

# PATENT SPECIFICATION



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## PROVISIONAL SPECIFICATION.

### Improvements in or relating to Fountain Pens.

We, CONWAY, STEWART AND COMPANY, LIMITED, a British company, of 75/82, Shoe Lane, London, E.C. 4, and ARTHUR STANLEY JONES, a British subject, of 8, Prebend Street, Islington, London, N. 1, do hereby declare the nature of this invention to be as follows:—

This invention relates to fountain pens and refers more particularly to fountain pens of the type in which the ink is contained in a rubber or like sack and means are provided for successively compressing and releasing said sack whereby the same may be replenished when exhausted.

The object of the invention is the provision of improved means for thus compressing and releasing said sack and the invention consists broadly in the combination of an elongated and longitudinally disposed base element adapted to rest against the inner periphery of the barrel an elongated and longitudinally disposed buckling element having one end secured to the adjacent end of said base element, an elongated and longitudinally disposed presser element having a medial point thereof secured to a medial point of said buckling element, and means for effecting relative longitudinal movement of the other ends of said base and buckling elements whereby the latter may be caused alternately to lie flat against, or buckle inwardly from, said base element.

In accordance with one embodiment of the invention the barrel of the pen has a plug screwed into the rear end thereof and secured to this plug is an elongated flat metal strip which extends along the inside of said barrel flat against the inner periphery to a position nearly as far as the forward end of the rubber ink sack.

Another flat strip hereinafter termed the actuating strip—is superimposed flat upon said base strip and has its forward end secured to the forward end of said base strip and its rear end secured to one end of a short lever pivotally mounted in a central slot in said plug about a transverse axis parallel to the plane of the strips. The end of said lever to which said actuating strip is secured lies normally (i.e. when the two strips are close together) close to the rear end of the base

strip. The other end of said lever projects a little beyond the rear end of said plug and the arrangement is such that when said lever is rocked about its pivot in one direction by means of said projecting end the end thereof to which the actuating strip is secured is moved forwardly and also outwardly from the base strip. The result of this is that said actuating strip is bowed and its mid portion is bent a considerable distance away from the base strip.

A third elongated strip, more rigid than the other strips and hereinafter termed the presser strip is superimposed over the actuating strip and has its mid point secured to the mid point of said actuating strip and its two ends free. This presser strip is slightly shorter than the actuating strip and thus its rear end does not foul the forward end of the plug.

It will be clear that when the lever is rocked as stated the presser strip will be moved laterally away from the base strip—i.e. inwardly from the inner periphery of the barrel—the ink sack will be compressed more or less flat. When the lever is subsequently released, the ink feed being submerged in ink, the sack will recover its normal shape and a charge of ink will be drawn thereinto.

With regard to certain structural details of the device, the base strip is secured to the plug by means of a metal band circumscribing or partially circumscribing said plug and riveted or soldered to said base strip. The slot in which the lever rocks is a longitudinal slot which nearly cuts the plug into two halves.

The means for moving the actuating strip may obviously be varied indefinitely. For example it may be found more convenient to link the lever to a horizontal rod so that the sack is adapted to be squeezed and released by longitudinal reciprocation of said rod, the arrangement being either such that pulling or that pushing the rear end of said rod effects the compression of the sack. In the latter case the rod may be operable by means of a star wheel mounted in the plug so as to be rotatable about a transverse axis, the arrangement being such

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that the arms of the star wheel as the same is rotated successively abut against the end of the rod and push the same forward. Thus if there are four arms to the star wheel a quarter rotation of the same will effect charging of the sack.

Another way of flexing the actuating strip is to mount the rear end of the same to a block which runs in a cam groove extending circumferentially around a cylindrical cam member mounted coaxially at the forward end of the plug. This cam member is carried by a shaft extending through said plug and bearing a milled wheel at its rear end whereby it together with said cam member is adapted to be rotated. The cam groove may be so cut that one complete rotation of the milled wheel will effect charging of the sack. In the case of this modification means will have to be provided for guiding the rear end of the actuating strip in a longitudinal path so as positively to preclude it from rotation with the cam member.

In accordance with another embodiment of the invention the actuating strip may have its rear end secured to the plug in place of the base strip and the flexion of said actuating strip may be adapted to be effected by rearwardly pulling said base strip. A lever or cam may be provided for effecting this rearward pulling as in the case of the forward pushing of the actuating strip of the previous embodiment, or said base strip may simply be provided with a button projecting either rearwardly of the plug or through a longitudinal slot in the barrel, by which button the rearward pulling is adapted to be performed directly.

In accordance with yet another embodiment of the invention the forward ends of the base strip and the actuating strip are connected through the medium of a short link to the two ends of which said strips are respectively pin jointed. This link normally lies flat against the base strip as an extension of the actuating strip and when said actuating strip is pushed

(or said base strip pulled) said actuating strip is flexed and the end of the link to which said actuating strip is connected swings outwardly from the base strip. The presser strip is in this case mounted with its mid point pin jointed to this end of the link and it will therefore be quite clear that said presser bar acts in the same way as in the previous embodiments. Instead of the actuating strip being directly connected to the link it may be connected to the presser strip a little rearwardly of said link. In either case it will be clear that the actuating strip together with the link and with or without the intervening portion of the presser strip, constitutes what is essential a single buckling member such as is constituted in the other embodiments by the actuating strip alone.

Instead of the base strip and actuating strip being connected at their forward ends and relatively movable at the rear ends, they may be connected at their rear ends, and relatively movable at their forward ends, the part corresponding to the plug being carried in or constituted by the forward end of the pen. In this case a hinged member may be provided which, in one of its two positions extends forwardly beyond the end of the nib and which when it is pressed rearwardly effects the buckling of the actuating member. Thus when filling the sack this hinged member is moved to its said forward position, the pen is dipped into the inkwell and said member is pressed against the bottom, thereby compressing the sack. As the pen is withdrawn the sack recovers and the charge of ink is drawn in. The arrangement could also be such that one common base strip could be pushed in this way from the point and also pulled from the rear if desired.

Dated this 6th day of August, 1927.

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## COMPLETE SPECIFICATION.

### Improvements in or relating to Fountain Pens.

We, CONWAY, STEWART AND COMPANY, LIMITED, a British company, of 75/82, Shoe Lane, London, E.C. 4, and ARTHUR STANLEY JONES, a British subject, of 8, Prebend Street, Islington, London, N. 1, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described

and ascertained in and by the following statement:—

This invention relates to fountain pens and refers more particularly to fountain pens of the self filling type in which the ink is contained in a rubber or like sac and a longitudinal buckling element with a pressure element secured to a medial

point thereof is provided in the barrel, said buckling element being adapted to be either buckled by longitudinal compression thereby causing said pressure element to compress the sac or to be released thereby permitting said sac to expand.

The object of the invention is the provision of an improved pen of this type and the invention consists in the provision of an elongated and longitudinally disposed base element adapted to rest against the inner periphery of the barrel and having one end secured to the adjacent end of said buckling element, and means for effecting relative longitudinal movement of the other ends of said base and buckling element and thereby effecting the buckling and release of the latter.

In order that the invention may be the more clearly understood a number of pens in accordance therewith will now be described, reference being made to the accompanying drawings Figures 1 to 4 which respectively illustrate certain of said pens in sectional elevation.

Thus referring to Figure 1 the barrel 1 of the pen has a plug 2 screwed into the rear end thereof and secured to this plug 2 is an elongated flat metal base strip 3 which extends along the inside of said barrel flat against the inner periphery to a position nearly as far as the forward end of the rubber ink sac 4.

Another flat strip 5—hereinafter termed the actuating strip—is superimposed flat upon said base strip 3 and has its forward end secured to the forward end of said base strip and its rear end soldered to a block 6 mounted so as to reciprocate longitudinally in a slot in said plug 2. At the rear end of said plug 2 is pivoted a lever 7 and this lever is adapted normally to rest in the position shown in full lines, and to be susceptible of being rocked by the finger to the position shown in dotted lines. When it is so rocked one end engages slidably with the curved rear surface of said block 6 and slides the same forwards by a cam action to the position shown in chain dotted lines. The result of this is that said actuating strip 5 is bowed and its mid portion is bent a considerable distance away from the base strip as shown in chain dotted lines.

A third elongated strip 8, more rigid than the other strips and hereinafter termed the presser strip is superimposed over the actuating strip 5 and has its mid point secured to the mid point of said actuating strip and its two ends free. This presser strip 8 is slightly shorter than the actuating strip and thus its rear end does not foul the forward end of the plug 2.

It will be clear that when the lever 7 is rocked as stated the presser strip 8 will be moved laterally away from the base strip to the position shown in chain dotted lines, and the ink sac 4 will be compressed more or less flat. When said lever 7 is subsequently returned to its normal position, the ink feed being submerged in ink, the sac 4 will recover its normal shape and a charge of ink will be drawn thereinto.

With regard to certain structural details of the device, the base strip 3 is secured to said plug 2 by means of a metal band 9 circumscribing or partially circumscribing said plug 2 and soldered to said base strip 3. Said band 9 rests in a circumferential groove 10 cut in the screw threaded portion of said plug and the said screw threaded portion is flattened at one side to the level of the bottom of the groove so as to afford accommodation for the base strip 3. The slot in which the block 6 slides is cut radially inwards from the flattened surface as shown.

Other constructional details are deemed obvious from the drawing.

The pen shown in Figure 2 differs from that of Figure 1 only in respect of the mechanism for effecting the movement of the actuating strip 5. In this case a rocking lever 7a is pivoted in a central slot in the plug 2 forwardly of the band 9 and is connected directly to said actuating strip 5. Said lever is adapted to be rocked by the longitudinal movement of a link 11 secured at one end to the end of said lever opposite said actuating strip and extending rearwardly from said lever in a longitudinal slot formed in said plug. Said link carries at its rear end a projection adapted to be actuated by the thumb nail.

The means for moving the actuating strip may obviously be varied indefinitely. For example a star wheel having four arms might, in the arrangement of Figure 1, be pivoted in place of the lever 7, the arrangement being such that the arms of the star wheel as the same is rotated successively abut against the rear end of the sliding block 6 and push the same forward. Thus if there are four arms to the star wheel a quarter rotation of the same will effect charging of the sac.

Another way of flexing the actuating strip is to attach the rear end of the same to a block which runs in a cam groove extending circumferentially around a cylindrical cam member mounted coaxially at the forward end of the plug. This cam member is carried by a shaft extending through said plug and bearing a milled wheel at its rear end whereby it

together with said cam member is adapted to be rotated. The cam groove may be so cut that one complete rotation of the milled wheel will effect charging of the sac. In the case of this modification means will have to be provided for guiding the rear end of the actuating strip in a longitudinal path so as positively to preclude it from rotation with the cam member.

In the arrangement shown in Figure 3 the actuating strip 5 has its rear end secured to the plug 2 in place of the base strip 3 and the flexion of said actuating strip is adapted to be effected by rearwardly pulling said base strip 3. In this case said base strip 3 extends rearwardly through the clearance adjacent the flattened portion of the plug into a longitudinal slot 12 in the rear portion of said plug 2. Said base strip carries a button which projects out of said slot 12 as shown and by which said base strip is adapted to be drawn rearwardly. Alternatively said base strip might be shortened and the button might project through a slot in the barrel 1.

In the arrangement of Figure 4 the forward ends of the base strip 3 and the actuating strip 5 are connected through the medium of a short link 13. Thus said two strips are shortened considerably as shown; the forward end of the actuating strip is connected to the middle of the presser strip 8 and the two ends of said link 13 are respectively pin jointed to the end of the base strip 3 and to a point of said presser strip 8 near the end of said actuating strip 5. This link 13 normally lies flat against the base strip 3 substantially as an extension of the actuating strip 5 and when said base strip is pulled as in Figure 3 (or the actuating strip pushed as in Figures 1 or 2) said actuating strip is flexed and the end of the link 13 swings outwardly from the base strip, the presser strip acting in the same way as in the previous embodiments. It will be clear that the actuating strip 5 together with the link 13 and with the intervening portion of the presser strip 8, constitutes what is essentially a single buckling member such as is constituted in the other embodiments by the actuating strip 5 alone.

Instead of the base strip and actuating strip being connected at their forward ends and relatively movable at the rear ends, they may be connected at their rear ends, and relatively movable at their forward ends, the part corresponding to the plug being carried in or constituted by the forward end of the pen. In this case a hinged member may be provided which, in one of its two positions extends for-

wardly beyond the end of the nib and which when it is pressed rearwardly effects the buckling of the actuating member. Thus when filling the sac this hinged member is moved to its said forward position, the pen is dipped into the inkwell and said member is pressed against the bottom, thereby compressing the sac. As the pen is withdrawn the sac recovers and the charge of ink is drawn in.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A fountain pen of the self filling type having means for compressing and releasing the sac comprising in combination an elongated and longitudinally disposed base element adapted to rest against the inner periphery of the barrel, an elongated and longitudinally disposed buckling element having one end secured to the adjacent end of said base element, an elongated and longitudinally disposed presser element having a medial point thereof secured to a medial point of said buckling element, and means for effecting relative longitudinal movement of the other ends of said base and buckling elements whereby the latter may be caused alternately to lie flat against, or buckle inwardly from, said base element.

2. A fountain pen according to Claim 1, wherein said base and buckling elements are secured together at their forward ends and are relatively movable at their rear ends.

3. A fountain pen according to Claim 2, wherein a plug is secured in the rear end of the barrel, one of said elements being connected to said plug and the other element being connected to an actuating mechanism mounted in said plug.

4. A fountain pen according to Claim 3 wherein the base element is the element connected to said plug and the buckling element is the element connected to said actuating mechanism, said actuating mechanism being adapted to move the rear end of said buckling element forwardly.

5. A fountain pen according to Claim 2, wherein a plug is secured in the rear end of said barrel, said buckling element is secured to said plug and said base element is adapted to be pulled rearwardly for buckling of said buckling element.

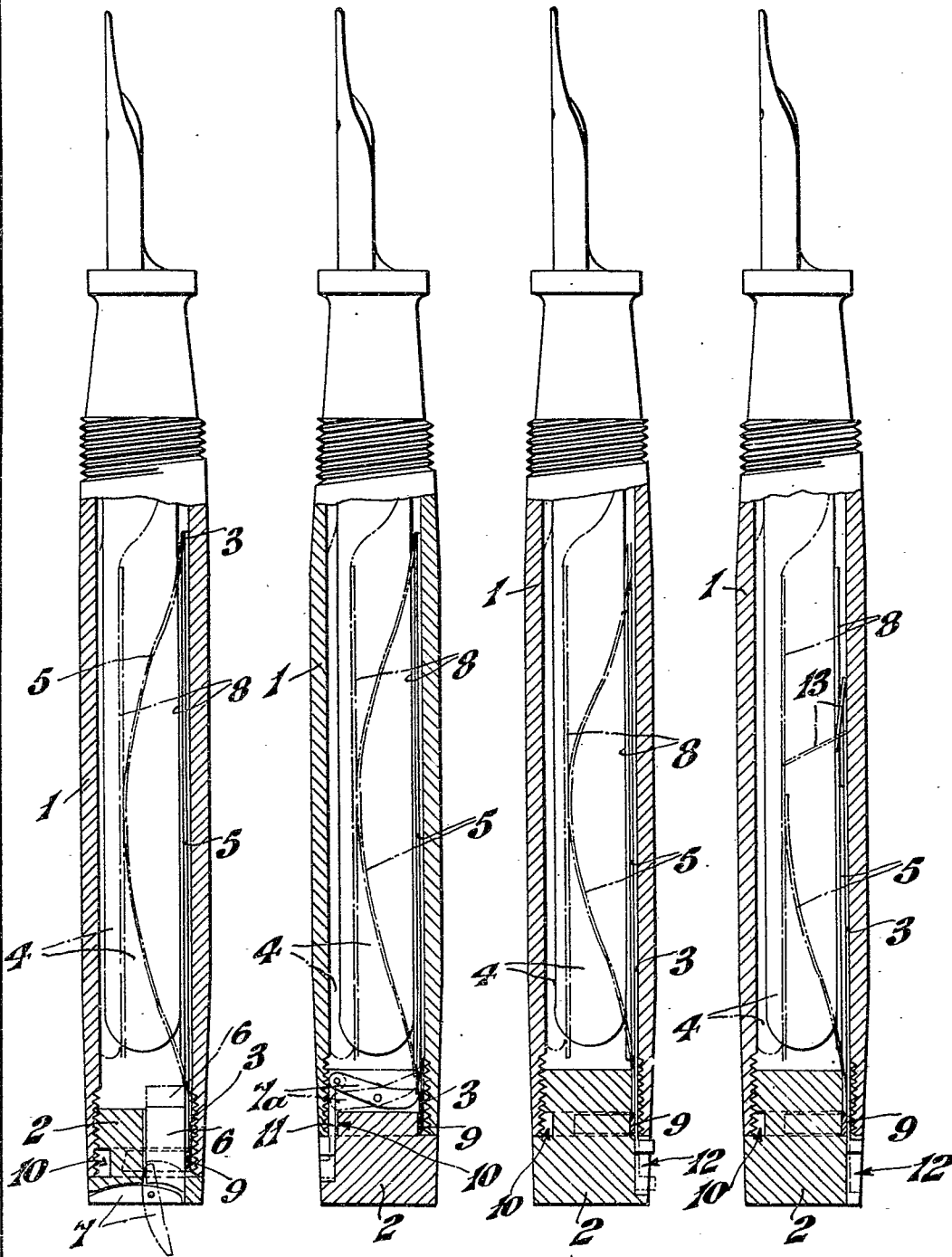
6. A fountain pen according to any of Claims 2 to 5, wherein said buckling element comprises two separate parts connected through the medium of some form of hinge substantially as described.

7. A fountain pen substantially as herein specified with reference to the accompanying drawings.

Dated this 7th day of May, 1928.

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[This Drawing is a reproduction of the Original on a reduced scale.]



*Fig. 1. Fig. 2. Fig. 3. Fig. 4.*