PATENT SPECIFICATION

Application Date: July 9, 1919. No. 17,213/19. **151,753**

Complete Left: May 10, 1920.

Complete Accepted: Oct. 7, 1920.

PROVISIONAL SPECIFICATION.

Improvements in and relating to the Filling of Fountain Pens.

We, THE WYVERN FOUNTAIN PEN Co., of 143, High Holborn, London, Manufacturers, and GEORGE DAVIES, of Vulcanite Works, Woodboy Street, Leicester, in the County of Leicester, Works Manager, do hereby declare the nature of this invention to be as follows:—

This invention relates to the filling of fountain pens and more particularly to a device of the type in which a lever is positioned in a slot in the barrel or holder, and one end of the lever is adapted to depress a presser plate mounted in the barrel which in turn acts upon a flexible ink tube in such a way that when the tube is depressed the air is expelled therefrom, the subsequent expansion of the tube drawing in a new charge of ink.

One object of the present invention is to enable the replacement or the removal of the lever should it become broken or damaged. Another object is an improved support for the parts and a further object is to form a guide for the presser plate in its movement so that it cannot be longitudinally displaced.

In carrying the invention into effect there is arranged within the tubular barrel a frame or U-shaped bracket, the upper limb of which is provided with a pair of cheeks to project through the slot in the holder and by which the device is rigidly secured relatively to the slot. The end of the upper limb is forked and provided with hook-like bearings, which are adapted to engage with trunnion-like pins projecting from either side of the lever, the trunnion and its bearings constituting the fulcrum for the lever. It is preferred to construct the lever of the usual channelled section, and ears are formed which are adapted to receive the trunnion pin or pins at a short distance from one end, thus forming a two armed lever, the shorter arm of which fits under or into the barrel, and is adapted, when the longer arm is raised to depress the presser plate and thus act upon the flexible ink tube arranged beneath the presser plate. The lever at its opposite end is provided with the usual finger piece which is adapted to conveniently fit into the slot, and in order that the lever will be held in the guides, it is preferred to slightly inwardly bend one end of each of the guides or cheeks and the corresponding part of the lever is formed with similarly shaped surfaces so that when the lever is in its inoperative position the parts will have a spring engagement which will normally tend to retain it from being inadvertently opened.

In order to assist the placing of the U-shaped bracket in the barrel the inner end of the bracket at one of its corners or elbows is formed with a spring loop or pin that will assist or permit the upper limb of the bracket to be flexed when guiding it into position, the other elbow or corner acting to firmly maintain the bracket in position in the holder. The inner end of the presser bar is provided with a slot which is caused to engage with the transverse limb of the U-shaped bracket, so that it acts as a guide to the presser plate to constantly prevent it from longitudinal displacement when acted upon by the lever.

From the foregoing description it will be seen that the lever fulcrum is constituted by a bracket which is arranged in-

[*Price* 1/-]

side the tubular holder, which is an advantage as compared with other types of devices in which a fulcrum is constituted by the sides of the holder, the pin or equivalent member being rigidly mounted in openings which need to be previously bored in the holder. By the construction described it is only necessary to form the actual slot opening in the barrel, and the device is then passed into the barrel through the holder, small brackets or ears being formed on the frame bracket to immovably secure the upper arm in position, so that it constitutes a rigid fulcrum for the lever.

Instead of the above described trunnion-like mounting of the lever, the converse arrangement may be adopted, *viz.*: a hook-like bearing or bearings formed on the lever and the supporting pins on the guides or cheeks.

Dated this 9th day of July, 1919.

MARKS & CLERK.

COMPLETE SPECIFICATION.

Improvements in and relating to the Filling of Fountain Pens.

We, THE WYVERN FOUNTAIN PEN CO., of 143, Holborn, London, Manufacturers, and GEORGE DAVIES, of Woodboy Street, Leicester, in the County of Leicester, Works Manager, 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 the filling of fountain pens and more particularly to a device of the type in which a lever is positioned in a slot in the barrel or holder, and one end of the lever is adapted to depress a presser plate mounted in the barrel which in turn acts upon a flexible ink tube in such a way that when the tube is depressed the air is expelled therefrom, the subsequent expansion of the tube drawing in a new charge of ink.

One object of the present invention is to enable the replacement or the removal of the lever should it become broken or damaged. Another object is an improved support for the parts and a further object is to form a guide for the presser plate in its movement so that it cannot be longitudinally displaced.

The invention consists in making the lever readily detachable should it become broken or damaged.

The invention also consists in arranging within the barrel of the pen a frame which is designed to support the actuating lever and to also serve as a guide for the movable presser bar.

Reference will now be made to the accompanying drawings which illustrate two examples of a pen according to the invention.

Fig. 1 is a longitudinal section of so much as is necessary, with the flexible ink tube expanded,

Fig. 2 is a similar section with the ink tube partly deflated,

Fig. 3 is a cross section on the line 3—3 of Fig. 2,

Figs. 4 and 5 are views similar to Figs. 1 and 2 of a modified construction,

Fig. 6 is a cross section taken on the line 6—6 of Fig. 5.

Figs. 7 and 8 are plan views of two parts of Figs. 5 and 6 and hereinafter described.

In carrying the invention into effect and referring to Figs. 1, 2 and 3 there is arranged within the tubular barrel *a* of the pen a frame or U-shaped member *b* comprising two arms or limbs b^1 and b^2, the upper limb b^1 of which is provided with a pair of cheeks *c* to project through the slot *d* in the barrel, and by which the device is rigidly secured relatively to the slot. The cheeks *c* fit friction tight in the sides of the slot and the end of the limb b^1 is forked and provided with hook-like bearings *e*, which are adapted to engage with trunnion-like pins *f* projecting from either side of the lever *g*, the trunnions and their bearings constituting the fulcrum for the lever *g*. It is preferred to construct the lever of the usual channelled cross section, and ears are formed which are adapted to receive the trunnion pin or pins *f* at a short distance from one end, thus forming a two armed lever, the shorter arm *h* of which fits under or into the barrel. When the longer arm *g* of the lever is raised to depress the presser plate *k* the shorter end *h* will act upon the flexible ink tube *l*, which is arranged beneath the presser plate *k*. The upper end of the lever is provided with the usual finger piece *m* which is adapted to conveniently fit into the slot and in order that the arm *g* of the lever will be held in the guides, it is preferred

to slightly inwardly bend one end of each of the guides or cheeks *a* and the corresponding part of the lever is formed with similarly shaped surfaces so that when the lever is in its inoperative position the parts will have a spring engagement which will normally tend to retain the lever from being inadvertently opened.

The inner frame *b* as shown comprises an upper limb b^1 of a length which is relatively long as compared with the shorter limb b^2, which fits under the ink tube *h* and these two limbs are joined by an intermediate vertical leg *n* on to which one end of the presser bar fits with a slot on its end, in order to guide the presser plate in its up and down movements.

In order to assist the placing of the U-shaped bracket or frame in the barrel the inner end of the bracket at one of its corners or elbows is formed with a spring loop or pin *o* that will assist or permit the upper limb of the bracket to be flexed when guiding it into position, the other elbow or corner acting to firmly maintain the bracket in its position within the barrel. By securing the one end of the presser bar upon the member *n* not only will it be efficiently guided in its vertical movement but it will also be prevented from longitudinal displacement when acted upon by the arm *h* of the lever.

Instead of the above described trunnion-like mounting of the lever, the converse arrangement may be adopted, *viz.*: a hook-like bearing or bearings may be formed on the lever and the supporting pins being secured upon the end of the limb b^1.

Referring now to Figures 4 to 8 the modified arrangement shown therein comprises the inner frame or U-shaped member *b*, but there is arranged between the presser bar and the limb b^1 a bow spring *p*, one end *q* of which is firmly connected to the loop *o* of the frame *b*, whilst the other end of such spring has a sliding engagement with the free end of the member b^1. The centre of the spring is moreover secured as by rivet or the like to a more or less centre position of the presser bar, and in place of the trunnion-like fulcrum of the lever, the following arrangement is shown. The lever *g* carries a hook *r*, and slots are formed in the limb b^1 through one of which the lever extends, such slot being indicated at *s*. The hook *r* on the lever is adapted to engage with a similar slot *t*, and in order that the limb b^1 may be firmly secured relatively to the slot, lugs *u* are stamped up therefrom to fit over the material at the ends of the slot. The part *h* of the lever is formed with a rounded nose to engage the upper surface of the bow spring *p*, and to assist in maintaining the lever in position ears are stamped up from the presser plate *k* to act as a guide for the stroke of the lever. By the above described construction the presser bar, when the lever is being replaced in its inoperative position, it is positively raised so as to allow the ink tube to expand by the re-action of the bowed spring and when the lever is in its final inoperative position the spring tends to maintain it locked.

From the two forms of devices hereinbefore described it will be understood that the lever fulcrum is constituted by a bracket which is arranged inside the barrel or tubular holder, which is an advantage as compared with other types of devices in which the fulcrum is constituted by the sides of the slot, the pin or equivalent member being rigidly mounted in openings which need to be previously bored in the holder. By the construction described it is only necessary to form the actual slot opening in the barrel, and the device is then passed into the barrel through the holder, small brackets or ears being formed on the upper limb of the frame to immovably secure the upper arm in position, so that it constitutes a rigid fulcrum for the lever.

Moreover, it is to be understood that in case of accident which might cause the breakage or deformation of the lever it may be removed from its bearings and a new one substituted.

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. An improved device for filling fountain pens of the kind in which a lever is adapted to depress a presser plate to act upon a flexible ink tube in the barrel, characterised in that the lever is readily detachable from its fulcrum support should it become broken or damaged, in order that the lever may be repaired or a new one substituted.

2. A device for filling fountain pens as claimed in Claim 1 comprising a frame arranged within the barrel which is designed to support the actuating lever and to also serve as a guide for the movable presser bar.

3. A device for filling fountain pens as claimed in Claim 1 comprising the combination of a U-shaped frame within the

barrel, the longer limb of which is adapted to serve or constitute a fulcrum for the actuating lever, with a presser bar carried on the transverse or shorter limb of the frame for the purpose described.

4. A device for filling fountain pens as claimed in Claim 3 in which the upper limb of the inner frame is formed with hook-like bearings and in which the lever is fitted with trunnion-like pins to engage such hooked bearings so as to form a readily detachable mounting for the lever.

5. A device as claimed in Claim 1 in which the presser plate is fitted with a bow spring so that it is withdrawn by the re-action of the spring when it is necessary to expand the ink tube by moving the lever accordingly.

6. A device as claimed in Claim 5 in which there is arranged between the presser bar and the upper limb of the U-shaped frame, a bow spring which may be flexed by the actuation of the lever, one end of said spring being firmly secured in position, whilst the other end has a sliding connection with the upper limb of the inner frame.

7. A device as claimed in Claim 6 in which the upper limb of the inner frame is slotted to accommodate the lever and to also receive a hook-like extension from said lever, thereby constituting a detachable mounting for the latter.

8. The improved devices for filling fountain pens substantially as described and as illustrated in and by the accompanying drawings.

Dated this 10th day of May, 1920.

MARKS & CLERK.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1920.

151,753. WYVERN FOUNTAIN PEN CO. *& another's* COMPLETE SPECIFICATION.

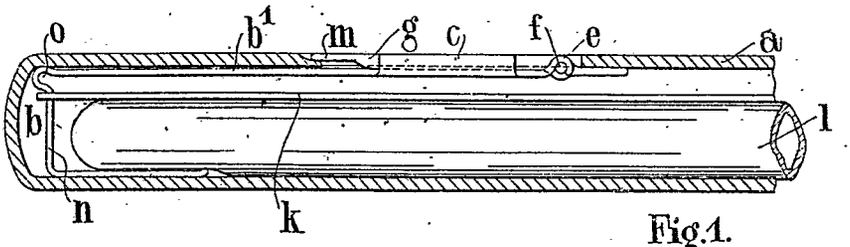

Fig.1.

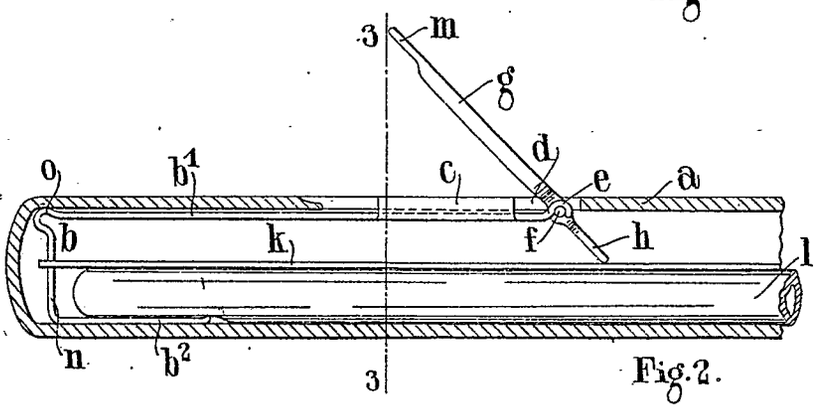

Fig.2.

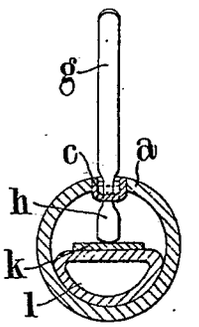

Fig.3.

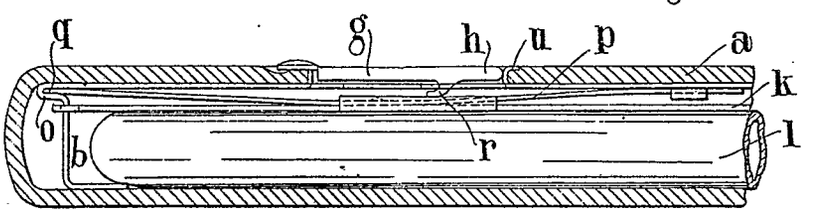

Fig.4.

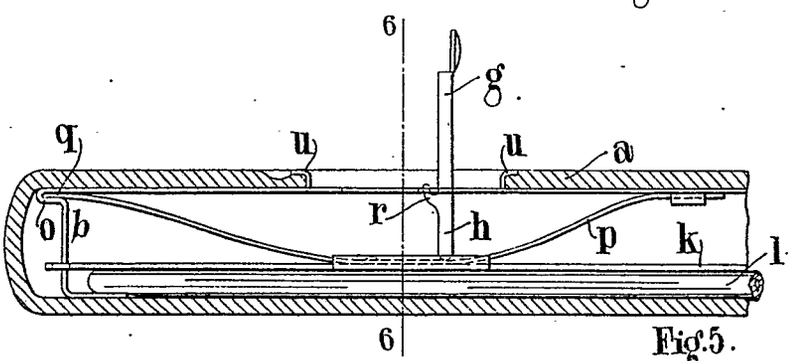

Fig.5.

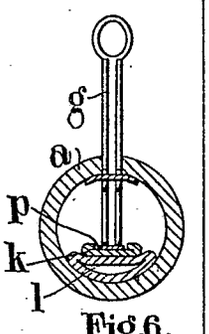

Fig.6.

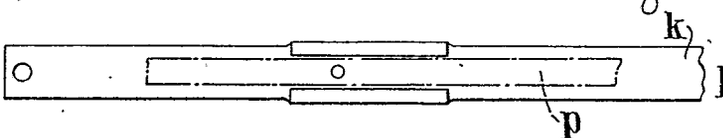

Fig.7.

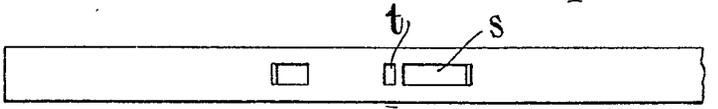

Fig.8.

Malby & Sons, Photo-Litho.