

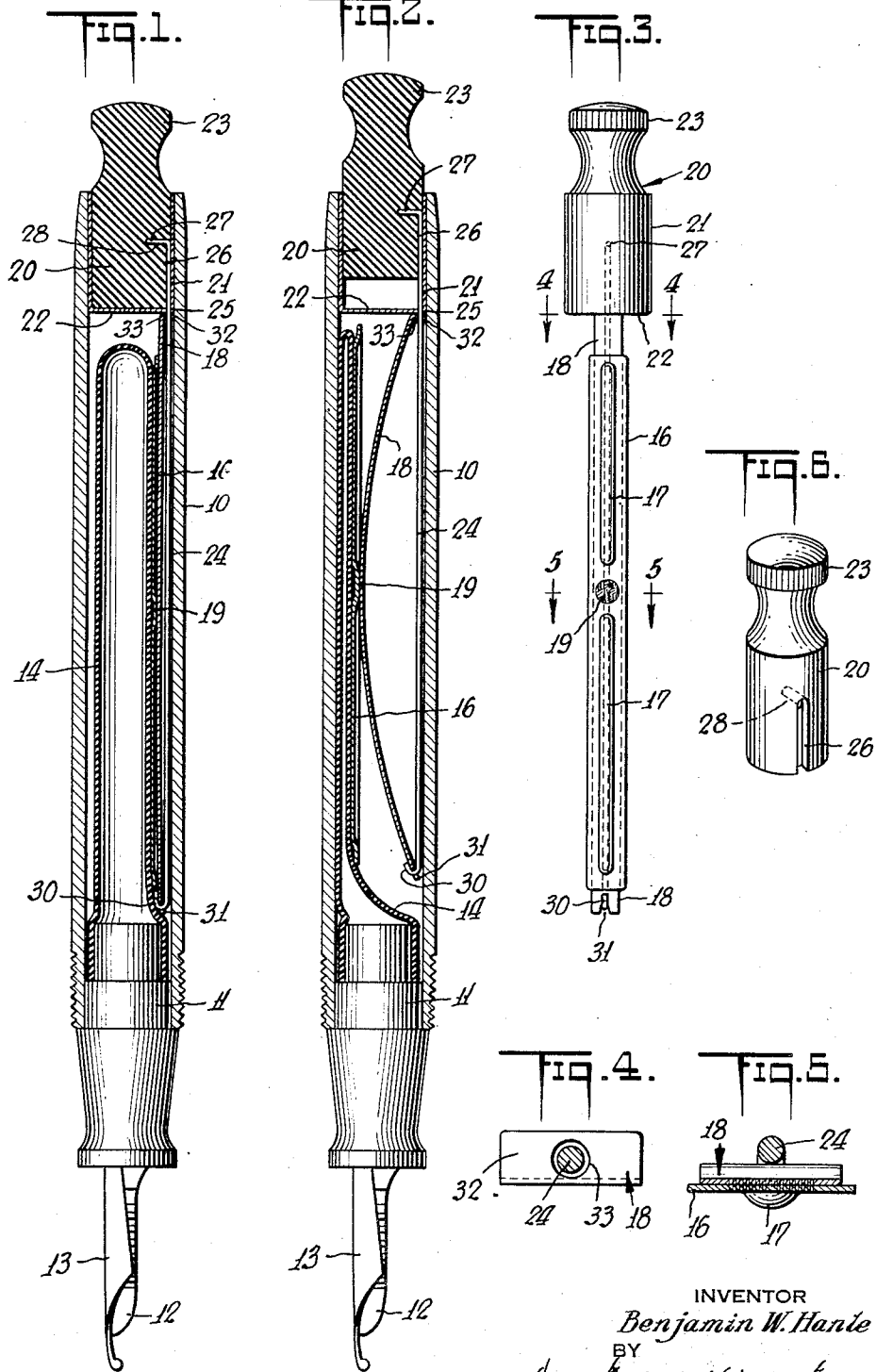
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FOUNTAIN PEN

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FOUNTAIN PEN

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The present invention relates to a self-filling fountain pen of the sac type, and more particularly, to a mechanism of the presser-bar type for deflating its sac in the filling of said pen.

5 It is among the objects of the invention to provide a pen filling mechanism of the general type referred to, which is simple in construction with the elimination of cams, links, or rotatable threaded finger pieces, reliable and efficient in use and inexpensive to manufacture.

10 Another object is to provide a pen of the above type in which the parts automatically return to normal position after the sac deflating operation, without special instrumentalities for that purpose, and in which the expulsion of ink due to an accidental pushing or tapping of the pen is obviated, without the need for a protective cap for the finger piece used in filling.

15 In a preferred embodiment there is provided a spring bar interposed between the ink sac and one side of the pen barrel, a presser bar connected to said spring bar, a slidable plunger having a finger piece, and mounted on the outer end of the pen barrel, and means for applying end-
25 wise compressive thrust on said spring bar upon an outward pull on said finger piece to cause said spring bar to be bowed inwardly, and to cause said presser bar to be correspondingly moved laterally into sac collapsing position.

30 In the accompanying drawing in which is shown one or more of various possible embodiments of the several features of the invention,

35 Fig. 1 is an enlarged side elevation partly in longitudinal section of the fountain pen, and shows the parts thereof in normal position with the ink sac uncompressed,

Fig. 2 is a view similar to that of Fig. 1, but representing the parts in sac compressing position,

40 Fig. 3 is a side elevation of the pen-filling mechanism,

Figs. 4 and 5 are sections taken on lines 4—4 and 5—5 of the Fig. 3 respectively, but somewhat enlarged, and

45 Fig. 6 is a perspective of the plunger with its associated finger piece.

Referring now to the drawing, the fountain pen includes the usual construction of a barrel 10, a tubular section 11, a feed bar 12, a pen nib 13 superposed over said bar, and interposed at its shank between said bar and said section, and a collapsible ink sac 14 of soft rubber disposed in said barrel, and having its open end fitted over the inner end of said section.

55 The sac deflating mechanism includes a sub-

stantially straight metal presser bar 16, disposed between the ink sac 14 and one side of the pen barrel 10, and preferably provided with embossed longitudinal stiffening grooves or ribs 17, terminating near the middle of the presser bar 16, at which it is affixed preferably by spot welding as at 19, to the middle of a metal spring bar 18.

A cylindrical cup sleeve 21, preferably of spun sheet metal, is secured to the open end of the pen barrel 10 preferably by a press-fit therein, and desirably extends flush at its rim with the upper end of the pen barrel 10. It is closed at its bottom by an end wall 22 which serves as an abutment for the upper end stop 32 of the spring bar 18.

A plunger 20, preferably cylindrical and of plastic composition and with a protruding finger piece 23, has a snug sliding fit in cup 21 to bottom against the end wall 22 of the latter.

A metal tie rod 24, preferably of wire, is lodged in a longitudinal recess 26, formed on the outside of the plunger 20, and is anchored to said plunger as by a bent-over tip 27 extending into a radial hole 28 in the upper end of said recess to form a detachable connection with said plunger. This tie rod 24 passes loosely through an aperture 25 formed in the end wall 22 of the cup 21 and through an aperture 33 in the stop 32 of the spring bar, and extends longitudinally along the inner wall of the barrel 10 with its lower end detachably hooked, as at 30, in a notch 31 on said spring bar.

The various parts of the mechanism may be easily assembled to form a unit, by passing the upper end of the tie rod 24 through the aperture 25 of the cup end wall 22 while the plunger 20 is out of the cup 21, and inserting the bent-over tip 27 of said tie rod into the radial hole 28 of the plunger 20, which is then moved into its lowermost position in the cup. The perforated stop end of the spring bar 18 with the presser bar 16 spot welded thereto, is then slipped over the hook end 30 of the tie rod 24 and slid into contact with the cup end wall 22, while said hook end 30 is caught in the notch 31 of said spring bar.

55 While the operation is readily understood, it will be briefly set forth. The length of the tie rod 24 is such that the spring 18 is not straight, but bowed slightly from tie rod 24, thereby urging plunger 20 to its innermost or seated position, assuring the firm gripping of the ends of said tie rod to the plunger 20 and the lower end of the spring bar 18 respectively, and predetermining the direction of bowing of the spring bar

18 inwardly upon outward pull on the finger piece 23.

To fill the fountain pen, the finger piece 23 is pulled outwardly to the approximate position shown in Fig. 2, thereby effecting an upward thrust upon the lower end of the spring bar 18 by means of the tie rod 24. Since the upper end of the spring bar 18 is fixed by the end wall 22 against movement, the resultant endwise compressive thrusts on said spring bar cause it to be bowed inwardly, thereby effecting lateral movement of the presser bar 16 into the sac deflating position shown in Fig. 2 so that the sac is collapsed substantially throughout its length. Upon release of the finger piece 23, the various movable parts of the mechanism will automatically return to the position shown in Fig. 1 under the influence of the spring bar 18, and the pen nib being submerged in the well during the operation ink will flow into the sac 14 to satisfy the vacuum in the inflating sac.

It is seen therefore that the sac filling mechanism is operated by a simple manipulation, involving a mere outward pull on the finger piece 23 and effecting the instantaneous deflation of the ink sac. No manipulation is necessary to return the movable parts of the mechanism to normal position, return being automatically effected upon the release of the finger piece. Furthermore accidental inward pushing or tapping of the end of the finger piece 23 will not cause the expulsion of ink from the pen as in the case of an inwardly operable finger piece.

All of these advantages are obtained without the use of cams, links, threaded or rotatable parts, coil springs, or fixed spring engaging abutments at the lower end of the barrel, and by a simple construction which can be easily assembled, which is inexpensive to manufacture, and which may be attached to the pen barrel as a unit by merely press fitting the cup sleeve 21 in the upper end of the pen barrel.

It will thus be seen that there is herein described apparatus in which the several features of this invention are embodied, and which apparatus in its action attains the various objects of the invention and is well suited to meet the requirements of practical use.

As many changes could be made in the above construction, and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A mechanism for deflating the ink sac of a fountain pen including a spring bar, a slide plunger, means operable upon the outward slide movement of said plunger for bowing said spring bar into deflating relationship with respect to said ink sac, and means actuated by the spring action of said bar for restoring said slide plunger to its original position.

2. A mechanism for deflating the ink sac of a fountain pen including a presser bar, a spring bar carrying said presser bar, a finger piece, and means operable upon the outward axial movement of said finger piece for bowing said spring bar and for correspondingly moving said presser bar laterally into sac deflating position.

3. A mechanism for deflating the ink sac of a fountain pen including a spring bar, a slide plunger beyond one end of said spring bar and movable lengthwise of said spring bar, a fixed abutment for said end of said spring bar, and a tie member between said plunger and the other end of said spring bar for bowing said spring bar upon outward slide movement of said plunger.

4. A mechanism for deflating the ink sac of a fountain pen including a spring bar, a slide plunger beyond one end of said spring bar and movable lengthwise of said spring bar, a fixed abutment for said end of said spring bar and for said slide plunger, and a tie member between said plunger and the other end of said spring bar for bowing said spring bar upon slide movement of said plunger.

5. A mechanism for deflating the ink sac of a fountain pen including a spring bar, a presser bar carried by said spring bar, a cup sleeve, a plunger slidable in said cup sleeve and presenting a finger piece beyond said cup sleeve, and means operable upon the outward slide movement of said plunger in said sleeve for bowing said spring bar, and for correspondingly moving said presser bar laterally into sac deflating position.

6. A mechanism for deflating the ink sac of a fountain pen including a spring bar, a presser bar carried by said spring bar, a cup sleeve having an end wall engaging one end of said spring bar, a plunger slidable in said cup sleeve, and a tie member connected to said plunger and extending to the other end of said spring bar for bowing said spring bar and for correspondingly moving said presser bar laterally into sac deflating position upon outward slide movement of said plunger.

7. A mechanism for deflating the ink sac of a fountain pen including a spring bar fixed at one end, a presser bar carried by said spring bar, a cup sleeve near said end of said spring bar and having an end wall, a plunger slidable in said cup sleeve, and a tie member, anchored at one end to said plunger, anchored at its other end to the remote end of said spring bar, and passing through said end wall.

8. A mechanism for deflating the ink sac of a fountain pen including a spring bar fixed at one end, a slide plunger near said end of said spring bar, and a tie rod anchored at one end to said plunger and detachably anchored at its other end to the remote end of said spring bar, for bowing said spring bar upon outward slide movement of said plunger.

9. A mechanism for deflating the ink sac of a fountain pen including a spring bar having a notch at one end and fixed against endwise movement at its other end, a slide plunger near the latter end of said spring bar, and a tie rod anchored at one end to said plunger and having a hook at its other end engaging the notched end of said spring bar, for bowing said spring bar upon outward slide movement of said plunger.

10. A mechanism for deflating the ink sac of a fountain pen including a spring bar fixed at one end, a slide plunger near said end of said spring bar, and a tie rod anchored at one end to said plunger and hingedly anchored at its other end to the remote end of said spring bar for bowing said spring bar from the latter end of said bar upon outward slide movement of said plunger.

11. A mechanism for deflating the ink sac of a fountain pen including a spring bar fixed at one end, a sleeve near said end of said bar, a slide plunger in said sleeve, and a tie rod extending at

one end between said sleeve and said plunger, connected to said plunger near said latter end, and connected at its other end to the remote end of said spring bar, whereby upon outward sliding movement of said plunger said spring bar will be bowed.

12. A mechanism for deflating the ink sac of a fountain pen including a spring bar fixed at one end, a slide plunger disposed near said end of said spring bar, and a tie rod having a bent-over portion at one end extending into a transverse hole in said plunger and connected at its other end to the remote end of said spring bar.

13. A mechanism for deflating the ink sac of a fountain pen including a spring bar fixed at one end, a cup disposed near said end of said spring bar, a slide plunger in said cup, and a tie rod lodged near one end in a longitudinal groove in said plunger and having a bent-over tip extending into a transverse hole in said plunger, and having its other end connected to the remote end of said spring bar.

14. A mechanism for deflating the ink sac of a fountain pen including a spring bar fixed at one end, a slide plunger near said end of said spring bar, and a tie rod detachably anchored at its ends to said plunger and to the remote end of said spring bar respectively.

15. A mechanism for deflating the ink sac of a fountain pen including a spring bar fixed at one end, a tie rod connected at one end to the other end of said spring bar, and passing through the fixed end of said spring bar, and means including a finger piece for pulling said tie rod to cause bowing of said spring bar.

16. A mechanism for deflating the ink sac of a fountain pen including a spring bar, a cup having an end wall engaging one end of said spring bar and holding said bar end against endwise movement, a slide plunger in said cup, and a tie rod connected at one end to said plunger, passing through said end wall and said end of said spring bar, and connected at its other end to the other remote end of said spring bar.

17. A fountain pen including a barrel, an ink sac in said barrel, a spring bar between said ink

sac and one side of said barrel, a presser bar carried by said spring bar, a sleeve press fitted to the upper end of said barrel, a slide plunger in said sleeve, and means for bowing said spring bar inwardly and for causing lateral movement of said presser bar into sac deflating position upon outward slide movement of said plunger.

18. A fountain pen including a barrel, an ink sac in said barrel, and a mechanism for deflating said ink sac and including a spring bar between said ink sac and one side of said barrel, a presser bar having the intermediate portion thereof secured to the intermediate portion of said spring bar, a sleeve cup secured to the upper end of said barrel and having an end wall serving as an abutment for one end of said spring bar, a slide plunger in said sleeve cup, and a tie rod between said plunger and the other end of said spring bar, whereby said spring bar will be bowed inwardly and said presser bar moved laterally into sac deflating position upon an outward slide movement of said plunger.

19. A mechanism for deflating the ink sac of a fountain pen including a spring bar, a presser bar provided with embossed longitudinal stiffening grooves terminating near the middle of said presser bar, the intermediate portion of said presser bar between said grooves being spot welded to the intermediate portion of said spring bar, a slide plunger, and means operable upon the outward movement of said plunger for bowing said spring bar, and for correspondingly moving said presser bar laterally into sac deflating position.

20. A fountain pen including a barrel, an ink sac in said barrel, and a mechanism for deflating said ink sac, mounted in said barrel as a self-contained unit, and including a sleeve firmly embraced by the upper end of said barrel, a slide plunger in said sleeve, a presser bar in said barrel, a spring bar carrying said presser bar, and means operable upon outward slide movement of said plunger for bowing said spring bar, and for correspondingly moving said presser bar laterally into sac deflating position.

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