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DUAL FOUNTAIN PEN

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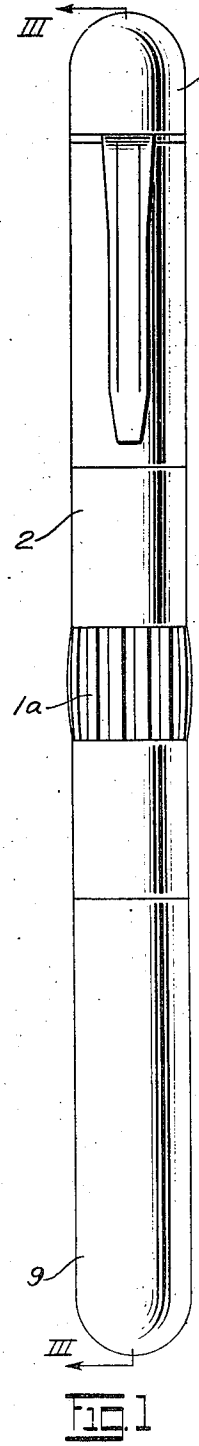


Fig. 1

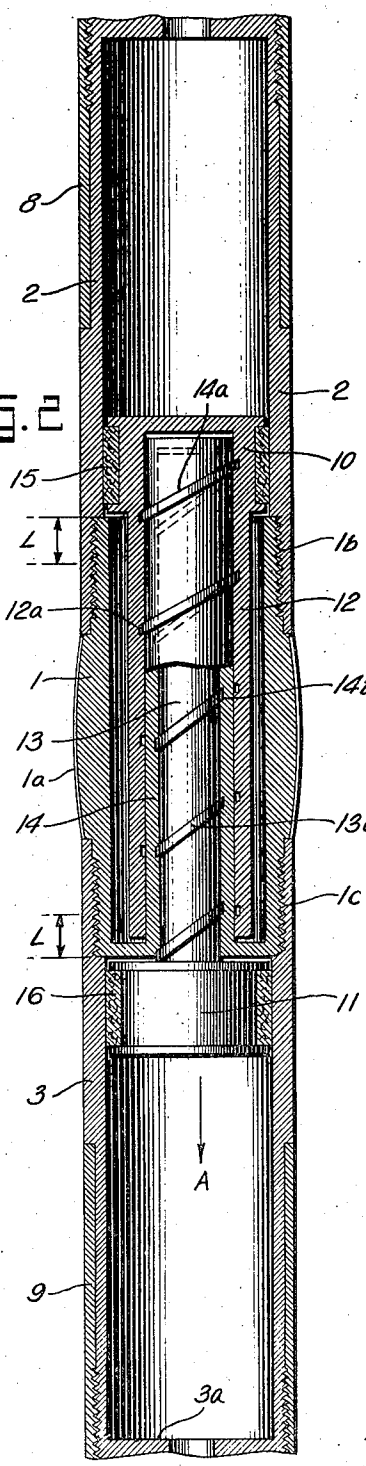


Fig. 2

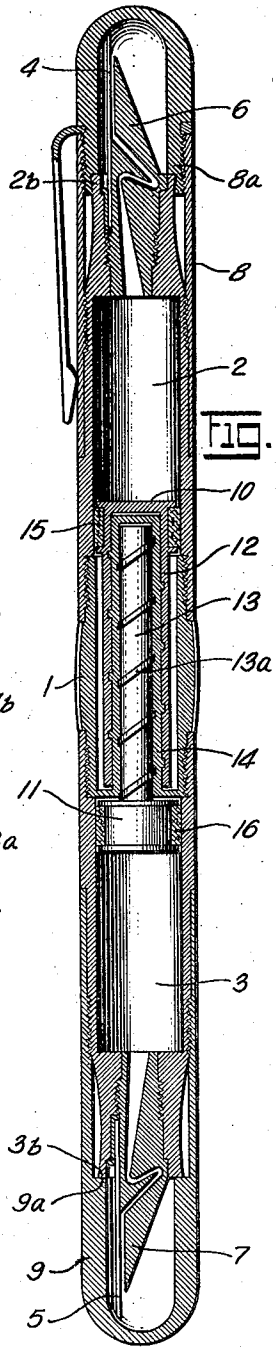


Fig. 3

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DUAL FOUNTAIN PEN

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4 Claims. (Cl. 120—42.10)

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In practically all intellectual professional circles, especially with writers, engineers, businessmen, teachers and pupils alike there exists a great need for a fountain pen adapted to carry two kinds of ink, one of which may be red.

Attempts have already been made to manufacture such multi-colour fountain pens on the principle of the multiple propelling pencils, but all these attempts, known to the applicant, have been characterized by too great a mechanical complexity.

The object of the present invention is a dual fountain pen distinguished by cheapness and reliability. This fountain pen possesses at each end an ink reservoir terminating outwardly in a nib-section and which, inwardly, is closed by a plunger coacting with a mechanism by means of which each plunger can be axially displaced within the related ink reservoir.

In the accompanying drawing there is shown for purposes of illustration one preferred embodiment of the invention.

Fig. 1 is a lateral view of the dual fountain pen,

Fig. 2 shows a fragmentary cross-sectional view taken on an enlarged scale from Fig. 3,

Fig. 3 represents a longitudinal section of the fountain pen taken on an enlarged scale on the line III—III of Fig. 1.

With reference to said annexed drawing, numeral 1 designates a tubular center piece or operating member provided outside with a knurling 1*a*. Each end of the centerpiece is fitted with a screw-thread of low pitch 1*b*, 1*c*, respectively. Each of these threads enters an ink reservoir 2, 3, respectively, terminating in a nib-section 4 or 5. 6 and 7 denote the two pertinent usual ink feeders threaded into the ends of the ink reservoirs 2, 3, numerals 8 and 9 designating the two protective caps screwed onto the ends of the ink reservoirs 2, 3.

On the inside the two ink reservoirs 2, 3 are each closed by an axially slidable plunger 10, 11, respectively, seated on spindles 12, 13, spindle 12 being hollow and provided inside with a screw-thread 12*a* of high pitch, while the solid spindle 13 carries an external thread 13*a* likewise of high pitch.

As apparent especially from Fig. 2, the centerpiece 1 is integral with the cylinder 14 arranged therein. Internally and externally this cylinder is provided with screw-threads 14*a*, 14*b*, respectively, of high pitch, which threads correspond with those 12*a* and 13*a* of the spindles 12 and 13 fitted to the hollow cylinder 14.

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The manipulation and operation of the aforedescribed dual fountain pen is as follows. In Figs. 2 and 3 the two plungers 10, 11 are in the inner position. Suppose now the reservoir 3 is empty and has to be filled with ink, then the cap 9 is first unscrewed and the pen 5 dipped as usual into an inkwell. The lower part of the reservoir 3 is now held firmly by the one hand, and by the other hand the centerpiece 1—seen from the nib 5—is turned clockwise. Thereby the hollow cylinder 14 is turned together with the upper reservoir 2 round about the spindle 13, and since the latter is prevented from being carried therewith due to friction between plunger 11 and inner wall of reservoir 3, the spindle 13 together with plunger 11 becomes axially displaced in the direction of the arrow A indicated in Fig. 2 until the plunger 11 eventually abuts on the lower end 3*a* of reservoir 3. By turning the centerpiece 1 it is simultaneously screwed out of the reservoir 3 the axial distance L. The thread 1*c* being, however, longer than the length of the threaded portion around which the centerpiece is screwed out of the reservoir 3, the connection between these two parts is maintained in any position.

As soon as the plunger 11 abuts on the lower end 3*a* of reservoir 3, the centerpiece 1 is turned in the opposite direction, whereby spindle 13 and plunger 11 are raised, that is, moved in a direction opposite to that indicated by the arrow A and ink is drawn into the reservoir 3. The process is similar when the other reservoir 2 is to be filled; namely, the structure 2 is prevented from rotating while the actuating means 1 is moved clockwise or unscrewed in order to axially extend the plunger 10 and its operating rod 12, such rotation of 1 being in the same direction as that previously employed above to withdraw the opposite plunger 11 when the pen was inverted. When the plunger 10 has travelled outward the length of the reservoir 2, it is retracted by reverse rotation of the centerpiece 1, thus causing ink to be sucked into the reservoir. It is thus seen that, whichever reservoir 2 or 3 is being filled or emptied, the centerpiece 1 is unscrewed or screwed into one reservoir the axial distance L while the corresponding plunger moves in the opposite direction the much greater length of the reservoir, these axial movements being proportionate to the different pitches of threads 1*c* and 13*a* or of 1*b* and 14*a* as the case may be.

When the plunger 10 or 11 returns to the position shown in Figs. 2 and 3, the centerpiece 1 too is at the same time again firmly threaded into the reservoir 2 or 3. Since the hollow cylin-

der 14 adapted to the centerpiece is not hollow throughout, but closed at one end, plunger packings 15 and 16 prevent ink from flowing from one reservoir into the other. In order to prevent leakage, even in regions of rarefied air, say, in the mountains, especially with the barrel held downwards, the protective caps 8, 9 fit snugly with a shoulder 8a and 9a, to outer front rims 2b and 3b so as to render the barrel fluid tight.

Alternatively, the object of the invention may likewise be utilized as writing instrument with two different nibs, one soft and one hard. Thus, for instance, a standard writing pen may be set in at the one end, while the other end of the holder carries a special signature pen.

Instead of providing the centerpiece with ends threadedly engaging the reservoir 2 and 3, it might also be possible to have each of the reservoirs rotatably arranged on a stud of the centerpiece. To secure the position in axial direction these studs could be designed with an annular groove snugly engaged by the related reservoir.

What I claim is:

1. In a dual fountain pen having an ink reservoir disposed at each end thereof, and a plunger operatively mounted in each reservoir, the improvement comprising: an inwardly extending, threaded spindle connected to each plunger; and an operating member rotatable with respect to said dual fountain pen and threadedly connected to each spindle, whereby rotation of said member serves selectively to effect axial reciprocal movement of either plunger.

2. The improvement of the preceding claim wherein one of said spindles is internally threaded and the other is externally threaded at their respective portions which are in threaded registration with said operating member.

3. The improvement of the preceding claim wherein said operating member comprises a hollow cylinder threaded both internally and externally and disposed with its inner and outer faces in threaded registration with the respective spindles.

4. The improvement of claim 1 wherein said operating member is connected to said dual fountain pen by threads of lesser pitch than those of each spindle whereby upon manipulation, said member moves axially opposite to and a lesser distance than the axial movement of the particular plunger being operated thereby.

MAX ERNST.

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