that the sac is shown compressed.

Referring to the drawing, the pin comprises the barrel or tube shaped body portion *a* having an external thread *b* at one end over which a cap *c* is screwed.

The barrel *a* at the same end is provided with an internal thread *d* to receive the threaded projection *e* of the nib and sac-carrying union *f*.

The opposite end of the pen-body *a* is provided with an external thread *g* of normal slow pitch to accommodate a rotary end-piece or cap *h* Fig. 7.

The end of the barrel *a*, having the cap *h*, is provided with a through axial bore having a steep pitch left hand thread *i* into which is screwed a cylindrical member *k*, as shown in Fig. 6.

The nib-carrying union-piece *f* is provided with an integral nipple at the end opposite the pen point to receive the open end of a cylindrical reservoir or sac *l* of elastic material, the sac being disposed within the chamber *m* of the barrel *a*.

The sac operating device according to Fig. 5 comprises a band-spring *o* having an offset end portion *O*¹ and a straight portion *O*², to which is attached a rigid (presser) bar or jaw *n*.

The offset end *O*¹ is slightly curved transversely thereof, to ensure rigidity.

Referring to the cylinder *k*, as will be seen from Fig. 6, the threaded portion carries a head *k*³ having a slotted end *k*¹, the opposite end being provided with a central cavity *k*². The cavity *k*² receives a loose block, which receives in turn the end of the offset *O*¹ of the spring. The block turning loosely within the cavity or recess *k*² renders impossible any torsion in the extremity of the spring.

To assemble the pen, the cylinder *k* is screwed almost to its full length into the thread *i* the head *k*³ and neck thereof being allowed to project beyond the end of the threaded nipple *a*'. The cap *h* is screwed into the thread *g* care being taken to locate the transverse bore *h*' in the cap so as to coincide with the groove or slot *k*¹ of the head *k*³, thus permitting the introduction of a pin *p*

through the bore h' , and groove k' . According to this construction a connection between the cap and barrel is established to permit operation of the pen. The spring (Fig. 5) is introduced into the barrel through the end having the union f which when screwed into place engages and anchors the straight end O^2 of the spring. The offset end O^1 of the spring o is seated in the aperture k^2 of the screw-cylinder k .

In the operation of filling the pen, the cap h is rotated sufficiently to project the screw cylinder k a considerable distance along its axis and against the offset end O^1 of the spring O , because the thread of the cylinder k is the thread of a pitch the reverse of that of the cap h and the pitch of the thread is very steep, so that while the cap h is being unscrewed it moves backward very slightly while the cylinder k on the contrary, advances a considerable distance and very rapidly. The spring o is contracted by the inward movement of the screw cylinder k and is caused to buckle at its mid portion in the direction of the sac. The jaw n carried by the spring o presses against the side of the sac causing it to collapse as shown in Figure 9. At this point, the pen point is dipped into a receptacle containing ink. The cap h is then screwed up again, allowing the cylinder k to retract and release the spring o which, on returning to its position of rest, will, in its turn, leave the sac l free to draw in ink until it has become filled to its capacity. The shoulder under the head k^3 of the screw cylinder k is provided to contact with the nipple a' and so limit the length of the stroke of the said cylinder to the required extent; and to prevent it even under great strain, from advancing beyond a certain point beyond what is necessary.

Another variation of the example delineated might be that of rendering the end-piece h male (i. e. externally threaded) and correspondingly rendering female the end part of the body a , the thread g being internal.

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. In a fountain pen, a hollow barrel, a compressible sac therein, a spring for compressing the sac, and a rotary screw in said barrel directly abutting one end of the spring to contract and force the latter against the sac when screwed into the barrel.

2. In a fountain pen, a hollow barrel, a pen carrying union in one end of the barrel, a compressible sac attached to the union and disposed in the barrel, a spring to compress the sac abutting the union at one end and projecting along the sac towards the other end of the barrel, a rotary screw having a rapid pitch screwed into the last mentioned

end of the barrel and adapted to abut the adjacent end of the spring, and a rotary cap mounted on the barrel and connected to the screw, whereby rotary movement of the cap will impart simultaneous rotary and axial movement to the screw to buckle the spring as the space between its ends is reduced.

3. In a fountain pen, a hollow barrel, a pen carrying union mounted in one end of the barrel, a compressible sac carried by the union and disposed in the barrel, a spring to compress the sac abutting the union at one end and projecting along the sac towards the other end of the barrel, a screw having a rapid pitch thread screwed into the barrel and provided with a recess to receive the adjacent end of the spring, said screw having a slotted end portion projecting beyond the barrel, a cap to screw over the end of the barrel carrying the screw, the threads receiving the cap being opposite to those of the screw, and a pin projecting transversely of the cap and through the slotted end of the screw, whereby rotary movement of the cap will impart a simultaneous rotary and axial movement to the screw to buckle the spring as the space between its ends is reduced.

4. A fountain pen, as claimed in claim 3, in which the spring comprises a straight portion projecting from the union to the free end of the sac and an offset end portion to pass around the end of the sac and into the center of the screw, and a jaw attached to the spring at the center of the straight portion, between the latter and the sac.

5. In a fountain pen, a hollow barrel, a compressible sac therein, a spring for compressing the sac, a rotary screw having a rapid pitch thread screwed into the barrel and against one end of the spring to buckle the same against the sac, and a cap attached to the rotary screw and screwed onto the end of the barrel, the axial movement of the cap being slower and opposite to that imparted to the screw when both members are rotating in the same direction.

6. A fountain pen, as claimed in claim 3, in which the slotted end of the screw comprises a head having a shoulder abutting the adjacent end of the barrel to prevent axial movement of the cap beyond a certain point.

In testimony whereof I affix my signature.
GIUSEPPE TIBALDI.

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