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(72) Inventor: **MUNRO ALEXANDER (GB)**

(30) Priority:


(54) **FOUNTAIN PEN**

(54) **PLUME-FONTAINE**

To all whom it may concern.

Be it known that I, ALEXANDER MINRO of the Town of Stockport, in the county of Chester, England, Surveyor of Taxes having invented certain new and useful improvements in reservoir pen/s, do hereby declare that the following is a full, clear and exact description of the same.

This invention relates to what are commonly known as reservoir or fountain pens and its object is to ensure a proper flow of the ink whenever the pen is required for use, to provide means for drawing any ink that may remain on the pen nib after use back into the reservoir and to allow of the reservoir being filled without inconvenience. With fountain pens as at present made the ink often flows too fast, or refuses to flow until the pen has been violently shaken whilst after use the ink is often allowed to remain on the pen nib and become wasted by evaporation or otherwise.

According to this invention I employ an arrangement of devices within or about the pen which constitute a pump capable of being easily worked by the user's finger whilst writing and when operated in one direction serving to draw ink into the pen and by continued action fill the reservoir and when operated in the opposite direction serving to ~~draw~~  the ink and feed it on to the nib point.

In conjunction with such feed devices I may employ means for setting or cleaning the nib-point prior to writing.

On the accompanying drawing

Fig. 1 illustrates an exterior view of a fountain pen fitted with my invention.

Fig. 2 illustrates a longitudinal section of Fig. 1 to a larger scale.

Figs. 3 and 4 illustrate like views (in part) but with certain of the devices removed.

Fig. 5 illustrates a sectional plan of Fig. 4.

Fig. 6 illustrates a transverse section of Fig. 4 on the line c-d.

Fig. 7 illustrates a transverse section of Fig. 3 on the line a-b.

Fig. 8 illustrates a further longitudinal section, but upon another plane to that shown in Fig. 2 and showing a modification.

Fig. 9 is a plan of certain parts shown in Fig. 8.

Figs. 10, 11, 12 and 13 illustrate details.

Fig. 14 illustrates transverse section of Fig. 8, and Figs. 15, 16 and 17 illustrate like views of modifications.

Fig. 18 illustrates a side exterior view in part, and Figs. 19 and 20 transverse sections of two further modifications, Fig. 21 being a longitudinal section.

Referring to Figs. 1 to 15 (1) is the pen-holder wherein is formed a cavity (2) in the opposite end walls of such cavity are small holes (3) leading respectively into the ink reservoir (4) and to the pen nib (5). Within the said cavity (the floor of which as shown is semi-circular) and projecting through the said holes (3) is an india-rubber tube (6). This tube, is by preference, of the shape shown in Fig. 15 having flanges (7) and (8) so that after passing through the holes (3) such flanges serve to hold the tube in its proper place, and to resist any tendency of being pulled out. Also within the said cavity is a wheel (9) mounted on an

axis (10) the ends of which take their bearings in small recesses (11) in the opposite sides of the cavity, see Figs. 5 and 7.

Upon the said wheel are studs (12) preferably two in number, and upon each stud is an anti-friction roller or sleeve (13) the wheel (9) lies to one side of the tube (6), and the rollers (13) lie directly over the tube (6) and in the same plane. The position of the rollers relatively to the wheel centre is also such that as the wheel is rotated the rollers roll and press upon the tube, thereby flattening the tube as shown in Fig. 8 and diminishing or closing the passage for the ink at the point of contact, the tube due to its own elasticity extending or expanding again as soon as the roller has passed.

At one end of the india-rubber tube is connected an ink-feeder consisting by preference of a small tubular part (14) terminating at one end in a plate (15) which loosely fits the channel of the pen-nib and at the other end terminates in an enlarged tubular part (16) which fits over the flanged end (17) of the india-rubber tube as shown in Fig. 8 and thereby connects the feeder and tube to each other. The said enlarged part of the feeder is held in position within the holder by fitting tightly or screwing into a metal piece (18) carried by a rod (19) which in turn is secured to the split steel nib-holder (20) see Figs. 11 and 12.

With the parts thus assembled the user may charge the ink reservoir (4) in the ordinary way through the removable end (21) or he may charge it by dipping the pen-nib into a supply of ink and by constantly rotating the wheel (9) pump it in through the tube (6).

To prepare for writing the wheel (9) is rotated by say the users finger tip until the ink reaches the pen, each traverse of one of the rollers along the tube serving to drive forward a portion of ink.

After using the pen and desiring to prevent the waste of ink remaining on the nib, the user rotates the wheel backwards, and thus causes the rollers to roll upon the tube in an opposite direction and thereby drive the ink back into the reservoir.

To provide for the more effective flow of the ink and wetting of the nib, or to clear the nib of dried or clogged ink the Feeder (14) and its holder (18) may be capable of sliding to and fro upon the rod (19) and in such connection the retraction of the tube (6) may serve for returning the feeder after it has been moved outwards. And to facilitate the moving out of the feeder I may provide a small bent wire (22) secured to the part (18) and after passing through a slot (23) in the holder terminating in a small head (24) so that the user by applying his thumb nail or finger tip thereto may readily move the feeder forward and allow the india-rubber tube to draw it back again, the plate (15) thereby rubbing the ink over the point of the nib and making it ready for use.

In place of the said wire (22) I may use a further wheel (26) within the cavity (8) and upon the same axle (10), but loose as shown in Fig. 14, also a rack (27), see Fig. 5, gearing with the said wheel (26). This rack is a continuation of the part (18) (a small hole being provided for it to pass through) so that upon rotating the wheel (26) in the direction of the arrow, the feeder plate (15) is moved forward to the nib-point as shown by dotted lines, the tube (6) returning it after the wheel (26) is released.

In Figs. 15 to 17 I show various ways of mounting the wheels and rollers, the roller studs (12) in Figs. 15 and 16 being carried by the wheel (9) and a disc (9^A). In such examples the rollers (13) may be on studs secured to both wheel and disc or be solid and have runways (13^A) taking loosely into holes in the wheel and disc.

In Fig. 17 I show how the axle (10) may pass right through the holder and the wheel (9) be rotated by a loose key applied to the squared end of the axle or by a ring, but I prefer the wheels to be rotated as aforesaid.

The reservoir may consist of a thin rubber bag (28) lying inside the holder and attached to one end of the rubber tube (6) as shown in Fig. 5. Inside such bag I may place a vulcanite or thin metal tube (29) perforated with a few holes. This rod or tube serves to keep the rubber bag in position to conduct the ink and to afford a means of affixing the rubber bag to the rubber tube.

the top end of the holder is closed by the plug (21) which fits tightly or screws into the holder and in such plug I form a small air hole. When so constructed it is impossible that the ink can spill or leak when the pen is carried in any position in the pocket.

Fig. 11 illustrates a section of the split steel lining (20) which holds the pen nib pressed against the inside of the pen-holder. The steel lining also supports at its inner end the rod (19) and the projection (20) which supports the rod takes into a recess (21) of the pen-holder and prevents the lining being withdrawn when the pen nib is withdrawn.

Fig. 10 illustrates a section of the lining (20) and the metal

piece (18) when the stud (22) is used as shown in Fig. 8. Fig. 12 is an end view of the lining (20).

In the illustrations I have shown the wheel (26) mounted on the opposite side of the cavity to the wheel (9). As a modification it may be mounted adjacent to such wheel. The holder (1) may be made of a larger diameter where it contains the cavity in order to permit of the cavity being made of larger size than would be the case if the pen-holder was of a uniform size in every part. The cavity itself may also be formed from the side or from the bottom instead of from the top, the essential points being that it should contain part of a circle whereon the rubber tube may rest and that it should permit of a part of the wheel circumference being outside the cavity and convenient to the finger tip.

Figs. 1 to 12 have particular reference to cases where a U-shaped cavity is employed. In the modifications hereinafter described where a transverse cylindrical cavity is used the whole of the wheel or wheels may lie outside the cavity.

In the modification shown in Fig. 12, the transverse cylindrical cavity extends only partly across the pen-holder.

The moveable feeder is operated by means of a stud (22) as already described and the wheel (26) is therefore unnecessary. The rollers (18) are supported on studs (18) on the wheel (9) and a metal liner (22) is used. The liner is of cylindrical shape to fit the cavity and in it are formed holes to lie exactly opposite the holes (8).

One end of the liner (22) is open and the closed end supports in its centre a sleeve or tubular part which serves to hold the axle of the wheel (10). The end of the axle away from the wheel is secured by a nut (24).

In the modification shown in Fig. 20 the cylindrical cavity passes right through the penholder and I use two discs (54) with holes at their centres to support the axle (10) and in which the axle revolves. These discs are fixed by their circumference fitting tightly against the substance of the penholder at the ends of the cylindrical cavity.

The gear teeth in this case are preferably formed on a small pinion affixed to and lying on the inner-side of the wheel (26) and the rack (27) is bent and passes through a slot in the disc or holder which enables the rack to be moved as described in order to operate the movable feeder. The wheel (26) is loose on the axle.

What I claim is:-

1i.- In a reservoir pen or the like, a holder a small pump within the said holder and a wheel capable of being rotated in either direction, by pressing its outside edge, and of operating the said pump, as and for the purposes set forth.

2. In a reservoir pen or the like, a holder, a movable ink feeder and an india-rubber tube, one part of the tube being fixed to the holder and another part to the feeder so that upon the feeder being moved forward to the pen-nib point the contraction of the tube automatically pulls the feeder back, as set forth.

3i.- In a reservoir pen or the like, a holder having a cavity, an ink feeder secured to the holder, a tube of india-rubber in the said cavity, a wheel also in the cavity, and means for axially sustaining the wheel, studs on the wheels and rollers loose on the studs, as set forth.

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1i.- In a reservoir pen or the like, a holder a small pump within the said holder and a wheel capable of being rotated in either direction, by pressing its outside edge, and of operating the said pump, as and for the purposes set forth.

2. In a reservoir pen or the like, a holder, a movable ink feeder and an india-rubber tube, one part of the tube being fixed to the holder and another part to the feeder so that upon the feeder being moved forward to the pen-nib point the contraction of the tube automatically pulls the feeder back, as set forth.

3i.- In a reservoir pen or the like, a holder having a cavity, an ink feeder secured to the holder, a tube of india-rubber in the said cavity, a wheel also in the cavity, and means for axially sustaining the wheel, studs on the wheels and rollers loose on the studs, as set forth.

41- In a reservoir pen or the like, a holder having a cavity and slot, an ink feeder loosely fitted to the holder, a tube of india-rubber in the said cavity connected at one end with the feeder and at the other end leading into the ink reservoir, a wheel in the cavity, means for axially supporting the wheel, studs on the wheel and rollers loose on the studs, and means for moving the ink feeder towards the pen nib, as set forth.

42- In a reservoir pen or the like, a holder having a cavity with curved floor and holes in each end wall, an india-rubber tube in such cavity with its ends passing through the said holes, a wheel and axle in the said cavity, and studs and rollers on the wheel as set forth.

43- In a reservoir pen or the like, a holder having a cavity a wheel and axle within the cavity and studs and rollers on the wheel as set forth.

44- In a reservoir pen or the like, a holder having a cavity, a wheel and axle in the said cavity and the said wheel having gear teeth, a rack gearing with the said teeth and a moveable ink feeder connected to the said rack as set forth.

45- In a reservoir pen or the like, a holder having a cavity, a wheel and disc and an axle within such cavity, rollers mounted between the wheel and disc, as set forth.

46- In a reservoir pen, a holder having a cavity, a wheel and disc and an axle within such cavity, rollers mounted between the wheel and disc, an india-rubber tube also within the cavity with one end leading to an ink reservoir and the

other and having no other business with the writer,
he will be glad to see you.

10. In a recent paper of the 11th, a letter setting a new
rule for the school was sent to the writer, and
the writer has been thinking of the matter for some
time. The rule is that the school should be
closed for the winter months, and the writer
is of the opinion that this is a very good
rule, and he is of the opinion that it should
be adopted. The writer is of the opinion that
it is a very good rule, and he is of the
opinion that it should be adopted.

11. In a recent paper of the 11th, an advertisement was
sent to the writer, and the writer has been
thinking of the matter for some time. The
advertisement is for a school, and the
writer is of the opinion that it is a very
good advertisement, and he is of the
opinion that it should be adopted.

Alexander Harris

Secretary, New York State

Department of Education

William Eastwood

John C. ...



FIG. 1.

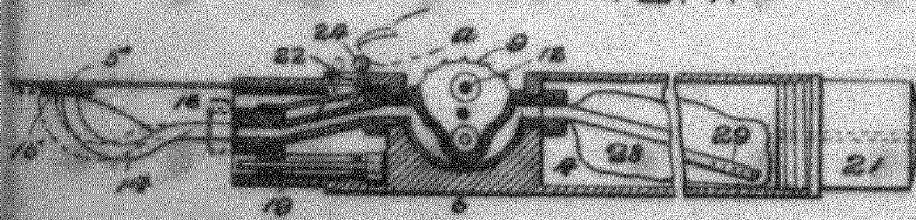


FIG. 2.

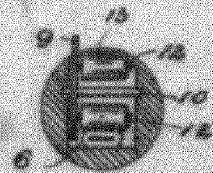


FIG. 7.

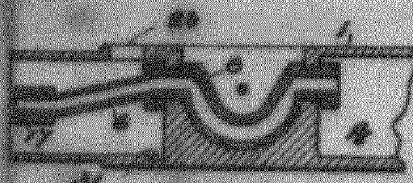


FIG. 3.

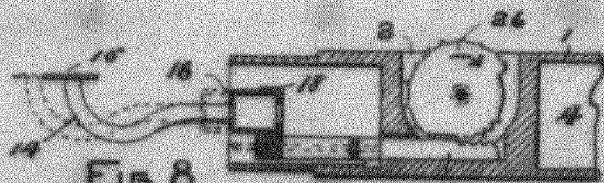


FIG. 8.

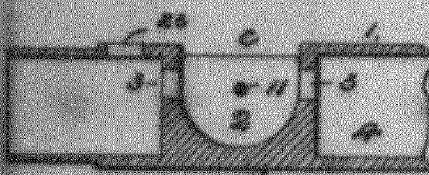


FIG. 4.

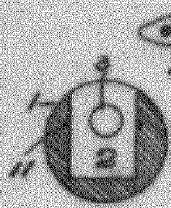


FIG. 6.



FIG. 8.

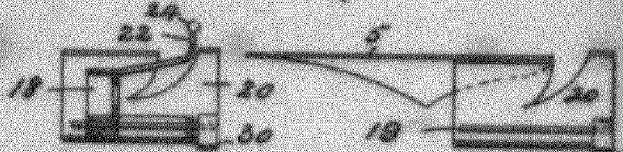


FIG. 10.



FIG. 12.

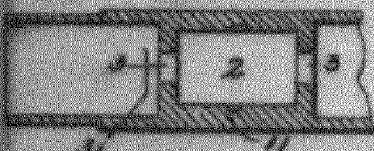


FIG. 5.

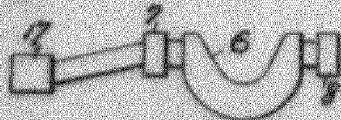


FIG. 13.

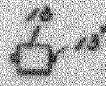


FIG. 15.



FIG. 18.

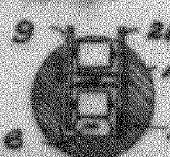


FIG. 14.

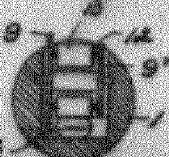


FIG. 15.



FIG. 16.



FIG. 19.



FIG. 20.

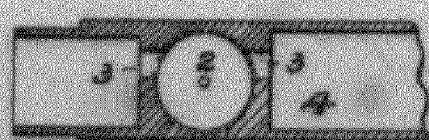


FIG. 21.

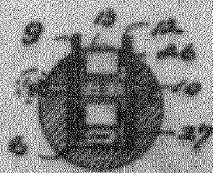


FIG. 17.

June 27th 1902.

Witnesses:
John Camp.
William Eastwood.

Certified to be the Drawing
referred to in the specification
aforesaid.
Alexander Murray
by Walter Green, Attorney.