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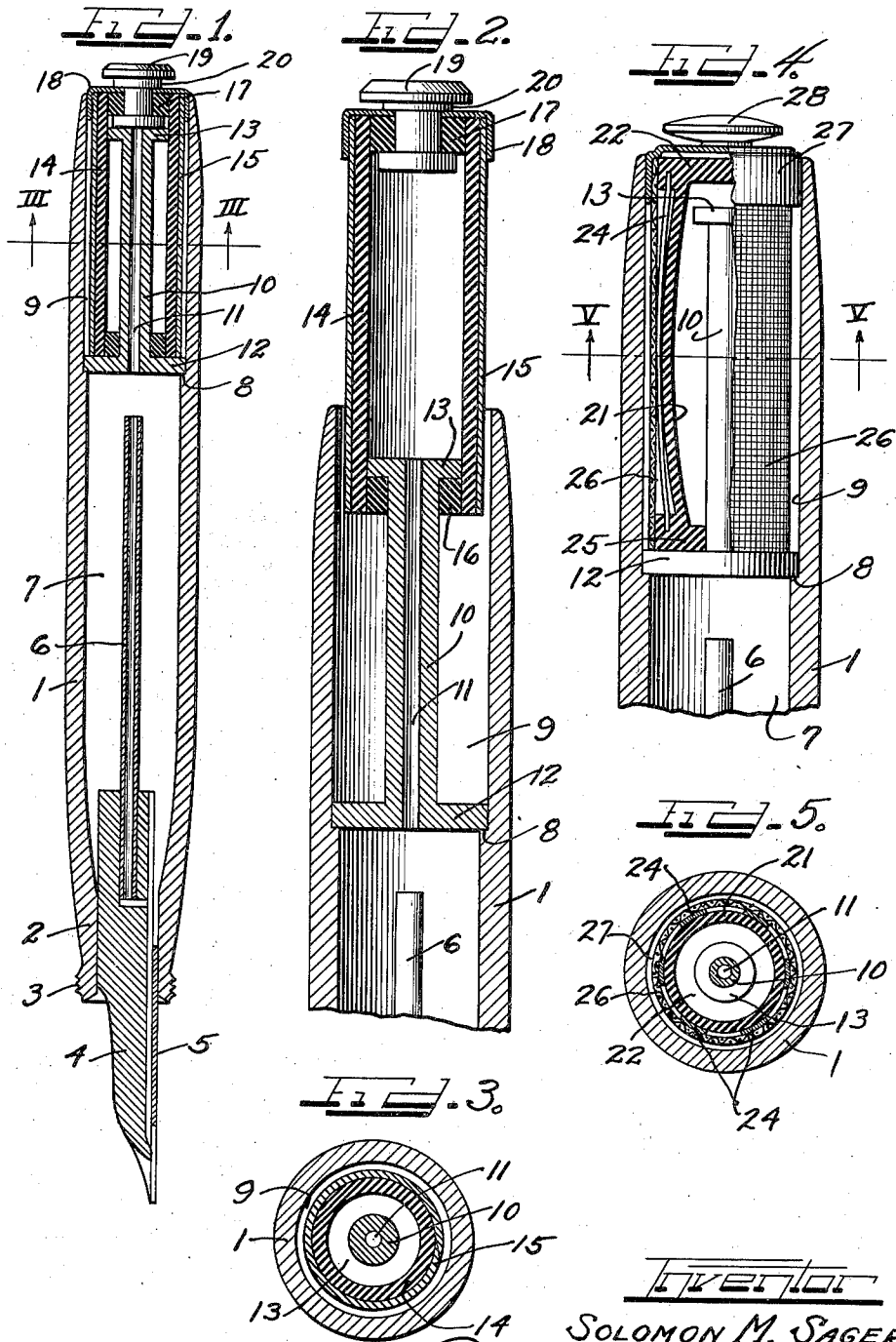
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FOUNTAIN PEN

Filed July 6, 1937

2 Sheets-Sheet 1



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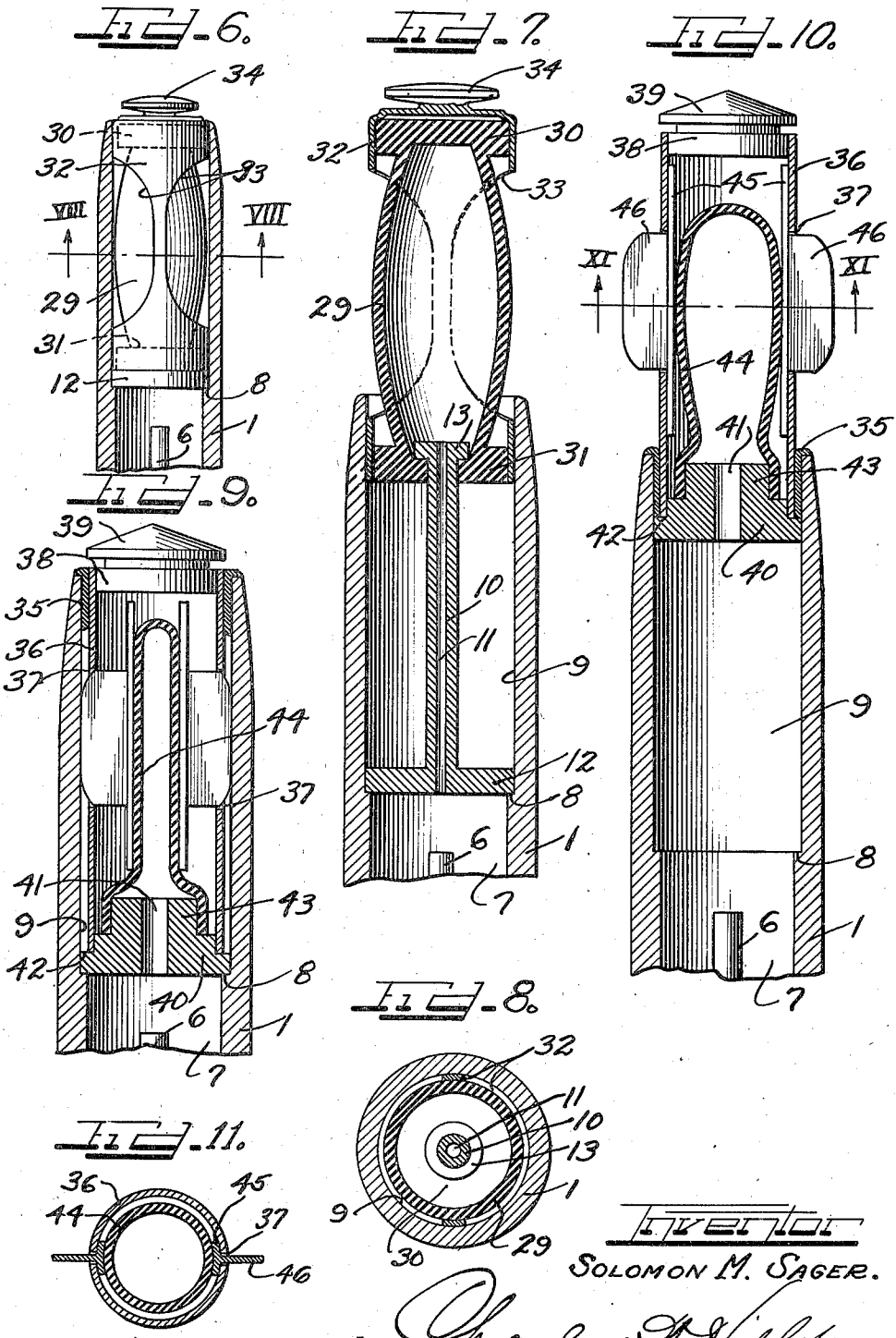
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FOUNTAIN PEN

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19 Claims. (Cl. 120—46)

The present invention pertains to fountain pens and more particularly to fountain pen filling units for insertion in one end of a fountain pen barrel adjacent the inner end of the ink intake tube. The improved filling units include several selected forms including encased bulbous structures which are normally disposed within the end of the fountain pen barrel and which may be moved outwardly to permit operation thereof to cause filling of the fountain pen barrels after which the encased bulbous structures are returned to their normal position seated within the ends of the fountain pen barrels.

It is an object of this invention to provide a fountain pen with a filling unit engageable within one end of the fountain pen barrel and including a bulbous filling structure which is movable outwardly with respect to the barrel into a position to be actuated to cause filling of the fountain pen barrel.

It is also an object of this invention to provide a fountain pen with a filling unit insertable in one end of the fountain pen barrel and including a bulbous filling structure which is slidably engaged over a stationary plunger unit or stem secured in the barrel adjacent the end of the fountain pen intake tube to permit filling of the fountain pen when the bulbous structure is moved into a projecting position and is manually operated by repeated transverse collapsing operations to cause filling of the fountain pen barrel.

It is a further object of this invention to provide a fountain pen with a filling unit engaged in one end of the fountain pen barrel, said filling unit including a casing enclosing a bulbous structure, both of which are movable into a projecting position from the end of the barrel to expose spring controlled manually operable finger pieces which are operable for repeatedly collapsing the bulbous structure to effect filling of the fountain pen barrel.

It is an important object of this invention to provide a fountain pen wherein the fountain pen barrel has a feed bar and pen point engaged in one end thereof, with an intake tube engaged in the feed bar and projecting into the barrel, while the opposite end of the barrel is provided with a filling unit normally engaged in the end of the barrel and including a bulbous filling structure which is adapted to be pulled out of the end of the barrel into a position to permit actuation of the bulbous structure and filling of the fountain pen barrel, after which the bulbous structure is pushed back into

the end of the barrel into an enclosed, protected position against operation.

Other and further important objects of this invention will be apparent from the disclosures in the specification and the accompanying drawings.

The invention (in preferred forms) is illustrated in the drawings and hereinafter more fully described.

On the drawings:

Figure 1 is a central longitudinal section of an improved fountain pen, with the fountain pen cap omitted, and including an improved filler unit embodying the principles of this invention engaged in one end of the fountain pen barrel.

Figure 2 is an enlarged longitudinal sectional view of the end of the fountain pen barrel enclosing the filling unit, and showing the bulbous portion of the filling unit extending out of the end of the barrel into an operating position with respect to a stationary plunger or stem which remains in the barrel.

Figure 3 is an enlarged detailed transverse section taken on line III—III of Figure 1.

Figure 4 is an enlarged central longitudinal section through one end of a fountain pen barrel in which a modified form of filling unit is engaged in closed normal position.

Figure 5 is a transverse detailed section taken on line V—V of Figure 4.

Figure 6 is a longitudinal central section through one end of a fountain pen barrel in which another modified form of filling unit is engaged, with the filling unit in closed normal position.

Figure 7 is an enlarged longitudinal central section of the modified form of filling unit disclosed in Figure 6 showing the bulbous structure moved into an outwardly projecting position ready for actuation for filling of the fountain pen.

Figure 8 is an enlarged transverse section taken on line VIII—VIII of Figure 6.

Figure 9 is an enlarged central vertical detailed section through one end of a fountain pen barrel enclosing another modified form of filling unit in closed normal position within the end of a barrel showing the collapsed form of the bulbous filling member.

Figure 10 is a longitudinal sectional view of the filling unit illustrated in Figure 9 positioned in its outermost operating position with respect to the fountain pen barrel with the bulb expanded to project the actuating finger pieces

into position to permit the filling of the fountain pen.

Fig. 11 is a transverse detailed section taken on line XI—XI of Figure 10.

As shown on the drawings:

The reference numeral 1 indicates a fountain pen barrel which is open at both ends. Integrally formed on one end of the barrel 1 is a section 2, the outer end of which terminates in a threaded portion 3 on which an interiorly threaded portion of a fountain pen cap is adapted to be threaded for holding the cap in position over the writing end of the fountain pen. For the purpose of simplification, the fountain pen cap has been omitted. Projecting into the section 2 are a feed bar 4 and a pen point 5. Engaged in the inner end of the feed bar 4 is an ink intake and air tube 6 which projects axially through the ink chamber 7 of the fountain pen barrel to within a short distance of an annular shoulder 8 which is formed on the interior of the barrel 1 a short distance from the outer end thereof.

Engaged in the end chamber 9 of the fountain pen barrel 1 is one form of an improved filler unit comprising a stationary plunger or tube 10 provided with an axial passage 11, the inner end of which continues through a base plate or disc 12 which tightly seats against the shoulder 8 of the fountain pen barrel 1. The peripheral surface of the plate 12 is in tight frictional sealing contact with the wall of the chamber 9 of the fountain pen barrel. Integrally formed on the outer end of the passaged stem 10 is a retaining head 13 which is centrally apertured with the aperture registering with the passage 11 of the tube 10. The tube 10, together with the plate 12 and the head 13 may be constructed of hard rubber or other suitable material.

Slidably engaged over the stationary stem 10 and over the head 13 formed on the outer end thereof, is a filler device comprising a bulb or bellows 14 constructed of rubber or other suitable material and enclosed by a reinforcing or stiffening sleeve or covering 15 which may be glued, cemented, or otherwise secured around the exterior surface of the bellows or bulb 14. Secured in the inner end of the bulb 14 is a centrally passaged or apertured closure disc or bushing 16 constructed of hard rubber or other suitable material. The bushing 16 is slidably engaged over the stationary stem 10 and is adapted to contact the inner face of the stem head 13 when the filling device is in its outermost position, as illustrated in Figure 2, to limit the outward movement of said filling device. The outer end of the bulb or rubber casing 14 is closed by means of a centrally apertured disc or bushing 17. Secured over the outer end of the bulb 14 and its cover 15 and also enclosing the gasket 17, is a metal finishing cap 18. The filling device in its normal closed position projects into the end of the fountain pen barrel chamber 9 to close the end of the barrel. Rigidly secured to the cap 18 and to the bushing 17 is a button or knob 19 which is so formed that a groove 20 is provided between the head of the button 19 and the outer face of the cap 18 for the reception of the fingernails of a person's hand when it is desired to pull the filling device outwardly from the normal position illustrated in Figure 1 into the full line position of Figure 2. When the filling device is in the outermost position illustrated in Figure 2, it is only necessary to project the feed bar 4 and the pen point 5 into a supply of ink and then manually, repeat-

edly compress and release the bulb or rubber case 14 to cause ink to be drawn upwardly through the ink intake tube 6 to be deposited in the ink chamber 7 of the fountain pen barrel to fill the fountain pen.

Figures 4 and 5 illustrate a modified form of filling unit which consists of a stem unit constructed the same as the stem unit illustrated in Figures 1 and 2, and which is mounted to remain stationary within the chamber 9 of the fountain pen barrel 1 with the base plate 12 seated against the shoulder 8. The filler device portion of the filling unit comprises a diametrically compressible rubber bulb or casing 21 which is closed at its outer end by an integral top 22 which is of diameter greater than the top end of the bulb 21. Projecting into the bottom surface of the projecting portion of the closure top 22 are the upper ends of a plurality of metal strap springs 24 which extend downwardly in spaced relation around the bulb 21 and have the lower ends thereof projecting into a base 25 integrally formed on the lower end of the bulb 21. Engaged around the bulb 21 and the strap springs 24 thereof is a metal mesh protecting covering or casing 26, the ends of which engage around and are secured to the bulb top 22 and the base 25. Securely engaged over the outer end of the mesh covering 26 and the top 22 of the bulb is a metal finishing closure cap 27 which normally is adapted to seat in the end of the chamber 9 of the barrel 1 to close the same. Secured on the cap 27 is an operating button or knob 28, which serves as a finger piece for moving the filling device from the position illustrated in Figure 4 into an outwardly projecting position similar to that illustrated in Figure 2 to permit alternate compression and release of the bulbous structure 21 within the protecting metal mesh housing 26. With the outward movement of the bulbous structure 21 and its covering, the stem unit 10 remains stationary within the barrel 1 with the stem head 13 acting as a stop for limiting the outward movement of the bulbous filling mechanism.

Figures 6, 7, and 8 illustrate still another modified form of fountain pen filling unit consisting of a slidable filling device associated with a stationary stem mechanism secured within the fountain pen barrel. The parts which are similar to those illustrated and described in connection with Figures 1 to 3 inclusive are correspondingly numbered.

Slidably engaged in the barrel chamber 9 in telescoping relationship with the stationary stem 10 is a filling device comprising a bulb or bellows 29 constructed of soft rubber or other suitable material which is closed at its upper or outer end by means of a cap or cover plate 30. Integrally formed on the lower or inner end of the bulb 29 is a passaged base or bottom plate 31 which slidably engages over the stem 10 with the stem head 13 positioned inside of the bulb 29. Secured over the bulb 29 is a metal protecting casing 32 having finger openings or windows 33 provided in opposite sides thereof to permit access to be had to the sides of the bulbous structure for compressing the same for filling the fountain pen. The upper end of the protecting casing 32 is closed and has secured or formed thereon a button or knob 34 which forms a finger piece to permit the filler device to be pulled outwardly from the full line position of Figure 6 into the operating position illustrated in Figure 7. The

inner end of the protecting casing 32 is open and engages around the base 31 of the bulb 29.

Figures 9, 10, and 11 illustrate another modified form of fountain pen filling unit in which the stem mechanism is omitted and wherein the outer end of the recess or chamber 9 of the fountain pen barrel 1 has a metal stop sleeve 35 secured therein for limiting the outward movement of the fountain pen filling unit, which normally is seated against the stop shoulder 8 in the barrel 1, as illustrated in Figure 9.

The filler unit comprises a metal tube or casing 36, provided with diametrically opposite longitudinally disposed openings or slots 37. The outer end of the casing 36 is closed by means of a top plate or plug 38 having a button or knob 39 formed on the outer side thereof. The inner end of the casing 36 is closed by means of a base plug 40 having an axial passage 41 provided there-through. The base plug 40 is provided with a shoulder at 42 which is adapted to seat against the end of the stop sleeve 35 to limit the outward movement of the filler unit when the same is moved into an operating position, as illustrated in Figure 10. The inner end of the base plug 40 is circumferentially grooved to provide a shank portion 43 around which the open end of a filling bulb or bellows 44 is secured. The bulb 44 projects upwardly into the casing 36 between a pair of oppositely positioned actuating bars or plates 45 disposed within the casing 36. Each of the plates 45 is provided with a finger piece or ear 46 which projects outwardly through one of the slots 37 in the casing 36. The bulb 44, which is constructed of rubber or other suitable material, normally acts on the plates 45 to project the finger pieces 46 outwardly through the slots 37 into an actuating position, when the filling device is pulled into its outermost operating position as shown in Figure 10. When the filling device is projected into the chamber 9, as shown in Figure 9, the projecting finger pieces 46 coming into contact with the stop sleeve or collar 35 are projected into the sleeve or casing 36 thereby causing the actuating plates 45 to compress the bulb 44 when the filler device is not in use.

To fill the fountain pen, it is only necessary to engage the knob 39 to pull the casing 36 from the position illustrated in Figure 9 into the projecting position shown in Figure 10, in which position the resilient bulb 44 acts to project the actuating finger pieces or ears 46 outwardly through the slots 37, so that when the finger pieces 46 are compressed and released, the filler bulb 44 is compressed and released thereby causing ink to be drawn upwardly through the ink intake tube 6 to fill the fountain pen.

It will, of course, be understood that numerous details of construction may be varied through a wide range without departing from the principles of this invention, and it is, therefore, not the purpose to limit the patent granted hereon otherwise than necessitated by the scope of the appended claims.

I claim as my invention:

1. A fountain pen comprising a barrel having a seat in one end thereof, a feed bar and pen point engaged in the opposite end of the barrel, an intake tube connected with the feed bar and disposed within the barrel, and a bulbous filling unit slidably engaged in the end of the barrel opposite the feed bar and seated against said seat, said filling unit adapted to be pulled out of the end of the barrel into a projected position to be alter-

nately compressed and released to cause filling of the fountain pen barrel.

2. A fountain pen comprising a barrel having a seat in one end thereof, a feed bar and pen point engaged in the opposite end of the barrel, an intake tube connected with the feed bar and disposed within the barrel, and a filling unit movably engaged in the barrel and normally seated on said seat, said filling unit adapted to be moved out of the end of the barrel into a position to be actuated to cause filling of the fountain pen.

3. A fountain pen comprising a barrel having means therein defining an annular seat, a passaged stem unit rigidly secured in the barrel and seated on said seat, and a filler unit slidably engaged in the barrel over said stem unit and movable outwardly with respect to the stem unit into a position to be actuated to cause filling of the fountain pen.

4. In a fountain pen, a filler unit for insertion in one end of the fountain pen barrel, said filler unit comprising a bulbous rubber-like structure normally seated in the barrel, means for pulling the bulbous rubber-like structure into a position to project out of the end of the barrel to permit manual actuation of the bulbous rubber-like structure to cause filling of the fountain pen, and means for limiting the outward movement of the bulbous rubber-like structure with respect to the barrel.

5. In a fountain pen, a filler unit for insertion in one end of the fountain pen barrel, said filler unit comprising a stem unit rigidly secured in the barrel, and a bulbous filling structure slidably engaged in the barrel over said stem unit and slidable into a position to project out of the end of the barrel into a position for manual operation of the bulbous structure to cause filling of the fountain pen.

6. In a fountain pen, a filler unit for insertion in one end of the fountain pen barrel, said filler unit comprising a bulbous rubber-like structure slidably engaged in one end of the barrel, a stem unit secured in the barrel in telescopic relationship with the bulbous structure, means connected with the bulbous structure for pulling the same outwardly into a position to be actuated to cause filling of the fountain pen, and means for limiting the outward movement of the bulbous structure and the inward movement thereof.

7. In a fountain pen, a filler unit for insertion in one end of the fountain pen barrel, said filler unit comprising a compressible bulbous structure and a protecting covering therefor, said filler unit normally seated in the barrel and slidably movable with respect to the barrel into a projecting position for actuation of the bulbous structure to cause filling of the fountain pen.

8. In a fountain pen, a filler unit for insertion in one end of the fountain pen barrel, said filler unit comprising a stationary stem device secured in the barrel, and a filling device slidably engaged in the end of the barrel over the stem device.

9. In a fountain pen, a filler unit for insertion in one end of the fountain pen barrel, said filler unit comprising a stationary stem device secured in the barrel, a filling device slidably engaged in the end of the barrel over the stem device, and means on the stem device for limiting the sliding movement of the filler device with respect to the stem device and with respect to the fountain pen barrel.

10. A fountain pen including in combination a barrel having a shoulder formed therein, a stem unit rigidly secured in the barrel and seated

against said shoulder, and a bulbous filling structure slidably engaged in the barrel and having telescopic relationship with the stem device and limited outward movement with respect thereto when moved to project from the barrel into a position to permit actuation thereof for filling the fountain pen.

11. In a fountain pen, a filler unit comprising a passaged stem unit rigidly secured in one end of the fountain pen barrel, and a plunger means in the form of a filling unit slidably projecting into the barrel and over the stem unit and movable into a position projecting from the end of the barrel to permit actuation thereof to cause filling of the fountain pen.

12. In a fountain pen, a filler unit secured in one end of the fountain pen barrel and comprising a slidable bulbous structure, a protecting covering therefor slidable therewith, means for limiting the movement of the bulbous structure and the protecting covering therefor with respect to the barrel, and finger engaging means connected with the protecting covering for moving the bulbous structure and the protecting covering into an outwardly projecting position with respect to the barrel to permit operation of the bulbous structure through the protecting covering to cause filling of the fountain pen.

13. In a fountain pen, a filler unit normally projecting into one end of the barrel into an inoperative position, and slidable out of the end of the barrel to permit manual actuation thereof to cause filling of the fountain pen.

14. In a fountain pen, a filler unit secured in one end of the fountain pen barrel and comprising a slidable bulbous structure, a protective covering therefor, and a finger engaging means on the protective covering for slidably moving the filler unit with respect to the fountain pen barrel.

15. In a fountain pen, a filler unit secured in one end of the fountain pen barrel and comprising a stationary passaged stem device, a bulbous filling structure slidably engaged in the barrel over the stem device, a protecting covering for the bulbous filling structure, a finger piece on the protecting covering for pulling the bulbous structure and the protective covering outwardly with respect to the barrel into a position to be operated to cause filling of the fountain pen, and means on the stem device for limiting the outward and inward movement of the bulbous structure and the protective covering therefor.

16. In a fountain pen, a filler unit secured in one end of the fountain pen barrel and comprising a bulbous structure, a protective casing therefor having slots therein, actuating plates in the casing on opposite sides of the bulbous structure and including finger pieces projecting through the slots in the casing into a position to permit alternate collapsing and release of the bulbous structure to cause filling of the fountain pen when the bulbous structure and the protecting casing therefor are moved into a position to project out of the end of the fountain pen barrel.

17. In a fountain pen, a filler unit secured in one end of the fountain pen barrel and comprising a bulbous structure, a slotted casing enclosing the same and movable therewith, operating plates in the casing on opposite sides of the bulbous structure, finger pieces on said plates projecting through the slots in said casing, means for pulling the bulbous structure and the casing into a position to permit the finger pieces to be manually operated to cause operation of the bulbous structure and filling of the fountain pen, and means for limiting the outward movement and the inward movement of the bulbous structure and the protective casing therefor with respect to the fountain pen barrel.

18. In a fountain pen, a filler unit secured in one end of the fountain pen barrel and comprising a casing slidable with respect to the barrel, a bulbous filling structure enclosed by the casing and movable therewith, and operating means between the casing and the bulbous structure and movable into an outwardly projecting position by the bulbous structure when the casing is projected from the end of the barrel, and movable by contact with the barrel into a position to compress the bulbous structure when the protective casing is pushed back into the barrel when the filler unit is not in use.

19. A fountain pen filling unit comprising a passaged member adapted to be secured in one end of a fountain pen barrel, and a bulbous plunger mechanism having slidable telescopic engagement with the passaged member and movable into a position to project from the fountain pen barrel to permit the bulbous structure to be alternately collapsed and released to cause filling of the fountain pen.

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