April 13, 1937. W. LIVSEY 2,076,997

FOUNTAIN PEN

Filed June 11, 1936

FIG. 1.

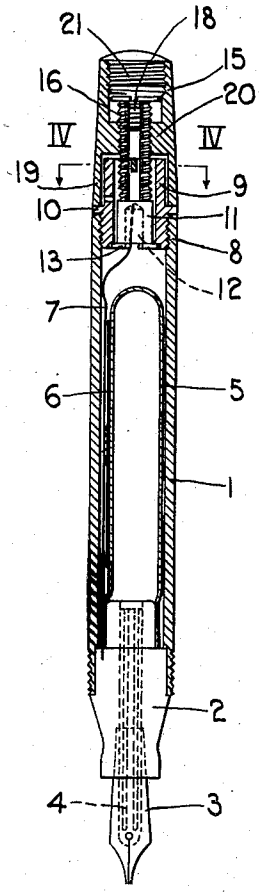


FIG. 2.

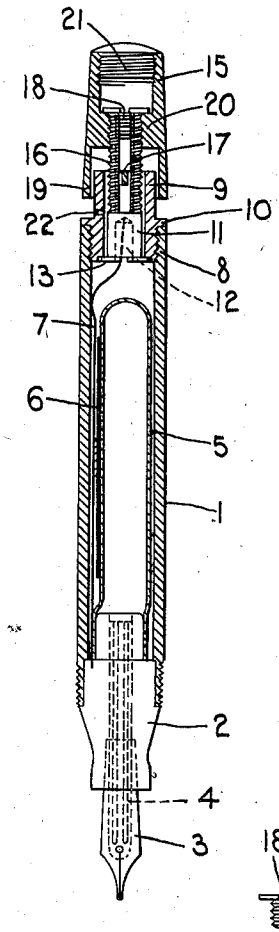


FIG. 3.

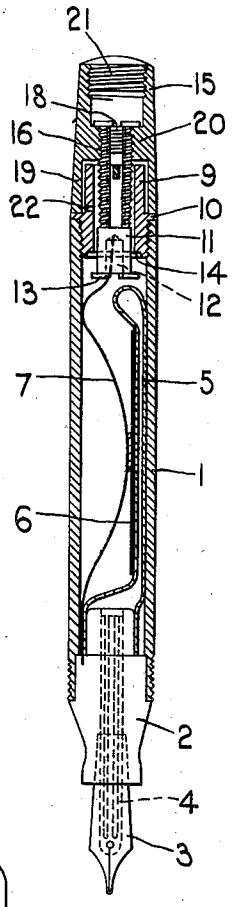


FIG. 4.

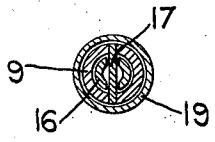
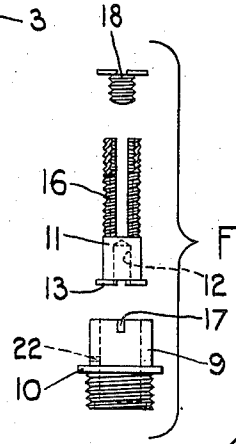


FIG. 5.



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UNITED STATES PATENT OFFICE

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FOUNTAIN PEN

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In Great Britain July 1, 1935

6 Claims. (Cl. 120—46)

This invention relates to self-filling fountain pens with more especial reference to those in which, during the filling operation, compression of a rubber sac or reservoir is effected by the lateral pressure of a flexible metal strip which can be bowed or buckled by endwise pressure.

Customarily, the endwise pressure is applied by manipulation of a small plunger in the rear end of the pen barrel, the projecting portion of the plunger being normally covered by a small removable cap, which requires to be removed and is liable to be mislaid in the filling operation. Various proposals have been made to eliminate this removable end cap, for example by screw-threading the projecting portion of the plunger and mounting the cap thereon so that it is unscrewed preparatory to depression of the plunger during a filling operation, and the present invention has for its object to provide an improved mechanism for actuating the spring presser bar to fill the pen which can be readily assembled and is convenient in use.

In accordance with the present invention mechanism for actuating the spring presser bar comprises a flanged cylindrical plug adapted to be screwed into the rear end of the barrel and a split or slotted plunger slidable in said plug and restrained against rotation therein by a cross member on the plug traversing the slot, the outer extremity of the plunger being screw-threaded to mount a finger piece for operation of the plunger to actuate the presser bar and fill the pen.

Complete removal of the finger piece from the plunger in use may be prevented in any appropriate manner, preferably by a headed screw in the plunger co-operating with an internal abutment on the finger piece, the pitch of the screw in relation to that of the plunger being such that on the finger piece being unscrewed along the plunger preparatory to the filling operation when the abutment contacts with the screw head, a lock nut action takes place.

Preferably also the flanged plug is fabricated of metal and provides a rearwardly projecting cylindrical boss about which the finger piece slides, being screwed into abutment with the flange, except during filling operation, when it is unscrewed along the plunger so that the latter may be actuated to flex the spring presser bar and compress the sac. Filling takes place on the finger piece being released when the sac returns to normal and the finger piece can be screwed back into engagement with the flange on the screwed plug.

The length of the headed screw, the end of which may be arranged to contact with the cross member on filling by depression of the finger piece, forms a ready means of fixing the travel of the plunger, outward movement of which is limited as customary by a circumferential flange engaging with the front end of the plug for the receipt of which flange a recess may be provided in the front end or face of the screw plug.

The invention will be further described with reference to the accompanying explanatory drawing which illustrates by way of example one embodiment thereof and in which Figs. 1, 2 and 3 are longitudinal sections of a self-filling fountain pen equipped with the improved actuating mechanism,—

Fig. 1 showing the pen with its parts in a normal writing position.

Fig. 2 with the finger piece retracted ready for the filling operation.

Fig. 3 with the plunger depressed by means of the finger piece during the filling operation.

Fig. 4 is the cross section on the line IV—IV of Fig. 1, and

Fig. 5 is a detailed view to a larger scale of the flanged plug plunger and locking screw.

Referring now to the drawing, 1 generally designates the cylindrical barrel of the pen, and 2 the nib section fitted in the front end of the barrel and mounting as customary the nib 3 and feed 4 at its outer end while its inner end carries the usual rubber ink sac or reservoir 5.

6 is the rigid presser bar and 7 the customary flexible metal strip which is bowed or buckled by endwise pressure to the position shown in Fig. 3 with the presser bar 6 collapsing the ink sac or reservoir 5.

The rear end of the pen barrel 1 is interiorily screw-threaded at 8 to mount a flanged cylindrical plug 9 preferably of metal having a flange 10 in abutment with the barrel end when the plug is screwed home therein.

The plug 9 has a circular bore slidably mounting a plunger 11 which in the embodiment illustrated is furnished with a recess 12 at its inner end receiving the end of the flexible metal strip 7 and also a head 13 engaging the flanged plug 9 to limit the outward movement of the plunger. As shown more clearly in Fig. 3, the inner face of the plug 9 is furnished with a circular recess 14 normally to accommodate the head 13 of the plunger.

For the actuation of the plunger 11 a finger piece 15 is provided conveniently constructed of the same or similar material to that of the pen

barrel 1. The finger piece 15 is carried on a screw threaded split extension 16 of the plunger 11 which is restrained against rotation in the flanged plug 9 by a cross member 17. 18 is a head or locking screw of the extremity of the split extension of the plunger which serves to prevent the finger piece becoming detached when it is unscrewed along the plunger to the position shown in Fig. 2 ready for the filling operation.

To fill the pen, after unscrewing the finger piece 15 to the position shown in Fig. 2 and inserting the nib in the ink, the finger piece is depressed to the position shown in Fig. 3 so that the sac 5 is collapsed and the finger piece is then released with the nib still in the ink whereat the parts reassume the position shown in Fig. 2 and the ink is drawn up through the feed 4 to fill the reservoir 5. Thereafter the finger piece 15 is returned to the normal position shown in Fig. 1, being furnished with a depending sleeve portion 19 which then abuts with the flange 10 on the plug and provides a smooth continuation of the outer surface of the pen barrel 1.

In the embodiment illustrated, complete removal of the finger piece is prevented by means of the headed screw 18 co-operating with an abutment 20 in the form of an internal annular projection, the bore of which provides the screw thread mounting the finger piece on the extension 16 of the plunger 11. The pitch of the headed screw 18 in relation to that of the plunger 16 is preferably such that on the finger piece 15 being unscrewed along the plunger 16 preparatory to the filling operation when the abutment 20 contacts with the screw head, a lock nut action takes place.

The cross member 17 traversing the slot of the plunger 11 may be a simple pin borne on the flanged plug 9 although in the embodiment illustrated it takes the form of a light bar wedged in notches on the rear outer face of the plug 9 by slight deformation of the metal thereof, for instance by a swaging process.

The rear end of the finger piece 15 is shown closed by a screwed-in button or plug 21 which can be removed when access to the mechanism is required for adjustment or inspection, the mechanism being bodily removable from the fountain pen if desired by unscrewing the cylindrical plug 9 which operation is facilitated by the provision of a recess 22 on the circumferential surface thereof and readily engageable by an appropriate tool.

It will readily be appreciated that the full stroke of the mechanism during the filling operation can be determined either by the abutment between the depending sleeve portion 19 of the finger piece and the flange 10 on the cylindrical plug or by the space between the opposed interior faces of the finger piece and plug before contact takes place the stroke being readily adjustable by means of washers (not shown) interposed between the head screw 18 and the plunger extension 16.

By the present invention, the improved mechanism for actuating the spring presser bars of self-filling fountain pens is provided which is cheaply manufactured, readily assembled as a unit for fitment to the pen and which, being without loose parts, is extremely convenient in use.

What I claim is:—

1. Mechanism for actuating the spring presser bar in a self-filling fountain pen comprising a flanged cylindrical plug adapted to be screwed into the rear end of the barrel and a split or slotted plunger slidable in such plug and restrained against rotation therein by a cross member on the plug traversing the slot, the outer extremity of the plunger being screw-threaded to mount a finger piece for operation of the plunger to actuate the presser bar and fill the pen.

2. Mechanism for actuating the spring presser bar of a self-filling fountain pen according to claim 1, wherein the removal of the finger piece from the plunger in use is prevented by the provision of a headed screw in the plunger co-operating with an internal abutment on the finger piece.

3. Mechanism according to claim 1, wherein the cross member traversing the slot in the plunger is a light bar wedged in notches on the rear face of the plug.

4. Mechanism according to claim 1, including a locking screw for preventing the removal of the finger piece in use wherein the pitch of such screw in relation to that on the plunger is such as to provide a lock nut action when the finger piece is unscrewed.

5. Mechanism for actuating the presser bar of a self-filling fountain pen according to claim 1 wherein the flanged cylindrical plug with its plunger, finger piece and locking screw can be assembled as a unit and readily fitted as such to the pen body or barrel.

6. Mechanism for actuating the presser bar of a self-filling fountain pen according to claim 1 wherein the front or inner face of the flanged plug is furnished with a recess normally accommodating a head provided on the inner end of the plunger to limit the outward travel thereof.

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