Dec. 18, 1923. 1,478,332

L. G. GAARDER ET AL

FOUNTAIN PEN

Filed Nov. 12, 1921

Fig. 1.

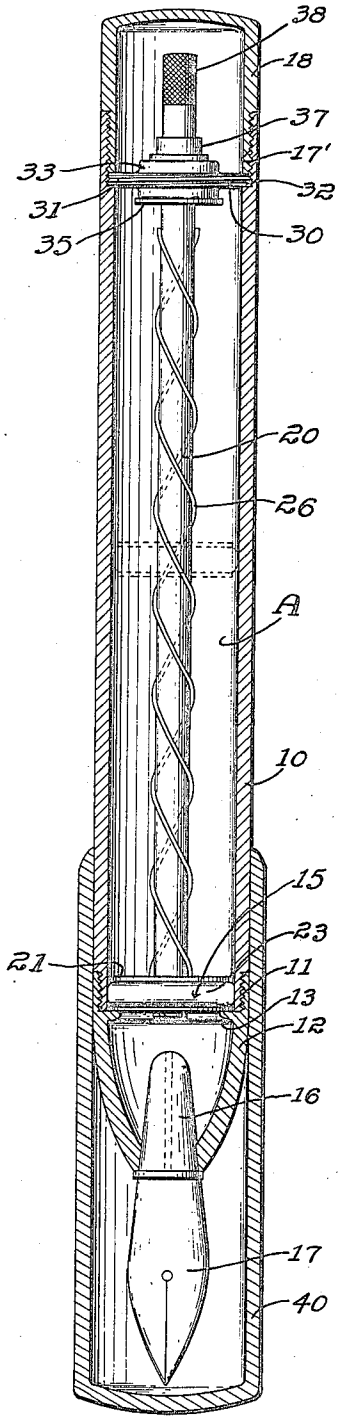


Fig. 2.

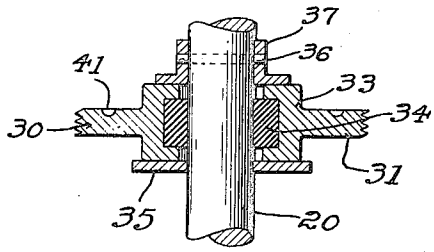


Fig. 3.

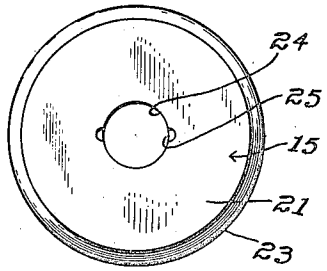
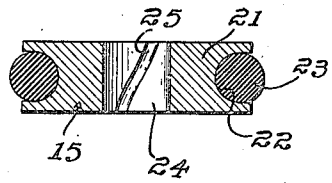


Fig. 4.



Lester G. Gaarder
Neil C. Enger
Inventors

By Lancaster and Allwine
Attorneys

Patented Dec. 18, 1923. 1,478,332

UNITED STATES PATENT OFFICE.

LESTER G. GAARDER AND NEIL C. ENGER, OF OSHKOSH, WISCONSIN.

FOUNTAIN PEN.

Application filed November 12, 1921. Serial No. 514,632.

To all whom it may concern:

Be it known that we, LESTER G. GAARDER and NEIL C. ENGER, citizens of the United States, residing at Oshkosh, in the county of Winnebago and State of Wisconsin, have invented certain new and useful Improvements in Fountain Pens, of which the following is a specification.

This invention relates to fountain pens of the self filling type and the primary object of the invention is the provision of a novel pen of this character in which the use of flexible compressible sacks for the reception of the ink or valves or other complicated mechanism which is subjected to wear or great deterioration is eliminated, thereby producing a self filling fountain pen of great durability.

A further object of the invention is the provision of a self filling fountain pen having a novel suction head reciprocably mounted in the barrel of the pen for forming a suction therein for sucking the ink through the nib and feed bar thereof and a novel means for operating said suction head.

A still further object of the invention is the provision of an improved self filling fountain pen embodying a minimum number of parts, none of which are subjected to great wear or deterioration, and a novel means of associating and assembling said parts.

With these and other objects in view, the invention consists in the novel construction, arrangement and formation of parts, as will be hereinafter more specifically described, claimed and illustrated in the accompanying drawings, forming a part of this specification, in which drawings:

Figure 1 is an enlarged longitudinal section through the improved fountain pen.

Figure 2 is an enlarged detail fragmentary section illustrating the means of supporting the rotatable rod for operating the plunger head, whereby the leakage of ink past said rod is absolutely prevented.

Figure 3 is an enlarged plan view of the novel suction head.

Figure 4 is a diametric section through the head.

Referring to the drawings in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter A generally indicates the improved self filling fountain pen, which includes the barrel 10 having the opposite ends thereof open, for a purpose which will be hereinafter more fully described. The outer end of the barrel 10, which can be of a cylindrical shape, is reduced in diameter and provided with exterior threads 11 for the reception of the head 12, which can be provided with an inwardly extending ledge 13. This ledge 13 performs a dual function, first to form a shoulder between the head and barrel for preventing the leakage of ink between the barrel and head; and second, for limiting the downward movement of the novel suction head 15 which will be hereinafter more fully described. The head 12 supports any preferred type of feed bar 16 which has associated therewith any preferred type of nib or point 17. The opposite end of the barrel 10 from the head 12 has the bore thereof enlarged and interiorly threaded as at 17′ for the reception of a cap 18. The cap 18 has the inner portion thereof reduced in diameter and exteriorly threaded for engaging the threads 17′. This formation forms a positive shield for preventing the seeping of ink past the cap 18.

The means for sucking the ink within the barrel 10 includes the suction head or piston 15 and the actuating rod 20 therefor. The suction head or piston 15 includes a disc-shaped body 21 having the outer surface thereof provided with an annular groove 22 for the reception of a compressible soft rubber gasket 23. The gasket 23 has a diameter slightly larger than the interior diameter of the barrel 10 so as to insure a friction tight engagement between the plunger or suction head 21 and the barrel. The disc shaped body 21 of the plunger or suction head 15 is provided with an axial bore 24 which is provided with double spiral grooves 25. These spiral grooves 25 are disposed opposite each other.

The operating rod 20 for the plunger or suction head 15 extends longitudinally of the barrel 10 at the axial center thereof and has the outer surface thereof provided with double spiral guide ribs or threads 26. The spiral guide ribs 26 are located directly opposite to each other, so that an even pull will be exerted on the suction head or plunger 15 during the actuation thereof.

The operating rod 20 is supported in a novel manner within the barrel 10 and the means for supporting the rod is designated by the numeral 30. This supporting means

30 consists of a disc shaped partition plate 31, the outer surface of which is exteriorly threaded as at 32 so as to permit the same to be fitted within the interior threaded portion 17' of the barrel 10. It is essential that the partition plate or disc 31 engage the shoulder formed by the enlarging of the bore of the barrel 10 so as to prevent the seeping of ink past the disc or partition plate 31 and the barrel 10. It is to be also noted that when the cap 18 is threaded in position, the same will engage against the plate and also serve as means to prevent leakage of ink past the plate. The axial center portion of the disc or plate 31 is provided with an axial opening, the inner surface of which is provided with an annular retaining ring 33, in which is fitted a relatively soft compressible rubber washer or ring 34. This gasket, washer or ring 34 is adapted to snugly engage the outer surface of the operating rod 20 so as to prevent the leakage of ink past the rod and the partition plate or disc 31. In order to further preclude the passage of ink past the rod or head 31, the rod 20 can have secured thereto a guard plate 35 which is adapted to engage the lower surface of the retaining ring 33. If desirable, the rod 20 may have secured thereto by means of a removable pin or the like 36 a collar 37 for engaging the partition plate or disc 31, so as to prevent sliding movement of the rod 20 in relation to the said plate or disc 31.

This collar 37 also acts as an additional guard against the leakage of ink past the rod and disc partition plate 31. The extreme outer end of the operating rod 20 may be knurled or serrated as at 38 so that a ready and firm grip can be obtained on the same. In the assembling of the improved device, the head 12 and the cap 18 are removed from the barrel 10. The partition plate or disc 31 is then threaded into the barrel 10 as shown in Figure 1 of the drawings, after which the head 15 is placed on the rod 10 by a slight twisting movement and the rod is inserted through the gasket 34 until the plate 35 engages the lower surface of the ring 33. The collar 37 is then slipped on the rod into engagement with the outer surface of the ring 33 and the pin 36 is placed in position. The head 12 is then threaded on the other end of the barrel and the pen is ready for use.

When it is desired to fill the pen, the cap 40 which can be movably fitted on the barrel 10 in any preferred manner is removed, and the rod 20 rotated in such a direction as to feed the plunger 15 to the lower end of the barrel. The pen point or nib 17 is then inserted in the ink in the usual manner and the rod 20 is rotated in the reverse direction which will feed the suction head or plunger 15 upwardly and thus effectively suck ink into the barrel. After the barrel has been filled with ink, the cap 18 can be placed on the barrel 10 so as to hide the threaded or knurled end 38 of the rod 20 and the pen will present the appearance of the ordinary type of fountain pen. It is to be noted that the friction set up between the soft rubber ring 23 and inner surface of the barrel 10 will be sufficient to prevent the rotation of the plunger or suction head during the actuation thereof. If desired, the outer surface of the partition plate or disc 31 may be provided with suitable indentations 41 for the reception of a suitable tool to facilitate rotation thereof, whereby the same can be readily fitted within the barrel 10.

It is of course desirable that the parts of the pen, wherever possible, be made of hard rubber or similar material.

From the foregoing description, it can be seen that a simple and durable self filling fountain pen has been provided which includes a minimum number of operating parts, none of which will be subjected to great wear or deterioration.

Changes in details may be made without departing from the spirit or scope of this invention; but,

We claim:

1. In a self filling fountain pen, a barrel having its outer end open and enlarged in diameter providing an internal shoulder, screw threads formed on the enlarged portion of the barrel, a supporting plate externally threaded into the enlarged portion of the bore and arranged to fit on said shoulder, said plate having an axial opening therein, a rotatable rod having one end extending through the opening, a suction plunger mounted for travelling movement on the rod during the rotation thereof, an annular retaining ring concentric with the opening in the plate, a compressible gasket in the retaining ring and embracing the rod, stop plates on the rod arranged upon opposite sides of the supporting plate and a cap threaded into the threaded enlarged portion of the barrel for engaging the outer surface of the supporting plate to prevent movement thereof.

2. In a self filling fountain pen, a barrel, an operating plunger rod disposed axially within the barrel, a suction head movable upon the plunger rod and comprising a flat disc having an axial opening therethrough, said disc having transversely disposed spiral grooves in the walls of the opening arranged at diametric points and having an annular groove formed in the periphery thereof, a compressible gasket fitted within the groove in the periphery of the disc for engaging the wall of the barrel, spiral guides formed on the plunger rod cooperating with the spiral grooves in the suction head, whereby the suction head will be reciprocated upon the

rod during rotation thereof, and fluid tight means for rotatably supporting the rod within the barrel.

3. In a self filling fountain pen, a barrel, a reciprocating plunger head in said barrel, a rotatable rod for actuating the plunger, means for rotatably supporting the rod in said barrel comprising a partition plate, means for removably securing the plate in the barrel against the leakage of fluid past the same, the plate having an axial opening therein, a retaining ring on the plate formed concentric with the opening, a flexible soft rubber ring arranged in the retaining ring for engaging the outer surface of the rod, and stop plates carried by the rod and arranged upon opposite sides of the partition plate to prevent sliding movement of the rod in relation to said plate.

LESTER G. GAARDER.
NEIL C. ENGER.