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UNITED STATES PATENT OFFICE.

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FOUNTAIN-PEN.

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To all whom it may concern:

Be it known that we, JOSEPH A. VOGELMANN and CHARLES F. HOVEY, citizens of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Fountain-Pens; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to fountain pens, and more especially to the filling devices therefor; and the objects of the same are to prevent a fountain pen from leaking, while yet permitting the ink to flow when desired or when the pen is being filled, and also to provide means for permitting the pen to be filled by an ordinary filler when desired. These objects we carry out by the construction hereinafter more fully described and claimed, and as shown in the drawings, wherein—

Figure 1 is a central, vertical, longitudinal section; Fig. 2 is a plan view thereof, the cap removed; Fig. 3 is a transverse section on line 3—3 of Fig. 1; Fig. 4 is a detail side elevation of the rotary plug at the upper end of the pen; Fig. 5 is a central, vertical, longitudinal section, showing a modified form; Fig. 6 is a transverse section on line 6—6 of Fig. 5.

In the drawings the letter B designates the barrel of this pen, N the point or nib, and C the cap for covering the point when the nib is not in use and for closing the other end of the pen at other times. The lower end of the latter is reduced as seen at 5 and its extremity closed as at 6 and pierced with a hole 7 which is off center, and around the reduced portion is a groove 8. The collar 9 which carries the nib N has a sleeve 10 at its upper end which surrounds said reduced portion, and through this sleeve is passed a pin or screw 11 on each side which engages the groove 8 so that these parts can rotate relatively. Above and below this groove are other grooves in which is disposed packing 12 to prevent leakage. The collar is provided longitudinally with an off-center duct 13 adapted to register with the hole 7 when the collar is properly turned as the pin and groove permit, and when so set it will be understood that the ink within the barrel can flow to the nib.

On the top of the barrel and collar are marks or score lines 15 as best seen in Fig. 2, so disposed that when they are opposite each other the duct and hole are in register and the ink is flowing, but at other times the ink is positively cut off and therefore the pen cannot leak at this end. The other or upper end of the pen is reduced and provided with an axial bore within which is journaled the head 20 of a plug best seen in Fig. 4, the opposite end of this plug being enlarged into a knob or handle 21 which is knurled or milled on its exterior so that the plug may be rotated. The shank 22 of this plug is hollow for a distance, its duct having a funnel-shaped mouth 23 opening through the upper end of the knob 21 and extending thence downward within the shank to a lateral opening 24 about as seen; and the upper end of the barrel where it is reduced has an off-center hole 27 which extends first upward and then inward toward the axis so that it may communicate with said opening 24 when the plug is properly turned. Beneath the knob may be a skirt 25, and around the shank a groove 26, both of which are for packing as best seen in Fig. 1, so that the plug cannot leak when the opening 24 from its duct is set out of communication with the hole 27 and no ink can escape from this end of the pen under those conditions. It will be obvious that by turning the knob the upper end of the pen can be opened when desired.

The cap C of this improved pen is well illustrated in Fig. 1. It comprises an inner shell 30 and an outer shell 35 having a closed upper end 36 and slidably mounted upon the inner shell as will be understood, and there may be packing 37 between the two parts. The upper end of the inner shell is also closed as at 32 and pierced with a central opening 33, the whole for a purpose which will appear below.

In Fig. 5 is shown a slight modification wherein the collar 9^a has a duct 13^a, and its sleeve 10^a which is screwed as at 5^a upon the reduced lower end of the barrel B, and the hole 7^a in the latter bends upward as shown so that it may be thrown into register with the duct by rotating the collar on its thread. Otherwise the construction is much similar to that above described. The other end of this barrel is provided with a knob 21^a having a funnel-shaped opening

23^a through it, but the knob is screwed as at 25^a into this end of the barrel. Below the threads within the barrel the latter is provided with an internal cross bar 22^a having a central conical valve 24^a adapted to seat into the lower and smaller end of the funnel-shaped opening when the plug is screwed home as shown; otherwise the construction is much the same as above, and it is intended that the same is to be used. We might add that in either construction the barrel and knob are marked with scores or marks 38 on their exteriors, as best seen in Fig. 2, which when in register with each other indicates that this end of the barrel is open.

This improved pen is used in the usual manner, the valve at the upper end being normally closed and that at the lower end adjusted to set it open to a greater or lesser degree as desired, and as the pen is used the ink flows out this lower end to the nib N. When the ink is exhausted or nearly so and it is desired to fill the pen, the valve at the lower end is closed, the cap withdrawn, the valve at the upper end opened, and the pen may be filled by an ordinary filler as usual; after which this valve is closed and the cap re-applied. During the operation no ink can escape at the lower end, and of course after the valve is closed at the upper end no ink can escape there and the valve at the lower end must again be opened so that the pen can be used. If it be desired to fill the pen by means of the cap itself, both valves are opened and the cap applied as shown in Fig. 1, then the lower end of the pen is inserted in the ink well and the outer shell of the cap drawn upward over the inner shell while the latter remains upon the upper end of the pen; this creates a vacuum within the two shells and between their upper ends, and the suction thereby set up exerts force through the opening 33 and through the open valve at the upper end of the pen and sucks ink in at its lower end as will be clearly understood. The valve at the lower end is then closed, the entire cap removed, the valve at the upper end of the barrel closed, the shells of the cap telescoped upon each other to the position shown in Fig. 1 and the entire cap replaced, the lower valve opened,

and writing resumed. Thus it will be seen that we have produced a pen which may be filled in the ordinary manner if desired and may be used with the ordinary cap if preferred, but when this improved cap is also employed it can yet be filled in the ordinary manner or can be filled by suction without the possibility of soiling the fingers or clothing. The parts are of the desired sizes, shapes, proportions and materials.

What is claimed as new is:

1. In a fountain pen, the combination with a barrel having a manually-operated valve at its lower end and at its upper end an axial bore and an off-center hole whose upper extremity leads radially into said bore; of a rotary plug comprising a shank journaled in said bore and having an annular groove, an enlarged knob resting against the upper end of the barrel, and packing within said groove, the shank and knob having a duct whose upper end is funnel-shaped and whose lower end has a lateral opening adapted to communicate with said hole.

2. In a fountain pen, the combination with the barrel, and manually-operated valves at its extremities; of a cap comprising an inner shell adapted to fit over either end of said barrel and having its upper end closed except for an opening, and an outer shell slidably mounted around the inner shell and having its upper end closed.

3. In a fountain pen, the combination with a barrel having a manually-operated valve at its upper end; of a cap comprising an inner shell adapted to be slipped over said upper end, the upper extremity of the shell being closed except for an opening, an outer shell slidably but closely surrounding the inner shell and having its upper extremity closed, and packing between the shells.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

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Witnesses:

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