G. WELLS.
Fountain-Pen.

No. 216,004. Patented May 27, 1879.

Fig. 1.

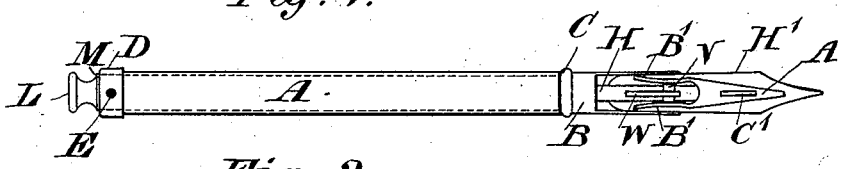

Fig. 2.

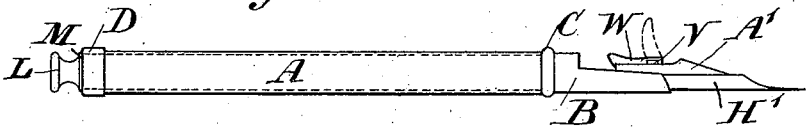

Fig. 5.

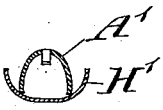

Fig. 3.

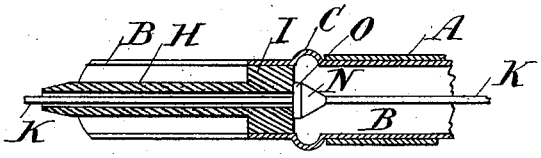

Fig. 6.

Fig. 4.

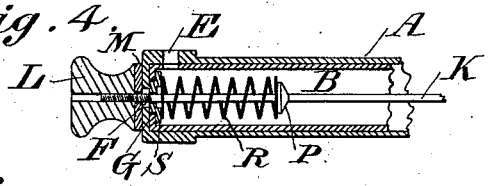

Fig. 7.

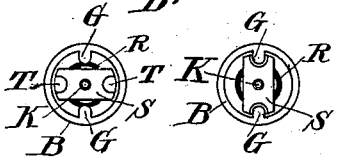

Fig. 8.

Witnesses.

Charles G. C. Simpson

W. E. Sudger

Inventor.

Geo. Wells.

UNITED STATES PATENT OFFICE.

GEORGE WELLS, OF MONTREAL, QUEBEC, CANADA, ASSIGNOR OF ONE-HALF HIS RIGHT TO GEORGE STAPLES, OF SAME PLACE.

IMPROVEMENT IN FOUNTAIN-PENS.

Specification forming part of Letters Patent No. **216,004**, dated May 27, 1879; application filed January 24, 1879.

To all whom it may concern:

Be it known that I, GEORGE WELLS, of Montreal, Canada, have invented certain new and useful Improvements in Fountain-Pens; and I do hereby declare that the following is a full, clear, and exact description of the same.

This invention has reference to improvements in the fountain-pens to enable them, in the first place, to answer the purposes of an office and pocket pen; in the second place, to provide the holder and pen so that the operations of filling the holder and pen and cleaning the same may be performed in a more easy and thorough manner than in those at present in use, the part of my holder being arranged to form as it were a pump to pump in the ink into the holder, and will also, by using water instead of ink, enable the holder to be washed out, as will hereinafter be fully described.

In the drawings hereunto annexed similar letters of reference indicate like parts.

Figure 1 is an elevation of a pen and holder embodying my invention. Fig. 2 is an elevation of a pen and holder embodying my invention, taken at right angles to Fig. 1. Figs. 3, 4, 5, 6, 7, and 8 are details on an enlarged scale.

Letter A is a barrel or tube, which will preferably be about the dimensions shown in the original drawings, Figs. 1 and 2, within which another tube, B, slides. This tube B is provided with a swell, C, which forms a stop to govern the distance that the tube A will slide down on B, and assists materially in forming an air-tight joint, although I should make the tube A to be a very snug sliding fit on B. The tube is made of such length that when the end of A is down on C it will extend to the top of the tube A, as will be seen in Fig. 4.

The tube A is shown with an end, D, of increased thickness; but this is not necessary, being only so made for finish and appearance. This end D is provided with a hole, E, and a hole, F, is formed in its end. Were it not for the hole F the extreme end of the tube A would be closed.

The tube B is provided with two projections, G, turned over, as shown in Figs. 4, 7, and 8. It is also provided with a hole agreeing with the hole E. The tube then continues as a plain tube until we come to the swell C, after which it extends, and in the extension of it a tube, H, is inserted, having an enlarged head, I, made to fill the tube B. The head I is secured in position by solder in the ordinary way. After passing the head I the tube B is cut away to a half-tube, so that between it and the tube H the pen H′ may be held; but to enable the pen to be held the tube H must be set eccentric to the tube B. This would be seen in Fig. 3 had that figure been drawn at right angles to the position it delineates.

The tube H is of larger inner diameter than the wire K, so that it will not be filled by the said wire K. This wire extends up through the hole to the top, and passes through F a sufficient distance to receive upon it a nut, L, correspondingly screwed to fit upon it. Between the end of the tube A and nut L an elastic washer, M, is placed to form a fluid-tight joint at this point. This I prefer to do, although it is not absolutely necessary.

In constructing the wire K a shoulder or flange, N, is secured on it, as shown in Fig. 3, under which is placed a rubber washer, O. The wire then extends up as a plain wire until we come to the washer P secured upon it. (See Fig. 4.) This is for a spiral spring, R, to press against at one end, while the other end of the spiral spring presses against a cap, S, held in position by the projections G, so that the spring R keeps the valve formed by N and O, but which will hereinafter be called the valve O, down upon the end of the tube H, and cuts off communication between it and the tube B.

It will be seen by Figs. 7 and 8 that to enable the cap S to be put in place it must have the configuration of a zone. It also has a hole in its center for the wire K to pass through, and recesses T formed in it for the lugs or projection G to be received in and keep S from turning round. S is put in place by placing it in the position shown in Fig. 7, pressing it down into the tube B, thereby compressing the spring R. It is then turned round to the position shown in Fig. 8, and next released, whereupon the spring R presses the recesses T up against the projections G.

On the tube H two projections, V, are formed, between and to which is pivoted a swinging

lever, W, which may be turned to either of the positions shown in full or dotted lines in Fig. 2. This swinging lever might be a fixed one instead of a pivoted one; but as it is my intention to provide an ordinary cap or guard to pass over the pen and fit on that part of the barrel B below the swell C, I make it, as stated, to turn down. This swinging lever is for the purpose of enabling the second finger of the hand holding the pen to be moved down to the said swinging lever W, and force down the tube B a small distance, as will be hereinafter more fully described in the operation of the invention.

Figs. 1, 2, 5, and 6 show a fountain attachment, A′, which consists of a plate of metal bent to the configurations of half of a hollow cone extending in two projections, B′, which embrace between them the tube H, and by the gripe of the projections B′ on the tube H it is held in position on or close to the under surface of the pen H′. This fountain attachment provides a means of holding by capillary attraction a large supply of ink in the pen without danger of the ink falling out and blotting, and to increase the capillary attraction I punch a slot, C′, in A′. The piece D′, punched out of the slot C′, is not altogether separated from A′, but is left attached at one end, as shown in Fig. 6.

The pen-holder having been constructed as above described, it is operated in the following manner: The first operation will naturally be to fill the tube B with ink. This may be done by the invention itself, without any further appliance, by removing the nut L, pen H′, fountain attachment A′, and then inserting the tube H in the vessel from which the ink is to be drawn.

It will be observed in Fig. 3 that the wire K extends below the tube H, so that when the holder is inserted in the vessel from which the ink is to be drawn, by pressing the end of K on the bottom of the vessel the valve O will be raised from its seat, allowing the free passage of the ink. The tube A is then drawn up a small amount to clear the upper end of the wire K, after which the finger and thumb or fingers will be placed on the openings E and F, after which the tube A will be drawn up on the tube B nearly the whole extremity, thereby forming a vacuum in the tube B, and causing the ink to ascend through the tube H and fill or nearly fill the tube B.

Should the ink not entirely fill the tube B at the first stroke, and it is desired to entirely fill it, it is only necessary to remove the end of K from the bottom of the vessel containing the ink, thereby allowing the valve O to close. The obstruction is next removed from the holes E and F, and the tube A returned to the position shown in Figs. 1 and 2. The tube H is again inserted in the vessel containing the ink and the tube A again drawn up. In this manner as many strokes can be made as are desired to fill the tube B; but if the tubes are properly fitted two strokes will always be found sufficient, or more than sufficient, for the purpose.

As another means of filling the tube B, the pen-holder may be inverted, the nut L having been removed. Then draw up the tube B. The pen-holder is next turned vertical, with the top end up, thereby causing the ink that has been drawn through the opening E, and was first received in the tube A, to fall by its own gravity into the tube B.

A second stroke may be made in this case similar to the one just above described to completely fill up the tube B, if desired.

A third way of filling is by a syringe applied to the hole E. After filling, the nut L and washer M will, of course, be put in place. The next operation is to charge the pen H′ and fountain attachment A′. This is done in the following manner: I must here explain that although the opening E is shown in Fig. 4 as agreeing with the corresponding opening in the tube B, yet by rotating the tube A a small amount this agreement of the openings may be severed. This will be done when it is intended to carry the invention in the pocket; otherwise it is immaterial. By pressing on the swinging lever W and forcing down the tube B the valve O is raised from its seat by the withdrawal of the head N from it. At the same time the tube B is slightly moved down in the tube A, thereby causing a small amount of air to enter through the opening E, the end of the tube B being now below that opening. The force is next removed from the swinging lever W, and the spring R draws up the tube B within the tube A to the position shown in Figs. 1 and 2, when a sufficient amount of ink will have flowed from the tube H to charge the pen H′ and fountain attachment A′.

By screwing the nut L, so as to raise the valve O slightly from its seat, and placing the opening E in D to agree with the opening E in B, as shown in Fig. 4, a steady flow of ink may be allowed to escape from the tube B to the pen, and thus render the pen self-feeding, the flow being in proportion to the adjustment of the valve O.

When it is desired to wash sediment, &c., out of the tube B the nut L is removed, and the end of the tube H immersed in a bath of water instead of ink, with the end K pressed on the bottom of the receptacle holding the water, thereby opening the valve O. The tube A is worked up and down on the tube B, thereby pumping the water in and out of the said tube, the holes E and F being closed, as before described; or, after removing the nut L, the tube A will be removed, and the plate S may next be removed, after which the spring R and wire K may be taken out. The tube A may next be returned to the tube B, and water pumped in and out of the tube in the same manner as hereinbefore described.

The valve O, in addition to fulfilling the function of stopping the bottom of the tube B, when required, performs another function, which is to agitate and keep soft any sediment

that might otherwise be inclined to settle and harden in the bottom of the said tube.

What I claim, and wish to secure by Letters Patent, is as follows:

1. The combination of the tubes A B H, valve O, having wire K extending beyond the tube H, and said tube A sliding on said tube B, so that when the valve O is raised from its seat the tube B may be charged with writing-fluid by the pumping action of the tube A, which action will also avail for cleaning the tube B, substantially as described.

2. The combination of the tube A, having wire K attached thereto by means of the nut L when said nut is in place, and said wire detached from the said tube when the said nut L is removed, tube B, having tube H attached to it, as described, and with wire K, having valve O, the whole being arranged as described, wherein, by the adjustment of the nut L, the flow of the ink to the pen H′ may be regulated to any desired amount, and at the same time the operator is enabled to operate the valve O, by raising the nut L from the end of the tube A, without disturbing the relative positions of the tubes A and B, as described.

3. The fountain attachment A′, having projections B′, slot C, and attached piece D′, substantially as and for the purposes described.

4. The combination of the tube A B H, wire K, nut L, valve O, all constructed and arranged as described, with the swinging lever W, as set forth.

GEO. WELLS.

Witnesses:
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W. E. FUDGER.