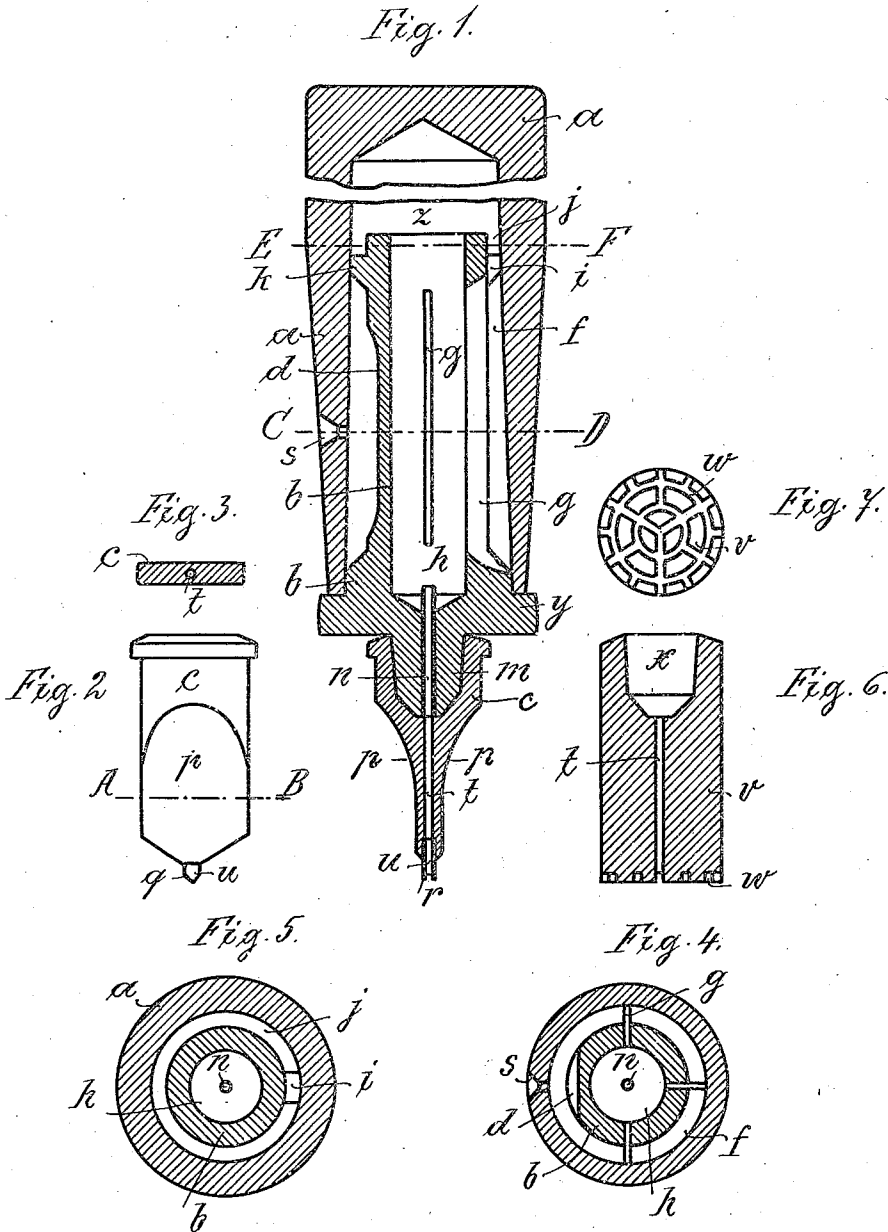


T. KOVACS.  
 FOUNTAIN PEN.  
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1,426,200.

Patented Aug. 15, 1922.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

THEODOR KOVÁCS, OF BERLIN, GERMANY.

## FOUNTAIN PEN.

1,426,200.

Specification of Letters Patent. Patented Aug. 15, 1922.

Application filed September 13, 1920. Serial No. 410,030.

*To all whom it may concern:*

Be it known that I, THEODOR KOVÁCS, a citizen of the Hungarian Republic, residing at Berlin, Germany, have invented certain new and useful Improvements in Fountain Pens (for which I have filed applications in Germany May 28, 1920, and in Hungary Apr. 22, 1917, and in Hungary Jan. 20, 1919, and in Hungary Jan. 23, 1919), of which the following is a specification.

In fountain pens the ink does not flow out with sufficient uniformity. According to this invention the uniform outflow of the ink is ensured by means of a special capillary space designed to receive the excess of ink which has flowed out of the ink reservoir. This compensating space supplies the ink gradually and absolutely uniformly to the channels which conduct the ink to the nib of the pen. The compensating space communicates continuously with the atmosphere and serves further for conducting auxiliary air to the ink reservoir.

A fountain pen with such a device is not only well adapted for writing purposes but can also serve as drawing pen for drawing long lines of uniform thickness. If the mouth piece is made removable it can be replaced by a mouth piece for the drawing of lines of different thickness. The fountain pen is properly ensured against drying up of the ink. With each fountain pen several mouth pieces are sold.

For the drawing of very large lines a mouth piece is used which has a capillary boring at its axis and capillary notches at the end designed to distribute the ink uniformly over the end part which is thus supplied with ink automatically without the assistance of any mechanical device. For the drawing of thin lines a mouth piece is used which is adapted to draw very sharp lines and which is securely conducted by the T-square, triangle or any other auxiliary device.

With this object in view the mouth piece is very wide in one direction and very thin in a direction perpendicular thereto, and it is provided with a separate insertion which is essentially smaller than the above mentioned width. This insertion piece has edges at its mouth which determine through their distance from one another the thickness of the line to be drawn, said edges standing parallel the guiding surfaces.

In the accompanying drawings the invention is shown by way of example:—

Fig. 1 shows in longitudinal section an improved fountain pen with the mouth piece designed for the drawing of thin lines.

Fig. 2 is a side view of the mouth piece.

Fig. 3 is a section on line A—B,

Fig. 4 is a section on line C—D of Fig. 1,

Fig. 5 is a section on line E—F,

Figs. 6 and 7 represent in section and seen from below a mouth piece designed for the drawing of thick lines.

In the hollow pen holder *a* a piece *b* is inserted which has a flange *y* designed to close the open end of the holder. This piece *b* has a boring *h* with capillary lateral slots *g* (Figs. 1 and 4). At the inner end of the piece *b* a ring *k* is provided which bears against the inner wall of the hollow pen holder *a*. This ring *k* has a slot *i* which forms an opening through which the capillary space *f* between the piece *b* and the inner wall of the pen holder *a* is connected with the ink reservoir *z*. Near the upper end of the pen-holder *a* an opening *s* is provided in its wall which communicates with the space *f*, said space being enlarged at this point by a cavity *d* in the outer surface of the wall of the piece *b*. A conical extension *m* of said piece *b* serves as seat for a mouth piece and has a central boring *n* which communicates with the boring *h* of the piece *b*.

Fig 1 shows a mouth piece *c* for the drawing of thin lines. The space *f* forms the compensating space hereinbefore mentioned.

Owing to the capillary effect of the compensating space *f*, the ink which is pressed out of the reservoir *z*, for example through increase of pressure into the air space which is not filled with liquid and which would be in excess of the ink which fills the outflow channel *n* respectively the channel *t* of the mouth piece *c*, is sucked into the compensating space to be used according to requirement. In order to make the supply of ink from the compensating space *f* as gradual as possible the space *f* is narrowed towards its upper end so that, with the increasing pressure of the ink in the compensating space *f*, the capillary action increases also whereby the increase of force due to the greater outflow of ink is compensated by the increase of resistance. The long and

very narrow slots *g* of the piece *b*, extending along the entire length of the compensating space *f*, serve to ensure that all the ink which has been supplied to the compensating space *f* flows back to the reservoir *z* at any position of the pen holder. Opposite the opening *s* in the wall of the pen-holder, the capillary action of the space *d* is reduced through said space being enlarged. The opening *s* cannot be clogged by dried ink as no ink can get at said opening. As this opening *s* is very small it can scarcely serve to balance the pressure between the air in the space *f* and the outer air so that the air required for pressing the ink out of the reservoir *z* has to be taken from the compensating space *f* whereby the evaporation and the drying up of the ink in said reservoir is prevented as much as possible. For this purpose the slot *i* in the ring *k* of the piece *b* is used. The air which flows from the space *f* through the slot *i* into the ink reservoir *z* must pass through a capillary groove *j*. As this capillary groove *j* is even then filled with ink if the level of the ink in the reservoir *z* stands below said capillary groove, only very small bubbles of air can pass through said capillary groove *j*; consequently the variations of pressure resulting from the supply of air to the ink reservoir are reduced to the minimum. The compensating space *f* could, instead of being arranged in longitudinal direction upon the piece *c*, be arranged in transverse direction or it could be spiral shaped. The boring *n* in the extension *m* is capillary and so are the borings *t* of the mouth piece *c* to be placed upon said extension *m*.

The mouth piece *c* shown in Figs. 1 to 3 is of a small cross section and tongue-shaped. In a section perpendicular to that of Fig. 1 said piece is however comparatively large and it has inclined surfaces *p* upon either side (Fig. 2). These inclined surfaces *p* serve for guiding the mouth piece along a T-square, triangular or similar auxiliary device. The mouth piece is thus ensured against accidental movement so that a sharp line is drawn. As can be seen from Fig. 2, the nib *q* inserted into the end of the mouth piece *c* is sharpened like a chisel. The section shown in Fig. 1, which is taken at an angle of 90° with regard to Fig. 2, shows the sharp edges *r* which are thus formed lying in the direction of the surfaces *p*. The thickness of the line to be drawn is determined by the distance between said edges *r*.

If particularly thick lines have to be drawn, a mouth piece is used which is constructed as shown in Figs. 6 and 7. The body *v* of this mouth piece has at its inner end a conical body *x* which fits upon the extension *m* of the pen holder. From this boring *x* a central capillary boring *t* leads

to the outer surface of the mouth piece. In this outer surface notches *w* are provided which extend to the circumference and communicate with each other. Fig. 7 shows by way of example a practical arrangement of said notches.

Fountain pens for drawing thick lines have already become known, but such pens of known construction present at the end either the form of a calotte or they are spoon-shaped. In connection with fountain pens these mouth pieces are usually supplied with ink by means of auxiliary devices whilst, owing to the special construction of the mouth piece *v* and to the capillary boring *t* in connection with the capillary notches *w* the improved mouth piece is automatically supplied with ink when it moves over the drawing sheet.

I claim:—

1. Fountain pen comprising in combination with a hollow pen holder serving as an ink reservoir, a body inserted in said pen holder and stopping the open end the same being of smaller diameter than said pen holder so that between the outer surface of which body and the inner wall of the pen holder a separate capillary space is formed which is connected on the one hand with the ink reservoir and on the other hand with the atmosphere, said capillary space extending almost over the entire surface of said body and getting narrower towards the outer end so that the capillary action increases, and a mouth piece for the reception of a pen or of a device for drawing lines.

2. Fountain pen comprising in combination with a hollow pen holder serving as an ink reservoir, a body inserted in said pen holder and stopping the open end the same being of smaller diameter than said pen holder so that between the outer surface of which body and the inner wall of the pen holder a separate capillary space is formed which is connected on the one hand with the ink reservoir and on the other hand with the atmosphere, small slots being provided in the wall of said hollow body for connecting said capillary space with the inner boring of said body and extending over the entire length of the capillary space, and being narrower than the capillary space around the body and thus adapted to prevent air entering the inner space of said hollow body, and a mouth piece for the reception of a pen or of a device for drawing lines.

3. Fountain pen comprising in combination with a hollow pen holder serving as an ink reservoir having an opening in its wall arranged at a point which is usually unaccessible for the ink, a body inserted in said pen holder and stopping the open end of the same being of smaller diameter than

said penholder so that between the outer surface of which body and the inner wall of the pen holder a separate capillary space is formed which is connected on the one hand with the ink reservoir and on the other hand with the atmosphere through said opening in the wall of the pen holder, a cavity in the wall of said body opposite said opening of the pen holder for reducing the capillary action of said capillary space, and a mouth piece for the reception of a pen or of a device for drawing lines.

4. Fountain pen comprising in combination with a hollow pen holder serving as an ink reservoir, a body inserted in said pen holder and stopping the open end the same being of smaller diameter than said pen holder so that between the outer surface of which body and the inner wall of the pen holder a separate capillary space is formed which is connected on the one hand with the ink reservoir and on the other hand with the atmosphere, a ring at the inner end of said body bearing against the inner wall of the pen holder having a slot connecting said capillary space with the ink reservoir and a capillary groove as extension of said slot designed to retain ink even if the ink level in the reservoir stands below said capillary groove, and a mouth piece for the reception of a pen or of a device for drawing lines.

5. Fountain pen comprising in combination with a hollow pen holder serving as an ink reservoir, a body inserted in said pen holder and stopping the open end the same being of smaller diameter than said pen holder so that between the outer surface of which body and the inner wall of the pen holder a separate capillary space is formed which is connected on the one hand with the ink reservoir and on the other hand with the atmosphere, a ring at the inner end of said body bearing against the inner wall of the pen holder having a slot connecting said capillary space with the ink reservoir and a capillary groove as extension of said slot designed to retain ink even if the ink level in the reservoir stands below said capillary groove, an extension at the outer end of said body having a capillary boring, and a mouth piece for the reception of a pen or of a device for drawing lines.

6. Fountain pen comprising in combination with a hollow pen holder serving as an ink reservoir, a body inserted in said pen holder and stopping the open end the same

being of smaller diameter than said pen holder so that between the outer surface of which body and the inner wall of the pen holder a separate capillary space is formed which is connected on the one hand with the ink reservoir and on the other hand with the atmosphere, a ring at the inner end of said body bearing against the inner wall of the pen holder having a slot connecting said capillary space with the ink reservoir and a capillary groove as extension of said slot designed to retain ink even if the ink level in the reservoir stands below said capillary groove, an extension at the outer end of said body having a capillary boring and a mouth piece having a capillary central boring mounted upon said extension so that this central boring of the mouth piece is in alignment with the central boring of said extension.

7. Fountain pen comprising in combination with a hollow pen holder serving as an ink reservoir, a body inserted in said pen holder and stopping the open end the same being of smaller diameter than said pen holder so that between the outer surface of which body and the inner wall of the pen holder a separate capillary space is formed which is connected on the one hand with the ink reservoir and on the other hand with the atmosphere, a ring at the inner end of said body bearing against the inner wall of the pen holder having a slot connecting said capillary space with the ink reservoir and a capillary groove as extension of said slot designed to retain ink even if the ink level in the reservoir stands below said capillary groove, an extension at the outer end of said body having a capillary boring and a mouth piece for drawing thin lines being enlarged in one direction and forming a comparatively small tongue in a direction of 90° with regard to the first direction mounted upon said extension.

8. In a mouth-piece for pens, guiding surfaces on said mouth-piece, a separate member adapted to be inserted in the mouth-piece having two sharp chisel-like edges, the distances between which determine the thickness of the line to be drawn, said edges being parallel with the guiding surfaces of the mouth piece.

In testimony whereof I affix my signature in presence of two witnesses.

THEODOR KOVÁCS.

Witnesses:

RABBI SEECH,  
LEOPOLD MEYER.