July 22, 1941. M. KÁLMÁN 2,249,961

FOUNTAIN PEN

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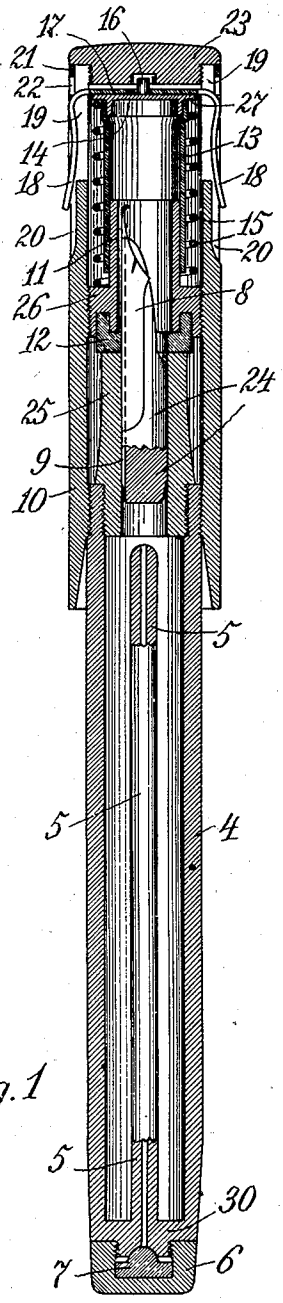


Fig. 1

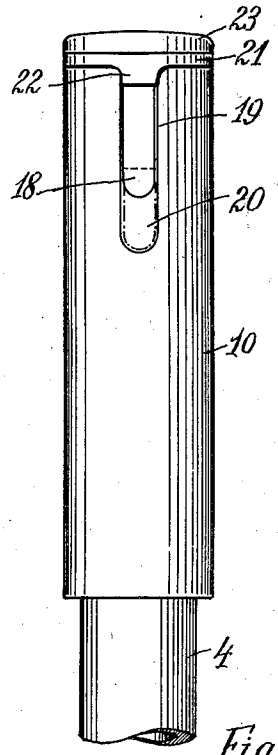


Fig. 2

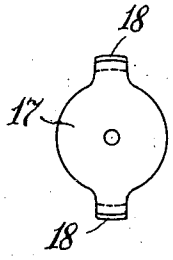


Fig. 3

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FOUNTAIN PEN

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In Austria February 25, 1938

3 Claims. (Cl. 120—46)

This invention relates to fountain pens and more particularly to fountain pens of that type in which the ink is drawn in at the rear end of the barrel during the filling operation, a filling tube open at both extremities being so arranged in the barrel as to extend from the perforated rear end wall to the forward end of the barrel.

One object of the invention is to provide a fountain pen of the type specified above in which the barrel or reservoir is of thoroughly rigid or inextensible construction and contains no constructional parts other than the filling tube mentioned above or its equivalent.

Another object of my invention is to facilitate the production of a partial vacuum in the barrel for the purpose of filling.

A further object of my invention is to provide, for the filling operation, an easily operated and reliable suction device outside the barrel but within the conventional components of a fountain pen.

Still another object of the invention is to efficiently prohibit leaking in the applied position of the protective cap.

I attained all these objects and several other advantages by the cooperative combination with a filling tube as specified above of suction producing means adapted to be airtightly fitted upon or around the forward or nib end of the fountain pen so as to communicate with and suck from or through the ink passage through which ink flows to the nib when writing.

A preferred form of my invention is illustrated in the accompanying drawing in which—

Fig. 1 is an enlarged longitudinal section of my whole fountain pen with the protective cap applied to the forward end of the pen;

Fig. 2 is a side view of the cap, the barrel being broken away;

Fig. 3 shows a portion of the suction device in plan view.

In the embodiment of my invention shown in the drawing, the barrel 4 is provided with a known filling tube 5 open at both extremities and so arranged within the barrel as to extend from the rear extremity almost to the forward end of the barrel. The rear end wall 30 of the barrel being thus perforated, a cap 6 may be screwed upon the reduced end of the barrel, and tight closure may be insured by an interposed packing 7, for example rubber.

The forward end of the barrel 4 carries the pen proper 8 frictionally secured in the usual manner between a pen holder 25 and a plug 24 in which the usual ink duct 9 is formed for the passage of ink from the barrel to the nib of the pen 8.

In the protective cap 10 adapted to be screwed on the forward end of the fountain pen, suction producing means are so arranged as to airtightly join the forward end of the fountain pen when the cap 10 is screwed on. A short tube 11 is screwed with its flange 26 into, or otherwise secured in, the cap 10, its end face adjoining the forward end of the fountain pen being provided with a gasket 12. A short piece of hose 13 is airtightly fitted with one end upon the tube 11, the other end of the hose being stoppered by a disk 14. Interposed between a flange 27 of this disk and the flange 26 of tube 11 is a helical spring 15 which surrounds and tends to extend the hose 13 in its longitudinal direction. On a short peg 16 projecting from the center of the disk 14 a second disk 17, Fig. 3, is stuck from which two finger-pieces 18 project outwards and downwards through opposite longitudinal slots 19 in the cap 10. These slots continue downwards in the form of grooves 20 and serve as guidings in which the finger-pieces 18 may slide. When the finger-pieces are pushed down into their lowest positions shown by dots-and-dashes in Fig. 2, the disk 17 integral with them carries with itself the disk 14 secured to hose 13 so that spring 15 and hose 13 are compressed, and when spring 15 is allowed to expand it returns both disks and the finger-pieces into their highest positions shown in Fig. 1 so that hose 13 is extended. Thus, provided that cap 6 has been removed from the lower or rear end of the barrel so that air may escape through tube 5 during the downward stroke, the hose acts as a sucker in the upward stroke. Lugs 22 downwardly projecting from a ring 21 embracing the upper edge of the cylindrical portion of cap 10 cover the upper ends of slots 19 and limit the upward stroke of finger-pieces 18. The top portion 23 of cap 10 may be screwed off when the several parts of the suction device are to be introduced or exchanged.

To fill the barrel with ink, the rear cap 6 is screwed off and the pen with the protective cap 10 screwed on is so held between two fingers of one hand that these rest on the finger-pieces 18. The rear end of the pen is now dipped in an ink well and the suction device is actuated by moving the finger-pieces down and up. The ink sucked in during every upward stroke flows from the upper end of the filling tube 5 down into the lower portion of the barrel where it remains trapped until the barrel is filled up to the level of the upper extremity of the tube 5.

The airtight joint between the suction device and the forward end of the pen insures at the same time against leaking when the pen is carried in the pocket.

It will be understood that the invention is susceptible of considerable variation in the construction shown and described. Thus, for example, the filling tube need not occupy an axial position in the barrel, and a narrow ink duct extending along the inner wall of the barrel and open at its ends only may be substituted for tube 5. The suction device may be of any suitable construction provided that it is adapted to be fitted upon or around the forward or nib end of the fountain pen to suck out air from the barrel through the duct or passage feeding ink from the barrel to the pen proper.

I am aware that it has already been proposed to arrange in the protective cap a suction device adapted to suck air from the barrel through the ink passage through which ink flows to the nib when writing, and I do not claim broadly the arrangement of suction producing means in a protective cap for any fountain pen but what I claim is:

1. In a fountain pen, a protective cap, and suction producing means arranged in said cap and comprising a rigid suction-tube secured within said cap, a peripheral flange on said tube, a hose airtightly fitted with one end upon said tube, a rigid stopper airtightly closing the other end of said hose and having a peripheral flange, a helical spring inserted between said two flanges and surrounding and tending to extend said hose, and means for reciprocating said stopper in the longitudinal direction of said hose.

2. In a fountain pen, a protective cap with opposite longitudinal slots in its side walls, and suction producing means arranged within said cap and comprising a rigid suction-tube secured in said cap, a peripheral flange on said tube, a flexible hose airtightly fitted with one end upon said tube, a rigid closing member in the other end of said hose, a peripheral flange on said closing member, a coil spring inserted between said two flanges and surrounding and tending to extend said hose, and two finger-pieces connected to said closing member and projecting outwardly through said slots, said slots forming guidings for said finger-pieces in their reciprocatory movements.

3. In a fountain pen, a barrel having a perforated rear end wall, a filling tube extending from the outer face of said end wall to a point within said barrel near the forward end thereof, a pen holder closing the forward end of said barrel, an ink passage through said pen holder, a protective cap to be applied to the forward end of the fountain pen, and suction producing means arranged in said cap and comprising a rigid suction-tube so secured in said cap as to tightly join said pen holder and suck through said ink passage from the barrel in the applied position of said cap, a peripheral flange on said tube, a hose airtightly fitted with one end upon said tube, a rigid closing member in the other end of said hose, a peripheral flange on said closing member, a coil spring inserted between said two flanges and surrounding and tending to extend said hose, and means for reciprocating said closing member in the longitudinal direction of said hose.

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