Aug. 4, 1925. 1,548,502

E. F. ATTULA

FOUNTAIN PEN

Filed Jan. 26, 1924

FIG. 1

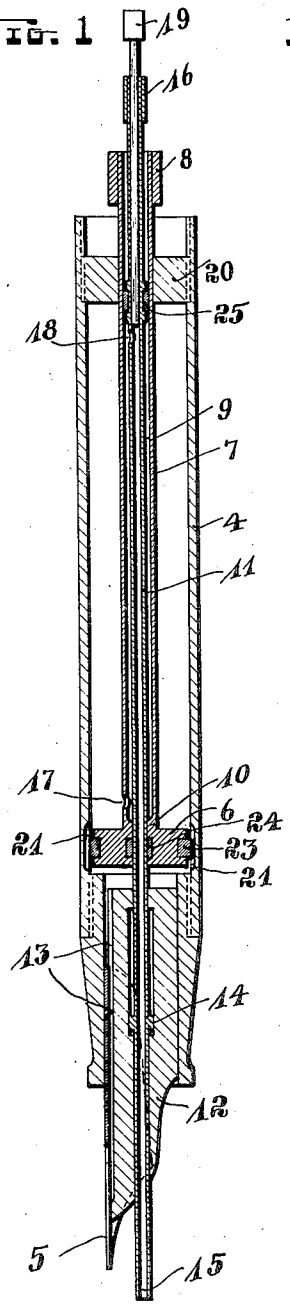


FIG. 2.

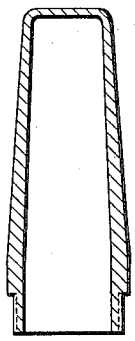
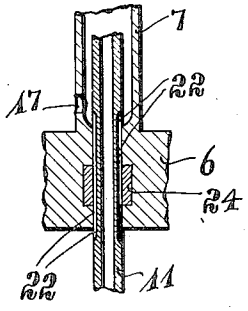


FIG. 3.



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UNITED STATES PATENT OFFICE.

ERNST F. ATTULA, OF LOS ANGELES, CALIFORNIA.

FOUNTAIN PEN.

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To all whom it may concern:

Be it known that I, ERNST F. ATTULA, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Fountain Pen, of which the following is a specification.

This invention relates to devices used for supplying ink or writing fluid to writing pens.

One of the objects of this invention is to provide a device in the form of a self-filler, having the peculiarity or characteristic of filling or re-filling itself without requiring a dipping of the pen proper into the ink.

Another object is to provide a filling channel independently of the supplying channel for the pen.

Another object is to provide a shiftable tubular member by which ink or writing fluid can be allowed to enter the pen-holder when shifted to its outermost position and which may be moved to a position back of the writing point of the pen when the pen is used for writing purposes.

Another object is to provide means by which ink can be made to pass into the holder by the operation of a plunger in the holder while the pen is held above the surface of the ink.

Other objects will appear from the following description and appended claims as well as from the accompanying drawing, in which—

Fig. 1 is a longitudinal midsectional view of a pen-holder, or so-called fountain-pen of a form embodying the invention.

Fig. 2 is a longitudinal midsectional view of a cap for closing the top end of the holder.

Fig. 3 is a fragmentary detail midsectional view of the plunger slightly enlarged in a somewhat modified form, having ink-supplying channels for the pen in the surface of the filling tube, instead of in the inner surface of the casing as illustrated in Fig. 1.

The casing 4 forms the holder for the pen 5. A plunger 6 is shiftably disposed in the casing 4, having a tubular stem 7, extending through the top end of the casing. A suitable knob or enlarged portion 8 is preferably provided at the upper end of the stem 7, to facilitate a handling of the stem and thereby of the plunger 6. The larger portion of the stem is provided with a proportionally large bore 9, while, at a point within or near the plunger, a somewhat restricted bore 10 is provided in the lower termination. A smaller tube 11 is shiftably disposed in the restricted bore 10 of the stem 7. This tube 11 extends through both ends of the holder or casing 4. A plug 12 is disposed in the lower termination of the casing 4, together with the pen 5, sealing up this end of the whole device. The plug 12 is provided with a proportionally small channel 13 for supplying the pen 5 with ink in the normal use of the pen. The inner tube 11 is limited in its movement by a shoulder member 14 within the plug 12, to bring the lowermost termination 15 to a point to be dipped into ink without a soiling of the pen or holder. If so desired, the tube is made to reach well below the lowermost point of the pen, so that not even the pen-point can reach the ink while the holder is refilled.

The uppermost end 16 of the tube 11 extends to a point above the upper termination of the stem 7, to allow a handling and shifting of the tube 11 into the ink for filling and re-filling, and to allow a retracting of the tube 11 into the holder while the pen is used in the normal manner.

By providing the larger bore 9 within the stem 7, a suitably large space is formed between the inside of the stem and surrounding the inner tube 11.

A communicating opening or passage 17 is provided in the stem 7 near the plunger 6, so that ink may pass from the inside of the stem 7 into the casing or holder 4.

Another communicating opening or passage 18 is provided in the inner tube 11, allowing a passing of ink from the inside of the tube 11 into the space between the inner tube 11 and the inside of the stem 7.

The plug 19 is provided in the upper termination of the inner tube 11, extending into the tube 11 to a point to form the closing means for the passage 18 in the inner tube 11. In the drawing, this plug 19 is illustrated in its withdrawn position, ready to allow ink to pass through the passage 18.

To fill the receptacle or container formed by the pen-holder or casing 4, the inner tube 11 is first pushed through the lower end to the position in which it is illustrated in Fig. 1, ready to be dipped into ink. The plug 19 is then withdrawn to free the passage 18 in the inner tube 11, as illustrated in Fig. 1. The plunger 6 with the stem 7 is then moved or drawn to its outermost position, towards

the closing end 20 of the casing 4, whereby the inner tube is thoroughly air-cleaned, since the air in the receptacle or container of the casing 4 is forced out through the inner tube by the movement of the plunger in this upward direction, the air from the container passing through the passage 17 and through the space within the stem 7 around the inner tube 11 to enter the inner tube through the passage 18. The plunger 6 is then immediately pushed back into the casing to the innermost position in which it is illustrated in Fig. 1, whereby ink may be drawn into the container by holding the lower termination of the inner tube 11 into ink so as to allow the ink to pass through the inner tube 11 upwardly following the course of the passage 18 through the space within the stem 7 around the inner tube 11 and through the passage 17 into the container, by the suction of the downward moving plunger 6 in the casing 4.

The plug 19 is then pushed back into the inner tube 11 to close the passage 18, and the tube 11 is retracted to its innermost position to bring the lower termination 15 to a point back of the point of the writing pen 5, controlled by the shoulder portion 14.

The shoulder portion 14 may be in form of a press-fit ring on the inner tube, or the portion 14 may be integral with the inner tube, in which case a suitable portion is necessarily made removable in the plug 14 to allow an assembling of the shouldered tube 11 within the plug 12, as will easily be understood without further illustration or description. Once assembled, the tube 11 is never removed from the plug 12, or at least not necessarily made removable.

The knob or handle portions 8 and 16 are also sufficiently secured by being made press-fit on the stem 9 and on the tube 11, but may also be screwed on, or otherwise suitably applied. Such minor details are not considered of importance in this case and therefore not particularly specified, but I do not limit myself to any particular one of such minor details as shown.

As soon as the plunger 6 reaches its innermost or normal position, the fluid in the container is in communication with the channel 13 in the plug 12 and thereby apt to reach the pen 5 through the proportionally small overflows or grooves 21 in the casing, as illustrated in Fig. 1.

A slightly modified form of supplying the pen with ink from the container is illustrated in Fig. 3. Grooves or overflows 22 are provided in the surface of the inner tube 11 of a suitable length to form communication between the inside of the stem 7 and thereby through the passage 17 with the container in the casing 4 on the one side and the space below the plunger on the other side, as will easily be understood when comparing this fragmentary detail with the illustration in Fig. 1.

This slightly modified form has the advantage over the form illustrated in Fig. 1 that communication is not completed until the tube 11 is retracted to its innermost position, since the communicating overflows are preferably disposed or provided at a point near the shoulder portion 14, being thereby out of alignment or far enough away from the plunger during the filling or refilling of the container that the inner tube alone is in communication with the inside of the container.

In the form illustrated in Fig. 1, air may pass into the container through the channel 13 past the plunger 6 through the grooves 21 if the plunger is quickly forced to its lowermost position in which it is illustrated. If these grooves are substituted by the grooves 22 in the inner tube air cannot very well pass into the container, though these grooves 22 may necessarily have to be much smaller than the grooves 21 could be, since otherwise the tube 11 would have to be of rather heavy material, not very much desired for such purpose. Narrow or small grooves at 22 may require a more frequent cleaning than larger grooves at 21. This, however, is a mere detail to be decided on through experimentation, and the plunger can easily be moved slow enough to fill the container to a great extent before the plunger reaches the point to allow a passing of air through the grooves 21.

The top end is preferably closed by a cap of the form illustrated in Fig. 2, to prevent or avoid a moving or undue touching of the ends 8, 16 and 19.

Suitable packing is preferably provided at 23, between the plunger and the casing 4; at 24, between the plunger 6 and the inner tube 11; and, at 25, between the inner tube and the stem 7, at the upper end of the device, just above the normal filling position of the passage 18.

Having thus described my invention, I claim:

1. In a pen of the class described, a pen proper, a holder for the pen proper forming a reservoir for writing fluid and having a supplying conduit to the pen, and a filling mechanism embodying a member shiftable to a point near the point of the pen so that writing fluid may be supplied therethrough to the reservoir.

2. In a pen-holder of the class described having a pen proper at one termination, a shiftable filling member shiftable outwardly in the direction of the pen proper so that writing fluid may be supplied therethrough into the pen.

3. In a pen of the class described, a pen proper, a holder for the pen proper forming a reservoir, and a shiftable filling mem-

ber adapted to extend out of the holder near the pen proper for filling the said reservoir.

4. In a pen of the class described, a pen proper, a holder for the pen proper forming a reservoir and embodying a supplying conduit between the pen proper and the said reservoir, and a shiftable member forming a conduit in communication with the reservoir in the holder and adapted to extend out of the holder near the pen proper for filling the reservoir independently of the conduit relative to the pen.

5. In a pen of the class described, a pen, a holder for the pen forming a reservoir for writing fluid and embodying a supplying conduit for the pen, a plunger shiftably disposed in the holder having a stem extending out of the holder by which the plunger may be moved for filling the holder with writing fluid, and a shiftable member forming a conduit extending out of the casing near the pen proper for filling purposes and adapted to be moved back into the holder when the pen is being used in the normal manner, the shiftable member and the stem having passages to allow a filling of the reservoir through the said member and the stem.

6. In a pen of the class described, a pen proper, a holder for the said pen proper forming a reservoir for writing fluid and embodying a supplying channel for the pen proper, a plunger shiftable in the holder having a stem extending through the top end of the holder and having a passage therethrough in communication with the reservoir, and a tubular member shiftable within the plunger and stem extending beyond the lower end of the holder and through the upper end of the stem and having a communicating passage in communication with the inside of the said stem and thereby with the reservoir and adapted to allow a filling of the reservoir through the lower end of the tubular member by a movement of the said plunger in the reservoir.

7. In a pen of the class described, a pen proper, a holder for the pen proper forming a reservoir and having a supplying conduit for the pen proper, a plunger normally disposed near the lower termination within the reservoir and having a stem extending through the top end of the holder and having a passage through the plunger and the stem in communication with the reservoir, and a tubular member shiftable within the plunger and the stem to be extended to a point below the lower termination of the holder for dipping into writing fluid and having a passage in communication with the inside of the stem so as to allow a drawing of writing fluid into the reservoir through the lower end of the tubular member.

8. In a pen of the class described, a pen proper, a holder for the pen proper forming a reservoir and having a supplying conduit for the pen proper, a plunger normally disposed near the lower termination within the reservoir and having a stem extending through the top end of the holder and having a passage through the plunger and through the stem in communication with the reservoir, a tubular member shiftable within the plunger and the stem to be extended to a point below the lower termination of the holder for dipping into writing fluid and having a passage in communication with the inside of the stem so as to allow a drawing of writing fluid into the reservoir through the lower end of the tubular member, and a closing member for the tubular member for closing the passage in the tubular member when the reservoir is filled.

9. In a pen of the class described, a pen proper, a holder for the pen proper forming a reservoir and having a supplying conduit for the pen proper, a plunger shiftable within the reservoir and having a passage therethrough in communication with the reservoir, a hollow member shiftable within the plunger and extending to a point below the holder in filling position and adapted to be moved back into the holder when the pen is being used in the normal manner for writing purposes and having a passage in communication with the reservoir so as to allow a drawing of writing fluid into the reservoir through the lower end of the hollow member, means for shutting off the passage between the hollow member and the reservoir, and means for shutting off the communication between the reservoir and the supplying conduit of the pen proper when the reservoir is being filled.

10. In a pen-holder of the class described, a filling member shiftable in the direction of and beyond the pen-holding end of the holder for supplying writing fluid therethrough to the holder.

In testimony that I claim the foregoing as my invention I have signed my name in the presence of two subscribing witnesses.

ERNST F. ATTULA.

Witnesses:
O. H. KRUEGER,
WILLIS M. BAUM.