

Feb. 23, 1926.

1,574,266

J. C. WAHL

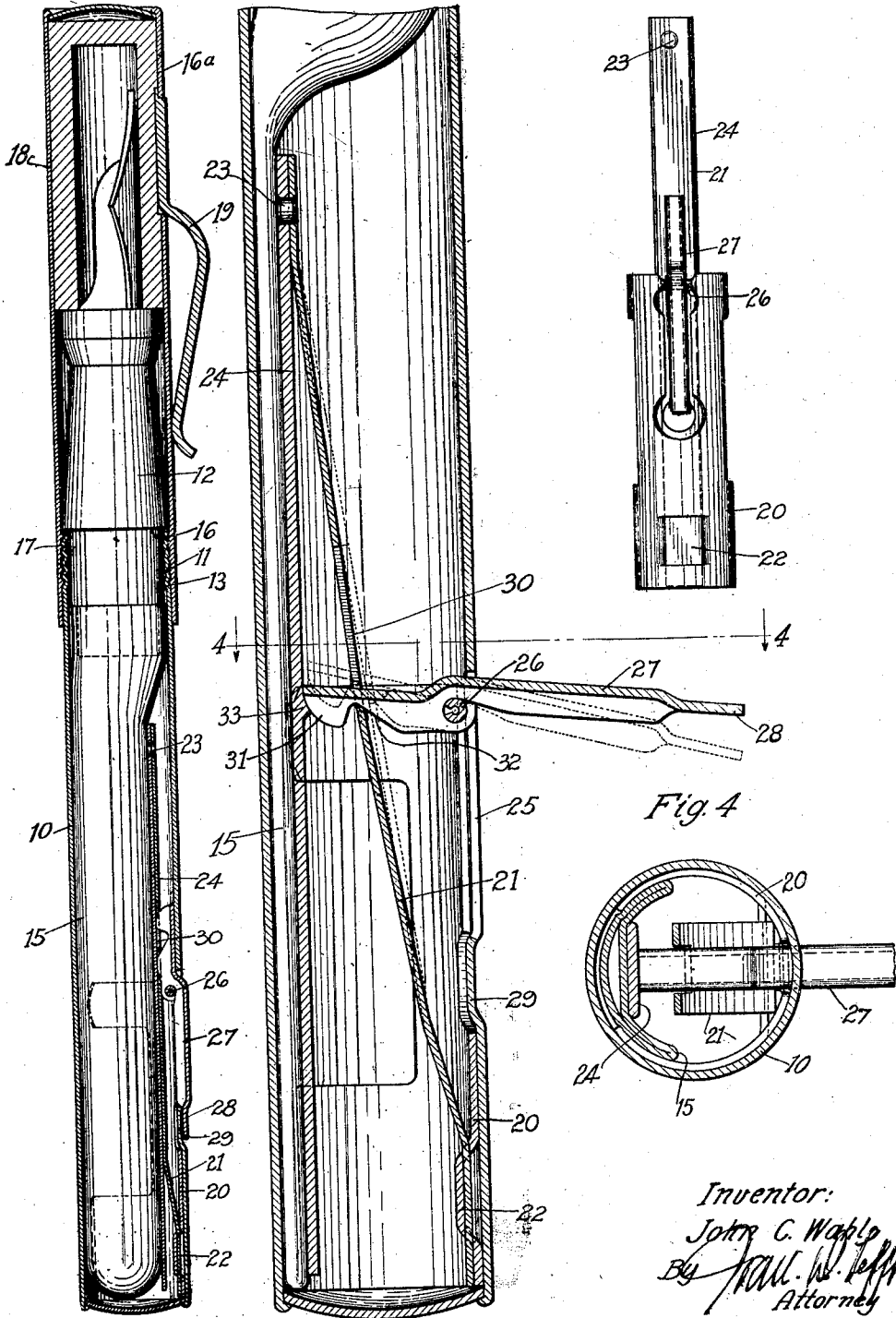
PEN

Filed Nov. 7, 1921

Fig. 1

Fig. 2

Fig. 3



Inventor:
John C. Wahl
By *[Signature]*
Attorney

UNITED STATES PATENT OFFICE.

JOHN C. WAHL, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WAHL COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF DELAWARE.

PEN.

Application filed November 7, 1921. Serial No. 513,231.

To all whom it may concern:

Be it known that JOHN C. WAHL, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, has invented certain new and useful Improvements in Pens, of which the following is a specification.

My invention relates to fountain pens.

The invention is directed specially to the mechanism for deflating the ink sack of a fountain pen.

The invention comprehends structure and co-relationship of a spring bar, a pressure bar and a lever functioning under normal or inactive condition to hold the pressure bar in complete relief of the ink sack and also to hold the lever in firm closed position and under active conditions (those pertaining to expelling of ink from the ink sack) that the lever in action shall be at all times under an active closing tension exerted by the spring member.

Other objects of my invention will appear in the following specification in connection with the annexed drawing in which:

Fig. 1 is a longitudinal sectional view of the pen showing the special filling means in its normal or retracted position.

Fig. 2 is an enlarged sectional view showing in detail the mechanism in its raised or operating position.

Fig. 3 is a plan view of the lever showing in detail the special mounting thereof on the pen barrel.

Fig. 4 is a cross sectional view taken on the line 4—4 of Fig. 2.

The parts that go to make up the filling devices of fountain pens are necessarily very small and fragile and from my experience in connection with the manufacture of fountain pens utilizing such filling devices, I have found that the levers need to be protected against undue violence in operating them. Positive stops and short arm lever action, from my experience, are to be avoided and to that end I have designed a filling device wherein in the action for depressing the ink sack the lever is at no time brought to a positive stop but at all times is under the resilient tension of a spring which tension at the designed maximum opening action of the lever is put under the buckling action of spring as distinguished from its normal tensioning force. Furthermore, in developing my improved structure

the retarding force upon the lever is at its extreme outer end and by thus extending the arm of the lever from its fulcrumed or pivoted point to its end as much as possible the strain thereon is such as to minimize the strain upon its pivotal support. The structure is designed as an improvement over filling devices wherein positive stops are employed to limit the opening action of the lever and where such stops are arranged to actively engage the lever arm intermediate its end and comparatively close to the pivoting point of said lever.

Referring to the drawings, there is shown generally a pen of conventional construction, with the main portion of which we are not specially concerned, inasmuch as the invention is directed mainly to the special filling mechanism. At 10 is shown the pen barrel, said barrel having at its open end the exteriorly threaded portion 11. Frictionally mounted within the open end of said barrel is a pen section designated generally as 12, said section having the portion 13 frictionally engaging the barrel 10 and an ink sack 15 attached thereto and extending within the body of the barrel 10, having an abutment shoulder 16 which prevents the pen section from being inserted beyond its normal depth within the barrel. A cap 16^a having the interiorly threaded portion 17 is adapted for threaded engagement with the barrel 10. The cap 16^a is of conventional form and has the member 18 therein for housing the pen point and forming a tight connection with the upper portion of the pen section. The customary clip 19 is suitably attached to the cap. The special filling device is made up of the following elements. An annular ring frictionally engaging the inner wall of the pen barrel is shown at 20, said ring having a spring or yieldable bar 21 extending forwardly and downwardly therefrom, the spring bar 21 being positioned in a positive manner within the barrel. This connection is made by inserting the outer end of the spring bar in a depressed portion of said ring as at 22. Fixedly attached to the forward end of the spring bar as shown at 23, is a pressure bar 24. The pressure bar 24 is made of non-resilient material and extends substantially the length of the ink sack or reservoir within the barrel. The barrel 10, has a longitudinal slot 25, and pivotally mounted at 26 is a special lever desig-

nated generally as 27. The outer end of the lever has the cap portion 28, engaging the depression 29 in the barrel when disposed in its normal position. The body portion of the lever is fashioned, as may be seen in Fig. 1 in such a manner that when the lever is in its normal position it will project but slightly above the surface of the pen barrel. The inner or operating end of the lever when actuated projects through a longitudinal slot 30, in the spring bar and has its rounded end portion 31 abutting the pressure bar. The lever is formed in one side with an inclined recess as at 32, thereby providing a cam surface. A raised portion 33, is shown on the pressure bar 24; said portion conforming to the arcuate shape of the inner end 31 of the lever.

The operation of the pen and filling device is as follows:

As shown in Fig. 1 of the drawings, the pen parts are in their normal positions and, as is well known, the filling of the ink sack or reservoir of a pen of this type is accomplished by deflation of said reservoir, whereby, upon inflation the ink is forced into the sack or reservoir. This is accomplished by raising the lever 27 to the elevated position shown in Fig. 2 of the drawings, whereby the pressure bar 24 is forced downward upon said sack under yielding tension due to the retarding action of the spring bar 21. As has been said before, the object of my invention is to provide a filling mechanism whereby, under all conditions attending the deflation action, the lever will be acted upon by the spring member in such manner as to tend to force it always to its normal or closed position. The above result is accomplished as follows: As the rounded inner end of the lever gradually forces the pressure bar against the ink sack or reservoir, it will, of course, press it downwardly, but when the lever has assumed the position shown in the dotted line position in Fig. 2, the cam portion 32 thereof will abut the spring bar 21, said lever having already traversed the entire length of longitudinal slot 30 in the lever. Further upward movement of the lever to its raised position as shown in Fig. 2 will cause a depression of the spring bar from the dotted line position shown in Fig. 2 to its final position shown in full lines.

It will be observed that the final movement of the lever (that is when the cam surface 32 thereon is brought in contact with the wall of slot 30 in spring 21) that its opening movement is brought under the severe resisting strain resulting from a buckling or depressing of said spring member and if the movement is continued it is brought to a final stop by the engagement of its lower end with cam lug 33 on the pressure bar, so that under normal conditions of opera-

tion, the operator will note the extra pressure attending the resistance of the buckling action of the spring upon the lever and will release it, but any abnormal or unnecessary pressure applied to the lever will firmly be resisted by the cam lug 33 on the pressure bar so that in operation the lever is never stopped by the wall of the slot in the spring thereby preventing a short lever action or strain on the lever, but, if such extra and unnecessary pressure is applied, the stop force is on the extreme end of the lever thereby lessening the danger of breakage, either of the lever or its pivot. Also, it will be noted that the arcuate shape of the lever end and the conforming shape of the stop lug on the pressure bar will induce a tendency of the lever, when released, to be moved towards the closed position, also, that the cam portion on the body of the lever that contacts with the rear wall of the slot in the spring, if said lever is moved far enough to buckle the latter, will also act to move the lever to its closed position, so that, under all circumstances of operation there can be no positive locking of the lever in open position.

Thus we see that by raising the lever to its upward position the ink reservoir may be depressed, however, unless the finger is actually held against said lever in its upward position it will immediately be thrust back to its former or normal position.

What I claim is:

1. A fountain pen, in combination, the casing having a longitudinal slot therein, a pressure bar, a spring bar suitably secured in connection with said casing and attached to the pressure bar and provided with a centrally located slot therein, a lever pivoted in the slot in the casing and capable of projection through the slot in the spring member and into contact relation with the pressure bar, including a fashioning of a portion of the lever and relative arrangement thereof with reference to the slot in the spring, whereby, in the course of raising the lever to its open position, a portion thereof will be projected through the slot in the spring member and by contact with a wall of the slot as the lever nears its open position will induce gradual deflection and buckling action of the spring member whereby a tensioned stop for the lever will be effected and a resilient force will be developed to cause the lever to be returned to closed position.

2. In combination with a fountain pen, having a barrel section with a longitudinal slot therein, a compressible ink sack within said barrel having a lever fulcrumed in said slot, a pressure bar, a spring bar attached at its forward end to said pressure bar and firmly positioned within the barrel section at its outer end; said spring bar having a slot therein, and means including a cam

surface on said lever whereby said lever has a tendency to be forced always towards its closed position.

3. In a fountain pen, in combination, a casing provided with a longitudinal slot therein, a compressible ink sack inserted within said casing, ink sack compressing means including a pressure bar, a spring member suitably supported within the casing and functioning to normally hold the pressure bar in close relation with the inner wall of the casing and over the slot therein, said spring member being provided with a slot through the body thereof, and a lever pivotally supported in the casing slot, the rear portion of its inner end being fashioned to produce a cam surface thereon, said lever in its opening action adapted to project through the slot in the spring member and to contact with the pressure bar, and, approximating the limit of its opening action, its cam face adapted to function with the wall of the slot in the spring member to buckle the latter for stop purposes and to induce a return action to the lever to normal position when the lever is released.

4. In a fountain pen, in combination, a casing provided with a longitudinal slot therein, a compressible ink sack inserted within casing, ink sack compressing means including a pressure bar having an arcuate faced lug thereon, a spring member suitably supported within the casing and functioning to normally hold the pressure bar in close relation with the inner wall of the casing and over the slot therein, said spring member being provided with a slot through the body thereof, and a lever pivotally supported in the casing slot arcuately formed at its lower end conformitory to the arcuate shape of the lug on the pressure bar, the rear portion of its inner end being fashioned to produce a cam surface thereon, said lever in its opening action adapted to project through the slot in the spring member and to contact with the pressure bar, and, approximating the limit of its opening action, its cam face adapted to function with the wall of the slot in the spring member to buckle the latter for stop purposes and to induce a return action to the lever to normal position when the lever is released.

5. In a pen, in combination, a casing, provided with a longitudinal slot therein, an ink reservoir therein, a slotted spring member supported in connection with the body of the casing and normally lying in contact with the inner wall of the latter, a pressure bar connected therewith, and a lever pivotally associated with the opening in the casing and co-related to the pressure bar to depress the same, and fashioned to co-operate with the spring and pressure bar to cause the former to buckle under certain conditions of force applied

at the conclusion of the opening movement to form a yielding stop and to give initial impetus to the lever to return it to normal position.

6. In combination, with a fountain pen, having a hollow casing with a slot extending longitudinally thereof, and a lever fulcrumed in said slot, a compressible ink reservoir inserted within said casing, of means operable independent of said reservoir and within said casing for firmly holding said lever in closed position, and for operation in conjunction with said lever for compressing the ink reservoir, including means for buckling a member of said means to give preliminary impetus to the lever to facilitate the closing action, and to yieldingly limit the movement of the lever in the opening action.

7. In a pen, in combination, a hollow casing with a slot extending longitudinally thereof, an ink reservoir inserted within said casing, a spring suitably supported within the casing, a pressure bar connected with the free end of the spring member, a lever pivoted within the pen body and fashioned for co-operation with the spring member and the pressure bar, that when the lever is actuated, the pressure bar will be depressed, and a continuation of such relative co-action will cause a buckling of the spring member to provide a yielding stop and to facilitate initial impetus in the closing movement of the lever.

8. In a pen, in combination, a casing, an ink reservoir therein, a spring member supported in the casing, a pressure bar connected with the free end of the spring member and normally lying in the same transverse plane, and a lever for depressing the pressure bar, said lever being so fashioned as to co-act in conjunction with said pressure bar and spring in a manner to effect a buckling of the latter under certain tension, to provide a yielding stop and to give impetus to the lever to return to its normal closed position.

9. In a fountain pen, a casing having an opening in its side wall, a lever pivotally mounted for movement in said opening, an ink reservoir, a spring supported in the casing and normally tending to move toward the side wall of the same, a pressure bar connected with said spring, the lever upon being moved towards open position pressing the pressure bar inwardly against the tension of the spring, but without substantially contacting the spring, the lever when nearing its open position contacting with the spring to put it under further tension to provide a yielding stop and to create an initial impetus to the closing of the lever when released.

In testimony whereof I affix my signature.

JOHN C. WAHL.