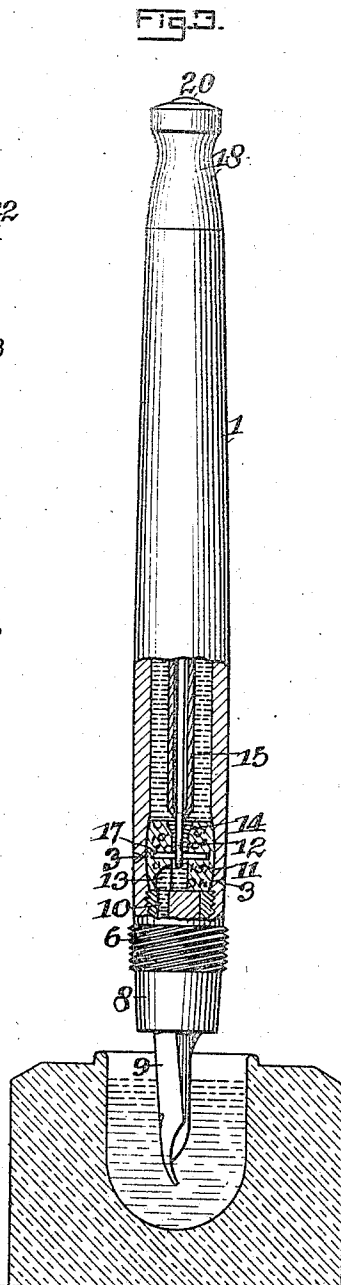
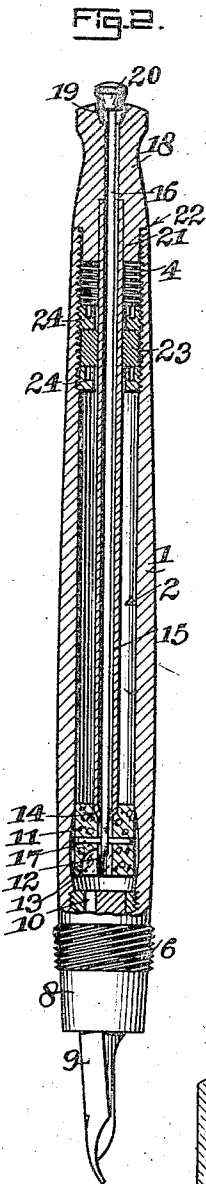
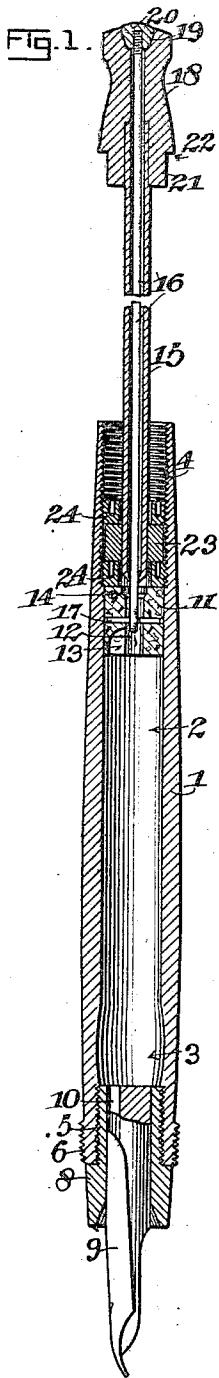


E. M. AND W. A. HOUSTON.
 FOUNTAIN PEN.
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1,320,393.

Patented Nov. 4, 1919.



WITNESSES

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EDMUND MILLER HOUSTON, OF MINNEAPOLIS, MINNESOTA, AND WILLIAM ANDREW HOUSTON, OF SIOUX CITY, IOWA.

FOUNTAIN-PEN.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, EDMUND MILLER HOUSTON, a citizen of the United States, and a resident of Minneapolis, in the county of Hennepin and State of Minnesota, and WILLIAM ANDREW HOUSTON, a citizen of the United States, and resident of Sioux City, in the county of Woodbury and State of Iowa, have invented a new and useful Improvement in Fountain-Pens, of which the following is a specification.

Our invention relates to improvements in fountain pens, and it consists in the constructions, combinations, and arrangements herein described and claimed.

An object of our invention is to provide a fountain pen including a barrel having a plunger movable in the bore thereof to draw in a quantity of ink by suction, the bore of the barrel being enlarged near the point of the pen to form an expansion chamber into which the plunger is adapted to expand after the ink has been drawn in.

Another object of the invention is to provide a fountain pen including an ink barrel with a plunger movable in the bore thereof, the plunger having a plunger rod connected thereto, and being adapted to engage the end of a sleeve of an end-plug when it is desired to move the plunger and draw in a quantity of ink, the plunger being subsequently separated from the end of the sleeve by moving the plunger rod to open a passage and permit the ink to flow through the plunger into a chamber above it.

Other objects and advantages will appear in the following specification, reference being had to the accompanying drawing in which:

Figure 1 is a longitudinal section of a fountain pen embodying the features of our invention, the plunger being in the outer position.

Fig. 2 is a section of the fountain pen showing the plunger about to be moved adjacent to the expansion chamber.

Fig. 3 is a side elevation of the fountain pen parts being shown in section, showing the plunger in position in the expansion chamber and the ink passage open.

In carrying out our invention, we provide an ink barrel 1 which is made of any suitable material such as hard rubber, and may be made of a transparent material if it be

so desired, so that the user of the pen can see how much ink it contains. The barrel 1 has a bore 2 which is enlarged near one end as at 3, to form an expansion chamber.

The bore 2 of the barrel 1 is counter-bored and threaded at 4 and 5 in the plug and point ends, respectively. The point end of the barrel 1 has external threads upon which a cap may be screwed.

A nozzle 8 which carries a pen point 9, is screwed into the counter-bore 5 in the point end of the ink barrel 1. The nozzle 8 has the usual ink duct 10 through which the ink flows to the pen point when the fountain pen is used in writing, and through which the ink flows into the bore 2 of the barrel 1, when the pen is being filled, in a manner to be described.

A plunger 11 slides in the bore 2 of the barrel 1, and has a central ink passage 12 which communicates at one side with a port 13. The ink passage 12 is enlarged at the top to form a valve seat 14 with a conical or rounded surface to properly receive a similarly formed end of a sleeve 15 which is adapted to engage the valve seat 14 and form an air-tight joint at certain times.

A plunger rod 16 is movable in the bore of the sleeve 15, and is connected to the plunger 11 by a cross pin 17. The plunger rod 16 is longer than the sleeve 15 as will be evident from the drawing, and extends toward the outer surface of an end plug 18 to which the sleeve 15 is secured in any suitable manner. The end plug 18 has a conical recess 19 into which a button of the plunger rod 16 is adapted to be pressed.

The inner end of the end plug 18 is restricted in diameter at 21 to form an annular shoulder 22. When the parts are in the position indicated in Fig. 2 of the drawing, the restricted portion 21 enters the threaded end 4 of the barrel 1, and the annular shoulder 22 rests on the edge of the bore. The portion 21 is not threaded but simply slides into the threaded bore so that the end plug 18 may readily be withdrawn by simply grasping the end plug at the throat of the plug and pulling it out.

A packing 23 surrounds the sleeve 15, and is held in place by the threaded washers which are screwed into the threaded plug end 4, as plainly shown in the drawing.

The plunger 11 is made of some elastic or

sponge-like material and is adapted to expand into the expansion chamber 3 at the point end of the barrel 1, when it is moved to the operative position of the pen indicated in Fig. 3. The plunger 11 may be made of soft rubber which is at once elastic enough to expand into the expansion chamber 3, and also strong enough to provide a proper support for the cross pin 17 of the plunger rod 16.

The manner of operation in filling the pen is as follows: The normal position of the plunger 11 when the pen is in use, is in the position indicated in Fig. 3, wherein the plunger 11 is shown as having expanded to fill the expansion chamber 3. The end of the sleeve 15 is also unseated from the valve seat 14 in the plunger 11, so that the ink in the bore 2 of the ink barrel 1 above the plunger 11 may freely flow out through the passage 12, the port 13, and the duct 10.

When the fountain pen becomes empty, the end plug is grasped by the fingers and pulled out to the position shown in Fig. 1. The bore 2 of the barrel 1 is thus cleaned of ink which may adhere to the sides, and such ink passes through the passage 12 which is now open because the end of the sleeve 15 is unseated from the valve seat 14. When the end plug 18 is pulled out as just described, the plunger 11 moves in the bore 2, opening the passage 12. Thus the plunger 11 does not move against any back pressure, as it might do were the passage 12 not opened, whereupon air would be compressed behind the plunger.

After the end plug 18 is pulled out to the position shown in Fig. 1, it is again pushed inwardly or downwardly toward the point of the pen. The act of pushing the end plug 18 downwardly or inwardly, causes the button 20 to become unseated from the recess 19, and the end of the bore of the sleeve 15 to tightly engage the valve seat 14. The parts just described being in this position, the inward pushing of the end plug 18 continues, and a vacuum is formed in the chamber behind the plunger 11. The plunger 11, of course, expands into the expansion chamber 3 when it reaches said chamber. The point of the pen is now placed in the ink and the button 20 is pushed into the recess 19 so that the plunger 11 may fully expand into the expansion chamber 3 and open the passage 12 at the valve seat 14.

The passage 12 having been opened, the ink rushes in through the duct 10, the passage 12, and the valve seat 14, into the chamber above the plunger, thus filling the barrel of the pen.

While the construction and arrangement of the device as illustrated in the accompanying drawing is that of a generally preferred form, obviously modifications and changes may be made without departing from the

spirit of the invention or the scope of the claims.

We claim:

1. A fountain pen including a barrel having a bore, a plunger movable in the bore, an end plug having a sleeve, a plunger rod movable in the sleeve and connected to the plunger, the plunger having a passage and a seat for receiving the end of the sleeve, and a button carried by the plunger rod and engageable with the end plug when the plunger seat and the end of the sleeve are in disengagement.

2. A fountain pen including a barrel having a bore, a plunger in the bore and having a passage and a valve seat, an end plug having a sleeve adapted to disengage the valve seat when the plunger is drawn outwardly to prevent the formation of a back pressure against the plunger, a plunger rod in the sleeve connected to the plunger, and a button on the end of the plunger rod adapted to engage the end plug when the plunger is drawn outwardly.

3. A fountain pen including a barrel having a bore, a plunger in the bore and having a passage and a valve seat, an end plug adapted to engage the end of the barrel when in the inward position, the end plug having a sleeve disposed in the bore, the end of the sleeve engaging the valve seat when the plunger is pushed into the bore, a plunger rod disposed in the sleeve and connected to the plunger, and a button on the plunger rod adapted to disengage the end plug when the plunger is pushed inwardly in the bore by the end plug.

4. A fountain pen including a barrel having a bore and an expansion chamber near the pen end, a plunger movable in the bore and having a passage and a valve seat, an end plug having a sleeve disposed in the bore, the end of the sleeve engaging the valve seat when the plunger is pushed into the bore by the end plug, a plunger rod in the sleeve and having connection with the plunger, and a button on the plunger rod in disengagement with the end plug when the plunger is pushed into the bore, said button being adapted to be subsequently pressed to disengage the plunger seat from the end of the sleeve and move the plunger into the expansion chamber.

5. In a fountain pen, an ink barrel having a bore and an enlargement in the bore forming an expansion chamber, and a plunger movable in the bore, said plunger being made of elastic material to expand into and fill the expansion chamber.

6. In a fountain pen, a barrel having a bore and an expansion chamber, an elastic plunger adapted to expand into and fill the expansion chamber, an end plug having a sleeve engageable with the plunger to push the plunger toward the expansion chamber,

the end plug having a loose connection with the barrel, and a plunger rod in the sleeve connected to the plunger to subsequently disengage the plunger from the sleeve and push it into the expansion chamber, the expanded plunger forming a key preventing the casual displacement of the end plug from the barrel.

7. In a fountain pen, an ink barrel having a bore provided with an expansion chamber and an adjacent threaded counter-bore, an elastic plunger adapted to fill the expansion chamber, the plunger having an ink passage and a lateral port, and a nozzle arranged to be screwed in the threaded counter-bore, the nozzle having a duct registrable with the port.

8. In a fountain pen, a barrel having a bore and an expansion chamber at one end of the bore, an elastic plunger adapted to fill the expansion chamber and having an ink passage, an end plug having a sleeve adapted to engage the plunger to move the same a predetermined distance and to form a tight joint therewith when in engagement, and a plunger rod connected with the plunger and working in the sleeve, said plunger rod being adapted to move the plunger when the sleeve ceases to move the plunger.

9. In a fountain pen, a barrel having a bore, a plunger movable in the bore and having a cross pin, a plunger rod connected to the cross pin, an end plug having a sleeve

surrounding the plunger rod, the end of the sleeve being engageable with the plunger to push the plunger inwardly, said plunger rod being adapted to subsequently move the plunger independently of the sleeve when the plunger reaches the limit of movement under the action of the sleeve.

10. A fountain pen including a barrel having a bore and threaded counter-bores at the plug and point ends, the bore having an expansion chamber adjacent to the point end, a plunger in the bore, the plunger having an ink passage and valve seat, a nozzle in the point end counter-bore, a packing in the plug end counter-bore, an end plug having a restricted boss forming an annular shoulder and having a sleeve passing through the packing into the bore, the end of the sleeve engaging the valve seat to push the plunger adjacent to the expansion chamber, the annular shoulder being adapted to then engage the adjacent rim of the plug end counter-bore, a plunger rod in the sleeve and connected to the plunger, and a button on the end of the plunger rod exposed at the end plug, said button being adapted to be pressed to move the plunger into the expansion chamber subsequently to the inward movement of the plunger through the medium of the end plug and sleeve.

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