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(71) Applicant: **ROMAN HELLER.**

(72) Inventor: **KUTTER LEOPOLD ().**

(54) **FOUNTAIN PEN**

(57) **Abstract:**

(54) **STYLOGRAPHE**

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Fountain pens are already known consisting of two telescopically slidable tubes in which a closing flap on the outer tube is automatically opened and closed when the inner tube is pushed out or retracted, by means of a member actuated by the inner tube and engaging the flap. In such an arrangement it is necessary for the inner tube, which is retracted in the outer tube up to a stop, to be secured to some extent against being pushed forward so that the closure flap is held closed by means of this actuating member.

This arrangement is necessary, more especially in a fountain pen in which the end of a curved leaf spring engaging the closure flap excentrically cooperates with a transverse notch and adjoining longitudinal groove which have hitherto been worked in a metal sleeve pushed on the inner tube. This metal sleeve is also provided with resilient ridges which, when the inner tube is completely retracted, engage behind an offset part of the outer tube and prevent displacement, when the end of the movement of the inner tube has been reached on account of a pin projecting out of the inner tube striking against the end of the groove of the outer tube.

This metal sleeve or other necessary metal parts are, however, complicated in manufacture and assembly, and also they have great disadvantages for permanent satisfactory operation of the fountain pen because they are attacked by the ink which easily reaches them from the nib, so that the displacement of the tubes and the springing of the parts is detrimentally affected. It would be much too expensive to manufacture the sleeves or other large metal parts from suitable noble metal.

The present invention avoids these disadvantages by dispensing with this metal sleeve or other large metal parts and providing a securing device for the inner tube when retracted in the outer tube up to a stop, consisting of an annular groove provided on the inner tube in which resilient members are arranged on a sleeve which can be screwed on to the outer tube which also forms the stop for an offset part of the inner tube and satisfactorily limits its movement.

Further, the resilient members are preferably formed from balls which are embraced together by a freely springing ring. When a leaf spring engaging with the closure cap is adjacent the transverse notch and longitudinal groove are worked in the non-metallic material, such as vulcanite or the like, which forms the inner tube.

The accompanying drawing illustrates a constructional example of the invention as applied to the known arrangement with leaf spring, Figs. 1 and 2 being longitudinal sections with the nib retracted and pushed out respectively, and Fig. 3 being a longitudinal section of the middle part of the holder on a larger scale in the position shown in Fig. 1.

The fountain pen consists of the outer tube 1 and the inner tube 2. The outer tube has a closure cap 4 which can swing at 3 and which in the closed position bears on a packing 5. The closure cap is controlled by a leaf spring 6, with an end 7 in the form of a lug which engages the cap 4 excentrically at 8 and is guided in a longitudinal groove 9 of the outer tube 1.

The inner tube 2 contains the known ink reservoir, which is not illustrated, and has at its end the known ink guide 10 and the nib 11.

The transverse notch 12, with adjoining longitudinal groove 13 serving for controlling the leaf spring 6 and with it the closure cap 4, is worked according to the invention, in the non-metallic material, for example, vulcanite of which the inner tube 2 is made. Moreover, at the second end of this longitudinal groove a transverse notch 14 is formed in the material of the tube for a purpose to be described below.

The new arrangement for securing the inner tube 2 when completely retracted within the outer tube 1, consists of an annular groove 15 arranged preferably at a thickened part 26 of the tube 2 and in which resilient members on the outer tube 1 can engage. These resilient members in the example illustrated consist of balls 16 (See more particularly Fig. 3), which are mounted in cavities 17 of the outer tube from the outside in such a manner that they cannot fall out on the inside. The balls are surrounded on the outside by a common freely springing ring 18 which forces them inwards and is deformed resiliently by pressure from inside.

tubular member
 The balls 16 are mounted in cavities in a short sleeve 19, in order to fulfil a particular purpose, the sleeve being screwed into the outer tube 1 at 25 in such a manner that the free springing of the ring 18 arranged between the two parts 1, 19 is not affected. The sleeve 19 further has a smaller internal diameter than the tube 2. This results in an

internal offset part 20 which serves for obtaining a limitation of movement of the two tubes 1, 2 when the inner tube 2 is retracted since an offset part 21 of the inner tube 2 strikes against it, which offset part is formed by a further thickening of the tube 2, preferably along a suitable length 22 so that the tube 2 slides smoothly in the tube 1 and also the leaf spring 6 can be pressed flat, as will be clear from the further description.

The two tubes 1, 2 are prevented from rotating by a straight line guide, a pin 23 on the inner tube 2 engaging in a covered groove 24 or an open slot in the outer tube 1. This pin has hitherto been made of metal and has been inserted in the groove 24 laterally from the interior of the tube 1 through a lateral opening. The groove 24 has been closed at both ends by the material of the tube 2, or otherwise, so that the pin 23 can strike against both ends in order to limit the movement of the tubes 1, 2.

According to the invention the pin 23 strikes the end of the guiding groove 24 only when the pin is pushed out (Fig. 2). When the tube 2 is completely retracted (Figs. 1 and 3) the movement of the two tubes 1, 2 is limited, not by the parts 23, 24, but by the stops 20, 21. It is therefore also possible to arrange the pin 23 rigidly on the inner tube 2 and if desired to make it from the same material as the tube. The guiding groove 24 extends to the end of the tube 1, that is up to the beginning of the thread 25, and therefore, when the sleeve 19 is screwed off, the tube 2 together with

the fixed pin 23 can be pushed into the tube 1, because the pin can enter the groove 24 at the open end.

The mode of operation of the pen is known in the basic features.

When the tube 2 is completely retracted (Figs. 1 and 3) its movement is limited by the stops 20, 21 and the balls 16 acted upon by the spring ring 18 enter the annular groove 15 of the thickened part 26 and secure the inner tube against displacement with a certain amount of force. In this way an undesired opening of the closure cap 4 is prevented because the end 7 of the leaf spring is thereby somewhat stretched and the notch is provided on the inner tube which is held fast.

When the tube 2 is pushed out, which is not possible only by using a certain amount of force in order to lift the balls 16 out of the groove 15, the closure cap 4 is first opened by means of the leaf spring 6. The lug 7 at the end of the spring moves out of the notch 12, slides into the groove 13 and finally enters the second notch 14 at the end of the movement of the tubes 1, 2 (Fig. 2) determined by the pin 23 and groove 24 or by the abutment 32. By this engagement the tubes 1, 2 are held, with a certain amount of force, against a retraction of the tube 2, so that an undesired retraction of the nib by the pressure used in writing is not possible. The balls 16 slide on the part of the tube which is not thickened so that the spring ring 18 is stretched somewhat and the pressure of the balls is smaller.

When the tube 2 is retracted the lug 7 is first lifted out of the notch 14. The cap 4 cannot then be closed because the leaf spring 6, which is pressed flat by the thickened part 22, slides ineffectively in the groove 13. When the tube is practically completely retracted the lug 7 catches in the notch 12, assisted by the spring 6 becoming curved again, so that the cap 4 is closed.

WHAT I CLAIM IS:-

1. A fountain pen holder comprising two telescopically slidable non-metallic tubes, a nib carried by the outer end of the inner tube, a closure flap hingedly mounted on the outer end of the outer tube, a spring member eccentrically secured at one end to the flap and actuated by the inner tube, whereby the flap is opened when the tubes are extended and is closed when the tubes are retracted, the inner tube being provided with an annular groove, a plurality of members associated with the outer tube and resiliently engageable in said groove when the tubes are retracted whereby the inner tube is resiliently fixed to the outer tube in both longitudinal directions, the flap thereby being kept in a closed position.

2. A fountain pen holder as claimed in Claim 1, further comprising a sleeve member secured to the inner end of the outer tube, said sleeve member having recesses for receiving the resiliently engageable members and having an internal offset portion, said inner tube having an external offset portion, said offset portions abutting each other when the tubes are retracted.

3. A fountain pen holder as claimed in Claim 1, wherein said resiliently engageable members are constituted by balls, and further comprising a

freely resilient ring surrounding said outer tube and embracing said balls.

4. A fountain pen holder as claimed in claim 1 wherein said resiliently engageable members are constituted by balls, and further comprising a sleeve member secured to the inner end of the outer tube, said sleeve having recesses for receiving said balls and having an internal offset portion, said inner tube having an external offset portion, said offset portions abutting each other when the tubes are retracted and a freely resilient ring disposed between the inner end of the outer tube and said sleeve for embracing said balls.

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5. A fountain pen holder as claimed in claim 1, wherein said inner tube is provided with a thickened portion in which said annular groove is provided.

6. A fountain pen holder as claimed in claim 1, wherein the inner tube is provided with an external longitudinal groove and a transverse notch at one end of the groove, said spring member cooperating with said notch and groove.

7. A fountain pen holder as claimed in claim 1, wherein the inner tube is provided with an external longitudinal groove and a transverse notch at both ends of the groove, said spring member cooperating with said notch and groove.

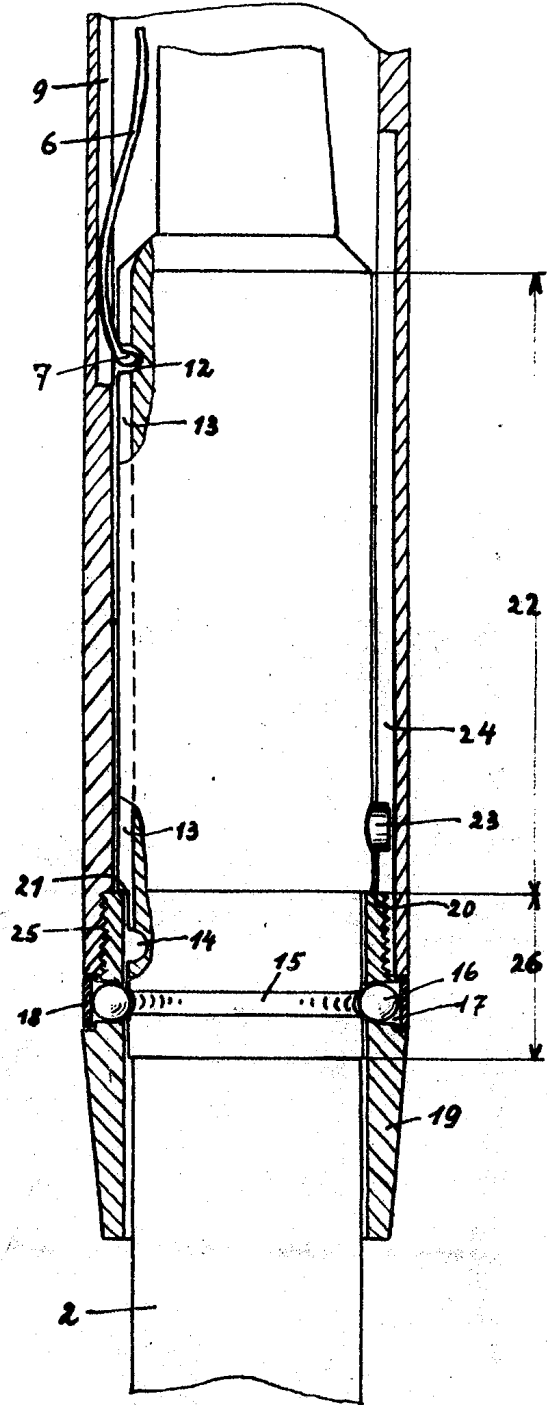
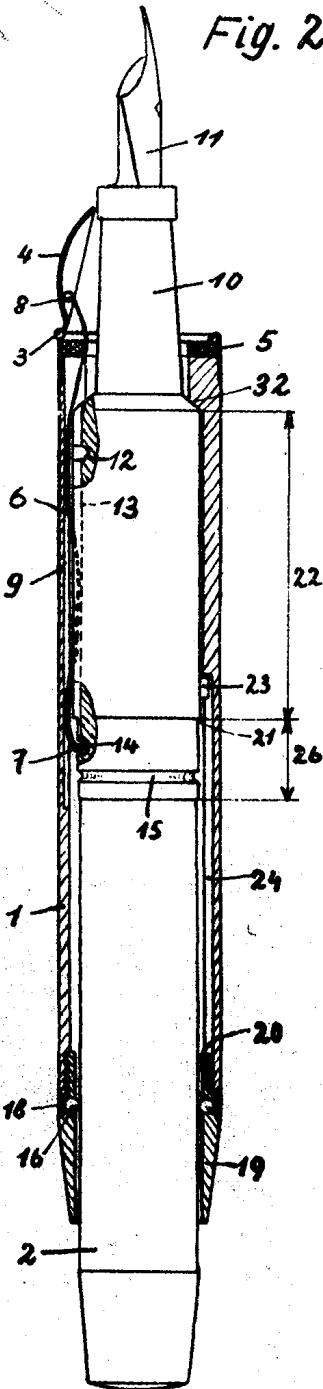
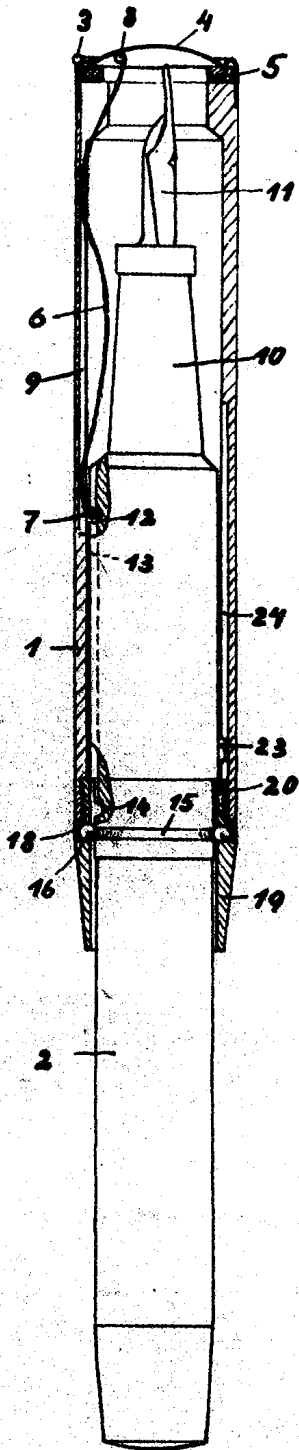
8. A fountain pen holder as claimed in claim 1, wherein said outer tube is provided with an internal longitudinal groove and further comprising a pin secured externally of the inner tube and slidable in said groove.

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Fig. 2.

Fig. 1.

Fig. 3.



CERTIFIED TO BE THE DRAWINGS REFERRED TO IN THE SPECIFICATION HEREUNTO ANNEXED.

OTTAWA Sept. 4, 1935.

BY

L. Kuttaw
Marks & Clerk
ATTORNEYS